

D-Link[®]
Building Networks for People

DMC-920
DMC-920R
DMC-920T



10/100BASE-TX to 100BASE-FX Single-Fiber

Media Converter

Manual

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Building Networks for People



DMC-920/DMC-920R/DMC-920T
10/100BASE-TX to 100BASE-FX
Single-Fiber
Dual-Wavelength
Media Converter Kit
Manual



RECYCLABLE

29071600DMC9202

Rev. 1.01

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Introduction

Thank you for choosing the Smart 10/100BASE-TX to 100BASE-FX Media Converter. The Media Converter introduced here provides one channel media conversion between 10/100BASE-TX and 100BASE-FX.

Dual-Wavelength Single-Fiber

These types of Single-Fiber modules combine transmit and receive signals onto one fiber strand using two wavelengths. This design avoids the budget losses incurred by the single-wavelength single-fiber technology, and minimizes any possibility of reflections in the system. The units on both ends of a link are different. One module uses one wavelength to transmit and a second wavelength to receive, while the other module flips that relationship. For this reason these units are sold in pairs.

About Media Converter

The Smart Media Converter is a network technology specified by IEEE 802.3 10BASE-T, IEEE802.3u 100BASE-TX, 100BASE-FX standards.

About Link Pass Through

When LLCF is enabled, the ports do not transmit a link signal until they receive a link signal from the opposite port. Link loss is “carried forward” to the managed switch or hub that is sending the link. LLCF can be used for either the copper or fiber ports.

When LLR is enabled, the fiber port’s transmitter shuts down if its receiver fails to detect a valid receive link. If one of the optical conductors is bad, the card with LLR enabled will return a no link condition to its link partner. LLR is used to detect link problems only on the fiber port.

Product Features

- ✓ A pair of One-channel single fiber media conversion between 10/100BASE-TX and 100BASE-FX.
 - ✓ Two different type of transmitting wavelength: One wavelength with bi-directional for both transmit and receive. TX: 1310nm; RX: 1550nm. or TX: 1550nm; RX: 1310nm
 - ✓ Auto negotiation of speed and duplex mode on TX port
 - ✓ Store-and-forward mechanism
 - ✓ Back-pressure & IEEE802.3x compliant flow control
 - ✓ Full wire-speed forwarding rate
 - ✓ Front panel status LEDs
 - ✓ Used as a stand-alone device or with a chassis
 - ✓ Hot-swappable when used with a chassis
 - ✓ Supports Link Pass Through
 - ✓ Supports Auto-MDIX for 100BASE-TX port
 - ✓ Sliding switch for the duplex mode of Fiber
 - ✓ Sliding switch for setting to Forced mode or Auto-negotiation
 - ✓ Sliding switch for setting the speed
 - ✓ Sliding switch for setting the LLCf, LLR function
 - ✓ Hot-swappable when used with a Chassis System
- Manageable through Intelligent Chassis System

Installation

This chapter gives step-by-step installation instructions for the Smart Media Converter.

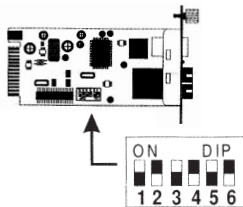
Selecting a Site for the Equipment

As with any electric device, you should place the equipment where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

1. The ambient temperature should be between 32 and 104 degrees Fahrenheit (0 to 40 degrees Celsius).
 2. The relative humidity should be less than 90 percent, non-condensing.
 3. Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards for IEC 801-3, Level 2 (3V/M) field strength.
 4. Make sure that the equipment receives adequate ventilation. Do not block the ventilation holes on each side of the switch or the fan exhaust port on the side or rear of the equipment.
 5. The power outlet should be within 1.8 meters of the switch.
-

Sliding Switch

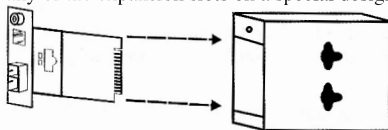
There is a sliding switch for the setting on copper and fiber port. Refer to the table below for more details.



