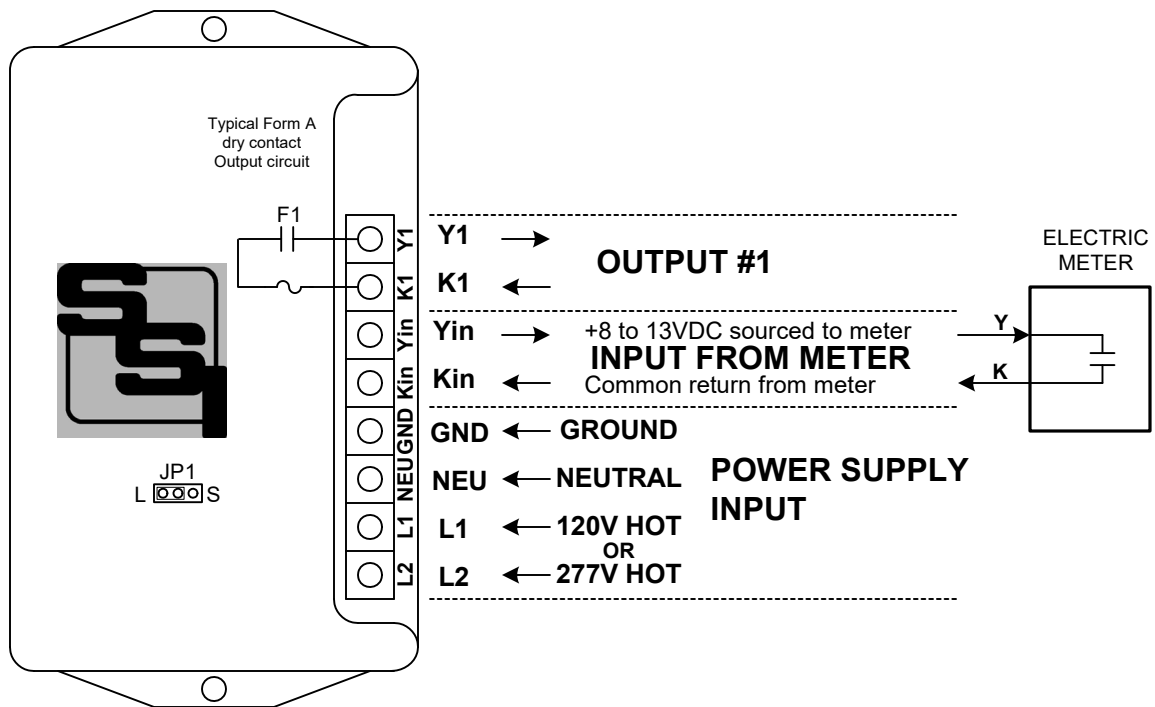# PIR-1PS+
Elite Solid State

PULSE ISOLATION RELAY INSTRUCTION SHEET

MOUNTING POSITION - The PIR-1PS+ may be mounted in any position.

POWER INPUT - For a 120VAC power supply, connect the "hot" lead to the **L1** terminal   For a 208 to 277VAC power supply, connect the "hot lead to the **L2** terminal. Connect the Neutral power supply lead to the **NEU** terminal Connect the electrical system ground to the **GND** terminal.

METER CONNECTIONS - The PIR-1PS+'s **Kin** and **Yin** input terminals are connected to the meter's K & Y terminals: Kin to K and Yin to Y. The PIR-1PS+'s **Yin** terminal provides a "pulled up" +13VDC wetting voltage to the meter's Y terminal. The **Kin** terminal is the common return.

FUSES - The fuse is a type 3AG and may be up to 1/2 Amp in size. A 1/2 Amp fuse is supplied standard with the unit unless otherwise specified.

