CE

![Omniflex logo]

REMOTE MONITORING SPECIALISTS

# INSTALLATION GUIDE
## Omniterm FCX Contact Repeater
## Model C2477B

The OMNITERM FCX module provide the ability to safely send contact signals in both directions up to 20km over a pair of optical fibres. Connect two FCX modules together over a duplex fibre optic link and when the contact on the one module is closed, the relay output on the other module will be energised and its relay contact will close.

LED indication is provided to show the state of the input and output contacts, the presence of instrument power, and any detected fault condition within the module.

The module's output contact is designed with dual signal detector relays in a 2oo2 configuration with fault indication.

The input receiver is designed with dual signal receivers in a 2oo2 configuration with fault indication.

## Box Contents

- 1 x C2477B Omniterm FCX Contact Repeater
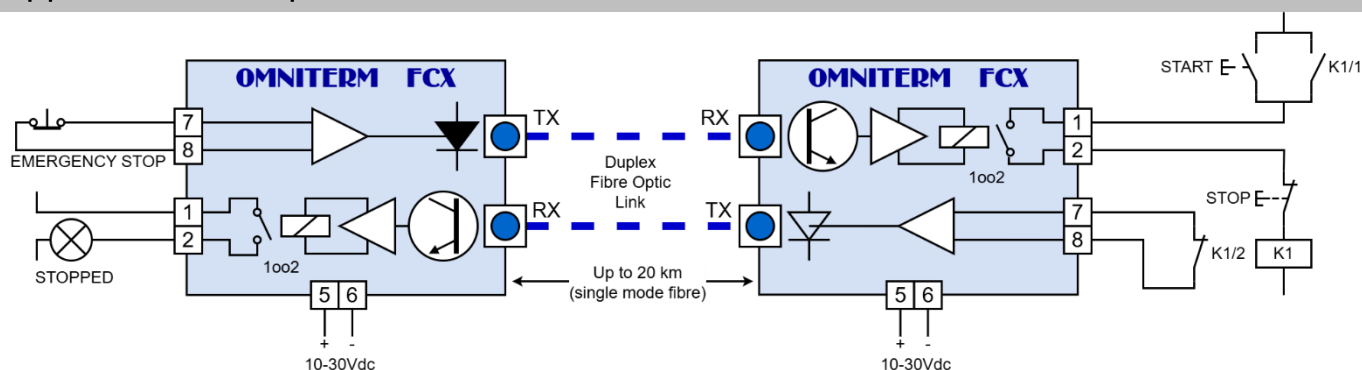- Installation Guide (this document)

## Features

- DIN Rail or surface mountable
- Narrow 22.5mm module width
- 10-30Vdc powered
- Fail-safe 2oo2 input receiver configuration
- Multi-mode 850nm or single mode 1300nm
- 0-60°C operating temperature range
- CE and UKCA Mark Compliant
- Fail-safe 2oo2 output relay configuration

## Getting Started

Thank you for choosing the Omniterm FCX Contact Repeater from Omniflex for your remote communication needs.

## Application Example

## Quick Start Guide

Follow these simple steps to get started using your FCX in the shortest possible time.

1. Install the fibre optic cable as per recommended Fibre Optic Cable Installation Guidelines; the FCX uses Type SC fibre connectors.
2. Connect a 5dB attenuator in each fibre when using 1300nm single mode fibre with distances less than 5km and less than 2km when using 850nm multi-mode fibre.
3. Mount the two FCXs in suitable locations.
4. Connect the one end of the fibre optic cable to the Tx port on the first FCX and the other end of the same fibre optic cable to the Rx port on the second FCX; Repeat with the second fibre optic cable as per Application Example.
5. Power up the first unit (9-30Vdc).
6. Its Green PWR (power) LED will light up.
7. Connect a link to terminals 7 and 8 (input) on the first FCX.
8. The Green IP (Input) LED will light up because the transmitter is turned on which indicates the terminals 7 and 8 are shorted.
9. Power up the second unit (9-30Vdc).
10. Its Green PWR (power) LED will light up.
11. The Red OP (output) LED will light up, its relays will energise and its contact will close when the unit is receiving a valid transmit signal from its counterpart.
12. The red FLT (fault) LED will light up if there is an internal fault with the 2oo2 receiving logic. **Note**: In a 2oo2 (two-out-of-two) system, if either of two circuits (that check the electrical data from the optical fibre) differ, then the Red FLT LED is turned on.
13. The red FLT LED will also light up if there is an internal fault with the 2oo2 relay logic. **Note**: In a 2oo2 (two-out-of-two) system as above, there are two relays and if both relays do not energise then the Red FLT (fault) LED is turned on. As a result, one of the relay's contacts will not energise and its contact will be open as the two relay's contacts are in series.
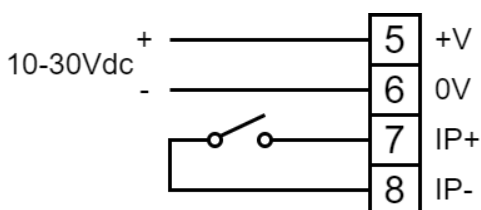
Remember to download this Installation Guide for a copy of this Installation Guide from http://www.omniflex.com/dsview.php?hid=C2477B.

