

## **IMD System**

### **General Description**

This is a system that can accept a number of video sources, produce the same number of outputs but each carrying its own UMD information, in-picture. Each output will carry only one video source to one screen. Picture re-sizing is carried out to allow the correct aspect ratio to be shown on either a 4:3 or 16:9 screen. The UMD data may be either superimposed on the picture or boxed in.

The IMD system is housed in a 3U high, 19" rack unit. The rack houses two cassette-based mains power supplies. The second supply will be optional, to offer redundancy for failure protection, and both supplies will be hot-swappable against supply failures. Changeover in the event of one supply failure will be automatic.

A maximum of 16 IMD modules are housed within the rack, as plug-in cards, which mate with passive connector module cards fitted in the rear of the frame. The cards are user-installable, and are hot-swappable. Access to the modules is through a drop-down door at the front of the rack.

A single RS422 D9 connection to the tally controller is provided on each rack.

The rack, power supplies, modules and general arrangement of components is designed to meet EMC and electrical safety requirements.

### Rack

The rack is 3U high, 19" rack, depth not exceeding 320mm behind the rack mounting ears.

The rack offers:

1. Provision for two plug-in mains power supplies, each with an independent fused IEC mains inlet. The mains power supply for the IMD system is a cassette style unit to allow simple exchange in the event of a failure. In addition the dc outputs are diode protected to allow two supplies to operate in parallel within one rack to provide redundancy. Although the supplies potentially load-share, either supply will have sufficient capacity for a fully populated rack. The cassettes make use of industry standard 'footprint' switch-mode modules for economy and security of supply. The mains input is of universal range, 90-264Vac, 50/60Hz.
2. Housing for up to sixteen IMD cards.
3. Individual signal I/O rear panels for each IMD card. Although these would normally be factory fitted, with suitable blanking panels for unused locations, it will be possible to change/upgrade these in the field.
4. Sync locking reference BNC connector – if this facility is required.
5. Forced ventilation with temperature controlled fan(s).
6. Access to the IMD cards, and modular power supplies is through a user-accessible front panel door.

## Dual Composite IMD Card 2IMD-COMP / TSL IMD 01

This card offers a basic composite input, composite output, with two independent channels on one card. Each channel is as follows:

### **Input**

Input: Composite video  
Input standards: PAL-I, M/NTSC auto-detected  
Input impedance: 75ohm terminating  
Nom level: 1Vp-p when terminated

### **Output**

IMD Output: Composite video with IMD and tallies, two BNCs  
Output standard: As input  
Synchronization: Free-run or locked to B&B

### **Picture Processing**

A-D/D-A processing: 8-bit conversion, at 27MHz  
Picture re-sizing: According to user pre-set output format (16:9 or 4:3), can be set to produce letterbox or side-blinds according to input, or to display anamorphically.  
IMD re-sizing: The user may shrink the picture, whilst maintaining the appropriate aspect ratio, to provide IMD under the picture on a black background, or leave the picture unchanged but with the IMD overlaid on the picture.

### **User controls**

Card address: Set by 3 x rotary BCD switch, 6 on each card – 3 per channel.  
IMD position: Shrink picture/ overlay IMD set by DIP switches.

### DIP Switch Settings for 2IMD-COMP / TSL IMD 01 (From Software version: 2.6C)

Up/Off = to the Right  
Down/On = to the Left

#### Channel A (Top )switches

|                       |   |  |
|-----------------------|---|--|
| Switch 1              | - Input aspect ratio                          | up = 4:3, down = 16:9  |
| Switch 2              | - Monitor aspect ratio                        | up = 4:3, down = 16:9  |
| Switch 3              | - Tally colour for Basic Mode                 | up = red, down = green   |
| Switch 4 & 5          | - IMD background transparency (both channels) | up, up = 0% transparent<br>down, up = 50% transparent<br>up, down = 75% transparent<br>down, down = 100% transparent |
| Switch 6<br>switch 1) | - WSS detection                               | up = disabled, down = enabled (overrides   |

