



## User's Guide

### MIL-FT240TX

#### 10/100 Fault-Tolerant Stand-Alone Transceiver

- 10/100 Base-T(x) to 10/100 Base-T(x)
- Ethernet/Fast Ethernet

The MIL-FT240TX is a fault-tolerant transceiver, providing redundant paths for fast Ethernet devices. It has three ports: main, primary, and backup. Typically, the main port connects to a critical 10/100 fast Ethernet device. The primary port and the backup port connect to two different switch ports or two different ports on separate switches. When the unit powers up, it checks the primary port for a link signal; if the signal is present, the main and primary ports will connect and the signal from the backup port is disabled. Any device connected to the backup port will not detect a signal at this time. However, if the device does not detect a signal on the primary port, then the main port and backup port connect.

Part Number	Port One - Copper 10/100Base-T(x)	Port Two Copper 10/100Base-T(x)	Port Three - Copper 10/100Base-T(x)
MIL-FT240TX	RJ-45 100 M (328 ft*)	RJ-45 100 M (328 ft*)	RJ-45 100 M (328 ft*)

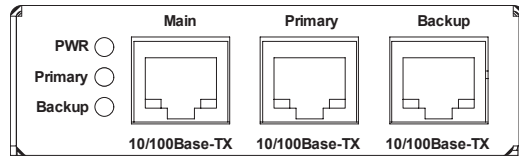
\*Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of th network.

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## Product Features

### Front panel

The MIL-FT240TX has three 10/100Base-T(x) ports.



### Auto-Negotiation (*selectable*)

The Auto-Negotiation feature automatically configures the transceiver to achieve the best possible mode of operation over a link. The transceiver broadcasts its speed (10 Mb/s or 100 Mb/s) and duplex capabilities (*full or half*) to the other devices and negotiates the best mode of operation. Auto-Negotiation allows quick and easy installation because the optimal link is established automatically—no user intervention required.

In a scenario where the media converter is linked to a non-negotiating device, the user may want to disable Auto-Negotiation. In this instance, the mode of operation will drop to the least common denominator between the two devices (*e.g., 10 Mbps, half-duplex*). Disabling this feature gives the user the ability to force the connection to the desired speed and duplex mode.

### Data Transfer rate (*selectable*)

10Base-T data transfer rate: 10 Mbps baseband Ethernet

100Base-TX data transfer rate: 100 Mbps baseband Ethernet

### Full-Duplex network (*selectable*)

In a full-duplex network, maximum cable lengths are determined by the type of cables used. The 512-Bit Rule does not apply in a full-duplex network.

### Half-Duplex network (*selectable*) (512-Bit Rule)

In a half-duplex network, the maximum cable lengths are determined by the round trip delay limitations of each fast Ethernet collision domain. (*A collision domain is the longest path between any two terminal devices, e.g., terminal, switch, or router.*)

The 512-Bit Rule determines the maximum length of cable permitted by calculating the round-trip delay in bit times (BT) of a particular collision domain. If the result is less than or equal to 512 BT, the path is good.

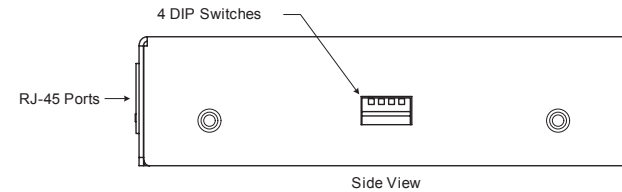
### AutoCross™

When the AutoCross feature is activated, it allows either straight-through MDI or crossover MDI-X cables to be used when connecting to 10Base-T or 100Base-TX devices. AutoCross determines the characteristics of the connection and automatically configures the unit to link up, regardless if the cable configuration is MDI or MDI-X. This feature is ON permanently.

## Installation

**CAUTION:** Do Not install the MIL-FT240TX transceiver in location where it might be exposed to wetness. Failure to observe this caution could result in damage to the transceiver.

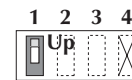
### Set DIP Switch



### Four (4) Dip Switches

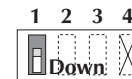
- SW 1: Auto-Negotiation
- SW 2: Speed
- SW 3: Duplex
- SW 4: Not Used

**Note:** See the diagrams below and use a very small flatblade screwdriver or similar device to set the DIP switch.

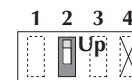


When Auto-Negotiation is enabled (*switch #1 UP*), the transceiver advertises all rate and mode capabilities to the network: 100Mb/s full duplex, 100Mb/s half-duplex, 10Mb/s full duplex, and 10Mb/s half duplex.

**Note:** Switches “#3” and “#4” are non-functional when switch “#1” is in the UP position (*Auto-Negotiation enabled*).



When auto-negotiation is disabled (*switch #1 DOWN*), the transceiver does not advertise rate and mode capabilities to the network.



