

R10R RELAY OUTPUT MODULE INSTALLATION AND OPERATING INSTRUCTIONS

CAUTION: BEFORE INSTALLING OR REMOVING ACCESSORY MODULES, DISCONNECT POWER TO THE SOLIDYNE CONTROLLER YOU ARE USING. FAILURE TO REMOVE POWER WILL RESULT IN DAMAGE TO THE CONTROLLER.

DESCRIPTION

The R10R relay output module is designed for use specifically with the CLIPPER™ Building Automation System (model 8008SP) and the PneumaPulse (model 3255) pneumatic interface module. The R10R module provides normally open relay contacts for switching of the PneumaPulse module. The R10R is wired directly to the CLIPPER controller and can be located several thousand feet away (distance depends on the gauge of wire used).

SPECIFICATIONS

Model number: 00-R10R

Input voltage: 10-14 Volts DC

Operating temperature: 0° F to 160° F

Storage temperature: -40° F to 160° F

Contact rating: 0.5 Amps resistive @120 VAC

Dimensions: 1.5 x 2.13 x 3.0 inches

INSTALLATION

Some Basic Installation Rules

- Disconnect power to the CLIPPER controller prior to connecting any accessories.
- Discharge any static charge you may have accumulated by touching building ground before touching any terminals on the CLIPPER controller.

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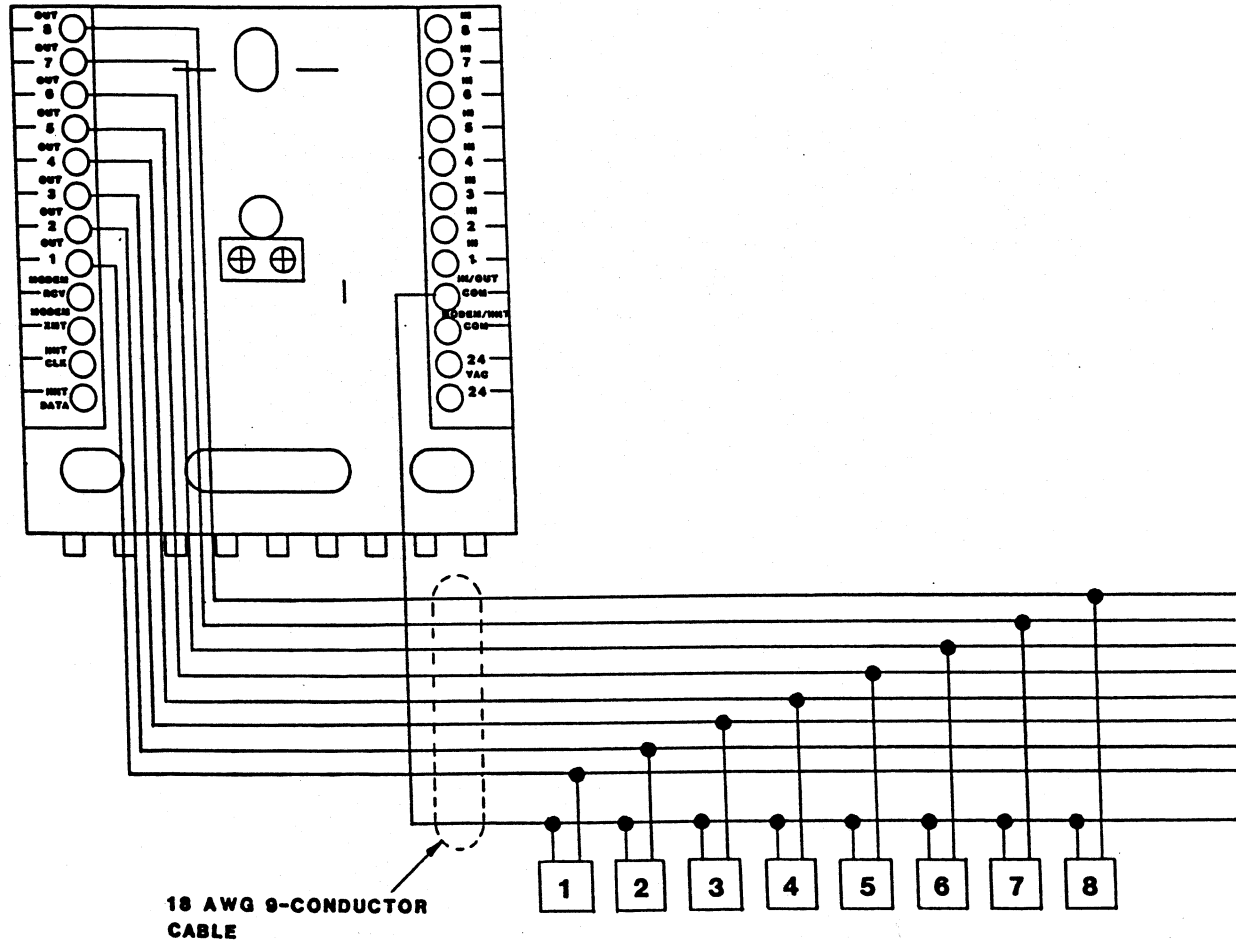


