

AUSTRON Model 1295D Series  
Distribution Chassis  
Unit Serial No. 14278AC  
User Guide  
P/N 12711391-002-2, Revision A

August 1992

## 2. INSTALLATION

### 2.1. SCOPE OF SECTION

Section Two describes the steps required to prepare the Model 1295D Distribution Chassis for operation or reshipment to another location. Included in this section are instructions for unpacking, inspection and shipping, along with lists of fundamental electrical requirements and accessories.

### 2.2. UNPACKING AND INSPECTION


The following paragraphs describe the steps involved in inspection and unpacking the Model 1295D upon arrival.

#### 2.2.1. Initial Inspection

Inspect internal components and circuits by removing the dust covers. Examine exterior and interior parts carefully. Immediately report any equipment damage to the carrier making delivery and to AUSTRON, Inc.

#### 2.2.2. Module Assemblies

Use care when removing or installing modules. The recommended installation procedure is to align the module contacts with the connector, then with gentle, steady force, insert it as far as it will go.

 **NOTE:** Component side to the left when facing the module panel.

**CAUTION:**  
AUSTRON advises to disconnect power before removing or installing modules.

### 2.3. OPERATIONAL INSTALLATION

The following paragraphs describe the operational installation of the unit.

#### 2.3.1. Accessories

The following accessories are shipped with the Model 1295D:

- One three-conductor power cord (ac/dc configuration)
- One MS-type mating dc power connector (two with Dual DC)
- One MS-type mating alarm connector
- Two MS-type cable clamps (three with Dual DC)
- Two sets of spare fuses (ac)
- One Extender PCB assembly
- One technical user guide for the Model 1295D chassis
- One technical user guide for each input and output module per system and one for each spare module

### 2.3.2. AC/DC Power Input Module Connections

This unit normally operates on 115/230 Vac  $\pm$  10 percent, 48 Hz to 420 Hz. Before connecting the power cable to the source, perform the following:

1. Verify that the power selector in J1 is in the correct (115 or 230) position.
2. Verify that the line fuse is correct, i.e., 2 A slow-blow 3AG for 115 Vac and 1 A slow-blow 3AG for 230 Vac.
3. For dc-only operation or if operation of the unit in the event of line power failure is required, an auxiliary dc power source capable of supplying up to 5 A at 22 to 57 Vdc must be connected to J2.

### 2.3.3. Dual DC Power Input Module Connections

This unit normally operates on dc power ranging from 22 Vdc to 57 Vdc with positive or negative ground.

1. Verify breakers CB1, CB2, CB3 and CB4 are reset.
2. The Model 1295D chassis will operate from the dc input which is at the higher level of the two inputs. So, for dual dc operation use the higher dc level input as the primary power source. The Model 1295D will operate off the secondary lower input upon primary source failure. Both power sources must be within 22 Vdc to 57 Vdc and capable of supplying 5 A.

With the MS-type connectors supplied, fabricate cables to connect the dc power input and the external alarm contacts. Use AWG 20 wire (or larger) on J2 (and J1) and connect as follows:

CONNECTOR	PIN	DESCRIPTION/STATUS
J2 — AC/DC Input (J1 — Dual DC Input)	A	+ dc input
	B	– dc input
	C	chassis ground
J3 — Alarm	A – B	normally open
	C – D	normally closed

### 2.3.4. Installation

The Model 1295D may be rack mounted in a standard 19 in (48.3 cm) rack or bench mounted on a stable surface, as required. The input/output ports may be mounted to the front or rear simply by attaching the rack-mounting ears on one end or the other and switching the power input and status modules. Choose a location away from equipment producing high temperatures.

### 2.3.5. Alarm Indicator Panel Installation (Option)

A Model 1295D configured without the Alarm Indicator Panel can be easily retrofitted with one. Refer to Dwg. No. 12411489.

1. Remove the four screws holding the blank filler panel on the front of the Model 1295D.
2. Connect the supplied ribbon cable to J1 of the Alarm Indicator PCB and J1 of the Interconnect PCB. Note the position of pin 1 at each end.

3. Attach the Alarm Indicator Panel to the Model 1295D chassis with the four mounting screws.

Each slot position can now be monitored for ALARM conditions from the front of the chassis.

## 2.4. PREPARATION FOR RESHIPMENT

Perform the following steps to prepare the unit for shipment:

1. Disconnect power and all signal cables. Check to see that all modules are in place and secured.
2. Use the original packing material for shipping, if possible. If not, enclose unit in a suitable water- and vapor-proof plastic bag. Pad all projections and sharp edges with a cushioning material.
3. Heat seal or tape the plastic bag to ensure a moisture-proof enclosure. When sealing the bag, keep the trapped air volume to a practical minimum.
4. Place the unit in an interior box that will restrict movement.
5. Place the interior box in a shipping container that will allow for at least two inches of packing material on all sides of the interior box.



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NOTES:

### 3. OPERATION

#### 3.1. SCOPE OF SECTION

Section Three provides instructions for operating the AUSTRON 1295D Distribution Chassis. Included are general descriptions of setups, checkout and adjustment.

#### 3.2. SETUP AND POWER-UP PROCEDURES

The following steps covers the setup and power-up procedures.

1. After installing, as per Section Two, place the power switch in the ON position (up).
2. Verify the POWER indicator(s) is green.
3. Verify the ALARM indicator is red and the ALARM contacts of J3 indicate as follows:

PIN	STATUS	COMMENT
A – B	Closed	Alarm condition
C – D	Open	Alarm condition

4. Depending upon the input module(s) selected, attach the appropriate input signal(s). Terminate all unused Reference or PLL module front panel outputs.
5. Verify the ALARM indicator(s) are darkened on the appropriate output module(s) as the input signal(s) is/are applied. Reference and PLL modules will darken their ALARM condition within twenty minutes.
6. Verify when all required input signals are applied, all output module ALARM indicators are OFF and the ALARM indicator on the Power Supply Module has changed from red to green.
7. Verify the ALARM contacts on the Power Input module indicate as follows:

PIN	STATUS	COMMENT
A – B	Open	No Alarm
C – D	Closed	No Alarm

8. Connect external (or secondary) dc power as indicated in paragraph 2.3.2 (or 2.3.3).
9. Remove the ac (or primary dc) power cord.
10. Verify the POWER indicator remains green and the ALARM indicator is green, indicating the unit is operating from the standby dc source.
11. Reconnect the ac (or primary dc) power cord.

All internal adjustments have been preset at the factory. If adjustments are required, refer to Section Two of the 1295D Maintenance Manual for procedures.

### 3.3. OPERATING PROCEDURES

Slots XA1 through XA11 may be used for either input or output modules. Buses A, B, C, D and E span the length of the backplane with jumper headers for slot position and termination selection. Each slot used for an output module must have jumpers installed on the desired pair of bus headers. A pair of jumpers will also be installed at the slot of an input module using the C bus. Refer to Dwg. No. 12611490 at the back of this user guide for Configuration Table. The termination headers are located near XA13 and XA14.

Connect the Model 1295D Distribution Chassis outputs as desired. Set levels of adjustable output modules at termination of the respective cables. Make adjustments only with proper load and set unused adjustable outputs to approximately 1 Vrms. It is advised that all unused outputs be terminated. It is imperative that all PLL or Reference modules be terminated with a 50  $\Omega$  load on their front panel output connector.

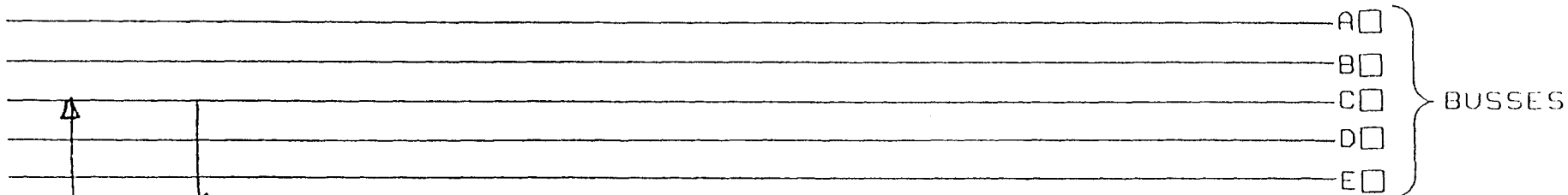
The unit is ready for operation following setup and signal level checks.

14278AC  
SERIAL NUMBER

1295D INTERCONNECT TABLE  
25411393-002  
BACKPLANE

563  
SALES ORDER  
DFAS Columbus  
CUSTOMER

T6  
PREPARED BY  
8-4-95  
DATE



A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	POWER INPUT/ SUPPLY MODULES <input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> REVERSE <u>A14641</u> SERIAL NUMBER POWER SUPPLY MODULES <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> REDUNDANT <u>A14590</u> SERIAL NUMBER <u>A14611</u> SERIAL NUMBER
5MHz Dual Hi Iso Switch 23412024-032 A14667	Quad Distrib Amp 23412100-001 A14675										

5MHz 5MHz \_\_\_\_\_ INPUT FREQUENCY  
5MHz 5MHz \_\_\_\_\_ OUTPUT FREQUENCY  
FIC CIF 1 1 1 1 1 1 1 1 1 1 SIGNAL IN/OUT

IN/OUT: LABEL WITH "A,B,C,D, OR E" FOR BUS USED, OR "F" FOR FRONT PANEL CONNECTION.

REMARKS/SPECIAL APPLICATION Quad Distribution Amp WS shorted for correct operation.

NOTE: PLACE AN "X" IN BOX AT END OF BUS IF TERMINATORS ARE NEEDED.

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## **1. GENERAL DESCRIPTION**

### **1.1. SCOPE OF SECTION**

Section One introduces the AUSTRON Model 1295D Series Distribution Chassis with a general description of the equipment, the model variations, specifications, and the input and output modules available.

### **1.2. PURPOSE OF EQUIPMENT**

The AUSTRON Model 1295D Distribution Chassis is an extremely versatile instrument that can be configured for many applications. It is designed to provide the generation and distribution of timing signals, reference frequencies, and clocking signals for telecommunications, telemetry, and instrumentation systems. It provides the necessary noise immunity and drive capability to interface a frequency standard or other signal source to equipment located up to 1,000 ft (30.48 m) away. It may also be used to generate the desired frequencies and signal types from a variety of input signals or an internal frequency source.

The input and output signal types and the number of outputs for each signal are customer specified to provide a cost effective system. There are input and output modules available for telecommunications applications involving T1 and T2 signals, composite clock signals, and bipolar alternate-mark-inversion (AMI) signals as well as sine or square wave signals. I/O signal types may be: single ended or balanced; RS-422 signals; V.35 signals; modulated time code signals; and fiber optic signals. There are several types of switchover modules that can provide redundant signal path configurations with automatic switching on loss of signal. Up to five signal types can be supplied to the outputs in multiples of four of each type. Any combination of I/O modules up to a total of 11 may be used to give as many as 40 outputs per chassis.

### **1.3. MODEL VARIATIONS**

The basic unit of the Model 1295D is called the mainframe and is available in four versions. Each version includes the respective final assemblies along with the user guide, power cord, connectors and fuse. This user guide (P/N 12711391-2) covers all versions of the complete mainframe assembly including the power modules. Individual user guide supplements are included for each type of input and output module ordered.

#### **1.3.1. Model 1295D, Standard Version**

The standard version of the mainframe is Assembly P/N 30411392. It includes the chassis, the AC/DC Power Input module, and one Power Supply module. The Power Input module contains the ac and dc power inputs, external alarm connector and power breakers and fuse. The dc power input can operate in a positive or negative ground environment. The Power Supply module houses the dc regulators and generates the dc voltages required in the unit.

#### **1.3.2. Model 1295D, DC-Only Version**

The dc-only version, Assembly P/N 30411392-1, of the mainframe is identical to the standard version except for the Power Input module used. It has dual dc power input connectors with diode summing of input power for dual bus power systems. It can be used in a positive or negative ground power environment.

**1.3.3. Model 1295D, DC-Only Version**

The dc-only version, Assembly P/N 30411392-1, of the mainframe is identical to the standard version except for the Power Input module used. It has dual dc power input connectors with diode summing of input power for dual bus power systems. It can be used in a positive or negative ground power environment.

**1.3.4. Model 1295D, Dual Power Supply Version**

The dual power supply version, Assembly P/N 30411392-2, of the mainframe is identical to the standard version with the exception of having Dual Power Supply modules installed which have diode summing to combine the regulated dc outputs. This version is intended for systems requiring a very high operational reliability and it provides protection against failure of either of the regulator assemblies. Combined with the use of both ac and dc power inputs, this design gives full redundancy to the power supply section of the unit.

**1.3.5. Model 1295D, DC-Only Dual Power Supply Version**

The Assembly P/N 30411392-3 is a dc-only version of the Model 1295D Distribution Chassis and is identical to the P/N 30411392-1 version except for having Dual Power Supply modules for redundancy.

**1.4. INPUT MODULE DESCRIPTIONS**

The input modules available for the Model 1295D are the real key to its versatility. There are buffers, scalers, converters, synthesizers, switching, phase locked loop oscillator, and other types of input modules as described in the following paragraphs.

**1.4.1. Buffer/Scaler/Converter Modules**

Buffer Input modules buffer an input signal, clip and amplify it to make the output independent of input level and waveform, then filter and amplify the signal to generate a pure sine wave output at the input frequency. The Scaler Input modules work in a similar fashion but include digital divider chains to generate subharmonics of the input frequency. Both are available in single or dual frequency versions to give one or two outputs with one buffered and one scaled or both buffered or scaled. The Converter/Buffer modules perform conversion of signal types and/or buffering of input signals.

**1.4.2. Synthesizer Modules (P/N 2341260\*-\* )**

The Select Rate Synthesizer Module is an optional input module for the AUSTRON 1295D Distribution Chassis. The module phase locks a selectable frequency square wave output to an external reference input. A fault indicator lights if phase lock or input signal is lost. Numerous input/output frequency and jack combinations are available. Selectable frequency divides for PLL and output make the Select Rate Synthesizer a very versatile module for the Model 1295D.

**1.4.3. Phase Locked Loop (PLL) Oscillator (P/N 23499400) and Digital Hold PLL Oscillator (P/N 23410794)**

The AUSTRON Digital Hold PLL Oscillator Module cleans up an input signal and provides redundancy in case of input signal loss. The Digital Hold PLL module holds the last tuning voltage on loss of the input. These PLL modules provide the long-term stability of the input signal and short term stability of the AUSTRON Model 1120L oscillator, or the temperature stability of the

1180 or rubidium oscillator. The 1121 oscillator models provide an economical redundant source. The units supply a clean sine wave output signal to the distribution bus or to the front panel. They are available in many output frequencies. The 6.132 MHz version effectively removes jitter from a T2 clock signal. These modules require three or four slots in the mainframe to accommodate the oscillator package.

#### **1.4.4. Rubidium Reference Oscillator Module (P/N 23411419)**

This module provides a 10 MHz frequency source with excellent long-term frequency stability in addition to the Rubidium PLL Oscillator described above. The module has a vernier adjustment dial on the front panel for setting the output frequency and may be used as a source for other modules in the chassis or with only output modules for distributing 10 MHz reference signals. The module requires three slots.

#### **1.4.5. Low Noise Wideband Input (P/N 23498935)**

This module, available in two versions, transformer couples its input signal through to the Quad Wideband Output modules to give very low noise distribution of signals in the 100 kHz to 10 MHz range. The unit adds no significant noise or jitter to the input but provides no level control or wave-shaping of the input signal. The P/N 23498935-1 version is a dual channel module allowing two input signals while requiring only one slot in the mainframe.

#### **1.4.6. Time Code Input (P/N 23499797)**

This module, available in two versions, provides automatic gain control (AGC) of a modulated time code (T/C) input signal with a carrier frequency from 100 Hz to 100 kHz. The unit is used with the Time Code Output module for distribution of IRIG, XR3, or other time code signals. The P/N 23499797-1 version does not include the AGC circuitry and is preferred for simple distribution of a T/C signal to multiple outputs.

#### **1.4.7. 10 dB Combiner (P/N 23499880)**

The 10 dB Combiner module provides switching capability between two input signals. This module attenuates the secondary input by 10 dB and then combines the two inputs in a passive hybrid combiner. The output is the sum of the two signals with the primary input being predominate as long as it is present and the secondary input being available if the primary is lost. This provides hitless switching when used to drive a synthesizer or PLL module.

#### **1.4.8. Automatic Switchover (P/N 23410202) and Remote Automatic Switchover (P/N 23410836)**

This module uses relays to switch between the primary and secondary inputs when the level of the selected input drops below a safe threshold while the alternate input is still present. The different versions of this module provide for inputs and output from the front panel or the bus and switching of single ended or balanced signals. The remote control versions are the same except that a double width front panel (requiring two slots) is used with BNC inputs that allow for controlling the selection of input from an external source. This is useful for switching on an alarm signal from an external device, such as the Model 2110 Disciplined Frequency Standard.

**1.4.9. Composite Clock Generator (P/N 23410947)**

The module accepts either a 1 MHz, 5 MHz, 10 MHz or 1.544 MHz input signal and synthesizes a 64/8 kHz composite clock signal. This composite clock generator signal is a 64 kHz, return-to-zero, bipolar AMI format with a bipolar violation every eighth pulse (8 kHz). It is jumper-selectable for either 50/50 or 5/8 duty cycle pulses. It is normally used to interconnect DS0 circuits to a common clock source. It must be used with the Quad Composite Clock Output module(s) to generate the required output signals.

**1.4.10. Framed T1/E1 Synthesizer (P/N 23411872\*), T2 Synthesizer (P/N 23411106) and T3 Synthesizer (P/N 23411926)**

The T1/E1, T2 and T3 synthesizers accept a number of frequencies to synthesize corresponding clock frequencies. Framed T1/E1 can be output through the Quad G.703 Output Module. T2 can be output through the Quad RS-422 or Quad G.703 Module. The T3 output is on the T3 synthesizer's own front panel.

**1.4.11. Clock Recovery (P/N 23411078)**

This module accepts a PCM data line in bipolar AMI format and recovers the clock from it. It can be set by DIP switches for any frequency in the 1 MHz to 10 MHz range, such as T1, T1E, T2, or CEPT (2.048 MHz). The input is through either a twin-BNC or TT jack on the front panel. Provision is included to select either bridging ( $> 1\text{ k}\Omega$ ) or terminating ( $100\text{ k}\Omega$ ) input termination. The module generates an output clock which is synchronous with the incoming data rate in either bipolar square wave or RS-422 format. The output signal can be jumpered to the distribution amplifier bus or to the front panel.

**1.4.12. Digital Fiber Optic Receiver (P/N 23411216)**

This input module accepts an optical signal from fiber cable through a front panel SMA-type optical connector. This signal is conditioned and placed on the Model 1295D bus for distribution, or output through a front panel BNC connector in the P/N 23411261-1 version. The module is normally used with the Digital Fiber Optic Transmitter module in another Model 1295D main-frame.

**1.5. OUTPUT MODULE DESCRIPTIONS**

In addition to the wide variety of input modules available there are several versions of output modules which may be used in the unit. Each of these contain four individual channel amplifiers with a common input and are designed for analog, digital, composite clock, or time code signal distribution. All output modules except RS-422 include output level monitoring of each channel to give an alarm if any channel drops below a preset threshold. The output signals of modules other than RS-422 and V.35 are individually adjustable for output level.

There are other versions of output modules available. See your AUSTRON sales representative for more information.

**1.5.1. Quad Distribution Amplifier (P/N 23412100-\*)**

The Quad Distribution Amplifier Module is the new standard output module for the AUSTRON Model 1295D Distribution Chassis. The variations include different output connectors and impedance as well as transformer coupling.

**1.5.2. Time Code Output (P/N 23410093)**

This module distributes modulated time code signals provided by the Time Code Input module discussed earlier. The module outputs signals via BNC connectors with individual level adjustments.

**1.5.3. Quad RS-422 Output (P/N 23410140)**

Another of our quad modules, this unit has four RS-422 outputs (differential TTL) on twin-BNC connectors and accepts bus signals from any of the input modules that provide a square wave or RS-422 signal. The P/N 23410140-1 version sends its output signals to wire-wrap posts.

**1.5.4. Composite Clock Output (P/N 23411085)**

Used with the Composite Clock Generator discussed earlier, this module distributes 64/8 kHz composite clock signals for telecommunications equipment. Three versions are available: the basic unit has TT-type jacks, P/N 23411085-1 version has twin-BNC-type connectors, while the P/N 23411085-2 version offers wire-wrap post output terminals.

**1.5.5. Quad V.35 Output (P/N 23411123)**

The module takes square wave signals from 1 kHz to 10 MHz and provides a balanced output meeting the CCITT V.35 Appendix II specifications. This output also meets the requirements for reference frequency inputs of various microwave radio equipment. The P/N 23411123 version has twin-BNC connectors and the P/N 23411123-1 has wire-wrap posts for its output signals.

**1.5.6. Digital Fiber Optic Transmitter (P/N 23411259)**

There are two versions of this new module that provide an optical output to drive fiber cable with an SMA-type optical connector for isolated and EMI secure interconnection between areas. The module accepts bus signals from any of the input modules that are available for the Model 1295D. The P/N 23411259-1 version has a front panel BNC connector for input.

**1.5.7. Quad HI/LO Buffer (P/N 23411560-\*)**

The Quad HI/LO Buffer Module is used with the Model 1295D Distribution Chassis Series. This high isolation, low phase noise buffer provides four outputs isolated from each other and from their input signal with minimum additional phase noise. The input can be for one module, or the I/O module can be jumpered to the bus to utilize other Isolation Output modules.

## 1.6. SPECIFICATIONS

The AUSTRON Model 1295D Distribution Chassis consist of a mainframe assembly with selected Power Input and Power Supply modules. Up to eleven selected I/O modules complete the unit. The following table provides specific information on the mainframe unit. Refer to the user guide supplements for the selected I/O modules for information specific to each module.

<b>Table 1: Model 1295D Specifications</b>	
<b>Physical Specifications</b>	
Height	5.25 in (13.3 cm)
Width	17 in (43.2 cm)
Rack Mtg. (std.)	19 in (48.3 cm)
Rack Mtg. (opt.)	23 in (58.4 cm)
Depth (behind mtg.)	15.25 in (38.7 cm)
(overall)	17.3 in (43.9 cm)
Weight	Less than 35 lbs (16 kg)
Ambient Temperature	0°C to 50°C (operating)
Relative Humidity	Up to 95% (noncondensing)
<b>Electrical Specifications</b>	
Ratings	CSA LR84583 (option 12811887)
AC/DC Input Module	AC and dc inputs with automatic switchover
ac input	115/230 Vac $\pm$ 10% at 2 A/1 A max. 48 Hz to 420 Hz
dc input	22 to 57 Vdc at 5 A max. positive or negative ground
DC Input Module	Dual dc inputs with diode summing
dc inputs	22 to 57 Vdc at 5 A max. positive or negative ground
Power Consumption	Less than 120 W (dependent on unit configuration)
Alarm output	NO and NC relay contacts
Bus Signal Levels	Balanced, 1 Vp-p (typical); 3 Vp-p (max.)
Frequency range	100 Hz to 10 MHz
Refer to selected module specifications for more information.	

### 1.6.1. Configurations

The Model 1295D Distribution Chassis is configured as a mainframe which includes the chassis and selected Power Input and Power Supply modules. This may include AC/DC or DC-Only Power Input and single or Dual Power Supply modules. All other modules are selected separately to meet the customers requirements. Power and signal I/O may be on either the front or rear of the unit. An additional feature is the use of plug-in jumpers to configure the backplane of the mainframe chassis and the input modules to distribute the available signals as desired.

The backplane has five differential buses running the length of the chassis that can be connected to the individual slots by jumpers. The input modules can be jumpered to any of these buses and each slot can be jumpered for an output from any bus to an output module.

### 1.6.2. Alarms

Internal power supply voltages and input and output signals are individually monitored for signal loss. Any alarm condition lights an indicator on the effected module and a summary alarm indicator and relay are activated to indicate a system fault. By noting these indicators, the nature of a failure can be quickly determined. An optional Alarm LED Panel will provide all alarm indications on



the front panel of the unit. The modular design of the Model 1295D allows easy replacement of a defective module and limits down time to a minimum. With the use of redundant signal paths and switchover modules, many repairs can be accomplished without loss of output signals. Mean time to repair (MTTR) for the unit has been calculated to be approximately 19 minutes, including fault isolation, module replacement, and repair verification.

### 1.6.3. Power Requirements

The Model 1295D operates from 115 or 230 Vac, 50 Hz to 400 Hz, or 22 to 57 Vdc, positive or negative ground. Automatic switchover to dc power on loss of ac is accomplished with no interruption of operation. The optional dc-only versions provide two inputs with diode summing for operation from dual power bus systems. Internal voltages are generated in the Power Supply module with provision for redundant modules for very high reliability requirements. Power consumption is dependent on chassis configuration but is always less than 120 W for a full chassis.

### 1.6.4. Mounting

The unit is designed to be mounted in a 19 in (48.26 cm) or 23 in (58.42 cm) rack or cabinet and requires 5.25 in (13.33 cm) of rack space and a depth of 15.25 in (38.73 cm). It may be mounted with the I/O and power connectors on the rear (standard) or in a reverse mount configuration with the I/O connectors on the front and the power connections on the rear. Mounting holes are also provided for attaching chassis slides and for positioning the rack ears for center mounting the unit is a telephone type relay rack. The mounting configuration can be changed in the field by interchanging power modules and/or moving the rack mounting ears. An Extender PCB is included for alignment and servicing of any of the input or output modules and blank panels are provided to cover unused I/O slots.

## 1.7. CONTROLS, INDICATORS AND CONNECTORS

Dwg. No. 12411469, Dwg. No. 12411470 and Dwg. No. 12411489 show all panel controls, indicators and connectors for the Model 1295D. Specific information is provided as follows.

Table 2: Power Input Module	
Reference Designator	Description
J1	ac power input connector (AC/DC) dc power input connector (Dual DC)
J2	secondary dc power input connector
J3	external alarm connector
F1	protects the ac power input (AC/DC)
CB1 & CB2	protect the dc power input
CB3 & CB4	protect the secondary power input

### 1.7.1. Power Supply Module

DS1 and DS2 are the POWER status indicators. DS2 is green under normal POWER conditions or DS1 is red for POWER ALARM condition.

DS3 and DS4 are the ALARM status indicators. DS3 is green under NO ALARM condition or DS4 is red for an ALARM condition.

**1.7.2. Standard Output Module**

The BNC connectors are the signal output ports. The recessed adjustment nearest each connector controls the output level of the channel. The red indicator lights at loss of output on one or more channels.

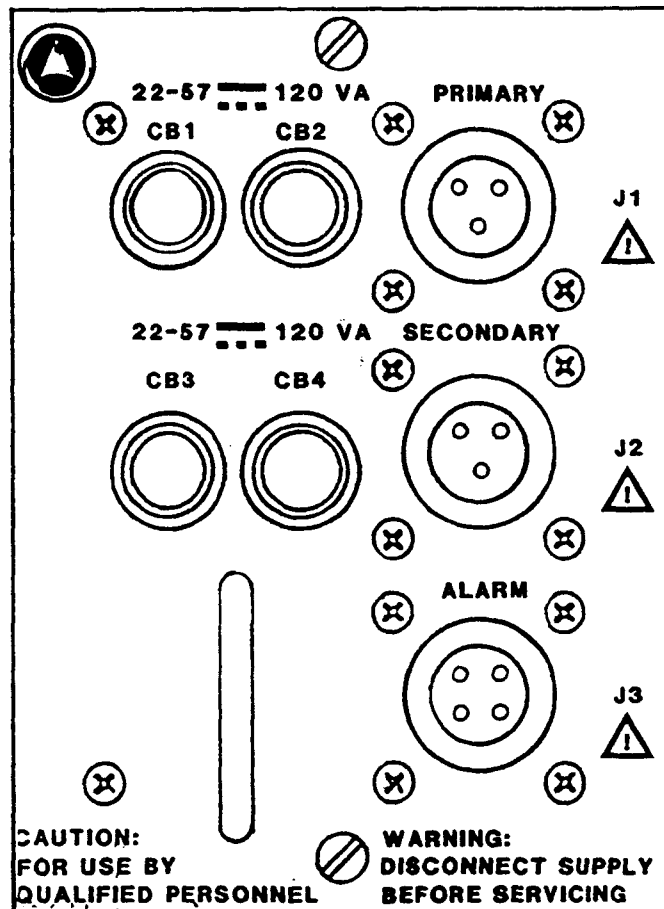
**1.7.3. Standard Input Module**


The BNC connector is the signal input port for the unit. The red indicator lights to indicate loss of input signal to the module. A green indicator lights to indicate normal operation.

**1.7.4. Alarm Indicator Panel (Option) (P/N 10911487-\*)**

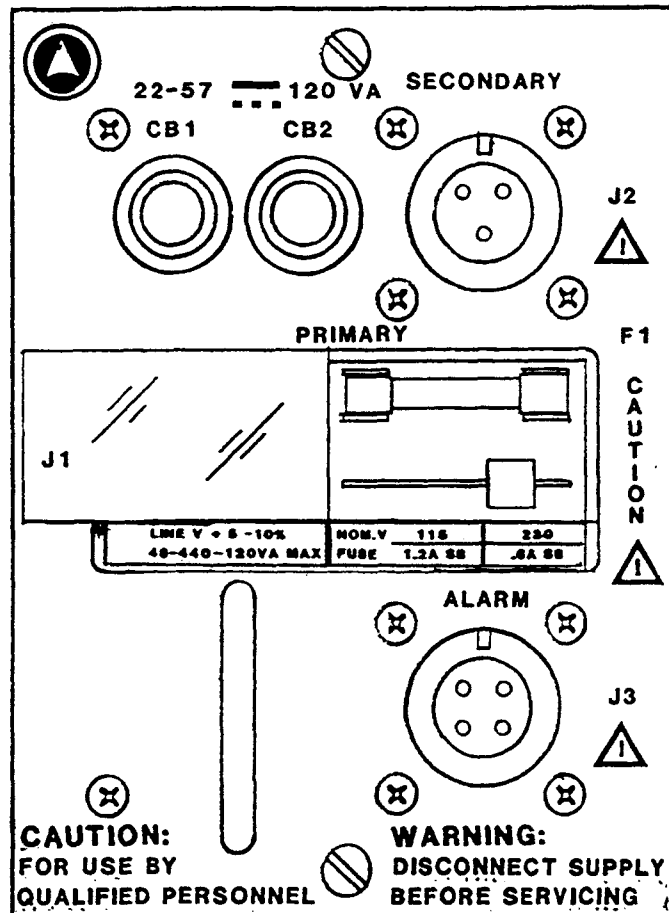
The LEDs on the Alarm Indicator Panel show the ALARM status of each individual slot position. A slot indicator will be green for NORMAL conditions or red for ALARM conditions. The Alarm Indicator Panel is used for immediate ALARM status verification from the front of the Model 1295D. It is also easily installed on Model 1295Ds that are configured with the blank filler panel.


