

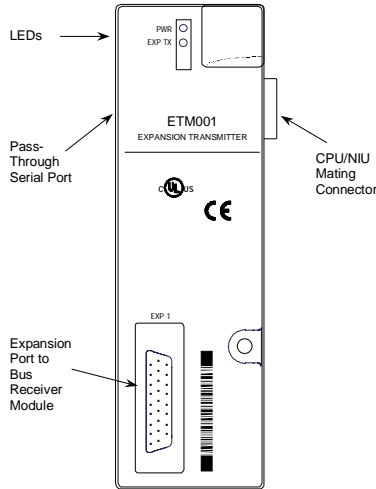
# Expansion Transmitter Module

December 2000

GFK-1521B

## Description of the Expansion Transmitter Module

The Expansion Transmitter Module (\*ETM001) is used to expand a PLC or NIU I/O station to include up to seven additional "racks" of modules. Each expansion rack can include up to eight I/O and specialty modules, including fieldbus communications modules.



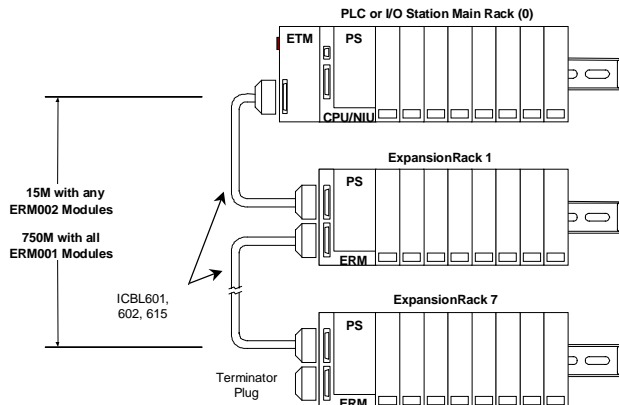
## Expansion Connector

The 26-pin female D-shell connector on the front of the Expansion Transmitter is the expansion port for connecting to an Expansion Receiver Module. There are two types of Expansion Receiver Modules: Isolated (module \*ERM001) and Non-Isolated (module \*ERM002).

The maximum overall length of the expansion bus depends on which type of Expansion Receivers are used:

- 15 Meters: any Expansion Receivers\* ERM002 on the bus
- 750 Meters: Isolated Expansion Receivers \*ERM001 only

By default, the module is set up to operate with the maximum length expansion cable at the default data rate of 250Kbits/second. In a PLC system, if the total length of the expansion cable is less than 250 meters and there are no non-isolated Expansion Receivers (\*ERM002) in the system, the data rate can be configured to 1Mbit/second. In an NIU I/O Station, the data rate cannot be changed from the default 250Kbits.



## Pass-Through Serial Programming Port

The 16-pin male connector on the upper left side of the Expansion Transmitter is the pass-through serial programming port. It can be used to upload firmware updates to an adjacent NIU.

## LED Indicators

The LEDs on the Expansion Transmitter show the status of power to the module and the status of the expansion port.

## Module Specifications

Module Characteristics	
LED indicators	PWR LED indicates 5VDC power status EXP TX LED indicates expansion bus communication status
Backplane current consumption	5V output: 44mA maximum
Cable Specifications	
Receiver Module ERM002:	
Maximum cable length	15 meters
Effective data rate	5 Mbits/sec(max)
Electrical Isolation	non-isolated differential communications
Receiver Module ERM001:	
Maximum cable length	250 meters (if configured for higher data rate), 750 meters (default distance)
Effective data rate	1 Mbits/sec (configurable for less than 250 meters), 250 Kbits/sec (default data rate)
Electrical Isolation	500 VDC isolated differential communications
Firmware Update Interface	
Maximum cable length	6 feet
Effective data rate	See specification for NIU modules (serial lines are pass-through on ETMs)

## Compatibility

All I/O and communications modules can be used in expansion racks. Some analog modules require specific module revisions as listed below. The date code is a 3-digit number on the outside of the module and on the shipping box.

Module	Module Revision	Module Date Code Range
*ALG320	B or later	Any
*ALG321	B or later	Any
*ALG322	B or later	Any
*ALG430	C or later	Any
*ALG431	C or later	Any
*ALG432	B or later	Any
*ALG230	A or later	<b>CPU or NIU Revision 1.5:</b> Date code must begin with a number other than 9 and must be 011 or greater.
	Any	<b>CPU or NIU Revision 2.0 or later:</b> Any date code.
*ALG260	A or later	<b>CPU or NIU Revision 1.5:</b> Date code must begin with a number other than 9 and must be greater than 011.
	Any	<b>CPU or NIU Revision 2.0 or later:</b> Any date code.

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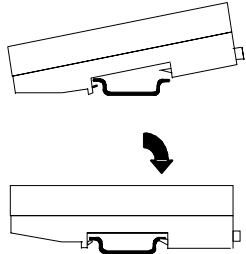
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## Installation Instructions

### Preinstallation Check

Carefully inspect all shipping containers for damage. If any equipment is damaged, notify the delivery service immediately. Save the damaged shipping container for inspection by the delivery service. After unpacking the equipment, record all serial numbers. Save the shipping containers and packing material in case it is necessary to transport or ship any part of the system.

