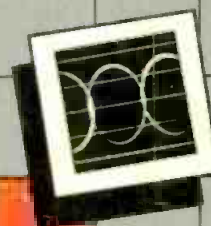
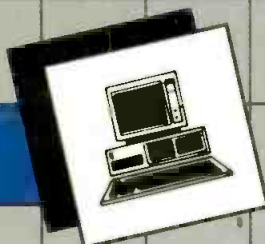
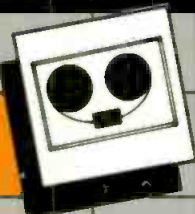
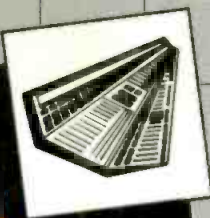


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PESA



Circle (1) on Reply Card

If you've been putting off doing stereo field remotes for fear of risking a fragile, expensive stereo mic, Shure's new VP88 is what you've been waiting for.

The VP88 is an advanced single point stereo condenser mic that not only recreates the sonic environment with extraordinary audio fidelity, but meets Shure's legendary standards for ruggedness and reliability.

The VP88 is built to withstand the punishment of field remotes. And, it comes at a price you'll find surprisingly affordable.

TRUE MS STEREO.

The VP88 features a forward facing Mid capsule, perpendicular Side capsule and built-in stereo matrix to assure a wide, natural, uncolored

response for stereo imaging. Yet, it's perfectly mono compatible.

To enable you to control the degree of stereo spread and ambience pick-up, the VP88 has three switch-selectable stereo modes or direct mid and side output. And it's designed to provide the wide dynamic range and low noise you need for remote broadcasts.

THE FEATURES YOU NEED.

The VP88 can be powered by a self-contained battery or phantom power so you can go where the action takes you. It includes switchable low-frequency rolloff for reduced ambient noise and a built-in "pop" screen.



In addition to camera mounting, the VP88 can be used on a stand, fishpole, or boom. And the mic comes with a wide range of standard and optional accessories to accommodate your most challenging stereo miking requirements.

So whether you're just beginning to look at stereo miking, or you want to take your stereo to the next level — consider the advantages of the Shure VP88. It's making stereo miking an affordable proposition.

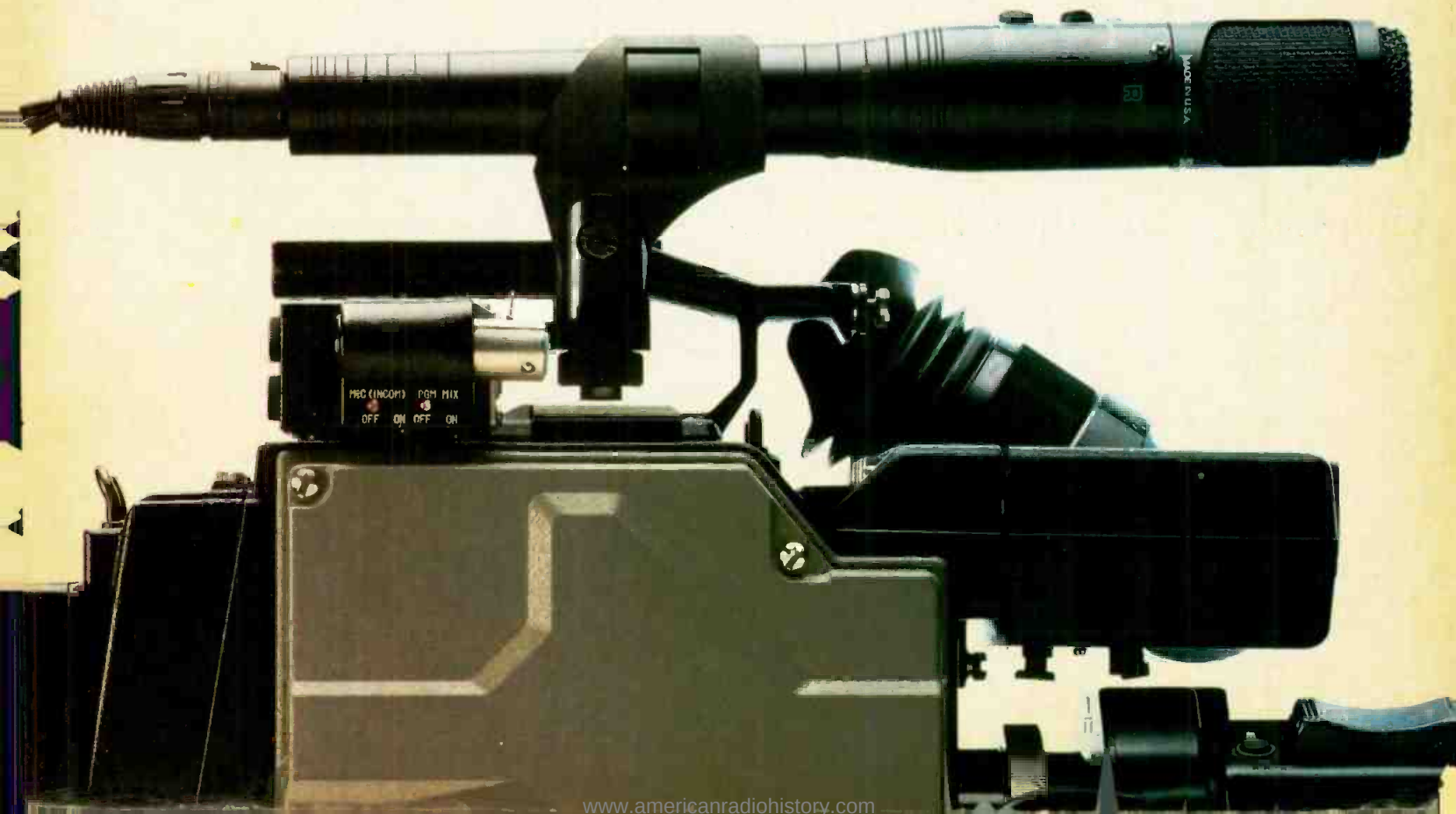
For the name of your nearest dealer and our free brochure, call or write Shure, 222 Hartrey Avenue, Evanston, IL 60202-3696. 1-800-25-SHURE. The Sound of the Professionals®... Worldwide.

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Compatible

Circle (5) on Reply Card

Shure's New VP88 Stereo Microphone Offers A New Level Of Reliability And Affordability.



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If you ever need the address, telephone number and/or fax number to contact a company, this directory provides the most up-to-date information.

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ON THE COVER

The annual Equipment Reference Manual is a comprehensive directory for radio and TV broadcasters. This special BE publication can be used as a guidebook whenever an equipment purchase is being planned. Keep this annual publication on your desk for reference throughout the year. (Cover design by Kim Bracken, graphic designer.)

BROADCAST engineering

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PUBLISHING CORPORATION

INTRODUCING OUR S9x5.5 ENG/EFP LENS

The point of news coverage and field production is to be in close. Broad in scope. With no distortion. All while capturing shots as appealing as a wide slice of pepperoni pizza.

Nikon's new S9x5.5 lens, with internal focus, was made to order. Search far and wide and you'll find, for being near (about 1') and wide (77.3° x 61.9°), no one else gives more. The crisp image, sharp from corner to corner, comes courtesy of Nikon's famed optics and ED glass. You glide through the 9x zoom ratio — from 5.5mm to 49.5mm — smoothly. And we include a 1.7x extender.

The internal focus extends your creative options to include matte boxes and a full range of filters. And, like all Nikon ENG/EFP lenses, its lightweight design and rigid construction can't be topped.

The S9x5.5. Expect no less from Nikon. After all, we create the world's finest video lenses — from a complete line of HDTV lenses to converters that transform your Nikon F-series SLR lenses into a complete menu of special effects lenses for your CCD camera.

*For more information, write or call:
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Welcome readers

Welcome to the 1992 *Broadcast Engineering* Equipment Reference Manual and Buyers Guide. Continuing the tradition, this 11th reference issue contains a wealth of information regarding manufacturers and many facts on the latest equipment for broadcast, cable and production environments.

Buying hardware today is difficult and there is an abundance of equipment and options available. The task for the engineering manager is to select the best product for the given application. That can be a difficult task. Fortunately, the Equipment Reference Manual and Buyers Guide is your key to making the correct

hardware purchases.

We've incorporated several features to make your search for the best equipment even easier. The fold-out tab pages quickly guide you to different sections of this issue: Buyer's Guide Product Listings, Manufacturers' Addresses and Specification Comparisons. Color highlighting throughout the issue alerts you to those companies that have their products advertised in this issue. In the Product Directory, a number of closely related categories (for example, audio mixers, microphones, and transmitters) have been combined to make your search faster. One list shows all players, with logical code letters following their names to indicate which type of equipment they offer.

Additional tab pages alert you to the Audio Products, Video Products and RF & Test Products sections within this issue. These sections also contain color highlighting of company names to alert you to advertisers.

This issue contains the most complete listing of products and specifications available in one source for this industry. The information is based on data provided by those companies responding to our request for assistance. Multiple requests for information

were directed to all participants of previous directories, to new companies exhibiting at trade shows and those appearing in our New Products columns during the year. There are more than 1,000 companies listed in the Manufacturer Address listing. If a company is missing from this compendium, it is because we received no information from that company after repeated requests.

Thank you for helping *Broadcast Engineering* in our efforts to continue the tradition of serving the industry in a first-class form. If we can be of further assistance, please let us know.



Pat Blanton

Pat Blanton,
directory editor

Carl Bentz

Carl Bentz,
special projects editor



“What I Like About the Odetics Cart Machine.”

“When I joined WTVH two years ago, the existing cart handling equipment was more than 15 years old. There was a real need for a new, more reliable cart machine. I took a serious look at the machines out there, then settled on the Odetics TCS2000.

Since we installed the TCS2000, everyone here has come to share my appreciation of its capabilities. We’ve especially liked the computer-based playlist. We had been manually checking play information against a paper log. Now we download the information directly from our traffic computer, and the TCS2000 generates a playlist. With the human-error factor eliminated, on-air discrepancies have become practically non-existent.

The efficiency of the Odetics equipment has streamlined our entire operation. Our older technology machine would hold only 24 spots at a time. We load over 400 spots into the new machine. Also, we use the Odetics machine’s multi-cut feature, and that’s increased our on-line spot capability by about 33 percent.

At WTVH we run 2-1/2 hours of local news every day, so last-minute changes are routine. Using the Odetics keyboard, we

can insert new material up to 30 seconds before going on air. Deletions need only two seconds lead time.

One of the most useful aspects of the machine’s software is the reports it generates. For example, I can pull a report any time showing what spots are needed that are not already in the machine. In the past, we might not know we were missing a spot until just before air time.

This machine has certainly made my own job a lot easier. That’s what I like most of all. I don’t hear any more comments at staff meetings about spots being lost on-air, and it’s a pleasure to see those blank discrepancy reports.

If you’re considering installing a new cart machine, give me a call at (315) 425-5555. I’ll be glad to talk with you firsthand about the advantages the Odetics TCS2000 has brought to WTVH.”

**Jim Bernier, Director of Engineering
WTVH Syracuse**

**Odetics
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Buyers' Guide Product Categories

Audio Products

Color highlights denote advertisers; see ad index

Audio Products

AMPLIFIERS

D audio distribution; P mic/phone pre-amp

Advanced Video Associates	D
AEQ-Aplicaciones Electronicas Quasar	D
Aiphone Intercom Systems	D
AIR Corp.	D/P
Allen Avionics, Inc.	D/P
Alphaton	D
Altec Lansing	D
AMEK Systems & Controls	P
Aphex Systems Ltd.	D
API-Audio Products Inc.	D/P
Arrakis Systems	D/P
Ashly Audio	P



ATI-Audio Technologies Inc.	D P
Audio Design	D
Audio Developments Ltd.	D/P
Auditronics, Inc.	D/P
Avitel Electronics Corp.	D
BAL	D
BBE Sound	P
Beaveronics, Inc.	D
Benchmark Media Systems, Inc.	D/P
BFE AG	D/P
BGW Systems, Inc.	D
Biamp Systems	P
Bogen Communications	P
Brabury International	D
Broadcast Devices Inc.	D/P
Bryston Vermont Ltd.	D
BSM Systems Inc.	D
BTS Broadcast Television Systems	D
Canford Audio plc	D/P
Central Dynamics	D
Channelmatic, Inc.	D
CRL Systems	P
J.E. Cuesta & Co. Inc.	D
Datatek Corp.	D
Di-Tech Inc.	D
D&R Electronica b.v.	P
DTL Broadcast Ltd.	D
DYMA Engineering, Inc.	D/P
DYNAIR Electronics, Inc.	D
EDCOR Electronics	P
EELA Audio	D/P
ESE	D
Fartronics	D
FM Acoustics Ltd.	D/P
FM Systems, Inc.	D
Focusrite Audio Eng. Ltd.	P
Full Compass Systems, Ltd.	D
Fumeo S.p.A.	D
Gentner Electronics Corp.	D
GML/George Massenburg Labs	P
Grass Valley Group	D
James Grunder & Associates Inc.	D
Harris Allied Broadcast Equipment	P
HEDCO	D
Henry Engineering	D
HES Electronics	D/P
Icon Electronics Corp.	D
Image Video Ltd.	D
IRP, A Knowles Div.	D
ITAME, S.A.	D/P
ITI Electronics, Inc.	P
Jensen Transformers	P
JNS Electronics, Inc.	D/P
Laford Telemedia Inc.	D
Lectrosonics, Inc.	D/P
Leitch Inc.	D
Logitek Electronic Systems, Inc.	D/P
MBI Broadcast Systems Ltd.	D

McCurdy Radio Industries	D
Modular Audio Products	D/P
Modulation Sciences	D
Moseley Associates, Inc.	D
MTC/Mycomp Technologies Corp.	D
Multidyne Electronics, Inc.	D
Neumade Products Corp.	D
Neve/A Siemens Co.	D
NTP Elektronik A/S	D/P
nVision, Inc.	D
Omicron Video	D
Opamp Labs, Inc.	D/P
Pacific Recorders & Eng. Corp.	D/P
PESA America Inc.	D
Philip Drake Electronics	D
PKE International	D/P
Pro-Bel Ltd.	D
Professional Sound Corp.	D/P
ProTech Audio Corp.	D/P
QMI	D
Radio Systems Inc.	D/P
Ram Broadcast Systems	D/P
Ramko Research	D/P



Rane Corp.	D/P
RE Broadcast	D
Reliance Comm/Tec	D
Richmond Sound Design, Ltd.	D
ROH Products	D
Russco Electronics Mfg. Inc.	D
S.A.V.	D
Sandar Electronics	D
Scantex Labs Inc.	D
SCV Audio	D/P
Seem Audio A/S	D/P
Shintron Co., Inc.	D
Shure Brothers Inc.	D/P
Siel Sistemi Elettronici SRL	D
Sierra Video Systems	D
Sigma Electronics, Inc.	D
Solutec Ltd. (H.A.)	D
Sonosax SA	D/P
Spectra Sonics	D/P
Spectrum Communications Corp.	D
Studio Technologies, Inc.	P
Summit Audio Inc.	P
Symetrix Inc.	P
Target Technology	D
TC Electronic	P
Tech Electronics, Inc.	D
Telex Communications, Inc.	D
Texar/Gentner Electronics	D
360 Systems	D
Total Audio Concepts Ltd.	P
Trident Audio USA	P
Utah Scientific, Inc.	D
Valley International, Inc.	P
Video Accessory Corp.	D
Videoquip Research Ltd.	D/P
Videotek, Inc.	D
Vortex Communications	D
Ward-Beck Systems, Ltd.	D
Wheatstone Corp.	D
World Video	P
Yamaha Pro Audio Products	P

AMPLIFIERS, MONITOR, POWER

AEQ-Aplicaciones Electronicas Quasar	
Aiphone Intercom Systems	
AIR Corp.	
Alesis Corp.	
Altec Lansing	
API-Audio Products Inc.	
Arrakis Systems	
Ashly Audio, Inc.	
ATI-Audio Technologies Inc.	
Benchmark Media Systems, Inc.	
BGW Systems, Inc.	
Biamp Systems	

Bogen Communications, Inc.	
Broadcast Devices Inc.	
Bryston Vermont Ltd.	
BSM Systems Inc.	
Canford Audio plc	
Carver Corp.	
Carvin	
Conex Electro Systems	
Crown	
J.E. Cuesta & Co. Inc.	
DYMA Engineering, Inc.	
EDCOR Electronics	
EELA Audio	
Electro-Voice Inc.	
Fartronics	
FM Acoustics Ltd.	
Fumeo S.p.A.	
Furman Sound, Inc.	
Gentner Electronics Corp.	
Hill Audio Ltd.	
Icon Electronics Corp.	
IRP, A Knowles Div.	

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Logitek Electronic Systems, Inc.	
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PKE International	
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QSC Audio Products, Inc.	
Ram Broadcast Systems	
Ramko Research	
Rane Corp.	
Renkus-Heinz, Inc.	
ROH Products	
Rohde & Schwarz	
Russco Electronics Mfg. Inc.	
S.A.V.	
SCV Audio	
Seem Audio A/S	
Siel Sistemi Elettronici SRL	
Somich Engineering	
Sonosax SA	
Spectra Sonics	
Symetrix Inc.	
Target Technology	
TEAC	
Tech Electronics, Inc.	
Telex Communications, Inc.	
Texar/Gentner Electronics	
TOA Electronics, Inc.	
UREI	
US Audio	
Videoquip Research Ltd.	
Wohler Technologies, Inc.	
World Video Inc.	
Yamaha Pro Audio Products	

CABLE, AUDIO, MIC

1-/multiple-pair, shielded.	
Arcor Broadcast Products	
Audio-Technica U.S., Inc.	
BARCO-EMT GmbH	
Beyer Dynamic Inc.	
Bi-Tronics, Inc.	
C.A.E.	
Canare Cable, Inc.	
Canford Audio plc	
Chester Audio & Video Cable/Alcatel	
Clark Wire & Cable	
Connectronics Corp.	
Cooper Industries/Benden	
Electro-Voice Inc.	

FM Acoustics Ltd.	
Full Compass Systems, Ltd.	
Gecco International, Inc.	
Har-Ken Specialties	
JNS Electronics, Inc.	
Marshall Electronics	
MicroFone	
Mohawk Wire & Cable Corp.	
Nemal Electronics International	
Neutrik USA, Inc.	
ORA Electronics	
Professional Sound Corp.	
S.A.V.	
SCV Audio	
Seam-Tech	
Sennheiser Electronik KG	
Shure Brothers Inc.	
Spectrum Communications Corp.	
Teledyne Thermatics	
Trompeter Electronics, Inc.	
Veam/Litton Systems, Inc.	
Videoquip Research Ltd.	
Whirlwind	
Wireworks Corp.	

CD PLAYERS

Audio Design	
Barco, Inc.	
BARCO-EMT GmbH	
Broadcast Automation, Inc.	
Canford Audio plc	
Carver Corp.	
Denon America, Inc.	
DKW Systems	
EuroSon America, Inc.	
Gefen Systems	
Gotham Audio Corp.	
Leonardo Software	
Numark Electronics	
PKE International	
Ram Broadcast Systems	
Sony Business & Professional Group	
Studer Revox America Inc.	
TASCAM	
TEAC	
The Management	
TM Century, Inc.	

DELAY SYSTEMS

Systems, devices introducing audio delays to compensate signal delays in video processing; excludes audio effects and reverb.

Allen Avionics, Inc.	
Audio/Digital	
Axon Digital Design	
BARCO-EMT GmbH	
Dalanco Spry	
Digital Audio Research	
Eventide Inc.	
Gotham Audio Corp.	
IRP, A Knowles Div.	
Klark-Teknik	
Leitch Inc.	
MacroMedia Design	
McCurdy Radio Industries	
Merlin Engineering Works, Inc.	
Ram Broadcast Systems	
Spectra Sonics	
TC Electronic	
Tektronix Inc.	
TFT Inc.	

DIGITAL WORKSTATIONS

Hard disk recorders, software.	
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AKG Acoustics, Inc.	
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AMS Industries/Siemens	
Antex Electronics	
Amel Corp.	
Audio Design	

CEDAR Audio Ltd.
Cipher Digital, Inc.
Computer Concepts Corp.
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IGM Communications
IMC/Akai
International Tapetronics Corp.
JLCooper Electronics
Lexicon Inc.
MacroMedia Design
McCurdy Radio Industries
New England Digital Corp.
Opcode Systems, Inc.
Otari Corp.
PKE International
Racom Broadcast Ltd.
Richmond Sound Design, Ltd.
Roland Pro Audio/Video Group
S.A.V.
Schafer World Communications Corp.
Sentry Systems
Solid State Logic
Sonifex Ltd.
Studer Revox America Inc.
Symetrix Inc.
Texar/Gentner Electronics
The Management
360 Systems
Videoquip Research Ltd.
Wheatstone Corp.

DUPLICATORS, AUDIO

Accurate Sound Corp.
Canford Audio plc
Gauss
Graff Electronic Machines Ltd.
Lyrec Mfg. A/S
Otari Corp.
S.A.V.
Telectro Systems Corp.
Telex Communications, Inc.

DYNAMICS PROCESSORS

Compression, limiting, expansion, noise reduction, de-essing, spectral exciter.

AEV
AIR Corp.
Alesis Corp.
AMEK Systems & Controls, Ltd.
AMEK/TAC US Operations
Antex Electronics

APHEX SYSTEMS

Aphex Systems Ltd.
API-Audio Products Inc.
Ashly Audio, Inc.
ATI-Audio Technologies Inc.
Audio Animation Inc.
Audio Design
Audio Developments Ltd.
BARCO-EMT GmbH
BBE Sound, Inc.
BFE AG
Biamp Systems
CEDAR Audio Ltd.
CRL Systems

D&R Electronica b.v.
dbx Professional/AKG Acoustics
Dolby Laboratories, Inc.
Dorrough Electronics
EELA Audio
Electro-Voice Inc.
Eventide Inc.
FM Systems, Inc.
Focusrite Audio Eng. Ltd.
Furman Sound, Inc.
GML/George Massenburg Labs
Gotham Audio Corp.
Inovonics Inc.
IRP, A Knowles Div.
ITAME, S.A.
JBL Professional
JNS Electronics, Inc.
JVC Professional Products Co.
Kahn Communications, Inc.
KINTEK, Inc.
Klark-Teknik
Lectrosonics, Inc.
Lexicon Inc.
Logitek Electronic Systems, Inc.
Modular Audio Products
Modulation Sciences
Neve/A Siemens Co.
NTP Elektronik A/S
Orban Associates/AKG Acoustics
PKE International
ProTech Audio Corp.
QMI
Ram Broadcast Systems



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Renkus-Heinz, Inc.
S.A.V.
SCV Audio
Seem Audio A/S
Sescom, Inc.
Somich Engineering
Summit Audio Inc.
Symetrix Inc.
Tayo Industries
Tectan
Texar Ltd.
Texar/Gentner Electronics
Total Audio Concepts Ltd.
UREI
Valley International, Inc.
Wheatstone Corp.
Yamaha Pro Audio Products

EBS EQUIPMENT

Encoders, decoders
Gorman-Redlich Mfg. Co.
Leitch Inc.
S.A.V.
Siel Sistemi Elettronici SRL
TFT Inc.

EFFECTS PROCESSORS

Plate/room simulation, reverb, flanging, chorus functions; profanity delays; may include simple delay function (excludes delay-only devices).

AKG Akustische u. Kino-Geräte GmbH
Alesis Corp.
AMS Industries/Siemens Co.
ASC-Tube Traps
Audio Design
Audiocontrol Industrial
BARCO-EMT GmbH
D&R Electronica b.v.
Eventide Inc.
Gotham Audio Corp.
Klark-Teknik
Lexicon Inc.
Numark Electronics
Roland Pro Audio/Video Group
S.A.V.
Spectra Sonics

Studio Technologies, Inc.
TC Electronic
TOA Electronics, Inc.
White Instruments/C Van R, Inc.
Yamaha Pro Audio Products

EQUALIZERS

HP-/LP-Filters, parametric, psophometric, swept, etc.
AIR Corp.
Alesis Corp.
Alec Lansing
AMEK Systems & Controls, Ltd.
Aphex Systems Ltd.
API-Audio Products Inc.
Ashly Audio, Inc.
ATI-Audio Technologies Inc.
Audio Animation Inc.
Audio Developments Ltd.
BFE AG
Biamp Systems
CEDAR Audio Ltd.
CRL Systems
D&R Electronica b.v.
dbx Professional/AKG Acoustics
Electro-Voice Inc.
Flying Fur Industries
Focusrite Audio Eng. Ltd.
Furman Sound, Inc.
GML/George Massenburg Labs
Gotham Audio Corp.
Harrison by GLW
IRP, A Knowles Div.
ITAME, S.A.
JBL Professional
JNS Electronics, Inc.
Klark-Teknik
Lectrosonics, Inc.
MicroAudio, Inc.
Modular Audio Products
Neve/A Siemens Co.
NTP Elektronik A/S
Orban Associates/AKG Acoustics
Pacific Recorders & Eng. Corp.
PKE International
QMI
Ram Broadcast Systems



Rane Corp.
Richmond Sound Design, Ltd.
Roland Pro Audio/Video Group
S.A.V.
SCV Audio
Solid State Logic
Spectra Sonics
Summit Audio Inc.
Symetrix Inc.
Total Audio Concepts Ltd.
TC Electronic
TEAC
TOA Electronics, Inc.
Trident Audio USA
TTE, Inc.
UREI
Valley International, Inc.
Ward-Beck Systems, Ltd.
Wheatstone Corp.
White Instruments/C Van R, Inc.
Yamaha Pro Audio Products

FADERS, ATTENUATORS

Console replacement and automated faders; audio attenuator pads

Aphex Systems Ltd.
API-Audio Products Inc.
BFE AG
Canford Audio plc
D&R Electronica b.v.
FSR, Inc.
GML/George Massenburg Labs
Harrison by GLW
Henry Engineering

JLCooper Electronics
Lectrosonics, Inc.
Neve/A Siemens Co.
NTP Elektronik A/S
Penny & Giles, Inc.
Richmond Sound Design, Ltd.
S.A.V.
Schafer World Communications Corp.
Selco Products Co.
Shalco, Inc.
Stanton Magnetics Inc.
Television Technology Corp.
Trident Audio USA
Ward-Beck Systems, Ltd.

HEADPHONES, HEADSETS

AKG Akustische u. Kino-Geräte GmbH
Audio-Technica U.S., Inc.
Beyer Dynamic Inc.
Birns & Sawyer Inc.
Broadcast Electronics, Inc.
Canford Audio plc
Cine 60, Inc.
David Clark Co.
Clear-Com Intercom Systems
Countryman Associates Inc.
Dynatech Tactical Communications
EDCOR Electronics
Fostex Corp. of America
HM Electronics
Koss Corp.
Multidyne Electronics, Inc.
Nady Systems, Inc.
Numark Electronics
Philip Drake Electronics
Plantronics
R-Columbia Products Co., Inc.
Ram Broadcast Systems
RE Broadcast
ROH Products



Sennheiser Electronic Corp.
Setcom Corp.
Shure Brothers Inc.
Sony Business & Professional Group
Stanton Magnetics Inc.
Systems Wireless Ltd.
Technical Projects, Inc.
Telectro Systems Corp.
Television Equipment Associates
Telex Communications, Inc.
Telfax Communications
TOA Electronics, Inc.
Valcom Ltd.
Yamaha Pro Audio Products

INTERCOMS

Aiphone Intercom Systems
Alphaton
Ampco Sound Lab (ASL)
Atlas/Soundolier
Bogen Communications, Inc.
Brabury International
Canford Audio plc
David Clark Co.
Clear-Com Intercom Systems
Comrex Corp.
Comtek Communications Technology, Inc.
EELA Audio
Farrtronics
Heikki Malkki Ltd.
HES Electronics
HM Electronics
JNS Electronics, Inc.
Lee Dan Communications, Inc.
Marti Electronics
Philip Drake Electronics
PKE International
Professional Sound Corp.
ProTech Audio Corp.
R-Columbia Products Co., Inc.
Ram Broadcast Systems

Audio Products

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ROH Products
S.A.V.
Setcom Corp.
Studio Technologies, Inc.
Swintek Enterprises, Inc.
Systems Wireless Ltd.
Technical Projects, Inc.
Telectro Systems Corp.
Television Equipment Associates
Telex Communications, Inc.
Telos Systems
TOA Electronics, Inc.
Vega, A Mark IV Co.
Ward-Beck Systems, Ltd.
Wheatstone Corp.

MICS & ACCESSORIES

A Windscreens, direct boxes, booms, stands; H Hand-held, stand, shotgun; L Lavalier; W Wireless

AKG Acoustics, Inc. A/H/L/W
Alphaton L
AMS Industries/Siemens L
API-Audio Products Inc. A
Ariel Corp. H
ATI-Audio Technologies Inc. A
Atlas/Soundolier A
Audio Visual Assistance A
Audio-Technica U.S., Inc. A/H/L/W
Audix Corp. H/L/W
Beyer Dynamic Inc. A/H/L/W
Birns & Sawyer Inc. A/H
Black Audio Devices A
Bogen Communications, Inc. A
Broadcast Electronics, Inc. A/H/L
Brüel & Kjær A/H
Canford Audio plc A/H/W
Carvin H
Cine 60, Inc. A/H/L

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Gotham Audio Corp. A/H
Har-Ken Specialties A
HM Electronics H/L/W
Karl Heitz, Inc. A
Keith Monks Sound Systems A
Lectrosonics, Inc. W
LTM Corp. of America A
MicroFon A/H/L/W
Micron Audio Products Ltd. A/H/L/W
Milab Microphones H
Nady Systems, Inc. H/L/W
Numark Electronics H
Panasonic Professional Audio Systems H/L
Professional Sound Corp. A/L
Ram Broadcast Systems A/H/L/W
Theodore A Rapp Assoc/Tram L
R-Columbia Products L/W
ROH Products A/W
Samson Technologies W
Sanken Microphone
Audio Interview Design H/L
Schoeps Schalltechnik A/H
Seam-Tech A

SENNHEISER

Sennheiser Electronic A/H/L/W

SHURE

Shure Brothers Inc. A/H/L/W
Sony Business & Professional H/L/W

Spectra Sonics A/L/W
Spectrum Communications Corp. H/W
Swintek Enterprises, Inc. H/L/W
Systems Wireless Ltd. W
Technical Projects, Inc. A
Telectro Systems Corp. H/W
Telex Communications, Inc. A/H/L/W
TOA Electronics, Inc. H/L/W
Vega, A Mark IV Co. H/L/W
Whirlwind A
Yamaha/Pro Audio H

MIXERS, PORTABLE/ENG, MIC

P Portable, ENG, Mic; O On-air Radio.
TV; S Studio Production, Recording,
Reinforcement, ESAM

AEQ P/O
AEV P/O
Altec Lansing P/S
AMEK Systems & Controls P/O/S
AMEK/TAC US Operations P/O/S
AMS Industries/Siemens S
API-Audio Products Inc. P/O/S
Arrakis Systems O/S
Ashly Audio, Inc. P/S

ATI

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Audio Teknology Inc. P
Audio-Technica U.S., Inc. P
Auditronics O/S
BARCO-EMT S
Biamp Systems P/S
Broadcast Automation S
Canford Audio plc P/S
Carvin P/S
Comrex Corp. P
D&R Electronica b.v. P/O/S
DDA/Dearden Davies Assoc. O/S
dbx Professional/AMG Acoustics P
EDCOR Electronics O/S
EELA Audio P/O/S
Electro-Voice Inc. P/S
Fidelipac O/S
Focusrite Audio Eng. S
FOR.A S
Fostex O/S
Full Compass Systems P/O
Furman Sound, Inc. P
Gentner Electronics P
GML/George Massenburg Labs S
Gotham Audio O/S
Graham-Patten Systems S
Grass Valley Group P/S
Hallikainen & Friends P/O
Harris Allied O
Harrison by GLW P/O/S
Henry Engineering S
Hill Audio Ltd. P/O/S
IRP, A Knowles Div. P/O
ITAME, S.A. P/O/S
JLCooper O/S
JVC Professional Products Co. P
Kaitronics Corp. P/O
Lectrosonics O
Logitek Electronic Systems, Inc. P/O
LPB Inc. O
MBI Broadcast Systems Ltd. P/O/S
McCurdy Radio Industries O
MicroAudio, Inc. P
Micro Controls, Inc. O
Micron Audio Products Ltd. P
Nady Systems, Inc. P
Neotek S
Neve/A Siemens Co. P/O/S
Numark Electronics O/S
Opamp Labs S
Otari S
Pacific Recorders & Eng. O/S
Panasonic Professional Audio Systems P/S
Philip Drake Electronics O/S
PKE International O
Professional Sound Corp. P/O/S

ProTech Audio Corp. O/S
Quad Eight Electronics S
Racom Broadcast Ltd. P
Radio Systems Inc. O/S
Ram Broadcast Systems P/O
Ramko Research P/O/S
Rane Corp. S
Richmond Sound Design, Ltd. P
Russco Electronics Mfg. Inc. P/O/S
Samson Technologies S
S.A.V. P/O/S
Scantex Labs S
Schafer World Comm. P/O/S
Seem Audio A/S P/O/S

SENNHEISER

Sennheiser Electronic Corp. P/O

SHURE

Shure Brothers Inc. P/O/S
Sierra Automated Systems O
Solid State Logic O/S
Sonosax SA P/O/S
Sony Business & Professional P/O/S
Soundcraft Electronics P/O/S
Soundtracs PLC P/O/S
Spectra Sonics P/O
Stanton Magnetics Inc. P
Studer Revox America Inc. P/O/S
TASCAM S
Telex Communications, Inc. O
Telfax Communications P
The Management O
TOA Electronics S
Total Audio Concepts Ltd. P/O/S
Trident Audio O/S
Unitronic P/O
US Audio P/S
Vortex Communications P
Ward-Beck Systems O/S
Wheatstone Corp. P/O/S
Yamaha/Pro Audio Products S

MUSICAL INSTRUMENTS MIDI EQUIPMENT

Includes Instrumental pickups & microphones.

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Audio-Technica U.S., Inc.
Digidesign Inc.
Eventide Inc.
Hybrid Arts, Inc.
IMC/Akai
JLCooper Electronics
Lexicon Inc.
Lone Wolf
Nady Systems, Inc.
Opcode Systems, Inc.
Rane Corp.
Roland Pro Audio/Video Group
Telfax Communications
Yamaha Pro Audio Products

RECORDERS, AUDIO

C Cartridge, NAB; includes digital units
emulating standard cart machines; S
Cassette; D Digital, all formats; R Reel
Accurate Sound Corp. S/R

ALESIS

Alesis Corp. D
Apogee Electronics D
Asaca/Shibasoku C/D
Audi-Cord Corp. C
Audio Design D
BARCO-EMT GmbH C/D

Broadcast Automation, Inc. C/R
Broadcast Cartridge Service C/S
Broadcast Electronics, Inc. C
Canford Audio plc C/S/D/R
Concept Productions D
Corporate Computer Systems C
Dictaphone Corp. S/D/R
Digital Audio Technologies SA R
Fidelipac Corp. C
Fostex D/R
Fougerolle Audio D
Gotham Audio D
IMC/Akai S/D
International Tapetronics Corp. C
ITAME, S.A. C
JVC Professional D
Lyrec Mfg. R
MacroMedia Design C/D
Nagra Kudelski D/R
Neve/A Siemens Co. D
Otari Corp. C/D/R
Pacific Recorders & Eng. Corp. C
Panasonic Pro Audio Systems D
Perfectone D/R
PKE International C
Radio Systems Inc. C/D
Ram Broadcast Systems C/S/D/R
Rangertone Research R
Schafer World Communications Corp. C
Sharp/LCD Products S/D
Sonifex Ltd. C
Sony Business & Professional D/R
Studer Revox America S/D/R
TASCAM S/D/R
TEAC S/R
Telectro Systems S/D/R
Television Technology Corp. C/R
The Management D
360 Systems C/D
Tiffen Mfg. Corp. S
TM Century, Inc. C
Uher of American S/R
Wheatstone Corp. C
Yamaha/Pro Audio Products S/D

RECORDING HEADS, AUDIO

Auteri Associates, Inc.
International Electro-Magnetics
Northern Magnetics, Inc.
Nortronics Co., Inc. c/o Applied Magnetics
Saki Magnetics Inc.
Studer Revox America Inc.
Television Technology Corp.

RECORDING TAPE

All audio formats

Ampex Recording Media Corp.
Audiopak, Inc.
Broadcast Cartridge Service
Canford Audio plc
Cine 60, Inc.

DIC/DAT
Digital Audio Tape

DIC Digital
Dictaphone Corp.
Fidelipac Corp.
International Tapetronics Corp.
Maxell Corp. of America
Panasonic Professional Audio Systems
Sony Magnetic Products Co.
3M Professional A/V & Specialty Products
Zonal Ltd.

ROUTING SWITCHERS

A Audio, V video and data signal
distribution switching systems.

Adrienne Electronics Corp. A/V
Amtel Systems, Inc. A/V
API-Audio Products Inc. A
Arrakis Systems A
Artel Communications Corp. V
Asaca/Shibasoku Corp. of America A/V



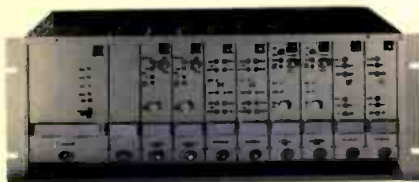
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AutoPatch

AutoPatch XN Technologies	A
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BAL	V
BARCO	A/V
Brabury International	V
Broadcast Video Systems, Ltd.	V
BSM Systems Inc.	A/V
BTS Broadcast Television Systems	A/V
Canford Audio plc	A
Dwight Cavendish Co.	V
CEL Electronics	V
Central Dynamics	A/V
Channelmatic, Inc.	A/V
ChronTrol Corp.	V
Communications Specialties	V
Computer Concepts Corp.	A
Conex Electro Systems	A
Creston Electronics, Inc.	A/V
Datatek Corp.	A/V
DiCon Fiberoptics	V
Di-Tech Inc.	A/V
DKW Systems	A
DTL Broadcast Ltd.	V
DYNAIR Electronics, Inc.	A/V
EELA Audio	A
Ergo Industries	A
ESE	A/V
FOR.A Corp. of America	A/V
Fougerolle Audio/Video	A/V
FSR, Inc.	A
Gennum Corp.	V
Gentner Electronics Corp.	A
Ghielmetti Inc.	A/V
Gotham Audio Corp.	A
Grass Valley Group	A/V
Harrison by GLW	A
HEDCO	A/V
HES Electronics	A
Icon Electronics Corp.	V
Image Video Ltd.	A/V
IMC/Akai	A/V
Integrated Switching Systems	V
Intelvideo, Inc.	V
International Tapetronics Corp.	A
IRIS Technologies, Inc.	V
Jem-Fab Corp.	V
JNS Electronics, Inc.	A/V
Kaitronics Corp.	V
Laird Telemedia Inc.	A/V
Leitch Inc.	A/V
Logitek Electronic Systems, Inc.	A
MBI Broadcast Systems Ltd.	A
McCurdy Radio Industries	A
Monroe Electronics, Inc.	A/V
Moseley Associates, Inc.	A
Multidyne Electronics, Inc.	A/V
NTP Elektronik A/S	A
nVision, Inc.	A
Omicron Video	A/V
Opamp Labs, Inc.	V
Pacific Recorders & Eng. Corp.	A
Panasonic Communications/Systems	V
PESA America Inc.	A/V
Philip Drake Electronics	A/V
PKE International	A
Pro-Bell Ltd.	A/V
ProTech Audio Corp.	A
Questech Ltd.	V
Ram Broadcast Systems	V
Ramko Research	A
Richmond Sound Design, Ltd.	A
ROH Products	A
Sandar Electronics	V
S.A.V.	A/V
Scantex Labs Inc.	A
Seem Audio A/S	A
Shintron Co., Inc.	A/V
Sierra Automated Systems	A
Sierra Video Systems	V
Sigma Electronics, Inc.	A/V
Sony Business & Professional	A/V

System Video	V
Target Technology	A/V
Telfax Communications	A
Texar/Gentner Electronics	A
The Management	A
360 Systems	A
Thomson Broadcast	V
Titus Technological Labs	A
Utah Scientific, Inc.	A/V
VGTV, Inc.	V
Video Data Systems	V
Videoquip Research Ltd.	A/V
Videotek, Inc.	A/V
Vidicraft Inc.	A/V
Vistek Electronics Ltd.	A/V
Vortex Communications	V
Whirlwind	A

SPEAKERS, ENCLOSURES

Includes integrated amplifier-speaker units.

AEQ-Aplicaciones Electronicas Quasar	
Aiphone Intercom Systems	
AKG Akustische u. Kino-Geräte GmbH	
Altec Lansing	
Atlas/Soundolier	
Audix Corp.	
Auernheimer Labs & Co.	
Auratone Corp.	
Bogen Communications, Inc.	
Canford Audio plc	
Carvin	
Electro-Voice Inc.	
Fostex Corp. of America	
Gauss	
Genelec Oy	
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Ram Broadcast Systems	
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ROH Products	
Samson Technologies Corp.	
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Target Technology	
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TOA Electronics, Inc.	
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UREI	
Vandenberghe Profenex B.V.	
Westlake Audio Pro Products Mfg. Group	
Wohler Technologies, Inc.	
Yamaha Pro Audio Products	

STEREO CORRECTORS, SYNTHESIZERS

Includes audio phase correction systems.

Axon Digital Design
BBE Sound, Inc.
Broadcast Devices Inc.
FM Systems, Inc.
JNS Electronics, Inc.
KINTEK, Inc.
Modulation Sciences
Orban Associates/AKG Acoustics
Philip Drake Electronics
Ram Broadcast Systems
Studio Technologies, Inc.
Titus Technological Labs

TELEPHONE BANDWIDTH EXTENDERS

Canford Audio plc

COMREX

Comrex Corp.

Gentner Electronics Corp.

ITAME, S.A.

Kahn Communications, Inc.
Marcom
Racom Broadcast Ltd.
Ram Broadcast Systems
Telfax Communications
Texar/Gentner Electronics
Titus Technological Labs

TELEPHONE HYBRIDS

AEQ-Aplicaciones Electronicas Quasar

AEV

Broadcast Services/EME
Canford Audio plc
Comrex Corp.
D&R Electronica b.v.
EELA Audio
ESE

Gentner Electronics Corp.

Henry Engineering

Intraplex, Inc.

ITAME, S.A.

ITI Electronics, Inc.

NTP Elektronik A/S

Old Dominion Broadcast Eng. Service

PKE International

Professional Sound Corp.

Racom Broadcast Ltd.

Ram Broadcast Systems

Reach Electronics, Inc.

ROH Products

Seem Audio A/S

Sonifex Ltd.

Studer Revox America Inc.

Symetrix Inc.

Telfax Communications

Teios Systems

Texar/Gentner Electronics

TEST, ALIGNMENT RECORDS, TAPES, CDs

R.B. Annis Co.
Asaca/Shibasoku Corp. of America
Boland Communications
Canford Audio plc
Consultronics
Geneva Group of Companies, Inc.
Horita Co.
JRF Magnetic Sciences Inc.
Multidyne Electronics, Inc.
Prosonus
Sonifex Ltd.
Standard Tape Lab, Inc.
Titus Technological Labs

TRANSFORMERS

Audio matching, splitting

Alphaton
Atlas/Soundolier
Audio-Technica U.S., Inc.
Bogen Communications, Inc.
Canare Cable, Inc.
Canford Audio plc
Deerfield Laboratory
EDCOR Electronics
ESE
FSR, Inc.
Har-Ken Specialties
ITI Electronics, Inc.
Jensen Transformers Inc.
JLCooper Electronics
Microtran Co. Inc.
Modular Audio Products
Neutrik USA, Inc.
North Hills Electronics, Inc.
ProTech Audio Corp.
Richmond Sound Design, Ltd.
SCV Audio
Shure Brothers Inc.
Spectra Sonics
Telectro Systems Corp.
Valley International, Inc.
Whirlwind

TURNTABLES, PHONO

Including cartridges and tone arms

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Canford Audio plc
EELA Audio
Gotham Audio Corp.
Numark Electronics
Ram Broadcast Systems
Russco Electronics Mfg. Inc.
Shure Brothers Inc.
Stanton Magnetics Inc.
Telex Communications, Inc.

Video Products

AMPLIFIERS, DISTRIBUTION

Video: Pulse, Clamp, EQ

Advanced Video Associates
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BAL
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Communications Specialties Inc.
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Di-Tech Inc.
Digital Processing Systems Inc.
DTL Broadcast Ltd.
DYMA Engineering, Inc.
DYNAIR Electronics, Inc.
ESE
FM Systems, Inc.
Fumeo S.p.A.
Grass Valley Group
HEDCO
Icon Electronics Corp.
Image Video Ltd.
JNS Electronics, Inc.
Laird Telemedia Inc.

Leitch Inc.
McCurdy Radio Industries
Mobile-Cam Products
Modulation Sciences
MTC/Mycomp Technologies Corp.
Multidyne Electronics, Inc.
Multiplex Technology, Inc.
Omicron Video
Opamp Labs, Inc.
PESA America Inc.
Philip Drake Electronics
Pro-Bell Ltd.
QSI Systems, Inc.
Ram Broadcast Systems
RE Broadcast
S.A.V.
Sandar Electronics
Shintron Co., Inc.
Sierra Video Systems
Sigma Electronics, Inc.
Solutec Ltd. (H.A.)
Tech Electronics, Inc.
Thomson Broadcast
TRW LSI Products Inc.
Utah Scientific, Inc.
VGTV, Inc.
Video Accessory Corp.
Videoquip Research Ltd.
Videotek, Inc.
Vistek Electronics Ltd.
Vortex Communications

ANIMATION EQUIPMENT

Film & digital video
AIM Graphics, Inc.



TTV 1645 Sportcam



TV 1647 ENG Camera



TTV 1542 Studio / O.B. Camera



TTV 1647 EFP Compact Triax Camera

There's more to creating a family of cameras than putting your name on them.

Thomson's new generation of CCD cameras is actually a camera "family." Each camera gives you virtually identical video performance. Every one uses the same high resolution, 450,000 pixel CCD sensors. Each delivers equally high quality colorimetry, sensitivity, signal-to-noise, resolution, and registration. And each offers the specific features you need whether your production is in the studio, outside, at a news or sports event.

But the relationships run far deeper. Thomson's concept of *family* means each camera not only uses the same CCU, it can use Thomson's master control panel, operational control

panels and set-up control panels. Thus, a multi-camera production using Thomson studio, ENG and EFP cameras provides absolutely uniform video performance with the added efficiency and cost benefits of total component compatibility and system integration. One final family trait. Each camera is equipped for today and prepared to accept tomorrow's enhancements. It's part of Thomson's Theory of Evolution.

Put the family to all the tests (including price) against any cameras you might be considering. For more information or to arrange an on-site, side-by-side demonstration, call Thomson Broadcast tollfree at 1-800-882-1824.



THOMSON BROADCAST, Inc.

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Dynatech ColorGraphics, Inc.
Fumeo S.p.A.
Getris Images
Grass Valley Group
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Kavours Inc.
Lazerus
Leightronix, Inc.
MPB Technologies Inc.
Neilson-Hordell Ltd.
Pinnacle Systems
Quantel Inc.
Rank Cintel
TDI America
Time Arts Inc.
United Media
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Videomedia, Inc.
Visionetics International

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Multicore, triaxial
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BTS GmbH
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Canare Cable, Inc.
Canford Audio plc
Chester Audio & Video Cable/Alcatel
Cine 60, Inc.
Clark Wire & Cable
Cooper Industries/Benden
Gepco International, Inc.
Hitachi Denshi America, Ltd.
JVC Professional Products Co.
Marshall Electronics
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Nemal Electronics International
Panasonic Broadcast Systems Co.
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Seam-Tech
Teledyne Thermatics
Telemetrics Inc.
Thomson Broadcast
VDO-PAK

CAMERA REMOTE CONTROLS

For remote camera adjustments, lens control; may include camera positioning, CCU capability
Birns & Sawyer Inc.
BURLE INDUSTRIES, INC.
Cohu Inc., Electronics Div.
Concept W Systems, Inc.
DNF Industries
Egipment USA Inc.
Fujinon Inc.
Hitachi Denshi America, Ltd.
Innovation Optics
JVC Professional Products Co.
Matthews Studio Equipment, Inc.
Neilson-Hordell Ltd.
Panasonic Communications & Systems Co.
Telemetrics Inc.
Thomson Broadcast
TSM
Vicon Industries/Professional Products
Vinten Broadcast

CAMERA STABILIZERS

Specialized lens systems and camera support products to reduce image vibration, operator or mounting instability.
Carter Cartop Inc., Harry
Century Precision Optics
FSR, Inc.
Schwenn Technology
Telemetrics Inc.

CAMERA IMAGING DEVICES

Tubes, CCDs
CCTV Corp.
EEV
FOR.A Corp. of America
Hitachi Denshi America, Ltd.
Ortel Corp.
Richardson Electronics, Ltd.
Sony Business & Professional Group
Teltron Inc.
Thomson Tubes Electroniques

CAMERAS, VIDEO

C Camcorder 1-piece and still video acquisition products; **E** ENG/EFP portable and docking units; **S** Studio models
Ampex Corp. C/E
BTS C/E/S
Fumeo S.p.A. C
GE Support Services/RCA Broadcast S
Hitachi Denshi America E/S
Ikegami Electronics (USA), Inc. C/E/S
JVC Professional E/S
Panasonic Broadcast Systems Co. C/E/S
Panasonic Communications/Systems C/E/S
PERROTT Engineering Labs E
Sharp LCD Products C
Shook Electronics E
Sony Business & Professional Group C/E/S
Thomson Broadcast C/E/S
Vision Quest C/E

CAPTIONING, VBI DATA SYSTEMS

Includes Teletext, Videotext equipment.
Colorado Video Inc.
Computer Prompting Corp.
EEG Enterprises, Inc.
Logica Space & Comm./Broadcast
MPB Technologies Inc.
Multiplex Technology, Inc.
PESA America Inc.
Skotel Corp.
Softel Systems
VG Electronics Ltd.
Video Data Systems

CHARACTER GENERATORS, TITLERS

Video titling systems; excludes time code character insertion.
Abekas Video Systems
AF Associates
Ampex Corp.
Aston Electronic Designs Ltd.
Aston from Paltex/Paltex Imaging Systems
AVS Broadcast
BTS Broadcast Television Systems
Display Systems International, Inc.
Evertz Microsystems Ltd.
FOR.A Corp. of America
Grass Valley Group
Horita Co.
Laird Telemedia Inc.
Lazerus
Leitch Inc.
MFJ Enterprises Inc.
MPB Technologies Inc.
Multiplex Technology, Inc.
Nexus Engineering Corp.
Outland Technology Inc.
Panasonic Communications & Systems Co.
PESA America Inc.
OSI Systems, Inc.
Quanta Corp.
Quantel Inc.
Ram Broadcast Systems
Ryley Communications
S.A.V.
Sigmacon Industries
Spaceward Graphics Ltd.
TDI America
Teledac Inc.
Texscan MSI
VG Electronics Ltd.
Video Data Systems

Vortex Communications
World Video Inc.

COLOR CORRECTION EQUIPMENT

Providing color balance, component level adjustments, color enhancement.
Allen Avionics, Inc.
Broadcast Systems Design
BTS GmbH
daVinci Systems, Inc.
Digi-Grade Systems/DGS
FOR.A Corp. of America
James Grunder & Associates Inc.
Intelvideo, Inc.
Laird Telemedia Inc.
Leitch Inc.
Pandora International
Rank Cintel
S.A.V.
Showline Video
Snell & Wilcox
Sony Business & Professional Group
Thomson Broadcast
Vidicraft Inc.
Vistek Electronics Ltd.

DELAYS, PULSE/VIDEO

Simple delay-lines and packaged delay systems.
Allen Avionics, Inc.
Avitel Electronics Corp.
BAL
Brabury International
Broadcast Video Systems, Ltd.
DI-Tech Inc.
DYMA Engineering, Inc.
Eventide Inc.
Icon Electronics Corp.
Intelvideo, Inc.
Leitch Inc.
Matthey Electronics
Omicron Video
PESA America Inc.
Philip Drake Electronics
Pro-Bell Ltd.
RF Technology, Inc.
S.A.V.
Shintron Co., Inc.
Sigma Electronics, Inc.
Television Equipment Associates
Thomson Broadcast
Utah Scientific, Inc.

DIGITAL EFFECTS SYSTEMS

Abekas Video Systems
Alta Group, Inc.
Ampex Corp.
AVS Broadcast



CEL Electronics
Digital F/X
Digital Support Group
Dubner Computer Systems, Inc.
Dynatech ColorGraphics, Inc.
ECHOlab, Inc.
Electrohome
Fairlight ESP PTY Ltd.
FOR.A Corp. of America
Fougerolle Video
Getris Images
Grass Valley Group
Hotronic, Inc.
Imaging Systems
JVC Professional Products Co.
Lazerus
Leitch Inc.
Microtime, Inc.
Nova Systems, Inc.
Pinnacle Systems
Quantel Inc.
Questech Ltd.
S.A.V.
Sony Business & Professional Group

TDI America
Thomson Broadcast
Videoplex Inc.

DUPLICATORS, VIDEO

Dwight Cavendish Co.
Century Precision Optics
JVC Professional Products Co.
Leightronix, Inc.
Matco Mfg. & Test Co.
Panasonic Communications & Systems Co.
Recortec, Inc.
Sharp/LCD Products
Tech Electronics, Inc.

EDITING CONTROLLERS

Includes cuts-only, A/B roll, large scale on-line, off-line; ATR and transport synchronizers (not frame synchronizers).
Abekas Video Systems
Adams-Smith
Adelaide Works Inc.
Ampex Corp.
Amtel Systems, Inc.
BTS Broadcast Television Systems
Calaway Editing
CEL Electronics
Channelmatic, Inc.
Cipher Digital, Inc.
CMX Div. of Chyron
Convergence Editing/Paltex International
CV Technologies
DNF Industries
Editflex Systems
Editing Machines Corp.
Evertz Microsystems Ltd.
FOR.A Corp. of America
FutureVideo
Grass Valley Group
Horita Co.
JLCooper Electronics
JVC Professional Products Co.
M&R Data Services
MPB Technologies Inc.
NEC America/Broadcast Equipment
Paltex Editing Systems
Panasonic Broadcast Systems Co.
Panasonic Communications & Systems Co.
Pandora International
Quantel Inc.
S.A.V.
Sigmacon Industries
Sony Business & Professional Group
Thomson Broadcast
Time Logic, Inc.
TouchVision Systems, Inc.
United Media
Videomedia, Inc.

ENCODERS, DECODERS

Scan converters; component to composite, composite to component; computer to video.
Accom, Inc.
Allen Avionics, Inc.
Asaca/Shibasaku Corp. of America
Axon Digital Design
BAL
BPI Porta-Pattern
Brabury International
Broadcast Systems Design
Broadcast Video Systems, Ltd.
BTS Broadcast Television Systems
CEL Electronics
Central Dynamics
Communications Specialties Inc.
Croma Research Ltd.
dbx Professional/AKG Acoustics
Digital Processing Systems Inc.
Dubner Computer Systems, Inc.
Ensemble Designs
Faroudja Labs, Inc.
FOR.A Corp. of America
Fougerolle Video
Grass Valley Group
James Grunder & Associates Inc.

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Fujinon's Pegasus III 14 x 8.5 CCD lens is the light way to catch all the action. The Pegasus III, and the Lynx III 18X zoom are both lightweight, extremely dependable and offer unmatched optical performance. And, as you've come to expect from Fujinon, they're both backed by the best technical support in the industry.

Fujinon's Pegasus III and Lynx III CCD lenses. When the action is hot, you'll always come out a hero.



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Midwestern 3 N. 125 Springvale, West Chicago, Illinois 60185 (708) 231-7888
Western 129 E. Savarona Way, Carson, California 90746 (213) 532-2861
FUJI PHOTO OPTICAL CO., LTD. 324, Uetake-Machi 1-Chome, Omiya City, Saitama
Pref. 330, Japan Cable: Fujipto Omiya TELEX: J22885, J22887 Phone: 0486 (63) 0111



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I-Den Videotronics Corp.
Icon Electronics Corp.
Ikegami Electronics (USA), Inc.
Instant Replay, Inc.
Intelvideo, Inc.
Intraplex, Inc.
Laird Telemedia Inc.
Leitch Inc.
Magni Systems, Inc.
Merlin Engineering Works, Inc.
Moseley Associates, Inc.
Omicron Video
Optical Electronics
Panasonic Communications & Systems Co.
Quanta Corp.
Questech Ltd.
RGB Spectrum
S.A.V.
Shintron Co., Inc.
Showline Video
Sigma Electronics, Inc.
Snell & Wilcox
Sony Business & Professional Group
System Video
Thomson Broadcast
TouchVision Systems, Inc.
ULTIMATE Corp.
VGV, Inc.
Video International Development Corp.
Vistek Electronics Ltd.
Vortex Communications

FILM CAMERAS/EDITORS

Includes motion picture film cameras and editing equipment.

Adelaide Works Inc.
Arriflex Corp.
Bims & Sawyer Inc.
CMX a Div. of Chyron
Ediflex Systems
Lightworks The O.L.E. Partnership
Mitchell Camera Corp.
Neumade Products Corp.
Pioneer Technology Corp.
Plastic Reel Corp. of America
Quantel Inc.
Steenbeck, Inc.

FILTERS, OPTICAL

Includes visual effect, ND illumination level compensation and color correction.

Bims & Sawyer Inc.
Century Precision Optics
Da-Lite Screen Co., Inc.
Schneider Corp.
Television Equipment Associates
Tiffen Mfg. Corp.

FORMAT TRANSLATORS

For inter-format conversions among video component types.

Adelaide Works Inc.
Avitel Electronics Corp.
Brabury International
Broadcast Systems Design
Broadcast Video Systems Ltd.
CEL Electronics
Digital Processing Systems Inc.
Fougerolle Video
Leitch Inc.
Nova Systems, Inc.
Omicron Video
Questech Ltd.
Shintron Co., Inc.
Sierra Video Systems
Thomson Broadcast
Vistek Electronics Ltd.

GENERATORS, SAFE AREA/SOURCE ID

Asaca/Shibasoku Corp. of America
Boland Communications
Broadcast Video Systems, Ltd.
Croma Research Ltd.
Digital Processing Systems Inc.
Gray Engineering Labs, Inc.
Icon Electronics Corp.
Leader Instruments Corp.
Leitch Inc.
Magni Systems, Inc.
Multidyne Electronics, Inc.
QSI Systems, Inc.
Sigma Electronics, Inc.
Target Technology
Video Data Systems
Videotek Research Ltd.
Videotek, Inc.
Vistek Electronics Ltd.
Vortex Communications
World Video Inc.

GRAPHICS SYSTEMS

Dedicated and PC-based products; software packages

Accu-Weather, Inc.
Advanced Designs Corp.
AIM Graphics, Inc.
Artel Communications Corp.
Aurora Systems
Autodesk/Multimedia Div.
Aydin Controls
BTS GmbH
Design CAD Inc.
Digital F/X
Display Systems International, Inc.
Dubner Computer Systems, Inc.
Dynatech ColorGraphics, Inc.
Ensemble Designs
FOR A Corp. of America
Getris Images
Imaging Systems
Laird Telemedia Inc.
Lazerus
Logica Space & Comm./Broadcast
Media Computing, Inc.
Modern Media Consulting
Modgraph, Inc.
MPB Technologies Inc.
PESA America Inc.
Pinnacle Systems
Processor Sciences, Inc.
Quantel Inc.
Rank Cintel
Recortec, Inc.
Rix Software Inc.
Spaceward Graphics Ltd.
Teledac Inc.
Thomson Broadcast
Time Arts Inc.
Video Data Systems
Visionetics International
Vortex Communications

HARDCOPY PRINTERS, VIDEO

Hitachi Denshi America, Ltd.
Mitsubishi Electronics/Pro Electronics
Nikon Photo Electronic Imaging Products
Panasonic Communications & Systems Co.
Sharp Electronics/LCD Products
Sony Business & Professional Group

HDTV, ATV EQUIPMENT

For images of more than 1,000-line structure; interlace, sequential scans; excludes CAD and non-video products.

Adrienne Electronics Corp.
Asaca/Shibasoku Corp. of America
Aston Electronic Designs Ltd.
Avitel Electronics Corp.
BTS Broadcast Television Systems
Croma Research Ltd.
Di-Tech Inc.
Electronic Visuals Ltd.

ESE
Faroudja Labs, Inc.
FOR A Corp. of America
Fujinon Inc.
GE/Projection Display Products
Grass Valley Group
Hitachi Denshi America, Ltd.
Ikegami Electronics (USA), Inc.
Kaitronics Corp.
Magni Systems, Inc.
nVision, Inc.
Omicron Video
Pandora International
Quantel Inc.
Rank Cintel
S.A.V.
Shintron Co., Inc.
Sigma Electronics, Inc.
Snell & Wilcox
Sony Business & Professional Group
Tektronix Inc.
Thomson Broadcast
TRW LSI Products Inc.
Vac Systems Corp.
Vistek Electronics Ltd.

KEYERS

DSK, chroma, linear, luminance, compositing
Accom, Inc.
Aston from Paltex
Beaveronics, Inc.
Broadcast Video Systems, Ltd.
BTS GmbH
CEL Electronics
Central Dynamics
FloriCal Systems, Inc.
FOR A Corp. of America
Getris Images
Imaging Systems
Omicron Video
Paltex Editing Systems
Pinnacle Systems
Pro-Bell Ltd.
Questech Ltd.
S.A.V.
Thomson Broadcast
ULTIMATE Corp.
Videotek, Inc.
Vistek Electronics Ltd.
Vortex Communications

LENS SYSTEMS

Fixed and zoom units for video cameras, including adapters, extenders
Bims & Sawyer Inc.
Buhl Optical Co.
Canon USA/Broadcast Equipment
Century Precision Optics
Film/Video Equipment Service Co.
Fujinon Inc.
Innovision Optics
Neumade Products Corp.
Nikon Photo Electronic Imaging Products
Schneider Corp.
Tamron Industries Inc.
Tiffen Mfg. Corp.
VDO-PAK
Vicon Industries/Professional Products
VMI-Visual Methods Inc.

LIGHTING EQUIPMENT

C Control and dimming systems; I Instruments and lighting kits; L Lamps for stage, studio
Apollo Audio Visual/Lighting L
Arriflex Corp. I
Bims & Sawyer Inc. I/L
Brabury International I
CAE Inc. C/I
Celco Inc. C/I
Cine 60, Inc. I/L
Colortran, Inc. C/I
Creston Electronics, Inc. C
Dedotec USA, Inc. I/L
Dove Systems C

Frezolini Electronics, Inc. I
Gray Supply Co. L
Innovision Optics I
Koto Luminous Corp. L
Lamp Technology Inc. L
Lowel-Light Mfg. Inc. I
Lumitrol, Ltd. C/M
Matthews Studio Equipment, Inc. I
Mole-Richardson Co. C/M
L.E. Nelson Sales Corp. C/M
Neumade Products Corp. L
Omni Q Inc. C
Packaged Lighting Systems, Inc. C/M
PERROTT Engineering Labs Inc. I
Philips Lighting L
RDS Corp. C/M
Sachtler I
George R. Snell Associates L
Union Connector Co., Inc. C
Vantage Lighting L
VDO-PAK I
Veam/Litton Systems, Inc. C

MONITORS, MONO, COLOR

S Sun shade accessories
Aiphone Intercom Systems
Asaca/Shibasoku Corp. of America
Aydin Controls
Barco, Inc.
Brabury International
BURLE INDUSTRIES, INC.
CCTV Corp.
Conrac Display Products Group
Croma Research Ltd.



Dotronix, Inc.
Electrohome
Electronic Visuals Ltd.
Hitachi Denshi America, Ltd.
Hoodman Corp. S



I-Den Videotronics Corp.
Ikegami Electronics (USA), Inc.
JVC Professional Products Co.
Leader Instruments Corp.
Melford Electronics Ltd.
Mitsubishi Electronics/Pro Electronics
MultiVideo Image Display Co.
Panasonic Broadcast Systems Co.
Panasonic Communications/Systems Co.
PESA America Inc.
Recortec, Inc.
S.A.V.
Sharp Electronics/LCD Products
Sony Business & Professional Group
Vicon Industries/Professional Products
Video Display Corp.
Videoplex Inc.
Videotek, Inc.
Vistek Electronics Ltd.
World Video Inc.

