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# IRT 1 RU
# 10 x 1 Video Switcher
# Type AVS-1210

**Designed and manufactured in Australia**

**IRT can be found on the Internet at:**
**http://www.irtelectronics.com**

# IRT 1 RU
# 10 x 1 Analogue Video Switcher
# Type AVS-1210

## Instruction Book

Table of Contents



This instruction book applies to units later than S/N 9910000.

# General description

The AVS-1210 10 x 1 analogue video switcher is a self-contained, mains powered unit occupying one unit of rack mounting space. It has the capability to switch any one of its ten loop-through inputs to its output. The output has two isolated feeds. Selection of the required input is made via a "D" type connector mounted on the rear panel, using a 4 or 5 bit code.

The switcher can be fitted with a CPS-1210 10 x 1 or a CPS-1220 dual 10 x 1 (20 x 1) Control Panel.

The switcher can be remotely controlled by using CPS-1050 10 x 1 or CPS-1052 20 x 1 remote control panels.

The AVS-1210 is provided with an eleventh (cascade) input to facilitate two AVS-1210 switchers to be linked providing 20 x 1 operation using either a CPS-1220 locally or CPS-1052 remotely.

The input circuits of this series of switcher are designed for loop through operation to allow several switchers to be stacked with common inputs, without the need for additional distribution amplifiers.

The switcher is housed in an IRT one rack unit (44 mm high) 483 mm (19 inch) rack mounting metal chassis. The input and output circuit connections are by means of BNC sockets mounted on the edge of the printed circuit board, accessible from the rear panel of the unit.

Control/tally connections to the switch data buss are made to a pair of 25 pin "D" connectors mounted on the rear panel. The control system is compatible with that used for control of IRT's AAS-1220 10 x 1 stereo audio switcher and with 3000 series Eurocard modules.

An internal AC mains powered regulated power supply provides the operating voltages for the switcher circuitry. A selector on the rear panel allows matching to local mains supply voltages.

## Accessories

| | |
|---|---|
| CPS-1210 | 10 x 1 Local control panel. |
| CPS-1220 | 20 x 1 Local control panel. |
| CPS-1050 | 10 x 1 Remote control panel. |
| CPS-1052 | 20 x 1 Remote control panel. |
| CDC-3060 | Serial control module for interfacing to RS-232 or computer control systems. |
| GDW-1050 | 10 way HE14 to D25 male adapter cable to connect remote panel to switcher. |

# Technical data

## Video input characteristics:

| | |
|---|---|
| Input Signal Level | 1 Vp-p. |
| Input Impedance | Bridging 75 Ohms, Loop through. |
| Return loss | >46 dB to 4.3 MHz. |
| Number of Inputs | 10. |
| Input Connectors | BNC. |

## Video expansion input characteristics:

| | |
|---|---|
| Input Signal Level | 1 Vp-p. |
| Input Impedance | 75 Ohms terminated. |
| Return loss | >46 dB to 4.3 MHz. |
| Number of Inputs | 1. |
| Input Connectors | BNC. |

## Transfer Characteristics:

| | |
|---|---|
| Overall Gain | Unity |
| Frequency Response | ± 0.1 dB to 10 MHz (0.5V p-p Sweep Signal) |
| Differential Gain | <0.2% (10-90% APL) at 4.43 MHz |
| Differential Phase | <0.2 degrees (10-90% APL) at 4.43 MHz |
| Crosstalk | <65 dB to 4.43 MHz |

## Video output characteristics:

| | |
|---|---|
| Output signal level | 1 Vp-p |
| Number of outputs | 2 |
| Output impedance | 75 Ohms |
| Isolation | >36 dB to 4.3 MHz |
| Noise at the outputs | 70 dB below 1V p-p |
| Output connectors | BNC. |

## Control inputs/outputs:

| | |
|---|---|
| Switching time | During the vertical interval. Timing is derived from the output video |
| Type | 4/5 bit parallel TTL level signal compatible with IRT VA-400 video switcher tally output circuit and IRT 3000 series switchers. |
| Number | 1 “input” & 1 “output”. |
| Connectors | 25 pin 'D' - female. |

## Power requirements:

110, 130, 220 / 240 Vac 50 / 60 Hz 10 VA.

| | | |
|---|---|---|
| Fuse rating: | 240 Vac | 250 mA slow blow. |
| | 110 Vac | 500 mA slow blow. |

## Other:

| | | |
|---|---|---|
| Temperature range | | 0 - 50° C ambient |
| Mechanical | | IRT 19" rack chassis with input, output and power connections on the rear panel. |
| Finish: | Front panel | Grey enamel, silk screened black lettering & red IRT logo |
| | Rear panel | Silk screened bright passivated steel, silk screened black lettering. |
| Dimensions | | 44 mm x 480 mm x 230 mm. |
| Supplied accessories | | Matching connectors for control inputs / outputs. |
| Optional accessories | | Instruction manual<br>CPS-1210 10 button local control panel kit.<br>CPS-1220 20 button local control panel kit.<br>CPS-1050 10 button remote control panel.<br>CPS-1052 20 button remote control panel.<br>GDW-1050 10 way HE14 to D25 male adapter cable to connect remote panel to switcher. |

# Technical description

See wiring diagram 804341.

The AVS-1210 comprises a single printed circuit board mounted in a 1 RU chassis.
Where local control switches are fitted, these are mounted on separate boards behind the front panel. A technical discussion of these control boards and the data protocol employed may be found in the CPS-1050 / CPS-1052 / CPS-1210 / CPS-1220 control panel manual.

## AVS-1210 chassis wiring:

Chassis wiring for the AVS-1210 is shown on Dwg 804341.

The input fuse is located inside the IEC power connector socket and should be as follows:

240 Vac 250 mA slow blow.
110 Vac 500 mA slow blow.

A voltage selector switch on the rear of the unit allows for 110, 130, 220 or 240 Vac operation by selecting a combination of primary windings on the power transformer.
Power on indication is via a neon indicator built into the power switch on the front panel. The brightness of this neon indicator will therefore vary according to the mains input voltage.
The two secondary low voltage windings from the transformer are wired in a centre-tap configuration to provide raw low voltage AC to the DC power supply located on the video PCB.

## Video PCB: (Refer to drawing 804338 sheets 1 & 2.)

**Power supply**
The power supply section consists of a bridge rectifier (D 1 - 4) and two 3 terminal regulators providing regulated + and -10 Vdc supply lines.

**Video circuit**
The Video inputs are directed to one of three Gennum GX4314 4 x 1 multiplexing IC's (U 1, U2 & U 3).

According to Gennum, "the GX4314 is a wideband video multiplexer characterised by excellent differential phase and gain in the enabled state, very high off-isolation in the disabled state and fully buffered unilateral signal path.
Make-before-break switching assures virtually glitch-free switching.
For use in N x M routing matrices, the GX4314 features very high, nearly constant input impedance coupled with high output impedance in the disabled state. This allows multiple devices to be paralleled at the inputs and outputs without additional circuitry."
For additional information see Gennum data sheet for this device.

The use of three multiplexers allows for a maximum of 12 inputs. The $11^{th}$ and $12^{th}$ inputs are tied together and used as an expansion input for forming switchers greater than 10 x 1.

