

Datasheet : F-12G-8SDI-CWDM-TX/RX-20km



8-Channel 12G-SDI CWDM Fiber Optic Transmitter & Receiver – 20 km

The **F-12G-8SDI-CWDM-TX/RX** is a professional, broadcast-grade **8-channel 12G-SDI over fiber transmission system**, designed for **uncompressed, ultra-low-latency transport** of multiple SDI video signals over a **single-mode fiber** using **CWDM technology**.

This system supports **SD-SDI, HD-SDI, 3G-SDI, 6G-SDI, and 12G-SDI** video formats with **automatic signal detection**, allowing seamless transport of up to **eight independent SDI sources** on one fiber strand. It is ideal for **4K / UHD production**, live broadcast, sports, stadiums, OB vans, racing, theaters, government, and university installations where reliability and zero latency are critical.

Each transmitter provides **8 SDI inputs with local loop-out**, while the receiver offers **dual SDI outputs per channel**, enabling flexible signal distribution at the destination. The system delivers **transparent, lossless video** with embedded audio fully preserved, meeting strict **SMPTE SDI standards**.

Features :

- 8 independent SDI channels over one fiber
- Supports 12G / 6G / 3G / HD / SD-SDI
- CWDM single-fiber architecture
- Uncompressed, zero-delay transmission (~1 ms)
- Auto-detect SDI formats and resolutions
- Local SDI loop-out on every input
- Dual SDI outputs per channel on receiver
- Clock recovery and jitter regeneration
- Hot-swappable SFP optical modules
- Broadcast-grade SMPTE compliance
- Plug-and-play operation
- Rack-mount 1RU enclosure

Typical Applications :

- 4K / UHD broadcast production
- Live sports and stadium video transport
- OB vans and mobile broadcast units
- University and education media networks
- Government and defense video systems
- Live theater, concerts, and racing events
- Camera-to-fiber SDI conversion
- Long-distance SDI transport without compression

System Overview :

The **F-12G-8SDI-CWDM-TX/RX** uses **CWDM optical multiplexing** to carry eight SDI signals over a **single-mode fiber** up to **20 km** (standard). Longer distances are available using optional optical modules.

- **Transmitter:**
 - 8 × SDI inputs
 - 8 × SDI loop-outs (one per input)
- **Receiver:**
 - 16 × SDI outputs (2 per channel)

The system maintains full video integrity, embedded audio, and metadata with **no compression and no frame buffering**.

Model Selection :

F-12G-2SDI-CWDM-TX/RX -12G with 2SDI inputs fiber optic transmitter & receiver kit

F-12G-4SDI-CWDM-TX/RX -12G with 4SDI inputs fiber optic transmitter & receiver kit

F-12G-8SDI-CWDM-TX/RX -12G with 8SDI inputs fiber optic transmitter & receiver kit

Specifications:

Parameter	Specification
Model	F-12G-8SDI-CWDM-TX/RX
Video Channels	8 × SDI (model-specific)
Supported Standards	SD-SDI / HD-SDI / 3G-SDI / 6G-SDI / 12G-SDI
Protocol Standard	SMPTE ST-2082
SMPTE Data Rates	270 Mbps / 1.485 Gbps / 2.97 Gbps / 5.94 Gbps / 11.88 Gbps
Video Formats	480i, 576i, 480p, 576p, 720p, 1080i, 1080p60, 2160p30, 2160p60
Embedded Audio	Supported (transparent pass-through)
Optical Wavelength	1310 nm / CWDM
Fiber Type	Single-mode
Fiber Connector	ST/PC
Standard Optical Distance	~20 km (extendable)
Transmitter Optical Power	0 to -3 dB
Receiver Sensitivity	-12 dB
SDI Input Connector	BNC, 75 Ω
Signal Amplitude	800 mV ±10%
Local Loop-Out	1 × SDI loop-out per input
Cable EQ Distance	75 m @ 11.88 Gbps / 120 m @ 5.94 Gbps / 200 m @ 2.97 Gbps / 300 m @ 1.485 Gbps / 600 m @ 270 Mbps
Clock Recovery	Yes (TX & RX)
Latency	~1 ms (near-zero)
Power Input	AC 90–240 V
Form Factor	1RU Rack-Mount
Dimensions	440 × 230 × 44.5 mm
Net Weight	~3 kg
Operating Temperature	-20°C to +75°C
Storage Temperature	-40°C to +85°C
Relative Humidity	5–95% non-condensing
MTBF	>100,000 hours

Summary

The **F-12G-8SDI-CWDM-TX/RX** is a high-density, future-proof solution for **multi-channel SDI over fiber**, enabling **8 uncompressed SDI feeds** to be transported over a **single fiber** with **broadcast-grade reliability, zero latency, and full SMPTE compliance**. It is an ideal choice for demanding professional video environments requiring scalable, long-distance SDI transport.