2022

SOLID STATE INSTRUMENTS

A DIVISION OF BRAYDEN AUTOMATION

TO OUR VALUED CUSTOMERS:

Welcome to our 2022 Edition of the Solid State Instruments Catalog! We sincerely appreciate your interest in our products and hope that you find exactly the pulse metering product you are looking for. As we start our 43rd year, please know that my team members and I are dedicated to our customers and are committed to making the most reliable, highest quality products in the industry, all while providing first-class customer service.

This year we've continued to strengthen the green initiatives of Brayden Automation Corporation. In 2008, we converted to a mercury-free product line, when we transitioned to our new Solid State Elite product line. A quick product reference guide found on our website will help you cross the legacy SSI products with the newest version.

In following with the tradition of our previous catalogs, we've continued to put our contact information on the bottom of every product page. We've done this to make it easy for you to contact us and get the products and technical support you need! We invite you to visit our website at www.solidstateinstruments.com for the latest product additions and information.

Once again this note would not be complete without giving you my sincere thanks for your business. It is your continued patronage that has made Solid State Instruments into the company that it is today, and it is our goal to uphold the reputation that you have helped us build. We will work diligently to meet your requests and needs in the best manner possible. To our future customers, we are privileged to have caught your interest and we look forward to serving you.

Best regards,

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TABLE OF CONTENTS

Selecting the Correct Relay 2
Terms & Definitions 3

SSI Standard

MODULAR RELAYS

SPR-1 4
SPR-2 6
SPR-3 8
SPR-22 10
SPR-24 12
SPR-36 14
SPR-44 16
SPR-48 18
SPR-110 20
SPR-112 22
SPR-448 24
SPR-610 26
RTR-2+ 28
RTR-22+ 30
DPR-1 32
DPR-2 34
DPR-4 36
ETR-3 38

SELF-CONTAINED RELAYS (OUTDOOR)

SPR-3E 40
SPR-24E 42
SPR-510 44
SPR-610 46

SSI Elite

MODULAR RELAYS

RPR-1PS 48
RPR-2PS 50
RPR-3PS 52
RPR-22PS 54
RPR-23PS 56
RPR-24PS 58
RPR-33PS 60
RPR-903PS 62
PIR-1PS+ 64
PIR-2PS+ 66
PIR-3PS+ 68
PCR-3PS 70
DPR-22PS 72

SELF-CONTAINED RELAYS (OUTDOOR)

CIR-13PS 74
CIR-22PS 76
CIR-24PS 78
CIR-24NG 80

Totalizers

MPT-2C 82
MPT-4C 84
MPT-8C 86
MPT-440 88
NPR-1 90
NPR-8 92

Pulse Links

PRL-1200 94
SPS-1D 96
OPL-1B 98
OPL-1C 100
OPL-4B 102
OPL-4C 104
OPL-8B 106
OPL-8C 108
PTR-1PS 110
PTR-2PS 112
CLR Series 114

Specialty Devices

MPG-3 116
MPG-3E 118
MPG-3ES 120
MPG-3SC 122
PMC-1 124
CID-1 126
CID-2 128
CID-3 130
CID-4 132
APU-1 134
APU-3 136
MPS-1 138
MPS-2 140
PPC-2 142
PPT-1 144
OPP-1 146
OPP-1i 148
CLC-1 150
PCL-1 152
DCS-1 154
DCS-2 155
Typical Hookups 156
Case Schematics 161
Warranty-Shipping Terms 162

SELECTING THE CORRECT RELAY

Do you want a Fully Self-Contained Relay, a Modular Relay, or a Totalizing Relay?

Self-Contained Relays are an all-in-one solution including a weather-resistant enclosure for outdoor mounting. They contain separate utility and customer compartments. Modular Relays are housed in a polycarbonate case and are suitable for mounting indoors or in another enclosure as part of a metering system. Totalizing relays are special purpose devices packaged in the same polycarbonate case as the modular relays.

What Input Format does your pulse sending device have — 2-Wire, 3-Wire or Field-Selectable?

Input format refers to the number or wires between the sending unit (usually an electric meter) and the pulse isolation relay. For an energy signal, it can be either a 2-wire or a 3-wire system. For a time or end-of-interval signal, it is usually a 2-wire system. Many newer electronic metering devices, however, are using a 2-wire format for both. A field-selectable device has a 2 or 3-wire input and allows the installer to select the configuration upon installation.

What Output Format is required?

The output format is either a 3-Wire, 2-Wire, field-selectable or specialty type. The 3-wire output is a Form C configuration and consists of K, Y and Z terminals. The 2-wire output is a Form A configuration and consists of K and Y terminals. The field selectable type allows the installer to select a 2-wire or 3-wire output upon installation of the relay. Specialty types perform special functions like pulse dividing, scaling or conversion.

How many Isolated Outputs are required on a relay?

The number of output relays on an SSI isolation relay is generally identified by the last numerical digit(s) of the relay's model number. For example, an RPR-2P has two relay outputs. Relays are available with up to 12 outputs.

ADDITIONAL CONSIDERATIONS:

What is the Minimum Time the sending device's contact is made up?

The sending device must have contacts made up (closed) for at least 25 milliseconds for the relay to reliably switch. All SSI relays will work properly if the sending device's contacts are made up for a minimum of 25 milliseconds.

What is the Minimum Current the sending device must switch to reliably operate the relay?

Most relays listed in this catalog require the sending device contacts to switch currents less than 20 milliamps to operate the relay reliably.

What is the Maximum Output Current the relay can switch?

The maximum current-carrying capacity of all SSI Elite relay outputs is 3/4 amp, with total power dissipation of 50 VA. SSI Elite relays are equipped at the factory with 1/2 amp fuses. Equip the relay for your application with the correct size fuse up to 1/2 amp.

