



Installation Instructions for Digital Relay Accessory Module

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Fig. 1 The Digital Relay Accessory Module

1.0 GENERAL DESCRIPTION

The Digital Relay Accessory Module, as seen in Figures 1 and 4, is a Cutler-Hammer accessory that will operate as a slave communicating device in conjunction with either a compatible Cutler-Hammer trip unit and breaker or other master communications network (*see Figure 2*).

This module package provides 4 Form 'C' relay output contacts that can be operated by a master device using the Cutler-Hammer INCOM network signal protocol. The catalog number of this product is *DRAM*.

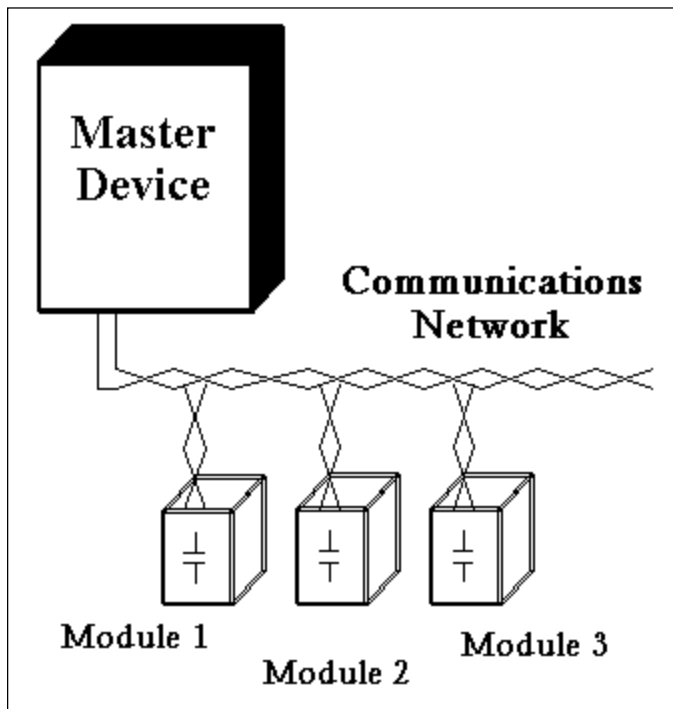


Fig. 2 Digital Relay Accessory Modules in an INCOM Network

2.0 FEATURES

The Digital Relay Accessory Module is a slave device and as such requires a master device for control commands to open and close the module relay contacts. Each Digital Relay Accessory Module provides:

- 4 individual Form 'C' relay output contacts
- Flashing Status LED to indicate that the Module has power
- LED indicators corresponding to each of the four relay contacts that light indicating when a relay is energized
- DIN rail mounting
- Input power for the module from 48-125 VDC or 120 VAC

3.0 INSTALLATION

The Digital Relay Accessory Module is designed to be installed, operated, and maintained by adequately trained people. These instructions do not cover all details or variations of the equipment for its storage, delivery, installation, checkout, safe operation or maintenance.



DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. DEATH OR SEVERE PERSONAL INJURY CAN RESULT FROM CONTACT WITH ENERGIZED EQUIPMENT. ALWAYS VERIFY THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING. ALWAYS FOLLOW SAFETY PROCEDURES. CUTLER-HAMMER IS NOT LIABLE FOR THE MISAPPLICATION OR MISINSTALLATION OF ITS PRODUCTS.

If you have any questions or need further information or instructions, please contact your local representative or the Customer Support Center at 1-800-356-1243.

3.1 Simplified Wiring Rules

The following simplified rules apply given a system consisting of a single daisy chained main cable link between master and slave devices (*see figure 2*). For more complex considerations including star configurations please refer to the IMPACC™ Wiring specification TD17513.

