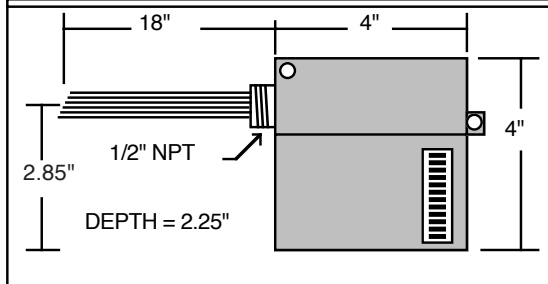
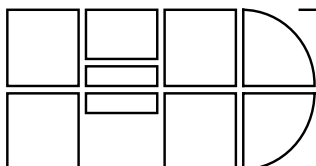


# FUNCTIONAL DEVICES INC.

## POWER-LINE CARRIER



### MODEL RC RESPONDER (1-WAY)



#### DESCRIPTION

RCs are a remote component in the PLC link between the controller and the load being controlled. They carry out, via internal relay(s), the digital-out commands given by the controller using the existing ac wires or a dedicated pair as the communication path. They can be programmed by setting the positions of switches to assume a unique digital code or identity (ID).

#### FEATURES

- Uses existing ac power wires or dedicated twisted pair for the communication link.
- Easy to install
- Field-programmable DIP switch:
  - 512 IDs
  - Manual "OVERRIDE ON" switch
  - Communication-loss "TAKE ACTION" switch
  - "STARTUP-CONDITION" switch
- Excellent diagnostics
- Internal relay provides digital output
- Built-in microprocessor with fail-safe circuit
- 120 through 600 Vac power input (also 24 Vac)

#### OPTIONS

RESPONDER POWER SOURCE						RELAY #1	RELAY #2	# OF IDs
24 Vac ***	120 Vac	240 Vac	347 Vac	480 Vac	600 Vac	PILOT		1
RC24C/A	<-----RC41C/A----->				RC06C/A	PILOT		1
RC24H/A	<-----RC41H/A----->					PILOT	PILOT**	1
	RC01P/A	RC02P/A		RC04P/A	RC06P/A	POWER 1		1
				RC04P2/A		POWER 2		1
		RC02T/A				POWER 1	PILOT**	1
RC242C/A	<-----RC412C/A----->					PILOT	PILOT	2
RCQ/A	<-----SEE*----->					4 PILOT RELAYS		4

\* RCQ/A gets power from 24 Vac & signal from any 0-480 Vac source. Housed in metal 2" x 4.5" x 10.5".

\*\* In RC24H/A, RC41H/A and RC02T/A relay #2 follows relay #1 on immediately but delays off for 10 minutes. Suitable for cycling heater or compressor without fan going off.

\*\*\* See note ② on page 7. All Responders connected to case L of page 4 must have green wire connected to equipment ground at the location of the Responder.

Timed manual override-on (1/2, 1 or 2 hours) is available on all RC Responders except RCQ. In ordering, follow model number by M and the override-on time desired. Initiate override-on by connecting grey / red wire to green wire.

RC type Responders receive signals from any Command Synthesizer via the CTME Command Transmitter or CTR Command Transmitter/Receiver. Relay(s) within RC control the load(s).

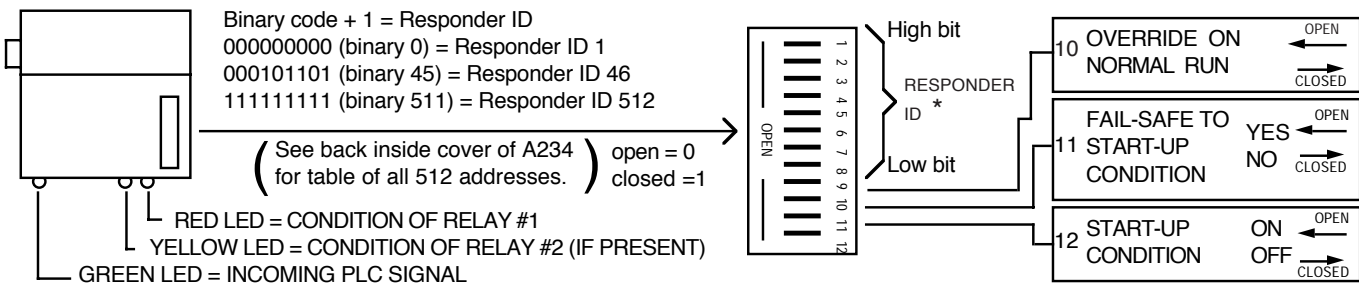
Any of 512 IDs is set by position 1-9 of the DIP switch with position 1 = most significant (high) bit. DIP switch 10 overrides on if open (normal operation if closed). DIP switch 12 sets the start condition to start the load on if open (off if closed). DIP switch 11 controls whether or not the Responder goes to the start condition if it receives no good signal for 20 minutes - open = go to start condition, closed = take no action upon loss of signal. In a dual address Responder the upper 8 bits of the ID (set with switches 1-8) are the same for both relay IDs. The Responder automatically assigns a 0 as the low bit of the ID of relay # 1 (normally switch 9) and a 1 as the low bit of the ID of relay # 2. Switch 9 then sets the start condition of relay # 2.