#### Channel B (Lower) switches

|                       |                               |  |
|-----------------------|-------------------------------|--|
| Switch 1              | - Input aspect ratio          | up = 4:3, down = 16:9                    |
| Switch 2              | - Monitor aspect ratio        | up = 4:3, down = 16:9                    |
| Switch 3              | - Tally colour for Basic Mode | up = red, down = green                   |
| Switch 4 & 5          | - No function                 |  |
| Switch 6<br>switch 1) | - WSS detection               | up = disabled, down = enabled (overrides |

## Dual SDI IMD Card 2IMD-SDI / TSL IMD 02

### **Input**

Input: SDI video  
Input standards: PAL-I, M/NTSC auto-detected  
Input impedance: 75ohm terminating  
Nom level: 1Vp-p when terminated

### **Output**

IMD Output: SDI and composite video with IMD and tallies, one BNC per signal type  
Output standard: As input  
Synchronization: Free-run or locked to B&B.

### **Picture Processing**

D-A processing: 8-bit conversion, at 27MHz  
Picture re-sizing: According to user pre-set output format (16:9 or 4:3), can be set to produce letterbox or side-blinds according to input, or to display anamorphically.  
IMD re-sizing: The user may shrink the picture, whilst maintaining the appropriate aspect ratio, to provide IMD under the picture on a black background, or leave the picture unchanged but with the IMD overlaid on the picture.

### **User controls**

Card address: Set by 3 x rotary BCD switch, 6 on each card – 3 per channel.  
IMD position: Shrink picture/ overlay IMD set by DIP switches.

### DIP Switch Settings for 2IMD-SDI / TSL IMD 02 (From Software version: 2.6C)

Up/Off = to the Right  
Down/On = to the Left

#### Channel A (Top) switches

|                       |   |  |
|-----------------------|---|--|
| Switch 1              | - Input aspect ratio                          | up = 4:3, down = 16:9  |
| Switch 2              | - Monitor aspect ratio                        | up = 4:3, down = 16:9  |
| Switch 3              | - Tally colour for Basic Mode                 | up = red, down = green   |
| Switch 4 & 5          | - IMD background transparency (both channels) | up, up = 0% transparent<br>down, up = 50% transparent<br>up, down = 75% transparent<br>down, down = 100% transparent |
| Switch 6<br>switch 1) | - WSS detection                               | up = disabled, down = enabled (overrides   |

#### Channel B (Lower) switches

|                       |                               |  |
|-----------------------|-------------------------------|--|
| Switch 1              | - Input aspect ratio          | up = 4:3, down = 16:9                    |
| Switch 2              | - Monitor aspect ratio        | up = 4:3, down = 16:9                    |
| Switch 3              | - Tally colour for Basic Mode | up = red, down = green                   |
| Switch 4 & 5          | - No function                 |  |
| Switch 6<br>switch 1) | - WSS detection               | up = disabled, down = enabled (overrides |

## Pin outs

The IMD rack has a 9 way female D-type socket on the back panel. This is for connecting TSL UMD data to the frame.

The pin assignments are as follow:-

Data in: Pins 3 (Rx+), Pin 8 (Rx-),  
Data out: Pins 7 (Tx+), Pin 2 (Tx-). (Not currently Used)  
0V on Pins 1, 4, 6, 9.

## Cable Details

RJ45 Display Connectors (Control 4 on the TMx series).

| TMx RJ45 | →    | IMD D9M |
|----------|------|---------|
| 1        | 0v   | 1       |
| 2        | 0v   | 4/6     |
| 3        | RX-  |         |
| 4        | TX+  | 3       |
| 5        | TX-  | 8       |
| 6        | RX+  |         |
| 7        | +24v |         |
| 8        | +24v |         |

RS422 D9 Control Ports on the TMx series.

| Control Port | →          | IMD D9M |
|--------------|------------|---------|
| 1            | 0v/Chassis |         |
| 2            | TX-        | 8       |
| 3            | RX+        |         |
| 4            | 0v         | 4       |
| 5            | -          | -       |
| 6            | 0v         | 6       |
| 7            | TX+        | 3       |
| 8            | RX-        |         |
| 9            | 0v         |         |
|              |            |         |

Ext Sync-locking BNC (Gold in colour). Black and Burst.

Only need be connected it is essential that all images are locked. Not normally required.