



V1627 & V1628

DA / MONITORING ENCODER

INSTALLATION and OPERATION

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V1627 & V1628 DA / MONITORING ENCODER

INSTALLATION AND OPERATION

1. DESCRIPTION

The V1627 and V1628 are Serial Digital Video Distribution Amplifiers (SDI DA) with a monitoring quality colour composite encoder. The V1628 also has a component DAC fitted. They form part of the V1600 range of interface products. They are both 3U high Eurocards which are fitted into either a V1601 or V1603 rack from which they receive their power. Common passive rear modules are available which are suitable for either product. A different rear module is required for the V1601 and V16093 chassis.

The digital DA is full specification SMPTE 259M/CCIR Rec. 601 reclocking device. This enables cable reception and drive of at least 250m using Belden 8281 cable. Normally there are three SDI outputs, but there is a build standard which allows an extra fourth output (at the expense of one of the coded outputs). For details please consult the factory.

The colour coder is for monitoring purposes only. Even though the digital DA operates to the full 10 bit performance of CCIR Rec. 601, the colour coding uses only 8 bits. The reduction is done using the Dynamic rounding technique which eliminates the visibility of 8 bit quantisation.

The component DAC on the V1628 is also intended only for monitoring purposes. Although it operates to the full 10 bit precision on all three channels the post DAC filtering does not fully meet the Rec. 601 specification.

Since the PCB is common for both the V1627 and the V1628, but the former has less complexity, there are much less components fitted to the V1627. This results in a large number of components on the PCB that are not fitted. The front panels are also very similar with only the Unit Code being different.

Both units operate automatically in both input signal formats, 625/50 and 525/60. The colour standard for each format is selected on an internal DIL switch. The available standards are:

625/50 : PAL I or PAL N

525/60 : NTSC or PAL M

In addition the NTSC standard may be set, using the internal switch, to that used in JAPAN, where no set-up is used and the levels are scaled for 100 IRE. The internal DIL switch also allows other operating parameters to be changed. These are detailed later.

The unit can be controlled through the DARTBUS control system. Using DART all the internal parameters can be set from the control system.

The front panel has five LEDs and a switch. The upper two LEDs indicate that power is applied and whether the unit is being accessed by the remote control system. The lower two indicate the presence of an input signal and its format. Thus there is one LED for 625/50 and one for 525/60. They are actually labelled for NTSC/PAL M and PAL I/PAL N, but do not indicate the actual colour standard. If the input signal fails then neither of the lower LEDs will be on.

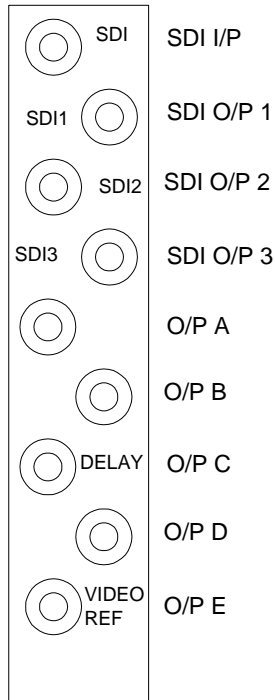
Also on the front panel is the Local/Remote switch. When in Local mode all conditions are set by the internal DIL switch, while in Remote mode everything is controlled over DART.

2. INSTALLATION

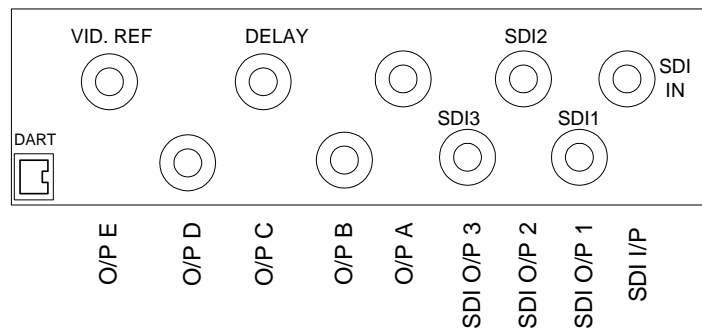
2.1 REAR PANEL CONNECTIONS

The two available rear panels are shown below:

3U (V1603)



1U (V1601)



SIGNAL	SOURCE	COMMENTS
POWER	The Rack	V1627 ?? Watts
		V1628 ?? Watts
SDI I/P	SD (IN)	Sourcing cable length up to 200m
SDI O/P 1	SD1 (OUT)	Driving cable length up to 200m
SDI O/P 2	SD2 (OUT)	Driving cable length up to 200m
SDI O/P 3	SD3 (OUT)	Driving cable length up to 200m
O/P A	CVBS or Y from Y/C	Y/C selected by switch 2 on SW 1
O/P B	CVBS or C from Y/C	
O/P C	Y from YpbPr or CVBS	CVBS selected by switch 6 on V1628 only Always CVBS on V1627
O/P D	Pb from YpbPr or CVBS	
O/P E	Pr from YPbPr or CVBS	

Exceptionally it is possible to have SDI4 (OUT) on O/P A. This requires a modification by a qualified technician.

