DMCF-RX-4K-SFP

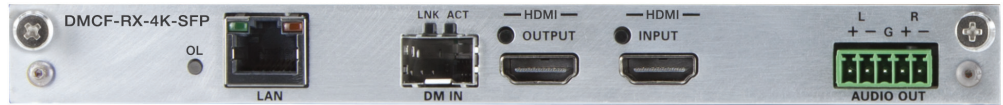## DigitalMedia™ SFP+ 4K Fiber Receiver Card for DMF-CI-8

> Uncompressed 4K video signal extension over fiber optic cable

> Configurable for multimode or single-mode fiber using SFP+ transceiver modules [2]

> Seamless integration with DM® switchers to enable 4k fiber input capability

> Built-in 4K/60 scaler

> HDCP 2.2 compliant

> Dolby® TrueHD, Dolby Atmos®, DTS-HD®, and uncompressed 7.1 linear PCM audio support

> HDMI® output

> Auto-switching HDMI input

> Balanced analog stereo audio output [4]

> Stereo HDMI-to-analog audio de-embedding

> CEC device control gateway

> Dynamic text overlay

> Gigabit Ethernet LAN port

> Web browser setup

> Occupies one card slot of a DMF-CI-8

> Requires a DMF or DMCF series transmitter

The DMCF-RX-4K-SFP is a fiber-based receiver card designed to function as part of a Crestron® 4K video signal extender solution. It is used with a companion transmitter (DMF-TX-4K-SFP or DMCF-TX-4K-SFP [1]) to support point-to-point signal extension, and may also be used to add 4K fiber input capability to a DigitalMedia™ switcher (see "DM® Switcher Integration" below for details) .

The DMCF-RX-4K-SFP installs in any slot of a DMF-CI-8 card chassis.[1] Its "DM IN" port allows for the insertion of an appropriate SFP+ transceiver module to enable compatibility with multimode or single-mode fiber.[2] It also features a built-in 4K/60 scaler, HDMI® and analog audio outputs, a local HDMI input, and a gigabit Ethernet LAN port.

4K Ultra HD

The DMCF-RX-4K-SFP enables uncompressed 4K/60 video signal extension over fiber optic cable. Support for 4K video ensures support for the latest generation of computers and monitors with native resolutions beyond 1080p and WUXGA. The DMCF-RX-4K-SFP can handle uncompressed Full HD 1080p, Ultra HD, 2K, and 4K video signals with support for Deep Color and HDCP 2.2. Audio capabilities include support for high-bitrate 7.1 audio formats like Dolby® TrueHD, Dolby Atmos®, and DTS-HD Master Audio™ as well as uncompressed linear PCM.

DM® Switcher Integration

The DMCF-RX-4K-SFP works integrally with a DM-MD series matrix switcher to facilitate routing of 4K video and control signals over fiber optic cable. Setup requires simply installing the DMCF-RX-4K-SFP in a DMF-CI-8 card chassis and connecting its HDMI output to an available HDMI input on the switcher. An Ethernet LAN connection is also required to enable communication with the associated control system.[3]

SFP+ Configurable DM Port

The "DM IN" port on the DMCF-RX-4K-SFP is configurable using SFP+ transceiver modules to enable compatibility with multimode or single-mode fiber types.[2] Each DMCF-RX-4K-SFP is sold as a packaged kit containing the receiver card and one SFP+ module as follows:

• **DMCF-RX-4K-SR PAK KIT** – Supports duplex multimode fiber at up to 1000 ft (300 m) using OM3, or 1300 ft (400 m) using OM4

• **DMCF-RX-4K-BX PAK KIT** – Supports simplex single-mode fiber at up to 6.2 miles (10 km) using ITU-T G.652.D fiber, Crestron model CRESFIBER8G-SM-P or equivalent

• **DMCF-RX-4K-S PAK KIT** – Supports legacy CresFiber® 8G Multimode fiber at up to 650 ft (200 m) *(Only for retrofit applications where Crestron CRESFIBER8G-NP or CRESFIBER8G-P is already installed; not for new installations!)*

Local HDMI® Input

In addition to its DM input port, the DMCF-RX-4K-SFP also includes an HDMI input, which can be used to connect any HD or 4K source. Switching between the DM and HDMI inputs can be done automatically using auto-switching mode or programmatically via a Crestron control system.

