BLACK BOX®
NETWORK SERVICES

Dynamic Fiber Conversion System
10/100T-Fx User Manual

DFCS 10/100T-Fx Dual Fiber Modules			
Connector Type	Distances	ST	SC
MM	5 km	LMC3033C	LMC3036C
SM	30 km	LMC3034C	LMC3037C
SM	60 km	LMC3035C	LMC3038C

CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week; Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com**
E-mail: **info@blackbox.com**

Description:

The DFCS 10/100T-Fx converters support the IEEE 802.3 Ethernet standard and convert between Ethernet 10Base-T or 100Base-Tx unshielded twisted pair (UTP) and Fast Ethernet fiber 100Base-Fx. Models are available for multimode (MM) and single-mode (SM) dual-fiber, and single-mode single-fiber.

The 10/100T-Fx supports Half-Duplex and Full-Duplex modes and features a cross-over UTP switch for easy attachment to hubs, switches and workstations.

The 10/100T-Fx can be used as a standard two port UTP to fiber converter. It can also use its two additional 10/100 backplane ports to connect to adjacent modules and accommodate flexible network configurations like in-band management and multi-module configurations.

The 10/100T-Fx can be used in an unmanaged or managed fashion. When unmanaged, it can be installed in a chassis without a Network Management Module (NMM). To be managed, a NMM module must be installed in the same chassis.

Port Structure:

Using a 4-port-switch design, the 10/100T-Fx features the two traditional front-plane 10/100 UTP and 100Mbps fiber ports and two 10/100 Ethernet backplane ports ("A" and "B") that can connect to adjacent modules within the same chassis.

When the 10/100T-Fx A and B ports are enabled (using the "BPOEN" dip-switch), they connect via the chassis' backplane to the slots on the left and right sides of the 10/100T-Fx module. When another switch-based module with backplane port connections such as a second 10/100T-Fx or a NMM is installed in an adjacent slot, it can be connected via the backplane to the 10/100T-Fx to facilitate a multi-module configuration.

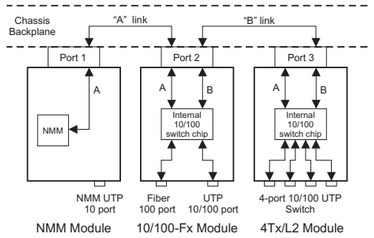


Fig. 1 10/100T-Fx front and backplane ports

Fig. 1, depicts a chassis with three modules plugged into three of its adjacent backplane slots. The adjacent slots are connected via the backplane using the "A" and "B" 10/100 links. In this example, the 10/100T-Fx in the center slot connects to the slot on its left using the A link and to the slot on its right using the B link.

In this example, the module on the left is a Network Management Module (NMM) and it connects via its A backplane port to the 10/100T-Fx facilitating "In-Band" management (via the fiber uplink). The module on the right is a 4-port 10/100 switch module (4Tx/L2) and it connects via its B link port to the 10/100T-Fx facilitating a 5-port 10/100 Ethernet switch with a fiber uplink configuration. This 3-module configuration provides an effective 5-port 10/100 managed switch with a fiber uplink configuration.

This example shows how the 10/100T-Fx can be used either as a traditional managed or unmanaged media converter or to create flexible and effective network

switch configurations.

To find about individual chassis A and B backplane links, refer to the specific chassis' user manual.

Link Modes:

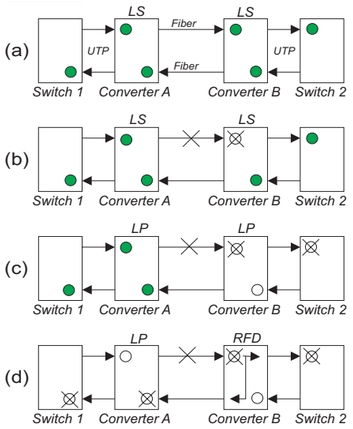


Fig 2: Link Modes

In order to accommodate different user needs, the 10/100T-Fx supports three different linking modes.

