

# IQAVDR Video Distribution Amplifier



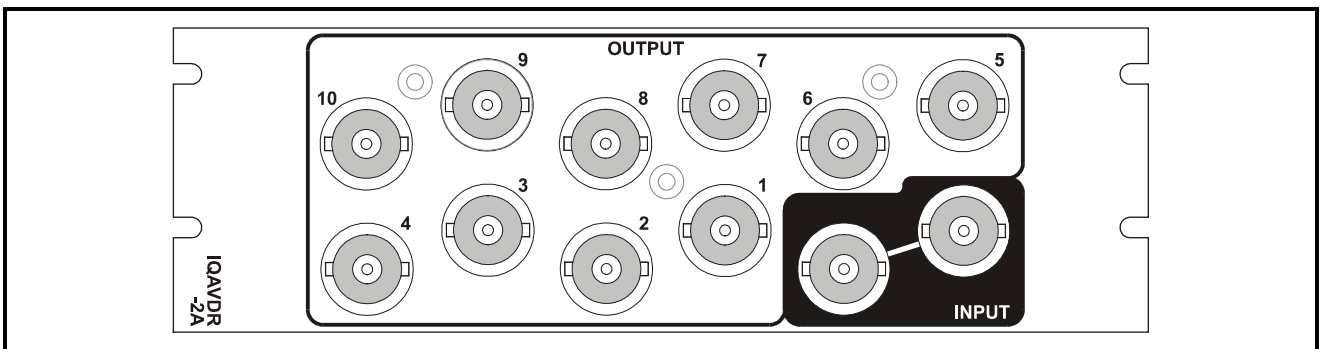
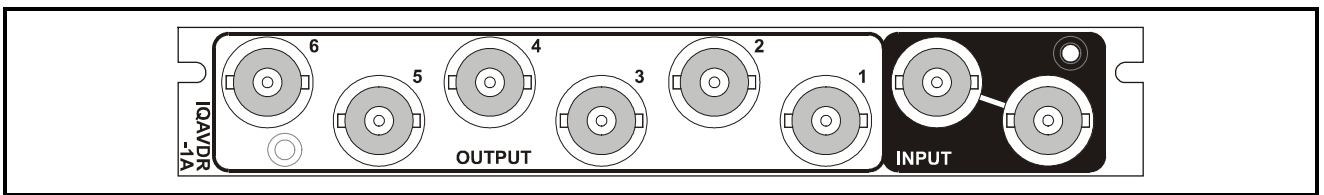
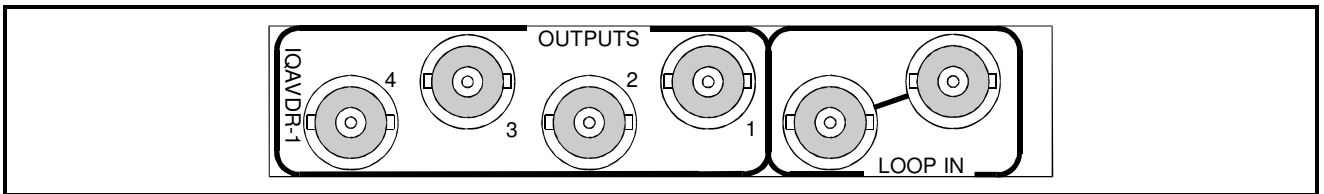
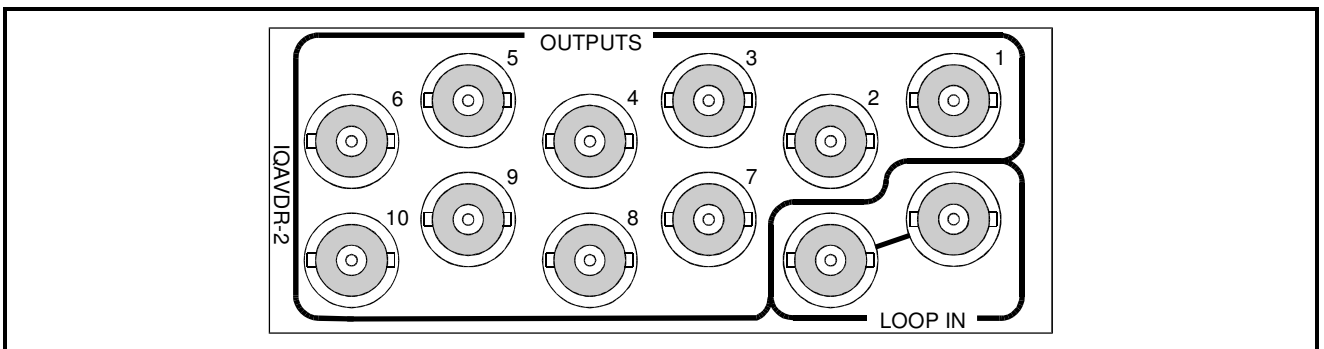
## Module Description

The IQAVDR is a broadcast quality 10/4-output distribution amplifier with adjustable gain, and equalization. An on-board processor identifies the incoming signal standard/format. Automatic gain and equalization adjustment is available for composite signals. The input is a loop-through and fully differential. Equalization for common cable types and a black level clamp may be enabled by simple link changes.

The bandwidth of 35 MHz enables it to be used with HDTV component inputs.