Switch 1	On	Fiber Half Duplex
	Off	Fiber Full Duplex
Switch 2	On	TX Forced Mode
	Off	TX Auto-Negotiation
Switch 3	On	TX 10M
	Off	TX 100M
Switch 4	On	TX Half Duplex
	Off	TX Full Duplex
Switch 5	On	LLR Enable
	Off	LLR Disable
Switch 6	On	LLCF Enable
	Off	LLCF Disable

Installing in a Chassis

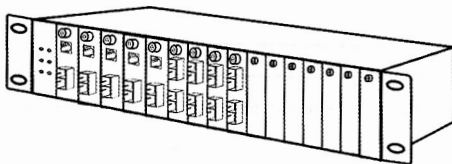
The Converter can be fit into any of the expansion slots on a special designed chassis.



Unscrew and pull out the media converter board

First, install the converter onto a carrier supplied with the chassis:

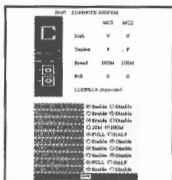
- Step 1- Unscrew the carrier from the desired expansion slot on the chassis.
- Step 2- Remove the screw on the converter as shown below.
- Step 3- Fit the converter onto the carrier and use the screw to secure it.



Management the Media Converter

The optional Management Chassis that can control this Smart Media Converter through the management system, this Smart Media Converter can be controlled through Web Browser, SNMP management utility and terminal emulation program.

The Management Chassis will detect the default reset on the DIP switches and display out the status, also the Management Chassis can control the function through the management system.



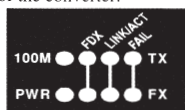
Through the optional Media Converter Chassis System via Management Module, you can control the setting of this Smart Media Converter.

To set the Fiber and UTP (FDX/HDX), UTP (Auto negotiation/Manual), Speed (10M/100M), LLR (Enable/Disable), LLCF (Enable/Disable)

Device Link Setup	To enable or disable the connection of both UTP port and Fiber port
LLCF Setup	To enable or disable the LLCF function of the device
M1 AN Setup	To set the UTP to Auto-negotiation or Forced Mode
M1 Speed Setup	To set the speed of UTP to 10M or 100M
M1 DUP Setup	To set the Duplex Mode of UTP port to Full or Half
M1 FC Setup	To set the Flow Control of the UTP to enable or disable
M1 Link Setup	To enable or disable the connection of the UTP port
M2 LLR Setup	To enable or disable the LLR function of the Fiber port
M2 DUP Setup	To set the Duplex Mode of Fiber port to Full or Half
M2 Link Setup	To enable or disable the connection of the Fiber port

LED Indicator

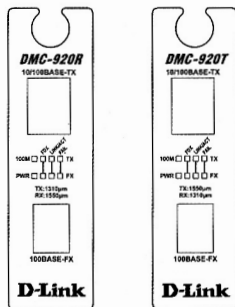
The LED indicators give you instant feedback on status of the converter:



LEDs	Status	Indication
PWR (Power)	Lights on	Power on
	Off	Power off
100M (100Mbps)	Lights on	Runs at 100Mbps on TX port
	Off	Runs at 10Mbps on TX port
FDX/COL	Lights on	Connection in full duplex mode
	Lights off	Connection in half duplex mode
	Blinking	Data collision
LINK/ACT	Lights on	A valid network connection established
	Lights off	Not Linking
	Blinking	Data transmitting or receiving
FAIL	Lights on	The physical line is broken
	Lights off	The physical line is fine

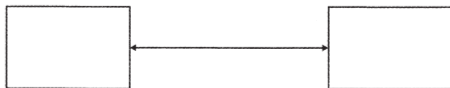
Dual Wavelength Single Fiber

The converter combine transmit and receive signal onto one fiber strand using two kind of wavelength. The units on both ends of a link are different. One module uses one wavelength to transmit and a second wavelength to receive, while the other module flips that relationship. For this reason these units are sold in pairs.