The output of the three multiplexers is buffered to two outputs by video amplifier U 4. RV 3 is included to provide trim of DC offset at the output and RV 1 provides limited gain adjustment to ensure a 1:1 transfer characteristic for the switcher overall.

**Synch circuit**
The switchers may be operated in either a local or remote sync mode in order to allow simultaneous switching of different signals in multilevel applications.
This implies that the matrix will not switch until a sync pulse is received. When this is not provided externally, a local sync needs to be provided.

A sample of the video output signal is taken to a video synch separator IC (U 5). The vertical synch output is then further processed by monostables U 6a & U 6b to produce a suitably timed signal to synchronise switching to the vertical interval. RV 2 is included to generate a latch pulse timed to fall approximately 10 lines into the field period of the video signal.

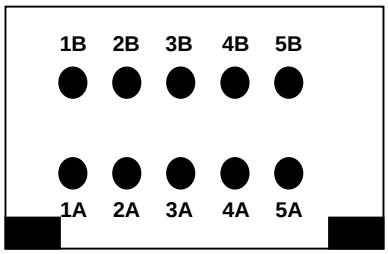
The "localsync" signal is passed to the PLA via link LK 4, which allows a choice of internal or external sync to the switcher logic. The chosen sync is echoed to "vertout" which is available on the PL 5 remote connector for slaving other switchers. See *Configuration* section for details.

**Control circuit**
Control logic is performed by a Programmable Logic Array (PLA) which has been programmed for the required operations. This component will only function correctly when loaded with the correct program and is therefore only available through IRT.

The switcher has two control connectors on the PCB that normally connect direct to corresponding connectors on the rear panel.
They are labelled PL 4 and PL 5. For descriptive purposes, PL 4 is called the "input" connector and PL 5 the "output" connector.

The pins on these connectors have the following functions:

| | PL 4 | PL 5 |
|---|---|---|
| 1A | +12 Vdc | NC |
| 1B | Ground | Ground |
| 2A | Data 4 | Data 4 |
| 2B | Data 3 | Data 3 |
| 3A | Data 2 | Data 2 |
| 3B | Data 1 | Data 1 |
| 4A | Data 0 | Data 0 |
| 4B | *Switch pulse in* | *Switch pulse out* |
| 5A | *Busy out* | *Busy in* |
| 5B | *Unlatch in* | *Unlatch out* |




The 5 bit codes on Pins 2A to 4A represent the input selected. This code is in BCD (Binary Coded Decimal) where the Data 0 to 3 represent the binary numbers 0 to 9 (Inputs 1 to 10 if Data 4 is 0 or Inputs 11 to 20 if Data 4 is 1).

The *unlatch out* signal is asserted by a switcher if any of its front panel switches is operated or if its *unlatch in* signal is asserted. The presence of an *unlatch in* signal causes any switcher to release control of the data lines (if it had control of them).
A switcher signals that it has control of the data lines by asserting *busy out*. *Busy out* also ripples *busy in*.

The operation of a push-button ripples unlatch to modules farther down the chain, causing any of them with control of the bus to release it, and in so doing clear the *busy* line.
As soon as the requesting module sees its *busy in* line clear, it takes control of the bus and asserts its *busy out*. The *busy out* signal then ripples up the chain causing any other modules release control (if they had it).

# Internal adjustments

The following adjustable resistors are factory set and should not be adjusted unless a component has been changed. They are not 'operational' controls. Before adjusting any of these controls allow time for the module to reach temperature stability.

| | |
|---|---|
| RV 1 Transfer gain. | Set to best unity gain match for all inputs. (Set with all inputs/ outputs 75 Ohm terminated and using standard 1 Vp-p test signal.) |
| RV 2 Vertical interval switching time. | Set so that switching occurs at approximately 10 lines into the field period of the video signal. |
| RV 3 Output DC offset. | Set to lowest average DC offset for all inputs. |

# Configuration

## Local control panel operation:

**Local 10 x 1 control:**
First, see section on fitting local control panels under *Installation*.
PL 4 on the control panel is then connected to PL4 on the rear of the switcher.
PL 5 on the control panel is then connected to the switcher PCB.

**20 x 1 operation**
A link is provided (LK 2) to tell the switcher whether it is to respond to crosspoint commands 1 – 10 or 11 – 20. When set in the 1 – 10 position, a code outside that range will cause the switcher to select the expansion input (V 11). This input is then connected externally to another AVS-1210's video output, with that switcher set to the 11 – 20 mode.
The outputs should be taken from the 1 – 10 switcher.

**Local 20 x 1 control:**
First, see section on fitting local control panels under *Installation*.
Control panels are looped by joining PL 5 (data out) on the 1 to 10 panel to PL 4 (data in) on the 11 to 20 panel.
Set link LK 2 OUT on the 1 to 10 panel and IN on the 11 to 20 panel.
PL 4 on the 1 to 10 panel is then connected to PL 4 on the rear of the switcher.
PL 5 on the 11 to 20 panel is then connected to the switcher PCB.

## Wire per crosspoint remote control:

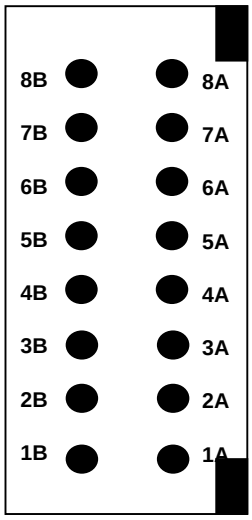
This option is made available by way of connections on the rear of the pushbutton control board and is therefore only available at the switcher if a local control set of buttons is fitted.
It is not necessary for the buttons to be functional.

A connection is made from PL 3 - 16 pin HE14 type connector to pins on the PL 4 connector.

**10 x 1 Operation:**

**PL 3 Wire per crosspoint control input: (On rear of pushbutton panel.)**
(Recommended wiring to PL 4 on rear panel.)

| PL 3 - HE14 | | PL 4 - 25 pin 'D' |
|---|---|---|
| 1A | SW 1 | 1 |
| 1B | SW 2 | 2 |
| 2A | SW 3 | 3 |
| 2B | SW 4 | 4 |
| 3A | SW 5 | 5 |
| 3B | SW 6 | 6 |
| 4A | SW 7 | 7 |
| 4B | SW 8 | 8 |
| 5A | SW 9 | 9 |
| 5B | SW 10 | 10 |
| 6A | Switch common | 11 |
| 6B | Ground | 12 |
| 7A | No connection | |
| 7B | “ | |
| 8A | “ | |
| 8B | “ | |




**20 x 1 Operation:**

Due to the number of connections required, it is not possible to operate the switcher in 20 x 1 wire per crosspoint mode and retain the standard BCD remote control.

For 20 x 1 operation it is necessary to wire connections from the back of each PL 3 connector, on the rear of the two halves of the control panel, to the PL 4 connector on the rear of the switcher.
Before doing this, the existing connections to PL 4 should be removed.