In "Link Segment" (LS), sometimes referred to as the "Normal" mode, a port transmits a "Link" signal independently of any received "Link" at any other port. For example, the UTP transmits a "Link" regardless of the fiber receiving a "Link" [Fig 2(b)].

In "Link Propagate" (LP), sometimes referred to as "Link Loss Carry Forward", a port transmits a "Link" signal only when receiving a "Link" at its other port. For example, the UTP transmits a "Link" only when receiving a "Link" at the fiber port. [Fig 2(c)].

In "Remote Fault Detection" (RFD), the UTP port transmits a "Link" signal only when receiving a "Link" at the fiber port. The fiber port transmits a "Link" only when receiving "Link" signals both at the fiber port and the UTP port. As a result, fiber faults (no "Link" received at the fiber) are looped-back and can be reported to the network's core [Fig 2(d)].

Front Plane Dip-Switch Settings:

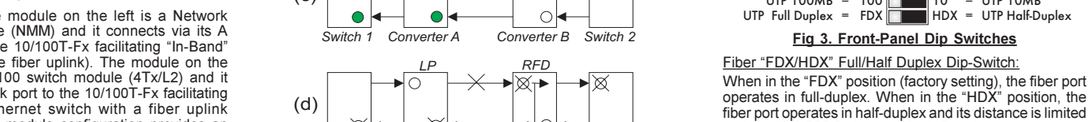


Fig 3. Front-Panel Dip Switches

Fiber "FDX/HDX" Full/Half Duplex Dip-Switch:

When in the "FDX" position (factory setting), the fiber port operates in full-duplex. When in the "HDX" position, the fiber port operates in half-duplex and its distance is limited by the IEEE 802.3 standard to 412 meters.

UTP "AN / MAN" Auto/Manual Dip-Switch:

When in "AN" (Auto-Negotiation) position (factory setting), the converter auto-negotiates and matches

the 10/100 speed and duplex mode of a mating auto-negotiating device connected to its UTP port.

When in "Man" (Manual) position, the converter does not auto-negotiate and operates in the mode selected by the "FDX/HDX" and "10/100" dip-switches.

UTP "10/100" Dip-Switch (10 / 100):

When the "AN/Man" switch is in the "Man" position, the UTP "10/100" switch selects the speed of the UTP port. When in the "100" position (factory setting), the UTP port operates at 100 Mbps. When in the "10" position the UTP port operates at 10 Mbps.

UTP "FDX / HDX" Full/Half Duplex Dip-Switch:

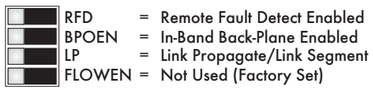
When the "AN/Man" switch is in the "Man" position, the UTP "FDX/HDX" switch selects the duplex mode of the UTP port. When in the "FDX" position (factory setting), the UTP port operates in full duplex. When in the "HDX" position, the UTP port operates in half duplex.

Note that attaching an auto-negotiating UTP port to a non auto-negotiating (manual / forced / hard-coded) UTP port may result in unpredictable port setting with excessive collisions and poor link performance. When operating in manual mode, both mating ports MUST be set manually to the same speed and duplex mode.

"RJ45 Cross-Over" Switch:

When connecting the UTP to a hub or switch, set switch to "Straight-Through" (factory setting). When connecting to a workstation, set to "Cross-Over."

Board Mounted Dip-Switch Settings:



"RFD" Remote Fault Detection:

When the "RFD" dip-switch is in the "UP" position, the RFD mode is selected. When in the "DOWN" position (factory setting), the RFD mode is disabled.

Connecting two converters with both set to RFD mode is illegal and will cause a "deadly embrace" lockup.

"LP" Link Propagate/Segment Dip-Switch:

When in the "DOWN" (factory setting) position (and the "RFD" dip-switch is in the "DOWN" position), the LS mode is selected. When in the "UP" position, LP mode is selected.