When using a converter that the TX (transmit) is 1310µm and the RX (receive) is 1550µm, then the other end need to have a combination of converter that the TX (transmit) is 1550µm and the RX (receive) is 1310µm.

The TX needs to connect to the other end's RX with the same wavelength.

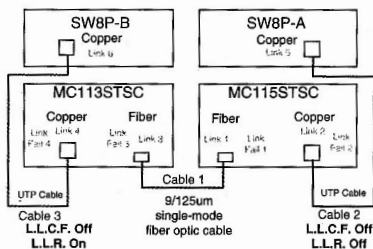


Link Pass Through Function

LLR (Link Loss Return)

When a device connected to the converter and the fiber line loss the link, the converter's fiber will disconnect the link of transmit.

The switch 5 is to enable or disable the LLR function of the media converter.



Test Result:

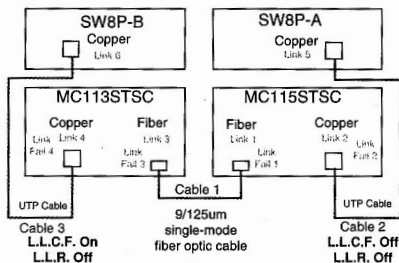
Link Status	Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link Fail 1 LED	Link Fail 2 LED	Link Fail 3 LED	Link Fail 4 LED
Disconnect										
Cable 1	Off	On	Off	On	On	On	On	Off	On	Off
Cable 2	On	Off	On	On	Off	On	Off	On	Off	Off
Cable 3	On	On	On	Off	On	Off	Off	Off	Off	On

Note: When using two converters, don't enable the both device's LLR function at the same time.

LLCF (Link Loss Carry Forward)

When a device connected to the converter and the TP line loss the link, the converter's fiber will disconnect the link of transmit, so that the other ends will know that there is a linkage error on this end. And when the Fiber line loss the link, the converter's TP will be disconnected, and the other end will know that there is a linkage problem exist.

The switch 6 is to enable or disable the LLCF function of the media converter.



Test Result:

Link Status	Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link Fail 1 LED	Link Fail 2 LED	Link Fail 3 LED	Link Fail 4 LED
Disconnect										
Cable 1	Off	On	Off	Off	On	Off	On	Off	On	Off
Cable 2	On	Off	On	On	Off	On	Off	On	Off	Off
Cable 3	Off	On	Off	Off	On	Off	On	Off	Off	On

Specifications

Applicable Standards	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX, 100BASE-FX
Ports	1 x 10/100BASE-TX port, 1 x 100BASE-FX port
Speed	10/20Mbps for half/full-duplex 100/200Mbps for half/full-duplex
LED Indicators	Per Unit:- Power TP: FDX/COL, LINK/ACT, FAIL, Speed Fiber: FDX/COL, LINK/ACT, FAIL
Cable	10BASE-T: 2-pair UTP Cat. 3,4,5, up to 100 m 100BASE-TX: 2-pair UTP Cat. 5, up to 100 m 100BASE-FX: 10/125um single mode fiber optic cable
Dimensions	L120 x W88 x H25 mm
Power	External power adapter 7.5V 1.5A
Power Consumption	3W Max.
Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
Storage Temperature	-25°C ~ 70°C (-13°F ~ 158°F)
Humidity	10 ~ 90%, non-condensing
Emissions	FCC Class A, CE Class A, VCCI Class A

LIMITED WARRANTY

D-Link provides this limited warranty for its product only to the person or entity who originally purchased the product from D-Link or its authorized reseller or distributor.

Limited Hardware Warranty: D-Link warrants that the hardware portion of the D-Link products described below (“Hardware”) will be free from material defects in workmanship and materials from the date of original retail purchase of the Hardware, for the period set forth below applicable to the product type (“Warranty Period”) if the Hardware is used and serviced in accordance with applicable documentation; provided that a completed Registration Card is returned to an Authorized D-Link Service Office within ninety (90) days after the date of original retail purchase of the Hardware. If a completed Registration Card is not received by an authorized D-Link Service Office within such ninety (90) period, then the Warranty Period shall be ninety (90) days from the date of purchase.

