

# Instructions for the Addressable Relay II Used in the INCOM Networks of IMPACC Systems

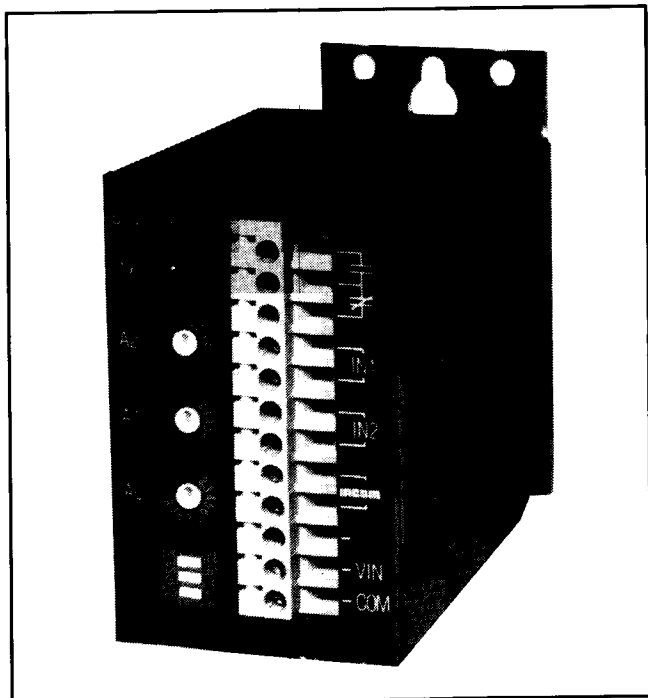


Fig. 1 Addressable Relay II

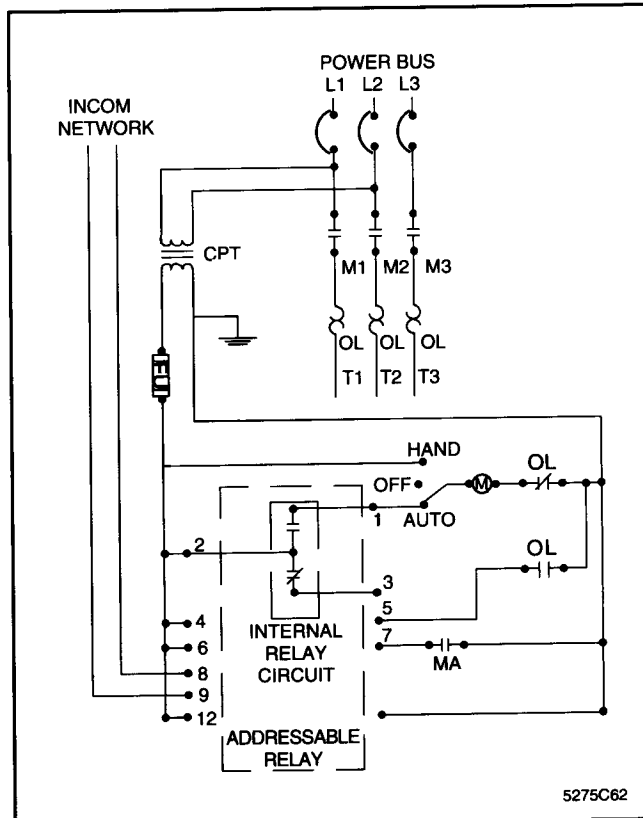


Fig. 2 Typical Schematic Diagram

## COMMUNICATIONS

Addressable Relays are one form of communication module used for remote control of electrical devices. They are connected to an INCOM network that is part of an Integrated Monitoring, Protection and Control Communications (IMPACC) system. A typical motor starter application is shown in Figure 2. A typical network consists of twisted pairs, daisy-chained as shown in Figure 3 to a remote personal computer. The computer identifies which device on the network it is communicating with by the address assigned to the Addressable Relay.

## INSTALLATION

This industrial type control is designed to be installed, operated, and maintained by adequately trained workmen. These instructions do not cover all details, variations, or combinations of the equipment, its storage, delivery, installation, check-out, safe operation, or maintenance. Care must be exercised to comply with local, state, and national regulations, as well as safety practices, for this class of equipment.