REVISIONS			
LTR	DESCRIPTION	DATE	APPD
B	REDRAWN PER ECO 12470	8/15/89	MLN

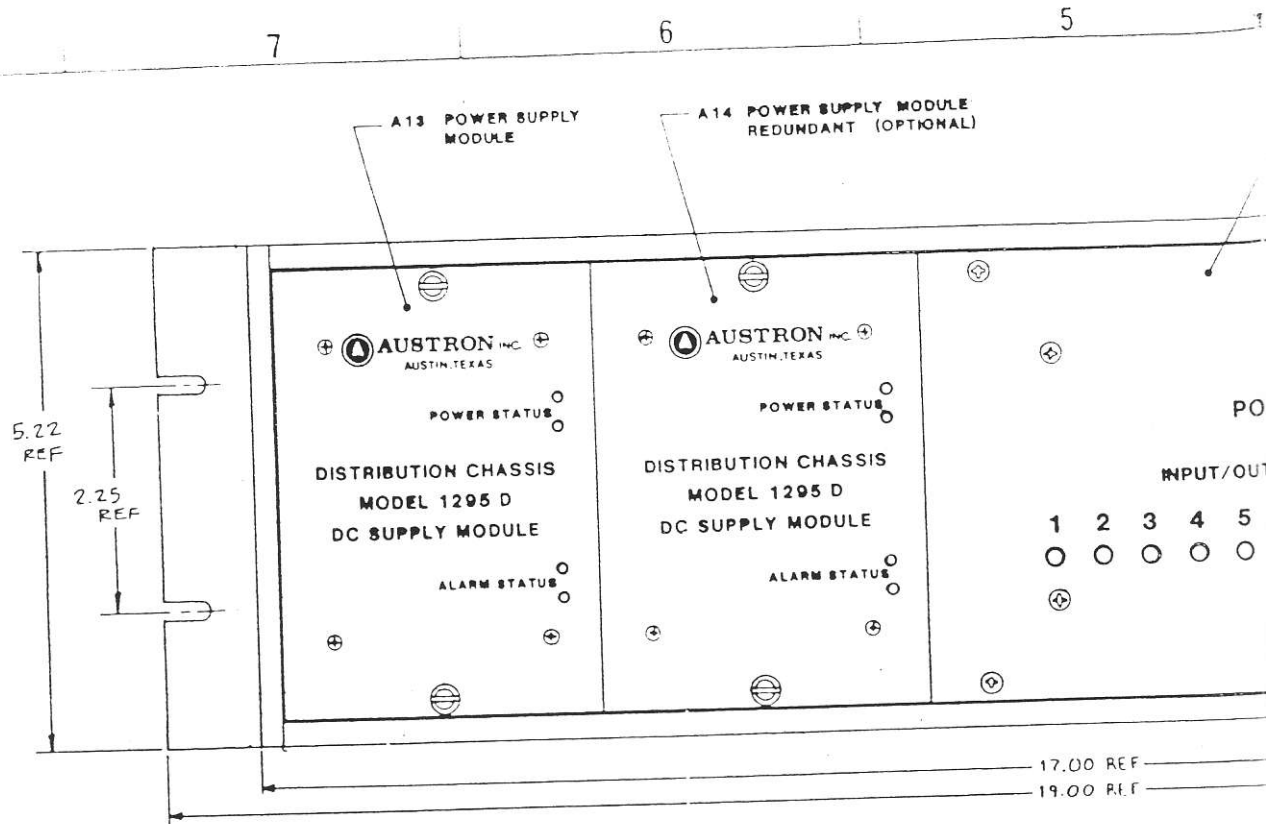


		TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> AUSTIN, TEXAS		
		DEC	FRAC	ANG			
		MATERIAL:					
					DUAL DC POWER INPUT PANEL		
1295D		Q.A.	LOPEZ	8/15/89	SIZE	CODE IDENT NO.	REV
NEXT ASSY		ENGR	CE	9 Aug 89	1	24672	B
USED ON		CHECK	MLN	8/15/89			
APPLICATION		DRAWN	Austron	6/7/89	SCALE	~ / ~	SHEET

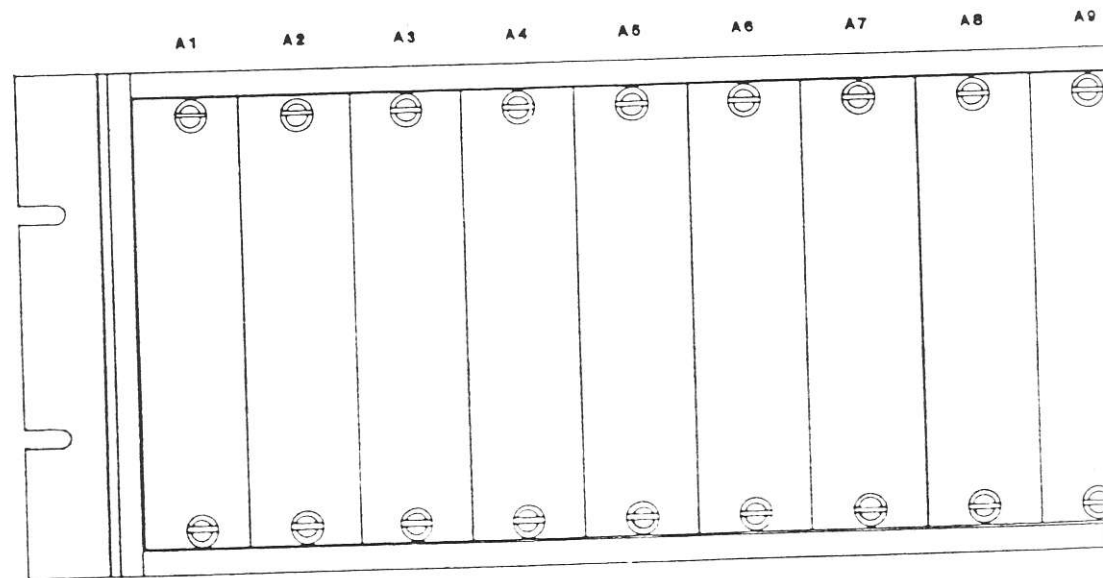
REVISIONS				
LTR	DESCRIPTION		DATE	APPD
B	REDRAWN PER ECO 12470	LT	8/15/89	MLN
C	REV PER ECO 13050	MN	6/14/10	LT



		TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> AUSTIN, TEXAS			
		DEC	FRAC	ANG				
		MATERIAL:			<b>AC/DC POWER INPUT PANEL</b>			
1295D	Q.A.	LOPEZ	8-15-89	SIZE	CODE IDENT NO.	REV		
NEXT ASSY	USED ON	ENGR	CE	1	24672	12411470		
APPLICA	10	CHECK	MLN	SCALE	~ / ~	SHEET / OF /		
DRAWN	6/7/89	DRAWN	6/7/89					



FRONT VIEW

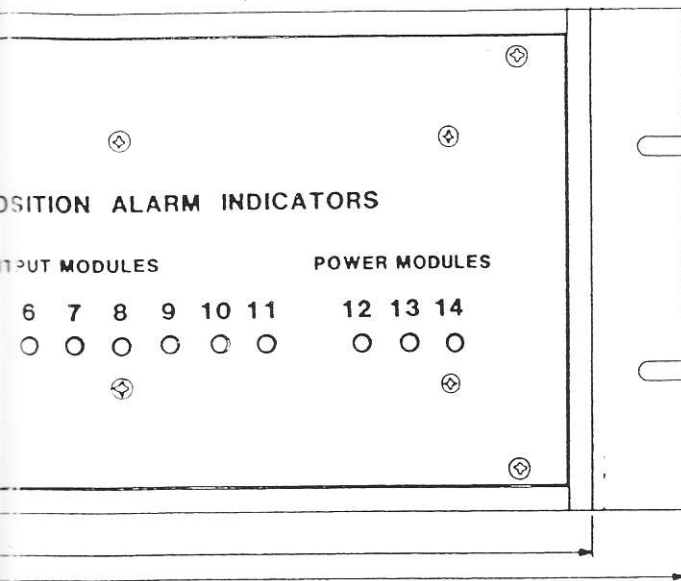


REAR VIEW

DASH # (NO.) TABLE				
DASH NO.'S (#)	POWER INPUT / OUTPUT (I/O) MODULES			
	AC/DC		DUAL DC	
	SINGLE	REDUNDANT	SINGLE	REDUNDANT
NO DASH	X			
-1			X	
-2		X		
-3				X

1295D { 30411392\*  
26411393\*

A16 ALARM INDICATOR PANEL  
(OPTIONAL)



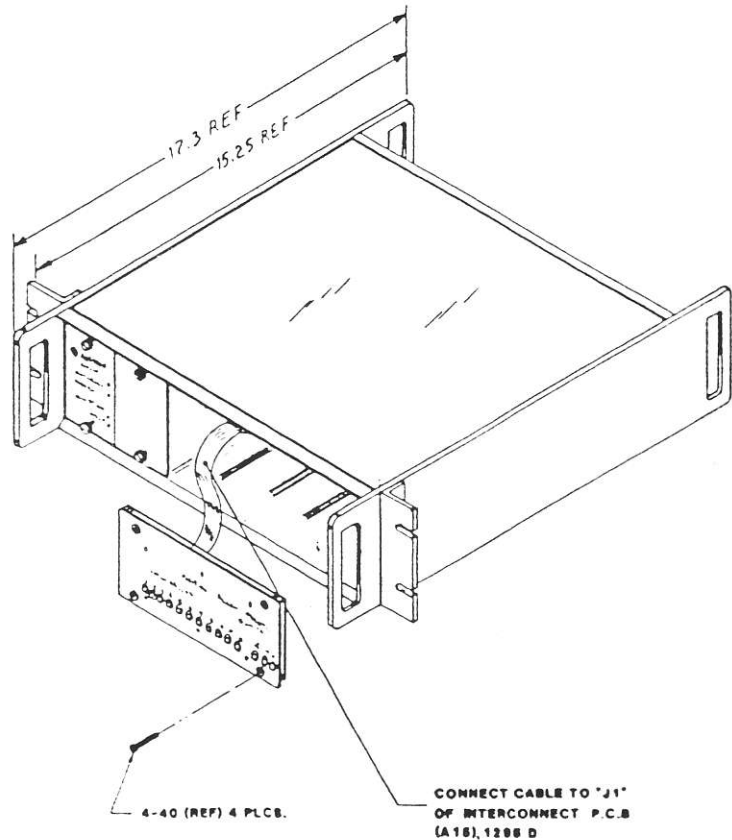
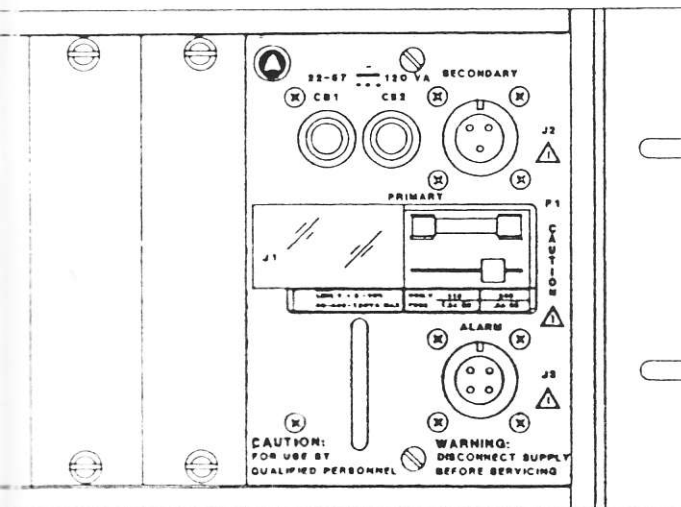
		REVISIONS	
ZONE	LTR	DESCRIPTION	
A		RELEASED	
B		REVISED PER ECO 12410	
C		REV PER ECO 13050	

DATE	APPD
4/13/88	CRD
7/15/89	CRD
11/14/89	CRD



A10

A11

A12



INDICATOR PANEL INSTALLATION

					TOLERANCES UNLESS OTHERWISE SPECIFIED			 AUSTRON INC. AUSTIN, TEXAS	
					DECIMALS	FRACTIONS	ANGLES		
					MATERIAL  			1295D CONNECTORS AND INDICATORS.	
12711391	1295D				QA	LOPEZ	4/12/88	SIZE	
NEXT ASSY	USED ON	REF DES	FIG NO		ENGR	LE	12/24/88	4	
					CHECKED	W. L. GARCIA	3/11/89	11	12411489
					DRAWN	F. HARRISON	3/3/89	SCA	C
APPLICATION								SHEET 1 OF 1	



P. O. BOX 14766 AUSTIN, TX 78761 ■ TEL (512) 251-2313 ■ FAX (512) 251-9685

AUSTRON Model 1295D Series  
Distribution Chassis  
Unit Serial No. \_\_\_\_\_  
Maintenance Manual  
P/N 12711391-000-2, Revision F

July 10, 1995

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## 1. FUNCTIONAL DESCRIPTION

### 1.1. SCOPE OF SECTION

Section One provides a functional analysis of the Model 1295D Distribution Chassis including circuit descriptions and schematics for the chassis. The chassis consists of the modules shown on the block diagram in Dwg. No. 12411488. A general description is followed by a discussion of each module's circuit. The various input and output modules are covered in detail in the supplemental manuals.

### 1.2. GENERAL CIRCUIT DESCRIPTION

The reversible feature of the Model 1295D allows modules to be plugged into different slot positions. For purposes of reference designator assignment, AUSTRON has set up a standard configuration. This standard configuration is not meant to recommend one configuration over the other, it is intended only to maintain clarity in the reference designations assigned in this manual. Refer to Dwg. No. 12411489.

The standard configuration is as follows:

- 1) All input and output modules to the rear.
- 2) Power Input module to the rear.
- 3) Power Supply module(s) and optional slot position Alarm Indicator Panel to the front.

The input modules detect, scale, filter, buffer or create input signal(s) as required. Internal jumpers set the output to the selected bus.

The output modules buffer, level adjust and detect the signals within the frequency band. Signal selection is made through jumpers on the Interconnect PCB assembly for each output slot.

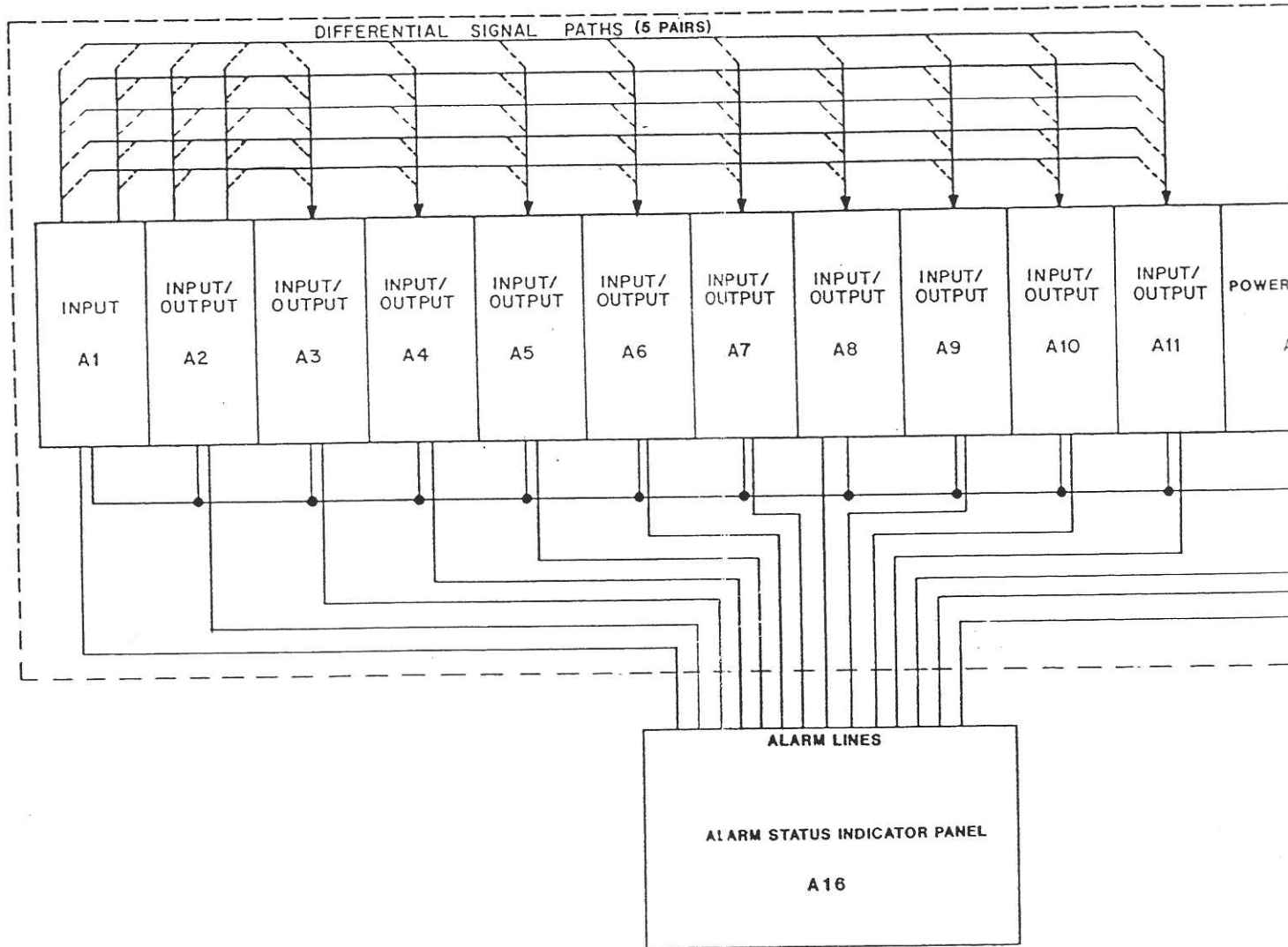
The Power Input module is the unit which accepts the ac and/or dc input. This module also houses the alarm logic and relay. The reference designator is A12 and it is located on the right as you look at the rear of the unit.

The Power Supply module contains power converters and filters for the Model 1295D Distribution Chassis. This module also has power supply voltage level detection to provide an alarm upon any power supply failure. Front panel indicators on this module allow for immediate ALARM and POWER status verification. A Model 1295D Distribution Chassis that is configured for redundant power supplies will contain two Power Supply modules. The reference designator is A13 and/or A14. The module(s) is located to the left when looking at the front of the unit.

The motherboard interconnects the voltages and signals within the system. Refer to Dwg. No. 12411488. The reference designator is A15.

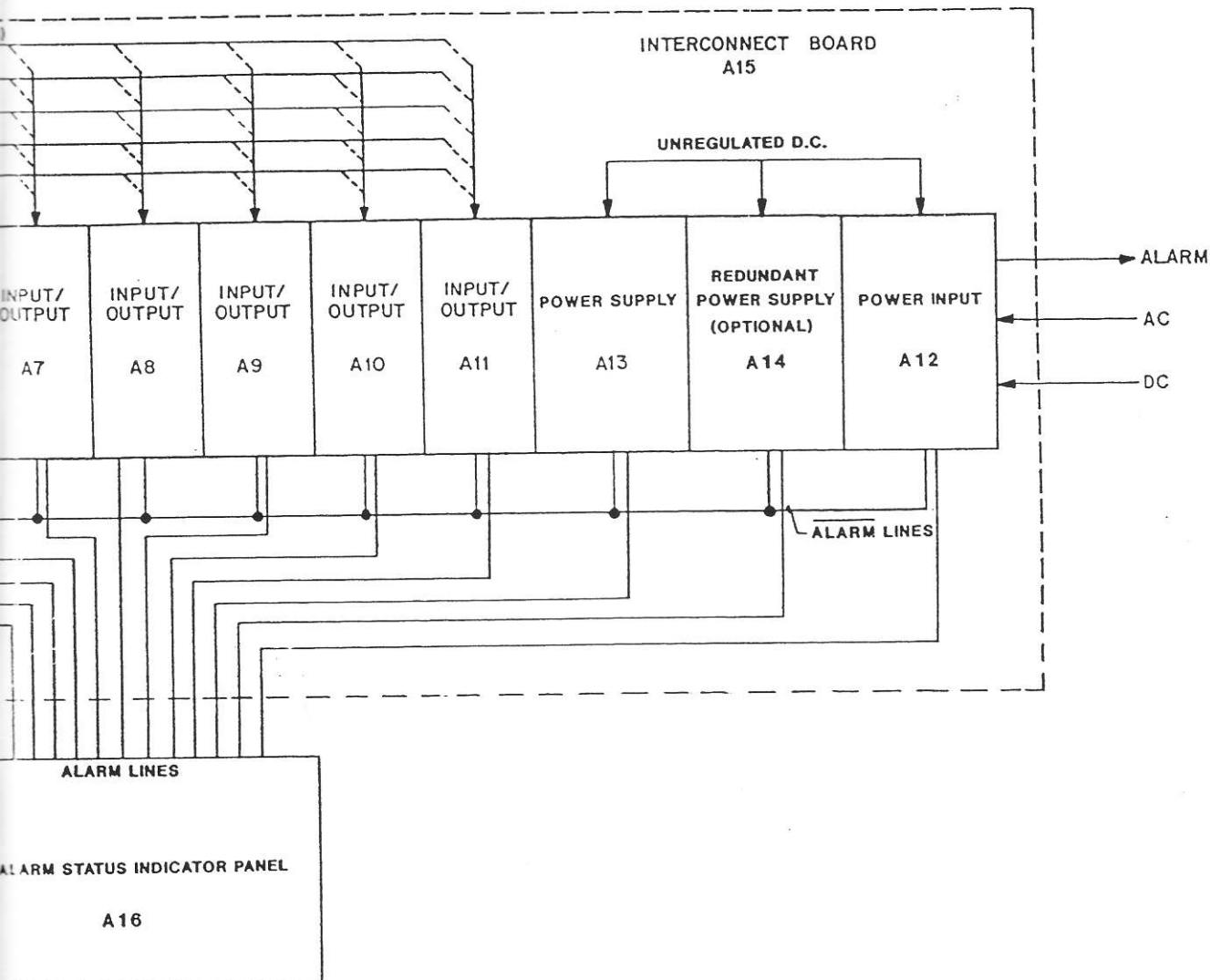
### 1.3. CIRCUIT DESCRIPTIONS


The following paragraphs describe in general the Model 1295D Distribution Chassis including brief descriptions of each major subassembly.



				DEC
				MA
12711394	1294			
12711391	1295 D		4-2	ENC
NEXT ASSY	USED ON	REF DES	FIG NO	CH
APPLICATION				DRF

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE
	A	RELEASED	4/13/88
			CEL



				<b>TOLERANCES</b> UNLESS OTHERWISE SPECIFIED DECIMALS   FRACTIONS   ANGLES			 <b>AUSTRON INC.</b> AUSTIN, TEXAS	
				MATERIAL:				
							<b>CHASSIS BLOCK DIAGRAM</b>	
12711394	1294			ENGR	CE	12/1/88	SIZE	CODE IDENT
12711391	1295 D		4-2	CHECK	CEL	4/12/88	3	3
NEXT ASSY	USED ON	REF DES	FIG NO	DRAFTSMAN	K. HARGROVE	4/3/88	SCALE N/A	
APPLICATION							SHEET 1 OF 1	
							12411488	
							A	

### 1.3.1. Power Input Module

(Refer to Dwg. No. 12311351, Dwg. No. 12411470, Dwg. No. 12311350, and Dwg. No. 10311351 for AC/DC. Refer to Dwg. No. 12311356, Dwg. No. 12311355, Dwg. No. 12411469 and Dwg. No. 10311356 for Dual DC)

The Model 1295D Power Input modules perform several functions such as power line filtering, fusing, power line level selection, rectification, power source switchover and provides the alarm output.

The ALARM line is monitored at pin 2F which is normally pulled up to the 6 volt line by R9. Q5 then current limits Q4 which holds K1 energized. If any other module's open collector output pulls the bus ALARM line down, Q4 turns off and K1 de-energizes. The output of K1 is available through J3, the alarm jack.

#### 1.3.1.1. AC/DC Power Input

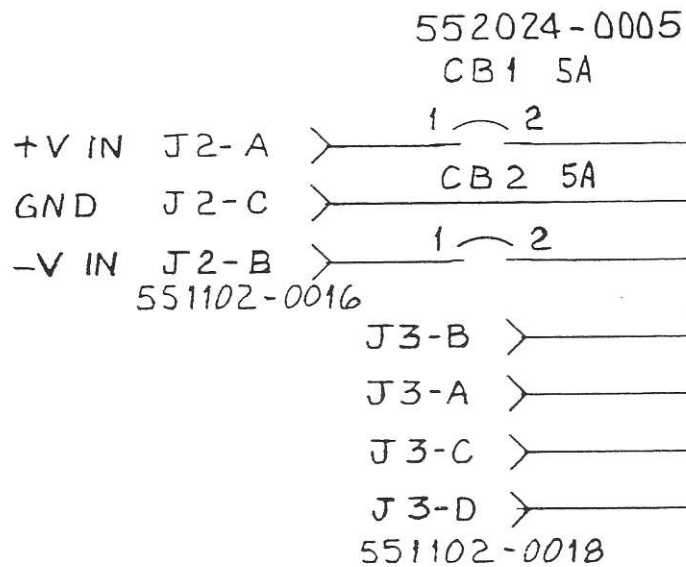
The filter in J1 provides RFI control of line-to-ground noise. The fuse F1 offers line protection for the primary of the power transformer. The voltage selector in J1 places the primary windings of power transformer T1 in parallel for 115 Vac operation or in series for 230 Vac operation.

J2 is the input connector for the standby dc voltage. This source is protected by breakers CB1 and CB2.

The output from the secondary of the transformer T1 is full-wave rectified by CR5, CR6, CR8 and CR9. The resulting unregulated voltage is filtered by C3. Diodes CR4 and CR7 provide an independent dc output for monitoring the dc source. If the dc source is present, the potential across C2 causes the saturation of Q3 which will raise the emitter potential enough to keep Q2 from conducting. With Q2 turned off, the dc switchover FET Q1 will remain off. If a dc source is connected to J2 and the ac source at J1 is not present, Q2, biased by CR3, turns on. The gate of Q1 is then allowed to drop to 15 V below the source (set by Zener CR2), thus connecting the dc source to the + V line. CR1 keeps the dc source from biasing Q1 on when the ac source returns. Upon ac source decay this switchover action will occur at approximately 23 Vdc across C3.

#### 1.3.1.2. Dual DC Power Input

The primary dc source is supplied through J1 which is protected by breakers CB1 and CB2. The secondary dc source is supplied through J2 which is protected by CB3 and CB4. The diodes, CR1 through CR4, allow for power input switchover and positive or negative ground connection. Though J1 is marked primary and J2 secondary, the module will pass the greater potential of the two sources.



AC/DC POWER

10311351

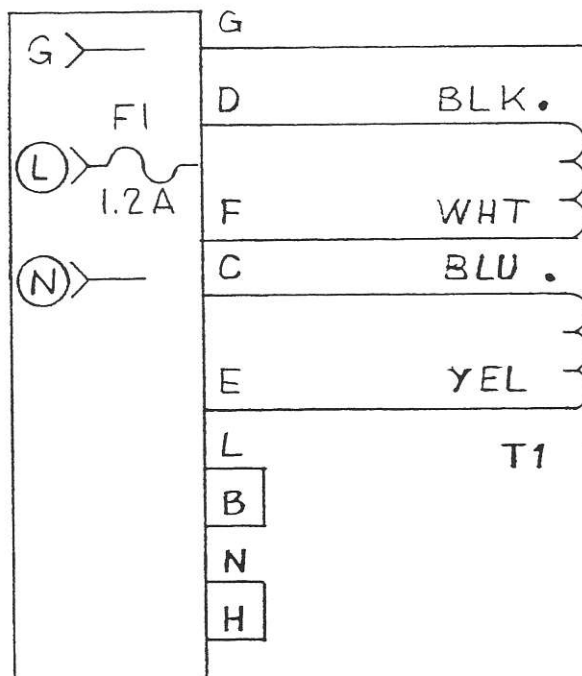
12311351

E10

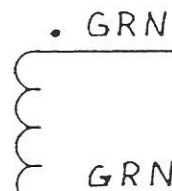
E6

E7

J1  
779007-1495



T1 75198586  
115/230 PRI  
28 VAC, 50/60 HZ



23411350	1295C/D	
NEXT ASSY	USED ON	RE
APPLICATION		

## REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPD
	A	RELEASED PER ECO 12489 CRL	4/27/89	<i>[Signature]</i>
	B	REVISED PER ECO 13048 <i>[Signature]</i>	12/5/90	ga

POWER INPUT

51

51

→ 7,8,9 C&amp;F +V OUT

→ 15,16,17 C&amp;F -V OUT

→ 2 F

→ 10,13 C&amp;F

→ 11,12 C&amp;F

→ 1 C&amp;F GND

## TOLERANCES

UNLESS OTHERWISE SPECIFIED

DEC      FRAC      ANG

MATERIAL:


**AUSTRON INC.**  
 AUSTIN, TEXAS

SCHEMATIC, AC/DC POWER INPUT MODULE

Q.A.	LOPEZ	4-27-89
ENGR	CE	4-27-89
CHECK	<i>[Signature]</i>	4-27-89
DRAWN	CRL ANCASTER	4-17-89

SIZE	COD	VO.	REV
2	2 7	2	B

12311350

TION

REF DES

FIG NO.

SCALE

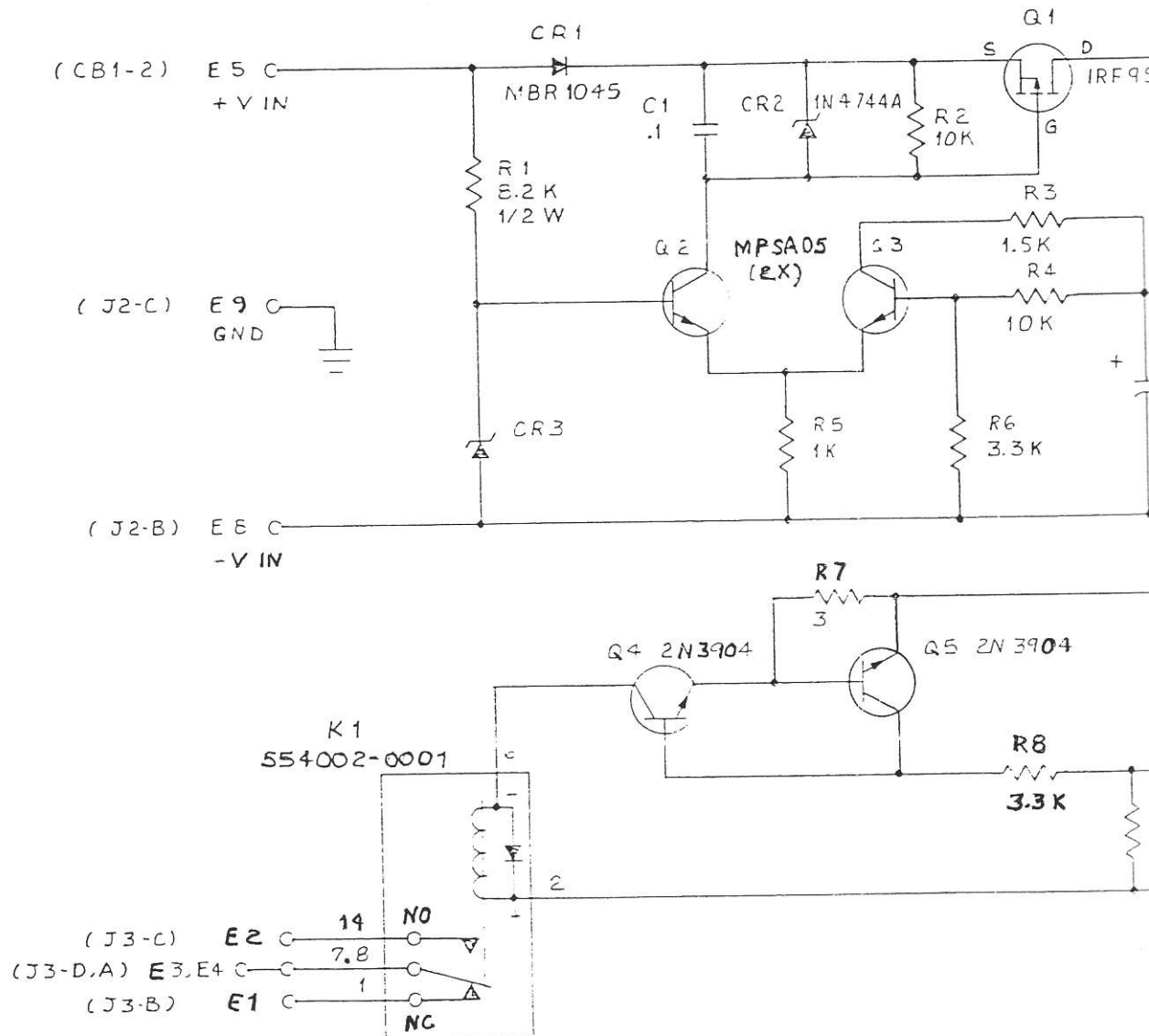
SHEET 1 OF 1

D

C

B

A



③ W1 NORMALLY SHORTED.