SSI Standard relays have a maximum current carrying capacity of 100 mA, with total power dissipation of 800 mW. SSI Standard relays are equipped with 1/10th amp fuses.

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TERMS & DEFINITIONS

2-WIRE	A transmission system that uses 2 wires and usually transmits positive-going pulses of some duration with a rest (or zero voltage level) between pulses. Historically, this type of pulse system lacked immunity to induced noise. Often referred to as Form A.
3-WIRE	A transmission system that employs 3 wires and has a signal on the common to one of the two contacts at all times, but never simultaneously to both. This type of system is much less prone to noise than a 2-wire system because a signal is always present. Often referred to as Form C.
"DRY" CONTACTS	A relay's contacts that have no electricity applied to them from the device in which they are incorporated. A voltage is supplied by an external device or system.
FORM "A" CONTACTS	An industry standard SPST contact arrangement that is normally-open or the non-made up position, usually referred to as K & Y. Also called 2-wire.
FORM "C" CONTACTS	A set of SPDT contacts consisting of one Form "A" and one Form "B" with a single "common" ("K") contact. A Form "C" set of contacts will break one set of contacts before making up the opposite set. Generally referred to as K, Y & Z.
"K" LEAD	The center or common lead of a 3-Wire (Form C) or single-pole double-throw switch.
LATCHING RELAY	A relay that will stay in the last position it was in when voltage was removed.
MERCURY WETTED CONTACTS	Contacts that have a very small amount of mercury around the contact point to prevent arcing or "bounce" when the contacts close. Most mercury-wetted relays (switches) must be mounted in the vertical position.
MILLISECOND	One one-thousandth of a second.
POWER SOURCE VOLTAGE	The voltage provided to power the operating equipment. Usually 120 VAC or 277 VAC, but also be station battery voltages of 24, 48 or 125 VDC.
REED SWITCH	A switch that is enclosed in a small glass tube, that is controlled by a magnet(s) or magnetic field acting on it.
SENSE VOLTAGE	The voltage used to detect the operation of either contact opening or closing as with watt-hour meters and energy controllers. Industry convention requires that the receiving device supply the sense voltage to the sending device (i.e. relay to meter, energy control system to relay). Also called "wetting voltage."
SOLID STATE CONTACTS	Contacts that switch power that have no moving parts. Contacts are made of a silicon material.
SOLID STATE RELAY	A relay using solid state contacts that switch power that have no moving parts. Contacts are made of a silicon material. Generally solid state relays are non-latching and have lower power handling capabilities that mercury-wetted relays.
"Y" & "Z" LEADS	The normally-open and normally-closed contacts, respectively, of a Form C or single-pole, double-throw (SPDT) switch.
"T1" & "T2" LEADS	The time control (end-of-interval) leads coming off of most meters. Normally a Form A contact closure to a two-wire transmission system.

SSI STANDARD

SPR-1 PULSE ISOLATION RELAY

DESCRIPTION

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	2 Wire or 3 Wire	3 Wire
FORM	A or C	C

The SPR-1 pulse isolation relay is designed to provide one set of isolated (dry) solid state Form C (K, Y & Z) contacts from a single field-selectable Form A or C input over a wide voltage range. The outputs may be configured as either toggle or fixed mode. In toggle mode, the outputs are fixed at 100mS, regardless of the closure time of the input. The sense voltage provided by the SPR-1 to the sending device (typically a meter) is +13 VDC. The SPR-1 may be used with meters having high or low voltage semiconductor outputs, or mechanical output contacts (relays).

Applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorders or supervisory control (SCADA) systems. The SPR-1 relay has a switch-selectable Form A or Form C input and input filtering circuitry to prevent noise from triggering the output. Pulses less than 18 mS are considered to be noise and will not be detected as a valid pulse. Once an input pulse greater in length than 18 mS is detected, the output will be changed to the state of the input.

Bright red and green LED indicators display the system's status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-1's input and output terminal strip is a "Euro" type. When the stripped wire has been correctly installed in the terminal's slot, no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The "K" lead of the SPR-1's output is fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-1 has built-in MOV transient protection for the solid state relay contacts that eliminates the need for external protection. All component parts which have power applied to them, with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface. The SPR-1 is normally mounted inside another enclosure, suitable for the user's intended application.

SPR-1

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SPR-1 PULSE ISOLATION RELAY

SPR-1

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277. Burden: 10 mA at 120 VAC
Pulse Input:	One switch-selectable Form A or Form C input. “Kin” is common return. Input has “Yin” and “Zin” input terminals “pulled up” to +13VDC for pulse signal from meter. “Yin” terminal used for 2-Wire mode. Both used for 3-Wire.
Pulse Output:	One set of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum power rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.70” high, 1.50” deep
Weight:	6 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

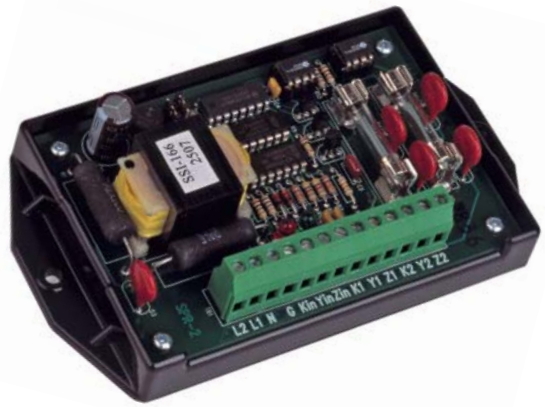
SSI STANDARD

SPR-2 PULSE ISOLATION RELAY

DESCRIPTION

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	2 Wire or 3 Wire	3 Wire
FORM	A or C	C



The SPR-2 pulse isolation relay is designed to provide two sets of isolated (dry) solid state Form C (K, Y & Z) contacts from a single field-selectable Form A or C input, over a wide voltage range. The outputs may be configured as either toggle or fixed mode. In toggle mode, the outputs are fixed at 100mS, regardless of the closure time of the input. The sense voltage between the SPR-2 and the sending device (typically a meter) is +13 VDC. The SPR-2 may be used with meters having high or low voltage semiconductor outputs, or mechanical output contacts (relays).

Applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorders or supervisory control (SCADA) systems. The SPR-2 relay has a switch-selectable Form A or Form C input and input filtering circuitry to prevent noise from triggering the output. Pulses less than 18 mS are considered to be noise and will not be detected as a valid pulse. Once an input pulse greater in length than 18 mS is detected, the outputs will be changed to the state of the input.

Bright red and green LED indicators display the system's status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-2's input and output terminal strip is a "Euro" type connector. When the stripped wire has been correctly installed in the terminal's slot, no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each "K" lead of the SPR-2's outputs is fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-2 has built-in MOV transient protection for the solid state relay contacts that eliminates the need for external protection. All component parts which have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface. The SPR-2 is normally mounted inside another enclosure, suitable for the user's intended application.

SPR-2

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SPR-2 PULSE ISOLATION RELAY

SPR-2

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277. Burden: 10 mA at 120 VAC
Pulse Input:	One switch-selectable Form A or Form C input. “Kin” is common return. Input has “Yin” and “Zin” input terminals “pulled up” to +13VDC for pulse signal from meter. “Yin” terminal used for 2-Wire mode. Both used for 3-Wire.
Pulse Output:	Two sets of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum power rating of each contact is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.70” high, 1.50” deep
Weight:	6 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

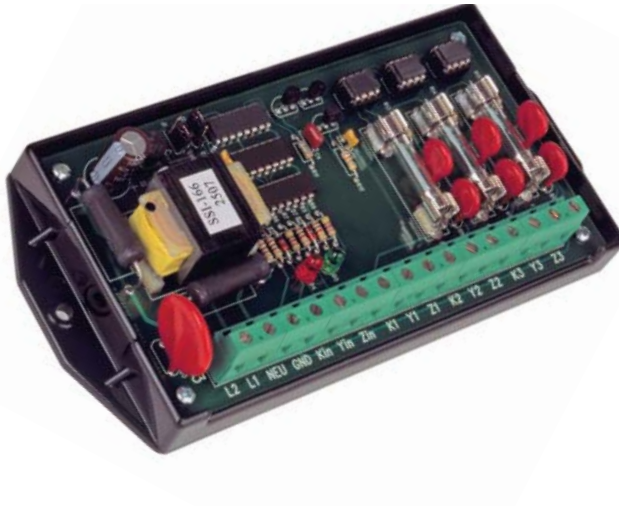
SSI STANDARD

SPR-3 PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	3
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C

DESCRIPTION



The SPR-3 pulse isolation relay is designed to provide three sets of isolated dry, solid state Form C (K, Y, & Z) contacts from a single field selectable Form A or C input over a wide voltage range. The outputs may be configured as either toggle or fixed mode. In toggle mode, the outputs are fixed at 100mS, regardless of the closure time of the input. The sense voltage of +13VDC is available on the "Yin" and "Zin" inputs, and is "pulled up." "Kin" is the common return. The SPR-3 may be used with meters having mechanical output contacts (relays), or high or low voltage semiconductor outputs.

Typical applications include interfaces between utility metering devices and customer owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces. The SPR-3 relay has a switch selectable Form A or Form C input and input filtering circuitry to prevent noise from triggering the output. Any pulses less than 18mS are considered to be noise and will not be detected as a valid pulse. Once an input pulse greater than 18mS is detected, the outputs will be changed according to the status of the input.

Bright red and green LED indicators display the system status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-3's input and output terminal strip is a "Euro" type connector. When the stripped wire has been correctly installed in the terminals "slot", no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each "K" lead of the SPR-3's outputs is fused to prevent damage to the relays under almost any condition users might cause such as excessive current, incorrect wiring, etc.

The SPR-3 has built-in MOV transient protection for the solid state (silicon) relays contacts which eliminates the need for external protection. All component parts which have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

SPR-3

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SPR-3 PULSE ISOLATION RELAY

SPR-3

SPECIFICATIONS

ELECTRICAL

Pulse Input:	120, 208-277. Burden: 10 mA at 120 VAC
Signal Input:	One switch-selectable Form A or Form C input. “Kin” is common return. Input has “Yin” and “Zin” input terminals “pulled up” to +13VDC for pulse signal from meter. “Yin” terminal used for 2-Wire mode. Both used for 3-Wire.
Power Output:	Three sets of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50”deep
Weight:	17 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

SSI STANDARD

SPR-22 PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	2	2
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C

DESCRIPTION

The SPR-22 pulse isolation relay provides two channels each with an isolated dry-contact, solid state Form C (K, Y, & Z) output from a Form A or C inputs. The SPR-22 has the functionality of the RPR-22PS but utilizes the standard solid state relays packaged in the small SSI footprint enclosure. The primary application for the SPR-22 is “Watts and Vars” or anywhere where two independent isolation relay channels are desired in one package.

The SPR-22 operates over the standard SSI wide voltage range. The SPR-22 has a built-in low voltage transformer-isolated power supply generating a +13VDC sense voltage. The sense voltage is sent to each electric meter’s Y and Z pulse initiator output terminals from the SPR-22’s “Y1in”/”Z1in” and “Y2in”/”Z2in” input terminals, returning to the “K1in” and “K2in” terminals, the common return for both meters.