RollCall provides full remote control and monitoring. The monitoring facilities include identification of signal presence, format/standard and sync/burst height

## REAR PANEL VIEWS



Versions of the module cards available are:

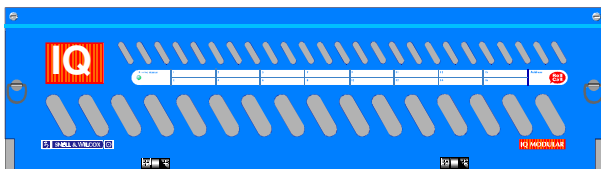
IQAVDR-1	4 output video distribution amplifier with equalisation	Single width module
IQAVDR-2	10 output video distribution amplifier with equalisation	Double width module
IQAVDR-1A	6 output video distribution amplifier with equalisation	Single width module
IQAVDR-2A	10 output video distribution amplifier with equalisation	Double width module

Note that -E versions of the above cards (for use with Nokia cable type 0.6/2.8 AF FRNC) are also available.

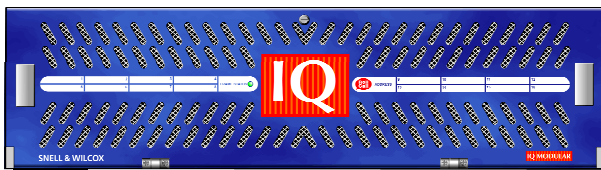
**Note that there are two styles of rear panels available. They are not interchangeable between the two styles of enclosures. However, the cards may be fitted into any style of enclosure.**

**‘A’ Style Enclosure**

Rear panels **with** the suffix A may only be fitted into the ‘A’ style enclosure shown below.



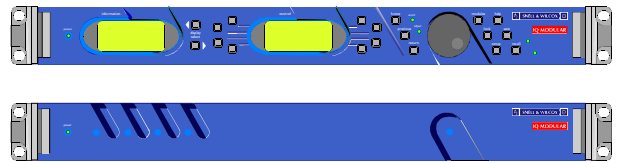
(Enclosure order codes IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P)



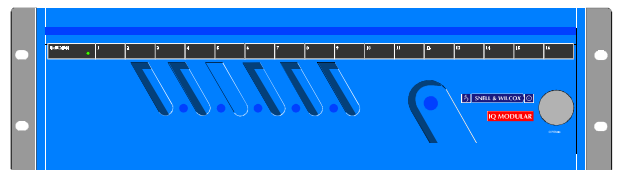
(Enclosure order **codes** IQH3A-S-0, IQH3A-S-P)

**‘O’ Style Enclosures**

Rear panels without the suffix A may only be fitted into the ‘O’ style enclosures shown below.



**(Enclosure order codes** IQH1S-RC-0, IQH1S-RC-AP, IQH1U-RC-0, IQH1U-RC-AP, Kudos Plus Products)

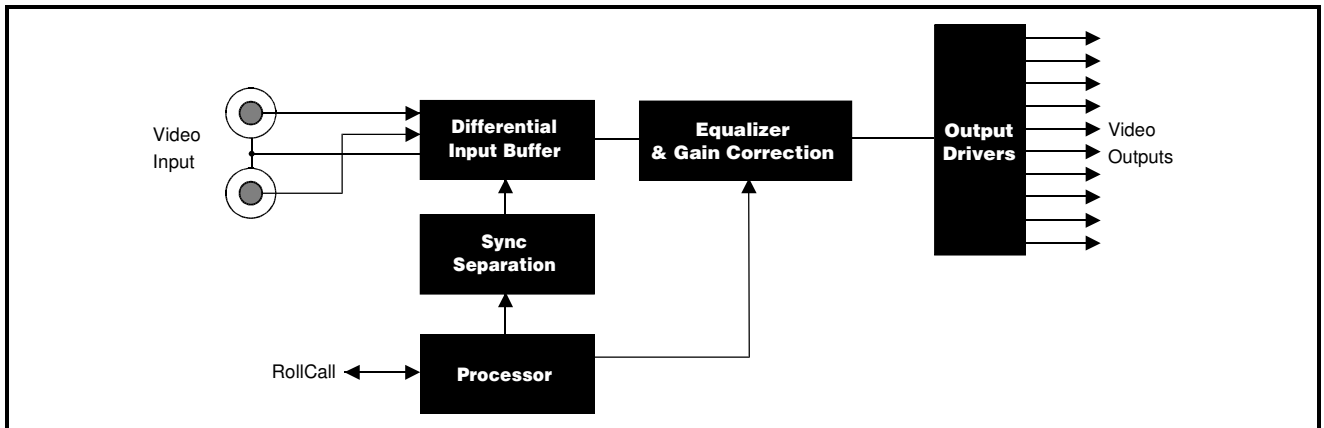


(Enclosure order codes IQH3N-0, IQH3N-P)



(Enclosure order codes IQH3U-RC-0, IQH3U-RC-P)

## BLOCK DIAGRAM

**Features**

Up to 10 high quality outputs

- Balanced Loop-through input
- 35 MHz bandwidth
- Adjustable gain and equalization
- Equalization for RG59U/Belden 8263 or PSF1/2/Belden 8281 (link selectable)
- Black level clamp (link selectable)
- Full RollCall remote control and signal identification
- Sync and burst level warnings
- Automatic gain control (AGC) with respect to sync height
- Automatic equalization (ACC) with respect to burst height

TECHNICAL PROFILE

**Features**

**Signal Inputs**

Video ..... 1 Balanced loop-through

**Signal Outputs**

Video ..... Up to 10 Unbalanced Outputs

**Card Edge Controls (also available via RollCall)**

Gain.....±3 dB in steps of 0.05 dB

Equalization (PSF1/2 or Beldon 8281)

0-200 m .....±0.1 dB to 10 MHz  
 ±0.2 dB 10-25 MHz

0-100 m .....+0.5, -1.5 dB 25-35 MHz

200-300 m .....±0.2 dB to 10 MHz  
 +0.3 dB, -1.5 dB 10-25 MHz

Equalization (RG59/U or Beldon 8263)

