



**DESCRIPTION:** RF over Optical Fiber link  
**MODEL:** FODX series (see ordering information)



## SUMMARY

The CTI's FOD RF-over-fiber links are ideal for long-distance transmission of RF signals over single-mode fiber-optic cables.

- Negligible degradation of signals due to noise or inter-modulation.
- High link reliability.
- Wideband performance for AM, FM, VHF, UHF, 700, 800 & 900 MHz Two-way radio signal distribution.
- Suitable for any analog or digital signal modulation type.
- Highly flexible product suitable for a large number of different installations.
- Comprehensive alarm/status monitoring.
- DFB laser at 1310 ± 20nm (1550 nm/CWDM/DWDM options)

For installations with limited cross-site fiber connections, CTI can offer solutions based on the whole range of ITU CWDM or DWDM wavelengths.

To be used in 1U unmanaged chassis (up to 2 units) or 3U fully managed chassis with capacity for up to 12 slots. When used in a 3U fully managed chassis with OM-ECM it provides Ethernet TCP/IP via RJ-45 connector, Tx/Rx Alarm & Status Monitoring thru web server, SNMP v2 or Modbus, 4 Form C Dry Contact and 4 Opto-isolated TTL (24V), as well 8 LED indicators.

## Features:

- Wideband 10-1000MHz RF-over-Fiber link for long distance transmission. Available in several sub-bands.
- Wide dynamic range.
- Modulation protocol independent.
- Excellent linear performance, with very low noise for multi-carrier and multi-band performance.
- DFB laser 1310 nm (1550 nm optional).
- ITU CWDM and DWDM options available.
- SC/APC Optical connector for low back reflections.
- Individual Tx and Rx modules, or combined Tx/Rx modules/ Dual
- Dry-contact alarms
- Optional RF data modem (contact manufacturer)
- Options for AM & FM transmission.
- Optional blind mate connectors for hot-swap replacement.
- 3U Plug-in modular form-factor cards
- 3U fully managed chassis with capacity for up to 12 slots. Tx/Rx Alarm & Status Monitoring via network controller.
- 1U chassis unmanaged chassis supports 3 slots.
- Extended temperature range -30 °C to +60 °C

## Applications:

- Distributed Antenna System (DAS).
- Land Mobile Radio & Public Safety links.
- Remote Radio Units backhaul links.



| Parameter  | Specification   |                    |
|--|---|--------------------|
| <b>RF Performance</b>                                  | Case 1: 0dB Gain  | Case 2: 10dB Gain  |
| Frequency range  | 80-1000MHz  |                    |
| VSWR (Input/Output)                                    | 1:1.5 typ.  |                    |
| Link gain (Tx gain/Rx gain) <sup>(1)</sup>             | 0dB nom. (-15/+15)  | 10dB nom. (-5/+15) |
| Link Gain adjustable range                             | RF gain manually adjustable from software web-page. Two cases, 0dB and 10dB gain, are included here for reference. Total range = 30dB, -10 to +20dB.<br>Tx: -5 to -20dB; Rx: +10 to +25dB |                    |
| Flatness, full-band <sup>(1)(2)</sup>                  | ±0.3dB typ.   |                    |
| Gain stability   | 0.25dB @ 24hrs typ.   |                    |
| Input P1dB <sup>(1)(3)</sup>                           | +2dBm typ.  | -6dBm typ.         |
| Input IP3 <sup>(1)(3)</sup>                            | +14dBm typ.   | +6dBm typ.         |
| Noise figure @ 0dB optical loss <sup>(1)(3)</sup>      | 24dB typ.   | 17dB typ.          |
| Noise figure @ 5dB optical loss <sup>(4)(3)</sup>      | 29dB typ.   | 22dB typ.          |
| Noise floor avg. power @ 10kHz BW <sup>(1)(3)</sup>    | -110dBm   | -107dBm            |
| Tx/RX RF Isolation                                     | 80dB typ.   |                    |
| SFDR <sup>(1)</sup>                                    | 109dB/Hz <sup>2/3</sup> typ.  |                    |
| Maximum RF input power to transmitter (without damage) | +15dBm  |                    |
| <b>Optical Performance</b>                             |   |                    |
| Laser type   | DFB, Distributed Feedback Laser, Single-Mode  |                    |
| Optical wavelength                                     | 1310 nm ± 20 nm standard (1550 nm ± 20 nm available).   |                    |
| ITU CWDM/DWDM wavelengths                              | Optional  |                    |
| Optical output power                                   | +4dBm nom.  |                    |
| Laser Rx Alarm Threshold                               | 18dB <sub>o</sub> loss  |                    |
| <b>General Specifications</b>                          |   |                    |
| RF connector   | 50 Ω SMA, rear or front access  |                    |
| Optical connector                                      | SC/APC, rear or front access. FC/APC also available.  |                    |
| Operating voltage                                      | 12 VDC nom.   |                    |
| Maximum power consumption                              | Single TX: 3.7W, Single RX: 3.4W, Dual TX: 5W,  |                    |