The SPR-22 may be used with electric meters having electro-mechanical or semiconductor output contacts, either high or low voltage. Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorders, and supervisory control systems (SCADA) interfaces. The SPR-22 relay is designed for high-speed pulses and can switch up to 72,000 pulses/hour in 3-Wire mode, and 36,000 pulses/hour in 2-Wire mode. The outputs are non-latching. Each input may be configured for either a “long” or “short” output pulse. In the “long” output mode, the output pulse width exactly follows (or “mirrors”) the input pulse width. In the “short” output mode, the output pulse is fixed at 100 milliseconds (mS). The “short” mode is normally used for end-of-interval pulses or where a fixed pulse width is needed.

Bright red and green LED indicators, one on each input, display each channel’s relay status at all times thus allowing a rapid check of the system’s performance without requiring any additional test equipment. The SPR-22’s input and output terminal strip is a “EURO” type connector. When the stripped wire has been correctly installed in the terminals “slot” no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each “K” lead of the SPR-22’s outputs is fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-22 has built-in MOV transient protection for the solid-state relay contacts which eliminates the need for external or off-the-board transient suppressors. All component parts which have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection.

The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuits and the mounting surface.

SPR-22

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SPR-22 PULSE ISOLATION RELAY

SPR-22

SPECIFICATIONS

ELECTRICAL

Power Input:	90 to 300 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Two switch-selectable Form A or Form C inputs. “Kin” is common return. Each input has “Yin” and “Zin” input terminals for pulse signal from meter. “Yin” terminal used for 2-Wire mode. Both used for 3-Wire.
Pulse Output:	Two sets of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are rated at 125VAC/VDC at 100milliamps. The maximum rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Operate and Release Time:	Turn On Time - .5 mS typical; 3 mS MAX Turn Off Time - .1 mS typical; 1 mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.70” high, 1.50” deep
Weight:	6 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

SSI STANDARD

SPR-24 DUAL PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	2	4
TYPE	2 Wire or 3 Wire	3 Wire
FORM	A or C	C

SPR-24

DESCRIPTION

The SPR-24 dual pulse isolation relay is designed to provide four isolated dry-contact, solid state Form C (K, Y, & Z) outputs from two Form A or C inputs. The primary application for the SPR-24 is where two independent isolation relay channels are desired with multiple outputs on each channel, in one package.

The SPR-24 operates over the standard SSI wide voltage range. The SPR-24 has a built-in low voltage transformer-isolated power supply generating a +13VDC sense voltage. The sense voltage is sent to each electric meter's Y and Z pulse initiator output terminals from the SPR-24's "Y1in"/"Z1in" and "Y2in"/"Z2in" input terminals, returning to the "K1in" and "K2in" terminals, the common return for both meters. Output relays 1 and 2 follow input 1, while outputs 3 and 4 follow input 2.

The SPR-24 may be used with electric meters having electro-mechanical or semiconductor output contacts, either high or low voltage. Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces. The SPR-24 relay is designed for high speed pulses and can switch up to 72,000 pulses/hour in 3-Wire mode and 36,000 pulses/hour in 2-Wire mode. The outputs are non-latching. Each input may be configured for either a "long" or "short" output pulse. In the "long" output mode, the output pulse width exactly follows (or "mirrors") the input pulse width. In the "short" output mode, the output pulse is fixed at 100 milliseconds (mS). The "short" mode is normally used for end-of-interval pulses or where a fixed pulse width is needed.

Bright red and green LED indicators, one on each input, display each channel's relay status at all times thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-24's input and output terminal strip is a "Euro" type connector. When the stripped wire has been correctly installed in the terminals "slot" no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each "K" lead of the SPR-24's four outputs is fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-24 has built-in MOV transient protection for the solid-state relay contacts which eliminates the need for external or off-the-board transient suppressors. All component parts which have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection.

The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuits and the mounting surface.

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SSI STANDARD

SPR-24 DUAL PULSE ISOLATION RELAY

SPR-24

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277. Burden: 10 mA at 120 VAC
Pulse Inputs:	Two switch-selectable Form A or Form C inputs. “Kin” is common return. Each input has “Yin” and “Zin” input terminals for pulse signal from meter. “Yin” terminal used for 2-Wire mode. Both used for 3-Wire.
Pulse Outputs:	Four sets of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are rated at 125VAC/VDC at 100milliamps. The maximum rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	17 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

SSI STANDARD

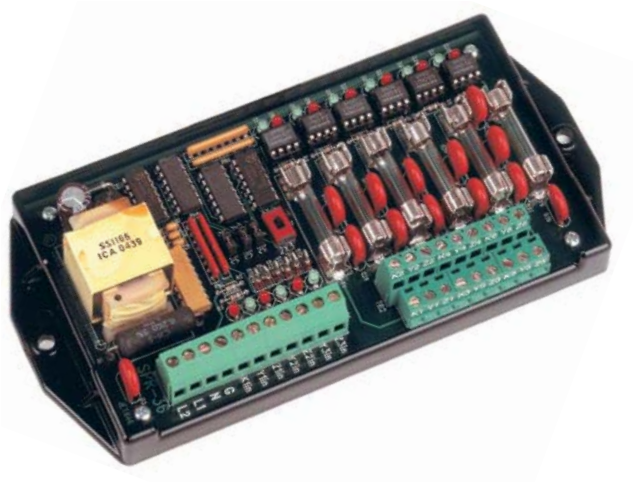
SPR-36 TRIPLE PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	3	6
TYPE	2 Wire or 3 Wire	3 Wire
FORM	A or C	C

SPR-36

DESCRIPTION



The SPR-36 triple pulse isolation relay is designed to provide six isolated dry contact, solid state Form C (K, Y, & Z) outputs from three Form A or C inputs. The primary application for the SPR-36 is where three independent 2-output pulse isolation relays, OR two independent 3-output pulse isolation relays are desired in one ultra-compact package. Inputs may be paralleled for a variety of flexible applications.