100Base-TX data transfer rate (*switch #2 UP*): 100 Mbps fast Ethernet.

## Installation -- Continued

1 2 3 4 10Base-TX data transfer rate (*switch #2 DOWN*): 10 Mbps Ethernet.



1 2 3 4 Full duplex switch #3 UP.



1 2 3 4 Half duplex switch #3 DOWN.

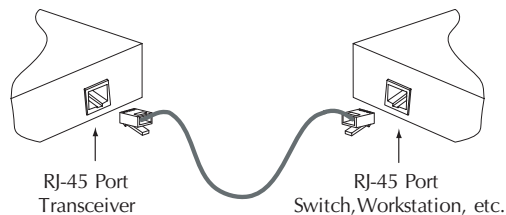


**Note:** The functionality for each switch setting applies to all ports simultaneously.

### Installing the twisted-pair copper cable (*customer supplied*)

1. Locate or build an IEEE 803.2 compliant 10Base-T or 100Base-TX cables, with male RJ-45 connectors installed onto both ends.
2. Connect the RJ-45 connector at one end of the cable to the RJ-45 port on the transceiver as shown below.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 port on the other device (*switch, workstation, etc.*) as shown below.

**Note:** The MDI (*straight-through*) cable or the MDI-X (*crossover*) cable connection is configured automatically, according to network conditions.

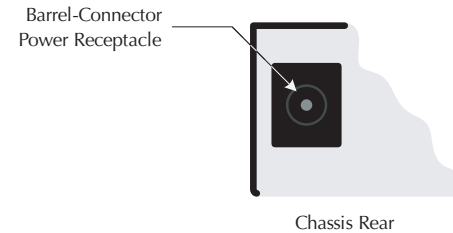


## Installation -- continued

### Connecting power to the media converter

AC/DC:

1. Connect the barrel connector of the adapter to the power port of the transceiver (*located on the back of the transceiver shown below*).
2. Connect the power adapter plug into AC power: if all the configuration switches are in the UP position, the port LEDs will flicker during the initialization process and then go OFF.



**Note:** The power-on LED will be lit (ON).

## Operation

### Status LEDs

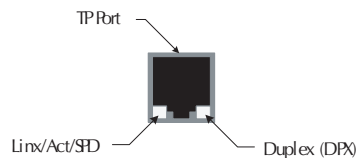
There are three (3) LEDs on the converter chassis front panel and two (2) on each TP port.

### Chassis LEDs

Power (PWR):	LED ON indicates connection to an external AC power source
Primary:	ON when the primary port is in use
Backup:	ON when the backup port is in use

### TP port LEDs

LINK/ACT/SPD:	Green (ON) for 100 Mbps and Link/Act; Flashing when transmitting data; Orange for 10Mbps
Duplex (DPX):	Green (ON) for full duplex; OFF for half duplex



## Cable Specifications

### Copper cable (10Base-T/100Base-TX)

Ensure that the correct cable type is installed to support the highest speed and mode of operation. Though category 3 cable is adequate for a 10Base-T installation, category 5 cable is recommended, since category 3 cable DOES NOT support 100Base-TX.

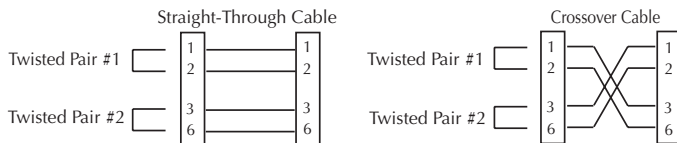
Category 3: *(minimum requirement for 10 Mb/s operation)*

Gauge: 24 to 22 AWG  
Attenuation: 11.5 dB/100m @ 5-10 MHz  
Maximum cable distance: 100 meters

Category 5: *(minimum requirement for 100 Mb/s operation)*

Gauge: 24 to 22 AWG  
Attenuation: 22.0 dB /100m @ 100 MHz  
Maximum cable distance: 100 meters

- Straight-through (MDI) or crossover (MDI-X) cable may be used.
- Shielded (STP) or unshielded (UTP) twisted-pair cable may be used.
- Pins 1/2 and 3/6 are the two active pairs in an Ethernet network.
- Use only dedicated wire pairs for the active pins:  
(e.g., blue/white & white/blue, orange/white & white/orange, etc.)
- Do not use flat or silver satin wire.



10Base-T and the Ethernet collision domain:

- Refer to the 5-Segment Rule before installing half-duplex 10Base-T cable.
- Installing full-duplex twisted-pair cable avoids collision domain considerations—maximum distance 100 meters.