OUTPUT - Under the PIR-1PS+' cover in the center of the board just above the power transformer is a 3-pin header labeled **JP1**. This selects either the **L**ong (LEFT) or the **S**hort (RIGHT) output pulse mode. Use the long (L) mode to have the output pulse length match the input pulse length. Read page 3 of this sheet for additional information on selecting the jumper setting. Arc suppression for the contact of the solid state relay is provided internally.
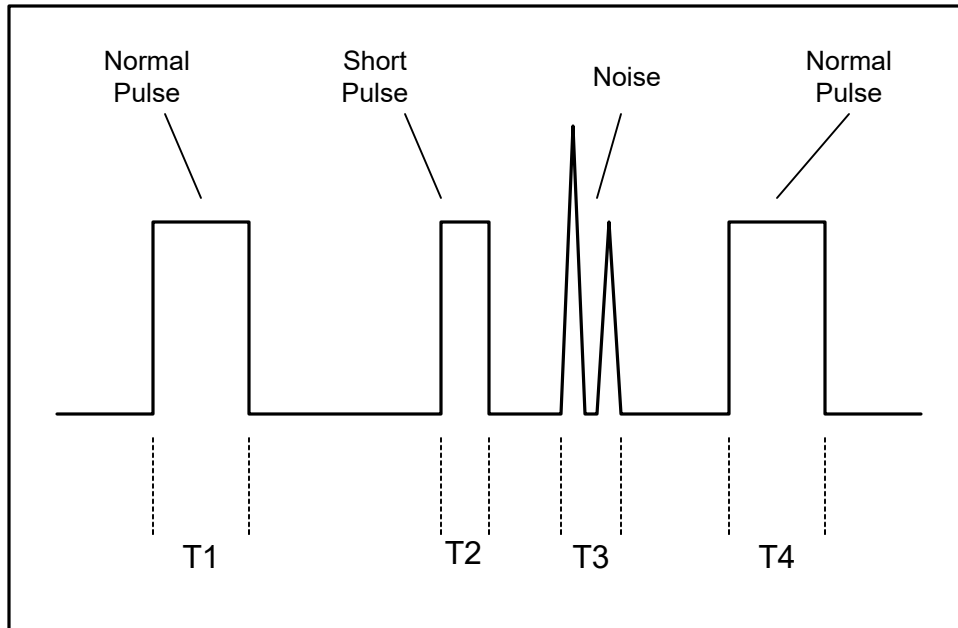
SOLID STATE INSTRUMENTS
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WORKING WITH THE PIR-1PS+ RELAY

BLOCKING NOISE: The PIR-1PS+ has built-in noise rejection circuitry to to allow the detection of valid pulses from a sending source. The circuit accomplishes this by measuring the time the input pulse is present. If the input pulse is present for less than the specified time (in milliseconds) as determined by the position of jumpers JP4 and JP5, it is assumed to be noise. An input equal or longer in duration than the specified time is classified as a valid input and an output will occur. In the illustration to the left, the normal pulses with time durations of T1and T4 will cause an output. The short pulse of time duration T2 and the noise with duration T3 will be rejected because the length of time (pulse width) is too short, even though the voltage is of sufficient magnitude. The time T4 could be many times as long as T1 and it would still be a valid time pulse since it has met the minimum time requirement. The time duration of 20 milliseconds (max) has been chosen as the factory-set default value since one cycle of the 60 hertz AC line frequency represents 16.67 milliseconds. Most induced noise and arcing discharges do not last longer than this, while most contact closures are a great deal longer. The time duration of the may be modified by changing jumpers JP4 and JP5. See table 1 on Page 3 for input filtering times.

OUTPUT PULSE DURATION: The PIR-1PS+ can output two types of pulses - long or short - depending upon the position of the small 3-pin header **JP1** located in the middle of the board just above the transformer and to the left of the Yin terminal. In the "**S**" (right) position, the PIR-1PS+ outputs a "short" pulse which has a duration determined by the position of jumpers **JP2** and **JP3**. Once a valid pulse has been qualifed, the output pulse will be set and time specified output time will begin timing out. See Table 2 on page 3 for the selectable output pulse lengths. If the switch is in the "S" position and the incoming pulse is of sufficient time duration to be a valid pulse, but is less than 100 milliseconds, for example, the output time period will still be 100 milliseconds. Thus, the PIR-1PS+ can be used as a pulse stretcher. In the "**L**" (left) position, the PIR-1PS+ outputs a "long" pulse which is the same duration as the valid input pulse plus the specified input time. Thus, the maximum pulse rate is dependent on the positions of jumpers JP2 through JP5. If no jumpers are installed, the PIR-1PS+ will default to the long output mode, 20mS input time, and output will mirror the input pulse length.

CONFIGURING THE PIR-1PS+ RELAY

INPUT FILTER TIMES - The PIR-1PS+ contains four different input filtering options. A pulse received at the PIR-1PS+' input must be present for <u>at least</u> the specified amount of time to be considered a valid pulse. Minimum pulse times can be set in the following times: 2mS, 5mS, 10mS or 20mS. For most electric meter pulse applications, the 20mS input time will be satisfactory. For higher speed applications with water or gas meters, the minimum input time may need to be reduced. The table below shows how to set jumpers **JP4** and **JP5** for the selected time.
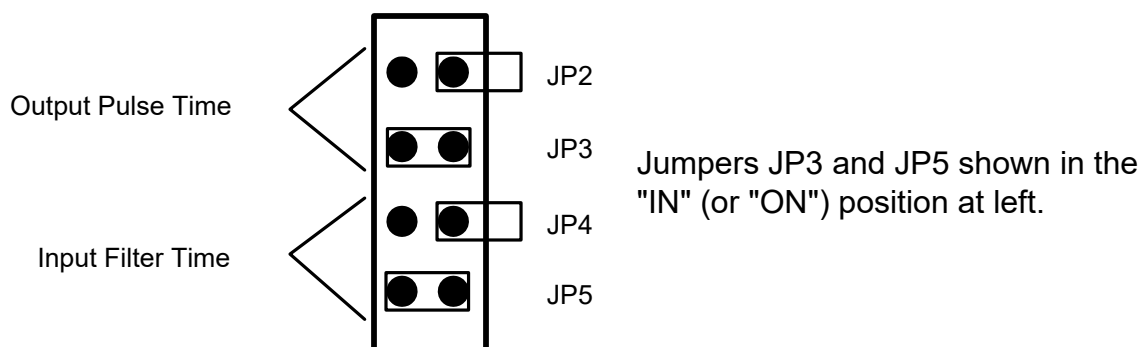
Table 1

JP5	JP4	mS
Out	Out	20	*
Out	In	10
In	Out	5
In	In	2

SHORT MODE OUTPUT PERIOD - When **JP1** is selecting the short output pulse mode, the duration of the output time can be selected by using jumpers **JP2** and **JP3**. Output times are selectable as follows: 100mS, 300mS, 500mS and 1000mS (1 second). The receiving equipment may require pulses to be of a given minimum length to be considered a valid pulse. If input pulses are received while a short output pulse is timing out, the PIR-1PS+ will store the received pulse(s) and output them as soon as the time has timed out. The time between pulses is the same as the specified pulse time. Up to 255 output pulses may be stored.

Table 2

JP3	JP2	mS
Out	Out	100	*
Out	In	300
In	Out	500
In	In	1000

Output Pulse Time — JP2, JP3

Input Filter Time — JP4, JP5

Jumpers JP3 and JP5 shown in the "IN" (or "ON") position at left.