Note that for LS mode, both the "LP" and "RFD" dip-switches must be in the DOWN position (factory setting).

Note that setting both the "LP" and the " RFD" to the UP positions on the same module is an illegal mode that will result in unpredictable behavior.

"BPOEN" A and B Back-Plane Link Enable Dip-Switch:

When the "BPOEN" dip-switch is in the "UP" position, both the A and B backplane ports are enabled and connect to the backplane. When the "BPOEN" switch is in the "DOWN" position (factory setting), both ports are disabled and disconnected from the backplane.

"FLOWEN" Dip-Switch:

This switch is for factory use only and should always be left in the "DOWN" (factory setting) position.

LED Indicators:

LED	Color	Description
Power/Test:	Yellow	On--Power / Blink--test
UTP Link:	Green	On--Link / Blink--activity
F/O Link:	Green	On--Link / Blink--activity
UTP Auto:	Green	On--Auto-Negotiation enabled
UTP FDx:	Green	On--Full-Duplex detected
Fiber FDx:	Green	On--Full-Duplex selected
UTP 100:	Green	On--100 Mbps link
UTP 10:	Green	On--10 Mbps link

Mounting and Cable Attachment:

DFCS modules are hot-swappable and can be installed into any *DFCS* chassis.

1. Using the chassis' module guides for alignment, insert the module into the selected slot and secure using the front panel fastener screw.
2. Using a Category 5 cable attach the UTP port to a mating 10 or 100Base-Tx Ethernet device port.
3. Using a multimode or single-mode dual-fiber cable as required per the converter type, attach the fiber port to a 100Base-Fx mating Ethernet device. The transmit (Tx) must attach to the receive side of the mating device and the receive (Rx) must attach to the transmit side.
4. Single fiber (SF) converters must be used in matched pairs. The transmit (Tx) and receive (Rx) wavelengths of one converter must match the receive (Rx) and transmit (Tx) wavelengths of the mating converter. Only single-fiber cable is required to connect the mating devices.
5. Set the BPOEN backplane switch enable as needed.
6. While in LS mode (RFD and LP "DOWN"), select the required Duplex mode using the fiber FDX/HDX and the

UTP AN/Man, FDX/HDX, 10/100 switches. Verify that all link LEDs are ON and that flawless data flow can be established. Change speed and duplex as needed while making sure that if in the manual mode, both ends are in manual mode and both are set to the same speed and duplex modes.

7. Change to LP or RFD as needed.

SPECIFICATIONS	
Model	10/100T-Fx
Protocols	10Base-T, 100Base-Tx, 100Base-Fx
Copper Connectors	RJ-45
Fiber Connectors	ST or SC
Controls	LS/LP, RFD, UTP crossover, BPOEN, Auto/Man, FDX/HDX, 10/100
LED Displays	Pwr, Fiber link, Fiber FDX/HDX, UTP link, UTP FDX/HDX, Auto, FDX/HDX, 10, 100
Dimensions	W:0.85" x D:4.5" x H:2.8"
Weight	8 oz.
Compliance	UL, CE, FCC Class A, NEBS 3
Temperature -Operating -Storage	 0 to 50 C -40 to 80 C
Altitude	0-10,000 ft
MTBF (hrs)	1,150,000

TRADEMARKS

All applied-for and registered trademarks are the property of their respective owners.

FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

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

NORMAS OFICIALES MEXICANAS (NOM)

ELECTRICAL SAFETY STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedeIstales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra or superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u ostros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precación debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y

receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    A: El cable de poder o el contacto ha sido dañado; u
    B: Objectos han caido o liquido ha sido derramado dentro del aparato; o
    C: El aparato ha sido expuesto a la lluvia; o
    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    E: El aparto ha sido tirado o su cubierta ha sido dañada.

