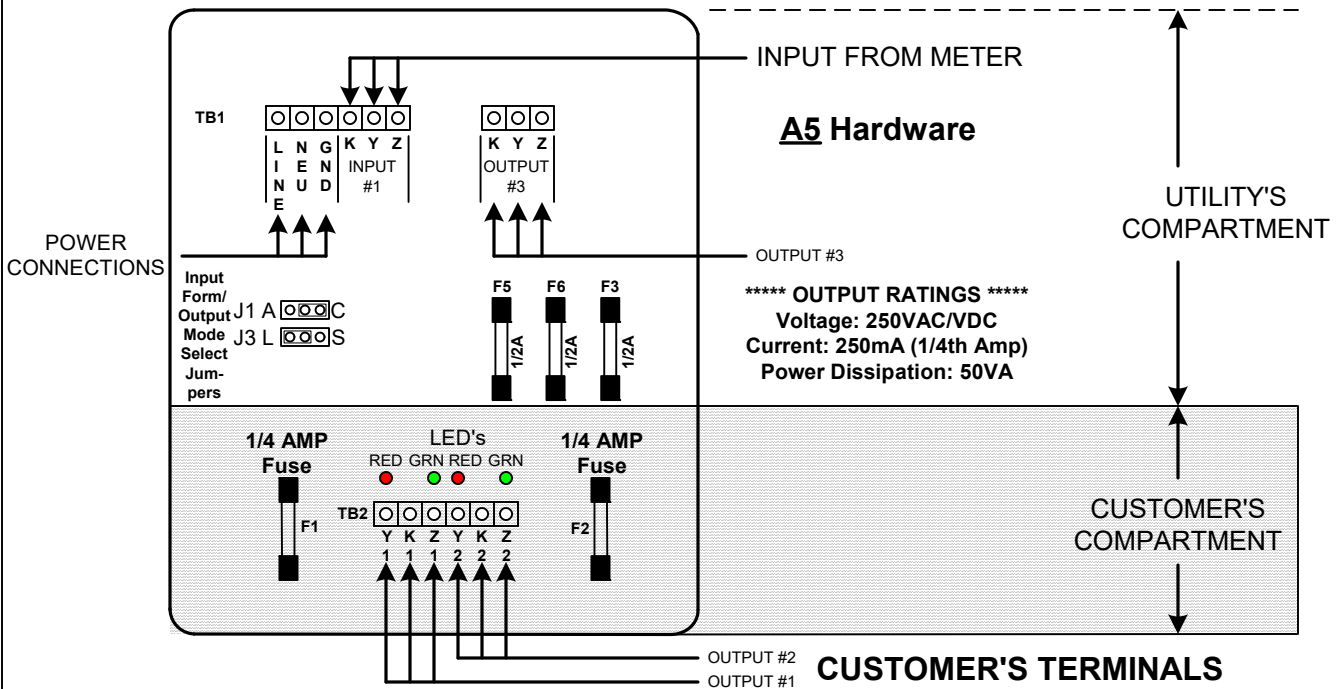


# CIR-13PS

Elite Solid State

# CUSTOMER INTERFACE RELAY INSTRUCTION SHEET

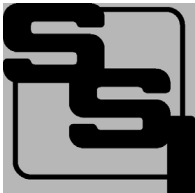


**MOUNTING POSITION** - The CIR-13PS may be mounted in any position.

**POWER INPUT** - The CIR-13PS features an auto-ranging power supply from 120V to 277VAC. Connect the "hot" lead to the **LINE** terminal. Connect the "neutral" lead to the **NEU** terminal. Connect the **GND** terminal to the electrical system ground. If no true neutral exists at the meter, connect NEU and GND terminals both to Ground. \*\*\*The CIR-13PS must be wired Phase-to-Neutral, NOT Phase-to-Phase.\*\*\*

**METER CONNECTIONS** - The CIR-13PS is designed for 2-Wire (Form A) or 3-Wire (Form C) inputs. For a 2-Wire (Form A) input, connect the K and Y wires from the meter. For a 3-Wire (Form C) input, all three (K, Y, & Z) wires are required. As appropriate and required for your application, connect the K, Y, & Z leads from the Meter's dry contact pulse initiator to the K1, Y1, & Z1 input terminals on the terminal strip in the utility compartment. The CIR-13PS' "K" input terminal is the common return. The CIR-13PS' KYZ inputs are compatible with electro-mechanical or solid state pulse initiators. When using an open-collector transistor output or open-drain FET to interface a meter with the CIR-13PS, the transistor's emitter or the FET's drain must be connected to the K input terminal. The transistor's collector or the FET's source pin must be connected to the Y or Z input terminals.