- Recommended cable styles are Belden 9463 or Cutler Hammer style 2A957805G01.
- The maximum system capacity is 10,000 feet of communications cable and 1000 slave devices.
- Non-terminated taps, up to 200 feet in length, off the main link are permitted, but add to the total cable length.
- Make sure that there is a twisted wire pair present that is intended for IMPACC™ network use. Use shielded twisted pair wire to connect each slave device to the INCOM network, daisy-chain style. **The polarity of the twisted pair is not important.**
- When mounting the device verify that a **11mm H x 28mm W DIN Rail** is used and that it is within an enclosed space.
- Set the address selector dials to a slave address (001 to FFE in Hexadecimal form).

DANGER

ALL APPLICABLE SAFETY CODES, SAFETY STANDARDS, AND SAFETY REGULATIONS MUST BE STRICTLY ADHERED TO WHEN INSTALLING, OPERATING, OR MAINTAINING THIS EQUIPMENT.

4.0 ACCESSORY MODULE CONNECTIONS

Refer to Figure 3 and the following three pin out tables for installation specifics.

4.1 Output Connections

Output Connections for a Digital Relay Accessory Module:
(see figure 3)

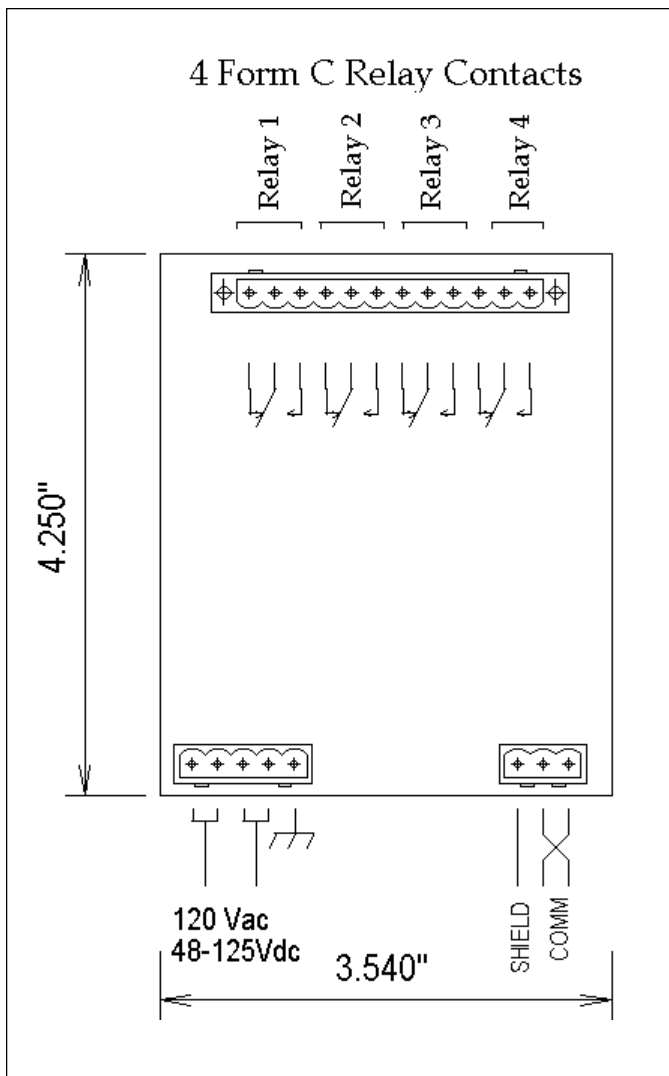


Fig. 3 Digital Relay Connections

4.1.1 Relay Connections

Relay Connector: A 12-Pin connector providing 4 Form 'C' contacts with each having a rating of 10 Amp max @ 120 VAC.

Table 1 Relay Connector Pin Outs

Relay #	Pin #	Signal
1	1	Norm Closed
	2	Common
	3	Norm Open
2	1	Norm Closed
	2	Common
	3	Norm Open
3	1	Norm Closed
	2	Common
	3	Norm Open
4	1	Norm Closed
	2	Common
	3	Norm Open

4.1.2 Power Connections

Power Connector: Module power uses a 5-pin input connector. Power requirements are 120 VAC, 60 Hz or 48-125 VDC.

