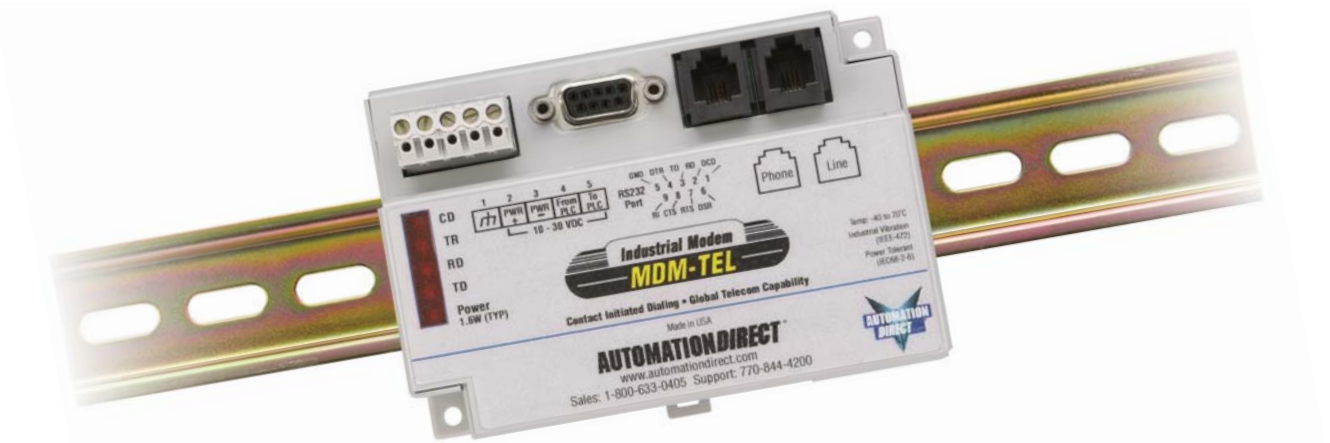# MDM-TEL INDUSTRIAL MODEM

Reduce design time

The MDM-TEL industrial serial modem has the features to meet your application requirements in a straight-forward manner. You won't need to concoct a way to make it work. The MDM-TEL uses an industrial version of the standard PC modem chip set, so it supports the full set of AT commands and features. The contact-initiated dialing feature gives the MDM-TEL functionality that is not found in most modem products, such as the ability to dial a pager. The MDM-TEL will dial out and send a pre-programmed string whenever it detects power on its "From PLC" contact. The "To PLC" contact allows a controller to monitor the modem's activity. The MDM-TEL complies with telephone systems around the world. Whether you have domestic or international customers, the MDM-TEL can go where your equipment goes. Required to use a specific PLC? No problem. The MDM-TEL is compatible with most brands. And with the MDM-TEL, you can avoid repeating the design and qualification process. Our modems have a five-year guaranteed availability.

Simplify installation

MDM-TEL's PC software includes an advanced Windows-based Configuration Wizard for easy set-up. The MDM-TEL comes ready for either DIN-rail or panel mounting. Requiring only 1.6 W of 24 VDC power, the MDM-TEL is perfect for control panels and remote locations without the need for a 110 VAC source.

Increase reliability

The MDM-TEL has been designed for the industrial environment. It will survive extreme temperatures, as well as dirty and unreliable industrial power. Meeting UL 1604 (Class I Div. 2) and the IEC68-2 standard for vibration resilience, the MDM-TEL will provide years of reliable performance in applications where other modems just shouldn't go.

Features:

- Contact-initiated dialing allows you to:
  - Report an alarm
  - Report an event
  - Send a message to a pager
- Works with most PLCs (Null Modem included)
- Auto answer capability
- Global Telecom capability
- DC-powered (no external transformer needed)
- Offers choice of DIN rail or panel mounting
- UL 508 (PLC enclosure), UL 1604 Class I, Div. 2, CSA, and CE-listed
- Rated -30C to +70C
- Includes modem set-up software (Windows)
- No DIP switches or jumpers
- Includes RS232 (DB9) modem configuration cable

MDM-TEL

MDM-TEL SPECIFICATIONS

Mounting dimensions

FRONT VIEW

Note: Screw holes are provided as an alternative to DIN rail mounting.

