



ANALOG WAY®

SMART SCALER™ (SMS100)

User's Manual

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SAFETY INSTRUCTIONS

All of the safety and operating instructions should be read before the product is operated and should be retained for further reference. Please follow all of the warnings on this product and its operating instructions.

CAUTION :

WARNING : To prevent the risk of electric shock and fire, do not expose this device to rain, humidity or intense heat sources (such as radiators or direct sunlight).

SLOTS AND OPENINGS in the device are provided for ventilation and to avoid overheating. Make sure the device is never placed on or near a textile surface that could block the openings. Also keep away from excessive dust, vibrations and shocks.

POWER : Only use the power supply indicated on the device or on the power source. Devices equipped with a grounding plug should only be used with a grounding type outlet. In no way should this grounding be modified, avoided or suppressed.

POWER CORD : Use the On (I) / Off (O) switch to power On or Off devices equipped with that switch. All other devices should be plugged and unplugged from wall outlet.

In both cases, please follow these instructions :

- The power cord of the device should be unplugged from the outlet when left unused for several days.
- To unplug the device, do not pull on the power cord but always on the plug itself.
- The outlet should always be near the device and easily accessible.
- Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them.

If the power supply cord is damaged, unplug the device. Using the device with a damaged power supply cord may expose you to electric shocks or other hazards. Verify the condition of the power supply cords once in a while. Contact your dealer or service center for replacement if damaged.

CONNECTIONS : All inputs and outputs (except for the power input) are TBTS defined under EN60950.

SERVICING : Do not attempt to service this product yourself by opening or removing covers and screws since it may expose you to electric shocks or other hazards. Refer all problems to qualified service personnel.

OPENINGS : Never push objects of any kind into this product through the openings. If liquids have been spilled or objects have fallen into the device, unplug it immediately and have it checked by a qualified technician.

INSTRUCTIONS DE SÉCURITÉ

Afin de mieux comprendre le fonctionnement de cet appareil nous vous conseillons de bien lire toutes les consignes de sécurité et de fonctionnement de l'appareil avant utilisation. Conserver les instructions de sécurité et de fonctionnement afin de pouvoir les consulter ultérieurement. Respecter toutes les consignes marquées dans la documentation, sur le produit et sur ce document.

PRÉCAUTION & AVERTISSEMENT :

ATTENTION : Afin de prévenir tout risque de choc électrique et d'incendie, ne pas exposer cet appareil à la pluie, à l'humidité et aux sources de chaleur intense.

INSTALLATION : Veillez à assurer une circulation d'air suffisante pour éviter toute surchauffe à l'intérieur de l'appareil.

Ne placez pas l'appareil sur ou proximité de surface textile susceptible d'obstruer les orifices de ventilation.

N'installez pas l'appareil à proximité de sources de chaleur comme un radiateur ou une bouche d'air chaud, ni dans un endroit exposé au rayonnement solaire direct, à des poussières excessives, à des vibrations ou à des chocs mécaniques. Ceci pourrait provoquer un mauvais fonctionnement et un accident.

ALIMENTATION : Ne faire fonctionner l'appareil qu'avec la source d'alimentation indiquée sur l'appareil ou sur son bloc alimentation. Pour les appareils équipés d'une alimentation principale avec fil de terre, ils doivent être obligatoirement connectés sur une source équipée d'une mise à la terre efficace. En aucun cas cette liaison de terre ne devra être modifiée, contournée ou supprimée.

CORDON D'ALIMENTATION : Pour les appareils équipés d'un interrupteur général (Marche I / Arrêt O), la mise sous tension et la mise hors tension se fait en actionnant cet interrupteur général.

Pour les appareils sans interrupteur général, la mise sous tension et la mise hors tension se fait directement en connectant et déconnectant la prise murale.

Dans les 2 cas ci-dessus appliquer les consignes suivantes :

- Débrancher l'appareil de la prise murale si vous prévoyez de ne pas l'utiliser pendant quelques jours ou plus.
- Pour débrancher le cordon, tirez le par la fiche. Ne tirez jamais sur le cordon proprement dit.
- La prise d'alimentation doit se trouver à proximité de l'appareil et être aisément accessible.
- Ne laissez pas tomber le cordon d'alimentation et ne posez pas d'objets lourds dessus.

Si le cordon d'alimentation est endommagé, mettez immédiatement l'appareil hors tension. Il est dangereux de faire fonctionner cet appareil avec un cordon endommagé, un câble abîmé peut provoquer un risque d'incendie ou un choc électrique. Vérifier le câble d'alimentation de temps en temps. Contacter votre revendeur ou le service après vente pour un remplacement.

CONNEXIONS : Toutes les entrées et sorties (exceptée l'entrée secteur) sont de type TBTS (Très Basse Tension de Sécurité) définies selon EN 60950.

RÉPARATION ET MAINTENANCE : L'utilisateur ne doit en aucun cas essayer de procéder aux opérations de dépannage, car l'ouverture des appareils par retrait des capots ou de toutes autres pièces constituant les boîtiers ainsi que le dévissage des vis apparentes à l'extérieur, risque d'exposer l'utilisateur à des chocs électriques ou autres dangers. Contacter le service après vente ou votre revendeur ou s'adresser à un personnel qualifié uniquement.

OUVERTURES ET ORIFICES : Les appareils peuvent comporter des ouvertures (aération, fentes, etc...), veuillez ne jamais y introduire d'objets et ne jamais obstruer ses ouvertures. Si un liquide ou un objet pénètre à l'intérieur de l'appareil, débranchez immédiatement l'appareil et faites le contrôler par un personnel qualifié avant de le remettre en service.

SICHERHEITSHINWEISE : DEUTSCH

Um den Betrieb dieses Geräts zu verstehen, raten wir Ihnen vor der Inbetriebnahme alle Sicherheits- und Betriebsanweisungen genau zu lesen. Diese Sicherheits- und Betriebsanweisungen für einen späteren Gebrauch sicher aufbewahren. Alle in den Unterlagen, an dem Gerät und hier angegebenen Sicherheitsanweisungen einhalten.

VORSICHT & WARNUNG

ACHTUNG: um jegliches Risiko eines Stromschlags oder Feuers zu vermeiden, das Gerät nicht Regen, Feuchtigkeit oder intensiven Wärmequellen aussetzen.

EINBAU : Eine ausreichende Luftzufuhr sicherstellen, um jegliche Überhitzung im Gerät zu vermeiden. Das Gerät nicht auf und in Nähe von Textiloberflächen, die Belüftungsöffnungen verschließen können, aufstellen. Das Gerät nicht in Nähe von Wärmequellen, wie z.B. Heizkörper oder Warmluftkappe, aufstellen und es nicht dem direkten Sonnenlicht, übermäßigem Staub, Vibrationen oder mechanischen Stößen aussetzen. Dies kann zu Betriebsstörungen und Unfällen führen.

STROMVERSORGUNG : Das Gerät nur mit der auf dem Gerät oder dem Netzteil angegebenen Netzspannung betreiben. Geräte mit geerdeter Hauptstromversorgung müssen an eine Stromquelle mit effizienter Erdung angeschlossen werden. Diese Erdung darf auf keinen Fall geändert, umgangen oder entfernt werden.

STROMKABEL : Für Geräte mit einem Hauptschalter (Ein/Aus) erfolgt die Stromversorgung und unterbrechung mittels dieses Hauptschalters.

Geräte ohne Hauptschalter werden durch das Einstecken oder Herausziehen des Steckers in den Wandanschluß ein- oder ausgeschaltet.

Für beide Fälle gelten folgende Richtlinien :

- Den Stecker aus dem Wandanschluß herausziehen wenn Sie das Gerät mehrere Tage oder länger nicht benutzen.
- Das Kabel mittels dem Stecker herausziehen. Niemals am Stromkabel selbst ziehen.
- Die Steckdose muß sich in der Nähe des Geräts befinden und leicht zugänglich sein.
- Das Stromkabel nicht fallen lassen und keine schweren Gegenstände auf es stellen.

Wenn das Stromkabel beschädigt ist, das Gerät sofort abschalten. Es ist gefährlich das Gerät mit einem beschädigten Stromkabel zu betreiben; ein abgenutztes Kabel kann zu einem Feuer oder Stromschlag führen. Das Stromkabel regelmäßig untersuchen. Für den Ersatz, wenden Sie sich an Ihren Verkäufer oder Kundendienststelle.

ANSCHLÜSSE : Bei allen Ein- und Ausgängen (außer der Stromversorgung) handelt es sich, gemäß EN 60950, um Sicherheits Kleinspannungsanschlüsse.

REPARATUR UND WARTUNG : Der Benutzer darf keinesfalls versuchen das Gerät selbst zu reparieren, die Öffnung des Geräts durch Abnahme der Abdeckhaube oder jeglichen anderen Teils des Gehäuses sowie die Entfernung von außen sichtbaren Schrauben zu Stromschlägen oder anderen Gefahren für den Benutzer führen kann. Wenden Sie sich an Ihren Verkäufer, Ihre Kundendienststelle oder an qualifizierte Fachkräfte.

ÖFFNUNGEN UND MUNDUNGEN : Die Geräte können über Öffnungen verfügen (Belüftung, Schlitze, usw.). Niemals Gegenstände in die Öffnungen einführen oder die Öffnungen verschließen. Wenn eine Flüssigkeit oder ein Gegenstand in das Gerät gelangt, den Stecker herausziehen und es vor einer neuen Inbetriebnahme von qualifiziertem Fachpersonal überprüfen lassen.

INSTRUCCIONES DE SEGURIDAD: ESPAÑOL

Para comprender mejor el funcionamiento de este aparato, le recomendamos que lea cuidadosamente todas las consignas de seguridad y de funcionamiento del aparato antes de usarlo. Conserve las instrucciones de seguridad y de funcionamiento para que pueda consultarlas posteriormente. Respete todas las consignas indicadas en la documentación, relacionadas con el producto y este documento.

PRECAUCIONES Y OBSERVACIONES

CUIDADO : Para prevenir cualquier riesgo de choque eléctrico y de incendio, no exponga este aparato a la lluvia, a la humedad ni a fuentes de calor intensas.

INSTALACIÓN : Cerciórese de que haya una circulación de aire suficiente para evitar cualquier sobrecalentamiento al interior del aparato. No coloque el aparato cerca ni sobre una superficie textil que pudiera obstruir los orificios de ventilación. No instale el aparato cerca de fuentes de calor como radiador o boca de aire caliente, ni en un lugar expuesto a los rayos solares directos o al polvo excesivo, a las vibraciones o a los choques mecánicos. Esto podría provocar su mal funcionamiento o un accidente.

ALIMENTACIÓN : Ponga a funcionar el aparato únicamente con la fuente de alimentación que se indica en el aparato o en su bloque de alimentación. Los aparatos equipados con una alimentación principal con hilo de tierra deben estar conectados obligatoriamente a una fuente equipada con una puesta a tierra eficaz. Por ningún motivo este enlace de tierra deberá ser modificado, cambiado o suprimido.

CABLE DE ALIMENTACIÓN : Para los aparatos equipados con un interruptor general (Marcha I / Paro O), la puesta bajo tensión y la puesta fuera de tensión se hace accionando este interruptor general.. En los aparatos que no tienen interruptor general, la puesta bajo tensión y la puesta fuera de tensión se hace directamente conectando y desconectando el enchufe mural.

En ambos casos, se deberá respetar las siguientes consignas:

- Desconectar el aparato del enchufe mural si no piensa utilizarlo durante varios días.
- Para desconectar el cable, tire de la clavija. No tire nunca del cable propiamente dicho.
- El enchufe de alimentación debe estar cerca del aparato y ser de fácil acceso.
- No deje caer el cable de alimentación ni coloque objetos pesados encima de él.

Si el cable de alimentación sufriera algún daño, ponga el aparato inmediatamente fuera de tensión. Es peligroso hacer funcionar este aparato con un cable averiado, ya que un cable dañado puede provocar un incendio o un choque eléctrico. Verifique el estado del cable de alimentación de vez en cuando. Póngase en contacto con su distribuidor o con el servicio de posventa si necesita cambiarlo.