Analog Audio De-Embedding

A balanced analog audio output is included to allow stereo audio signals to be extracted from the digital output and fed to a separate audio switcher, processor, or amplifier. The output volume is adjustable via a control system.[4]

4K/60 Scaler

Built-in Crestron 4K/60 scaling technology ensures that input sources of any resolution or frame rate can be routed and displayed reliably. The DMCF-RX-4K-SFP accepts any input resolution from standard definition NTSC 480i to ultra high-definition DCI 4K, and scales it beautifully to any output resolution up to DCI 4K (4096 x 2160 @ 60 Hz). Interlaced sources are converted to progressive scan using motion-adaptive deinterlacing. Intelligent frame rate conversion enables support for 24p and PAL format sources. Fully automatic operation eliminates any complicated setup.

Dynamic Text Overlay

Dynamic text overlay capability allows for labeling of the video image, or can be used to display instructions, schedules, alerts, or other messaging.

CRESTRON®

Gigabit LAN Connectivity

The DMCF-RX-4K-SFP includes a gigabit Ethernet port for integration with a Crestron control system via the local network. Ethernet is also transported over the fiber interface, eliminating the need for a separate LAN connection at the transmitter, and allowing the transmitter's LAN port to be used to provide LAN connectivity for a local computer or other device.[3]

CEC Embedded Device Control

DigitalMedia offers an alternative to conventional RS-232 or IR control methods by harnessing the CEC (Consumer Electronics Control) signal embedded in HDMI. Through its connection to a control system, the DMCF-RX-4K-SFP provides a gateway for controlling devices through their HDMI connections, potentially eliminating the need for any dedicated control wires or IR emitters.

Web Browser Setup

Simplified setup of the DMCF-RX-4K-SFP and its companion transmitter is facilitated using a web browser.

Please refer to the DigitalMedia Resources Webpage at http://www.crestron.com/dmresources/ for additional design tools and reference documents.

SPECIFICATIONS

Fiber Types

Fiber Type	Connector Type	Maximum Cable Length	SFP+ Module [2]	Package Model
Multimode, duplex, 850 nm	Dual LC	1000 ft (300 m) using OM3 1300 ft (400 m) using OM4	SFP-10G-SR	DMCF-RX-4K-SR PAK KIT
Single-mode, simplex, 1330/1270 nm	Single LC	6.2 miles (10 km)	SFP-10G-BX-D	DMCF-RX-4K-BX PAK KIT
CresFiber 8G Multimode, simplex *(Only for retrofit applications where CresFiber 8G multimode fiber is already installed; not for new installations)*	Single SC *(via LC-to-SC patch cord and adapter, included)*	650 ft (200 m) using CRESFIBER8G-NP or CRESFIBER8G-P	SFP-10G-S-D	DMCF-RX-4K-S PAK KIT

NOTE: The maximum cable length for single-mode fiber is measured using ITU-T G.652.D fiber optic cable, Crestron model CRESFIBER8G-SM-P or equivalent.

Video

Input Signal Types: DM SFP+ 4K Fiber w/Deep Color, 3D [5], & 4K support (configurable for multimode or single-mode fiber [2]); HDMI w/Deep Color, 3D [5], & 4K support (DVI & Dual-Mode DisplayPort compatible [6])
Output Signal Types: HDMI w/Deep Color & 4K support (DVI compatible [6])
Switcher: 2x1 auto-switching, Crestron QuickSwitch HD™ technology
Scaler: 4K video scaler with motion-adaptive deinterlacing, intelligent frame rate conversion, Deep Color support, 3D to 2D conversion [5], widescreen format selection (zoom, stretch, maintain aspect-ratio, or 1:1), dynamic text overlay

Maximum Resolutions:

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 4K DCI & 3840x2160 Ultra HD	24 Hz	4:4:4	30 bit
		30 Hz	4:4:4	24 bit
		30 Hz	4:2:2	36 bit
		60 Hz	4:2:0	24 bit
	2560x1600 WQXGA	60 Hz	4:4:4	36 bit
	1920x1080 HD 1080p	60 Hz	4:4:4	36 bit
Interlaced (Input only)	1920x1080 HD 1080i	30 Hz	4:4:4	36 bit

NOTE: Common resolutions are shown; other custom resolutions are supported at pixel clock rates up to 300 MHz

Audio

Input Signal Types: DM SFP+ 4K Fiber (configurable for multimode or single-mode fiber [2]), HDMI (Dual-Mode DisplayPort compatible [6])
Output Signal Types: HDMI, analog stereo [4]
Digital Formats: Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, LPCM up to 8 channels
Analog Formats: Stereo 2-channel
Switcher: 2x1 audio-follow-video
Digital-To-Analog Conversion: 24-bit 48 kHz
Analog Performance: Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz; Stereo Separation: >90 dB
Analog Volume Adjustment: -80 to +20 dB

Communications

Ethernet: 10/100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP, IEEE 802.1X, IPv4 or IPv6, web browser setup and control, Crestron control system integration
DM: DM SFP+ 4K Fiber, HDCP 2.2, EDID, CEC, Ethernet
HDMI: HDCP 2.2, EDID, CEC

