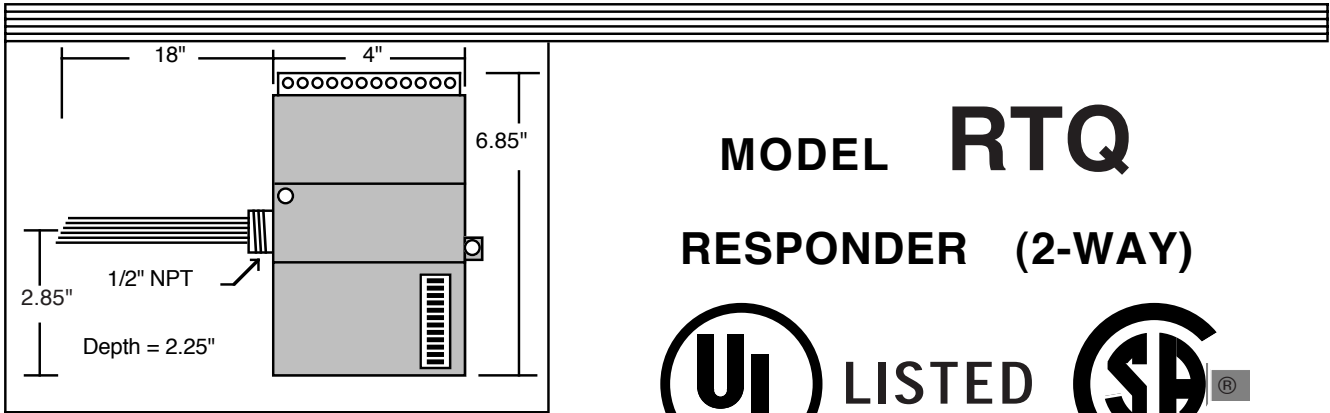
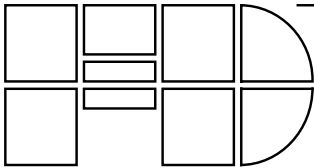


FUNCTIONAL DEVICES, INC

POWER-LINE CARRIER



MODEL RTQ

RESPONDER (2-WAY)



DESCRIPTION

RTQs are a remote component in the PLC link between the controller and the digital and analog information being sensed. They can be programmed to assume 2 or 4 successive digital codes or identities (IDs) and are intended for use where multiple digital and/or analog sensors are located in close proximity. They contain no relays and if digital outs are required in the vicinity they can be satisfied by using RCs at different IDs (see "OPERATION"). They use the existing ac wires or a dedicated twisted pair as the communication path.

Models are available to report statuses of four RTDs, two RTDs plus two 4-20 mA sensors or four thermistors. All models report digital statuses (external contacts) for each ID they serve. The reporting of the digital statuses can be inhibited so that RV or RA Responders can be assigned to the same ID.

FEATURES

- Uses existing ac wires or separate dedicated twisted pair for the communication link
- Field-programmable DIP switch for setting 2 or 4 consecutive IDs anywhere in the 512 ID range (See "OPERATION" for restrictions)
- Excellent diagnostics
- Easy to install
- Accepts 2 or 4 each of digital and analog inputs
- Built-in microprocessor with fail-safe circuit
- 120 through 600 Vac power input

OPTIONS

Power input is 120 to 600 Vac. In case L of page 4, signal input is as shown on page 7. *

MODEL #	TYPE OF INPUT	RESOLUTION	RANGE
RTQ1 (* / *) P, C or N	= 4 RTDs	8 BIT	* / * DEG F
RTQ2 (* / *) P, C or N	= 2 RTDs + 2 CURRENT TRANSDUCERS	8 BIT	* / * DEG F 4/20 MA
RTQ3(*/*)	= 4 THERMISTORS	8 BIT	*/* DEG F

* / * = CUSTOMER-SPECIFIED TEMP RANGE P = PLATINUM DIN STD. C = COPPER N = NICKEL-IRON

* 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.

RTQs contain no relays. They can be programmed to assume 2 or 4 successive IDs. The PLC answer sends the status of digital input (external contacts) and analog information for all of the assumed IDs. The PLC answer containing the digital-in can be inhibited so that RV or RA Responders at the same ID code can supply the digital information. If 4-20 mA has its own voltage source, connect between -V and the - terminal of the 4-20 mA input with the + output of the 4-20 mA current source on the - terminal of the 4-20 mA input.