NOISE REDUCTION SYSTEMS

Accom, Inc.
Allen Avionics, Inc.
AVS Broadcast
BTS Broadcast Television Systems
CEL Electronics
Digital Processing Systems Inc.
FOR A Corp. of America
Nova Systems, Inc.
Optical Electronics
Rank Cintel
S.A.V.
Snell & Wilcox
Sony Business & Professional Group
Video Accessory Corp.



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CANADA: EEV Canada Ltd, 67 Westmore Drive, Rexdale, Ontario M9V 3Y6. Telephone: (416) 745 9494 Telex 06 989363 Fax: (416) 745 0618
UK: EEV, Waterhouse Lane, Chelmsford, Essex CM1 2QU, England. Telephone: (0245) 493493 Telex: 99103 Fax: (0245) 492492

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SUPPORT SYSTEMS

H Pan/Tilt Heads, including automated camera positioning products; P Pedestals, Tripods, Dollies, including automated systems.

AF Associates	H/P
Arriflex Corp.	H/P
Bencher, Inc.	P
Birns & Sawyer Inc.	P
Bogen Photo Corp.	P
Broadcast Microwave Services, Inc.	H/P
BURLE INDUSTRIES, INC.	H
Canon USA /Broadcast Equipment	H/P
CCTV Corp.	H
Century Precision Optics	H/P
DNF Industries	H
Equipment USA Inc.	H/P
Fujinon Inc.	H
Geneva Group of Companies, Inc.	P
Innovision Optics	H/P
Karl Heitz, Inc.	H/P
Matthews Studio Equipment, Inc.	H/P
Miller Fluid Heads (USA) Inc.	H/P
Mitchell Camera Corp.	H/P
Mobile-Cam Products	H
Mole-Richardson Co.	P
Nelson-Hordell Ltd.	H/P
O'Connor Engineering	H/P
Panasonic Communications/Systems	H
Panther Corp. of America	P
Penny & Giles, Inc.	H
Precision Specialties, Inc.	H/P
Radamec EPO Ltd.	H/P
RDS Corp.	H/P
Sachtler	H/P
Telemetrics Inc.	H/P
Tiffen Mfg. Corp.	P
TSM	H/P
ULTIMATE Corp.	H
Velbon International Corp.	H/P
Vicon Industries/Professional Products	H
Vinten Broadcast	H/P

PRODUCTION SYSTEMS, INTEGRATED

May include functions of time base correction, switching, effects, graphics.

Abekas Video Systems
Arriflex Corp.
CEL Electronics
Digital F/X
Dynatech ColorGraphics, Inc.
FOR.A Corp. of America
Grass Valley Group
MPB Technologies Inc.
S.A.V.
Sony Business & Professional Group
Thomson Broadcast
Vistek Electronics Ltd.

PROJECTORS, VIDEO

Large screen systems using CRT, LCD light sources.

AmPro Corp. Esprit Projection Systems
Barco, Inc.
Buhl Optical Co.
Da-Lite Screen Co., Inc.
EEV
Electrohome
GE Projection Display Products
Hitachi Denshi America, Ltd.
Ikegami Electronics (USA), Inc.
Lazerus
Mitsubishi Electronics/Pro Electronics
Neumade Products Corp.
Nytone Inc.
Panasonic Communications/Systems
Research Technology International
S.A.V.
Sharp Electronics/LCD Products
George R. Snell Associates
Sony Business & Professional Group
Telex Communications, Inc.

PROMPTING SYSTEMS, SOFTWARE

Dedicated and PC-based.

BASYS Automation Systems
BDL/Autoscript Ltd.
Beacon Software, Inc.
Blue Feather Co.
Comprompter, Inc.
Computer Prompting Corp.
EDS Portaprompt Ltd.
Listec Video Corp.
Magic Teleprompting, Inc.
maney logic
Media Computing, Inc.
QTV
S.A.V.
Telescript, Inc.
Video Data Systems

RECORDERS, VIDEO

H 1/2" non-digital; U 3/4" U-matic; O 1" Type B or C non-digital; D D-1, D-2. 1/2" Digital; K Solid-state recorders.

Ampex Corp.	H/O/D
BTS Broadcast Television Systems	H/O/D
DNF Industries	H/U/O/D
Getris Images	K
Hitachi Denshi America, Ltd.	H/O/D
Instant Replay, Inc.	H
JVC Professional Products Co.	H/D
Merlin Engineering Works, Inc.	K
Mitsubishi Electronics/Pro Electronics	H
NEC	K
Odetics Broadcast	H/U/D
Panasonic Broadcast Systems Co.	H/D
Panasonic Communications/Systems	H/K
Questech	K
Sharp Electronics Corp. LCD Products Div.	H
Sony Business & Professional	H/U/O/D
Thomson Broadcast	H/U/D
Vicon Industries/Professional Products	H

RECORDERS, STILL STORES

Includes still video reproduction products; optical and magnetic videodisc systems.

Abekas Video Systems
Accom, Inc.
Asaca/Shibasoku Corp. of America
Aston Electronic Designs Ltd.
Aston from Paltext
BTS GmbH
CEL Electronics
Leitch Inc.
Logica Space & Comm./Broadcast
Nikon Photo Electronic
Imaging Products
Oktel, LP
Optical Disc Corp.
Panasonic Communications & Systems Co.

Prime Image

Prime Image
Sony Business & Professional Group
TEAC

RECORDING HEADS, VIDEO

Ampex Corp.
BTS GmbH
CMC Technology/Datatape Inc.
International Electro-Magnetics
Odetics Broadcast
Panasonic Broadcast Systems Co.
Panasonic Communications/Systems
Saki Magnetics Inc.
Videomagnetics

RECORDING TAPE

All video formats
Ampex Recording Media Corp.
BTS GmbH
Cine 60, Inc.
DIC Digital
Fuji Photo Film USA

JVC Professional Products Co.
Maxell Corp. of America
Odetics Broadcast
Panasonic Broadcast Systems Co.
Panasonic Communications/Systems
PolyQuick
Sony Magnetic Products Co.
3M Professional A/V & Specialty Products

SIGNAL ENHANCERS

Detail correction, enhancement equipment.

BBE Sound, Inc.
Broadcast Systems Design
BTS GmbH
Faroudja Labs, Inc.
Geneva Group of Companies, Inc.
Intelvideo, Inc.
Nova Systems, Inc.
Optical Electronics
Shintron Co., Inc.
Snell & Wilcox

STANDARDS CONVERTERS

Inter-standard conversion between composite video; NTSC, PAL-N/M, SECAM; may include video component input and output capabilities.

Adelaide Works Inc.
AF Associates
Allen Avionics, Inc.
AVS Broadcast
BTS GmbH



CEL Electronics
FOR.A Corp. of America
Fougerolle Video
FSR, Inc.
James Grunder & Associates Inc.

I.DEN

I-Den Videotronics Corp.
Instant Replay, Inc.
Leitch Inc.
LNR Communications, Inc.
OKI Electric Industry Co., Ltd.
Quantel Inc.
Snell & Wilcox
Thomson Broadcast
TRW LSI Products Inc.
Video International Development Corp.
Vistek Electronics Ltd.
Vizcom Satellite Systems
Vortex Communications

SWITCHERS, VIDEO

O TV on-air master control; P Production studio video

Abekas Video Systems	P
Alta Group, Inc.	P
Ampex Corp.	P
AVS Broadcast	P
BTS Broadcast Television Systems	O/P
Central Dynamics	P
Channematic, Inc.	O
ChronTrol Corp.	O
ECHOLab, Inc.	P
FOR.A Corp. of America	P
Fougerolle Video	P
Grass Valley Group	O/P
James Grunder & Associates Inc.	P
Image Video Ltd.	O
IRIS Technologies, Inc.	O/P
JVC Professional Products	P
Kaitronics Corp.	O
MPB Technologies Inc.	P
Multidyne Electronics, Inc.	O/P
Omicron Video	O/P

Panasonic Communications/Systems	P
PESA America Inc.	O

Prime Image

Prime Image	P
Philip Drake Electronics	O
Ross Video Ltd.	P
Sandar Electronics	O/P
Sony Business & Professional	O/P
Tech Electronics, Inc.	O
Thomson Broadcast	O/P
Utah Scientific, Inc.	O/P
VGX, Inc.	P
Videotek, Inc.	P
Vistek Electronics Ltd.	O/P

SWITCHERS, VIDEO ROUTING

See Routing Switchers page 12.

SYNC/PATTERN GENERATORS

Produces video drive pulses, subcarrier, blackburst, color bar, test patterns.

Asaca/Shibasoku Corp. of America
Brabury International
BTS GmbH
Digital Processing Systems Inc.
FOR.A Corp. of America
Grass Valley Group
HEDCO
Horita Co.
Icon Electronics Corp.
Leader Instruments Corp.
Leitch Inc.
Magni Systems, Inc.
MPB Technologies Inc.
Multidyne Electronics, Inc.
Omicron Video
Optical Electronics
QSI Systems, Inc.
RE Broadcast
Rohde & Schwarz
S.A.V.
Shintron Co., Inc.
Sigma Electronics, Inc.
System Video
Tektronix Inc.
Telcom Research
Thomson Broadcast
Video Accessory Corp.
Videotek, Inc.
Vistek Electronics Ltd.
Vortex Communications

TBCs, SYNCHRONIZERS

Video signal timing correction equipment.

Alta Group, Inc.
Ampex Corp.
BTS GmbH



CEL Electronics
Digital Processing Systems Inc.
Ensemble Designs
FOR.A Corp. of America
Fougerolle Video
GE-Marconi Communication Ltd.
James Grunder & Associates Inc.
Hotronic, Inc.

I.DEN

I-Den Videotronics Corp.
JVC Professional Products Co.
Leitch Inc.
Microtime, Inc.
Nova Systems, Inc.
Panasonic Communications & Systems Co.

Prime Image

Prime Image
Questech Ltd.
Showline Video
Snell & Wilcox
Sony Business & Professional Group
Tektronix Inc.
Thomson Broadcast
Videotek, Inc.
Vistek Electronics Ltd.

TELECINE SYSTEMS

Film-to-video presentation, transfer
Adelaide Works Inc.
BTS Broadcast Television Systems
Buhl Optical Co.
Digi-Grade Systems/DGS
daVinci Systems, Inc.
Fumeo S.p.A.
GE-Marconi Communication Ltd.
Ikegami Electronics (USA), Inc.
Laird Telemedia Inc.
Magna-Tech Electronic Co., Inc.
Pandora International
Rangertone Research
Rank Cintel
Snell & Wilcox
SONDOR AG
Steenbeck, Inc.
Tamron Industries Inc.
Thomson Broadcast

TELECONFERENCING SYSTEMS

American Laser Systems
AMX Corp.
Artel Communications Corp.
Canon USA Inc. Broadcast Equipment Div.
CEL Electronics
Colorado Video Inc.
DYNAIR Electronics, Inc.
FOR.A Corp. of America
Fujinon Inc.
Lectrosonics, Inc.
Microdyne Corp.
Nytone Inc.
Orchard Communications Inc.
Radamec EPO Ltd.
George R. Snell Associates
Sony Business & Professional Group
Telemetrics Inc.
Telos Systems
Videoplex Inc.
Vortex Communications

TEST CHARTS, SLIDES

Includes illuminators.
Asaca/Shibasaku Corp. of America
Birns & Sawyer Inc.
BPI/Porta-Pattern
Brabury International
BTS GmbH
Century Precision Optics

TEST, ALIGNMENT TAPES

Ampex Corp.
Geneva Group of Companies, Inc.

TIME CODE EQUIPMENT

Generators, readers, character insertion;
film frame counting, film data products.
A.Z. Associates
Adams-Smith
Adelaide Works Inc.
Adrienne Electronics Corp.
Avitel Electronics Corp.
Axon Digital Design
Beaveronics, Inc.
BTS GmbH
Calculated Industries
Cipher Digital, Inc.
CV Technologies

Denecke Inc.
DTL Broadcast Ltd.
ESE
Evertz Microsystems Ltd.
Fast Forward Video
FOR.A Corp. of America
Fougerolle Video
FutureVideo
Gray Engineering Labs, Inc.
Horita Co.
JLCooper Electronics
JRF Magnetic Sciences Inc.
JVC Professional Products Co.
Leitch Inc.
Magna-Tech Electronic Co., Inc.
Multidyne Electronics, Inc.
Nesbit Systems Inc.
Opcode Systems, Inc.
Otari Corp.
Rangertone Research
Shintron Co., Inc.
Skotel Corp.
Sony Business & Professional Group
TASCAM

telcom research

Telcom Research
Torpey Controls & Eng. Ltd.
TouchVision Systems, Inc.
TrueTime, Inc.
United Media
Vid-Video, Inc.
Video Data Systems
VideoLab
Vortex Communications

TIME MODIFICATION EQUIPMENT

Products permitting time compression,
expansion of recorded material.

Adams-Smith
Allen Avionics, Inc.
BTS GmbH
Eventide Inc.
Questech Ltd.
TouchVision Systems, Inc.
VideoLab

VITS, VIRS GENERATORS, INSERTERS

Aston Electronic Designs Ltd.
Digital Processing Systems Inc.
Leitch Inc.
Multidyne Electronics, Inc.
Philips TV Test Equipment
Rohde & Schwarz
System Video
Tektronix Inc.

WEATHER DISPLAYS, RADAR SERVICES

D weather graphics display systems,
radar electronics; S weather data services

Accu-Weather, Inc. D/S
Advanced Designs Corp. D/S
Alden Electronics, Inc. D/S
Colorado Video Inc. D
Dubner Computer Systems, Inc. D
Dynatech ColorGraphics, Inc. D
EEV D
Ellason Avionics D
Grass Valley Group D
Kavours Inc. D/S
Modern Media Consulting D/S
MPB Technologies Inc. D
Texas Electronics, Inc. D/S
Video Data Systems D
WeatherNews America S

If your company's information is missing
from this directory, see note on page 32.

RF Products

ANTENNA POSITIONING SYSTEMS

Microwave and ES/TVRO antenna
controllers.
Advent Communications, Ltd.



Astroguide International
Bi-Directional Microwave c/o Diversified
Marketing
Broadcast Microwave Services, Inc.
Comtech Antenna Systems, Inc.
Hallikainen & Friends, Inc.
Hero Communications
Microdyne Corp.
Mobile-Cam Products
Precision Specialties, Inc.
Radamec EPO Ltd.
Radiation Systems, Inc. SatCom Technolo-
gies Div.
RF Technology, Inc.
Telesat International, Ltd.

AM ANTENNA EQUIPMENT

R Remote indicators, monitors; S
Sampling equipment; T Tuning units; A
Directional arrays
ABB Infocom Ltd. R S/T/A
Alan Dick & Co. Ltd. T/A
Audiolab Electronics, Inc. T/A
CCA Electronics T
Central Tower Inc. A
Continental Electronics Corp. S/T/A
Delta Electronics Inc. R/S
Eagle Wichita S
Elcom Bauer T
Electronics Research Inc. S/A
Geleco Electronics Ltd. R/S/T/A
GE-Marconi Communications Ltd. T/A
Gorman-Redlich Mfg. Co. R
Hallikainen & Friends, Inc. R
Ham-Pro Antennas/Kopps Corp. T
Harris Allied Broadcast Equipment R/T/A
ITAME, S.A. T
Kahn Communications, Inc. A
Kintronics Labs, Inc. S/T/A
LBA Technology, Inc. S/T/A
LeBlank & Royle Telcom Inc. A
Lightning Prevention Systems T/A
MFJ Enterprises Inc. T
Lawrence L. Morton Associates A
Potomac Instruments, Inc. R
Precision Specialties, Inc. R
RF Technology, Inc. R
Stainless Inc. A
Stellar Communications A
Telefunken Sendertechnik GmbH T/A
Telesat International, Ltd. R
Tenco Tower A
Trylon Towers A

ANTENNAS, TRANSMITTING

F FM radio; M Microwave, ENG, ITFA,
MDS, STL, ICR; S Satellite R/T, TVRO; T
UHF/VHF TV
Advent Communications, Ltd. S
Alan Dick & Co. Ltd. F/T
Andrew Corp. M S/T



Astroguide International M/S
Audiolab Electronics M
Blonder-Tongue Labs, Inc. S
Broadcast Electronics, Inc. F/M
Broadcast Microwave Services M
Cablewave Systems F/M/T
Central Tower Inc. F

Comad Communications Ltd. F/T
Comark Communications F
Comtech Antenna Systems, Inc. S
Comwave Div. Communication Microwave M
DB Elettronica Telecomunicazioni S.p.A. . . . F/M/T
Dielectric Communications F/T
Electronics Research Inc. F/T
Elenos M
EMCEE Broadcast Products M/T
FUBA Communication/Hans Kolbe & Co. . . . F/T
Gabriel Electronics Inc. M
GE-Marconi Communication Ltd. F/T
Ham-Pro Antennas/Kobbs Corp. M
Harris Allied Broadcast Equipment F/T
Hero Communications S
ISS Engineering, Inc. S
J&L Associates F/M/T
Jampro Antennas Inc. F/T
Kathrein-Werke KG F/M/S/T
LDL Communications, Inc. F/T
Loral Microwave-Narda M
Lucas Epsco Inc. S
Marti Electronics M
Micro Communications, Inc. F/M/T
Microdyne Corp. S
Microwave Networks Inc. M

MICROWAVE RADIO corporation

The Microwave Connection

Microwave Radio Corp. M
Nucomm Inc. M
Precision Specialties, Inc. M
Racon M
Radiation Systems/Mark Antennas M
Radiation Systems/SatCom Technologies . . S
RF Technology, Inc. M
Rohde & Schwarz F/T
Scala Electronic Corp. F/M/T
Shively Labs Div. of Howell Labs, Inc. . . . F
SIRA s.r.l. F/T
Spectrum Communications Corp. F
Swager Communications M



SWR Inc. F/T
Teko Telecomm SRL M
Telefunken Sendertechnik GmbH F
Telesat International, Ltd. S
Tenco Tower Co. F/M/T
Tennaplex Systems Ltd. F/T
Thomson-LGT F/T
Valcom Ltd. F
Vizcom/Satellite Systems S/T

ATTENUATORS, RF

Allen Avionics, Inc.
AVA Electronics Corp.
Bird Electronic Corp.
Blonder-Tongue Labs, Inc.
Coaxial Dynamics
Comark Communications
DB Elettronica Telecomunicazioni S.p.A.
Dielectric Communications
Electro Impulse Lab, Inc.
FUBA Communication/Hans Kolbe & Co.
Harris Allied Broadcast Equipment
Kay Elemetrics Corp.
Kintronics Labs, Inc.
Loral Microwave-Narda
Penstock, Inc.
RF Industries
Rohde & Schwarz
Spectrum Communications Corp.
Tech Labs Inc.
Tennaplex Systems Ltd.
Trompeter Electronics, Inc.

DE-ICER SYSTEMS

Andrew Corp.
Astroguide International
Comtech Antenna Systems, Inc.

Dielectric Communications
Electronics Research Inc.
Environmental Technology, Inc.



Ice Krackers, Inc.
Jampro Antennas Inc.
Lucas Epsco Inc.
Shively Labs Div. of Howell Labs, Inc.
Telesat International, Ltd.
Vizcom/Satellite Systems

ENG COMPONENTS & ELECTRONICS

Astroguide International
AVA Electronics Corp.
Broadcast Microwave Services, Inc.
C.A.E.
Eagle Wichita
JNS Electronics, Inc.
Lucas Epsco Inc.
Marti Electronics



Microwave Radio Corp.
Mobile-Cam Products
Nucomm Inc.
RF Industries
RF Technology, Inc.
Sennheiser Elektronik KG
Shook Electronics USA, Inc.
Swintek Enterprises, Inc.
Tectan
Wolf Coach, Inc.

EXCITERS, RF GENERATORS

A AM/Stereo; F FM/Stereo, SCA; T
TV/Stereo, PRO, SAP
ABB Infocom Ltd. A/F
Advent Communications Ltd. F/T

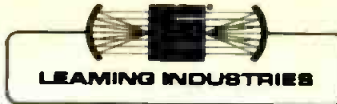
APHEX SYSTEMS

Aphex Systems Ltd. F
BBE Sound, Inc. A/F/T
Bext Inc. F/T
Broadcast Electronics, Inc. A/F
CCA Electronics, Inc. F
Cemlys S.A. F
Comad Communications Ltd. F
Comark Communications, Inc./Thomson-
CSF T
Continental Electronics Corp. A/F
CRL Systems F/T
DB Elettronica Telecomunicazioni S.p.A. F/T
Delta Electronics Inc. A
Dorrough Electronics F
Elcom Bauer A/F
Elenos F



ELIT-Elettronica Italiana S.p.A. F/T
EMCEE Broadcast Products T
Energy-Onix F
FM Systems, Inc. F
GE-Marconi Communications Ltd. F/T
Gentner Electronics Corp. A/F
Harris Allied Broadcast Equipment F/T
Inovonics Inc. F
ISS Engineering, Inc. T
ITAME, S.A. A/F
ITELCO S.p.A. A/T
ITS Corp. T
JNS Electronics, Inc. F

Kahn Communications, Inc. A
LDL Communications, Inc. T



Learning Industries F/T
LNR Communications, Inc. A/F/T
Marcom F/T
Marti Electronics F
McMartin Inc. A/F
Modulation Sciences F/T
Moseley Associates, Inc. A/F
Motorola Inc. AM Stereo A
Multidyne Electronics T
Nexus Engineering Corp. T
QEI Corp. F
Rohde & Schwarz A/F/T
SCA Data Systems, Inc. F
Diel Sistemi Elettronici SRL F
Teko Telecom S.R.L. F/T
Telefunken Sendertechnik GmbH A/F
Television Technology Corp. F/T
Tepco Corp. F
TFT Inc. F
VG Electronics, Ltd. F

FILTERS, MICROWAVE, RF

Alan Dick & Co. Ltd.
Allen Avionics, Inc.
AVA Electronics Corp.
Bird Electronic Corp.
Broadcast Microwave Services, Inc.
Coaxial Dynamics
Comad Communications Ltd.
Continental Electronics Corp.
DB Elettronica Telecomunicazioni S.p.A.
Dielectric Communications
Eagle Wichita
EEV
Electronics Research Inc.
ELIT-Elettronica Italiana S.p.A.
Richard Hirschmann GmbH
ITAME, S.A.
ITELCO S.p.A.
ITS Corp.
J&L Associates
Loma Scientific
Matthey Electronics
Micro Communications, Inc.
Microwave Development Labs, Inc.
Microwave Filter Co., Inc.
Microwave Networks Inc.
Multiplex Technology, Inc.
North Hills Electronics, Inc.
Nucomm Inc.
Penstock, Inc.
Shively Labs Div. of Howell Labs, Inc.
Spectrum Communications Corp.
SWR Inc.
Teko Telecom S.R.L.
Tepco Corp.
TTE, Inc.
UTE Microwave, Inc.

HEAT EXCHANGERS

Includes all transmitter air-handling and cooling products.

Bird Electronic Corp.
Dielectric Communications
Electro Impulse Lab, Inc.
Harris Allied Broadcast Equipment

ISOCOUPERS

Audiolab Electronics, Inc.
Dielectric Communications
Kintronic Labs, Inc.
Marti Electronics
Moseley Associates, Inc.
Shively Labs Div. of Howell Labs, Inc.
UTE Microwave, Inc.

ITFS, MDS COMPONENTS, & ELECTRONICS

Comwave/Communication Microwave Corp
Conifer Corp.
EMCEE Broadcast Products
ITS Corp.
J&L Associates
Loma Scientific
Micro Communications, Inc.
Microwave Filter Co., Inc.
Richardson Electronics, Ltd.
Telesat International, Ltd.

MOBILE RADIO, CELLULAR PHONES

Utility communications products.
Astroguide International
Cellabs
GE-Marconi Communication Ltd.
Moseley Associates, Inc.
Motorola Inc. Land Mobile Products Sector
OKI Electric Industry Co., Ltd.
SIRA s.r.l.
Solid Electronics Labs
Standard Communications

MODULATORS, TV

Advent Communications, Ltd.
Astroguide International
Bext Inc.
Blonder-Tongue Labs, Inc.
Catel Telecommunications
Comark Communications.
DB Elettronica Telecomunicazioni S.p.A.



ELIT-Elettronica Italiana S.p.A.
FUBA Communication/Hans Kolbe & Co.
GE-Marconi Communication Ltd.
Richard Hirschmann GmbH
ISS Engineering, Inc.
J&L Associates
Loma Scientific
Magnavox CATV Systems, Inc.
Multiplex Technology, Inc.
Nexus Engineering Corp.
Philips TV Test Equipment
T.R. Pitts Co.
Rohde & Schwarz
Teko Telecom S.R.L.
Television Technology Corp.

POWER AMPLIFIERS, CAVITIES

Advent Communications, Ltd.
Bext Inc.
Cemlys S.A.
Comark Communications.
Continental Electronics Corp.
DB Elettronica Telecomunicazioni S.p.A.
EEV
EMCEE Broadcast Products
Frequency Products Inc.
FUBA Communication/Hans Kolbe & Co.
GE-Marconi Communication Ltd.
Harris Allied Broadcast Equipment
Richard Hirschmann GmbH
ITAME, S.A.
Loma Scientific
Marti Electronics
MCL, Inc.
McMartin Inc.
Nexus Engineering Corp.
QEI Corp.
Rohde & Schwarz
Spectrum Communications Corp.
Teko Telecom S.R.L.
Telefunken Sendertechnik GmbH
Television Technology Corp.
Tepco Corp.
TFT Inc.
Thomson Tubes Electroniques
Varian Associates

Varian Associates Power Grid & X-Ray Products
Varian Associates Microwave Equipment Products

POWER COMBINERS, DIPLEXERS

Advent Communications, Ltd.
Blonder-Tongue Labs, Inc.
Comad Communications Ltd.
Comark Communications.
Continental Electronics Corp.
DB Elettronica Telecomunicazioni S.p.A.
Dielectric Communications
Eagle Wichita
EMCEE Broadcast Products
FUBA Communication/Hans Kolbe & Co.
GE-Marconi Communication Systems Ltd.
Harris Allied Broadcast Equipment
Richard Hirschmann GmbH
ITAME, S.A.
ITS Corp.
J&L Associates
Jampro Antennas Inc.
Kintronic Labs, Inc.
LDL Communications, Inc.
Loral Microwave-Narda
Lucas Epsco Inc.
Marti Electronics
Micro Communications, Inc.
Microwave Filter Co., Inc.
North Hills Electronics, Inc.
Penstock, Inc.
Richardson Electronics, Ltd.
Rohde & Schwarz
Shively Labs Div. of Howell Labs, Inc.
Teko Telecom S.R.L.
Telefunken Sendertechnik GmbH
Television Technology Corp.
Tennaplex Systems Ltd.
TFT Inc.
TTE, Inc.
UTE Microwave, Inc.
Wide Band Engineering Co., Inc.

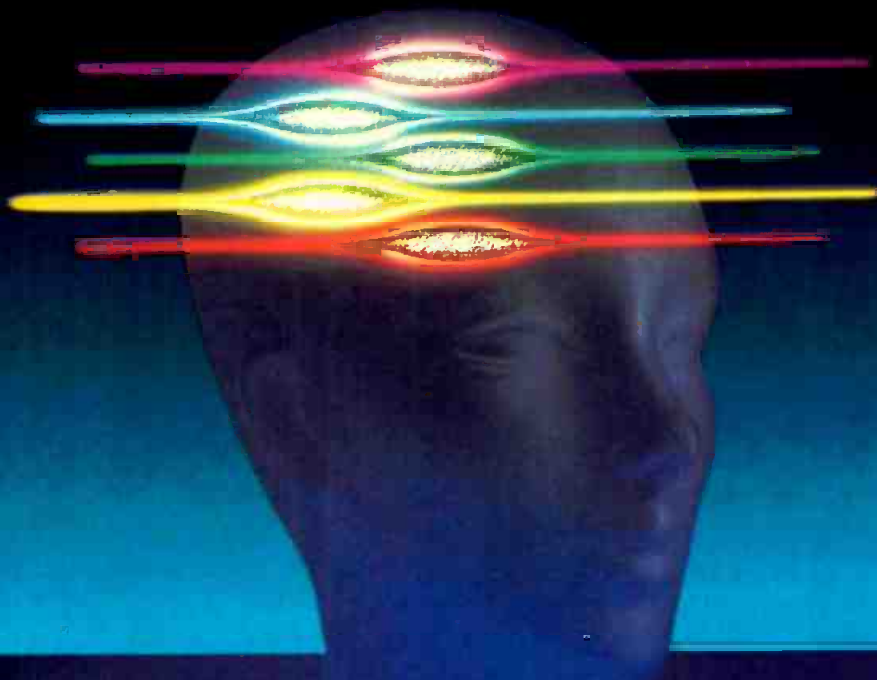
POWER DIVIDERS

Andrew Corp.
AVCOM of Virginia, Inc.
Blonder-Tongue Labs, Inc.
Comad Communications Ltd.
Comark Communications.
DB Elettronica Telecomunicazioni S.p.A.
Dielectric Communications
Eagle Wichita
FUBA Communication/Hans Kolbe & Co.
Geleco Electronics Ltd.
GE-Marconi Communication Ltd.
Harris Allied Broadcast Equipment
Richard Hirschmann GmbH
ITAME, S.A.
J&L Associates
Jampro Antennas Inc.
JFW Industries
Kintronic Labs, Inc.
LDL Communications, Inc.
Loral Microwave-Narda
Lucas Epsco Inc.
Marti Electronics
Micro Communications, Inc.
MYAT, Inc.
North Hills Electronics, Inc.
Penstock, Inc.
T.R. Pitts Co.
Rohde & Schwarz
Scala Electronic Corp.
Shively Labs Div. of Howell Labs, Inc.
SIRA s.r.l.
SWR Inc.
Television Technology Corp.
Tennaplex Systems Ltd.
TFT Inc.

PRESSURIZATION EQUIPMENT

Andrew Corp.
Cablewave Systems
Comad Communications Ltd.
Dielectric Communications

THE NEW TV TRANSMITTER FOR VHF BAND III



TV Transmitter System 2100

At the forefront of communications.

In its new 10-kW TV Transmitter NT 413 S Rohde & Schwarz presents a fully mature and solid-state system concept for the next generation in broadcasting.

Major advantages:

- high availability of the entire transmitter
- high reliability and long service life
- easy to maintain, modular transmitter architecture
- amplifier units exchangeable without breaks in transmission
- simple and clear operation
- monitoring of quality during ongoing broadcasts

The same architecture, the same amplifier modules and the same power-supply units for all power categories mean rationalized stocking of spares and cost-attractive maintenance.

Our specialists can advise you on all matters of TV transmission and TV testing and measurement. We guarantee optimal performance of a project through to punctual installation, make sure your transmissions start up correctly and securely and offer highly qualified training of operator staff.

**It's never too early to talk to
Rohde & Schwarz.**



Circle (12) on Reply Card

An independent concern, founded in 1933.
5000 employees, represented in 80 countries.
Design and turn-key installation of systems
with software and servicing.
Calibration, training and documentation.



ROHDE & SCHWARZ

W-8000 München 80 Postfach 80 14 68
Telex 523 703 (rus d) Telefax (089) 41 29 - 21 64
Tel. internat. + (4989) 41 29 - 0

Electronics Research Inc.
Environmental Technology, Inc.
Gabriel Electronics Inc.
Nucomm Inc.
RF Technology, Inc.
Shively Labs Div. of Howell Labs. Inc.
SIRA s.r.l.



SWR Inc.

RECEIVERS, AM, FM, SCA, EBS

Aiphone Intercom Systems
Avocet Instruments
Bext Inc.
Bogen Communications, Inc.
Catal Telecommunications
Comad Communications Ltd.
Croma Research Ltd.
DB Elettronica Telecomunicazioni S.p.A.
Delta Electronics Inc.
ELIT-Elettronica Italiana S.p.A.
Fairchild Data Corp.
Gorman-Redlich Mfg. Co.
Hemec Communications
Inovonics Inc.
ISS Engineering, Inc.
JNS Electronics, Inc.
Kahn Communications, Inc.
Marti Electronics
McMartin Inc.
Micro Controls, Inc.
Modulation Sciences
Moseley Associates, Inc.
T.R. Pitts Co.
Reach Electronics, Inc.
Rohde & Schwarz
SCA Data Systems, Inc.
Siel Sistemi Elettronici SRL
Singer Products, Inc.
Spectrum Communications Corp.
Swintek Enterprises, Inc.

RECEIVERS, SATELLITE

Includes associated LNA, LNC products.

Advent Communications, Ltd.
Andrew Corp.
Antenna Technology



Astroguide International
AVCOM of Virginia, Inc.
Blonder-Tongue Labs, Inc.
Fairchild Data Corp.
FUBA Communication/Hans Kolbe & Co.
GE-Marconi Communication Ltd.
Hemec Communications
Hero Communications
Richard Hirschmann GmbH
Intraplex, Inc.
ISS Engineering, Inc.
Kathrein-Werke KG
LNR Communications, Inc.
McMartin Inc.
Microdyne Corp.
Microwave Solutions Inc.
Nexus Engineering Corp.
T.R. Pitts Co.
Rohde & Schwarz
Standard Communications
Tennaplex Systems Ltd.
Vizcom/Satellite Systems
Wegener Communications Inc.

REMOTE PICKUP COMPONENTS, ELECTRONICS

Ace Communications
Astroguide International
Intraplex, Inc.

ITAME, S.A.

JNS Electronics, Inc.
Kintronic Labs, Inc.
LNR Communications, Inc.
McMartin Inc.
Moseley Associates, Inc.
Nucomm Inc.
RF Technology, Inc.
Richardson Electronics, Ltd.
Spectrum Communications Corp.
TFT Inc.

SATELLITE T/R COMPONENTS, ELECTRONICS

Excludes antennas.

Advent Communications, Ltd.
Andrew Corp.
Antenna Technology
ArTel Communications Corp.



Astroguide International
Corporate Computer Systems
Dolby Laboratories, Inc.
EEV
Fairchild Data Corp.
GE-Marconi Communication Ltd.
Hemec Communications
Hero Communications
Intraplex, Inc.
ISS Engineering, Inc.
JNS Electronics, Inc.
Kathrein-Werke KG
Lucas Epsco Inc.
MCL, Inc.
McMartin Inc.
Microdyne Corp.
Microwave Filter Co., Inc.
Ortel Corp.
Radiation Systems/SatCom Technologies
Standard Communications
Tectan
3M Sound Products
Varian Assoc./Microwave Equipment
Vizcom/Satellite Systems
Wegener Communications Inc.

STL COMPONENTS, ELECTRONICS

Excludes antennas (FO Fiber optical STL systems)

American Lightwave Systems, Inc.
ArTel Communications Corp.
Bext Inc.
Bi-Directional Microwave
Broadcast Electronics, Inc.
Broadcast Microwave Services, Inc.
Cemlys S.A.
Corporate Computer Systems
Dolby Laboratories, Inc.
Elenos
EMCEE Broadcast Products
FM Systems, Inc.
Intraplex, Inc.



ITAME, S.A.

JNS Electronics, Inc.
Leaming Industries
Marti Electronics
Microwave Filter Co., Inc.
Microwave Networks Inc.



Microwave Radio Corp.
Modulation Sciences
Moseley Associates, Inc.

Nucomm Inc.
Orban Associates/AMG Acoustics
OEI Corp.
RF Technology, Inc.
T-Tech
Tectan
TFT Inc.
Wegener Communications Inc.

SWITCHERS, RF COAXIAL

ABB Infocom Ltd.
Bird Electronic Corp.
Broadcast Electronics, Inc.
BURLE INDUSTRIES, INC.
Comad Communications Ltd.
Comark Communications.
Continental Electronics Corp.
DB Elettronica Telecomunicazioni S.p.A.
Dielectric Communications
GE-Marconi Communication Ltd.
Harris Allied Broadcast Equipment
J&L Associates
JFW Industries
Kay Elemetrics Corp.
Loral Microwave-Narda
Lucas Epsco Inc.
Micro Communications, Inc.
Micro Controls, Inc.
Monroe Electronics, Inc.
MYAT, Inc.
Penstock, Inc.
T.R. Pitts Co.
Pro-Bell Ltd.
Shively Labs Div. of Howell Labs, Inc.
SIRA s.r.l.
Tech Labs Inc.
Telefunken Sendertechnik GmbH
Tennaplex Systems Ltd.
TFT Inc.

TOWER LIGHTING SYSTEMS

ABB Infocom Ltd.
Aluma Tower Co. Inc.
Central Tower Inc.
Crouse-Hinds Airport Lighting Products
EG&G Electro-Optics
Electronics Research Inc.
Flash Technology
Flying Fur Industries
GE-Marconi Communication Ltd.
Hughey & Phillips Inc.
Kline Towers
Microlect Co., Inc.
Fred A. Nudd Co.
PiRod Inc.
Racal Decca Canada Ltd., Insulators Div.
ROHN
SSAC Inc.
Stainless Inc.
Stellar Communications Inc.
Tenco Tower Co.
Trylon Towers
TWR Lighting, Inc.
Utility Tower Co.

TOWERS, ANTENNA SUPPORT, PORTABLE & ACCESSORIES

S antenna support; P portable; A guys, insulators, hardware

ABB Infocom Ltd. S/P/A
Alan Dick & Co. Ltd. S/P
Allied Tower Co., Inc. S/A
Aluma Tower Co. Inc. S/P/A
Andrew Corp. S/A
Central Tower Inc. S/A
Electronics Research Inc. S/A
EMCEE Broadcast Products S/A
Express Tower Co. S/P/A
FWT S/P/A
GE-Marconi Communication Ltd. S/P/A

Kline Towers S/A
LBA Technology, Inc. A
LDL Communications, Inc. S/P/A
LeBlanc & Royle Telcom Inc. S
Lightning Prevention Systems A
Magnum Towers, Inc. S/A
Microlect Co., Inc. S/A
Fred A. Nudd Co. S/A
PiRod Inc. S/A
Racal Decca Canada/Insulators A
Rapid Deployment Towers S/P/A
RF Technology, Inc. P
ROHN S/A
Stainless Inc. S/P/A
Stellar Communications Inc. S/P/A
Swager Communications S
Telefunken Sendertechnik GmbH A
Telux Communications, Inc. S/P/A
Tenco Tower Co. S/P/A
Trylon Towers S/P/A
United Ropeworks (USA) Phillystran A
Utility Tower Co. S/A
The Will-Burt Co. S/P
Wolf Coach P

TRANSFORMERS, POWER, MODULATION

ABB Infocom Ltd.
Computer Power Inc.
Dahl Co. Inc., Peter
Telefunken Sendertechnik GmbH

TRANSLATORS/TRANSPOSERS

F FM radio; T TV.

Acrodyne T
Advent Communications, Ltd. F
Bext Inc. F
Cemlys S.A. F
Comad Communications Ltd. F/T
DB Elettronica Telecomunicazioni F/T
Elenos F



ELIT-Elettronica Italiana S.p.A. F/T
EMCEE Broadcast Products T
Energy-Onix F
FUBA Communication/Hans Kolbe F/T
Hero Communications T
Richard Hirschmann GmbH T
ITAME, S.A. F
ITELCO S.p.A. F/T

ITS CORPORATION

ITS Corp. T
J&L Associates F/T
LDL Communications, Inc. T
Loma Scientific T
Marti Electronics F
Microwave Solutions Inc. F
Nexus Engineering Corp. F/T
OEI Corp. F
Shively Labs Div. of Howell Labs, Inc. F
Teko Telecom S.R.L. F/T
Telefunken Sendertechnik GmbH F



Television Technology Corp. F/T
Tepco Corp. F/T
TFT Inc. F
Thomson-LGT F/T

TRANSMISSION LINE, WAVEGUIDE

Andrew Corp.
Cablewave Systems
Comark Communications

Dielectric Communications
EMCEE Broadcast Products
Gabriel Electronics Inc.
GE-Marconi Communication Ltd.
J&L Associates
Loral Microwave-Narda
Micro Communications, Inc.
Microlect Co., Inc.
Microwave Development Labs, Inc.



MYAT, Inc.
Nucomm Inc.
RF Technology, Inc.
Shively Labs Div. of Howell Labs, Inc.
SIRAS r.l.



SWR Inc.
Telefunken Sendertechnik GmbH
Tenco Tower Co.

TRANSMITTER REMOTE CONTROL, TELEMTRY

Includes transmitter logging systems.

ABB Infocom Ltd.
Advent Communications, Ltd.
Broadcast Electronics, Inc.
Burk Technology, Inc.
Continental Electronics Corp.
DB Elettronica Telecomunicazioni S.p.A.
Elenos
Energy-Onix
Gentner Electronics Corp.
Hallikainen & Friends, Inc.
Harris Allied Broadcast Equipment
ITAME, S.A.
ITELCO S.p.A.
Logica Space & Comm. Broadcast
Marti Electronics
Micro Controls, Inc.
Moseley Associates, Inc.
RF Industries
Telefunken Sendertechnik GmbH
Texar/Gentner Electronics
TFT Inc.

TRANSMITTERS, RADIO/TV

A AM/SW radio; F FM radio; T UHF/VHF
TV; L Laser

ABB Infocom Ltd. A
Acrodyne T
American Laser Systems L
Beaveronics F
Bext Inc. F/T
Broadcast Electronics, Inc. F
Broadcast Microwave Services, Inc. F
Catal Telecommunications A/F/T
CCA Electronics, Inc. A/F
Cemty S.A. A/F
Comad Communications Ltd. F/T
Comark Communications/Thomson-CSF T
Comwave/Communications Microwave T
Continental Electronics Corp. A/F
DB Elettronica Telecomunicazioni S.p.A. F/T
Elcom Bauer A/F
Elenos F



ELIT-Elettronica Italiana S.p.A. F/T
EMCEE Broadcast Products T
Energy-Onix A/F
FUBA Communications/Hans Kolbe F/T
GE-Marconi Communication Ltd. A/F/T
GE Support Services/RCA Broadcast F/T
Harris Allied Broadcast Equipment A/F/T

Hero Communications T
Richard Hirschmann GmbH T



ITAME, S.A. A/F
ITELCO S.p.A. T

ITS CORPORATION

information transmission systems

ITS Corp. T
J&L Associates A/F/T
LDL Communications T
Loma Scientific T
LPB Inc. A
McMartin Inc. A/F
Micro Controls, Inc. F
Nautel Maine Inc. A/F
Nexus Engineering Corp. F/T
Pauza & Co., Ltd. T
QEI Corp. F
Radio Systems Inc. A
RIZ Transmitter Factory A/F
Rohde & Schwarz A/F/T
Siel Sistemi Elettronici SRL F
Singer Products, Inc. A/F
Spectrum Communications Corp. F
Supercircuits T
Swintek Enterprises, Inc. F
Teko Telecom S.R.L. F/T
Telefunken Sendertechnik GmbH A/F/T



Television Technology Corp. F/T
TFT Inc. F
Thomson-LGT F/T
Toshiba Corp. T

TUBES, ELECTRON

R Rectifier, tube, solid-state; P RF power devices, tube, solid-state; K Klystron.
TWT. Klystron. IOT

ABB Infocom Ltd. R/P
Advent Communications K
Astroguide International K
BURLE INDUSTRIES P
California Tube Lab Inc. R/K
Comark Comm./Thomson-CSF P/K
DB Elettronica Telecomunicazioni R/P
Econco P/K
EEV R/P/K
Geleco Electronics Ltd. R/P
J&L Associates R/P/K
McMartin Inc. R
Pauza & Co., Ltd. P/K
Philips Components R/P/K
Richardson Electronics, Ltd. R/P/K
Thomson Electron Tube & Devices P
Thomson Tubes Electroniques P/K
Varian Associates P/K
Varian Assoc./Power Grid X-Ray Products P

VACUUM CONTACTORS

Geleco Electronics Ltd.
Kintronic Labs, Inc.
Richardson Electronics, Ltd.

Automation & Computer Products

BAR CODE EQUIPMENT

And supporting software.
Adelaide Works Inc.

BASYS Automation Systems
Computer Assisted Technologies
Ensemble Designs
Evertz Microsystems Ltd.
Multidyne Electronics, Inc.
Nesbit Systems Inc.
Skotel Corp.
Swintek Enterprises, Inc.
Xymox Systems

BUSINESS & STATION AUTOMATION

Systems and supporting software for B business and S station automation

ABB Infocom Ltd. S
AGAP S
Alamar Electronics USA, Inc. S
American Broadcast Systems S
Antex Electronics S
Asaca/Shibasoku Corp. of America S
Audio Design S
BASYS S
Broadcast Electronics, Inc. S
BTS Broadcast Television Systems S
ChronTrol Corp. S
CBSI-Custom Business Systems, Inc. B
Columbine Systems, Inc. B/S
Computer Concepts Corp. B/S
Concept Productions S
Datacount, Inc. S
DKW Systems B/S
EDS Portaprompt Ltd. S
FloriCal Systems, Inc. S
IGM Communications S
Logica Space & Comm. Broadcast S
Leonardo Software B
MacroMedia Design B/S
McCurdy Radio Industries S
Media Computing, Inc. S
Modern Media Consulting S
Multidyne Electronics, Inc. B/S
Nesbit Systems Inc. B/S
Odetics S
PKE International B/S
Racomb Broadcast Ltd. B/S
Radamec EPO Ltd. S
Ramko Research S
Richmond Sound Design, Ltd. S
Schafer World Communications Corp. S
Schmid Telecom AG S
Sony Business & Professional B
Systemation Corp. B/S
Texar/Gentner S
The Management B/S
Time Logic, Inc. S
TM Century, Inc. S
Utah Scientific, Inc. S
Video Data Systems S
Videomedia, Inc. S
Vistek Electronics Ltd. S
Xymox Systems B/S

COMMERCIAL INSERTION SYSTEMS

VCR sequencing systems; includes control, switching for video, audio signals for LPTV, CATV, etc.

Alamar Electronics USA, Inc.
Antex Electronics
Asaca/Shibasoku Corp. of America
BASYS Automation Systems
Channelmatic, Inc.
DNF Industries
EMCEE Broadcast Products
FloriCal Systems, Inc.
Matco Mfg. & Test Co.
Monroe Electronics, Inc.
Nexus Engineering Corp.
Odetics Broadcast
Panasonic Communications & Systems
T.R. Pitts Co.
Solutec Ltd. (H.A.)
Tech Electronics, Inc.
Texscan MSI
Video Data Systems
Vistek Electronics Ltd.

COMPUTERS & PERIPHERALS

Includes PCs, VDT terminals, touch-screen control adaptations; engineering management, maintenance and non-production software.

Adrienne Electronics Corp.
Advanced Designs Corp.
AGAP
Arel Communications Corp.
Aydin Controls
B&B Electronics Mfg. Co.
BASYS Automation Systems
Columbine Systems, Inc.
Comprompter, Inc.
Computer Concepts Corp.
Computer Power Inc.
J.E. Cuesta & Co. Inc.
Dalanco Spry
DKW Systems
Dotronix, Inc.
Full Compass Systems, Ltd.
Gefen Systems
Harrison by GLW
Hewlett-Packard Co.
JL Cooper Electronics
Lazerus
Luxor Corp.
MacroMedia Design
Media Computing, Inc.
Micro Express
Modern Media Consulting
Modgraph, Inc.
Multidyne Electronics, Inc.
PKE International
Racomb Broadcast Ltd.
Recortec, Inc.
Richmond Sound Design, Ltd.
Systemation Corp.
Tamron Industries Inc.
Texar/Gentner Electronics
The Management
Tripp Lite
Visionetics International
Xymox Systems

CONTROLLERS, SIGNAL ACTIVATED

Includes tone encoding, decoding equipment.

AGAP
AMX Corp.
Astroguide International
Broadcast Automation, Inc.
Channelmatic, Inc.
Computer Concepts Corp.
GDI
Leightronix, Inc.
MacroMedia Design
Monroe Electronics, Inc.
Schmid Telecom AG
Solutec Ltd. (H.A.)
Texar Ltd.
Video Data Systems
Videoquip Research Ltd.
Visionetics International
Vortex Communications

ENGINEERING SOFTWARE

CAD, diagnostics, maintenance
AGAP
American Small Business Computers
Ariel Corp.
Audio Teknology Inc.
Autodesk/Multimedia Div.
BAI Systems, Inc.
Carvin
Computer Assisted Technologies
Delta Electronics Inc.
Design CAD Inc.
EDX Engineering, Inc.
Gotham Audio Corp.
Jensen Transformers Inc.
MPB Technologies Inc.
OrCad
Renkus-Heinz, Inc.

Rohde & Schwarz

David Taylor Software
Vac Systems Corp.
Video Design Pro
Visionetics International

NEWSROOM AUTOMATION

Dedicated, PC-based, supporting software packages.

Asaca/Shibasoku Corp. of America
BASYS Automation Systems
Columbine Systems, Inc.
Comprompter, Inc.
Computer Prompting Corp.
Corporate Computer Systems
DKW Systems

Leitch Inc.

MacroMedia Design
Media Computing, Inc.
MPB Technologies Inc.
Multidyne Electronics, Inc.
PKE International
Ramko Research
Sony Business & Professional Group
Texar Ltd.
Vistek Electronics Ltd.
Wynford Technologies Inc.

PLAYBACK AUTOMATION

Audio/radio systems.

AEV
AGAP
Alamar Electronics USA, Inc.
Alpha Audio
Asaca/Shibasoku Corp. of America
BASYS Automation Systems
Broadcast Automation, Inc.
Broadcast Electronics, Inc.
Computer Concepts Corp.
Concept Productions
Conex Electro Systems
Corporate Computer Systems
DKW Systems
Gefen Systems
Harrison by GLW
IGM Communications
Leonardo Software
MacroMedia Design
Matco Mfg. & Test Co.
PKE International
Racom Broadcast Ltd.
Richmond Sound Design, Ltd.
Sentry Systems
Sierra Automated Systems
Systemation Corp.
The Management
360 Systems
Time Logic, Inc.
TM Century, Inc.
Video Data Systems
Vistek Electronics Ltd.

RECORD/PLAYBACK AUTOMATION

Video/TV systems

Alamar Electronics USA, Inc.
American Broadcast Systems
Asaca/Shibasoku Corp. of America
BASYS Automation Systems
BTS GmbH
Dwight Cavendish Co.
Channelmatic, Inc.
Cycle-Sat, Inc.
DKW Systems
DNF Industries
FloriCal Systems, Inc.
Harrison by GLW
Leightronix, Inc.
Leitch Inc.
Logica Space & Comm./Broadcast
Matco Mfg. & Test Co.
Media Computing, Inc.
Merlin Engineering Works, Inc.
MPB Technologies Inc.
Nexus Engineering Corp.
Odetics Broadcast
Panasonic Broadcast Systems Co.

Sony Business & Professional Group

Systemation Corp.
Tech Electronics, Inc.
Texscan MSI
Time Logic, Inc.
Video Data Systems
Videoquip Research Ltd.
Vistek Electronics Ltd.

Test & Measurement, Maintenance

ANALYZERS, AUDIO SYSTEM

includes distortion measurement and automated test systems.

Amber Electro Design
Ariel Corp.
Asaca/Shibasoku Corp. of America
ASC-Tube Traps
Audio Precision
Audiocontrol Industrial
Boland Communications
Boonton Electronics Corp.
Broadcast Electronics, Inc.
Brüel & Kjær A/S
Canford Audio plc
Consultronics
Danbridge A/S
Dorrough Electronics
Gauss
Gotham Audio Corp.
Hewlett-Packard Co.
Hybrid Arts, Inc.
Ivie Technologies, Inc.
Jasani Electronics
Klark-Teknik
Leader Instruments Corp.
MicroAudio, Inc.
Neutrik USA, Inc.
Potomac Instruments, Inc.
RE Broadcast
ROH Products
Rohde & Schwarz
Schmid Telecom AG
Sescom, Inc.
Sound Technology
Symetrix Inc.
TC Electronic
Tektronix Inc.
TFT Inc.
Titus Technological Labs
Wandel & Goltermann EMT

ANALYZERS, RF SPECTRUM & SIDEBAND

Astroguide International
AVCOM of Virginia, Inc.
B&K Precision Maxtec International Corp.
Delta Electronics Inc.
Hemec Communications
Hero Communications
Hewlett-Packard Co.
Motorola Land Mobile Products Sector
Rohde & Schwarz
Stanford Research Systems
Tektronix Inc.
Trilithic, Inc.
Wandel & Goltermann EMT
White Instruments Div./C Van R, Inc.

ANALYZERS, VIDEO SYSTEM

includes automated test systems.

Boland Communications
FloriCal Systems, Inc.
FM Systems, Inc.
Richard Hirschmann GmbH

Leitch Inc.

PESA America Inc.
Plateau Digital Technology
Rohde & Schwarz
System Video
Tektronix Inc.
Videotek, Inc.

ANTENNA IMPEDANCE BRIDGES

Delta Electronics Inc.
Eagle Wichita
MFJ Enterprises Inc.
Rohde & Schwarz
Trilithic, Inc.
Wide Band Engineering Co., Inc.

AUDIO GENERATORS

Stand-alone systems.

Amber Electro Design
Asaca/Shibasoku Corp. of America
Audio Precision
Audiocontrol Industrial
Avitel Electronics Corp.
B&K Precision Maxtec International Corp.
Boonton Electronics Corp.
Brüel & Kjær A/S
Conex Electro Systems
Consultronics
Danbridge A/S
Delta Electronics Inc.
Hewlett-Packard Co.
JNS Electronics, Inc.
Leader Instruments Corp.
Leitch Inc.
Lyrec Mfg. A/S
Multidyne Electronics, Inc.
Neutrik USA, Inc.
NTP Elektronik A/S
Potomac Instruments, Inc.
Pro-Bell Ltd.
Rohde & Schwarz
Schmid Telecom AG
Stanford Research Systems
Tektronix Inc.
Vortex Communications

BENCH POWER SUPPLIES

B&K Precision Maxtec International Corp.
Behlman Electronics/Astrosystems
Calex Mfg. Co., Inc.
Computer Power Inc.
J.E. Cuesta & Co. Inc.
Hewlett-Packard Co.
Leader Instruments Corp.
Multidyne Electronics, Inc.
Plastic Capacitors, Inc.
Sorensen Co./Switchcraft
Stanford Research Systems
Tektronix Inc.

DEMODULATORS, TV PRECISION

Asaca/Shibasoku Corp. of America
Modulation Sciences
Philips TV Test Equipment
QSI Systems, Inc.
Rohde & Schwarz
Tektronix Inc.
Videotek, Inc.

DETECTORS, NON-IONIZING RADIATION

Holaday Industries, Inc.
Loral Microwave-Narda

DIGITAL DIAGNOSTIC SYSTEMS

B&B Electronics Mfg., Co.
Broadcast Electronics, Inc.
Computer Power Inc.
Plateau Digital Technology
Telecommunications Techniques Corp.
Vac Systems Corp.

FREQUENCY COUNTERS

B&K Precision Maxtec International Corp.
Beckman Industrial/Instrumentation Products

Black Star Ltd.

Coaxial Dynamics
EIP Microwave, Inc.
John Fluke Mfg. Co. Inc.
Hewlett-Packard Co.
Leader Instruments Corp.
Sescom, Inc.
Simpson Electric
Stanford Research Systems
Tektronix Inc.
Tremetrics Inc. Industrial Instruments.

METERS, AC/POWER PHASE

Biddle Instruments
Dranetz Technologies, Inc.
Rohde & Schwarz
Simpson Electric
Tektronix Inc.

METERS, AUDIO LEVEL INDICATOR

Alphaton
ATI-Audio Technologies Inc.
B&B Systems, Inc.
Benchmark Media Systems, Inc.
Beyer Dynamic Inc.
Boland Communications
BPI Porta-Pattern
Brüel & Kjær A/S
Dwight Cavendish Co.
Consultronics
D&R Electronica b.v.
D1 International Inc.
Dorrough Electronics
Electronic Systems Labs, Inc.
ESE
FM Systems, Inc.
Furman Sound, Inc.
Hamlet Video International Ltd.
Inovonics Inc.
Leader Instruments Corp.
Logitek Electronic Systems, Inc.
McCurdy Radio Industries
NTP Elektronik A/S
Radio Systems Inc.
Scantex Labs Inc.
Selco Products Co.
Sescom, Inc.
Simpson Electric
Solutec Ltd. (H.A.)
Symetrix Inc.
Target Technology
Tektronix Inc.
Titus Technological Labs
Videoquip Research Ltd.
Videotek, Inc.
Ward-Beck Systems, Ltd.
Wohler Technologies, Inc.
World Video Inc.

METERS, DVMS, DMMs, VOM

B&K Precision Maxtec International Corp.
Beckman Industrial/Instrumentation Products
Black Star Ltd.
Brüel & Kjær A/S
J.E. Cuesta & Co. Inc.
Dranetz Technologies, Inc.
Fieldpiece Instruments
John Fluke Mfg. Co. Inc.
Hewlett-Packard Co.
Leader Instruments Corp.
Outland Technology Inc.
Rohde & Schwarz
Simpson Electric
A.W. Sperry Instruments Inc.
Tektronix Inc.

METERS, FIELD STRENGTH, RF LEVEL

R.B. Annis Co.
Bird Electronic Corp.
Coaxial Dynamics
J.E. Cuesta & Co. Inc.
Holaday Industries, Inc.
Kathrein-Werke KG
Leader Instruments Corp.
T.R. Pitts Co.

GALAXY

ITAME'S 1 + N FORMULA



GALAXY GE90 STEREO ENCODER Because of its digital technology, the GALAXY GE90 stereo encoder provides state-of-the-art performance.



GALAXY EX20 FM EXCITER ITAME's experience in exciters, combined with the application of new technologies—such as digital generation of direct frequency—results in the optimum specifications and performance of these units.



GALAXY RT20 REBROADCAST TRANSMITTER This unit combines a professional quality synthesized receiver—with excellent sensitivity and low noise level—and an EX20 exciter.



GALAXY EP100 POWER STAGE

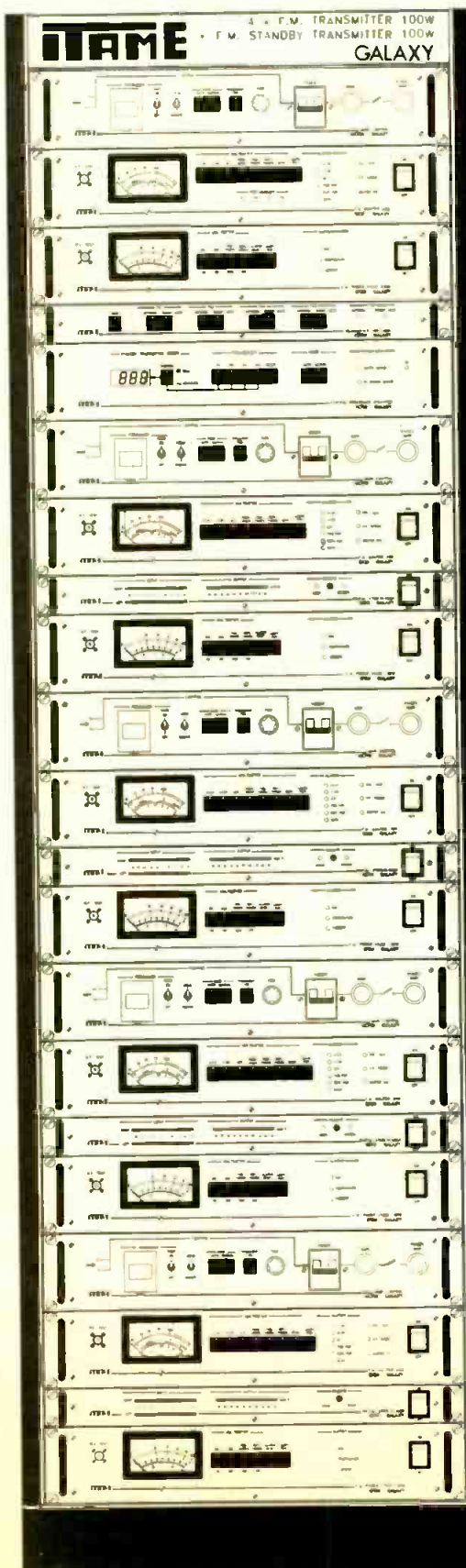


GALAXY EP500 POWER STAGE



GALAXY EP600 POWER STAGE

The new GALAXY series wide-band power amplifiers are equipped with the latest (MOSFET) technology to assure *reliability, durability and simplicity*, with excellent performance and minimum excitation. They are stand-alone units, fitted with a complete measurement, indication and protection system. Standard equipment includes remote measurement, remote control and remote indication. Because of their broad bandwidth (87.5-108 MHz) they do not require any adjustment in order to operate at any frequency in compliance with CCIR and FCC standards.



EXAMPLE OF A GALAXY N+1 SYSTEM CONFIGURATION

EQUIPMENT:

4 100-W FM transmitters + 1 100-W standby transmitter (could also be 300 or 600 W).

See how we can solve a specific need.

This configuration can carry four simultaneous programs, with one in reserve to be used as needed for any of the active channels.

Each program has a complete transmitter consisting of:

- 300-W power stage
- EX20 exciter
- GE90 stereo encoder
- MC708 control unit

A transmitter consisting of the following equipment acts as the standby unit:

- 300-W power stage
- Four-frequency exciter
- PC702 central processor
- CT709 transmitter switching unit
- NC708 control unit

The GALAXY series is new on the market and is available with a system of options:

- Summing networks
- Control units
- Switching units
- N+1 exciters, etc.

This example can cover any program, power and backup contingency.

Because stations change...

Circle (14) on Reply Card



c. Campezo s.n. Pol. Ind. Las Mercedes
28022 MADRID, SPAIN
Tel: (34-1) 747 74 44 Fax: (34-1) 747 75 07
Telex: 28257 ITAME

Potomac Instruments, Inc.
Rohde & Schwarz
 Simpson Electric
 Trilithic, Inc.

METERS, PHOTOGRAPHIC LIGHT

Includes monitor color balance measurement, adjustment systems.

Birns & Sawyer Inc.
 Dorrrough Electronics
 Minolta Corp. Industrial Meter Div.
 Philips TV Test Equipment

METERS, RF POWER

Bird Electronic Corp.
 Boonton Electronics Corp.
 Coaxial Dynamics
 J.E. Cuesta & Co. Inc.
 Dranetz Technologies, Inc.
 Hewlett-Packard Co.
 Loral Microwave-Narda
 MFJ Enterprises Inc.
Rohde & Schwarz
 Simpson Electric

MODULATION MONITORS

AM, FM radio, TV aural
Belar Electronics Lab, Inc.
 Boonton Electronics Corp.
 Broadcast Electronics, Inc.
 Delta Electronics Inc.
 FM Systems, Inc.
 Harris Allied Broadcast Equipment
 Hewlett-Packard Co.
 Inovonics Inc.
ITAME, S.A.
 JNS Electronics, Inc.
 Kahn Communications, Inc.
 Marcom
 Modulation Sciences
 Motorola Inc. AM Stereo
 QEI Corp.
Rohde & Schwarz
Tektronix Inc.
 TFT Inc.
 VG Electronics Ltd.

OSCILLOSCOPES, ACCESSORIES

American Laser Systems
 B&K Precision Maxtec International Corp.
 Beckman Industrial/Instrumentation Products
 Black Star Ltd.
 Dranetz Technologies, Inc.
 John Fluke Mfg. Co. Inc.
 Hewlett-Packard Co.
 Hitachi Denshi America, Ltd.
Leader Instruments Corp.
Rohde & Schwarz
 S.A.V.
 Sescor, Inc.
 Sperry Instruments Inc., A. W.
Tektronix Inc.
 Test Probes, Inc.
 Vortex Communications

RECORDER TEST SYSTEMS

Excludes general categories of distortion analyzer, audio generator, level, noise measurement equipment; includes tension and alignment products; T tension alignment gauges

Amber Electro Design
 R.B. Annis Co.
 Asaca/Shibasaku Corp. of America
Audio Precision
 Brüel & Kjær Instruments, Inc.
 Gauss
 Hybird Arts, Inc.
Rohde & Schwarz
 Tentel

RF GENERATORS

Stand-alone; excludes products designed used as part of a transmitter.
 Boonton Electronics Corp.