SIDE VIEW

MDM-TEL Performance Specifications	
Telephone Line	
Max. data rate	33.6 kbps (V.34)
Compatibility	V.34, V32bis, V.32, V.22, V.22A/B, V.23, V.21, Bell 212A and 103
Data compression	V.42 bis MNP5
Error correction	V.42 MNP 2-4
Max. fax rate	14.4 kbps
Fax capabilities (V.21)	Group 3 (V.33,V.17,V.29,V.27 ter, V.21)
Ringer equivalent	0.3
Line/auxiliary jack	RJ11
RS232 Port	
Max. RS232 rate	115.2 kbps (Kilobaud)
RS232 (DB9 female)	TD, RD, CTS, RTS, CD, DTR, DSR, RI, GND
Command set	All standard AT and S register commands,incl. Class 1 & 2 Fax
Status LEDs	
CD (carrier detect)	Carrier detected on the phone line
TR (terminal ready)	Host connected and ready
RD (receive data)	Data is coming from the serial port
TD (transmit data)	Data being sent out the serial port
Power	On when power is present
General Characteristics	
Input power	10-30 VDC
Input current	65 mA @ 24 VDC
Operating temperature	-30°C to 70°C (-40°C to 85°C storage)
Humidity	5% to 95% RH (non-condensing)
Flammability	UL 94V-0 materials
Telecom certification	FCC part 68, Industry Canada CS03-8, CTR21 (98/482/EC); A CA TS 001-1997; ACA TS 002-1997
Electrical safety	UL 508, CSA C22. 2/14; EN61010-1 (IEC1010), IEC 950: 1991, AS/NZS3260-1993
EMI emissions	FCC part15, ICES-003, Class A; EN55022; AS/NZS3548-1995
EMC immunity	EN50082-1 (IEC801-2, 3, 4)
Surge withstand	IEEE-472 (ANSI C37.90)
Vibration	IEC68-2-6
Hazardous locations	UL,1604, CSA C22.2/213-M1987, Class 1, Div 2, Groups A,B,C,D) Cenelec EN50021 (EEx nA II T4)
Mounting	DIN rail or panel mount
PLC Discrete I/O Interface	
Trigger input	Connects to PLC output. Starts auto-dialing when TRUE.
Voltage range	9 to 30 VDC (6.5 mA at 24 VDC)
Max OFF voltage	5 VDC
Online output	Output is ON as long as a connection exists (carrier detect).
Output type	Sourcing, switches power supply 100mA max output current
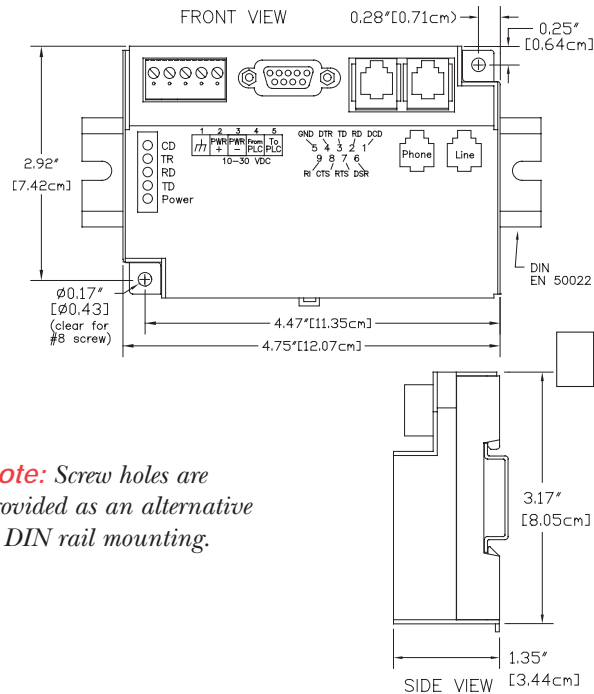
Complete documentation

The modem wizard and user manual are provided on the MDM-TEL CD-ROM, or may be downloaded from www.automationdirect.com. An application note with help for many common situations is included.
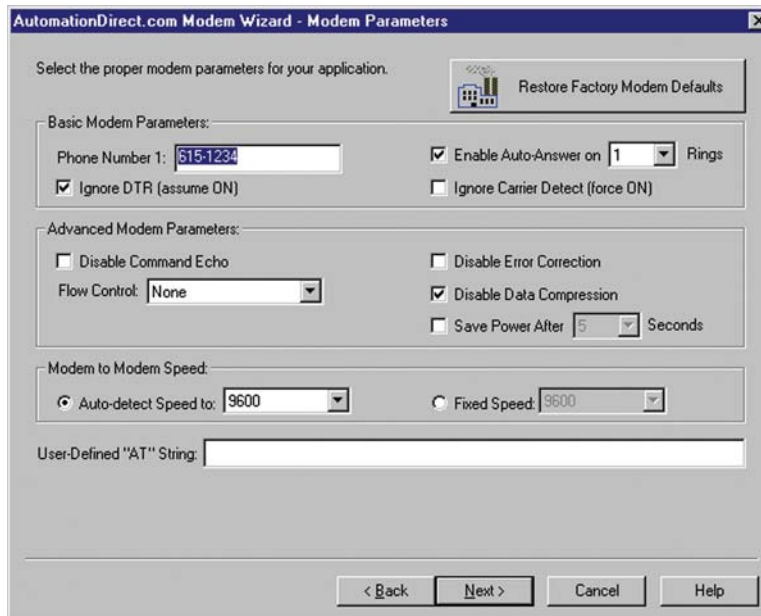
*Easy set-up with modem wizard software*

MODEMS MADE SIMPLE WITH AUTOMATIONDIRECT

Check out these examples of basic telephone modem solutions. For detailed information on configuring your system, visit our Technical Support section at www.automationdirect.com and link to the modem support technical notes.
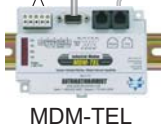
Coordinated control

PLC automatically initiates call and coordinates control with no human intervention. Modems dial on PLC signal and return input to PLC after telephone line connection has been established.
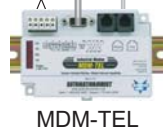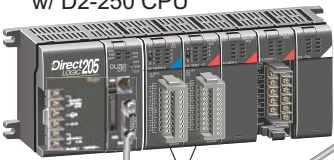
DL205 PLC
w/ D2-260 CPU
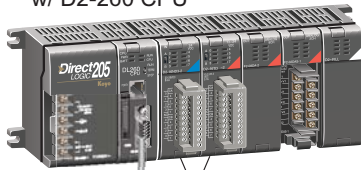
D2-DSCBL-1 with
null modem adapter*
(HD15M to DB9M
null modem cable)

MDM-TEL

DL205 PLC
w/ D2-250 CPU

MDM-TEL

Remote support

Connect to your PLC from a remote location to program, update, or troubleshoot.

PC with internal modem
running *Direct*SOFT32
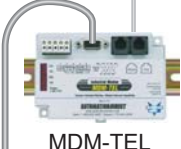
MDM-TEL

D2-DSCBL with null modem adapter*
(RJ12 to DB9M null modem cable)
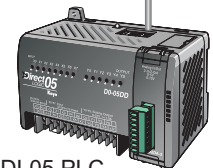
DL05 PLC

Data sharing

Collect data from field PLCs to monitor performance or capture production information.

