

# HFD-2040

## 3G/HD/SD-SDI Digital Video Demultiplexer with Frame Sync

The HFD-2040 is a 3G/HD/SD-SDI digital video demultiplexer with frame sync which is used in i-MOD series frames. The HFD-2040 demultiplexer offers one 3G/HD/SD-SDI (2.97Gbps, 2.97/1.001Gbps, 1.485Gbps, 1.485/1.001Gbps, 270Mbps) digital video input, 1 fiber signal input, four AES3 digital audio outputs and provides one fiber signal output and two 3G/HD/SD-SDI digital video outputs with audio embedded. H & V phase adjustment and automatic alignment.

The HFD-2040 demultiplexer extracts digital video signal from 3G/HD/SD-SDI digital video signal with embedded audio. De-embedding channels are selectable and de-embedded audio can output to designated port. De-embedding modes are selectable, including L/R swap, copy and mix. Input audio gain is adjustable within  $\pm 20$ dB. The 3G-SDI input signal supports 328 ft (100 m)/656 ft (200 m) /984 ft (300 m) cable equalization compensation (Belden 1694A cable or equivalent cables).

Status presence indication and parameters manual adjustment are provided via the LED indicators, selector and paddle switches located on the module edge. 1RU and 2RU back modules are provided for HFD-2040 modules when used in 1RU and 2RU i-MOD series frames, respectively.

### SPECIFICATIONS

Specifications are subject to change without notice.

#### DIGITAL VIDEO INPUT

|                      |                                                                                                                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signal Format.....   | 1080P/50,1080P/59.94,1080P/60;<br>1080I/50,1080I/59.94,1080I/60;<br>720P/23.98,720P/24,720P/25,<br>720P/29.97,720P/30,720P/50,<br>720P/59.94,720P/60; 1080P/25,<br>1080P/29.97,1080P/30;<br>525i/59.94,625i/50 |
| Signal Standard..... | SMPTE 259M, SMPTE 272M,<br>SMPTE 292M, SMPTE 424M                                                                                                                                                              |
| Connector.....       | BNC (x1)                                                                                                                                                                                                       |
| Impedance.....       | 75 ohms                                                                                                                                                                                                        |
| Return Loss.....     | SD > 18 dB @ 270 MHz<br>HD > 15 dB @ 1.485 GHz/2.97 GHz                                                                                                                                                        |
| Cable EQ.....        | SD<984 ft (300 m)<br>HD<656 ft (200 m)<br>3Gbps<328 ft (100 m)<br>(Belden 1694A or equivalent cables)                                                                                                          |

#### REF VIDEO INPUT

|                    |                                  |
|--------------------|----------------------------------|
| Signal Format..... | BB/HD tri-level Sync             |
| Connector .....    | BNC(x2),hi-z loop-thru supported |

#### DIGITAL VIDEO OUTPUT

|                       |                                                                                                                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signal Format.....    | 1080P/50,1080P/59.94,1080P/60;<br>1080I/50,1080I/59.94,1080I/60;<br>720P/23.98,720P/24,720P/25,<br>720P/29.97,720P/30,720P/50,<br>720P/59.94,720P/60;1080P/25,<br>1080P/29.97,1080P/30;<br>525i/59.94,625i/50 |
| Signal Standard.....  | SMPTE 259M, SMPTE 272M,<br>SMPTE 292, SMPTE 424M                                                                                                                                                              |
| Connector.....        | BNC (x2)                                                                                                                                                                                                      |
| Impedance.....        | 75 ohms                                                                                                                                                                                                       |
| Return Loss.....      | SD > 18 dB @ 270 MHz<br>HD > 15 dB @ 1.485 GHz/2.97GHz                                                                                                                                                        |
| Amplitude.....        | 800 mVp-p $\pm 10\%$                                                                                                                                                                                          |
| Alignment Jitter..... | 100kHz-300MHz<br>3Gbps: < 0.3 UI<br>HD/SD: < 0.2 UI                                                                                                                                                           |