John Fluke Mfg. Co. Inc.
 Hewlett-Packard Co.
 JNS Electronics, Inc.
Kay Elemetrics Corp.
Leader Instruments Corp.
MCL, Inc.
 Potomac Instruments, Inc.
Rohde & Schwarz
 Stanford Research Systems
 Trilithic, Inc.

RF LOAD RESISTORS & DUMMY LOADS

Alltronic Research Inc.
 AVA Electronics Corp.
 Bird Electronic Corp.
 Coaxial Dynamics
 Dielectric Communications
 Electro Impulse Lab, Inc.
 GE-Marconi Communication Ltd.
 Harris Allied Broadcast Equipment
ITAME, S.A.
 JFW Industries
 Kintronic Labs, Inc.
 Loral Microwave-Narda
 MFJ Enterprises Inc.
 Penstock, Inc.
Rohde & Schwarz
 UTE Microwave, Inc.
 Wide Band Engineering Co., Inc.

SC/H PHASE MEASUREMENT & DISPLAYS

excludes waveform, vector monitors with SC/H phase measurement capability.

Alphaton
 BPI/Porta-Pattern
 Hamlet Video International Ltd.
 Icon Electronics Corp.
Leitch Inc.
Plateau Digital Technology
Rohde & Schwarz
 Sigma Electronics, Inc.
 System Video
 Vortex Communications

TIME DOMAIN REFLECTOMETERS

Beckman Industrial/Instrumentation Products
 Biddle Instruments
 Delta Electronics Inc.
 Riser-Bond Instruments
 Siecor Corp.
Tektronix Inc.

VECTORSOPES

Electronic Visuals Ltd.
 James Grunder & Associates
 Hamlet Video International Ltd.
 Hitachi Denshi America, Ltd.
Leader Instruments Corp.
 Magni Systems, Inc.
 Philips TV Test Equipment
Plateau Digital Technology
 S.A.V.
 Snell & Wilcox
 System Video
Tektronix Inc.
 Videotek, Inc.

VIDEO GENERATORS

Pattern, blackburst, color bar; includes programmable systems.
 B&K Precision Maxtec International Corp.
 Black Star Ltd.
 Boland Communications
 BPI/Porta-Pattern
 Brabury International
 Colorado Video Inc.
 Ensemble Designs
 ESE
 John Fluke Mfg. Co. Inc.
FOR.A Corp. of America
 Horita Co.
 Icon Electronics Corp.
Leader Instruments Corp.
Leitch Inc.

Magni Systems, Inc.
 Multidyne Electronics, Inc.
 Optical Electronics
PESA America Inc.
 Philips TV Test Equipment
 QSI Systems, Inc.
Rohde & Schwarz
 Sigma Electronics, Inc.
 System Video
Tektronix Inc.
 Video Accessory Corp.
 Videotek, Inc.
 Vortex Communications

VSWR INDICATORS, DETECTORS

Bird Electronic Corp.
 Electronics Research Inc.
 Loral Microwave-Narda
 MFJ Enterprises Inc.
Rohde & Schwarz
 Shively Labs Div. of Howell Labs, Inc.
 Wide Band Engineering Co., Inc.

WAVEFORM MONITORS

Electronic Visuals Ltd.
 James Grunder & Associates
 Hamlet Video International Ltd.
 Hewlett-Packard Co.
 Hitachi Denshi America, Ltd.
Leader Instruments Corp.
 Magni Systems, Inc.
 Philips TV Test Equipment
Plateau Digital Technology
 S.A.V.
 Snell & Wilcox
 System Video
Tektronix Inc.
 Videotek, Inc.

Ancillary & Support Products

ACOUSTIC MATERIALS

Acoustic Systems
Acoustical Solutions
Alpha Audio Acoustics
 ASC-Tube Traps
 AZ-USA, Inc.
 Canford Audio plc
 Industrial Acoustics Co.
 Lakeside Associates Inc.
 Ram Broadcast Systems



RPG Diffusor Systems, Inc.
 Sonex-Source
 Systems Development Group
 3M Sound Products

ATTENUATORS, FIXED, IMPEDANCE MATCHING

Allen Avionics, Inc.
 AVA Electronics Corp.
 Bird Electronic Corp.
 Danbridge A/S
 Har-Ken Specialties
 JFW Industries
 Kintronic Labs, Inc.
 Matthey Electronics
 Penstock, Inc.
 Russco Electronics Mfg. Inc.
 Shallco, Inc.
 Tech Labs Inc.
 Trilithic, Inc.
 Wide Band Engineering Co., Inc.

BATTERIES

Chargers, analyzers, reconditioners
 Alexander Batteries

antonbauer

Anton Bauer, Inc.
 Birns & Sawyer Inc.
 Christie Electric Corp.
 Cine 60, Inc.
 Computer Power Inc.
 J.E. Cuesta & Co. Inc.
 Dynamote Corp.
 Energex Systems Corp.
 Frezzolini Electronics, Inc.
 G&M Power Products, Inc.
 Gray Supply Co.
 HM Electronics
 Indus-Tool
 Lamp Technology Inc.
 Motorola Inc. Land Mobile Products Sector
 PAG Ltd.
 Periphex Inc.
 PERROTT Engineering Labs Inc.
 T.R. Pitts Co.
 Pro Battery Co. Inc.
 Professional Sound Corp.
 Reliance Comm/Tec
 Synergistic Batteries Inc.
 Tungstone Batteries Inc.
 VDO-PAK
 Whirlwind

BLOWERS, FANS

Ventilation products; includes facilities air-conditioning systems.
 Amco Engineering Co.
 Cabtron Systems Inc.
 J.E. Cuesta & Co. Inc.
 Emcor Products Crenlo, Inc.
 Ergo Industries
 General Devices Co., Inc.
 Winsted Corp.

CAPACITORS, HV

ABB Infocom Ltd.
EEV
 Motor Capacitors, Inc.
 Plastic Capacitors, Inc.
 Surcom Associates, Inc.

CARTS, A/V EQUIPMENT UTILITY

Advance Products Co.
 Apollo Audio Visual/Lighting
 Birns & Sawyer Inc.
 Brettford Mfg., Inc.
 Canford Audio plc
 Cine 60, Inc.
 Ergo Industries
 Ferno Salesmaker/Ferno-Washington, Inc.
 Luxor Corp.
 Nalpak Video Sales Inc.
 Neumade Products Corp.
 Peerless Sales Co.
 Professional Sound Corp.
 Research Technology International
 Tek Media Supply Co.
 3M Professional A/V & Specialty Products
 3M Sound Products
 Winsted Corp.

CASES, EQUIPMENT TRANSPORT

Aarmor Case Co.
 Anvil Cases (Subsidiary of Zero Corp.)
 Broadcast Marketing International
 Calzone Case Co.
 Canford Audio plc
 Cine 60, Inc.
 EDAK
 Hardigg Cases
 Island Cases
 K&H Products Ltd.-Porta Brace
 Karl Heitz, Inc.
 Keystone Metal Products, Inc.
 Lowel-Light Mfg. Inc.
 MicroFone
 Nalpak Video Sales Inc.



**He is manageable, easy to catch, simple to cut-out
and can be quickly put into place without costing an arm and a leg**

Picturebox is the most powerful, versatile and cost-effective still store on the market.

A single station can handle thousands of images with fast, efficient picture
management and complete on-air control.

What's more, it can frame grab, produce floating graphics and expand to meet any
requirements. It is the definitive system for a new age of stills presentation.

Go on, catch one today.

PICTUREBOX



Quantel Inc. 85 Old Kings Highway North, Darien, CT 06820

Circle (15) on Reply Card

www.americanradiohistory.com

Neumade Products Corp.
O'Connor Engineering
Ram Broadcast Systems
Reliance Plastics & Packaging Div.
Sachtler Corp. of America
Star Case Mfg. Co., Inc.
Telepak San Diego
Thermodyne International
Tiffen Mfg. Corp.
Viking Cases

CHEMICALS

Cleaning, conditioning treatment products.
CAIG Labs, Inc.
DW Electrochemicals Ltd.
Geneva Group of Companies, Inc.
Lipsner-Smith Co.
Mitchell Co. Inc., E.C.
ORA Electronics
Ram Broadcast Systems
Research Technology International
Tayo Industries
Tek Media Supply Co.
3M Sound Products

CLOCKS

Master, synchronized studio clocks, timers.
BAI Systems, Inc.
Beaveronics, Inc.
BPI/Porta-Pattern
Broadcast Automation, Inc.
Canford Audio plc
ChronTrol Corp.
CRL Systems-Circuit Research Labs, Inc.
DYMA Engineering, Inc.
EELA Audio
ESE
Evertz Microsystems Ltd.
Leitch Inc.
MacroMedia Design
maney_logic
QSI Systems, Inc.
Radio Systems Inc.
Ram Broadcast Systems
Richmond Sound Design, Ltd.
Seem Audio A/S
Time Service Systems Inc.
TOA Electronics, Inc.
Torpey Controls & Eng. Ltd.
Vortex Communications
Ward-Beck Systems, Ltd.
World Video Inc.

COAXIAL CABLE

RF, video; excludes transmission line products rated greater than 1kW.
Alpha Wire Corp.
Andrew Corp.
Arcor Broadcast Products
Astroguide International
AVA Electronics Corp.
Bi-Tronics, Inc.
C.A.E.
Canare Cable, Inc.
Canford Audio plc
Chester Audio & Video Cable/Alcatel
Clark Wire & Cable
Comark Communications.
Connectronics Corp.
Cooper Industries/Benden
DYMA Engineering, Inc.
Gabriel Electronics Inc.
Hero Communications
Magnavox CATV Systems, Inc.
Marshall Electronics
Mohawk Wire & Cable Corp.
MTC/Mycomp Technologies Corp.
Nemal Electronics International
T.R. Pitts Co.
Shively Labs Div. of Howell Labs, Inc.
Tenco Tower Co.
Trompeter Electronics, Inc.
Western Electronic Products
Wireworks Corp.

COMPONENTS, ELECTRONIC

Resistors, capacitors, inductors;
solid-state devices; panel indicators.

Allen Avionics, Inc.
Alpha Wire Corp.
Altronic Research Inc.
AT&T Microelectronics
C.A.E.
Calex Mfg. Co., Inc.
Comark Communications.
Computer Power Inc.
EEV
Gennum Corp.
Kintronic Labs, Inc.
Lamp Technology Inc.
Ledtronics, Inc.
McMartin Inc.
Motor Capacitors, Inc.
Norlake Mfg. Co.
ORA Electronics
Penstock, Inc.
T.R. Pitts Co.
Richardson Electronics, Ltd.
Sescom, Inc.
Target Technology
Thomson Broadcast

CONNECTORS

Audio, video, RF, fiber optic
Alpha Wire Corp.
AMP
Andrew Corp.
Arcor Broadcast Products
AT&T Microelectronics
AVA Electronics Corp.
B&B Electronics Mfg., Co.
Beyer Dynamic Inc.
Bi-Tronics, Inc.
Bird Electronic Corp.
Blonder-Tongue Labs, Inc.
C.A.E.
Canare Cable, Inc.
Canford Audio plc
Chromatic Technologies
Comark Communications.
Connectronics Corp.
Cooper Industries/Benden
Hero Communications
ITT Cannon, Canada
Kings Electronics Co., Inc.
Lemo USA
Marshall Electronics
Nemal Electronics International
Neutrik USA, Inc.
OFTI
ORA Electronics
Penstock, Inc.
T.R. Pitts Co.
Pomona Electronics/ITT
Reliance Comm/Tec
RF Industries
Shively Labs Div. of Howell Labs, Inc.
Siecor Corp.
SIRA s.r.l.
Superior Electric Co.
Switchcraft Inc.
Target Technology
Tenco Tower Co.
3M Sound Products
Trompeter Electronics, Inc.
Union Connector Co., Inc.
Veam/Litton Systems, Inc.
Whirlwind
Wireworks Corp.

CRYSTAL REFERENCES, FREQUENCY

McMartin Inc.
Motorola Inc. Land Mobile Products Sector
Sennheiser Electronic Corp.

FIBER-OPTIC EQUIPMENT

Cable and terminal equipment, laser transmission products and FO STL systems.



ADC Telecommunications, Inc.
American Lightwave Systems, Inc.
AMP
Arcor Broadcast Products
Artel Communications Corp.
Astroguide International
AT&T Microelectronics
Bec Technologies, Inc.
BURLE INDUSTRIES, INC.
C-COR COMLUX, Inc.
Catel Telecommunications
Chromatic Technologies
Cooper Industries/Benden
DYNALIR Electronics, Inc.
Fotec, Inc.
Gotham Audio Corp.
Grass Valley Group
Innovision Optics
Integrated Switching Systems
Intraplex, Inc.
Kathrein-Werke KG
LNR Communications, Inc.
Lone Wolf
Magnavox CATV Systems, Inc.
Mohawk Wire & Cable Corp.
Nexus Engineering Corp.
nVision, Inc.
OFTI
ORA Electronics
Orchard Communications Inc.
Ortel Corp.
T.R. Pitts Co.
RF Technology, Inc.
Seico Products Co.
Siecor Corp.



T-Tech
3M Professional A/V & Specialty Products
Veam/Litton Systems, Inc.

FILM CLEANING, INSPECTION, PROCESSING EQUIPMENT

Birns & Sawyer Inc.
Lipsner-Smith Co.
Neumade Products Corp.
Research Technology International
Steenbeck, Inc.
Tamron Industries Inc.
Tek Media Supply Co.

FILTERS, VIDEO HUM-REDUCTION

Allen Avionics, Inc.
Audio-Video Engineering
BAL
Beaveronics, Inc.
Broadcast Video Systems, Ltd.
Deerfield Laboratory
Matthey Electronics
North Hills Electronics, Inc.
Shintron Co., Inc.
Vortex Communications

HARDWARE, EQUIPMENT MOUNTING

Atlas/Soundolier
BGW Systems, Inc.
Black Audio Devices
Bretford Mfg., Inc.
Buhl Optical Co.
Canford Audio plc
Catamount Mfg. Inc.
Croma Research Ltd.
J.E. Cuesta & Co. Inc.
Emcor Products Crenlo, Inc.
Ergo Industries
FSR, Inc.

Fumeo S.p.A.
General Devices Co., Inc.
GKM Mfg. Corp.
Jem-Fab Corp.
JNS Electronics, Inc.
Keystone Metal Products, Inc.
Lenbar Electronics Corp.
Lowel-Light Mfg. Inc.
Matthews Studio Equipment, Inc.
Newton Instrument Co., Inc.
Fred A. Nudd Co.
Peerless Sales Co.
Pivotelli/USA
PKE International
Seam-Tech
Utility Tower Co.
Vortex Communications
Winsted Corp.
Zero Stantron Cabinets

LABELS, ADHESIVE-BACKED

Cart, cassette, ID, cabling, panel.
Canford Audio plc
Catamount Mfg. Inc.
Patch Bay Designation
3M Professional A/V & Specialty Products
3M Sound Products
Winsted Corp.

LIGHTS, STUDIO ON-AIR WARNING

Brabury International
Canford Audio plc
Fidelipac Corp.
Frezolini Electronics, Inc.
Henry Engineering
Koto Luminous Corp.
Philips Lighting
PKE International
Titus Technological Labs
Vantage Lighting

PATCH PANELS, ACCESSORIES, CABLES



ADC Telecommunications, Inc.
AMP
Arcor Broadcast Products
Audio Accessories, Inc.
Avitel Electronics Corp.
B&B Electronics Mfg., Co.
BFE AG
BGW Systems, Inc.
Bi-Tronics, Inc.
Brabury International
C.A.E.



Canare Cable, Inc.
Canford Audio plc
Connectronics Corp.
Cooper Industries/Benden
J.E. Cuesta & Co. Inc.
D&R Electronica b.v.
Dielectric Communications
Ergo Industries
Fartronics
Fougerolle Video
Furman Sound, Inc.
Har-Ken Specialties
ITI Electronics, Inc.
Jem-Fab Corp.
Kings Electronics Co., Inc.
Kintronic Labs, Inc.
Lenbar Electronics Corp.
Lumitrol, Ltd.
Marshall Electronics
Nemal Electronics International
Newton Instrument Co., Inc.
OEI Electronics Systems, Inc.
ORA Electronics
Packaged Lighting Systems, Inc.
Patch Bay Designation

Penny & Giles, Inc.
Philip Drake Electronics
Pomona Electronics/ITT
Ram Broadcast Systems
Seam-Tech
Seem Audio A/S
Shively Labs Div. of Howell Labs, Inc.
Siecor Corp.
SIRA s.r.l.
Switchcraft Inc.
TASCAM
Texar/Gentner Electronics
Trompeter Electronics, Inc.
Union Connector Co., Inc.
Videoquip Research Ltd.
Ward-Beck Systems, Ltd.
Whirlwind
Wireworks Corp.

PHASE CONVERTERS, 1-to-3Φ

ABB Infocom Ltd.
Computer Power Inc.
J.E. Cuesta & Co. Inc.
Dielectric Communications
International Computer Power

POWER GENERATORS, STANDBY

Motor-generator, solar, power inverters, UPS.
ABB Infocom Ltd.
Alpha Technologies
Atlas Energy Systems
Behlman Electronics/Astrosystems
Best Power Technology, Inc.

COMPUTER POWER INC.

Computer Power Inc.
J.E. Cuesta & Co. Inc.
Dynamote Corp.
Exeltech, Inc.
FWT
Indus-Tool
Instrumentation & Control Systems, Inc.
International Computer Power
Kalgio Electronics
LorTec Power Systems
Neumade Products Corp.
Nexus Engineering Corp.
Northern Technologies, Inc.
PERROTT Engineering Labs Inc.
Reliance Comm/Tec
Schafer World Communications Corp.
Sola
SSAC Inc.
Staco Energy Products
Superior Electric Co.
Teledyne Energy Systems
Tripp Lite

POWER LINE CONDITIONERS

Includes surge suppression, lightning protection products; grounding products.
ABB Infocom Ltd.
Alpha Technologies
Atlas Energy Systems
Best Power Technology, Inc.

COMPUTER POWER INC.

Computer Power Inc.
Control Concepts Corp.
J.E. Cuesta & Co. Inc.
Current Technology Inc.
Furman Sound, Inc.
Indus-Tool
International Computer Power
Kalgio Electronics
Lightning Eliminators & Consultants, Inc.
Lightning Prevention Systems
Lyncole XIT Grounding
MCG Electronics, Inc.

Nexus Engineering Corp.
Northern Technologies, Inc.



PolyPhaser Corp.
Power Integrity Corp.
Schafer World Communications Corp.
Sine Control International Corp.
Sola
Spectrum Communications Corp.
Staco Energy Products
Superior Electric Co.
Television Technology Corp.
Transtector Systems Inc.
Tripp Lite

RACKS, EQUIPMENT ENCLOSURE

Amco Engineering Co.
Andrew Corp.
Arcor Broadcast Products
Arrakis Systems
Atlas/Soundolier
BFE AG
BGW Systems, Inc.
Black Audio Devices
Broadcast Automation, Inc.
Cabtron Systems Inc.
Calzone Case Co.
Canford Audio plc
Continental Electronics Corp.
Croma Research Ltd.
J.E. Cuesta & Co. Inc.
D&R Electronica b.v.
EDAK
Emcor Products Crenlo, Inc.
Ergo Industries
Fumeo S.p.A.
General Devices Co., Inc.
GKM Mfg. Corp.
Hardigg Cases
Harris Allied Broadcast Equipment
Hero Communications
Jem-Fab Corp.
JNS Electronics, Inc.
Keystone Metal Products, Inc.
Kintronic Labs, Inc.
Lake Cabinet Systems
Luxor Corp.
Mobile-Cam Products
Modular Audio Products
Neumade Products Corp.
Newton Instrument Co., Inc.
Nexus Engineering Corp.
Packaged Lighting Systems, Inc.
T.R. Pitts Co.
PKE International
Ram Broadcast Systems
Recortec, Inc.
Research Technology International
Rohde & Schwarz
Ruslang Corp.
Siecor Corp.
Skaggs Telecommunications Service, Inc.
Spectrum Communications Corp.
Star Case Mfg. Co., Inc.
The Express Group
Thermodyne International
3M Sound Products
Union Connector Co., Inc.
Wheatstone Corp.
Winsted Corp.
Zero Stantron Cabinets

RECORD CARE PRODUCTS

Audiolab Electronics, Inc.
Geneva Group of Companies, Inc.
Keith Monks Sound Systems
TASCAM
Tayo Industries

RECORDER CARE, RECORDING ACCESSORIES

Includes head-cleaning products.

CAIG Labs, Inc.
Geneva Group of Companies, Inc.
Tayo Industries

RECORDER ELECTRONICS, MOTORS

Inovonics Inc.
Television Technology Corp.

REELS, CABLE

Arcor Broadcast Products
C.A.E.
Canare Cable, Inc.
Canford Audio plc
Chester Audio & Video Cable/Alcatel
Communications Specialties Inc.
Connectronics Corp.
Fumeo S.p.A.
Keith Monks Sound Systems
Mobile-Cam Products
T.R. Pitts Co.
Rapid Deployment Towers
Roll-A-Reel Co. Inc.
Seam-Tech
Wireworks Corp.

SHIELDING, RFI/EMI

ABB Infocom Ltd.
Alpha Wire Corp.
Arcor Broadcast Products
Chester Audio & Video Cable/Alcatel
Current Technology Inc.
EEV
Emcor Products Crenlo, Inc.
General Devices Co., Inc.
Industrial Acoustics Co.
LBA Technology, Inc.
3M Sound Products
Tripp Lite
Western Electronic Products
Zero Stantron Cabinets

STATIC SUPPRESSORS, ENVIRONMENTAL CONTROLS

Computer Power Inc.
Cortana Corp.
Indus-Tool
Lightning Prevention Systems
Solder Absorbing Technology Inc.
3M Electrical Specialties Div.

STORAGE SYSTEMS

Including racks and shelves for videocassettes, cartridges, CDs, etc.
Advance Products Co.
Canford Audio plc
J.E. Cuesta & Co. Inc.
Ergo Industries
Fidelipac Corp.
Fumeo S.p.A.
Geneva Group of Companies, Inc.
Kintronic Labs, Inc.
Lake Cabinet Systems
Neumade Products Corp.
Plastic Reel Corp. of America
Research Technology International
Ruslang Corp.
Sonifex Ltd.
Star Case Mfg. Co., Inc.
Storeel Corp.
Tek Media Supply Co.
The Express Group
3M Sound Products
Wide Range Electronics Corp.
Winsted Corp.

STUDIO SCENERY, DRAPERIES, SETS

Arrakis Systems
Broadcast Services/EME
Canford Audio plc
Da-Lite Screen Co., Inc.
Hoffend & Sons, Inc.
Lake Cabinet Systems
Lumitrol, Ltd.
The Express Group

Wheatstone Corp.

TAPE CLEANERS, EVALUATORS, CONDITIONERS

Accurate Sound Corp.
Data Security, Inc.
Geneva Group of Companies, Inc.
ORA Electronics
Recortec, Inc.
Research Technology International
Sony Magnetic Products Co.
Tek Media Supply Co.
Wide Range Electronics Corp.

TAPE, HEAD DEGAUSSERS

Conveyor & non-moving types
Ampex Corp.
R.B. Annis Co.
Audiolab Electronics, Inc.
Canford Audio plc
Data Security, Inc.
Garner Industries
Geneva Group of Companies, Inc.
Graff Electronic Machines Ltd.
Ram Broadcast Systems
Sanix Corp.
Sonifex Ltd.
Videomagnetics
Weircliffe International Ltd.
Wide Range Electronics Corp.

TOOLS, KITS

AMP
Black Audio Devices
Canare Cable, Inc.
Canford Audio plc
Contact East Inc.
Jensen Tools Inc.
Nalpak Video Sales Inc.
Pace Inc.
Paladin Corp.
RIZ Transmitter Factory
Siecor Corp.
Solder Absorbing Technology Inc.
Techni-Tool Inc.
Western Electronic Products
Brian R. White Co., Inc.
Wide Range Electronics Corp.

VEHICLES, PRODUCTION/ENG/SNV

Advent Communications, Ltd.
AF Associates
BAF Communications Corp.
Cycle-Sat, Inc.
Fougerolle Video
Fumeo S.p.A.
Harris Allied Broadcast Equipment
Landy Associates, Inc.
Microdyne Corp.
Mobile-Cam Products
RIZ Transmitter Factory
Roscor Corp.
Shook Electronics USA, Inc.
Telesat International, Ltd.
Television Engineering Corp.
Western Electronic Products
Wolf Coach, Inc.

VOLTAGE REGULATORS

High-power systems transmitter operation.
Atlas Energy Systems
Computer Power Inc.
J.E. Cuesta & Co. Inc.
Hipotronics Inc. Power Products Div.
Northern Technologies, Inc.
RIZ Transmitter Factory
Sola
Superior Electric Co.

Services

ANTENNA, TOWER INSTALLATION, MAINTENANCE

ABB Infocom Ltd.
Alan Dick & Co. Ltd.

Alpha Tower Design, Inc.
Andrew Corp.
Antenna Technology
John H. Battison & Assoc., Consulting Eng.
Broadcast Communications
DSI Communications, Inc.
DYMA Engineering, Inc.
Electronics Research Inc.
EMCEE Broadcast Products
Express Tower Co.
FWT
Gabriel Electronics Inc.
J&L Associates
Kline Towers
La Cie D'Electronique Normex Ltee
LDL Communications, Inc.
LeBlanc & Royle Telcom Inc.
Marcom
Multiphase Consulting
Fred A. Nudd Co.
Rohde & Schwarz
SIRA s.r.l.
SOFRATEV
Southern Illinois Antennas
Stainless Inc.
Stellar Communications Inc.



SWR Inc.
Teletech, Inc.
Tenco Tower Co.



Tower Network Services
Trylon Towers
Utility Tower Co.

CONSULTING, DESIGN

Facilities, system and custom equipment designs

ABB Infocom Ltd.
AEQ-Applicaciones Electronicas Quasar
AF Associates
AIR Corp.
Alpha Tower Design, Inc.
Eric Neil Angevine P.E.
Antenna Technology
ASC-Tube Traps
AVEC
B&B Systems, Inc.
BAI Systems, Inc.
Baranti Group
BASYS Automation Systems
John H. Battison & Assoc., Consulting Eng.
Franklyn R. Beemish & Co.
Lawrence Behr Associates Inc.
BFE AG
Broadcast Communications
Broadcast Equipment Sales & Eng.
Broadcast Systems Design
BTS GmbH
Richard W. Burden Associates
CEL Electronics
D.A.T.A. Business Publishing
John J. Davis & Assoc., Consulting Eng.
DeSantis Associates
DKW Systems
DSI Communications, Inc.
DYMA Engineering, Inc.
East Coast Video Systems
EDX Engineering, Inc.
Electronics Research Inc.
EMCEE Broadcast Products
EMS-Electronic Maintenance Services
Ergo Industries
Evans Assoc. Consulting Telecom, Eng.
Fougerolle Video
Full Compass Systems, Ltd.
Funke & Associates
GEE Broadcast Systems Ltd.
Gendra International, Inc.
Harris Allied Broadcast Equipment

Harrison Systems Ltd.
HB Centennial
Hemec Communications
HN Engineering Inc.
Integral Systems Group
Jem-Fab Corp.
Key Systems International, Inc.
Kintronic Labs. Inc.
Knudson-Benson Associates Inc.
Ron Krob Technical Consultant
Lakeside Associates Inc.
Landy Associates, Inc.
LDL Communications, Inc.
Logica Space & Comm./Broadcast
Lumitrol, Ltd.
Magnavox CATV Systems, Inc.
Marcom
D.L. Markley & Assoc. Inc., Consulting Eng.
MBI Broadcast Systems Ltd.
Kenneth R. Meades
Media Touch Systems, Inc.
Micro Communications, Inc.
Jay Mitchell Associates
Modern Media Consulting
Lawrence L. Morton Associates
Moseley Associates, Inc.
Multi Electronic Services Ltd.
Multiphase Consulting
Nesbit Systems Inc.
Nissen Group Inc.
Old Dominion Broadcast Eng. Service
Pacific Recorders & Eng. Corp.
Philip Drake Electronics
PKE International
Pro Video & Film Equipment Group
Radiotechniques Engineering Corp.
A.D. Ring
RMS
ROH Products
Roscor Corp.
Rosner TV Systems, Inc.



RPG Diffusor Systems, Inc.
RPS Communications
Seem Audio A/S
Shook Electronics USA, Inc.
Smith & Powstenko
George R. Snell Associates
SOFRATEV
Somich Engineering
Sony Business & Professional Group
Southern Illinois Antennas
Standard Frequency Measuring Service
Star Case Mfg. Co., Inc.



Synergistic Technologies, Inc.
Systems Development Group
David Taylor Software
Teletech, Inc.
Television Technology Corp.
Theta Scientific
Tiffen Mfg. Corp.
Vac Systems Corp.
VDO Ltd.
Video Images-Chicago
Video Masters Inc. (VMI)
Vir James Consulting Engineers
Vizcom/Satellite Systems
Washington Information Group

EDITING, POST PRODUCTION FACILITIES

Associated Images Ltd.
Audio Plus Video Int'l/International Post
CEDAR Audio Ltd.
Center Video Industrial Co. Inc.
Corplex Inc.
Cycle-Sat, Inc.
Ediflex Systems

Gendra International, Inc.
HDTV Holland BV
High Fidelity
Image Video Teleproductions, Inc.
M2 Design
Media Concepts, Inc.
METROPOST
MPB Technologies Inc.
Pro Video & Film Equipment Group
Prosonus
Skaggs Telecommunications Service, Inc.
Steenbeck, Inc.
Tayo Industries
3M Optical Recording
Video Central
Video Dub, Inc.
VSC Post Production, Inc.

EQUIPMENT REBUILDING

Reconditioning, customizing
ABB Infocom Ltd.
AIR Corp.
Atlas Energy Systems
Baranti Group
Broadcast Automation, Inc.
Broadcast Equipment Sales & Engineering
California Tube Lab Inc.
Center Video Industrial Co. Inc.
EMS-Electronic Maintenance Services
Freeland Products, Inc.
Full Compass Systems, Ltd.
Funke & Associates
GE Support Services/ RCA Broadcast
Gendra International, Inc.
Hall Electronics
Harris Allied Broadcast Equipment
Harrison Systems Ltd.
Kintronic Labs. Inc.
Landy Associates, Inc.
McMartin Inc.
Multi Electronic Services Ltd.
Old Dominion Broadcast Eng. Service
PERROTT Engineering Labs Inc.
Pro Video & Film Equipment Group
Schafer World Communications Corp.
Sprague Magnetics, Inc.



Synergistic Technologies, Inc.
Texscan MSI



Tower Network Services
Vac Systems Corp.

EQUIPMENT RENTAL, LEASING, BROKERS

Altronic Research Inc.
Atlas Energy Systems
BCS, Inc.
BDL/Autoscript Ltd.
BERC-Broadcast Equipment Rental Co.
Broadcast Equipment Sales & Engineering
BTS GmbH
Center Video Industrial Co. Inc.
Continental Electronics Corp.
Cycle-Sat, Inc.
Egripment USA Inc.
Film/Video Equipment Service Co.
Full Compass Systems, Ltd.
Funke & Associates
GE/Projection Display Products
Gendra International, Inc.
Harris Allied Broadcast Equipment
High Fidelity
Image Video Teleproductions, Inc.
Landmark Financial Group
LTM Corp. of America
Marcom
Matthews Studio Equipment, Inc.

Maze Broadcast, Inc.
Media Concepts, Inc.
Multiphase Consulting
Musco Mobile Lighting, Ltd.
Old Dominion Broadcast Eng. Service
Panther Corp. of America
Pauza & Co., Ltd.
PERROTT Engineering Labs Inc.
Pro Video & Film Equipment Group
Roscor Corp.
Schafer World Communications Corp.
Siecor Corp.
Solid Electronics Labs
Sony Business & Professional Group
Steenbeck, Inc.
System Associates
The Toy Specialists
Video Central
Video Images-Chicago
Video Rentals, Inc.
Vision Quest

FILM-TO-TAPE TRANSFER

Audio Plus Video Int'l/International Post
Center Video Industrial Co. Inc.
Media Concepts, Inc.
Skaggs Telecommunications Service, Inc.
Video Dub, Inc.
VSC Post Production, Inc.

FREQUENCY MEASUREMENT, COORDINATION

John H. Battison & Assoc., Consulting Eng.
Broadcast Signal Lab
HN Engineering Inc.
Johnson Measurement Service
McQuatters Freq. Measurement Service
Lawrence L. Morton Associates
Old Dominion Broadcast Eng. Service
PKE International
SOFRATEV
Standard Frequency Measuring Service
Teletech, Inc.
Theta Scientific
Ziehl Electronic Service

HEAD REFURBISHING, RELAPPING

Auteri Associates, Inc.
CMC Technology/Datatape Inc.
GEE Broadcast Systems Ltd.
Hall Electronics
International Electro-Magnetics
JRF Magnetic Sciences Inc.
Northern Magnetics, Inc.
Oktei, LP
Saki Magnetics Inc.
Sprague Magnetics, Inc.
Videomagnetics

INSTRUMENT CALIBRATION

R.B. Annis Co.
Brüel & Kjaer Instruments, Inc.
Pro Video & Film Equipment Group
Rohde & Schwarz

LENS REPAIR

Birns & Sawyer Inc.
Canon USA Inc. Broadcast Equipment Div.
Century Precision Optics
Jem-Fab Corp.
Pro Video & Film Equipment Group

PRODUCTION MUSIC, EFFECTS LIBRARIES, IDs

Associated Production Music
Manhattan Production Music
Music Director Programming Service
Prosonus
Signature Music Library
Skaggs Telecommunications Service, Inc.
SoperSound Music Library
Sound Ideas
Tayo Industries
TM Century, Inc.
Valentino, Inc.

Acrodyne...the best of all worlds.

UHF TV Transmitters

Solid State Technology

The proof is in! Since 1989, Acrodyne has been delivering affordable solid state 1 kW UHF TV transmitters—**no tubes, no tuning, no downtime.**

- Redundant power supplies
- Built-in diagnostics
- Modular construction
- Frequency agile designs

Advanced Tetrode Technology

Our product line includes the world's only single tetrode 25 kW UHF TV transmitter. Acrodyne's advanced systems are demonstrating exceptional field reliability—the **only new UHF transmitter development which meets and routinely exceeds expected tube life at full rated power.**

- Ultra high plant efficiency
- Solid state drivers
- Inherent linearity minimizes precorrection
- Low cost tube replacement
- Parallel systems available



Tomorrow's digital TV transmitter company

ACRODYNE

Acrodyne Industries, Inc.
516 Township Line Road
Blue Bell, PA 19422
800-523-2596
or (215) 542-7000
FAX: (215) 540-5837

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Circle (16) on Reply Card

**Now Available
30kW
10% aural output**



RF SYSTEM MAINTENANCE

AM, FM, TV, microwave.
 ABB Infocom Ltd.
 Advent Communications, Ltd.
 Antenna Technology
 John H. Battison & Assoc., Consulting Eng.
 Broadcast Equipment Sales & Engineering
 DSI Communications, Inc.
 Electronics Research Inc.
 EMCEE Broadcast Products
 Frequency Products Inc.
 Funke & Associates
 Gabriel Electronics Inc.
 GE Support Services/ RCA Broadcast
 Harris Allied Broadcast Equipment

Harrison Systems Ltd.
 HN Engineering Inc.
 Ron Krob Technical Consultant
 LDL Communications, Inc.
 Marcom
 McMartin Inc.
Micro Communications, Inc.
 Lawrence L. Morton Associates
 Motorola Inc. Land Mobile Products Sector
 Multiphase Consulting
 Fred A. Nudd Corp.
 Old Dominion Broadcast Eng. Service
Rohde & Schwarz
 SIRA s.r.l.
 Southern Illinois Antennas

Stainless Inc.



SWR Inc.
 Teletech, Inc.
 Theta Scientific



Tower Network Services

Utility Tower Co.

SATELLITE TIME BROKERS

Program distribution; FO Fiber optic distribution
 Atlantic Satellite Communications, Inc.
 BAF Communications Corp.
 Cycle-Sat, Inc.
 GE American Communications
 Interactive Satellite
 ISS Engineering, Inc.
 NPR Satellite Services
 Skaggs Telecommunications Service, Inc.
 VYVX NVNFO
 Waterfront Communications Corp.

WIRING, CABLING

Arcor Broadcast Products
 Bi-Tronics, Inc.
 C.A.E.
Canare Cable, Inc.
 Canford Audio plc
 Chester Audio & Video Cable/Alcatel
 J.E. Cuesta & Co. Inc.
Full Compass Systems, Ltd.
 GEE Broadcast Systems Ltd.
Jem-Fab Corp.
 La Cie D'Electronique Normex Lee
 Lakeside Associates Inc.
 Landy Associates, Inc.
 Lemo USA
 Lenbar Electronics Corp.
 Multiphase Consulting
 Fred A. Nudd Corp.
 Old Dominion Broadcast Eng. Service
 Siecor Corp.
 SOFRATEV
 Teletech, Inc.
 Theta Scientific
 3M Professional A/V & Specialty Products
 3M Sound Products
 Western Electronic Products



The Fast-Track Video Analyzer Model UAF

Measures 25 Key Video Signal Parameters In Just 640 Milliseconds

You won't find another video analyzer that can match the speed of the UAF. With its advanced parallel measurement capability, the UAF can analyze 25 parameters of NTC-7 or FCC video test signals ... *in real time* ... with an accuracy of 0.1% for standard measurements, 0.01% for difference or reference measurements.

You can make all your equipment adjustments and checks more accurately and easily with the UAF ... measurement results for all parameters always reflect *real* conditions. Competitive products may have measurement cycles as long as 20 seconds - ample time for measured parameters to change and invalidate test results before the measurement cycle has been completed.

Operating flexibility is yet another convenient feature of the UAF - it can be operated manually, automatically using a convenient plug-in memory card, or remotely via an IEEE 488 bus. You can store measurement values on the memory card or output test results to a printer or plotter. You can even use the UAF as a bus controller for any IEEE 488 bus-addressable instruments on the bus.

High speed, outstanding accuracy, and versatility ... distinctive features of the UAF designed to make your job much easier!



ROHDE & SCHWARZ

Rohde & Schwarz, Inc., 4425 Nicole Drive
 Lanham, MD 20706 ■ Tel: (301) 459-8800

In Canada: Rohde & Schwarz Canada, Inc., 555 March Road, Kanata, Ontario, K2K 2M5 ■ Tel: (800) 667-9841
 Outside North America: Rohde & Schwarz Headquarters, Mühldorfstr. 15, W-8000 München 80, Germany ■ Tel: (089) 41-29-0

The information contained in this directory is taken from the responses to questionnaires sent to all companies on our mailing list as of June 1991. If a specific manufacturer does not appear in this directory, either the name was not on the mailing list with current address information, or no questionnaire was returned. To have a company name included on the mailing list for future issues and other special editorial projects, please contact the Directory Editor or Editor, Special Projects, **Broadcast Engineering Equipment Reference Manual**, PO Box 12901, Overland Park, KS 66282-2901.



**NOW
SHIPPING**

par•a•gon \ ' par-e-, gän, -gen \ n

1: a fully digital transmission processor for all

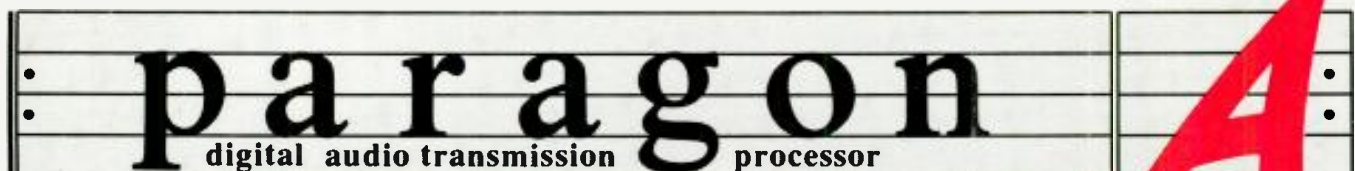
broadcast environments.

2: Featuring:

No clipper, meaning no clipping



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298 metal particle formulation enables the use of higher carrier frequencies for greater reproducible bandwidth and improved signal-to-noise ratio for bright, sharp pictures even after multiple generations.

Identification tabs allow machine to sense tape type and adjust for thickness, hub diameter, and record current when using both Betacam and Betacam SP.

Hold-down spring with precision-ground ends helps center spool properly. One-piece cap design holds spool securely in place and protects against dislodging.

Solid, precision stainless-steel pins and low-friction rollers for smooth guiding and improved tape handling.

Brake system securely locks reel in place when not in use to prevent tape cinching.

198 high-energy cobalt-modified oxide formulation delivers excellent RF output, chrominance, and luminance for crisp colors.

Spool-hub bearing button mounts to cassette shell rather than window for greater stability during spool rotation, minimizing edge damage and improving tape handling.

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High-impact anti-stat plastic housing for maximum tape protection and minimum debris-induced dropouts.

Conductive carbon backcoat formulation incorporates a tough binder system to deliver durability, static dissipation, and a smooth surface for low dropouts and reliable handling.

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From the tape to the plastic to the packaging, 198 Betacam and 298 Betacam SP reflect our commitment to this growing format...and to your growing needs.

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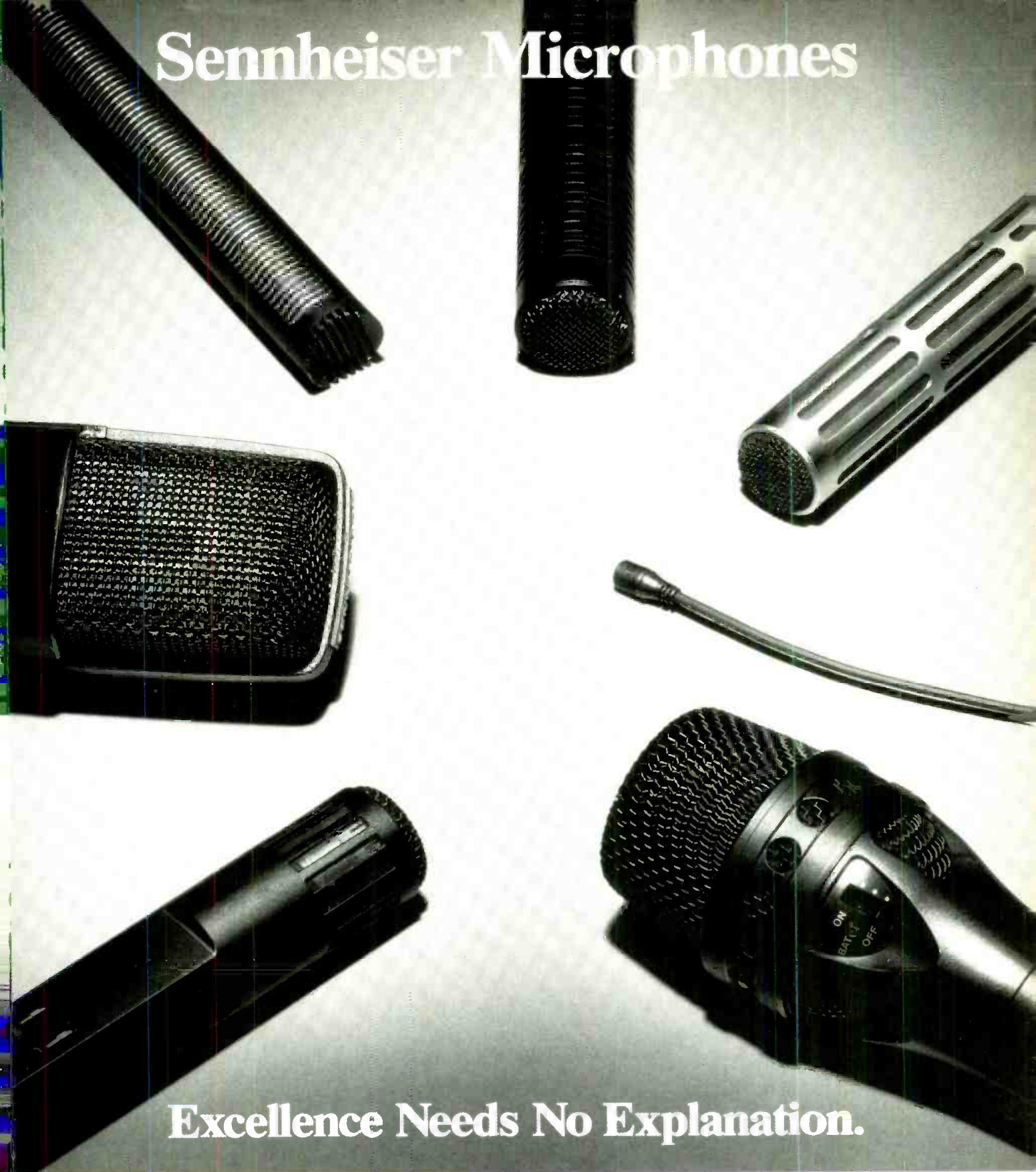
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San Diego, CA 92123
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Micron Audio Products Ltd.
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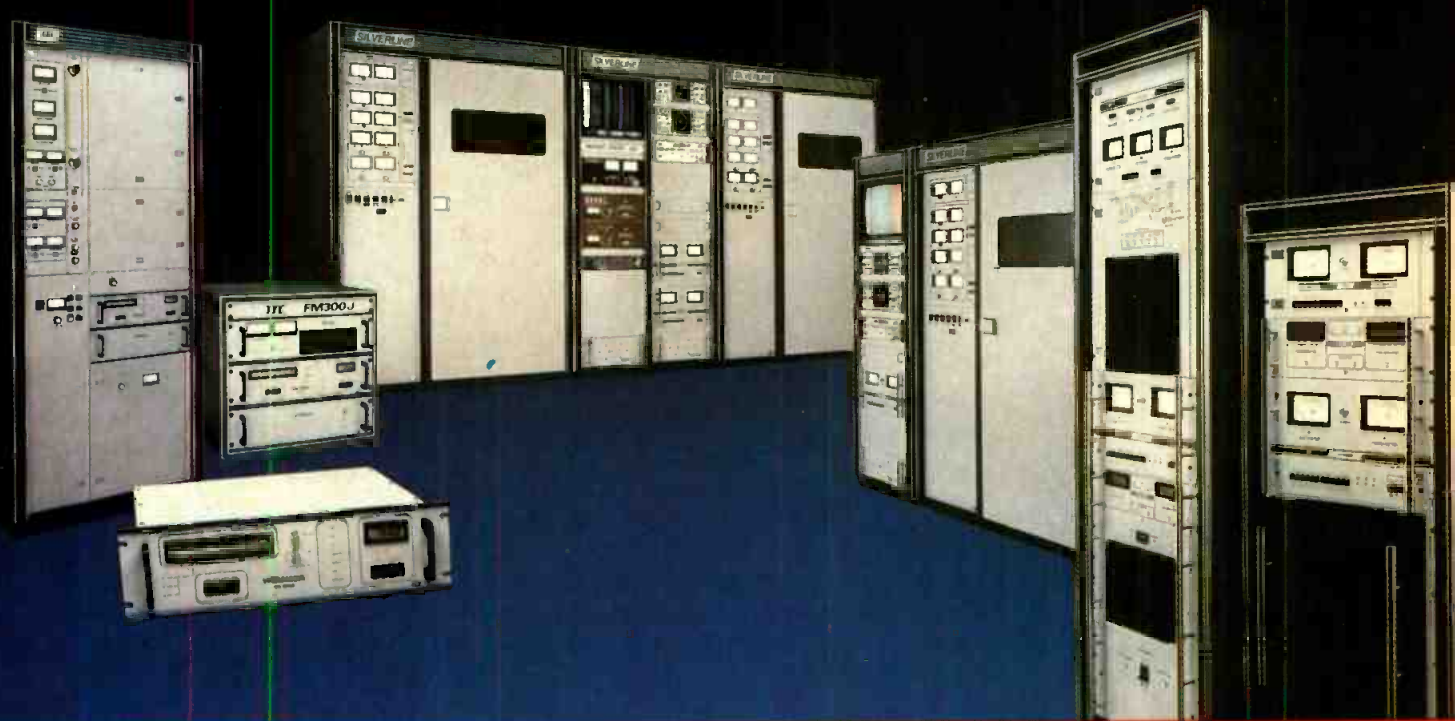
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Rank Cintel
Watton Road, Ware
Herts, England SG12 0AE
44-920-463939; Fax: 44-920-460803

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25358 Ave. Stanford, Valencia, CA 91355
805-294-2310; Fax: 805-294-1019

Rapid Deployment Towers
625 Profit St., Azle, TX 76020
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Theodore A. Rapp Associates Inc.,
Tram Microphones
P.O. Box 821, Nyack, NY 10960
914-358-7895

RDS Corp.
No. 7-2, 4-Chome, Shimbashi
Minato-Ku, Tokyo, Japan 105
81-3-5470-1405; Fax: 81-3-3432-1018

RE Broadcast
Ivanhoe Road, Finchampstead
Berks, England
44-734-731119; Fax: 44-734-731190

Reach Electronics, Inc.
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308-324-6661; 800-445-0007
Fax: 308-324-4985

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Fax: 408-734-2140

Reliance Comm/Tec
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800-245-4501

Reliance Plastics & Packaging Div.
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17191 Armstrong, Irvine, CA 92714
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4700 Chase Ave., Lincolnwood, IL 60466
708-677-3000; 800-323-7520
Fax: 708-677-1311

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10040 Mesa Rim Road
San Diego, CA 92121
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Fax: 619-587-0049

RF Technology, Inc.
16 Testa Place, South Norwalk, CT 06854
203-866-4283; 800-762-4369
Fax: 203-853-3513

RGB Spectrum
2550 Ninth St., Berkeley, CA 94710
415-848-0180; Fax: 415-848-0971

Richardson Electronics, Ltd.
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708-208-2200; 800-348-5580
Fax: 708-208-2550

Richmond Sound Design, Ltd.
1234 W. Sixth Ave.
Vancouver, BC, Canada V6H 1A5
604-732-1234

A.D. Ring
1019 19th St. N.W., 3rd Floor
Washington, DC 20036
202-223-6700; Fax: 202-466-2042

Riser-Bond Instruments
5101 North 57th St., Lincoln, NE 68507
402-466-0933; 800-688-8377
Fax: 402-466-0967

Rix Softworks Inc.
18552 MacArthur Blvd., Suite 200
Irvine, CA 92715
714-476-8266; Fax: 714-476-8486

RIZ Transmitter Factory
Bozidareviceva 13
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38-41-210-584; Fax: 38-41-231-410

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818-545-7561; 818-509-5733
Fax: 818-545-8249

ROH Products
6120 San Fernando Road
Glendale, CA 91201
818-500-0137; Fax: 818-240-1828

Rohde & Schwarz
PF 801469, W-8000 Munich 80, Germany
4989-41290; Fax: 4989-4129-2164

Rohde & Schwarz
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7200 Dominion Circle
Los Angeles, CA 90040
213-685-5141

Roll-A-Reel Co. Inc.
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513-761-8500; Fax: 513-761-9997

Roscor Corp.
1061 Feehanville Drive
Mount Prospect, IL 60056
708-299-8080 Ext
Fax: 708-299-4206

Rosner TV Systems, Inc.
17 Mitchell Drive, Kings Point, NY 11024
516-466-4172

Ross Video Ltd.
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613-652-4886; Fax: 613-652-4425

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12003 Wimbeldon St., Largo, MD 20772
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3 Bittersweet Court, Centerport, NY 11721
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203-384-1266

Russco Electronics Mfg. Inc.

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Fax: 209-291-9601

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Dorset, England BH21 7SA
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485-19 S. Broadway, Hicksville, NY 11801
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Sandar Electronics

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47 34 67222; Fax: 47 34 65219

Sanix Corp.

101-1-29-1 Kaminoge, Setagaya-Ku
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213-469-4773; Fax: 213-962-2603

SCA Data Systems, Inc.

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Scala Electronic Corp.

P.O. Box 4580, Medford, OR 97501
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Scantex Labs Inc.

P.O. Box 338
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P.O. Box 31, Marion, VA 24354
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Schmid Telecom AG

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Woodbury, NY 11797
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Schneider Optische Werke

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186, Allee des Erables, BP 50056
Roissy C.D.G., France F-95947
33 1 48 632211; Fax: 33 1 48 632292

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Fax: 714-739-1507

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203-434-9190; Fax: 203-434-1759

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415-965-8020; 800-966-1034
Fax: 415-965-1193

Shallco, Inc.

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LCD Products Div.
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201-529-8731; Fax: 201-529-9636

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704-327-5000; Fax: 704-327-5488

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Via Bari 26, Milan, Italy 20143
39-2-8131901; 39-2-817902
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Tustin, CA 92680
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Hialeah, FL 33012
305-558-3000; Fax: 305-558-2801

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Fax: 413-788-0490

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Solid State Logic

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One Sony Drive, Park Ridge, NJ 07656
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Richmond Hill, Ont., Canada L4B 1C6
416-886-5000; 800-387-3030 USA
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Soundtracs PLC
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Fax: 801-392-7531

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Fax: 818-994-2153

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Summit Audio Inc.
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SWR Inc.
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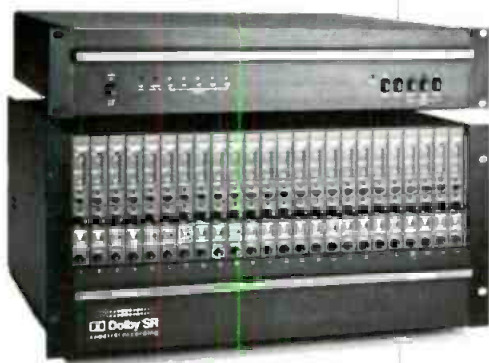
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Wolf Coach, Inc.
7 B St., Auburn, MA 01501
508-791-1950; Fax: 508-799-2384

World Video Inc.
P.O. Box 117, Boyertown, PA 19512
215-754-6700

Wynford Technologies Inc.
424 Mt. Pleasant Road
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416-322-0931; Fax: 416-322-5658

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Xymox Systems
17408 Chatsworth St., Suite 204
Granada Hills, CA 91344
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Yamaha Corp. of America
Professional Audio Products
P.O. Box 6600, Buena Park, CA 90622
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FL, Miami, 305-279-0523
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KS, Lenexa, 614-889-0265
MD, Poolesville, 301-972-7080
MA, Sharon, 617-784-1144
NJ, Stirling, 201-647-6262
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TX, Dallas, 214-243-2564
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WA, Lynwood, 206-771-6016

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Is your company's name missing from this directory? If so, either the name was not on our mailing list or the questionnaire mailed in June 1991 was never returned. If you wish to be included in future issues of the **Broadcast Engineering Equipment Reference Manual** and other special editorial projects, contact the Directory Editor or Editor/Special Projects, PO Box 12901, Overland Park, KS 66282-2901.

PANASONIC TAKES M.A.R.C. INTO THE DIGITAL AGE.

Panasonic won an Emmy for the M.A.R.C. Cassette Library System, but that didn't keep us from improving it.

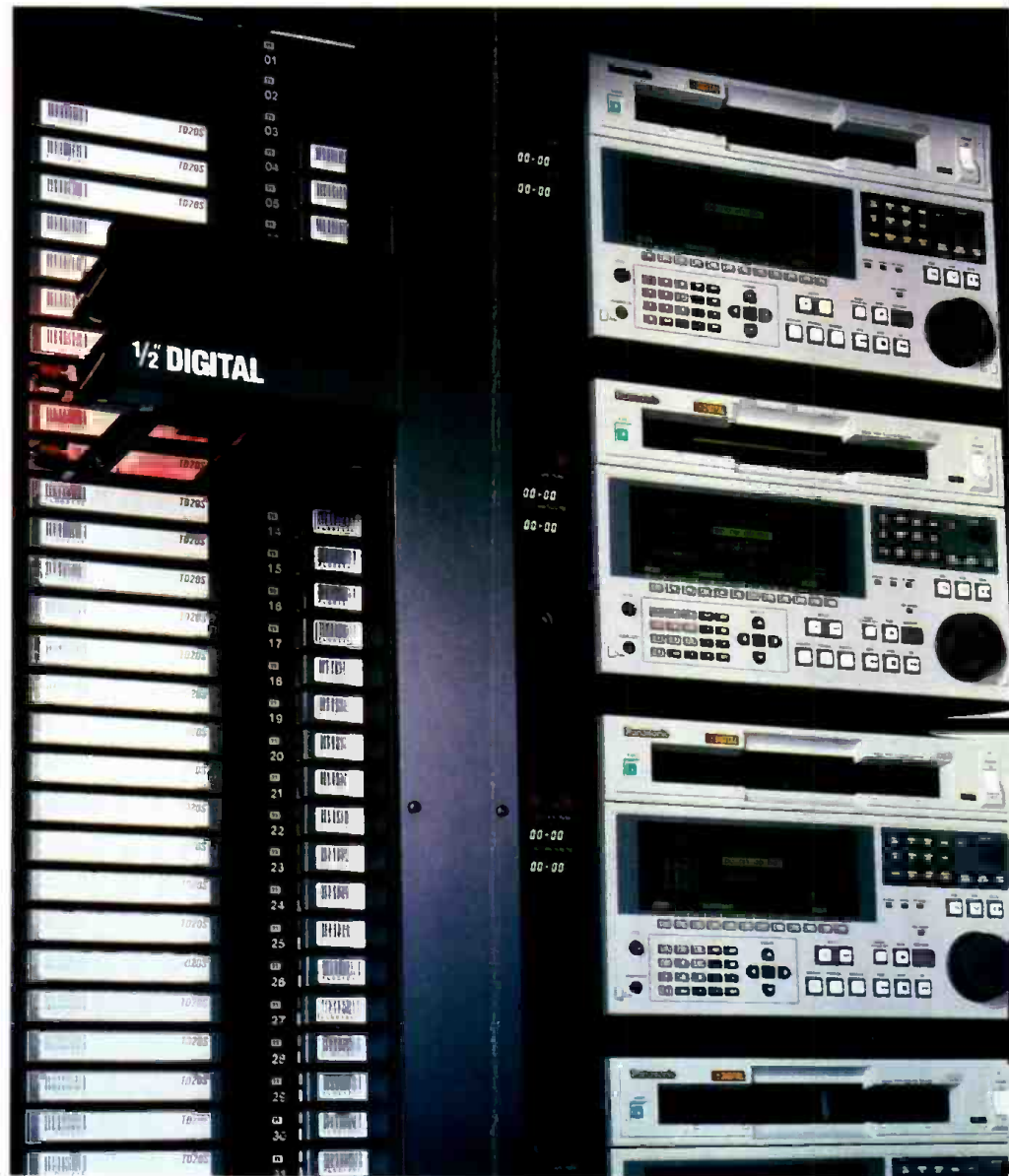
Panasonic's M.A.R.C. now has:



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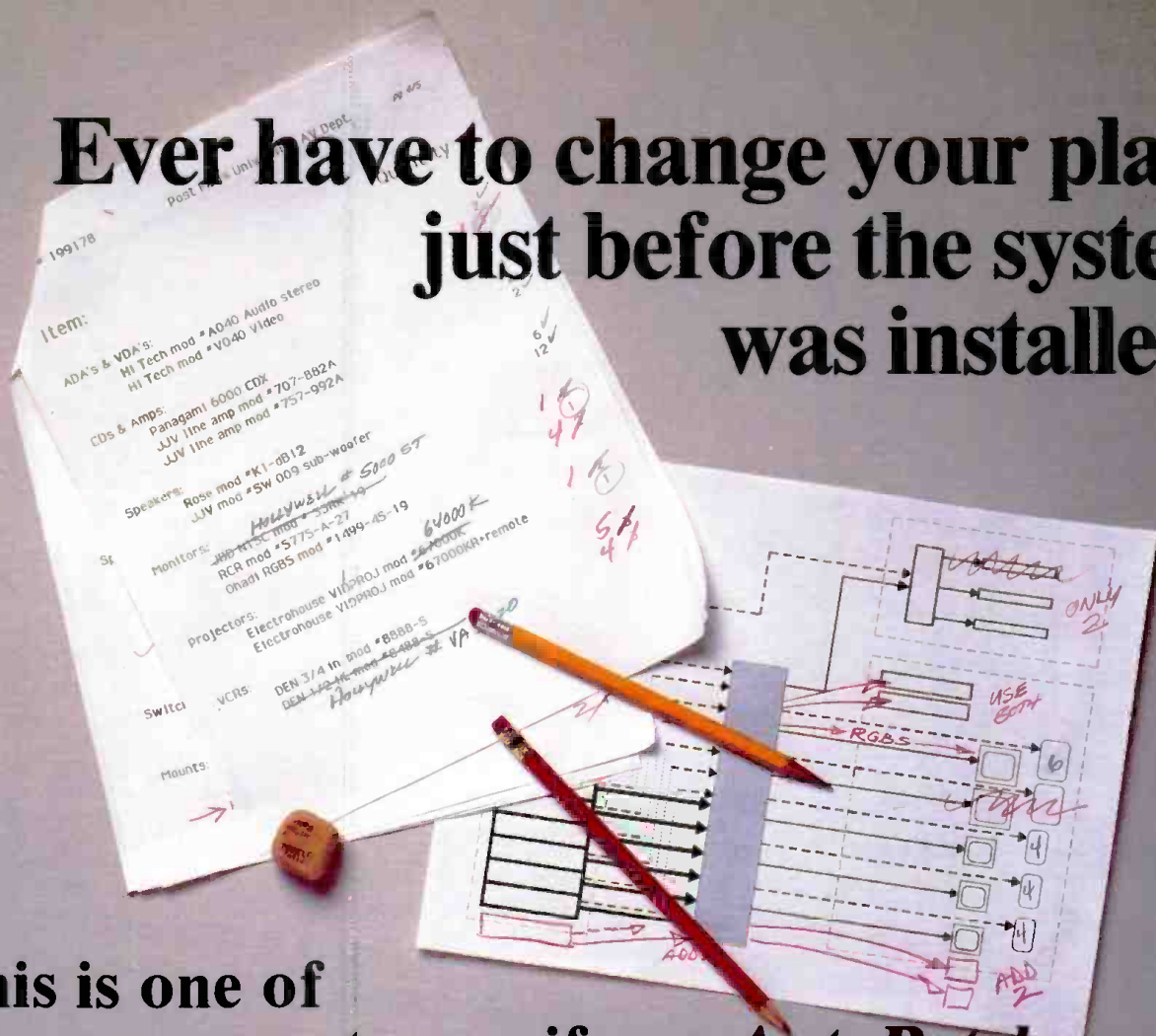
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...because our 4X and 4YDM series provide inputs and outputs in increments of only *four* instead of the usual eight, ten, or sixteen. So adding or dropping a few of either is both easy and economical - before or after installation.

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Suggested list price* examples:

4x4	Mono audio	\$1054
8x4	Stereo audio	\$1541
4x16	Video	\$2165
12x8	Video + mono	\$4286

*4X series: w/o control panel; subject to change.