Table 2 Power Connector Pin Outs

Pin #	Input Signal
1	Chassis Ground
2 & 3	VAC Neut. / VDC Common
4 & 5	VAC Line / 48-125 VDC+

4.1.3 INCOM Connections

INCOM Connector: This 3-Pin connector provides the interface to the INCOM network.

Table 3 INCOM Connector Pin Outs

Pin #	Signal
1	INCOM Carrier Network
2	INCOM Carrier Network
3	Shield

Connect shield wire to ground at master device end only. Interconnect shielding where devices are daisy-chained.

5.0 DIALS AND INDICATOR LEDS

Refer to Figure 4 to locate the control or status LED for the Digital Relay Accessory Module.



Fig. 4 The Digital Relay Accessory Module

5.1 MicroController LED (Status)

This indicator will be flashing whenever the module is powered up and when the microprocessor is executing instructions.

5.2 Relay Contact Status (Relays 1-4)

Four relay contact indicators. The associated relay LED will light when that relay is energized.

5.3 Red, 100 Ohm Termination Dip Switch (SW1)

This switch should be moved to the 'ON' position only when it is the last unit in a chain of units or if it is a single unit.

5.4 Address Selector Settings

The Digital Relay Accessory Module has three dials that are used to set the network address. Since the Module only receives commands from a master device and does not transmit reply messages, several Digital Relay Accessory Modules may be programmed with the same address. Those modules sharing a duplicate address will function identically.

6.0 THE NETWORK COMMUNICATION PROTOCOLS

The INCOM communication for the Digital Relay Accessory Module is based on a Master (*PC, Communicating Trip Unit, etc.*) - Slave (*Digital Relay Accessory Module*) set of Protocols.

In order to satisfy the Digital Relay Accessory Module communication needs, please see Reference Material:

IL17384 - Part A: IMPACC Communications Standard

7.0 Troubleshooting

The most common issues experienced with the installation of a Digital Relay Accessory Module are addressed below.

If you have any questions or need further information or instructions, please contact your local representative or the Customer Support Center at 1-800-356-1234.

- **STATUS LED not flashing**

1. Verify proper input power to module connectors.

- **STATUS LED flashing**, but module relays do not change state in response to master command requests

1. Verify correct module address.
2. Verify communication cable is connected correctly from the master to the module.
3. Verify that the red, termination switch (SW1) is set to 'ON' at the last module.

APPENDIX A

Figure 5 demonstrates a typical Accessory Module Connection Diagram as used with a Magnum DS 1150 Circuit Breaker.

Notes:

1. The Digitrip 1150 front panel is used to program the external module and can be programmed for ReLaY FUNCTION of AUX Switch or BELL Alarm or DEAD man or WATCHDOG or ALARM functions. *(Note: The alarm functions track the Aux ReLaY A programming.)*
2. Each module has four relays. Each relay has a form C contact with each having a rating of 10 Amp max @ 250 VAC.
3. Control Voltage is 120 VAC +/- 20% or 48-125 VDC
4. Accessory Bus Modules use DIN rail mounting. Connector types are plug-in-Phoenix. Four form C contacts use 12 pin connectors. Power is 5 pin.