### FEATURES

- One 3G/HD/SD-SDI video input signal with embedded audio
- SMPTE 259M, SMPTE 272M, SMPTE 292M and SMPTE 424M standard
- 1 fiber input and output, selectable
- H & V phase adjustment and automatic alignment
- Four AES3 digital audio outputs
- Output audio gain selectable within  $\pm 20$ dB
- De-embedding channel selectable; de-embedded audio can output to designated port
- De-embedded mode selectable, including L & R swap, copy and mixing
- Automatic detection of input video and audio loss
- Cable EQ for up to 328 ft (100 m) (2.97Gbps)/656 ft (200 m) (1.485Gbps)/984 ft (300 m) (270Mbps)
- Stores settings in non-volatile memory
- Hot-swappable
- Computer control supported

|                              |                                                           |
|------------------------------|-----------------------------------------------------------|
| Rise/Fall Time.....          | SD:400~1500ps; HD: <270 ps<br>3Gbps: < 135ps; 3G: < 135ps |
| Overshoot .....              | <10% amplitude                                            |
| H Adjustment Precision ..... | $\pm 1/2$ H                                               |
| V Adjustment Precision ..... | $\pm 1/2$ F                                               |
| Power .....                  | .7 W                                                      |

#### DIGITAL AUDIO OUTPUT

|                           |                  |
|---------------------------|------------------|
| Signal Format.....        | AES3             |
| Connector.....            | 3Pin (x4)        |
| Level.....                | 5Vp-p $\pm 10\%$ |
| Impedance.....            | 100k $\Omega$    |
| Jitter .....              | < 0.02 UI        |
| Output Sampling Rate..... | 48 kHz           |
| S/N Ratio .....           | >75 dB           |

#### FIBER INPUT

|                      |                                                                                                                                                                                                               |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector.....       | LC                                                                                                                                                                                                            |
| Signal Format.....   | 1080P/50,1080P/59.94,1080P/60;<br>1080I/50,1080I/59.94,1080I/60;<br>720P/23.98,720P/24,720P/25,<br>720P/29.97,720P/30,720P/50,<br>720P/59.94,720P/60;1080P/25,<br>1080P/29.97,1080P/30;<br>525i/59.94,625i/50 |
| Signal Standard..... | SMPTE 259M, SMPTE 272M,<br>SMPTE 292M, SMPTE 424M                                                                                                                                                             |

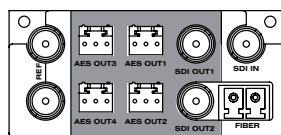
#### FIBER OUTPUT

|                              |                                                                                                                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector.....               | LC                                                                                                                                                                                                            |
| Signal Format.....           | 1080P/50,1080P/59.94,1080P/60;<br>1080I/50,1080I/59.94,1080I/60;<br>720P/23.98,720P/24,720P/25,<br>720P/29.97,720P/30,720P/50,<br>720P/59.94,720P/60;1080P/25,<br>1080P/29.97,1080P/30;<br>525i/59.94,625i/50 |
| Signal Standard.....         | SMPTE 259M, SMPTE 272M,<br>SMPTE 292M, SMPTE 424M                                                                                                                                                             |
| H Adjustment Precision ..... | $\pm 1/2$ H                                                                                                                                                                                                   |
| V Adjustment Precision ..... | $\pm 1/2$ F                                                                                                                                                                                                   |

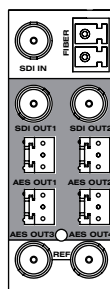
#### ENVIRONMENTAL

|                             |                           |
|-----------------------------|---------------------------|
| Operating Temperature ..... | 32° ~ 104° F (0° ~ 40° C) |
| Relative Humidity.....      | 10% ~ 90%                 |

## BACK MODULES



1RU



2RU

Note: Fiber connectors selectable.

## BLOCK DIAGRAM