2. ALL CAPACITOR VALUES ARE IN MICROFARADS.

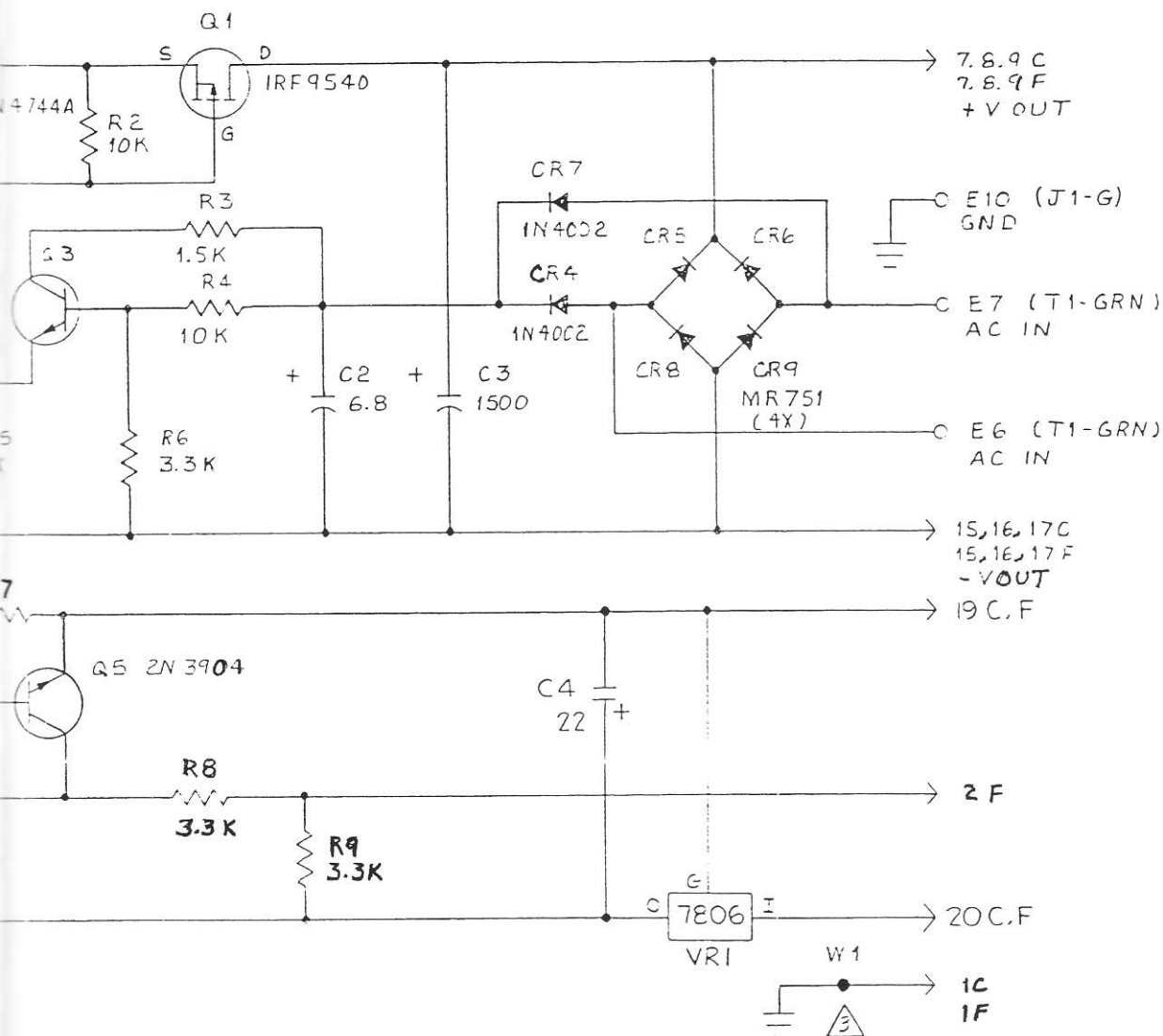
1. ALL RESISTOR VALUES ARE IN OHMS, 1/4 W, 5%.

NOTES: UNLESS OTHERWISE SPECIFIED:

10311351	1295C/D
NEXT ASSY	USED ON
APPLICATION	



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPD
	E	REDRAWN PER ECO 12489	CRL	
	F	REV PER ECO 13050	M-LN	
	G	REVISED PER ECO 13643	5/13/82	



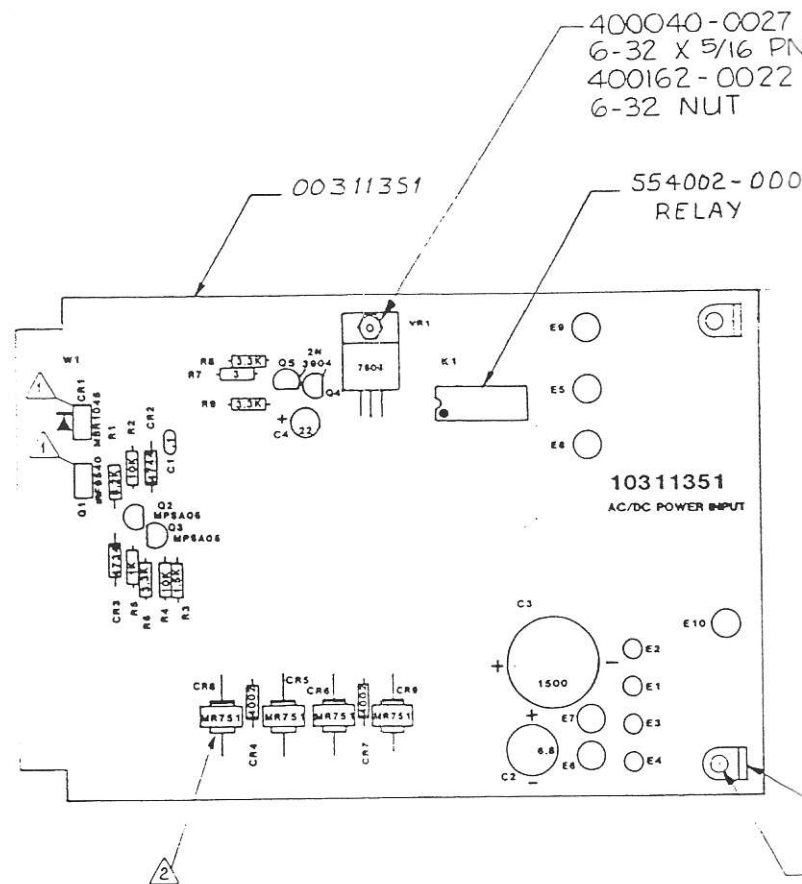
				<b>TOLERANCES</b> UNLESS OTHERWISE SPECIFIED DECIMALS   FRACTIONS   ANGLES			<b>AUSTRON INC.</b> AUSTIN, TEXAS	
				MATERIAL:			SCHEMATIC, AC/DC POWER INPUT PCB	
0311351	1295 C/D			Q.A.	LCPEZ	4-27-89	SIZE	C
NEXT ASSY	USED ON	REF DES	FIG NO	ENGR	LE	2/1/89	3	9
				CHECKED	LCPEZ	4-27-89	12311351	
APPLICATION				DRAWN	CRLANCASTER	4/17/89	SCALE	
				SHEET 1 OF 1				

D

C

B

A



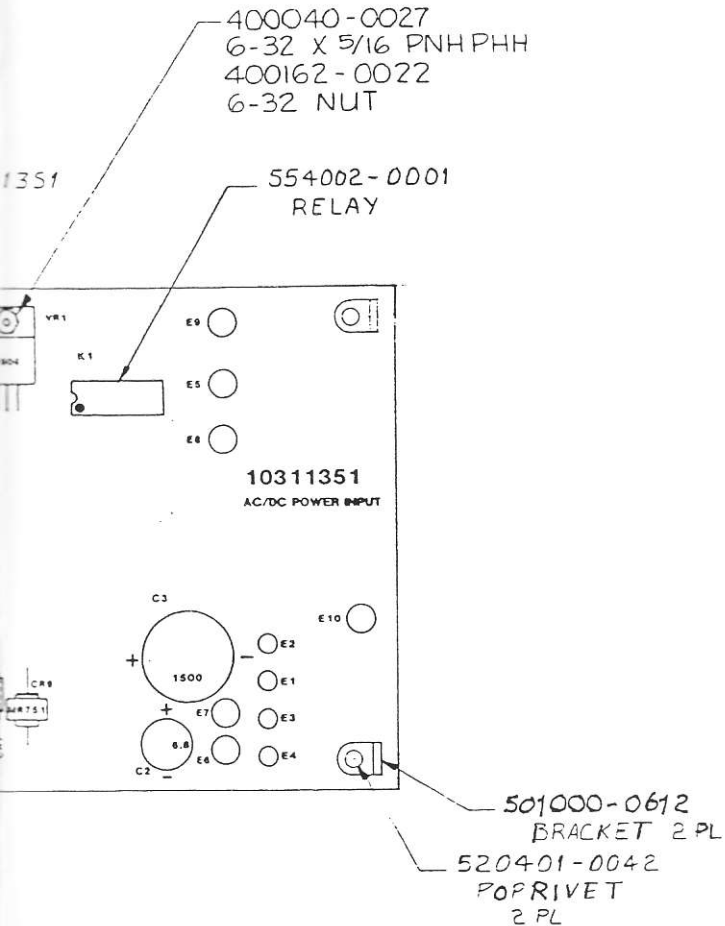
⚠ DIODES ARE TO BE MTD. 1/4" OFF THE SURFACE OF PCB.


⚠ PARTS ARE SHOWN FOR REFERENCE ONLY AND ARE TO BE MTD. AT THE 234 ASSY LEVEL.

NOTES:

23411350	1295 D	
NEXT ASSY	USED ON	REF
APPLICATION		

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPD
	F	REDRAWN PER ECO 12489	5/1/89	CLL
	G	REVISED PER ECO 13643	5/6/92	CLL



				TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> AUSTIN, TEXAS	
				DECIMALS	FRACTIONS	ANGLES		
				MATERIAL:			PCB ASSY, AC/DC POWER INPUT MOD.	
23411350	1295 D			QA.	LCDEZ	4-27-89	SIZE	3
NEXT ASSY	USED ON	REF DES	FIG NO	ENGR	CE	27Apr89	11	10311351
				CHECKED	5/1/89	5/1/89		
APPLICATION				DRAWN	CRANCASTER	4-24-89	SCALE	NTS
								SHEET 1 OF 1

4

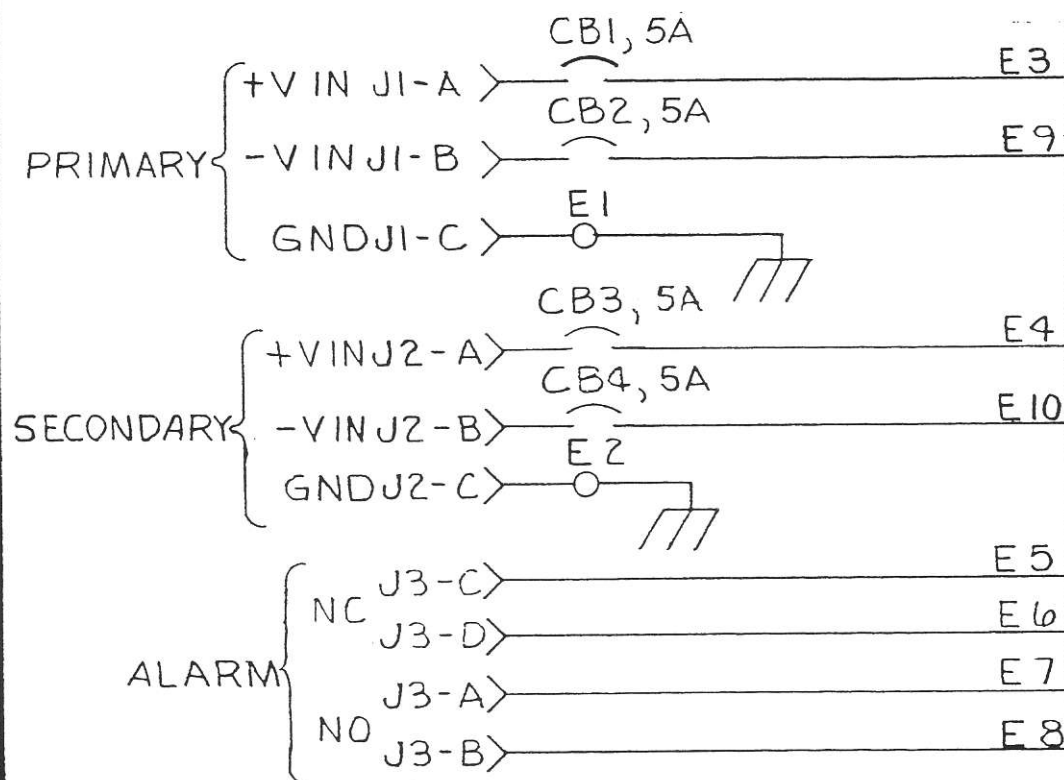
3

D

C

B

A



DUAL D  
 ASSY: 103  
 SCH: 123

23411355	1295D
NEXT ASSY	USED ON
APPLICA	

## REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPD
	A	RELEASED PER ECO 12485	5/11/89	GR

DC POWER

12311356

12311356

+V

7C, 7F, 8C, 8F  
9C, 9F

-V

15C, 15F, 16C, 16F  
17C, 17F

GND

1C, 1F

+6V

11C, 11F, 12C, 12F

+6V RET

10C, 10F, 13C, 13F

ALARM

2F

## TOLERANCES

UNLESS OTHERWISE SPECIFIED

DEC    FRAC    ANG

MATERIAL:

AUSTRON INC.  
AUSTIN, TEXASSCHEMATIC, DUAL DC  
MODULE

Q.A.	LOPEZ	5-1-89
ENGR	CE	1/11/89
CHECK	GR	4/28/89
DRAWN	LOPEZ	4/17/89

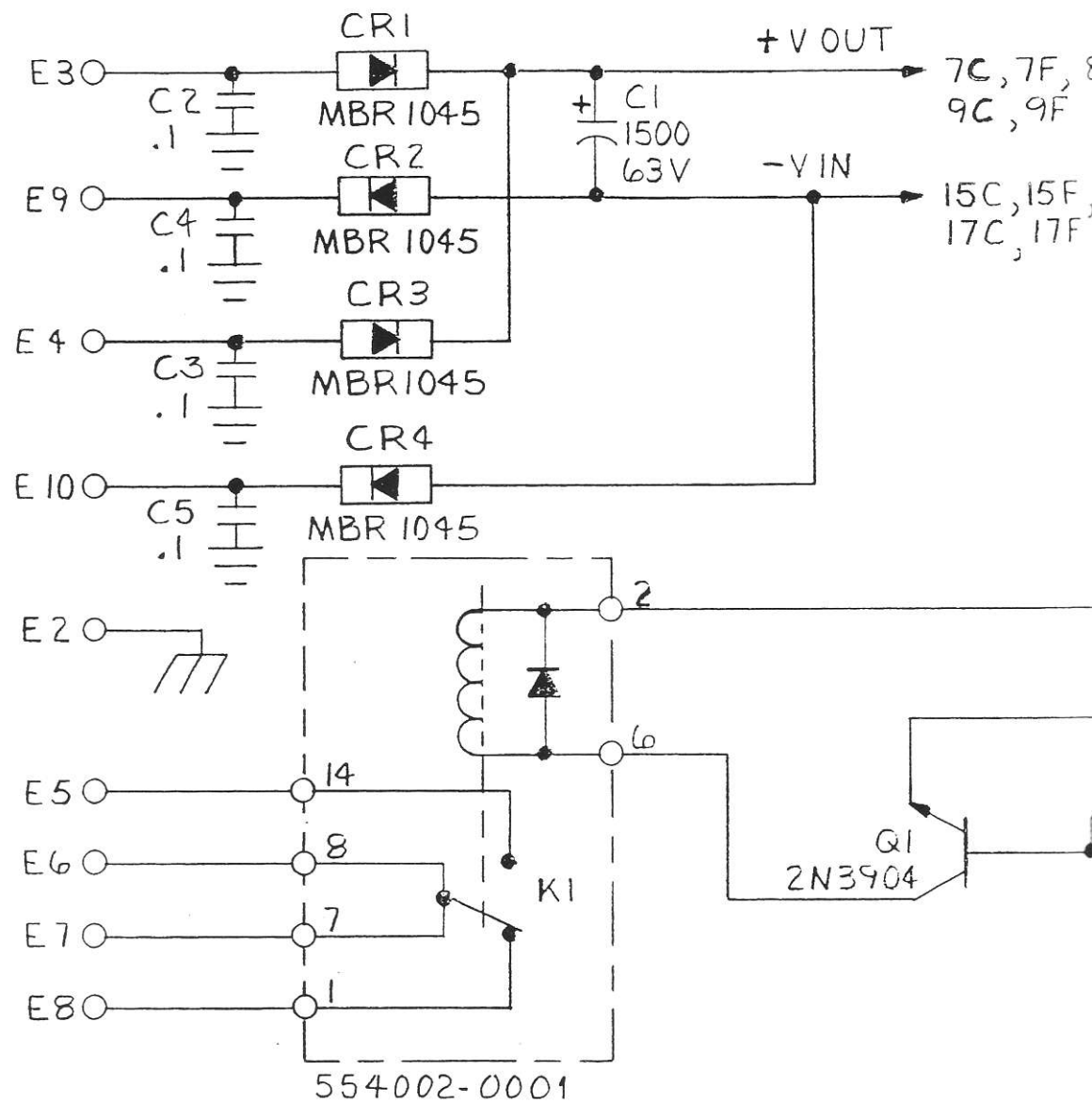
SIZE	CODE	NO.
2	2	13

12311355

REV  
A

SCALE ~ / ~

SHEET 1 OF 1



△ W1 NORMALLY SHORTED.

1. RESISTORS ARE IN OHMS, 1/4W 5%.

NOTES: UNLESS OTHERWISE SPECIFIED.

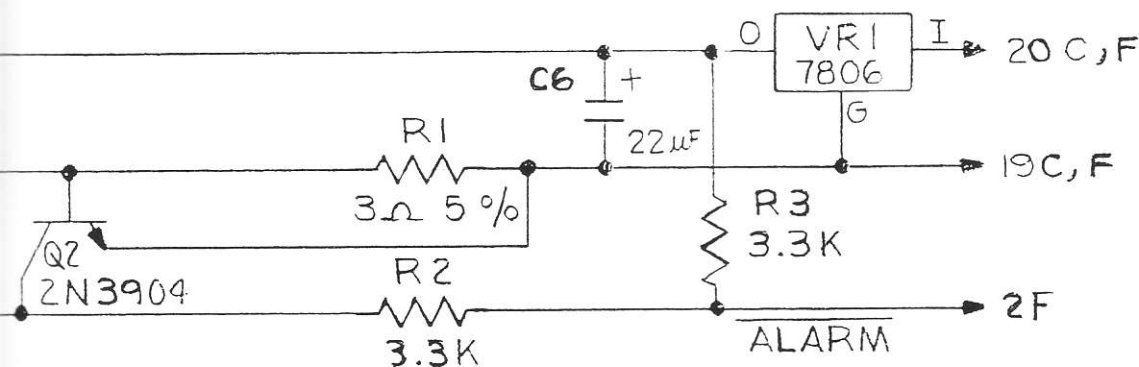
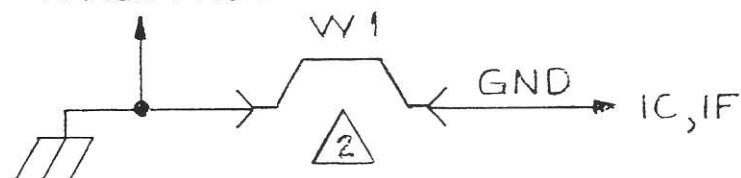
10311356	5594
10311356	1294
10311356	1295D
NEXT ASSY	USED ON
APPLICAT	


REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPD
	F	REDRAWN PER ECO 12485	5/1/89	CPL
	G	REV PER ECO 13050	6/14/90	MLN
	H	REV PER ECO 13641	5/21/92	SEPM

8C, 8F

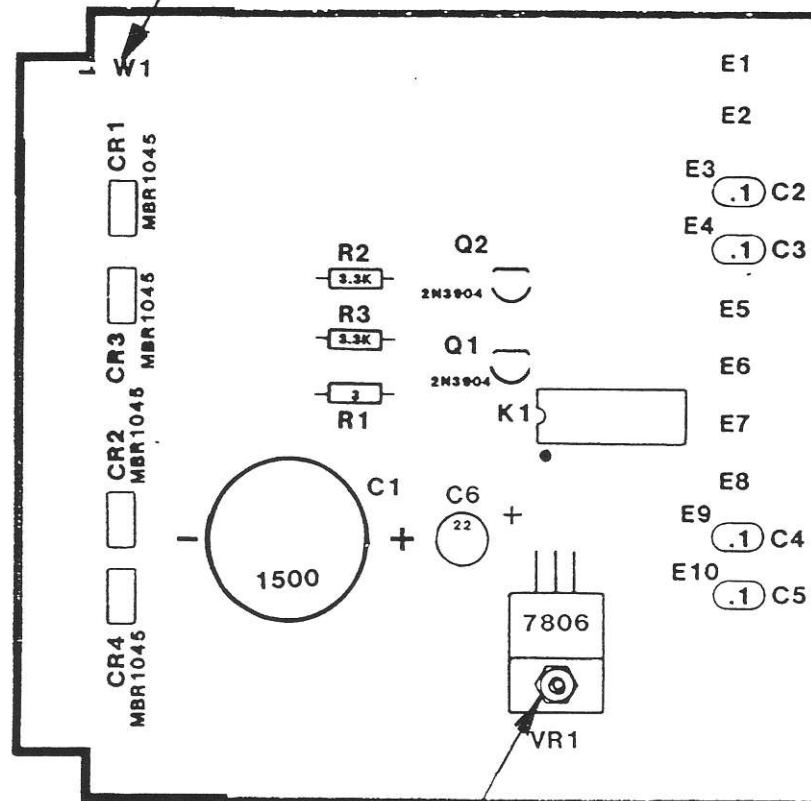
16C, 16F

BRACKET & FRONT  
PANEL PADS



			TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> AUSTIN, TEXAS			
			DEC	FRAC	ANG				
			MATERIAL:			SCHEMATIC, DUAL DC POWER INPUT			
REF	DES	FIG NO.	Q.A.	LOPEZ	5-1-89	SIZE	CODE	NO.	REV
			ENGR	CE	7/28/89	2	2	15	2
			CHECK	CPL	4/28/89				
TION			DRAWN	ATLANTA	4/17/89	SCALE ~ 1/2		SHEET 1 OF 1	

NOTE 1



10311356

AUSTRON INC.  
AUSTIN, TEXAS

400040-0026  
6-32 X 5/16 PNH PHH  
400162-0022  
6-32 NUT

00311356

1. CLOSE. SOLDER GAP W1 (MAY BE OPENED FOR SPECIAL ORDER ).

NOTES:

23411355	5594
23411355	1294
23411355	1295D
NEXT ASSY	USED ON
APPLICATION	



# REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPD
	A	RELEASED	2/1/88	CRL
	B	REV PER ECO 11526	3/14/88	CRL
	C	REVISED PER ECO 11663	4/29/88	CRL
	D	REV. PER ECO 11960	8/24/88	CRL
	E	ADDED C1 PER ECO 12034	10/19/88	CRL
	F	REVISED PER ECO 12485	4/28/89	CRL
	G	REVISED PER ECO 13641	5/21/92	CRL

TOLERANCES  
UNLESS OTHERWISE SPECIFIED

DEC FRAC ANG

MATERIAL:



AUSTRON INC.  
AUSTIN, TEXAS

PCB ASSY.,  
DUAL DC POWER INPUT

Q.A. *LIPER* *6-1-88*  
ENGR *CE* *11-29-88*  
CHECK *CPL/ancaster* *11-29-88*  
DRAWN *MLN* *1-29-93*

SIZE CODE IDENT NO.  
**2 2 17 1**

**10311356**

REV  
**G**

SCALE 1:1

SHEET 1 OF 1

REF DES FIG NO.

TION

### 1.3.2. Power Supply Module

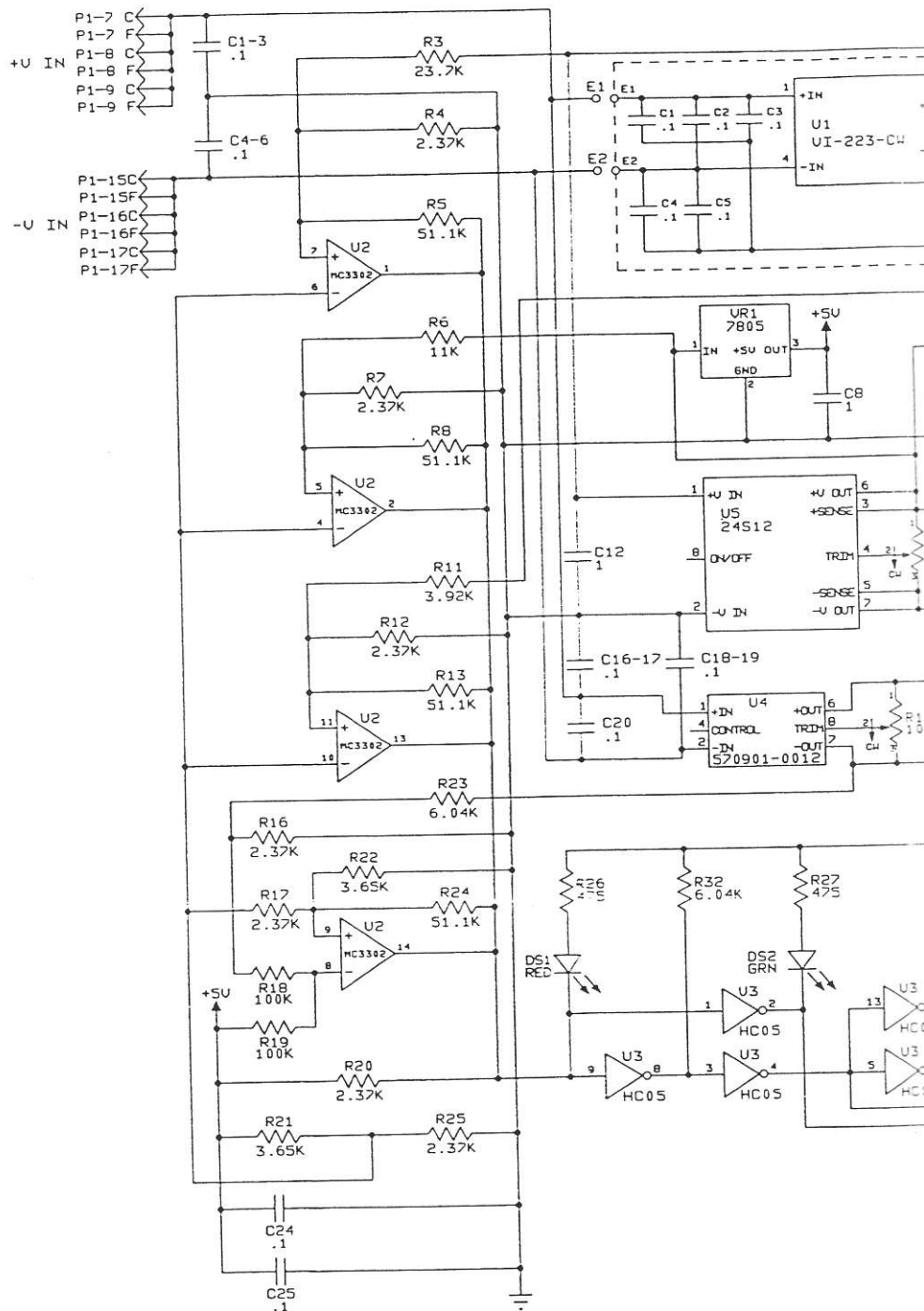
(Refer to Dwg. No. 12311343, Dwg. No. 10311343 and Dwg. No. 10311348-\*)

The Model 1295D Power Supply module contains dc power converters and alarm monitoring logic.

The unregulated input voltage is filtered and de-coupled to the ground plane, then connected to the isolated power converters (U1) and (U4). The 24 Vdc output of (U1) is used as the input for (U5). The 12 Vdc output of (U5) provides power for regulators VR1 and VR2. Regulator VR1's 5 Vdc output is used internally by the module for the alarm logic. VR2 provides the power for the 6 volt bus. CR1, CR2, CR3 and CR4 act as switchover diodes for the 24 Vdc, 6 Vdc, 12 Vdc and -12 Vdc bus outputs, respectively, so parallel power supply modules can be used.

All voltage supply levels are monitored by the comparator (U2) through appropriate divider networks. The open collector outputs of (U2) are OR'd together and drive DS1, (U3B), (U3C), (U3D), (U3E) and the ALARM line. The output of (U3D) and (U3E) drive the alarm line and DS2. DS1 and DS2 are the POWER indicators. Any Model 1295D ALARM also drives (U3B) and (U3C) which then controls DS3, (U3A) and (U3F). (U3A) and (U3F) drive DS4. DS3 and DS4 are the ALARM indicators.

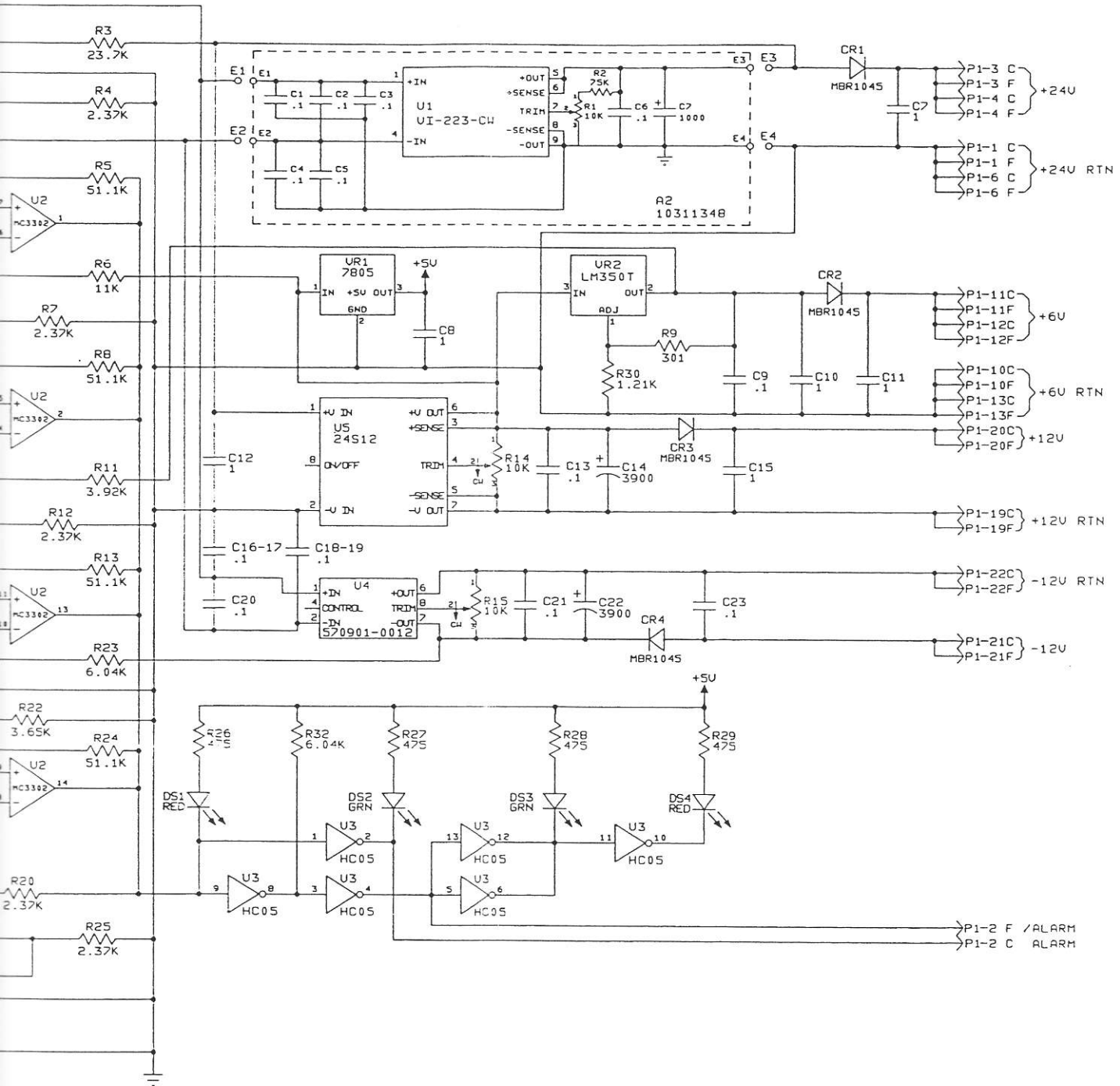
R1, R14 and R15 allow adjustment of the 24 volt, 12 volt and -12 volt levels which are preset at the factory.