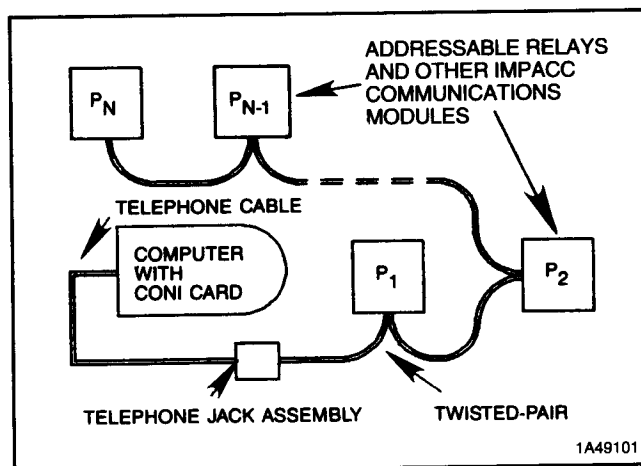


Fig. 3 Typical Network Interwiring

# ADDRESSABLE RELAY II

I.L. 17435

## CONTROL STATION

The control station for the IMPACC system must be an IBM® personal computer or equivalent (compatible) or a translator unit that will accept the INCOM network signals and convert them to an RS-232 format for transmission to the controlling computer.

The Addressable Relay II can communicate at either 1200 baud or 9600 baud. The baud rate is user selectable in the field by a DIP switch in the front of the unit. When DIP switch 1 is set to the OFF position, the Addressable Relay II will communicate at 9600 baud. When DIP switch 1 is set to the ON position, the Addressable Relay II will communicate at 1200 baud. See Figure 4 for DIP switch configuration. All devices on a singular INCOM network must communicate at the same baud rate.

## THE ADDRESSABLE RELAY II

The Addressable Relay II is a Form C relay with output contact ratings as shown in Table I. The Addressable Relay II may be powered by 48 to 120 Volts AC or 48 to 125 Volts DC through terminals 11 and 12 of the terminal block. DC polarity not significant. The operating temperature range of the Addressable Relay II is 0°C to 70°C.

Each Addressable Relay II includes two status indicating circuits (IN1 and IN2) which can be used to transmit the contact status of devices external to the Addressable Relay II. A typical installation using these report-back inputs to the IMPACC system is shown in Figure 2. Terminals 4 and 5 connect to the status INdicating 1 circuit and terminals 6 and 7 connect to the status INdicating 2 circuit. These status indicating circuits operate with input voltages of 48 to 120 Volts AC or 48 to 125 Volts DC circuits.

The Addressable Relay II includes a feature called the "communications watchdog." The communications watchdog monitors communications between the Addressable Relay II and the computer control station. If communications are lost, the communications watchdog will reset the relay to the de-energized (OFF) state. The Addressable Relay II must be updated every 10 seconds when the communications watchdog is enabled or else communications are assumed to be lost. The communications watchdog is enabled when DIP switch 3 is set to the ON position. When the communications watchdog is not enabled, the relay will remain in the state set by the last command issued. See Figure 4 for DIP switch configuration.

The Addressable Relay II also includes a feature called "relay pulse." The relay pulse feature sets the Addressable Relay II to a pulse mode where the relay is energized (ON) for 10 seconds and then is de-energized (OFF). The relay pulse is enabled when DIP switch 2 is set to the ON position and disabled when DIP switch 2 is set to the OFF

		OFF	ON
	BAUD RATE	9600	1200
	RELAY PULSE	DISABLED	ENABLED
	COMM. WATCHDOG	DISABLED	ENABLED
			5275C82

Fig. 4 DIP Switch Functions

position. If this feature is not enabled, the relay will remain in the state set by the last command.

Each Addressable Relay II has three hexadecimal (digits 0 through 9 plus A through F) selector switches that must be used to assign a unique address to each unit on the network. The light emitting diode (LED) at the top left-hand corner of the product (labeled RLY) illuminates red when the relay is energized and illuminates green when the relay is de-energized. The LED below labeled TX flashes when the Addressable Relay II is transmitting the status of the two report-back inputs into the IMPACC network. See Figure 1.

