

# Python Plus

## Multichannel Fiber Optic SDI and IP Transport System with CWDM Management & Multiplexing



Every Python Plus can transport a mix of digital and IP cameras, or virtually any digital video transceiver, through fiber or copper cables.

Python Plus from Grass Valley is our answer to lowering the cost of digital video and fiber distribution, eliminating concerns about distance, interference or ground loop issues.

With today's demanding market — technology shifting to IP and the constant increase in bandwidth demands driven by 3G and 4K UHD — Python Plus simplifies transport solutions.

Designed as modular, highly adaptable product, Python Plus supports a wide variety of signals, with each port providing multirate capability. Each unit can transport a mix of digital and IP cameras or virtually any digital

video transceiver through fiber or copper cables. Coaxial I/Os convert up to 16 channels of SDI to fiber optic transport supporting 19.4 Mb/s to 12 Gb/s rates, while each fiber port is capable of 3 or 10 Gb/s transport. One unit can support up to eight of any type of cameras, 2,048 AES channels or any mix of these signals desired, all in a compact 1 RU frame. All of these signals can be converted individually to fiber, or muxed to transport them over a single or pair of fibers.



## KEY FEATURES

- Economical, low profile packaging
- Up to 4 quad cards per 1 RU frame
- Wide range of digital formats
- 19.4 Mb/s to 12 Gb/s transport on coax I/O
- 3 Gb/s or 10 Gb/s on each fiber I/O
- Compatible with digital television standards:
  - SMPTE ST 292
  - SMPTE ST 259
  - SMPTE ST 424
  - SMPTE ST 2081
  - SMPTE ST 2082
- Handles DVB/ASI signals
- Immune to pathological data errors
- Equalizes coax up to 12 Gb/s
- Coaxial BNC I/O, and ST/UPC on fiber I/O
- Wide optical budget
- Low system jitter
- Low power consumption
- High reliability, durable design
- CWDM multiplexing (optional)
- Turns any optical signal into CWDM
- Re-times and extends optical transmission
  - Up to an additional 25 km (15.5 mi.)
  - Up to 50 km (31 mi.) with APD receiver (optional)
- Available dual or single fiber outputs with LC/UPC or ST/UPC connectors
- Active switching for fiber redundancy (optional)
- Front panel monitoring of all I/O
- Redundant power supply inputs
- Fast setup, plug and play operation
- Compatible with other Grass Valley HD/SD-SDI transport systems

## SPECIFICATIONS

## Coaxial

**Transmission method:** Digital

**I/O level:** 800 mVp-p ± 10%

**I/O impedance:** 75Ω

## Return loss:

> 15 dB 5 MHz – 1.5 GHz

> 10 dB 1.5 GHz – 3 GHz

> 7 dB 3 GHz – 6 GHz

> 4 dB 6 GHz – 12 GHz

## Coaxial input EQ (Belden 1694A):

12G: 60m

6G: 120m

3G: 200m [up from 120m]

1.5G: 200m

270M: 400m

**Bit-error rate at -21 dBm Rx optical power:** PRSB 2<sup>23</sup>-1, 1x10<sup>-12</sup>

**Timing jitter (color bars):** <2 UI, alignment jitter: <0.2 UI

## Optical

**Operating wavelength:** 1310 nm with optional CWDM: 1271-1611 nm

**Link margin:** Up to 22 dB

**1310 nm transmitter output power:** -7 dBm

**CWDM transmitter output power:** -5 to 1 dBm

## Receiver sensitivity:

6G-12G: -11 dBm with color bars

270M-3G: -20 dBm pathological

**Optical source:** SFP or SFP+

**Maximum data rate, per channel:** 12 Gb/s or 10 Gb/s

**Fiber type:** Single-mode

## Optical connectors:

Front: ST/UPC

Rear: ST/UPC and LC/UPC

## Mechanical/Environmental

**Dimensions (W x H x D):** 266.7 x 44.45 x 424.18 mm (10.5 x 1.75 x 16.7 in.)

**Weight, each end:** 2.27 kg (5 lbs.)

**Electrical connectors:** BNC

## Optical connectors:

Front: ST/UPC

Rear: ST/UPC and LC/UPC

**Input voltage:** 11-18 VDC

**Power consumption:** <25W

**Indicators:** Power on, SDI data presence, optical power

**Temperature range:** -20° to 45°C (-4° to 113° F)

**Humidity range:** 0 to 95% non-condensing

## ORDERING

## Frame

**PY3-FRAME** Python Plus frame

## Coaxial Cards

**PY3-RX** Quad fiber to SDI receiver

**PY3-TX-A** Quad SDI to fiber transmitter 1310 all

**PY3-TX-X\*** Quad SDI to fiber transmitter CWDM

## Fiber Cards

**TP3-RX** Quad fiber to fiber receiver

**TP3-RX10** Quad 10G fiber to 10G fiber receiver

**TP3-ARX** Quad fiber to fiber receiver ADP

**TP3-TX-A** Quad fiber to fiber transmitter 1310 all

**TP3-TX-X\*** Quad 10G fiber to 10G fiber transmitter CWDM

**TP3-TX-X\*** Quad fiber to fiber transmitter CWDM

## Rear Options

**S2-RX-XX\*** Rear panel receiver 2-ch (XX\*/UPC)

**S2-TX-XX\*** Rear panel transmitter 2-CH (XX\*/UPC)

**W4-XX-XX\*** Rear panel 4-ch RX or TX or TR CWDM demux to 1 (XX\*/UPC)

**W8-XX-XX\*** Rear panel 8-ch RX or TX or TR CWDM demux to 1 (XX\*/UPC)

**W16-XX-XX\*** Rear panel 16-ch RX or TX or TR CWDM demux to 1 (XX\*/UPC)

**X8-RX-XX\*** Rear panel 8-ch receiver CWDM demux with redundancy to 2 (XX\*/UPC)

**X16-RX-XX\*** Rear panel 16-ch receiver CWDM demux with redundancy to 2 (XX\*/UPC)

**D8-TX-XX\*** Rear panel 8-ch transmitter CWDM mux with redundancy to 2 (XX\*/UPC)

**D16-TX-XX\*** Rear panel 16-ch transmitter CWDM mux with redundancy to 2 (XX\*/UPC)

## Blank Plates

**PY3-BLANK** Front blank panel

**SR-BLANK** Rear blank panel

X\* Different CWDM wavelength are available and depend on a configuration.

XX\* Available as LC/UPC or ST/UPC.

*Special Note:* To correctly configure Python Plus, Grass Valley sales engineering support is required. Please contact your local sales representative for the further instructions and a quote.

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