OBSOLETE

** For new designs please see part number: FY-ENC-KSU*

FY-ENT-KSU
Fast Ethernet to Optical Media Converter
Datasheet

RoHS

DESCRIPTION

Firecomms Fast Ethernet CAT5 to optical Media Converter accepts standard 100 Mbps Fast Ethernet traffic from 100 Base-Tx source over CAT5 connected via a standard RJ45 jack. Ethernet traffic is fed to a 100 Base-Fx compatible PHY IC to a Firecomms Fast Ethernet fiber optic transceiver (Tx + Rx) housed in an OptoLock® connector format. Auto-MDIX, a standard feature on the PHY IC used in this media converter, automatically corrects for cable cross-over. The PHY provides the optimum data handling conditions for streaming video with excellent quality of service (QoS). This link is particularly suitable for applications such as IPTV delivered over a POF physical layer. The Firecomms RCLED based transceiver provides high levels of light coupling into fiber with short rise and fall times. This enables Ethernet signalling over large core POF.

The media converter is a plug and play device. Therefore, it does not require any firmware, driver or external software to operate.

The media converter may be used wherever it is required to convert Fast Ethernet traffic from copper cables to an optical cable. A pair of media converters may be used to form an optical "bridge" between two copper-based networks. A single media converter may be used to link a unit already equipped for Plastic Optical Fiber into a copper cable-based network.

Ordering Information

(For media converter main unit only)

Part Number	Name	Description
FY-ENT-KSU	Media Converter	Ethernet Media Converter, Black, 2.2 mm OptoLock®

Note: DC power supplies, USB power cables, POF cables and CAT5 cables are not included in the above part number. Please see accessories section on page 7 for more information.

FEATURES

- Converts Ethernet over copper to Ethernet over Plastic Optical Fiber
- Offers easy connection of POF via the patented OptoLock® plugless locking system
- 100 Mbps data (125 MBd) throughput sends high speed Fast Ethernet up to 80 meters over POF
- High speed 650 nm Resonant Cavity LED
- Compatible with IEEE 802.3u Fast Ethernet data communications standard
- Power supplied by a 5 V USB cable
- Low power consumption
- Auto MDIX simplifies cable selection
- Enables low cost and rugged optical data networks
- Plug and Play
- RoHS compliant
- CE marked

APPLICATIONS

- Point to Point Fast Ethernet Links
- Set top box to gateway box in home network
- Networking of robots in industrial environment
- Connection of medical devices
- Secure/tamperproof network
- Superior EMI immunity

SPECIFICATIONS

Storage Specifications

Parameter	Symbol	Minimum	Maximum	Unit
Storage Temperature	T_{stg}	- 20	+ 70	°C
Operating Temperature	T_{op}	0	+ 50	°C
Storage Humidity (RH non-condensing)	H_{stg}	10	90	%
Operating Humidity (RH non-condensing)	H_{op}	10	90	%

Ethernet Specifications

Specification	Description
Interface	1 x 125 Mbps Fast Ethernet OptoLock® 1 x 100 Mbps Fast Ethernet RJ-45
Standards	IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3x Flow Control 100Base-FX, 100Base-TX

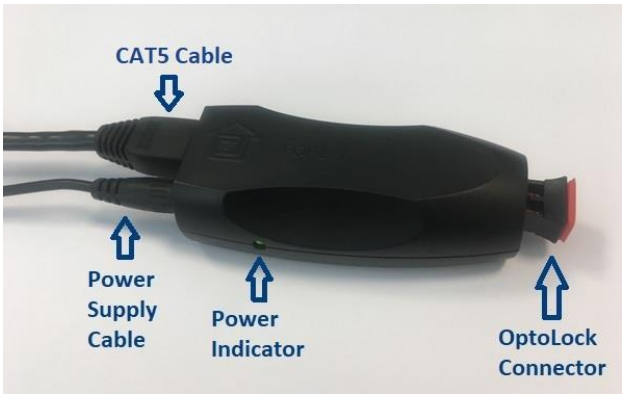
Technical Specifications

Parameter	Description	Minimum	Typical	Maximum	Unit
Vcc	DC supply voltage	4.5	5	5.5	V
Icc	Current Consumption	100	-	200	mA
Baud Rate	For an 8B/10B encoded data bus	10	-	125	MBd
λpeak	Peak Wavelength of Transmitter RCLED at 25°C	640	660	670	nm
Δλ	Spectral Bandwidth (FWHM)	-	23	30	nm
PO25	Average Output Power coupled into plastic fiber at TA=25 and 125Mbps data rate.	-6.0	-	-	dBm
Tr	Optical Rise Time (20% - 80%)	-	1.5	2	ns
Tf	Optical Fall Time (80% - 20%)	-	2	3	ns
PINmin	Minimum Receivable Power	-24	-	-	dBm
PINmax	Maximum Receivable Power	-	-	0	dBm