DL06 PLC

MDM-TEL

PC with internal modem
running DSData (DDE/OPC)
to office application
or Visual Basic

D2-DSCBL-1 with null modem adapter*
(HD15M to DB9M null modem cable)

* Null modem adapter supplied with MDM-TEL

WIRELESS AUTOMATION CONTROL

CIRRONET

Wireless solution

After numerous requests to supply an economical radio suitable for industrial control, AUTOMATIONDIRECT chose as a partner Atlanta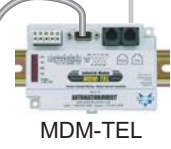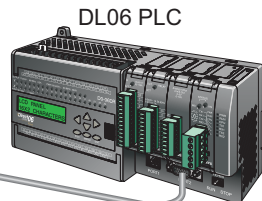-based Cirronet, which has well over a decade of success in developing innovative wireless data networking and communications products for industrial, OEM and Internet access markets. Employing proprietary Frequency Hopping Spread Spectrum (FHSS) radio transmission technology, Cirronet's products offer reliable, long range performance and unparalleled immunity against jamming and interference. The new CR series serial and Ethernet radios were developed specifically for the industrial automation marketplace.

CR Series Radios feature:

- Transmission at 2.4 GHz, the only truly international unlicensed frequency band
- Frequency Skip feature that prevents interference with/from any co-located 802.11 wireless LANs
- Reliable data throughput using Cirronet's patented FHSS technology; assures reliable performance even in high-multipath and noisy RF environments. CRC error checking and ARQ (automatic repeat-request) schemes for auto-retransmission of bad packets assures errorless data reception.
- Long range with high speed (up to 1.23 Mbps total over-the-air bandwidth in point-to-point and multipoint applications), up to 1.5 miles (farther with high gain antenna)
- License-free operation avoids the hassles and expense of obtaining an FCC license
- Wide operating temperature range from 30 degrees Celcius to +70 Celcius
- Rugged packaging well suited to varied operating conditions; external radios are housed in NEMA 4X/IP 66 enclosures ideal for outdoor and harsh environments.
- Easy-to-understand configuration tools for quick setup
- Fully programmable setup to meet specific site and performance requirements
- UL 2279 listed and CE marked

What are FHSS, DSSD, and OFDM radios?

1.FHSS (Frequency Hopping Spread Spectrum): A FHSS radio signal is broadcast on very narrow band in very short bursts. The broadcast signal "hops" around within the channel frequency band. Both transmitter and receiver are synchronized to the same hopping pattern. FHSS provides only 3 Mbps capacity links, but it is a very robust technology, with excellent behavior in harsh environments characterized by large areas of coverage, multiple collocated cells, noises, multipath, Bluetoooth presence, etc.

2. DSSS (Direct Sequence Spread Spectrum) A DSSS data signal is combined with a higher-data rate data stream. The resulting signal is spread across at least 10x the bandwidth of the unspread signal. The wider data-stream provides redundancy for bits damaged in transmission. DSSS provides 11 Mbps capacity links, but it is sensitive to RF interference (collocation, multipath, near/far, Bluetooth). The most limiting factor, multipath, may be minimized by using the technology for short distances or in point to point applications.

3. OFDM (Orthogonal Frequency Division Multiplexing) spread spectrum technique distributes the data over a large number of carriers that are spaced apart at precise frequencies. This spacing provides the "orthogonality" in this technique, which prevents the demodulators from seeing frequencies other than their own. The benefits of OFDM are high spectral efficiency, resiliency to RF interference, and lower multipath distortion. OFDM is used by Digital Audio Broadcasting (DAB) standard in the European market and development is ongoing for wireless Local Area Networks - point-to-point and point-to-multipoint configurations.

Configurations

Base (or master) — Point-to-point — Remote (or slave)

Point-to-mulitpoint

Base (or master) — Remote (or slave) — Remote (or slave) — Remote (or slave)

Why not use 802.11 wireless Ethernet for all my wireless communication?

1. 802.11b uses high speed, short range, DSSS radios. It is fine for transferring files in a home or office environment but offers a much less robust RF connection than FHSS radios.

2. 802.11b systems are often used for IT LAN, barcode systems, or other non-critical, short-range networks within industrial facilities. Using a non-802.11 technology isolates control network remains from other LANs and reduces the chance of adver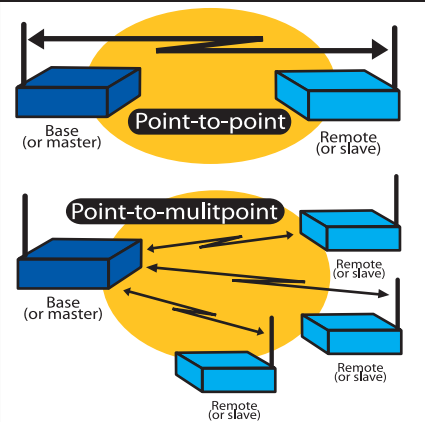se RF interaction. The CR series radios have a unique "Frequency Skip" feature that avoids the 802.11 WI-FI Ethernet channels. This means your control radios will not interfere with or suffer interference from co-located PC wireless networks.

3. Hackers expend considerable effort to pierce 802.11 data encryption and other software security schemes. Hackers aren't likely to be familiar with non-802.11 systems, nor are they likely to have radios compatible with a non-802.11 system.

CIRRONET™

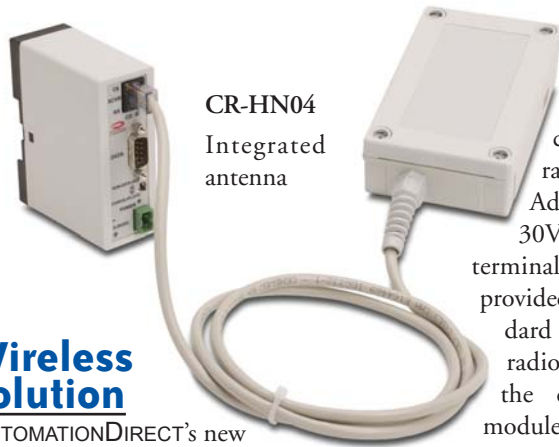# CR-HN SERIES SERIAL RADIO MODEMS

CR-HN04
Integrated antenna

Wireless solution

AUTOMATIONDIRECT's new CR-HN series serial radios are versatile, low cost, 2.4 GHz frequency-hopping spread spectrum wireless data modems. AUTOMATIONDIRECT and Cirronet™ have worked together to repackage Cirronet's popular HopNet 210 radio modem to be the most practical wireless solution for the industrial controls market. The CR-HN radios are ideal for SCADA applications as remote modems in multipoint configurations and are an extremely cost-effective solution for point-to-point installations.