The SPR-36 operates over the standard SSI wide voltage range. The SPR-36 has a built-in low voltage transformer-isolated power supply generating a +13VDC sense voltage. The sense voltage is sent to each meter's Y and Z terminals from the SPR-36's Yin and Zin input terminals, returning to the Kin terminal, the common return for all meters. Since all meters supplying pulses to the SPR-36 have a common reference, a number of flexible input configurations can be wired.

The SPR-36 may be used with electric meters having electro-mechanical or semiconductor output contacts, either high or low voltage. The SPR-36's inputs are configured to accept open-collector transistor or open-drain FET solid state pulse initiator switches. Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces. The SPR-36 relay is designed for high speed pulses and can switch up to 72,000 pulses/hour in 3-Wire mode and 36,000 pulses/hour in 2-Wire mode. The outputs are non-latching. The SPR-36 outputs' pulse timing follows the inputs' timing such that output pulses have the exact same pulse width as the input.

Bright red and green LED indicators, one of each on every input AND output, display each channel's relay status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-36's input and output terminal strip is a "Euro" type. When the stripped wire has been correctly installed in the terminals "slot", no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each "K" lead of the SPR-36's six outputs is fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc. Fuses are standard-sized 3AG or AGC 1/10th Amp fuses.

The SPR-36 has built-in MOV transient protection for the solid state relay contacts which eliminates the need for external or off-board transient suppressors. All component parts which have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection.

The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuits and the mounting surface.

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SPR-36 TRIPLE PULSE ISOLATION RELAY

SPR-36

SPECIFICATIONS

ELECTRICAL

Power Input:	120 to 277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Three independent field-selectable, Form A or Form C inputs. Each input has “Yin” and “Zin” input terminals wetted, pulled up with +13VDC. “Kin” is common return“. Form A input uses the ‘Yin” terminal and Form C uses the “Yin” and “Zin” terminals for the input from the meter.
Pulse Output:	Six (6) dry Form C contacts (K, Y, & Z) for energy pulses. The relay contacts are solid state with “no bounce” circuitry. Outputs are rated at 125VAC/VDC 1/10th Amp(100 milliamps). Factory fused at 1/10 amp @ 250VAC using standard AGC or 3AG fuses.
Contact On-State Resistance:	25 ohms maximum, 18 typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	17 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

SSI STANDARD B-SERIES

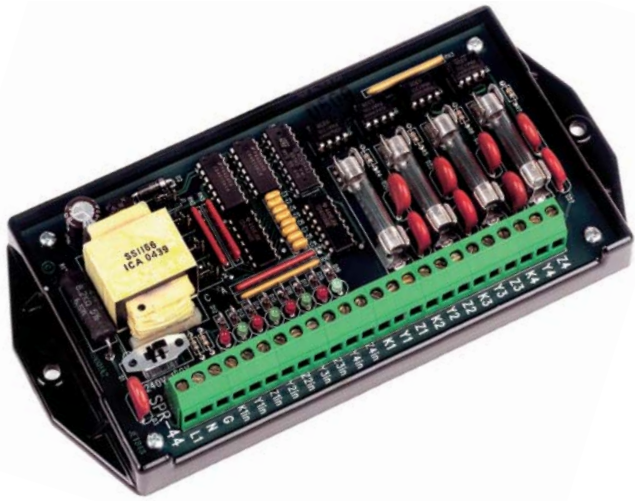
SPR-44 QUAD PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	4	4
TYPE	2 Wire or 3 Wire	3 Wire
FORM	A or C	C

SPR-44

DESCRIPTION



The SPR-44 quad pulse isolation relay is designed to provide four isolated dry-contact, solid state Form C (K, Y, & Z) outputs from four Form A or C inputs. The primary application for the SPR-44 is where four independent isolation relay channels are desired in one package. A variety of pulse splitting relaying schemes can be accomplished by paralleling two or more inputs.

The SPR-44 operates over the standard SSI wide voltage range. The SPR-44 has a built-in low voltage transformer-isolated power supply generating a +13VDC wetting voltage. The sense voltage is sent to each meter's Y and Z terminals from the SPR-44's "Yin" and "Zin" input terminals, returning to the "Kin" terminal, the common return for all meters. Since all meters supplying pulses to the SPR-44 have a common reference, a number of flexible input configurations can be wired. For example, two inputs can be wired in parallel giving a "splitting" configuration where one input and two outputs is desired.

The SPR-44 may be used with electric meters having electro-mechanical or semiconductor dry-contact output contacts, either high or low voltage. The SPR-44's inputs are configured to also accept open-collector transistor or open-drain FET solid state pulse initiator switches. Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces. The SPR-44 relay is designed for high speed pulses and can switch up to 72,000 pulses/hour in 3-Wire mode and 36,000 pulses/hour in 2-Wire mode. The outputs are non-latching. The SPR-44 outputs' pulse timing follows the inputs' timing such that output pulses have the exact same pulse width as the input.

The SPR-44 also has a pulse conversion capability built in. Each of the four channels of the SPR-44 can be independently set for Normal or Conversion mode. In the pulse conversion mode, a 3-wire (FormC) input can be converted to a 2-Wire (FormA) pulse while maintaining the same pulse value. Additionally, a 2-wire (FormA) input can be converted to a 3-Wire (FormC) pulse while maintaining the same pulse value.

Bright red and green LED indicators, one of each on every input, indicates each channel's relay status at all times thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-44's input and output terminal strip is a "EURO" type connector. When the stripped wire has been correctly installed in the terminals "slot" no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each "K" lead of the SPR-44's four outputs is fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-44 has built-in MOV transient protection for the solid state relay contacts which eliminates the need for external or off-board transient suppressors. All component parts which have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection.

The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuits and the mounting surface.