CONEXIONES : Todas las entradas y salidas (excepto la entrada del sector) son de tipo TBTS (Muy Baja Tensión de Seguridad) definidas según EN 60950

REPARACIÓN Y MANTENIMIENTO : Por ningún motivo, el usuario deberá tratar de efectuar operaciones de reparación, ya que si abre los aparatos retirando el capó o cualquier otra pieza que forma parte de las cajas o si destornilla los tornillos aparentes exteriores, existe el riesgo de producirse una explosión, choques eléctricos o cualquier otro incidente. Contacte el servicio de posventa, a su distribuidor o diríjase con personal cualificado únicamente.

ABERTURAS Y ORIFICIOS : Los aparatos pueden contener aberturas (aireación, ranuras, etc.). No introduzca allí ningún objeto ni obstruya nunca estas aberturas. Si un líquido o un objeto penetra al interior del aparato, desconéctelo y hágalo revisar por personal cualificado antes de ponerlo nuevamente en servicio.

SMART SCALER™**Chapter 1 : INTRODUCTION****1-1. SUPPLIED EQUIPMENT**

- **1 SMART SCALER™ (SMS100)**
- 1 Set of 19" Brackets
- 1 AC Power supply cord
- 1 VGA cable (HD15 Male / Male)
- 1 S.VIDEO (Y/C) cable
- 1 RCA Male /Male cable
- 1 RCA Female / BNC Male adapter
- 1 5xBNC to HD15 Female cable
- 1 Remote Control Software (3.5" Disk)
- 1 User's Manual

1-2. GENERAL INFORMATION

The SMART SCALER™ combines the functions of a High Resolution Video Scaler with a video switcher. In addition, a Computer or External Input is provided for direct display of your Presentations or Internet applications.

- The SMART SCALER™ is a state of the art improved **SCALER / LINE MULTIPLIER** which significantly increases the Video image resolution and brightness. The very High Quality decoder includes an Advanced Comb Filter, an emphasized "natural" color processing, a highly robust sync. detection and a new enhanced 3D auto-adaptive de-interlacing scheme (for motion artifacts), with correction of the "film to video" transfer (3/2 pulldown for NTSC). It provides you with a "cinema like" image.
- In addition, and according to your requirements, you can continuously adjust special image parameters like the Sharpness for detail emphasis, the Stepness Enhancer for subtitle readability improvements, the Coring processor for removing High Frequency noise found in some "VCR" tapes without affecting the bandwidth, and the Gamma Corrector, which optimizes your CRT, DLP, LCD's Luma response.
- The input source aspect ratio 4/3, letterbox, Widescreen can be selected as well as the size of the SCREEN (4/3-16/9).
- The Frame Conversion & Time Base Correction provide a High End A/V Pro & Home Theater solution.

Chapter 2 : INSTALLING

- Table Top Mounting: The SMART SCALER™ can be used directly on a table: the unit is equipped with 4 plastic feet.

- Rack Mounting: The SMART SCALER™ is compatible with a 19" enclosure . Please follow the instructions below to install the SMART SCALER™ into a 19" rack :

- **Screw the supplied 19" brackets to the sides of the SMART SCALER™ .**



- **Put the SMART SCALER™ into the rack.**

NOTE : The 19" front panel screws are not included.

- **The openings in the top cover and in the rear panel are for cooling. Do not cover these openings.**
- **Be sure that no weight is added to the SMART SCALER™ in excess of 2 kg (4.4 lbs.).**
- **The maximum ambient operating temperature must not exceed 40°C (104°F).**
- **The rack and all mounted equipment in it must be reliably grounded to national and local electrical codes.**

Chapter 3 : TECHNICAL DESCRIPTION**3-1. FRONT PANEL**

COMPUTER :	COMPUTER input selection.
COMPOSITE 1 :	COMPOSITE 1 input selection.
COMPOSITE 2 :	COMPOSITE 2 input selection.
S.VIDEO 1 :	S.VIDEO 1 input selection.
S.VIDEO 2 :	S.VIDEO 2 input selection.
RGB & COMPONENT :	RGB / COMPONENT (R-Y, Y, B-Y) input selection.
FREEZE :	Freezes the displayed image.
CONTROL ◀ ▶ :	Allows to select items in the LCD menu.
EXIT MENU :	Allows to exit from an LCD menu.
ENTER :	Allows to validate a selected item.
LCD SCREEN :	Displays the device Status or the Control Menus.
ON / OFF :	AC power switch (O = OFF, I = ON).

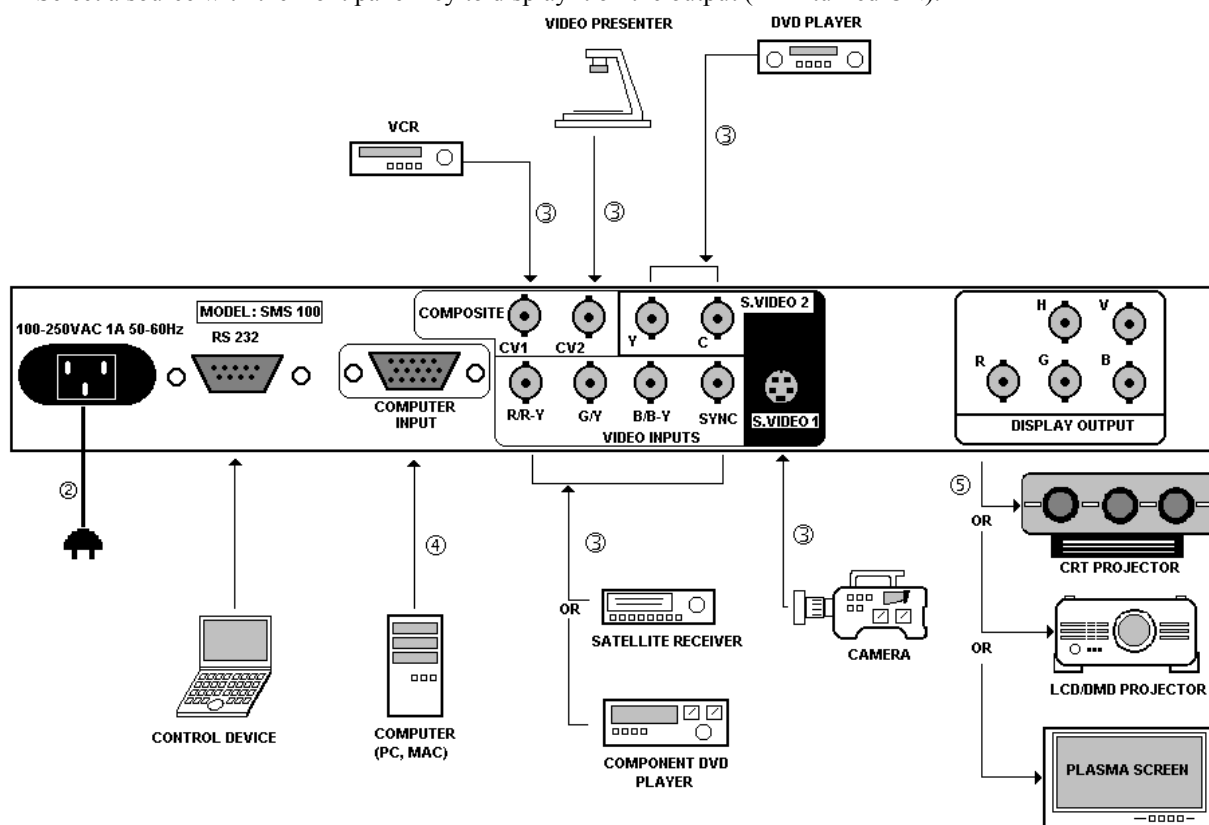
3-2. REAR PANEL

POWER INPUT :	Standard IEC connector (100-250VAC, 1A, 50-60Hz).
REMOTE RS-232 :	Standard remote control on DB9 Female connector.
COMPUTER INPUT :	Computer (PC, MAC, WORKSTATION) input on HD15 Female connector.
ROOM +12Vdc TRIGGER :	A Room control output (3.5 mm JACK female) controlled by the AC main switch. When you switch ON your SMART SCALER™ the ROOM output is activated (+12 Vdc trigger), which allows to control external units such as Up/Down screen, switching ON your projector, lighting...
VIDEO INPUTS	
C.V 1 :	COMPOSITE 1 video input on BNC connector.
C.V 2 :	COMPOSITE 2 video input on BNC connector.
S.VIDEO 1 :	S.VIDEO 1 (Y/C) input on 4 pin mini DIN connector.
S.VIDEO 2 :	S.VIDEO 2 (Y/C) input on 2 x BNC connectors.
RGB SYNC / R-Y, Y, B-Y :	RGB/S or YUV (COMPONENT) video inputs on 3 or 4 BNC connectors.
DISPLAY OUTPUT :	DATA output (RGB HV or RGB.S) on 4 or 5 BNC connectors

Chapter 4 : STARTING

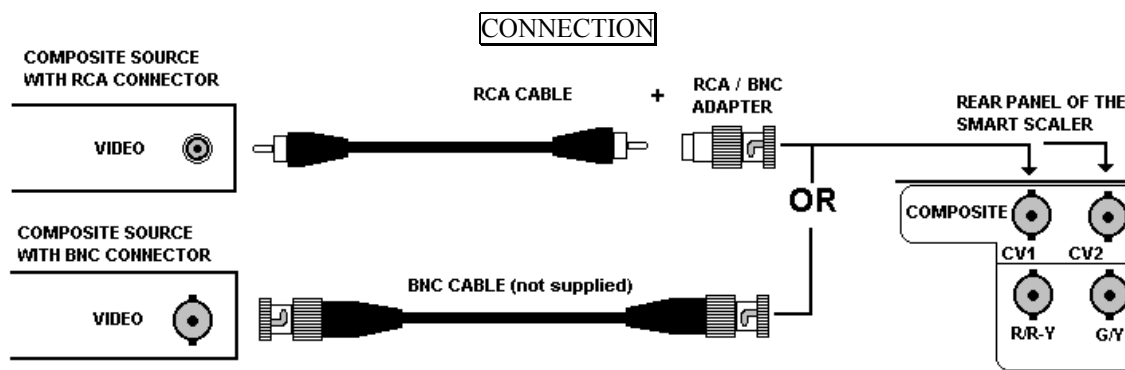
4-1. CONNECTIONS

- ① Turn OFF all of your equipment before connecting,
- ② Connect the AC Power supply cord to the SMART SCALER™ and to an AC power outlet,
- ③ Connect your video sources (VCR, DVD, camera, laser disc, ...) to the C.V1, C.V2, S.VIDEO 1, S.VIDEO 2 and RGB.S or COMPONENT (R-Y, Y, B-Y) inputs,
- ④ Connect your computer source to the COMPUTER INPUT,
- ⑤ Connect the "DISPLAY OUTPUT" of the SMART SCALER™ to the DATA INPUT of your display device (data projector, plasma screen,...).
- ⑥ Turn ON all of your input sources, the SMART SCALER™ (front panel switch) and then your display device.
- ⑦ Select a source with the front panel key to display it on the output (LED turned ON).



