12G/6G/3G/HD/SD/ASI Routing Switcher

MFR-1000

Powerful 4K and 8K routing with 4K-UHD conversion and 12G-SDI compatibility across all inputs and outputs.

Configure a matrix of up to 16 x 16. 12G-SDI compatibility across all inputs and outputs. Optional AVDL functionality enables smooth changeover without noise or disruption.

12G-SDI Support
Conventional 3G-SDI routing switches require 4 crosspoints to input and output 4K video. With 12G-SDI, 4K can be carried over a single crosspoint. The MFR-1000 also determines the type of SDI input automatically—no need to worry about what signals are supplied.

AVDL Functionality
AVDL functionality* can be added to 8 outputs, enabling smooth changeover without noise or disruption. Produces clean switched output for video input within the adjustment range.

Solid Performance
Multi-format video input and output
Support for 12G/6G/3G/HD-SDI and DVB-ASI input and output. No need to worry about signal formats, thanks to auto signal detection.

Outstanding redundancy
As core system components, FOR-A routing switchers can incorporate redundancy to ensure nonstop operation in case of problems.

GUI-based configuration
Built-in webserver enables immediate setup without installing software on external devices. Via this interface, settings can also be configured in an offline environment.

Versatile crosspoint control
Besides typical crosspoint switching, the unit enables a variety of crosspoint control.
- Salvo
- Take
- Link
- Error-proofing (Inhibit, Lock)

Remote control units
10 control units are available to suit specific applications.
(for the detailed information, please see the “Lineup” in the back.)

SNMP monitoring
Can be integrated into an SNMP monitoring system. Enables monitoring of various operational states, such as power, fan, CPU status and crosspoint errors. If system failure and recovery occur, SNMP traps are sent to managers.

Interface expansion units
Interface expansion units are available to suit specific applications.
- MFR-TALM: Tally Manager
- MFR-GPI: GPI Unit

Front control panel
Front panel enables menu display and notification of alarm details.

Connectivity with other products
Remote-controllable through the Ethernet or serial ports. Compatibility with common protocols such as TSL and Harris enables tally linkage or auto source name tracking for crosspoint switching. As well as our exclusive interface to the FOR-A line of HVS production switchers and standalone multi viewers.

Optional Video Cards
- MFR-8SDI12G Input Card
  Supports 8 inputs of 12G/6G/3G/HD-SDI and DVB-ASI.
- MFR-8AVDL12G AVDL Function Card
  AVDL functionality can be added to 8 outputs
- MFR-8SDO12G Output Card
  Supports 8 outputs of 12G/6G/3G/HD-SDI and DVB-ASI.
- MFR-10PS Redundant Power Supply Unit
Remote Control Unit Lineup

- High-end (with menu display): MFR-18RUA, MFR-39RUA
- Tabletop: MFR-16RUTA
- Standard: MFR-16RUD, MFR-16RU
- Basic: MFR-16RUW, MFR-32RUW, MFR-64RUW

Number of buttons: 16, 18, 32, 39, 40, 64

Functional versatility:
- High-end (with menu display)
- Tabletop
- Standard
- Basic

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# MFR-1000 Datasheet

## 1. Specifications

### Basic specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>0°C to 40°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>30% to 90% (no condensation)</td>
</tr>
<tr>
<td>Power</td>
<td>100V AC to 240V AC ±10%, 50/60Hz</td>
</tr>
<tr>
<td>Consumption</td>
<td>100V AC to 120V AC: 90 VA (88 W)</td>
</tr>
<tr>
<td></td>
<td>220V AC to 240V AC: 107 VA (86 W)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>430 (W) x 44 (H) x 325 (D)mm EIA 1RU</td>
</tr>
<tr>
<td></td>
<td>480 (W) (Including rack mount brackets)</td>
</tr>
<tr>
<td>Weight</td>
<td>6 kg</td>
</tr>
<tr>
<td>Consumables (at 24-hour operation)</td>
<td>Fan 1 (P-1630): Replace every 4 years.</td>
</tr>
<tr>
<td></td>
<td>Fan 2 (P-1631): Replace every 4 years.</td>
</tr>
<tr>
<td></td>
<td>Fan 3 (P-1632): Replace every 4 years.</td>
</tr>
<tr>
<td></td>
<td>Fan 4 (P-1633): Replace every 4 years.</td>
</tr>
<tr>
<td></td>
<td>Power supply unit: Replace every 5 years.</td>
</tr>
</tbody>
</table>