Figure 1- R10R Wiring diagram

Wiring the R10R to the CLIPPER Controller

The R10R relay output module has two control wires which must be connected to the CLIPPER controller baseplate. The BLACK wire must be connected to the terminal marked IN/OUT COM and the WHITE wire to one of the terminals marked OUT-1 through OUT-8. For convenience, it is recommended that you use 18 AWG nine-conductor (one for common and eight for each of the channels) wire to connect your R10R modules to the baseplate as shown in the wiring

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diagram in figure 1. This wiring method is economical, since it requires pulling only one cable.

If you look closely at the wiring diagram you can see that one wire in the cable is connected to the IN/OUT COM terminal on the baseplate and that the BLACK wires from each of the output modules are spliced into this same common wire. The other eight wires in the cable are each attached to one of the output terminals on the CLIPPER controller baseplate. The WHITE wire from each of the R10R modules is then spliced to the one of these eight cable wires. The resulting wiring arrangement looks like that shown in the figure 2.

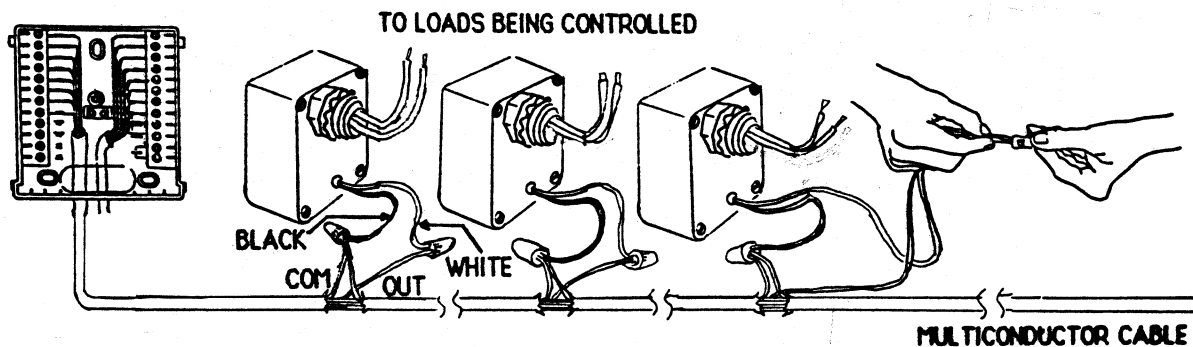


Figure 2 - R10R wiring

There is a distance limitation using this method, however. If, for instance, eight R10R modules are "strung" together using 18 AWG nine-conductor cable, the length of the cable from the baseplate to the farthest R10R cannot exceed 1400 feet. This distance can be doubled, though, if ten-conductor cable is used and two wires are used as common wires. Both of these common wires would be attached to IN/OUT COM at the controller baseplate. One would then be used as the common wire for the first four R10R modules, and the other would be used for the last four. The distance could also be increased if the gauge of the wire is increased.

The distance limitation is based on the electrical resistance of the wire being used. Table 3 shows a range of common wire gauges and the corresponding feet per ohm for each. The number in the "Feet Per Ohm" column indicates the length(in feet) of a particular gauge

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wire required to create an electrical resistance of one ohm. Using this table and the following formula you can easily determine the distance limitation for a particular combination of wire gauge, number of conductors, and number of R10R modules:

$$\text{maximum distance} = \frac{80 \times D \times C}{N + C}$$

Where D is the number of feet per ohm of resistance for the wire gauge being used (get this number from the table), C is the number of wires used for "common", and N is the number of R10R modules attached to the cable. For example, if we decide to wire eight R10R modules together using 16 AWG ten-conductor wire, and use two of the conductors as "common", then our distance limit from the controller to our farthest output module is $(80 \times 249 \times 2)/(8+2)$ or 3984 feet.