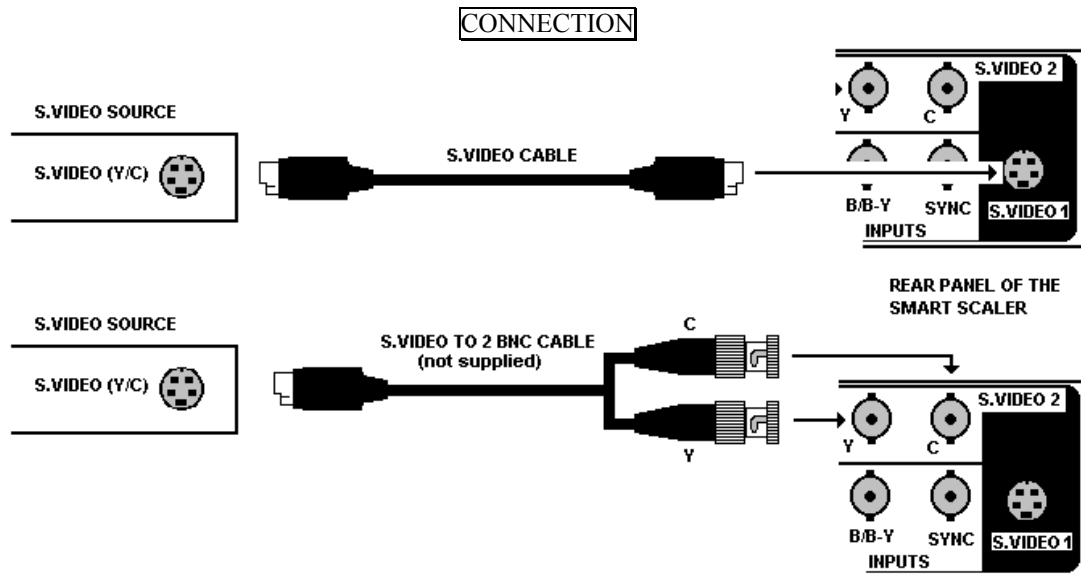
4-2. COMPOSITE VIDEO INPUTS (C.V1 & C.V2)

The Composite Video signal, usually called COMPOSITE or VIDEO, is available on most video equipment (VCR, DVD, CAMERA...), but it is also the lowest in picture quality. The video standard of this signal could be NTSC, PAL or SECAM. The signal is transmitted by a single coaxial cable, and is connected to the video equipment with an RCA or BNC connector.



4-3. S.VIDEO INPUTS

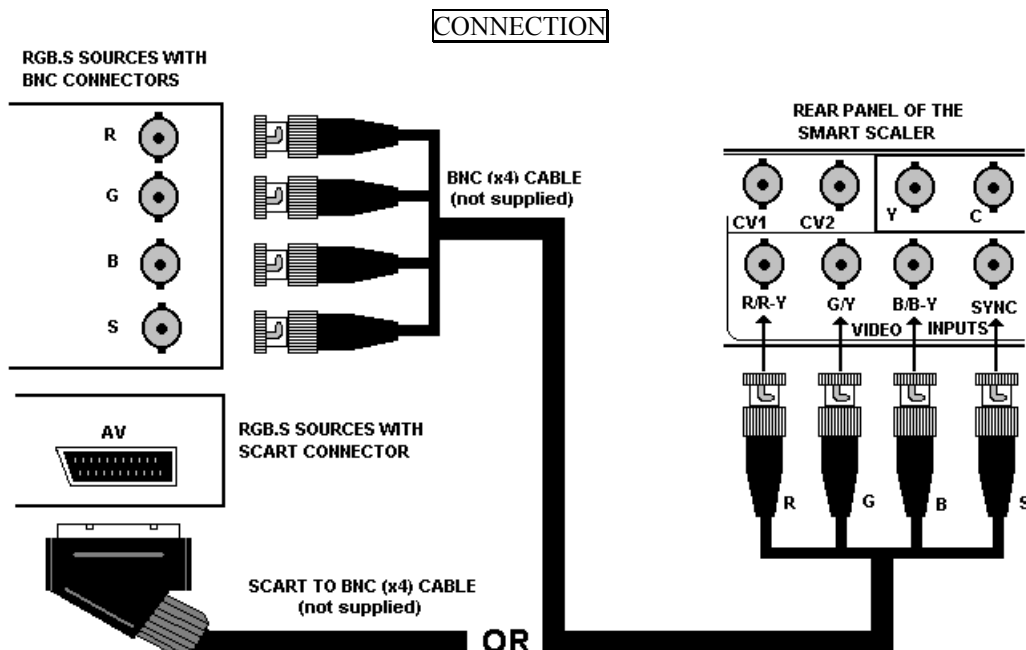
The S.VIDEO (Super Video) signal, also called Y/C, HI-8™, or S.VHS™, is available on most DVD players and high quality VCR (S.VHS). The S.VIDEO signal, in which the Luminance (Y) and Chrominance (C) informations are separately transmitted (2 wires), gives a higher quality picture than the Composite video signal. The S.VIDEO connector is usually a 4 pin Mini-DIN connector also called Oshiden™ connector. It can also sometimes be on 2 BNC connectors.



4-4. RGB.S & COMPONENT INPUT

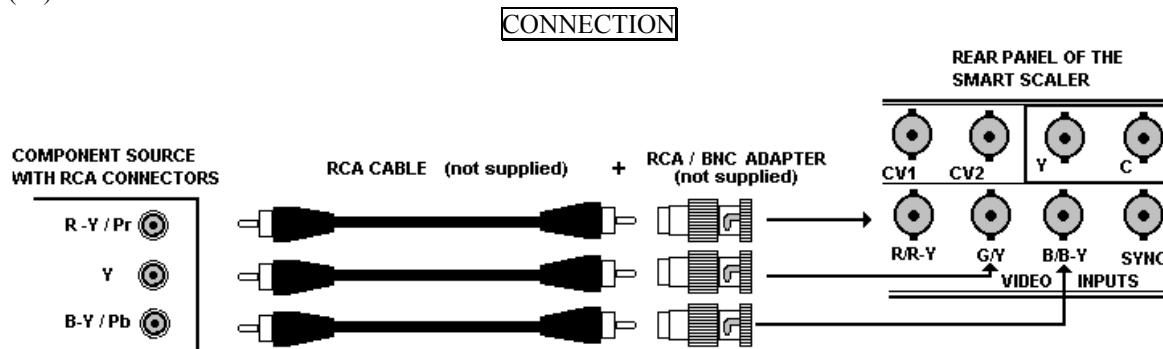
① RGBS VIDEO SIGNAL

The RGB.S signal, also called RGB Sync., is an RGB signal with COMPOSITE Sync. This signal is widely used in broadcasting and is available on European DVD players and Satellite receivers. The RGB.S signal is transmitted with 4 coaxial cables, and it has a better picture quality than COMPOSITE or S.VIDEO signals. The RGB.S connectors are usually BNC connectors for Broadcasting equipment, and SCART connectors for DVD players and Satellite Receivers.



② COMPONENT VIDEO SIGNAL (Y, R-Y, B-Y)

The Component Video signal, also called YUV (Y, R-Y, B-Y), or BETACAM™, is widely used in broadcasting and is available on high-quality DVD players. The COMPONENT signal is transmitted with 3 coaxial cables, and also has a better picture quality than COMPOSITE and S.VIDEO signals. The COMPONENT connectors are usually RCA (x3), or BNC (x3) connectors.



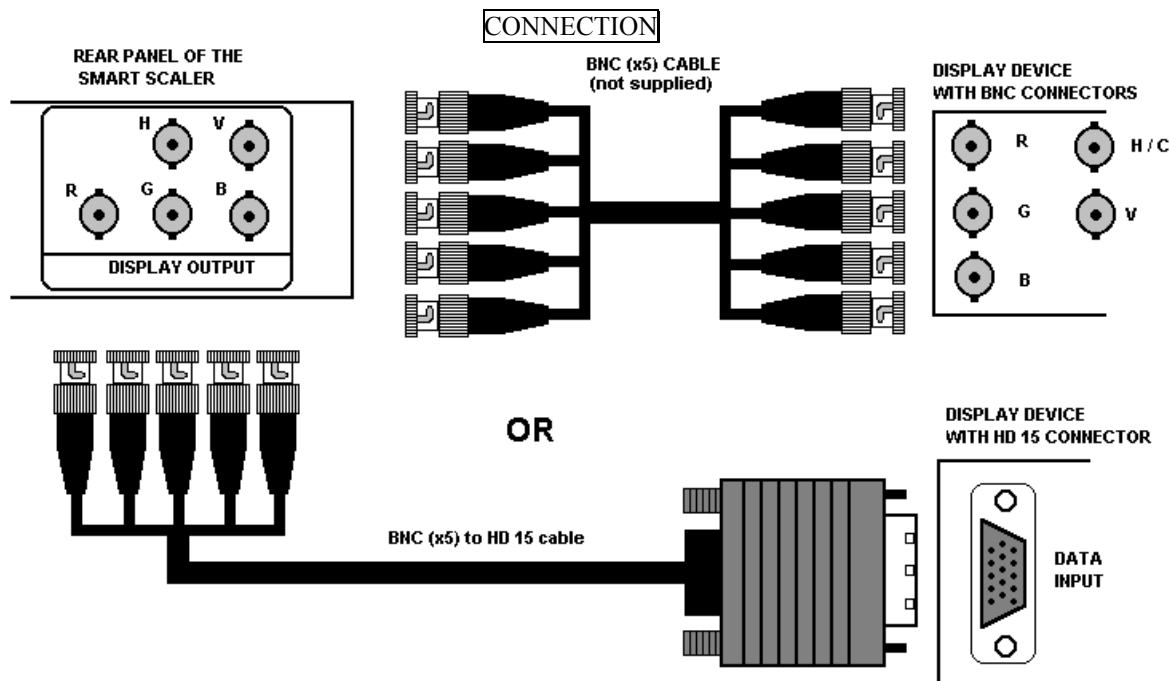
4-5. COMPUTER INPUT

This input is used to pass-through any High-definition or Computer signals. The signal connected to this input is sent directly to the display output. You may connect a Computer source (PC, MAC, WORKSTATION), or a high definition source (progressive DVD player, HDTV). Use the VGA supplied cable (HD15 male/male) to connect a PC. For other sources you may need some adapters (not supplied).

4-6. DISPLAY OUTPUT

The SMART SCALER™ is equipped with a 5 BNC connectors output. If your display device is equipped with an HD 15 connector : use the supplied BNC to HD 15 cable (See connection schematic below).

The SMART SCALER™ can provide an RGBHV (H & V Separate Sync.) or an RGBS (Composite Sync.) output signal. If your display device only accepts Composite Sync., connect the C.SYNC. cable to the H BNC of the SMART SCALER™ and select COMP (Composite Sync.) in the LCD menu # 2-1.



Chapter 5 : OPERATING MODE

5-1. SETTINGS

- ① We recommend to reset the SMART SCALER™ to all of its default values, with the LCD menu # 4-5, before proceeding.
- ② Select the video type of the signal connected to the RGB/YUV input (LCD menu # 1-3).
- ③ Select the type of screen (4/3 or 16/9) in LCD menu # 2-4.
- ④ Select the output Sync. type which corresponds to your display device (LCD menu # 2-1).
- ⑤ Select the Output rate mode (LCD menu # 2-3). See the OUTPUT RATE MODES TABLE.
- ⑥ Select an Output Format (LCD menu # 2-2).

NOTE: For fixed pixels display device (DMD, LCD, PLASMA...), always select the output format corresponding to the native resolution of your display device. Thus, the display device will not have to scale the image and the result will be better.

OUTPUT RATE MODES TABLE

MODES (OSD menu # 2-3)	OUTPUT RATE = VIDEO IN RATE	OUTPUT RATE = INTERNAL RATE
APPLICATIONS	Movie and motion pictures display.	Video presentation (static pictures).
OUTPUT FRAME RATE	Locked on the Frame Rate of the selected video input (50 Hz if PAL or SECAM and 59.94 Hz if NTSC)	Generated by the SMART SCALER™ (60 Hz or 75 Hz)
OUTPUT FORMAT AVAILABLE (LCD menu # 2-2)	• 640 x 480L (at 50 or 59.94 Hz - 4/3) • 852 x 480L (Plasma 42" at 50 or 59.94 Hz - 16/9) • 800 x 600L (at 50 or 59.94 Hz - 4/3) • 1024 x 768L (at 50 or 59.94 Hz - 4/3) • 1280 x 720L (HDTV at 50 or 59.94 Hz - 16/9) • 1280 x 768L (Plasma 50" at 50 or 59.94 Hz - 16/9) • 1280 x 960L (Line quadrupler at 50 or 59.94 Hz - 4/3) • 1280 x 1024L (at 50 or 59.94 Hz - 4/3) • 1365 x 768L (at 50 or 59.94 Hz - 16/9) • 1365 x 1024L (at 50 or 59.94 Hz - 4/3)	• VGA (640 x 480) at 60 Hz or 75 Hz • PLASMA 42" (852 x 480) at 60 Hz or 72 Hz • SVGA (800 x 600) at 60Hz or 75Hz • MAC (640 x 480) at 66Hz or 75Hz • XGA2 (1024 x 768) at 60Hz or 75 Hz • PLASMA 50" (1280 x 768) at 56 Hz or 75 Hz • SXGA (1280 x 1024) at 60 Hz or 75 Hz • D-ILA 16/9 (1365 x 768) at 60 Hz

5-2. IMAGE ADJUSTMENTS

For each input source connected to the SMART SCALER™, do the following adjustments:

- ① Select the aspect ratio of your input source (LCD menu #3-6).
- ② Adjust the position and size with the LCD menus (#3-1, #3-2, #3-3, #3-4).
- ③ Do any other adjustments, if necessary, available with the LCD menu # 3 (color, brightness, image process...).

