



# Densité 3+ FR1 Frame

## Compact 1 RU Frame for Four Modules

Space-saving, modular platform for advanced signal processing.

The 1 RU Densité 3+ FR1 Frame from Grass Valley offers true multiformat operation, with the ability to process simultaneously 12G, 3G, HD, SD and analog video, as well as AES and analog audio. The frame provides advanced monitoring and backup capabilities. It can be fitted with 3 RU and 2 RU (using an extender panel) Densité modules. The frame features dual hot-swappable power supplies and fans. The modules for the frame are also hot-swappable. The frame is air-cooled and all modules, redundant PSUs and fans are monitored to provide status via GPI or the Ethernet port. The frame configuration includes two PSUs and a controller card, which allows card adjustments from the front panel. Front panel multicolor LEDs provide status reporting.

The REF-1801-D3+FR1 reference module that distributes a universal reference signal (URS) to all the cards within a Densité 3+ FR1 frame. The unique URS concept provides significant advantages as it generates a digital reference signal, and also simplifies inter-format processing by using a unique reference signal for all video and audio frame rates. The REF-1801-D3+FR1 has the ability to extract timecode from the input as per SMPTE ST 318 standard, which allows for perfect audio/video phasing. The REF-1801-D3+FR1 is installed in the dedicated system slot of a Densité 3+ FR1 frame.



**KEY FEATURES**

- Multiple video and audio formats can be fitted in a single chassis
- Up to 4 cards in a single 1 RU frame, including an additional system slot
- Low noise operation
- Backwards compatible with Densité 2 or Densité 3 modules
- Easy configuration from the front panel or remotely via Ethernet
- Remote control by PC-based iControl
- Two hot-swappable power supply, with optional redundant power supply
- Supports full range of interfacing, distribution and monitoring modules
- Can be stacked without additional cooling spaces
- Redundant Ethernet connection

**When configured with REF-1801-D3+FR1 module:**

- Digitally generated reference for intra-frame distribution
- Timecode extraction and embedding
- Supports SMPTE ST 318 for perfect audio/video phasing
- Easy control and monitoring
- URS simplifies interformat processing



**SPECIFICATIONS**

**Mechanical**

**Dimensions:** 1 RU x 485 mm (19 in.) x 286 mm (11.25 in.) with connectors

**Weight:** 3.3 kg (7.2 lbs.) with 2 PSUs and controller card installed

**Power**

**Input range:** AC 50-60 Hz, 100-240V

**Rating:** 150W max.

**Control and Monitoring**

**Communication ports:** 2x Ethernet 10/100 Base-T

**Alarm:** GPI contact

**Cooling**

**Fans:**

- 2 on frame, serviceable
- 1 on each PS

**Operating temp. range:** 0° to 40°C (32° to 104°F)

**REF-1801-D3+FR1 Module**

**Reference Input**

**Load:** Passive loop-through

**Impedance:** 75Ω bridging

**Return loss:** >30 dB up to 30 MHz

**Signal type:** Composite NTSC-M, PAL-B blackburst with optional VITC

**Standard:** SMPTE ST 170, ITU-R BT.1700-1, SMPTE ST 318

**Signal level:** 1 Vp-p

**Signal type:** HD tri-level sync

**Standard:** SMPTE ST 274, SMPTE ST 296

**Signal level:** 600 mVp-p

**Signal type:** DARS AES-11 (48 kHz sampling frequency only)

**Standard:** SMPTE ST 276

**Signal level:** 1 Vp-p

**Signal type:** Word Clock

**Standard:** AES-11 Annex B (Informative)

**Signal level:** 2 Vp-p

**LTC-IN**

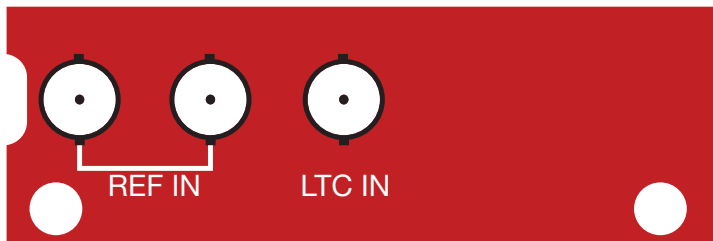
**Signal type:** LTC

**Standard:** SMPTE ST 12

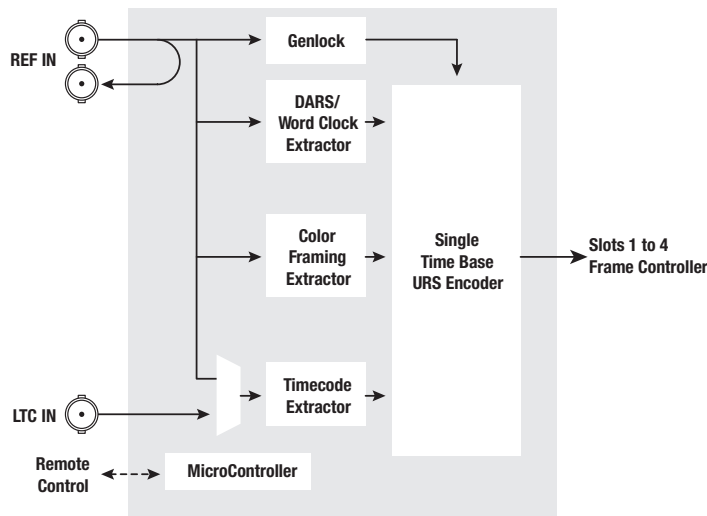
**Signal level:** 0.5 Vp-p to 4.5 Vp-p

**Electrical**

**Power:** 2.1 W



REF-1801-D3+FR1 rear panel



REF-1801-D3+FR1 Functional Block Diagram

**ORDERING**

**Densité 3+ FR1**

1 RU modular frame, 4 slots, 2 power supplies, controller card with redundant Ethernet ports and front control panel, blank rear panels.

*Note:* Rear panels must be specified and ordered with appropriate card.

**Options**

**REF-1801-D3+FR1**

Reference module for Densité 3+ FR1 Frame with rear

**Densité-CPU-ETH2-OPT-LNK**

Full link redundancy using channel bonding on Densité-CPU-ETH2

**Remote Control**

**iControl**

Remote control and monitoring

**iControl Solo**

Standalone remote control software



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