DPI External Communications Kit

These Installation Instructions are provided with the DPI External Comms Kit. This document explains how to install a communications adapter (sold separately) into the kit, mount the kit in an enclosure, and connect the required cables.

These instructions also describe the accessory AC Power Adapter. See AC Power Adapter (20-XCOMM-AC-PS1) on page 3 for details.

External Comms Kit (20-XCOMM-DC-BASE)

Compatability

This kit is for use with only the following Allen-Bradley communication adapters (sold separately):

- 20-COMM-E EtherNet/IP
- 20-COMM-C ControlNet (coax)
- 20-COMM-Q ControlNet (fiber)
- 20-COMM-D DeviceNet (Series B or later)
- 20-COMM-B BACnet MS/TP
- 20-COMM-M Modbus/TCP

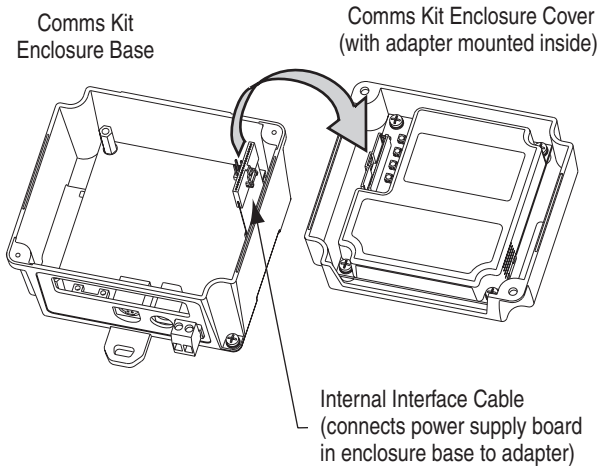
The DPI External Comms Kit is typically used to provide an additional network connection for a drive that already has a 20-COMM-* installed inside. For example, one network may be used for control and a second network may be used for configuration and data collection.

Installing the Communications Adapter

ATTENTION: Risk of equipment damage exists. The communications adapter contains ESD (Electrostatic Discharge) sensitive parts that can be damaged if you do not follow ESD control procedures. Static control precautions are required when handling the adapter. If you are unfamiliar with static control procedures, refer to *Guarding Against Electrostatic Damage*, Publication 8000-4.5.2.

1. Before you install the communication adapter into the Comms Kit, make sure to configure all of the adapter's switches and/or jumpers, if applicable, to appropriate settings. Refer to the Communication Adapter User Manual for details.
2. Remove the Comms Kit enclosure cover from the base by unfastening its two screws.
3. Fasten the communication adapter into the enclosure cover by using the adapter's captive screws (Figure 1). This also grounds the adapter.
4. The communication adapter is supplied with two Internal Interface (ribbon) cables. Use only the *longer* 15.24 cm (6 in.) Internal Interface cable. Plug one end of the cable into the mating connector on the power supply board in the base of the Comms Kit enclosure.

Figure 1 Mounting and Connecting the Adapter



5. Plug the other end of the Internal Interface cable into the mating connector on the communication adapter.
6. If using an Allen-Bradley I/O Board option (20-XCOMM-IO-OPT*) with the External Comms Kit, install the I/O board into the kit at this time. For details, see the I/O Board Installation Instructions provided with the board. Otherwise, fasten the enclosure cover onto the base using the two screws in the cover.

Mounting the External Comms Kit

ATTENTION: Risk of equipment damage exists. During panel or DIN rail mounting, be sure to prevent any debris (metal chips, wire strands, etc.) from falling into the Comms Kit. Debris that falls into the kit could cause damage on power up.

Panel or DIN rail mount the Comms Kit before connecting the adapter to the network and drive.