NOTE: The image adjustments are only active for the selected video input.

NOTE: To preset your image adjustments to the factory default values, select the video input and then use the LCD menu # 3-12 (Preset).

Chapter 6 : LCD SCREEN

6-1. LCD DESCRIPTION

The LCD screen is composed of 2 modes: the STATUS MODE and the CONTROL MODE.

- The STATUS MODE indicates the input and output status of the SMART SCALER™.
- The CONTROL MODE allows to select and adjust the parameters of the SMART SCALER™.

The LCD screen is controlled by 3 buttons :

◀ ▶ **CONTROL** knob: To scroll thru the different menus.

EXIT / MENU button:

- From the STATUS MODE, press this button to display the CONTROL MODE
- From the CONTROL MODE, press this button to :
 - return to the previous menu,
 - return to the STATUS MODE (press several times),
 - return without safeguarding the item.

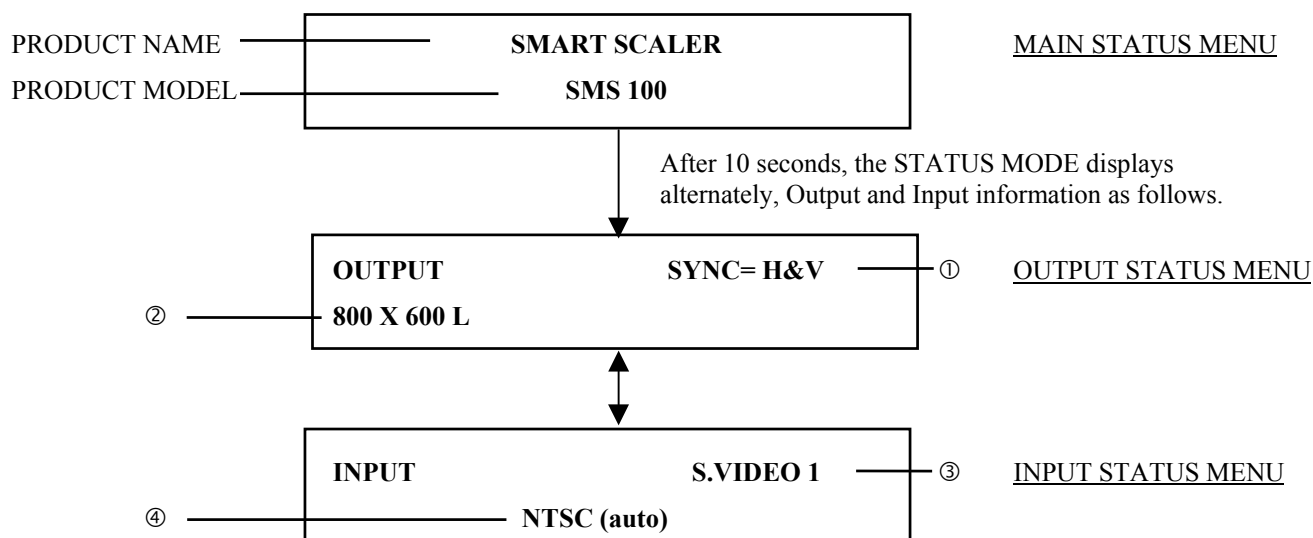
ENTER button :

- From the STATUS MODE, press this button to return to the last consulted menu.
- From the CONTROL MODE, press this button to confirm a selected item.

NOTE : When entering in the CONTROL MODE, the LCD window will automatically display the STATUS MODE after 60 seconds of inactivity of the front panel buttons.

6-2. STATUS MODE

When switching ON, the LCD SCREEN shows the product's name and reference as follows:



① OUTPUT SYNC TYPE (H&V = H & V Separate Sync, COMP = Composite Sync)

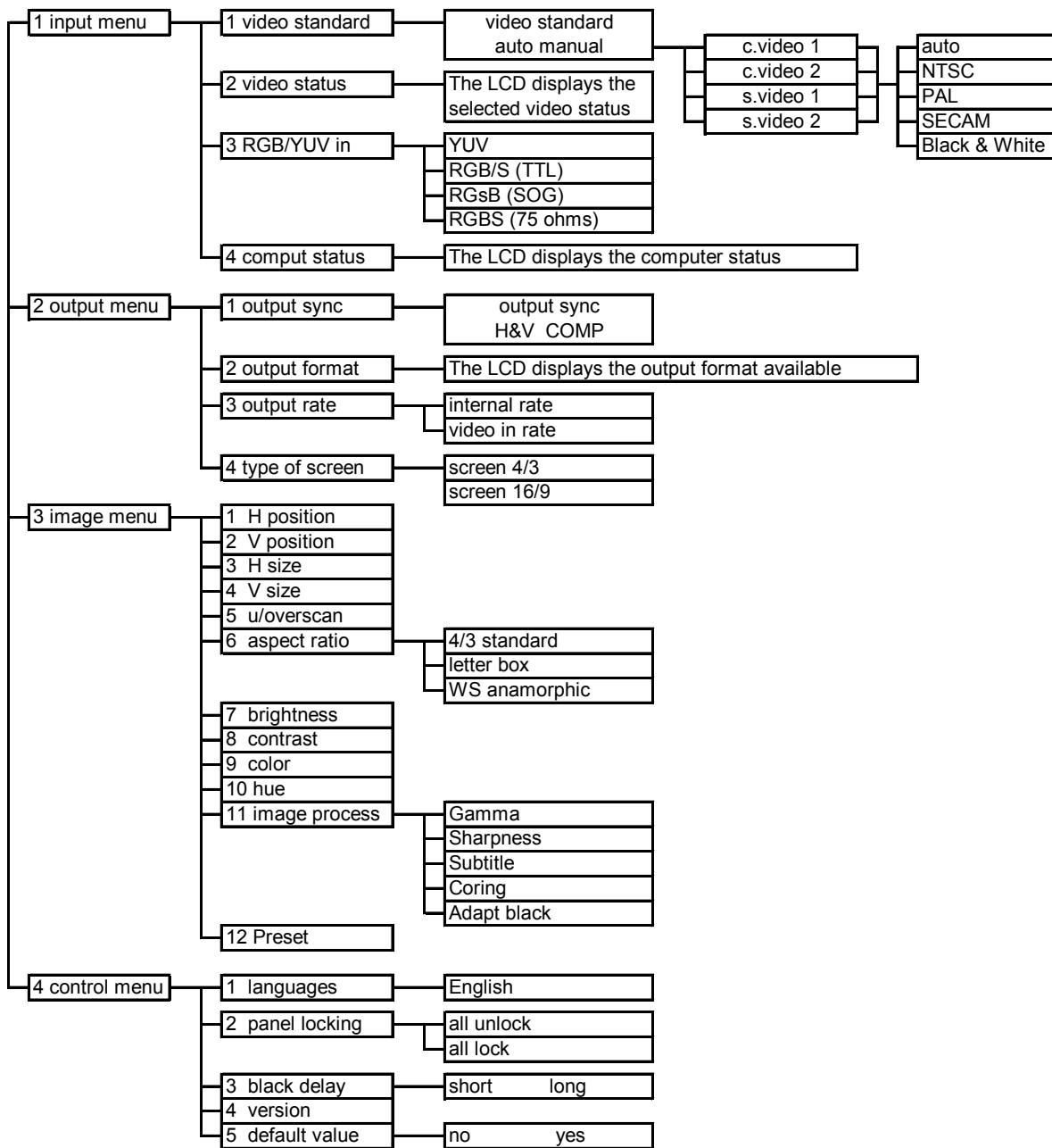
② OUTPUT FORMAT

③ DISPLAYED INPUT

④ VIDEO STANDARD OF THE DISPLAYED INPUT

6-3. CONTROL MODE

The menus of the CONTROL MODE are configured as follow :



Chapter 7 : LCD MENUS DESCRIPTION

1 ▶ [INPUT MENU] + ENTER

1-1 [video standard] + ENTER

Select an item with ◀ ▶ + **ENTER**

- [auto] = Automatic recognition of the video standard for each input. If the standard is not detected correctly, please use the [MANUAL] setting.
- [manual] = Manual selection of the video standard for each input.

① Select an input with ◀ ▶ + **ENTER**

- [c.video 1]
- [c.video 2]
- [s.video 1]
- [s.video 2]

② Select the video standard with ◀ ▶ + **ENTER**

- [auto] = Automatic detection.
- [NTSC] = NTSC detection only.
- [PAL] = PAL detection only.
- [SECAM] = SECAM detection only.
- [Black & White] = Black and White detection only.

1-2 [video status] + ENTER

Indicates the status of the selected video input.

- [S.VIDEO 1] = Selected input.
- [NTSC] = Video standard of this input.

1-3 [RGB/YUV in] + ENTER

Select the video signal connected to the RGB / YUV (R-Y / Y / B-Y) input :

- [YUV] = Component (YUV) video signal.
- [RGB/S (TTL)] = RGB/S video signal with TTL Composite Sync.
- [RGsB (SOG)] = RGsB video signal with analog Composite Sync. On Green.
- [RGB/S (75 Ω)] = RGB/S with an analog Composite Sync. (0.3 Vp/p).

1-4 [comput status] + ENTER

Indicates the status of the computer

- [COMP] = Composite Sync. or [H&V] = Separate H & V Sync.
- [SXGA] = Name of the input format.
- [64.0K / 60Hz] = Input line frequency / Input frame frequency (kHz / Hz).

2 ▶ [OUTPUT MENU] + ENTER

2-1 [output sync] + ENTER

Select the Output Sync. type with ◀ ▶ + **ENTER**

- [H&V] = Separate H & V Sync.
- [COMP] = Composite Sync.

2-2 [output format] + ENTER

The output formats available depend on the "OUTPUT RATE" selection (LCD menu #2-3)

Select an output format with ◀ ▶ + **ENTER**

- If [output rate] = [video in rate], the LCD window displays the following formats :

- 640 x 480L (Line doubler: 480p/59.94 Hz or 576p/50 Hz- 4/3)
- 852 x 480L (Plasma 42" at 50 Hz or 59.94 Hz- 16/9)
- 800 x 600L (at 50 Hz or 59.94 Hz- 4/3)
- 1024 x 768L (at 50 Hz or 59.94 Hz- 4/3)
- 1280 x 720L (HDTV 720p at 50 Hz or 59.94 Hz- 16/9)
- 1280 x 768L (Plasma 50" at 50 Hz or 59.94 Hz- 16/9)
- 1280 x 960L (Line Quadrupler at 50 Hz or 59.94 Hz- 4/3)
- 1280 x 1024L (at 50 Hz or 59.94 Hz)
- 1365 x 768L (at 50 Hz or 59.94 Hz - 16/9)
- 1365 x 1024L (at 50 Hz or 59.94 Hz- 4/3)

NOTE: The output rate is 50 Hz for PAL & SECAM video inputs, or 59.94 Hz for NTSC video inputs.