<sup>1</sup> Nominal input power at 0 dB optical loss.

<sup>2</sup> Default gain setting. Other options available, please contact Canam Technology, Inc.

<sup>3</sup> Measured at 500MHz.

<sup>4</sup> Nominal input power at 5 dB optical loss.



| Parameter                               | Specification   |
|---|---|
|   | Dual RX: 4.3W, TX/RX: 4.7W<br>3U chassis populated with 10 Tx/Rx: 58W   |
| RF data modem                           | Available upon request. Contact manufacturer  |
| RF card Plug-in Module Dimensions       | 3U height, 1" (7HP) Width, 7" depth   |
| EIA Chassis Dimensions (without cables) | Fits 3U or 1U 19" rackmount enclosure, 10.4" depth  |
| Chassis capacity (DC-Input)             | 3U: Up to 12 RF cards/modules (external power supply)<br>1U: Up to 2 RF cards/modules (single non-redundant AC/DC power supply) |
| Operating temperature (maximum rating)  | -30 °C to +60 °C, ±2dB gain flatness  |
| Storage temperature                     | -40 °C to +70 °C  |
| Humidity                                | 95% non-condensing humidity   |
| MTBF                                    | Single TX: 140,000 hrs, Single RX: 350,000 hrs,<br>Dual TX: 70,000 hrs, Dual RX: 175,000 hrs,<br>TX/RX: 140,000 hrs             |
| IP rating                               | IP40  |
| Weight                                  | 1 lb  |

| Module Ordering Information                    |                              |
|--|------------------------------|
| FODX-AAX-YYYY-D                                |                              |
| <b>AA: Module type</b>                         | <b>YYY: Laser wavelength</b> |
| RX: Receiver                                   | 131: 1310                    |
| TX: Transmitter                                | 155: 1550                    |
| TR: Transceiver                                |                              |
| DR: Dual Receiver                              |                              |
| DT: Dual Transmitter                           |                              |
| <b>X: Module connectors' access</b>            | <b>Z: Laser Type</b>         |
| R: Rear access                                 | S: Standard DFB              |
| F: Front access                                | C: ITU CWDM/DWDM DFB Options |
| <b>D: RF data modem over fiber link</b>        |                              |
| Blank: no data modem                           |                              |
| D: built-in data modem (19.2 kbps serial port) |                              |



Examples:

**FODX-TXR-131S:** Transmitter, 80 – 1000 MHz, 50  $\Omega$  SMA, Single-mode SC/APC, Rack-mount plug-in module rear access, Standard DFB Laser, 1310 nm wavelength.

**FODX-RXR-131S:** Receiver, 80 – 1000 MHz, 50  $\Omega$  SMA, Single-mode SC/APC, Rack-mount plug-in module rear access, Standard DFB Laser, 1310 nm wavelength.