**PL 3 Wire per crosspoint control input: (On rear of each of two pushbutton panels.)**
(Recommended wiring to PL 4 on rear panel.)

| | Control panel buttons 1 to 10 | |
|---|---|---|
| PL 3 - HE14 | | PL 4 - 25 pin 'D' |
| 1A | SW 1 | 1 |
| 1B | SW 2 | 2 |
| 2A | SW 3 | 3 |
| 2B | SW 4 | 4 |
| 3A | SW 5 | 5 |
| 3B | SW 6 | 6 |
| 4A | SW 7 | 7 |
| 4B | SW 8 | 8 |
| 5A | SW 9 | 9 |
| 5B | SW 10 | 10 |
| 6A | No connection | |
| 6B | No connection | |
| 7A | No connection | |
| 7B | “ | |
| 8A | “ | |
| 8B | “ | |

| | Control panel buttons 11 to 20 | |
|---|---|---|
| PL 3 - HE14 | | PL 4 - 25 pin 'D' |
| 1A | SW 1 | 11 |
| 1B | SW 2 | 12 |
| 2A | SW 3 | 13 |
| 2B | SW 4 | 14 |
| 3A | SW 5 | 15 |
| 3B | SW 6 | 16 |
| 4A | SW 7 | 17 |
| 4B | SW 8 | 18 |
| 5A | SW 9 | 19 |
| 5B | SW 10 | 20 |
| 6A | Switch common | 21 |
| 6B | Ground | 22 |
| 7A | No connection | |
| 7B | “ | |
| 8A | “ | |
| 8B | “ | |

## Individual tally outputs:

If a switch panel is not fitted, the 803089 tally decoder may be fitted externally to the switcher. Note that the 803089 tally decoder requires 12 Vdc to be supplied by the switcher. It can therefore only be connected to PL 4 on the switcher rear panel.

The individual tally output option is made available by way of logic on the pushbutton control board and is therefore only available at the switcher if a local control set of buttons is fitted.

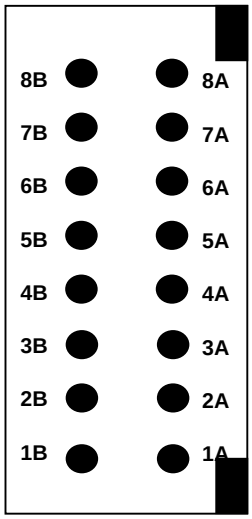
A connection is made from PL 7 - 16 pin HE14 type connector to pins on the PL 5 connector.

**10 x 1 Operation:**

**PL 7 Individual tally outputs: (On rear of pushbutton panel.)**

(Recommended wiring to PL 5 on rear panel.)

| PL 7 - HE14 | | PL 5 - 25 pin 'D' |
|---|---|---|
| 1A | SW 1 | 1 |
| 1B | SW 2 | 2 |
| 2A | SW 3 | 3 |
| 2B | SW 4 | 4 |
| 3A | SW 5 | 5 |
| 3B | SW 6 | 6 |
| 4A | SW 7 | 7 |
| 4B | SW 8 | 8 |
| 5A | SW 9 | 9 |
| 5B | SW 10 | 10 |
| 6A | +5 Vdc | 11 |
| 6B | “ | 12 |
| 7A | No connection | |
| 7B | “ | |
| 8A | “ | |
| 8B | “ | |




**20 x 1 Operation:**

Due to the number of connections required, it is not possible to operate the switcher in 20 x 1 wire per crosspoint mode and retain the standard BCD remote control.

For 20 x 1 operation it is necessary to wire connections from the back of each PL 7 connector, on the rear of the two halves of the control panel, to the PL 5 connector on the rear of the switcher.
Before doing this, the existing connections to PL 5 should be removed.

**PL 7 Individual tally outputs: (On rear of each of two pushbutton panels.)**

(Recommended wiring to PL 5 on rear panel.)

| | Control panel buttons 1 to 10 | |
|---|---|---|
| PL 7 - HE14 | | PL 5 - 25 pin 'D' |
| 1A | SW 1 | 1 |
| 1B | SW 2 | 2 |
| 2A | SW 3 | 3 |
| 2B | SW 4 | 4 |
| 3A | SW 5 | 5 |
| 3B | SW 6 | 6 |
| 4A | SW 7 | 7 |
| 4B | SW 8 | 8 |
| 5A | SW 9 | 9 |
| 5B | SW 10 | 10 |
| 6A | +5 Vdc | 11 |
| 6B | “ | 12 |
| 7A | No connection | |
| 7B | “ | |
| 8A | “ | |
| 8B | “ | |

| | Control panel buttons 11 to 20 | |
|---|---|---|
| PL 7 - HE14 | | PL 5 - 25 pin 'D' |
| 1A | SW 1 | 11 |
| 1B | SW 2 | 12 |
| 2A | SW 3 | 13 |
| 2B | SW 4 | 14 |
| 3A | SW 5 | 15 |
| 3B | SW 6 | 16 |
| 4A | SW 7 | 17 |
| 4B | SW 8 | 18 |
| 5A | SW 9 | 19 |
| 5B | SW 10 | 20 |
| 6A | +5 Vdc | 21 |
| 6B | “ | 22 |
| 7A | No connection | |
| 7B | “ | |
| 8A | “ | |
| 8B | “ | |

## Audio breakaway operation:

This option is available either by using:

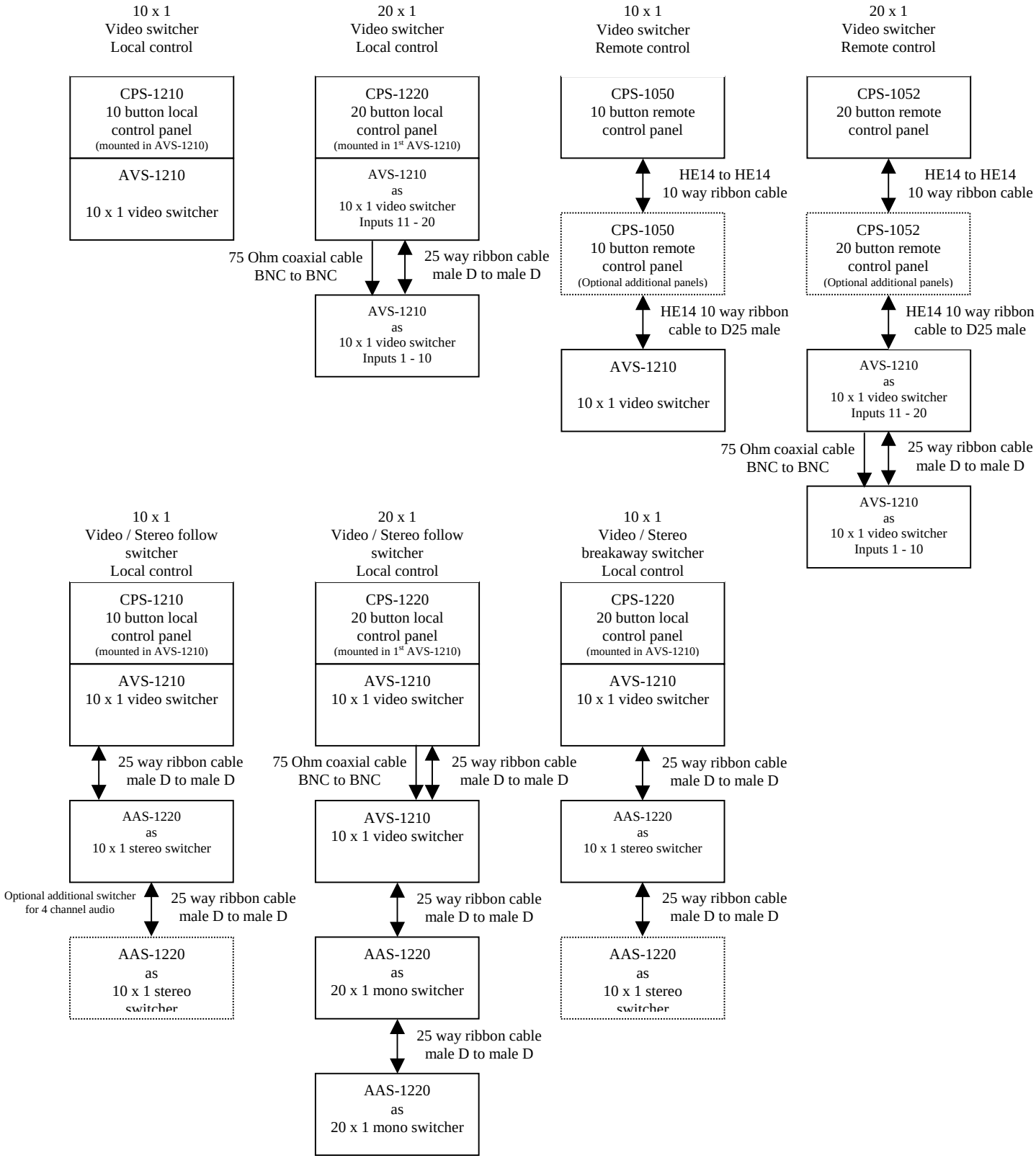
two interconnected CPS-1050 10 button remote control panels,
one CPS-1052 20 button remote control panel or
one AVS-1210 10 x 1 video switcher fitted with a CPS-1220 20 button local control panel.