4XDM Single-Cage models (with both audio and video) are available as 4x4, 4x8, 8x4, and 8x8 matrices at even lower prices. Standard 4XDM models are available with up to 3 signal levels providing over 250 configurations from 4x4 through 16x48. 4XDM optional control panel face illustrated



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Video Products

Color Television Cameras

Manufacturer	Ampex			BTS			Hitachi Denshi	
Model	CVC-50 (-5)	CVC-7(-70)	KCH 1000 ¹	LDK 9	LDK 90 (900)	LDK 91 ² (910)	SK-F2 (-F3) ³	SK-F200 (-300) ⁴
Composite output	Yes	Yes	Any HDTV	Yes N P	N P S (N P)	Yes N P	Yes	Yes
RGB output	Yes (No)	No	Yes	Yes	Yes	Yes	Yes	Yes
Y/R-Y/R-Y output	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
S-VHS/Y-C output	No	No	No	No	No	No	Option	No
Direct VCR cable	Yes	Yes	No	...	Yes (...)	Yes	Yes	No
Cable: coax triax FO	-50 only	C/T/FO	Triax	Triax	... (Triax)	Triax	C/T	Triax
Multicore cable	-50 only	Yes	No	Yes	No (Yes)	Yes	Yes	Yes
Docking VCR	Betacam	Yes	No	No	Yes (No)	Yes	Yes	No
Intercom audio	-50 only	Yes	Yes	Yes	Yes	Yes	...	Yes
Program audio	Yes	Yes	2-ch	Yes	Yes	Yes	Yes	Yes
Return video circuit	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lens correction memory	No	No	Yes	Yes	...	...	...	...
Color balance memories	Yes	Yes	Scenes	Yes	Yes	Yes	32 scenes	Yes
ND, color filters	4C-2N	4C-2N	4-position	8-position	(4-position)	(4-position)	2N-2C	4N-5C
For ENG EFP Studio OB	ENG EFP	ENG EFP	HDTV	Studio	E & (F/S)	E & (F/S)	ENG/EFP	OB
Pickup size type	FIT CCD	2/3" IT (FIT)	30mm PbO	3 FT 1/2" CCD	3 FT CCD 1/2"	2/3" CCD 1/2"	2/3" IT (FIT)	2/3" IT (FIT)
CCD array size type	510x492	768x493	or 24mm SAT	806x504	610x492 (2/3")	806x504	400k pixel	400k pixel
Standard sensitivity	2000 I/5.6	2000; 5.6	800; 4 PbO	2000; 4.0	1750; 4.0	1750; 4.0 (2000)	2000; 5.6	2000; I/5.6
Max sensitivity lux; f/ +dB	15; 1.4; +18	15; 1.4; +18	70; 2; +9	32; 1.4; 18	27(54); 1.4; 12	13(15); 1.4; +18	15; 1.4; +18	17; 1.; +18
S/N ratio	60dB (58)	62dB NTSC	...	62dB	58dB	62dB	60dB (62dB)	62dB
Limiting resolution	550 TVL	700 lines	1200 lines	>700	>650 lines	>700 lines	650 (700)	700
Electronic shutter speeds	7 on -50	6 to 1/2000S	No	Yes	2	2	6 to 1/2000	6
Registration error %	0.05%	0.005%	0.02%	0.05%	0.05%	0.05%	0.05% all zones	<0.1%
Highlight compensation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Color correction matrix	Option	Option	Yes	Yes	... (Yes)	... (Yes)	Option	Yes
Camera control unit	Option	Option	Yes	Yes	Yes	Yes	Option	Yes
Multi-camera panel	...	...	Yes	Yes	... (Yes)	... (Yes)	Option	Yes
Operating power	10.5-17V	10.5-17V	350W	0W	11W (110W)	11W (170W)	10.5-17V 14W	110VA
Camera head weight lbs	7.5 lb	7.5 lb	72.6	46.2	7.5 (< 40)	7.5 (< 40)	7.5 lb	55 lb
Reader Service No	301	302	303	304	305	306	307	308

¹ Software adjustable to all current HDTV proposals. ² LDK-391 Camcorder Betacam SP format; +24dB gain opt. ³ -F3S uses high sensitivity FIT CCD. ⁴ -300S high sensitivity FIT; -350S 450k pixel

Manufacturer	Hitachi Denshi			Ikegami				
Model	SK-F700/710	SK-F750(-760) ⁵	Z-One-A	EC-1125	HC-200/230 240 ⁶	HK-323	HK-327	HK-353 ⁷
Composite output	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
RGB output	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y/R-Y/R-Y output	Option	Option	Yes	Y C _u C _w	Yes	No	Yes	Yes
S-VHS/Y-C output	Option	...	Yes	No	Yes	No	No	Option
Direct VCR cable	Yes	...	Yes	No	Yes	No	No	No
Cable: coax triax FO	Triax	Yes	...	No	No	C/T/FO	C/T	C/T/FO
Multicore cable	Yes	Yes	Yes	2-core	Yes	Yes	Yes	Yes
Docking VCR	No	No	Yes	No	Yes	No	No	No
Intercom audio	Yes	Yes	Yes	*	Yes	Yes	Yes	Yes
Program audio	Yes	Yes	Yes	*	Yes	Yes	Yes	Yes
Return video circuit	Yes	Yes	...	*	Yes	Yes	Yes	Yes
Lens correction memory	...	...	...	*	No	Four	...	No
Color balance memories	32 data files	32 scenes	Yes	Yes	2	One	Yes	Yes
ND, color filters	4N-3C	4N-4C	1N-3C	3C-3N	3C 1N	4C-4N (3C-3N)	4C 4N	4N 4C
For ENG EFP Studio OB	OB-S	Studio/EFP	ENG/EFP	E. S	E. F. S	Studio/EFP	Studio/EFP	Studio
Pickup size type	2/3" FIT CCD	2/3" FIT CCD	3 2/3" CCD	PbO 1 1/4"	IL/IL/FIT 1/2"	1" PbO DG	30mm M-S PbO	IT 2/3"
CCD array size type	400k pixel	450k pixel	754x485	HDTV	250k/360k/400k	...	...	400k pix
Standard sensitivity	2000; 5.6	2000; 5.6	2000; 5.6	2000; 5.6	2000; 5/4.5/5	2000; 5.6	1500; 5.6	2000; 5.6
Max sensitivity lux; f/ +dB	15; 1.4; +21	15; 1.4; +18	23; 1.7; +18	...	20/24/20; 1.4; 18	12	94; 1.4; 0dB	125; 1.4; 0dB
S/N ratio	60dB/N; 57dB/P	62dB	60dB	60dB	58/60/60	59	59dB	62dB
Limiting resolution	700 TVL	800 TVL	750	800	570 600/700	700	800;	700H 400V
Electronic shutter speeds	None	6 to 1/2000	5 to 1/2000	No	3/3/6	No	No	Variable
Registration error %	0.05% all zones	0.05% all zones	0.05%	<0.03/<0.045	0.05%	0.05/1/1.2	0.05%	0.05%
Highlight compensation	Yes	Yes	Yes	*	Yes	Yes	Yes	Yes
Color correction matrix	Yes	Yes	No	...	No	Yes	Yes	Yes
Camera control unit	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Multi-camera panel	Yes	Yes	No	...	No	Yes	Yes	Yes
Operating power	300VA	300VA	12Vdc 11W	230VA	12V 11.5W	230VA	360VA	130VA
Camera head weight lbs	66	66	7.7 (9.2)	33	7.1/5.3/5.3	57	79.2	55
Reader Service No	309	310	311	312	313	314	315	316

⁵ -600/-610 use 400k pixel IT CCDs. ⁶ Variations based on CCD types. ⁷ Optical axis of prism adjusts to center lens on CCDs.

Manufacturer	Ikegami						JVC Company	
Model	HK-355 (355P) ⁶	HL-1125 (HC-2000)	HL-55A ⁹ (-53)	HL-57 (-V57) ¹⁰	HL-7M Owl ¹¹	LK-33	GY-X1 TCAU	KY-17U
Composite output	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
RGB output	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Y/R-Y/B-Y output	Opt	Y/Pg/Pr	Yes	Yes	Yes	...	No	Yes
S-VHS/Y-C output	No	No	No	No	...	...	Yes	Yes
Direct VCR cable	Opt	No	Yes	Yes	Yes	No	No	Yes
Cable: coax/triax/FO	C/T/FO	Yes (No)	Coax/triax	C/T	C/T	...	Coax	...
Multicore cable	Yes	2-core	Yes	Yes	Yes	Yes	No	26-core
Docking VCR	No (Yes)	No	Yes	Yes	Yes	No	S-VHS-C	Adapter
Intercom audio	Yes	...	Yes	Yes	...	No	...	Yes
Program audio	Yes	...	Yes	Yes	Yes	No	Yes	Yes
Return video circuit	Yes	Yes	Yes	Yes	Yes	•	No	Yes
Lens correction memory	Yes	...	No	...	No	•	IC Card memory	No
Color balance memories	Yes	Yes	2	2	2	2	...	...
ND, color filters	4C-4N (3C-3N)	3C-1N	2N-4C	2N-4C	1N-3C	2C-1N	1N-3C	1N-3C
For ENG EFP Studio OB	Stu EFP OB	Portable	E F S	E, F, S	Low light	EFP 3D	ENG/EFP	ENG/EFP
Pickup size/type	FIT CCD $\frac{2}{3}$ "	Harpicon $\frac{2}{3}$ "	FIT(IT) $\frac{2}{3}$ "	FIT $\frac{2}{3}$ "	FIT $\frac{2}{3}$ "	FIT $\frac{1}{2}$ "	$\frac{1}{2}$ " IL CCD	$\frac{1}{2}$ " IT CCD
CCD array size/type	450k (400k)	...	400k pix	400k pix	400k pix	400k	330k pixel Microlens	360k pixels
Standard sensitivity	2000; 5.6	200; 4(1000; 2.8)	2000; 6.2	2000; 6.2	150; 5.6	2000; 5.0	2000 1/5	2000 1/4
Max sensitivity lux; f/ +dB	125; 1.4; 12	...	13; 1.4; +24	3; 1.4; 30	0.02; ...; +18	25; 1.4; 18	20; 1.4; +18	32; 1.4; +18
S/N ratio	62dB	45dB	62dB	62dB	5dB	60dB	59dB	59dB
Limiting resolution	800 (700) 400V	800	700H 400V	750H/400V	30H	700	600	640 Lum
Electronic shutter speeds	Variable	No	6	6	5	6	4	3
Registration error %	0.02% (0.03)	0.05/0.1	0.05%	0.05%	±0.5%	0.05%	0.05%	0.05%
Highlight compensation	Yes	...	Yes	Yes	Yes	Yes	...	...
Color correction matrix	Yes	...	Yes	Yes	Yes	No	...	No
Camera control unit	Yes	... (Yes)	Yes	Yes	Yes	...	No	No
Multi-camera panel	Yes	... (Yes)	Yes	Yes	...	...	No	No
Operating power	130VA (26W)	110-220V	11-16V	11-16V; 16.5W	12V 15W	12V; 29W	12Vdc 25W	12Vdc 15W
Camera head weight lbs	55 (13.2)	14.3 (14)	6	6	9	9.4	11 lb	6 lb
Reader Service No	317	318	319	320	321	322	323	324

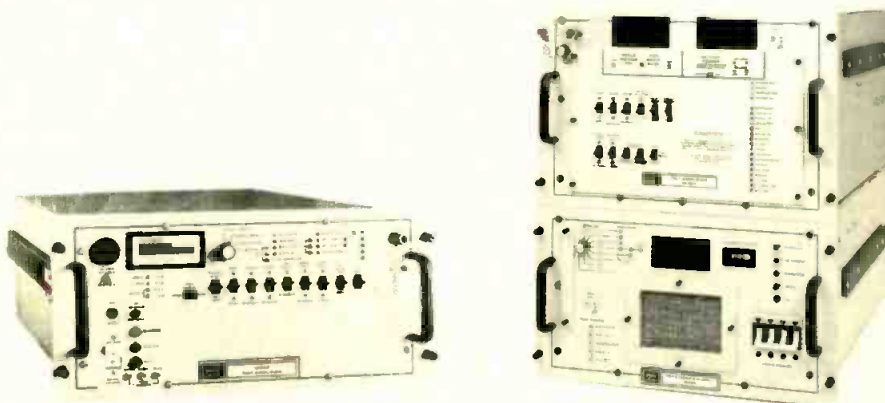
⁶ 355P portable. ⁹ HL-55/-V55 camcorders with Betacam SP recorder. ¹⁰ 10-bit digital processing. ¹¹ Proximity Image Intensifier/Micro-Channel Plate

Manufacturer	JVC Company		Panasonic Broadcast			Panasonic CSC		Sony
Model	KY-25U	KY-35U	AK 400	AK 450	AQ-20 (-10)	WV-F250	WV-F300 (-F200)	BVP-370 (270)
Composite output	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RGB output	Yes	Yes	Yes	Yes	Yes	Yes	...	CCU
Y/R-Y/B-Y output	Yes	Yes	Yes	Yes	Yes	Yes	...	CCU
S-VHS/Y-C output	Yes	Yes	No	No	No	Yes	Yes	No
Direct VCR cable	Yes	Yes	Option	Option	Yes	Yes	Yes	Option
Cable: coax/triax/FO	Coax	...	Coax/triax	Coax/triax	C/T/FO	Coax	Coax	Triax
Multicore cable	Yes	Yes	Yes	Yes	Yes	Yes	32-pin	...
Docking VCR	Adapter	Adapter	AU 400	AU 400	AU 400	Yes	Option	No
Intercom audio	Yes	Yes	...	...	...	Yes	Yes	Yes
Program audio	Yes	Yes	Yes	Yes	Yes	Yes	Yes	370
Return video circuit	Yes	...	Yes	...	[Digital	Yes	Yes	Yes
Lens correction memory	No	No	...	...	signal	...	No	Yes
Color balance memories	...	...	...	...	...	2	2	...
ND, color filters	1N-3C	2N-4C	3N 4C	3N 4C	4N-4C (2N-2C)	3C:1ND	3C:1N	4N 3C
Application ENG EFP Studio OB	ENG/EFP	Studio, remote	E F S C	E F S C	E F S C	E/M/S	E/M/S	S F
Pickup size/type	3 $\frac{2}{3}$ " IT CCD	$\frac{2}{3}$ " IT CCD	FIT $\frac{2}{3}$ "	FIT $\frac{2}{3}$ "	FIT $\frac{2}{3}$ "	3 FIT CCD $\frac{1}{2}$ "	3 IT CCD $\frac{1}{2}$ "	FIT (IT) $\frac{2}{3}$ "
CCD array size/type	380k pixels	768x482	574x494	838x485	768x499 (574x)	768x495	711x458 (510x492)	380k
Standard sensitivity	2000; 5.6	2000 1/7	2000; 5.6	2000; 5.6	2000; 5.6	2000 1/4	2000 1/5.6	2000; 5.6
Max sensitivity lux; f/ +dB	23; 1.7; +18	16 f/1.7 +18	20; 1.6; +18	20; 1.6; +18	20; 1.6; +18	30; 1.4; +18	2; 1.7; +18	15; 1.4; +18
S/N ratio	60dB	62dB	60dB	60dB	60dB	60dB	60dB (56dB)	62dB
Limiting resolution	700	700	650	800	750 (630)	700	700 (600)	700
Electronic shutter speeds	3 to $\frac{1}{1000}$	5	4	5	6	6	3 (...)	6
Registration error %	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%
Highlight compensation	...	...	Yes	Yes	Yes	Yes	Yes	Yes
Color correction matrix	No	Matrix mask	Yes	Yes	Yes	Mask	...	Option
Camera control unit	No	No	Yes	Yes	Yes	...	No	Yes
Multi-camera panel	No	No	...	...	...	No	No	Option
Operating power	12Vdc 1W	12Vdc 15W	10.5 17V	10.5 17V	12V	12V AC adaptor	12V	120V 350W
Camera head weight lbs	6.6	5 lb	7.5	7.5	6.5	5.5 lbs	7.7 lbs	44
Reader Service No	325	326	327	328	329	330	331	332

12



Reasons To Specify MCL C-Band, Ku-Band and DBS High Power TWT Amplifier Systems.



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Manufacturer	Sony		Thomson Broadcast				
Model	BVP-7015 ¹²	DXC-537	TTV 1250, Proscan ³	Proscan Light ¹³	TTV1542	TTV1645 Sportcam	TTV1647.S ¹⁴
Composite output	Yes	Yes	No	No	Yes	Yes ...	Yes
RGB output	Yes	CCU	Yes	Yes	Yes	Yes	Yes
Y/R-Y/B-Y output	Yes	Yes	Yes	Yes	Yes	Yes	Yes
S-VHS/Y-C output	No	Yes	No	No	No	No	...
Direct VCR cable	Yes	Yes	Triax	...	No	...	Yes
Cable: coax triax/FO	Tnax	...	No	...	Tnax	T	Triax
Multicore cable	Yes	Yes	200m	200m	Yes	No	26-core
Docking VCR	Yes	Adapter	No	No	No	No	Beta SP
Intercom audio	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Program audio	Yes	Yes	...	Yes	Yes	Yes	Yes
Return video circuit	...	...	Yes	Yes	Yes	Yes	Yes
Lens correction memory	No	No	Yes	Yes	Yes	...	...
Color balance memories	...	...	...	...	...	...	10
ND, color filters	2N 4C	2N 2C	6 pos.	6-pos./Effects	4N/4 effects	4 pos	4 pos
For ENG EFP Studio OB	E F	ENG EFP	HDTV(1)	HDTV	S F	S F	E F S
Pickup size type	3 FIT 2/3"	CCD IT 2/3"	PbO or SAT 2/3"	SAT 2/3"	2/3" IT (FIT)	IT 2/3"	2/3" IT (FIT)
CCD array size type	768x494	380k HyperHad	...	...	768 (754) px/line	440k	768 (838) px/line
Standard sensitivity	2000; 8.0	2000; 8.0	2200; 4.3 S	2200 f/4	1000; 4	1250; 4	1000 f/4(5.6)
Max sensitivity lux; f/ +dB	7.5; 1.4 +18	7.5; 1.4; +18	50; 1.4; +12	70; 1.4; +12	15; 1.4; +1dB	10; 1.4; +21	14; 1.4; +21
S/N ratio	62dB	62dB	43dB/47dB	43dB/47dB	61dB	62dB	62dB
Limiting resolution	700	700	... 20% 20MHz	40% Gr 13.7MHz	700.60%	700 TVL	700
Electronic shutter speeds	6	5	No	No	1/60-1/2000	5	1/60-1/2000
Registration error %	0.05%	0.05%	0.05%; 0.1%	0.05%; 0.1%	0.05%; 0.1%	<0.05%	0.05%
Highlight compensation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Color correction matrix	Yes	No	Option	Option	Yes	Opt	Option
Camera control unit	Option	Option	Option	Option	Yes	Yes	Option
Multi-camera panel	Option	No	Option	Option	Yes	Opt	Option
Operating power	12Vdc 13W	12Vdc 9.2W	110-220V	110/220V 150W	110-220Vac	110-220V	16.5W
Camera head weight lbs	7.5	7.65 lb	2kg	5.5kg	2kg	26.5kg	3.5kg
Reader Service No	333	334	335	336	337	338	339

¹² T7/-70 have removable optical heads; HyperHad CCDs for low light-level operation. ¹³ 1250:50, 1050:60Interlaced; 625:50.525:60 progressive. ¹⁴ ST IT; STX IT microlens; SF FIT; SFX FIT microlens.

TV Camera Zoom Lens Systems

Code letters for applications, E indicates ENG, F indicates EFP, O indicates Outside Broadcasting and S indicates Studio.

Zoom Lens Systems, 1/2"

Manufacturer	Angenieux				Canon USA	
Model	14x6	14x7	15x5 ²	20x7 ³	PH14x6.6B IRS	PH20xSuper
Application	E F/O	E F/O	S F/O	S F/O	E/F	Studio
Zoom range (mm)	6-84	7-98	5-75	7-140	6.6-92.4	6-120
Aperture (W-T)	1.4-1.6	1.4-1.6	1.4-1.7	1.2	1.4-1.55	1.4-1.5
MOD distance	31"	31"	19.5"	0"	31.5"	23.6"
MOD area (HxV)	61x46mm	52x39	35.4x46.8	110x83	712x534	813x610
H angle (W-T)	58°-4.5°	52°-4°	68.5-5°	51.5°-2.75°	51.7°-4°	56.1°-3.06°
Back focus (mm)	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable
Extender(s)	2x	0.64x ¹	2x; 0.8	2x	2x	2x
Macro focus	Yes	to 0" MOD	...	to 0" MOD	Yes	(at 3.74" MOD)
Diascope	No	No	...	3-lamp	No	No
Operating wt	4.2 lbs	3.1 lbs	23 lbs	39 lbs	2.87 lbs	35.2 lbs
Reader Service No	341	342	343	344	345	346

¹ Also wide-angle, tele, retrozoom models. ² 15x6.5 - 6.5-97.5mm f/1.6-2.3 for 2/3" format. ³ Optional integral shutter; other extenders: 1.2x, 1.4x, 1.6x, 1.8x.

Manufacturer	Canon USA	Fujinon				Schneider
Model	PH55xSuper	S14x6.4ERM ⁴	S18x6.4ERM/ERD	S24x8.8ERD	S8.5x4.2ERM/ERD	TV59 Apo-Varon
Application	EFP	E/F	E/F	E/F	E/F	E/F
Zoom range (mm)	7-385	6.4-90	6.4-115	8.8-211	4.2-36	6.5-91 (HM14x)
Aperture (W-T)	1.4-2.2	1.4-1.5	1.4-1.7	1.5-2.1	1.4-1.5	1.4-3
MOD distance	7.2'	29.1"	0.9m	1.8m	11"	31.5"
MOD area (HxV)	178.8x134.1	75.1x56.3	876x6571	1231.8x923.9mm	46.9x35.1	53x40
H angle (W-T)	49.1°-0.95°	53°-4°	53°08'-3°11'	39°58'-10°44'	74°-10°	53°-4°
Back focus (mm)	Adjustable	...	...	...	...	35.5
Aperture (F,B)	...	...	...	...	...	70.5-30.5
Extender(s)	2x; 2.6x	2x	1.7x	2x	1.7x	2x
Macro focus	at 15.7" MOD	Yes	Yes	Yes	Yes	Yes
Diascope	No	Yes	...	...	Yes	...
Operating wt	39 lbs	2.81 lbs	4 lbs	4 lbs	4 lbs	3.95 lbs
Reader Service No	347	348	349	350	351	352

⁴ Similar lens for 2/3" is A14x8.5ERM/ERD. RM/RD versions do not include extender.

Zoom Lens Systems, 2/3"

Manufacturer	Angenieux					Canon USA			
Model	14x8	14x9	15x6.5	20x8.5 ⁵	40x9.5	J13x9BIRS-IIA	J14ax8.5BIRS	J15x9.5BIRS	J18x8.5BIRS
Application	E/F/O	E/F/O	Studio OB	S.F.O	S.F.O	E/F	ENG EFP	E/F	E/F
Zoom range (mm)	8-112	9-126	6.5-97.5	8.5-170	9.5-380	9-117	8.5-119	9.5-143	8.5-153
Aperture (W-T)	1.6-2	1.6-2	1.6-2.3	1.3	1.3-2.1	1.6-1.9	1.7-2.0	1.8-2.1	1.7-2.3
MOD distance	31"	31"	0.5m	0"	0"	29.1"	31.5"	34.6"	35"
MOD area (HxV)	61x46	52x39	35.4x46.8	121.9x91.7	55x41.5 ⁷	...	755x566	86.2x64.7	86.2x64.6
H angle (W-T)	58°-4.5°	52°-4°	68.5°-5°	55°-3°	49.75°-1.33°	52.1°-4.3°	54.7°-4.24°	49.7°-3.5°	54.7°-3.3°
Back focus (mm)	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Var	Man adj	Adjustable	Adjustable
Aperture (F,B)	...	...	...	...	...	72.6; 31.7	...	...	82.8
Extender(s)	2x; 0.6x	2x; 0.8x ⁵	2x	2x	2.15x; 2.7x	2x	2x	2x	2x
Macro focus	to 0" MOD	to 0" MOD	...	to 0" MOD	to 0" MOD	Yes	Yes	Yes	Yes
Diascope	No	No	No	3-lamp	3-lamp	Option	No	No	Option
Operating wt	3.9 lbs	3.1 lbs	23 lbs	39 lbs	43 lbs	2.84 lbs	2.82 lbs	3.5 lbs	3.5 lbs
Reader Service No	353	354	355	356	357	358	359	360	361

⁵ Wide angle attachment; 1.55x tele adapter option. ⁶ Optional integral shutter, other extenders include: 1.2x, 1.4x, 1.6x, 1.8x. ⁷ Based on MOD of 8.2"; μ P control system.

Manufacturer	Canon USA					Fujinon			
Model	J20xSuper	J50xSuper	J55xSuper	A14x8.5ERM ⁸	A15x8.5ESM ⁹	A16x9.5ERM ¹⁰	A20x7ESM ¹¹	A34x20.5ESM	A44x9.5ESM ¹²
Application	Studio	EFP	EFP	E/F	EFP	E/F	EFP	EFP	EFP
Zoom range (mm)	7.5-150	9.5-475	9-500	8.5-119	8-120	9.5-152	7-140	20.5-700	9.5-420
Aperture (W-T)	1.5-1.9	1.4-2.7	1.4-2.8	1.7-2.0	1.5-1.7	1.8-2.2	1.4-1.6	2.4-3.5	1.4-2.5
MOD distance	21.8"	24"	8.2"	31.5"	27.5"	37.4"	29.5"	16.4"	7.2"
MOD area (HxV)	89x67	180x135cm	190x143	777x583	915x686	817x613	1166x874	2000x1500	1863x1397
H angle (W-T)	61.9°-3.3°	49.7°-1.1°	52.1°-1°	54°-4°	57°-4°	49°-3°	64°-3°	24°-0.7°	49°-1°
Back focus (mm)	Adjustable	Var; man adj	...	...	...	...	...	...	...
Extender(s)	2x; 1.5x	2x	2x; 1.5x	2x	2x	2x/1x	2x/1x	2x	2x
Macro focus	Yes	...	No	Yes	No	Yes	No	No	No
Diascope	Option	Option	Option	Yes	Yes	Yes	Yes	Yes	Yes
Operating wt	35.2 lbs	37.5 lbs	37.5 lbs	2.8 lbs	28.6 lbs	3.2 lbs	33 lbs	42.9 lbs	31.9 lbs
Reader Service No	362	363	364	365	366	367	368	369	370

⁸ Similar unit for 1/2" is S14x6.4ERM/ERD. ⁹ Similar unit for 1/2" is S15x6ESM. ¹⁰ Similar unit for 1/2" is S16x7ERM/RM. ¹¹ Similar unit for 1/2" is S20x5.4ESM. ¹² Similar unit for 1/2" is S44x7.3ESM.



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Circle (34) on Reply Card

Manufacturer	Fujinon	Nikon				Schneider		Schweim	Tamron
Model	A55x9.5ESM ¹³	S13x9B	S15x8.5B	S19x8B	S9x5.5B	TV56 Apo-Varon	TV80	Gyrozoom FP-1	466H (14x9B)
Application	EFP	E/F	E/F	E/F	E/F	E/F	O/S	E/F/O/S	ENG
Zoom range (mm)	9.5-525	9-117	8.5-127.5	8-152	5.5-49.5	9-126 (HM14x)	8.5-150	60-300	9-126
Aperture (W-T)	1.4-2.9	1.7-2.0	1.7-2.2	1.7-2.2	1.7-1.9	1.7-2.1	1.4-2	6.2	1.6-1.9
MOD distance	< 1'	31.5"	31.5"	35.4"	0.3m	31.5"	27.5"	10'	39.37"
MOD area (HxV)	2028x1521	72.2x54.2	76.4x57.5	89.3x67.4	60x45	54x41	53x40	...	...
H angle (W-T)	49°-0.97'	52.1°-4.3'	54.7°-4.0'	57.6°-3.3'	77.3°-10.2'	52°-4'	55.5°-3.4'	8.38°-1.68°	52°6'-4'
Back focus (mm)	...	Adjustable	Adjustable	Adjustable	Adjustable	42.5-47.6	42.4	...	38.98
Aperture (F, B)	...	...	...	...	...	72-29.5	133-33	...	76.5-24.8
Extender(s)	2x	2x	2x	2x	1.7	2x; W.A.	2x	...	None
Macro focus	No	Yes	Yes	Yes	Yes	...	No	No	Yes
Diascope	Yes	No	No	No	No	No	...	No	...
Operating wt	36.9 lbs	2.42 lbs	2.75 lbs	2.75 lbs	4.25 lbs	3.96 lbs	33 lbs	7.4 lbs	3.33 lbs
Reader Service No	371	372	373	374	375	376	377	378	379

¹³ Similar unit for 1/2" is S55x7.3ESM.

Zoom Lens Systems, 1"

Manufacturer	Angenieux		Canon USA			Fujinon		
Model	15x12 ¹⁴	40x14	PV14x12.5BIE	PV40x13.5BIE	PV50x13.5BIE	HR11x11SD	HR14x12.5ES	HR22x18ES
Application	HDTV	S/F/O	Studio	EFP	EFP	HDTV	HDTV	HDTV
Zoom range (mm)	12-180	14-560	12.5-175	13.5-540	13.5-675	11-121	12.5-175	18-400
Aperture (W-T)	1.5-1.8	1.9-3	1.6	1.7-2.8	2.0-3.7	1.8-2.0	1.6-1.7	1.8-2.7
MOD distance	0"	0"	27.5"	8.2'	8.2'	3.9'	4.6'	18'
MOD area (HxV)	60x34.5	55x41.5	960x125	211x158	213x160	1179x663	1058.6x595.5	3644x2050
H angle (W-T)	60.25°-4.5'	49.75°-1.33'	54.2°-4.3'	50.7°-1.4'	50.7°-1.1'	64°-6'	58°-4'	42°-2'
Back focus (mm)	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	...	...	...
Extender(s)	1.4x; 2x	2.15x; 2.7x	2x; 1.5x	2x; 1.5x	2x	...	2x	2x
Macro focus	...	to 0" MOD	...	...	at 19.7" MOD	No	No	No
Diascope	3-lamp	3-lamp	Option	Option	Option	Option	Option	Yes
Operating wt	54 lbs	43 lbs	51 lbs	68 lbs	46 lbs	18.7 lbs	45.1 lbs	57.2 lbs
Reader Service No	380	381	382	383	384	385	386	387

¹⁴ Similar unit is 6x10 10-60mm zoom; f/1.5 with 16" MOD.

Manufacturer	Fujinon					Nikon	
Model	HR6x12.5SD	R17x12.5ESM	R20x10.5ESM	R34x29.5ESM	R44x13.5ESM	R10x12AED-HD2	R5.5x12.5AD-HD
Zoom range (mm)	12.5-75	12.5-215	10.5-210	29.5-1000	13.5-600	12-120	12.5-70
Aperture (W-T)	1.5	1.6-2.0	1.6-2.1	3.5-5.0	1.8-3.0	1.8-2.2	1.5
MOD distance	3.9'	29.5"	29.5"	18.7"	8.2'	51.6"	1.21m
MOD area (HxV)	1013x570	987x174	1168x876	2021x1516	2181x1636	...	...
H angle (W-T)	58°-10'	54°-3'	62°-3'	24°-0.6'	50°-1'	60°19'-6°39'	58.3°-11.4'
Extender(s)	...	2x; 1.5x	2x; 1.5x	2x	2x	2x	No
Macro focus	No	No	No	No	No	Yes	Yes
Diascope	Option	Yes	Yes	Yes	Yes	...	...
Operating wt	15 lbs	42.9 lbs	45.1 lbs	45.1 lbs	55 lbs	16.5 lbs	20 lbs
Reader Service No	388	389	390	391	392	393	394

Zoom Lens Systems, 1 1/4"

Manufacturer	Angenieux	Canon USA			Fujinon			
Model	15x16	P14x16.5BIE	P18x15BIE	P40x18BIE	HP5x16SD	P17x16.5ESM	P20x14ESM	P44x18ESM
Application	HDTV	Studio	F/S	Field	HDTV	F/S/O Special	F/S/O Special	F/S/O Special
Zoom range (mm)	16-240	16.5-235	15-270	18-720	16-80	16.5-280	14-280	18-800
Aperture (W-T)	2-2.4	2.1	2.1-2.7	2.3-3.7	1.4	2.1-2.7	2.1-2.8	2.4-4.0
MOD distance	0"	27.6"	23.6"	8.2'	3.9'	29.5"	29.5"	8.2'
MOD area (HxV)	60x34.5	965x724	922x692	211x158	1055x594	1000x750mm	1171x878	2181x1636
H angle (W-T)	60.25°-4.5'	54.8°-4.2'	60.4°-3.7'	50.7°	60°-13'	54°-3'	62°-3'	50°-1'
Back focus (mm)	Adjustable	Adjustable	Adjustable	Adjustable	...	...	...	...
Extender(s)	1.4x; 2x	2x; 1.5x	2x; 1.5x	2x; 1.5x	2x; 1.5x	2x; 1.5x	2x; 1.5x	2x; 1.5x
Diascope	3-lamp	Option	Option	Option	Yes	Yes	Yes	Yes
Operating wt	54 lbs	51 lbs	59 lbs	68 lbs	31.9 lbs	42.9 lbs	45.1 lbs	55 lbs
Reader Service No	395	396	397	398	399	400	401	402

Video Monitors

Manufacturer	ASACA ShibaSoku					
Model	CM 23 43 ¹	CM201/141(202 142) ²	CM30A6 65B6	CM321H/361H	CM99A	CMM 20-11(U)
Beam feedback CRT	...	Yes	Yes	Yes	...	...
Aperture correction	Yes	Yes	No	No	Yes	Yes
X-Y display output	No	No	RGB only	RGB only	No	Opt
Underscan/overscan	Yes	Yes	Under	Under	Yes	Yes
# composite inputs	3	1	None	None	2	3



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Circle (29) on Reply Card

Manufacturer	ASACA/ShibaSoku					
Model	CM 23/43 ¹	CM201/141(202/142) ²	CM30A6 65B6	CM321H/361H	CM99A	CMM 20-11(U)
RGB Inputs	Yes	Yes	2	2	Yes	Opt
S-VHS inputs	Yes	Y/C	No	No	No	Opt
Y/C _R C _B inputs	No	Yes	2	2	No	Opt
Audio amp/speaker	No	No	No	No	Yes	No
Application	Grade 2	Video	HDTV	HDTV	Grade 2	Grade 1
CRT diagonal (in.)	21 (15)	20 (14)	30 (26)	32 (36)	9	20 (14/26)
CRT type	In-line dot	In-line dot	Delta/shadow mask	Delta/shadow mask	In-line dot	Delta gun/dot
Dot/stripe pitch (mm)	0.39	0.4/.31	0.37 (.34)	0.34 (.5)	0.3	0.44
Resolution at center	550TVL	600TVL	525NS/1150/1050	525NS/1125/1050	400TVL	600TVL
Luminance bandwidth	7MHz	7MHz	±3 30MHz	±3 30MHz	7MHz	7MHz
Chrominance bandwidth	0.5MHz	0.6MHz	±3 30MHz	±3 30MHz	0.5MHz	to 4.4MHz
Demodulation axes	R-Y/B-Y	I&Q	[16.9 & 4:3	[16.9 & 4:3	No	I/Q
Decoder filter	Comb & notch	Comb & notch	[aspect ratios	[aspect ratios	Comb & notch	Comb & notch
Standards	NTSC/PAL	202/142	Autoselection	Autoselection	NTSC/PAL	N/P/S multi
μP auto-setup	...	No	Yes	Yes	No	No
Reader Service No	403	404	405	406	407	408

¹ Flat square CRT also available in 14" rack-mount CM44. ² CM 202/142 may include multiple decoders with auto standard selection.

Manufacturer	Barco			Electronic Visuals	Hitachi Denshi	Ikegami
Model	AVM series ³	CVS 2037 2051	CVS series ⁴	EV6351B ⁵	CM-150 (-210)	15 series ⁶
Beam feedback CRT	Yes	Yes	Yes	Yes	Yes	Yes
Aperture correction	Yes	Yes	Yes	...	...	Yes
X-Y display output	...	No	No	No	No	Yes
Underscan/overscan	Yes	Yes	Yes	Yes	Yes	Yes
# composite inputs	3	3	2	Yes	3	3
RGB inputs	Yes	Yes	Yes	Yes	Yes	Yes
S-VHS inputs	No	No	No	Yes	Yes	No
Y/C _R C _B inputs	Yes	Opt	Opt	Yes	...	Option
Audio amp/speaker	Amp	-ASP opt	-ASP opt	No	No	No
Application	Grade 1	Grade 1	Grade 1	Video	Video	Video
CRT diagonal (in.)	10-28	14 (20)	14 (20)	20	15 (21)	14, 20
CRT type	In-line slot	In-line dot	In-line dot	In-line dot	Dark-Tint	In-line dot
Dot/stripe pitch (mm)	0.31	0.31	0.31	0.43 (0.47)	0.57	0.31 (0.43)
Resolution at center	>500 15"	900TVL	900TVL	...	450 (500)	700
Luminance bandwidth	6MHz	6MHz	6MHz	8MHz	...	to 10MHz
Chrominance bandwidth	0.6MHz	0.6MHz	0.6MHz	...	...	0.6MHz
Demodulation axes	R-Y/B-Y	R-Y/B-Y	R-Y/B-Y	U/V	R-Y/B-Y	R-Y/B-Y
Decoder filter	Comb filter	Comb & notch	Comb & notch	Notch	Notch (NTSC)	Adaptive comb
Standards	NTSC	N/P/S	N/P/S	PAL	NTSC/PAL	NTSC
μP auto-setup	Option	Standard feature	Yes; setup opt	No	No	Yes
Reader Service No	409	410	411	412	413	414

³ Available with MMRC, SRC multiple, single monitor remote controller; full control of 48 monitors from one remote panel; on-screen menu and digital controls; interfaces for PAL, NTSC, PAL, D1, D2. ⁴ Multiple input cards allow added input capability including quad input, NTSC-4.43, PAL/M/N; D-1/D-2, CCIR 601 digital. ⁵ EV6351 Grade II; -B model Grade I; switchable aspect ratio shows 4:3 or 16:9 pictures. ⁶ TM14-15RH; TM20-15RH

Manufacturer	Ikegami			JVC Company		
Model	16 series ⁷	19 series ⁸	20 series ⁹	TM20-30RH	TM-1400SU ¹¹	VM-R190SU ¹²
Beam feedback CRT	Yes	Yes	Yes	Yes	Yes	Yes
Aperture correction	Yes	Yes	Yes	Yes	...	Yes
X-Y display output	No	Yes	Y-B-Y/R-Y opt	Y/R-Y-B-Y opt	No	No
Underscan/overscan	Under	Under	Under/over	Under/Over	Under	Yes
# composite inputs	Yes	Yes	3	3-input	2	2
RGB inputs	Yes	Yes	Yes	Yes	No	Yes
S-VHS inputs	Yes	No	(D-1/D-2 opt)	Yes	Yes	Yes
Y/C _R C _B inputs	No	Yes	Yes	Yes	No	Yes
Audio amp/speaker	No	No	No	No	Yes	No
Application	Video	Video	Video	Video	Video/data	Video/data
CRT diagonal (in.)	10, 14, 20	10, 14, 20	14 (20)	20	14 Full Square	19
CRT type	In-line slot	In-line dot	Shadow mask/dot	Shadow mask/dot	In-line dot	In-line dot
Dot/stripe pitch (mm)	0.41 (0.55)	0.31 (0.43)	0.31 (0.43)	0.28	0.499 stripe	0.4
Resolution at center	500	700	700	900	450	600
Luminance bandwidth	to 7MHz	60-10MHz	50-7MHz	to 7MHz	...	...
Chrominance bandwidth	to 3.58MHz	0.6MHz	3.58MHz	to 10MHz/RGB	...	...
Demodulation axes	R-Y/B-Y	R-Y/B-Y	R-Y/B-Y	I/Q	R-Y/B-Y	R-Y/B-Y
Decoder filter	Comb & notch	Comb & notch	Comb & notch	Notch & Comb ¹⁰	Comb	Comb
Standards	NTSC	NTSC	Multistandard	Multistandard	NTSC/Y/C358	NTSC/component
μP auto-setup	No	No	Digital control	Opt w/probe	No	No
Reader Service No	415	416	417	418	419	420

⁷ TM10-16R; TM14-16R; TM20-16R ⁸ TM10-19RH; TM14-19RH; TM20-19RH ⁹ TM14-20RH; TM20-20RH ¹⁰ Adaptive comb filter option by Faroudja Laboratories. ¹¹ TM-200SU 20", TM-91SU 9" have similar features and specifications. ¹² VM-R140SU 14" unit with similar characteristics and specifications.

Manufacturer	Melford Electronics	Mitsubishi Electric		Parasonic Broadcast ¹	Panasonic PCSC	
Model	DU5-20C	AM-3501R ¹³	SMR-2601R	AT-H series ¹⁴	BT-H-D/M ¹⁵	BT-S series ¹⁶
Beam feedback CRT	Yes	---	---	Yes	Yes	Yes
Aperture correction	---	Yes	Yes	10dB	Yes	Yes
X-Y display output	EBU phosphors	No	No	No	No	No
Underscan/overscan	Overscan	Yes	Yes	Yes	Yes	Yes
# composite inputs	2	3	3	3	2	2
RGB inputs	Yes	Yes	Yes	Yes	Yes	Yes
S-VHS inputs	No	Yes	Yes	Yes	Yes	BT-S901Y
Y/C _R C _B inputs	No	No	No	Yes	Yes	No
Audio amp/speaker	No	Yes	Yes	No	Yes	Yes
Application	Video; Data	Data; Mon/Rcvr	Data; Mon/Rcvr	Video	Video	Video
CRT diagonal (in.)	20	35	26"	13; 19	13; 19	19/13/9/7
CRT type	In-line dot	In-line dot	In-line dot	In-line dot	In-line dot	3-beam/OLF gun
Dot/strip pitch (mm)	0.4; 0.31	0.92 centers	---	0.31; 0.44	0.31	0.31; 0.44
Resolution at center	5.5MHz pattern	630 TVL max	---	650	750; 550	230-350
Luminance bandwidth	to 10MHz	8MHz	---	>7	>8	>7
Chrominance bandwidth	---	---	---	0.6/0.3	---	0.6
Demodulation axes	UV	---	---	I/Q	PrPb	I/Q
Decoder filter	Notch	---	---	Both	Both	Both
Standards	PAL; NTSC	NTSC	NTSC	N/P/S	NTSC	N/P/S
μP/auto-setup	No	---	---	Option	No	No
Reader Service No	421	422	423	424	425	426

¹³ AM-2751A 27", AM-3151A 31" have similar characteristics. ¹⁴ AT-H1900; AT-H1300; may use multiple decoders. ¹⁵ CompuFocus CRT w/ th overlapping field lens gun; BT-H1350 w/C-phosphor, 4-std auto selection; BT-H1350 C-phosphor BT-D1920 19" w/.55mm dot pitch; BT-M1310 13" w/.39mm pitch. ¹⁶ CompuFocus CRT w/overlapping field lens gun on 13"/19" models: BT-S1900, BT-S1300N, BT-S901Y, BT-S701/702/703N

Manufacturer	PESA	Sony				
Model	BM-4400 series	BVM-1310 (-15)	BVM-1910 (-15)	BVM-1912 (-1312)	BVM-8021 9021	PVM-2030/2530 ¹⁷
Beam feedback CRT	Yes	Yes	Yes	Yes	...	Yes
Aperture correction	±6dB	6dB	6dB	Yes	Yes	...
X-Y display output	No	Yes	Yes	Yes	No	No
Underscan/overscan	Yes	Yes	Yes	Yes	Yes	No
# composite inputs	2	Yes	Yes	2	2	Yes

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Circle (36) on Reply Card

Manufacturer	PESA	Sony				
Model	BM-4400 series	BVM-1310 (-15)	BVM-1910 (-15)	BVM-1912 (-1312)	BVM-8021/9021	PVM-2030 2530 ¹⁷
RGB Inputs	Yes	Yes	Yes	Yes	No	PC
S-VHS inputs	Yes	No	No	[4:2:2 opt]	No	Yes
Y/CaCb inputs	Yes	Yes	Yes	Yes	No	No
Audio amp/speaker	No	No	No	No	0.8W	Yes
Application	Video	Video/data	Video/data	Grade I	graphics	Grade II
CRT diagonal (in.)	14; 20	13"	19	19" (13")	8"	21 (27)
CRT type	Dot mask	Trinitron	Trinitron	Trinitron	Trinitron	Trinitron
Dot stripe pitch (mm)	0.31, 0.44	0.25	0.3 (0.4)	0.30mm	0.25	0.55 (0.73)
Resolution at center	>600, >700	700 (600)	900 (600)	900 TVL	400	560
Luminance bandwidth	6MHz	8MHz (6) NTSC	8MHz (6) NTSC	10MHz	5.5MHz	6MHz NTSC
Chrominance bandwidth	...	10MHz (6) RGB	10MHz (6) RGB	1.5MHz	...	10MHz RGB
Demodulation axes	UV	R-Y/B-Y	R-Y/B-Y	R-Y/B-Y	R-Y/B-Y	R-Y/B-Y
Decoder filter	Both	Comb & notch	Comb & notch	Comb filter	NTSC (PAL/SECAM)	Comb
Standards	NTSC or PAL	per decoder	per decoder	per decoder	Comb-filter	NTSC
Multiscan capability	No	No	No	No	No	...
Auto-setup	Option	BKM-2053 adapter	BKM-2056 adapter	Standard	No	No
Reader Service No	427	428	429	430	431	432

¹⁷ PVM-3230 32"; PVM-4300 43"; PVM-1910 19".

Manufacturer	Sony	Videotek				Vistek Electronics
Model	PVM-5310 (3x)	AVM-13sv (-19s)	RM-8 (-8PR) ¹⁸	Studio 13	VM-13 PRO	GM7100(7200) ¹⁹
Beam feedback CRT	Yes	No	No	No	No	...
Aperture correction	[Sized for]	Yes	No	No	No	No
X-Y display output	[3-across mounting]	No	No	No	No	No
Underscan overscan	No	Under	Opt	Yes	Yes	Yes (Opt)
# composite inputs	Yes	2	2	3	3	A/B
RGB inputs	No	No	No	No	No	Yes
S-VHS inputs	No	-13vs	No	No	No	...
Y/CaCb inputs	No	No	No	No	No	No
Audio amp/speaker	No	Yes	Yes	Yes	No	No
Application	V	Grade 2	Mon/Rcvt	Grade 2	Grade II	Gr 1 (2)
CRT diagonal (in.)	5"	13 (19)	8	10	13	14/20 (6.5/10)
CRT type	Trinitron	In-line slot	Trinitron	In-line Slot	Trinitron Plus	Dot mask
Dot stripe pitch (mm)	...	...	...	...	0.25mm	0.39/0.44
Resolution at center	220	450 (380)	260TVL	380 TVL	260TVL	...
Luminance bandwidth	...	4.2MHz	3MHz	3MHz	3.2MHz	6MHz
Chrominance bandwidth	...	1MHz	1MHz	1MHz	1.5MHz	...
Demodulation axes	R-Y/B-Y	R-Y/B-Y	R-Y/B-Y	R-Y/B-Y	R-Y/B-Y	U-V
Decoder filter	...	Comb filter	Notch	Comb, notch	Notch	Comb filter
Standards	NTSC	NTSC	NTSC	NTSC	NTSC	PAL
Auto-setup	No	No	No	No	No	No
Reader Service No	433	434	435	436	437	438

¹⁸ RM-8 is a portable unit; both operate from ac or 12Vdc; 68 channel tuner. ¹⁹ GM7200 available for NTSC-358/4.43, PAL or SECAM.

Time Base Correctors/Synchronizers

Manufacturer	ALTA Group	Ampex Corporation	BTS	CEL Electronics	Digital Processing Systems			
Model	Cygnus (-5.5)	TBC-7	ZEUS	DSY7	P164-38 (-18)	DPS-220	DPS-265	DPS-270
Function TBC Synchronizer	Both	TBC	TBC	Synchronizer	Both	Both	Both	TBC
Standard NTSC PAL/SECAM/comp	NTSC	NTSC/PAL	N, P-M, S	CCIR 601	N/P/S	NTSC	NTSC	NTSC
Format conversions	(5.5 only)	No	No	No	Yes	No	Yes	Yes
Sampling frequency	14.318	4xF _{sc}	14.318	13.5MHz	13.5	4xF _{sc}	4xF _{sc}	4xF _{sc}
Bits/sample	8-bit	8-bit	9-bit	8/9/10-bit	8-bit	8-bit	8-bit	8-bit
Correction window	1 field	28-line	60 lines	1 frame	5-field PAL	Infinite	Infinite	16 lines
Video bandwidth	290 lines (5.5)	4.2 N/5.5 P	±0.2dB 5MHz	...	5.5MHz	-3/+0.5 to 6MHz	-3/0.5dB 6MHz	-3/0.25dB 5.5
S/N ratio	>55dB (>56dB)	>56dB	>58dB	[Unit is	56dB	>58dB	58dB	58dB
Diff phase gain	<3°/3% (<2°/2%)	<2%, <2%	<2°/2%	[digital	...	<2°/2%	<2°/2%	<2°/2%
Residual error	...	±2.5ns color	±10ns mono	[device	...	<15ns	±15ns	±15ns
Advanced sync output	No	Yes	Yes	...	Yes	Yes	No	Yes
Coherent subcarrier out	No	Yes	Yes	AF delay ctl	...	Yes	No	Yes
Composite I/O	Yes	Yes	Yes	With options	Yes	Yes	Yes	Yes
Component I/O	(Y/C 3.58)	No	D-2 ZeusPort	4:2:2 digital	YUV, Y/C CCIR-601/656	No	Color-under	Y-C
Heterodyne operation	...	Yes	Yes	No	...	Yes	Yes	Yes
Dropout compensation	...	Digital	Yes	[Auto selects	Yes	Opt	...	No
For servo capstan	...	Yes	Yes	[525/625 line	...	...	...	...
Supports dynamic tracking	Yes	Yes	Yes	[standard ref.	Yes	No	No	...
Noise reduction	No	...	Yes	[to input sync.	...	...	...	Chroma
Image enhancement mode	Yes (No)	No	...	[Variable	...	...	...	...
Video effects	Yes	No	No	[delay.	-38 only	No	(VITS insert)	No
Freeze frame, field	Yes [4x1 xtch	No	Yes	Yes	Yes [4x1 xtch	Yes	Yes	...
Reader Service No	441	442	443	444	445	446	447	448

Manufacturer	Digital Processing Systems		Digital Vision	For-A				Grunder/Feral
Model	DPS-295 ¹	DPS-375	DVFS 1000	FA 720	FA-220	FA-310	UDP-1000	C-100 ²
TBC or Synchronizer	TBC	Both	Both	Dual TBC	TBC	TBC	TBC	Both
Standard: NTSC/PAL/SECAM	NTSC	PAL	N, P, comp	NTSC	NTSC	NTSC	...	NTSC/PAL
Format conversions	Yes	Yes	Yes	Yes	No	Transcode opt	Yes	Yes
Sampling frequency	4xF _{SC}	13.5	4xF _{SC}	13.5	13.5 4:1:1	14.318	4xF _{SC}	13.5MHz
Bits/sample	8-bit	8-bit	10-bit	8-bit	8-bit	8-bit	8-bit	8-bit/4:2:2
Correction window	Infinite	Infinite	...	Full frame	Full frame	1-frame	1-frame	1 frame
Video bandwidth	-3/+2.5 6MHz	0.5dB 5MHz Y/C	[Spec per	5MHz	5MHz	4.2MHz	±0.3 5MHz	5.5MHz
S/N ratio	58dB	58dB	[CCIR 601	58dB	56dB	58dB	58dB	58dB
Diff phase/gain	<2°/ <2%	<1°/ <1%	...	2°/2%	2°/2%	2°/2%	2°/2%	2°/2%
Residual error	<15ns	±15ns	...	±15ns	15ns	±15ns	±2.5ns	...
Advanced sync output	Yes	Yes	...	...	Yes	Yes	Yes	...
Coherent subcarrier out	Yes	No	...	...	No	Yes	Yes	...
Composite I/O	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Component I/O	Yes	Y/C; YCrCb	RGB YCrCb D1	Y/C; YCrCb ...	Y/C RGB YCrCb	Y/C; YCrCb; D1	Y/C	...
Heterodyne operation	...	...	...	...	Yes	Yes	...	...
Dropout compensation	AUTODOC-3D	No	...	Yes	...	Yes	Yes	...
For servo capstan	...	...	...	...	Yes	Yes	Yes	...
Supports dynamic tracking	No	...	...	...	No	Option	Yes	No
Noise reduction	...	...	...	9dB 3-step	Luma/Chroma	9dB 3-step	2-stage	No
Image enhancement mode	...	...	Yes	...	[ACC Chromacor	[Auto Chroma	Yes	No
Video effects	Yes	Yes	No	No	[Color correction	[Level Ctrl	No	No
Freeze frame, field	Yes	Yes	...	Automatic	Automatic	Yes	Yes	Yes
Reader Service No	449	450	451	452	453	454	455	456

¹ NTSC/Y-C/Dub input; Y/R-Y/B-Y out. ² C-100N NTSC; C-100P PAL; S-100A automatic selection from input signal.

Manufacturer	Hotronic				I-DEN		Leitch Video	
Model	AE61-B/-S	AF71	AF75	AH91	IVT-7	IVT-9 Plus ³	TBCard (Plus)	DFS-3002N
Function TBC/Synchronizer	TBC	Both	Both	Both	Both	TBC	TBC	Synchronizer
Standard NTSC/PAL/SECAM comp	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC/D2
Format conversions	Yes	No	Yes	Yes	Yes	Yes	Yes	No
Sampling frequency	4xF _{SC}	4xF _{SC}	4xF _{SC}	14.3MHz, 8-bit	13.5MHz	13.5MHz	13.5MHz	14.3MHz
Bits/sample	8-bit	8-bit	8-bit	8-bit	8-bit	8-bit	8-bit	10-bit
Correction window	16-line	2 frame	1 frame	1 frame	1 frame	1 frame	1 frame	Infinite
Video bandwidth	4.2 (-B 2.5)	4.2	4.2 (400 lines)	5.5MHz	5.5MHz	5.5MHz	5.5MHz	4.5MHz
S/N ratio	58dB	58dB	58dB	58dB	58dB	58dB	56dB	>70dB
Diff phase/gain	<2°/ <2%	<1.5°/ <1.5%	<2°/ <2%	1°, 1%	2°/2%	2°/2%	2°/2%	<1°/ <1.25%
Residual error	±10ns	±20ns	±10ns	10ns C, 1° L	...	±15ns/2°	...	<10ns
Advanced sync output	Yes	Yes	Yes	Yes	No	Yes	No	...
Coherent subcarrier out	Yes	Yes	Yes	Yes	No	Yes	No	...
Composite I/O	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NTSC, D2
Component I/O	Y/C	No	Y/C	Y/C	Y/C	YCrCb; Y/C	Y/C; YCrCb	...
Heterodyne operation	Yes	Yes	Yes	Yes	...	...	...	...
Dropout compensation	Option	Yes	Yes	Yes	Yes	Yes	...	...
Supports dynamic tracking	...	...	...	No	No	Yes	No	...
Noise reduction	3dB chroma	3dB chroma	3dB chroma	Chrominance	No	No	No	No
Freeze frame, field	No	Yes	Yes	Yes A/V xch	Yes	Yes	No	On signal failure
Reader Service No	457	458	459	460	461	462	463	464

³ IVT-9S(M) offers similar characteristics. For PAL or Secam, use IVT-9S, (P).

Manufacturer	Microtime				Nova Systems			
Model	FS10 (FS8)	Tx3 FIT	Tx4.2 Component	Tx6	#700 (#800)	502 EFP-TBC	920SP 950 (900)	NOVASync ⁴
Function TBC/Synchronizer	Both	TBC	TBC	TBC component	TBC (Both)	TBC	Both	Both
Standard NTSC/PAL/SECAM/comp	NTSC; PAL	NTSC/PAL	N/P	NTSC; PAL-B	NTSC	NTSC	NTSC (& PAL)	NTSC
Format conversions	No	Yes	Yes	Yes	No	No	#950	(Sync2.2F)
Sampling frequency	4xF _{SC}	14.3MHz	14.3MHz	13.5	14.3MHz	14.3	13.5	14.3
Bits/sample	10-bit (8-bit)	8-bit	8-bit	4:2:2, 8-bit	8-bit	8-bit	8-bit 4:2:2	8-bit
Correction window	Inf (4-lld opt)	1 frame	1 frame	1-frame	32-line (frame)	6-line	1 field	1 frame
Video bandwidth	5.5MHz	5.2MHz	5.2MHz SVHS	5.5 MHz	5.5MHz #710	5.5MHz	to 5.5MHz	>5.5MHz
S/N ratio	>60dB	58dB	58dB NTSC	58dB NTSC	>58dB	>58dB	>58dB	>58dB
Diff phase/gain	1°/1% (2°/2%)	2°, 2%	2°, 2%	2°/2%	<2°/ <2%	<2°/ <2%	<2°/ <2%	2°/2%
Residual error	...	2°C, 15ns L	<15ns Y	<15ns	±10ns	±10ns	±10ns	±10ns Y
Advanced sync output	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coherent subcarrier out	No	Yes	Yes	No	Yes	Yes	No	Yes
Composite I/O	Yes	NTSC, PAL	NTSC, PAL	Yes	NTSC	Output	Yes	NTSC
Component I/O	D2	YUV, Y-C, YCrCb	Y-C YCrCb	Y/C	Y-C	...	Y/C; YCrCb out	Y-C
Heterodyne operation	Opt	No	Yes	...	Yes	...	...	Yes
Dropout compensation	...	Hetero component	Yes	Yes	Yes	No	Yes (No)	Yes

Manufacturer	Microtime				Nova Systems			
Model	FS10 (FS8)	Tx3 FIT	Tx4.2 Component	Tx6	#700 (#800)	502 EFF-TBC	920SP/950 (900)	NOVAsync ⁴
For servo capstan	...	or non-servo	or non-servo	Yes	Yes	Yes	Yes	Yes
Supports dynamic tracking	No	Vari-Trak	Vari-Trak	Yes	No	No	No	No
Noise reduction	No	Lum./Chr	Option	...	No	[Portable	3dB chroma	No
Video effects	No	Option	Option	...	No	[unit for	Yes	No
Freeze frame, field	Yes	Yes	Yes	Yes	Yes	[field use	[4x1 switcher	NOVAsync F/2F
Reader Service No	465	466	467	468	469	470	471	472

⁴NOVAsync/-F synchronizers; NOVAsync 2/-2F sync/TBCs.

Manufacturer	Panasonic CSC	Prime Image				Tektronix	Videotek
Model	TBC-200 Plus	6.5P (6500 ⁵)	7.5MHz (700 ⁶)	Excel 6.5 (600 ⁷)	HR600 (800) ⁸	Model 50 (25)	VDP8400 (8000) ¹⁰
Function TBC Synchronizer	TBC	Both	TBC	Both	Both	Both	Synchronizer
Standard NTSC PAL SECAM comp	NTSC	PAL	NTSC	NTSC	NTSC	NTSC	NTSC
Format conversions	Yes	Yes	Yes	Not 605/650.	Yes	(50S/25S)	No
Sampling frequency	14.318	...	...	...	...	...	14.314
Bits/sample	8-bit	8-bit	8-bit	8-bit Y&C	8-bit	8-bit	10-bit
Correction window	16 line	16 lines	16 lines	16-line	1 frame	1 frame	Infinite
Video bandwidth	6MHz DUB	6.5MHz	7.5MHz	6.5MHz	7.5MHz	4.2MHz	to 4.2MHz
S/N ratio	>57dB	58dB	58dB	58dB	58dB	58dB	>58dB
Diff phase gain	2°/2%	1.5°/1.5%	1.5°/1.5%	1.5°/1.5%	1.5°/1.5%	1.5°/1.5%	1°/1%
Residual error	±15ns	±15ns	±15nsec	±15nsec	±15nsec	±15ns	20ns max
Advanced sync output	Yes	Yes	Yes	Yes	Not required	No	No
Coherent subcarrier out	No	Yes	Yes	Option	Yes	No	No
Composite I/O	Yes	...	Yes	Yes	Yes	Yes	NTSC
Component I/O	Y/C YCrCb	Y/C YUV	Y/C; YCrCb	Y/C; YCrCb	Y/C YCrCb	(50S/25S)	None
Heterodyne operation	...	Yes	Yes	Yes	Yes	No	w/TBC opt
Dropout compensation	...	Yes	Yes	Yes	Yes	Yes	...
For servo capstan	...	...	...	...	...	...	...
Supports dynamic tracking	...	Yes	Yes	Yes	Yes	No	No
Noise reduction	Chroma	20dB	to 20dB	20dB	No	No	No
Video effects	No	Not 6500	Not 700	Yes	Some models	No	No
Freeze frame, field	...	No	Yes	Yes	Yes	Yes	Yes
Reader Service No	473	474	475	476	477	478	479

⁵ TBC 6500, 6501; TBC/Sync 6510, 6511. ⁶ TBC 705/750 composite I/O only; others include components. 700/701/705 TBC; 710/711/750 synchronizer. ⁷ 605, 650 composite I/O only. ⁸ 801 TBC, #800 with effects; 810 TBC synchronizer; 810 limited effects. ⁹ Link to AS-18 audio delay to resynchronize audio delayed through transmission or processing. VS-211 video synchronizer for PAL standard; 10-bit sampling. ¹⁰ 2-frame freeze memory for 1-frame freeze, while 2nd channel operates normal with synchronized output.

Routing Switchers, Audio/Video/Data

Manufacturer	360 Systems	Alpha Image	ASACA	Auditronics	AutoPatch	Barco	BTS Broadcast Television Systems		
Model	AM-16	Alpha 264S	ASW-88S	1900 IFB	4Y-140DM(8Y-)	BVRS/BARS	BSB-3000	BSX-350A-V	DRS 7
Audio/Video/Data	Audio	Serial digital	V/SA	Audio	V/A Data	V/A	Audio	V/A	Digital video
Basic crosspoint matrix	8x8/16x16	16x16	8x8	16x8	4x4 (8x8)	16x16	4x4	10x10	8x4
Typical system size	16x16x4	64x64	8x8	48x24	32x128 (64x256)	32x32	...	10x10-V 20x-A	8x8/8x12/8x16
Audio response ±dB Hz-kHz	-3 to 50k	...	±0.5 30-18k	±0.5 20-20k	±0.1 20-30k	±0.1 20-20k	±0.1 20-20k	±0.1 20-20k	[This system
Harmonic distortion	<0.008%	[Mix of D1, D2	<0.5%	<0.01%	±0.002%	<0.02%	<0.002%	<0.007%	[for CCIR
S/N ratio	105dB	[for serial	>72dB	91dBu	120dB	...	95dB	85dB	[601 4:2:2
Audio crosstalk (worst)	88dB 1kHz	[component or	<-80dB	-88dBu 1kHz	<-95dB	-100dB	<-95dB 20kHz	<-90dB	[digital video
Video response	...	[composite	-0.5/3.8MHz	...	to 50MHz	to 40MHz	...	to 20MHz	[signals in
Diff phase gain	...	[digital	<1°/1°	...	<0.05°/0.1%	<0.1°/0.1%	...	<0.1%	[8/9/10-bit
Chroma Luma delay	...	[signal	...	...	...	1° 4.43MHz	...	<±1°	[sampling;
Video S/N ratio	...	[distribution	>45dB	...	80dB	...	...	>75dB	[system auto-
Video crosstalk (worst)	...	[via coax.	<-50dB	...	<-78dB 10MHz	50dB 5MHz	...	-60dB	[selection of
Multilevel audio control	Yes	...	2-channel	...	Yes	Possible	...	Possible	[525 and 625.
For component video	...	Digital only	No	...	Yes	Possible	...	Possible	Digital
Reader Service No	481	482	483	484	485	486	487	488	489

Manufacturer	BTS		Datatek		Di-Tech				
Model	TAS/TVS-2000	BVS-350C	D-2400	D-2000	5865A 5864V	5616/5618	5216	5860 series	5217 Wideband
Audio/Video/Data	V/A	Component vid	V/A	V/A	V/2A	V/A	Video D1/D2	5861V/5862A	Video
Basic crosspoint matrix	10x10	10x1x3	160x20	50x25	32x24	16x8/16x16	16x16	64x32	16x16
Typical system size	250x150	3x20x1	40x20x4	50x50; 250x500	64x32	16x32 audio	64x16	256x256	HDTV video
Audio response ±dB Hz-kHz	±0.1 20-20k	...	±0.05 20-20k	±0.1 20-20k	±0.1 20-20k	±0.5 20-100k	[Digital; 75Ω	±0.5 20-100k	...
Harmonic distortion	<0.007%	...	<0.005%	0.05%	<0.05%	<0.25%	[input/output	<0.1%	...
S/N ratio	85dB	...	116dB	105dB	>70dB	>70dB	[at 0.8Vp-p;	>70dB	...
Audio crosstalk (worst)	<-90dB	...	-82dB 20kHz	-85dB 20kHz	<-75dB	<-80dB 20-1k	[data rates	<-80dB	...
Video response	to 20MHz	±0.7 30MHz	-3/0.5 60MHz	0.25 to 10MHz	-1/0 20MHz	-1/0 20MHz	[to 270Mbit/s	-1.5/0 20MHz	±0.25 50MHz
Diff phase gain	<0.1°/0.1%	<0.1°/0.1%	0.05°/0.05%	0.15°/0.15%	<0.25°/0.25%	<0.25°/0.25%	[D1, D2, &DX	<0.25°/0.25%	<0.2°/0.2%
Chroma Luma delay	<±1°	±1.5°	±0.75°	5ns	<1°	<1°dB	...	<1°	...
Video S/N ratio	>75dB	>75dB	75dB	...	>70dB	>70dB	[Matrix can be	>70dB	>60dB
Video crosstalk (worst)	-60dB 3.58	-40dB 30MHz	<-63dB 5MHz	...	<-60dB 4.5MHz	<-60dB 4.5MHz	[expanded.	<-60dB 4.5M	<-40dB 100MHz
Multilevel audio control	Yes	Yes	Yes	Yes	...	Yes	...	4-lvl brkaway	...
For component video	Possible	Yes	Yes	...	No	Possible	...	...	...
Reader Service No	490	491	492	493	494	495	496	497	498

Freedom package.