## ADDRESSING

Each Addressable Relay II installed in any one network must have a unique address. The three hexadecimal selector switches offer 4096 different addresses (16 x 16 x 16), ranging from 000 to FFF. Records of addresses may be maintained in terms of the hexadecimal number (recommended) or decimal equivalent. In a hexadecimal system, A = 10, B = 11, C = 12, D = 13, E = 14, and F = 15. Examples of switch settings are shown in Figure 5.

To convert from a hexadecimal number to a decimal number:

- 1) Multiply the setting on the top switch (A2) by 256.
- 2) Multiply the setting on the center switch (A1) by 16.
- 3) Multiply the setting on the bottom switch (A0) by 1.
- 4) Add the results from step 1, 2, and 3 together.

The result for the second example in Figure 5 is (2 x 256) + (1 x 16) + 10 = 538.

TABLE I — RELAY CONTACT RATINGS		
Voltage	Make	Break
120-240 VAC	4960 VA	828 VA
24-120 VAC	43 A	7.2 A
Can operate a Westinghouse Type DGSL9 control relay having a 48 or 125 VDC coil.		

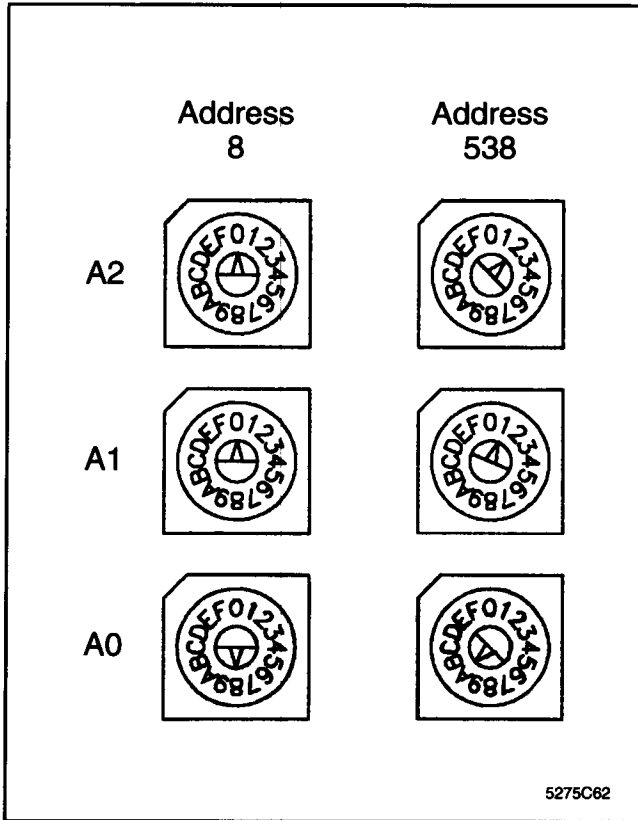


Fig. 5 Address Selector Switch Examples

TABLE II — WIRING DATA
Terminal Block Capacity:
#22 AWG to #12 AWG stranded copper conductors rated not less than 75°C. Tighten terminals to 4 to 6 lb.-in. Check each wire to ensure that it is fastened securely.