### DIN Rail Installation



All modules and carriers must be installed on the same section of 35mm x 7.5mm DIN rail. The rail must have a conductive (unpainted) finish for proper grounding. For best stability, the DIN rail should be installed on a panel using screws spaced approximately 6 inches (5.24cm) apart.

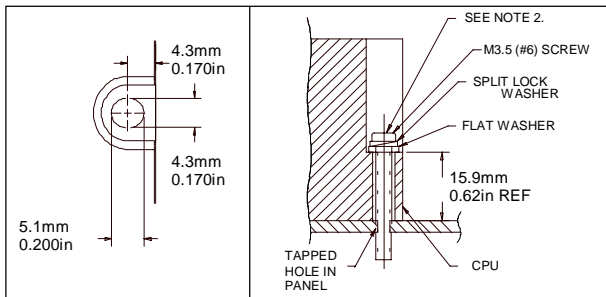
The module snaps easily onto the DIN rail. No tools are required for mounting or grounding to the DIN rail.

### Panel-Mounting

If excessive vibration is a factor modules should also be screwed down to the mounting panel.

Note 1. Tolerances are +/- 0.13mm (0.005in) non-cumulative.

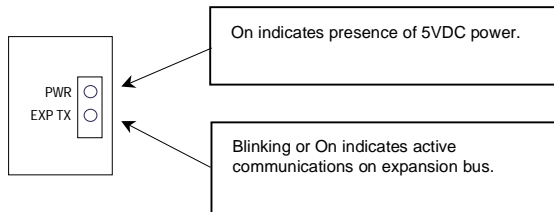
Note 2. 1.1-1.4Nm (10-12 in/lbs) of torque should be applied to M3.5 (#6-32) steel screw threaded into material containing internal threads and having a minimum thickness of 2.4mm (0.093in).



### Installing the Expansion Transmitter Module

The Expansion Transmitter Module must be installed to the **left** of a CPU or NIU.

1. Make sure rack power is off.
2. Remove the connector cover on the lefthand side of the CPU or NIU. Slide the module toward the CPU or NIU and press together until the connectors are mated.
3. After completing any additional system installation steps, apply power and observe the module LEDs.

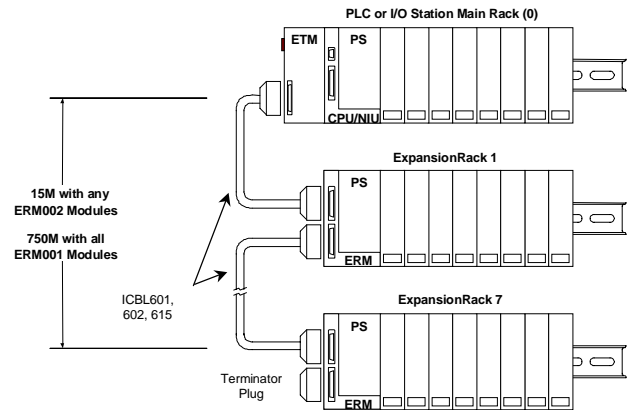


### Removing the Expansion Transmitter Module

1. Turn off power to the power supply.
2. (If the module is attached to the panel with a screw) remove the power supply module. Remove the panel-mount screw.
3. Slide the module away from the CPU or NIU until the connector on the right side disengages.
4. With a small flathead screwdriver, pull the DIN rail latch outward while tilting the other end of the module down to disengage it from the DIN rail.

### Connecting the Expansion Cable: RS-485 Differential

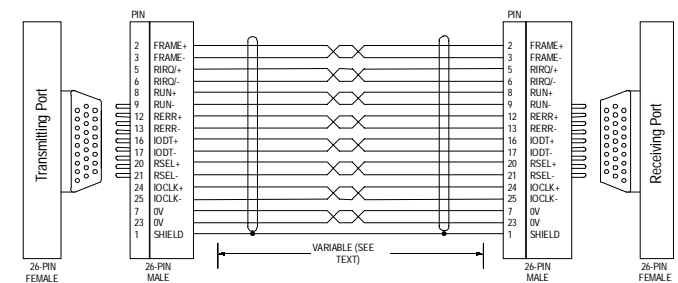
Connect the cable from the expansion port on the Expansion Transmitter to the Expansion Receivers as shown below.



### Terminator Plug

The expansion bus must be terminated with terminator plug \*ACC201 (included with the Expansion Transmitter). Spare Terminator Plugs may also be purchased separately as part number \*ACC201 (qty 2). The Terminator Plug installs in the lower port on the last Expansion Receiver.

### RS-485 Differential Inter-Rack Connection (\*CBL601, 602, 615)



### Building a Custom Expansion Cable

Custom expansion cables can be built using Connector Kit \*ACC202, Crimper AMP 90800-1, and Belden 8138, Manhattan/CDT M2483, Alpha 3498C, or equivalent AWG #28 (0.089mm<sup>2</sup>) cable.

### NIU Serial Update

When the Expansion Transmitter is connected to a Network Interface Unit (NIU) module in an I/O station, firmware upgrades to the NIU are performed via the Expansion Transmitter's pass-through serial port.