- If [output rate] = [internal rate], the LCD window displays the following formats :

- VGA 60 Hz (640 x 480 at 60 Hz)
- Plasma 42" 60 Hz (852 x 480 at 60 Hz)
- SVGA 60 Hz (800 x 600 at 60 Hz)
- MAC 66 Hz (640 x 480 at 66 Hz)
- XGA 60 Hz (1024 x 768 at 60 Hz)
- Plasma 50" 56 Hz (1280 x 768 at 56 Hz)
- SXGA 60 Hz (1280 x 1024 at 60 Hz)
- VGA 75 Hz (640 x 480 at 75 Hz)
- Plasma 42" 72 Hz (852 x 480 at 72 Hz)
- SVGA 75 Hz (800 x 600 at 75 Hz)
- MAC 16" 75Hz (832 x 624 at 75 Hz)
- XGA 75 Hz (1024 x 768 at 75 Hz)
- Plasma 50" 75Hz (1280 x 768 at 75 Hz)
- SXGA 75 Hz (1280 x 1024 at 75 Hz)
- D-ILA 60 Hz (1365 x 768 at 60 Hz)

NOTE: For fixed pixels display device (DMD, LCD, PLASMA...), always select the output format corresponding to the native resolution of the display device. Thus, the display device will not have to scale the image and the result will be better.

2-3 [output rate] + ENTER

Select an item with ◀ ▶ + **ENTER**

- [internal rate] = The output Frame Rate is 60 Hz or 75 Hz depending of the selected Output Format (LCD menu # 2-2). A high level frame frequency gives a better visual aspect when displaying static pictures.
- [video in rate] = The Output Frame Rate is identical to the Video Input Frame Rate : 50 Hz frame rate if the video is PAL or SECAM and 59.94 Hz if the video is NTSC. This function allows to improve the motion pictures.

2-4 [type of screen]

Select an item with ◀ ▶ + **ENTER**

- [screen 4/3] = if your image is displayed on a 4/3 screen.
- [screen 16/9] = if your image is displayed on a 16/9 screen.

NOTE: The 16/9 type of screen mode does not support the NTSC 4/3 standard image if the selected Output format is 1280 x 960L, 1280 x 1024L, 1365 x 1024L , XGA 75Hz or SXGA.

3 ▶ [IMAGE MENU] + ENTER

NOTE : This menu is available and active only on the selected video source. This menu is not available for the COMPUTER INPUT. The image settings and adjustments can be different and separately memorized for each video input.

3-1 [H position] + ENTER

Adjust the Horizontal position with ◀ ▶ + ENTER

3-2 [V position] + ENTER

Adjust the Vertical position with ◀ ▶ + ENTER

3-3 [H size] + ENTER

Adjust the Horizontal size with ◀ ▶ + ENTER

3-4 [V size] + ENTER

Adjust the Vertical size with ◀ ▶ + ENTER

3-5 [u / over scan] + ENTER

Select Underscan or Overscan with ◀ ▶ + ENTER

- [underscan] = Output image is the full input image.
- [overscan] = Output image is 10% bigger than in Underscan mode.

3-6 [aspect ratio] + ENTER

Select the Aspect Ratio of your input with ◀ ▶ + ENTER

- [4/3 standard] = 4/3 input Aspect Ratio.
- [letterbox] = Letterbox input Aspect Ratio.
- [WS anamorphic] = Widescreen Anamorphic input Aspect Ratio.(to be used only if your DVD player is set in 16/9 TV shape).

3-7 [brightness] + ENTER

Adjust the Brightness with ◀ ▶ + ENTER

3-8 [contrast] + ENTER

Adjust the Contrast with ◀ ▶ + ENTER

3-9 [color] + ENTER

Adjust the Color with ◀ ▶ + ENTER

3-10 [hue] + ENTER

Adjust the Tint of the picture (NTSC only) with ◀ ▶ + ENTER

3-11 [image process] + ENTER

Select a function and adjust with ◀ ▶ + ENTER, and validate with ENTER

- GAMMA: Gives greater depth to darker portions of the image for more exciting theater experience or brightens dark portions for the image for more enhanced presentations.
- SHARPNESS: Increases the details of the image.
- SUBTITLE: Increases the readability of subtitles.
- CORING: Reduces the noise found on some VCR tapes.
- ADAPTIVE BLACK: Automatic black level correction.

3-12 [preset] + ENTER

Select a function and adjust with ◀ ▶ + ENTER

- [YES] = Erases all of the Image Settings (#3-1, #3-2, ... #3-11) and sets them back to the Factory Settings.
- [NO] = Do not erase the Image Settings memorized.

4 ▶ [CONTROL MENU] + ENTER**4-1 [languages] + ENTER****4-2 [panel locking] + ENTER**

Select which locking function you need with ◀ ▶ + **ENTER**

- [all unlock] = All front panel switches are Unlocked.
- [all lock] = All front panel switches are Locked.

4-3 [black delay] + ENTER

This function allows to adjust the duration of the black delay when switching between sources.

Select the delay time that you need with ◀ ▶ + **ENTER**

- [short] = 1 second delay
- [long] = 3 seconds delay.

4-4 [version] + ENTER

Status of the internal firmware : K = xxxx L = xxxx R = xxxx V = xxxx

4-5 [default value] + ENTER

- [NO] = No Adjustments and Settings are modified.
- [YES] = Sets the device parameters to the factory values as follow:

- 1-1** video standard = Automatic
- 1-3** RGB / YUV in = YUV (Component)
- 2-1** output sync = Separate H & V Sync.
- 2-2** output format = 1024 x 768L
- 2-3** output rate = video in rate
- 2-4** type of screen = screen 4/3
- 3-5** u / over scan = overscan
- 3-6** aspect ratio = 4/3 standard
- 3-12** preset = yes
- 4-3** black delay = short

Chapter 8 : TECHNICAL SPECIFICATIONS

8-1. VIDEO INPUTS

- **RGB.S** (4 BNC connectors)

15.625 kHz / 50 Hz 15.735 kHz / 60 Hz (625L525L)

Levels: R, G, B = 3 x 0.7 Vp/p
SYNC. = 0.3 Vp/p or TTL

Impedance: RGB = 75 Ohms
SYNC. = 75 Ohms or Hi-Z

- **COMPONENT (YUV) - R-Y / Y / B-Y** (3 BNC connectors)

15.625 kHz / 50 Hz 15.735 kHz / 60 Hz (625L525L)

Levels: Y = 0.3 Vp/p (Sync.) + 0.7 Vp/p (Luma)
R-Y = 0.7 Vp/p
B-Y = 0.7 Vp/p

Impedance: Y, R-Y, B-Y = 75 Ohms

- **S.VIDEO (Y/C)** (4 pin mini DIN connector & 2 BNC connectors)

PAL / SECAM 15.625 kHz / 50 Hz (625L)

NTSC (3.58 MHz / 4.43 MHz) 15.735 kHz / 60 Hz (525L)

Levels: Y = 1 Vp/p (0.7 Vp/p Luma + 0.3 Vp/p Sync.)
C = 0.3 Vp/p (Chroma Burst)

Impedance: 75 Ohms

- **COMPOSITE VIDEO** (BNC connector)

PAL / SECAM 15.625 kHz / 50 Hz (625L)

NTSC (3.58MHz / 4.43 MHz) 15.735 kHz / 60 Hz (525L)

Levels: 1 Vp/p (0.7 Vp/p Luma + 0.3 Vp/p Sync.)

Impedance: 75 Ohms

8-2. COMPUTER INPUT (15 PINS HD F connector)

Hardware compatibility: Line frequency : from 15 kHz to 100 kHz
Frame frequency : from 24 Hz to 120 Hz

NOTE: The COMPUTER input is routed directly through to the DISPLAY OUTPUT connector. You can therefore connect a Computer source (PC, MAC, WORKSTATION) or a High Definition video source (progressive DVD player, HDTV) to the COMPUTER INPUT.

8-3. DISPLAY OUTPUT (4/5 BNC connectors)

Levels: R, G, B = 0.7 Vp/p
Sync. : Separate H & V = TTL
: COMP. Sync. = TTL

Impedance: R, G, B, H & V and COMP. Sync. = 75 Ohms

Format:

- If the computer input is selected : the output format is the same as the Computer input format.
- If a video input is selected : the output format is one of the formats available in the LCD menu # 2-2.

8-4. REMOTE PORT (DB 9 female connector)

Levels: RS-232

Data Rate: 9600 Bauds, 8 data bits, 1 stop bit, no parity bit, no flow control.

8-5. ROOM CONTROL (3.5 jack female connector)

NOTE: The ROOM (+12 Vdc Trigger) Control is activated by the AC Power Switch (ON/OFF).

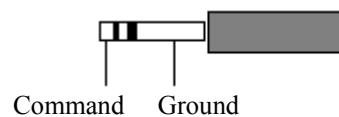
Levels:

- If AC Power Switch = ON : ROOM Control = + 12 Vdc
- If AC Power Switch = OFF : ROOM Control = 0 Vdc

Output Current: 0.1 A max at + 12 Vdc

Connection:

3.5 JACK MALE CONNECTOR (STEREO or MONO)

8-6. ENVIRONMENTAL

Power Supply: Internal CE / UL / CSA / IEC 950 (50 W), universal, automatic
Input : 100 VAC to 250 VAC ; 50-60 Hz ; I = 1 A Max.

Storage Temperature: -25 °C to +85 °C (-13 °F to + 185 °F)

Operating temperature: 0 °C to 50 °C (32 °F to 122 °F)

Maximum ambient operating temperature: < 40 °C (< 104 °F)

Hygrometry: 10% to 80% (without condensation)

Dimensions: D 300 x W 440 x H 44 mm / D 11.8" x W 17.3" x H 1.74"

Weight: 3.4 kg / 7.48 lbs.

Chapter 9 : CONTROL SOFTWARE

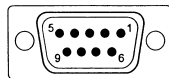
9-1. CONNECTION

• CONNECTING THE RS-232:

Connect the serial port of your Controlling Device to the REMOTE CONTROL (RS-232) connector (DB 9 Female) of the SMART SCALER™ with a **straight** cable (DB 9 Female / DB 9 Male).

• PIN-OUT:

PIN #	FUNCTIONS
2	TRANSMIT DATA (Tx)
3	RECEIVE DATA (Rx)
5	GROUND (Gnd)



DB 9 female

(Rear panel of the SMART SCALER™)

- **SPEED TRANSMISSION:** 9600 bauds, 8 data bits, 1 stop bit, no parity bit, no flow control.

9-2. "SMART SCALER™ REMOTE CONTROL" SOFTWARE

Your SMART SCALER™ is shipped with a WINDOWS 95/98/2000 compatible "SMART SCALER™ REMOTE CONTROL" software (3.5" disk). This software allows you to control and make adjustments to the TSC550 by a simple mouse click (output format, image adjustments, etc...).

• SOFTWARE INSTALLATION:

- ① Turn your computer ON and wait for WINDOWS to completely start.
- ② Insert the disk into the floppy drive.
- ③ In the WINDOWS PROGRAM MANAGER menu, click on RUN.
- ④ Choose the disk drive and click on **setup.exe** (ex : A:\setup.exe if disk 3.5" is drive A).
- ⑤ Follow the WINDOWS installation instructions. WINDOWS will create a file C:\Programfiles\ANALOGWAY\ Smart Scaler remote control.