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which delivers either one **or both** over a single optical fiber cable to the receiver, wherever you want it.

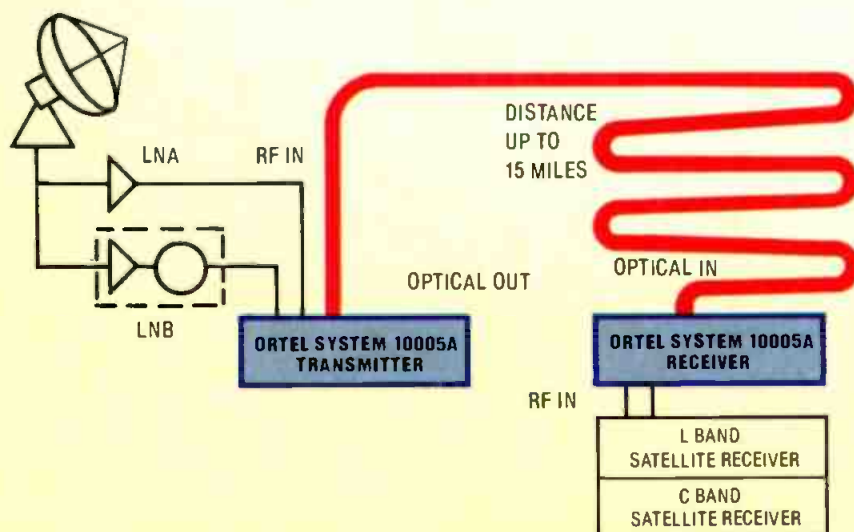
The modular design 10005A system uses a standard 19-inch rack mount incorporating dual, redundant power supplies for added reliability.

Modular design means you can expand the system to handle multiple polarizations. It also minimizes the cost of spares.

- Passband: 950 — 1450 MHz
3.7 — 4.2 GHz
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Circle (30) on Reply Card

Manufacturer	DYNAR Corporation				Grass Valley Group			Harrison GLW	HEDCO
Model	DYNA MITE	DYNASTY WB	DYNASTY 100	DYNASTY	Horizon DHX-532	20-TEN TEN-20	Horizon systems ¹	ARS-9	HD-16X A/V ²
Audio/Video/Data	V/A 40MHz	V/A (70MHz)	Video/digital	V/A 30(40)MHz	Video/digital	V/A	V/A	Audio	V/A
Basic crosspoint matrix	10x10	10x10	10x10	10x10	8x8	20x10/10x20	8x16	64x32	16x4/16x8
Typical system size	30x10 A/V	100x30	50x100	100x100 (x50) video	32x32	20x20-10x40	128x128	256x256	16x16-64x64
Audio response $\pm$ dB Hz-kHz	± 0.2 30-20k	± 0.1 20-20k	...	± 0.1 20-20k	[Conforms to]	± 0.1 20-20k	± 0.1 20-20k	>20kHz	-0.05 20-100k
Harmonic distortion	0.1%	0.1%	...	0.1%	[SMPTE RP125]	0.05%	<0.05%	...	<0.02%
S/N ratio	75dB	75dB	...	75dB	[CCIR 601/F]	120dB	>100dB	...	-80dB
Audio crosstalk (worst)	80dB	<-80dB	...	56dB	[EBU 3246-E]	80dB	<-80dB	...	>86dB
Video response	-3dB 40MHz	-3/1.5 70MHz	± 2 to 100MHz	± 0.3 20MHz	[standards]	± 0.5 10MHz	0.015 8MHz	[21.5dB]	-3dB >32MHz
Diff phase gain	0.05° 0.05%	0.2°/0.15%	0.25°/0.25%	0.05°/0.05%	...	0.2°/0.1%	<0.1°/0.1%	[headroom]	<0.3°/0.2%
Chroma Luma delay	1° 5MHz	1°	...	1° 5MHz	[DHX88;	> $\pm 1^\circ$	$\pm 1^\circ$	[above a]	< ± 2 ns
Video S/N ratio	30dB RMS	55dB 70MHz	55dB 100MHz	80dB < 1Vp-p	[DHX1616]	>75dB	>75dB	[+4dB level]	>70dB 10MHz
Video crosstalk (worst)	<-50dB 5MHz	<-25dB 70MHz	-25dB 100MHz	<-60dB 5MHz	[DHX3216]	-50dB 10MHz	-60dB	...	-60dB 4.43MHz
Multilevel audio control	Yes	Yes	...	Yes	...	Yes	Yes	Possible	Yes
For video components	Yes	Yes	Yes	Yes	Digital	Yes	Yes	...	Yes
Reader Service No	499	500	501	502	503	504	505	506	507

¹ HX-16 16x16; HX-32 8x16/16x16/24x16/32x16; HX-48 to 48x48; HX-64 to 64x64. ² HD-16x16D for RS-422/-423 data

Manufacturer	Image Video		Integrated Switching Systems	International Tapetronics	Microvideo	NTP Elektronik	nVision	Omicron Video	
Model	9540 (9541)	Model 9600	Pathfinder	Audio Switcher	RS422 matrix	Type 612	NV3512A	Model 554-XX/YY	Model 558
Audio/Video/Data	Video (audio)	Video/audio	D-1/D-2/HDTV	Audio only	RS-422 data	Audio	Audio/Data	Video	D1/D2 data
Basic crosspoint matrix	20x10	20x10/40x20	8x8	16x16	12x6	16x8/64x8	8x32	5x2	5x4
Typical system size	40x20	320x320	100x100	64x48 mono	32x32	96x192	2500x2500	20x20	10x8
Audio response $\pm$ dB Hz-kHz	(-0.25 20-20k)	-0.25 20-20k	[System uses]	± 0.1 20-20k	[Buffer I/O]	± 0.01 40-20k	...	...	[per CCIR 601]
Harmonic distortion	(<0.02 +18j)	<0.02%	[various I/O]	0.01%	[meet relevant]	<0.01% 22dBu	[Digital audio/]	...	[TEC2346E,
S/N ratio	>96dB	>96dB	[modules to]	95dB	[SMPTE, EBU]	<-93dBu rms	[data using]	...	[SMPTE 125(X)]
Audio crosstalk (worst)	>75dB	>75dB	[convert between]	<-95dB	[EIA spec]	>100dB	[50Mbps coax]	...	[specifications;
Video response	-1dB 30MHz	-1 30MHz	[coax or fiber]	...	[10Mbaud data]	...	[or FO, 10Mbps]	0.25/-3 35MHz	[permits analog]
Diff phase gain	0.1°, 0.1%	<0.1°, <0.1%	[distribution]	...	[rates; for]	...	[on bal. I/O]	<0.25°/0.25%	[audio, video,
Chroma Luma delay	<10nsec	<10ns	[system; 1.3GHz]	...	[reallocation]	...	...	...	[HDTV, tally]
Video S/N ratio	>70dB	70dB	[GaAs device]	...	[of edit ctl]	...	...	>65dB	[bit-parallel.
Video crosstalk (worst)	>65dB	>65dB	[switches 800]	...	[lines to multi]	...	...	>60dB 3.58	...
Multilevel audio control	2-channel	2-channel	[to 1500nm]	Yes	[VTRs,	3-level	Yes	4-level video	Yes
For video components	...	...	...	No	...	...	...	RGB/S	Digital analog
Reader Service No	508	509	510	511	512	513	514	515	516

Manufacturer	PESA			Pro-Bel		Siemens	Sierra Auto-mated Systems	Sierra Video Systems	
Model	System 5	Series H ³	AX switcher	Prodigy series	HD series	Crossmatic D	SAS32000	Series 16 ⁴	Series 32
Audio/Video/Data	A/V	A/V	Audio	V/A(TC)/D	V(A)	Audio	Audio	V/A	Video/audio
Basic crosspoint matrix	8x8	128x32	20x10	8x4	16x16	32x32	32x16 stereo	16x4	32x8
Typical system size	48x96	128x128	40x10, 20x20	24x24	256x256 (x128)	32x96	64x32	16x8/16x16	32x8 to 32x32
Audio response $\pm$ dB Hz-kHz	dB to 20k	± 0.15 dB to 20k	± 0.25 20-20k	< ± 0.25 20-20k	[Digital audio]	<0.4 40-15k	± 0.25 20-20k	± 3 150kHz	...
Harmonic distortion	<0.1%	<0.1%	<0.15	<0.1%	[at 44.1 48kHz]	<0.1	<0.05%	0.1%	...
S/N ratio	73dBm	92dB	>65dB	>96dB	[sampling rates]	>70dB	>86dB 20kHz	>100dB	...
Audio crosstalk (worst)	<-90dB	<-88dB	<-65dB	<-100dB	[w/mixed rates]	>100dB	<-70dB	<-80dB 1kHz	...
Video response	-1.5 to 20MHz	-1.5 to 20MHz	...	<3dB to 30MHz	[Serial digital]	...	...	-3dB 30MHz	to 100MHz
Diff phase/gain	0.1°/0.1%	0.1°/0.1%	...	<0.2°/0.15%	[video for NRZI]	...	...	0.25°/0.25%	...
Chroma Luma delay	<-62ns	± 10 ns	...	<5ns	[standards from]	...	...	...	...
Video S/N ratio	73dB	73dB	...	<78dB luma	[140-300Mbit/s]	...	...	60dB	...
Video crosstalk (worst)	-62dB 4.43MHz	-62dB 4.43MHz	...	-60dB 4.43MHz	...	...	...	-50dB 3.58MHz	...
Multilevel audio control	Yes	Yes	...	2nd level	...	Yes	...	Yes	Yes
For video components	Yes	Yes	...	Yes	D1, D2	...	...	Y-C/RGB/YC _R C _B	Yes
Reader Service No	517	518	519	520	521	522	523	524	525

³ Series H also available in 256x32; 32x32. ⁴ Series 8 offers 8x8 matrix with similar characteristics; System 16x4/16x8 video or 16x8 with four audio channels; model 61 8x8 may include one to three levels of video with stereo.

Manufacturer	Sony	Thomson	Utah Scientific				Vistek
Model	DVS-V/DVS-A ⁵	TTV5790 ⁶	AVS-1B series ⁷	DVS-1	DVS-2/32	AVS-2	ARRAY
Audio/Video/Data	A/V/Data	Video/digital	V/A	Video/digital	Serial digital	V/A	A/V/Dig Vid ⁸
Basic crosspoint matrix	16x16	30x15, 32x16	10x10	4x16	32x32	10x10	16x8, 16x16
Typical system size	512x512	30x30, 32x32	320x (150x10)	32x16	...	320x320	64x64
Audio response $\pm$ dB Hz-kHz	[Digital]	[Conforms to]	± 0.05 30-20k	[10-bit arch.	[for D1 270Mb/s]	± 0.05 30-20k	± 0.25 20-20k
Harmonic distortion	[A/V router]	[EBU 3247 &	0.05%	[conforms to]	[D2 143Mb/s NTSC]	0.05%	<0.1%

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Circle (13) on Reply Card

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Manufacturer	Sony	Thomson	Utah Scientific				Vistek
Model	DVS-V/DVS-A ⁵	TTV5790 ⁶	AVS-1B series ⁷	DVS-1	DVS-2 32	AVS-2	ARRAY
S/N ratio	[based on]	[CCIR 656 rec.	85dB	[SMPTE RP125	[D2 177Mb/s PAL	85dB	-90dBm Hum+noise
Audio crosstalk (worst)	[AES/EBU I/O	[for digital	-90dB to 20k	[EBU 3246E	[jitter time at	-90dB to 20k	-90dB
Video response	[format;	[video; for	±0.5 20MHz	[for digital	[<10% of the	±0.5dB 30MHz	-3dB 30MHz
Diff phase/gain	[Video for	[signals to	0.05°/0.05%	[video signals	[bit time	±0.05°/0.05%	0.1°/0.1%
Chroma Luma delay	[D1 or NTSC	[270 Mbits/s	±0.75°	[Switch allows	...	±5ns	...
Video S/N ratio	[and PAL D2	[data rate	80dB	[use as 8-bit	...	80dB	...
Video crosstalk (worst)	[formats.	[serial data	-60dB 4.43MHz	[9-, 10-bit	...	-60dB 4.43MHz	-60dB 4.43MHz
Multilevel audio control	...	[stream.	Yes	[per input.	...	8-level	Yes
For video components	Yes	Digital	Possible	...	...	Possible	Possible
Reader Service No	526	527	528	529	530	531	532

⁵ Models for 16x16, 32x32, 64x64 available. ⁶ TTV 5791 offers similar characteristics with basic 64x64 matrix, expanding to 256x256. ⁷ -1BB bandwidth 60MHz; -1WB bandwidth 100MHz for video with response of ±2dB. ⁸ Meets requirements for CCIR-656 8-/10-bit digital video in D1, D2 formats; available in 8x8 minimum matrix for digital video use.

Video Production & Master Control Switchers

Manufacturer	Abekas Video Systems		Alpha Image	ALTA Group		Ampex Corporation	
Model	A82 Digital	A84 Digital Post	Alpha 500	Pegasus	Pyxis 5.5	Century series	Vista Component
Control application	Post production	Post production	Production	Production	Production	Production	Production
Standard	Composite D-2	CCIR 601 D-1	D1 component dig.	NTSC	NTSC	NTSC/PAL	RGB/Y/PaP _B
# inputs	32 video or key	12 ²	16	8 Y/C or encoded	4 Y/C or encoded	16 or 32	10 or 18
Integral matte source	Yes	Yes	Yes	3 generators	Yes	per keyer	5 generators
Key sources	Any input ¹	12 ext 12 int	Yes	10-input	Yes	2 ext 10/18 int	2 ext 10/18 int
Chroma keyers	8 RGB	8 RGB	Yes	RGB option	...	3 per ME ⁴	3 RGB/Y/ISO ⁴
Downstream keyer	No	No	...	[2 linear keys	No	w/UNIKEY	w/UNIKEY
Switching buses	...	...	3	3	2	4 prime, 5 aux	12
# switcher M/E amps	4 Multilayer	8 layer capability	1	1	1	2 or 3 multilevel	1.5
# pattern generators	2	3	20 basic	27 patterns	10 transitions	164 patterns/ME	32 patterns
Wipe effects	Rot/S-E/Adj edge	Rot/S-E/Adj edge	...	hard/soft	Yes	H-E, S-E, Rot.	Hard, soft edge
Spotlight effects	...	...	...	No	No	Yes	Yes
Border effects	Yes	Yes	...	Matte/outlines	Yes	Opt	4 types
Shadow effects	Yes	Yes	...	Yes	No	Opt	Yes
Programmable routines	Yes	Yes	[Configures in	Yes/learn mode	Yes	SuperSTAR Mem.	24 routines
Memory backup battery	Yes	Yes	[layers	...	[Dual TBC	No	Yes+VistaDisk
Diagnostic software	Yes	Yes	...	...	[channels	Yes	Yes
Digital effects port	Yes	Yes	Yes	to Editor	Integral effects	for Int. ADO	Digi-Loop ⁵
Automation port	From edit control	From edit control	...	No	GPI/serial	GPSI, PIPS	GPSI, PIPS
Input timing adjustment	...	...	...	<1.5"	...	...	...
Path length, deviation	...	...	...	...	[>450-line	1"	1.5"
Crosstalk at subcarrier	...	Not applicable	...	<-54dB	[resolution	>55dB	>50dB
Link to rack electronics	1 digital line	1 digital line	[up to 4 separate	15-conductor	...	Multicore cable	Multicore cable
Audio preview function	No	No	[layers plus	No audio	[4-input	[Option for AIV	Option
Audio metering	No	No	[background;	N.A.	[stereo	[in association	Option
Audio level control	No	No	[memory for	N.A.	[audio follow	[with M/E or	Option
Audio mixer interface	No	No	[full switcher	N.A.	[mixer	[the DSK unit;	Option
Edit control interface	Yes	Yes	[setup per layer	RS-488	Yes	[editor/manual	Option
Reader Service No	533	534	535	536	537	538	539

¹ Adaptive Sub-Pixel Intelligent Keying; framestores associated with each keyer. ² Frame store associated with each input and all 12 key inputs; Adaptive Sub-Pixel Intelligent Keying. ³ 3 SpectraKey. ⁴ All keyers capable of linear, RGB luminance, external and encoded modes; SpectraKey processing. ⁵ SE models may include integrated ADO-100 or -2000 digital effects.

Manufacturer	Ampex	AVS (Vatek)	BTS	ECHOLab Inc			Feral Industries
Model	Vista Composite	Integra ⁶	MCS-2000	DV-5	DV-7 ¹⁰	SE-6	6119 (6119YC)
Control application	Production	Production	Master control	Production	Production	Production	Production
Standard	NTSC/PAL	PAL/CCIR 601	NTSC, PAL	NTSC/PAL	NTSC/PAL	NTSC/PAL	NTSC
# inputs	10 or 18	8 external ⁸	to 250	10	6	10	6 (6 Y-C)
Integral matte source	5 generators	2 generators	4 generators	3 generators	3 generators	3 generators	Yes
Key sources	2 ext 10/18 int	4 external	Ext/Int	4 ext/10 int	3 ext/1 int	5 ext 20 int	Int/ext
Chroma keyers	3 RGB/Y/ISO ⁶	...	Luminance only	RGB/Composite	RGB opt	RGB/Comp opts	...
Downstream keyer	w/UNIKEY	Per setup	Yes	Y	Yes	Yes	Yes
Switching buses	12	Multiple	3	3 primary	3 primary	4 primary 1 aux	3
# switcher M/E amps	1.5	to 4 key levels	...	1½	1	2½	1
# pattern generators	32 patterns	13-patterns	None	1½/39 patterns	1, 10 patterns	2/40 patterns	12 wipes
Wipe effects	Hard, soft edge	Yes	No	Rotary/adj edge	Soft-edge	Adjustable edge	Var edge
Spotlight effects	Yes	...	No	Yes	No	Yes	No
Border effects	4 types	Yes	Yes	Yes	Yes	Yes	...
Shadow effects	Yes	Yes	Yes	Opt	No	Option	No
Programmable routines	24 routines	Yes	Yes	1 std/5 opt	No	10/297 keyframes	...
Memory backup battery	Yes+VistaDisk	...	Yes	Yes			No

Manufacturer	Ampex	AVS (Vatek)	BTS	ECHOLab Inc			Feral Industries
Model	Vista Composite	Integra ⁸	MCS-2000	DV-5	DV-7 ¹⁰	SE-6	6119 (6119YC)
Diagnostic software	Yes	...	Yes	Yes	Yes	No	No
Digital effects port	Digi-Loop ⁷	Integral 3-D	No	Yes	No	No	No
Automation port	GPSI, PIPS	RS-422	Yes	No	No	No	Serial
Input timing adjustment	...	...	...	±0.001ms	±0.001ms	±0.001ms	...
Path length, deviation	1.5'	...	±1'	1'	1'	1'	...
Crosstalk at subcarrier	>55dB	...	<-60dB	-52dB	-51dB	-51dB	>50dB
Link to rack electronics	Multicore cable	24-pin D	...	2 coaxial	Single digital line	Multicore cable	...
Audio preview function	Option	[4:2:2:4 image	Yes	No	No	No	No
Audio metering	Option	[store permits	Yes	No	No	No	No
Audio level control	Option	[recursive	Yes	No	No	No	No
Audio mixer interface	Option	[effects	...	No	No	No	No
Edit control interface	Option	Yes	No	GPI Opt	Opt	No	Option
Reader Service No	540	541	542	543	544	545	546

⁶ 3 SpectraKey. ⁷ SE models may include integrated ADO-100 or -2000 digital effects. ⁸ Available in US from Vatek. ⁹ 1-6 composite, YCrCb or Y-C; 7-B also for RGB. ¹⁰ DV-7C permits intermixed component and composite signals.

Manufacturer	For-A			Grass Valley Group			
Model	CVM-600	PVM-525	110/CV ¹²	200 Composite	200-2CV	KADENZA	MASTER 21
Control application	Production	Production	Production Post	Production, post	Production, post	Production	Master control
Standard	NTSC RGB R-Y/B-Y	NTSC	RGB or YUV	NTSC/PAL	YCrCbYUV	NTSC/PAL ¹⁴	NTSC PAL
# inputs	12 component ¹¹	6	10	20	20	32 maximum	16 V/stereo audio
Integral matte source	2 generators	2 generators	3 generators	9 generators	9 generators	...	1 int generator
Key sources	4 ext/2 int	4 ext/2 int	2 ext/8 int	6 ext/20 int	16 ext	20 int	32 maximum
Chroma keyers	CCK-500C Exkey	CCK-500 Exkey	1 RGB optional	to 8 optional	...	Options	1 RGB opt
Downstream keyer	Yes	2-input	DSK-101	Standard	Yes	Yes	Yes
Switching buses	2 prime	4	3 prime	8 prime/4 aux	8 prime/4 aux	10-channel	2 prime
# switcher M/E amps	1	1	1	1 or 2	2 M Es	...	1 opt
# pattern generators	1 w/24 patterns	1 w/24 patterns	1 gen/10 patterns	2 gen 56 patterns ¹³	2 gen/56 patterns	2 w/44 patterns	1 w/10 patterns
Wipe effects	Soft-edge Adj edge	Adj edge	Soft edge/adj edge	Rot/S-E/Adj Edge	Rot S-E Adj Edge	Rot/S-E/Adj-Edge	SE Adj E
Spotlight effects	No	No	Yes	Standard	Yes	Yes	Option
Border effects	Yes	...	Yes	...	...	...	...

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Circle (37) on Reply Card

Manufacturer	For-A		Grass Valley Group				
Model	CVM-600	PVM-525	110/CV ¹²	200 Composite	200-2CV	KADENZA	MASTER 21
Shadow effects	Yes	Yes	Yes	Yes	Yes	Yes	Option
Programmable routines	FMX-500 Extrol	FXM-500 Extrol	E-MEM memory	E-MEM system	E-MEM 30 event	Yes	Event Stacker
Memory backup battery	No	No	Yes	Yes	Yes	Yes	Yes
Diagnostic software	No	No	Yes	Yes	Yes	Yes	Yes
Digital effects port	No	...	to DPM-100	...	No	Kaleidoscope	Opt/GVG DPM-100
Automation port	RS-422	GPI, serial	Serial editor	Serial editor opt	Serial editor opt	Editor option	RS-422
Input timing adjustment	...	...	Unspecified	...	...	...	...
Path length, deviation	...	...	Unspecified	1.5"	Not applicable	...	100ns length
Crosstalk at subcarrier	...	-60dB	≤-54dB DC-5MHz	≤-54dB	<-56dB DC-4MHz	...	56dB
Link to rack electronics	...	Multicore	1-line digital	1-cable 2-port serial	1-line digital	...	Multicore cable
Audio preview function	Option	[Audio	Option	No	No	No	Yes
Audio metering	Option	[functions	Option	No	No	No	Yes
Audio level control	Option	[with AFV-500	Option	No	No	No	Yes
Audio mixer interface	Option	[editing	to AMX-170S mixer	No	No	Option	No
Edit control interface	Option	[audio mixer.	Option	Option	Option	Option	No
Reader Service No	547	548	549	550	551	552	553

¹¹ CVM-400 component mixer is 8-source, 6-input system. ¹² 110 composite; 110CV component. ¹³ Programmable ((20+4)x16)+32. ¹⁴ Supports RGB, YUV SMPTE, YUV Betacam, CCIR 601/656 digital.

Manufacturer	Grass Valley Group		JVC Professional Products			Panasonic C&S	Polar Video
Model	Model 300 2A/2B	Model 3000	KM-1600U	KM-2500U ¹⁵	KM-D600U ¹⁶	EGP-7	PVM-1 (PVM-2)
Control application	Production	Production	Production	Production	Production	Production	Production
Standard	NTSC	PAL	NTSC	S-VHS Y-C	NTSC	S-VHS Y-C	NTSC
# inputs	24/16 ¹⁵	to 64	4	8	4	6 Y-C or encoded	4 (U-matic/S-VHS)
Integral matte source	5 generators	Yes	1 generator	2 gen w/DSK	1 generator	3 generators	Yes
Key sources	6/31 Ext 18/26 Int	per input+	Ext/Int	Ext/Int	Ext/Int	6	Int/Ext
Chroma keyers	6 RGB, 14/22 Comps	Yes	RGB	RGB	RGB	Option	Yes
Downstream keyer	Yes	Dual	Yes	Yes	Yes	Yes	...
Switching buses	9 prime/5 aux	...	2, flip/flop	3 prime 1 aux	2, flip/flop	3	3
# switcher M/E amps	2	2 4-layer	...	...	...	1	1
# pattern generators	2 w/44 patterns	Dual	6 patterns	13 patterns	6 patterns	28 patterns	1 w/8
Wipe effects	Rot/S-E/Adj-Edge	User definable	Soft wipes	S-E	Adj.	Soft wipes	Yes
Spotlight effects	Yes	...	No	No	No	...	No
Border effects	Yes	Yes	No	Yes	No	...	No
Shadow effects	Yes	Yes	No	No	No	...	No
Programmable routines	20 per M/E	E-MEM	No	No	No	Panel setup	No
Memory backup battery	Yes	Yes	...	No	...	...	No
Diagnostic software	Yes	Yes	No	No	No	...	No
Digital effects port	Yes	Yes	No	...	Int. dig. effects	No	No
Automation port	Editor option	[Inputs from	...	GPI	[Integrated	Editor only	GPI
Input timing adjustment	...	[analog and	...	...	[dual TBC	...	...
Path length, deviation	±1.5"	[serial or	...	...	[facilities	...	...
Crosstalk at subcarrier	-54dB	[parallel	...	...	[for editing	-50dB	...
Link to rack electronics	Multicore cables	[digital	...	1-line digital	[production	Coax	...
Audio preview function	No	...	No	No	No	Yes	No
Audio metering	No	...	No	No	No	VU L/R	No
Audio level control	No	...	No	No	No	Yes	No
Audio mixer interface	Option	...	No	No	No	No	No
Edit control interface	Option	...	No	GPI opt.	No	RS-422	PSI-I serial
Reader Service No	554	555	556	557	558	559	560

¹⁵ Model 300-3A 24-input system, 300-3B 16-input; Model 300 units includes 3 M/Es. Inputs from analog and ser/pal digital; Fineline key processor, Lamina Image layering. ¹⁶ KM-1200U 4-input switcher with similar characteristics.

Manufacturer	Prime Image	Ross Video Ltd		Sony	Thomson		
Model	CleanCut/EFX	Model 210A/216A	Model 416 (424)	BVS 8000 (8000C)	IMPULS	Synonym	TTV5645
Control application	Production	Production	Production	Production	Production	Dig. production	Production
Standard	NTSC	NTSC	PAL	NTSC/PAL	D-2 (D01)	4:2:2 digital	D-1
# inputs	4 (S-VHS Opt)	8/14	16 (24)	24	16	24 D-1 component	16
Integral matte source	...	3 generators	6	4 generators	Yes	Yes	9 backgrounds
Key sources	None	3-Ext, 8/14-Int	6-E	14-I	24	Int/Ext	10 inputs
Chroma keyers	None	RGB & composite	4-RGB/1-composite	1 RGB	Yes	Yes	3
Downstream keyer	None	Yes	Option	Yes	...	Multilevel	...
Switching buses	2	3 prime	6 prime, aux avail	4 prime 4 aux	5 prime	7+	8 + 6 aux
# switcher M/E amps	1	1	2 multilevel keys	2 w/2 keys each	Multiple	Multiple	2
Wipe effects	...	...	S-E, Adj E	Various	...	Yes	...
Spotlight effects	No	...	No	...	...	Yes	...

Manufacturer	Prime Image	Ross Video Ltd		Sony	Thomson		
Model	CleanCut/EFX	Model 210A/216A	Model 416 (424)	BVS 8000 (8000C)	IMPULS	Synonym	TTV5645
Border effects	No	Yes	Yes	Yes	Yes	Yes	Yes
# pattern generators	4 wipes	1 w/53 patterns	2 w/64 patterns	1 w/18 patterns	Multiple digital	4 gen	4 generators
Shadow effects	No	No	No	Yes	Yes	Possible	Yes
Programmable routines	No	No	(40 event 424)	Yes	Yes	with MEMBOX	Yes
Memory backup battery	[Unit	Yes	Yes	No	Yes	[270Mbit/s	Yes
Diagnostic software	[includes	Yes	Yes	...	Yes	[data stream	Yes
Digital effects port	[basic	Yes	Yes	Link to DME-5000	Yes	Yes	Yes
Automation port	[production	RS-422 option	RS-422 opt	Yes	Yes	RS-422	Yes
Input timing adjustment	[effects	No	...	...	Automatic	...	...
Path length, deviation	...	±1°	±1°	<1.5°	...	...	...
Crosstalk at subcarrier	...	-53dB	-53dB	...	...	[Keyers use	...
Link to rack electronics	N.A.	Dig 1-line	Dig 1-line	Digital/RS-422	...	[autophasing	...
Audio preview function	[4 AFV	No	No	No	No	[over 15 to	No
Audio metering	[switcher	No	No	No	No	[40µs	No
Audio level control	No	No	No	No	No	...	No
Audio mixer interface	No	No	No	No	No	...	No
Edit control Interface	No	Option	Option	Yes	Yes	RS-422	Yes
Reader Service No	561	562	563	564	565	566	567

Manufacturer	Utah Scientific		VGV		Videotek	Vistek Electronics	
Model	MC-500 series ¹⁷	PVS2-224 ¹⁸	D2500 (D3200)	DX120 (DX300)	Prodigy ²³	ARENA	VISION (PAL)
Control application	Master	Production	Production	Production	Production	Production	Production
Standard	NTSC/PAL	NTSC	D2, D3, Analog	Digital NTSC/PAL	NTSC	PAL	NTSC
# inputs	30 A/V + 8A	24	10 to 20 ¹⁹	10 (23) ²²	8	13	10 per CCIR 656 ²⁴
Integral matte source	1 generator	1 generator	8+2 ²⁰	Yes	1 generator	6 generators	Yes
Key sources	3 ext, 1 int	12-inx6 keyers	10 ext 20 int	15 (10)	3 ext 8 int	4 ext 13 int	Analog or digital
Chroma keyers	None	Analog	RGB, R-Y-B-Y	Optional	RGB Opt	1 RGB	Yes
Downstream keyer	None	Analog	...	Yes	Yes	Yes	...
Switching buses	2 prime/1 aux	3 prime/2 aux	5 prime/4 aux	8 (11)	3 prime	4 prime/1 aux	3
# switcher M/E amps	1	2	3, multilevel keys	(3 multilevel)	1 ME	3	1
# pattern generators	1 w/4 patterns	1 w/42 patterns	6 w/100 patterns	20 (...)	24 pat/program-mable	2 gen w/89	1 generator
Wipe effects	Soft-edge	Full feature	Rot/S-E Adj E	Yes	Soft-edge/adj edge	Rot, S-E, Adj-Edge	16 rotary+
Spotlight effects	No	Yes	Yes	...	Yes	Yes	Possible
Border effects	Yes	Soft/hard	Option	Options	Yes	Yes	Yes
Shadow effects	Yes	Yes	Option ²¹	Options	No	Yes	Yes
Programmable routines	Opt 99 routines	250 event	EZMEMthan 100	EZMem system	100 routines	Yes	Yes
Memory backup battery	Yes	Yes	Yes	...	Yes	Yes	Yes
Diagnostic software	Yes	...	Yes	...	Yes	No	Yes
Digital effects port	No	No	Yes	Option	Option	Yes	Options
Automation port	for TAS	AMES system	RS-422	RS-422, GPI	Option	RS-422	Option
Input timing adjustment	...	...	...	...	...	...	Synchronizer
Path length, deviation	±1°	1.5°	3200ns	...	<0.5°	440ns	...
Crosstalk at subcarrier	-60dB	-55dB	...	...	<-60dB	-50dB	...
Link to rack electronics	Multicore	Multicore	1-line digital	1-line digital	...	1-line digital	...
Audio preview function	Yes	...	No	No	Yes	No	No
Audio metering	LED	No	No	No	No	No	No
Audio level control	Yes	No	No	No	No	No	No
Audio mixer interface	8x3 matrix	No	No	No	No	No	No
Edit control interface	No	8 GPI in	Option	Option	Yes	Yes	Option
Reader Service No	568	569	570	571	572	573	574

¹⁷ MC-501C, M502B; 30-210 V/A + 8 A only inputs; SAP; Dynabus interface. ¹⁸ AMES (Automated Memory Effects System); PVS2-112 12-input system with 4 keyers. ¹⁹ D3200 includes 20-input phantom analog package; digital inputs are 8-10 bit parallel or serial. ²⁰ Eight complex function generators with two palnt-type generators. ²¹ Includes flying the entire screen. ²² 8-to-10-bit inputs for DX300; both systems use 16/32-bit internal processing. ²³ Prodigy/P PAL composite; Prodigy C 525/60 analog component; Prodigy C/P 625/50 analog component. ²⁴ Accepts analog and digital component video signals.

Standards Converters

Manufacturer	AVS			CEL Electronics			
Model	ADAC	EOS	ISIS	P156-2	P165 PLUS	P165 TETRA ¹	P165-22 STANDI
Supports NTSC 3.58 I/O	I/O	I/O	I/O	I/O	I/O	I/O	I/O
Supports NTSC 4.43 I/O	I/O	I/O	I/O	Opt	I/O	I/O	I/O
Supports PAL CCIR I/O	I/O	I/O	I/O	I/O	I/O	I/O	I/O
Supports PAL-M I/O	& N Opt	and N	& N opt	Opt	Output	I/O	...
Supports SECAM I/O	Option	I/O	Option	Input	I/O	I/O	Opt out
Supports Y/C, S-VHS I/O	No	I/O	Option	...	I/O	I/O	I/O
Supports YC/CB I/O	Yes	Yes	Option	Input	I/O	I/O	I/O
Supports RGB I/O	Yes	...	Option	...	...	No	...
Supports CCIR 601	Option	No	Option	No	Yes	Opt	Yes
Supports D-2	No	No	No	No	...	...	No

Manufacturer	AVS				CEL Electronics		
Model	ADAC	EOS	ISIS	P156-2	P165 PLUS	P165 TETRA ¹	P165-22 STANDI
Luminance bandwidth MHz	13.5MHz	13.5	13.5MHz	12.9	13.5	13.5	13.5
Chrominance bandwidth	6.75MHz	6.75	6.75MHz	4.3	6.75	6.75	6.75
Quantizing scheme L/C	8-bit	8-bit	8-bit	7-bit	8.bit	8.bit	8-bit
Input S/N minimum	>55dB	>50dB	...	53dB	>56dB	>56dB	>56dB
Resolution B/W	5.5MHz	4.5MHz NTSC	3.58MHz	3.5MHz	4.2MHz NTSC	4.2MHz	3.5MHz PAL
Timebase correction	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Synchronizer	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frame freeze	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Field freeze	4-field	Yes	Yes	1 or 2	Yes	Yes	...
Image enhancement	Yes	Yes	Yes	...	Y & chroma	Chroma	Yes
Noise reduction Y/C	9dB	Yes	17dB/21dB	...	Yes	Yes	9dB Y/3dB C
Composite encoder	Yes	Yes	Yes	No	Yes	Yes	Yes
Enhanced NTSC PAL	Yes	Yes	Yes	...	...	...	...
Format conversion	Yes	Yes	Yes	No	Yes	Yes	Yes
Scan conversion	No	No	No	No	No	Opt	Opt
Auto input selection	Yes	Yes	Yes	Yes	Yes	...	...
Color correction	Yes	Yes	Yes	Gain; phase	Yes	Yes	Yes
Programmable	No	4-preset	No	No	Rmt Ctl	RS-423	RS-423
Gamma correction	No	No	No	No	...	...	...
Color balance	Yes	Yes	Yes	No	...	...	...
Time code control	No	No	No	No	No	No	No
Scene detection	No	No	No	No	No	No	No
Proc-amp adjustment	Full	Full	Full	Yes	Yes	Yes	Yes
Reader Service No	575	576	578	579	580	581	582

¹ -50 full system; 4 options upgrade to full system.

Manufacturer	I-DEN	OKI Electric	Quantel	Snell & Wilcox			
Model	IP-500 (-450)	LT2000TSC	Satin 601	Alchemist	Atlantis series	Atlas series	HD 2020 (2010) ²
Supports NTSC 3.58 I/O	Yes	I/O	Yes	Yes	Yes	I/O	Yes
Supports NTSC 4.43 I/O	No	In	Yes	Yes	Yes	(3600)	Yes
Supports PAL/CCIR I/O	Yes	I/O	Yes	Yes	Yes	I/O	Yes
Supports PAL-M I/O	Yes	I/O	Yes	Yes	Yes	(3600)	...
Supports SECAM I/O	Yes	I/O	Yes	Yes	Yes	I/O	...
Supports Y/C, S-VHS I/O	Yes	I/O	...	Yes	Yes	No	...
Supports YCrCb I/O	Yes	Opt	Yes	YUV	YUV	No	YUV out
Supports RGB I/O	Yes	Opt	Yes	Yes	Yes	No	RGB out
Supports CCIR 601	No	Yes	Yes	Yes	...	No	CCIR 656
Supports D-2	No	...	...	Yes	...	No	...
Downconversion from HDTV	No	No	...	...	...	No	1250/50, 1125/60
Luminance bandwidth MHz	5.5	13.5	...	<+0.5 7.57MHz	±1 3.3MHz NTSC	-3dB 3.5MHz	5.5MHz
Chrominance bandwidth	3.58	6.75	...	<1 2.75MHz	...	...	...
Quantizing scheme L/C	8-bit 4:2:2	8-bit	...	10-bit 13.5/6.75	...	...	10-bit 4:2:2
Input S/N minimum	DOC	(>25dB)	...	...	56dB	56dB	>50dB
Resolution B/W	...	420L H/330L V	...	...	...	...	...
Timebase correction	Yes	Yes	Yes	Yes	Yes	Yes	...
Synchronizer	Yes	Yes	...	Yes	Yes	Yes	Yes
Frame freeze	Yes	Yes	...	Yes	Yes	...	Yes
Field freeze	Yes	Yes	...	Yes	Yes	...	Yes
Image enhancement	-500 only	H & V	Yes	H/V	H/V	(3600)	Yes
Noise reduction Y/C	-500 only	Yes	Yes	Yes	Yes	(3600)	Yes
Composite encoder	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enhanced NTSC/PAL	...	...	...	Yes	...	...	[16:9
Format conversion	Yes	...	Yes	Yes	No	No	[16:12 aspect
Scan conversion	No	No	...	No	No	No	[ratios out
Auto input selection	No	Yes	...	Yes	Yes	No	...
Color correction	ACC circuit	Yes	...	Yes	Yes	(3600)	...
Programmable	No	Remote	Yes	Yes	No	No	No
Gamma correction	No	...	...	...	...	...	...
Color balance	No	No	...	Yes	Yes	...	...
Time code control	No	No	...	No	No	...	...
Scene detection	No	No	...	No	No	No	...
Proc-amp adjustment	Full	Full	Yes	Yes	Yes	Full	Partial
Reader Service No	583	584	585	586	587	588	589

² -2010 output 625/50, RGB, YUV and CCIR 656.

In all categories of this Specifications Comparison section, the manufacturers may offer additional models, one of which may be ideally suited to your requirements. For information on other products, contact the manufacturers.

SYSTEL - 3000

DIGITAL MULTI-HYBRID TELEPHONE SYSTEM

- Digital signal processed hybrid system.
- Microprocessor controlled via standard RS-232 or RS-422 interface.
- Up to eight telephone lines in full multiplex communication, by way of the internal MIX-MINUS buss structure.
- No preliminary adjustment or line measurement is required; simply connect it and work!
- Easy to use: the control module can be either a small dedicated console or a standard PC or compatible.
- Line functions and controls are independent for each input module; the technician's job is made easier than ever, even in the software version.
- The switching section handles up to eight telephones, plus the control telephone and the studio telephone.
- Each input module includes:
 - Superb 60dB sidetone rejection.
 - 128 step digital adaptive filter.
 - 24 bit coefficients.
 - 16 bit sigma-delta A/D converters.
 - Switched-capacitor antialiasing filter, with 80dB rejection.
 - Line inputs safety protected against line transients and discharges, according to CCITT regulations.
- Some of the functions included on the digital processed section are:
 - Digital AGC included in the self-adaptive filter.
 - Doubletalk detection, without influence in the adaptive procedure.
 - Noise reduction procedure, using a white noise generator applied in the digital domain.
 - Noise free line switching, using stand-by signal timing.
 - Supervisory function of line status, with detection of dialing tones and signalling (busy line, disconnection, etc.)



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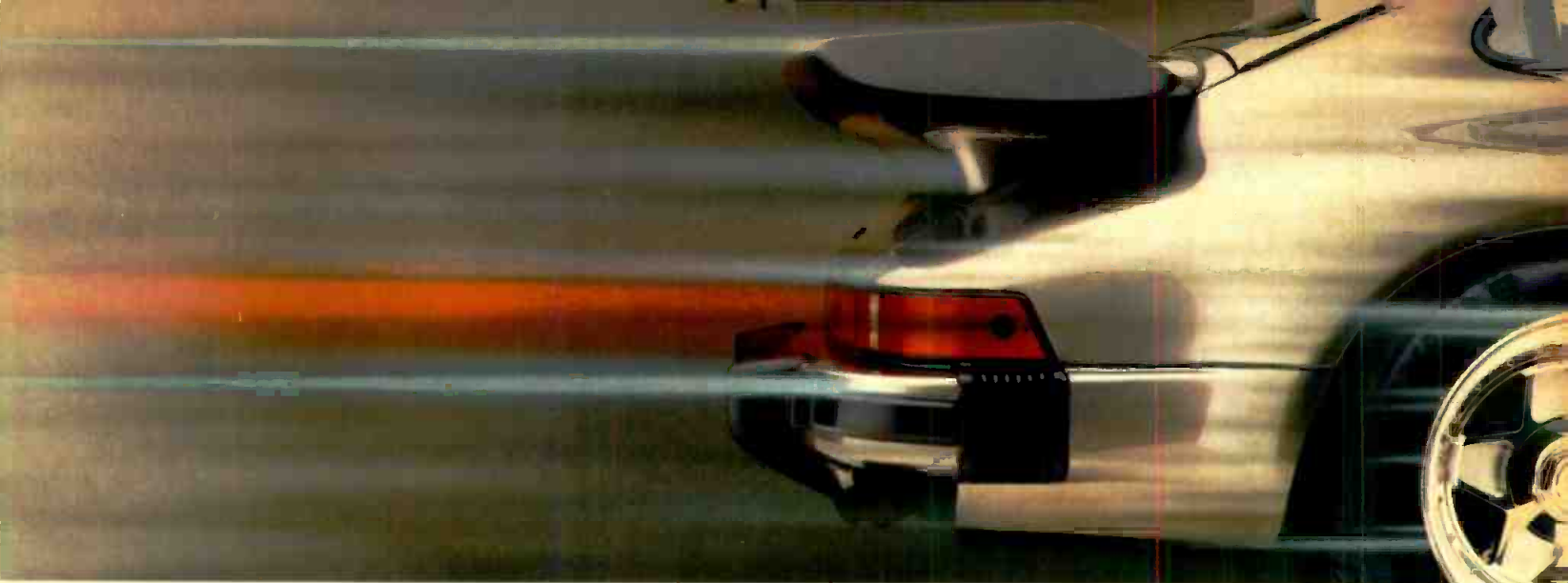
Circle (28) on Reply Card

Manufacturer	Snell & Wilcox		Video International		Video Int'l/Grunder		Vistek Electronics
Model	ME8800	ME9900 series	DTC 3504	DTC 3604	DTC 1504	DTC 2604	V4401 VECTOR
Supports NTSC 3.58 I/O	I/O	I/O	I/O	I/O	I/O	I/O	Yes
Supports NTSC 4.43 I/O	I/O	I/O	Yes	I/O	I/O	I/O	Yes
Supports PAL CCIR I/O	I/O	I/O	Yes	I/O	I/O	I/O	Yes
Supports PAL-M I/O	8800	(9930)	& -N	I/O	I/O3	I/O & -N	Yes
Supports SECAM I/O	I/O	(I/O 9930)	Yes	I/O	I/O	I/O	Yes
Supports Y/C, S-VHS I/O	Yes	(9910 DUB)	Yes	I/O	I/O	I/O	No
Supports YCrCb I/O	Yes	(9930)	Yes	I/O	I/O	I/O	Yes
Supports RGB I/O	No	(9930)	Yes	I/O	...	Option	Yes
Supports CCIR 601	No	No	D1	D1	...	No	Yes
Supports D-2	...	...	No	No	...	No	No
Downconversion from HDTV	No	No	No	No	No	No	Yes
Luminance bandwidth MHz	3.3MHz	3.3MHz	13.5	13.5	...	13.5	13.5
Chrominance bandwidth	...	...	6.75	6.75	...	6.75	6.75
Quantizing scheme L/C	8-bit	8-bit	8-bit	8-bit	8-bit/4:2:2	8-bit/4:2:2	8-bit
Input S/N minimum	56dB	56dB	60dB	60dB wtd	60dB	60dB wtd	...
Resolution B/W	...	4-field motion	>5.5	>5.5	...	>5.5	5.5MHz
Resolution V	...	processing	...	...	...	...	...
Timebase corrector	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Synchronizer	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frame freeze	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Field freeze	Yes	Yes	1 or 2	4-field	Yes	4-field	Yes
Image enhancement	Yes	Yes	Yes	H/V	Yes	H/V	...
Noise reduction Y/C	Yes	Yes	Yes	15dB	15dB	15dB	Yes
Composite encoder	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enhanced NTSC/PAL	...	...	Opt Comb	...	...	...	...
Format conversion	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scan conversion	No	No	No	No	No	No	No
Auto input selection	Yes	Yes	Yes	Yes	No	Yes	Yes
Color correction	Yes	Yes	Yes	Yes	Level only	Yes	Yes
Programmable	Yes	Yes	No	No	No	No	No
Gamma correction	...	...	No	...	No	...	No
Color balance	Yes	Yes	Yes	Yes	No	Yes	No
Time code control	...	...	No	No	No	No	No
Scene detection	No	No	No	No	No	No	No
Proc-amp adjustment	Full	Full	Full	Full	Yes	Full	Full
Reader Service No	590	591	592	593	594	595	596

Video Processing Systems

Products in this group serve various signal processing functions, including video color correction, encoding & decoding, format conversions & translations, image enhancement, line doubling and noise reduction.

Manufacturer	Accom		ALTA Group	AVS	Broadcast Video Systems				BTS
Model	D-Bridge 122 ¹	DIE-125 ² D	Celeris	SIGMA	#734/#735	#740 750	D100 (D101)	EN300/350/450	CNR7
Processing function	Encoder	Enhancer	Format converter	Noise reduction	Translator	Component translator	Decoder	Encoders	Noise reduction
Supports NTSC	Yes	Yes	Yes	Yes	[#743 for	[#740 RGB to	Yes	Yes	Yes
Supports PAL	Yes	...	No	Yes	[RGBS to	[YCrCb	(D101)	EN300	Yes
Supports SECAM	No	No	No	No	[YCrCb	No	No	No	...
Format conversion	Yes	Yes	Yes	Yes	[#735 for	Yes	Yes	350, 450	Yes
Supports Y/C 3.58	No	No	Yes	Yes	[YCrCb	[#750 RGB from	Yes	350, 450	Yes
Supports Y/C 688	No	No	Yes	...	to RGBS	[YCrCb	...	No	Yes
Supports RGB	Yes	Yes	No	Yes	Yes	Yes	Out	Yes	Yes
Supports YCrCb	Yes	Yes	No	Yes	Yes	Yes	Out	350, 450	Yes
Supports CCIR 601/D1	Yes	Yes	No	Processing	No	No	No	No	...
Supports D2	Yes	No	No	...	No	No	No	No	...
H enhancement	No	Yes	No	...	No	No	Video EQ	No	Yes
V enhancement	No	Yes	No	...	No	No	No	No	Yes
Noise reduction	No	Yes	No	3-16dB	No	No	No	No	Yes
Color correction	Yes	No	L/C delay	3-16dB	Yes	No	No	No	Yes
Contrast correction	Yes	No	No	...	Yes	No	No	No	Yes
Sync regeneration	Yes	Yes	Yes	TBC function	Yes	Yes	No	350, 450	TBC
Proc amp control	Yes	No	No	...	Partial	Yes	Partial	No	Yes
Programmable	Yes	Yes	No	...	No	No	Memories	No	...
Time code control	No	No	No	No	No	No	No	No	No
RS-232/422 control	Yes	Yes	No	No	No	No	RS-422	No	...
Composite encoder	Yes	No	Yes	Yes	No	No	...	Yes	Yes
Enhanced NTSC encoder	Yes	No	No	...	No	No	...	No	...



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The TETRA is fully bi-directional so you can get to or from NTSC, or PAL, or SECAM and back again faster than anything else in its class. TETRA also has the power of full bandwidth in 8-bit 4:2:2 and seats more standard features than converters twice the price.

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Circle (32) on Reply Card



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Manufacturer	Accom		ALTA Group	AVS	Broadcast Video Systems				BTS
Model	D-Bridge 122 ¹	DIE-125 ² D	Celeris	SIGMA	#734/#735	#740/750	D100 (D101)	EN300/350/450	CNR7
Video bandwidth	to 5.75MHz	to 5.75MHz	-3dB 6MHz	3.3MHz	...	10MHz	to 5MHz	5/5.5/6MHz	-3 +0.5dB 4MHz
Video S/N ratio	65dB	54dB	56dB	...	...	46dB	...	45/45/60dB	...
Envelop delay	5ns	5ns	Adjustable	...	...	4ns Δ	<20ns	±15/15/10ns	Adjustable
Δφ/G	0.2°, 0.2%	0°, 0%	...	...	...	...	...	...	...
Reader Service No	601	602	603	604	605	606	607	608	609

¹ D-Bridge 221 is companion decoder unit. ² Designed for reduction of noise and grain in film-to-tape transfer operations.

Manufacturer	BTS	CEL Electronics	Central Dynamics	Digital Vision	Faroudja Laboratories			For-A	Grass Valley Group
Model	DNR7 ³	P171	STAGE ★1 E-NTSC	DVCC1000	CTE-2	LD-1	VHP-N/P	CT-600	EMPHASYS #11
Processing function	Noise reduction	Encoder	Encoder	Color correction	Encoder	Line doubler	Enhancer	Format conversion	Encoder
Supports NTSC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports PAL	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
Supports SECAM	Yes	No	No	No	No	No	Yes	...	No
Format conversion	Yes	...	Yes	No	Yes	Yes	No	No	No
Supports Y/C 3.58	No	No	Yes	No	Yes	No	No	Yes	No
Supports Y/C 688	No	No	...	No	No	No	No	Yes	No
Supports RGB	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Supports YCrCb	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Supports CCIR 601/D1	Yes	Yes	Yes	Yes	No	No	No	No	No
Supports D2	No	No	Yes	No	No	No	No	Yes	10-bit
H enhancement	...	[Through	Yes	Yes	Yes	Yes	Yes	No	Hi freq boost
V enhancement	...	[artifact	Yes	Yes	Yes	Yes	Yes	No	...
Noise reduction	C/L	[reduction	No	...	No	Yes	No	No	Artifacts ⁴
Color correction	Yes	No	No	Yes	No	No	No	No	No
Contrast correction	...L	No	No	Possible	No	Yes	Yes	No	No
Sync regeneration	per CCIR	No	Yes	TBC function	Yes	Yes	No	Yes	Yes
Proc amp control	Yes	No	No	Partial	Yes	No	No	Yes	Yes
Programmable	...	No	Yes	w/IBM-PC	No	No	No	No	...
Time code control	...	No	No	LTC/VITC	No	No	No	No	No
RS-232-422 control	...	Yes	Yes	...	No	No	No	No	No
Composite encoder	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes
Enhanced NTSC encoder	...	Improved	Yes	...	Yes	No	No	...	Yes
Video bandwidth	per CCIR	to 5MHz	5.5MHz	[10-bit	6MHz	9MHz	4.2MHz	5MHz	5.75MHz
Video S/N ratio	...	...	>60dB	[4:2:2	>60dB	...	>60dB	>60dB	>65dB
Envelop delay	...	...	<10ns	[processing	<25ns	...	<20ns	...	...
Δφ/G	...	...	...	...	1°, 1%	...	2.5°, 2.5%	1°, 1%	...
Reader Service No	610	611	612	613	614	615	616	617	618

³ Integration into various production configurations with CD7 encoder, DC7 decoder; D-1. ⁴ 2-D, Lo/Hi, vertical and diagonal filtering modes for removal of cross luminance and cross color artifacts.

Manufacturer	I-DEN	Intelvideo		Laird	Leitch Video	Magni Systems		Microvideo	Philips
Model	IVS-3 (-4/-5)	IV-6 (IV-4)	IV-7 (IV-8) ⁵	1032 (1032Y/C)	VE-3210N	125AD (125DA)	4004/4005	CCIR656	PM 5638
Processing function	Translator	Encoder (decoder)	Decoder (encoder)	Encoder	Signal encoder	Transcoding	Encoder	Coder (decoder)	Encoder
Supports NTSC	No	Yes	Yes	Yes	Yes	...	4004	Yes	5638M
Supports PAL	[-3 RGB to	No	No	No	No	...	4005	Yes	5638G/N/P
Supports SECAM	[YCrCb	No	No	No	No	...	No	No	No
Format conversion	[-4 YCrCb		Opt	No	No	Yes	from Amiga 2000	No	No
Supports Y/C 3.58	[to RGB	(IV-4)	(Out opt)	Yes	No	...	...	No	No
Supports Y/C 688	No	...	...	S-VHS	No	...	S-VHS	No	No
Supports RGB	Yes	(Yes)	Yes	Yes	No	Yes	Yes	Yes	Yes
Supports YCrCb	Yes	(Yes)	Yes	...	No	Yes	No	Yes	Yes
Supports CCIR 601/D1	No	No	No	No	No	[RP125	No	Yes	No
Supports D2	No	(Option)	No	No	No	[EBU 3246	No	Yes	No
For dubbing	...	Yes	Yes	...	No	...	No	...	Yes
For production	5.5MHz	Yes	Yes	...	4.5MHz	...	No	...	Yes
For on-air	...	Yes	Yes	...	...	...	No	...	Yes
H enhancement	N.A.	(Yes)	IV-3	...	8- or 10-bit	No	No	No	No
V enhancement	58dB	Yes	IV-3	...	No	No	No	No	No
Noise reduction	[-5 converts	Artifacts	See Note ⁶	...	No	No	No	No	No
Color correction	[CTDM, CTCM	No	No	...	Yes	No	No	No	No
Contrast correction	[component to	No	No	...	Yes	No	No	No	No
Sync regeneration	[YCrCb	No	No	RS-170	Yes	No	RS-170 genlock	No	Yes
Proc amp control	No	No	No	Partial	Yes	No	Yes	[codes analog	...

Manufacturer	I-DEN	Intelvideo		Laird	Leitch Video	Magni Systems		Microvideo	Philips
Model	IVS-3 (-4/-5)	IV-6 (IV-4)	IV-7 (IV-8) ⁵	1032 (1032Y/C)	VGE-3210N	125AD (125DA)	4004/4005	CCIR656	PM 5638
Programmable	No	No	No	No	No	No	via PC	[components to	No
Time code control	No	No	No	No	No	No	...	[serial digital	No
RS-232-422 control	No	No	No	No	No	Yes	via PC	[decodes	Simple remote
Composite encoder	No	IV-6	Yes	Yes	No	No	Yes	[parallel	Yes
Enhanced NTSC encoder	No	Yes	(IV-3 encoder)	...	No	10-bit	...	[digital into	No
Video bandwidth	...	to 6.5MHz	>15MHz; >10Mhz	5MHz (8MHz)	±0.1dB 5MHz	±0.3 5.5MHz	>34dB 4.2MHz	[analog	to 8MHz
Video S/N ratio	Yes	...	...	56dB (72dB)	>60dB	>60dB	...	[components	75dB
Envelop delay	...	±25ns Y to C	±25ns Y to C	...	...	...	...	...	<20ns
Δφ/G	...	2/2%	2/2% (1/1%)	...	<0.2°, 0.5%	...	±1°, 1%	...	<0.15°<0.2%
Reader Service No	619	620	621	622	623	624	625	626	627

⁵ IV-3 encoder uses digital color modulation for enhanced NTSC using Intelcomp for greater detail. ⁶ Optional digital delay comb filter.

Manufacturer	Sierra Video Systems	Sony	Thomson	Vistek Electronics					
Model	Delta Series	BVX-D10	COLORADO	205N ⁷ (204N)	660JN ⁸	ACC200	V1010 series	V4000 series	V4130 series
Processing function	Format conversion	Format translation	Color correction	Encoder	Color corrector	Color correction	Format conversion	Transcoder	Encoders
Supports NTSC	No	Yes	No	Yes	Yes	No	...	Yes to PAL-M	3.58/4.43
Supports PAL	No	Yes	No	No	No	No	YUV	I, G, B, N	I/B/G/M/N
Supports SECAM	No	No	No	No	No	No	No	Yes	No
Format conversion	Yes	Yes	No	No	No	Yes	Yes	No	No
Supports Y/C 3.58	No	...	No	No	No	No	No	No	No
Supports Y/C 688	No	...	No	No	No	No	No	No	No
Supports RGB	Yes	Digital	Digital	Yes	Yes	Yes	Yes	Yes	Yes/YUV
Supports YCrCb	Yes	Digital	No	Yes	Yes	Yes	Yes	No	Yes
Supports CCIR 601/D1	No	Yes	Yes	No	No	No	No	No	No
Supports D2	No	Yes	No	No	No	No	No	No	No
H enhancement	No	No	No	Yes	No	...	No	...	...
V enhancement	No	No	No	No	No	...	No	...	58dB
Noise reduction	No	No	...	No	No	...	No	[4021 PAL	[encoding and
Color correction	No	[Gamma, gain	Yes	No	Yes	...	No	[4022 NTSC	[re-encoding of
Contrast correction	No	[Setup of RGB	...	No	Yes	...	No	[decoder units	[original or
Sync regeneration	No	No	No	Yes (No)	No	...	[Models for	[for conversion	[decoded RGB
Proc amp control	No	Yes	Yes	Yes (No)	No	...	[conversion	[between NTSC	[or YCrCb
Programmable	No	No	Yes	No	No	...	[among RGB, signals and	[to composite	...
Time code control	No	No	Yes	No	Yes	...	[RGS, and	[PAL-M or from	[output
RS-232-422 control	No	RS-422 comm.	Yes	No	No	...	[YCrCb	[PAL-I/B/G/N	...
Composite encoder	No	...	No	Yes	No	...	No	[to SECAM	Yes
Enhanced NTSC encoder	No	No	No	No	No	...	No	No	...
Video bandwidth	20MHz	13.5MHz Y	per CCIR 601	6MHz	5 MHz	6MHz	<0.1 5.5MHz	±1 5.5MHz	±0.2 5.5MHz
Video S/N ratio	60dB	...	per CCIR	60dB	65dB	60dB	>66dB	...	>64dB
Envelop delay	5ns	...	...	1100ns	450ns	30ns	...	<20ns	<10ns
Δφ/G	...	...	...	0.5	0.5%	...	...	...	...
Reader Service No	628	629	630	631	632	633	634	635	636

⁷ Model 205N provides genlock feature. ⁸ 600JN is similar unit providing color correction for component video.

Time Code Equipment

Manufacturer	Adams-Smith	Adrienne Electronics	Cipher Digital					
Model	System 2600	AEC-BOX series	PC-LTC (-VITC)	CDI-1000/-1200	CDI-1400	CDI-4800 Shadow II	CDI-4815 Phantom II ³	CDI-750
Portable unit	No	...	PC card	No	No	No	No	No
Internal reference	Yes	...	Yes (...	No	Yes	Yes	No	Yes
Reader function	Yes	Yes	Yes	Yes	...	Yes	Yes	Yes
Generator function	Yes	No	Yes	No	Yes	No	No	Yes
Character generator function	Yes	...	No	No	No	No	No	Yes
Supports drop frame	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports non dropframe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports color framing	Yes	Yes	Yes	N.A.	Yes	...	...	Yes
Supports jam sync	Yes	...	...	N.A.	Yes	No	No	Yes
Supports 3:2 film pull-down	Yes	...	...	No	...	...	...	No
Supports LTC	I/O	Box-1/-2/-20	Yes	I/O	I/O	Input	Input	I/O
Supports VITC	I/O	Box-10/-20	(Yes)	-1000 translator	No	No	No	No
Editor interface	Yes	RS-232/-422	RS-323/-422 opt	Yes	No	Yes	Yes	Yes
Character keyer	Yes	...	...	Yes	Yes	No	No	Yes
Keyed window display	Adj	...	...	Yes	Adj	No	No	Adj

Manufacturer	Adams-Smith	Adrienne Electronics			Cipher Digital			
Model	System 2600	AEC-BOX series	PC-LTC (-VITC)	CDI-1000/-1200	CDI-1400	CDI-4800 Shadow II	CDI-4815 Phantom II ³	CDI-750
Time code entry	Yes	...	Yes	No	Yes	No	No	Yes
Time code comparisons	Yes	Not Box-1	Yes	[Control track	No	Yes	Yes	Yes
User bit entry	Yes	...	Yes	[TACH input	Yes	No	No	Yes
Synchronizer function	Yes	No	No	No	[24-frame	Yes ²	Yes	No
TC UB display	LED	...	No	LED	LED	...	...	LED
TC UB display size	Various	...	No	...	...	...	...	0.7"
Reading speed range	1-100x	1/10-80 ¹	1/30x-80x/-1, +3x	(1/30-50x -1200)	Generates at 2x	1/30-50x	1/30-50x	1/30-80x
LTC output signal	1Vp-p	...	Yes (VITC)	-1000 only	+4dBm 600Ω	...	...	+4dBm 600Ω
Power requirement	110/220Vac	115Vac	From PC	110/220Vac	110/220Vac	110/220Vac	110/220Vac	110/220Vac
Reader Service No	637	638	639	640	641	642	643	644

¹ Box-1 to 2.2x; Box -10 -1x to +3x range. ² To synchronize and control one master and one slave. ³ Interface for one transport; for standard parallel interface, VO-5800/5850. third jack for future types.