3. LAST DESIGNATORS USED: A2, C25, CR4, DS4, E4, P1, R32, U5, UR2
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.
1. ALL RESISTOR VALUES ARE IN OHMS, 1/BW, 1%.

NOTES: UNLESS OTHERWISE SPECIFIED

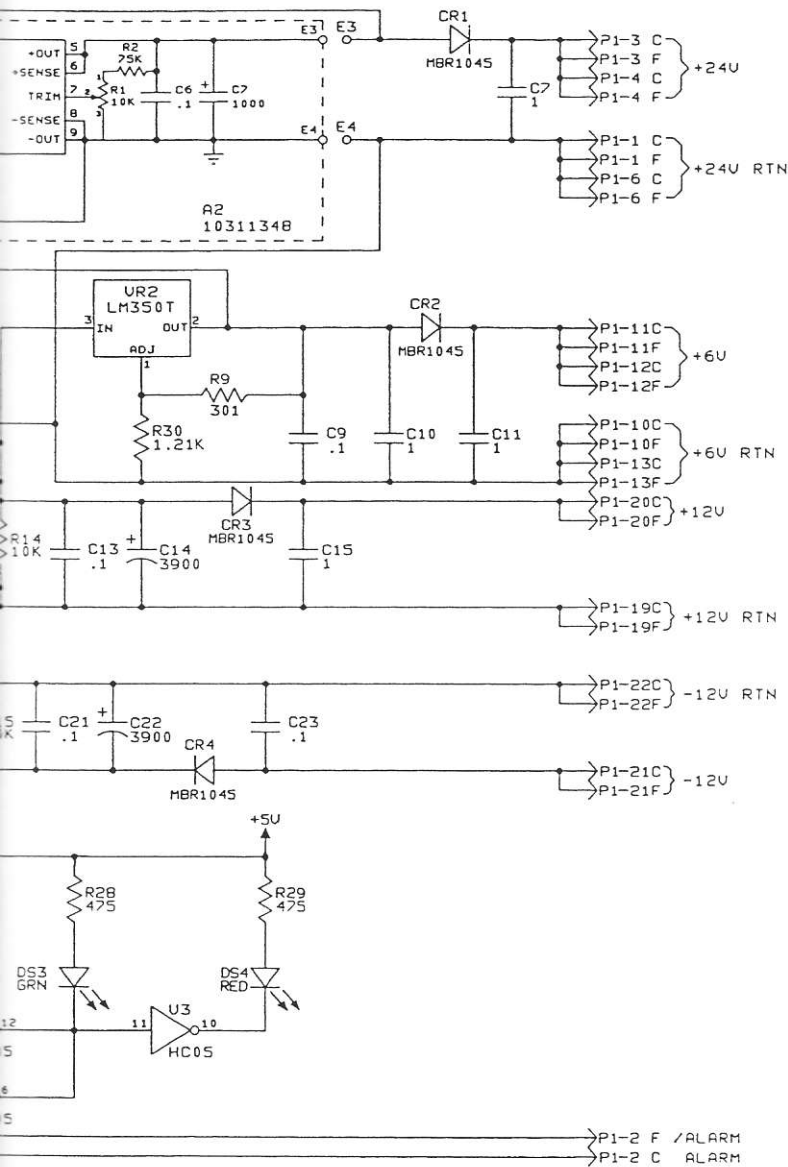
ZONE	LTR	
G	C14	
H	REVI	
J	REVI	




REF DES	+5V	RTN	BYPASS CAP
U2	3	12	C24
U3	14	7	C25

10311343	12950	A1		DATE
NEXT ASSY	USED ON	REFERENCE DESIGNATOR	FIGURE NUMBER	DESIGNED BY
APPLICATION				

REVISIONS				
ZONE	LTR	DESCRIPTION	ECO NO.	DATE
	G	C14 AND C22 WERE 3300	DG	12907 3/14/98
	H	REVISED PER ECO	DG	13423 11/6/98
	J	REVISED PER ECO.	DG	13654 2/27/99

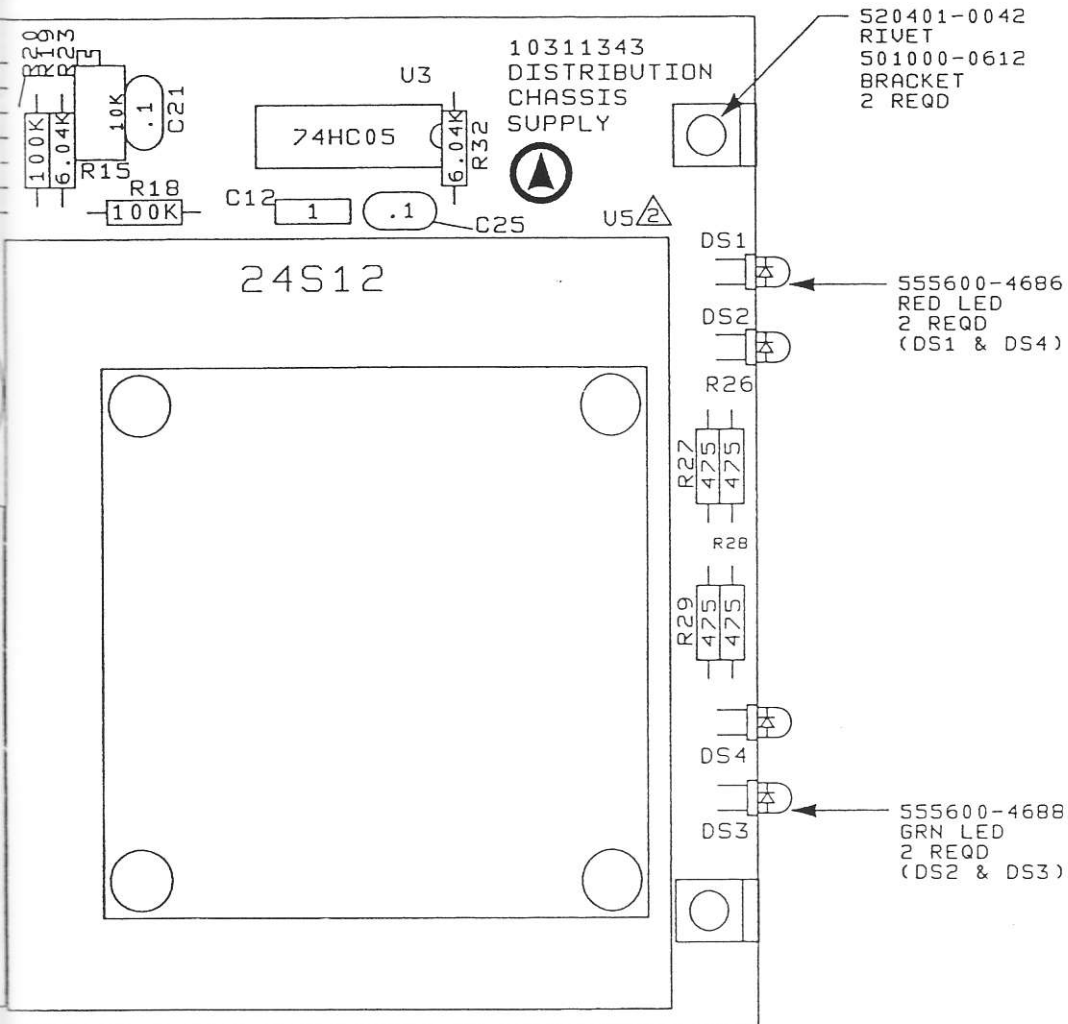



REF DES	+5V	RTN	BYPASS CAP
U2	3	12	C24
U3	14	7	C25

				TOLERANCES UNLESS OTHERWISE SPECIFIED			AUSTRON INC a DATUM company	
				DO NOT SCALE THIS DRAWING			TITLE  SCHEMATIC, DISTRIBUTION CHASSIS SUPPLY	
				DECIMAL	FRACTIONAL			ANGULAR
				+	+			+
				MATERIAL				
				DRAWN	DATE			
				John Matthews	10/6/87			
				CHECKER	DATE			
				CR LANCASTER	5/4/89			
				ENGINEER	DATE			
				CE	5/4/89			
				G. J. Lopez	5/4/89			
				APPLICATION				
10311343	12950	A1						
NEXT ASSY	USED ON	REFERENCE	FIGURE					
		DESIGNATOR	NUMBER					
				21				
				DRAFTING NUMBER 12311343				
				J				
				CAD GENERATED				
				Sheet 1 of 1				



REVISIONS					
ZONE	LTR	DESCRIPTION	ECO NO.	DATE	APUD
	A	RELEASED		2/1/88	CRL
	B	C14 AND C22 WERE 3900 JFM	11516	3/4/88	CRL
	C	R9 WAS 3.3K, R22 WQS 2.4K JFM	11662	4/25/88	CRL
	D	DELETED CRS, REPLOT JFM	11958	9/22/88	DG
	E	ENLARGED U5, MOVED COMPS, REPLOT JFM	12119	11/23/88	CRL
	F	SILKSCREEN CHANGED JFM	12277	1/31/89	CRL
	G	REVISED C1-C1, C16-C20 JFM	12348	3/2/89	CRL
	H	ADDED R32, REPLOT JFM	12488	5/4/89	CRL
	J	C14 & C22 WERE 3300 DG	12907	3/14/90	JFM
	K	REVISED PER ECO DG	13423	11/6/91	<i>Paul</i>
	L	REVISED PER ECO. DG	13654	JUN 92	<i>Paul</i>



				TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC</b> a DATUM company					
				DO NOT SCALE THIS DRAWING								
				DECIMAL	FRACTIONAL	ANGULAR	<b>TITLE</b> PCB ASSY- DISTRIBUTION CHASSIS SUPPLY					
				+	+	+						
				MATERIAL								
23411342	12950	A1		DRAFTER John Matthews	DATE 3/1/88	<b>SIZE</b> CC <b>3</b> 23		<b>DRAWING NUMBER</b> 10311343		<b>REVISION</b> L		
NEXT ASSY	USED ON	REFERENCE DESIGNATOR	FIGURE NUMBER	CHECKER CR LANCASTER	DATE 5/4/89							
				ENGINEER OE	DATE 5/4/89							
APPLICATION				G.C. J. LOPEZ	DATE 5/4/89	<b>SCALE</b> 2:1		CAD GENERATED		Sheet: 1 of: 1		

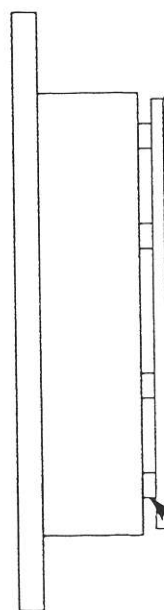
D


C

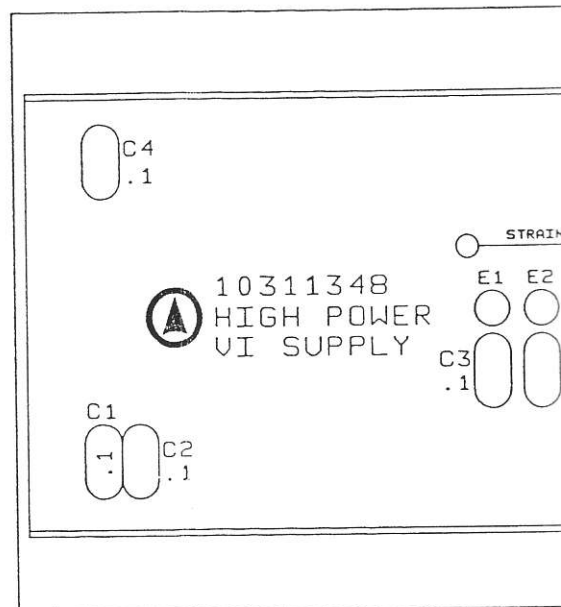
B


A


00311348(REF)



510904-0039   
GLASS BEAD  
7 PLACES



-  ATTACH WIRES(SEE W/L 12911359)  
AND TIE DOWN WITH STRAIN RELIEF  
WIRE (22AWG BUS) AT 234 LEVEL.

-  MOUNT BEADS TO 7 SMALLER PINS OF  
U1 BEFORE ATTACHING TO PCB.

•1. SEE CHART FOR SEL COMPS VALUES.

NOTES: UNLESS OTHERWISE SPECIFIED

23411910
23498204-2
23411346
23411342
NEXT ASSY

8

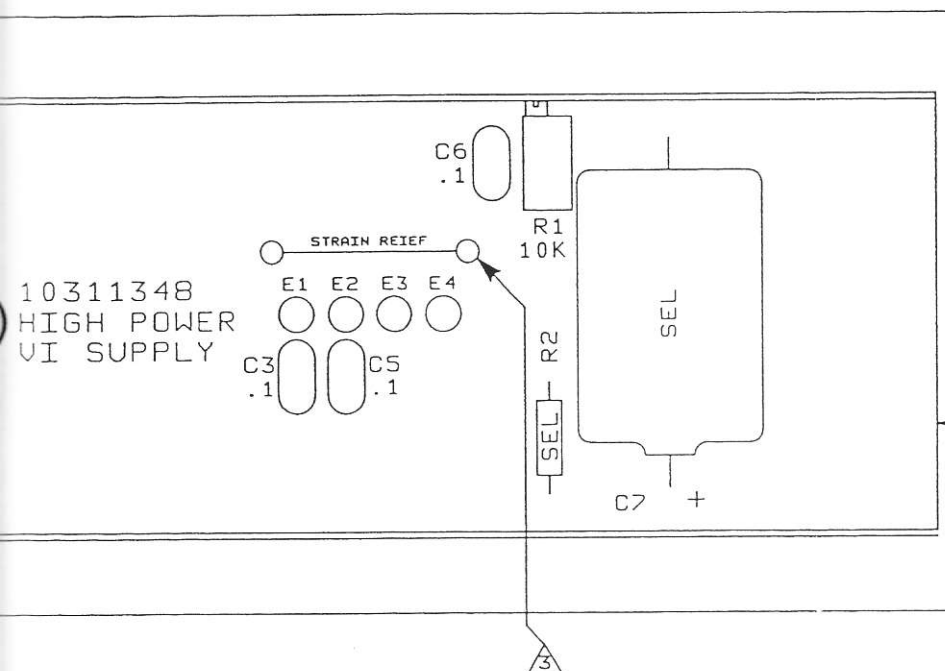
7

6

5



REVISIONS					
ZONE	LTR	DESCRIPTION	ECO NO.	DATE	APVD
	E	C1-C6 REVISED	JFM	12366	3/21/89 CRL
	F	ADDED -2, DWG WAS SIZE 2	JFM	12622	4/20/89 <i>DL</i>
	G	P/L CHANGE ONLY PER ECO 12773 <i>Jm</i>		12773	9/19/89 <i>gjm</i>
	H	REVISED PER ECO 13659 <i>reun</i>		5/21/92	<i>DL</i>



U1  
DC/DC CONV  
\*SEE DASH TABLE

00311348

-2	570901-0216	75K	1000 @ 40V
-1	570901-0214	33.2K	2200 @ 16V
NO	570901-0215	75K	1000 @ 40V
DASH NO.	U1	R2	C7
* DASH TABLE			

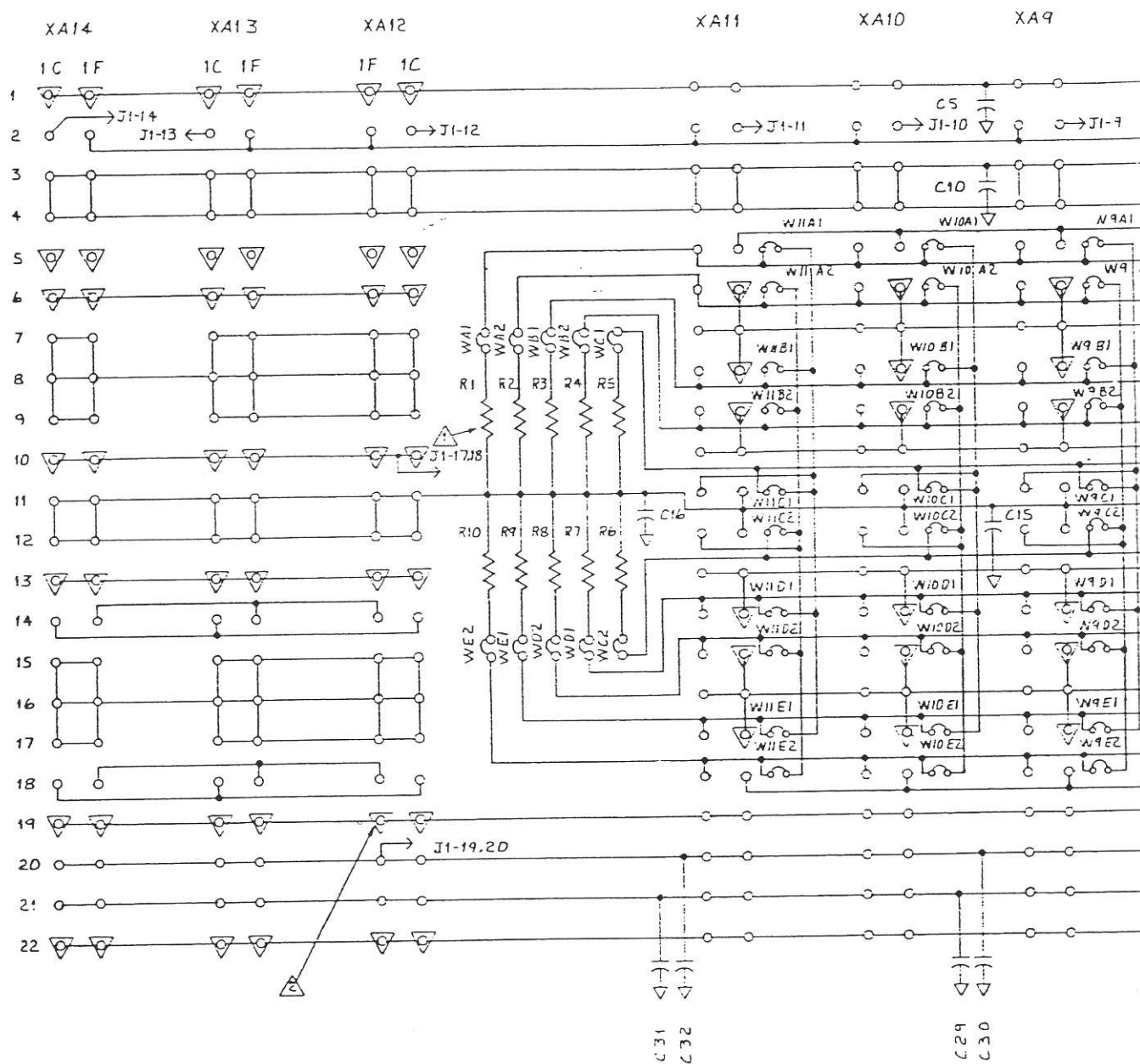
			TOLERANCES UNLESS OTHERWISE SPECIFIED DO NOT SCALE THIS DRAWING					
			DECIMAL	FRACTIONAL	ANGULAR	TITLE		
			+	+	+	PCB ASSY-		
			MATERIAL			HIGH POWER VI SUPPLY		
			DRAFTER John Matthews			DATE 1/22/88		
			CHECKER <i>DL</i>			DATE 6/20/89		
			ENGINEER <i>CE</i>			DATE 2-13-89		
			O.C. <i>7/1/92</i>			DATE 1-21-89		
23411910	1295D	A2				SIZE 3	25	DRAWING NUMBER 10311348*
23498204-2	1295C	A2				SCALE C. 1	CAD GENERATED	Sheet: 1 of: 1
23411346	1294	A2						
23411342	1295D	A2						
NEXT ASSY	USED ON	REFERENCE DESIGNATOR	FIGURE NUMBER					
APPLICATION								

**1.3.3. Interconnect PCB**

(Refer to Dwg. No. 12311341 and Dwg. No. 10311341)

The Interconnect PCB assembly interconnects various modules and supplies loads to selected signal lines. Header jumpers of 0.1 in (0.25 mm) spacing allow for quick configuration of the Interconnect PCB.

Slots XA1 through XA11 may be used for either input or output modules. Buses A, B, C, D and E span the length of the backplane with jumper headers for slot position and termination selection. Each slot used for an output module must have jumpers installed on the desired pair of bus headers. A pair of jumpers will also be installed at the slot of an input module using the C bus. Refer to Dwg. No. 12611490 in the back of this manual for the bus configuration table. The termination headers are located near XA13 and XA14.



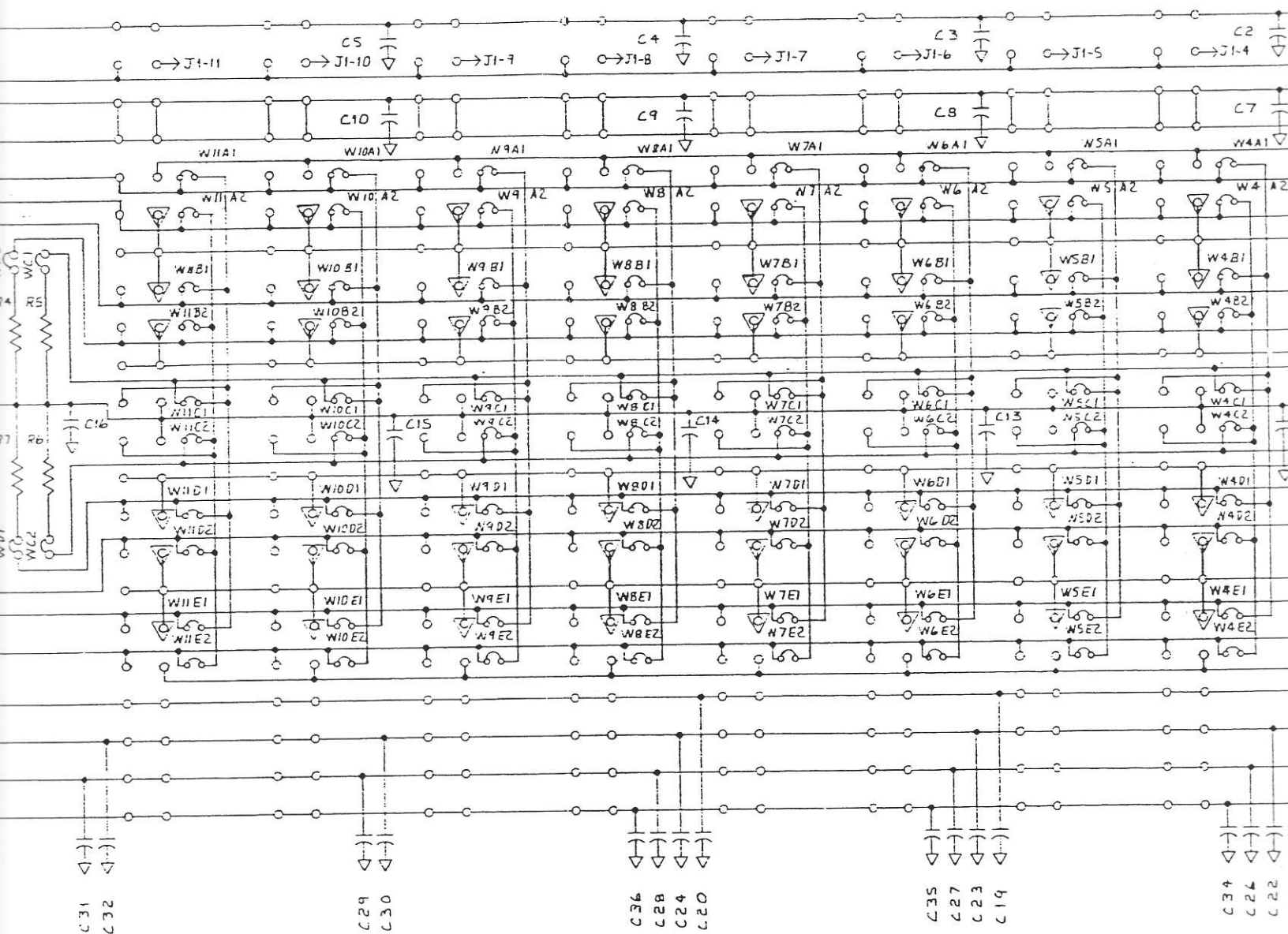
△ CONNECTIONS SO MARKED ▽ INDICATE A PHYSICAL CONNECTION TO THE GND PLANE.

1. ALL RESISTORS ARE 4.7K 5% 1/4W

ALL CAPACITORS ARE .1μF

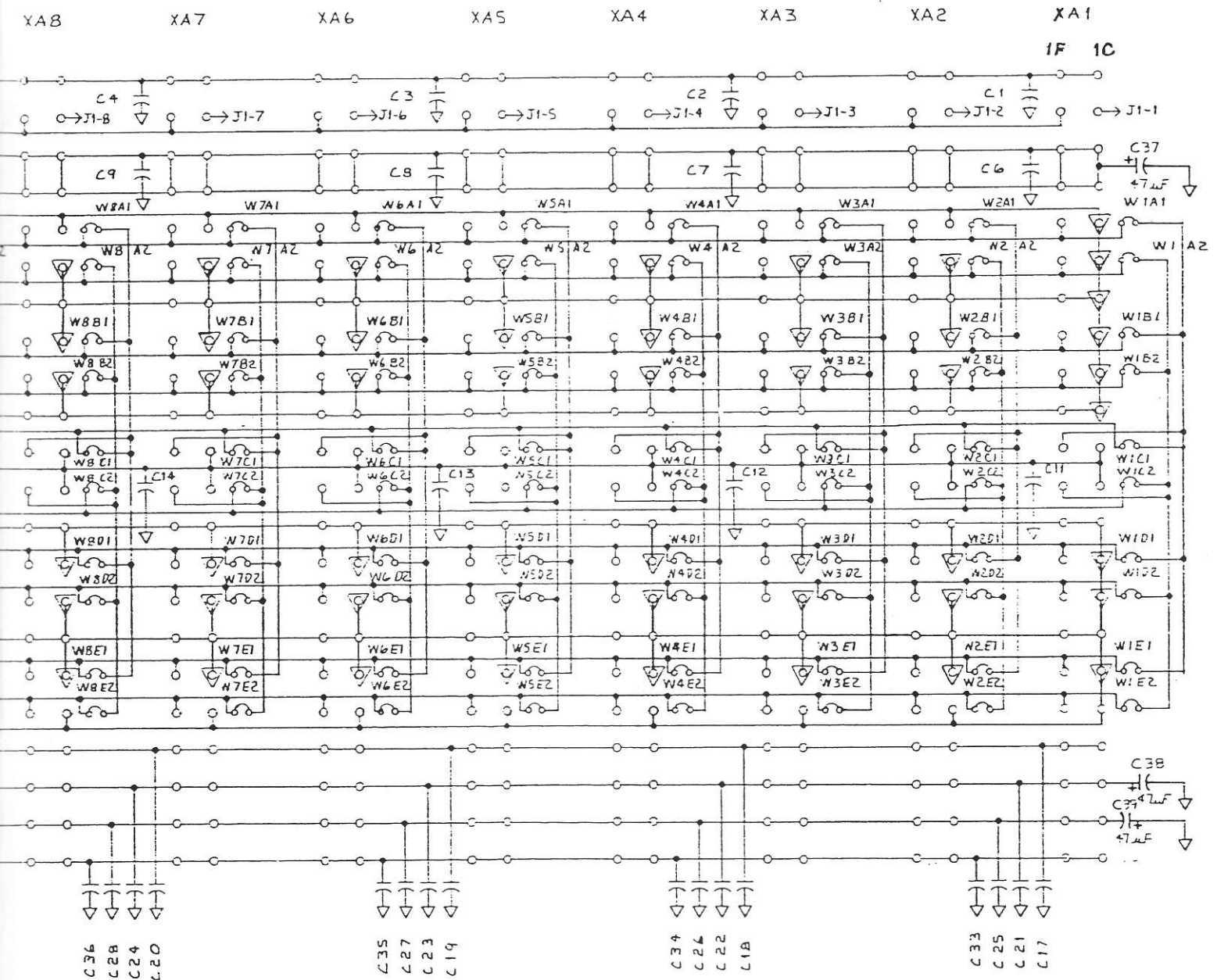
NOTES: UNLESS OTHERWISE STATED

XA11      XA10      XA9      XA8      XA7      XA6      XA5      XA4



				TOL	
				UNLESS OT	
				DECIMALS	
				MATERIAL	
10311341	1294	A15		CA	12
10311341	1295D	A15		ENGR	12
NEXT ASSY	USED ON	REF DES	FIG NO	CHECKED	12
APPLICATION				DRAWN	12

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE
A		RELEASED	5-16-64
B		REV PER ECO 11736	5-18-64
C		REVISED PER ECO 13136	5-18-64



				TOLERANCES			<b>AUSTRON INC.</b> AUSTIN, TEXAS	
				UNLESS OTHERWISE SPECIFIED				
				DECIMALS	FRACTIONS	ANGLES	SCHEMATIC, INTERCONNECT	
				MATERIAL				
							SIZE <b>4 29</b>	
10311341	1294	AIS		CA	100%	1/2-28	12311341	
10311341	1295D	AIS		ENGR	CE	10-18-64		
NEXT ASSY	USED ON	REF DES	FIG NO	CHECKED	10-18-64 10-18-64			C
APPLICATION				DRAWN				

4

3

D

C

B

A

BAR  
00111397-1

00311341  
COMP. SIDE

BAR  
00111397

400040-0014  
4-40X5/16 MSCR PHN FHH  
400152-0000  
#4 SPLIT LK WASHER  
10 PL

10311341  
INTERCONNECT 1295 D

CONN EDGE  
551007-0014  
11 PL

551107-6610  
10 POS. HEADER  
2 PL

HEADER.D  
551107-6

⚠ SOLDER GAPS TO BE BRIDGED AFTER PCB MTG BARS ARE ATTACHED. (THESE MAY BE OPENED FOR SPECIAL ORDERS.)