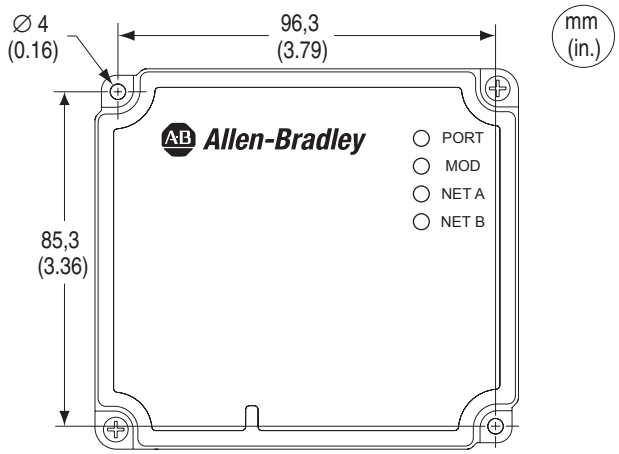
Minimum Spacing

External Comms Kits can be zero-stacked (side-by-side mounting). Allow 75 mm (3 in.) of space on the bottom of the enclosure for cable entry. Allow at least 75 mm (3.2 in.) of enclosure clearance depth to accommodate the Comms Kit.

Panel Mounting Using the Dimensional Drawing

Mount the Comms Kit to a panel using two M4 or #8 panhead screws (not included). Figure 2 shows mounting dimensions.

Figure 2 Panel Mounting Dimensions



Panel Mounting Procedure Using Comms Kit as a Template

The following procedure enables you to use the assembled Comms Kit as a template for drilling holes in the panel.

1. Using the assembled Comms Kit as a template, carefully mark the center of both holes on the panel.
2. Remove the Comms Kit to a clean location.
3. Drill and tap the mounting holes for the recommended M4 or #8 panhead screws (not included).
4. Place the Comms Kit back on the panel, and check for proper hole alignment.
5. Attach the Comms Kit to the panel using the mounting screws.

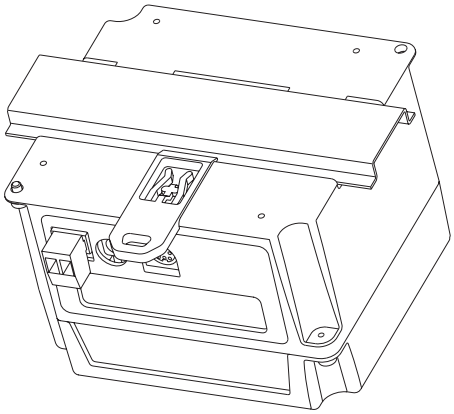
DIN Rail Mounting

The Comms Kit can be mounted using these DIN rails:

- 35 x 7.5 mm (EN 50 022 - 35 x 7.5)
- 35 x 15 mm (EN 50 022 - 35 x 15)

Before mounting the Comms Kit on a DIN rail, open the DIN rail latch. Press the DIN rail mounting area of the Comms Kit against the DIN rail, and manually lock the DIN rail latch (Figure 3).

Figure 3 DIN Rail Mounting

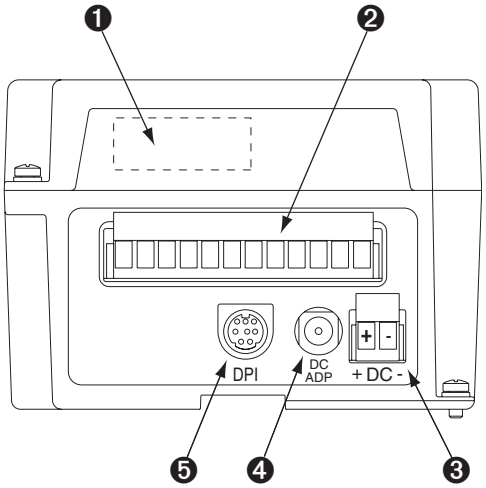


Electrical Connections

ATTENTION: Risk of equipment damage, injury or death exists. Unpredictable operation may occur if you fail to verify that parameter settings and switch settings are compatible with your application. Verify that settings are compatible with your application before applying power to the drive.

After the communication adapter (and I/O Board option, if used) is installed and the Comms Kit is mounted, connect all required cables. See Figure 4 and its related table showing the connectors and their connection procedures.