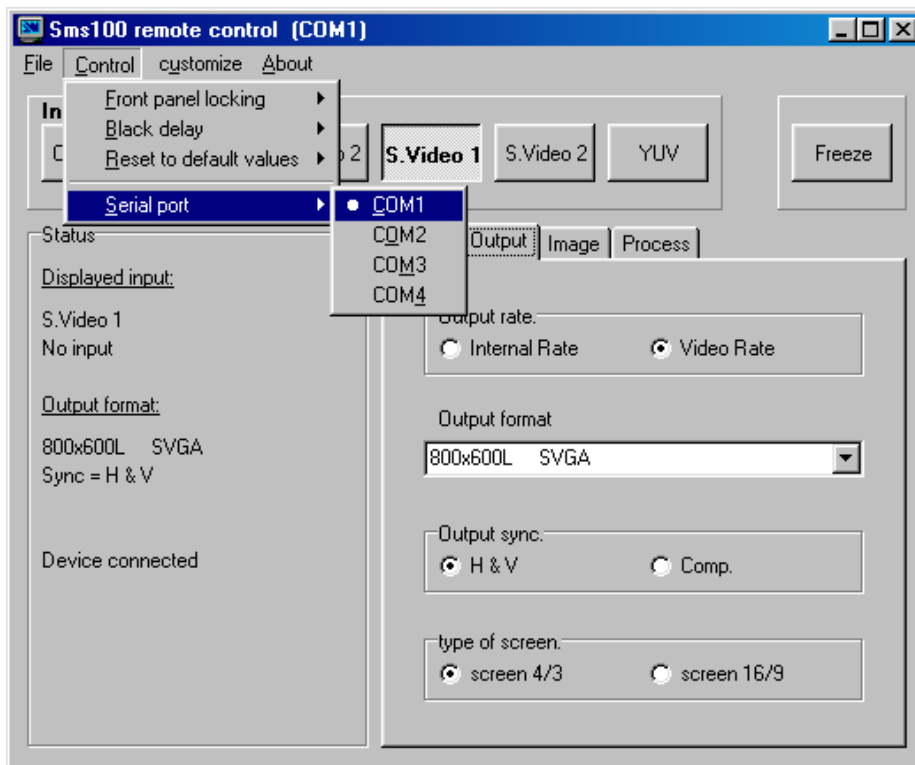
• STARTING UP:

- ① Connect the RS-232 cables between the controlling device and the SMART SCALER™ as indicated in section 9-1.
- ② Then only power ON all of the devices.
- ③ Click on the program files **SMS100** in **Start-program-ANALOGWAY** to run the software,
- ④ Click on **Control** menu and select the **Serial port**.

The SMART SCALER™ is now connected to the computer (if not, verify the DB9 serial connection and the selected serial port).

9-3. SOFTWARE SET UP

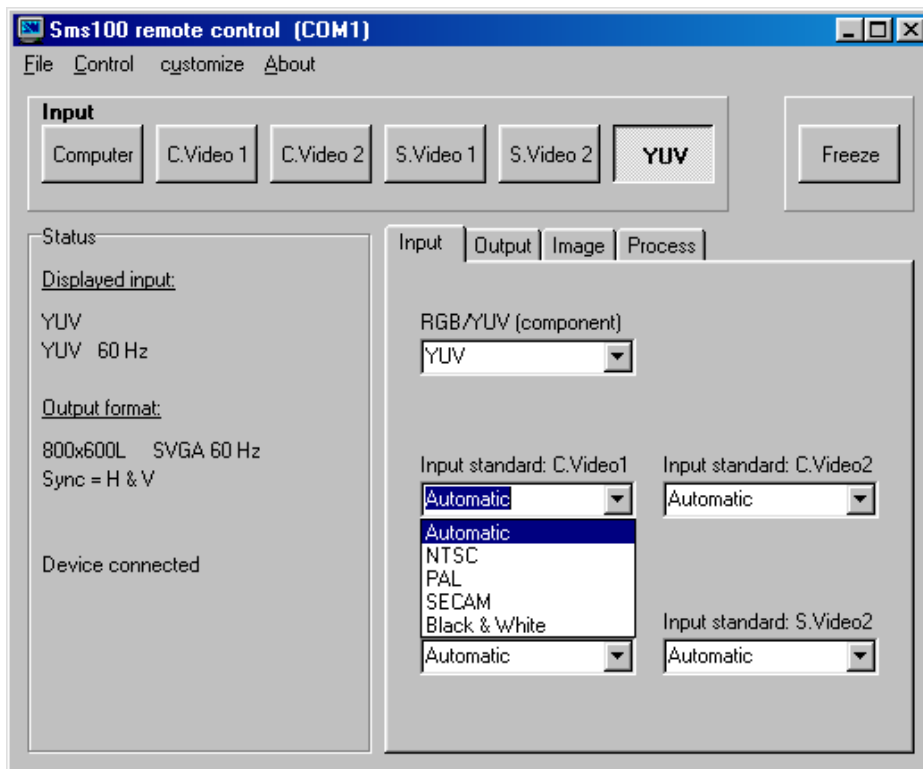
① Select the **Serial port** in the **Control** menu,



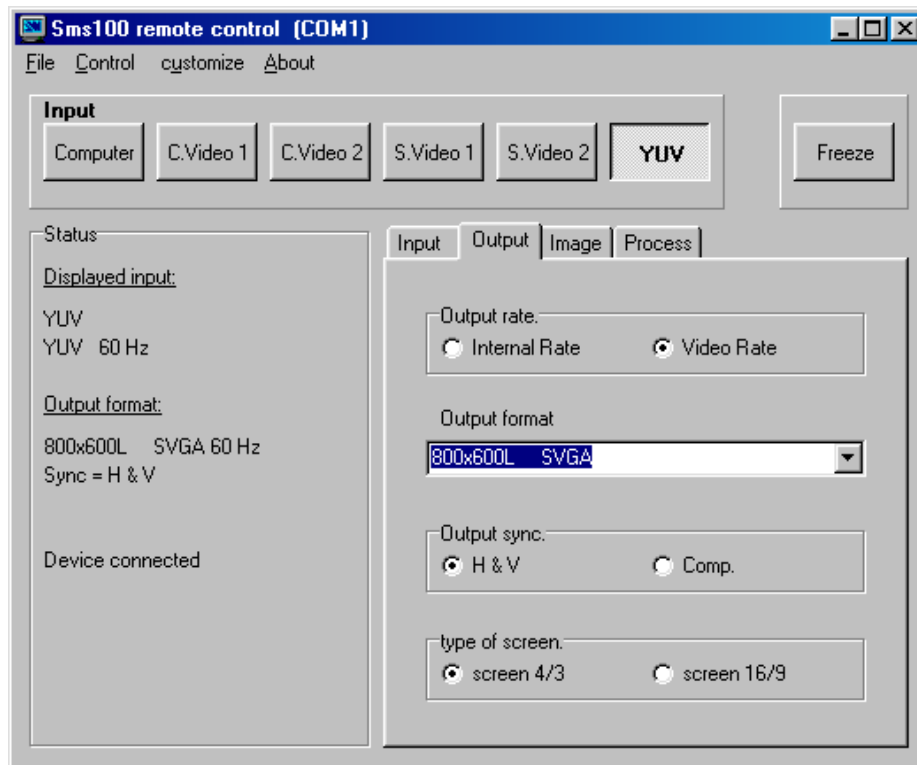
The SMART SCALER™ is now connected to the computer ; do a **Reset to default values** (**Control** menu) if necessary.

② In the **Input** menu, select the video type for the **RGB / YUV** input, and select the video standard for all of the other video inputs.

NOTE : **Automatic** = Automatic recognition of the video standard.



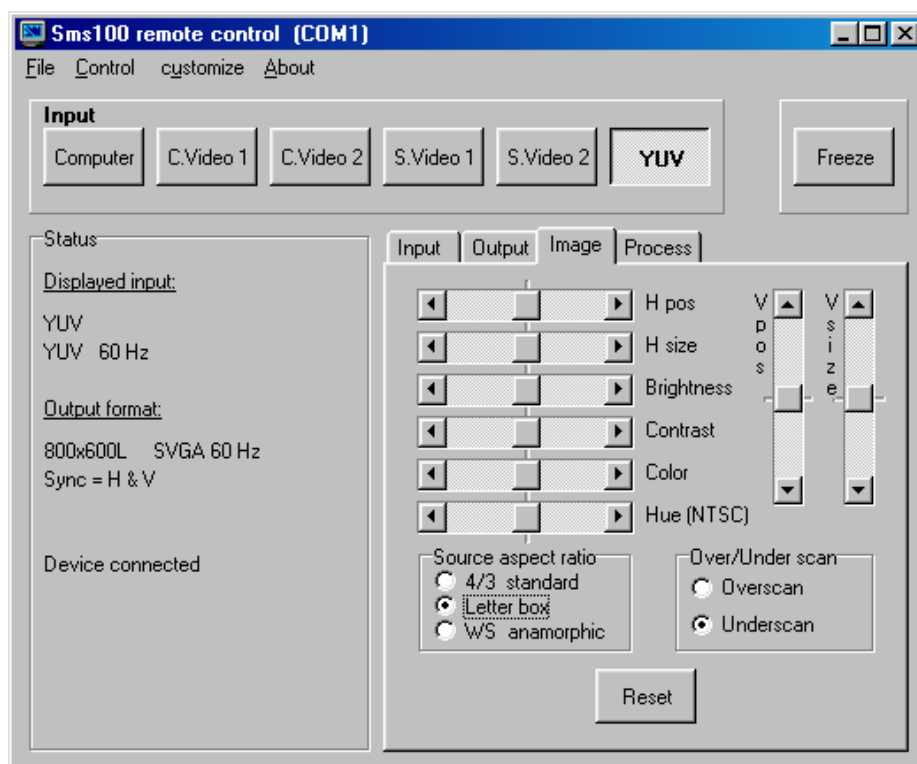
- ③ In the **Output** menu, select the **Output rate**, the **Output format**, the **Output Sync** and the **Type of screen**.



- ④ In the **Image** and **Process** menus, do the adjustments for all of your video TV inputs.

NOTE :

- The **Image** and **Process** menus act on the selected input only.
- The **Image** and **Process** menus are only available for the TV video inputs.
- The **Reset** function, sets all of the **Image** and **Process** adjustments to the factory settings.



Chapter 10 : RS-232 PROGRAMMER'S GUIDE

10-1. INTRODUCTION

If you need to use your own Software Control program from a PC or WORKSTATION with an RS-232 port, the SMART SCALER™ allows communication through an ASCII code protocol.

The SMART SCALER™ treats any character that it receives on the RS-232 as a possible command but only accepts legal commands. There is no starting/ending code needed in a command string.

A command can be a single character typed on a keyboard and does not require any special character before or after it. (it is not necessary to press "ENTER" on the keyboard). A command can be preceded by a value (See chapter 10-2 COMMANDS STRUCTURE).

When the SMART SCALER™ receives a valid command, it will execute the command. Then it will send back the status of the parameters that have changed due to this command.

If the command cannot be executed (value out of range, no signal on the selected input), the SMART SCALER™ will just send back the current status of the corresponding parameters.

If the command is invalid, an error response will be returned to the controlling device. All responses returned to the controlling device end with a carriage return <CR> and a line feed <LF> signaling the end of the response character string. (see chapter 10-3. ERROR RESPONSES).

10-2. COMMANDS STRUCTURE

Commands are usually composed of a numerical value followed by the command character. The characters used without any numerical value return the current setting of the command.

COMMANDS structure = (optional value) + <command character>

Examples:

	VALUE	COMMAND	Response	Action explanation
Character	none	o	OSIG	Read the Output Sync type.
Value + Character	10	V	VPOS10	Set Vertical position to 10

10-3. ERROR RESPONSES

When the SMART SCALER™ receives from the host an invalid command or value, it returns an error response:

	VALUE	COMMAND	Response	Action explanation
Character	none	BB	E10	Invalid command
Value + Character	260	V	E13	Invalid value

10-4. COMMANDS AND RESPONSES TABLE

The following table resumes commands which are recognized as valid and the responses that will be returned to the host (on the RS-232 port).