1. PARTS W/DASHED OUTLINES ARE MOUNTED ON THE CIRCUIT SIDE.

NOTES:

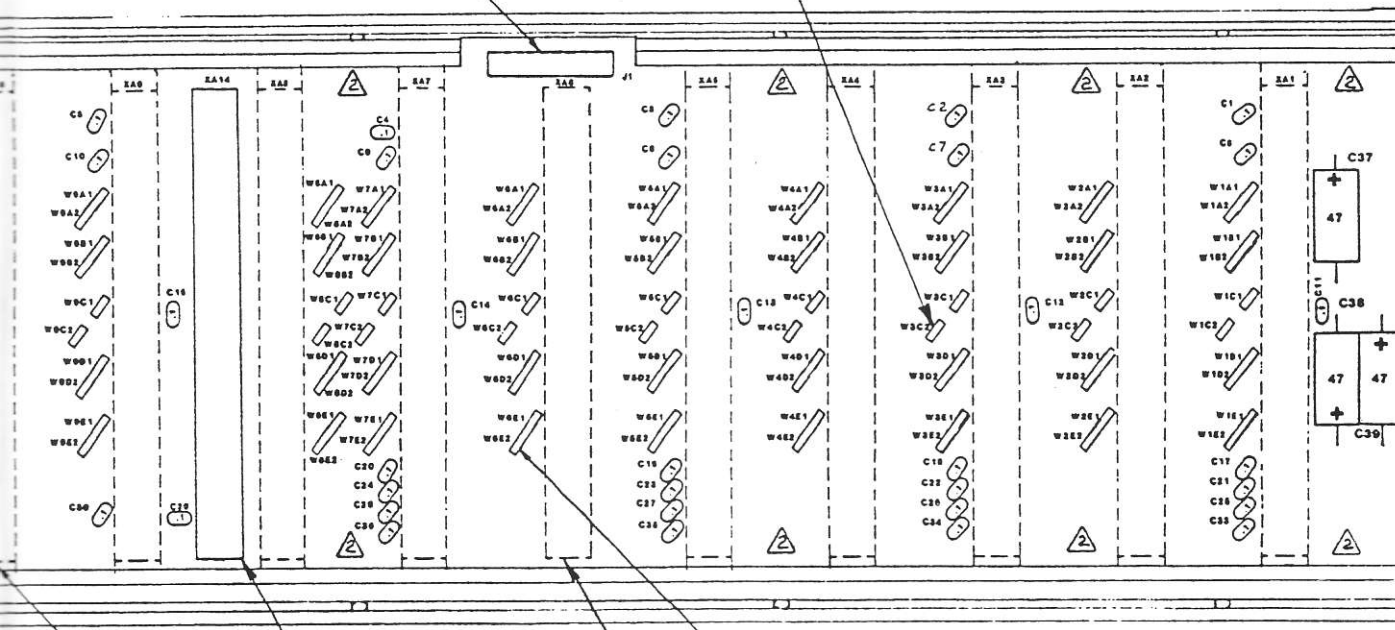
20411388	1294	
20411388	1295D	
NEXT ASSY	USED ON	R
APPLICATION		

## REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPD
	A	RELEASED	4/13/88	MLN
	B	REV. PER ECO 11962	8/9/88	CRL
	C	REVISED PER ECO 13136	9-17-88	MLN
	D	REVISED PER ECO 13583	1/28/92	MLN

HEADER.DBL ROW. 20 PIN  
551107-6620

551107-6502 HEADER  
2 PIN SECT, 22 PLACES



CONN EDGE  
551107-0014  
11 PL


CONN. EDGE

551107-0001  
3 PL

551107-6504 HEADER  
4 PIN SECT, 44 PLACES

551113-0000 REF.  
JUMPERS TO BE INSTALLED BY  
TEST PER CUSTOMER SPECS.

0  
DER

				<b>TOLERANCES</b> UNLESS OTHERWISE SPECIFIED DECIMALS   FRACTIONS   ANGLES			 <b>AUSTRON INC.</b> AUSTIN, TEXAS	
				MATERIAL:			PCB ASSY, INTERCONNECT	
				QA.   LCEEZ   4/12/88 ENGR   CF   12/1/88 CHECKED   J. T.   1/13/89 DRAWN   CRL   1/25/88			SIZE   3   31   10311341   D	
APPLICATION NEXT ASSY   USED ON   REF DES   FIG NO				SCALE			SHEET   1 OF 1	



**1.3.4. Alarm Indicator Panel (Option)**

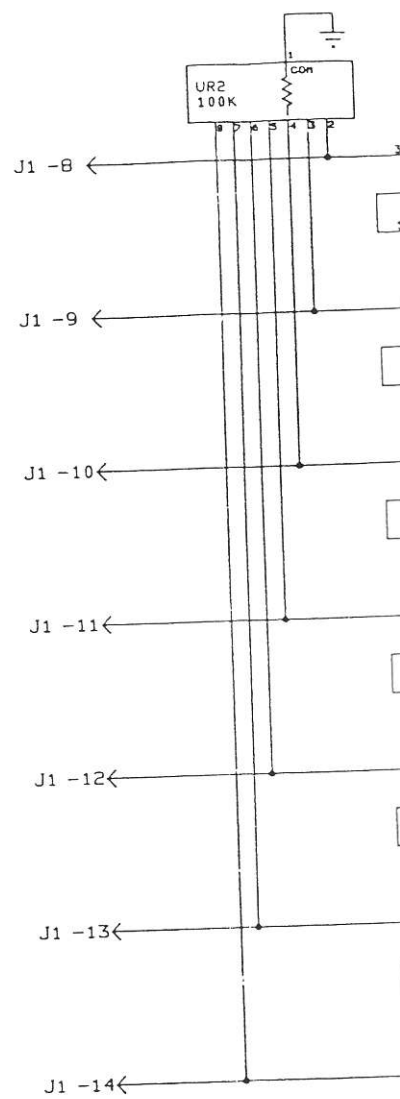
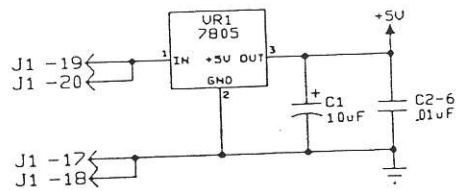
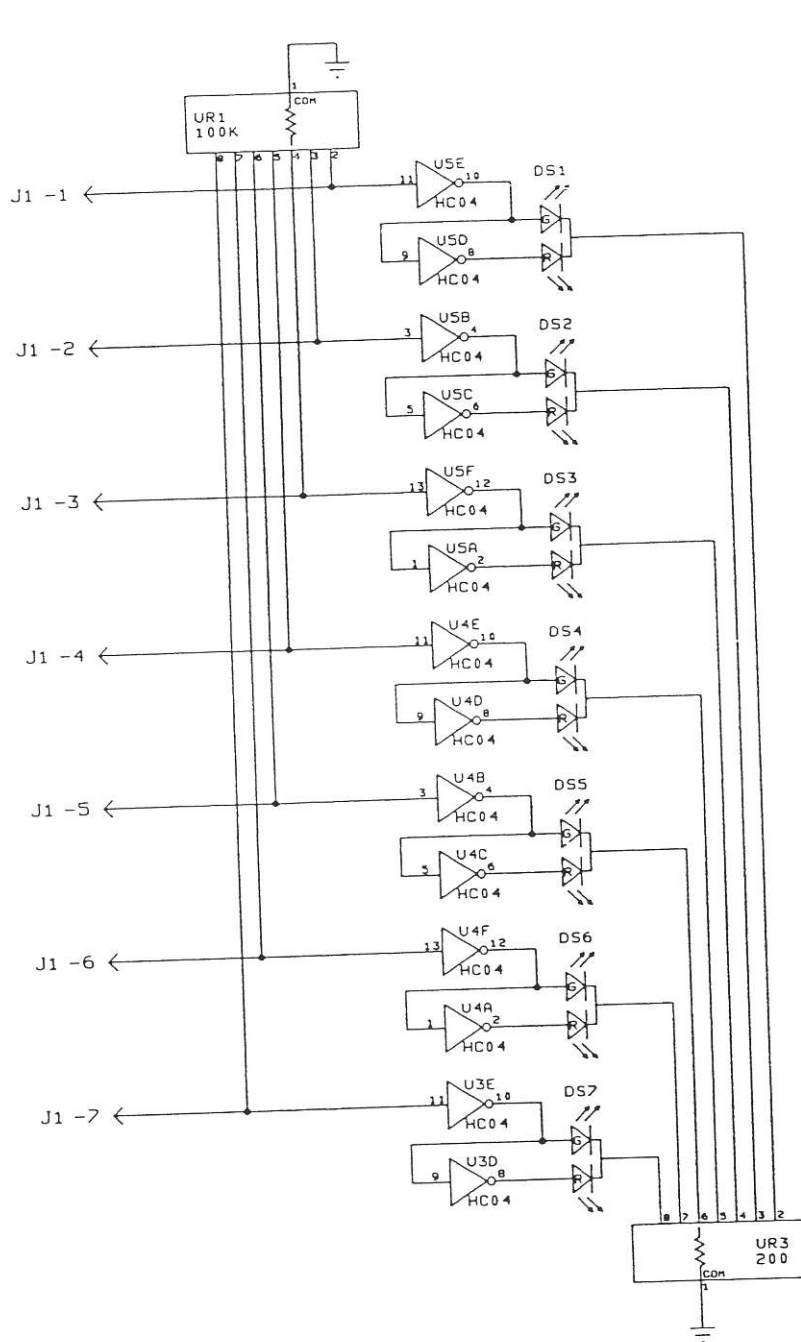
(Refer to Dwg. No. 12311292 and Dwg. No. 10311292)

The Alarm Indicator Panel indicates the ALARM status of each slot position in the Model 1295D. It connects to J1 of the Interconnect PCB via a 20-connector ribbon cable.

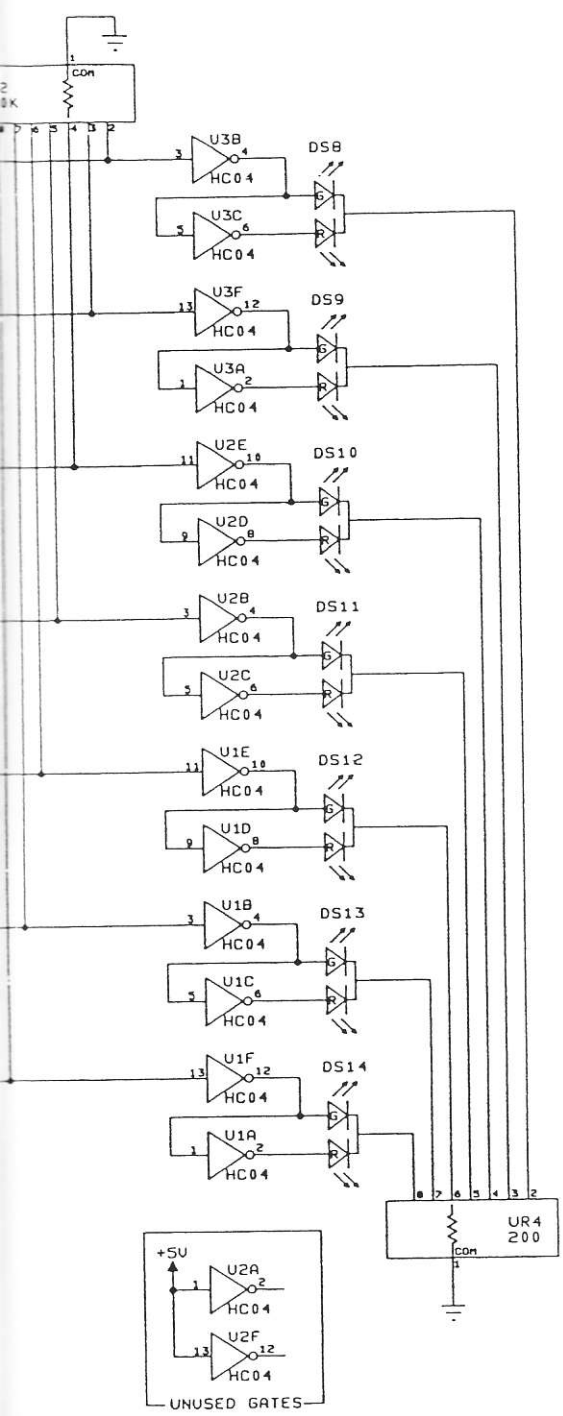
The ALARM line from each slot position is connected to the corresponding J1 pin on the Alarm Indicator PCB. An alarm condition in a slot results in the respective ALARM line being pulled high by (UR1) or (UR2). The corresponding inverter gate consisting of (U1), (U2), (U3), (U4) or (U5) will switch to low and lights the red side of its LED. This action will cause an adjacent gate to float high and darken the green side of the LED. Normal conditions create the opposite state of the circuit and lights the green side of the LED.

The regulator VR1 supplies the 5 Vdc to the alarm indicator circuit.





REVISIONS			
ZONE	LTR	DESCRIPTION	ECO NO
	A	RELEASED	



REF DES	Vcc	GND	BYPASS CAP
U1	14	7	C2
U2	14	7	C3
U3	14	7	C4
U4	14	7	C5
U5	14	7	C6

TOLERANCES UNLESS OTHERWISE SPECIFIED			
DECIMAL	FRACTIONAL	ANGULAR	
+	+	+	
-	-	-	
MATERIAL			
10311292	1294		
10311292	1295D		
NEXT ASSY	USED ON	REFERENCE DESIGNATOR	FIGURE NUMBER
APPLICATION			

**AUSTRON INC**  
AUSTIN, TEXAS

**SCHEMATIC-  
ALARM INDICATOR**

35

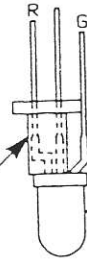
12311292

A

CAD GENERATED

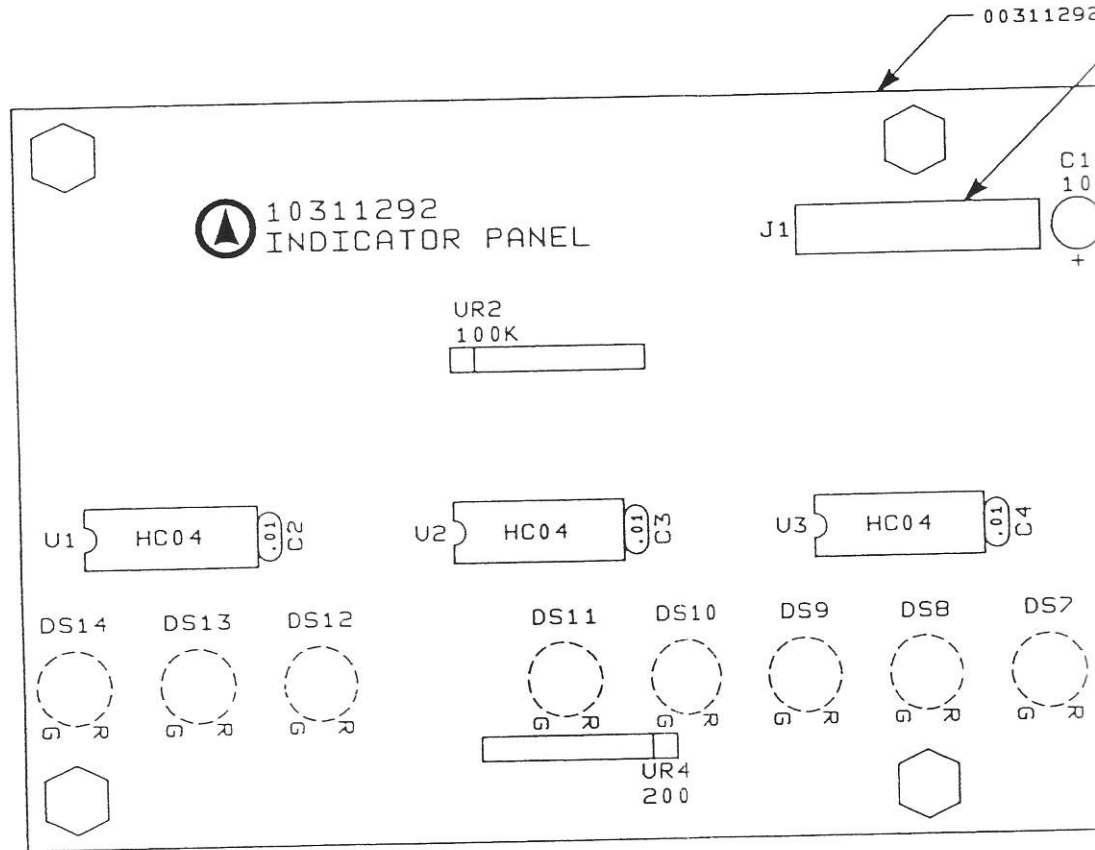
Sheet 1 of 1

510903-0004 REF  
NYLON SHOULDER  
WASHER



555505-0091 REF  
RED/GRN LED

DETAIL "A"  
NO SCALE

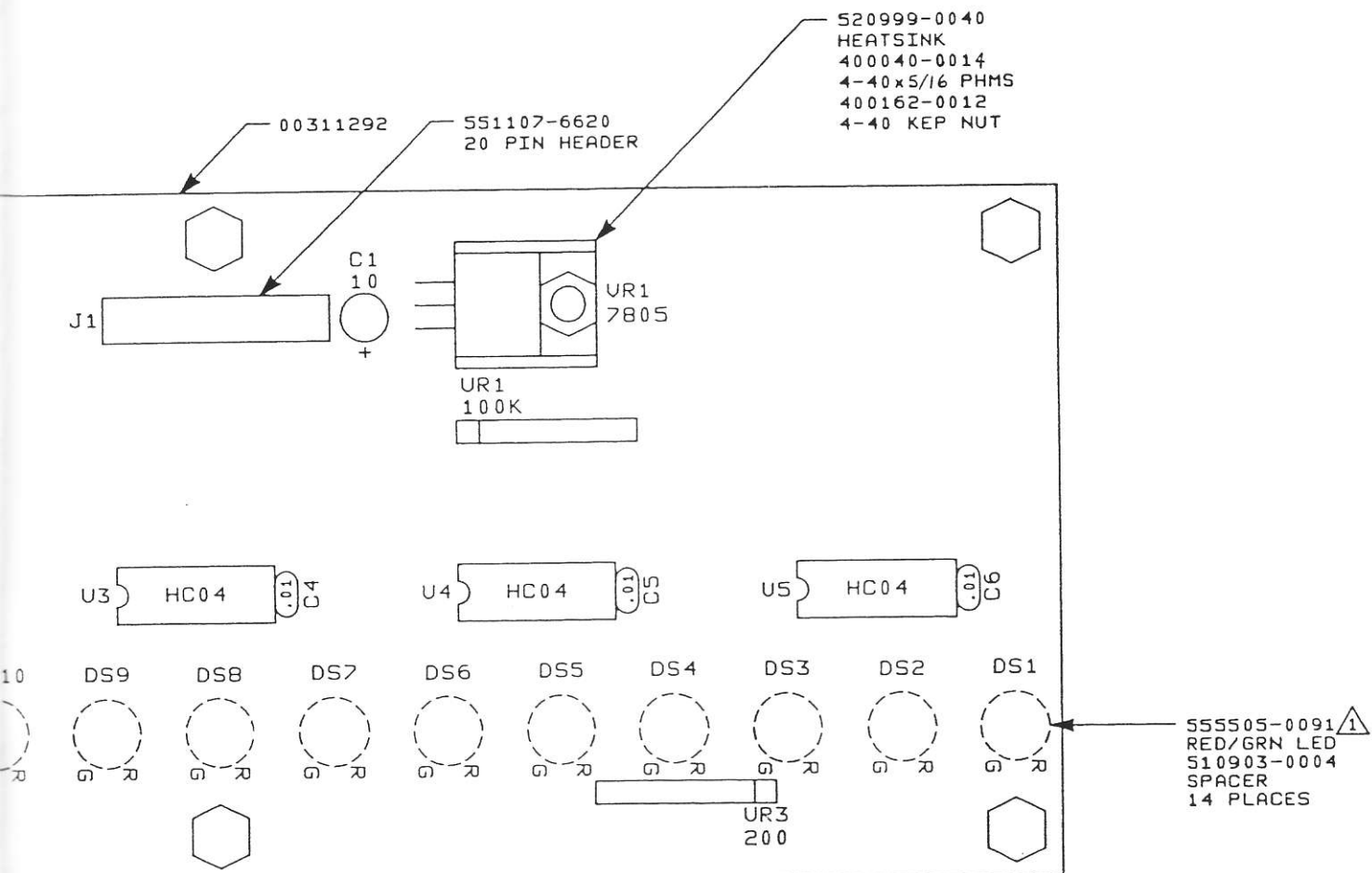


⚠ DS1-DS14 AND STANDOFFS ARE MOUNTED ON CIRCUIT SIDE  
AFTER WAVE SOLDER; SEE DETAIL "A".

NOTES: UNLESS OTHERWISE SPECIFIED

10911487*
10911487*
NEXT ASSY

REVISIONS				
ZONE	LTR	DESCRIPTION	ECO NO.	DATE
	A	RELEASED		4/13/88
				CRL



				TOLERANCES UNLESS OTHERWISE SPECIFIED			<b>AUSTRON INC</b> AUSTIN, TEXAS	
				DO NOT SCALE THIS DRAWING				
				DECIMAL	FRACTIONAL	ANGULAR	TITLE <b>PCB ASSY- ALARM INDICATOR</b>	
				+	+	+		
				MATERIAL			DRAFTER John Matthews DATE 2/23/88 CHECKER <i>CRL</i> DATE 4/12/88 ENGINEER <i>CE</i> DATE 12 Apr 88	
10911487*	1294						FIGURE NUMBER	37
10911487*	12950						ECO NO.	10311292
NEXT ASSY	USED ON	REFERENCE DESIGNATOR	FIGURE NUMBER				DATE	A
APPLICATION				G.O. <i>LCNEZ</i>			DATE	4/12/88
							CAD GENERATED	Sheet: 1 of 1

5

4

3

2

1

## 2. MAINTENANCE

### 2.1. SCOPE OF SECTION

Section Two provides the technician with the general approach to maintaining the Model 1295D Distribution Chassis manual. Included are trouble analysis guides and general maintenance procedures. Please review Section One, Functional Description, for detailed information.

### 2.2. TROUBLE ANALYSIS GUIDE

The following table lists the symptoms and probable causes that may occur.

Table 1: TROUBLESHOOTING CHART		
	SYMPTOM	PROBABLE CAUSE
1.	POWER and ALARM indicators fail to light green	<ul style="list-style-type: none"> <li>a. AC and dc power not available</li> <li>b. Power cord(s) not connected</li> <li>c. Fuse blown</li> <li>d. One of the regulated voltages at threshold level or failed</li> </ul>
2.	ALARM indicator fails to light green	<ul style="list-style-type: none"> <li>a. Power Selector in 230 Vac position when using 115 Vac input power</li> <li>b. Output set at threshold level on output module</li> <li>c. Input signal at threshold level</li> <li>d. Oscillation in an output module</li> </ul>
3.	Relay contacts indicate ALARM condition but BITE indicators do not	<ul style="list-style-type: none"> <li>a. Relay driver transistor on Power Input module</li> <li>b. Defective relay</li> </ul>
4.	ALARM condition, one BITE indicator on output module lighted	<ul style="list-style-type: none"> <li>a. One or more output levels set below 0.4 Vrms</li> <li>b. Short on one or more of the connected output lines</li> <li>c. Output module failure</li> </ul>
5.	ALARM condition, all BITE indicators on same bus are red but the input module is not	<ul style="list-style-type: none"> <li>a. Failure on input module after the detector circuit</li> <li>b. Short on the input of one of the output modules</li> </ul>
6.	ALARM condition, all input and output modules on a given bus, BITE indicators are red	<ul style="list-style-type: none"> <li>a. No input signal</li> <li>b. Input level too low</li> <li>c. Input module failure</li> </ul>
7.	ALARM condition, all BITE indicators for all buses, both input and output, are red	<ul style="list-style-type: none"> <li>a. No input signals</li> <li>b. Low input signals</li> <li>c. Regulated voltage (check POWER indicator)</li> </ul>
8.	Quad wideband outputs distorted when using Reference or PLL module	<ul style="list-style-type: none"> <li>a. Front panel output on Reference or PLL module not terminated with 50 <math>\Omega</math> load</li> </ul>

When evaluating a fault indicated by the BITE, the highest level alarm indicates the probable cause. The levels are as follows:

- power
- all
- input
- grouped outputs (on same bus)
- single output

The points monitored by the BITE are as follows:

- 1) The input signal on an Input module that has an ALARM indicator.
- 2) The individual output ports on an Output module.
- 3) The regulated voltages are sampled at the Power Supply module.
- 4) Reference or PLL module signal level and internal lock.

### 2.3. GENERAL MAINTENANCE

No periodic maintenance or calibration is required for this chassis unit.

#### Pretest Checklist

**WARNING:** 115 Vac/230 Vac is exposed inside the Power Input module.

**CAUTION:** Always disconnect power before removing or installing modules.

After removing the Power Supply module, allow ten seconds for the bleeder circuit to discharge the filter capacitor before installation.

Perform the following checks:

- 1) Power input connections secure.
- 2) All breakers are reset and ac fuse is intact.
- 3) Connectors to and from external equipment are wired and installed correctly.
- 4) External equipment is functioning.

5) Internal dc power supplies are within specified tolerances:

24 Vdc  $\pm 0.5$  Vdc adjustable

12 Vdc  $\pm 0.6$  Vdc adjustable

-12 Vdc  $\pm 0.6$  Vdc adjustable

6 Vdc  $\pm 0.3$  Vdc unadjustable

Access to the Power Supply module is through the top of the unit. All active components are housed in their respective modules which may be removed from the front or rear.

Use of a low wattage (40 W or less) iron and solder wick is recommended for removal of components from PCBs.

8

7

6

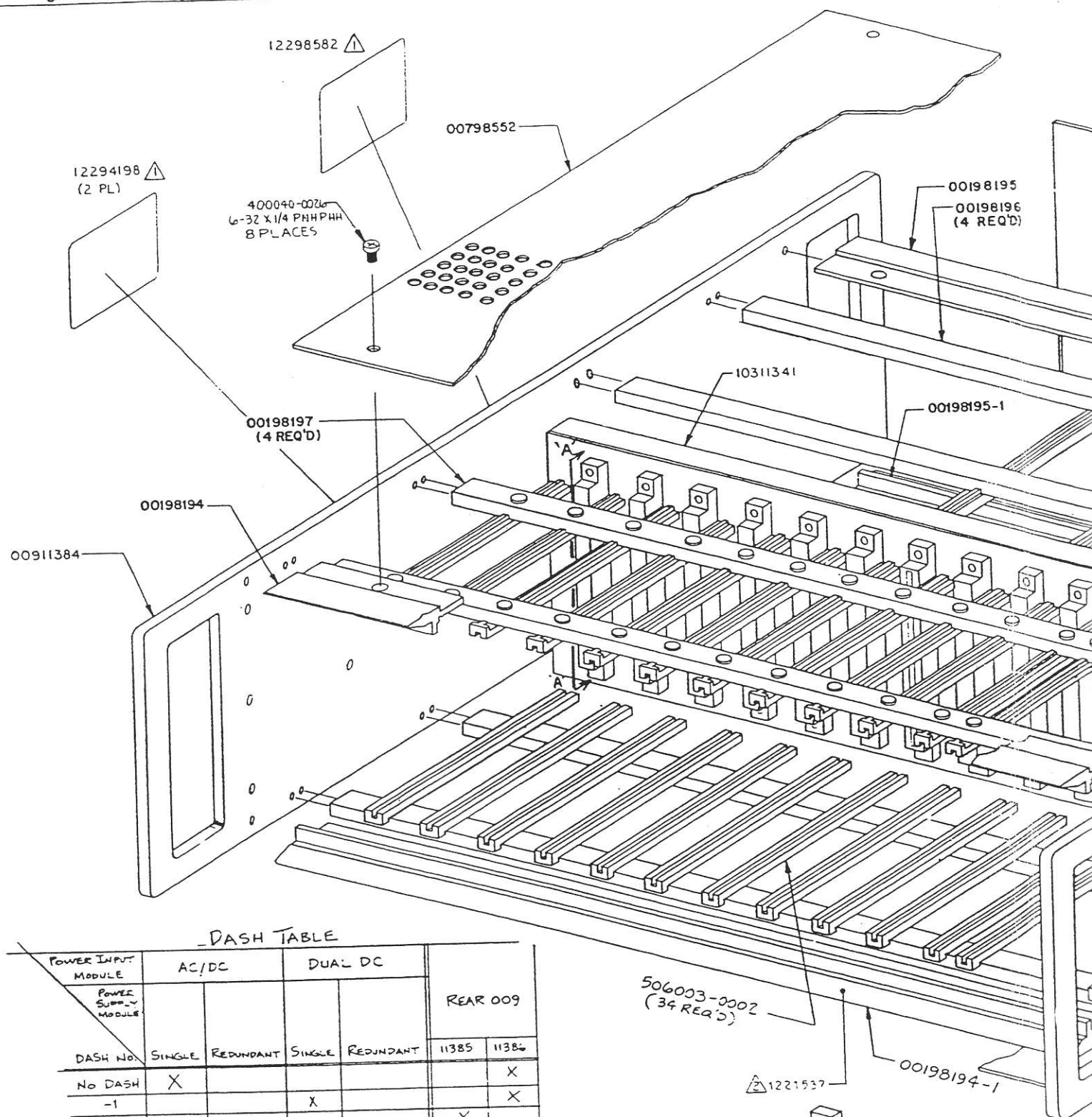
5

D

C

B

A



-DASH TABLE

POWER INPUT MODULE	AC/DC		DUAL DC		REAR 009	
	SINGLE	REDUNDANT	SINGLE	REDUNDANT	11385	11386
POWER SUPPLY MODULE						
DASH NO.						
NO DASH	X					X
-1			X			X
-2		X			X	
-3				X	X	

1295D { 30411392\*  
25411393\*1294 { 30411395\*  
25411396\*551009-0034  
1295D KEYS  
BETWEEN  
PINS 10 & 11ON XA1-XA11 ONLY  
(11 PLCS)  
1294 KEYS  
BETWEEN  
PINS 15 & 16

VIEW A-A

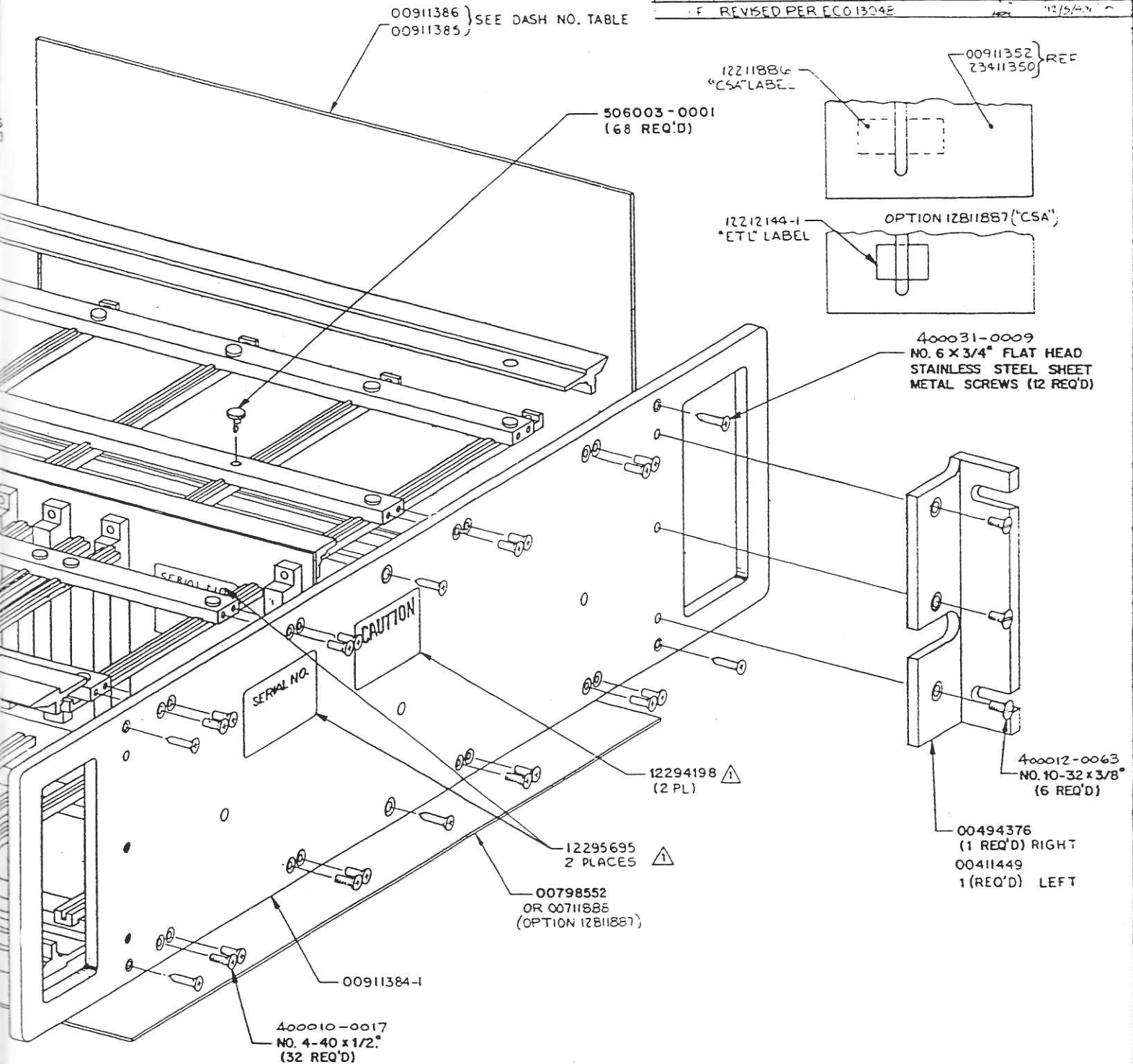
⚠ SLOT DESIGNATION LABEL IS MTD TO 00198194-1 BEFORE ASSY.