See Control panel and / or AAS-1220 manuals for additional details.

# Examples of switcher configurations

The following examples are intended as an illustrative guide only. These are not the only permissible configurations. For further advice, please consult IRT or your local distributor.

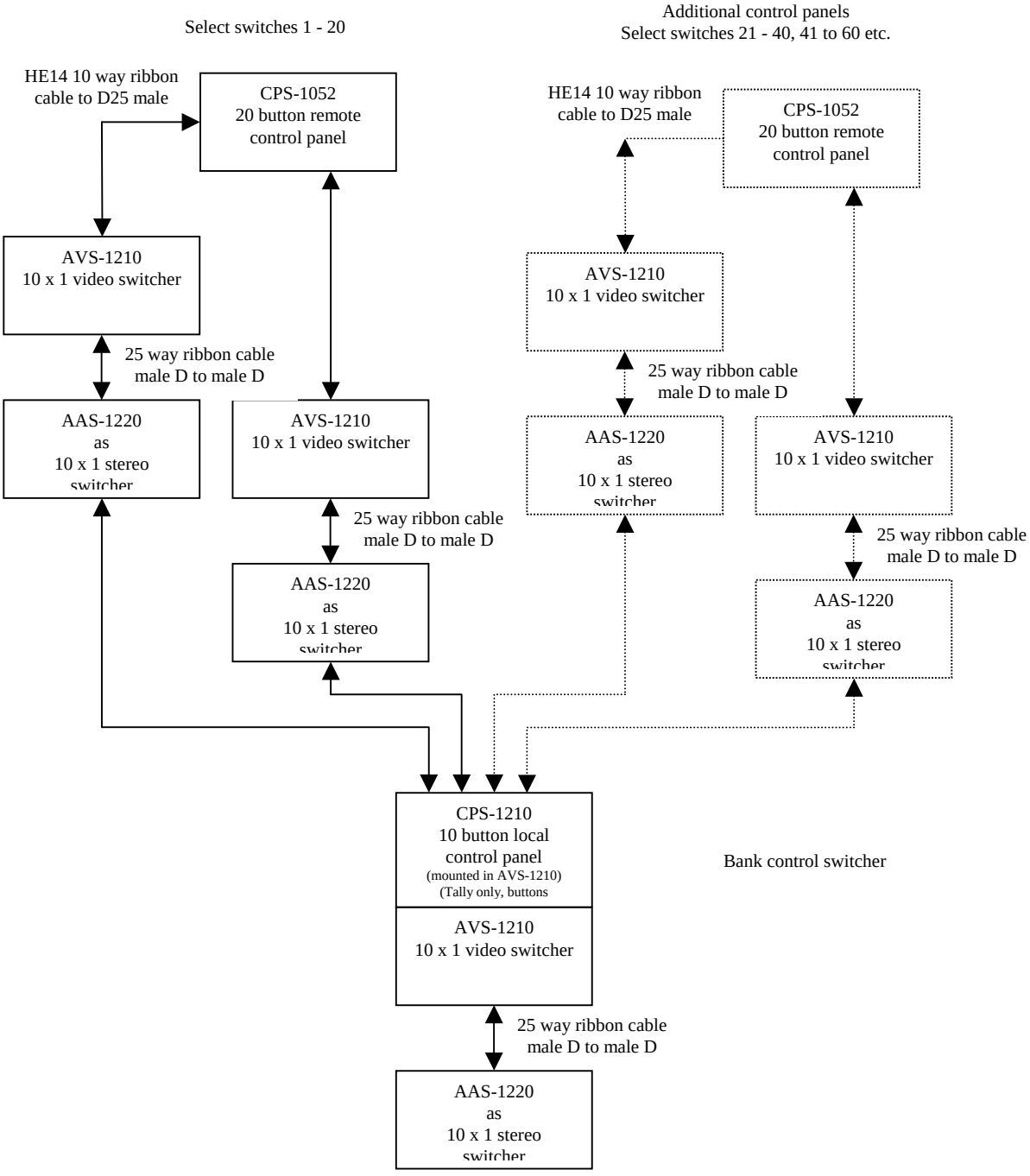
Note: The following diagrams only show the basic control connections.
Additional connections for signal wiring are required for video 20 x 1 switchers.
See also *Configuration* and *Installation* sections of AVS-1210, AAS-1220 and CPS-1050 / CPS-1052 manuals for details of required changes to link settings and cable connections.



# Switcher configuration for up to 200 x 1

The data protocol used in the AVS-1210, AAS-1220 and their control panels includes signals which indicate to other connected members of the group that a particular control panel is active. This allows this panel to take control. By using this signal to control another control panel, via its wire per crosspoint input, the additional switcher may be used to switch between up to 20 control panels.
Thus, by connecting the video and audio outputs of the input switchers to a bank control switcher, a composite switcher can be formed with up to 200 inputs and a single output.
The quality of these switchers is sufficiently high that the additional switcher does not effect overall performance. As all signals follow an equal signal path, no timing errors are introduced between inputs.

Note: The following diagram only shows the basic control connections in order to illustrate the concept.
Additional connections for video and audio signal wiring between the input switchers and the bank control switcher are required.
Please consult IRT for details of connections before proceeding.
See also *Configuration* and *Installation* sections of AVS-1210, AAS-1220 and CPS-1050 / CPS-1052 manuals for details of required changes to link settings and cable connections.