NOTE: Supports management of HDCP and EDID; supports management of CEC between the connected HDMI devices and a control system

Connectors

LAN: (1) 8-pin RJ45 female;
10Base-T/100Base-TX/1000Base-T Ethernet port

DM IN: (1) DM SFP+ 4K Fiber input port;
Accepts one Crestron SFP-10G series SFP+ transceiver module (included as part of a DMCF-RX-4K PAK KIT)

HDMI OUTPUT: (1) 19-pin Type A HDMI female;
HDMI digital video/audio output (DVI compatible [6])

HDMI INPUT: (1) 19-pin Type A HDMI female;
HDMI digital video/audio input;
(DVI & Dual-Mode DisplayPort compatible [6])

AUDIO OUT: (1) 5-pin 3.5 mm detachable terminal block;
Balanced/unbalanced stereo line-level audio output [4];
Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced;
Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

Indicators

OL: (1) Green LED, indicates online connection to a control system via Ethernet
LAN: (2) LEDs, green indicates Ethernet link status, amber indicates Ethernet activity
DM IN LINK: (1) Green LED, indicates DM link status
DM IN ACT: (1) Green LED, indicates DM link activity
HDMI OUTPUT: (1) Green LED, indicates video signal transmission at the HDMI output
HDMI INPUT: (1) Green LED, indicates sync detection at the HDMI input

Construction

Plug-in card, occupies (1) card slot in a DMF-CI-8 card interface, includes metal faceplate

Weight

15.1 oz (427 g)

MODELS & ACCESSORIES

Available Models

DMCF-RX-4K-SR PAK KIT: DigitalMedia™ SFP+ 4K Fiber Receiver Card for DMF-CI-8, includes SFP-10G-SR SFP+ Transceiver Module for Duplex Multimode Fiber
DMCF-RX-4K-BX PAK KIT: DigitalMedia™ SFP+ 4K Fiber Receiver Card for DMF-CI-8, includes SFP-10G-BX-D SFP+ Transceiver Module for Simplex Single-Mode Fiber
DMCF-RX-4K-S PAK KIT: DigitalMedia™ SFP+ 4K Fiber Receiver Card for DMF-CI-8, includes SFP-10G-S-D SFP+ Transceiver Module for CresFiber® 8G (for retrofit applications only)

Included Accessories

SFP-10G-SR: SFP+ Transceiver Module, Duplex Multimode 850 nm (Qty. 1 included with DMCF-RX-4K-SR PAK KIT)

SFP-10G-BX-D: SFP+ Transceiver Module, Simplex Single-Mode 1330/1270 nm, Downlink (Qty. 1 included with DMCF-RX-4K-BX PAK KIT)
SFP-10G-S-D: SFP+ Transceiver Module, CresFiber® 8G Multimode, Downlink (Qty. 1 included with DMCF-RX-4K-S PAK KIT)

Available Accessories

DMF-CI-8: DigitalMedia™ SFP+ 4K Fiber Extender Card Chassis
DMF-TX-4K-SFP: DigitalMedia™ SFP+ 4K Fiber Transmitter
DMCF-TX-4K-SFP: DigitalMedia™ SFP+ 4K Fiber Transmitter Card for DMF-CI-8
CBL Series: Crestron® Certified Interface Cables

Notes:

1. Item(s) sold separately.
2. The DM port on this device is designed for use with Crestron SFP-10G series SFP+ transceiver modules only. The fiber interface provided by the SFP+ module is exclusively for connection to a Crestron DMF or DMCF series transmitter device. It is not compatible with older Crestron DM Fiber (-F type), DM 8G® Fiber (-S type), or DM 8G SM Fiber (-S2 type) devices.
3. The LAN connection can be made via the local LAN port on the DMCF-RX-4K-SFP, or via the LAN port on the companion transmitter, but not both.
4. The analog stereo audio output is only active when the DMCF-RX-4K-SFP is receiving a 2-channel stereo input signal.
5. Does not support pass-through or scaling of 3D video signals. 3D signals are automatically converted to 2D, then scaled and output as 2D.
6. HDMI connections require an appropriate adapter or interface cable to accommodate a DVI or Dual-Mode DisplayPort signal. CBL-HD-DVI interface cables are available separately.

This product may be purchased from an authorized Crestron dealer. To find a dealer, please contact the Crestron sales representative for your area. A list of sales representatives is available online at www.crestron.com/salesreps or by calling 800-237-2041.

The specific patents that cover Crestron products are listed online at: patents.crestron.com.

Certain Crestron products contain open source software. For specific information, please visit www.crestron.com/opensource.

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