Manufacturer	Denecke	ESE				Evertz Microsystems		
Model	TC-1 (Syncbox)	ES452	ES453	ES455 ⁴	ES461	ES488	4015 ⁵	7200e ^{2,6}
Portable unit	Yes	No	No	No	No	No	No	No
Internal reference	Yes	No	No	No	Yes	Yes	Yes	No
Reader function	TC-1	Yes	Yes	Yes	No	Yes	No	Yes
Generator function	Syncbox	...	No	No	Yes	Yes	Yes	No
Character generator function	...	Yes	No	No	No	Yes	Yes	No
Supports drop frame	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports non dropframe	...	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports color framing	...	No	No	No	Yes	Yes	Yes	Yes
Supports jam sync	Yes	No	No	No	Yes	Yes	No	No
Supports 3:2 film pull-down	...	No	No	No	No	No	Yes	No
Supports LTC	Yes	In	In	In	I/O	I/O	Opt	In (VITC Input)
Editor interface	Opt	No	Yes	No	No	No	No	Yes
Character keyer	No	Yes	No	No	No	Yes	Yes	No
Keyed window display	No	Multiline	No	No	No	Adj	...	No
Time code entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
User bit entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Synchronizer function	No	No	No	No	No	No	No	Yes
TC UB display	TC-1 LED	Video	LED	LED	LED	LED	LED	...
TC UB display size	...	5% of screen	0.56"	0.56"	0.56"	0.56"	0.75"	...
Reading speed range	1/50-50x	1x	1x	1/30-30x	...	1/30-30x	...	0-70x
LTC output signal	1V 10kΩ	...	...	...	1V 0dBm 75Ω	1V 0dBm 75Ω	-20/12dBm	...
Power requirement	ac/dc	110Vac	110Vac	110Vac	110Vac	110Vac	110/220Vac	12Vdc
Reader Service No	645	646	647	648	649	650	651	652

⁴ ES 455 includes window dubber feature. ⁵ Film footage. ⁶ Intelligent interface encoder

Manufacturer	Evertz	Fast Forward Video		For-A	Gray Engineering Laboratories			
Model	EV-Bloc ⁷	F30	P1 (F22)	TGR-2000	DR-107B	DT-104FC	DTR-313 series	DT-213 VID-225
Portable unit	No	No	P1	No	No	No	No	No
Internal reference	Yes	Yes	Yes	Yes	...	Yes	Yes	Yes
Reader function	611	Yes	Yes	Yes	Yes	Slave	Yes	Yes
Generator function	612	Yes	Yes	Yes	No	Yes	Yes	Yes
Character generator function	613	Yes	F22 ⁸	Yes	Yes	...	Yes	Yes
Supports drop frame	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports non dropframe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports color framing	Yes	Yes	No	Yes	...	Yes	Yes	Yes
Supports jam sync	Yes	Yes	Yes	Yes	N.A.	Yes	...	Yes
Supports 3:2 film pull-down	...	No	No	No	Yes	Yes	Yes	Yes
Supports LTC	I/O and VITC	I/O	I/O	I/O	Yes	Yes	Yes and VITC	I/O and VITC
Editor interface	Yes	Yes	No	Yes	Yes	Yes	Remote	Yes
Character keyer	613	Yes	F22	Yes	Yes	No	Yes	Yes
Keyed window display	Yes	Yes	No (Adj)	Adj	Yes	No	Yes	Adj
Time code entry	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Time code comparisons	...	No	No	No	...	...	...	Yes
User bit entry	Yes	Yes	(F22)	Yes	No	Yes	Yes	Yes
Synchronizer function	No	No	No	...	No	Yes	...	No
TC UB display	LED	LED	LCD (LED)	LED	No	LED	LED	LED
TC UB display size	0.75"	0.55"	... (0.55")	Adj.	No	...	...	0.6"
Reading speed range	0-70x	1/30-15x	1x (1/30-15x)	1/30-80x	1/100-100x	...	...	1/40-100x
LTC output signal	+6dBm	0.5-8V	0dBm (0.5-8V)	2.2Vp-p	Reconstituted	+8dBm	+8dBm	+8dBm 600Ω adj
Power requirement	110/220Vac	110/220Vac	12Vdc (110Vac)	110Vac	110Vac	110Vac	110Vac	100/220Vac
Reader Service No	653	654	655	656	657	658	659	660

⁷ Modular system of building blocks to perform required functions. ⁸ P2 includes character inserter.

Manufacturer	Horita	OpTex	Skotel				Sony	Telcom
Model	TG-50 TRG-50 ⁹	AVTC-20	TCG-313 (FTK)	TCG-333	TCG-80N-FT	TCT-412 (421) ¹⁰	BVG series	PC 600
Portable unit	Yes	Yes	No	No	No	No	(BVG-100)	PC card ¹¹
Internal reference	No	Yes	Yes	Yes	No	[LTC-VITC and	Yes	...
Reader function	TRG-50	Yes	Yes	Yes	Yes	[(VITC-LTC)	BVG-1600	Yes
Generator function	Yes	Yes	Yes	Yes	Yes	[translators	BVG-1500	No
Character generator function	Yes	-20VI	Yes	Yes	Yes	No	Yes	via PC
Supports drop frame	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports non dropframe	Yes	...	Yes	Yes	Yes	Yes	Yes	Yes
Supports color framing	No	...	Yes	Yes	Yes	Yes	Yes	Yes
Supports jam sync	Yes	Yes	Yes	Yes	Yes	Yes	Yes	...
Supports 3:2 film pull-down	No	...	No	Yes	No	No	...	Yes
Supports LTC	I/O	Yes	I/O	I/O	I/O	In (Out)	Yes	Yes
Supports VITC	with VLT-50	...	No	I/O	Output	Out (In)	Yes	...
Editor interface	No	No	No	...	No	[LTC sampled	Yes	...
Character keyer	Yes	...	Yes	Yes	Yes	[at frame rate	Yes	Yes
Keyed window display	WG-50	...	Adj	Adj	Adj	[for non-play	Yes	No
Time code entry	Yes	Yes	Yes	Yes	Yes	[speed use. Yes	Yes	...
Time code comparisons	No	No	No	Yes	No	[may duplicate	...	...
User bit entry	Yes	Yes	Yes	Yes	Yes	[address or skip	Yes	Yes
Synchronizer function	No	No	No	No	No	[in sequence.	No	No
TC UB display	...	LED	LED	Variable	LED	LED	LED	PC CRT
TC UB display size	...	...	0.6"	Variable	0.3"	0.56"	...	...
Reading speed range	1/30-10x	...	1/40-80x	Still-±50X	0.9-1.1x	1/40-80x	...	1/40-70x
LTC output signal	1V/-6dBm 2kΩ	3dB 1kΩ	0.5-5V 100Ω	0.5-4.5Vpp	0.5-5V 100Ω	0.5-5V 100Ω	to 8dBm	...
Power requirement	110Vac 9-12Vdc	12Vdc	ac/dc	110Vac	ac/dc	ac/dc	110ac (9dc)	From PC
Reader Service No	661	662	663	664	665	666	667	668

⁹ TRG-50PC for IBM/compatibles w/PC-LOG, TC-TOOLKIT software; RS-232 serial communication; RLT-50 Hi8 to LTC translations; WG-50 window dub in-serfer. ¹⁰ supports KEYCODE data. ¹¹ TC-LOG, EDL, BUF600, PC600 DRV software; Executive Producer software from Imagine Products.

Manufacturer	Telcom Research				Time Line	United Media	
Model	T 102	T5010	T911 processor ¹³	TCR 680	Lynx TC module	Model 505	515 TCR CG
Portable unit	Desktop	No	No	Yes	No	Yes	Yes
Internal reference	Yes	Yes	Yes	...	Yes	Yes	Yes
Reader function	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Generator function	Yes	Yes	Yes	No	Yes	Yes	No
Character generator function	Yes	Yes	Yes	Yes	No	Yes	Yes
Supports drop frame	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports non dropframe	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports color framing	Yes	Yes	Yes	...	No	Yes	Yes
Supports jam sync	Yes	Yes	Yes	...	Yes	Yes	Yes
Supports 3:2 film pull-down	No	No	Yes	No	Film module	Yes	Yes
Supports LTC	I/O	I/O	Yes	Input	I/O	I/O	I/O
Supports VITC	No	No	Yes	No	No	I/O	I/O
Editor interface	via PC	No	Yes	No	Yes	Yes	Yes
Character keyer	EFP ¹²	Yes	Yes	Yes	No	Yes	Yes
Keyed window display	...	Adj	Yes	Adj	No	Multi-line Adj	Multi-line Adj
Time code entry	via PC	Yes	Yes	...	Yes	Yes	Yes
Time code comparisons	...	No	Yes	...	No	Yes	Yes
User bit entry	Yes	Yes	Yes	...	Yes	No	No
Synchronizer function	No	No	No	...	Yes	No	No
TC UB display	EFP PC CRT	LED	LED	Video	LED	LED	LED
TC UB display size	...	0.8"	0.8"	...	0.3"	4"	4"
Reading speed range	1/40-8x	1/30-8x	...	1/50-8x	1/2-60x	1/20-50x	1/20-50x
LTC output signal	11dBm 600Ω	11dBm 600Ω	11dBm 600Ω	...	-1dBm 200Ω adj	0.5-4Vp-p	0.5-4Vp-p
Power requirement	117Vac	110/220Vac	110/220Vac	8-16Vdc	110/220Vac	110/220Vac	110/220Vac
Reader Service No	669	670	671	672	673	674	675

¹² EFP Electronic Front Panel display on EGA, VGA, 8514A video adapter and CRT; TC-LOG, EDL software packages. ¹³ Includes MIDI/MTC output and translations from LTC/VITC to MTC.

Editing Control Systems

Manufacturer	Abekas Video	ALTA Group	Ampex	Amtel Systems	Axial Corp.	BTS	Calaway Editing	
Model	A34 Solo ⁶	Pyxis (E)	ACE 25 ⁴	E-Pix	Axial	BBE-910 ⁵	CD-400	CE-210 (110) ⁷
Suggested for	On-line	On-line	On, Off-line	Off-line	On-line	On/off-line	On-line	On-line
Editing type	Linear	A/B roll	Linear	Non-linear	Either	...	...	...
Transports controlled R P	2-R, 4-P	1R/2P	1R, 3P	8 R, 8 P	48 devices	1R, 3P	13 VTRs	8 (4)
Videodisc interface	No	...	No	Yes	Yes	No	...	...
Control μ type	Centralized	...	80286 PC	Distributed	Proprietary	PC	Central 8-bit	80386 DOS

Manufacturer	Abekas Video	ALTA Group	Ampex	Amtel Systems	Axial Corp.	BTS	Calaway Editing	
Model	A34 Solo ¹	Pyxis (E)	ACE 25 ⁴	E-Pix	Axiel	BBE-910 ⁶	CD-400	CE-210 (110) ⁷
# events (internal storage)	512	None	1000	2000	...	128	9999-line	3000 (1980)
External event storage	FD	{Dual-channel	FD dual 3.5"	Floppy disk	MO disk	None	FD	FD
Edit decision list	Yes	{TBC facility	Yes	Yes	Yes	Yes	TurboTrace+	TurboTrace+
Edit data display	CRT	{(E) includes	CRT	CRT	CRT	CRT	CRT	CRT
Printer interface	3.5" disk on PC	{Synchronizers	RS-232 ser/par	Centronics parallel	36-pin	None	Yes	Yes
Command entry via	Keyboard	Control panel	Keyboard	Keyboard	Keyboard	Keyboard	Keyboard	Keyboard
Deck motion control via	KB, Joystick ²	None	Keyboard, Knob	Joystick	Trackball	Keyboard, knob	Knob	keys
Assemble edit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Insert edit	Yes	...	Yes	Yes	Yes	Yes	Yes	...
Split A-V edits	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
A-B sync roll	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Animation mode	No	{Includes audio	No	Yes	Yes	...	Yes	Possible
Integral TC reader	No	{& video mix	No	No	...	Yes	...	...
Integral TC generator	No	{capability	No	No	...	No	...	...
Time reference support for	LTC VITC Ctl-Trk	None	LTC VITC CtlTrk	LTC VITC	LTC	Ctl-Trk	LTC VITC CtlTrk Sync	...
Color framing	Yes	...	Yes	Yes	Yes	NTSC, PAL	NTSC PAL	NTSC & PAL
Editing accuracy	1 TC ± 2 CtlTrk ³	...	0 TC ± 1 CtlTrk	± 0 TC	...	TC	± 0 TC, ± 2 CTL	...
Interfaces available	AF mixer, Video EFX system	GPI triggers	AF Vd Xtch Multi-ATR, Ser/Par interface	AF mix, VD xtch, Multi ATR, Titler	RS422/-232/-GPI	Switcher, mixer, VTR, GPI equipment	V/A mixers, A/V mixers, TBC	VTRs, Prvw xtchr
Control protocol	RS-422, GPI	...	RS-232	RS-422	GPI	Ethernet	RS-422	RS-422, ESBUS, GPI
Reader Service No	677	678	679	680	681	682	683	684

¹ Combines editing control with 8-input A/V switcher, 2-D digital effects, 3 TBCs, flying bus, luma and DSK keying. ² Or thumb wheel control. ³ Accuracy dependent upon VTRs used in the system. ⁴ ACE-200 (20 GPIs, 16 devices), ACE 10 (4 GPI, 2P/1R VTRs), ACE Micro (4 GPIs, 4VTRs) have characteristics similar to the ACE 25 system. ⁵ ACE-MIF, digital effects system on GPI. ⁶ BBE-600, scaled down version with fewer VTRs and reduced effects type control. ⁷ Related systems include CE-25 cutsonly, CE-75 A/B roll with 999-line EDL.

Manufacturer	Cipher Digital	CV Technologies	Ediflex Systems	EMC Editing Machines	FOR-A	Grass Valley Group		JVC Professional Products	
Model	CDI-5000 Softouch II	Edit Master	Ediflex II ⁸	EMC ⁹	EC-740	VPE-141	VPE-151	RM G850U	RM G86U
Suggested for	On-line	On-line	...	Off-line	On-line	On, Off	On-line	Off-line	Off-line
Editing type	Linear	Linear	Non-linear	Non-linear	Linear	Linear	Linear	Linear	Linear
Transports controlled R P	4-R, 4-P	1R 4P	1/2" options	Opt configs	1R, 2P	1-R, 6-P	1-R, 6-P	1-R, 2-P	1-R, 1-P
Videodisc interface	No	...	WO MO disk	Option	...	No	...	No	No
Control μ type	Multiple	80286, 68000	Proprietary	PC	...	...	...	...	...
# events (internal storage)	16	900	...	...	1-event	2,000	16,000	1 event	1 event
External event storage	3.5" FD	Floppy disk	Floppy disk	FD	None	FD, papertape	FD, papertape	None	None
Edit decision list	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Edit data display	CRT	CRT	CRT	RGB CRT	LED displays	CRT	CRT	LED display	LED display
Printer interface	RS-232, parallel	via PC	...	RS-232	None	RS-232	RS-232	...	...
Command entry via	Keyboard	Keyboard	GUI/pointer	Keyboard	Keyboard	KB	Keyboard	Keyboard	Keyboard
Deck motion control via	Keyboard	Keyboard	GUI/pointer	Keyboard	Knob	KB	Keyboard	Knobs	Knobs
Assemble edit	...	Yes	Yes	Option	Yes	Yes	Yes	Yes	Yes
Insert edit	{Audio editor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Split A V edits	{stores setup	4-ch audio	Yes	Yes	Yes	Yes	Yes	No	No
A B sync roll	{w/edit list	Yes	...	...	Yes	Yes	Yes	No	No
Animation mode	{Interface to 4	...	Yes	No	...	Option	Yes	No	No
Integral TC reader	{Shadow II and	Yes	KEYCODE data	No	...	No	No	No	No
Integral TC generator	{CDI-750 G/R.	Yes	...	No	...	No	No	No	No
Time reference support for	LTC	VITC/LTC	LTC	LTC	...	L/V/CT	L/V/CT	LTC CtlTrk	CtlTrk
Color framing	...	...	...	Yes	...	Yes	Yes	N	N
Editing accuracy	0.01 Frame/TC	...	...	...	± 2	± 0 TC, ± 1 CT	± 0 TC, ± 1 CT	0 TC ± 2 CtlTrk	± 2 CtlTrk
Interfaces available	...	Various	...	...	Various	AF Mixer, Video Prod Switcher, Still Store Multitrack-ATR, Titler, Digital Effects	...	...	...
Control protocol	RS-232, GPI	...	...	...	GPI, RS-422	RS-422	RS-422	RS-422	Other
Reader Service No	685	686	687	688	689	690	691	692	693

⁸ Provides optional hybrid disk/tape systems; Optiflex uses rewritable MO media exclusively. ⁹ EMC¹ hard-disk based; EMC² MO optical disks for source material; EMC-PC is editing software only for PCs/compatibles.

Manufacturer	NEC America	OLE Partnership	Paltex			Panasonic PCSC		QUANTEL	Sony
Model	VUES	Lightworks	Abner-II	Europa (Plus)	ECS-85	AG-A770	AG-A800	Harry Suite	BVE-600 (BVE-910)
Suggested for	On-line	Off-line	On-, Off-line	On-, Off-line	On-line	...	On-line	Either	On (& Off) line
Editing type	...	Random	Linear	Linear	Linear	2-machine	A/B roll	Random	Non-linear
Transports controlled R P	...	5 VTRs	1 R, 2 P	8 to 16 decks	1P 1P (opt)	1R, 1P	1R 2P	{RGB/YUV	1-R/2-P, 1-R/3-P
Videodisc interface	...	...	No	Option	...	No	No	{composite	No
Control μ type	Macintosh IIx	...	Centralized	Multiple	Proprietary	Proprietary	Proprietary	{CCIR 601	Centralized

Manufacturer	NEC America	OLE Partnership	Paltex			Panasonic PCSC		QUANTEL	Sony
Model	VUES	Lightworks	Abner-II	Europa (Plus)	ECS-85	AG-A770	AG-A800	Harry Suite	BVE-60C (BVE-910)
# events (internal storage)	...	...	50	3100-event	1000 line	128-event	128-event	[I/O support.	... (998)
External event storage	...	FD	Floppy disk	Floppy disk	Floppy disk	via PC/RS-232	PC/RS-232	...	Floppy disk
Edit decision list	Yes	Yes	50-event	7000 lines	Yes	...	...	...	No (Yes)
Edit data display	Macintosh CRT	CRT ¹	CRT	E-Screen CRT	CRT	TC on LEDs	TC on LEDs	CRT menus	LED (CRT)
Printer interface	via Macintosh	...	...	RS-232	...	No	No	...	RS-232
Command entry via	Keyboard	Kybrd	console	Keyboard	Keyboard	Keyboard	Keyboard	Keyboard	Keyboard
Deck motion control via	Keyboard	Console	Shuttle knobs	Shuttle knobs	Shuttle joystick	Shuttle knobs	Shuttle knob	Yes	Keyboard
Assemble edit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	[For editing of	No (Yes)
Insert edit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	[short segments	Yes
Split A V edits	...	Yes	Yes	Yes	Yes	Yes	Yes	[in memory;	Yes
A B sync roll	...	Yes	Yes	Yes	A/B upgrade	No	Yes	[CRT display	No (Yes)
Animation mode	Single frame	Yes	Yes	Yes	...	...	...	[of video and	No (Yes)
Integral TC reader	[per VSR-11	...	Yes	Yes	SID interface	No	No	[commands;	No (Opt)
Integral TC generator	[Solid-state	...	No	No	SID interface	No	No	[may link to	No (Opt)
Time reference support for	[recorder with	LTC/VITC	LTC CtlTrk VITC	LTC CtlTrk VITC	LTC/VITC/ctltrk	LTC. CntTrk	LTC	[Paintbox	LTC VITC Ctl-Trk
Color framing	[34s memory	...	No	No	Yes	...	...	[Mirage, Encore	Yes (opt)
Editing accuracy	[expandable to	...	±0 TC, ±1 Ctl-Trk	±0 TC, ±1 Ctl-Trk	...	...	...	[effects.	0 TC, ±2 CtlTrk
Interfaces available	[136s.	...	GPI	AF/VD/TELC Still Stores, ATRs, CG, EFX	Numerous	Integral switching	AG-SW800/-RM800	...	AF mix, Video switcher, (ATR Effects)
Control protocol	RS-422	...	RS-422 GPI Parallel	RS-422 GPI Parallel	RS-422/232	...	AG-IA81/-IA82	...	RS-422. GPI
Reader Service No	694	695	696	697	698	699	700	701	702

¹⁰ Abner-VITC supports VITC time code; "Park & Perform" marking feature. Upgradable to 6 machine system. ¹¹ Europa permits 4 of 8 VTRs rolled per event; Europa plus 6 for 6 of 12; Europa plus 8 for 8 of 16.

Manufacturer	Sony	United Media			Videomedia			
Model	BVE-9100	MultiTasking	UMI 400 series ¹²	UMI 500 (600)	Mickey	Micron, Super-Micron	V-LAN	VLC-32
Suggested for	On & Off line	On, Off-line	On, Off-line	On/Off line	On, Off-line	On/Off line	On/Off line	On/Off line
Editing type	Non-linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Transports controlled R/P	2-R/12-P1	3; 2-6; 2-9	2, 3, 4 total	4 (6) total	R/P	R/P	to 31 devices	2-16 transports
Videodisc interface	Option	Yes	Yes	...	Option	Option	Option	Option
Control μ type	Central, Distribute	Multi distributed	Multi distrib	MC68000	Distributed ¹³	Distributed ¹³	Distributed ¹³	Distributed ¹³
# events (internal storage)	1000	2000, 3000	250	1000 (2000)	400	250	...	500
External event storage	Floppy disk	Floppy disk	Floppy disk	3.5 Floppy disk	FD	FD	FD/HD	Floppy disk
Edit decision list	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edit data display	CRT	CRT	CRT	CRT	CRT	CRT	CRT	CRT
Printer interface	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232
Command entry via	Keyboard	Keyboard	Keyboard joystick	Keyboard	Keyboard, Mouse	Keyboard	Keyboard	Keyboard
Deck motion control via	Keyboard	Keyboard	Keyboard	Joystick	Mouse	Keyboard	Keyboard	Keyboard
Assemble edit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Insert edit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Split A V edits	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
A B sync roll	Yes	Yes	Yes	Yes	Yes	(SuperMicron)	Yes	Yes
Animation mode	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Integral TC reader	Option	Yes	Yes	...	Option	Option	Optional	Option
Integral TC generator	Option	Yes	Yes	Yes	No	No	Optional	No
Time reference support for	LTC VITC CtlTrk	LTC VITC CtlTrk Tmr	...	LTC VITC CtlTrk	LTC/VITC/CtlTrk	LTC/VITC/CtlTrk	LTC/VITC/CtlTrk	LTC/VITC/CtlTrk
Color framing	Yes (Opt)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Editing accuracy	0 TC, ±2 CtlTrk	±0 TC ±2 CtlTrk	±0 TC, ±2 CtlTrk	±0 TC	...	...	...	...
Interfaces available	AF mixer, Video switcher, ATRs, Effects	AF mix Video switcher, ATRs	AF mix, Vid xtxh	Various	V-LAN units	V-LAN control network units ¹³		
Control protocol	RS-422. GPI	RS-232/-422/GPI	RS-232/-422/GPI	RS-232/422. GPI	RS-232/-422/GPI	RS-232/-422/GPI	RS-232/-422/GPI	RS-232/-422/GPI
Reader Service No	703	704	705	706	707	708	709	710

¹² UMI420 2-VTR, UMI430 3-VTR, UMI440 4-VTR, UMI450 3-VTR w/switcher ctl. ¹⁴ 1 VLX modules tie controlled devices to V-LAN network.

In most cases, manufacturers offer additional products in most of the categories of equipment featured in these specification comparison charts. We suggest you contact the manufacturers for information on these other models. These tables make no attempt to include every product from every manufacturer. They are based on information provided from the manufacturers in response to a questionnaire mailed in June 1991.

Video Recorders

Because the technical parameters of the various recording formats have been relatively standardized, the choice becomes a matter of operational features and preferences. The following tables indicate the types of recorder units and their model numbers. We invite you to request information from the manufacturers to learn more about their features before you make your selections for purchases.

	Betacam SP					M-II	S-VHS		
Manufacturer	Ampex	BTS	Ikegami	Sony	Thomson	Panasonic	Hitachi	JVC	Panasonic
Camcorder	CVR-300A, -400	LDK391	HL-V55	BVS-300A, -400	TTV3505				
Docking VCR	CVR-5			PVV-1		AU-410, 410S			AG-7450
Portable VCR	CVR-35, -50	BCB-35, -50		BVW-50	TTV-3535	AU-500, -520, -530, 550	VL-S100		AG-7400
Field player	CVR-22	BCB-22			TTV-3522				
Studio player	CVR-60, -65	BCB-60, -65, -2600		PVW-2600, BVW-65	TTV-3560, -65	AU-A63		BR-605U	AG-7650, -7150
Studio recorder	CVR-70, -75, -D75 ¹ , -85P ²	BCB-70, -75, -D75 ¹ , -2800		PVW-2800, BVW-70, -75, -D75 ¹	TTV-3570, -75	AU-65, -665		BR-S811U, S811U, -S822U	AG-7750, -7350
Reader Service No.	711	712	713	714	715	716	717	718	719

¹ -D75 Betacam SP system with component digital serial interface capabilities. ² Digital audio with DAP-85 processor.

	D-1 Digital Component		D-2 Digital Composite				D-X	C
Manufacturer	BTS	Sony	Ampex	BTS	Hitachi	Sony	Panasonic	Ampex
Portable recorder				DCR-2		DVR-2	AJD-310	
Studio recorder	DCR-100	DVR-2100	VPR-200, -250 ¹ , VPR-300, -350	DCR-10, -18 ² , DCR-20, -28	VL-D500	DVR-20, -28 ² , DVR-10	AJD-350	VPR-3, VPR-6, VPR-80
	720	721	722	723	724	725	726	727

¹ VPR-200, -250 designed for short and medium length cassettes; VPR-300, -350 also accept long cassettes. ² -10, -20 units support short and medium length cassettes; -18, -28 also support long cassettes.

Videocassette Automation Systems

Dedicated automation systems, not machine sequencer systems.

Manufacturer	Ampex	ASACA	Odetics	Panasonic Broadcast	Sony
Model	ACR-225 ¹	ACL-6000C	TCS-2000 ²	M.A.R.C. systems ³	BVC-1000S LMS ⁴
Video format	D-2	Betacam SP, M-II	Various	M-II, D-X	Beta cam SP, D-2
# record transports	3-4 & external	1	6 & external	1 or 2	4; 6 max
# playback transports	3-4 & external	4,5	6 & external	5	4; 6 max
Multiple outputs	4 simultaneous	...	Multiple	Multiple	2
Edtting features	Full feature	...	Per transport	Per transport	Per transport
Control protocol	RS-232/-422	RS-422	RS-422, Ethernet, ESBUS	RS-422	RS-422
Record/delayed play	Opt.	...	Yes	Yes	Option
Cassette ID	Barcode	Barcode	Barcode, TC/UB	Barcode, TC/UB	Barcode, TC/UB
Time code reader	LTC	Per transport	LTC	Yes	LTC/VITC
Time code generator	LTC	Per transport	LTC	...	LTC/VITC
Storage capability	256 32-min	600	280	107, expandable	1036 for D-2
Shortest segment	7 sec w/4	15s cycle	12 sec	10-15 sec	10s
Reader Service No.	728	729	730	731	732

¹ Multievent per cassette system, AutoResolve software previews playlist, recognizes and corrects playlist conflicts. ² Handles D-2, Betacam/SP, M-II systems, including PAL capability; capacity extendable with expansion units; maximum of 1,495 cassettes in D-2 format. ³ Expansion units permit from 472 to 1,176 cassettes; external VTRs may be used. ⁴ BVC-10 system has 40-cassette storage with 4 BVW-95 VTRs; three external transports may be supported; several sizes available based on small, medium and large size cassettes.

Many of the companies included in these specification comparisons have additional products, one of which might be ideal for your application. We suggest that you contact the manufacturers to learn more about other applicable models and systems.

The information included in this **Equipment Reference Manual** was derived from manufacturers' specification sheets; every effort has been made to assure accuracy in the tables. If a value was not given for a product or an interpretation would be required, an indication "N.A." or an ellipsis (...) is shown.

Manufacturers: If your company is not included in the directory portion of this publication, either your company's name was not on our mailing list, or the questionnaire, mailed in June 1991, was not returned.

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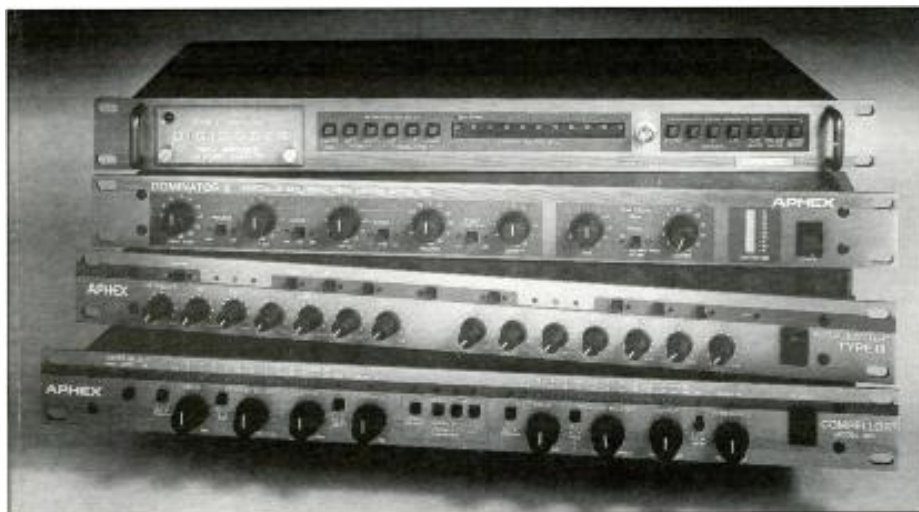
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GERMANY—AKG Acoustics; GREECE—Omikron S.A.;
HONG KONG—Ace Co. Ltd.; INDONESIA—David Sutedja & Assoc.;
ISRAEL—Sontronics; ITALY—Audio Equipment sri; JAPAN—Otaritec;
KOREA—Young Nak So Ri Sa; NEW ZEALAND—Maser Broadcast
Systems, Ltd.; NORWAY—Audiotron S/A; SINGAPORE—Auvi Private Ltd.;
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Audio Products

On-air Audio Mixers

Manufacturer	AMEK Systems & Controls	Arrakis Systems	ATI/Audio Technologies	Autogram		Broadcast Audio Corp.
Model	BC III	15,000 (12000)	Vanguard BC8 (12)	Pacemaker 1032	R-TV-20 ¹	Series VI
Modular system	Yes	Yes	Yes	No	No	Yes
Automation port	Option	No	Opt	...	Option	Yes
Digital control	No	No (...)	Yes	No	Option	No
Mono mix output	Yes	Yes	Yes	Yes	Yes	Yes
Solid-state bus switching	...	Yes	Yes	Yes	Yes	Yes
VCA gain control	Option	Yes	Yes	Yes	Yes	No
Pan pots	Yes	...	Yes	...	No	Option
Machine starts/stops	Yes	Yes	Option	Per mix position	Yes	Yes
Talkback circuitry	Yes	Yes	No	...	...	Yes
Speaker muting	Yes	...	Yes	Yes	Yes	Yes
Tone oscillator	Yes	...	No	No	No	Opt
Patch points	Yes	Yes	No	No	No	Yes
# of inputs (total)	12 (20/28)	8/18/28(56)	16-32	32	34	24 (72)
# of mixing buses	10 + 4	3 (6)	4	3	3	2 (4)
Fader type	Slider	P&G slider	Rot or slider	VCA sliders	Slider	Slider
Meter type	VU/PPM	VU/PPM	VU/PPM	VU	VU	VU/LED peak
Input connection Ω	A/T 1.2k/20k	AB	A 20k	B Unb 150-20k	150-20k Ω	A/TB 150/20k
Input range	+26dBu	$\pm$ 20dB	-60/4dBu	-65/+10dBm	-65/+10dBm	-60 10dBv
Output connection Ω	A/T >50	AB	A 400 Ω	B/Unb 600 Ω	B Unb 600 Ω	TB 150 Ω
Output level max	26dBu	27dB	24dBm	+24dBm	+24dBm	28dBm
AF response $\pm$ dB Hz-kHz	-1 20-20k	$\pm$ 0.5 20-20k	$\pm$ 0.25 20-20k	$\pm$ 0.1 20-20k	$\pm$ 0.1 20-20k	$\pm$ 0.5 20-20k
THD % $\pm$ dB Hz	0.02	0.006 (0.01)	0.15	<0.05%	<0.05%	0.007
S/N Mic EIN/Line dB	-128/81	-126/85(75)	-124/95	>90dB	-118dBm	80dB
Crosstalk (worst case)	<-90	<-75dB 20kHz	-74dB 10k	...	...	-80dB 15k
Reader Service No	801	802	803	804	805	806

¹ Remote control for all channels.

Manufacturer	Broadcast Electronics		EELA Audio	Hallikainen	Harrison by GLW	
Model	250A (350) ²	AirTrak 90	S-240 (-90/-50)	TVA series	AIR 790	AP-100
Modular system	No	Yes	Yes (Yes/No)	No	Yes	Yes
Automation port	No	Limited	Yes (Opt/No)	No	VSI editor port	...
Digital control	No	No	No	No	Yes	Yes
Mono mix output	Opt	Yes	Opt	Yes	Yes	Yes
Solid-state bus switching	No (Yes)	Yes	Yes	...	Yes	Yes
VCA gain control	No	Yes	Yes	No	Yes	DCA
Pan pots	No	No	Yes	No	Yes	No
Machine starts/stops	No	Yes	Yes	No	Yes	Yes
Talkback circuitry	Yes	Yes	Yes	No	Yes	...
Speaker muting	Yes	Yes	Yes	No	Yes	Yes
Tone oscillator	No	...	Opt	No	Yes	...
Patch points	No	No	Opt	No	Yes	Yes
# of inputs (total)	20 (22)	2x position	28 (17/4)	36 +x6	12-28	24 typical
# of mixing buses	2	2	20 (8/2)	2 mono	6	3
Fader type	Rotary (Slider)	Slider	P&G slider	Rotary	P&G slider	P&G slider
Meter type	VU	VU	VU/PPM/LED Peak	VU	VU & LED	VU
Input connection Ω	AB	1.5k/10k Ω	AB 1.5k/12k	Bal 150/15k	AB 1.2k	...
Input range	-65 20dBv	-60 8dB	-70 22dB	-58dB mic	-28 -52dB	...
Output connection Ω	TB 600 Ω	Bal <100 Ω	TB <60 Ω (50 Ω)	Bal 600	AB 40 Ω source	...
Output level max	18dBm	+29dB	20 (6 12 dB	+22dBm	+24dBm max	...
AF response $\pm$ dB Hz-kHz	-1 30-20k	-0.25 20-20k	-1 20-20k	$\pm$ 1 20-20k	...	...
THD % $\pm$ dB Hz	0.5 (0.075)	<0.05%	<0.03	<0.25%	...	...
S/N Mic EIN/Line dB	-120/68	>90dB	85dB	74dB	...	...
Crosstalk (worst case)	...	>80db	<-70dB 20-20k	-82dB	...	...
Reader Service No	807	808	809	810	811	812

² Also 150 series with 5 and 8 mix positions.

Manufacturer	ITAME	Logitek	LPB Inc		MBI Broadcast Systems	Pacific Recorders & Eng.
Model	Sierra 13S	TR2 (Mariner ³)	CITATION II	SIGNATURE III	Series 16	Radiomixer
Modular system	Yes	Yes	Yes	Yes	Yes	Yes
Automation port	Yes	No	No	No	Rmt Ctl	No
Mono mix output	Yes	Yes	Yes	Opt	Yes	Opt
Solid-state bus switching	Yes	No (Yes)	No	No	No	...
VCA gain control	Yes	No (Yes)	No	No	Opt	Yes

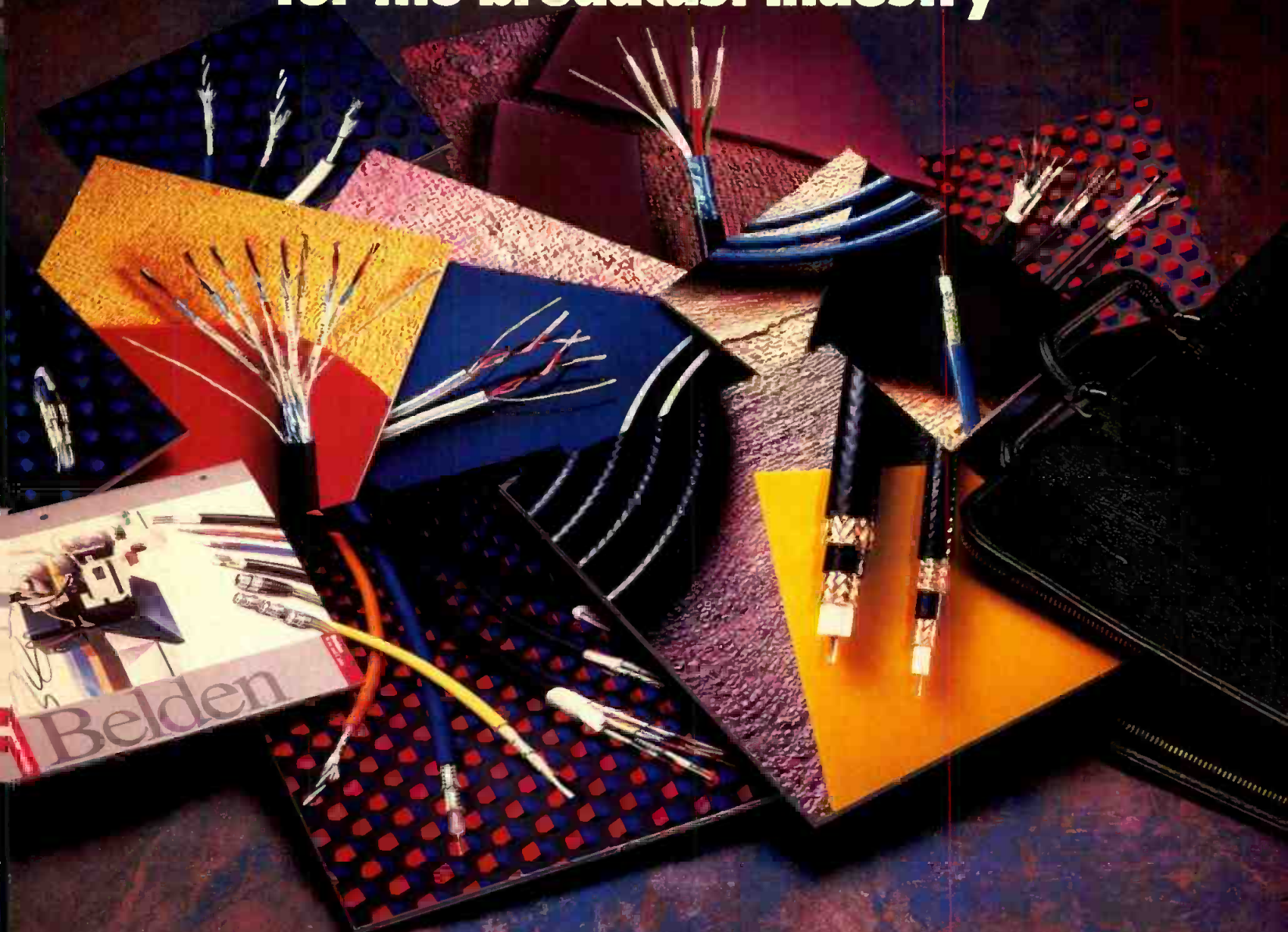
Manufacturer	ITAME	Logitek	LPB Inc		MBI Broadcast Systems	Pacific Recorders & Eng.
Model	Sierra 13S	TR2 (Mariner ³)	CITATION II	SIGNATURE III	Series 16	Radiomixer
Pan pots	No	No	No	No	Yes	Yes
Machine starts/stops	No	Yes	Yes	Yes	Yes	Yes
Talkback circuitry	Yes	...	No	No	Yes	Yes
Speaker muting	Yes	Yes	Yes	Yes	Yes	Yes
Tone oscillator	No	No	No	No	Yes	No
Patch points	No	...	No	No	Yes	Yes
# of inputs (total)	16	36	30, 3/ch	18-36	22-46	12/20/28
# of mixing buses	8	2 (2ST+1)	2	2	6	3
Fader type	Slider	Slider	Slider	Rotary	Slider	Slider
Meter type	VU/PPM	VU	VU	VU	VU/PPM	Sifam R32 VU
Input connection Ω	TB	AB 10k Ω	TB 150/600 Ω	TB 150/600 Ω	Bal	AB >30k Ω
Input range	-30/20dB	-60/23dBu	-65, -10dBm	-65, +10dBm	...	-70/+9Bu
Output connection Ω	TB	AB 60 Ω	TB 600 Ω	TB 600 Ω	Bal 600 Ω	AB 80 Ω source
Output level max	15dB	+23dBu	+22dBm	22dBm	+26dBu	+26dBm
AF response $\pm$ dB Hz-kHz	0.1 30-20k	$\pm$ 0.25 20-20k	1.0dB 20-20k	10 20-20k	$\pm$ 0.25 40-20k	-0.7 20-20k
THD %/dB/Hz	0.1	0.006%	0.04% 22dBm	0.05	<0.1%	<0.01
S/N Mic EIN/Line dB	75dB	90dB	>75dB	75dB	>80dB	-128/88
Crosstalk (worst case)	80dB 400Hz	...	Below noise	-61dB 1kHz	<-75dB	-80dB 1kHz
Reader Service No	813	814	815	816	817	818

³ Unit designed with waterproof packaging.

Manufacturer	Pacific Recorders & Eng.	PKE International		Radio Systems	Sonosax	Sony
Model	Stereomixer	CSC-1	MC-200	RS-6 (12/18)	SX-V	MXP-2900
Modular system	Yes	Yes	Yes	No	Yes	Yes
Automation port	No	...	No	No	Opt	Opt
Digital control	No	No	No	Yes	Opt	No
Mono mix output	No	Yes	...	Yes	Yes	...
Solid-state bus switching	Yes	Yes	Yes	Yes	No	Yes
VCA gain control	No	Yes	...	Yes	Option	...
Pan pots	Yes	Yes	No	No	Yes	Yes
Machine starts/stops	Yes	Yes	Yes	Yes	Option	Yes
Talkback circuitry	Yes	Yes	Yes	Yes	Option	Yes
Speaker muting	Yes	Yes	Yes	Yes	No	Yes
Tone oscillator	Yes	Yes	No	No	Yes	Yes
Patch points	Yes	No	...	Yes	Yes	Yes
# of inputs (total)	16	Custom	8, 12, 16	12-36	10	2x positions
# of mixing buses	1	2ST/2Mix-minus	Main, Aux	3	3	3
Fader type	Rotary	Slider	Slider	Slider	Slider	Slider
Meter type	VU	LED	LED VU	VU; LED Peak	VU; LED peak	LED
Input connection Ω	AB (40k)	Bal 150/10k Ω	...	A 10k	AB 10k Ω	TB 1.2k/10k Ω
Input range	-10/8dBv	Mic/line	-60dBm mic	-60/10dBm	-85/6dBu	-62/24dBs
Output connection Ω	AB 80 Ω	Bal 600 Ω	...	AB 100 Ω	AB 50 Ω	TB <100 Ω
Output level max	24dBm	...	+16dBm	22dBm	24dBu	+24dB
AF response $\pm$ dB Hz-kHz	-0.7 20-20k	20-20k	0.5 40-20k	$\pm$ 0.25 20-20k	$\pm$ 0.5 30-20k	-1.5 20-20k
THD %/dB/Hz	<0.01	...	0.15%	0.02	0.01	0.1%
S/N Mic EIN/Line dB	-126/88	...	75dB	-124/88	-129.2dBm	-122/85
Crosstalk (worst case)	-70dB 1kHz	...	...	<-75dB 20kHz	80dB 20k	69dB 16kHz
Reader Service No	819	820	821	822	823	824

Manufacturer	Soundcraft	Studer	Wheatstone Corporation		
Model	SAC 200	Studer 970	A-32 A-30	A-500	SP-40 series ⁴
Modular system	Yes	Yes	Yes	Yes	Yes
Automation port	Yes	...	No	No	No
Mono mix output	Yes	Yes	Yes	Yes	Yes
Solid-state bus switching	No	Yes	No	No	No
VCA gain control	Yes	...	No	Option	No
Pan pots	Yes	Yes	No	Yes	Yes
Machine starts/stops	Yes	Yes	Yes	Yes	Yes
Talkback circuitry	Yes	Yes	Yes	Yes	Yes
Speaker muting	Yes	Yes	Yes	Yes	Yes
Tone oscillator	Yes	Yes	No	Yes	Opt
Patch points	Yes	Yes	Yes	Yes	Yes
# of inputs (total)	32-48	18/exp x9's	2/position	3 position	2/position
# of mixing buses	3	Pgm, Aux	2	3	2+mono
Fader type	Slider	Slider	Slider	Slider	Slider
Meter type	VU/PPM	VU/Peak LED	VU	SIFAM VU	VU
Input connection Ω	A 1k/10k	A/T >1.6k/10k	...	A/BR; Xlfr	AB 150/50k Ω
Input range	-80/30dBu	-60/21dBu	28dBu max	Mic/line	+26dBu max

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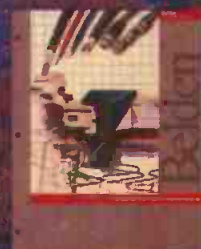


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Manufacturer	Soundcraft	Studer	Wheatstone Corporation		
Model	SAC 200	Studer 970	A-32/A-30	A-500	SP-40 series ⁴
Output connection Ω	AB	T <40 Ω	AB	AB	AB
Output level max	26dBu	6.15dBu	27dBu	30dBu max	+29dBu
AF response $\pm$ dB Hz-kHz	$\pm$ 0.5 20-20k	-1/5 4.5-45k	-0.25 20-20k	$\pm$ 0.1 20-20k	$\pm$ 0.1 10-20k
THD % $\pm$ dB/Hz	0.02	<0.03	<0.003%	<0.002	<0.004
S/N Mic EIN/Line dB	-128dBm	<-125/>95	-128/88	-128dBm/90dB	-128/75
Crosstalk (worst case)	-58dB 10kHz	>80dB	-65dB	-65dB separation	-80dB 1Hz
Reader Service No	825	826	827	828	829

⁴ SP-42 portable; SP-44; SP-48

Portable Audio Mixers

Manufacturer	AEQ	AEV		Alesis	Audio-Technica	Comprehensive Video Supply
Model	MP-10	BSM 622	MMS 412 series ¹	#1622	AT4462	MM-3100
Modular system	No	No	Yes	...	No	No
Mono mix output	Mono only	Yes	Yes	Yes	Yes	Mono only
Telephone hybrid	Yes	Yes	Yes	No	No	No
Telephone dial	Yes	No	No	No	No	No
Solid-state bus switching	No	No	...	...	No	No
VCA gain control	No	No	No	Yes	No	No
Pan pots	NA	Yes	Yes	Yes	Yes	N.A.
Machine starts/stops	No	Yes	Yes	...	No	No
Tone oscillator	w/ID	...	...	No	Yes	Yes
Patch points	No	No	No	Yes	No	No
# of inputs (total)	5	18	8-24	16	4	3
# of mixing buses	1	4	4 stereo	Main, aux	L/R	1
Fader type	Rotary	Slider	Slider	Slider	Rotary	Rotary
Meter type	VU	LED	VU	LED	VU	LED
EQ types	No	2-band	2-band	Hi/Lo freq	No	None
Input connection Ω	TB 1k Ω	Bal 220 Ω	TB 200-47k Ω	3.6k/100k Ω B	Bal 1.5k/47k Ω	1k/27k Ω
Input range	-79, +33dBm	-60, 6dB	-77, +6dB	-30, 14dBu	-15, +22dB	...
Output connection Ω	XLR 600 Ω	Unbal	100 Ω	400 Ω source	Bal >10 Ω	100 Ω
Output level max	+14dBm	+12dB	+6dB	+18dBu	+22dB	+16dBm
AF response $\pm$ dB Hz-kHz	-0.5 20-20k	-0.1, 20-50kHz	$\pm$ 0.1, 20-50k	-2dB 20-20k	-3/1 20-20k	1.5 40-15k
THD	...	0.003%	0.003%	<0.015%	<0.1%	<0.01%
S/N Mic EIN/Line dB	-121dBm	...	90dB	95dB	<-127dBm	<-120dBu EIN
Crosstalk (worst case)	...	>-65dB	-79dB	-91dB 1kHz	65dB L-R	...
Weight (portable) lb	9.3	5kg	22lb/24-ch	14 lb	>5 lb	4 lb
Power source (portable)	110-220/Nicad	110Vac 12W	220Vac	9Vac ext. PS	12-18Vdc/2-9V bat	2 9V alkaline
Reader Service No	831	832	833	834	835	836

¹ MMS312 8-24 inputs

Manufacturer	Comrex	Cooper Sound	Electro-Voice		Fostex	
Model	STLX SLX ²	CS 106+1	61PMX (81PMX)	BK-42 series	1840	280 Multitracker ³
Modular system	No	Yes	No	No	Yes	No
Mono mix output	Yes	Yes	Yes	...	No	Yes
Telephone hybrid	Yes	No	No	No	No	No
Pan pots	No	Yes	Mono	Yes	Yes	Yes
Tone oscillator	...	Yes	No	...	No	No
# of inputs (total)	4M/2L	6 (7th opt)	6 (8)	8/12/16/24	18	8
# of mixing buses	1 mono	1	Main	Monitor	Tape L/R, Aux	4
Fader type	Slider	Slider	Slider	Slider	Slider	Slider
Meter type	VU	VU	None	VU	LED	LED
EQ types	None	3-band	9-band	3-band	Parametric	3-band
Input connection Ω	Bal 150/500 Ω	XLR bal	Bal 4.4k/30k Ω	4.4k Ω bal	3k Ω /16k Ω	10k/20k Ω
Input range	-70/+8dBm	...	+24dBu max	-55/+24dBu	-10/+25dBV	-60/-10dBV
Output connection Ω	Bal 600	Various	...	...	UB 10k Ω	UB >10k Ω
Output level max	+24dB clip	...	...	...	+15dBV	-10dBV
AF response $\pm$ dB Hz-kHz	$\pm$ 0.5 50-15k	$\pm$ 0.5 20-20k	$\pm$ 0.5 20-20k	$\pm$ 1 20-20k	-1.5/1 20-20k	20-20k
THD	0.5%	<0.01%	<0.1% +20dB	<0.05% +4dBu	0.05%	<0.05%
S/N Mic EIN/line dB	-127dBm/80dB	<-130.5 A wtd	-126dBu EIN	-128dBu EIN mic	-125/48	70-80dB
Crosstalk (worst case)	...	...	N.A.	-65dB 1kHz	65dB	60dB
Weight (portable) lb	18 lbs	16	27 lb 81PMX	41 lb BK-1242	70	11
Power source (portable)	Vac or Nicad	12 D cells	110/220Vac 260W	110/220Vac 40W	37W	22W
Reader Service No	837	838	839	840	841	842

² STLX 2-line F.E.; SLX 1-line F.E. ³ Includes 4-track cassette ATR.

Manufacturer	Furman Sound	MBI Systems	Seem Audio A S	Shure Brothers	Sonosax	
Model	MM-4AB (MM-8AB)	Series 12	SEEPOR ⁴	FP410 IntelliMix	SX-PR series	SX-S6 (8/10)
Modular system	Yes	No	Yes	No	Yes	Yes
Mono mix output	Yes	Yes	Yes	Mono only	No	Yes
VCA gain control	No	Yes	No	Yes	No	No
Pan pots	Yes	No	Yes	No	Yes	Yes
Machine starts/stops	No	Yes	Option	No	No	Opt
Tone oscillator	No	No	Yes	1kHz	Yes	Yes
# of inputs (total)	4M/1S (11)	12	8	4	2 to 6	6/8/10
# of mixing buses	3	3	1 ST + 4	1	2	3
Fader type	Rotary	Opt pack	Slider	Rotary	Rotary	Slider
Meter type	(LED)	VU/PPM	LED	LED VU/Pk	VU/LED peak	VU/LED peak
EQ types	...	None	2-band	No	...	Swept
Input connection Ω	A (600 Ω)	T AB 1k/10k Ω	AB 8k Ω	TB 900/66k Ω	A >10k	A 10k
Input range	-75/18dBV (-60/18)	Mic/line	Mic, line	Mic/line	-98/6dBu	-85/6dBu
Output connection Ω	A (200 Ω)	TB 75 Ω	<40 Ω source	TB 100 Ω line	A <50 Ω	A/T <50 Ω
Output level max	23dBV (21)	22dBu	+20dBu	+19dBm	21dBu	24dBu
AF response $\pm$ dB Hz-kHz	-3/0 20-20k	0/-1 20-20k	-0.7dB 30-20k	-5.2 25-20k	$\pm$ 0.5 30-20k	$\pm$ 0.5 30-20k
THD	0.02%	0.5%	<0.1%	<0.5%	0.01%	0.01%
S/N Mic EIN/line dB	-126/-118dBV	>78dB	-125dBu	-128.5dB EIN	-129.6	-129.2
Crosstalk (worst case)	-40dB 20kHz	<-62dB	>90dB	...	80dB	-80dB 20kHz
Weight (portable) lb	6 lbs	...	...	5 lbs	4.88 lbs	14.8lbs
Power source (portable)	115/230Vac	110-240Vac	AC or DC	Vac/18Vdc	3Vdc	9-15Vdc
Reader Service No	843	844	845	846	847	848

⁴ Optional remote control.

Manufacturer		Sony	Soundcraft	SQN Electronics	Studer	
Model	MX-P61VU/PK	MXP-210 (290)	Spirit	SQN-4S Ser II ⁵	961/962	C279 Compact
Modular system	Yes	No	Yes	No	Yes	No
Mono mix output	...	L or R	Yes	Yes	Yes	No
VCA gain control	No	(-290)	No	No	...	Yes
Pan pots	Yes	Yes	Yes	Yes	Yes	Yes
Machine starts/stops	No	No	...	No	Yes	Opt
Tone oscillator	Yes	Yes	Yes	Yes	Yes	Option

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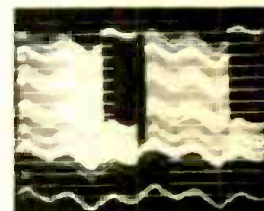
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Manufacturer	Sony		Soundcraft	SQN Electronics	Studer	
Model	MX-P61VU/PK	MXP-210 (290)	Spirit	SQN-4S Ser II ⁵	961/962	C279 Compact
# of inputs (total)	17	9	16-48	4	18	12
# of mixing buses	3	L/R	3	Stereo pair	6	4
Fader type	Slider	Slider	Slider	Rotary	Slider	Slider
Meter type	VU/PPM	LED	LED	TB meter	VU or PPM	LED w/peak
EQ types	3-band	3-band	3-band	...	Yes	Swept
Input connection Ω	Bal/Unbal	Bal 6k/47k Ω	>2k/10k Ω	XLR-3	1.6k/10k	1.2k/47k
Input range	Mic/line	-60/24dBs	...	-20, 0dB	-69/21dBu	-66/10dBv
Output connection Ω	Bal/Unbal	Bal 600 Ω /10k Ω	75 Ω	Bal/Unbal	<40 Ω	<50 Ω / $\leq$ 1k Ω
Output level max	...	15dBs	+21dBu	18dBm 600 Ω	24dBm	24dBv
AF response $\pm$ dB Hz-kHz	$\pm$ 0.5 30-20k	-1.5/5 20-20k	22-22kHz	-1, 0 30-20k	-1/0.5 4.5-45k	$\pm$ 1 20-20k
THD	...	<0.3%	<0.006%	...	<0.03%	<0.03%
S/N Mic EIN/line dB	...	-126/80dB	-129dBu EIN	3dB A wtd	<-125/>95	-125/>86
Crosstalk (worst case)	...	<-70dB	>85dB	<80dB 1kHz	<-90dB	...
Weight (portable) lb	...	16.5 lb	...	2.2kg	55-75 lbs	24.2 lbs
Power source (portable)	110/220Vac	24W ac	110Vac	8 AA cells	110/220Vac	100-240Vac
Reader Service No	849	850	851	852	853	854

⁵ SQN-3M mono; M-S stereo matrix.

Manufacturer	Studer	TASCAM			Vortex Communications
Model	Studer A779	M-106	M06 ST	M208 (M216/M224)	PFM-312
Modular system	No	No	No	No	No
Mono mix output	...	No	No	No	Mono only
Telephone hybrid	No	No	No	No	No
VCA gain control	Yes	No	No	No	...
Pan pots	Yes	Yes	Yes	Yes	No
Machine starts/stops	Yes	No	No	No	No
Talkback circuitry	Yes	...	No	No	No
Speaker muting	...	...	No	No	No
Tone oscillator	No	No	No	No	1kHz
# of inputs (total)	6	6	6	8 (16/24)	3
# of mixing buses	2	4	No	4	1 mono
Fader type	Slider	Slider	Slider	Slider	Rotary
Solo type	AFL/PFL	...	No	PF	...
Meter type	LED peak	VU	VU	VU/Peak LED	LED bargraph
EQ types	Swept	Swept	Swept	Swept	None
Input connection Ω	A/T >47k	UB 100k	UB 100k	A 2.8k/22k	1k/6k
Input range	-66/10dBv	-70/4dBV	-70/4dBV	-70/24dBV	-14/+22dBm
Output connection Ω	A/T <50 Ω	UB 100 Ω	UBb 220 Ω	100 Ω	50
Output level max	24dBv	18dBV	0dBu	20dBV	+16 to 600 Ω
AF response $\pm$ dB Hz-kHz	$\pm$ 1 20-20k	-2/1dB 20-20k	-2, 1 20-20k	-2/1 20-25k	$\pm$ 1 20-20k
THD	0.03%	0.01%	0.025%	0.025%	<0.02%
S/N Mic EIN/line dB	-65/86	70dB	51dB (78dB)	83dB	...
Crosstalk (worst case)	...	<-60dB	<-60dB	<-60dB	...
Weight (portable) lb	24.2 lbs	15.4 lbs	5.73 lbs	18.75 lbs	2 lbs
Power source (portable)	110/220Vac	110/220Vac	110/220Vac	110/220Vac	2x9Vdc
Reader Service No	855	856	857	858	859

Studio/Production Audio Mixers

Manufacturer	AMS/Siemens		Broadcast Audio	Broadcast Electronics	For-A	Fostex		Graham-Patten Systems
Model	Logic 1	Logic 2	Series IV ¹	Mix Trak-90	AFV-500	1240 (2440)	Model 812	D/ESAM 800
Modular system	Yes	Yes	Yes	Yes	Yes	No	Yes	[Digital edit
Cue amp	...	...	Yes	Yes	Yes	No	Yes	[suite mixer
Automation port	...	Yes	Yes	Yes	Yes	No	Option	To editor
Digital control	Yes	Yes	No	Yes	Yes	No	No	Yes
Digital processing	Yes	Yes	No	No	No	No	No	Yes
Mono mix output	Yes	Yes	Yes	Opt	Yes	No	...	...
Solid-state bus switching	[Integrates	Yes	Yes	No	...	No	No	Yes
VCA gain control	[with	Yes	No	Yes	...	No	No	Yes
Compressor/limiter	[AudioFile	Yes	No	No	No	No	No	No
Pan pots	[PLUS	Yes	Opt	Yes	Yes	Yes	Yes	No
Machine starts/stops	[digital	Yes	Yes	Opt	...	No	...	...
Talkback circuitry	[recorder	...	Yes	Opt	...	No	No	No
Speaker muting	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Tone oscillator	...	...	Opt	No	Yes	No	...	Yes
Patch points	Yes	Yes	Yes	Yes	Opt	No	Yes	Yes
# of inputs (total)	28+16	112	18-48	24-48	8	24 (48)	12	to 16

Manufacturer	AMS/Siemens		Broadcast Audio	Broadcast Electronics	For-A	Fostex		Graham-Patten Systems
Model	Logic 1	Logic 2	Series IV ¹	Mix Trak-90	AFV-500	1240 (2440)	Model 812	D/ESAM 800
# of mixing positions	14 or 28	28	6-16	12-24	8	12 (48)	20	12
# of direct outputs	16 to AudioFile	Multiple	3-7	3	2	12-24	12	...
# of mixing buses	Multiple	Multiple	2-4	6	2	4	3	4 channels
# of groups/subgroups	2	Various	User defined	...	...	4	8	...
# of sends/returns	Multiple	Multiple	2R/Defined sends	...	...	4	3 returns	...
Fader type	Slider	Slider	Slider	Slider	...	Slider	Slider	Slider
Solo type	PFL	PFL	PF	...	...	IP	In-place	...
Meter type	Bargraph	Bargraph	VU, peak LEDs	VU, PPM, LED pk	VU	LED peak	PPM	Bargraph
EQ types	4-band	4-band	Swept	Parametric	...	Parametric	3-band	Digital parametric
Filters	Adjustable	Adjustable	...	HP, LP	...	...	...	No
Input connection Ω	[Analog or	[Specifications	AB/TB 150/20kW	AB >10k Ω	A 600 Ω	A 7k Ω	B 600/20k Unb 20k	...
Input range	[digital	[per AES/EBU	-60, 10dBm	-65, 13dBu	-12, 24dB	-70, 15dBV	-70/+15dBV	...
Output connection Ω	[inputs and	[I/O analog or	TB 150 Ω	A <100 Ω	...	...	for 10k Ω load	...
Output level max	[outputs	[digital with	28dBm	26dBu	0, 24dB	15dBV	15dBV	...
AF response $\pm$ dB Hz-kHz	[with A/D	[20-bit cards	$\pm$ 0.5 20-20k	-0.25 20-20k	...	$\pm$ 1 20-20k	-2/1 20-20k	...
THD	[D/A converters	[Direct link	0.007% +28dBm	0.05% 0dBu 20-20k	0.15% +20dB 15kHz	0.05% 1Hz	0.05%	...
S/N Mic EIN/line dB	[meets AES/EBU	[to AudioFile	80dB	-128dBm/90dB	>90dB	52dB (48dB)	-125dBV EIN	...
Crosstalk (worst case)	[specifications	...	-80dB 1.5kHz +8dBm	<-80dB 20-20k 0dB	$\hat{a}$ -20dB 30Hz	-65dB 1kHz	65dB 1kHz	...
Reader Service No	861	862	863	864	865	866	867	868

¹ Usable in on-air applications.

Manufacturer	Graham-Patten Systems	Grass Valley Group	Harrison by GLW		MBI Broadcast Systems	Neve/Siemens		Neve Orion
Model	ESAM series	AMX-170S	PRO 790	TV-3 (TV-4)	Series 20	44 series	66 series	2000 series
Modular system	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Cue amp	No	No	...	Yes	Yes	...	Yes	...
Automation port	To editor	Yes	VSI editor port	Yes	Rmt Ctl	Options	Yes	ReMeM
Digital control	Yes	Yes	Yes	Yes	No	...	Yes	Yes
Digital processing	...	No	...	No	No	No	No	No

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Manufacturer	Graham-Patten Systems	Grass Valley Group	Harrison by GLW		MBI Broadcast Systems	Neve/Siemens		Neve Orion
Model	ESAM series ²	AMX-170S ³	PRO 790	TV-3 (TV-4)	Series 20	44 series	66 series	2000 series
Mono mix output	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Solid-state bus switching	Yes	Yes	Yes	Yes	No	...	Yes	Yes
VCA gain control	...	Yes	Yes	Yes	DBX VCA	...	Yes	Yes
Compressor/limiter	No	No	...	...	Voice-over	Yes	Option	No
Pan pots	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Machine starts/stops	...	No	Yes	Yes	Yes	Yes	Yes	Yes
Talkback circuitry	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Speaker muting	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tone oscillator	No	Yes	Yes	Yes	Yes	Yes	...	5-tone
Patch points	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
# of inputs (total)	12-16	8, 16	12-28	36-60 (16-60)	8/16/24/32/40	---	24, 36, 48	48
# of mixing positions	12-16	1	20-36	36-60	8/16/24/32/40	20+4+2	24, 36, 48	16
# of direct outputs	12-46	...	to 8-track	24, 48	Opt per input	Yes	per input	Yes
# of mixing buses	2	4	6	2 ST/4 Mono	3	2+	Main, Aux	4 (or 2+2)
# of groups/subgroups	...	2	4 groups	8 groups	...	4 option	4-8	8/2
# of sends/returns	...	4	2	4	...	...	Multiple	Var. config.
Fader type	Slider	Slider	P&G slider	P&G slider	Slider	Slider	Flying Fader	Slider
Solo type	...	...	PFL, In-place	AFL/PFL/APFL	...	...	Yes	Yes
Meter type	VU analog	VU, PPM, LED pk	VU & LED	VU & 40-seg LED	VU/PPM/bargraph	LED bargraph	Var. opts.	LED peak VU
EQ types	Programmable	Fixed freq	3-band	3-band	3-band	3-band	4-band	7-band
Filters	No	LP, HP	LP, HP	HP, LP	LP/HP	HPFx3	...	HP, LP
Input connection Ω	Opt TB >20kW	A Hi-Z	AB 1.2k	AB	Bal 1k/20k Ω	Bal	1k/10k Ω	Bal
Input range	...	-40.8dBu	-28, -52dB	+4dB	...	...	-70/+20dB	...
Output connection Ω	3/2 20k Ω	A 60 Ω	AB, 40 Ω source	AB	Bal 50 Ω	Bal	600 Ω TB <30 Ω	Bal
Output level max	+8dBu max nom.	20dBm	+24dBm max	+4 dB nom	+22dBu	...	25.5dBu max	...
AF response $\pm$ dB Hz-kHz	$\pm$ 0.5 20-20k	-0.3 20-20k	...	...	$\pm$ 0.25 40-20k	...	$\pm$ 0.5dB 20-20k	...
THD	<0.1% 16dBu	0.03% 4dB 20-20k	...	...	<0.1%	...	<0.2%	...
S/N Mic EIN/line dB	dB	89dB	...	...	-128/>80dB	...	-125dBu EIN	...
Crosstalk (worst case)	<-82dB 15kHz	-75dB/20kHz/4dB	...	...	<-75dB	...	...	...
Reader Service No	869	870	871	872	873	874	875	876

² Editing suite mixer system. ³ Also on-air; 2000E for post production.