# Installation

## Operational Safety:

**WARNING**

Operation of electronic equipment involves the use of voltages and currents that may be dangerous to human life. Note that under certain conditions dangerous potentials may exist in some circuits when power controls are in the **OFF** position. Maintenance personnel should observe all safety regulations.

Do not make any adjustments inside equipment with power **ON** unless proper precautions are observed. All internal adjustments should only be made by suitably qualified personnel. All operational adjustments are available externally without the need for removing covers or use of extender cards.

## Pre-installation:

### Handling:

This equipment may contain or be connected to static sensitive devices and proper static free handling precautions should be observed.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

### Power:

AC mains supply: Ensure that operating voltage of unit and local supply voltage match and that correct rating fuse is installed for local supply.

DC supply: Ensure that the correct polarity is observed and that DC supply voltage is maintained within the operating range specified.

### Earthing:

The earth path is dependent on the type of frame selected. In every case particular care should be taken to ensure that the frame is connected to earth for safety reasons. See frame manual for details.

**Signal earth:** For safety reasons a connection is made between signal earth and chassis earth. No attempt should be made to break this connection.

# Local control:

The AVS-1210 is manufactured as a slave format switcher with no local control panel.
Two local control panels are available; the CPS-1210 and the CPS-1220 with 10 and 20 buttons respectively. A switcher fitted with the CPS-1210 may be upgraded to 20 buttons by conversion kit CPS-1215.

## CPS-1210 fitting: (10 buttons)

1. Disconnect IEC power input plug from chassis and remove chassis from rack.

2. Remove 6 screws holding top cover (1 each side and 4 in top). Remove top cover.
   Remove 6 screws holding front escutcheon to front chassis and remove escutcheon.

3. Separate the switch PCB from the switch logic PCB and mount the switch PCB in the chassis cutout using the 6 screws and stand-offs provided. The PCB should be mounted so that the LED's in the switches are at the top.
   Re-fit the switch logic PCB to the switch PCB by locating PL 1 & PL 2 over the two sets of connector pins and pressing firmly and evenly into place.

4. PL 4 on the control panel is then connected to PL4 on the rear of the switcher.
   PL 5 on the control panel is then connected to PL4 on the switcher PCB using the 150 mm cable provided (GDW-3010).
   The connection from PL 5 on the switcher PCB to PL 5 on the rear of the switcher is left untouched.

5. Check the position of links LK 2 & LK 3 on the switch logic PCB.
   For switches to operate 1 - 10 LK 2 should be OUT.
   For switch panel to operate as tally only LK 3 should be in position A.
   For front panel switches to be operative LK 3 should be in position B.

6. Fit new front escutcheon using the original 6 screws.
   Re-fit chassis top cover using the original 6 screws. The two countersunk head screws are used at the front top of the cover. Note that the top cover sits on top of the chassis at the rear, but under the fold at the front.

7. The switcher is now ready to re-install in the rack.

## CPS-1220 fitting: (20 buttons)

The procedure is the same as for the CPS-1210 except that two sets of switch PCB's are fitted.

**Normal 20 x 1 operation.**

1. As per CPS-1210.
2. As per CPS-1210.
3. As per CPS-1210. Repeat for the second PCB.
4. PL 4 on the 11 - 20 switch control panel is then connected to PL 4 on the rear of the switcher.
   PL 5 on the 11 - 20 switch control panel is then connected to PL 4 on the 1 - 10 switch control panel using the 300 mm cable provided (GDW-3011).
   PL 5 on the 1 - 10 switcher control panel is then connected to PL 4 on the switcher PCB using the 150 mm cable provided (GDW-3010).
   The connection from PL 5 on the switcher PCB to PL 5 on the rear of the switcher is left untouched.
5. Check the position of links LK 2 & LK 3 on the switch logic PCB's.
   For the 1 - 10 switch PCB LK 2 should be OUT.
   For the 11 - 20 switch PCB LK 2 should be IN.
   For switch panel to operate as tally only LK 3 should be in position A on both PCB's.
   For front panel switches to be operative LK 3 should be in position B on both PCB's.
6. As per CPS-1210.
7. As per CPS-1210.

See also 20 x 1 operation section below for changes to main PCB link settings.

**Breakaway operation.**
Normally this is only configured with a video and audio switcher combination. The following information is included in case 2 + 2 audio breakaway operation is desired.

1. As per CPS-1220 normal operation.
2. As per CPS-1220 normal operation.
3. As per CPS-1220 normal operation.
4. PL 4 on the 1 - 10 switch control panel is then connected to PL 4 on the rear of the switcher.
   PL 4 on the 11 - 20 switch control panel is then connected to PL 6 on the 1 - 10 switch control panel using the 300 mm cable provided (GDW-3011).
   PL 5 on the 1 - 10 switcher control panel is then connected to PL4 on the switcher PCB using the 150 mm cable provided (GDW-3010).
   Disconnect PL 5 on the switcher PCB and connect PL 5 on the rear of the switcher to PL 5 on the 11 - 20 switch PCB.
5. Check the position of links LK 2 & LK 3 on the switch logic PCB's.
   For the 1 - 10 switch PCB LK 2 should be OUT.
   For the 11 - 20 switch PCB LK 2 should be OUT.
   For switch panel to operate as tally only LK 3 should be in position A on both PCB's.
   For front panel switches to be operative LK 3 should be in position B on both PCB's.
6. As per CPS-1210.
7. As per CPS-1210.

# Connections:

## Video:

Signal connections are by means of BNC sockets mounted on the rear of the printed circuit board and protruding through the rear panel of the chassis.

If input termination is required then BNC termination plugs should be fitted to the secondary input sockets.
The expansion input is terminated in 75 Ohms as there is no loop through requirement for this function.

Connect inputs as required. There is no need to make any connection to unused inputs and it is not necessary to connect inputs in sequential order without gaps.

Two outputs are provided for each channel. These are identical, but are passively isolated so that loading on one does not significantly effect the other. Normally, one output will be used for the signal destination and one for local monitoring.
When configuring a switcher to act as inputs 11 – 20, either output may be used to feed the cascade input of the 1 - 10 switcher.

## Control:

Control tally connections are made to PL 4 & PL 5, a pair of 25 pin "D" sockets on the rear panel.

The connections to PL 4 & PL 5 are:

| | | |
|---|---|---|
| 1 | 14 | +12 Vdc for remote control panel. (PL 4 only) |
| 2 | 15 | Gnd |
| 3 | 16 | *Switch pulse* |
| 4 | 17 | |
| 5 | 18 | D - Data 3 |
| 6 | 19 | C - Data 2 |
| 7 | 20 | B - Data 1 |
| 8 | 21 | A - Data 0 |
| 9 | 22 | E - Data 4 |
| 10 | 23 | |
| 11 | 24 | *Busy* |
| 12 | 25 | *Unlatch* |
| 13 | | |

Pins 1 to 13 are reserved for user options. See *Configuration* section of this manual for details.