Gauge (AWG)	Feet per Ohm
14	396
16	249
18	157
20	99
22	39

Table 3

Connecting the PneumaPulse to the R10R

The YELLOW and BLUE wires coming from the R10R module are attached to the normally open (N.O.) contacts of the R10R's internal relay. These wires are used to switch the PneumaPulse, and are attached as shown in figure 4. Note that the PneumaPulse requires an external 24 volt DC power supply (see the PneumaPulse instruction sheet for more information).

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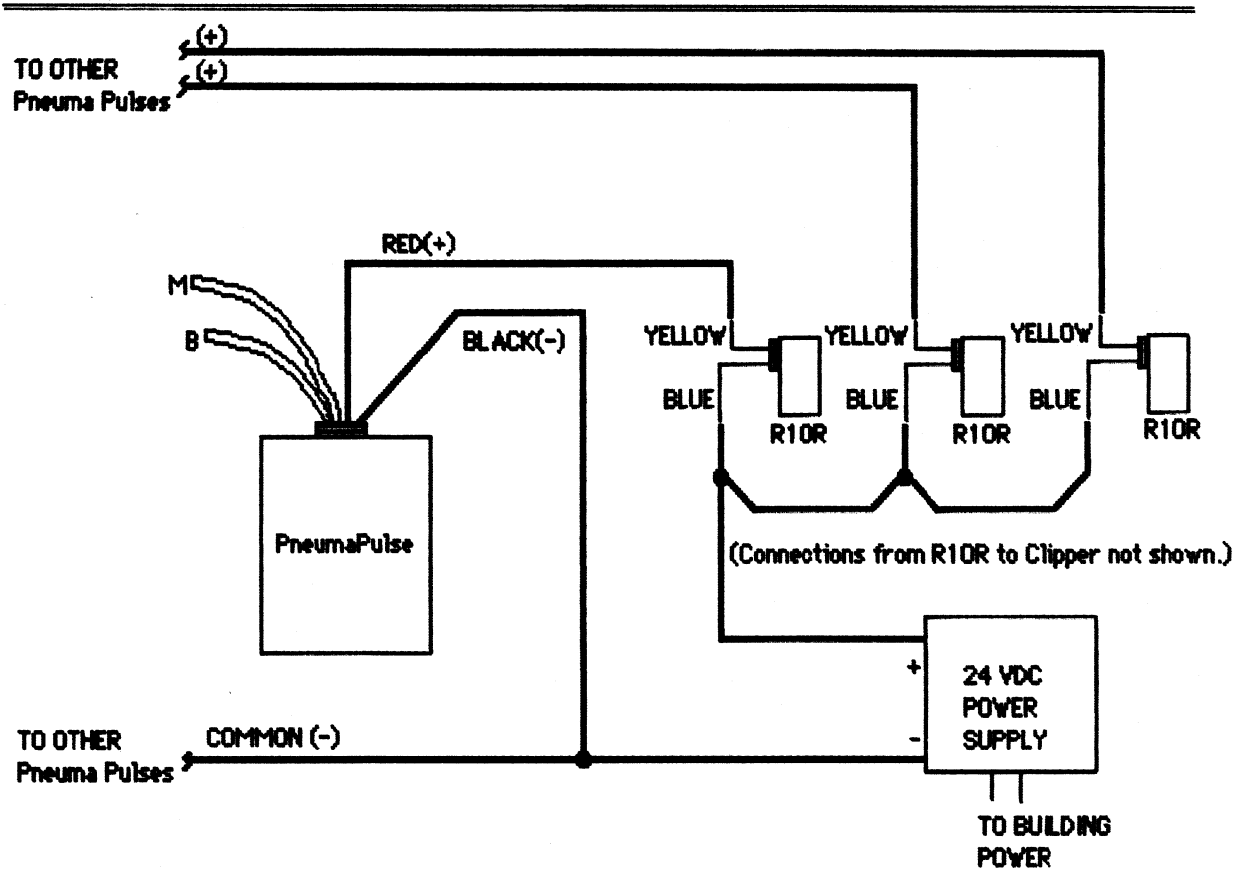


Figure 4 - R10R to PneumaPulse Wiring

Make sure local electrical codes are followed for all wiring.