5. Communications cable is C-H style 2A957805G01 or Belden style 9463.
6. Set switch to corresponding address (**001 though 004**) programmed via the Digitrip front panel.
7. Set switch up to insert 100 ohm terminating resistor on last relay of the network.
8. Power and relay output wiring is any approved 300 Volt, 10 Amp, 30-12 AWG (**stranded or solid**)
9. Terminal Types (**supplied with module**) are 3 point, 5 point and 12 point Phoenix Contact
 - MVSTBR2.5/3-STF-5.08 (p/n 1835106)
 - MVSTBR2.5/5-STF-5.08 (p/n 1835122)
 - MVSTBR2.5/3-STF-5.08 (p/n 1835193)

Notes

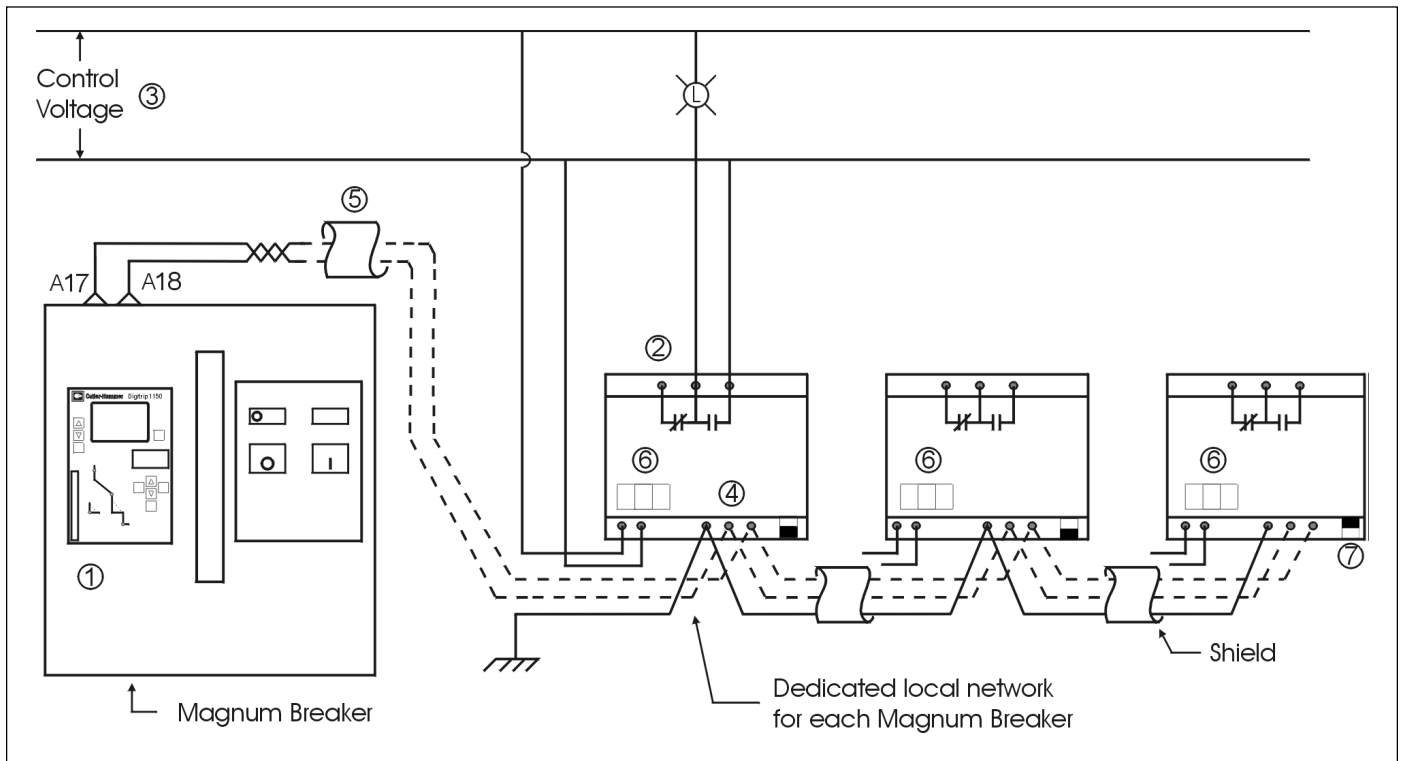


Fig. 5 A Typical Installation with Magnum DS

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