A DIN-rail mounted Serial Adapter Box, one of the major components of the CR-HN series, resides in the control panel while the NEMA 4X radio module is mounted externally to the control panel to achieve the best line-of-sight link to the other radio antennas in the system. For most purposes, the CR-HN radio module incorporates an integral 6dB antenna, creating a "single piece" modem. The integral 6dB patch antenna provides a line-of-sight range of several miles. For extended distances or in obstructed environments, higher gain and/or directional antennas are available. A standard serial cable connects the communicating device to the CR-HN serial adapter. Similar "serial-quality" cabling is used for the link between the serial adapter and radio module. In most cases, no expensive, troublesome RF quality cabling is required. The CR-HN radio module simply installs on the side of a building or attaches to a mast where the antenna would normally be mounted.

When using a specialty antenna, a short, pre-manufactured, RF cable connects the antenna to the radio module. The Serial Adapter Box accepts 10-30VDC via a removable screw terminal plug. An adapter is provided for connection to a standard 120VAC receptacle. The radio module is powered over the cable linking the radio module to the serial adapter.

The CR-HN series has exceptional multipath fade rejection as well as immunity to jamming. Up to 16 networks can be grouped together with 63 remotes (slaves) per network. The HN series radios have a unique "Frequency Skip" feature to avoid the standard 802.11 wireless WI-FI Ethernet channels. This means your control radios will not interfere with or suffer interference from PC wireless networks that may be grouped together. Selectable transmit power levels of 10mW and 100mW allow the CR-HN series to be used worldwide even with the gain of the patch antenna. The CR-HN series radios communicate over the air at460.8 Kbps and support both point-to-point and point-to-multipoint networks.

They are field proven performers that deliver robust, reliable performance in hostile industrial environments. The CR-HN series is UL, FCC and CE marked.

Features:
- 2.4 GHz Frequency Hopping Spread Spectrum Technology
- Unique "Frequency Skip" setting to avoid 802.11 Wireless Ethernet LANs
- 460 Kbps over the air and 115 Kbps I/O data rates
- 64 hopping patterns
- FCC Certified and CE marked
- Integral 6dB patch antenna
- RS-232 asynchronous serial interface
- Transparent and MODBUS suport modes

Benefits:
- Exceptional immunity to multi-path fading and jamming
- Grouping of multiple networks
- No interference with/from 802.11 Wireless Ethernet networks
- License-free applications
- Cost-effective, simple installation
- Connects to PC Serial ports
- Point to point and point to multipoint

CR-HN Series Serial Radio Modems		
Part Number	**Description**	**Price**
CR-HN50	Hop-Net radio with 50ft cable and integral antenna	check
CR-HN50X	Hop-Net radio with 50ft cable and external antenna connector	check!
CR-HN04	Hop-Net radio with 4ft cable and integral antenna	check
CR-HN04X	Hop-Net radio with 4ft cable and external antenna connector	check
CR-HNSA	Replacement Serial Adapter for all CR radios	check
CR-OMN2402	Replacement Dipole Antenna, 2.4GHz, 2dB, right angle	check
CR-OMN2409	9dB, 2.4 GHz, Omni Antenna	check
CR-CRN2409	9dB, 2.4 GHz, Corner Reflector Antenna	check
CR-PAR2418	18dB, 2.4 GHz, Parabolic Dish Antenna	check
CR-CBL24N	24" RF Cable, Reverse TNC to N connects an external antenna to a CR radio	check
CR-CBL60N	60" RF Cable, Reverse TNC to N connects an external antenna to a CR radio	check
CR-REPETR	Dual radio repeater with rechargeable lead-acid battery. Requires two CR series antennas and two series CR-CBLxxN RF cables. Non-stock item, 3 week delivery.	check

SERIAL RADIO MODEM SPECIFICATIONS

CR-HN04X
Reverse TNC male connector requires CR series antenna

CR-HN04
Integrated antenna

| CR-HN Series Specification	
Electrical Specifications	
Frequencey Band	2.4 GHz
Licensing	Unlicensed under FCC Part 15, ETSI 300.328
Number of Channels	75 or 25
Hopping Patterns	User configurable, 64 patterns (networks) available
I/O Data Rate	Up to 115.2 Kbps Asynchronous
RF Channel Rate	460 Kbps
Line of Sight Range	> 5 Miles
RF Bandwidth	750 KHz
Modulation Type	GFSK
Output Impedance	50 Ω
Network Protocol	Dynamically Assigned TDMA with ARQ
Transmit Power	EIRP: +16dBm/+24dBm
Receive Sensitivity	-99dBm
Power Requirements	10 - 30VDC, 160mA typical, 750mA surge
Serial Data Interface	Asynchronous RS-232
Mechanical Specifications	
Antenna	CR-HN50 & CR-HN04: Integrated 6dB Patch CR-HN50X & CR-HN04X: Reverse TNC Male Connector, requires CR series antenna
Case Materials	Polycarbonate, NEMA 4X
Dimensions: in(mm)	5.13 (130) x 3.13 (79) x 1.38 (35) (excl. flange)
Weight excl. cable	235g
Data Connector	9-Pin D
Power Connector	2 Pin, plug-in, screw terminal
Cables	CR-HN04 comes with 4 feet of cable CR-HN50 comes with 50 feet of cable
LED Indicatore	Power, Tx, Rx, Carrier Detect
Environmental Specifications	
Temperature Range	-30°C to 70°C (radio enclosure)
Humidity	95% at 40°C, Non-condensing
Approvals	
UL 508	
CE	

FA-ISOCON UNIVERSAL ISOLATED NETWORK ADAPTER

FA-ISOCON

The FA-ISOCON Universal Isolated Network Adapter is used to place RS-232 devices such as PLCs, operator interfaces, industrial computers, etc. on an RS-422 or RS-485 multidrop network. The Network Adapter converts RS-232 signal levels to isolated RS-422 or RS-485 signal levels. This network adapter is similar to our other RS-232/422 converters, but it offers the added benefit of network isolation. This adapter is especially useful in noisy environments where data corruption due to induced noise is possible. The FA-ISOCON features Automatic Network Transmitter Enable (ANTE) so that an RTS output is not required on the connected RS-232 device. The FA-ISOCON is a direct functional replacement for the FA-ISONET when CTS Controlled Transmit Enable(CCTE) mode is active. Having both ANTE and CCTE modes, the FA-ISOCON is compatable with most RS-232 devices.