2.2 INSERTION DELAY

The insertion delay from the SDI de-serialiser to the analogue outputs is shown in the table.

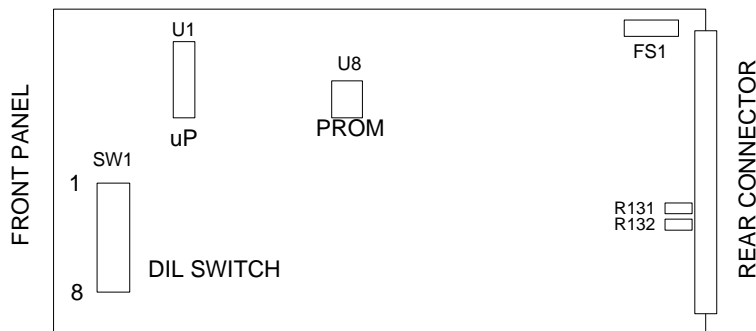
SDI to SDI	1.47 μ s
SDI to CVBS	1.47 μ s
SDI to YPbPr	1.47 μ s

2.3 HARDWARE

The figure below shows diagrammatically the main board along with certain components of interest. In particular it shows the positions of the 8 way DIL switch and the programmable devices. There are in fact two externally programmable devices, Us 1 and 8, and both can be changed in the field.

Note that on the V1627 there is a large area on the lower part of the board that has no components fitted. These are used on the V1628 build.

R131 and R132 are shown because they should be reversed to enable the four SDI O/P variant.



2.4 SWITCH SETTINGS

This table shows the use of the DIL switch, SW 1. Note that to turn a parameter ON the switch should be pushed toward the front of the boards. Ignore the ON indication on some of the actual switches which implies the opposite.

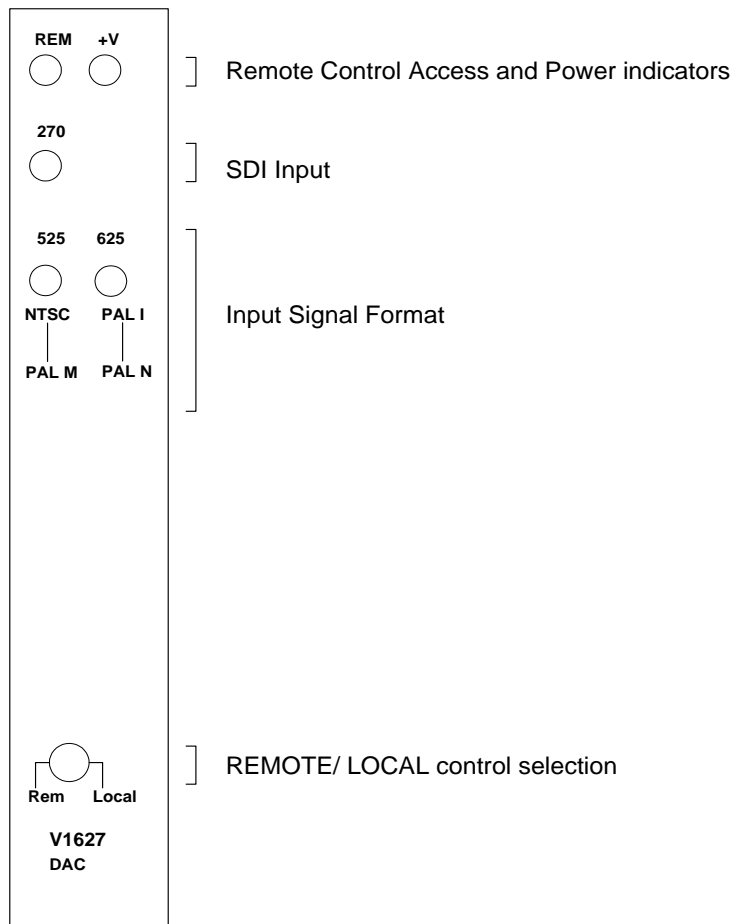
SWITCH	TITLE	ON (Front)	OFF (Rear) - Default
1	Std. Select	625/50 \Rightarrow PAL N 525/60 \Rightarrow PAL M	625/50 \Rightarrow PAL I 525/60 \Rightarrow NTSC
2	AB to YC	O/Ps A, B \Rightarrow Y and C	O/Ps A, B \Rightarrow CVBS
3	VI Blank	Blank Vert. Interval on CVBS	Pass Vertical Interval to CVBS
4	DR Off	Dynamic Rounding disabled	Dynamic Rounding ON
5	NTSC - Japan	NTSC JAPAN for 525/60 i/ps	Standard NTSC for 525/60 i/ps
6	CDETOCVBS	O/Ps C,D,E \Rightarrow CVBS (V1628 only)	O/Ps C,D,E \Rightarrow YpbPr (V1628) O/Ps C,D,E \Rightarrow CVBS (V1627)
7	HIPASS	Pass Hor. Interval on YpbPr (V1628 only)	Blank Hor. Interval on YpbPr (V1628 only)
8	unused		