## Connections for remote control panel to AVS-1210:

To connect a CPS-1050 or CPS-1052 remote control panel to the AVS-1210 switcher the following cable is required.

| CPS-1050 | | | AVS-1210 |
|---|---|---|---|
| 10 Pin HE14 | to | | 25 Pin "D"(male) |
| PL 5 | to | | PL 4 |
| Pin | to | Pin | |
| | | | |
| 1A | to | 14 | +12 Vdc for remote control |
| 1B | to | 15 | Gnd |
| 4B | to | 25 | *Switch pulse* |
| | | | |
| 2B | to | 18 | D - Data 3 |
| 3A | to | 19 | C - Data 2 |
| 3B | to | 20 | B - Data 1 |
| 4A | to | 21 | A - Data 0 |
| 2A | to | 22 | E - Data 4 |
| | | | |
| 5A | | 16 | *Busy* |
| 5B | | 24 | *Unlatch* |

Where connection is from a remote control panel to both video and audio switchers the above wiring should be used between the control panel and either the AAS-1220 or AVS-1210. The two switchers are then linked with a 25 way cable wired pin to pin.

Note that he connection must always be from PL 5 on the remote control panel to PL 4 on the switcher. Additional control panels and switchers follow the same procedure with the first control panel having no connection to PL 4 and the last switcher having no connection to PL 5.

Under no circumstances should a connection be made from a PL 4 to a PL 4 or PL 5 to a PL 5.

## Connections for linking two AVS-1210 switchers:

To connect two AVS-1210 switchers the following cable is required.

| AVS-1210 | | AVS-1210 |
|---|---|---|
| 25 Pin "D"(male) | to | 25 Pin "D"(male) |
| PL 5 | to | PL 4 |
| | | |
| Pins 1 - 25 | to | Pins 1 - 25 |

Wiring is pin to pin.
Pins 15 - 25 only are required unless special options are in use. For convenience a 25 way ribbon cable may be used with all pins connected.

## Connections for AA-294 switcher as audio follow:

To connect an AA-294 stereo switcher to the AVS-1210 switcher the following cable is required.

| AVS-1210 | | AA-294 |
|---|---|---|
| 25 Pin "D"(male) | to | 25 Pin "D"(male) |
| PL 5 | to | J1 |
| | | |
| Pin | to | Pin |
| Pin 15 | to | Pin 15 |
| Pin 18 | to | Pin 18 |
| Pin 19 | to | Pin 19 |
| Pin 20 | to | Pin 20 |
| Pin 21 | to | Pin 21 |

The above connections only are required and connection of other pins may cause incorrect operation.

## 20 x 1 operation:

For 20 x 1 operation LK 2 should be installed. (For normal operation it must not be installed.)
While LK 2 is installed the switcher will respond to commands for crosspoints 11 – 20 as if they were 1 – 10. Any code outside this range will cause the switcher to select the expansion input.

The remote control cable from a CPS-1052 to an AVS-1210 is the same as that for a CPS-1050 described previously.

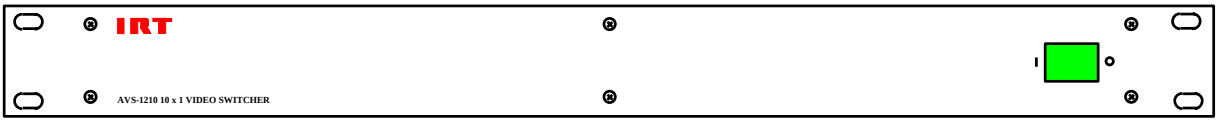
A CPS-1220, 20 button, local control panel may be fitted to the AVS-1210 in addition to, or in place of, the CPS-1052 remote control panel.

See remote control panel manual for configuration options including audio breakaway and multiple remote control wiring.

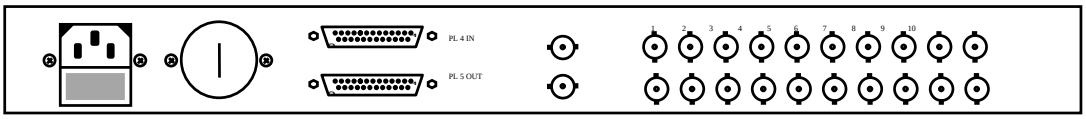
## Front & rear panel connector diagrams

The following front panel and rear assembly drawings are not to scale and are intended to show relative positions of connectors, indicators and controls only.

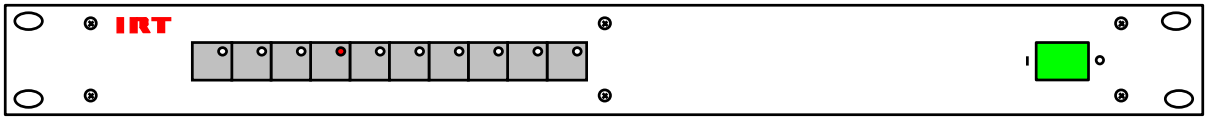
AVS-1210 - front view




AVS-1210 - rear view

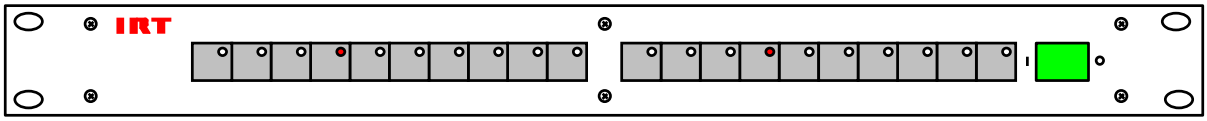



AVS-1210 fitted with CPS-1210 - front view

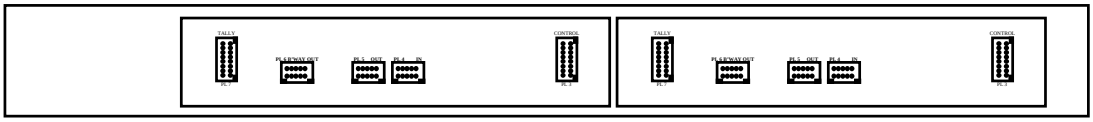



CPS-1210 - view of rear from inside chassis

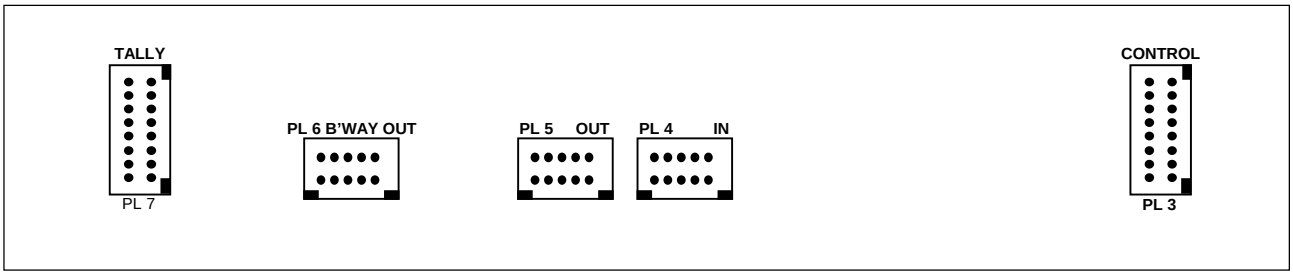
AVS-1210 fitted with CPS-1220 - front view




CPS-1220 - view of rear from inside chassis



CPS-1210 - view of rear from inside chassis
(connector positions)



# Maintenance & Storage

## Maintenance:

No regular maintenance is required.