1000 Park Drive · Lawrence, PA 15055-1018
724-746-5500 · Fax 724-746-0746

040-L3033-001A 11/03

RFD = Remote Fault Detect Enabled
BPOEN = In-Band Back-Plane Enabled
LP = Link Propagate/Link Segment
FLOWEN = Not Used (Factory Set)

"RFD" Remote Fault Detection:

When the "RFD" dip-switch is in the "UP" position, the RFD mode is selected. When in the "DOWN" position (factory setting), the RFD mode is disabled.

Connecting two converters with both set to RFD mode is illegal and will cause a "deadly embrace" lockup.

"LP" Link Propagate/Segment Dip-Switch:

When in the "DOWN" (factory setting) position (and the "RFD" dip-switch is in the "DOWN" position), the LS mode is selected. When in the "UP" position, LP mode is selected.

Note that for LS mode, both the "LP" and "RFD" dip-switches must be in the DOWN position (factory setting).

Note that setting both the "LP" and the " RFD" to the UP positions on the same module is an illegal mode that will result in unpredictable behavior.

"BPOEN" A and B Back-Plane Link Enable Dip-Switch:

When the "BPOEN" dip-switch is in the "UP" position, both the A and B backplane ports are enabled and connect to the backplane. When the "BPOEN" switch is in the "DOWN" position (factory setting), both ports are disabled and disconnected from the backplane.

"FLOWEN" Dip-Switch:

This switch is for factory use only and should always be left in the "DOWN" (factory setting) position.

LED Indicators:

LED	Color	Description
Power/Test:	Yellow	On--Power / Blink--test
UTP Link:	Green	On--Link / Blink--activity
F/O Link:	Green	On--Link / Blink--activity
UTP Auto:	Green	On--Auto-Negotiation enabled
UTP FDx:	Green	On--Full-Duplex detected
Fiber FDx:	Green	On--Full-Duplex selected
UTP 100:	Green	On--100 Mbps link
UTP 10:	Green	On--10 Mbps link

Mounting and Cable Attachment:

DFCS modules are hot-swappable and can be installed into any *DFCS* chassis.

1. Using the chassis' module guides for alignment, insert the module into the selected slot and secure using the front panel fastener screw.
2. Using a Category 5 cable attach the UTP port to a mating 10 or 100Base-Tx Ethernet device port.
3. Using a multimode or single-mode dual-fiber cable as required per the converter type, attach the fiber port to a 100Base-Fx mating Ethernet device. The transmit (Tx) must attach to the receive side of the mating device and the receive (Rx) must attach to the transmit side.
4. Single fiber (SF) converters must be used in matched pairs. The transmit (Tx) and receive (Rx) wavelengths of one converter must match the receive (Rx) and transmit (Tx) wavelengths of the mating converter. Only single-fiber cable is required to connect the mating devices.
5. Set the BPOEN backplane switch enable as needed.
6. While in LS mode (RFD and LP "DOWN"), select the required Duplex mode using the fiber FDX/HDX and the UTP AN/Man, FDX/HDX, 10/100 switches. Verify that all link LEDs are ON and that flawless data flow can be established. Change speed and duplex as needed while making sure that if in the manual mode, both ends are in manual mode and both are set to the same speed and duplex modes.
7. Change to LP or RFD as needed.

SPECIFICATIONS	
Model	10/100T-Fx
Protocols	10Base-T, 100Base-Tx, 100Base-Fx
Copper Connectors	RJ-45
Fiber Connectors	ST or SC
Controls	LS/LP, RFD, UTP crossover, BPOEN, Auto/Man, FDX/HDX, 10/100
LED Displays	Pwr, Fiber link, Fiber FDX/HDX, UTP link, UTP FDX/HDX, Auto, FDX/HDX, 10, 100
Dimensions	W:0.85" x D:4.5" x H:2.8"
Weight	8 oz.
Compliance	UL, CE, FCC Class A, NEBS 3
Temperature -Operating -Storage	 0 to 50 C -40 to 80 C
Altitude	0-10,000 ft
MTBF (hrs)	1,150,000

TRADEMARKS

All applied-for and registered trademarks are the property of their respective owners.

FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

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

NORMAS OFICIALES MEXICANAS (NOM)

ELECTRICAL SAFETY STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedelstales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra or superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u ostros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precación debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y

receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    A: El cable de poder o el contacto ha sido dañado; u
    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    C: El aparato ha sido expuesto a la lluvia; o
    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    E: El aparto ha sido tirado o su cubierta ha sido dañada.

1000 Park Drive · Lawrence, PA 15055-1018
724-746-5500 · Fax 724-746-0746

040-L3033-001A 11/03

BLACK BOX NETWORK SERVICES

Dynamic Fiber Conversion System
10/100T-Fx User Manual

DFCS 10/100T-Fx Dual Fiber Modules			
Connector Type	Distances	ST	SC
MM	5 km	LMC3033C	LMC3036C
SM	30 km	LMC3034C	LMC3037C
SM	60 km	LMC3035C	LMC3038C

CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week; Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com**
E-mail: **info@blackbox.com**

Description:

The DFCS 10/100T-Fx converters support the IEEE 802.3 Ethernet standard and convert between Ethernet 10Base-T or 100Base-Tx unshielded twisted pair (UTP) and Fast Ethernet fiber 100Base-Fx. Models are available for multimode (MM) and single-mode (SM) dual-fiber, and single-mode single-fiber.

The 10/100T-Fx supports Half-Duplex and Full-Duplex modes and features a cross-over UTP switch for easy attachment to hubs, switches and workstations.

The 10/100T-Fx can be used as a standard two port UTP to fiber converter. It can also use its two additional 10/100 backplane ports to connect to adjacent modules and accommodate flexible network configurations like in-band management and multi-module configurations.

The 10/100T-Fx can be used in an unmanaged or managed fashion. When unmanaged, it can be installed in a chassis without a Network Management Module (NMM). To be managed, a NMM module must be installed in the same chassis.

Port Structure:

Using a 4-port-switch design, the 10/100T-Fx features the two traditional front-plane 10/100 UTP and 100Mbps fiber ports and two 10/100 Ethernet backplane ports ("A" and "B") that can connect to adjacent modules within the same chassis.

When the 10/100T-Fx A and B ports are enabled (using the "BPOEN" dip-switch), they connect via the chassis' backplane to the slots on the left and right sides of the 10/100T-Fx module. When another switch-based module with backplane port connections such as a second 10/100T-Fx or a NMM is installed in an adjacent slot, it can be connected via the backplane to the 10/100T-Fx to facilitate a multi-module configuration.

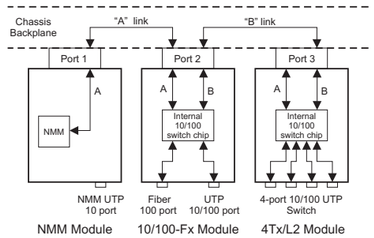


Fig. 1 10/100T-Fx front and backplane ports

Fig. 1, depicts a chassis with three modules plugged into three of its adjacent backplane slots. The adjacent slots are connected via the backplane using the "A" and "B" 10/100 links. In this example, the 10/100T-Fx in the center slot connects to the slot on its left using the A link and to the slot on its right using the B link.

In this example, the module on the left is a Network Management Module (NMM) and it connects via its A backplane port to the 10/100T-Fx facilitating "In-Band" management (via the fiber uplink). The module on the right is a 4-port 10/100 switch module (4Tx/L2) and it connects via its B link port to the 10/100T-Fx facilitating a 5-port 10/100 Ethernet switch with a fiber uplink configuration. This 3-module configuration provides an effective 5-port 10/100 managed switch with a fiber uplink configuration.