**OUTPUTS** - Three 3-wire isolated outputs are provided on the CIR-13PS, with output terminals K1, Y1 & Z1; K2, Y2, & Z2; and K3, Y3 & Z3. Each output is rated at 250VAC/VDC MAX and current limited to 500mA (1/2 Amp). Arc suppression for the contacts of the solid state relays are provided internally. The CIR-13PS' outputs may be configured for either **Long** or **Short** output pulses. Selector Jumper J3 selects the long or short output configuration for all outputs. Put the Jumper Plug in the correct position for the output type desired. See Page 3 for more information on Long and Short output modes.



## SOLID STATE INSTRUMENTS

by Radian Research, Inc

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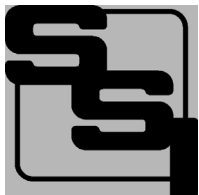
Mail: technicalsupport@radianresearch.com

**CUSTOMER OUTPUTS** - Two outputs are provided for CUSTOMER use. The terminals for these two outputs are located in the bottom of the enclosure in the customer compartment and are marked K1, Y1 and Z1 for Output #1 and K2, Y2, and Z2 for Output #2. Each K-Y input (connection between the K and Y input terminals) will result in a closure of the K-Y contacts of all outputs. A K-Z input (connection between the K and Z input terminals) will result in a closure (continuity) of the K-Z contacts of all outputs. Outputs are dry-contact type and must be provided with an external voltage of up to 250VAC/VDC on the K terminal by the customer's equipment. Maximum current through the solid state switch is 500mA. Arc suppression for the contacts of the solid state relays are provided internally. There is approximately 2.5 ohms of on-state resistance across the relay outputs.

**UTILITY OUTPUT** - One output is provided for UTILITY use and is located in the top of the enclosure in the utility compartment. It is marked K3, Y3 and Z3. Each K-Y input (connection between the K and Y input terminals) will result a closure of the K-Y contact of the output. A K-Z input (connection between the K and Z input terminals) will result in a closure of the K-Z contact of the output. Outputs are dry-contact type and must be provided with an external voltage of up to 250VAC/VDC on the K terminal by the customer's equipment. Maximum current through the solid state switch is 500mA. Arc suppression for the contacts of the solid state relays are provided internally. There is approximately 2.5 ohms of on-state resistance across the relay outputs.

**MAXIMUM POWER DISSIPATION OF OUTPUTS** - Output devices are rated at a maximum of 50VA. Care should be taken to insure that the wetting voltage used across the output device times the current (or burden) of the input of the downstream device, does not exceed the maximum power output dissipation of 50W. Normally this is not a problem since most downstream instrumentation devices are high impedance and present a very low burden, usually less than 10mA. For example, if 240VAC is used, the maximum allowable current across the output is 208mA. If 12VDC is used, the maximum current allowable across the output is approximately 4.15A, however 4.15 Amps is clearly beyond the 1/2A rating of the device. Therefore, the maximum dissipation when using 12V is 6VA since the current is limited to 1/2 amp. Calculate the maximum current using the following formula:  $50\text{Watts} / \text{Voltage} = \text{Max. Current (burden)}$ . Adjust the voltage or current used across the output to insure that the maximum power dissipation, voltage and current maximums are not exceeded.

**FUSES** - Fuse F5 in the utility's compartment is coordinated (in series) with the customer's fuse F1. Fuses F6 is similarly coordinated with F2. F1 and F2 are factory-equipped at 1/4th Amp (Max 1/2A). F5 and F6 are factory equipped at 1/2 Amp (Max 3/4A). F5 and F6 are designed to protect the CIR-13PS's circuit boards in the event that fuses larger than 1/2 Amp are used by the customer in the F1 and F2 positions. F1 and F2 may be sized up to 1/2 Amp but must be at least 1/8th Amp less than the size of F5 and F6 respectively. F3 which protects Utility output #3, is also factory equipped at 1/2 Amp. Maximum fuse ratings are designated on the silkscreen under or adjacent to each fuse position.