Care however should be taken to ensure that all connectors are kept clean and free from contamination of any kind. This is especially important in fibre optic equipment where cleanliness of optical connections is critical to performance.

## Storage:

If the equipment is not to be used for an extended period, it is recommended the whole unit be placed in a sealed plastic bag to prevent dust contamination. In areas of high humidity a suitably sized bag of silica gel should be included to deter corrosion.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

# Warranty & Service

Equipment is covered by a limited warranty period of three years from date of first delivery unless contrary conditions apply under a particular contract of supply. For situations when "**No Fault Found**" for repairs, a minimum charge of 1 hour's labour, at IRT's current labour charge rate, will apply, whether the equipment is within the warranty period or not.

Equipment warranty is limited to faults attributable to defects in original design or manufacture. Warranty on components shall be extended by IRT only to the extent obtainable from the component supplier.

## Equipment return:

Before arranging service, ensure that the fault is in the unit to be serviced and not in associated equipment. If possible, confirm this by substitution.

Before returning equipment contact should be made with IRT or your local agent to determine whether the equipment can be serviced in the field or should be returned for repair.

The equipment should be properly packed for return observing antistatic procedures.

The following information should accompany the unit to be returned:

1. A fault report should be included indicating the nature of the fault
2. The operating conditions under which the fault initially occurred.
3. Any additional information, which may be of assistance in fault location and remedy.
4. A contact name and telephone and fax numbers.
5. Details of payment method for items not covered by warranty.
6. Full return address.
7. For situations when "**No Fault Found**" for repairs, a minimum charge of 1 hour's labour will apply, whether the equipment is within the warranty period or not. Contact IRT for current hourly rate.

Please note that all freight charges are the responsibility of the customer.

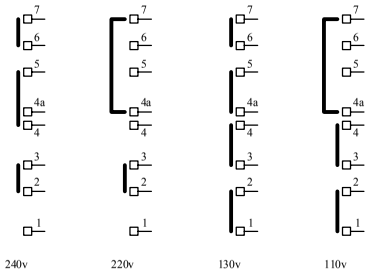
The equipment should be returned **to the agent who originally supplied the equipment** or, where this is not possible, to IRT direct as follows.

Equipment Service
IRT Electronics Pty Ltd
26 Hotham Parade
ARTARMON
N.S.W. 2064
AUSTRALIA

Phone: 61 2 9439 3744 Fax: 61 2 9439 7439
Email: service@irtelectronics.com

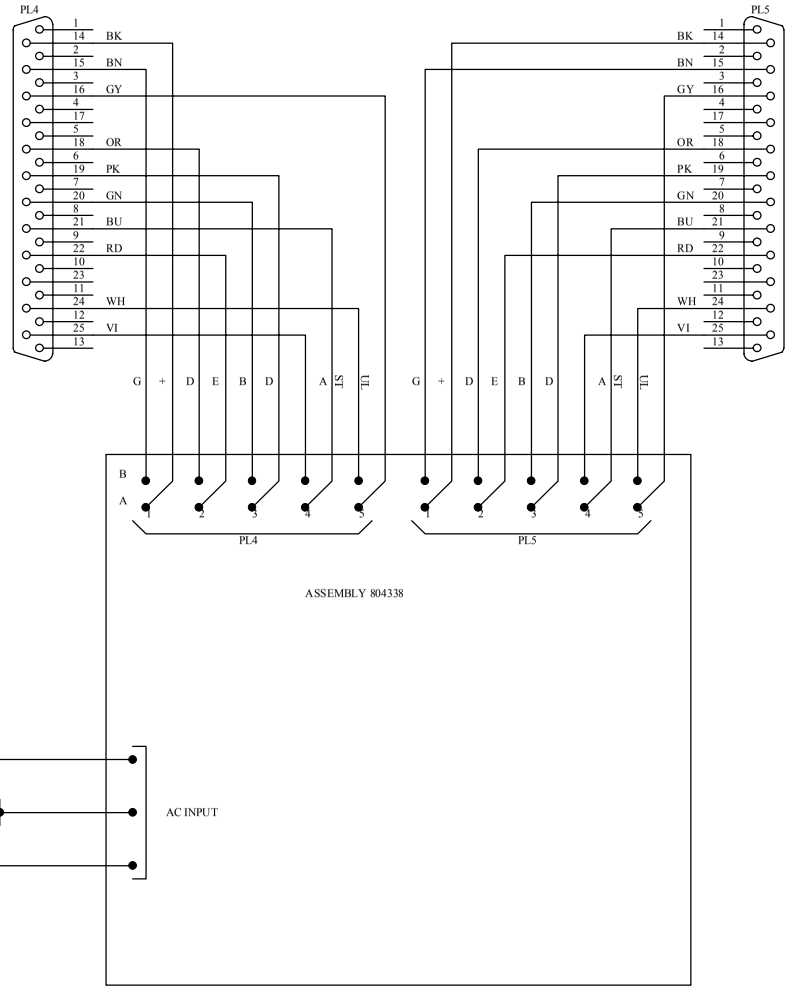
# Drawing index

| Drawing # | Sheet # | Description |
|---|---|---|
| 804341 | | AVS-1210 wiring details. |
| 804338 | 1 | AVS-1210 10 x 1 video switcher schematic diagram – video section. |
| 804338 | 2 | AVS-1210 10 x 1 video switcher schematic diagram – logic section. |




