



## SPECIALTY DEVICES

# RTR-2A / -2B WATER METER RELAYS

## DESCRIPTIONS



### FUNCTIONAL SUMMARY

IN	OUT
1	2
2 Wire	2 Wire
A	A
Open collector transistor or dry contact switch input	

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TYPE

FORM

SPECIAL FEATURES

The RTR-2 relays are designed to interface with water meters and provide a duplicated set of contacts for interfacing to other systems. The RTR-2A pulse isolation relay is designed for use with Badger's Record-All Transmitter Register (RTR) water meters and Hersey's ER-2 water meters. The RTR-2B pulse isolation relay is designed for use with Hersey's ER-1 water meters. Both RTR-2 models provide two sets of isolated solid-state Form A (K & Y) dry contacts. The RTR-2's input is designed for an open-collector transistor, open drain FET or a dry-contact relay. The input is activated when the input (Y) is switched to ground (K) for 5 milliseconds or longer for the RTR-2A and 50 microseconds or longer for the RTR-2B.

If Badger's RTR water meter provides an open-collector transistor output to interface to Badger's remote meter reading equipment, the RTR-2 relay is inserted in the two conductor cable between the RTR meter and the remote equipment. The RTR-2 provides a replicated signal to the remote equipment, and a separate isolated Form A contact closure for use with customer-owned monitoring equipment.

Typical applications involve pulse counting, monitoring and recording of water usage. Other applications include interfaces between utility metering devices and customer-owned building automation systems, control and monitoring systems, usage recorders, automated meter reading systems and supervisory control systems (SCADA). A bright yellow LED lamp indicates the system's status at all times thus allowing a rapid check of the system's performance without requiring any additional test equipment.

The RTR-2 has an integrated circuit that checks each incoming pulse for its duration. If the incoming pulse is less than 5 milliseconds in length the RTR-2A assumes the incoming pulse to be noise and it is disregarded. (Less than 50 microseconds for the RTR-2B.) Thus any valid pulse rate of 100 pulses per second (50 on-50 off form factor) or less is accepted while static and induced high frequency noise is rejected. If used in a very noisy environment this "pulse acceptance window" may be lengthened or shortened as needed to reject noise by the change of a resistor and/or a capacitor value. The RTR-2's Form A output pulse dry contact closure is set for a nominal 100 millisecond closure, regardless of the input pulse's duration. The 100 millisecond factory set duration may be changed by changing either a resistor and/or a capacitor for longer or shorter durations. The RTR-2's dry contact closure allows a pulse of approximately 100mS to the remote equipment & allows the revenue water meter display to operate normally.

The RTR-2's input and output circuit's terminal strip is a "Euro" type connector for easy field wiring. The "K" lead of the RTR-2's output is fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc. RTR-2 models have built-in transient protection for the solid-state relay's contacts that eliminates the need for external or off-the-board transient suppressors.

All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum user protection. The mounting base plate is made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface. The RPR-2 models are designed to be mounted in an electrical enclosure appropriate for the application and operating environment.

# RTR-2A/2B



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## SPECIFICATIONS

### ELECTRICAL

Power Input:	90 to 300 VAC. Burden: 10 mA at 120 VAC
Output:	Two sets of dry Form A (K & Y) contacts. Outputs are activated (closed) for a nominal 100mS following a valid input pulse. The contacts are solid state "no bounce" relays rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Operate and Release Time:	Turn On: 20 mS maximum, 8 mS typical Turn Off: 5 mS maximum, .15 mS typical
Input/Output Isolation Voltage:	2500 Vrms

### MECHANICAL

Mounting:	Any position
Size:	3.27" wide, 5.65" high, 1.50" deep
Weight:	13 ounces

### TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

### OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.
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