⚠ LABELS SHALL BE MOUNTED 1.50 FROM TOP OF PANELS.

NOTE 9:



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPO
-		RELEASED	2/1/88	CAL
B		REV. PER ECO 1159	4/1/88	CRL
C		HYD CHANGE PER ECO 1213 & CRL	11/1/88	Q2
D		REVISED PER ECO 1237	12/1/88	CAL
E		ADDED 2nd SERIAL NO. LABEL & A PER ECO 12746	12/1/88	CAL
F		REVISED PER ECO 1304E	12/1/88	CAL



				TOLERANCES UNLESS OTHERWISE SPECIFIED			<b>AUSTRON INC.</b> AUSTIN, TEXAS	
				DECIMALS	FRACTIONS	ANGLES		
				MATERIAL:			<b>ASSEMBLY PROCEDURE, MODEL 129 X X</b>	
25411396-X	1294			QA	10/1/88	5/1/88	SIZE	4 43
25411395-X	1295D			ENGR	CE	5/1/88		
NEXT ASSY	USED ON	REF DES	FIG NO	CHECK	CR	1/24/88		20111390
APPLICATION				DRFTSMN	MLN	1/24/88	SCALE	
								SHEET 1 OF 1

PREPARED BY

DATE \_\_\_\_\_

BUSSES

12611490 REV:D

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AUSTRON Model 1295D Series  
Distribution Chassis  
Dual Input High Isolation Switch Module  
User Guide Supplement  
P/N 12712029-002-2, Revision C

July 1995

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## 1. GENERAL DESCRIPTION

### 1.1. SCOPE OF SECTION

Section One describes the AUSTRON Dual Input High Isolation Switch Module. Provided here is the description of the equipment including typical configurations, controls, indicators, and connectors.

### 1.2. PURPOSE OF EQUIPMENT

The Dual Input High Isolation Switch Module (refer to Dwg. No. 12412025) selects one of two input signals and passes the one selected to the output of the module. The input may also be selected manually. If one of the inputs is lost, the module automatically selects the available input within one cycle of the input frequency. The module accepts the two input signals from the front panel connectors. The output is fed to the backplane. Green status LEDs indicate which input is selected and the loss of an input is indicated by red LEDs. The remote control allows selection of input by control signals input on the 9-pin D-Subconnector. This module is used with the AUSTRON Model 1295D Distribution Chassis.

### 1.3. SIGNIFICANT FEATURES

The Dual Input High Isolation Switch Module is used in fail-safe systems that require continuous signal input. The remote control input provides an enable for external alarm condition for the signal source failing. A high level of isolation is possible with a minimum of phase noise. Specific input frequencies are available from 1 MHz to 10 MHz with various impedance options.

### 1.4. SPECIFICATIONS

The following table describes the equipment specifications of the Dual Input High Isolation Switch Module.

Table 1: Module Specifications	
<b>INPUT</b>	
Level	From 1 Vrms to 1.5 Vrms differential pair or single-ended depending on application
Frequency	Any one frequency from 1 MHz to 10 MHz
Isolation	< -87 dB
Impedance options	50 $\Omega$ unbalanced 75 $\Omega$ unbalanced 100 $\Omega$ balanced
10 MHz Phase Noise Minimum	< -90 dBc at 0.1 Hz < -120 dBc at 1 Hz < -130 dBc at 10 Hz < -140 dBc at 100 Hz < -150 dBc at 1 kHz
<b>OUTPUT (Standard Model 1295D bus signal)</b>	
Harmonics	Better than -40 dBc
Selection	Manual, automatic (on loss of selected input) or through optional remote control

<b>Table 1: Module Specifications</b>	
Phase shift	< 0.1 ns with alternate input shorted or opened
Spurious	<-80 dBc above 700 kHz <-70 dBc below 700 kHz
Output level change	0.1% with alternate input shorted or opened
<b>GENERAL</b>	
Power consumption	Under 17 W
Operating temperature	0°C to 50°C
Storage temperature	-40°C to 70°C
Humidity	95% without condensation
Altitude	Up to 30,000 ft (9,144 m)

### 1.5. CONTROLS, INDICATORS AND CONNECTORS

The Dual Input High Isolation Switch Module occupies any input or output slot in the Model 1295D by appropriate bus wire jumpering. Power, ground, and I/O lines enter the module via the 22-pin edge-connector. The two signal inputs are made at the front panel with BNC connectors. The remote control is connected to the 9-pin D-connector on the front panel. Refer to Dwg. No. 12412026, Assembly, P/N 23412024-\* front panel.

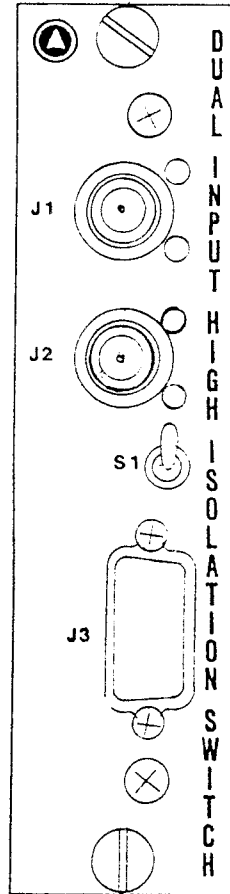
A toggle switch on the front panel manually selects the input. This switch allows the module to automatically switch on interrupted input signals, or manually selects one of the inputs for continuous use.


The green LEDs on the front panel indicate which input is selected as an output and the red LEDs indicate the availability of inputs. When an LED is green, the associated input passes through to the output. If the input signal is available but not selected, the indicators are unlit. When a LED is red, the associated input is not available. When both input signals are unavailable, one of the indicators has both the red and the green LEDs lit, indicating that the associated input is selected even though no signal is available.





REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	RELEASED	4/23/90	MB



		<b>TOLERANCES</b> UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> AUSTIN, TEXAS		
		DEC	FRAC	ANG			
		MATERIAL:			CONTROLS AND INDICATORS - DUAL INPUT HIGH ISOLATION SWITCH		
	1295D	Q.A.	M. Bralby	4-17-91	SIZE	CODE IDENT NO.	REV
NEXT ASSY	USED ON	ENGR	Decker	11/7/91	1	24672	12412026
		CHECK	Autour	4/22/91			A
APPLIC		DRAWN	W.D. Mach	4/4/90	SCALE	NONE	SHEET 1 OF 1

## **2. INSTALLATION**

### **2.1. SCOPE OF SECTION**

Section Two describes the steps required to prepare the Dual Input High Isolation Switch Module for operation or reshipment to another location. Included in this section are instructions for unpacking, inspection, installing and storing the unit.

### **2.2. UNPACKING AND INSPECTION**

#### **2.2.1. Unpacking**

Inspect the shipping container for signs of damage or dampness. Carefully remove the module from its shipping container.

#### **2.2.2. Initial Inspection**

Visually inspect the module for any apparent physical damage. Immediately report any equipment damage to the carrier making delivery and to AUSTRON, Inc.

### **2.3. MODULE INSTALLATION**

Plug the Dual Input High Isolation Switch Module in the appropriate slot in the Model 1295D Distribution Chassis. Secure the module by tightening the knurled screws. Refer to the 1295D bus configuration sheet located at the back of the Model 1295D Distribution Chassis User Guide.

### **2.4. PREPARATION FOR RESHIPMENT**

For shipping, enclose the unit in a suitable water- and vapor-proof plastic bag. Pad all projections, sharp edges, and other features which may tear the plastic. Heat seal or tape the plastic bag to ensure a moisture-proof closure. When sealing the bag, keep the trapped air volume to a minimum.

Reuse the original shipping container and packing material if still in good condition. Protect the equipment from damage by using a rigid box of sufficient strength and size for the shipping container.

---

NOTES:

### 3. OPERATION

#### 3.1. SCOPE OF SECTION

Section Three describes the operation of the Dual Input High Isolation Switch Module. This section includes module setup and check-out procedures.

#### 3.2. SETUP AND CHECK-OUT PROCEDURES

This module is configured at the factory according to the dash number version ordered. For bus I/O configurations the module is jumpered according to the Model 1295D Distribution Chassis configuration requirements. To make changes in the configuration or bus selection, unplug the module from the chassis and remove the cover. To change the bus output, connect jumpers from points E1 and E2 to the selected bus pair on points E7-E16. To change the bus inputs, jumper the primary input from E3 and E4 to the selected bus as above. Select the secondary bus input using E5 and E6 in the same manner. When changes are completed, reinstall the cover.

Plug the Dual Input High Isolation Switch Module into the Model 1295D chassis, if it is not already installed. (Refer to Section Two.) Connect the appropriate cables to the BNC connectors if front panel I/O is used. Select the desired input by toggling the switch, S1, on the front panel. If the inputs are at the front panel connectors, verify automatic switchover to the alternate input when either is disconnected. With the optional remote control input version, connect the remote control lines to the 9-pin D-connector on the front panel. Verify that removing either control line causes a switchover to the alternate input.

Under normal operation with both inputs available, the selected input LED is green. The input LED which is not selected is not lit. If no input is supplied to either input, the selected input LED lights green and red. If no input is supplied, the LED is red. On initial power-up, the primary input is selected, if available.

The alarm output may be jumper selected to give an alarm signal on loss of either input or on loss of both inputs. Close jumper S2 for an alarm on loss of either input. Close jumper S2 for an alarm only on loss of both inputs. The selection of the alarm output is made depending on the system configuration requirements. Refer to Table 2 for full usage of the front panel 9-pin connector.

**Table 2: J3 Pinouts**

J3 Pin	Signal	Signal Name	Logic High Result
J3-1	Input	Input select J1	Select J1 input
J3-6*	Input	Input select J1	Select J2 input
J3-2	Output	Input select indication J1	J1 input selected
J3-7	Output	Input select indication J1	J2 input selected
J3-3	Output	Input failure	Both inputs present
J3-8	Output	Input failure	1 or both inputs failed
J3-4	Output	Summary ALARM	No Summary ALARM
J3-9	Output	Summary ALARM	Summary ALARM
J3-5	Ground	Signal Reference	—————
* Input Select J1 not used in single-ended control mode.			

Each I/O signal on J3 has a complement signal. The remote monitor outputs include Input select indication, Input failure and Summary ALARM. The Input select indication J1 signal (J3-2) is high for J1 selection and low for J2 selection. Its complement is on J3-7. The Input failure signal (J3-3) is high for both signals present and low for either or both failed. Its complement is on J3-8. The Summary ALARM signal (J3-4) is high for a chassis alarm and low for no chassis alarm. When jumper S2 is open (up), the Model 1295 ALARM output can be used as a major alarm monitor, but this action also disconnects the input failure alarm from the chassis alarm. The Summary ALARM complementary signal is on J3-9.

The input select J1 signal (J3-1) can be used with its complementary input (J3-6) with pulse rate levels or with a single-ended input. Jumper W1-A should be set for balanced input or W1-B set for single-ended input. A transition to a high signal to J3-1 selects input J1 and a transition to a low selects input J2. Input J3-5 is a ground reference for the I/O signals. These I/O signals can be used as comprehensive controls and monitors for the Dual Input High Isolation Switch Module configured in a Model 1295 chassis.

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AUSTRON, Inc.  
P.O. Box 14766  
Austin, Texas 78761

AUSTRON Model 1295D Series  
Distribution Chassis  
Dual Input High Isolation Switch Module  
Maintenance Manual Supplement  
P/N 12712029-000-2, Revision G

July 20, 1995



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Prior to return of a product under terms of this warranty, AUSTRON, Inc., Austin, Texas, is to be notified. Notification is to include the model number and serial number of the product and full details of the problem.

## INTRODUCTION

This maintenance manual supplement to the Model 1295D Distribution Chassis describes the operation of the Dual Input High Isolation Switch Module, Assembly P/N 23412024-\*, manufactured by AUSTRON, Inc.

It contains information about the functional analysis, access descriptions, parts list, PCB assembly drawings, and other applicable drawings required to adequately support the equipment.


This maintenance manual supplement is to be used in conjunction with the Dual Input High Isolation Switch Module User Guide, P/N 12712029-002-2.

### WARNING:

Servicing instructions are to be used only by qualified personnel.  
To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

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 **NOTE:** The content of any amendments may affect operation, maintenance, or calibration of the equipment.

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## 1. FUNCTIONAL DESCRIPTION

### 1.1. SCOPE OF SECTION

Section One details the theory of operation of the Dual Input High Isolation Switch Module. Included is an overview and in-depth analysis of the unit.

### 1.2. GENERAL CIRCUIT THEORY

The details of the Dual Input High Isolation Switch Module are presented by first over-viewing operation and interconnection of the major sections of the circuitry. Then, a detailed circuit description shows how each section's components serve to give the section its ability. The module consists of six major sections listed below.

1. Input buffers
2. Monolithic switch
3. Signal comparators
4. Delay circuitry and flip-flops
5. Alarm circuitry
6. Remote select circuitry

### 1.3. OVERVIEW

The input buffers are utilized to maximize input isolation and minimize added phase noise. These stages consist of hybrid buffers that drive the monolithic switch and the switching logic. The input connectors are padded and show a dc resistance. Caution should be observed to keep dc current to a minimum.

The monolithic switch is a SPDT GaAs part that switches with a minimum of delay. It receives the RF signal from the buffers and switching signals from the switching logic latches. Its output drives the output to the bus.

A pair of comparators are used to detect signal presence from the buffers. The comparator levels are set by adjusting R33. These comparators detect for presence of the input signal. The output of the comparator feeds the delay lines and flip-flops. This stage doubles the input frequency.

The delay lines and flip-flops are fed by the comparator stages. The signal they receive is twice the input frequency. The delay chips delay the signal by two cycles and clock the D flip-flops synchronously with the comparator signal. A selector is used to select which channel is selected to control the monolithic switch. These stages are controlled by the comparator output and the remote select circuitry, and controls the monolithic switch directly generating alarm signals.

The remote select circuitry consists of a differential line receiver and D flip-flops. The purpose is to remotely select the channel to be used on the bus. A differential input can be applied to the 9-pin D-connector at pins 1 and 6 with W1 jumpered at A, or a single-ended control signal may be applied to pin 1 with W1 jumpered in the B position. A select toggle switch on the front panel can also be positioned to keep either input selected. This circuitry directly controls the control flip-flop.

The alarm circuitry is designed to alarm in the event of the loss of either input signal. S2 can be opened on the board to keep the system summary alarm from alarming. Differential drivers signal loss of input on pins 8 (-) and 3 (+), summary alarm on pins 4 (+) and 9 (-), and A/B selected on pins 2 (+) and 7 (-).



## 1.4. DETAILED CIRCUIT THEORY

The following paragraphs provide detailed circuit information. Refer to Dwg. No. 12312023-000-2 and Dwg. No. 10312023-000-2, for the following discussion.

### 1.4.1. Input Buffers

The input buffers consist of a pair of hybrid fast buffer amplifiers (U4) and (U6). These buffers are single-ended supplied with dc and are fed signals through the input network stage, and transformer-coupled for balanced or unbalanced capabilities.

### 1.4.2. Monolithic Switch

The monolithic switch (U3) gets its inputs from the input buffer stages. These signals are applied to pins 7 and 5. This SPDT switch gets its control voltages from a pair of level-shifting transistors Q1 and Q2. The output of this switch is transformer-coupled to the backplane for a balanced output signal.

### 1.4.3. Signal Comparators

NE522 comparators are (U2) and (U5). The RF signals are applied to pins 1 and 11 comparator inputs. The reference level voltages are generated by (U1) LF412 dual op amp. The outputs of this IC gives a positive and negative voltage equal in amplitude in respect to ground. These voltages are fed to pins 2 and 12. Due to the open collector outputs of the comparators on each channel being tied together, a positive-going pulse is generated during the positive and negative peaks of the RF signal. A low level is generated during the mean time and this output is twice the RF input frequency.

This signal is then sent to the delay and flip-flop circuits.

### 1.4.4. Delay And Flip-Flop Circuits

The RF signal from the comparators are sent to pin 8 of (U14) and (U15). These ICs wave shape the signal and outputs on pin 1. ICs (U7) and (U10) are used to delay the signal for clocking purposes. The outputs of (U9) and (U10) clock the D flip-flops of (U17) synchronously to quickly detect signal presence.

The Q outputs of (U16) are used to trigger alarm circuits and to light red LEDs in the event of missing channels. The  $\overline{Q}$  outputs are sent to a selector (U17) preset to monitor one of the channel inputs. Any dropped signal of the selected channel toggles (U11B) D flip-flop and the alternate channel is selected.

Level shifting transistors Q1 and Q2 are used to send a negative-level signal to the monolithic switch. They are connected directly to (U11) Q and  $\overline{Q}$  outputs.

### 1.4.5. Alarm Circuitry

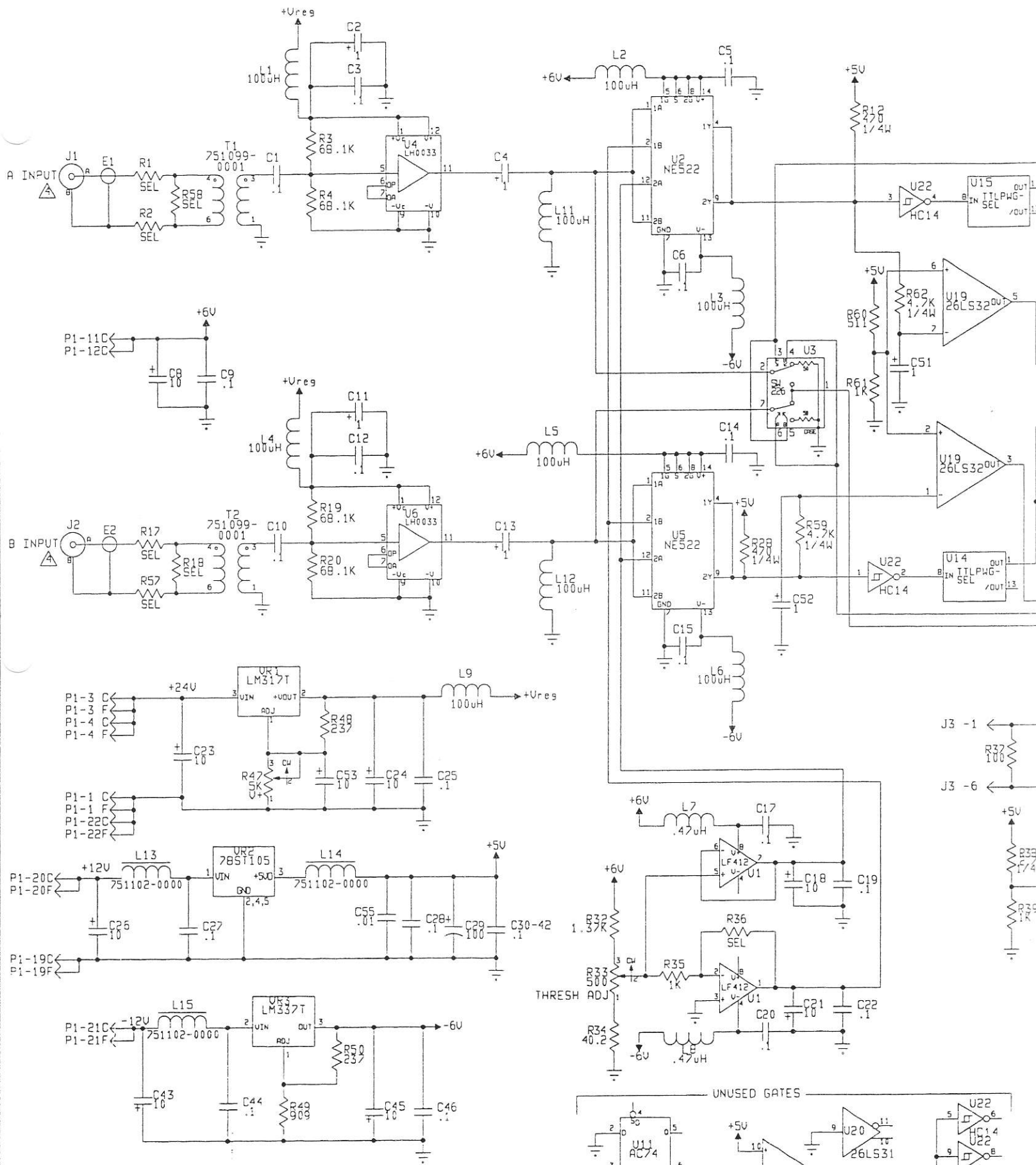
The alarm circuits get their signals from (U16) D flip-flop Q outputs. These signals are ANDed together and send alarms to the backplane and to the D-connector in the event of an input failure. Switch S2 on the board can be opened to keep the switchover module from sending a summary alarm to the backplane. RS-422 level signals are available on the D-connector for A/B selectors, Loss of Input and Summary Alarm.

#### **1.4.6. Remote Select Circuitry**

The D-connector has the input to remotely select an input channel to be switched to the back-plane on pins 1 (+) and 6 (-). These inputs can be used to remotely select the desired channel when W1 is jumpered for A. The connector can also be used as a single-ended input by jumpering W1 for B position. In this mode, only pin 1 is used. The RS-422 line receiver (U19) is used to buffer this input and drive a pair of flip-flops. One flip-flop is preceded by an inverter to keep the two input clock levels out of phase.

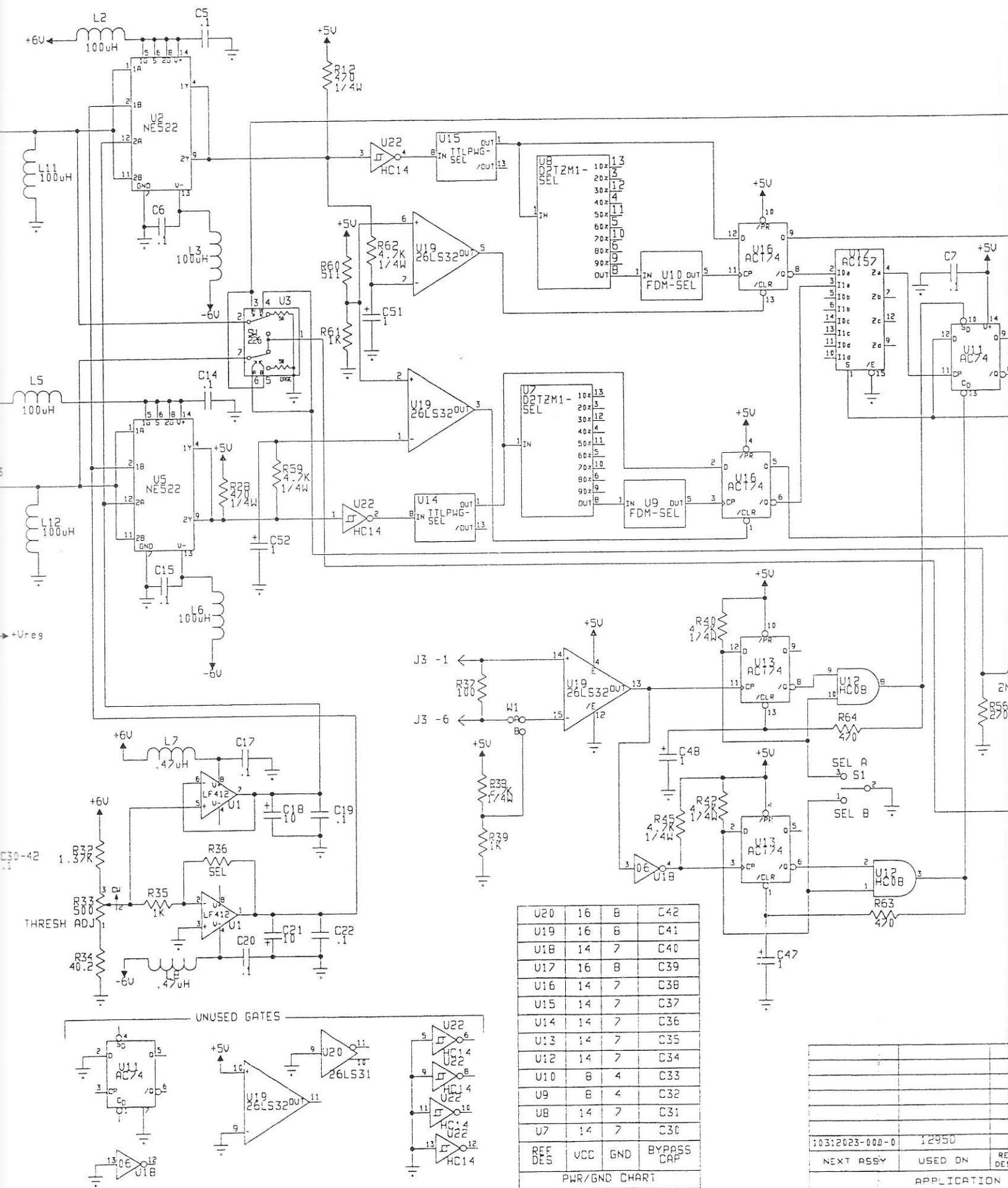
The channel select switch on the front panel overrides all other channel select signals by holding low the AND gate input selected. The output of the (U12A) AND gates directly sets the control flip-flop of (U11).

NOTES:

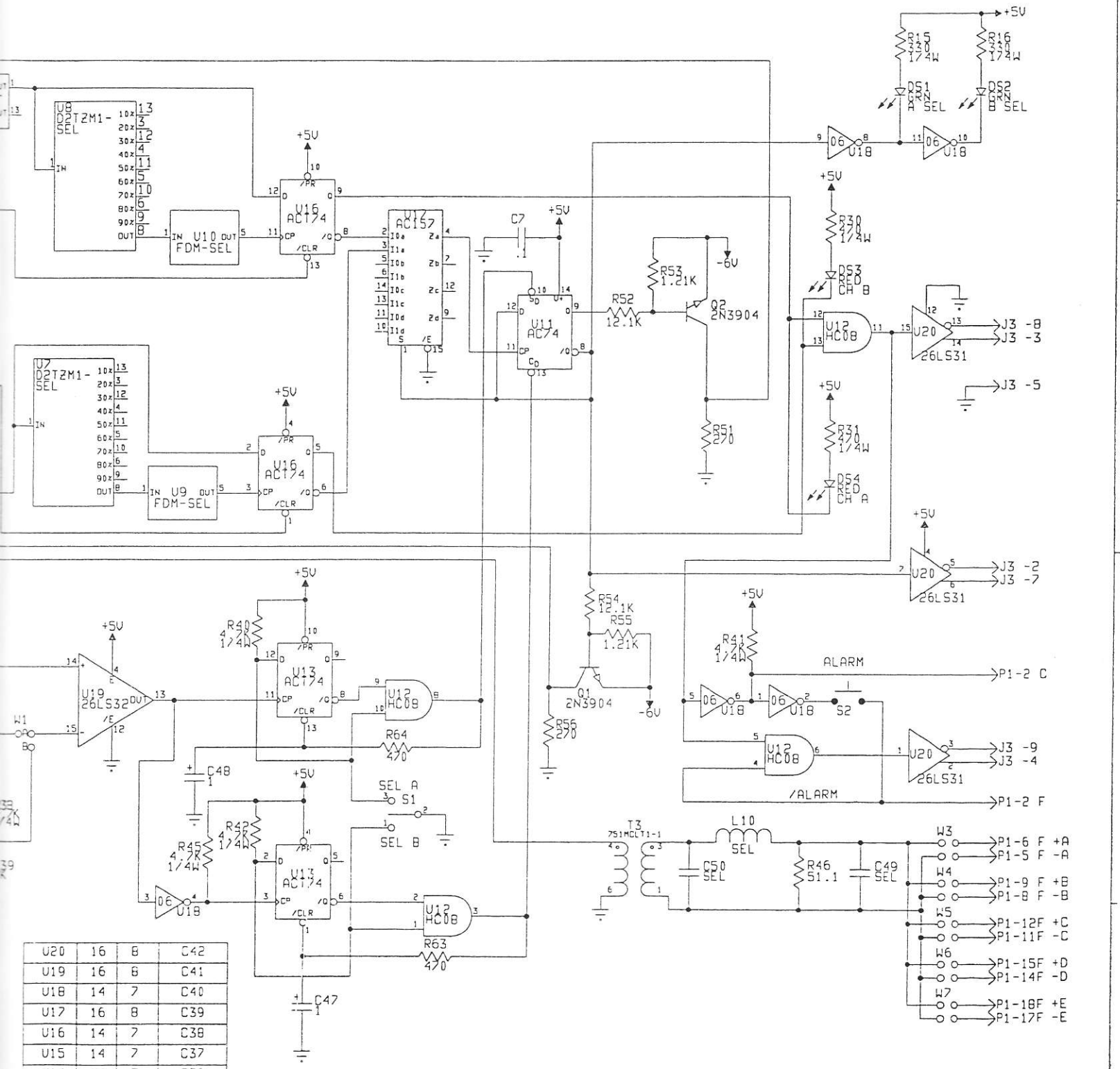


- SEE 23412024-000-0 FOR OPTIONS.  
 3. RESISTORS MARKED 1/4W ARE 1/4W, 5%.  
 2. ALL CAPACITOR VALUES ARE IN MICROFARADS.  
 1. ALL RESISTOR VALUES ARE IN OHMS, 1/8W, 1%.