The diagram below shows a simple example of an FA-ISOCON used for PC to multiple PLC communications.
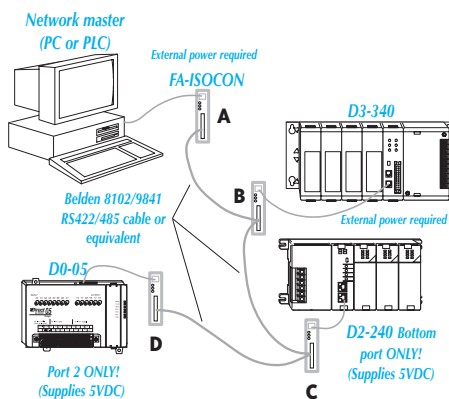
Key features

Following are some of the key features and benefits of the FA-ISOCON:

- Dipswitch selectable Automatic Network Transmitter Enable so that an RTS output is not required on the connected RS-232 device.
- Dipswitch selectable CTS Controlled Transmit Enable mode for backwards compatability with the FA-ISONET.
- Dipswitch select termination and bias resistors; short/open TXD+/RXD+ and TXD-/RXD- terminals for 1/2 duplex comm.
- Isolation removes ground loop currents from data lines. Noise voltages resulting from transformer-like coupling are also eliminated.
- Many forms of radiated noise are reduced to negligible levels.
- FA-ISOCON can be powered from 24VDC or 5VDC. (Unit may be powered directly from CPU pins on CPUs with +5V pins or the auxiliary 24VDC power supply on I/O bases.)
- Unit has RS-232 transmit and receive LEDs and an RS422/485 Transmitter Enable LED to simplify troubleshooting.

RJ12 port allows you to use the modular cables (included) to quickly connect the D0-05, D2-240 or D3-340 to the FA-ISO-CON. Connections can be made to the D3-350, DL405 CPUs and PCs with the connectors that are included.

Specifications

- Max. network distance: 4000 feet
- Max. number of devices: 32 per network
- Max. baud rate: 115.2 Kbaud
- Supply voltage: 5VDC @ 100mA max. (from CPU) or 24VDC @ 70mA (external source)
- Max. driver load: 62 ohms
- Driver voltage: ±1.5V minimum
- No load current: 80mA
- Max. current: 100mA (62 ohms)
- Isolation resistance: >10^{14} ohms/7pF
- Voltage withstand: 1.2KVrms/1s 1.0KVrms/1 minute
- Operating temp: 0 to 60ºC (32 to 140ºF)

Installation is a 'snap'

The FA-ISOCON comes with an attached DIN rail connector. Simply hook the top of the DIN connector on the DIN rail, then pull the unit down and rotate the bottom of the DIN connector onto the DIN rail (or use the provided holes to flush mount it on a panel). The adapter's RJ12 serial port can be connected to a PC or a *Direct*Logic CPU port using one of the supplied cables/connectors. Or, use the adapter's RS-232 terminal block to connect to a serial device. Connect the RS-422/485 communications wiring to the convenient RS-422/485 terminal blocks.

Adapter components

- FA-ISOCON Isolated Network Adapter with attached DIN mounting bracket
- 25-pin male to RJ12 6P6C connector
- 9-pin female to RJ12 6P6C connector
- 1' cable, RJ12 6P6C plug to RJ11 4P4C plug
- 1' cable with RJ12 6P6C plug to RJ12 6P6C plug

Dimensions including DIN bracket and terminal blk. HxWxD (4.55" x 0.90" x 4.69")

A) FA-ISOCON converts the network master's (computer or PLC, etc.) RS-232C communication signal levels to RS-422/485.

B) FA-ISOCON converts the RS-422/485 signal levels back to RS-232C for a connection to the D3-340 CPU bottom port.

C) FA-ISOCON converts the RS-422/485 signal levels back to RS-232C for a connection to the D2-240 CPU bottom port.

D) FA-ISOCON converts the RS-422/485 signal levels back to RS-232C for a connection to the D0-05 CPU port 2.

Removeable terminal blocks make it easy to connect communication wiring. (Replacement terminal plug kit FA-ISOCON-P)

Network master (PC or PLC)
External power required
FA-ISOCON
Belden 8102/9841 RS422/485 cable or equivalent
D3-340
External power required
D0-05
D2-240 Bottom port ONLY! (Supplies 5VDC)
Port 2 ONLY! (Supplies 5VDC)