SW2 INTERNAL CONNECTIONS

POSITIONS 150 & 260 ARE INOPERATIVE




FUSE RATING

240 & 220V = 250mA SLO BLO

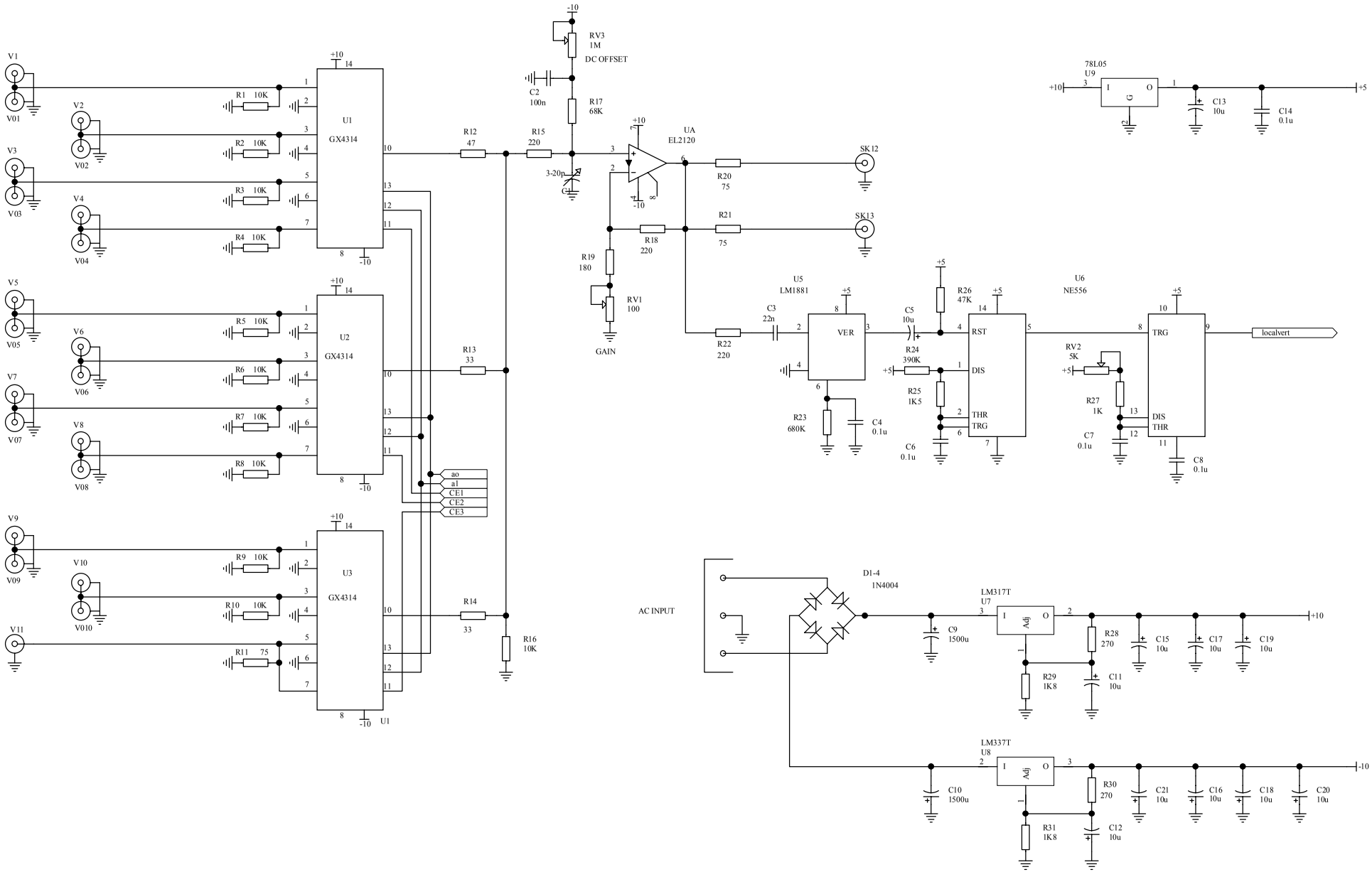
130 & 110v = 500mA SLO BLO

1 10/11/99



IRT

| | | |
|---|---|---|
| DRAWN RBB | SIZE | TITLE AVS-1210 10x1 VIDEO SWITCHER A.F.V. |
| CHECKED | SCALE | DRAWING No. 804341 |
| ENG. APP. | | SHEET 1 OF 1 |
| CONTRACT No. | IRT Electronics Pty. Ltd. ARTARMON NSW AUSTRALIA 2064 | |






1 27/07/99

IRT

| | | |
|---|---|---|
| SIZE | TITLE AVS-1210<br>10X1 VIDEO SWITCHER | |
| DRAWN RBB | | |
| CHECKED | SCALE | DRAWING No. 804338 — SHEET 1 OF 2 |
| ENG. APP. | | |
| CONTRACT No. | IRT Electronics Pty. Ltd.<br>ARTARMON NSW AUSTRALIA 2064 | |

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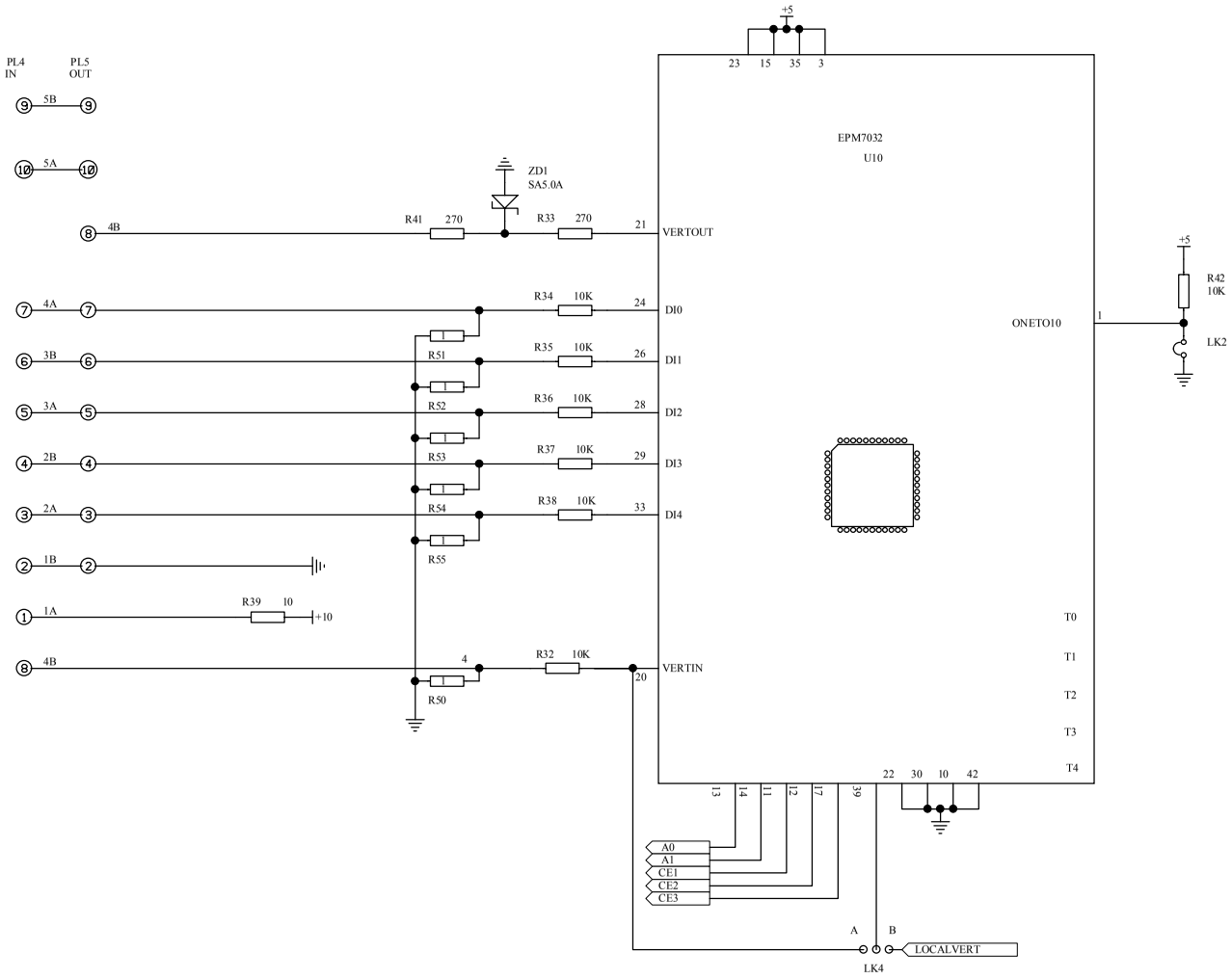


1 27/07/99



DRAWN RBB
CHECKED
ENG. APP.
CONTRACT No.

IRT

SIZE

TITLE AVS-1210
10X1 VIDEO SWITCHER

SCALE

DRAWING No. 804338

SHEET 2 OF 2

IRT Electronics Pty. Ltd.
ARTARMON NSW AUSTRALIA 2064