Technical support is available by email at techsupport@omniflex.com or contact your local supplier.
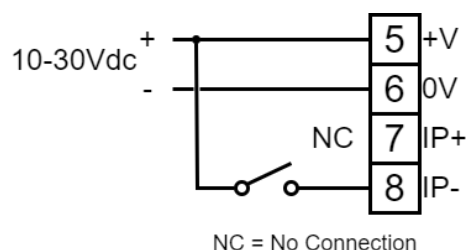
## Input Wiring Options

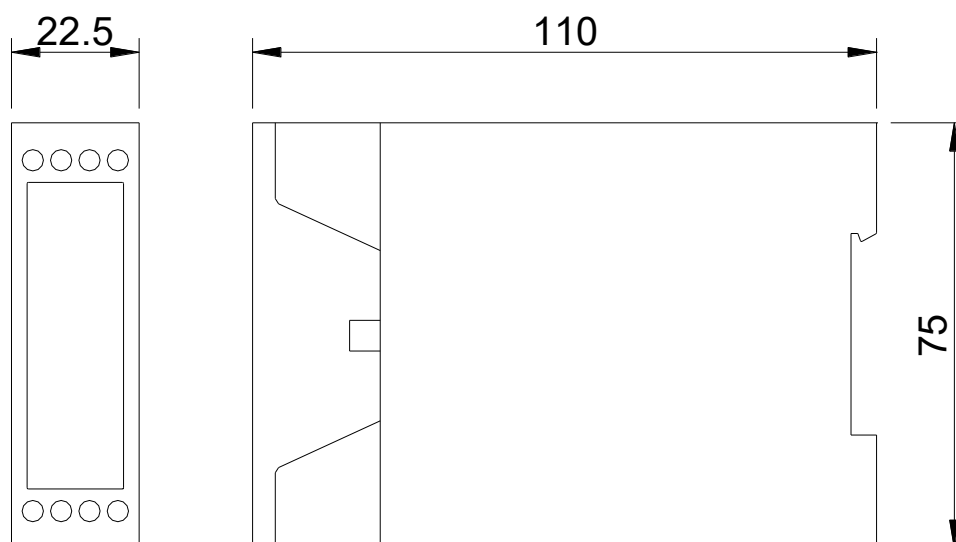The input to the FCX can be wired in the following ways and retain the fail-safety nature of the circuit:



| Volt Free Contact | Switch to +V |

## Mechanical Dimensions



## Specifications

### Power Supply

| Operating Range | 10-30Vdc |
|---|---|
| Supply Current | 150mA maximum at 10V |

| Typical Supply Current at 24V | |
|---|---|
| Standing Current | 10mA |
| Input contact closed | Add 10mA |
| Output relays closed | Add 20mA |
| I/P contact closed, O/P Relay ON | 40mA |

### Input

| Type | Volt free Contact (Switch to +V to operate) |
|---|---|
| Open circuit voltage | 30Vdc maximum |
| Closed circuit current | <10mA |
| Allowable Series resistance | 50 ohms maximum |

### Output

| Type | Form A (Normally Open) contact |
|---|---|
| Switching voltage | 250VAC/220Vdc max. |
| Switching current | 0.25A max. |
| Mechanical Life | 100 000 000 operations |
| Electrical Life | 100 000 operations at full load |

### Optical Link

| Model | C2477B-1 | C2477B-2 |
|---|---|---|
| Centre Wavelength | 850nm | 1300nm |
| Transmission mode | Multi-mode | Single mode |
| Connector | SC | SC |
| Tx Output Power | -12dBm min -9dBm typical -6dBm max | -7dBm min, -5dBm typical -3dBm max |
| Rx Sensitivity | -16dBm max | -20dBm max |
| Rx Overload | -12dB min | -7dBm min |
| Extinction Ratio | 9dB min | 9dB min |
| Min. Power Budget | -4dBm min | -13dBm min |
| Example Distance | 1km @ 3.5dB/km | 20km @ 0.4dB/km |
| Distance Calculation | Distances shown are calculated using typical cable attenuation. Actual distance achieved will also depend upon cable splices and additional connectors. | |

### Compliance to Standards

| Functional Safety | IEC61508 SIL1 and SIL2 |
|---|---|
| Human Safety | IEC 60950 |
| Immunity – ESD | IEC 61000-4-2 4kV |
| Immunity – RF Fields | IEC 61000-4-3 10V/m |
| Immunity – Fast Transients | IEC61000-4-4 2kV dc power, 1kV inputs/outputs |
| Emissions | EN55011 Group I, Class A |

### Reliability Data

| Model | C2477B-1 | C2477B-2 |
|---|---|---|
| MTBF | 20.5 years | 11.2 years |
| PFD (TI = 1 year) | Tx: 5.91E-5 Rx: 1.88E-4 | Tx:5.91E-5 Rx:1.88E-4 |
| SFF | Tx: 99.51% Rx: 98.6% | Tx: 99.86% Rx: 99.57% |

### Temperature

| | |
|---|---|
| Storage | -10 to +70 °C |
| Operating | -10 to 60 °C |

### Weight

| | |
|---|---|
| Unpacked | 140g approx. |
| Packed | 165g approx. |
| Packed | 165g approx. |

### Housing

| | |
|---|---|
| Width | 22.5mm (1.18″) |

| | |
|---|---|
| Height | 75mm (2.95″) |
| Depth (from panel) | 110mm (4.33″) |

### Ordering Information

| Order Code | Description |
|---|---|
| C2477B-1 | Omniterm FCX Bidirectional Fibre Optic SIL2 Contact Repeater (850nm multi-mode) |
| C2477B-2 | Omniterm FCX Bidirectional Fibre Optic SIL2 Contact Repeater (1300nm single mode) |