F2-UNICON UNIVERSAL CONVERTER
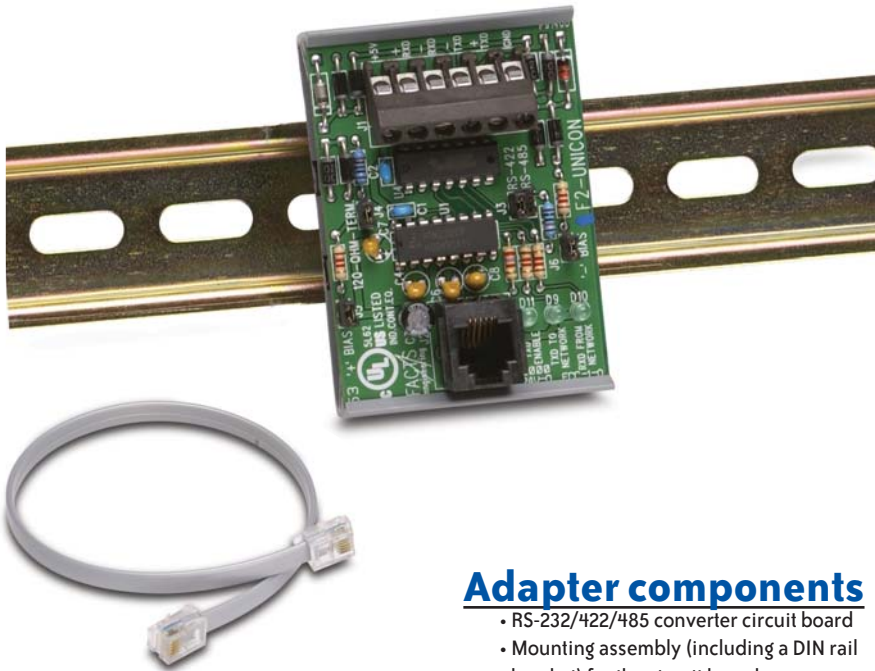
General specifications
- Max. network distance: 4000 feet
- Max. baud rate: 19.2 Kbaud
- Supply voltage: 5VDC (from CPU)
- Max. driver load: 62 ohms
- Driver voltage: ±1.5V minimum
- No load current: 65mA
- Max. current: 100mA
- Operating temp: 60ºC (140ºF)

Example of system using F2-UNICON
A) FA-ISOCON converts the network master's (computer) RS-232C communications card signal levels to RS-422/485, which is suitable for a multi-drop network.
B) F2-UNICON converts the RS-422/485 signal levels back to RS-232C for a connection to the D2-240 CPU bottom port.
C) F2-UNICON converts the RS-422/485 signal levels back to RS-232C for a connection to the D2-240 CPU bottom port.
D) F2-UNICON converts the RS-422/485 signal levels back to RS-232C for a connection to the DL05 port 2

Adapter components
- RS-232/422/485 converter circuit board
- Mounting assembly (including a DIN rail bracket) for the circuit board
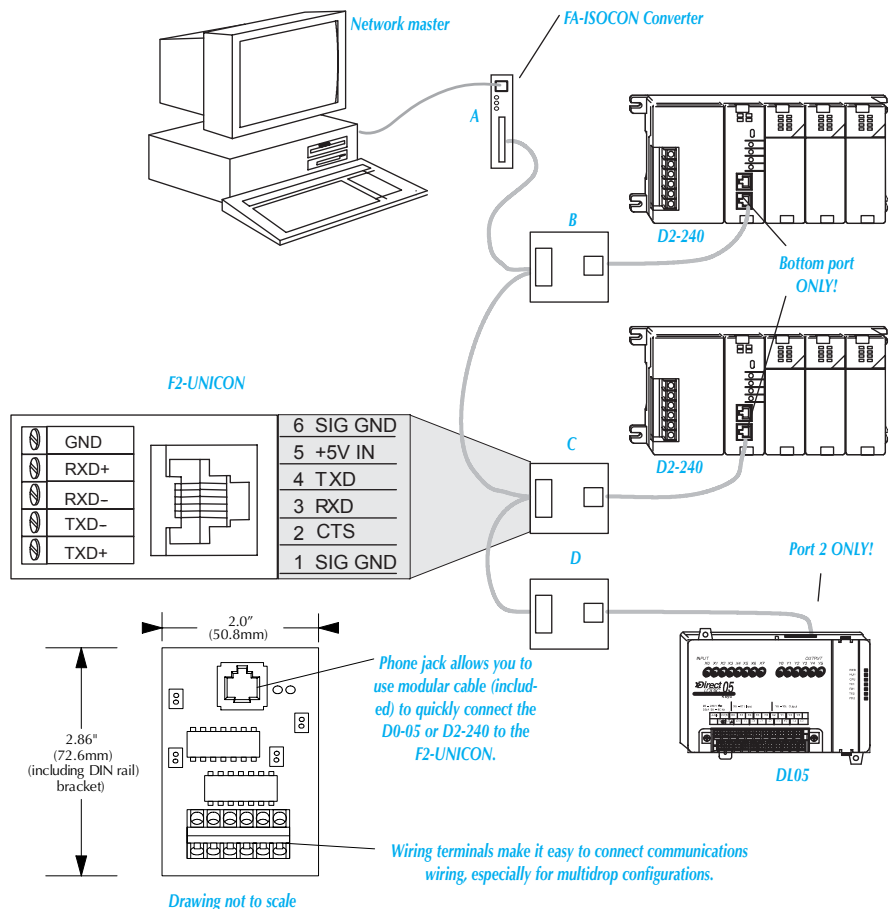- 1 ft. modular cable with two RJ12 6P6C plugs

F2-UNICON

The F2-UNICON Universal Converter converts RS-232C signal levels to RS-422 signal levels or RS-422 signal levels into RS-232C signals. The F2-UNICON does not offer the benefit of network isolation that the FA-ISOCON offers. The F2-UNICON has been specifically designed to be used with the DL05 and D2-240 CPUs. It offers features such as:

- F2-UNICON mounts to DIN rail
- F2-UNICON does not require an external power source. It obtains power from the +5V pin on the D2-240 CPU port (bottom port) and the DL05 (port 2).
- F2-UNICON has transmit and receive LEDs to simplify troubleshooting.

Installation is a "snap"

The F2-UNICON comes with a DIN rail housing for the circuit board. Simply snap the board into the housing and mount it on a DIN rail (or flush mount it on a panel). Connect the communications wiring to the convenient terminal blocks, then connect the adapter to the CPU port with the cable.

Network master

FA-ISOCON Converter

A

B

D2-240

Bottom port ONLY!

C

D2-240

Port 2 ONLY!

D

DL05

F2-UNICON

GND		6	SIG GND
RXD+		5	+5V IN
RXD–		4	T XD
TXD–		3	RXD
TXD+		2	CTS
		1	SIG GND

2.0″ (50.8mm)

2.86" (72.6mm) (including DIN rail) bracket)

Phone jack allows you to use modular cable (included) to quickly connect the D0-05 or D2-240 to the F2-UNICON.

