

# Instructions for Addressable Relays Used in INCOM Networks

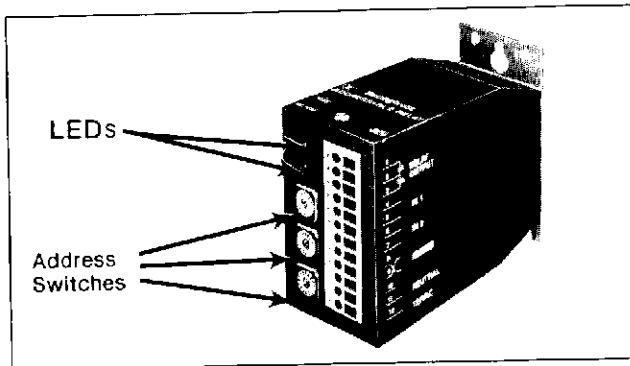


Fig. 1 An Addressable Relay

## THE ADDRESSABLE RELAY

The addressable relay is a Form C relay which is controlled by INCOM from a computer control station. The addressable relay is powered by 120VAC through terminals 11 and 12 of the terminal block. The addressable relay can operate over a temperature range of 0°C through 70°C.

Each addressable relay also includes two status indicating circuits (IN 1 and IN 2) which can be used to transmit the status of contacts of devices external to the addressable relay. A typical installation using these report-back inputs to the INCOM 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 only with contacts in a 120 VAC circuit.

There are two slide-on plastic covered jumpers located on the printed circuit boards. They are labeled J3 and J4. The jumper labeled J3, if allowed to remain in place, will turn the relay OFF, if after 10 seconds an instruction to turn the relay ON has not been received. This is an automatic reset function to prevent the relay from staying ON even if communications have been lost. If J3 is not in place and communications are lost, the relay will stay in the state that it was when it lost communications. The jumper labeled J4 is the signal transmission rate jumper and must remain in place when the addressable relay is used as explained in this instruction leaflet.

Gain access to jumper J3 by removing the two screws holding the relay cover in place. Slide the two printed circuit boards out of the case simultaneously. Fold the boards apart to see jumper J3. Use the terminal label as a guide in replacing the boards in the correct slots.

Each addressable relay 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. A light emitting diode (LED) at the top left corner of the product lights when the relay is energized. The light emitting diode below it lights when the addressable relay is sending the status of the two report-back inputs into the INCOM network. This LED does not light when receiving commands to turn the relay ON or OFF. See Figure 1.

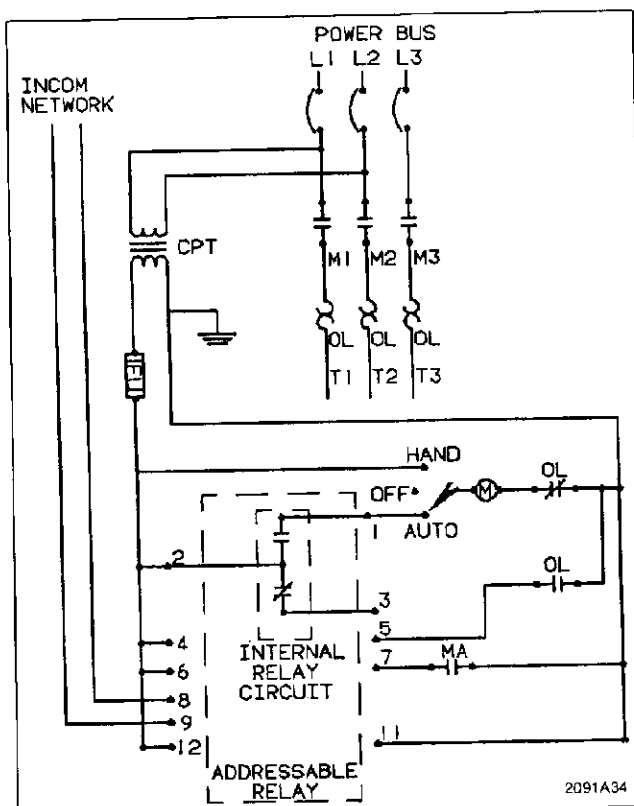


Fig. 2 Typical Schematic Diagram

TABLE I — RELAY OUTPUT RATINGS		
Voltage	Make	Break
115-120 VAC	43.2 A	7.2 A

TABLE II — TERMINATION MEANS
Terminal Block Capacity:
No. 24 through #16 AWG wire with copper conductors rated not less than 75°C only. Tighten terminals to 7 lb.-in.

## CONTROL STATION

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

Status signals are transmitted at 1200 baud over the twisted pair used to connect each addressable relay into the INCOM network.