Physical Specifications

Specification	Measurement	Unit
Dimensions	93.5 * 40 * 25.2	mm
Weight	36	g

MEDIA CONVERTER USER INSTRUCTIONS



Purpose

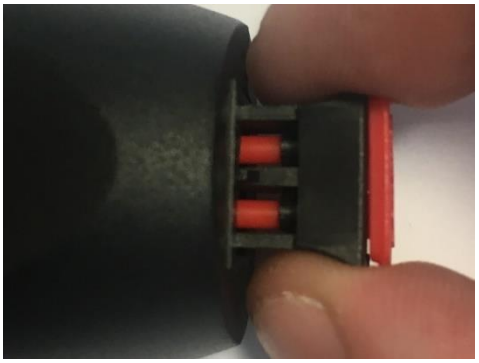
The Firecomms Media Converter allows fast ethernet traffic to pass between a plastic optical fiber and a CAT5 twisted pair cable.

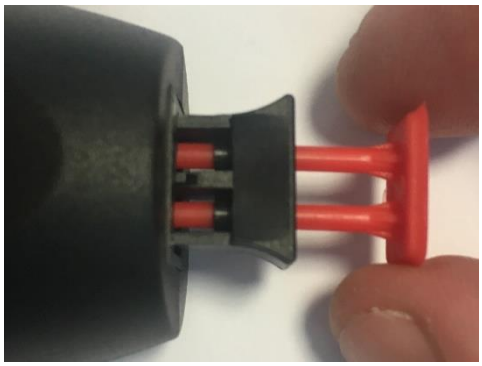
Safety

The light source in the optical connector is classified “Class 1” eye safe.
Do not dismantle the Media Converter or the power supply unit as there are no user-serviceable parts inside. It is normal for the Media Converter and the power supply to become warm during normal operation. If either becomes excessively hot, emits smoke or appears to be melting then do not touch. Power down, by switching off the mains supply at source and discontinue use of the unit.
The unit is for indoor use only. Do not place over a heater or over the cooling grid of other equipment.

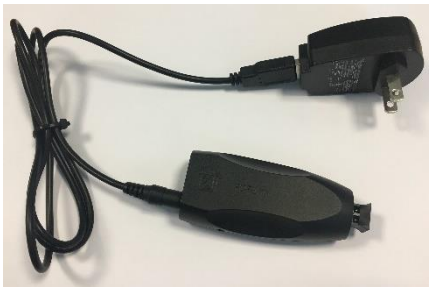
Installation

(1) Remove the dust cap if present. Pull the transceiver lock to the open position and pull the dust cap free of the connector.



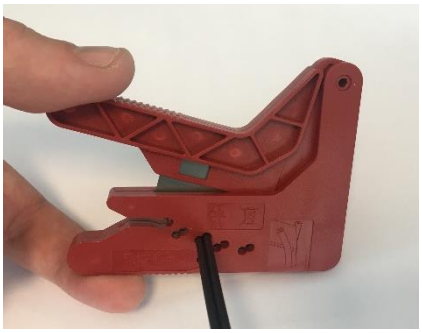


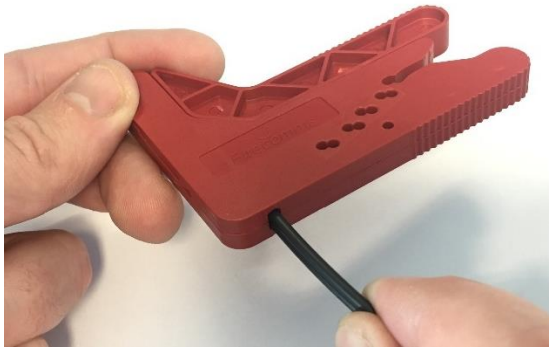
(2) Power up the media converter using either the 5 V DC power brick and cord connected to mains power OR to 5 V via the USB power-only cable connected to a standard USB connector. The green LED at the side will light up indicating power on. Shortly after the OptoLock® will emit red light from its transmitter port (the hole marked Tx).

