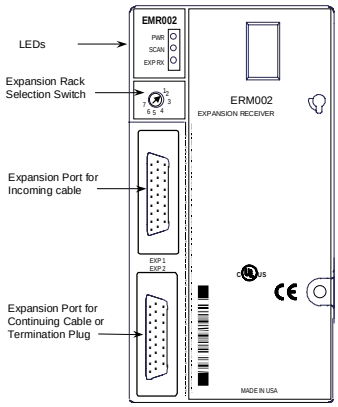
Non-Isolated Expansion Receiver Module

December 2000 GFK-1554B

Non-Isolated Expansion Receiver Module

The Non-Isolated Expansion Receiver Module (*ERM002) interfaces an expansion “rack” to a PLC or NIU I/O Station system. The expansion rack can to include up to eight I/O and special-purpose modules. A power supply installed on the Expansion Receiver Module provides operating power for the modules in the rack.



This module may be used without an Expansion Transmitter Module (*ETM001) in the PLC or I/O Station if there is only one expansion rack in the system and if the cable length is one meter or less. An Expansion Transmitter Module is required if there are multiple expansion racks or if there is only one expansion rack located farther than 1 meter from the CPU or NIU.

LED Indicators

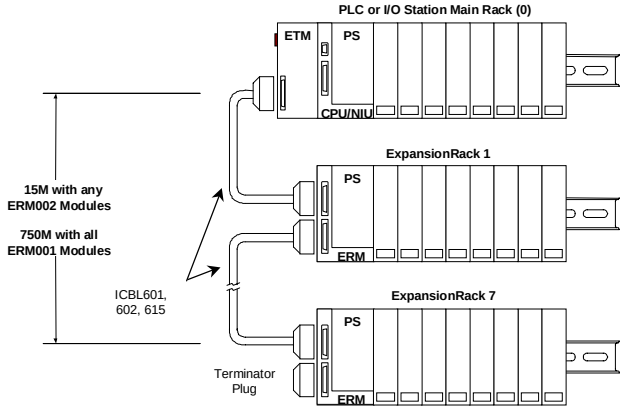
The LEDs on the Expansion Transmitter show the status of power to the module and the status of the expansion port.

Expansion Connector

The Expansion Receiver has two 26-pin female D-shell expansion ports. The upper port receives the incoming expansion cable. In a system that includes an Expansion Transmitter Module, the lower port on the Non-Isolated Expansion Receiver Module is used to daisy-chain the cable to the next expansion rack or to attach the terminator plug at the last rack. The Expansion Receiver must always be installed in the leftmost position of the rack (slot 0).

RS-485 Differential Expansion System

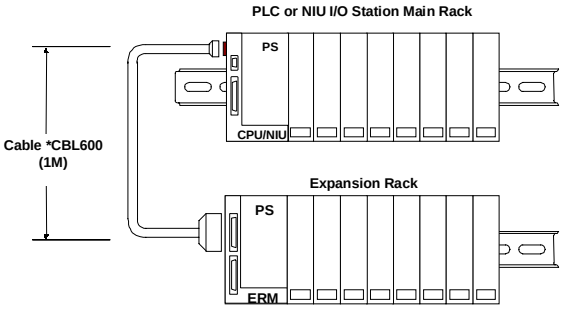
The Non-Isolated Expansion Receiver Module can be used in a multi-rack expansion system that includes an Expansion Transmitter Module in the PLC or NIU I/O Station. Up to seven expansion racks can be included in the system. With any non-isolated Expansion Receiver Module in the system, the total overall length of the expansion cable can be up to 15 meters.



Two-Rack Local System

Non-Isolated Expansion Receiver *ERM002 can also be used to connect just one expansion rack to a PLC main rack or NIU I/O Station without having an Expansion Transmitter Module in the main rack.

This “single-ended” configuration has a maximum cable length of 1 meter. No terminator plug is required in the expansion rack.



Module Specifications

Module Characteristics	
LED indicators	PWR LED indicates 5VDC power status EXP RX LED indicates expansion bus comms status SCAN LED indicates whether the CPU/NIU is scanning I/O in expansion racks
Backplane current consumption	5V output: 70mA maximum 3.3V output: 20mA
Cable Specifications	
Max. cable length	15 meters (differential) ,1 meter (differential)
Effective data rate	5 Mbits/sec (differential), 2.765 Mbits/sec (single-ended)
Electrical Isolation	Non-isolated differential or single-ended communications

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	***CPU or NIU Revision 1.5:*** Date code must begin with a number other than 9 and must be 011 or greater.
	Any	***CPU or NIU Revision 2.0 or later:*** Any date code.
*ALG260	A or later	***CPU or NIU Revision 1.5:*** Date code must begin with a number other than 9 and must be 011 or greater.
	Any	***CPU or NIU Revision 2.0 or later:*** Any date code.

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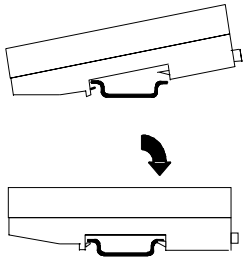
Installation Instructions

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.