Wiring terminals make it easy to connect communications wiring, especially for multidrop configurations.

Drawing not to scale
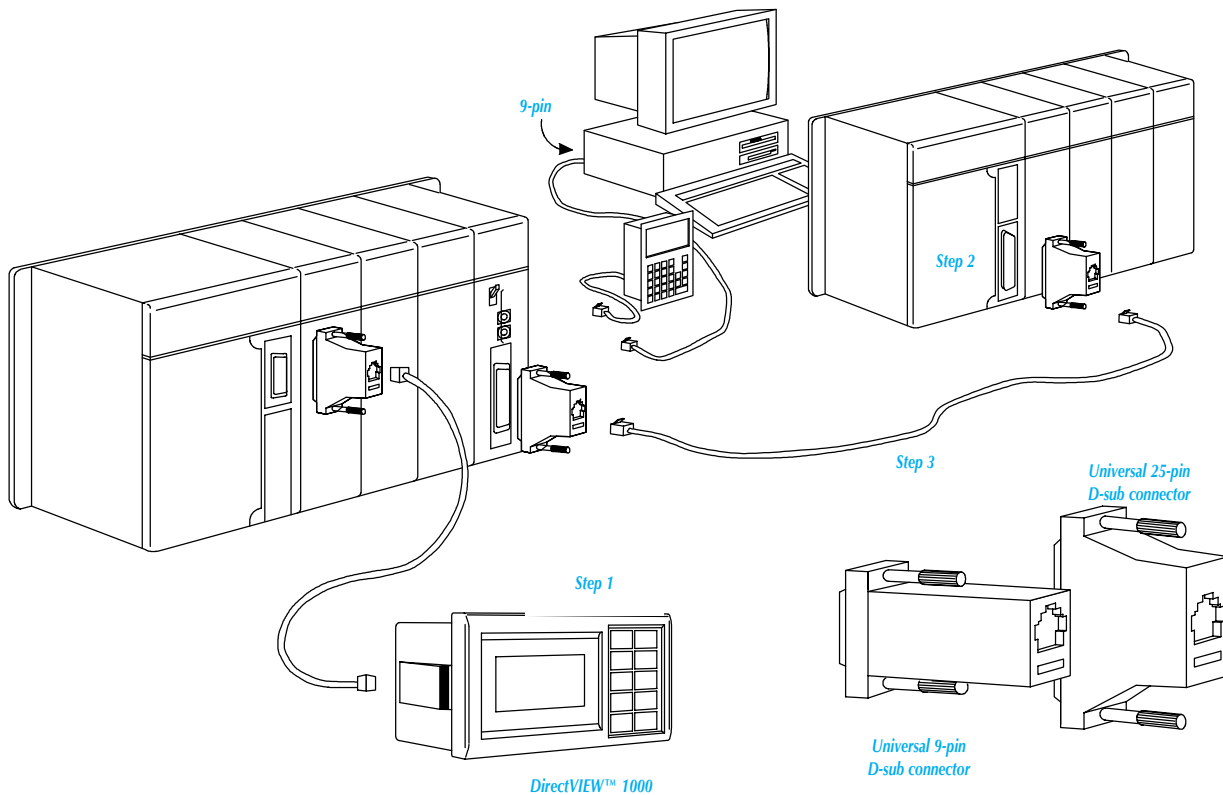
FA-CABKIT UNIVERSAL CABLE KIT

FA-CABKIT

The Universal Cable Kit (FA-CABKIT) allows you to connect various types of *Direct*LOGIC™ products with a RS-232C cable in a matter of minutes. The kit consists of a phone cable (with male plugs already attached) and several specially wired connectors. The special connectors are a D-sub style with built-in female phone jacks. This kit, with its wide variety of special connectors, allows for easy connections to many different products from each of the *Direct*LOGIC product families. The individual pieces are not sold separately.

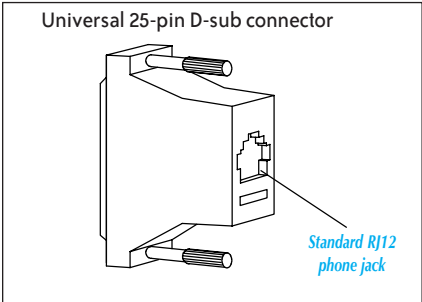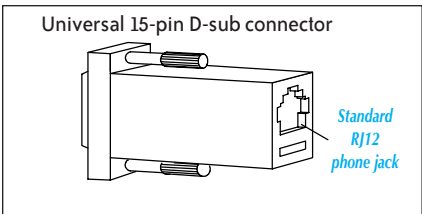## Follow these simple steps to use the cable kit:

1. Plug the proper universal connector (or cable) into the appropriate communication port of the host product (CPU, DCM, CoProcessor module, personal computer, operator interface, etc.).
2. Plug the proper universal connector onto the other device to be connected to the host system (DL405, DL305, DL205 (does not connect to the bottom port of the D2-250 CPU), DL105, DL05, CoProcessor module, Computer communication card, etc.).
   Note: For connection to Port 2 of the DL06, D2-250, D2-250-1 and D2-260, you can purchase the FA-15HD 15-pin connector to use in conjunction with this cable kit.
3. Connect the universal cable between the two connectors.
4. Verify that the circuit you created is correct before applying power.

WARNING: This cable system is designed for temporary testing situations and should not be used in actual applications. This cable is not shielded and is susceptible to electrical noise. Electrical noise can cause unpredictable operation that may result in a risk of personal injury or damage to equipment.

Comm.

9-pin

Step 2

Step 3

Step 1

Universal 25-pin
D-sub connector

Universal 9-pin
D-sub connector

DirectVIEW™ 1000

Communication Products **23–17**

FA-CABKIT UNIVERSAL CABLE KIT

The table lists various devices that can be connected quickly with the universal cable kit. To determine which parts you need to use, simply find the connection you wish to make in the table. Then match the devices required for that connection with their part number. Snap the pieces together and you're ready to communicate. The following six parts come with the Universal Cable Kit. These parts are not sold separately; they can only be purchased as a complete kit.

