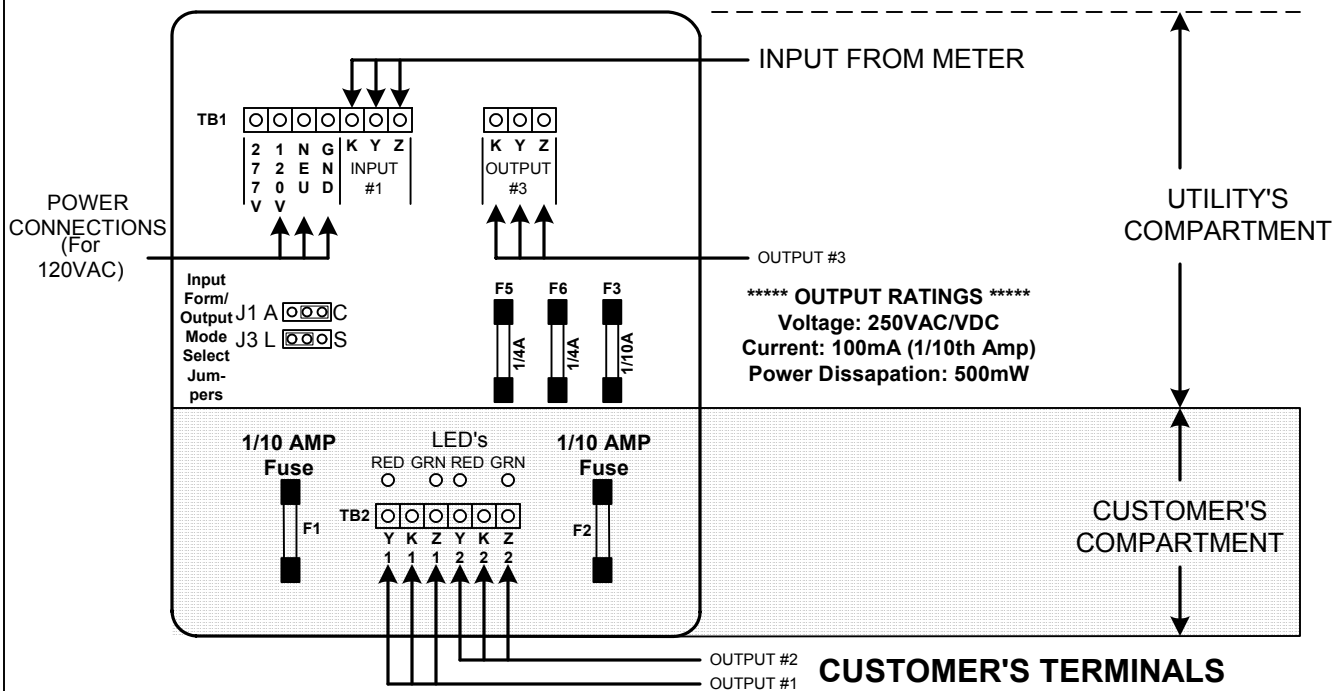


INSTRUCTION SHEET

CIR-13S CUSTOMER INTERFACE RELAY



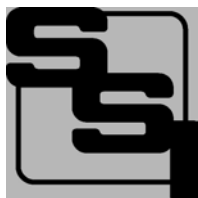
**** OUTPUT RATINGS ****
 Voltage: 250VAC/VDC
 Current: 100mA (1/10th Amp)
 Power Dissipation: 500mW

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

POWER INPUT - Connect the CIR-13S to the 120V and NEU terminals for use with a 120VAC power supply. Connect the 120VAC "hot" lead to the L1 terminal. For 208 to 277 VAC operation, use the 277V and NEU input terminals. Connect the 277VAC "hot" lead to the L2 terminal. Connect the GND terminal to the electrical system ground. Either L1 OR L2 may be used, but not both simultaneously.

METER CONNECTIONS - The CIR-13S 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 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-13S' "K" input terminal is the common return. The CIR-13S' 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-13S, 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-13S, 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 100mA (1/10th Amp). Arc suppression for the contacts of the solid state relays are provided internally. The CIR-13S' 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

a division of Brayden Automation Corp.
 6230 Aviation Circle, Loveland, Colorado 80538
 Phone: (970)461-9600 Fax: (970)461-9605
 E-mail: support@solidstateinstruments.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 100mA. Arc suppression for the contacts of the solid state relays are provided internally. There is approximately 20 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 100mA. Arc suppression for the contacts of the solid state relays are provided internally. There is approximately 20 ohms of on-state resistance across the relay outputs.

MAXIMUM POWER DISSIPATION OF OUTPUTS - Output devices are rated at a maximum of 500mW or 1/2 Watt. 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 500mW. For example if 240VAC is used, the maximum allowable current across the output is 2mA. If 12VDC is used, the maximum current allowable across the output is approximately 42mA. Calculate the maximum current using the following formula: $0.5\text{Watt} / \text{Voltage} = \text{Max. Current (burden)}$. Adjust the voltage used across the output to insure that the maximum power dissipation is not exceeded.