COMMAND	RESPONSE	COMMAND	VALUE		EXAMPLE		
ASCII	TO HOST	DESCRIPTION	MIN	MAX	COMMAND	RESPONSE	ACTION EXPLANATION
INPUT COMMANDS							
I	ICHAN	SELECTED INPUT	1	7	5I	ICHAN5	SELECTS S.VIDEO 1 INPUT
r	IRGB	VIDEO TYPE OF RGB/YUV INPUT	0	3	r	IRGB1	READS VIDEO TYPE OF THE RGB/YUV INPUT
w	ISTDC1	INPUT STANDARD C.VIDEO 1	0	4	w	ISTDC10	READS THE VIDEO STANDARD DETECTION
x	ISTDC2	INPUT STANDARD C.VIDEO 2	0	4	x	ISTDC21	READS THE VIDEO STANDARD DETECTION
y	ISTDS1	INPUT STANDARD S.VIDEO 1	0	4	y	ISTDS14	READS THE VIDEO STANDARD DETECTION
z	ISTDS2	INPUT STANDARD S.VIDEO 2	0	4	z	ISTDS21	READS THE VIDEO STANDARD DETECTION
OUTPUT COMMANDS							
O	OFMT	OUTPUT FORMAT	0	17	O	OFMT2	READS THE OUTPUT FORMAT
o	OSIG	OUTPUT SYNC. TYPE	0	1	1o	OSIG1	SETS THE OUTPUT SYNC. TO COMP. SYNC.
u	SSYNC	OUTPUT FRAME RATE	0	3	3u	SSYNC3	SETS THE OUTPUT FRAME RATE TO VIDEO IN RATE
IMAGE COMMANDS (VIDEO ONLY)							
H	HPOS	HORIZONTAL POSITION	0	255	20H	HPOS20	SETS H. POSITION TO 20
V	VPOS	VERTICAL POSITION	0	255	V	VPOS73	READS V POSITION
W	HSIZ	HORIZONTAL SIZE	0	255	W	HSIZ128	READS H WIDTH
S	VSIZ	VERTICAL SIZE	0	255	157S	VSIZ157	SETS V SIZE TO 157
B	BRGT	BRIGHTNESS ADJUSTMENT	0	255	B	BRGT15	READS BRIGHTNESS LEVEL
C	CONTR	CONTRAST ADJUSTMENT	0	255	C	CONTR50	READS CONTRAST LEVEL
s	COLOR	COLOR SATURATION	0	255	s	COLOR125	READS COLOR SATURATION LEVEL
T	HUE	HUE ADJUSTMENT (NTSC ONLY)	0	255	T	HUE120	READS HUE LEVEL
b	IASP	ASPECT RATIO	0	2	2b	IASP2	SETS ASPECT RATIO TO 16/9
j	GAMMA	GAMMA ADJUSTMENT	0	63	j	GAMMA0	READS GAMMA LEVEL
A	SHARP	SHARPNESS ADJUSTMENT	0	63	A	SHARP20	READS SHARPNESS LEVEL
Q	SUBTT	SUBTITLES ADJUSTMENT	0	63	Q	SUBTT55	READS SUBTITLE LEVEL
N	NOISE	CORING ADJUSTMENT	0	63	N	NOISE10	READS NOISE REDUCTION LEVEL
STATUS COMMANDS (READ ONLY)							
U	UNIT	MEASURES UNITY IN kHz	0	65535	U	UNIT----	READS UNITY OF MEASURE
l	CLD	DURATION OF A COMPUTER LINE	0	65535	l	CLD----	READS LINE FREQUENCY OF SELECTED COMPUTER
t	CFD	NUMBER OF LINE PER FIELD OF COMPUTER	0	65535	t	CFD----	READS LINE PER FIELD OF SELECTED COMPUTER
P	CSTA	COMPUTER STATUS	0	31	P	CSTA----	READS COMPUTER STATUS
p	VSTA	VIDEO STATUS	0	16	p	VSTA13	READS THE VIDEO STATUS
v	VCHAN	INPUT NUMBER OF THE VIDEO WHICH STATUS IS GIVEN	0	7	v	VCHAN7	VIDEO STATUS IS FOR RGB/YUV INPUT
n	SCSTA	SCALER SYNCHRONIZATION	0	3	n	SCSTA3	VIDEO IN RATE
MISCELLANEOUS COMMANDS							
Y	CMD	MISCELLANEOUS CONTROL	0	32768	128Y	CMD128	FREEZE ACTION
?	DEV	DEVICE TYPE	0	65535	?	DEV13	READS DEVICE TYPE (13 = SMART SCALER™)
K	K_	"K" FIRMWARE VERSION	0	65535	K	K_	READS K VERSION
L	L_	"L" FIRMWARE VERSION	0	65535	L	L_	READS L VERSION
R	R_	"R" FIRMWARE VERSION	0	65535	R	R_	READS R VERSION
X	V_	"X" FIRMWARE VERSION	0	65535	X	V_	READS X VERSION

10-5. COMMANDS DESCRIPTION

Values sent or received are in decimal. Depending on the command letter, the value can be used as a linear control (ex : 255W to set the horizontal size to the maximum) or as a set of bits (ex : P command with multiple controls). In this case, the value must be converted in binary base to understand every bit action.

EXAMPLE : Host receives message CSTA3 (P command)

Decimal value 3 = Binary value 011

$3 = (4 \times 0) + (2 \times 1) + (1 \times 1)$

bit 0 = 1 means Sync. detected.

bit 1 = 1 means Comp. Sync. detected.

bit 2 = 0 means non interlaced format detected.

① INPUT COMMANDS

• **I command** is used to select an input.

DECIMAL VALUE	INPUT SELECTION	RESPONSE
1	COMPUTER	ICHAN1
3	C.VIDEO 1	ICHAN3
4	C.VIDEO 2	ICHAN4
5	S.VIDEO 1	ICHAN5
6	S.VIDEO 2	ICHAN6
7	RGB / YUV	ICHAN7

• **r command** is used to select the video type of the RGB/YUV input.

DECIMAL VALUE	SELECTION	RESPONSE
0	YUV	IRGB0
1	RGB/S (TTL)	IRGB1
2	RGsB (SOG)	IRGB2
3	RGB/S (75Ω)	IRGB3

• **w, x, y, z commands** are used to select the video standard of the C.VIDEO 1, C.VIDEO 2, S.VIDEO 1 and S.VIDEO 2 input.

DECIMAL VALUE	SELECTION	RESPONSE
0	AUTOMATIC	ISTD__0
1	NTSC (3.58 / 60Hz)	ISTD__1
2	PAL (4.43 / 50Hz)	ISTD__2
3	SECAM	ISTD__3
4	BLACK & WHITE	ISTD__4

② OUTPUT COMMANDS

- **o command** is used to select the Output Sync. type.

DECIMAL VALUE	SELECTION (OUTPUT SYNC TYPE)	RESPONSE
0	SEPARATE H & V SYNC.	OSIG0
1	COMPOSITE SYNC.	OSIG1

- **O command** is used to select the output format.

Use the following table when the **u** command (Output Frame Rate) is set on **Video In Rate** (SSYNC3).

DECIMAL VALUE	SELECTION (OUTPUT FORMAT)	RESPONSE
0	640 x 480L (at 50Hz or 59.94 Hz)	OFMT0
1	852 x 480L (PLASMA 42" at 50Hz or 59.94 Hz)	OFMT1
2	800 x 600L (at 50Hz or 59.94 Hz)	OFMT2
4	1024 x 768L (at 50Hz or 59.94 Hz)	OFMT4
5	1280 x 768L (PLASMA 50" at 50Hz or 59.94 Hz)	OFMT5
6	1280 x 1024L (at 50Hz or 59.94 Hz)	OFMT6
14	1280 x 720L (HDTV at 50Hz or 59.94 Hz)	OFMT14
15	1280 x 960L (at 50Hz or 59.94 Hz)	OFMT15
16	1365 x 1024L (at 50Hz or 59.94 Hz)	OFMT16
17	1365 x 768L (at 50 Hz or 59.94 Hz)	OFMT17

Use the following table when the **u** command (Output Frame Rate) is set on **Internal Rate** (SSYNC0).

DECIMAL VALUE	SELECTION (OUTPUT FORMAT)	RESPONSE
0	VGA (640 x 480) at 60Hz	OFMT0
1	PLASMA 42" (852 x 480) at 60Hz	OFMT1
2	SVGA (800 x 600) at 60Hz	OFMT2
3	MAC (640 x 480) at 66Hz	OFMT3
4	XGA (1024 x 768) at 60Hz	OFMT4
5	PLASMA 50" (1280 x 768) at 56Hz	OFMT5
6	SXGA (1280 x 1024) at 60Hz	OFMT6
7	VGA (640 x 480) at 75Hz	OFMT7
8	PLASMA 42" (852 x 480) at 72Hz	OFMT8
9	SVGA (800 x 600) at 75Hz	OFMT9
10	MAC 16" (832 x 624) at 75Hz	OFMT10
11	XGA (1024 x 768) at 75Hz	OFMT11
12	PLASMA 50" (1280 x 768) at 75Hz	OFMT12
13	SXGA (1280 x 1024) at 75Hz	OFMT13
17	D-ILA 16/9 (1365 x 768) at 60Hz	OFMT17

- **u command** is used to select the Output Frame Rate.

DECIMAL VALUE	SELECTION (OUTPUT RATE)	RESPONSE
0	INTERNAL RATE	SSYNC0
3	VIDEO IN RATE	SSYNC3

③ IMAGE COMMANDS

The following commands are active only on the selected (displayed) video input.
They are not active for the COMPUTER input.

- **H, V, W, S, B, C, s, T, commands** are used to control the output adjustments.

0 = minimum

255 = maximum

- **b command** is used to select the video input aspect ratio.

DECIMAL VALUE	SELECTION OF ASPECT RATIO	RESPONSE
0	4/3	IASP0
1	letterbox	IASP1
2	Widescreen Anamorphic	IASP2

- **j, A, Q, N commands** are used to control the output adjustments.

0 = minimum

63 = maximum

④ STATUS COMMANDS (READ ONLY)

This control family is read only ; it cannot be preceded by a value.

- **U command** returns the UNIT value, used to calculate the computer line and frame frequency.

- **l command** returns the Computer Line Duration (CLD value).

The following formula allows to calculate input line frequency in kHz.

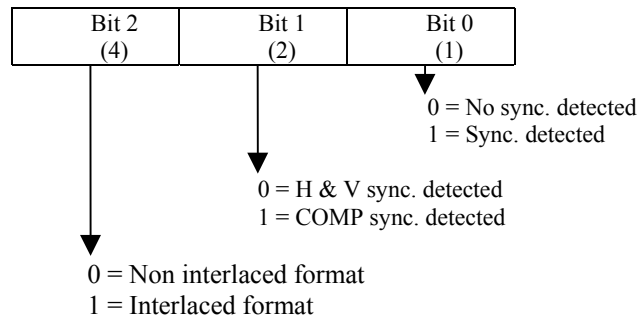
$$\frac{\text{UNIT VALUE}}{\text{CLD VALUE}} = \text{Input line frequency in kHz.}$$

- **t command** returns the Computer lines per Frame (CFD value).

The following formula allows to calculate the computer input frame frequency in Hz.

$$\frac{\text{INPUT LINE FREQUENCY (Hz)}}{\text{CFD VALUE}} = \text{Input frame frequency in Hz.}$$

- **P command** returns the Computer status. (RESPONSE : CSTA__).



- **p command** returns the video status. (RESPONSE : VSTA__).

DECIMAL VALUE	VIDEO STATUS	RESPONSE	DECIMAL VALUE	VIDEO STATUS	RESPONSE
0	NO VIDEO	VSTA0	9	PAL 4.43 50 Hz	VSTA9
1	WRONG SIGNAL	VSTA1	10	SECAM 50 Hz	VSTA10
2	NTSC 3.58 60 Hz	VSTA2	11	B & W 50 Hz	VSTA11
3	NTSC 3.58 50 Hz	VSTA3	12	B & W 60 Hz	VSTA12
4	NTSC 4.43 60 Hz	VSTA4	13	YUV 50 Hz	VSTA13
5	NTSC 4.43 50 Hz	VSTA5	14	YUV 60 Hz	VSTA14
6	PAL 3.58 60 Hz	VSTA6	15	RGB 50 Hz	VSTA15
7	PAL 3.58 50 Hz	VSTA7	16	RGB 60 Hz	VSTA16
8	PAL 4.43 60 Hz	VSTA8			

- **v command** is used to know the number of the video input which status is displayed. (RESPONSE : VCHAN_).