## MOUNTING

Use three number 8 screws to mount the unit as specified in Figure 3. If there is a BF relay mounting strip already installed use it to mount the unit without

# ADDRESSABLE RELAYS

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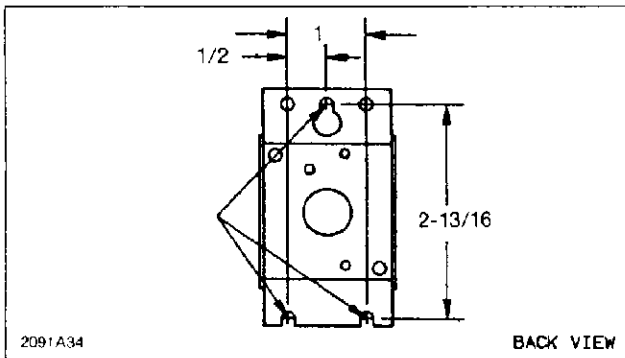


Fig. 3 Mounting Dimensions (Dim. in inches)

any hardware. The unit should be mounted with the light emitting diodes in the upper left hand corner.

## 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.

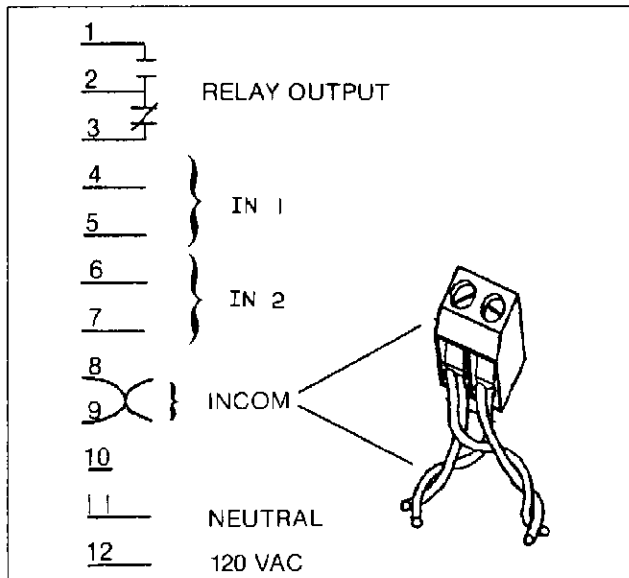


Fig. 4 Terminal Block with Twisted Pair

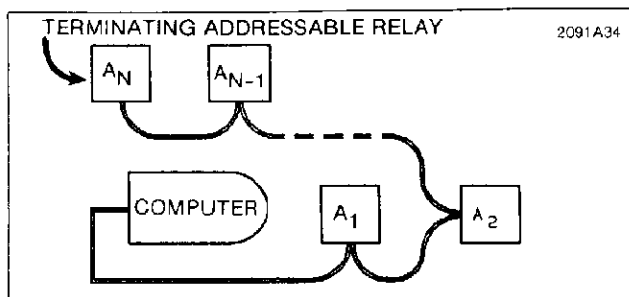


Fig. 5 Network Interwiring

Wire the 12-pole terminal block located on the addressable relay per Figure 4. 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 AC input 1. Terminals 6, and 7 are used for status AC input 0. For terminals 8, and 9 (the INCOM connection) use twisted pair wire (telephone or instrumentation wire) to connect each addressable relay to the INCOM network, daisy chain style. See Figure 5. Terminal 10 is not used. Terminals 11 and 12 are used for the 120VAC control power. If the terminating addressable relay is installed on the network more than 500 feet from the control station computer, connect a 150 ohm, 1/2 watt, carbon composition resistor across the transmission line at terminals 8 and 9.

## ADDRESSING

Each addressable relay installed in any one network must have a unique address. The three hexadecimal selector switches offer 4096 different addresses ( $16 \times 16 \times 16$ ), 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 6.

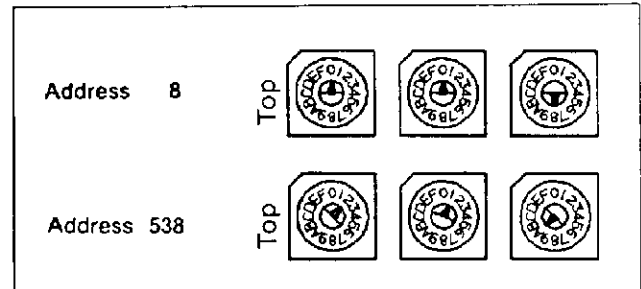


Fig. 6 Address Switch Examples

To convert from a hexadecimal number to a decimal number multiply the setting on the first (top) switch by 256, and add to it the product of 16 times the setting on the middle switch, and to that sum add the setting of the bottom switch. For the second example in Figure 6,  $(2 \times 256) + (1 \times 16) + 10 = 538$ .

## OPERATION CHECK

After the INCOM system has been installed, check the operation of each addressable relay by applying power to the unit and issuing an INCOM command to the correct address to turn the relay on. The top LED will be turned on. This will confirm that the unit is receiving the INCOM command.

By sending a request for status command, this will cause the unit to flash the bottom LED and return status to the computer. This will confirm that the unit is responding correctly.