Figure 4 Connecting to the Comms Kit



Item	Description	Connection Procedure
1	Network Connector	Connection for the network. Insert the network cable plug into the mating connector on the communications adapter.
2	Optional I/O Terminal Block	See the I/O Board option (20-XCOMM-IO-OPT*) Installation Instructions for details.

Item	Description	Connection Procedure
❸	24 VDC Power Terminal Block (1)	Connection for 24 VDC (+15% / -25%) power source. Connect the " + " and " - " wires of the DC power source to the 2-pin linear plug (provided with Comms Kit), matching the respective polarity. Then insert the 2-pin linear plug into the mating **DC** power terminal block. **NOTE:** When powering the Comms Kit with the accessory 20-XCOMM-AC-PS1 power adapter, this terminal block can be used to daisy-chain 24 VDC to other kits (Figure 5).
❹	AC-to-DC Adapter Connector (1)(2)	Connection for AC-to-DC adapter, such as Allen-Bradley 20-XCOMM-AC-PS1, when not using a DC power source. Plug the adapter into the mating **DC ADP** connector.
❺	DPI Connector	Connection for DPI. Using a 1202-Cxx Communications Cable, connect one end into the mating **DPI** connector of the Comms Kit and the other end into the port on the bottom of the drive.

(1) The DC power source or AC-to-DC converter used to power the Comms Kit must be capable of providing a minimum of 150 mA @ 18-27 VDC. Also, its connector must be of "pin and barrel" construction with a 2 mm pin.

(2) To power multiple Comms Kits, see Powering Daisy-Chained Comms Kits on page 4.

Configuring the Communications Adapter

After mounting and connecting the Comms Kit, configure the communication adapter. Refer to the communication adapter User Manual for complete details.

External Comms Kit Specifications

Communications

Network	Dependent on installed 20-COMM-* adapter
Drive Protocol Data Rates	 DPI 125 kbps or 500 kbps

Electrical

Drive	60 mA at 12 VDC supplied from drive via DPI cable
Network	None for all network protocols except: DeviceNet 60 mA at 24 VDC
DC Power Supply Requirement (1)	20-COMM-B 75 mA at 24 VDC 20-COMM-C 105 mA at 24 VDC 20-COMM-D 60 mA at 24 VDC 20-COMM-E 140 mA at 24 VDC 20-COMM-Q 135 mA at 24 VDC 20-COMM-M 140 mA at 24 VDC

(1) Since the Comms Kit is powered by a nominal 24 VDC, the current consumption listed in this table differs from the value shown on the label of the communication adapter, which is based on the adapter being powered by 5 VDC from the drive.

Mechanical

Dimensions Width Height Depth	 108 mm (4.25 in.) 108 mm (4.25 in.) with I/O terminal block attached 75 mm (2.95 in.)
Weight	340 g (12 oz.)

Environmental

Temperature Operating Storage	 -10 to 50° (14 to 122° F) -40 to 85° (-40 to 185° F)
Relative Humidity	5 to 95% non-condensing
Atmosphere	**Important:** The Comms Kit must not be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the Comms Kit is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.
Shock Operational Non-operational	 30g, 11 ms (DIN Rail Mount) 50g, 11 ms (Panel Mount) 30g, 11 ms (DIN Rail Mount) 50g, 11 ms (Panel Mount)
Vibration Operational Non-operational	 2.5g, 5 to 2000 Hz 5.0g, 5 to 2000 Hz

Regulatory Compliance

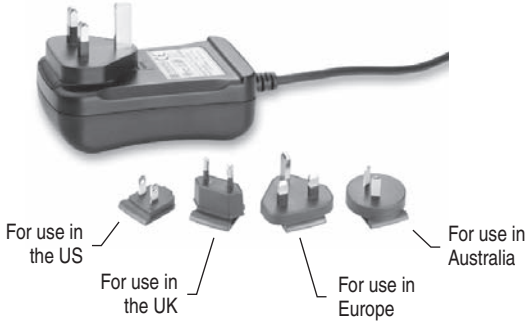
UL	UL508C
CUL	CAN / CSA C22.2 No. 14-M91
CE	EN50178 and EN61800-3
CTick	EN61800-3

NOTE: In order to remain CE and CTick compliant, the DPI cable length may not exceed 30 m (98.4 ft.).

