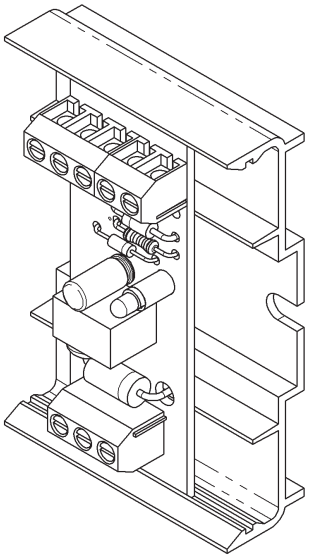
PMPB5 - Pulse Meter Pulse Buffer

Installation & Operating Instructions

12213_ins_PMPB5 rev. 03/24/20

Overview

Many electrical, water or gas meters provide a pulse output with each pulse representing a specific quantity of the media being measured. These pulse outputs often need to be electrically isolated from the controller's input by a buffer. The PMPB5 provides that buffer by receiving the pulses from the meter and recreating them as dry contact closures. An LED lights whenever the buffer contacts are closed. The PMPB5 fits standard 2.75" snaptrack.



PMPB5 mounted in the optional 2.75" snaptrack

RELATED PRODUCTS

Snaptrack:
BAPI sells snaptrack in 1.25", 2", 4", 8", 12", 18" and 48" lengths. Search for TRK01 on the BAPI website. PMPB5-TRK includes the 1.25" piece of snaptrack.

PE4 - Pulse Extender, 4 Inputs
If you find that your meter pulses are too short to work with PMPB5 or your controller, the PE4 can read very short pulses and create a 100ms pulse to the controller. If your meter pulses are too fast for the PMPB5 or your controller, the PE4 can divide the input pulses by 2, 4, 8, or 16 and create 100ms output pulses to the controller.

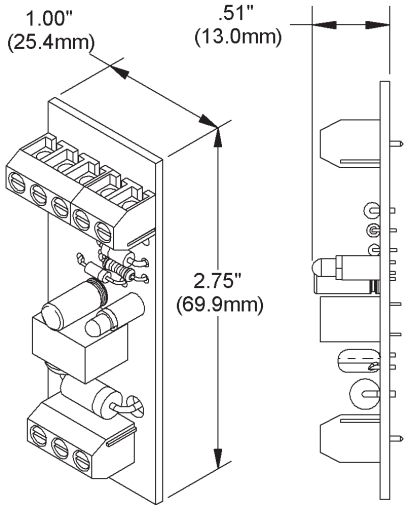
IRM4 - Interposing Relay Module, 4 Circuits
If you just need an interposing relay to isolate contacts in the field from the controller, or to boost an output signal with more current, the IRM4 has 4 separate relays which can be configured for "contact in / contact out", "voltage in / voltage out" or "voltage in / contact out".

Specifications

Power
24VAC, 50/60HZ @ 25mA (0.6VA) • 24VDC @ 13mA (0.3W)

Contact Rating
1A @ 24VAC/DC max, 1mA @ 5VDC min*

(*This is the minimum recommended "wiping" or wetting current required to ensure current flow through the relay contacts and to prevent buildup of surface film on the contacts which eventually leads to contact failure.)



Contact Repetition Rate
16 pulses per second (16Hz)

(The 16Hz is based on worst-case estimates of capacitor charge/discharge times and relay coil operation times. Results may vary depending on cable length, resistance and capacitance between the PMBP5 and the meter contact.)

Surge Protection on Controller Side (no surge protection on meter side)
Pin 8 (the supply voltage from the controller) is protected with an MOV which nominally clamps at 39V. Max working voltage is 25VAC / 31VDC.

Pin 7 (the return pulse to the controller) is protected with a TVS diode which nominally clamps at 6V. Do not connect the supply voltage directly to pin 7!

Pulse Duration
Because of the TVS diode protecting pin 7, pulse duration for any supply voltage greater than 5VDC on pin 8 should be limited to 2s or less. To allow enough time for the capacitor to charge and the relay to close, meter pulse width should be a minimum of 30ms.