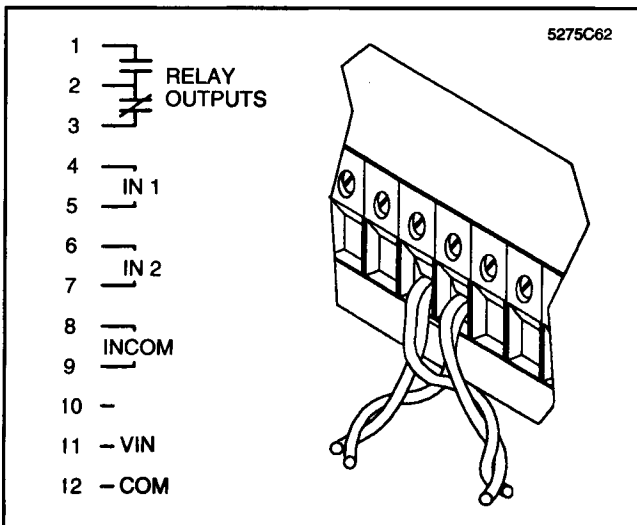


Fig. 6 Terminal Block with Twisted Pair

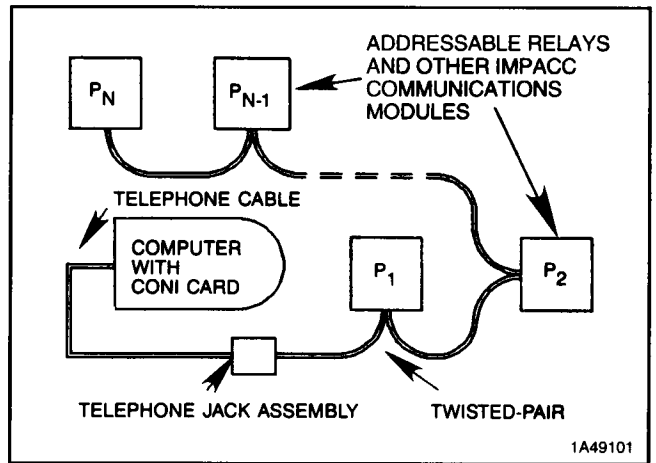


Fig. 7 Typical Network Interwiring

**WIRING**

Wire the 12-pole terminal block located on the Addressable Relay II per Figure 6. The terminal block capabilities are shown in Table II. Terminals 1, 2, and 3 are used for the relay output. Terminals 4 and 5 are used for status indicating circuit 1. Terminals 6 and 7 are used for status indicating circuit 2. Terminal 10 is not used. Terminals 11 and 12 are used to supply the control power. The polarity of the control power is not important.

Terminals 8 and 9 are the INCOM communications connections. Use a twisted pair wire (Belden 9463 or equivalent) to connect terminals 8 and 9 of the Addressable Relay II to the INCOM network, daisy-chain style (See Figure 7). The polarity of the twisted pair is not important.

**OPERATION CHECK**

After the IMPACC system has been installed, check the operation of each Addressable Relay II by applying power to each unit. The top LED should illuminate green when power is first applied. Issue a command to turn the relay ON (energize the relay). The top LED will turn red. This will confirm that the unit is receiving the IMPACC command.

Send a request for status command. This will cause the unit to flash the bottom LED and return a status to the computer. This response will confirm that the unit is responding correctly.

**MOUNTING**

Use three #8 screws to mount the unit as specified in Figure 8. If there is a BF relay mounting strip already installed, use it to mount the unit without any hardware.

## MOUNTING (Cont.)

The unit should be mounted with the light emitting diode (LED) in the upper left-hand corner.

## TROUBLESHOOTING

If the unit does not operate properly, check the following:

- 1) Check to see if all wires are securely connected to the Addressable Relay II.
- 2) Check the baud rate selection.
- 3) Check the INCOM network wiring.
- 4) Check to see if the address is set correctly.
- 5) Check to see if the software is configured correctly.

The Addressable Relay II has no user serviceable parts. Please contact your local Westinghouse representative or the Westinghouse Advanced Product Support Center (1-800-542-7883) for service information or additional questions regarding the Addressable Relay II or any other IMPACC product.

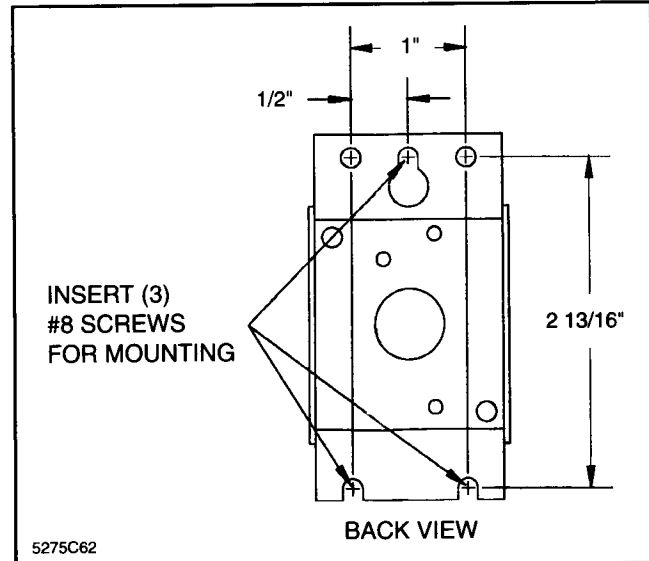


Fig. 8 Mounting Dimensions (in inches)