Standard phone-style connectors (RJ12), non-shielded

Standard phone and handset style connectors (RJ12, RJ11), non-shielded

Universal 9-pin female D-sub connector

Standard RJ12 phone jack

Universal 9-pin D-sub connector

Standard RJ12 phone jack

Universal 15-pin D-sub connector

Standard RJ12 phone jack

Universal 25-pin D-sub connector

Standard RJ12 phone jack
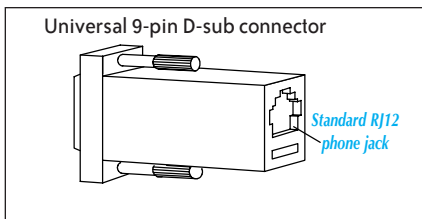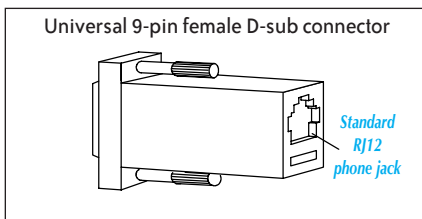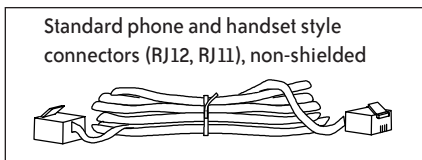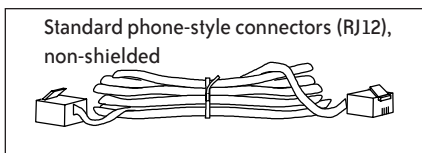
Universal cable kit

Bill of materials for the universal cable kit

Device Description
1. 7 ft. standard cable, 6P6C to 6P6C phone type
2. 6 ft. adapter cable, 6P6C to 4P4C phone type
3. AT connector 9-pin female to 6P6C connector
4. (ASCII BASIC module) 9-pin to 6P6C connector
5. DL405 15-pin to 6P6C connector
6. DL405 CPU and DCM 25-pin to 6P6C connector

DL05, DL06*, DL105, DL205*, and D3-350 CPU connections

Connection desired.. Devices required
1. DL05/06*/105/205*/DL350 to AT type computer 9-pin............................. 1,3
2. CPU to DV1000 1
3. CPU to DL205 or DL405 DCM 1,6
4. CPU to DL340 CPU.. 2
5. CPU to ABM (DL205 only) 1,4

DL305 D3-232-DCU connections

Connection desired.. Devices required
1. DCU to AT type computer 9-pin 1,6,3
2. DCU to DL405 series DCM (requires 2 kits) 1,6,6
3. DCU to DL340 CPU 2,6
4. DCU to ABM.. 1,6,4

DL305 CPU connections

Connection desired.. Devices required
1. DL340 CPU to AT type computer 9-pin 2,3
2. DL340 CPU to DL405 series CPU/DCM... 2,6
3. DL340 CPU to DL240 CPU 2
4. DL340 to ABM 2,4
5. DL340 CPU to DCU CPU 2,6

DL405 CPU (15-pin) top port connections

Connection desired.. Devices required
1. DL405 CPU to AT type computer 9-pin 1,5,3
2. DL405 CPU to DV-1000 1,5

DL405 CPU (25-pin) bottom port connections

Connection desired.. Devices required
1. DL405 CPU to AT type computer 9-pin 1,6,3
2. DL405 CPU to DL405 series DCM (requires 2 kits) 1,6,6
3. DL405 CPU to DL340 CPU 2,6
4. DL405 CPU to ABM 1,6,4

* Note: Connection to Port 2 of the DL06, D2-250, D2-250-1 and D2-260, requires the FA-15HD 15-pin connector (purchased separately) to use in conjunction with this cable kit.

High density 15-pin
D-sub connector (FA-15HD)

purchased separately

Standard RJ12 phone jack
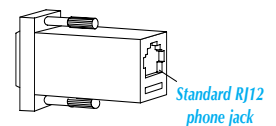
Note: For D-sub to terminal block adapters, see the Connection Systems section of this desk reference.

USB TO RS-232 CONVERTER

USB-RS232

This quality USB to RS-232 converter transparently connects serial devices to PC applications via a USB port. It is perfect for the user needing to connect to a serial port-based peripheral from a laptop PC with an available USB port but no serial port. The adapter driver creates a virtual serial port (using the next available COM number). Applications connect to the virtual COM port as if it were a standard serial port. The USB-serial conversion is completely transparent to the peripheral device.

Features:
- Flexible cable
- Premium quality
- Gold connectors
- Ergonomic molding for easy connection
- Industry standard color coded for easy installation
- Foil and braid shielding to reduce EMI/RFI interference
- Designed for high-speed transmissions
- LED power and TX/RX indicators
- Mates with PC DB9 serial cables (such as our D2-DSCBL PLC cable)
- 2 hex nuts included

Specifications:
- RS-232C standard
- Powered by the USB bus
- DB 9 male connector
- USB A male connector
- 6ft (1.8) cable
- USB 1.1 compliant
- Plug and Play

Operating Systems:
- Windows 98® and Windows 98 SE®
- Windows Millennium®
- Windows 2000 Professional®
- Windows 2000 Server® Family
- Windows XP Home®
- Windows XP Professional®

Compatible with AUTOMATIONDIRECT's:
- *Direct*LOGIC PLCs (*Direct*SOFT32 3.0C build 80 and later versions)
- EZTouch and EZText panels (EZ-TOUCHEDIT and EZ-TEXTEDIT software)
- Optimate panels (OP-WINEDIT software)
- GS series drives (GSoft software)
- MDM-TEL industrial modem (Modem Wizard software)
- Entivity's WinPLC & PC Control software
- Lookout*Direct* software

Note: USB-RS232 is not compatible with DirectTouch panels.

Hardware Requirements:
- Pentium II class processor or higher
- One available USB port

Device