NOTE: This is a product of category C3 according to IEC 61800-3. It is not intended for operation in a domestic environment.

AC Power Adapter (20-XCOMM-AC-PS1)

The 20-XCOMM-AC-PS1 is an accessory AC-to-DC converter for use with the External Comms Kit. It is used when only 100-240 VAC power is available inside a control panel. The converter, which comes with interchangeable plugs, is shown below. The converter connects to an AC receptacle inside the control panel. Use the appropriate plug for your region:



Electrical Connections

Powering a Single Comms Kit

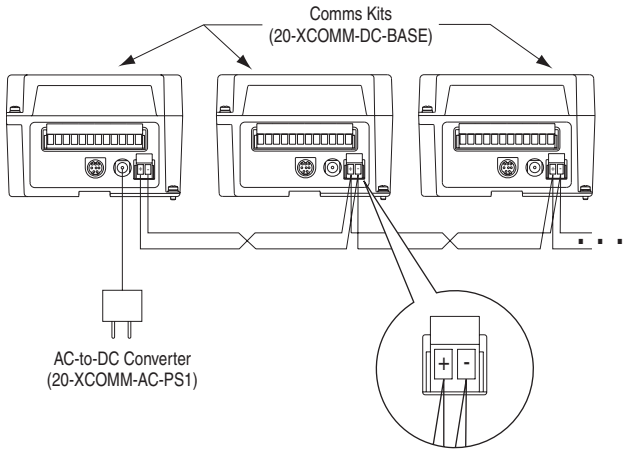
The DC output plug is connected to the mating **DC ADP** connector on the 20-XCOMM-DC-BASE.

Powering Daisy-Chained Comms Kits

Additional Comms Kits can be powered by daisy-chaining them together. For each Comms Kit in the chain, connect all DC "+" terminals together and all DC "-" terminals together (Figure 5).

TIP: It is highly recommended to use twisted wire pairs for better noise immunity.

Figure 5 Powering Multiple Comms Kits via Daisy Chaining



The number of Comms Kits that can be daisy-chained together is dependent on:

- Total current consumed by all of the communication adapters being daisy-chained. For adapter current consumptions at 24 VDC, see DC Power Supply Requirement on page 3.
- Whether or not an I/O Board option is installed. If it is, the I/O Board consumes 60 mA @ 24VDC.
- Available current output capacity of the AC-to-DC converter being used.

The following two examples explain how to determine the number of daisy-chained Comms Kits that can be powered:

Example 1: Suppose the Comms Kits being daisy-chained each have an installed 20-COMM-E EtherNet/IP adapter and I/O Board option, and that the kits will be powered by the 20-XCOMM-AC-PS1 converter which has an output capacity of 830 mA.

Since the current consumed by one Comms Kit is 200 mA (140 mA for the 20-COMM-E plus 60 mA for the I/O board), divide the power source's available output capacity by this consumption (830 mA ÷ 200 mA = 4.15), and round down the result. For this example, 4 daisy-chained Comms Kits can be powered.

TIP: When using the DC power source to also power the additional I/O, subtract the required I/O current from the power source capacity before making the calculation.

Example 2: Suppose the Comms Kits being daisy-chained each have an installed 20-COMM-C ControlNet adapter, and that the kits will be powered by the 20-XCOMM-AC-PS1 converter which has an output capacity of 830 mA.

Since the current consumed by one Comms Kit is 105 mA, divide the power source's available output capacity by this consumption (830 mA ÷ 105 mA = 7.90), and round down the result. For this example, 7 daisy-chained Comms Kits can be powered.

AC Power Adapter Specifications

Input	
Rated Input Voltage	100 - 240 VAC
Operating Input Voltage	90 - 264 VAC
AC Input Frequency	47 - 63 Hz
Output	
Output Voltage	24 VDC
Output Current	830 mA

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