This example shows how the 10/100T-Fx can be used either as a traditional managed or unmanaged media converter or to create flexible and effective network

switch configurations.

To find about individual chassis A and B backplane links, refer to the specific chassis' user manual.

Link Modes:

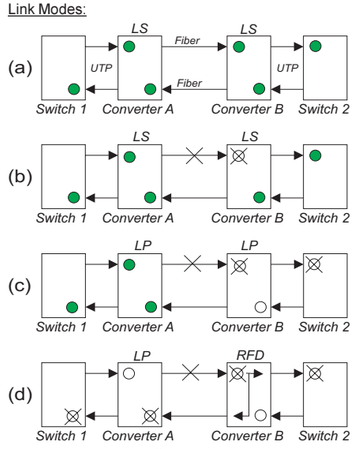


Fig 2: Link Modes

In order to accommodate different user needs, the 10/100T-Fx supports three different linking modes.

In "Link Segment" (LS), sometimes referred to as the "Normal" mode, a port transmits a "Link" signal independently of any received "Link" at any other port. For example, the UTP transmits a "Link" regardless of the fiber receiving a "Link" [Fig 2(b)].

In "Link Propagate" (LP), sometimes referred to as "Link Loss Carry Forward", a port transmits a "Link" signal only when receiving a "Link" at its other port. For example, the UTP transmits a "Link" only when receiving a "Link" at the fiber port. [Fig 2(c)].

In "Remote Fault Detection" (RFD), the UTP port transmits a "Link" signal only when receiving a "Link" at the fiber port. The fiber port transmits a "Link" only when receiving "Link" signals both at the fiber port and the UTP port. As a result, fiber faults (no "Link" received at the fiber) are looped-back and can be reported to the network's core [Fig 2(d)].

Front Plane Dip-Switch Settings:

F/O Full Duplex = FDX | HDX = F/O Half Duplex
UTP Auto-Negotiate = AN | Man = UTP Manual
UTP 100MB = 100 | 10 = UTP 10MB
UTP Full Duplex = FDX | HDX = UTP Half-Duplex

Fig 3. Front-Panel Dip Switches

Fiber "FDX/HDX" Full/Half Duplex Dip-Switch:

When in the "FDX" position (factory setting), the fiber port operates in full-duplex. When in the "HDX" position, the fiber port operates in half-duplex and its distance is limited by the IEEE 802.3 standard to 412 meters.

UTP "AN / MAN" Auto/Manual Dip-Switch:

When in "AN" (Auto-Negotiation) position (factory setting), the converter auto-negotiates and matches

the 10/100 speed and duplex mode of a mating auto-negotiating device connected to its UTP port.

When in "Man" (Manual) position, the converter does not auto-negotiate and operates in the mode selected by the "FDX/HDX" and "10/100" dip-switches.

UTP "10/100" Dip-Switch (10 / 100):

When the "AN/Man" switch is in the "Man" position, the UTP "10/100" switch selects the speed of the UTP port. When in the "100" position (factory setting), the UTP port operates at 100 Mbps. When in the "10" position the UTP port operates at 10 Mbps.

UTP "FDX / HDX" Full/Half Duplex Dip-Switch:

When the "AN/Man" switch is in the "Man" position, the UTP "FDX/HDX" switch selects the duplex mode of the UTP port. When in the "FDX" position (factory setting), the UTP port operates in full duplex. When in the "HDX" position, the UTP port operates in half duplex.

Note that attaching an auto-negotiating UTP port to a non auto-negotiating (manual / forced / hard-coded) UTP port may result in unpredictable port setting with excessive collisions and poor link performance. When operating in manual mode, both mating ports MUST be set manually to the same speed and duplex mode.

"RJ45 Cross-Over" Switch:

When connecting the UTP to a hub or switch, set switch to "Straight-Through" (factory setting). When connecting to a workstation, set to "Cross-Over."

Board Mounted Dip-Switch Settings: