



## 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.

### Part Number

### Description

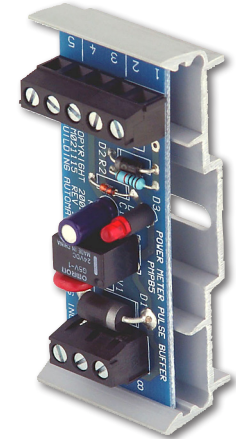
**BA/PMPB5**.....Pulse Meter Pulse Buffer

*See end of Section G for list pricing.*

## Specifications

Power ..... 24VAC 50/60HZ @ 25mA (0.6VA)  
 Contact rating ..... 1A @ 24VAC/DC max, 1mA @ 5VDC min\*  
 Contact repetition rate ..... 2 seconds per pulse maximum

\*Return pulse from the relay contact is clamped at 5V to ground.



**PMPB5 mounted in the optional 2.75" snaptrack**

# TS1 & TS2 - Transient Suppressor

## ETA Line

Rev. 01/31/06

## Overview

HVAC control systems can be subjected to electrical transients (temporary excess voltage) from various sources. Damage to control systems can occur if static electricity, lightning or contactors produce transients of sufficient magnitude and duration to overwhelm the protection built into the control system components. The TS1 and TS2 can significantly increase the transient protection and reduce the possibility of damage to the control system. Both modules fit in standard 2.75" snaptrack

The TS1 is specifically designed for network communications between control system components. The TS1 clamps voltages to 10 VAC or  $\pm 14$  VDC Line to ground and 7.5 VDC line to line. *Please Note: The added capacitance of the TS1 may be unsuitable for some combinations of communications line length and high speed data. For best operation you may have to reduce line lengths and add data repeaters.*

The TS2 is designed to protect 4 to 20 mA current loops. The TS2 clamps the signal return line to 5 volts above ground and 1 volt below ground. The voltage supply line is clamped to  $\pm 39$  VDC Line to ground.

### Part Number

### Description

**BA/TS1**.....Transient Suppressor (voltage)

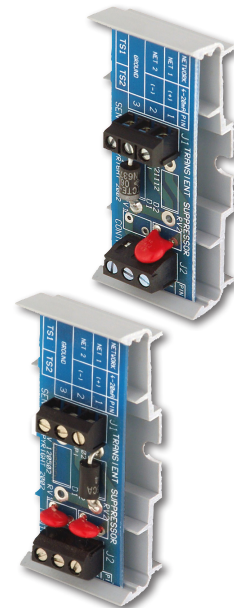
**BA/TS2**.....Transient Suppressor (current)

*See end of Section G for list pricing.*

## Specifications

TS1 Clamping Voltage..... 10 VAC or  $\pm 14$  VDC Line to Ground,  $\pm 7.5$  VDC Line to Line

TS2 Clamping Voltage..... 5 VDC Above Ground, Signal Return Line  
 1 VDC Below Ground, Signal Return Line  
 $\pm 39$  VDC Line to Ground, Power Supply Line



**TS1 & TS2 - Transient Suppressors mounted in the optional 2.75" snaptrack**