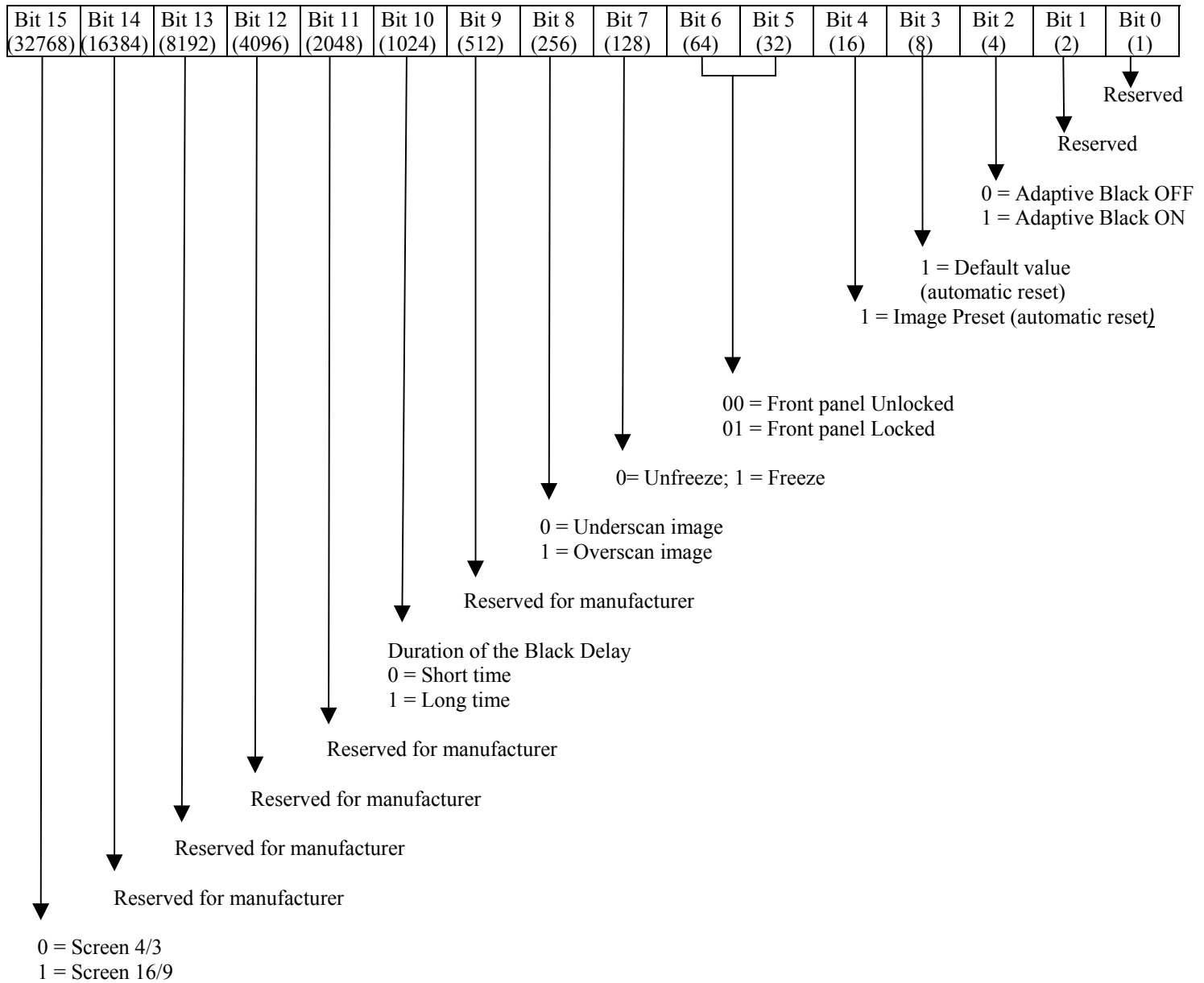
DECIMAL VALUE	STATUS OF VIDEO #	RESPONSE
0	NO VIDEO SELECTED	VCHAN0
3	C.VIDEO 1	VCHAN3
4	C.VIDEO 2	VCHAN4
5	S.VIDEO 1	VCHAN5
6	S.VIDEO 2	VCHAN6
7	RGB / YUV	VCHAN7

- **n command** is used to know the reference of the Output Frame Rate. (RESPONSE : SCSTA_).

DECIMAL VALUE	STATUS OF FRAME RATE	RESPONSE
0	INTERNAL RATE	SCSTA0
3	VIDEO IN RATE	SCSTA3

⑤ MISCELLANEOUS COMMANDS

- **Y command** is used to control different menus like the FRONT PANEL LOCK, the FREEZE... (RESPONSE : CMD----).



NOTE: To modify an adjustment you should first read the value of the command, then modify the value of the corresponding bit without modifying the value of the other bits, and then return the new value.

Example : If the actual adjustment is : Screen 4/3, Short, overscan, Unfreeze, Front panel unlocked, and Adaptive Black OFF, then the return value is :

Bit 15 (32768)	Bit 14 (16384)	Bit 13 (8192)	Bit 12 (4096)	Bit 11 (2048)	Bit 10 (1024)	Bit 9 (512)	Bit 8 (256)	Bit 7 (128)	Bit 6 (64)	Bit 5 (32)	Bit 4 (16)	Bit 3 (8)	Bit 2 (4)	Bit 1 (2)	Bit 0 (1)
0	X	X	X	X	0	X	1	0	0	0	0	X	0	X	X

Now if you want to Lock the Front Panel, you should set the bit 5 to 1, without changing the value of the other bits. In this case you should add 32 to the previous value.

- **?, K, R, L, X, commands** are the status of the device's internal firmware (read only).

10-6. ASCII / HEX / DEC TABLE

ASCII	HEX	DEC	ASCII	HEX	DEC	ASCII	HEX	DEC
space	20	32	@	40	64	`	60	96
!	21	33	A	41	65	a	61	97
"	22	34	B	42	66	b	62	98
#	23	35	C	43	67	c	63	99
\$	24	36	D	44	68	d	64	100
%	25	37	E	45	69	e	65	101
&	26	38	F	46	70	f	66	102
'	27	39	G	47	71	g	67	103
(	28	40	H	48	72	h	68	104
)	29	41	I	49	73	i	69	105
*	2A	42	J	4A	74	j	6A	106
+	2B	43	K	4B	75	k	6B	107
,	2C	44	L	4C	76	l	6C	108
-	2D	45	M	4D	77	m	6D	109
.	2E	46	N	4E	78	n	6E	110
/	2 F	47	O	4 F	79	o	6 F	111
0	30	48	P	50	80	p	70	112
1	31	49	Q	51	81	q	71	113
2	32	50	R	52	82	r	72	114
3	33	51	S	53	83	s	73	115
4	34	52	T	54	84	t	74	116
5	35	53	U	55	85	u	75	117
6	36	54	V	56	86	v	76	118
7	37	55	W	57	87	w	77	119
8	38	56	X	58	88	x	78	120
9	39	57	Y	59	89	y	79	121
:	3A	58	Z	5A	90	z	7A	122
;	3B	59	[	5B	91	{	7B	123
<	3C	60	\	5C	92		7C	124
=	3D	61	]	5D	93	}	7D	125
>	3E	62	^	5E	94	~	7E	126
?	3F	63	_	5F	95	DEL	7F	127

Chapter 11 : TROUBLESHOOTING

SYMPTOM	CAUSE	CORRECTION	PLEASE SEE
• NO POWER <i>The LCD is OFF</i>	• The power cord is disconnect.	• Connect the AC power cord to the SMART SCALER and to the power outlet.	• Chapter 4-1
	• The SMART SCALER™ is “POWER OFF”.	• Press the power switch on the front panel.	• Chapter 4-1
• NO PICTURE <i>The LCD input status displays “No video”. For example : S.Video 1 = No video</i>	• The input source is not selected correctly.	• Select the input source, with the front panel push button, according to the equipment connected to the SMART SCALER™.	• Chapter 4-1
	• The input source is OFF.	• Power ON the input source.	• Input source user’s manual.
	• The input source is disconnected.	• Connect the input source to the SMART SCALER™.	• Chapter 4-1
• NO PICTURE <i>The LCD input status displays the right status of the video. (For example : S.Video 1 = NTSC) but no image appears on the display device.</i>	• The display device is OFF.	• Powered ON the display device.	• Display device user’s manual.
	• The display device is disconnect.	• Connect the DISPLAY OUTPUT of the SMART SCALER™ to the DATA (PC/RGB) input of your display device.	• Display device user’s manual.
	• The DATA (PC/RGB) input of your display device is not selected correctly.	• Select the DATA (PC/RGB) input on your display device.	• Display device user’s manual.
	• The display device is not compatible with the selected output format.	• Check if the Display device is compatible with the selected output format.	• Chapter 7 : LCD menu # 2-2. • Display device user’s manual.
	• The display device is not compatible with the selected output Sync. type.	• Check if the Display device is compatible with the selected output Sync. type.	• Chapter 7 : LCD menu # 2-1. • Display device user’s manual.
	• H & V Sync. are reversed.	• Try reversing the H & V Sync. cables.	• Chapter 4-6
• The RGB or YUV input does not work properly	• The RGB/YUV input type is not selected correctly.	• Select the RGB/YUV input type according to your input source.	• Chapter 7 : LCD menu # 1-3
• The RS-232 software displays “SMART SCALER not connected”	• The RS-232 cable is disconnect.	• Connect the serial port of your computer to the RS-232 connector of the SMART SCALER™ (using a straight cable).	• Chapter 9-1.
	• The serial port is not selected correctly.	• Select the serial port in the control menu .	• Chapter 9-3.

Chapter 12 : OPTIONAL ACCESSORIES

DESIGNATION	LENGTH	REFERENCE
S-VIDEO (Y/C) CABLE (4 pin mini DIN M/M)	5 m / 16 ft	10093
S-VIDEO (Y/C) CABLE (4 pin mini DIN M/M)	10 m / 33 ft	10094
S-VIDEO (Y/C) TO 2 BNC CABLE (4 pin mini DIN M/ BNC M)	1.8 m / 6 ft	10102
S-VIDEO (Y/C) TO 2 BNC CABLE (4 pin mini DIN M/ BNC M)	5 m / 16 ft	10103
VGA TO 5 BNC CABLE (HD15 M / BNC M)	1.8 m / 6 ft	10023
VGA TO 5 BNC CABLE (HD15 M / BNC M)	3 m / 10ft	10024
VGA TO 5 BNC CABLE (HD15 F / BNC M)	1.8 m / 6 ft	10025
VGA TO 5 BNC CABLE (HD15 F / BNC M)	3 m / 10ft	10026
VGA TO 5 BNC CABLE (HD15 M / M)	6 m / 20 ft	10022
VGA TO 5 BNC CABLE (HD15 M / M)	10 m / 33 ft	10076
5 BNC TO 5 BNC CABLE (BNC M / M)	6 m / 20 ft	10096
5 BNC TO 5 BNC CABLE (BNC M / M)	10 m / 33 ft	10098
SET OF MAC (RGB HV) TO VGA CABLE ADAPTER (DB15 M / HD15 F)	2 x 0.3 m / 2 x 1 ft	10045
REMOTE CABLE (DB 9 M/F)	3 m / 10ft	10110
REMOTE CABLE (DB 9 M/F)	5 m / 16 ft	10111
REMOTE CABLE (DB 9 M/F)	10 m / 33 ft	10112

WARRANTY

Analog Way warrants the product against any defects in material and workmanship for a period of three years from the date of purchase (back to the factory).

In the event of any malfunction during the warranty period, Analog Way will, at its discretion, repair or replace the defective unit, including free material and labor.

This warranty does not apply if the product has been :

- improperly installed or abused,
- handled with improper care,
- used or stocked in abnormal conditions,
- modified, opened,
- damaged by fire, war, or Natural disasters (Acts of God).

In no way shall Analog Way be responsible for direct or indirect loss of profit or consequential damages resulting from any defect in this product.

In case of any problem, get the serial number of the unit, a description of the problem, and then call your authorized dealer.