* Note: Jumpers JP2-JP5 come factory-set to the "OUT" position

PIR-1PS+ Wiring Diagram

To Line

1 2 3 NEU

Service Entrance

To Loads

Electric Meter

Pulse Initiator

K

Y

Z NC

Kin

Yin

PIR-1PS+ Repeating Pulse Relay

K1

Y1

Out 1

To Energy Management System, SCADA, RTU, Recorder or other pulse input device

Power Supply Connections

277V

120V

NEU

GND
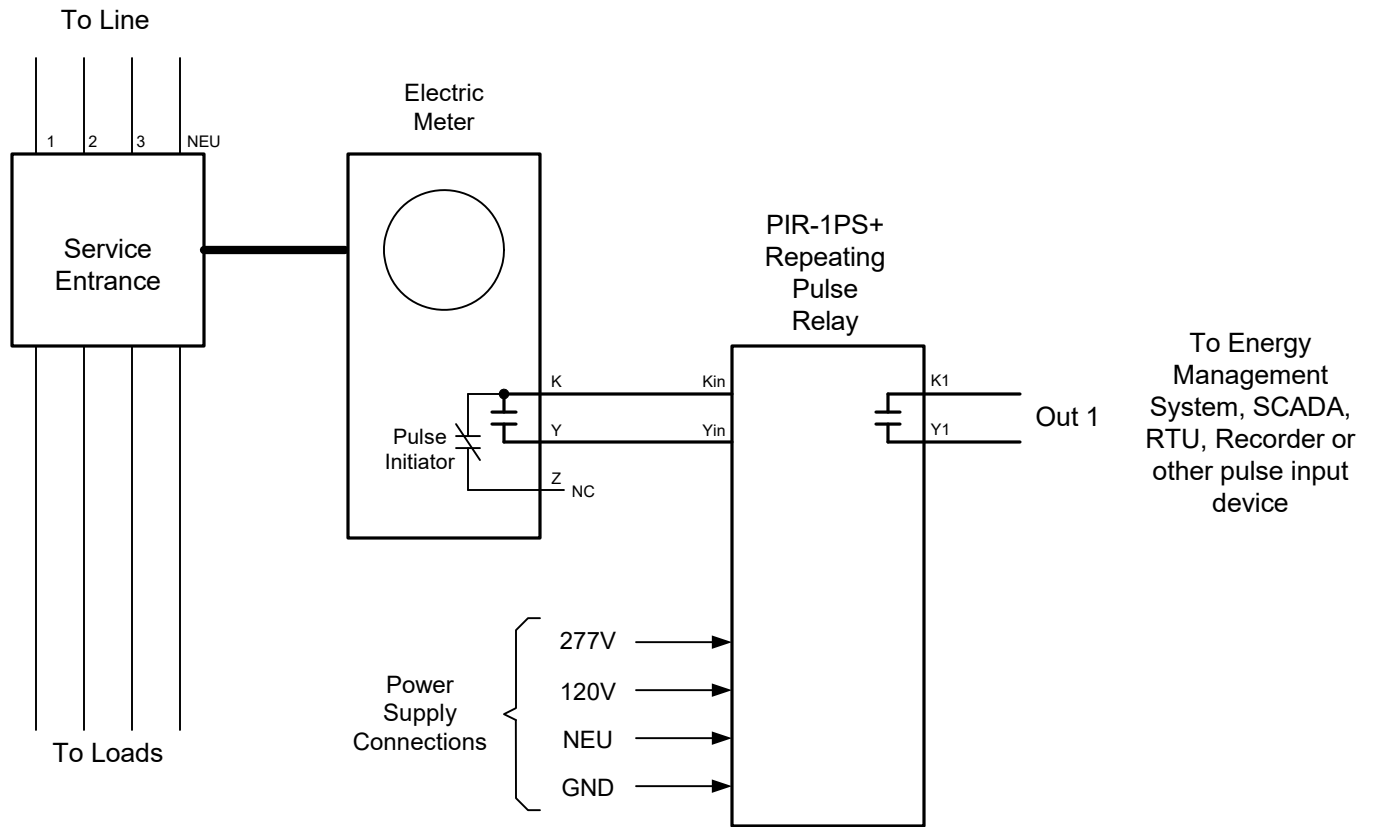
	REVISIONS		
PIR-1PS+ Repeating Pulse Relay Wiring Diagram	NO.	DATE	DESCRIPTION
DATE ORIGINAL 01/01/2025 SCALE N/A			
LATEST REVISION JOB NO. CHECKED DRAWN WHB			

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