Manufacturer	Pacific Recorders & Engineering		Philip Drake	Solid State Logic		Sonosax	Sony
Model	Productionmixer	STX	PD2000 series	SL 5000M ser ⁴	SL 6000G ser ⁴	SX-T ¹	MXP-2000
Modular system	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cue amp	Yes	Yes	...	Yes	Yes	Yes	Yes
Automation port	No	No	Yes	Yes	Yes	Opt	via editor
Digital control	No	No	Yes	Yes	Yes	Opt	Yes
Digital processing	No	No	...	No	No	No	No
Mono mix output	Yes	Opt	Yes	Yes	Yes	Opt	Yes
Solid-state bus switching	...	Yes	Yes	Yes	No	Yes	No
VCA gain control	Yes	No	Yes	Yes	Yes	Opt	Yes
Compressor/limiter	No	Option	...	Yes	Yes	Opt	Yes
Pan pots	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Machine starts/stops	Yes	Yes	...	Opt	Opt	Yes	Yes
Talkback circuitry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Speaker muting	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tone oscillator	No	Yes	Yes	Yes	Yes	Yes	Yes
Patch points	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of inputs (total)	28	156-252	48+8aux	to 96	24 to 96	10-32	16-36
# of mixing positions	28	26-42	48	1 to 3	One	...	16-36
# of direct outputs	8	...	per input	1 per channel	Option	8-16	16-36
# of mixing buses	3	15	12+	32	6	8-16	4+2
# of groups/subgroups	...	...	12	Variable	1-32/1-32	8	4+2-G, 4R
# of sends/returns	2/2	12/1	8 send	8 S/# of channels	6 S/8 R	2	4S, 4R
Fader type	Slider	Slider	Slider	Slider	Slider	...	Slider
Solo type	Cue	...	AFL, PFL	PF, AF, IP	PF, AF, IP	PF, AF, IP	PF, AF
Meter type	Sifam R32 VU	VU, PPM	VU	VU/PPM, LCD	VU PPM, Plasma	VU	LED peak
EQ types	3-band	...	4-band	Parametric	Parametric	Swept	Swept
Filters	...	HP/LP	HP, LP	HP, LP	HP, LP options	HP	HP
Input connection Ω	AB >30k Ω	AB 40k Ω	...	T/AB 10kW	TB/AB 1k/10kW	...	A/TB 10k Ω
Input range	-70/+9dBu	-15/10dBv	...	-80, +16dBu	-80, +24dBu	-85, +6dBu	+27dBm max
Output connection Ω	AB 80 Ω source	AB 30 Ω	...	AB 30 Ω	AB 75 Ω	AB/TB	A/TB 50 Ω
Output level max	+26dBm	28dBm	...	+28dBu	+29dBu	+24dBu	+25dBm
AF response $\pm$ dB Hz-kHz	-0.7 20-20k	-0.9 20-20k	...	$\pm$ 0.5dB 20-20k	$\pm$ 0.5dB 20-20k	$\pm$ 0.5 20-20k	$\pm$ 0.5dB 30-20k
THD	<0.01	<0.1	...	0.08% 24dBu 1kHz	0.02% +8dBu 1kHz	0.01% 6dBu 20-20k	0.05% 20dB 1kHz
S/N Mic EIN/line dB	-128/88	-127/88	...	-125 dBm	-127.5dBm	-129.2dBm	-126dBm EIN
Crosstalk (worst case)	-80dB 1kHz	-80dB 1kHz	...	-80dB/15kHz/+4dB	-70dB 1kHz/+4dB	-80dB 20k/0dB	60dB 15kHz
Reader Service No	877	878	879	881	882	883	884

⁴ May be configured for on-air operation.

Manufacturer	Sony	Soundcraft			Soundtracs Plc			Studer
Model	VSP-8000	Delta 200	Delta AVE	Sapphire	ERIC series ⁵	IL4832 (3632)	Quartz series	900 series ⁶
Modular system	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Automation port	from editor	...	to editor	Yes	No ⁵	No	Auto muting	Yes
Digital control	[48, 44.1 or	No	No	No	Yes	No	Yes	Yes
Digital processing	[44.056kHz	No	No	No	No	No	No	No
Solid-state bus switching	[32-bit sampling	No	No	No	Yes	No	Yes	Yes
VCA gain control	...	Yes	Yes	Yes	No	No	No	Yes
Compressor/limiter	Yes	Yes	Yes	Yes	No	No	No	Yes
Pan pots	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Machine starts/stops	...	Yes	Yes	Yes	Yes	No	Yes	Yes
Talkback circuitry	...	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Speaker muting	...	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tone oscillator	...	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Patch points	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of inputs (total)	16 or 32 dig	8-96	8-96	64	32-48	48 (36)	32-48	28
# of mixing positions	16 or 32	8/16/24/32	8/16/24	32	...	...	...	41
# of direct outputs	...	per mix pos.	per mix pos.	2-32 track	32-48	48 (36)	32-48	24
# of mixing buses	4 out dig	1 pr + 6	1 pr + 6	1 pr	8-24	32	8-24	24
# of groups/subgroups	...	4 subgroups	4 subgroups	8 groups	8-24	32 In line	8-24	8
# of sends/returns	...	2	4	6	8	8 S	8	Various config.
Fader type	Slider	Slider	Slider	Slider	Slider	Slider	Slider	Slider
Solo type	...	PFL	PFL	...	PF, AF, IP	PF, AF, IP	PF, AF, IP	PF, AF
Meter type	201-seg plasma	LED bar	LED bar	Bargraph/VU	LED peak	LED Peak	LED peak	VU
EQ types	4-band	4-band	4-band	4-band	Parametric	Parametric	4-band	Parametric
Filters	HP/LP	HP/LP	HP/LP	HP/LP	Swept HP	HP	Swept HP	HF roll-off
Input connection Ω	XLR-3-31	A 2k/10k	A 2k/10k	A 2k/15k	AB 710k Ω	AB	AB 2k Ω 10k Ω	T/A 61.6k/610k Ω
Input range	Per AES/EBU	-80/30dBu	-80/30dBu	-80/30dBu	-60, +10dB	-60, +10dB	-60, +10dB	-70, +20dBu
Output connection Ω	XLR-3-32	AB 75 Ω	AB 75 Ω	AB 600 Ω	AB <75 Ω	AB	AB ...	TB <50 Ω
Output level max	...	27dBu	27dBu	27dBu	+24dBV	+26dBV	+26dBu	+24dBm
AF response $\pm$ dB Hz-kHz	-1, +0.5 20-20k	-0.5 20-20k	-0.5 20-20k	-0.9 20-20k	-2, 0dB 20-20k	-2, 0dB 20-20k	...	-1, +0.5 30-20k
THD	...	0.003%	0.003%	0.005	0.008% 0dB 1kHz	<0.02% 0dB	<0.1%	<0.1%
S/N Mic EIN/line dB	...	-127.5/93dB	-127.5/93dB	-127.5dBm	-127.5dBm	-127dBm	-127.5dBm/81dB	-125dBm/>100dB
Crosstalk (worst case)	...	80dB max gain	80dB max gain	85dB 10kHz	-82dB/1kHz/0dB	-82dB/1kHz/0dB	<-85dB	<-85dB
Reader Service No	885	886	887	888	889	890	891	892

⁵ ERIC III moving faders. ⁶ Also custom configurations.

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Circle (47) on Reply Card

Manufacturer	Studer		TASCAM		Trident Audio	Wheatstone Corporation	
Model	990 series	Model 963	M-3500	M600 (M700)	Vector 432	SP-5	SP-6
Modular system	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cue amp	Yes	Yes	Yes	No	Opt	No	No
Automation port	Option	No	...	Yes	Yes	No	No
Digital control	Yes	No	No	No	No	No	No
Mono mix output	Yes	Yes	Yes	No	Opt	Opt	Opt
Solid-state bus switching	Yes	...	No	No	Yes	No	No
VCA gain control	Yes	...	...	No	Opt	No	No
Compressor/limiter	...	Yes	No	No	Yes	No	No
Pan pots	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Machine starts/stops	Yes	Yes	No	No	Yes	No	No
Talkback circuitry	...	Yes	Yes	Yes	Yes	Yes	Yes
Speaker muting	Yes	Yes	Yes	No	Yes	Opt	Opt
Tone oscillator	...	Yes	Yes	Yes	Yes	Yes	Yes
Patch points	Yes	Yes	...	Yes	Yes	Yes	Yes
# of inputs (total)	80	24-60	24, 32	162 (40)	40-4	2/input	2/input
# of mixing positions	per config	24-60	24, 32	32	1-4	16-32	16-32
# of direct outputs	1/channel	56	...	32	40-64	Per mix position	Per mix position
# of mixing buses	4+8+4	2 mstr, 4 aux	Program	16	4-8	1 stereo/1 mono	1 stereo/1 mono
# of groups/subgroups	8	4 or 8	8 groups	16 (32)	32 G/32 S	8M/4S	8M/4S
# of sends/returns	2/channel	Various config.	6 send/4 ret	4/6 (8/8)	8 S/8 R	4/4	4/4
Fader type	Slider	Slider	Slider	Slider	Slider	Slider	Slider
Solo type	PFL	AF	IP/PFL	PF, AF, IP	PF AF IP	PF	PF
Meter type	...	VU, bar graph	Bargraph	VU, LED peak	VU, PPM, Pk LEDs	VU	VU
EQ types	4-band	3-band	4-band	Swept	Parametric, swept	3-band	3-band
Filters	LF, HF	HP	HP	... (HP, LP)	HP, LP	HP	HP
Input connection Ω	T/A 61.6k/610k Ω	TB >5k Ω	Bal 2.2k/16k Ω	AB 2k/100k Ω	AB/TB >10k Ω	AB 10k-20k Ω	AB 10k-20k Ω
Input range	-70, +20dBu	-70, +21dBu	-67, +4dBm	-68, +8dBm	-20, +70dB dBu	Mic. line	Mic. line
Output connection Ω	TB 650 Ω	TB <50 Ω	Bal 75 Ω	AB 100 Ω	AB/TB 600 Ω	AB 600 Ω	AB 600 Ω
Output level max	+24dBm	+24dBm	+25dBm	+28dBm	+28dBu	+28dBu	+28dBu
AF response $\pm$ dB Hz-kHz	-1, +0.5 30-20k	-1, -0.5 4.5-40k	-1.5, +0.5 20-20k	$\pm$ 1dB 20-20k	$\pm$ 0.5dB 10-50k	-0.2 20-20k	-0.5 10-30k
THD	$\leq$ 0.1%	0.03%	$\leq$ 0.018%	0.015% 1kHz	0.03%	0.004	0.005
S/N Mic EIN/line dB	-125dBm >100dB	$\hat{a}$ -125dBu/895dB	-130dBm/85dB	88dB unwt'd	-128dBm/+70dB	-129dBm/-90dBu	-129dBm/90dB
Crosstalk (worst case)	$\leq$ 85dB	>90dB	$\leq$ 59dB	$\leq$ 60dB 1kHz	$\leq$ 80dB/0dB	-75dB 1kHz	-100dB
Reader Service No	893	894	895	896	897	898	899

CD Players

Manufacturer	Barco EMT		Denon America			Harris Allied Broadcast	Panasonic Pro Audio
Model	EMT 980	EMT 981	DN-7700R	DN-950FA ²	DN-970FA ²	Audiometrics CD10 ²	SL-4300
Configuration	Single player	Single	Record/Play ¹	Single player	Single player	Single player	Single
Player trays	...	...	1	1	1	1	1
Programmable events #	None	4-event	None	None	None	Pending EOM	20-event
Output connection Ω	Balanced	Balanced	for 600 Ω load	Balanced	for 600 Ω load	AB 40 Ω source	Unb
Output level	+6dB	+6dB	-4/+22dB	+4dB	-5/+18dB	+24dBm	-10dBu
Digital output kHz	No	Yes 44.1kHz	AES EBU on XLR	No	AES EBU on XLR	...	No
Digital resolution	16-bit	16-bit	16-bit	16-bit	16-bit	...	16-bit
Oversampling (factor)	x2	x4	x8	x4	x8	...	x4
AF response $\pm$ dB, Hz-kHz	$\pm$ 0.5 20-19.8k	$\pm$ 0.2dB 40-20k	20Hz-20kHz	20Hz-20kHz	20Hz-20kHz	$\pm$ 1 20-20k	$\pm$ 0.5 2Hz-20kHz
Distortion	0.03%	0.04%	$\leq$ 0.008%	$\leq$ 0.01%	$\leq$ 0.008%	$\leq$ 1%	0.003%
Dynamic range	90dB	98dB	>90dB	92dB A wtd	>90dB	...	94dB
Crosstalk (worst case)	-60dB	$\leq$ -75dB	>90dB	...	>90dB	...	...
S/N	+94dB RMS	+105dB RMS	>92dB	92dB	>92dB	...	96dB
Access time (worst)	4s	3.5s	...	3s	...	<200ms	...
Reader Service No	901	902	903	904	905	906	907

¹ 63 min per disc: analog and digital inputs and outputs; discs per Orange Book. ² Emulates tape cartridge machine.

Manufacturer	Panasonic Pro Audio	Sony	Studer			TASCAM	
Model	SL-4700	CDP-2700 ³	D740 CD/CDR ³	A727	A730	CD 401/501	CD 701
Configuration	6-disc cap.	Single player	Record/Play	Single	Single	Single player	Single player
Player trays	1	3" or 5"	1	1	1	8 or 12mm	8 or 12mm
Programmable events #	36 event	24 event	...	No ⁴	3-event ⁴	via Rmt Ctl	RC-701 unit
Output connection Ω	Unbal	XLR or Phone	Bal/UB 600 Ω load	Bal/UB <50 Ω	Bal/UB <50 Ω	Bal XLR	Bal XLR
Output level	-10dB	+15dBs max	24dBm max	+15dBm	15dBm	+4dBm	+18dBm max
Digital output, kHz	No	AES/EBU XLR/Phono	Yes	Yes	Yes	Yes	Yes

Manufacturer	Panasonic	Sony	Studer			TASCAM	
Model	SL-4700	CDP-2700 ³	D740 CD/CDR ³	A727	A730	CD 401/501	CD 701
Digital resolution	16-bit	18-bit	16-bit	16-bit	16-bit	16-bits	16-bit
Oversampling (factor)	x4	8x	x4	x4	x4	18-bit x4	16-bit 4x
AF response $\pm$ dB, Hz-kHz	± 0.5 2Hz-20kHz	± 0.5 20-20k	± 0.2 20-20k	± 0.1 20-20k	± 0.1 20-20k	± 3 5-20k	-1 20-20k
Distortion	0.003%	<0.04%	<0.008%	0.006%	<0.006%	0.008%	0.008%
Dynamic range	94dB	---	---	>100dB	>100dB	96dB	---
Crosstalk (worst case)	---	100dB	>90dB	<-90dB	<-90dB	92dB	90dB
S/N	96dB	>110dB	---	>100dB	>100dB	96dB	96dB
Access time (worst)	---	---	---	<3s	<3s	<2sec	2s
Reader Service No	908	909	910	911	912	913	914

³ $\pm 12.7\%$ variation in speed; features interface for start/stop control from audio mixer fader. ⁴ Analog line and XLR, Cinch or optical digital inputs and outputs. ⁵ A729 CDS series controller may be used with 4 A727 or A730 units for multiple event program.

Shotgun Microphones

Manufacturer	AKG Acoustics			AMS Industries	Audio-Technica		
Model	C 460B/ULS/61	C 568 EB	CK 62 DF-ULS	SoundField	AT4071	AT4073	AT815a
AF response Hz-kHz	20-20k	20-20k	20-20k	---	30-20k	30-20k	40-20k
Polar pattern(s)	Cardioid	HC/directional	Omni	Variable ¹	Lobar	Nar. dir.	Narrow directional
Output impedance	$\leq 120\Omega$	$\leq 600\Omega$	$\leq 120\Omega$	---	250 Ω	250 Ω	600 Ω
Output level (mV/Pa)	8mV/Pa	11mV/Pa	8mV/Pa	---	62mV	52mV/Pa -25.7dBm	9mV/Pa -44.5dBm
Maximum SPL dB; % dist.	---	128dB 0.5%	---	140dB 0.5%	127dB	129dB 1% dist	120dB 3% dist
Output noise	15dB	18dB DIN 45412-A	15dB	20dB/pattern spec	12dB A-wtd	16dB	18dB
S/N ratio	79dB	76dB	79dB	---	---	>75dB	>70dB
Mic capsule type	Electret	Electret	Electret	---	Capacitor	Ext pol cap	Fixed-charge cond.
Stereo design	No	No	No	M/S or L/R	No	No	No
Power source	C460B preamp	9-45Vdc	C460B preamp	48Vdc or ac	12-48V	12-48Vdc	1.5Vdc AA-cell
Filters	---	---	---	Bass rolloff	---	High-pass	High-pass
Weight	4.2gm	6.2gm	4.2gm	---	5.8 oz	4.2oz	9.2oz
Reader Service No	915	916	917	918	919	920	921

¹ Patterns from omni through cardioid to Figure-eight.

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Circle (48) on Reply Card

1992 Equipment Reference Manual *Broadcast Engineering* 105

Manufacturer	Audio-Technica		beyerdynamic			Electro-Voice	
Model	AT835	AT877	MC 736-PV	MC 737-PV	MCE 86 S	DL42 ²	RE45N D ³
AF response Hz-kHz	40-20k	60-14k	40-20k	40-20k	50-18k	50-12k	150-15k
Polar pattern(s)	Narrow directional	Unidirectional	Cardioid lobe	HC/lobe	HC/lobe	HC	Card.-line
Output impedance	600Ω	350 Ω	150Ω	150Ω	190Ω	150Ω	600Ω
Output level (mV/Pa)	9mV/Pa -45.5dBm	10mV	25mV/Pa	25mV/Pa -30dBV	4.2mV/Pa -47dBm	-50dB	5mV/Pa 1kHz
Maximum SPL dB; % dist.	115dB 3% dist	120dB	128dB	122dB	138dB 0.7% dist	...	...
Output noise	17dB	...	4.5μVS	4.5μVS	3.8μVS	-125dBm hum	-130dBm hum
S/N ratio	>70dB	>70dB	74dB	74dB	61dB	...	...
Mic capsule type	Fixed-charge cap.	Condenser	RF condenser	RF condenser	Electret	Dynamic	Dynamic
Stereo design	No	No	No	No	No	...	No
Power source	1.5Vdc	AA cell	1.5V	12Vdc	12-48Vdc	8-48Vdc	Not required
Filters	High-pass	...	Bass rolloff	Bass rolloff	...	...	...
Weight	7.5 oz	>6 oz	4 oz	7 oz	2.5 oz	13 oz	7.5 oz
Reader Service No	922	923	924	925	926	927	928

²Windscreen, case, coiled cord, handle. ³Shock mount, case, handle, clamp, attenuator.

Manufacturer	Georg Neumann		Sennheiser Electronics			Shure Brothers
Model	KMR8 1i (KMR82i) ⁴	RSM190i MS-stereo ⁵	MKH 416 P48 ⁶	MKH 70 P48	MKH 816- P48 ⁷	SM89
AF response Hz-kHz	40-18k (40-20k)	40-18k	40-20k	±2 70-20k	40-20k	60-20k
Polar pattern(s)	HC	HC/Fig-8	Sup card./lobe	Sup card. lobe	Ultra dir/lobe	HC; LOBAR
Output impedance	150Ω	50Ω	10Ω	150Ω bal	10Ω	100Ω source
Output level (mV/Pa)	18mV/Pa (21mV/Pa)	23mV/Pa	1.25	40mV/Pa	1.2V	2.2mV/Pa -53dBV
Maximum SPL dB; % dist.	>128dB	134mV/Pa	128dB	124dB	124dB	127dB 0.5% dist
Output noise	...	...	17dB	10dBA/DIN 45500	15Ba	16dB A wtd
S/N ratio	82dB	78dB M/72dB S	>77dBa	...	>78dBa	79dB
Mic capsule type	...	...	RF condenser	RF condenser	RF condenser	Electret
Stereo design	No	Yes	No	No	No	No
Power source	48Vdc±4V	48Vdc±4V	48V	48Vdc	48Vdc/8	11-52Vdc
Filters	...	...	...	High boost	Low cut	Highpass
Weight	145 g	300 g	6.25 oz	6.5 oz	13.4 oz	6.9oz
Reader Service No	929	930	931	932	933	934

⁴Windscreen, case mounting accessories. ⁵MTX 190i matrix amplifier ⁶MKH 416 TU3 12Vdc. ⁷MKH8166 TU3 12Vdc

Wireless Microphone Systems

Manufacturer	Audio-Technica US		beyerdynamic		Comprehensive Video Supply	Comtek	
Model	ATW1031	ATW1032	SDM 170/NE 170	TS 170 NE 170	HighBand 1500	MR-180/M-72	MR-182/M-182
RF spectrum	169-216 MHz	169-216 MHz	169.5-202.3MHz	169.5-202.3MHz	203-215MHz	169-216MHz	169-216MHz
Modulation control	Compression	Compression	...	...	...	Compression	Compression
Companding function	2:1	2:1	Low noise	Low noise	Yes	2:1	2:1 companding
System AF response	±1 40-16k	±1 40-16k	-3 30-18k	-3 30-18k	±3 25-20k	±2 50-15k	±2 80-15k
System S/N ratio	95dB	95dB	102dBA	102dBA	...	95dB	95dB
System distortion	0.5%	0.5%	0.5%	0.5%	<0.3%	0.05%	0.5%
Transmitter Model:	ATW-T31 UniPak	ATW-T32	SDM-170	TS-170	HBT-1500	M-72	M-182
Transmitter packaging	Pocket unit	Handheld	Handheld	Pocket unit	Body pack	Pocket	Handheld
RF output	30mW	30mW	50mW	50mW	50mW	35mW	50mW
FM deviation	±15kHz	±15kHz	±15kHz	±15kHz	±16kHz	±30kHz	±30kHz
Microphone support	AT831b/ATM73a ¹	ATW-T32-HE ³	DM 186.04 head	Electret ⁴	Lavalier/mini XLR	Elect Dynam Rib	Electret
Auxiliary line input	Yes	Yes	No	No	...	Possible	No
Power requirement	9Vdc	9Vdc	9Vdc alk.	9Vdc	9V alk.	9Vdc	3-AA
Operating weight	3.2	3.2	160g	160g	...	4	11
Receiver Model:	ATW-R10	ATW-R10	NE 170	NE 170	HBR-1500	MR-180	MR-182 ⁵
RF sensitivity	1μV 60dB quieting	1μV 60dB quieting	0.5μV 20dB quieting	0.5μV 20dB quieting	Adjustable	1μV 45dB quieting	1μV 45dB quieting
Spurious rejection	60dB	60dB	>60dB	>60dB	60dB	80dB	>90dB
Antenna types	Whip furnished	Whip furnished	Dual whips	Dual whips	Softwire	Whip dipole, multi-element accsy	Whip dpl multiel acc
Diversity reception	Yes	Yes	Yes	Yes	N.A.	No	No
Multichannel	No	No	No	No	No	No	No
AF output level	-8dBV Unbal ²	-8dBV Unbal ²	-20/+6dBm	-20/+6dBm	600Ω Unb	+9dBm	+10dBm
Power requirement	120ac/12-18dc	120ac/12-18dc	15Vdc	15Vdc	9V alk	6-12dc 50hr	ac/dcV 8W
Metered parameters	AF/RF	AF/RF	AF/RF	AF/RF	...	AF/V	AF RF/V
Metering types	LEDs	LEDs	LEDs	LEDs	LEDs	LEDs	LEDs
Reader Service No	935	936	937	938	939	940	941

¹Or AT803b, AT857AMLa, ATM35, AT851a. ²-20dB balanced. ³Or ATW-T32-C condenser type capsule. ⁴Suitable for various mic units; phantom power.

⁵MRC-82 Camera Companion receiver attaches to camera, connects to camera audio channel.

Manufacturer	HM Electronics		Electronsonics			Micron Audio Products	
Model	515 (525)	System 55 (50)	Pro-STD-T (-L)	PRO-4-Mini	PRO-DIV-L (-T)	CTR 501 /H	MDR530-SH
RF spectrum	169-216MHz	169-216MHz	150-216MHz	150-216MHz	150-216MHz	169-216MHz	170-216MHz
Modulation control	Compression	Compression	Compression	Compression	Compression	Limiting	Limiting
Companding function	Dynamic expansion	Dynamic expansion	2:1	2:1	2:1	CNS type	CNS type
System AF response	±3 100-15k	±3 100-15k	±1 50-15k	±1 50-15k	50-15k	±2 50-15k	±2 50-15k
System S/N ratio	NRX II	NRX II	96dB A wid	96dB A wid	96dB A wid	>115dB	>115dB
System distortion	1%	1%	0.7%	0.7%	0.7%	<0.3% THD	<0.3% THD
Transmitter Model:	TX550 (555)	TX555 (TX550)	T185 (M185)	M185/H185	M185 (T185)	TX-501 (503)	TX-513/-516
Transmitter packaging	Body-Pac (HH)	Body-pac	Handheld (Pocket)	Handheld/plugon	Pocket (HH)	Pocket (HH)	[-513 operates on
RF output	>50mW	>50mW	50mW	50mW	50mW	50mW	[3 of 6 freq in
FM deviation	15kHz max	15kHz max	±15kHz	±15kHz	±15kHz	±15kHz	[1.2MHz range.
Microphone support	1.5-5k Ω (dynamic)	Dynamic	SM58 (Electret ⁶)	Electret or dynamic	Electret (& dynamic)	Electret, dyn.	...
Auxiliary line input	...	No	No (Yes)	...	Yes (No)	Yes	
Power requirement	9Vdc	9Vdc	9Vdc	9Vdc	9Vdc	9Vdc	9Vdc
Operating weight	4.7	10	13.2 (5.3)	...	5.3 (13.2)	8.5 (11)	8.5
Receiver Model:	RX522	RX520	R185	CR185/CDM4	DR185	MR-510 (110) ⁸	MDR-530 ⁹
RF sensitivity, quieting	1 μ V 30dB	1 μ V 30dB	0.5 μ V 20dB	0.6 μ V 20dB	0.5 μ V 20dB	> 5 μ V >100dB S/N	2 μ V 60dB
Spurious rejection	>50dB	>60dB	>100dB	>100dB	>100dB	>80dB	>80dB
Antenna types	Whip BNC	Whip BNC	Whip furnished ⁷	Whip furnished	Whip furnished	Whip furnished	Whips furnished
Diversity reception	No	Yes	No	No	Yes	No	Yes
Multichannel	No	No	No	4-channel	No	No	No
AF output level	-4dBV	-4dBV	-18dBm	-65.0dBm	-65.0dBm	-65.0dBm	-53dBV/0dBV
Power requirement	120ac/12-16dc	120ac/12-16dc	12dc/120ac	9-16dc/120ac	12dc/120ac	12-30dc	12-18dc/Vac
Metered parameters	Vdc/RF	Vdc/RF/AF	AF/RF/Vdc	AF/RF/Vdc	AF/RF/Vdc	AF/RF/Vdc	AF/RF/Vdc
Metering types	LEDs	LEDs	LEDs	LEDs	LEDs	LEDs	LEDs
Reader Service No	942	943	944	945	946	947	948

⁶M185 also supports dynamic mic units. ⁷Dipole antenna available as an added accessory. ⁸Model 110 without noise suppression. SR-120/SR-520 are similar receivers, mounting on and can be powered from the camera. ⁹MDR-550 mobile diversity receiver offers similar characteristics in portable, compact dc-powered package.

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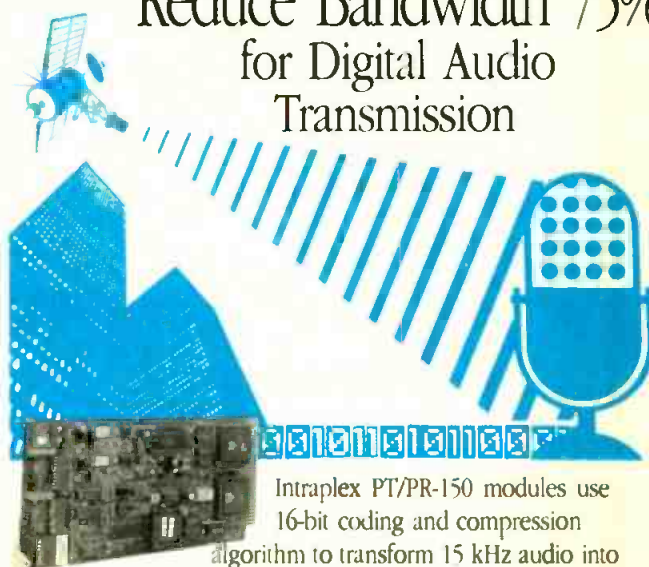
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Circle (50) on Reply Card

Manufacturer	Micron Audio	Samson Technologies			Sennheiser Electronics		
Model	MDS-2	Broadcast STD	Concert TD	MR-1 system	UHF 1B (1H)	UHF 2B (2H)	VHF 1B-90 (1H)1
RF spectrum	150-216MHz	174-199MHz	174-199MHz	174.46-199.6MHz	450-960MHz	450-960MHz	174-216MHz
Modulation control	Limiting	...	...	...	Compress (limit)	Compress (limit)	Compress (limit)
Companding function	CNS type	NRS dbx I/II	NRS dbx I/II	NRS dbx II	Hi-Dyn	Hi-Dyn	HiDyn
System AF response	±2 50-15k	±3 30-18k	±3dB 30-18k	±3dB 60-12k	±3 40(70)-20k	±3 40(70)-20k	±3 40(70)-20k
System S/N ratio	115dB	>115dB	>100dB	95dB IHF	94dB	94dB	+92dB A wtd (94)
System distortion	<0.3% THD	<0.5% 400Hz	<0.5% 1kHz	...	<2%	<2%	<2%
Transmitter Model:	TX-501 (503) ¹⁰	BH-3 (BT-3)	CH-2 (CT-2)	SH-2 (ST-2(L))	SK-2012-TV (SKM 4031)	SK-2012-TV (SKM 4031)	SK-2012-90 (4031-90)
Transmitter packaging	Pocket (HH)	Handheld (Belt)	Handheld (Belt)	Handheld (Belt)	Pocket (handheld)	Pocket (handheld)	Pocket (handheld)
RF output	50mW	50mW	50mW	50mW	20mW	20mW	30mW
FM deviation	±15kHz	±15kHz	±15kHz	±15kHz	±40kHz	±40kHz	±40kHz nom.
Microphone support	Elec	dyn (AKG)	Various ¹²	Various ¹³	Various ¹⁴	Electret MKE-2/-40	MKE-2/-40
Auxiliary line input	Yes (No)	No	No	No	No	No	No
Power requirement	9Vdc	9Vdc	9Vdc	9Vdc[6-8 hr]	4.5V 3-AAA cells	4.5V 3-AAA cells	4.5Vdc 3-AAA
Operating weight	8.5 (11)	...	13 (4.2)	7.8 oz (5.1)	7 oz (9 oz)	7 oz (9 oz)	7 oz (9 oz)
Receiver Model:	MDR-540 (-4) ¹¹	BR-3	CR-2	MR-1 Micro	EK-2012-TV ¹⁵	EM 2003-TV	EK-2012-90 ¹⁶
RF sensitivity, quieting	2μV 60dB	15μV 60dB S/N	15dB μV 60dB S/N	15-45dBu	<20μV 40dB	<10μV 40dB	<20μV 40dB
Spurious rejection	>80dB	60dB ±60Hz	60dB ±60Hz	60dB ±60kHz	>70dB	>80dB	>70dB
Antenna types	Dipole	Dual whips	Dual whips	7" Flex whip	Whip furnished	Whip furnished	Whip furnished
Diversity reception	Yes	Yes	Yes	No	No	Yes	No
Multichannel	Yes	10	1 of 10	1 of 10	Option	Yes	No
AF output level	0dB line	Bal/unbal 8dBm	Bal/unbal 8dBm	Bal/unbal 0dBv	-26/+6dBm	-28/+12dBm	-26,+26dBm
Power requirement	10-22dc/120ac	110/220ac	110/220Vac	9V	4.5Vdc 3-AAA cells	12-24Vdc 117Vac	4.5Vdc
Metered parameters	AF/RF/Vdc	Vdc/RF A-B Ch/AF	Vdc RF A/B	Vdc	RF	None	AF/RF
Metering types	LEDs	LEDs	LEDs	LEDs	...	LEDs	...
Reader Service No	949	950	951	952	953	954	955

¹⁰TX100 series does not use CNS noise suppression. ¹¹-4 model does not include noise suppression; multiple element accessory available. ¹²Various mic possibilities include: AKG, Audio-Technica, E-V, Sennheiser, Shure, Sony. ¹³Various mic include AKG, Audio-Technica, E-V, Sennheiser, Shure, Sony. ¹⁴Supports various mics from all major manufacturers in dynamic and condenser types. ¹⁵Camera mounted receiver. ¹⁶VHF camera mount receiver. Model WM1 wireless mixer may be used; 4 of 5 channels include wireless receivers with HI/Lo EQ, 70Hz cutoff, pre-fader listen features.

Manufacturer	Sennheiser	Shure Brothers		Sony	Swintek	Vega Mark IV	
Model	VHF 2B-90(2H-90)	LS14 839 ¹⁸	LS23	UHF systems	MK50A Hi-fi-S ²²	Pro Plus	VX-20 systems
RF spectrum	174-216MHz	169-216MHz	169-216MHz	400 (900)MHz	49-470MHz	150-216MHz	150-174/174-216
Modulation control	Compress (limit)	Companding	Companding	Limit/compress	Limit/compression	...	Compression
Companding function	HiDyn	Yes	Yes	Switchable ¹⁹	Yes	Dynex III	DYNEX III
System AF response	±0.3 40-20kHz	±2 50-15k	±2 50-15k	±1.5dB 75-15k	±3dB	60Hz-20kHz	40-15kHz
System S/N ratio	+92dB A wtd	...	<13dB SPL	57dB linear A-wtd	80dB	110dB	>100dB
System distortion	<2%	0.3%	0.3%	0.3% linear	1%	<0.2%	<0.5%
Transmitter Model:	SK 2012-90 (SKM-4031)	L11	L2	WRT-28L (H)	MK50A HHI	77/DH (T-81)	T-25/-28/-29
Transmitter packaging	Pocket (handheld)	Pocket	Handheld	Pocket	Pocket	Body (handheld)	Bodypack/Hand-held
RF output	30mW	50mW	50mW	6mW (30mW) ²⁰	50mW	50mW	50mW
FM deviation	±40kHz nom.	±15kHz	±15kHz	±2.4kHz ²¹	±20kHz	...	±15kHz
Microphone support	MKE-2/-40	Electret 839W	58; 96	Elec Dyn ECM-77BC	Electret; dynamic	Various ²³	Electret/...
Auxiliary line input	No	No	No	No	Yes	No	No
Power requirement	4.5Vdc 3-AAA	9Vdc	9Vdc	3Vdc	9Vdc	9V alk	9V MN1604
Operating weight	7 oz (9 oz)	5.5oz	10.4 oz max	4.6 oz	5 oz	7 (9-13.5)	5/9/10Oz
Receiver Model:	EM-2003-90 ¹⁷	L4 MARCAD	L3	WRR-28/37	QDC HI-FI	R-42A	R-27
RF sensitivity, quieting	<10μV 40dB	0.45μV 12dB	0.35μV 12dB	10dBμ mute level	1μV 12dB	1.3μV 50dB SNR	<1.3μV 50dB S/N
Spurious rejection	>100dB	75dB	75dB	>70dB	80dB	...	75dB
Antenna types	Whip	ground plane	Whip furnished (2)	Whip furnished (2)	Whip	Whip	Dual whips
Diversity reception	Yes	Yes	No	WRR-37	O	Yes	No
Multichannel	No	No	No	Yes	O	No	No
AF output level	-28/+12dBm	0dBm	-2dBv	-58dBs 600Ω	56dBm,+10dBm	Line level	-45/+1dBm
Power requirement	117Vac	12-18Vdc	12-18Vdc	3/10-17Vdc	9Vdc	ac/dc	9V alk.
Metered parameters	AF/RF	AF/RF/V/Div	AF/RF/V	AF/RF	AF/RF/V	A-B, RF/AF	RF, AF, DC
Metering types	LEDs	LEDs	LEDs	LEDs	LEDs	LEDs	meter
Reader Service No	956	957	958	959	960	961	962

¹⁷EM-2003-90 offers diversity reception; EK-2012-90 is a camera mount receiver. ¹⁸Various other systems available combining L11 transmitter with other microphone instruments. ¹⁹Linear or companded; >60dB SNR w/companding; 0.7% distortion w/companding. ²⁰WP-27 amplifier gives 500mW. ²¹Per 1kHz linear mode; ±9.4kHz/1kHz, companded. ²²Video camera system. ²³T-series includes elements such as E-V N/D757, Shure SM-58, SM-85, SM-87.

Telephone Audio Bandwidth Extenders

Manufacturer	Comrex Corporation				Gentner Electronics			
Model	2XP/2XR	3XP/3XR	LX-T/ LX-R	PLXmicro/THX	EFT-1000A ¹	EFT-100 ¹	EFT-3100	EFT-900A ¹
System type	2-line	3-line	1-line	1-line duplex	1-line	1-line	3-line duplex	1-line
Offset line 1 Hz	250	250	250	250	250	250	320	250
Offset line 2 Hz	2k	2k	...	...	...	...	2.82k	...
Offset line 3 Hz	...	2k	...	...	...	...	5.32k	...
Translation error	±0.02Hz	±0.02Hz	±0.02Hz	±0.02Hz	±0Hz	±0Hz	±0Hz	±0Hz
Processing analog/digital	Analog	Analog	Analog	Analog	Digital	Digital	Digital	Digital
AF response dB/Hz	0.5 50-5k	0.5 50-10k	0.5 50-5k	0.5 50-5k	0.5 50-3.5k	0.5 50-3k	0.5 50-7k	0.5 50-3.5k
Compression/expansion	...	Auto lvl ctrl	Yes	...	Yes	Yes	No	Yes
System transmitter	2XP	3XP	LX-T	PLX micro	EFT-1000A	EFT-100	EFT-3100	EFT-900A
Packaging	Portable	Portable	Rack/Table	Portable	Portable	Rack/Table	Rack/Table	Portable
AF input impedance	600Ω	600Ω	600Ω	150Ω/10kΩ	600 Ω	>10kΩ	150/600Ω	150/600Ω
AF input level dBm	+4	+4	-20; +8	-60; +0	-55; 0	-10; 0	10	-55; 0
Mic input	...	...	...	Bal	Bal	...	Bal	Bal
Line input	Bal	Bal	Yes	Bal	Bal	Bal	Bal	Bal
Output connection	Xfmr bal	Xfmr bal	Xfmr bal	Xfmr bal	Xfmr bal	Ext hybrid	Xfmr bal	Xfmr bal
Output impedance	600Ω	600Ω	600Ω	600Ω	600Ω	600Ω	600Ω	600Ω
Output level	-9dBm	-9	-9	-9dBm	-15	-2	-10	0
Power requirement	120/240Vac	120/240Vac	120Vac	120Vac; ±15Vdc	117/234Vac; dc	117/234Vac	117/234Vac	117/234Vac; dc
System receiver	2XR	3XR	LX-R	TH-X	EFT-1000A	EFT-100	EFT-3100	EFT-900A
Packaging	Rack mount	Rack mount	Rack/Table	Rack-mount	Portable	Rack/Table	Rack/Table	Portable
Power requirement	...	120/240Vac	...	...	117/234Vac	117/234Vac	117/234Vac	117/234Vac
Telco connection	Xfmr bal	Xfmr bal	Xfmr bal	Xfmr bal	Xfmr bal	Ext hybrid	Xfmr bal	Xfmr bal
Telco input level	-40; +8	-40; +8	-40; +8	-40; +8	-30; +17	-20; 0	0	-35; +4
Telco impedance	600Ω	600Ω	600Ω	600Ω	600Ω	600Ω	600Ω	600Ω
AF output connection	Act bal	Act bal	Act bal	Act bal	Act bal	Act bal	Act bal	Act bal
AF output impedance	600Ω	...	600Ω	600Ω	600Ω	600Ω	600Ω	600Ω
AF output level dBm	0	0	0	0dBm	0	-10; 0	10	-60; 0
Reader Service No.	963	964	965	966	967	968	969	970

¹Transceiver units; one required at each end of link.

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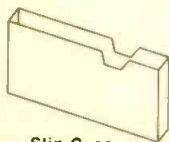
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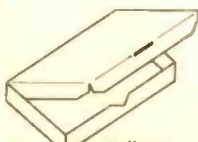
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Circle (51) on Reply Card

Circle (52) on Reply Card

Audio Test Systems

Manufacturer	Amalgamated Wireless Australasia	Amber Electro Design			ASACA ShibaSoku		Audio Precision		Hewlett-Packard
Model	F242A	# 3501	# 5500 ²	# 7000 ³	AD60A	AM51A	Portable One	System One	HP 8903E
Auto level set	Yes	Yes	Yes	Yes	...	Yes	Yes	Yes	Yes
Auto null set	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
μP-control	...	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Automation bus port	No	No	Yes	GP/RS-232	GP-IB	GP-IB	Yes	Yes	HP-IB
Audio recorder tests	No	Yes	Yes	Wow/flutter	CD spec	...	No	Yes	Non-specific
Transmit-receive units	No	Yes	Yes	No	No	No	Yes	Yes	No
Portable unit	...	Yes	Yes	No	No	No	Yes	No	No
AF range (fundamentals)	20-20kHz	10-100k	10-100k	8.5Hz->500kHz	10-120kHz	10-100kHz	10-100kHz	10-200kHz	20Hz-100kHz
Range (on harmonics)	10-100kHz	10-300k	10-500k	...	...	to 330kHz	...	10Hz->500kHz	1-Hz-500kHz
Input level range	-30/+30dBm	-30/+40dBm	-30/+40dBm	-100/+40dBV	1mV-100Vrms	-26.8/+42.2dBm	-800μV	<21μV, -90dBu	50mV-300V
Input impedance	600Ω	100kΩ	100kΩ	100kΩ	200kΩ/2100kΩ	200kΩ/2100kΩ	100kΩ	100kΩ	100kΩ
Input connection	Bal/Unbal	AB/AU	AB/AU	B/Unbal	2-ch Bal/unb	Bal/unb	Bal/Unbal	Bal/Unbal	B/Unb
Fundamental rejection	...	>100dB	>100dB	>120dB ⁴	>115dB	>85dB	...	...	...
THD minimum, accuracy	<0.005%, ±0.5	0.0008%, ±1%	0.001%, ±1%	-30dBV, ±2dB	<-110dB	-120dB	0.0025%, ±1dB	0.001%, ±0.5dB	-80dB, ±2dB
IMD measurements per	N.A.	SMPTE ¹	SMPTE ¹	SMPTE 4:1	...	70kHz/7kHz	SMPTE ⁵	SMPTE ⁵	...
IMD minimum, accuracy	N.A.	0.003%, ±2%	0.001%, ±1%	<0.003%	...	0.001-100%	0.0025%, ±1dB	0.0018%, ±1dB	...
AC voltage range	-110/+32dBm	<3μV-100V	10μV-100V	Yes	30μV-100V	0.1μV-100Vrms	<10mV-140V	300μV-160V	0.3mV-300V
Audio noise range	<2.5μV	<1μV-100V	<1μV-100V	to <-112dBm	...	-100dB/+40dB	...	75μV-160Vrms	0-99.99dB
Signal generator range	Model G232	<-60/+28dBm	<-80/+30dBm	Yes	No	Yes	10Hz-120kHz	10Hz-204kHz	Yes
Generator output	B/Unb	TB/TU	TB/TU	B/Unbal Act	...	Bal/unb	Bal/Unbal Xfmr	Bal/Unbal Xfmr	600Ω or 50Ω
Frequency counter range	No	10Hz->500kHz	to 500kHz	Yes	Yes	to 500kHz	10-200kHz	10Hz->500kHz	Yes
Meters/display	Vrms/dBm meter	Mechanical	LED	Windows 3.0	Dual analog	LCD display	LCD panel	CRT	7-seg LED
Reader Service No	971	972	973	974	975	976	977	978	979

¹ Also per DIN 45045 & CCIF specifications. ² AudioCheck software package allows control from PC for automated measurement system. ³ System based on IBM/compatible with Windows 3.0 operating system. ⁴ Rejection > 120dB or 10dB below highest harmonic. ⁵ IMD also per DIN 45045/45043; measurements also per CCIR IEC 2683 IHF A202.

Manufacturer	Neutrik		Rohde & Schwarz		Schmid Telecomm.	Sound Technology		Tektronix	
Model	A1 System	TT402A	SUN-2	UPA series	SZ 346/316 ⁶	1510A ⁷	3200B/3100B ⁸	AA5001	AA501
Auto level set	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Auto null set	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
μP-control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Automation bus port	RS-232	-488/-232	Yes	Yes	RS-232	Opt	Yes	Yes	No
Audio recorder tests	Possible	Possible	Yes	Yes	Possible	Yes	Yes	No	No
Transmit-receive units	No	No	Yes	No	X-316/R-346	Yes	Yes	No	No
Portable unit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
AF range (fundamentals)	20Hz-40kHz	19Hz-21kHz	10-100kHz	10-100k	30Hz-20kHz	20-40kHz	1-102.39kHz	10-100kHz	
Range (on harmonics)	to 130kHz	to 200kHz	...	300k	...	315Hz-1kHz	10Hz-300kHz	to 300kHz	
Input level range	10mV-200V	30μV-100V	-84/+32dB	12mV min	-44/+21dBm	100μV-40V	10mV-100V	60mV-200V 100kΩ	
Input impedance	100kΩ	2 100kΩ	1MΩ	1M/20k/600Ω	600/10kΩ	100kΩ	100kΩ	100kΩ	100kΩ
Input connection	Act bal	Bal A/B	B/Unb	B/Unb	2 bal	AB	...	AB	AB
Fundamental rejection	...	...	>65dB	...	...	...	...	10dB ⁹	10dB ⁹
THD minimum, accuracy	0.0025%	<0.01%, ±1.5%	0.06%, ±0.1dB	0.0001%, ±2dB	>0.1%	0.05%, 5%	0.001%, 10%	0.0025%, ±10%	
IMD measurements per	...	Options	per DIN 45405	...	Opt SMPTE	...	SMPTE	CCIF/DIN SMPTE	
IMD minimum, accuracy	...	...	...	N.A.	...	...	0.002%, 1.0%	0.0018%, ±10%	
AC voltage range	10μV-200V	30μV-100V	-84/+32dBm	10μV-300V unb	-70/+21dBm	300μV-40V	30μV-100V	-108/+48dBm ±2% fs	
Audio noise range	-111dBu res. al	<-106dB min	Yes	<3μV	-70dBm	-92/-10dBV	<4μV	-108dBm	-108dBm
Signal generator range	Yes	Yes	SUN-2/S	Opt 10-100k	Yes	-80/+30dBm	-90/+30dBm	10-100k 28dBm	10-100k 28dBm
Generator output	<0.2Ω bal	Bal	B/Unb	Bal	unbal	Bal<5/600Ω	AB	AB	28dBm Bal
Frequency counter range	...	Yes	...	8-250k	...	20Hz-40kHz	10Hz-500kHz	No	No
Meters/display	LCD	LCD	Multi-LED	VU	LED displays	LCD displays	LEDs	CRT	LED
Reader Service No	980	981	982	983	984	985	986	987	988

⁶ SIAT "Short Interval Audio Testing" is a signal generator and receiver for operation of wired or radio links; complete set of measurements made within 5-sec interval. ⁷ Audio signal and recording test system; measures 2nd, 3rd harmonics separately. ⁸ Two unit package for programmable transmission path tests; transmission package is 3100B programmable generator with LED metering display. ⁹ Value noted below specified residual THD & noise or actual THD, whichever is greater.

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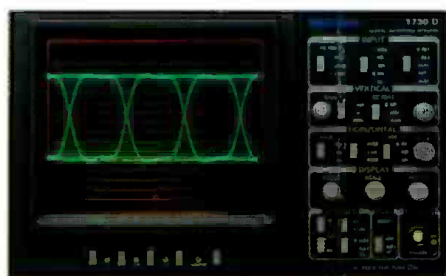
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1730 Waveform Monitor

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RF/Test & Measurement

AM Broadcast Transmitters

Manufacturer	Continental Electronics				Energy-Onix	Harris Broadcast	
Model	315-R1	316F-1	419G ¹	420C	AM-10K ²	DX-100 ³	DX-50 ⁴
Band of service	Broadcast	Broadcast	Shortwave/SSB	Shortwave/SSB	Broadcast/SW	Broadcast	Broadcast
RF output	5kW	10kW	250kW/300kW	500kW	11kW	100kW	60kW
RF output connection	1½"	1½"	50Ω/75Ω/300Ω bal	50Ω/75Ω/300Ω bal	...	6½" 50Ω	3½ 50Ω
Carrier stability	± 5Hz	± 5Hz	±1×10 ⁻⁶ Hz	±1×10 ⁻⁶ Hz	±10Hz	± 2Hz typical	± 2Hz typical
Carrier shift	2%	<2% 100% mod	<5%	<5%	2% max	<1%	<1%
Modulation maximum	125%	125%	100%	100%	125%	130%	145% 50kW
Audio Input connection	Act bal	Act bal	Active 600Ω	10kΩ	Active 600Ω	10kΩ	600Ω bal
Audio response (dB Hz)	±1 20-7.5k	1.5 10-15k	±1 50-7.5k	±1 50-7.5k	±1 20-7.5k	-0.9/0.1 30-10k	-0.9/0.1 30-10k
Audio distortion	< 2% 100%	< 3% 100% 50-10k	< 3% to 98% mod	< 3% to 98%	< 2.5%	≤1% 95% mod	≤1% 95% mod
AM noise figure	< -60dB unwt'd	< -60dB unwt'd	< -55dB residual	< -55dB unwt'd	-60dB	65dB	65dB
IPA driver stage	Solid-state	Solid-state	...	...	Solid-state	Solid-state	Solid-state
Final amplifier	3CX3000F7	4CX15000A	Multiple source	Multiple source	2 3CX2500F3	MOSFET	MOSFET
Modulator final	3CX3000F7	Solid-state	SS modulator	SS modulator	2 3CX2500F3	AM digital	AM digital
Input AC power	208-250Vac 3φ	208/230Vac 3φ	4.160-13kV 3φ	4.160-13kV 3φ	208-380Vac	220Vac 3φ	220Vac 3φ
Power consumption	12.8kVA	28.4kW	640kW 95% mod	1075kVA 95% mod	30kW 100% mod	117kW	59kW
Power factor (System Efficiency)	0.95 (>55%)	0.93 (53%)	>0.95 (70%)	>0.95 (70%)	...	0.98 (86%)	0.98 (85%)
Stereo capable	Yes	Yes	No	No	...	Yes	Yes
Fault logic	Relay	Relay	μP system	μP system	Solid-state	Solid-state	Solid-state
Floor space used	35×34" sep. PS	67×26"	400×72", sep. PS	42m ² sep. PS	52×37"	...	120×33"
Reader Service No	1301	1302	1303	1304	1305	1306	1307

¹ Model 418D-2 at 100kW. ² AM-5K5.5kW; AM-2-5K/3K 3-3.5kW. ³ DX300 300kW; DX500 500kW; DX750 750kW configurations; digital modulation. ⁴ DX10 11kW; DX25U 27.5kW; DX100 110kW; 3 pre-set power levels; lower power units combine for higher levels.

Manufacturer	Harris Broadcast		ITAME	LPB Inc	GE-Marconi Communications		
Model	Gates 5A ⁵	SX-5A ⁶	TAURO S 10 ⁷	AM-100P ⁸	B6034 ⁹	B6040	B6126 (6127)
Band of service	Broadcast	Broadcast	Broadcast	LP Broadcast	Broadcast	Broadcast	Shortwave
RF output	5.6kW	5.6kW	10kW	100W	50kW	5W/10kW	300kW (500kW)
RF output connection	7/8"	7/8" 50Ω	1½"	SO-239 UHF 50Ω	50Ω/300Ω	50Ω unb	50Ω/300Ω
Carrier stability	±2Hz	±10Hz PLL	±5Hz	±10Hz	< 1 ppm/yr	±10Hz	< 1 ppm/yr
Carrier shift	<1% 100%	<2% 100%	<3%	<2%	<2.5%	<5%	<2.5%
Modulation maximum	130% peak	125%	125% PDM	+125%	125%	100%	100%
Audio Input connection	600Ω bal	600Ω bal	Bal 600Ω	600Ω	Bal 600Ω	Bal 600Ω	Bal 600Ω
Audio response (dB Hz)	±0.5 20-10k	-1.5/5 20-12.5k	±1 20-10k	±1.0 20-15k	±1 50-6k	±1 50-6k	±1 50-6k
Audio distortion	<1.3% 95% mod	<1% 95%	<2% 99%	<2%	95% mod	4% 90% mod	3% 90% mod
AM noise figure	>60dB	>60dB	60dB	-55dB	<-56dB	-55dB	<-56dB
IPA driver stage	FET	Solid-state	Tube-type	Solid-state	...	Solid-state	4CW25000A
Final amplifier	FET	MOSFET	3CX10000A7	Solid-state	Tetrode	2 4CX5000A	TH 537 (TH 558)
Modulator final	Polyphase PDM	Polyphase PDM	4CX15000A	Solid-state	Tetrode	Solid-state	TH 555 (TH 581)
Input AC power	220Vac 3φ	240Vac 3φ	220/380Vac	117Vac 1φ	230Vac 2φ	380/415Vac 3φ	11kVac 3φ
Power consumption	7.7kW	11.6kW	11kW	400W	...	30kVA	429kW (...)
Power factor (System Efficiency)	... (65%)	... (>65%)	... (40%)	0.9 (25%)	0.9 (...)	0.9 (...)	0.9 (64%)
Stereo capable	Yes	Yes	Yes	Yes	Yes	No	No
Fault logic	Solid-state	μP	Solid-state	relay	Relay	Solid-state	relay
Floor space used	28×30"	28×30"	45×37"	Wall-mount	3.65×1.54m ²	65×33"	72(85)m ²
Reader Service No	1308	1309	1310	1311	1312	1313	1314

⁵ Gates One, 1kW; Gates Two 2.5kW. ⁶ SX-2.5A 2.5kW; SX-1A 1kW. ⁷ Systems at 7kW, 5kW and 2kW feature similar characteristics. ⁸ Series includes at 5W, 60W. ⁹ B6035 rated 100kW, B6036 rated 150kW and B6037 rated 200kW are combinations of the B6034 system.

Manufacturer	Nauteil		RIZ Transmitter Factory		TELEFUNKEN
Model	AMPFET ND 10 ¹⁰	AMPFET ND50 ¹¹	OR K series ¹²	OR S series ¹³	S4006 (S4005) ¹⁴
Band of service	Broadcast	Broadcast	SW 3.2-6.1MHz	AM/MW	Brdcst/MW (SW)
RF output	11kW	55kW	50-250kW	20kW-1MW	600kW (500kW)
RF output connection	1½" 50Ω	3½" 50Ω	50Ω/300Ω	50/60Ω, 120Ω	50Ω/25Ω/150Ω/300Ω
Carrier stability	±5Hz	±5Hz	...	...	0.5×10 ⁻⁶ Hz/yr
Carrier shift	<1%	<1%	...	[auto-tuning]	<3%, 1kHz (<3%)
Modulation maximum	125% at 11kW	125%, 55kW	...	[on OR20S-02]	100%
Audio Input connection	Bal 600Ω	600Ω bal	...	...	600Ω Bal
Audio response (dB Hz)	±0.5 30-10k	±0.5 30-10k	...	...	±1 40-4.5kHz
Audio distortion	<1% 95% mod	<1% 95% mod	< 3%	< 2-3%	< 2% 80% mod (< 3%)

Manufacturer	Nautel		RIZ Transmitter Factory		TELEFUNKEN
Model	AMPFET ND 10 ¹⁰	AMPFET ND50 ¹¹	OR/K series ¹²	OR/S series ¹³	S4006 (S4005) ¹⁴
AM noise figure	60dB	60dB	50-60dB	55-65dB	>55dB unwt'd
IPA driver stage	Solid-state	Solid-state	...	...	Tube type
Final amplifier	Modular SS	Modular SS	...	...	1-TH558
Modulator final	IRF 140	TRF 130	...	...	1-TH558
Input AC power	208Vac 3 ϕ	480Vac 3 ϕ	440Vac	440Vac	400Vac
Power consumption	20kVA	97.4kVA	40kVA-645kVA	60kVA-2.3MVA	1253kVA (1103kVA)
Power factor (System Efficiency)	0.98 (>75%)	0.98 (80%)	... (40%-65%)	... (49-72%)	>0.9 [73% (68%)]
Stereo capable	Yes	Yes	N.A.	...	No
Fault logic	Solid-state	Solid-state	...	...	Solid-state
Floor space used	45x24"	164x32"	...	...	5.5x5.6m
Reader Service No	1315	1316	1317	1318	1319

¹⁰ND 5.5kW, ND 2.5-2.5kW, ND 1-1kW. ¹¹ND25 25kW. ¹²OR250K-01/A 250kW, OR100K-01/A 100kW, OR50K-01/A 50kW, OR20K-02 20kW, OR10K-02 10kW, 10-20kW covers 3.2-22MHz. ¹³OR20S-02 20kW, OR100S-02 100kW, OR300-05 300kW, OR1000-03 1MW. ¹⁴Model S4004, S4003 rated 300kW, 4002, S4001 rated 100kW; TH-573, TH-555 devices used: PDM/PANTEL modulation and DAM volume-dependent carrier control improved efficiency.

FM Exciters

Manufacturer	BEXT		Broadcast Electronics	C.T.E. Int'l	Cemtys		Continental Electronics	ELIT
Model	PTX30(TEX20)	PTX80	FX-50	VL30	#25.770	#27.905	802A ³	TMF-4A20 SC-20 ⁴
Power output	2-30W, 50 Ω N	5-80W, N	3-50W, 50 Ω BNC	2-30W, N	20W, 50 Ω	0-18W, N	5-50W, 50 Ω BNC	20W, 50 Ω N
Frequency range MHz	87.5-108MHz		87-109	87.5-108	87.5-108	87.5-108	87-109	87.5-108
Modulation capability	>75kHz	75kHz	$\pm$ 350kHz	> $\pm$ 75kHz	$\pm$ 75kHz	$\pm$ 120kHz	$\pm$ 200kHz	> $\pm$ 75Hz
Asynchronous S/N	65dB	...	< 55dB	-65dB	...	< -60dB	73dB	>68dB
Synchronous S/N	55dB	...	< 50dB	-55dB	...	< -70dB	65dB	...
Composite input Z	10k Ω	5k Ω	10k Ω /50 Ω	10k Ω , 600 Ω	50 Ω N	2k Ω BNC	5k Ω B Ub	600/4k Ω Lemo
Composite input level	2.2Vp-p	3.5Vp-p	3.5Vp-p	-12.+9dBm	3.5Vpp	1-10Vpp	1.25VRMS	-6, +14dBm
Composite THD	< 0.05% (< 0.1%)		$\leq$ 0.005%	< 0.05%	< 0.7%	< 0.3%	0.08%	< 0.3%
Composite IMD/TIM	< 0.05%	...	$\leq$ 0.005%, $\leq$ 0.01%	< 0.05%	...	...	0.08%, 0.1%	< 0.1%
Composite response	30-100k ¹	...	$\pm$ 0.05%	$\pm$ 0.3dB 100k	< $\pm$ 0.3dB	< $\pm$ 0.2dB	$\pm$ 0.1 20-100k	...
Phase response	...	...	$\pm$ 0.25 $^\circ$	...	...	...	$\pm$ 0.5 $^\circ$	...

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Circle (56) on Reply Card

Manufacturer	BEXT		Broadcast Electronics	C.T.E. Int'l	Cemtys		Continental Electronics	ELIT
Model	PTX30(TEX20)	PTX80	FX-50	VL30	#25.770 ²	#27.905	802A ³	TMF-4A20 SC-20 ⁴
Composite group delay	...	...	+10ns	...	...	...	±25ns	...
Stereo separation	>45dB (>40)	40dB	52dB to 15kHz	>45dB	>40dB	>40dB	50dB	>45dB
SCA Inputs	3	...	3 unbal BNC	Yes	No	One	Two	One
SCA input Z	10kΩ	...	100kΩ	10kΩ	n.a.	1MΩ	15kΩ	2kΩ
SCA inputs level	2.2Vp-p	...	3.5Vp-p	0dBm	n.a.	2Vpp	1.25V RMS	0.5-3Vpp
Amplitude response	40k-100k ¹	...	±0.2dB	±0.5dB 100k	n.a.	n.a.	40k-100k	...
Stereo (SCA) generator	Ext.	TDSS2	FS-30 (FC-30)	...	...	...	External	Integral (Ext)
Reader Service No	1320	1321	1322	1323	1324	1325	1326	1327

¹ 0.8dB variation for same range with TEX20. ² Includes receiver for translator service. ³ Model 813A 500W LPFM using 802 exciter. ⁴ RMF-44A20 transposer, RMF-44A20/D transposer enhanced selectivity for input channel separation; RMF series amplifiers from 100W to 10kW.