### Technical specifications

#### Video Formats

<table>
<thead>
<tr>
<th>Format</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHD 4K (12G-SDI)</td>
<td>2160/60p, 59.94p, 50p (SMPTE ST 2082-10)</td>
</tr>
<tr>
<td>HD (3G-SDI)</td>
<td>1080p/ 60, 59.94, 50 (SMPTE424M)</td>
</tr>
<tr>
<td>HD (HD-SDI)</td>
<td>1080i/ 60, 59.94, 50, 1080p/ 30, 29.97, 25, 24, 23.98, 720p/ 60, 59.94, 50 (SMPTE292M)</td>
</tr>
<tr>
<td>HD (SD-SDI)</td>
<td>525/59.94i, 625/50i (SMPTE259M)</td>
</tr>
<tr>
<td>DVB-ASI</td>
<td>Compliant to EN 50083-9</td>
</tr>
</tbody>
</table>

#### Input/Output Matrix

<table>
<thead>
<tr>
<th>Format</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard: 8 × 8, Max.:16 × 16</td>
<td>Standard: 8 × 8, Max.:16 × 16</td>
</tr>
</tbody>
</table>

#### Video Input

<table>
<thead>
<tr>
<th>Format</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFR-8SDI12G (Option)</td>
<td>12G/3G/HD/SD-SDI Input Card - 75Ω BNC x 8</td>
</tr>
<tr>
<td>Cable Equalization</td>
<td>- 12G-SDI: 70m (L-5.5CUHD cable)</td>
</tr>
<tr>
<td></td>
<td>- 3G/HD-SDI: 100m (5C-FB cable)</td>
</tr>
<tr>
<td></td>
<td>- SD-SDI: 200m (5C-2V cable)</td>
</tr>
</tbody>
</table>

#### Video Output

<table>
<thead>
<tr>
<th>Format</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFR-8SDO12G (Option)</td>
<td>12G/3G/HD/SD-SDI Output Card - 75Ω BNC x 8 (Auto reclocking)</td>
</tr>
</tbody>
</table>
**AVDL Function**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFR-8AVDL12G</td>
<td>AVDL function card</td>
</tr>
</tbody>
</table>

**Output alignment**
- +1H ~ 5H against the reference input signal.
- Variable depending on output adjustment range
  - +1H Output: -4.1H to +0.9H
  - +2H Output: -3.1H to +1.9H
  - +3H Output: -2.1H to +2.9H
  - +4H Output: -1.1H to +3.9H
  - +5H Output: -0.1H to +4.9H

**Ancillary Data Packet - Quiet Switch: OFF**
- All ancillary data in input signal is passed through. (No compensation on signal switching noise.)

**Ancillary Data Packet - Quiet Switch: ON**
- Ancillary data as listed below are embedded by reproduction.
  - SMPTE ST352 (Video payload ID)
  - SMPTE ST299-1 (Embedded audio)
    - 16 channels (Group 1 to 4)
    - PCM, 48kHz, 24-bit synchronous only
    - (For 12G-SDI, Group 1-4 in Stream 1 passed through)

**Reference Input BB**
- NTSC: 0.429Vp-p / PAL: 0.45Vp-p or
- Tri-level Sync: 0.6 Vp-p
- 75Ω BNC x 1, loop-through (Terminate with a 75Ω terminator if unused.)

**Interfaces**
- MFR-LAN 10/100BASE-TX RJ-45 x 1
  - (For connecting up to 128 RU/GPI units.)
- PC-LAN 10/100BASE-TX, RJ-45 x 1 (for PC operation/External connection)
- GPI IN/TALLY OUT 25 pin D-sub (female) x 1

**Options**
- MFR-8SDI12G 8 SDI-input card
- MFR-8SDO12G 8 SDI-output card
- MFR-8AVDL12G AVDL function card
- MFR-10PS Redundant power supply unit (with AC cord and AC cord clamp.)
- MFR-8RUA/18RUA/39RUA/40RU Remote Control Unit
- MFR-16RU/16RUD/16RUTA
- MFR-16RUW/32RUW/64RUW
- MFR-GPI Interface Expansion Unit
- MFR-TALM Tally Manager Unit

**Accessories**
- AC cord, Rubber feet, and Quick setup guide
2. External Dimensions

(All dimensions in mm.)