NOTES: UNLESS OTHERWISE SPECIFIED



REVISIONS					
ZONE	LTR	DESCRIPTION	ECO NO.	DATE	APUD
A		RELEASED			
B		REVISED PER ECO.	13789	4/24/91	
C		REVISED PER ECO.	14279	12/02/93	
D		REVISED PER ECO.	14458	7/02/94	
E		REVISED PER ECO.	14467	7/02/94	
F		REVISED PER ECO.	14481	2/24/95	



U20	16	8	C42
U19	16	8	C41
U18	14	7	C40
U17	16	8	C39
U16	14	7	C38
U15	14	7	C37
U14	14	7	C36
U13	14	7	C35
U12	14	7	C34
U10	8	4	C33
U9	8	4	C32
U8	14	7	C31
U7	14	7	C30
REF DES	VCC	GND	BYPASS CAP

PWR/GND CHART

10312023-000-0		12950		TOLERANCES UNLESS OTHERWISE SPECIFIED DO NOT SCALE THIS DRAWING		<b>AUSTRON INC.</b> a DATUM company	<b>SCHEMATIC, DUAL INPUT HIGH ISOLATION SWITCH</b>
NEXT ASSY	USED ON	REFERENCE DESIGNATOR	FIGURE NUMBER	DECIMAL	FRACTIONAL		
APPLICATION				+	+		
				-	-		
				MATERIAL		TITLE	
				DRAWN: Jena Mellinas		DATE: 11/22/89	
				CHECKED: G. GUTOWSKI		DATE: 4/24/91	
				ENGINEER: SHIRAR		DATE: 4/19/1978	
				D.C. LOPEZ		DATE: 4/25/91	
						5	DRAWING NUMBER: 12312023-000-2 CAD GENERATED: SHEET: 1 of 2

-034	1800 pF	5.6 uH	12.1	24.9
-033	390 pF	1.2 uH	12.1	24.9
-032	750 pF	2.2 uH	12.1	24.9
-031	3900 pF	12 uH	12.1	24.9
-024	1800 pF	5.6 uH	18.2	40.2
-023	390 pF	1.2 uH	18.2	40.2
-022	750 pF	2.2 uH	18.2	40.2
-021	3900 pF	12 uH	18.2	40.2
-014	1800 pF	5.6 uH	24.9	51.1
-013	390 pF	1.2 uH	24.9	51.1
-012	750 pF	2.2 uH	24.9	51.1
-011	3900 pF	12 uH	24.9	51.1
-004	1800 pF	5.6 uH	24.9	51.1
-003	390 pF	1.2 uH	24.9	51.1
-002	750 pF	2.2 uH	24.9	51.1
-001	3900 pF	12 uH	24.9	51.1
23412024-000-0 DASH NUMBER	C49 & C50	L10	R1,R2 R17,R57	R18,R58
SELECT VALUE COMPONENT				

24.9	AITD-500 or D2TZM1-500	FDM-40	TTLPWG100	1.00K
24.9	AITD-200 or D2TZM1-200	FDM-25	TTLPWG50	4.02K
24.9	AITD-200 or D2TZM1-200	FDM-25	TTLPWG50	1.00K
24.9	AITD-500 or D2TZM1-500	FDM-50	TTLPWG100	1.00K
40.2	AITD-500 or D2TZM1-500	FDM-40	TTLPWG100	1.00K
40.2	AITD-200 or D2TZM1-200	FDM-25	TTLPWG50	4.02K
40.2	AITD-200 or D2TZM1-200	FDM-25	TTLPWG50	1.00K
40.2	AITD-500 or D2TZM1-500	FDM-50	TTLPWG100	1.00K
51.1	AITD-500 or D2TZM1-500	FDM-40	TTLPWG100	1.00K
51.1	AITD-200 or D2TZM1-200	FDM-25	TTLPWG50	4.02K
51.1	AITD-200 or D2TZM1-200	FDM-25	TTLPWG50	1.00K
51.1	AITD-500 or D2TZM1-500	FDM-50	TTLPWG100	1.00K
51.1	AITD-500 or D2TZM1-500	FDM-40	TTLPWG100	1.00K
51.1	AITD-200 or D2TZM1-200	FDM-25	TTLPWG50	4.02K
51.1	AITD-200 or D2TZM1-200	FDM-25	TTLPWG50	1.00K
51.1	AITD-500 or D2TZM1-500	FDM-50	TTLPWG100	1.00K
R18,R58	U7 & U8	U9 & U10	U14 & U15	R36

# MPONENTS TABLE

D  
C  
B  
A

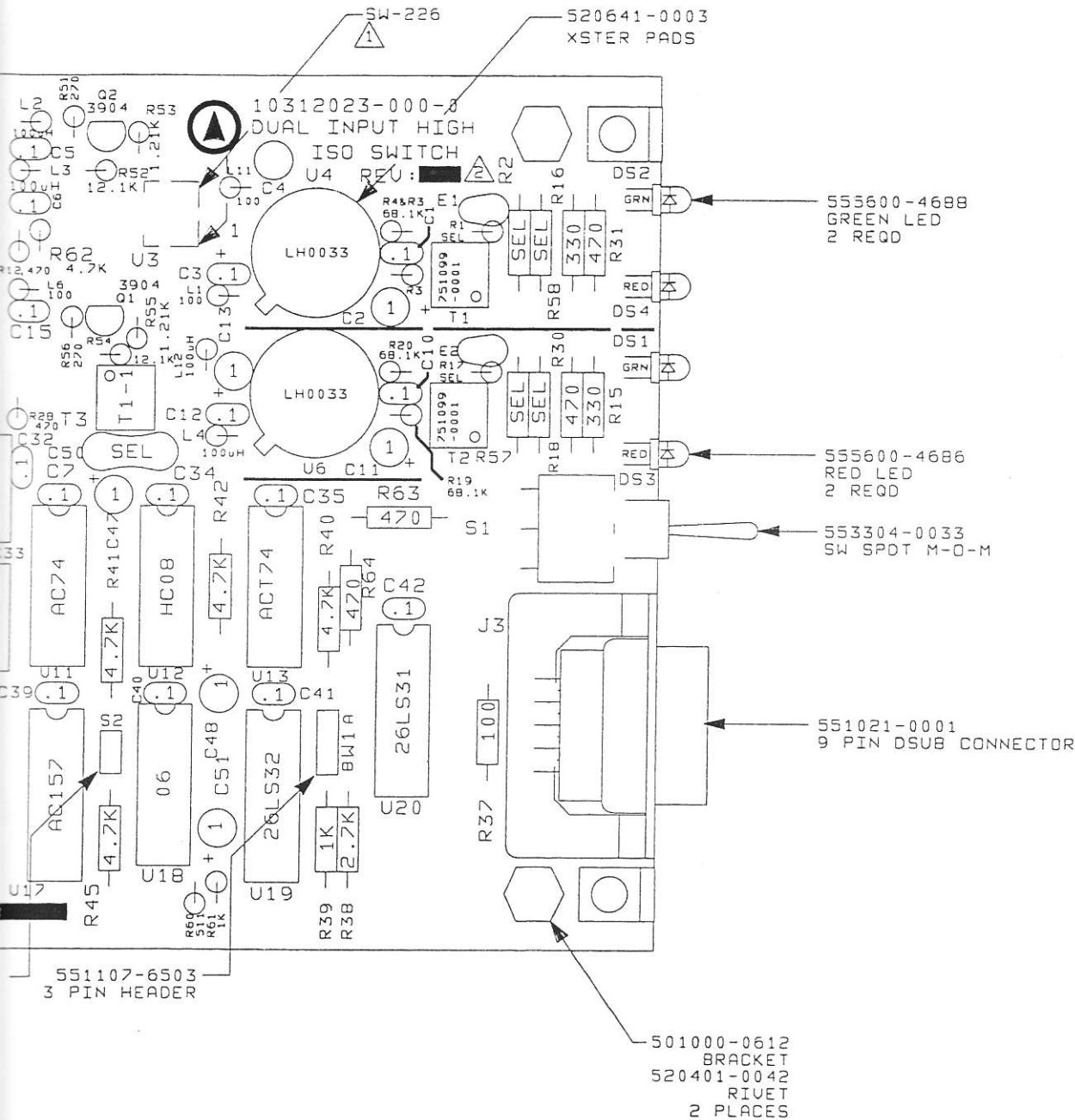




- NOTES: UNLESS OTHERWISE SPECIFIED

23412024-000-0	1295
NEXT ASSY	USED (
APPLIC	

ZONE	LTR	DESCRIPTION	ECO NO.	DATE	APVD
A		RELEASED		4/24/91	Det
B		REVISED PER ECO.	13561	2/4/92	Det
C		REVISED PER ECO.	13789	20CT92	Conum
D		REVISED PER ECO.	14279	20DEC93	Conum
E		REVISED PER ECO.	14458	20CT94	Conum
F		REVISED PER ECO.	14467	20CT94	Conum



PART NUMBER		DESC.		REV
10312023-000-0		PCB ASSY		G
<div style="display: flex; align-items: center;"> <div> <b>AUSTRON INC</b>  <small>a DATUM company</small> </div> </div>				
TOLERANCES UNLESS OTHERWISE SPECIFIED DO NOT SCALE THIS DRAWING		TITLE		
DECIMAL	FRACTIONAL	ANGULAR	PCB ASSY, DUAL INPUT HIGH ISOLATION SWITCH	
+	+	+		
-	-	-		
MATERIAL				
DRAFTER John Matthews		DATE 12/5/89		
CHECKER D. GUTOWSKI		DATE 4/24/91		
ENGINEER SHIRAR		DATE 4/19/91		
D.C. LOPEZ		DATE 4/25/91		
SIZE 2 9		DRAWING NUMBER 10312023-000-2		
SCALE NONE		REVISION G		
APPLICATION		Sheet: 1 of: 1		

23412024-000-0	12950		
NEXT ASSY	USED ON	REFERENCE DESIGNATOR	FIGURE NUMBER
APPLICATION			

## 2. MAINTENANCE

### 2.1. SCOPE OF SECTION

Section Two includes a pretest checklist and a troubleshooting table showing alarm conditions and probable causes. Please review Section One, Functional Description, for detailed information.

### 2.2. TROUBLE ANALYSIS GUIDE

The following paragraphs list and describe steps and procedures for pretest, checkout and troubleshooting the module.

#### 2.2.1. Pretest Checklist

The normal operation indication is one LED lit green and the other LEDs not lit. If this is the status, then there is no problem. If troubleshooting is required, then an oscilloscope and a signal source supplying the proper input frequency, 1 Vrms to 1.5 Vrms, are needed. If troubleshooting is performed at the Model 1295D chassis, then a module Extender PCB is necessary. A troubleshooting table is provided below.

Table 1: Troubleshooting Table		
	Alarm Condition	Probable Cause
1	Either or both LEDs red	<p><b>a.</b> Input signal(s) not present, check for inputs with scope at K1, pins 8 and 14.</p> <p><b>b.</b> Input signal(s) weak.</p> <p><b>c.</b> Reference pot R33 set wrong, set pot so that dc voltage properly biases the comparator.</p>
2	R33 cannot be adjusted for proper operation of module.	<p><b>a.</b> Input signals are not the same amplitude.</p> <p><b>b.</b> Input signal(s) levels are too low.</p>
3	Inputs present, no output	Incorrect jumper setting, trace output with scope from either side of R46 to output jumpers. Also, check output modules are properly jumpered on the Model 1295D backplane.

#### 2.2.2. Module Maintenance

This module is designed and manufactured so that periodic maintenance is not required. Contact your AUSTRON representative for assistance if you find a problem in your Dual Input High Isolation Switch Module.

### 2.3. ALIGNMENT PROCEDURE

The Dual Input High Isolation Switch Module requires no alignment other than adjustment of the comparator bias level and the buffer regulator voltage. These adjustments allow you to set the comparator bias at an appropriate level for the input signals being used and properly bias the input buffers.

The comparator bias control is set to bias the comparators at a level to detect the positive and negative peaks of the incoming signals. This needs to be adjusted to bias pins 2 and 12 of (U2) and (U5) to dc levels below the RF peak levels but high enough to give a transition low output level. Turn the comparator bias adjustment R33 until there is a clean 50/50 duty cycle signal at the pin 8 input of (U14) and (U15) and there is a clean pulse at the output pin 5 of (U9) and (U10) equal to the pulse width out pin 1 of (U14) and (U15), respectively.

To perform these adjustments, remove the module cover and place the module on the Extender PCB assembly. Connect the normal input signals and output load and apply power to the module. Turn the comparator bias adjustment R33 counterclockwise until twice the input signal frequency is measured at pin 4 at (U2) and (5). Adjust R47 for  $20\text{ V} \pm 1\text{ V}$  at L9. Recheck the operation of the module when either signal is removed or decreased in level. Make minor adjustments to R33 as needed. Reinstall the cover and replace the module in the chassis.

---

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NOTES:

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AUSTRON, Inc.  
P.O. Box 14766  
Austin, Texas 78761



AUSTRON Model 1295D Series  
Distribution Chassis  
Quad Distribution Amplifier Module  
User Guide Supplement  
P/N 12712098-002-2, Revision C

October 1994



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Prior to return of a product under terms of this warranty, AUSTRON, Inc., Austin, Texas, is to be notified. Notification is to include the model number and serial number of the product and full details of the problem.

## INTRODUCTION

This user guide supplement to the Model 1295D Distribution Chassis describes the operation of the Quad Distribution Amplifier Module, Assembly P/N 23412100-\*, manufactured by AUSTRON, Inc.


It contains information about the physical and electrical specifications, installation and operation.

### WARNING:

Servicing instructions are to be used only by qualified personnel.  
To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

## AMENDMENT NOTICE

AUSTRON, Inc. makes every attempt to provide up-to-date user guides with the associated equipment. Occasionally, changes are made to equipment wherein it is necessary to provide amendments to the user guide. If any amendments are provided for this document, they are printed on colored paper and will be found at the rear of this user guide.

 **NOTE:** The content of any amendments may affect operation, maintenance, or calibration of the equipment.

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NOTES:

## 1. GENERAL DESCRIPTION

### 1.1. SCOPE OF SECTION

Section One introduces the Model 1295D Distribution Chassis Series supplement Quad Distribution Amplifier Module manufactured by AUSTRON, Inc. Provided here are descriptions of the purpose and physical characteristics of the Quad Distribution Amplifier Module.

### 1.2. PURPOSE OF EQUIPMENT

The Quad Distribution Amplifier Module is the standard output module for the AUSTRON Model 1295D Distribution Chassis. The signal from the backplane is amplified through four identical wideband amplifiers with individual amplitude adjustments and low output indicators. Refer to the block diagram, Dwg. No. 12412474.

### 1.3. SPECIFICATIONS

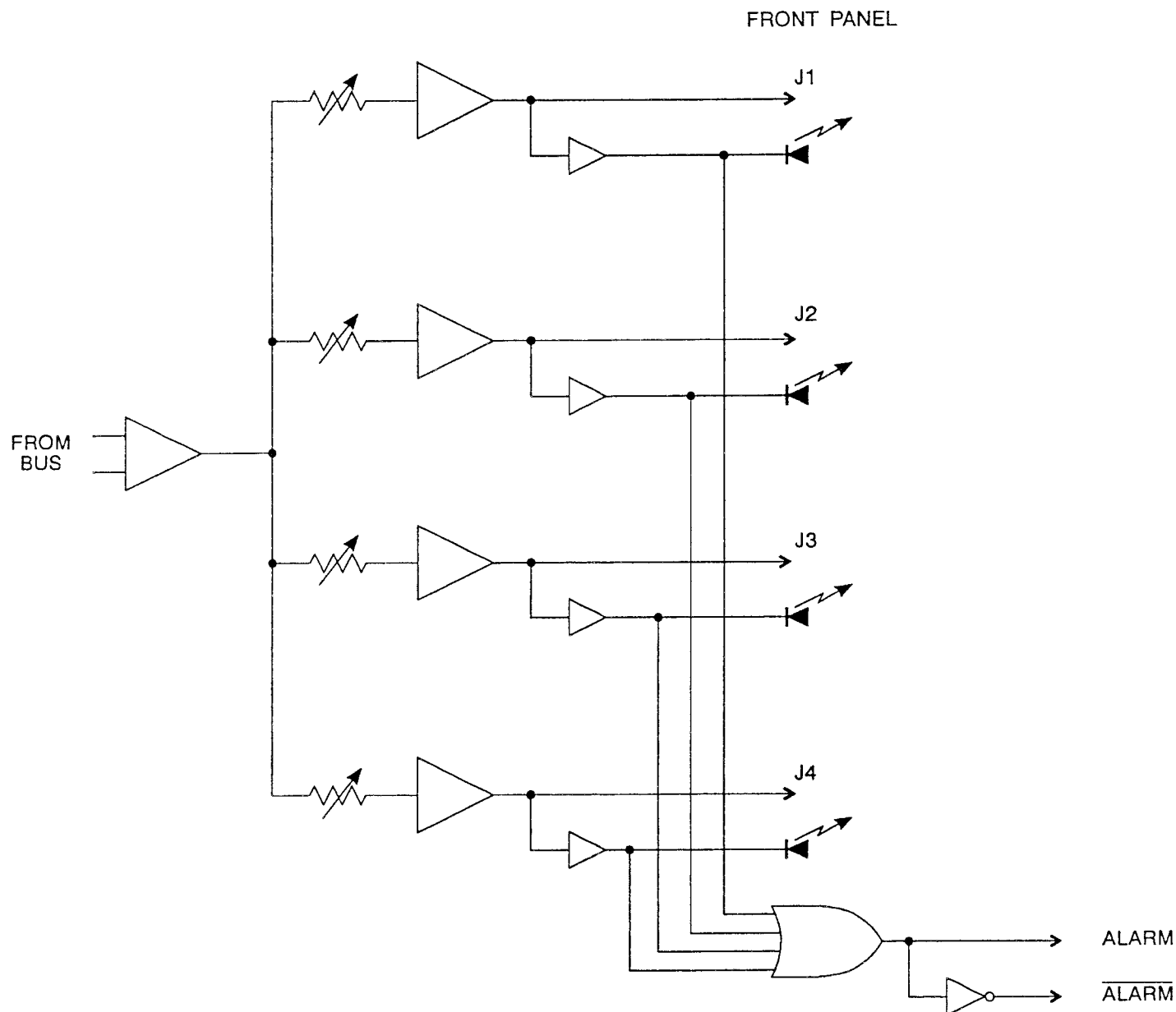
The following table lists the Quad Distribution Amplifier Module specifications and model variations.


Table 1: Module Specifications	
<b>INPUT</b>	Model 1295D Differential Bus Signal
Level	From 700 mVp-p to 1 Vp-p (W5 open) From 2.8 Vp-p to 3 Vp-p (W5 closed)
<b>OUTPUT</b>	Specified by module dash number described in Table 2
Harmonic Distortion	<-40 dBc <-37 dBc at 10 MHz
Nonharmonic Distortion	<-60 dBc
Phase Noise (typical)	-140 dBc 10 Hz -150 dBc 100 Hz -155 dBc 1000 Hz
<b>GENERAL</b>	
Alarm	Adjustable threshold (2 Vp-p nominal) Indicator for each channel Summary to 1295D bus
Power Consumption	Less than 6 W
Operating Temperature	0°C to 50°C
Humidity	95% without condensation
Altitude	To 30,000 ft (9,144 m)

Table 2: Outputs By Module Dash Numbers			
23412100 Dash No.	Connector/Load /Coupling	Maximum Level at Frequency	Channel to Channel Isolation
-1	BNC/50 $\Omega$	1.5 Vrms @ 500 Hz to 5 MHz 1.1 Vrms @ 100 Hz to 10 MHz	>70 dB
-2	BNC/50 $\Omega$ w/transformer	1.5 Vrms @ 100 kHz to 5 MHz 1 Vrms @ 50 kHz to 10 MHz	>60 dB
-3	BNC/75 $\Omega$	1.5 Vrms @ 500 Hz to 5 MHz 1.1 Vrms @ 100 Hz to 10 MHz	>70 dB
-4	BNC/75 $\Omega$ w/transformer	1.7 Vrms @ 100 kHz to 5 MHz 1 Vrms @ 50 kHz to 10 MHz	>60 dB
-5	BNC/Low Imp	3 Vrms @ 50 Hz to 5 MHz 2 Vrms @ 100 Hz to 10 MHz	>70 dB
-6	BNC/Low Imp w/transformer	3 Vrms @ 100 Hz to 5 MHz 2 Vrms @ 100 kHz to 10 MHz	>60 dB
-10	TWBNC/100 $\Omega$ w/transformer	2.5 Vrms @ 300 kHz to 5 MHz 1 Vrms @ 100 kHz to 10 MHz	>60 dB
-11	W-W/100 $\Omega$ w/transformer	2.5 Vrms @ 300 kHz to 5 MHz 1 Vrms @ 100 kHz to 10 MHz	>60 dB
-12	TRB/100 $\Omega$ w/transformer	2.5 Vrms @ 300 kHz to 5 MHz 1 Vrms @ 100 kHz to 10 MHz	>60 dB



REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	RELEASED	12/2/91	



		TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> a DATUM company					
		DEC	FRAC	ANG						
		MATERIAL:			BLOCK DIAGRAM QUAD DISTRIBUTION AMPLIFIER					
12712098	1295D	Q.A.	M Parakey		SIZE	CODE IDENT NO.	12412474		REV	
NEXT ASSY	USED ON	ENGR	CE		1	24672			A	
APPLICATION		CHECK	J. Antonsen		SCALE	NONE	SHEET 1 OF 1			
		DRAWN	R. CHAPIN							
			12/2/91	11/26/91			3			

#### 1.4. CONTROLS, INDICATORS AND CONNECTORS

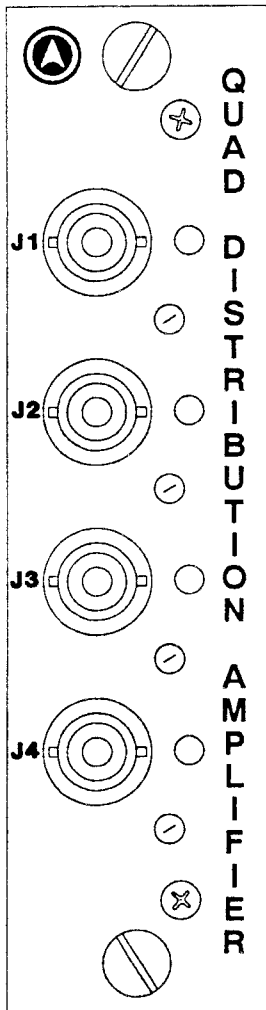
The Quad Distribution Amplifier is designed to occupy any output slot in the Model 1295D Distribution Chassis. Power, ground and input signal connections are made at the 22-pin PCB edge-connector.

There are several connector options for the front panel that provide outputs:

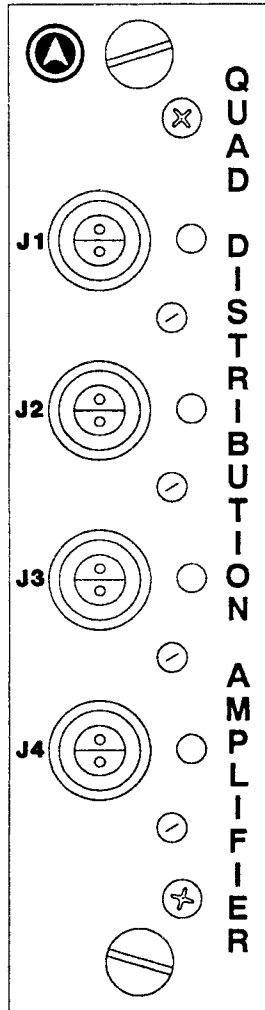
- 1) four BNC connectors
- 2) four Twin BNC (TWINAX) connectors
- 3) four TRB (TWINAX) connectors
- 4) a wire-wrap connector

A control adjacent to each connector allows the adjustment of the output amplitude to a desired value. Refer to Dwg. No. 12412099 for indicators and connectors.

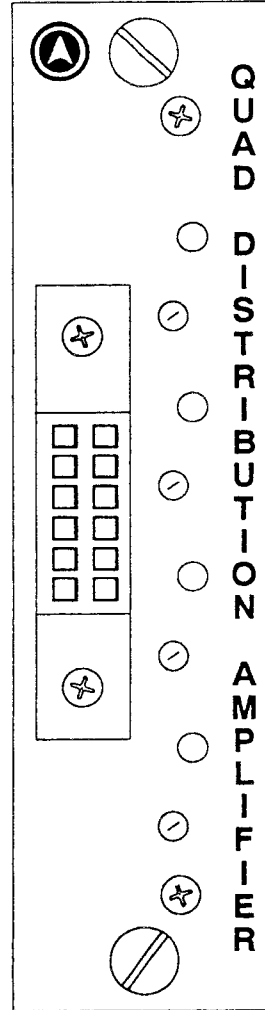
REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	RELEASED	12/2/91	<i>[Signature]</i>
B	REVISED PER ECO 13602	3/31/92	<i>[Signature]</i>



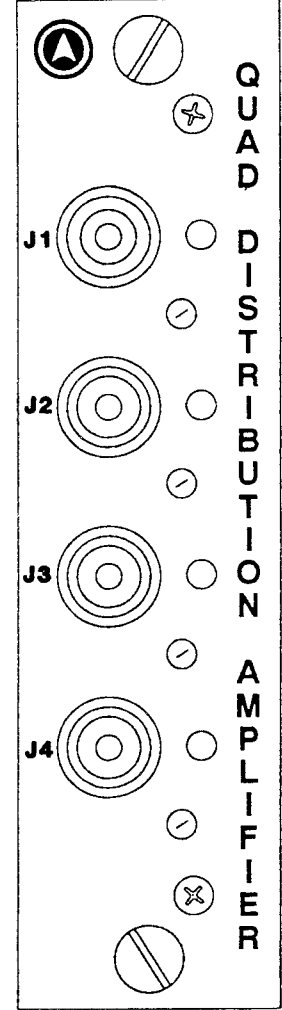
-1 thru -6  
BNC, ISOLATED



-10  
TWIN BNC




-11  
WIRE WRAP



-12  
TRB

Module 23412100

		TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> a DATUM company			
		DEC	FRAC	ANG				
		MATERIAL:			<b>CONTROLS AND INDICATORS, QUAD DISTRIBUTION AMPLIFIER</b>			
12712098	1295D	Q.A.	<i>M. Perale</i>	12/2/91	SIZE	CODE IDENT NO.	12412099	REV B
NEXT ASSY	USED ON	ENGR	<i>CE</i>	27 Nov 91	1	24672		
APPLICATION		CHECK	<i>A. H. Town</i>	12/2/91	SCALE	NONE	SHEET 1 OF 1	
		DRAWN	R. CHAPIN	11/26/91				

NOTES:

## 2. INSTALLATION

### 2.1. SCOPE OF SECTION

Section Two describes the steps required to prepare the Quad Distribution Amplifier Module for operation and reshipment to another location. Included in this section are instructions for unpacking, inspection, installing and storing the unit.

### 2.2. UNPACKING AND INSPECTION

As soon as the instrument is received, verify it is intact and as ordered. Inspect the unit for damage. If any shipping damage is found refer to the warranty at the front of this manual and to paragraph 2.4 for repackaging and shipping instructions.

As soon as possible, install the instrument and give it a thorough electrical inspection. If the instrument fails to operate properly or to meet the listed specifications, immediately contact your AUSTRON representative.

### 2.3. QUAD DISTRIBUTION AMPLIFIER INSTALLATION

In most cases, the Quad Distribution Amplifier Module will already be installed in the Model 1295D Distribution Chassis. If so, remove the module from the chassis by loosening the two knurled screws. Unplug the module. Plug the Quad Distribution Amplifier Module into the appropriate slot. Secure the module by tightening the two knurled screws.

If the Quad Distribution Amplifier Module is received separately from the Model 1295D, carefully remove it from the shipping container.

### 2.4. STORAGE AND RESHIPMENT

Environment conditions during storage and shipment should be limited as follows:

Maximum temperature:	185°F ( 85°C)
Minimum temperature:	-69°F (-55°C)

To protect your instrument during shipment or storage, use the best packaging methods available. Contract packaging companies can provide dependable packaging on short notice.

#### General packaging instructions:

- 1) Wrap the instrument in heavy paper or plastic before placing it in the shipping container.
- 2) If possible, use the original container designed for the instrument. Otherwise, use a strong carton (350 lb sq in bursting strength) or wooden box to house the instrument.
- 3) Use plenty of packaging material around all sides of the instrument and protect the front panel with cardboard strips.
- 4) Seal the package with a strong tape or metal bands. Mark the package with "DELICATE INSTRUMENT".
- 5) Refer to the warranty at the front of this user guide and check with your AUSTRON representative for shipping instructions.

All correspondence should refer to the instrument by its model number and full serial number.

NOTES:

### 3. OPERATING INSTRUCTIONS


#### 3.1. SCOPE OF SECTION

Section Three provides instructions for operating the Quad Distribution Amplifier Module. Please read the following description on use of the instrument before operating the unit.

#### 3.2. NORMAL OPERATION

This module receives a signal from any bus of the Model 1295D Distribution Chassis and provides four identical output channels. Each channel has an individual BNC, Twin BNC (Twinax), TRB (Twinax) or wire-wrap output connector. A visual fault indicator is provided for each output channel, along with the alarm status signals which are used internally by the Model 1295D Distribution Chassis.

To operate the Quad Distribution Amplifier Module, install an appropriate input module that is configured to an unused bus. Verify the Model 1295D slot for the Quad Distribution Amplifier is configured to the same bus. For wire-wrap connector outputs, refer to Dwg. No. 12311365 on the following page. Properly load and monitor each output. Adjust each output for desired level. Verify each individual channel alarm is off.

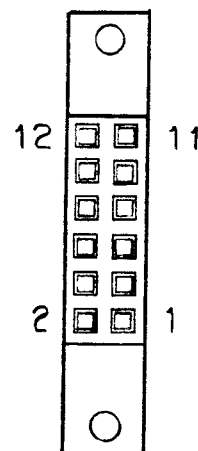
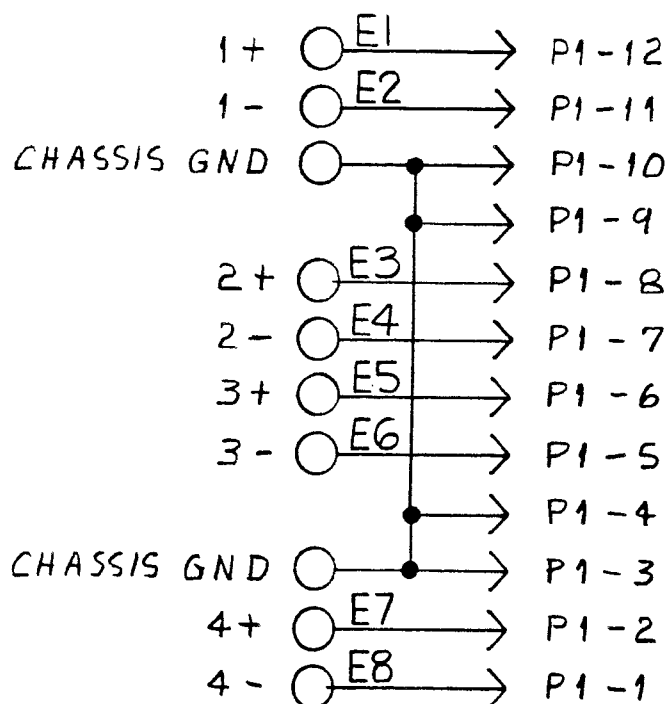
 **NOTE:** For use with input modules that apply a 1 Vrms to the Model 1295D bus, close W5 on the circuit side of the Quad Distribution Amplifier. Close W1 through W4 to ground center tap for balanced outputs.

#### 3.3. ALARM THRESHOLD ADJUSTMENT


The Quad Distribution Amplifier Module has an adjustable alarm threshold. The module is set from the factory to alarm if any output is below 2 Vp-p. To adjust the alarm threshold, remove the module's cover and place the module on a 1295D extender card in an appropriate 1295D slot. Set one output level to just below the minimum desired ALARM level. Adjust R40 so the channel's alarm LED just turns on. Remove the module from the extender card and replace the cover. Replace the module in the chassis and verify proper operation.

REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	RELEASED	10/12/87	<i>[Signature]</i>
B	REDREW J1 DETAIL <i>ECO11552</i>	3/14/88	<i>[Signature]</i>
C	REVISED PER ECO 13331 <i>ECO</i>	11/25/91	<i>[Signature]</i>

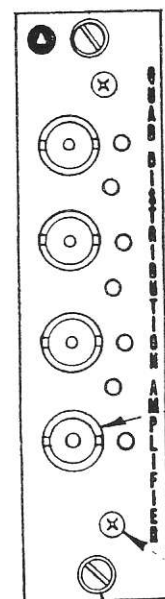
INPUT WIRE PTS.      WW/CONN.