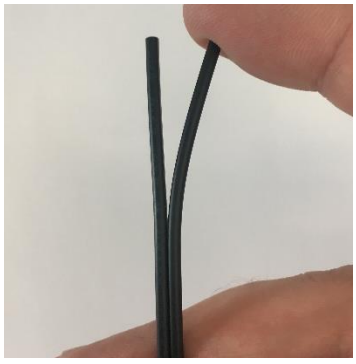


OR

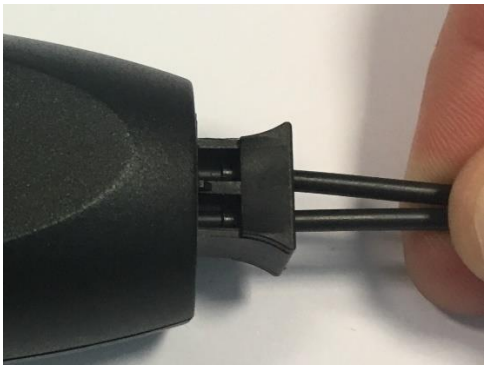
(3) Once the media converter has been powered, the next step is to prepare the POF cable for insertion into the OptoLock connector. Both simplex or duplex POF can be used, however duplex POF is typically preferred for tidiness. It is necessary to terminate the end of the POF cable before being inserted into the OptoLock connector. Using a cutter, slice of a small section of POF to a clean cut which terminates the cable cleanly. Separate the two fibers if duplex POF is used before insertion.



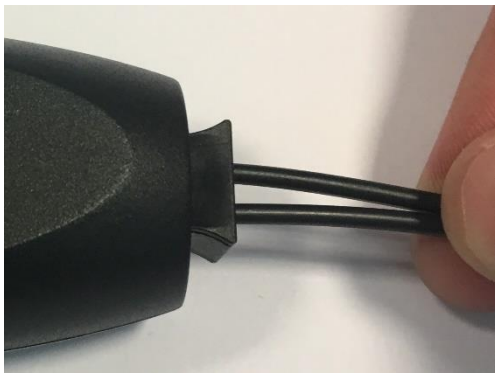




(4) Insert fiber cable into the OptoLock®.



(5) Slide the fiber in until it is fully home, then press closed the OptoLock®.



(6) Connect the CAT5 cable to both the media converter and the target equipment (e.g. a laptop, desktop, set-top-box or router).

(7) At the other end of the connection take the fiber and the powered-up media converter. Terminate the fiber with a clean cut and separate the two strands. Match the fiber strands to the OptoLock® as follows. The lit fiber should insert into the dark side of the OptoLock® (marked “R”). The dark fiber should insert into the lit side of the OptoLock® (marked “T”).

(8) As before push the fiber fully into the transceiver as far as it will travel and push the transceiver lock to close and secure the POF into place.

(9) Once again connect the CAT5 cable to the Ethernet equipment and to the media converter.

(10) The green and yellow LED’s on each media converter should be lit and start flashing indicating that data is flowing in the link.

ACCESSORIES

Accessories and Kit Ordering Information

Part Number	Name	Description
FY-ENT-KSU	Media Converter	Ethernet Media Converter, Black, 2.2 mm OptoLock®
FY-ENT-KKS	US Single End Kit	A kit includes: OptoLock® Media Converter, US power supply, USB power cable, 15 cm CAT5 cable and POF cutter
FY-ENT-KKL	UK Single End Kit	A kit includes: OptoLock® Media Converter, UK power supply, USB power cable, 15 cm CAT5 cable and POF cutter
FY-ENT-KKG	EU Single End Kit	A kit includes: OptoLock® Media Converter, EU power supply, USB power cable, 15 cm CAT5 cable and POF cutter
F02269-102*	US Power Supply	DC Adaptor, 5V, 500 mA, Black, USB, US Input
F02269-101*	UK Power Supply	DC Adaptor, 5V, 500 mA, Black, USB, UK Input
F02269-103*	EU Power Supply	DC Adaptor, 5V, 500 mA, Black, USB, EU Input
F02198-100*	USB Power Cable	USB DC Power Cable, length 100 cm
F01409-015*	CAT5 Cable	Cat5e Cable, Black, Straight Through, 15 cm length
PC220F-410	POF Cutter	POF cutter used for terminating and splicing 2.2 mm POF with jacket stripper

* Must be ordered with a Media Converter

Bare POF Cable Ordering Information

Part Number	Name	Description
FC-xxx-0SB	Simplex POF Cable	SI-POF 2.2 mm simplex
FC-xxx-0DB	Duplex POF Cable	SI-POF 2.2 mm duplex

Note: To ensure tidiness, Duplex POF is typically used with the media converter

The sequence -xxx in each part number should be replaced by one of the following to indicate the required length:

Part Number Length Code

Code	Length	Max Length
xxC	xx cm Cable	99 cm
xxM	xx m Cable	50 m

Ordering example:
A 5m duplex POF cable would have the part number FC-05M-0DB