For normal operation all switches should be OFF, i.e. set towards the rear.

3. OPERATION

3.1 FRONT PANEL

The front panel layout is as shown here.



The V1627 and V1628 have a front panel as shown above.

The LED indicating 270MHz shows that a valid D1 serial signal has been applied and correctly received by the DA processing circuitry. D2 signals will not light the LED.

The lower LEDs indicate the format of the D1 signal as decoded by the coder and DAC circuitry.

3.2 V1627 LOCAL CONTROL

Most of the coder functions are inherent to the design. However some characteristics can be changed using the switch, SW 1:

FUNCTION	Switch	LEFT	RIGHT (Default)
Standard Select	1	PAL N and PAL M	PAL I and NTSC
A,B Outputs	2	Y/C	CVBS
Vertical Blanking	3	625: 623.5 → 22, 311 → 335	625: 623.5 → 6, 311 → 320
		525: 1 → 20, 293.5 → 19	525: 1 → 9, 263.5 → 9
Dynamic Rounding	4	Disabled	Enabled
NTSC Japan	5	NTSC = Japanese version	Standard NTSC
reserved	6		
reserved	7		
reserved	8		

3.3 V1628 LOCAL CONTROL

Most of the DAC functions are inherent to the design. However some characteristics can be changed using the switch, SW 1:

FUNCTION	Switch	LEFT	RIGHT (Default)
Standard Select	1	PAL N and PAL M	PAL I and NTSC
A,B Outputs	2	Y/C	CVBS
Vertical Blanking	3	625: 623.5 → 22, 311 → 335	625: 623.5 → 6, 311 → 320
		525: 1 → 20, 293.5 → 19	525: 1 → 9, 263.5 → 9
Dynamic Rounding	4	Disabled	Enabled
NTSC Japan	5	NTSC = Japanese version	Standard NTSC
C,D,E Outputs	6	CVBS	Y, Pb, Pr
Horizontal Interval	7	No Hor. blanking on Y, Pb, Pr	Blank Y, Pb, Pr outputs
reserved	8		

3.4 REMOTE CONTROL

Both units can be controlled over the DART remote control system. All the same functions as defined above can be controlled locally.

To enable DART control put the Local/Remote switch to REMOTE. There is no direct indication that the unit is in remote control other than the position of this switch. The REM LED will blink to indicate that the unit is being accessed, but this applies even if the unit is in Local control since the DART system can always read the unit's status.

For DART control the rack must be fitted with a V1608 Rack Controller.

3.5 ADJUSTMENTS

Both the V1627 and V1628 have internal adjustable potentiometers for setting up gains and black levels. They are shown in this table:

POT.	BUILD	OUTPUT	PARAMETER
VR 1	Both	A on CVBS	CVBS Gain
VR 2	Both	A on CVBS	CVBS Black
VR 3	Both	A on Y/C	Y Black
VR 4	V1628 Only	C on YUV	Sync Amplitude
VR 5	V1628 Only	C on YUV	Y Amplitude
VR 6	V1628 Only	C on YUV	Y Black Level offset
VR 7	V1628 Only	D on YUV	Pr Zero Offset
VR 8	V1628 Only	E on YUV	Pb Zero Offset

3.6 SIGNAL FAIL

On loss of input signal the SDI DA detects the absence of 270MHz and mutes the output, so there will be no noise on the output.

All analogue outputs are switched off to a dc level. For the Coder outputs, this is in the region of the sync tips, approximately -300mV. For the YPbPr outputs the dc voltage is near blanking level. There is no facility to generate a colour black signal.