100Base-TX and the Fast Ethernet collision domain:

- Refer to the 512-Bit Rule before installing half-duplex 100Base-TX cable.
- Installing full-duplex twisted-pair cable avoids collision domain considerations—maximum distance 100 meters.

**Note:** A Fast Ethernet collision domain can have only “1” Class “I” repeater or “2” Class “II” repeaters.

## Troubleshooting

If the MIL-FT240TX fails or initially does not power up and function properly, ask the following questions and take the suggested corrective actions.

1. Is the power LED on the transceiver ON?

NO:

- Is the barrel connector from the external power supply fully inserted into the transceiver?
- Is the adapter plugged into an external power source?
- Contact Technical Support: 1.800.466.4526, then press "2."

YES: Go to step 2.

2. Is there an active (*connected to an output source*) RJ-45 cable inserted into the transceiver main port?

NO:

- Insert an RJ-45 cable into the transceiver main port
- Insert the other cable end into an active device

YES: Go to step 3.

3. Is the link/active LED on the main port lit (ON)?

NO:

- Check that the RJ-45 cable is properly inserted into the transceiver main port.
- Check that the other cable end is inserted into an active device
- Check the cable for damage
- Contact Technical Support

YES: Go to step 4.

4. Is there an RJ-45 cable inserted into the primary port on the transceiver?

NO:

- Insert the RJ-45 cable into the transceiver primary port
- Insert the other end of the cable into the input of an active device

YES: Go to step 5.

5. Is the primary LED on the chassis lit (ON)?

NO:

- Check that the RJ-45 cable is properly inserted into the primary port
- Check that the other end of the cable is properly inserted into an active device
- Check the cable for damage
- Contact Technical Support

YES: Go to step 6.

## Troubleshooting -- continued

6. Is there an RJ-45 cable inserted into the backup port on the transceiver?
- NO:
- Insert the RJ-45 cable into the transceiver backup port
  - Insert the other end of the cable into the input of the an active device
- YES: Go to step 7.
7. Is the backup LED on the chassis lit (ON)?
- NO:
- Check that the RJ-45 cable is properly inserted into the backup port.
  - Check that the other end of the cable is properly inserted into an active device
  - Check the cable for damage
  - Contact technical support
- YES: If the LED is ON and still no activity, contact technical support: 1.800.466.4526, then press "2."

## Technical specifications

Standards:	IEEE 802.3™ 2000
Regulatory: EN55024	Emissions: EN55022 Class A, Immunity:
Safety compliance:	UL listed, CE Mark ( <i>wall-mount power supply</i> )
Data Rate:	10 Mbps, 100 Mbps
Dimensions: <i>121.9mm</i>	3.25" W, 1" H, 4.8" L ( <i>82.6 mm x 25 mm x</i>
Weight:	10 oz. approximate
Power consumption:	2.4 watts
Power supply:	12VDC, 0.4A minimum
Operating temp:	0°C to 50°C ( <i>32°F to 140°F</i> )
Switching time:	<189 ms ( <i>primary to secondary</i> )
Storage temp:	-20°C to +85°C ( <i>-4°F to 185°F</i> )
Humidity:	5% to 95%, non-condensing
Altitude:	0 – 10,000 feet
Warranty:	5 year limited

## Contact Us

### North American technical support

E-mail: support@milan.com

Telephone: +1.800.466.4526. then Press "2"

Fax: +1.408.744.2793

### International technical support

E-mail: support@milan.com

Telephone: +1.408.744.2751

Fax: +1.408.744.2793

### E-Mail

Ask a question anytime by sending an e-mail to our technical support staff.

support@milan.com

### Address

Headquarters:

MiLAN Technology

1329 Moffett Park Drive

Sunnyvale, CA 94089

Phone: 408-744-2775

Toll Free: 800-466-4526

Fax: 408-744-2871

Email: info@milan.com



### Declaration of Conformity

**Name of Mfg:** Transition Networks, 6475 City West Parkway,  
Minneapolis, MN 55344 U.S.A.

**Model:** MIL-FT240TX Stand-Alone Transceiver

**Part Number:** MIL-FT240TX

**Regulation:** EMC Directive 89/336/EEC

**Purpose:** To declare that the MIL-FT240TX to which this declaration  
refers is in conformity with the following standards:

CISPR 22:1997+A1:2000; EN 55022:1998+A1:2000 Class A; FCC Part 15 Subpart B;  
21CFR subpart J

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s)  
and Standard(s).

  
Stephen Anderson, Vice-President of Engineering

October 5, 2005  
Date

## Compliance Information

### CSA Certified

CISPR22/EN55022 Class A + EN55024

### CE Mark

### FCC regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

### Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

### European Regulations

**WARNING:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**Achtung !** Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

**Attention !** Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.



In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.



**CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.**

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstößt gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

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