FUSES - Fuse F5 in the utility's compartment is coordinated (in series) with the customer's fuse F1. Fuses F2 & F6 are similarly coordinated with F2. F1 and F2 are factory-equipped at 1/10th Amp. F5 and F6 are factory equipped at 1/4 Amp. F5 and F6 are designed to protect the CIR-13S's circuit boards in the event that fuses larger than 1/4 Amp are used by the customer in the F1 and F2 positions. F1 and F2 may be sized up to 1/10 Amp. F3 which protects Utility outputs #3, are also factory equipped at 1/10 Amp. Fuse ratings are designated on the silkscreen under or adjacent to each fuse position.



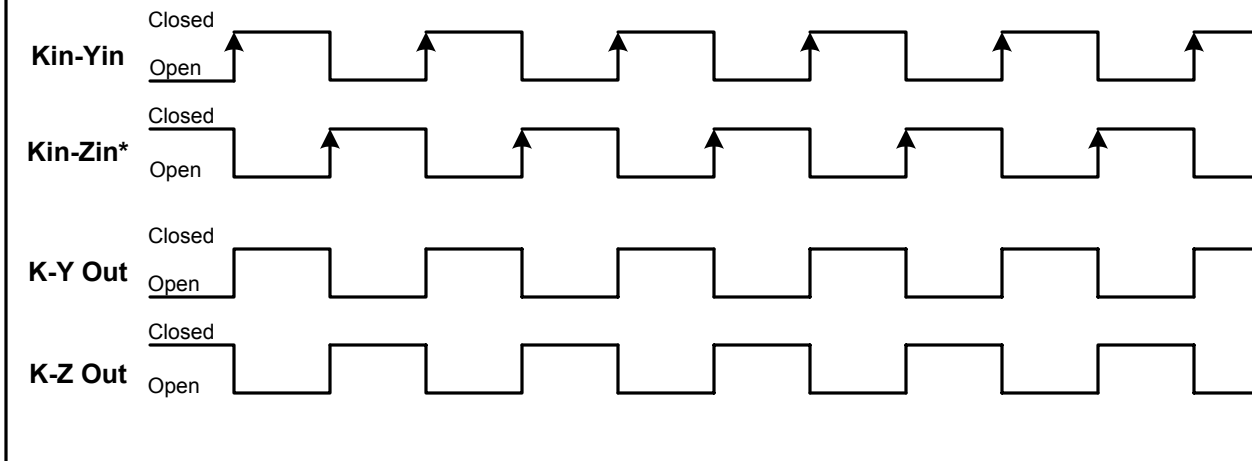
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a division of Brayden Automation Corp.
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Phone: (970)461-9600 Fax: (970)461-9605
E-mail: support@solidstateinstruments.com

WORKING WITH THE CIR-13S RELAY

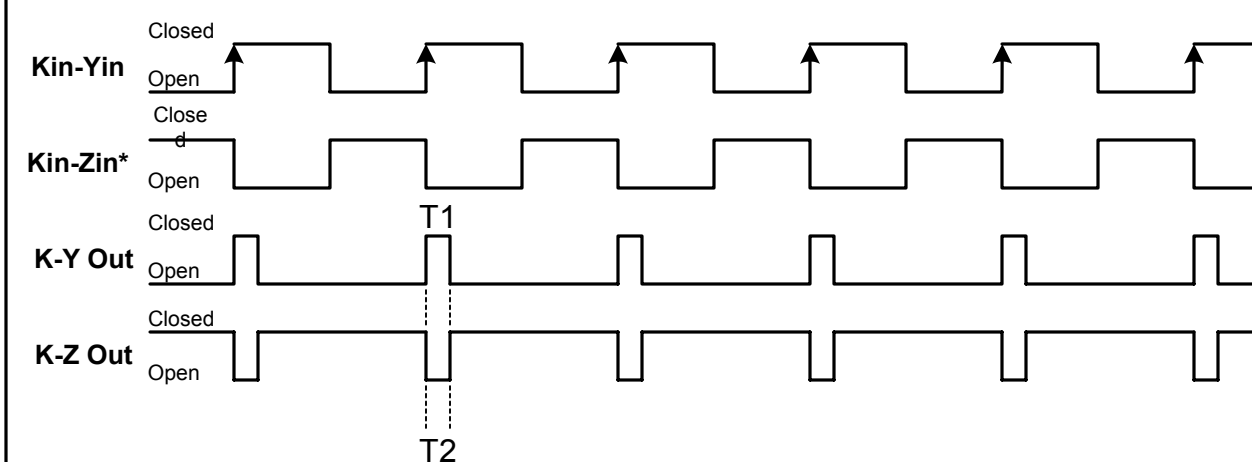
OPERATING MODES: The CIR-13S Repeating Pulse Relay allows the output to be configured for either the "**Long**" or "**Short**" pulse output mode using Jumper J3. In the Long mode, the outputs simply follow the input such that the output pulse widths are equal to input pulse widths. With the "long" output 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.

Figure 1: 2-Wire or 3-Wire LONG Output Operation



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.

Figure 2: 2-Wire or 3-Wire SHORT Output Operation



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 (888)272-9336.

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