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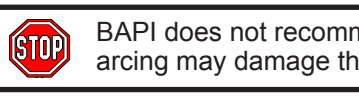
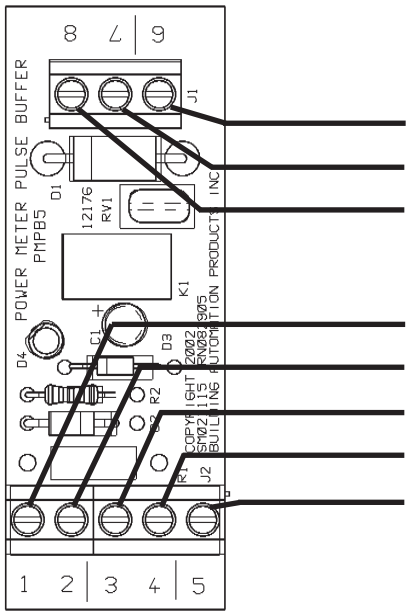
Termination

BAPI recommends using twisted pair of at least 22AWG. Larger gauge wire may be required for long runs. All wiring must comply with the National Electric Code (NEC) and local codes. Do NOT run this device's wiring in the same conduit as AC power wiring of NEC class1 or NEC class 2, NEC class 3 or with wiring used to supply highly inductive loads such as motors, contactors and relays.

BAPI's tests show that fluctuating and inaccurate signal levels are possible when AC power wiring is present in the same conduit as the signal lines. If you are experiencing any of these difficulties, please contact your BAPI representative



BAPI does not recommend wiring the device with power applied as accidental arcing may damage the product and will void the warranty.



PMPB5 Wiring Diagram

OUTPUT

Pin #6: Equipment Ground

Pin #7: Dry Contact, return pulse to controller, protected to 6VDC

Pin #8: Dry Contact, supply voltage from controller, 1A @ 24VAC/DC maximum, 1mA @ 5VDC minimum

INPUT

Pin #1: 24VAC/DC return from Dry Contact on the meter

Pin #2: 24VAC/DC to Dry Contact on the meter

Pin #3: 24VAC Hot / 24VDC

Pin #4: 24VAC Neutral / 0VDC

Pin #5: Equipment Ground

TERMINATION NOTES

Note 1: Since Pin #7 to the controller is protected to 5V with TVS diode, pulse duration is limited to < 2s. Do not use as a sustained isolation relay unless input voltage on Pin #8 is 5VDC or less.

Note 2: Equipment Ground, as used here, is earth ground, or Protection Ground (PG) as referred to on other BAPI ETA products. Only Pin #5 or Pin #6 need to be connected to ground. They are internally connected together.

Note 3: LED lights when contacts are closed.

Note 4: Using supply voltage greater than 6V will cause the TVS diode to draw additional current through the contact on each pulse, thus helping to ensure the 1mA minimum, even if the input impedance on the controller is high and input current low.

Note 5: PMPB5 can work with a powered meter which generates 24VDC pulses; simply connect the output pulse to Pin #1 and tie the meter's power supply ground to Pin #4. Pulse duration and frequency requirements must be met.

Note 6: PMPB5 may not work with meters having "open collector" or "open emitter" type electronic "contacts". It may be more suitable to connect these types of meters directly to the controller.

Diagnostics

Possible Problem:	***Possible Solution:***
Output is not working	- Check that connections are correct. - Check for proper connections in the terminal block. - Make sure that the supply voltage is present on pin 8.
There are more pulses at the controller than the meter is generating	- The relay contact will bounce when closing and opening, potentially creating additional very brief pulses. Some controllers are so sensitive they count these mini-pulses. This can be corrected in software, or with a debounce capacitor. Try adding a 1uF 50V ceramic capacitor between Pin #7 and Pin #6.
LED is not lighting up	- Make sure that the 24VAC/DC is present on Pin #3 and Pin #2. - Make sure the voltage is also present at the meter on the termination of the line from Pin #2. - Make sure there is flow and that the meter is actually pulsing. Test for voltage pulses on the output terminal of the meter. Verify that the meter's pulse width is 30ms and frequency is below 16 Hz.