The red LED indicates operation of the Responder and aids in diagnostics. On = load is on. Blinking slow = load is off. Alternating between off and blinking = load is off and no good signal is now being received. Alternating between on and blinking = load is on and no good signal is now being received. Blinking fast = no good signal has been received to that ID for 20 minutes or more (or since power-up). Yellow LED (if present) is on if load #2 is on and off if load #2 is off. The green LED indicates PLC signal being received - normal is flickering.

The last letter in the model number indicates the channel (carrier frequency) the Responder receives. It is normally Channel A for the first 512 IDs and Channel B for the second 512 IDs.

Model RCQ is composed of four independently codable Responders, each with its own DIP switch, red LED and relay.

Multiple RC Responders can be set to the same ID for load group control. If an RC Responder is being used in a two-way system and if the Command Synthesizer is being run adaptively then the RC may not be at the same ID as an RV or RA Responder and it may not be at the same ID as an RTC or RTQ unless the digital in of the RTC or RTQ has been inhibited.



\* In RC412C & RC242C position 9 sets the start condition of load 2. The 9th bit is automatically 0 for the first relay and 1 for the second relay.

**SPECIFICATIONS**

RESPONDERS	POWER INPUT		
RC24C/A, RC242C/A & RC24H/A	24 Vac	60 Hz	1.2 WATTS
RCQ/A	24 Vac	60 Hz	3.5 WATTS
RC41C/A, RC412C/A & RC41H/A	120-480 Vac	60 Hz	3.1 WATTS
RC01P/A	120 Vac	60 Hz	3.0 WATTS
RC02P/A & RC02T/A	208-277 Vac	60 Hz	3.0 WATTS
RC04P/A & RC04P2/A	480 Vac	60 Hz	3.0 WATTS
RC06C/A & RC06P/A	600Vac	60 Hz	3.0 WATTS

- SPDT pilot relay rated at 10 A resistive, 2 A tungsten, 277 Vac (For highly inductive loads such as 24 Vac contactors, Model TS transient suppressor is recommended to protect contacts.)
- Power 1 relay = SPST power relay rated 30 A at 300 Vac, 10 A at 600 Vac, 0.75 HP at 120 Vac, 1.5 HP at 240 Vac and heavy duty pilot at 600 Vac
- Power 2 relay = DPDT power relay rated 20 A at 300 Vac, 5 A at 600 Vac, 1 HP at 120/480/600 Vac, 1.5 HP at 208/240 Vac, 660 VA at 120 Vac, 915 VA at 208 Vac, 960 VA at 240 Vac, 765 VA at 480/600 Vac and NEMA B600 Pilot Duty rating
- Relay rated life 100,000 cycles minimum at full rated load, 1,000,000 cycles mechanical
- Minimum sensitivity of 10 mV peak-to-peak PLC
- Absolute rejection of all signals outside of + / - 0.8% of channel center
- PLC communication has confirmation means, redundancy and continuous refresh
- Operating temperature range = -30° to 150° F, except for RC04P2/A, which is -30° to 122° F; storage temperature range = -40° to 185° F
- Humidity range = 5 to 95% (noncondensing)
- Contains externally visible LEDs, which show the presence of ac power, the presence and validity of incoming PLC and the ON/OFF status of the load(s)
- Two-piece housing 4" X 4" X 2.25" of 94-5V flame retardant grey plastic, mountable via attached 1/2" NPT nipple or via screw mounts. Electronics portion is separable from mounting/wiring portion.
- UL listed under standard 916 Energy Management Equipment. CSA Certified.