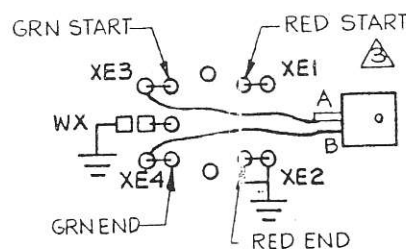
J1 CONN.  
WIRING SIDE

		TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> AUSTIN, TEXAS		
		DEC	FRAC	ANG			
		MATERIAL:			SCHEMATIC INTERFACE COAX TO WW CONNECTORS		
	1295	Q.A.	LOPEZ	10/13/87	SIZE	CODE IDENT NO.	REV
NEXT ASSY	USED ON	ENGR	JW PORTER	8/2/87	1	24672	12311365
		CHECK	<i>[Signature]</i>	10/12/87			C
APPLICA		DRAWN	CRL	10/8/87	SCALE	NONE	SHEET 1 OF 1

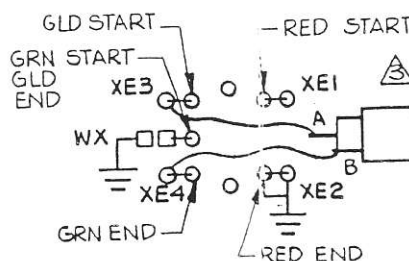




10312101

$$\frac{-52}{2}$$


-2, -4, & -6



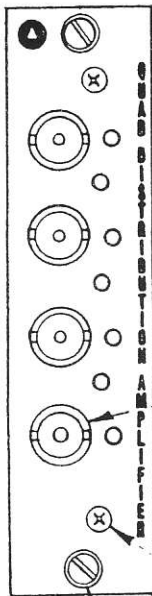
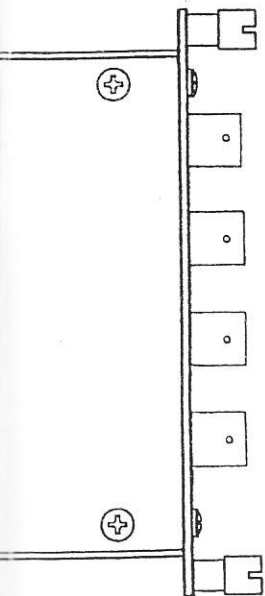
-12

- ① RUBBER STAMP PART NUMBER AND APPROPRIATE DASH NUMBER IN POSITION SHOWN, SEE TABLE.

NOTES: UNLESS OTHERWISE SPECIFIED

				DEC
				MATE
				QA.
				ENGR
NEXT ASSY	USED ON	REF DES	FIG NO	CHECK
APPLICATION				DRAW

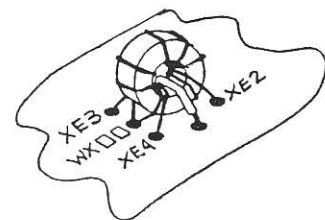
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	B	REVISED PER ECO 13605	5/21/92	Ed
	C	REVISED PER ECO 14454	11/26/94	Ed



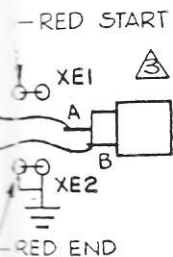
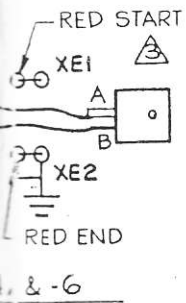
SEE DASH TABLE

2 PLACES  
400040-0013  
4-40 X 1/4 PHMS

520300-6104  
2 PLACES




TRANSFORMER  
MOUNTING DETAIL  
TYP



-12	653001-1000	551099-0000	75110076	00912524-2
-11	653001-1000	Refer to 12811415-6	75110076	REFER TO 128 DWG
-10	653001-1000	551100-0015	75110076	00911597-2
-6	JUMPER	551100-0010	75199241	00911597-2
-5	JUMPER	551100-0010	-	00911597-2
-4	653001-66R5	551100-0010	75199241	00911597-2
-3	653001-66R5	551100-0010	-	00911597-2
-2	653001-40R2	551100-0010	75199241	00911597-2
-1	653001-40R2	551100-0010	-	00911597-2
Dash No.	R1,16,26,33	CONNECTORS	T1,2,3,4	PANEL NO.

DASH TABLE FOR SELECT COMPONENTS

				TOLERANCES UNLESS OTHERWISE SPECIFIED			 <b>AUSTRON INC.</b> AUSTIN, TEXAS	
				DECIMALS	FRACTIONS	ANGLES		
				MATERIAL:			<b>MODULE ASSY - QUAD DISTRIBUTION AMPLIFIER</b>	
1295D				QA.	<i>M. P. Smith</i>	12/2/91	SIZE	C
NEXT ASSY				ENGR	<i>CE</i>	27/Nov/91	3	11
USED ON				CHECKED	<i>J. H. Smith</i>	12/2/91	23412100-*	
REF DES				DRAWN	<i>Ed</i>	12AUG91	SCALE NONE	
FIG NO							SHEET	OF
APPLICATION								

NOTES:

## **1. FUNCTIONAL DESCRIPTION**

### **1.1. SCOPE OF SECTION**

Section One details the theory of operation of the AUSTRON Model 1295D Quad Distribution Amplifier Module. Included are schematic and assembly drawings.

### **1.2. CIRCUIT ANALYSIS**

Refer to schematic, Dwg. No. 12312101, and assembly, Dwg. No. 10312101. The following paragraphs describe the Quad Distribution Amplifier circuitry in detail.

#### **1.2.1. Input Amplifier**

The input to the Quad Distribution Amplifier Module enters from P1-11F (+) and P1-12F (-). ICs (U5) and (U6) together form a very high input impedance amplifier with a set gain. W5 is used to reduce the gain when higher input levels are encountered. The input amplifier is then dc-coupled to each output buffer through potentiometers R2, R19, R27 and R34.

#### **1.2.2. Output Buffers**

The high speed buffers (U3), (U4), (U7) and (U8) provide wideband, high level signals for each output. R1, R16, R26 and R33 set the output impedance of each ac-coupled signal which may be transformer-coupled to the output jack on select module versions.

#### **1.2.3. Alarm Circuit**

The output signal on C12, C27, C36 and C49 is rectified and filtered, then fed to comparators in (U2). IC (U2) compares each signal level to a reference voltage set by R40 and reports each channel status. IC (U1) drives the alarm LED for each channel and controls the summary chassis alarm for the module.

#### **1.2.4. Power Input**

Amplifier power 24 Vdc is filtered by C4, L1 and C6 and is further filtered at each amplifier IC. The alarm logic supply 5 Vdc is supplied by VR1 and filtered by C43 and L8.

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## INTRODUCTION

This maintenance manual supplement to the Model 1295D Distribution Chassis describes the operation of the Quad Distribution Amplifier Module, Assembly P/N 23412100-\*, manufactured by AUSTRON, Inc.

It contains information about the functional analysis, access descriptions, parts list, PCB assembly drawings, and other applicable drawings required to adequately support the equipment.


This maintenance manual supplement is to be used in conjunction with the Quad Distribution Amplifier Module User Guide, P/N 12712098-2.

### WARNING:

Servicing instructions are to be used only by qualified personnel.  
To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

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 **NOTE:** The content of any amendments may affect operation, maintenance, or calibration of the equipment.

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For this warranty to be effective, the purchaser agrees that the equipment will be properly installed and maintained. Equipment which, upon examination by AUSTRON, requires repair or replacement of parts thereof as a result of improper installation, misuse, unauthorized alterations or repairs, or user negligence, such repairs or replacement of parts thereof will be made at cost.

AUSTRON makes no representation or warranty of any kind, either expressed or implied, with respect to equipment operation and procedures. Any action that the user may take in reliance upon the operation or accuracy of this equipment shall be taken solely upon the user's own responsibility and risk.

AUSTRON shall not be liable for consequential damages to purchaser, user, or any others resulting from the possession or use of this equipment.

Prior to return of a product under terms of this warranty, AUSTRON, Inc., Austin, Texas, is to be notified. Notification is to include the model number and serial number of the product and full details of the problem.





AUSTRON Model 1295D Series  
Distribution Chassis  
Quad Distribution Amplifier Module  
Maintenance Manual Supplement  
P/N 12712098-000-2, Revision D

July 10, 1995

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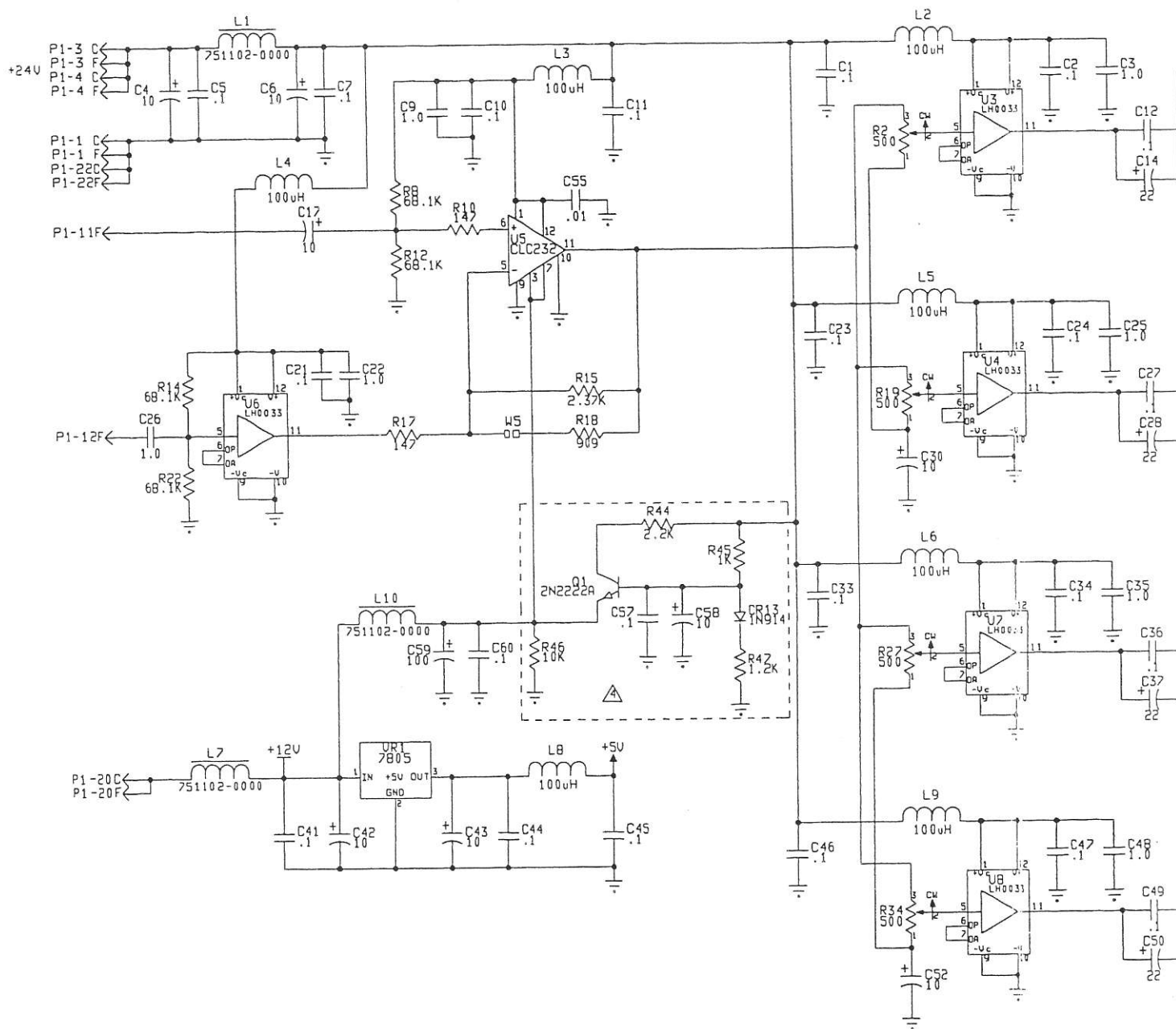
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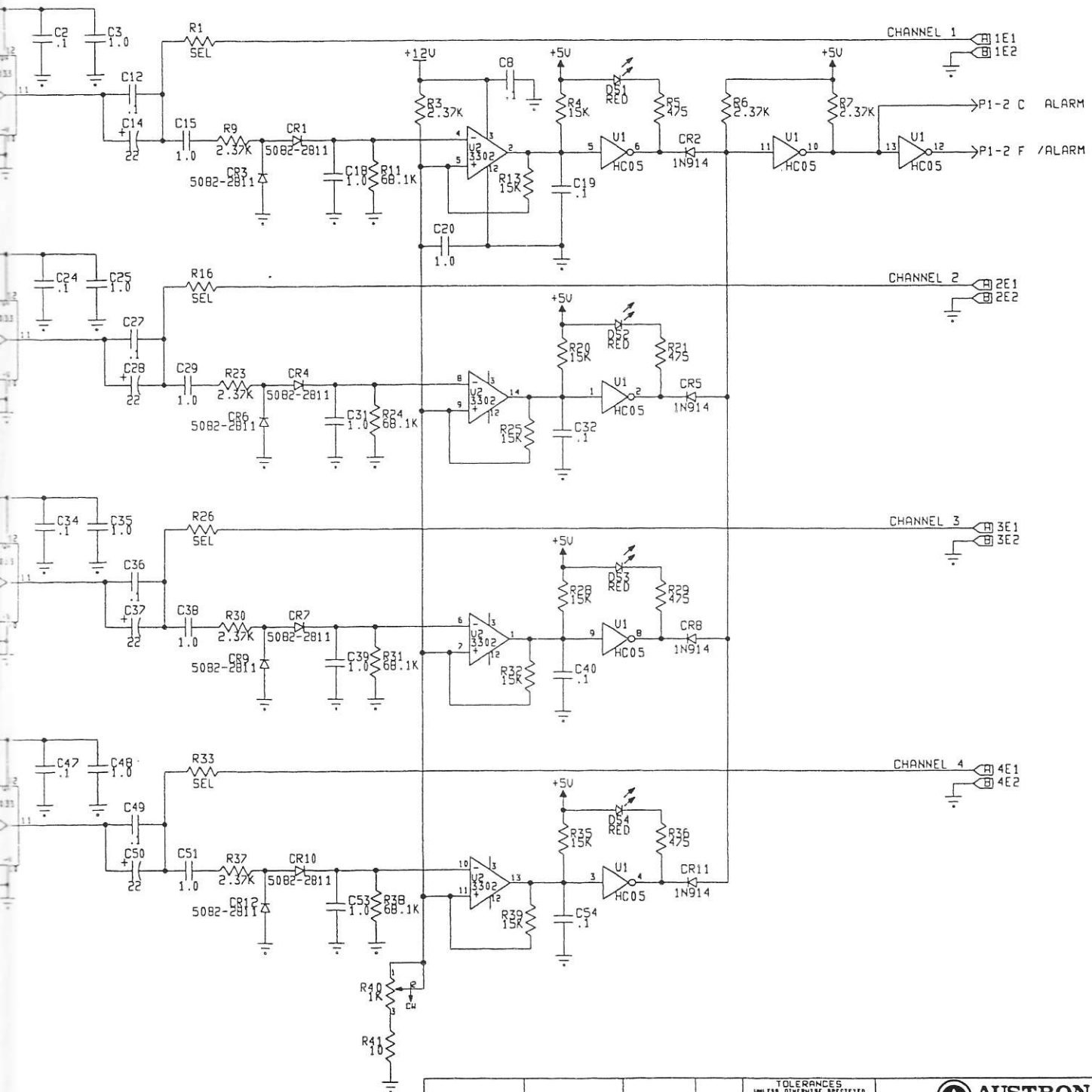


- △ COMPONENTS INSIDE DASHED LINE ARE NOT INSTALLED.  
 3. SEE 23412100\* FOR COMPONENTS MARKED "SEL".  
 2. ALL CAPACITOR VALUES ARE IN MICROFARADS.  
 1. ALL RESISTOR VALUES ARE IN OHMS, 1/BW, 1%.

NOTES: UNLESS OTHERWISE SPECIFIED

LAST USED	
REF. DESG.	
L10	R47 W5
P1	UB UR1
DS4	J4 C60
T4	Q1 CR13

REVISIONS					
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A		RELEASED		12/29/91	11
B		REVISED PER ECO.	06	13578	25 FEB 92
C		US WAS TP0032. ADDED CKT AT Q1.	14454	26 SEP 92	11



LAST USED REF. DESG.	
L10	R47 W5
P1	UB UR1
DS4	J4 C60
T4	Q1 CR13

U1	14	7	C45
REF DES	VCC	GND	BYPASS CAP
PWR/GND CHART			

TOLERANCES UNLESS OTHERWISE SPECIFIED	
DO NOT SCALE THIS DRAWING	
DECIMAL	FRACTIONAL
+	+
MATERIAL	
10312101	12950
NEXT ASSY	USED ON
APPLICATION	

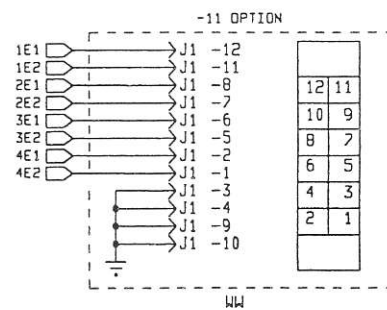
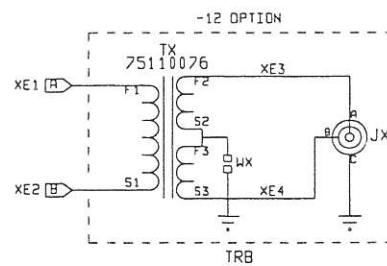
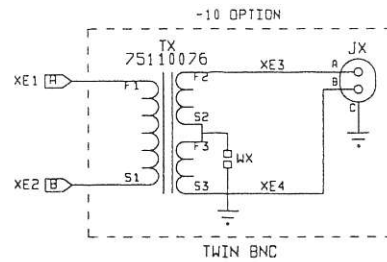
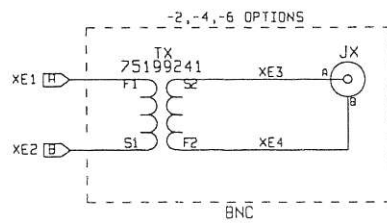
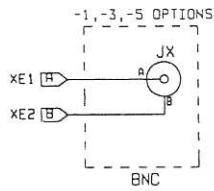


SCHEMATIC, QUAD  
DISTRIBUTION AMPLIFIER

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3	Sheet 1 of 2

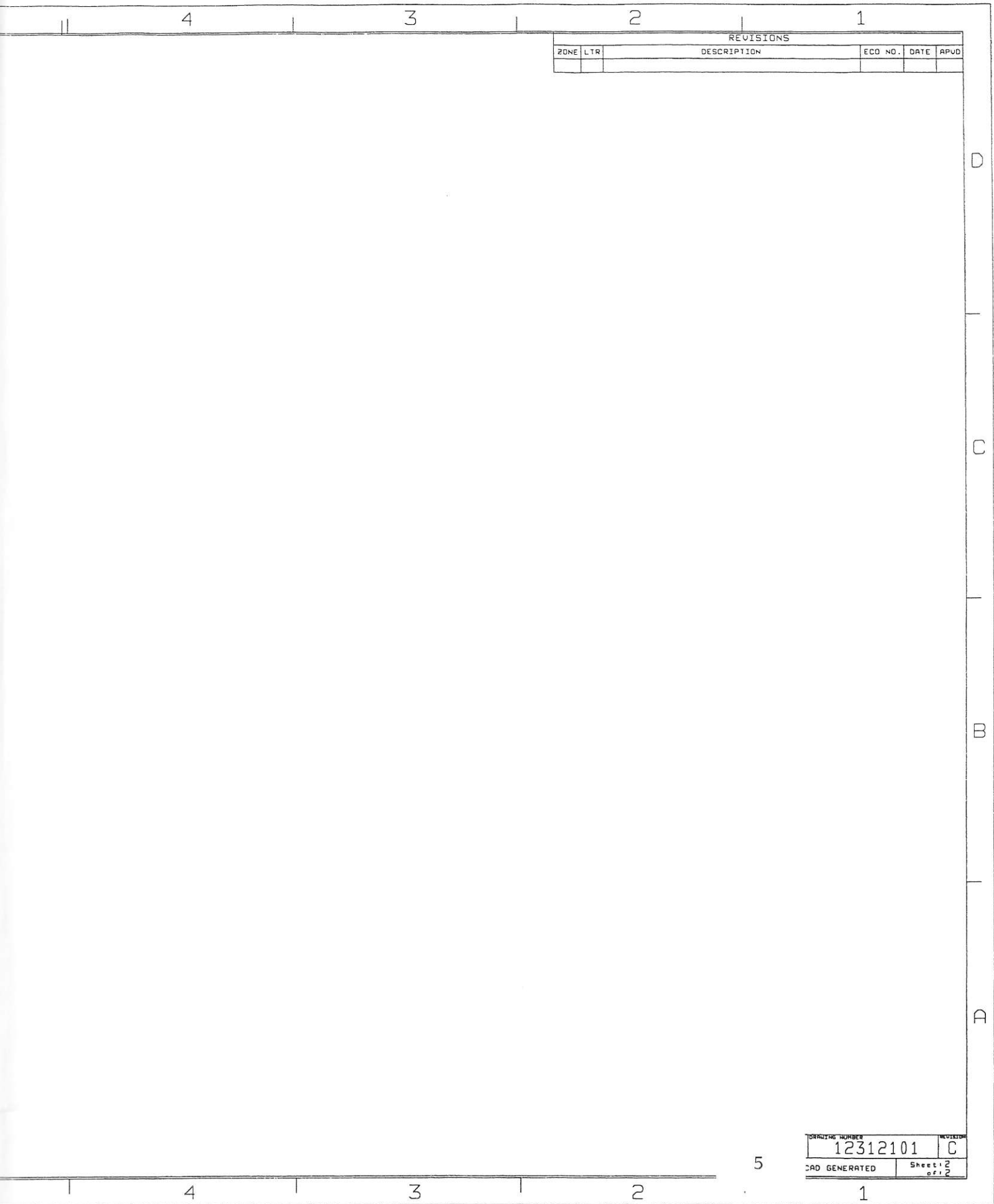


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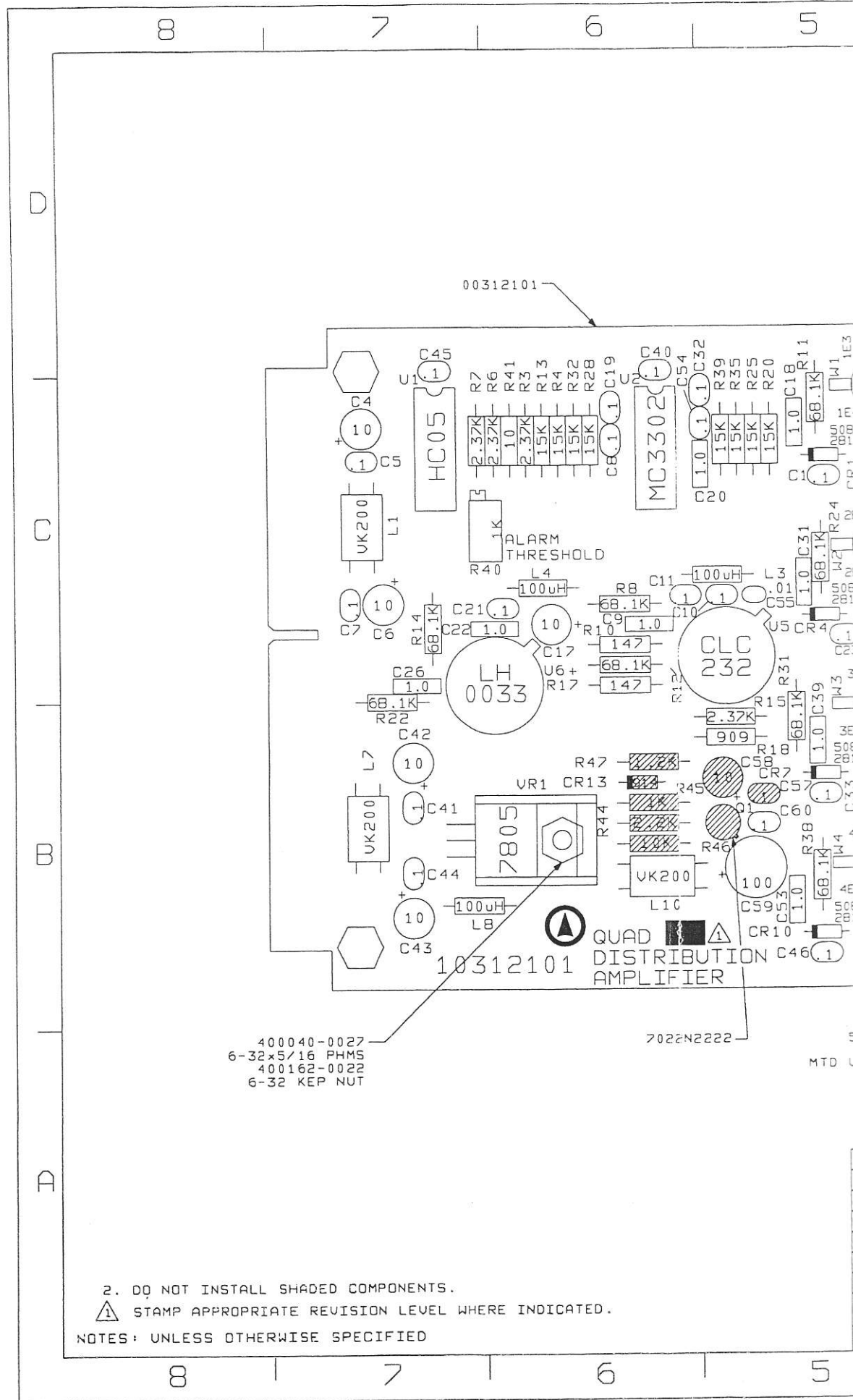
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R1											
R16	40.2										
R26											
R33											

NOTES: UNLESS OTHERWISE SPECIFIED



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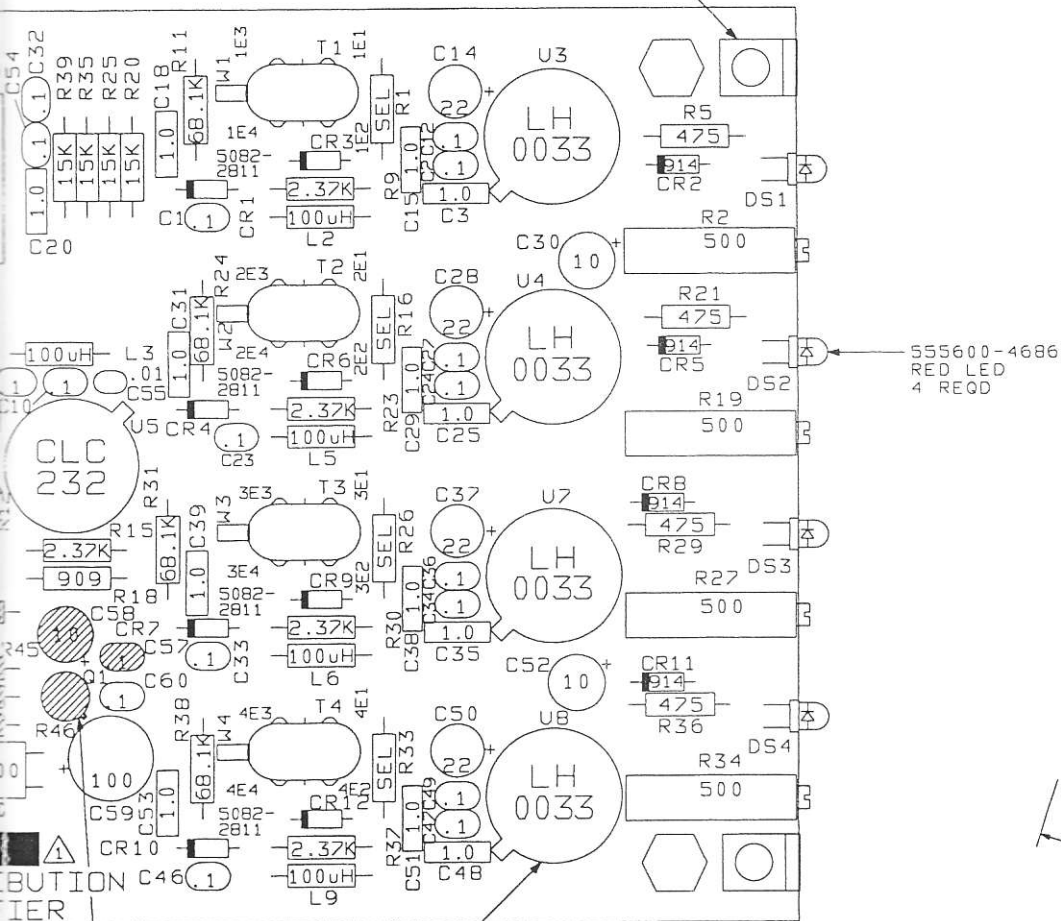
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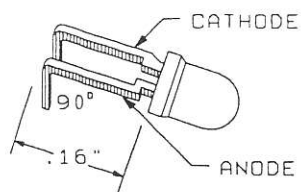
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B		REVISED PER ECO.	DG	13578	
C		U5 WAS TP0032, ADDED CKT AT Q1.		14454	

501000-0612  
BRACKET  
520401-0042  
RIVET  
2 PLACES



DETAIL 'A'



520641-0003  
SPACER  
MTD UNDER U3-U8

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DECIMAL	FRACTIONAL	ANGULAR	
±	±	±	
MATERIAL			
DRAFTER DonW DATE 1/17/91			
CHECKER D. GUTOWSKI DATE 12/2/91			
ENGINEER CE DATE 11/27/91			
D.C. M. PERALES DATE 12/2/91			
23412000	1295	REFERENCE DESIGNATOR	FIGURE NUMBER
NEXT ASSY	USED ON	APPLICATION	



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TITLE

PCB ASSY, QUAD  
DISTRIBUTION AMPLIFIER

SIP: 2  
SCF: 7

DRAWING NUMBER	REVISION
10312101	C
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5

4

3

2

1

## 2. MAINTENANCE

### 2.1. SCOPE OF SECTION

Section Two provides the technician with a general approach to maintaining the Quad Distribution Amplifier Module. Included are trouble analysis guides and general alignment procedures. Please refer to Section One, FUNCTIONAL DESCRIPTION, for detailed information.

### 2.2. ALIGNMENT PROCEDURE

The Quad Distribution Amplifier Module has an adjustable alarm threshold. The module is set from the factory to alarm if any output is below 2 Vp-p. To adjust the alarm threshold, remove the module's cover and place the module on a 1295D extender card in an appropriate 1295D slot. Set one output level to just below the minimum desired ALARM level. Adjust R40 so the channel's alarm LED just turns on. Remove the module from the extender card and replace the cover. Replace the module in the chassis and verify proper operation.

### 2.3. TROUBLE ANALYSIS GUIDE

The Model 1295D Distribution Chassis, the Quad Output Modules, and most input modules are equipped with built-in test equipment (BITE) for quick determination of failures. The following table lists the most common problems with this equipment. Further troubleshooting is beyond the scope of this manual. To determine the frequencies associated with Quad Distribution Amplifier Module, consult the Model 1295D bus configuration sheet at the back of the Model 1295D manual.

Table 1: Troubleshooting Chart		
Symptom		Probable Cause
1	Input Module(s) ALARM LED off or green  Quad Distribution Amplifier Module ALARM LEDs off  Chassis Power Supply Module ALARM LED green	Normal operation
2	Input Module(s) ALARM LED red  Quad Distribution Amplifier Module ALARM LEDs off  Chassis Power Supply Module ALARM LED red	a. Input low (below 0.7 Vrms but above drive threshold)  b. Low input detector failure on input module if input is good
3	Input Module(s) ALARM LED red  Quad Distribution Amplifier Module ALARM LEDs on  Chassis Power Supply Module ALARM LED red	Input lost

Table 1: Troubleshooting Chart		
Symptom		Probable Cause
4	Input Module(s) ALARM LED off or green  One or more Quad Distribution Amplifier Module ALARM LEDs on  Chassis Power Supply Module ALARM LED red	a. Low or lost output from input module  b. Low output from Dist. Amp, refer to Section 2.2 for alignment procedures  c. ALARM threshold set incorrectly, refer to Section 2.2 for alignment procedures

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