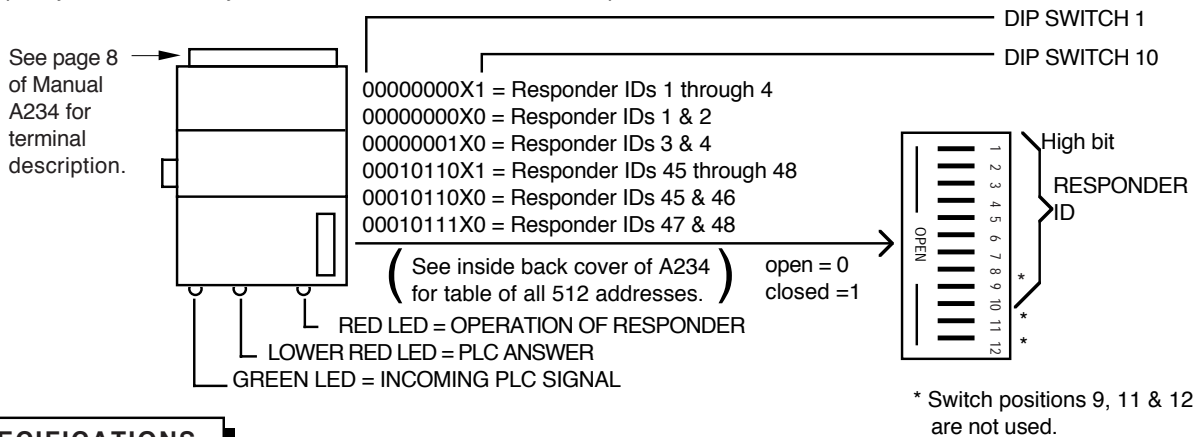
The 2 or 4 IDs can be set to any sequential group of 2 or 4 IDs as indicated below. After setting the high 7 ID bits using positions 1 through 7 of the DIP switch, use the table below to set whether the RTQ assumes 2 or 4 IDs and which IDs they are. (The low bit of each pair of bits is the rightmost bit.)

LOW ID BITS (BINARY) COVERED BY RTQ	DIP SWITCH 8	DIP SWITCH 10	DIP SWITCH POSITIONS 9, 11 AND 12 ARE NOT USED
11 + 10 + 01 + 00	OPEN	CLOSED	
01 + 00	OPEN	OPEN	
11 + 10	CLOSED	OPEN	

The first red LED indicates operation of the Responder and aids in diagnostics. On or blinking slow = normal. Alternating between off and blinking or on and blinking = no good signal is now being received. Blinking fast = no good signal has been received to any of the assumed IDs for 20 minutes or more (or since power-up). Second red LED indicates PLC answer. 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.

Only one two-way Responder may be at a given ID. An RV or RA Responder may share the same ID as an RTQ if the RTQ has had its digital inputs inhibited. 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 RTQ Responder.



SPECIFICATIONS

- 120 through 600 Vac, 60 Hz, 4 watts power input (household GFIs not allowed on circuit supplying ac to Responder) 347 & 600 Vac require addition of C 600 capacitor network (see page 7 of Manual A234).
- Signal in is separate from power in, allowing RTQ to be used on ac lines or dedicated twisted pair
- Minimum sensitivity of 10 mV peak-to-peak PLC
- Absolute rejection of all signals outside of + / - 0.8% of channel center
- PLC communication is two-way, has confirmation means, redundancy and continuous refresh
- Operating temperature range = -30° to 150° F, storage temperature range = -40° to 185° F
- Humidity range = 5 to 95% (noncondensing)
- Dry-contact input open-circuit voltage = +29 Vdc. Short-circuit current = 1 mA
- Maximum wire run from Responder to dry-contact input switch with 20-gauge wire (shielded) is 1000 feet
- Contains externally visible LEDs, which show the presence of ac power, the presence and validity of incoming PLC and the occurrence of a PLC answer.
- Three-piece housing 6.85" 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
- Analog inputs have 8-bit resolution (RTD, thermistor and current)
- DI may be inhibited for assignment of RA or RV Responder to the same ID
- Use 50 ft. of 20-gauge, 80 ft. of 18-gauge, 125 ft. of 16-gauge or 200 ft. of 14-gauge wire for 1/2 Degree Fahrenheit error on 1,000-ohm RTD sensor. Wire must be shielded. Use a maximum of 1,000 ft. of 20-gauge wire for thermistor or current sensor.
- UL listed under standard 916 Energy Management Equipment. CSA Certified.