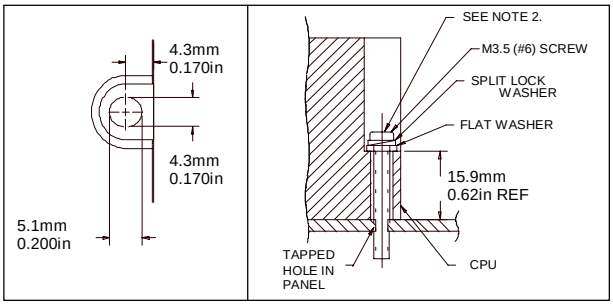
The module snaps easily onto the DIN rail. No tools are required for mounting or grounding to the DIN rail.

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).



Expansion Rack Power Sources

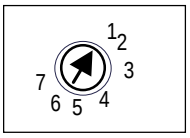
Power for module operation comes from the Power Supply installed on the Expansion Receiver Module. If the expansion rack includes any Power Supply Booster Carrier and additional rack Power Supply, it must be tied to the same source as the Power Supply on the Expansion Receiver Module.

When operating the system in single-ended mode, the power supplies for the main rack and expansion rack must be fed from the same main power source. The main rack and expansion racks cannot be switched ON and OFF separately; either both must be ON or both must be OFF for proper operation.

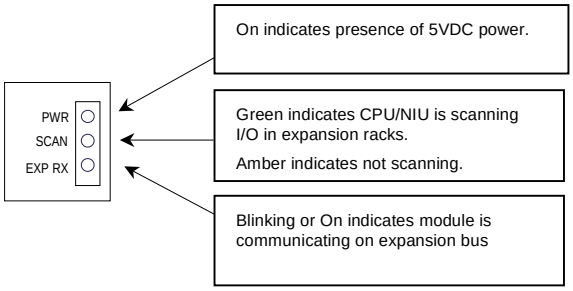
Installing the Isolated Expansion Receiver Module

The Expansion Receiver Module must be installed in the leftmost slot of an expansion "rack".

1. Insert the label inside the small access door at the upper left corner of the module.
2. Attach the module to the DIN rail at the left end of the expansion rack.
3. Select the expansion rack ID (1 to 7) using the rotary switch under the access door at upper left corner of the module.



4. Install a Power Supply module on top of the Expansion Receiver.
5. Attach the cables and terminator plug as described at right.
6. After completing any additional system installation steps, apply power and observe the module LEDs.

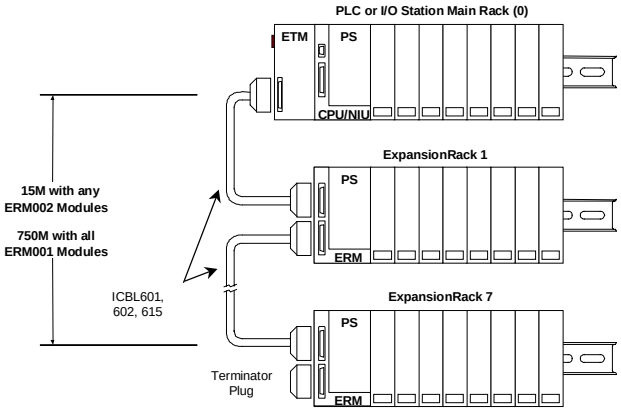


Removing the Expansion Receiver Module

1. Make sure rack power is off.
2. Un-install the Power Supply module from the Expansion Receiver Module.
3. Slide the Expansion Receiver Module on DIN rail away from the other modules.
4. Using a small screwdriver, pull down on the tab on the bottom of the module and lift the module off the DIN rail.

Connecting the Expansion Cable: RS-485 Differential

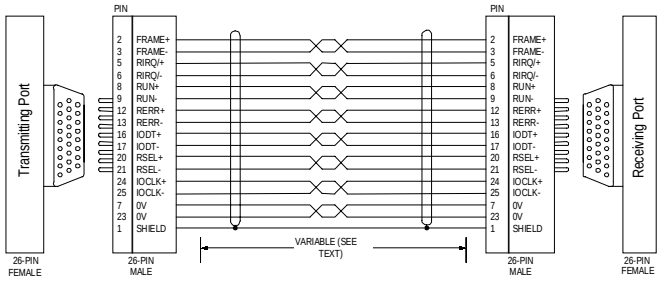
Connect the cable from the expansion port on the Expansion Transmitter to the Expansion Receivers as shown below.



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)*

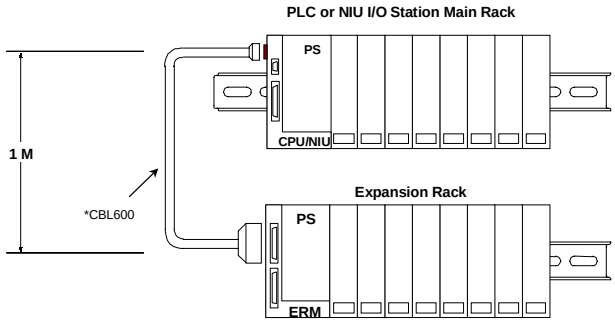


Building a Custom Expansion Cable

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^2) cable.

Connecting the Expansion Cable: Single-ended

For a two-rack local system with one Non-Isolated Expansion Receiver Module (*ERM002) and NO Expansion Transmitter, connect the expansion cable from the serial port on the CPU or NIU to the Expansion Receiver as shown below. The maximum cable length is one meter. Cables cannot be fabricated for this type of installation; cable *CBL600 must be ordered separately.



No Terminator Plug is needed in a single-ended installation; however, it will not impede system operation if installed.

*Single-Ended Inter-Rack Connection Cable (*CBL600)*