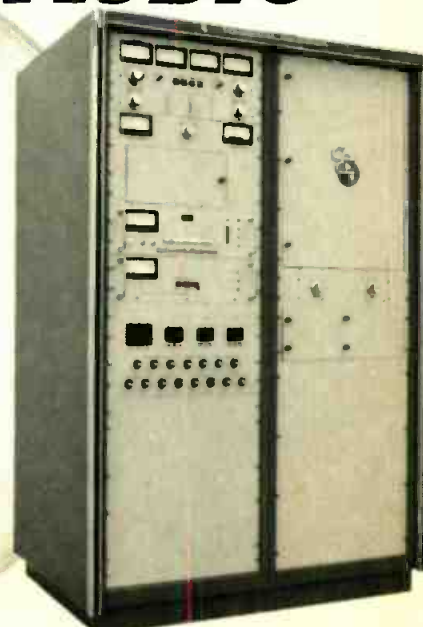
Manufacturer	ELIT	Harris Broadcast		Harris TVT	ITAME		Itelco	QEI
Model	TMF-4C20/SC	Digital 50 FM	THE-1	1248 ⁵	A-20W	Galaxy EX20	T 241	#695
Power output range	5-20W, 50Ω N	2-15W	3-55W, 50Ω BNC	3-15W; 3-55W	15-100W, 50Ω N	5-20W, 50Ω N	100-600W, 50Ω N	25W, 50Ω N
Frequency range MHz	87.5-108MHz	87.5-108MHz	87.5-108MHz	Type N	87.5-108MHz	87.5-108MHz	87.5-108MHz	87.5-108MHz
Modulation capability	>±100Hz	>200% possible	±200kHz	±150kHz	>±75kHz	±200kHz	>±75kHz	100%
Asynchronous S/N	>68dB	-73dB	73dB	58dB	>65dB	>65dB	>60dB	>55dB
Synchronous S/N	...	-60dB	55dB	46dB	>65dB	>65dB	>52dB	>55dB
Composite input Z	600/4kΩ Lemo	2kΩ	2kΩ	...	1kΩ unbal	>1kΩ unb BNC	Bal 600 5kΩ	10kΩ
Composite input level	-6, +14dBm	3.5Vpp	1Vrms	...	3.5Vp-p	3.5Vp-p	-4, 12dBm	3.5Vp-p
Composite THD	< 0.3%	0.01%	0.08%	< 0.3%	%	0.09%	< 0.07%	0.025%
Composite IMD	< 0.1%	0.2%, 0.02%	0.02%	< 0.3%	...	...	...	0.025%, 0.025%
Composite response	...	±0.1 30-100kHz	±0.1 30-53k	±0.5% 30-100k	±1 30-53k	±0.2 30-55k	0.2dB to 100kHz	±0.15 30-75k
Phase response	...	±0.1°	-1, +0.5°	±0.3°	...	...	...	±0.1°
Stereo separation	>45dB	...	to 50dB	40dB	49dB	>55dB	>50dB to 15kHz	60dB
SCA inputs, Z	Also RDS, 2kΩ	Three, 10kΩ	Bal, 600Ω	Yes	[RF output 100W	[EP series amps	& RDS. 600Ω unb	3 inputs, 10kΩ
SCA inputs level	0.5-3Vpp	3.5Vpp	10dBm	...	[to 1kW with	[at 100W	-10, 12dBm	1Vp-p
Amplitude response	[44C100/D	±0.1 40k-100k	±0.5 30-15k	...	[aux power	[300W, 600W	±0.5 21k-100k	...
Stereo (SCA) generator	[100W output	External	Option	Yes	[amplifier	GE90	Integral	Any
Reader Service No	1328	1329	1330	1331	1332	1333	1334	1335

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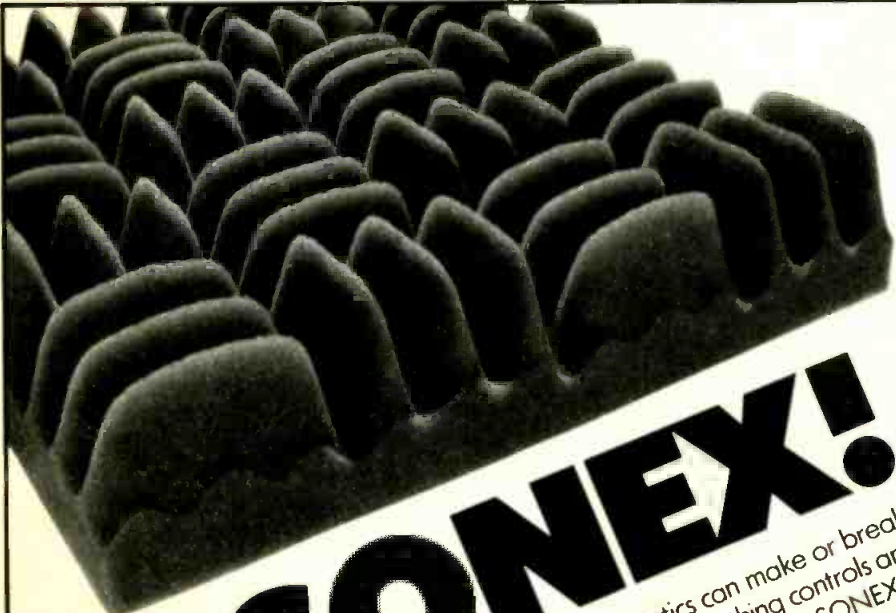
Circle (57) on Reply Card

Manufacturer	QEI	Rohde & Schwarz	Telefunken	Thomson-LGT		TTC/Television Technology Corp	
Model	Model 675 ⁶	SU115	S3233	FMT series	FMT100S Ramsès II	FM-300J	Model X
Power output range	5-20W BNC	10W BNC	2-20W, Type N	4W, 50Ω N	30-100W, 50Ω N	150-275, 50Ω N	1-30W
Frequency range MHz	88-108MHz	87.5-108MHz	87.5-108	87.5-108MHz	87.5-108MHz	65-108MHz	76-108MHz
Modulation capability	150kHz pk	>±75kHz	±120kHz	±150kHz	±150kHz	±500kHz	±500kHz
Asynchronous S/N	>55dB	≥56dB	≥58dB unwt'd	>80dB	>80dB	>60dB	80dB
Synchronous S/N	>55dB	...	≥50dB unwt'd	>74dB stereo	>74dB	>60dB	80dB
Composite input Z	10kΩ	>3kΩ	600Ω/2kΩ	15kΩ bal	15kΩ bal	BNC	10kΩ
Composite input level	3.5Vp-p	-6, 9.5dBm	-4, +9.4	...	6dBm	...	3.5Vp-p
Composite THD	0.25%	≤0.6%	≤0.3%	< 0.15%	< 0.3%	0.01%	≤0.01%
Composite IMD/TIM	...	≤0.15%	< 0.1%	...	...	0.01%, 0.01%	≤0.01%
Composite response	±1 30-15k	≤0.3 to 75kHz	≤0.3dB 75kHz	±0.3 to 75kHz	±0.3 to 75kHz	±0.5 25-100k	±0.05 20-100k
Stereo separation	>40dB	≥43dB	>40dB	>50dB	>50dB	...	...
SCA Inputs	2, 10kΩ	Avail, ≥2k unb	Option	Yes	& RDS, 15kΩ	...	5 BNC, 10kW
SCA inputs level	1Vp-p	...	...	...	6dBm	...	1Vp-p
Stereo (SCA) generator	Model 772	Integral	Option	Integral (Opt)	Integral (Opt)	...	...
Reader Service No	1336	1337	1338	1339	1340	1341	1342

⁵ #1237 300W; #1238 500W; 1239 1kW. ⁶ 675T300 300W; 675T150 150W.

FM Broadcast Transmitters

Manufacturer	Broadcast Electronics			C.T.E. Int'l	Cemtys			Continental
Model	FM-300B ¹	FM-35B ²	FM-5B ³	VL5000 ⁴	EF-20KX ⁵	FM 2,000-SS ⁶	FM 500C ⁷	814C
Exciter suggested	FX-50	FX-50	FX-50	VL30	Model 18.128	Cemtys 18.128	Cemtys 18.128	802A
Output power range	400W	10-38.5kW	5.5kW	5kW	22.5kW	2kW	500W	3.8kW
Output connector, Z	Type N	3½", 50Ω	1½", 50Ω	1½", 50Ω	3½", 50Ω	Type N, 50Ω	Type N, 50Ω	1½", 50Ω
Typical VSWR	1.1:1 max	1.8:1 max	2:1 max	Protected	1.8:1	...	...	1.2:1 max
Auto power control	...	Yes	Yes	Yes	Yes	...	...	Yes
Auto modulation control	...	...	...	Yes	...	...	...	Yes
Integrated remote control	Yes	Yes	Yes	Yes	Yes	...	...	Yes
μP diagnostics	...	Yes	Yes	Yes	CMOS logic	...	...	...



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Circle (58) on Reply Card

Manufacturer	Broadcast Electronics			C.T.E. Int'l	Cemtys		Continental	
Model	FM-300B ¹	FM-35B ²	FM-5B ³	VL5000 ⁴	EF-20KX ⁵	FM 2.000-SS ⁶	FM 500C ⁷	814C
PA device or	Solid-state	4CX20000C or 8990 tetrode	4CX3500A tetrode	250kW SS modules	YL-1631 ceramic tetrode	Solid-state	Solid-state	Multiple 700W modules
PA circuit type	...	Folded $\lambda/2$	Folded $\lambda/4$	...	$\lambda/4$ cavity	...	...	...
IPA device	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state
Floor space	51x32"	91x32"	35x38"	1.28x.565x.680m	1.8x1.236x.9m	19" rack	19" rack	38x34"
Input ac power needed	194-266Vac	208VY/240V Δ	208VY/240V Δ	220V/380V	220/380Vac	200Vac	200Vac	220Vac
Power consumption/P.F./Eff.	1.2kW	51kW/94/69%	8.3kW/92/60%	9.8kW/51%	>0.93	...	950W	10.5kW
Reader Service No	1343	1344	1345	1346	1347	1348	1349	1350

¹ FM-250B 250W; FM-100 100W. ² FM-20A to 22kW; FM-30A at 20kW; FM-30B 30kW; FM-20B 20kW; FM-10B 11kW ³ FM-3.5B 3.8kW; FM-1.5B 1.65kW; FM-1B 1.1kW ⁴ #VL2000 2kW; 10kW linear amplifier available. ⁵ EF-5KX 5kW; EF-10KX 10kW. ⁶ FM 1.000-SS 1kW. ⁷ FM 300C 300W; FM 100C 100W.

Manufacturer	Continental Electronics					ELENOS srl	Energy-Onix	
Model	814R-1 ⁸	816A	816R-4B ⁹	817A ¹⁰	817R-5B ¹¹	T-2000-3 ¹²	MK 22 ¹³	MK 50 ¹⁴
Exciter suggested	802A	802A	802A	802A	802A	60W required	SST-30	SST-30
Output power range	2.5kW	11kW	27.5kW	60kW	70kW	2kW	23.5kW	55kW
Output connector, Z	1 $\frac{1}{8}$ ", 50 Ω	3 $\frac{1}{8}$ ", 50 Ω	3 $\frac{1}{8}$ ", 50 Ω	6 $\frac{1}{8}$ ", 50 Ω	6 $\frac{1}{8}$ ", 50 Ω	7 $\frac{1}{8}$ ", 50 Ω	3 $\frac{1}{8}$ ", 50 Ω	3 $\frac{1}{8}$ ", 50 Ω
Typical VSWR	2:1 max	2:1 max	2:1 max	2:1 max	2:1 max	Cont. monitoring	<1.3:1	<1.3:1
Auto power control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Auto modulation control	Yes	Yes	Yes	Yes	Yes	...	...	...
Integrated remote control	Yes	Yes	Yes	Yes	Yes	Optional	Opto isolation	Opto isolation
μ P diagnostics	Yes	Yes	...	8-bit	8-bit	via rmt ctrl	...	...
PA device or	5CX1500A	Tetrode	4CX15000A	4CX40000G	2 9019/YC130	3CX1500A7	3CX10000A7	2 3CX15000A7
PA circuit type	$\lambda/4$ -cavity	...	Grounded Screen	Class C GS	90° hybrid	...	Grounded-grid	Grounded-grid
IPA device	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state
Floor space	35x24"	45x34"	72x28"	128x40"	160x28	19x24"	37x26"	37x52"
Input ac power needed	220Vac	220Vac 3 ϕ	220Vac 3 ϕ	220Vac 3 ϕ	220Vac 3 ϕ s.p.s.	240/380Vac	208-230V 3 ϕ	208-230V 3 ϕ
Power consumption	4.9kW	18.45kW	42kW	94.4kW	108kW	4.1kVA/64%	35kW for 22kW	75kW for 50kW
Reader Service No	1351	1352	1353	1354	1355	1356	1357	1358

⁸ 815A 4CX3500A final; 5kW output, 9.8kW consumption. ⁹ 816R-2B 21.5kW; 816R-3B 25kW; 816Bs in tandem for 817R-2B 40kW; 817R-3B 50kW; 817R-4B 55kW. ¹⁰ 817B (60kW) dual cavity w/external combiner; update to 817A. ¹¹ 816-R5B (35kW) one 9019/YC130. ¹² Series 800W to >5kW. ^{13, 14} 1.5kW to 40kW

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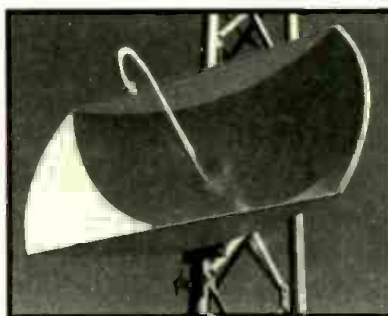
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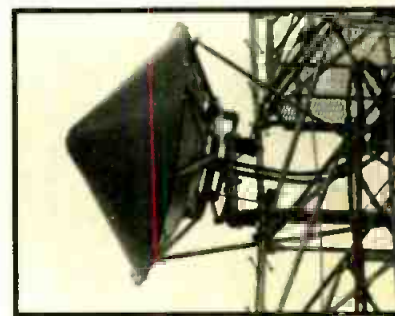
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Circle (59) on Reply Card



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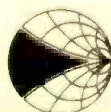


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Circle (60) on Reply Card

Manufacturer	Energy-Onix	Harris Broadcast				Harris TVT		ITAME SA
Model	SST-1000 ¹⁵	FM 1FM ¹⁶	HT 10FM ¹⁷	HT 35FM ¹⁸	Platinum PT10FM ¹⁹	1239 ²⁰	1242-1247 ²¹	ES-2000 (-1000)
Exciter suggested	SST-30	THE-1	THE-1	THE-1	THE-1	1248	1248	20W
Output power range	1kW	1kW	4-10kW	20-35kW	10kW	1kW	1.5kW-10kW	2kW (1kW)
Output connector, Z	7/8", 50Ω	7/8", 50Ω	3/8", 50Ω	3/8", 50Ω	3/8", 50Ω	Type N, 50Ω	1 1/8", 50Ω	1 1/8" (7/16), 50Ω
Typical VSWR	Protected	1.5:1	1.7:1 max	1.7:1 max	1.24:1	---	---	---
Auto power control	---	Yes	Yes	Yes	Yes	No	No	---
Auto modulation control	---	Yes	No	---	---	No	No	---
Integrated remote control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
μP diagnostics	---	---	Yes	Yes	Yes	No	No	---
PA device or	Solid-state	FET modules	4CX7500A	4CX20000D	FET1.35kW units	S-S 330W units	Solid-state FET	VMOS, 600W
PA circuit type	500W modules	---	λ/4-cavity	λ/4-cavity	---	---	modules	modules
IPA device	Solid-state	Solid-state	300W S-S	600W SS	Solid-state	Solid-state	Solid-state	Solid-state
Floor space	24x27"	23x25"	33x34"	34x34"	47x39"	23x29"	43x43"	24x36"
Input ac power needed	208-230Vac	220Vac	220-380 3	220-380 3φΔ	220-400Vac	380-415Vac	190-415Vac 3φ	220Vac
Power consumption PF	2kW	2.9kW	15.7kW/0.95	52kW/0.95	28.2kVA/0.75	2.34kVA	3.2kW-21kW	<4.5kW
Reader Service No	1359	1360	1361	1362	1363	1364	1365	1366

¹⁵ SSA-100 100W; SSA-300 300W; SSA-500 500W. ¹⁶ HT 250FM (250W), HT 500FM (500W) configurations upgrade to 1kW model. ¹⁷ Similar models include: HT 7FM (8kW); HT 5FM (5kW); HT 3.5FM (4kW) using 4CX3500A as PA device. ¹⁸ Similar models include HT30 FM 30kW; HT25 FM (25kW); HT20 FT (20kW) uses 8990 alternative PA. ¹⁹ PT 8FM 8.8kW; PT 5FM 5.5kW; PT 4FM 4.4kW; PT 2FM 2.2kW. ²⁰ #1238 0.5kW; #1237 0.3kW. ²¹ #1242 1.5kW; #1243 2.5kW; #1244 3.5kW; #1245 5kW; #1246 7kW; #1247 10kW.

Manufacturer	ITAME SA	ITELCO	Marconi	Nautel	QEI Corporation			RIZ
Model	Tauro Mod 30 ²²	S233	B6526 (-25)	AMPFET FM	695T1kW	FMQ-30000B ²³	FMQ-5000 ²⁴	RBT, OR U ²⁵
Exciter suggested	15W	T 241	Integral	Various	#695 or #675	#695 or #675	#695 or #675	---
Output power range	10-30kW	2kW	20kW (10kW)	4kW, 7kW	500-1250W	10-30kW	5.5kW	3-30kW
Output connector, Z	3/8", 50Ω	50Ω	3/8", 50Ω	1 1/8", 50Ω	1 1/8", 50Ω	3/8", 50Ω	1 1/8", 50Ω	50Ω
Typical VSWR	Protected	---	1.4:1	1.5:1	---	---	---	---
Auto power control	---	Yes	---	Yes	Yes	Yes	Yes	Yes
Auto modulation control	---	Yes	---	---	Automod	Automod	Automod	---
Integrated remote control	Yes	Yes	Option	Interface	ARC-27 opt	ARC-27 opt	ARC-27 opt	Yes
μP diagnostics	---	---	C-MOS logic	---	Option	Option	Option	Yes
PA device or	4CX-20000C	S-S 4-500W	9011 (8986)	Solid-state	Solid-state	3CX15000A7	3CX3000A7	[<0.5% THD
PA circuit type	---	FET modules	Class C	250W modules	Solid-state	Grounded-grid	Grounded-grid	[60-70 S/N
IPA device	Solid-state	Solid-state	200W S-S	---	---	3CX3000A7	Solid-state	---
Floor space	68x38"	22x30"	42x40"	29x32"	24x30"	72x30"	24x30"	---
Input ac power needed	220-380 3φ	380Vac 3φ	380-415V 3φ	220Vac (3φ opt)	208-240V 1φ	208-240V 3φ	208-240V 3φ	220Vac-440Vac
Power consumption	43kW	4.5kVA	33kW (17kW)	10.8kW for 7kW	2kW for 1.25kW	50kW	<9.5kW	5.5kVA-50kVA
Reader Service No	1367	1368	1369	1370	1371	1372	1373	1374

²² Philips YL 1530 available as alternative PA device. ²³ FMQ-20000B (20kW); #FMQ-10000 (10kW) uses Eimac YU148 PA device; FMQ-35000 w/4CX20000C. ²⁴ FMQ-3500 (3.75kW). ²⁵ RBT-3000 3kW, RBT-5000 5kW, RBT-10000 10kW. OR20U-01 20kW, OR30U-01 30kW

Manufacturer	Rohde & Schwarz	Telefunken	Television Technology Corp/TTC			Thomson LGT
Model	NU411 ²⁶	S3217	XLFM translators ²⁷	FM-25000J ²⁸	FMS-8000 ²⁹	FMT5000S RAMSESI ³⁰
Exciter suggested	SU155 R2	S3161	N.A.	Model X	Model X	Integral
Output power range	10kW	3kW-10kW	10W, 100W	15-25kW	8kW	5kW
Output connector, Z	Dezifix D ²⁶ , 50Ω	1 1/8", 50Ω	Type N, 75Ω	3/8", 50Ω	1 1/8", 50Ω	1 1/8", 50Ω
Typical VSWR	≤1.8:1	---	---	---	2:1 max	1.4:1 max
Auto power control	Yes	Yes	---	---	---	Yes
Auto modulation control	Yes	Yes	---	Yes	Yes	Yes
Integrated remote control	Yes	Yes	---	Option	Option	Yes/RS-232C
μP diagnostics	Yes	MCSG5364	---	---	---	Yes
PA device or	RS2024CL tetrode	RS2032CL tetrode	Solid-state	4CX15000A tetrode	Solid-state	Solid-state
PA circuit type	Grounded cathode	Grounded cathode	---	---	---	600W modules
IPA device	Solid-state	Solid-state	---	4CX250B	Solid-state	Solid-state
Floor space	23x29"	24x40"	Rack-mount	35x38"	46x31"	19x27"
Input ac power needed	220/380V 3φ	220/380Vac 3φ	110/220Vac	240V 3φ	240V	380V
Power consumption	21kVA	19kVA	75W (XL10FM2)	38kW	13kW	11kW
Reader Service No	1375	1376	1377	1378	1379	1380

²⁶ Other connectors available upon request. Model NU351 rated 5kW also uses Siemens RS 2024CL tetrode. ²⁷ XL1FM 1W, XL1FM2 dual 1W output; XM10FM 10W, XL10FM2 dual 10W output; for translator service. ²⁸ M-5000J to 6kW; FM-10000J to 11kW. ²⁹ FMS-4000 to 4kW. ³⁰ Related products in Ram-ses II line include: 100W to 2kW solid-state, 10kW tube types; transposers to 100W.

In many cases, manufacturers have additional models beyond those shown in these comparisons. When speaking with the manufacturers about your needs, be sure to check on other models that may fit your requirements even more precisely.

UHF Television Transmitters

Manufacturer	Acrodyne Industries			Comark Communications			CTE Int'l srl	EMCEE
Model	TL series	TR series ¹	TRU/1000 ²	ESC series ³	IOT series ⁴	S-series ⁵	TRS ch/ch ⁶	TTU5000DP ⁷
Visual peak power	1kW (100W)	25kW (10/5)	1kW	60kW-280kW	40kW-240kW	10kW-280kW	100W	5kW
Response vs brightness	±0.75dB	±0.75dB	±0.75dB	±0.75dB	±0.75dB	±0.75dB	-0.75dB	...
Low frequency linearity	0.45dB	0.45dB	0.45dB	1.0dB	1.0dB	1.0dB	<1%	...
ICPM, uncorrected	±2'	±2'	±2'	2'	2'	2'	...	...
Diff phase gain	±1.5/5%	1.5/3%	±1.5/3%	±3'/5%	±3'/5%	±3'/5%	<3'/N.A.	±3'/5%
K factor for 2T/12.5T	3%	2%/5%	2%/5%	2%/5%	2%/5%	2%/5%	...	2% 2T
Harmonics below visual	-60dB	-60dB	-60dB	-60dB	-60dB	-60dB	-60dB, <1mW	<-60dB
Visual (& aural) PA	S-S	Tetrode (Diplex)	Solid-state	ESC klystron	IOT	Klystron EC	S-S(Diplex)	TH382/9017 Dplx
Aural output power	10% of visual	10% of visual	100W	10% of visual	10% of visual	10% visual	% of visual	0.5kW
Carrier deviation	100kHz	100kHz	100kHz	±25kHz	±25kHz	±75kHz	...	...
Audio response	±0.1 50-50k	±0.1 50-50k	±0.1 50-50k	±0.5 30-15k	±0.5 30-15k	±0.5 30-15k	...	...
Applicable to stereo	BTSC	BTSC	BTSC	MTS/BTSC	MTS	MTS/IRT	Per exciter	...
Harmonic distortion	1%	0.5%	0.5%	0.5%	0.5%	0.5%	...	1%
AM/FM noise	-50dB/-60dB	-50dB/-60dB	-50dB/-60dB	-50dB/-60dB	-50dB/-60dB	-50dB/-60dB	N.A.	...
Cooling method	Forced air	Water (5kW air)	Forced air	Water	Forced air/water	Forced air/water	Forced air	Air
Input AC power	120Vac (120/230)	208Vac	230Vac	...	...	480Vac 3p	220Vac 50~	220Vac 3p
Power consumption	4.4kVA (1.2kVA)	46kVA (26/16)	4.4kVA	F.O.M. to 120%	...	>70% efficient	1.1kVA	20kVA max
Reader Service No	1381	1382	1383	1384	1385	1386	1387	1388

¹ TRU/25k 10kV with 1kW s-s driver; 10KVC uses 400W s-s driver. ² TLU/1000T with TCU frequency converter for translator use. ³ Powers from 60-70kW to 240-280kW, per sockets with 70kW ESC klystrons. ⁴ IOT inductive output tube from EEV development; 40kW to 240kW based on PA sockets; common amplification from 30kW-240kW. ⁵ External cavity; CCT-U-10S 10kW, -30S 30kW, -60SE 60kW, 1-tube visual; -60S 60kW, -120S 120kW, -240S 240kW hybrid-combined vision models; Comark/Thomson modulator, CTR-20 exciter. ⁶ Configures as LPTV transmitter or transposer, reception from bands I/III/IV/V. ⁷ TU1000E series translators; ceramic tetrode.

Manufacturer	Harris Broadcast		Harris TVT				ITS Corporation	
Model	TV-UM series ⁶	TV-UX series ⁹	1740 series ¹⁰	1790 series ¹¹	SCEPTRE ¹²	VISTA (1890) ¹³	ITS-1240 ¹⁵	ITS-220 ¹⁶
Visual peak power	120kW	120kW	10-30kW	60-240kW	3-30kW	60-240kW	10kW	100W
Response vs brightness	±0.75dB	±0.75dB	±1.0dB	±1.0dB	±1.0dB	±1.0dB	±0.5dB	±0.7dB

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Circle (65) on Reply Card

Manufacturer	Harris Broadcast			Harris TVT			ITS Corporation	
Model	TV-UM series ⁸	TV-UX series ⁹	1740 series ¹⁰	1790 series ¹¹	SCEPTRE ¹²	VISTA (1890) ¹³	ITS-1240 ¹⁵	ITS-220 ¹⁶
Low frequency linearity	<1.0dB	<1.0dB	≤0.8dB	≤0.8dB	≤0.8dB	≤0.8dB	5%	10%
ICPM, uncorrected	±2.0°	±2.0°	≤±3°	≤±3°	≤±3°	≤±3°	±2°	±3°
Diff phase/gain	3°/0.5dB	3°/0.5dB	≤±3°/0.4%	≤±3°/0.4%	≤±3°/0.4%	≤±3°/0.4%	±1°/5%	±3°/5%
K factor for 2T/12.5T	2%/3%	2%/3%	<2%/<2%	<2%/<2%	<2%/<2%	<2%/<2%	2%/4%	2%/5%
Harmonics below visual	-60dB	-60dB	-70dB	-70dB	-70dB	-70dB	-60dB	-70dB
Visual (& Aural) PA	MSDC Klystron	Klystron	Klystron	Klystron	SS modules	VKP 7990 ¹⁴	Tetrode (S-S)	Solid-state (dplx)
Aural output power	12kW (24)	12kW (24)	1-3kW	6-24kW	% of visual	6.6-24kW	500W, 1kW opt	5W
Carrier deviation	±120kHz	±120kHz	>100kHz	>100kHz	>100kHz	>100kHz	±75kHz	±75kHz
Audio response	±0.5 to 110k	±0.5 to 110k	0.5dB 30-15k	0.5dB 30-15k	0.5dB 30-15k	0.5dB 30-15k	±0.5dB 30-15k	±0.5dB 30-50k
Applicable to stereo	Yes	Yes	Yes	Yes	IRT/NTSC/NICAM	Yes	Yes	Yes
Harmonic distortion	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
AM/FM noise	-55dB/-60dB	-55dB/-60dB	-50dB/-60dB	-50dB/-60dB	-50dB/-60dB	-50dB/-60dB	-50dB/-60dB	-50dB/-60dB
Cooling method	Vapor phase	Vapor phase	Air/vapor	Air/vapor	Air	Air/water	Air	Air/convection
Input AC power	480Vac ±5% 3φ	480Vac ±5% 3φ	380/415Vac	480Vac	380-480	480Vac	208/240Vac 1-3φ	117Vac
Power consumption	165kVA/10% aural	253kVA/10% aural	28-70kW	140-553kVA	11-45kVA	76-296kW	30kW black pix	0.75kW
Reader Service No	1389	1390	1391	1392	1393	1394	1395	1396

⁸ TV-60UM 60kW; with combiner for higher power. ⁹ TV-60UX 60kW; with combiner for higher power. ¹⁰ #1740 rated 10-30kW; #1741 10-15kW; #1742 20-30kW; external cavity devices; LDM 1781 similar with TH382visual, TH327 aural PA, forced air cooling. ¹¹ #1790 60kW; 1790+1791 120kW; 1791+3 1790 240kW; aural 1790 24kW, 1791 12kW; 1792 6-8kW; external cavity klystrons. ¹² Models for 3kW, 5kW, 10kW, 15kW; combiners for higher powers. ¹³ LDM 1890 60kW; LDM 1890+1891 120kW; LDM 1891+3 1890 240kW. ¹⁴ May use PT5080 klystron in aural service. ¹⁵ ITS-235A 5kW; 1-tube, multiplexed visual/aural. ¹⁶ ITS-210/-210A 10W. ITS-220/-220A 100W; translators ITS-222/-222A 100W, ITS-212/-212A 10W.

Manufacturer	ITS Corp.	Marconi	Rohde & Schwarz	Television Technology Corp			Thomson-LGT
Model	ITS-230A ¹⁷	B7540 series ¹⁸	NT UHF series ¹⁹	UHF HP serie ²⁰	UHF-10MA	XL 1000U ²¹	EUHF1000 ²²
Visual peak power	1kW	10kW-60kW	100W-40kW	30-120kW	10kW	1kW	10kW
Response vs brightness	±0.5dB	±0.5dB	<0.3dB	1dB	1dB	1dB	...
Low frequency linearity	5%	95%	...	0.8dB	0.8dB	0.8dB	5%
ICPM, uncorrected	±2°	±4°	...	3°	3°	2°	<3°
Diff phase/gain	±2°/5%	3°/0.95	≤3°/5%	4°/5%	4°/5%	3°/0.8dB	±3°/95%
K factor for 2T/12.5T	2%/4%	2% for 2T	<2% 20T	2%/2%	2%/2%	2%	±1.5%
Harmonics below visual	-60dB	-60dB (20mW)	≤-60dB	-65dB	-65dB	<-60dB	-60dB
Visual (& aural) PA	9017 (Diplex)	Klystron (or S-S)	Power dependent	See note 20	Klystron (diplex)	TH-347 (diplex)	Solid-state
Aural output power	100W	1kW to 6kW	1/10-1/20 visual	2-10% visual	10% of visual	100W	1kW
Carrier deviation	±75kHz	±50kHz	≤50kHz	±25kHz	±120kHz	±40kHz	50kHz
Audio response	±0.5dB 30-15k	±1dB 30-15k	≤±0.3 to 60kHz	0.5 30-15k	±0.5 30-15k	0.5dB 30-15k	±0.5dB 40-20k
Applicable to stereo	BTSC	Yes	Dual carrier	BTSC/MTS	Yes	BTSC/MTS	Yes
Harmonic distortion	0.5%	0.5%	≤0.4% ±50kHz	0.5%	0.5%	<0.5%	0.5%
AM/FM noise	-50dB/-60dB	-50dB/-60dB	≥46dB/≥56dB	<-50dB/-58dB	-55dB/-60dB	<60dB	-50dB
Cooling method	Forced air	Vapor	Per PA type	Vapor	Forced air	Forced air	Forced air
Input AC power	208/240Vac 1φ	380-415Vac 3φ	220-380Vac 3φ	480Vac	480Vac	220Vac	380Vac
Power consumption	5kW 50% APL	38kW-129kW	1.8kVA-119kVA	0.9 PF	27kVA	4.8kVA	34kVA
Reader Service No	1397	1398	1399	1400	1401	1402	1403

¹⁷ ITS-232A 1kW translator; ITS-234A 2kW visual; ITS-1230 1kW solid-state w/50W aural. ¹⁸ B7545 10/15kW; B7546 20/30kW; B7547 30/45kW; B7548 65/60kW. ¹⁹ PAs use solid-state, tetrode or klystron devices, based on power level. ²⁰ UHF-30 30kW, UHF-60 60kW, UHF-120 120kW; PA device options for klystron, MSDC klystron, Klystron and IOT. ²¹ Translator XLS-1000U with solid-state PA, receives CCIR I/II/IV/V; XL 100U/XLS 100U 100W. ²² EUHF 5000 5kW visual; RUHF 500S 500W; RUHF 100S 1kW, provision for translator.

VHF Television Systems

Manufacturer	Acrodyne Industries		Harris Broadcast		ITELCO	LDL Communications/LARCAN	
Model	TR series1	TR series2	Platinum HT-10 ¹	Platinum HT-60 ²	T134 (383A) ³	TTS22M/TTP44M ⁴	TTS5M/TTS10M
Frequency band (CCIR)	VHF-H (III)	VHF (I/III)	VHF (I/III)		CCIR I/III	VHF (I/III)	
Visual peak power	30kW (20)	10kW (5)	10kW	60kW	20kW (5kW)	22kW (44kW)	5kW (10kW)
Response vs brightness	±0.75dB	±0.75dB	±0.75dB	±0.75dB	0.5dB	±0.75dB	±0.75dB
Low frequency linearity	0.45dB	0.45dB	<0.5dB	<0.5dB	0.5dB	0.5dB	0.5dB
ICPM uncorrected	±2°	±2°	±1.5°	±1.5°	...	±1°	±1°
Diff phase/gain	±1.5°/3%	±1.5°/3%	1°/3%	1°/3%	≤±3°/4%	±1°/±3%	±1°/±3%
K factor for 2T/12.5T	2%/5%	2%/5%	1.5%/3%	1.5%/3%	...	1%/3%	1%/3%
Harmonics below visual	-60dB	-60dB	-70dB	-70dB	<1mW	-80dB	-80dB
Visual (& aural) PA	Tetrode (Diplex)	Tetrode (Diplex)	SS modules	SS modules	TH 371 (S-S)	MOSGET SS	MOSGET SS
Aural output power	10% of visual	10% of visual	10% (20% opt)	10% (20% opt)	1/10; 1/20	2.2kW (4.4kW)	500W (1kW)
Carrier deviation	100kHz	100kHz	±200kHz	±200kHz	±50kHz	±200kHz	±200kHz
Audio response	±0.1 50-50k	±0.1 50-50k	±0.5 to 110k	±0.5 to 110k	0.5 40-15k	±0.5dB	±0.5dB
Applicable to stereo	BTSC	BTSC	Yes	Yes	...	Yes	BTSC
Harmonic distortion	0.5%		0.25%		<0.3%	0.05%	

Manufacturer	Acrodyne Industries		Harris Broadcast		ITELCO	LDL Communications/LARCAN	
Model	TR series1	TR series2	Platinum HT-10 ¹	Platinum HT-60 ²	T134 (383A) ³	TTS22M TTP44M ⁴	TTS5M TTS10M
AM FM noise	-50dB/-60dB	-50dB/-60dB	-55dB/-70dB	-55dB/-70dB	>50dB/>60dB	-60dB/-62dB	-60dB/-62dB
Cooling method	Forced air	Forced air	Forced air	Forced air	Air	Forced air	Forced air
Input AC power	208Vac	208Vac	280-415Vac 3φ	280-415Vac 3φ	380Vac 3φ	208-242Vac 3φ	380-440Vac 3φ
Power consumption	68kVA (39)	31kVA (21)	24.4kW for 10kW	135kW 10% aural	41.5kVA	36kW (80kW)	9.5kW (17.5kW)
Reader Service No	1404	1405	1406	1407	1408	1409	1410

¹ HT-5 5kW; HT-2 2kW; HT-1 1kW; HS (high-band) and LS (low-band). ² HT-15 15kW; HT-30 30kW; HT-45 45kW; HS (high-band) or LS (low-band); consumption higher for HS Models. ³ T383A high-band with common amplification of visual, aural carriers. ⁴ TTS30M rated 30kW, TTS60M 60kW.

Manufacturer	GE-Marconi Communications		Rohde & Schwarz	Siemens	Thomson-LGT	Toshiba
Model	B7530 series1 ⁵	B7530 series2 ⁶	NT VHF series	5/10kW system ⁷	EVHF20000 ⁸	Series 2000
Frequency band (CCIR)	VHF-H (III)	VHF-H (III)	VHF-H (III)	VHF-H (III)	VHF (I, III)	VHF-L (I)
Visual peak power	1kW (2kW/5kW)	10kW (25/30kW)	100W-20kW	(5)/10kW	20kW	To 64kW
Response vs brightness	±0.5dB	±0.5dB	<0.3dB	...	...	...
Low frequency linearity	90%	90%	...	...	5%	<10%
ICPM uncorrected	±4'	±4'	...	...	<3'	±2%
Diff phase gain	±3' 0.95dB	±3' 0.95dB	≤3' 5%	≤±5' / ≤±15%	±3' 5%	±3% ±5%
Harmonics below visual	60dB	60dB	≤60dB	...	-60dB	<-60dB
Visual (& aural) PA	SS & tetrode	SS & tetrode	SS or tetrode	RS 2026CL (dplx)	Solid-state	RF MOSFET array
Aural output power	0.1kW (2/5kW)	1 kW (2.5/3kW)	1/10-1/20 visual	(0.5)/10kW	2kW	10%-20% visual
Carrier deviation	±50kHz	±50kHz	≤50kHz	Per exciter	50kHz	±100kHz
Audio response	±1 30-15k	±1 30-15k	≤±0.3dB to 60kHz	Per exciter	±0.5dB 40-20k	±0.5dB 30-15k
Applicable to stereo	Yes	Yes	Dual carrier	Per exciter	Yes	BTSC
Harmonic distortion	0.5%	0.5%	≤0.4% ±50kHz	Per exciter	0.5%	<0.5% 30-15k
AM/FM noise	-50dB/-60dB	-50dB/-60dB	≥46dB/≥56dB unwt'd	...	-50dB	>50dB/>60dB
Cooling method	Forced air	Forced air	Per PA type	Forced air	Forced air	Forced air
Input AC power	380-415Vac 3φ	380-415Vac 3φ	220-380Vac 3φ	220/380Vac 3φ	380Vac	220Vac 3φ
Power consumption	4.9 for 1kW	59.5kW for 30kW	1kVA-52kVA	N.A.	36kVA	...
Reader Service No	1411	1412	1413	1414	1415	1416

⁵ All high-band; 1kW to 5kW. ⁶ All high-band; 10kW, 25/30kW. ⁷ Various exciters; 5kW/5kW multiplexed; 20kW uses RS1034SK; typically for visual only unless multiplexed. ⁸ EVHF 5000S 5kW; EVHF 10000S 10kW.



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Television Demodulators

Manufacturer	Barco Industries	Philips T&M	Rohde & Schwarz		Tektronix	Videotek
Model	VSD 1000 ¹	PM 5560 ²	AMFS	EMFT & EMFD	1450-1	DM-141S
Serviceband (CCIR)	VHF, UHF (I-IV)	VHF UHF IF (I/III-V)	45MHz-960MHz	V/UHF/IF/CATV (I-V)	IF (I)	III-V)
Channel select	Xtal or PLL	PLL synthesized	Synthesized	Xtal, PLL, D/C	Fixed & tunable	Synthesized
RF input impedance	75Ω, 50Ω opt.	50Ω	50/75Ω	50/75Ω	50Ω	75Ω
Direct input range	-30/+30dBmV	3V max	0.5-100mV	0.5-100mV	80μV-5V	---
Offair input range	300μV-30mV	>100mV	0.5-100mV	0.5-100mV	80mV-5V	100μV-630mV
IF input range	0-40dBmV	70mV ±3dB	5-100mV	5-100mV	80μV-22mV	---
Input level indicator	4-LED ladder	Analog meter	LED	Yes	LED display	No
Intercarrier input	---	Yes	Yes	Yes	50Ω	---
Split carrier mode	---	Yes	Yes	Yes	Yes	Yes
Zerocarrier reference	Yes	Int/Ext	Internal	Internal	Int	ext
Envelope, Synchronous detectors	Both	Envelop	Both	Both	Both	Synchronous
Quadrature detection	---	Yes	Yes	Yes	Yes	No
Aural signal reject	Yes	Yes	Yes	Yes	Yes	No
SAW filter design	Yes	No	Yes	Yes	Yes	Yes
# video outputs	2	3	1	1	2 75Ω	2
Aural deviation out	Yes	75kHz	Yes	±25kHz	50mV/kHz 600Ω	No
Audio line, speaker outputs	2 line, 2 spkr	0-6dBm var.	Both	Both	Includes spkr out	+4dBm & spkr out
Video clamp position	---	Backporch/sync	Backporch	Backporch	Sync	blank
Carrier, modulation failure alarms	Both	Carrier	Both	Both	---	No
Stereo audio type	Dual channel	MTS/dual aural/Nicam	Dual sound	BTSC & dual sound	BTSC system	BTSC
Reader Service No	1417	1418	1419	1420	1421	1422

¹ Available for I and BG (dual carrier stereo). ² Accepts BTSC, dual aural and Nicam type signals for stereo audio.

Waveform Monitors

Manufacturer	Electronic Visuals			Hamlet Video Int'l ¹	Leader Instruments				Magni Systems
Model	EV4042 (EV4031)	EV4051 Multiformat	EV4061 combo	HVI 204	5100 component	5860C (5860H)	5864 (5865)	5870 (5871) ⁴	MagniMonitor
Display size	8x10cm	8x10cm	8x10cm	128 linesx8.5μ/s	8x10cm	8x10cm	2.75" (8x10cm)	8x10cm	5.25x4.52-inch
Graticule	Int. illum	Internal	Illuminated	Internal	Int/electronic	Int illuminated	Int (illuminated)	Int illuminated	Int generated
Standards supported	N, P/-M, S	525/60, 625/50	N, P/-M, S	N, P/-M, S	N/P/HDTV/VAC	NTSC	NTSC	NTSC (PAL)	NTSC, PAL
Internal calibrator	Yes	Yes	Yes	Yes	Yes	Yes	No (Yes)	Yes	No
Vertical response	Chroma, Lin.	LP, Lin.	∂G Flat	Chroma, ∂G	LP, ∂G	Chroma	LP, Gain Lin. ³	Flat (∂G)	Chr. LP Flat ∂G
Time base magnification	1μ/s, 200μs/div	x5, x50	Yes	x3	x10/x25H x20V	x10 H, x20V	(x10 H, x20V)	x10 H, x20V	8X/32x/25x
RGB/YRGB displays	Yes (No)	Yes	Yes	Also YUV, YC	Yes	Yes	No (Yes)	Yes	Yes
VITS line select	7-22 (No)	No	No	2-line	---	No (Yes)	No (Yes)	Yes	No
Programmable	No	No	No	No	Presets	No	No (Yes)	Yes	---
Composite inputs	Yes	Yes	A B	Yes	Yes	Yes	Yes	Yes	Yes
Component inputs	No	YCrCb	No	Yes	Yes	No	No	No	Yes
Line strobe pulse	No	No	No	---	---	No (Yes)	No (Yes)	No	---
Vectorscope function	No	Yes	Yes	Yes	Yes, & shark-fin	No	No	Yes	Separate model
Waveform comparison	No	Superimposed	No	Yes	---	No	No	Yes	Parade
Reader Service No	1423	1424	1425	1426	1427	1428	1429	1430	1431

¹ James Grunder & Assoc. excl. US distributor; displays waveform, vector patterns on video monitor; expanded mode 512 linesx34μs; 300 series uses 4x sampling for clearer display. ² Linearity response or 1-line H or 1-line V timebase on 5860H. ³ SC/H measurement, simultaneous A/B displays; full line select. ⁴ Model 5872 specifications as 5870, 5871 but no SC/H phase measurements, simultaneous A/B display and full line select capability.

Manufacturer	Magni Systems			Philips Test & Measuring			System Video		Tektronix
Model	WFM 530	WFM 560/561	WV 560/561	PM5661 (5662)	PM5664	PM5665	1258	2207 Combo	1480 series
Display size	4x3.25"	4x3.25"	4x3.25"	8x10cm	8x10cm	8x10cm	10x10cm	8x10cm	8x10cm
Graticule	Int. illuminated	Int. illuminated	Int. illum	Internal	Int. electronic	Internal	Internal	Internal	Int
Standards supported	N P S	N P S	NTSC, PAL	NTSC PAL	RGB YPbPr, YIQ ⁵	NTSC, PAL	NTSC, PAL/-M	NTSC, PAL	N, P/-M, S
Internal calibrator	Y	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vertical response	Chroma LP Flat	Chr. LP Flat	Chroma LP Flat ∂G	Chr. LP/Lin Flat ∂G/∂φ	Low pass, Flat	Chroma LP ∂G Flat, Linearity	Flat, LP, Lin, Chroma	Flat, LP, Lin, Chr. Parade	Flat, chroma, LP, IRE
Time base magnification	x10 (H/2H), x25 (2V)			x10, x20	x10, x25	x10, x20	---	25.6x	x5 10 20 25 50
RGB/YRGB displays	Yes	Yes	Yes	Yes	RGB only	Yes	Yes	Yes	Yes
DC restore	Back porch	Back porch	Back porch	Back porch	sync	Back porch	black	Back porch	sync
VITS line select	Yes	Yes	Yes	Any line	Any line	Any line	Yes	Yes	1L & 15L
Programmable	Yes	Yes	Yes	No	Yes	No	Yes	---	No
Composite inputs	Yes	Yes	Yes	Yes	No	Yes	A B	A B C	A B Aux

Model	WFM 530	WFM 560/561	WV 560 561	PM5661 (5662)	PM5664	PM5665	1258	2207 Combo	1480 series
Component inputs	Yes	Yes	Yes	No	Yes	No	...	No	...
Vectorscope function	No	Yes	Yes	w/SC/H ϕ	Yes ⁶	No	No	Simultaneous	No
Waveform comparison	Yes	Yes	Yes	Yes	Overlay	Yes	Overlays	No	Overlay
Reader Service No	1432	1433	1434	1435	1436	1437	1438	1439	1440
Manufacturer	Tektronix						Videotek		
Model	1710B series	1730 (1730-HD/-D2) ⁷	1740 series	1750 series	1780R series combo	WFM 300A	TSM-61 ¹²	TVM-621 Combo	
Display size	8x10cm	8x10cm	8x10cm	8x10cm	2 8x10cm	8x10cm	8x10cm	8x10cm	
Graticule	Internal	Internal	Internal	Internal	Ext/ill int/elect	Elect 1% accur.	Internal	Internal	
Standards supported	N, P	N, P (multistd)	N, P/-M	NTSC, PAL	NTSC, PAL	525/60, 625/50 RGB ¹	NTSC, PAL	NTSC, PAL/-M	
Internal calibrator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vertical response	LP, flat	Flat LP chr. (30MHz 2-tr fltr)	Flat, IRE, Luma, Chroma		Chr LP Flat Luma ∂ step ⁹	Chr., Lightning Bowtie LP	Chroma LP Flat, ∂ Gain	Chroma LP Flat	
Time base magnification	x10	x10, 20, 25	x10 20	x2 10 20 50	x5 10 20 25 50 100	x20	x20	x5V, x10H	
RGB YRGB displays	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes R-Y Overlay	
VITS line select	None	Any (& 14-line)	Internal jumper	8-23 6-21 319-334	1H or 15H	Any line	Yes	No	
Programmable	No	Yes	All functions	All functions	Yes	...	No	Yes	
Composite inputs	A B	A B	A B	A B	A B1 B2 B3 ¹⁰	Yes	Yes	3	
Component inputs	No	3 each, A, B	No	No	A B1 B2 B3 ¹⁰	RGB, YCrCb ¹¹	No	No	
Vectorscope function	Burst phase	No	$\partial\phi$ in R-Y mode	w/SC/H ϕ	Yes	Yes	No	Yes	
AF stereo phase mode	Yes	No	No	No	Yes	No	No	No	
Waveform comparison	No	Parade, overlay	Parade, display	Overly Vctr/Wfm	Overlay, Parade	Overlay, parade	No	Yes	
Reader Service No	1441	1442	1443	1444	1445	1446	1447	1448	

⁵ Also accepts Betacam inputs. ⁶ Star mode. Gamut, RGB out⁷ D-2 model for digital has same features. ⁸ 10ns/div and 1-2/3-line for -HD. ⁹ SC/H polar display, Diff Phase, Diff Gain. ¹⁰ Auxiliary in/out. ¹¹ Transcoders for YIQ, YCrCb available. ¹² TSM-51 has no 1H sweep or differential gain features.

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Vectorscopes

Manufacturer	Electronic Visuals	Hamlet Video Int'l ¹	Leader Instruments		Magni Systems	
Model	EV4021	HVI 203	5850C	5854	VS 530/531	VS 560/561
Display size	8x10cm	128 linesx8.5µs/3	8x10cm	2.75" diagonal	4x3.25	4x3.25"
Graticule	Internal	Electronic	Int	ext	Internal	Internal
Waveform mode	No	Yes	No	No	No	No
Standards	NTSC, PAL/-M	NTSC, PAL, SECAM	NTSC	NTSC	NTSC, PAL	NTSC PAL
Function control	Manual	Manual	Manual	Manual	Manual or WFM530/560	
Integral calibrator	No	Yes	Yes	No	Test mode	Test mode
# composite inputs	A, B	2	...	2	3	6 composite ³
Subcarrier reference	Yes	A B Black	A B Black	A B	A B C Black	A B C Black
Sync reference	A/B Black/Composite	A B Black	A B Blackburst	A B	A B C Blackburst	A B C Blackburst
Display reference	A/B/Ext	A B Ext	A B Ext	A B	A B C External	A B C Ext
Diff phase/gain measurements	2"	2%	1"	1%	1"	1%
VITS line select (range)	No	Full line range	Yes ²	No	Yes w/WFM 530/560	w/WFM530/560
Luminance measurements	No	Yes	No	No	No	No
Reader Service No	1449	1450	1451	1452	1453	1454

¹ James Grunder & Associates exclusive US distributor; expanded mode 512 linesx34µs; unit displays vector, waveform patterns on standard video monitor; freeze, store functions; outputs recordable, transmittable; dual standard option; 300 series uses 4x sample rate for clearer display. ² Determined by companion line select waveform monitor. ³ Or component inputs.

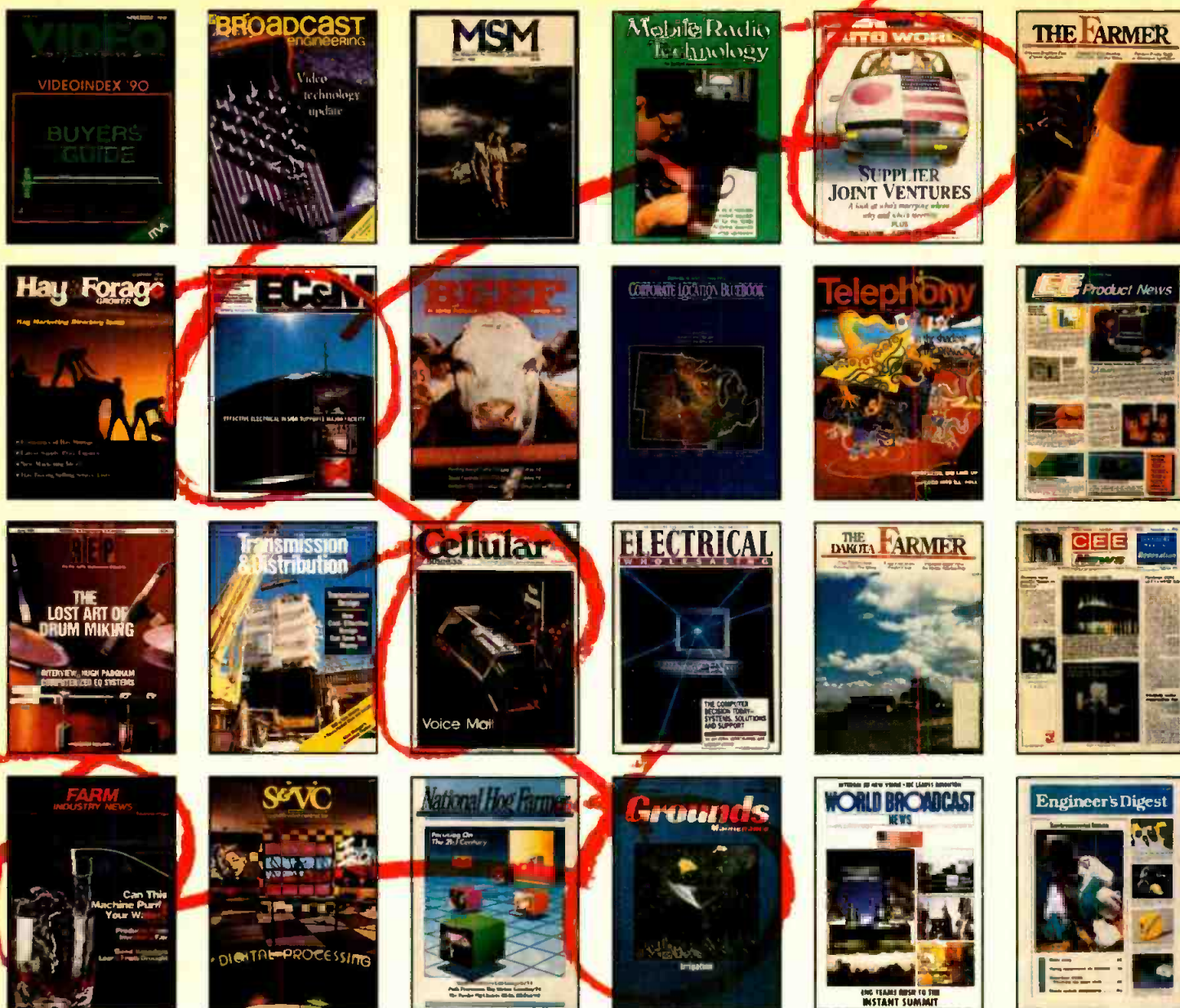
Manufacturer	Philips Test & Measuring		System Video	Tektronix	Videotek	
Model	PM5667	PM5668	1255	1720 series	TVM-720 combo	VSM-61
Display size	8x10cm	8x10cm	10x10cm	8x10cm	8x10cm	8x10cm
Graticule	Internal	Internal	Internal	Internal	Internal	Internal etched
Waveform mode	Vector	∂φ	Vector	∂φ	SC-H φ	No
Standards	NTSC PAL-G/-M/-N	NTSC PAL-G/-M/-N	NTSC	PAL/-M	NTSC	PAL
Function control	Manual	remote	Manual	remote	µP control panel	µP control
Integral calibrator	Yes	Yes	Yes	Yes	Yes	Yes
# composite inputs	A, B	2	A, B	A, B	To 8 ⁶	2
Subcarrier reference	A B Blk CompSync	A B Blk CompSync	A B Ext Int	Ext ref	Various	A B Sync
Sync reference	A B Blk CompSync	A B Blk CompSync	A B Ext Int	Yes	Various	
Display reference	A B External	A B External	A B Ext Int	Int	Ext	Various
Diff phase/gain measurements	0.2"	0.2"	to 0.05"	0.05% ⁴	≤2"	≤2%
VITS line select (range)	from 5665 WFM	from 5665 WFM	...	From 1730 WFM ⁵	Digital selector	No
Luminance measurements	No	No	No	No	Yes	No
Reader Service No	1455	1456	1457	1458	1459	1460

⁴ With 1407 ∂φ/∂G option. ⁵ 1725 for PAL; use with 1730, 1731, 1735 or WFM 300A waveform monitors. ⁶ Input for 2 CAV, 2 composite, 1 CAV and 5 composite or 8 composite signals; 3-D vector display shows luminance component on Z-axis; on-screen cursors; quad SC/H phase display; TVM-710 similar.

Automated TV Test Systems

Manufacturer	GE-Marconi	PESA	Rohde & Schwarz				Systems Video	Tektronix	Videotek
Model	2924 analyzer	SWAT 2000	Model TIF ¹	Model UAF ²	RMS100	UCMF system	WATCHDOG 2000	VM700 set	TVM-730 ⁷
Standards supported	N/P/S	NTSC, PAL-B	N/P/S	N/P/S/	NTSC, PAL	NTSC, PAL	N/P dual ⁶	NTSC, PAL	NTSC, PAL
Control computer	2-80188	Proprietary	Prop. transputer	Proprietary	IBM/PC comp.	IBM/PC comp.	Proprietary	Motorola 68020	...
Manual control mode	Yes	Yes	Yes	[Tests 3 inputs	Yes	Yes	Yes	Yes	Menu-driven
Programmable control	Yes	Yes	Yes	[simultaneously	Yes	Yes	9-/15-way D	Yes	Yes
Video test signal source	PM 5654	Video	Integrated generator				Ext 2360/2461	No	Ext source
Measurements per spc	FCC/RS-170, NTC-7	EIA, CCIR	Var. agencies	Var. agencies	C569 CBC NTC7 EIA250	per CCIR	EBU/CCIR/FCC	RS170A/NTC7 RS250B	NTC7
Line(s) used for test	Any line	Full field	...	Selectable	Line 17	...	Various	Any line	Any line
Automatic logging	Yes	Possible	Yes	Yes	Yes	Yes	EX800 Epson	via RS-232C	No
Waveform display-plot	VT100 terminal	CRT/LCD	External	No	No	Possible	# 2207 display ²	Raster scan	w/Vectors
Data storage	Ext. int	Printout or PC	Memory cards	Memory cards	Internal	PC controller	Yes	Int. ext	To PC
Set parameter limits	3 upper & lower	Yes	Yes	Yes	Yes	Yes	All adjustable	Yes	Yes
Out-of-tolerance alarm	Yes	LED, ext. video	Yes	Yes	Yes	Yes	Alarms	On-screen	...
Carrier alarm	Yes	Yes	N.A.	N.A.	Yes	Yes	...	No	No
Modulation alarm	Yes	Yes	N.A.	N.A.	Yes	Yes	...	No	No
Reader Service No	1461	1462	1463	1464	1465	1466	1467	1468	1469

¹ Test period of 1s measures 26 video timing parameters. ² Test period of 1s measures 25 parameters of video level, signal quality. ³ EIA 250B, CCIR 560
⁴ System designed for Sound and Vision transmitters, active/passive 2-port networks. ⁵ Auto ID of standard. ⁶ Dual vector/waveform display. ⁷ TVM-730 Auto-Measure feature; 4 composite inputs.



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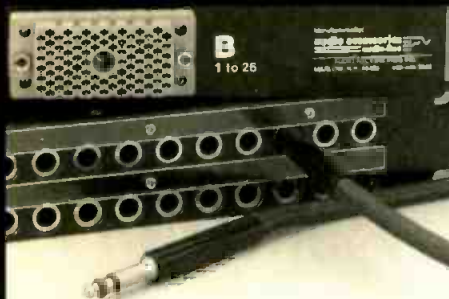
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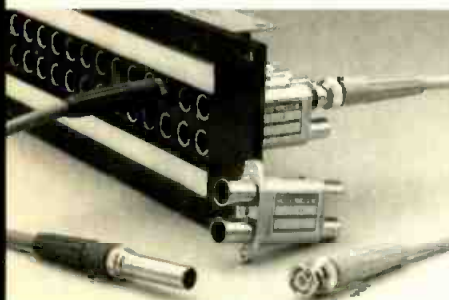
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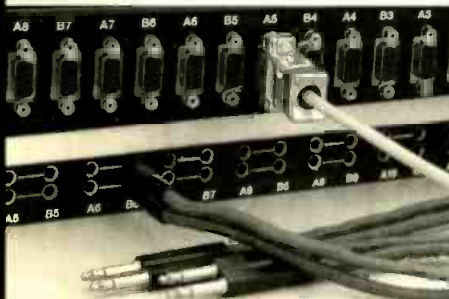
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Modulation Monitors

AM Modulation Monitors

Manufacturer	Belar Electronics Laboratory		Broad-cast Elect.	Harris	ITAME	Motorola	TFT Inc
Model	AMM2B (3)	AMM-3V	AS-10	AM-90	AM 90A	1410 AM Stereo	753/755A
Frequency range	200k-160M	200k-160M	530-1620k	450k-30M	530k-4M	530-1620k	500k-4M
Off-air RF range	100μ-300m	...	500mV-15V	Ext RF amp	1-10Vrms	...	100μV-10V
Direct input range	5-10Vrms	5-10Vrms	...	1-10Vrms	...	500mV-15V	1-10V 50Ω
Input attenuator range	Continuous	Continuous	0-30dB,AGC	0-50dB	0-50dB	0-30dB	0/-50dB
Modulation range	0-133% ¹	0-133% ¹	0-133%	0-140%	0-133%	-0, +133%	0, +133%
Peak mod indicator	Adjustable	Program	Autoranging	Adjustable	LEDs	Adjustable	Adjustable
Peak flasher accuracy	2% (1%)	1%	...	±1%	...	2%	±10%
Audio output level	+10dBm	+10dBm	2.45VRMS	+10dBm	10dBm	10dBm	0dBm
Audio output connection	Unbal active	Bal Xfmr	600Ω bal	Bal	600Ω bal	AB	Bal/Unbal
AF resp (mono)dB Hz-kHz	±0.5dB 20-25k		...	0-0.5dB	±0.5 20-25k	2dB, 30-20k	5% 20-25k
AF distortion (mono)	0.25% 99% mod		...	0.15%	...	0.25%	0.15%
Audio S/N ratio (mono)	75dB	75dB	...	75dB	75dB	+67dB	75dB
Meter, display type	Analog meters		Meters	Neon	Analog	Analog	Analog
Oscilloscope test output	Yes	Yes	Possible	Yes	...	Yes	No
Remote metering output	Yes	Yes	Possible	Yes	...	Yes	Yes
Failure alarms	Carrier; mod	±30% car; mod	...	Carrier; mod	Carrier fail.	...	Carrier off Mod low
Reader Service No	1470	1471	1472	1473	1474	1475	1476

FM Modulation Monitors

Manufacturer	Belar	QEI	TFT Inc	
Model	FMM-2 ¹	Model 691	844A	884
RF range-channel	Xtal (Opt presets)	PLL	Preselector	Preselector
Off-air RF range	50μV-300mV	3.16-80mV	250μV-100mV	50μV - 100mV
Direct input	1V-10V	1mW-50W	100mV-10V	0.5mV-100mV
Input attenuator	Continuous	...	0/-50dB 10dB steps	0/-50dB 10dB steps
Modulation range	0-133% on meter	0-133%	0, +133%	0, 133%
Meter response dB Hz-kHz	±0.1 10-100k	0.2 30-75k	±0.25 50-15k	±0.25 50-15k
Peak mod. adjustment	199%	0-199%	50-199%	50-199%
Peak flasher accuracy	1% 75kHz dev	±1%	1% 5kHz	20% 75kHz
Residual AM monitor	Integral	Yes	Integral	Integral
Audio output	+10dBm	1Vp-p	0dBm	0dBm
AF response	±0.01dB 10-50k	...	±0.5dB 30-120k	±0.5dB 50-15k
AF distortion (mono)	0.003% THD IMD	0.05%	0.1%	0.2%
S/N ratio	90dB	>75dB	75dB	70dB
Composite output	1.5Vrms 75kHz dev	1V p-p	5Vrms 75kHz dev	50Vrms 75kHz
Stereo/SCA monitor	Opt./FMS-2, 4-ch	.../Integral	Yes/Dual TFT 845	No/Dual TFT 845
Reader Service No	1477	1478	1479	1480

¹ Optional preselector. WIZARD analyzer may be used as adjunct for extensive modulation analysis.

TV Aural Modulation Monitors

Manufacturer	Belar	Tektronix	TFT Inc	
Model	TVM-101 (-100)	751 BTSC	701 (Mono) ²	850
RF range-channel	Any per request	Any US TV channel	Ch 2-83 (UHF/VHF)	
Off-air RF range V	200μ-1 50Ω	from 1450-1 demod	250μ-5m 75Ω	200μ-5m 50Ω
Modulation range	0-133% ¹	100% 73kHz max	0/ 133%	0/133%
Meter response dB HzkHz	±0.1dB 10-100k	±0.7k total	±0.2dB 50-15k	±2.0dB 50-120k
Audio output	+10dBm 600Ω bal	+8dBm 600Ω	2Vrms 600Ω	1.5Vrms 600Ω
AF response (out) ±dB HzkHz	±0.1 10-50k	±0.1 50-15k	0.2 15-15k	±0.5 50-50k
AF distortion (mono)	0.003% THD IMD	<0.1dB main ch.	0.25%	0.1% 1kHz
S/N ratio (mono)	80dB	>70dB	-65dB	70dB
Composite output V/Ω	1.5V 75Ω	No	...	1.5V 75Ω
Meter display types	Analog (& digital)	EL bar graph	...	Analog meter
Carrier alarms	Yes	Yes	Yes	Yes
Stereo SCA monitor	TVM-210/SCM-2	Integral	No/Single	Integral/Opt
Reader Service No	1481	1482	1483	1484

¹ Switchable for mono, BTSC stereo; integral residual AM, FM noise meter; split sound, quasi-parallel detection. ² RF frequency counter, intercarrier frequency error measurements; remote meter.

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