Other built options are available, please get in touch with Canam for more information:

- Standard SC/APC optical connectors. FC/APC and E2000/APC are available upon request.
- WDM single fiber strand Tx/Rx (Transceiver) configuration (1310 nm / 1550 nm)
- ITU CWDM or DWDM wavelengths Automatic Gain Control (AGC), Optical and RF
- **OMU-C3E:** 3U managed chassis supports up to 12 RF cards and one network controller card. Requires DC input (external AC/DC power supply).
- **OMU-C1:** 1U unmanaged chassis supports up to 2 RF cards with a single non-redundant AC/DC power supply

Other Similar products:

- Optical Splitters
- RF switches
- RF Splitters



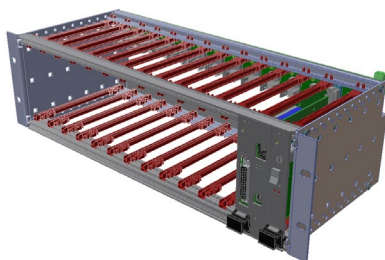
## CHASSIS (OMU-C3E)

The OMU-C3E is a 3U sub-rack unit to host RF/Fiber and RF switch modules, providing communication and power to each slot. The OMU-C3E supports up to 12 service modules with an external power supply.

The chassis has a 12VDC backplane and the DC wire harness gauge range is 10-12AWG

## SPECIFICATIONS

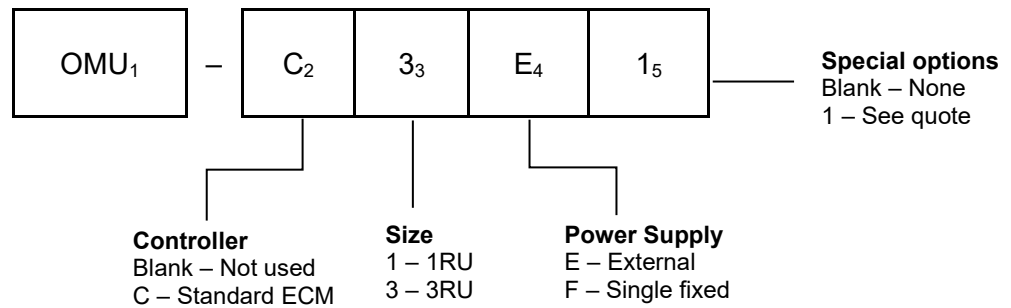
|  |  |
|--|--|
| <b>Capacity</b>                                | Up to 12 modules (external power supply)   |
| <b>Dimensions EIA 19" 3RU (H x W x D)</b>      | 5.25 x 19 x 10.5 inches                    |
| <b>Weight (chassis only / fully populated)</b> | 1.8 / 7.2 kg                               |
| <b>Operating Temperature</b>                   | -30° to +60° C                             |
| <b>Humidity</b>                                | 0-95%, non-condensing                      |
| <b>DC Power Input/ Interface</b>               | DC = 2 x screw terminal                    |
| <b>Operating Voltage</b>                       | 12 VDC nom.                                |
| <b>Maximum power consumption</b>               | Fully populated with 12 Tx/Rx modules: 67W |



OMU-C3E empty



OMU-C3E fully populated



## ORDERING INFORMATION

### CONTROLLER (OM-ECM)

The OM-ECM unit plugs into the OMU-C3E sub rack assembly to communicate and control the hosted devices. Several chassis can be daisy-chained from a single controller for expandability.



### SPECIFICATIONS

|                              |   |
|------------------------------|---|
| <b>Networking</b>            | Ethernet TCP/IP   |
| <b>Alarms</b>                | 4 Form C Dry Contact  |
| <b>Inputs</b>                | 4 Opto-isolated TTL (24V)   |
| <b>Comm</b>                  | Built-in Web browser<br>SNMP v2 or Modbus (special order)<br>Serial (factory debug) |
| <b>User Interface</b>        | 8 LED indicators  |
| <b>Operating Temperature</b> | -30° to +60° C  |
| <b>Humidity</b>              | 0-95%, non-condensing   |

\* Actual look may change