0-300 m .....±0.1 dB to 8 MHz

0-100 m .....±0.2 dB 8-20 MHz

**Specifications**

**Frequency Response**

(Without Equalization) ..... 10 kHz - 10 MHz ± 0.1 dB  
 10 MHz - 30 MHz ± 0.2 dB  
 35 MHz <-1 dB

Differential Gain .....Unity Gain - Better than 0.2%

Differential Phase .....Unity Gain - Better than 0.2°

Signal/Noise Ratio ..... 10 kHz – 7 MHz - Better than -66 dB  
 (Unweighted)

Linearity.....Better than 0.1%

50 Hz tilt K50Hz.....Better than 0.1%

Output D.C. ....< 90 mV

Output Return Loss .....better than 33 dB to 10 MHz,  
 26 dB to 30 MHz

Maximum Output Level.....2.4 V pk to pk @ 20 MHz into  
 75 ohms

Insertion Delay .....20 ns

Y-C Gain/ Delay inequality..< 1%, < 1 ns

K2T, KPb .....Better than 0.1%

Max. Input Level .....+ 6 dB

CMRR .....Better than 60 dB at 50 Hz,  
 40 dB 50 Hz to 8 MHz

Input Return Loss (Powered)  
 better than 36 dB to 10 MHz,  
 30 dB to 30 MHz

Input Return Loss (Un-Powered)  
 better than 33 dB to 30 MHz

Input Impedance.....> 22 k ohms

Headroom.....+6 dB

Output Impedance.....75 ohms ±1%

Gain.....Unity ±1% as supplied

200 m .....-1 dB typical at 25 MHz

300 m .....-1 dB typical at 15 MHz

AGC .....[On/Off] - All recognized SD  
 Sources

ACC .....[On/Off] - Composite Sources Only

**Functions Available via RollCall™ Only**

Signal Identification .....Line Standard – NTSC, 525 Mono,  
 PAL, 625 Mono, HD(720),  
 HD(1080), None, Unknown

Selectable Clamp

Signal level.....Sync and Burst amplitude ±10%

Logging .....Signal Level Warning, Line  
 Standard,  
 Burst level warning

Clamp Rejection .....8 dB typical at 50 Hz

**Power Consumption**

Module Power Consumption  
 3.5 W max

**EMC Performance Information**

Environment .....Commercial and light industrial E2

Peak Mains Inrush Current following a 5 second mains  
 interruption

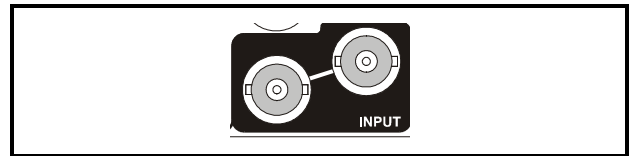
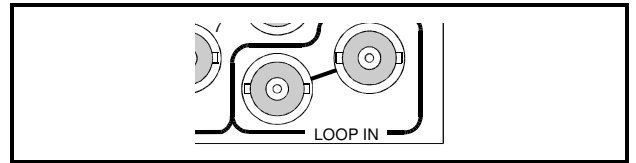
.....No mains input

Performance Information....Immunity to conducted  
 common-mode RF interference  
 (EN 55103-2 immunity phenomenon  
 I6):  
 Interference is just visible on critical  
 picture material when a video input  
 or output is subjected to modulated  
 RF at a level of 3 V.

**INPUT AND OUTPUT CONNECTIONS**

**INPUT SIGNAL**

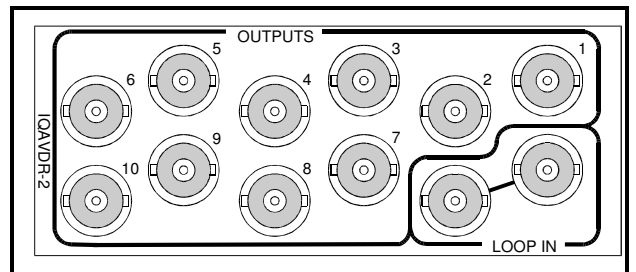
This is the video input to the unit via loop-through BNC connectors for 75 ohms. If only one connector is used the other connector should be fitted with a 75 Ohm terminator.



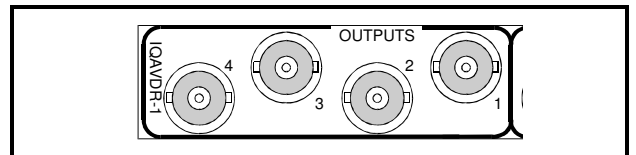
**OUTPUT SIGNALS**

These are the outputs of the unit via BNC connectors for 75 Ohms.

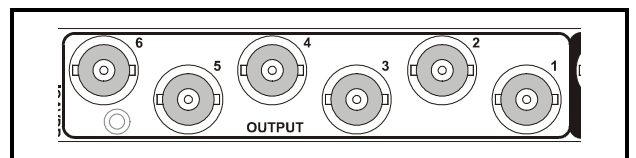
The IQAVDR-2 provides ten isolated outputs.



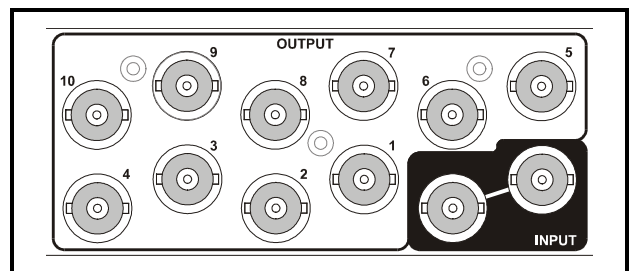
The IQAVDR-1 provides four isolated outputs.