## SOLID STATE INSTRUMENTS

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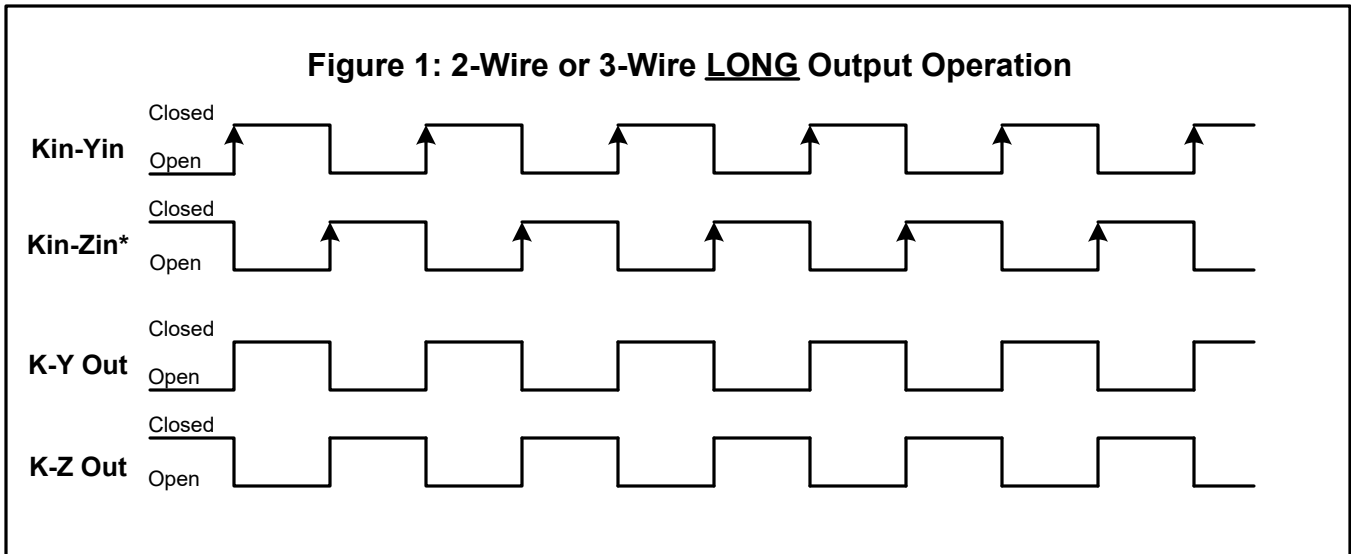
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Phone: (765) 449-5576

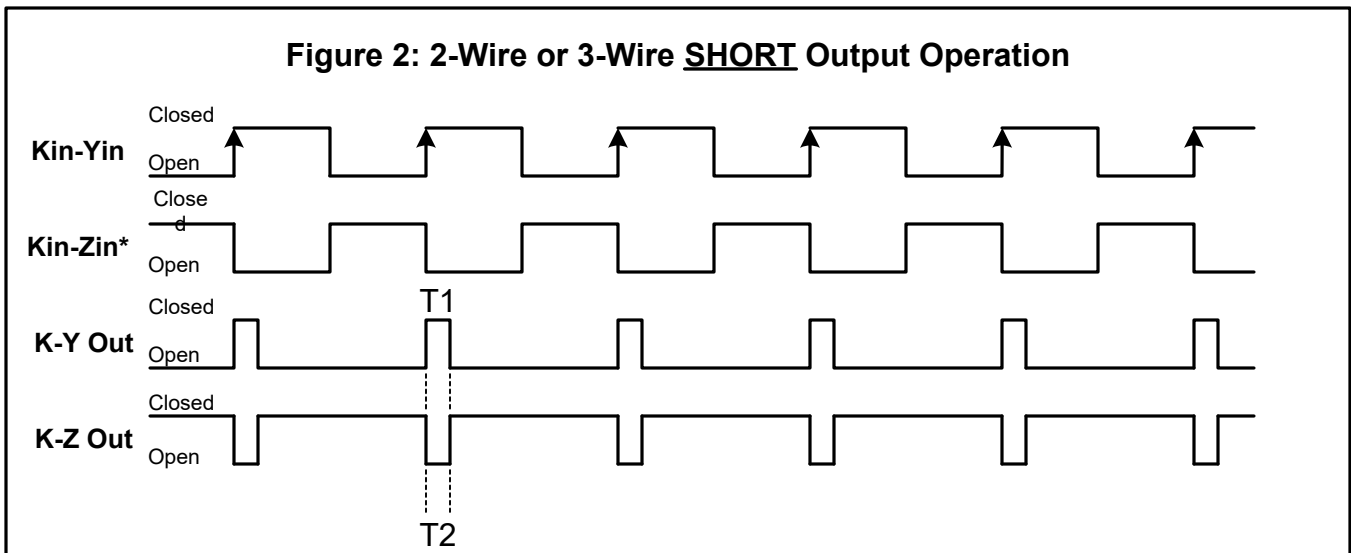
Mail: [technicalsupport@radianresearch.com](mailto:technicalsupport@radianresearch.com)

# WORKING WITH THE CIR-13PS RELAY

**OPERATING MODES:** The CIR-13PS Repeating Pulse Relay allows the output to be configured for either the "**Long**" or "**Short**" pulse output mode using Jumper J3. In the Long mode, the outputs simply follow the input such that the output pulse widths are equal to input pulse widths. With the "long" output configuration selected, pulse speeds of up to 72,000 pulses per hour (~20/sec) are possible. Figure 1 below shows the timing diagram for the "long" output mode.



In the Short output mode, shown in Figure 2 below, an output pulse (K-Y closure) with a fixed width (T1) of 100mS occurs each time the input is triggered. Correspondingly, the K-Z output opens for 100mS (T2) each time the input is triggered. In the "short" mode, the output pulse rate is limited to about 9 pulses per second, or about 32,400 pulses per hour.



If the input pulse rate is greater than 9 pulses per second or if pulses of 100mS are too short for the receiving equipment, it is recommended that the LONG pulse output mode be used. Contact the factory for technical support at (765) 449-5576.

\* Zin is not used in the 2-wire (Form A) input mode.