<i>Product Type</i>	<i>Warranty Period</i>
Product (excluding power supplies and fans)	One (1) Year
Power Supplies and Fans	One (1) Year
Spare parts and spare kits	Ninety (90) days

D-Link’s sole obligation shall be to repair or replace the defective Hardware at no charge to the original owner. Such repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement Hardware need not be new or of an identical make, model or part; D-Link may in its discretion may replace the defective Hardware (or any part thereof) with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. The Warranty Period shall extend for an additional ninety (90) days after any repaired or replaced Hardware is delivered. If a material defect is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to repair or replace the defective Hardware, the price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware (or part thereof) that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty: D-Link warrants that the software portion of the product (“Software”) will substantially conform to D-Link’s then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original delivery of the Software for a period of ninety (90) days (“Warranty Period”), if the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. D-Link’s sole obligation shall be to replace the non-conforming Software (or defective media) with software that substantially conforms to D-Link’s functional specifications for the Software. Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. The Warranty Period shall extend for an additional ninety (90) days after any replacement Software is delivered. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

What You Must Do For Warranty Service:

Registration Card. The Registration Card provided at the back of this manual must be completed and returned to an Authorized D-Link Service Office for each D-Link product within ninety (90) days after the product is purchased and/or licensed. The addresses/telephone/fax list of the nearest Authorized D-Link Service Office is provided in the back of this manual. **FAILURE TO PROPERLY COMPLETE AND TIMELY RETURN THE REGISTRATION CARD MAY AFFECT THE WARRANTY FOR THIS PRODUCT.**

Submitting A Claim. Any claim under this limited warranty must be submitted in writing before the end of the Warranty Period to an Authorized D-Link Service Office. The claim must include a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same. The original product owner must obtain a Return Material Authorization (RMA) number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided. After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. The packaged product shall be insured and shipped to D-Link, 17595 Mt. Herrmann Street Fountain Valley, CA 92708 USA, with all shipping costs prepaid. D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link's reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

What Is Not Covered:

This limited warranty provided by D-Link does not cover:

Products that have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed;

Initial installation, installation and removal of the product for repair, and shipping costs;

Operational adjustments covered in the operating manual for the product, and normal maintenance;

Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; and

Any hardware, software, firmware or other products or services provided by anyone other than D-Link.

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY OF ANY KIND INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS.

EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

Limitation of Liability: TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT.

GOVERNING LAW: This Limited Warranty shall be governed by the laws of the state of California.

Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This limited warranty provides specific legal rights and the product owner may also have other rights which vary from state to state.

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den spätem Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Um eine Beschädigung des Gerätes zu vermeiden sollten Sie nur Zubehörteile verwenden, die vom Hersteller zugelassen sind.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sichern Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen. Verwenden Sie nur sichere Standorte und beachten Sie die Aufstellhinweise des Herstellers.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Die Netzanschlußsteckdose muß aus Gründen der elektrischen Sicherheit einen Schutzleiterkontakt haben.
10. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
11. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
12. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.

13. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. Elektrischen Schlag auslösen.
14. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
15. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a – Netzkabel oder Netzstecker sind beschädigt.
 - b – Flüssigkeit ist in das Gerät eingedrungen.
 - c – Das Gerät war Feuchtigkeit ausgesetzt.
 - d – Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e – Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f – Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
16. Bei Reparaturen dürfen nur Originalersatzteile bzw. den Originalteilen entsprechende Teile verwendet werden. Der Einsatz von ungeeigneten Ersatzteilen kann eine weitere Beschädigung hervorrufen.
17. Wenden Sie sich mit allen Fragen die Service und Reparatur betreffen an Ihren Servicepartner. Somit stellen Sie die Betriebssicherheit des Gerätes sicher.
18. Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden, Für einen Nennstrom bis 6A und einem Gerätegewicht größer 3kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75mm² einzusetzen.

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FCC Warning

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 this 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 his own expense.

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