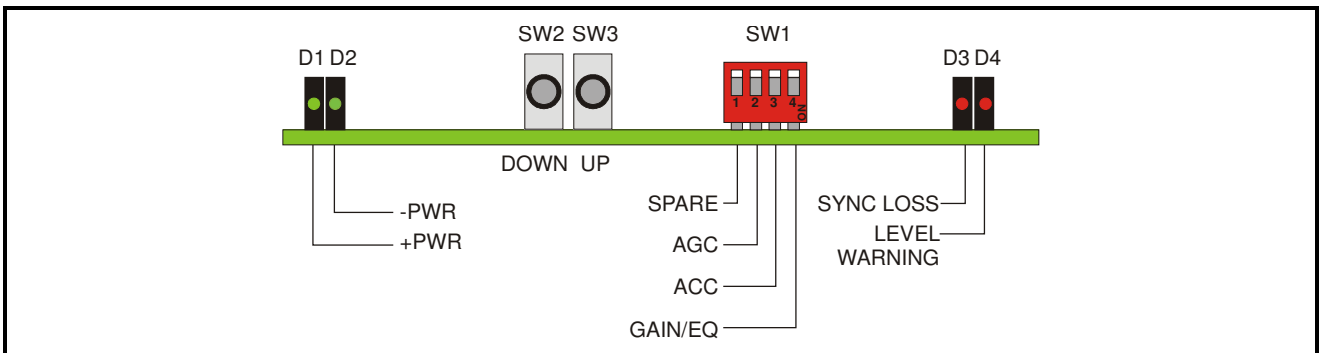
The IQAVDR-1A provides six isolated outputs.



The IQAVDR-2A provides ten isolated outputs.



CARD EDGE CONTROLS

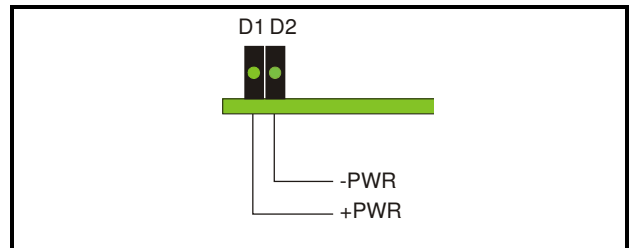


Adjustment of the settings of the IQAVDR is available either via card edge controls and/or via a more comprehensive remote control system using RollCall™

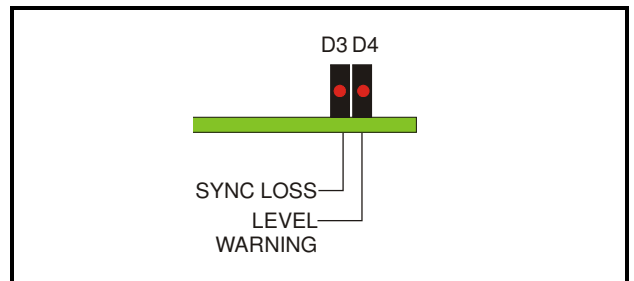
The adjustments are located on the front edge of the card.

LED INDICATORS

The left hand LED (D1) indicates that the internal +6V supply is present and the right-hand LED (D2) indicates that the -6V supply is present. Both indicators are green types.



When D3 is illuminated this indicates that the unit is not receiving a video input signal.



D4 provides a warning that various levels are incorrect.

It will become illuminated if either or any of the following parameters are in error:

- AGE**  
Automatic Gain Control is out of range
- EQE**  
Automatic Equalisation is out of range
- SLW**  
Sync level warning (level >10% or <10% typical from nominal)
- BLW**  
Burst level warning (level >10% or <10% typical from nominal)

## SW1, SW2 &amp; SW3

The two push buttons and the 4-way DIL switch allow various functions and modes to be set.

SW1 selects a particular function and the push buttons SW2 & 3 allow the value of the selected function to be adjusted.

SW2 (DOWN) increases the value and SW3 (UP) decreases the value.

*Note that to select the default value both buttons should be pressed together.*

## SW1 SWITCH FUNCTIONS

(Functions enabled when switch is set to ON)

Position 1	Not Used (Spare)
Position 2	AGC ON/OFF
Position 3	ACC ON/OFF
Position 4	GAIN...Switch OFF (UP) EQ...Switch ON (DOWN)

## AGC ON/OFF

The Automatic Gain Control may be switched ON or OFF.

Gain is automatically adjusted with respect to the sync pulse amplitude.

For 525 line sources the gain is adjusted to maintain a sync amplitude of approximately 286 mV. For 625 the amplitude is maintained at approximately 300 mV.

*Note that when the AGC is ON the manual gain control is disabled.*

*Note also that the AGC function is disabled when HD standards are detected.*

## ACC ON/OFF

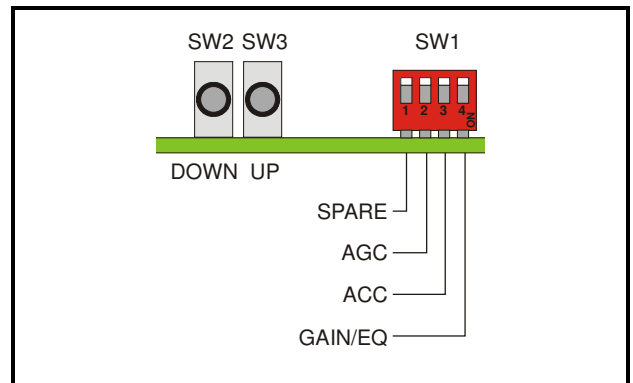
The Automatic Color Control may be switched ON or OFF.

The equalisation is automatically adjusted to maintain a burst amplitude of approximately 300 mV for PAL sources or 286 mV for NTSC sources.

*Note that when the ACC is ON the equalisation control is disabled.*

## GAIN

This control adjusts the overall gain of the amplifier. The range of control is  $\pm 3$  dB in 0.05 dB steps and is set by using the Up/Down push buttons SW2 and SW3. A 1 V p-p output signal may be obtained from an input signal level of between approximately 0.7 V p-p and 1.4 V p-p. SW2 increases the gain and SW3 reduces the gain.



LINKS

Links are provided on the card to select the type of cable to be equalised and to enable/disable the black level clamp.

For RG59/U or Belden 8263 the shorting link should be fitted in position LK2.

For PSF1/2 or Belden 8281 the shorting link should be fitted in position LK3.

*Note that for extended bandwidth operation (>10 MHz) with PSF1/2 or Belden 8281 cable (length greater than 150 m), shorting links LK3 and LK4 must be fitted.*

Black Level Clamp

Black level clamping may be enabled by setting LK5 to the position nearest the front of the card or disabled by setting LK5 to the position nearest the rear of the card.

CABLE EQUALISATION (EQ)

**Note that the equaliser links LK2, LK3 and LK4 (see LINKS above) must be set to the correct positions for the particular cable type.**

The controls SW2 and SW3 adjust the amount of cable equalisation (or controlled HF lift) that the unit provides. When set at minimum no lift is provided. The amount of lift or equalisation available allows 300 m of RG59/U or Belden 8263 to be equalised to 8 MHz  $\pm 0.1$  dB or 300 m of PSF1/2 or Belden 8281 to 10 MHz  $\pm 0.1$  dB.

*See specification on page 2b.4 for details of extended bandwidth performance.*

The equalisation characteristic has been carefully tailored to allow a standard cable to be corrected with only one control.

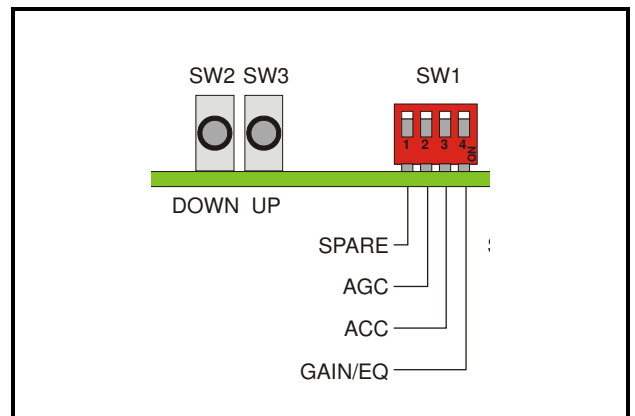
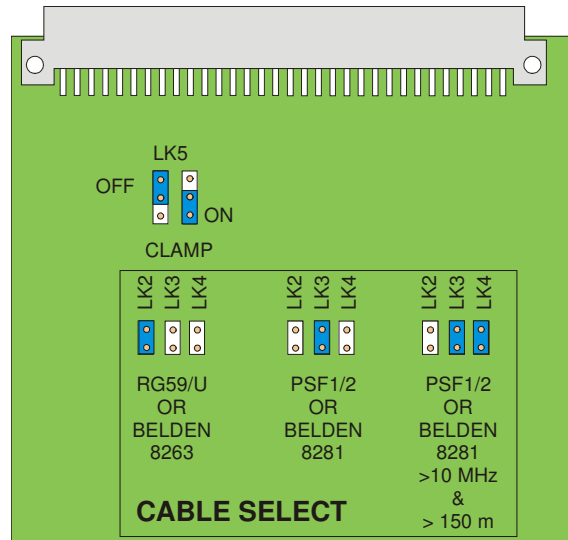
SW2 increases the amount of equalisation and SW3 reduces the amount of equalisation.

Setting the Cable Equalisation

Normally the AVDR would be installed at the end of the cable to be equalised. A video sweep signal covering 0-10 MHz at standard level (1V p-p) should be supplied to the cable and the output of the AVDR viewed on a suitable oscilloscope taking care that the loop through input is correctly terminated in 75 Ohms.

The GAIN should be adjusted to give a 1 V p-p level at low frequencies and the EQUALISATION control adjusted to give the flattest overall response.

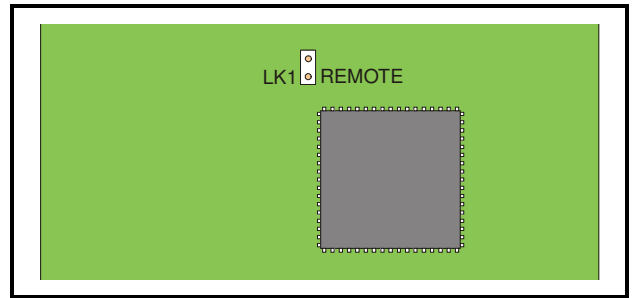
Alternatively a standard Sin<sup>2</sup> Pulse and Bar video test signal at the transmit end could be used and the GAIN adjusted to give a 1 V p-p bar level at the output. The EQUALISATION control should be used to give best pulse to bar relationship and pulse shape with minimum overshoots.





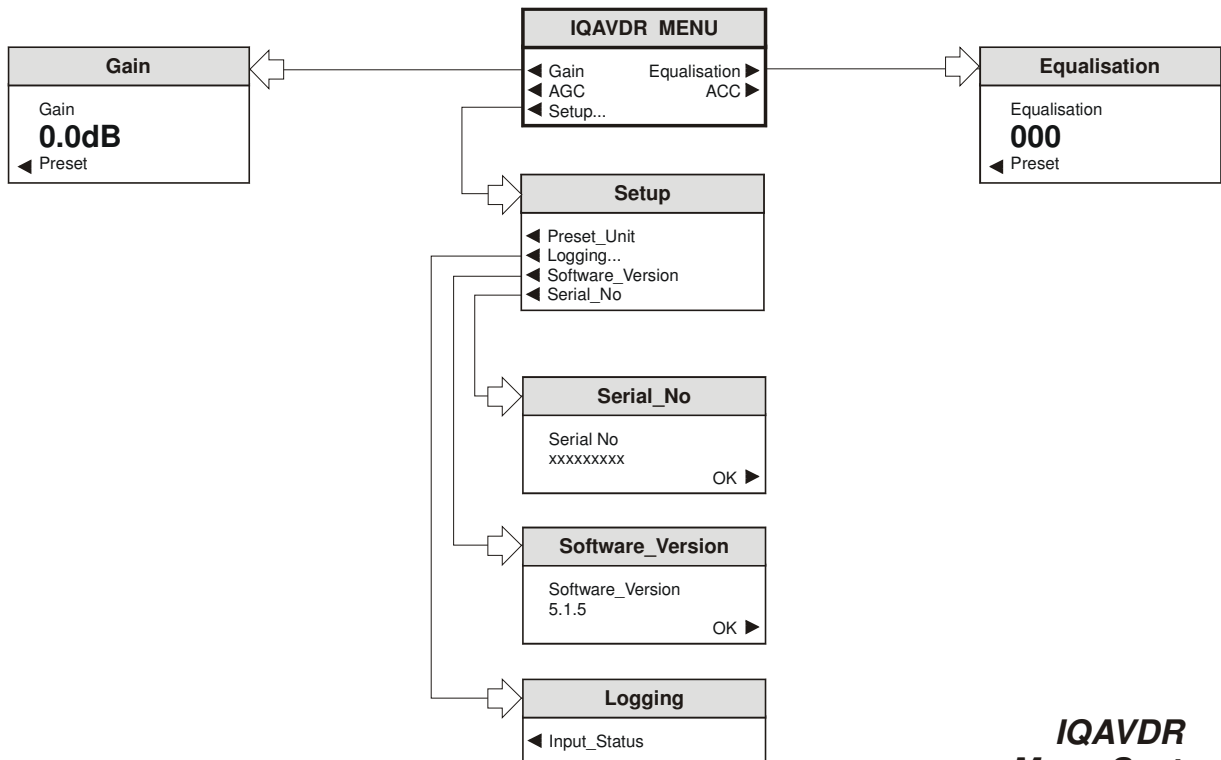
LK1 REMOTE

Note that the unit will respond to both local and remote control, one system overriding the settings of the other. For cards using the RollCall™ remote control system, activating SW1 will override the remote control settings. The RollCall™ control panel will then follow these settings.



Note that in Mainframes where RollCall™ is not available the link LK1 (Remote) located near the center of the card should be set to the OFF (unconnected) position. This ensures that when the unit is powered-up the factory default settings of parameters not available as card edge adjustments, are loaded. With the link in the ON (connected) position card will power-up with the last settings sent by the remote control panel.

MENU SYSTEM



***IQAVDR  
Menu System  
(Supervisor Level)***

MENU AVAILABILITY AT DIFFERENT ACCESS LEVELS

- USER LEVEL                      Setup menu does not include the **Logging** sub-menu
- ENGINEER LEVEL                Setup menu does not include the **Logging** sub-menu

**Operation from an Active Control Panel**

The card may be operated with an active control panel via the RollCall™ network.

The menus available for this card are shown on the previous page and will appear in the Control display window.

Note that at SUPERVISOR access level all menus are available; at USER level and ENGINEER level the setup menu does not include the **Logging** sub-menu.

Operational details for the remote control panel will be found in SECTION 1 of the Modular System Operator's Manual.

**MENU DETAILS**

(see IQAVDR Menu System Diagram)

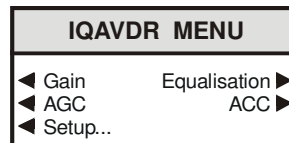
MAIN MENU (seen in the Control window)

The main, or top level menu allows various sub-menus to be selected by pressing the button adjacent to the required text line.

*Note that where a menu item is followed by three dots (...) this indicates that a further sub-menu may be selected.*

Whenever a menu item is selected the parameters of that selection will be displayed in the Information window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the mode is not available for selection the text will remain normal.

**Main Menu**



**Information Window**

The information Window will display data about the unit setup and the video signal.

An example is shown below:

01: IQAVDR	
Inp: OK	Std: PAL
ISY: 0.30V	IBU: 0.30V
AGE EQE SLW BLW CAL	

The third line alternates to

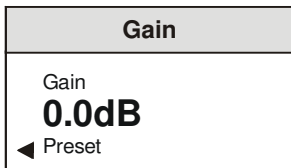
01: IQAVDR	
Inp: OK	Std: PAL
OSY: 0.30V	OBU: 0.30V
AGE EQE SLW BLW CAL	

**Where:**

- 01: IQAVDR      This is the name of the unit
- Inp: OK        This shows that the unit is receiving an input signal.
- Std: PAL        This indicates that the unit is processing a PAL standard signal
- ISY: 0.30V     This gives the p-p input sync pulse amplitude
- IBU: 0.30V     This gives the p-p input color burst amplitude
- OSY: 0.30V     This gives the p-p output sync pulse amplitude
- OBU: 0.30V     This gives the p-p output color burst amplitude

◀ **Gain**

This selection reveals a numerical readout display for the overall gain of the unit.



The overall range of adjustment is ±3 dB in steps of 0.05 dB.

Selecting Preset returns the setting to the calibrated value of 0.0 dB.

◀ **AGC**

The Automatic Gain Control may be switched ON (text highlighted) or OFF (text normal).

Gain is automatically adjusted with respect to the sync pulse amplitude.

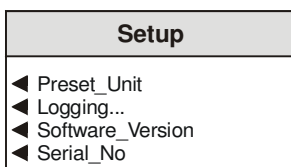
For 525 line sources the gain is adjusted to maintain a sync amplitude of approximately 286 mV. For 625 sources the amplitude is maintained at approximately 300 mV.

*Note that when the AGC is ON the manual gain control is disabled.*

*Note also that the AGC function is disabled when HD standards are detected.*

◀ **Setup**

This selection reveals a sub-menu that allows the following functions to be set up:

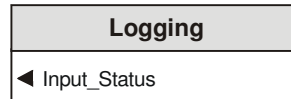


◀ **Preset\_Unit**

Selecting this function presets all functions available at the current access level.

◀ **Logging**

If a logging device is attached to the RollCall™ network, information about various parameters will be reported to the logging device assigned in the Remote Control Interface system. The RCIF Menu System can be made available to such a device.



◀ **Input\_Status**

When activated the status of the input signal and sync and burst level warning are issued to the logging device.

INPUT LOST  
WARNING: EQE:AGE:SLW:BLW:  
OK

STD =NTSC  
525 MONO  
NTSC  
525 MONO  
PAL  
625 MONO  
HD(720)  
HD(1080)  
NONE  
UNKNOWN

Where:

- AGE Automatic Gain Control is out of range
- EQE Automatic Equalization is out of range
- SLW Sync level warning (level >10% or <10% typical from nominal)
- BLW Burst level warning (level >10% or <10% typical from nominal)

### ◀ Software\_Version

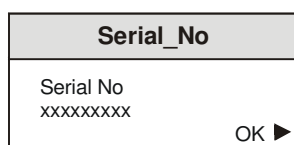
Selecting this item reveals a display showing the version of the software fitted in the module.



Select OK to return to the Setup Menu.

### ◀ Serial No

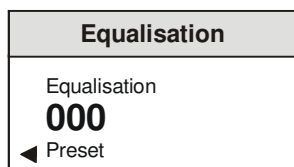
This displays the serial number of the unit.



Select OK to return to the setup menu.

## Equalisation ▶

This selection reveals a numerical readout display for the amount of equalisation of the unit.



The overall range of adjustment is from 0 to 200 units, where the value of 200 produces maximum equalisation.

Selecting Preset returns the setting to the calibrated value of 0 (no equalization).

## ACC ▶

The Automatic Equalisation Control may be switched ON (text highlighted) or OFF (text normal). The equalisation is automatically adjusted to maintain a burst amplitude of approximately 300 mV for PAL sources or 286 mV for NTSC sources.

*Note that when the ACC is ON the equalisation control is disabled.*

## Operation via the RollCall Control Templates

### Control


This screen allows various settings and adjustments to be made.

### Gain

This adjusts the overall gain of the unit.

The scrollbar may be used to adjust the value of gain. The gain in dB will be shown as a numerical value above the scroll bar

The overall range of adjustment is  $\pm 3$  dB in steps of 0.05 dB.


Selecting  Preset returns the setting to the calibrated value of 0.0 dB.

### Equalization

This adjusts the amount of equalization applied to the signal.

The scrollbar may be used to adjust the value of equalization. The value will be shown as a numerical value above the scroll bar

The overall range of adjustment is from 0 to 200 units, where the value of 200 produces maximum equalization.

Selecting  Preset returns the setting to the calibrated value of 0 (no equalization)

### AGC

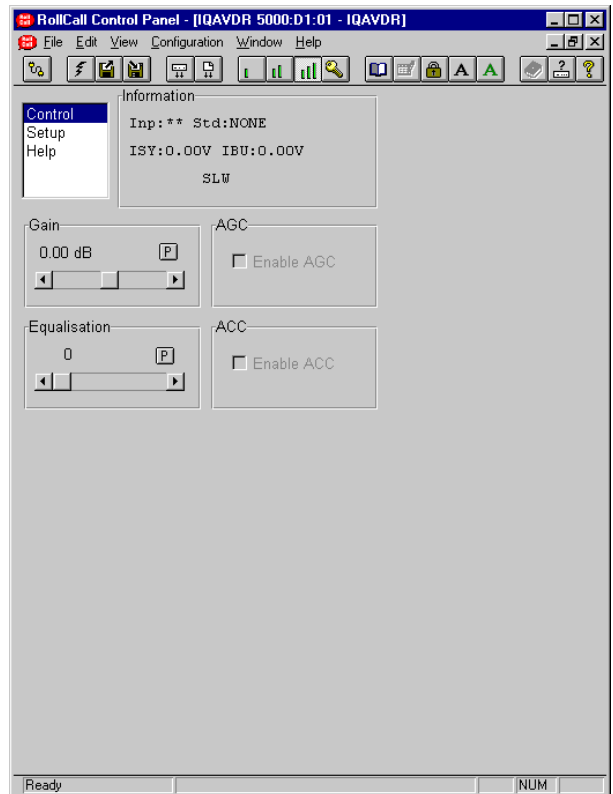
The Automatic Gain Control may be switched ON (**Enable AGC** checked) or OFF (**Enable AGC** not checked).

Gain is automatically adjusted with respect to the sync pulse amplitude.

For 525 line sources the gain is adjusted to maintain a sync amplitude of approximately 286 mV. For 625 sources the amplitude is maintained at approximately 300 mV.

*Note that when the AGC is ON the manual gain control is disabled.*

*Note also that the AGC function is disabled when HD standards are detected.*



### ACC

The Automatic Equalization Control may be switched ON (**Enable ACC** checked) or OFF (**Enable ACC** not checked).

The equalization is automatically adjusted to maintain a burst amplitude of approximately 300 mV for PAL sources or 286 mV for NTSC sources.

*Note that when the ACC is ON the equalization control is disabled.*

**Setup**

This screen reveals a sub-menu that allows the various functions to be set up.

**Preset Unit**

Selecting this item sets all adjustment functions that include a preset facility, to their preset values.

**Software Version**

This item shows the version of the software fitted in the module.

**Serial Number**

This shows the serial number of the unit.

**Logging**

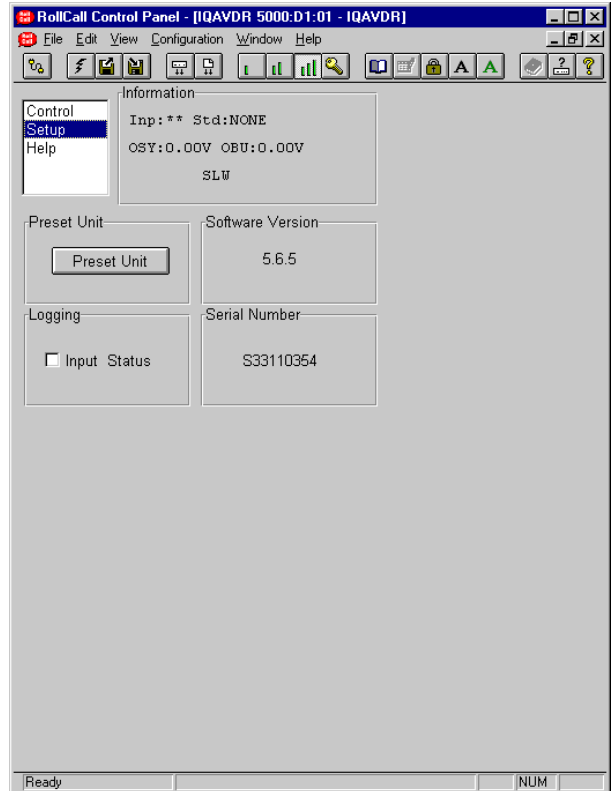
If a logging device is attached to the RollCall™ network, information will be reported to the logging device assigned in the Remote Control Interface system. The RCIF Menu System can be made available to such a device.

**Input Status**

When activated the status of the input signal and sync and burst level warnings are issued to the logging device as follows:

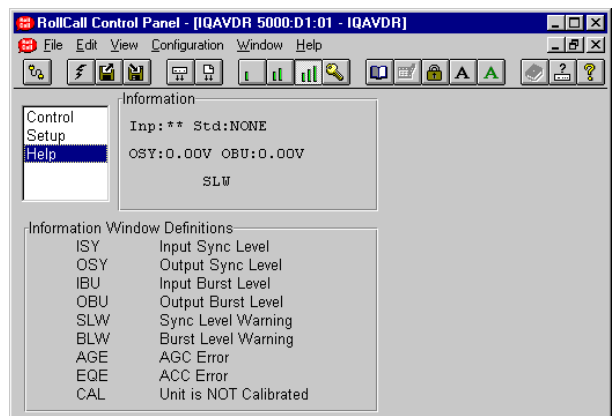
```
INPUT=LOST
WARNING: EQE:AGE:SLW:BLW:
OK
```

```
STD =NTSC
525 MONO
NTSC
525 MONO
PAL
625 MONO
HD(720)
HD(1080)
NONE
UNKNOWN
```



**Help**

This screen provides definitions of the abbreviated terms used in the information window.



**Information Area**

This area shows the status of the unit in an abbreviated form.

**First Line**

```
Inp:** Std:NONE
```

The first item (**Inp**) of this line will show the status of the input. It may show:

- \*\* No input signal detected
- Ok Valid input signal detected

The second item (**Std**) of this line will show the standard of the input signal. It may show:

- NTSC
- 525 MONO
- PAL
- 625 MONO
- HD(720)
- HD(1080)
- NONE Standard not recognized
- UNKNOWN Invalid standard detected

*Note that there are 11 different HD standard groups that the IQAVDR can detect but they are only reported in the logging and information display as stated above.*

**Second Line**

```
OSY:0.00V OBU:0.00V
```

The first item will show the peak-to-peak sync amplitudes in volts.

OSY Output sync

Or

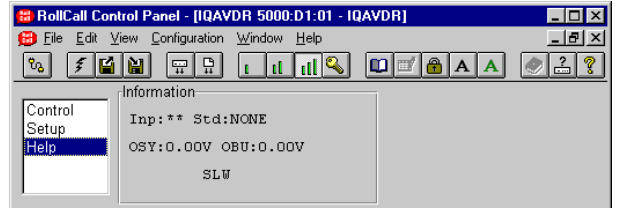
ISY Input sync

The second item will show the peak-to-peak burst amplitudes.

OBU Output color burst

Or

IBU Input color burst



**Third Line**

```
SLW
```

This line will display various warnings.

- SLW Sync level warning (deviates by more than  $\pm 10\%$  of nominal)
- BLW Burst level warning (deviates by more than  $\pm 10\%$  of nominal)
- AGE Automatic Gain Control is out of range
- EQE Automatic equalization is out of range
- CAL Unit is NOT calibrated

*Note that color burst measurements are only calibrated for 625 PAL at 4.43 MHz and 525 NTSC at 3.58 MHz.*

*Note also that amplitude measurements for HD tri-level syncs are made from the bottom to the mid-level of the sync pulse.*

NTSC, 525 MONO, PAL, 625 MONO, HD(720), HD(1080), NONE, UNKNOWN