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SPR-44 QUAD PULSE ISOLATION RELAY

SPR-44

SPECIFICATIONS

ELECTRICAL

Power Input:	120 to 277 VAC. Burden: 10 mA at 120 VAC Four independent field-selectable, Form A or Form C inputs.
Pulse Input:	Each input has “Yin” and “Zin” terminals wetted “pulled up” with +13VDC. “Kin” terminal is the common return. The Form A input uses the “Yin” terminal, the Form C input uses the “Yin”, and “Zin” terminals for the input from the meter.
Pulse Output:	Four sets of dry Form C contacts (K, Y, & Z) for energy pulses. The relay contacts are solid state with “no bounce” circuitry. Outputs are rated at 125VAC/VDC 1/10th Amp(100 milliamps). Factory fused at 1/10 amp @ 250VAC. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	3750Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	(-SP2 Option) 125 VDC input (-SP12 Option) 12VDC input (1SP13 Option) 15-48VDC input

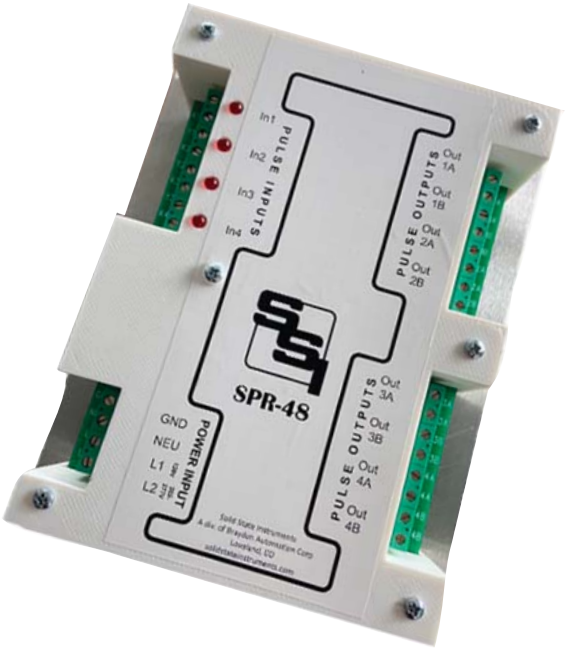
SSI STANDARD B-SERIES

SPR-48 PULSE ISOLATION RELAY

DESCRIPTION

FUNCTIONAL SUMMARY

	IN	OUT
#	4	8
TYPE	2 Wire	2 Wire
FORM	A	A



The SPR-48 is a 4-channel pulse isolation relay designed for high-density pulse applications where two RPR-24PS or SPR-24 relays would be required. Eight isolated solid-state Form A (K&Y) dry-contact outputs are provided, two each from four Form A inputs. The SPR-48 relay contains standard-duty solid state outputs. The wetting voltage provided by the SPR-48 to the sending devices (typically electric meters) is +13 VDC. The SPR-48 may be used with meters having semiconductor or electro-mechanical output contacts (relays).

The SPR-48 relay's Form A inputs feature input filtering circuitry to prevent noisefrom false triggering the outputs. Bright red and green LED indicators display the system status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-48's input and output terminal strips are "Euro" type. When the stripped wire has been correctly installed in the terminal's slot, no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The "K" lead of the SPR-48's outputs are fused to prevent damage to the relays under almost any condition
a user might cause such as excessive current, incorrect wiring, etc.

The SPR-48 has built-in MOV transient protection for the solid state relay contacts that eliminates the need for external protection. The SPR-48 is provided on a chassis mount panel and normally mounted inside another enclosure, suitable for the user's intended application. An optional NEMA 4X enclosure is available with the SPR-48 mounted on an internal mounting plate.

SPR-48

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SSI STANDARD B-SERIES

SPR-44 PULSE ISOLATION RELAY

SPR-48

SPECIFICATIONS

ELECTRICAL

Power Input:	120 to 277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Four Form A inputs. “Kin” is common return. Input has “Yin” input terminals are “pulled up” to +13VDC for pulse signal from meter
Pulse Output:	Eight (8) Form A dry contacts (K & Y) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum power rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	7.00” wide, 9.00” high, 1.8” deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -38.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	• 125 VDC input using DCS-1 Power Supply • +15-48VDC input using DCS-2 Power Supply • +12VDC & +24VDC/24VAC are also available. Contact Factory for other input voltages.

All specifications are subject to change without notice.

SSI STANDARD

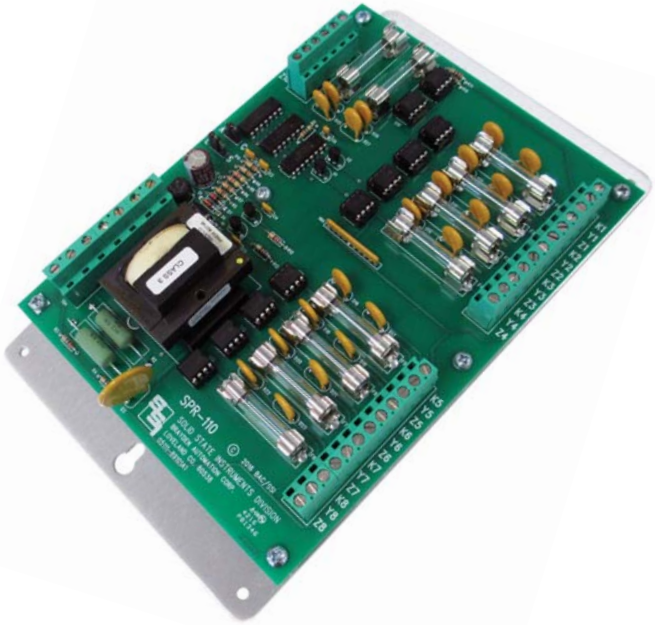
SPR-110 PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	10
TYPE	2 Wire or 3 Wire	3 Wire
FORM	A or C	C

SPR-110

DESCRIPTION



The SPR-110 pulse isolation relay is designed to provide ten sets of isolated dry, solid state Form C (K, Y, & Z) contacts from a single field selectable Form A or C input over a wide voltage range. The outputs may be configured as either toggle or fixed mode. In fixed mode, the outputs are fixed at 100mS, regardless of the closure time of the input. In toggle mode, the output time is the same as the input closure time. The sense voltage of +13VDC is available on the “Yin” and “Zin” inputs, and is “pulled up.” “Kin” is the common return. The SPR-110 may be used with meters having electro-mechanical output contacts (relays), or high or low voltage semiconductor outputs.

Typical applications include interfaces between utility metering devices and customer owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces. The SPR-110 relay has a switch selectable Form A or Form C input and input filtering circuitry to prevent noise from triggering the output. Any pulses less than 18mS are considered to be noise and will not be detected as a valid pulse. Once an input pulse greater than 18mS is detected, the outputs will be changed according to the status of the input.

Bright red and green LED indicators display the system status at all times, thus allowing a rapid check of the system’s performance without requiring any additional test equipment. The SPR-110’s input and output terminal strip is a “Euro” type connector. When the stripped wire has been correctly installed in the terminals “slot”, no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each “K” lead of the SPR-110’s outputs is fused to prevent damage to the relays under almost any condition users might cause such as excessive current, incorrect wiring, etc.

The SPR-110 has built-in MOV transient protection for the solid state (silicon) relays contacts which eliminates the need for external protection. The SPR-110 is provided on a mounting base plate between the circuit board and the mounting surface.

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SSI STANDARD

SPR-110 PULSE ISOLATION RELAY

SPR-110

SPECIFICATIONS

ELECTRICAL

Pulse Input:	120, 208-277. Burden: 14 mA at 120 VAC
Signal Input:	One switch-selectable Form A or Form C input. “Kin” is common return. Input has “Yin” and “Zin” input terminals “pulled up” to +13VDC for pulse signal from meter. “Yin” terminal used for 2-Wire mode. Both used for 3-Wire.
Power Output:	Ten sets of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	7” wide, 9” high, 1.8”deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -38.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DCS-1C Power Supply. Contact factory for other input voltages.

SSI STANDARD

SPR-112 PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	12
TYPE	2 Wire	2 Wire
FORM	A	A

SPR-112

DESCRIPTION

The SPR-112 pulse isolation relay is designed to provide twelve sets of isolated solid state Form A (K & Y) dry-contact outputs from a single Form A pulse input over a wide voltage range. The SPR-112 relay contains standardduty solid state outputs. The sense voltage provided by the SPR-112 to the sending device (typically a meter) is +13 VDC. The SPR-112 may be used with meters having high or low voltage semiconductor outputs, or electro-mechanical output contacts (relays). The SPR-112 also doubles as a pulse generator and was two internal pulse sources: a 1 Hz Pulse generator and a variable pulse generator from .1 to 10 pulses per second.

The SPR-112 relay has a switch-selectable input which can select the external Form A pulse input, the 1 Hz pulse generator or the internal variable pulse generator. Input fi ltering circuitry prevents noise from triggering the output. Pulses less than 18 mS are considered to be noise and will not be validated as a pulse. Once an input pulse greater in length than 18 mS is validated, the output will be changed to the state of the input.

Bright red and green pulse input LED indicators display the system's status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-112's input and output terminal strips are "Euro" type. When the stripped wire has been correctly installed in the terminal's slot, no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The "K" lead of the SPR-112's output is fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-112 has built-in MOV transient protection for the solid state relay contacts that eliminates the need for external protection. The SPR-112 is mounted on an open chassis and is normally mounted inside another enclosure, suitable for the user's intended application and easy access for wiring.

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SSI STANDARD

SPR-112 PULSE ISOLATION RELAY

SPR-112

SPECIFICATIONS

ELECTRICAL

Pulse Input:	120 VAC, 208-277. Burden: 10 mA at 120 VAC
Signal Input:	One switch-selectable Form A input. “Kin” is common return. Pulse Input is “Yin” input terminal, “pulled up” to +13VDC for pulse signal from meter.“
Power Output:	Ten (10) sets of dry Form A contacts (K & Y) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum power rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	7” wide, 9” high, 1.8”deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -38.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact factory for other input voltages.

SSI STANDARD

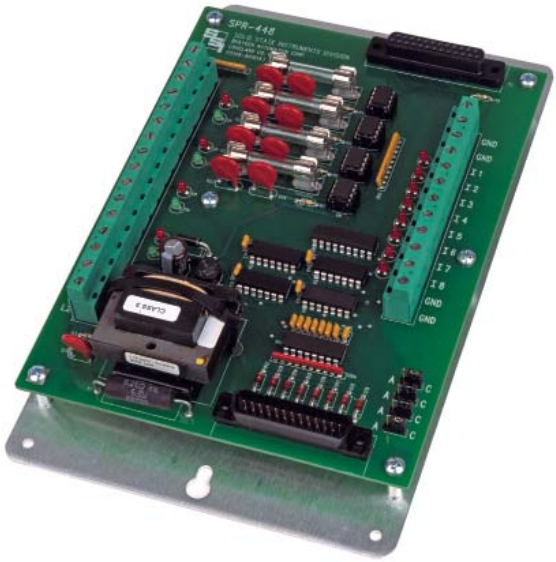
SPR-448 I/O UNIT - LANDIS + GYR 2510 or MAXSYS ELITE METERS

FUNCTIONAL SUMMARY

	IN	OUT
#	4	4
TYPE	2 Wire or 3 Wire	3 Wire
FORM	A or C	C

SPR-448

DESCRIPTION



The SPR-448 is an input/output termination unit designed specifically for the Landis + Gyr 2510 and MaxSYS Elite meters. It includes an integral 4-channel KYZ pulse isolation relay to protect the meter's KYZ output board from transient voltages, induced electrical noise, over-currents (short-circuits), over-voltages and other conditions that might damage the meter. Metal oxide varistor (MOV) transient suppression is provided on each output. In addition, each output is equipped with a standard AGC/3AG style fuse that can be replaced by field personnel.

The input configuration of each input can be independently set on site as either a Form C (3-wire) or Form A (2-wire) input. The meter's pulse output "J3" wire harness plugs directly into the DB-25 connector, allowing for quick and convenient connection. Screw terminals are provided for each output making field wiring a snap.

In addition to the isolation relays on the outputs, the SPR-448 features an 8-input termination section, providing a convenient way to interface external KYZ pulses or other digital inputs with the 2510 or MaxSYS Elite meters. Bright red LED's have been added to display input status, allowing for easy and fast monitoring of all inputs.

The SPR-448 is mounted on an aluminum mounting plate with key-hole mounting slots, making it easy to mount the unit inside another enclosure. Additional mounting holes are provided in each corner of the mounting plate. The board is mounted approximately 9/16" above the mounting plate surface providing excellence isolation from ground. Transient suppression is provided on the power supply.

The SPR-448 is available in two versions: P/N SS5148A-00001 with perpendicular DB-25 connectors that are available from the front of the board, or P/N SS5148A-00002 with parallel DB-25 connectors that are available from the sides of the board.

Optional indoor (NEMA 1) and outdoor (NEMA 3R) enclosures are also available.

ORDERING INFORMATION

SS5148A-00001: Perpendicular "straight up" DB-25 connectors
SS5148A-00002: Parallel DB-25 Connectors

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SSI STANDARD

SPR-448 I/O UNIT - LANDIS + GYR 2510 or MAXSYS ELITE METERS

SPR-448

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208 to 277 VAC. Burden: 10 mA at 120 VAC; 5 mA @ 240 VAC

ISOLATION RELAY

Pulse Input:	Four independent field-selectable inputs. Form A or Form C inputs are provided by Landis + Gyr MaxSYS 2510 or Elite meters through the meter's J3 DB-25 connector. Each input has "Yin" and "Zin" terminals wetted, pulled up with +13VDC. "Kin" terminal is the common return. The Form A input uses the "Yin" terminal, and the Form C input uses the "Yin" and "Zin" terminals for the input from the meter.
Pulse Output:	Four sets of dry contact Form C outputs (K,Y & Z) for energy pulses. K-Y or K-Z may be used for Form A pulses. The relay contacts are solid state with "no bounce" circuitry. Outputs are rated at 125VAC/VDC 1/10th Amp (100 milliamps). Factory fused at 1/10 amp @ 250 VAC with standard 3 AG (AGC) style fuses.
Contact On-State Resistance:	25 ohms maximum, 18 ohms typical
Insulation Resistance:	50 megohms typical
Operate & Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

AUXILIARY INPUT

Eight auxiliary input terminals provided for external pulses. Wetting voltage provided by MaxSYS 2510 or Elite meters and "flows through" to the meter's J4 input terminals. The meter's "E1" jumper must be in the 2-3 position (+VUR) providing the wetting voltage for inputs.
Inputs are activated by dry contacts switching to A-GND
Four A-GND terminals provided
LED indicator on each input to display input status

MECHANICAL

Mounting:	Any position
Board Size:	5.5" wide, 7.5" high, 1.25" deep
Overall Assembly Size:	5.5" wide x 9.0" high x 1.8" deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

SSI STANDARD B-SERIES

SPR-610 PULSE ISOLATION RELAY

SPR-610

FUNCTIONAL SUMMARY

	IN	OUT
#	6	10
TYPE	2 Wire	2 Wire
FORM	A	A

DESCRIPTION

The SPR-610 is a 6-channel pulse isolation relay designed for high-density pulse applications where up to six RPR or SPR relays would be required. Twelve isolated solid-state Form A (K&Y) dry-contact outputs are provided, two each from four Form A inputs and one each for two Form A inputs. The SPR-610 relay contains standard-duty solid state outputs. The wetting voltage provided by the SPR-610 to the sending devices (typically electric meters) is +13 VDC. The SPR-610 may be used with meters having high or low voltage semiconductor outputs, or electro-mechanical output contacts (relays).

The SPR-610 relay's Form A inputs feature input fi ltering circuitry to prevent noise
from false triggering the outputs. Pulses less than 18 mS are considered to be noise and will not be detected as a valid pulse.Once an input pulse, greater in length than 18 mS, is detected the correspond-ing outputs will be changed to match the state of the input.

Bright red and green LED indicators display the system's status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-610's input and output terminal strip is a "Euro" type. When the stripped wire has been correctly installed in the terminal's slot, no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The "K" lead of the SPR-610's outputs are fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-610 has built-in MOV transient protection for the solid state relay contacts that eliminates the need for external protection. The SPR-610 is normally mounted inside another enclosure, suitable for the user's intended application. An optional NEMA 4X enclosure is available with the SPR-610 mounted on an internal mounting plate.

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SPR-610 PULSE ISOLATION RELAY

SPR-610

SPECIFICATIONS

ELECTRICAL

Power Input:	120 to 277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Six Form A inputs. “Kin” is common return. Input has “Yin” input terminals are “pulled up” to +13VDC for pulse signal from meter
Pulse Output:	Twelve (12) Form A dry contacts (K & Y) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum power rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	7.00” wide, 9.00” high, 1.8” deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -38.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	• 125 VDC input using DCS-1 Power Supply • +15-48VDC input using DCS-2 Power Supply • +12VDC & +24VDC/24VAC are also available. Contact Factory for other input voltages.

All specifications are subject to change without notice.

SSI STANDARD

RTR-2+ WATER & GAS METER RELAY

DESCRIPTION

The RTR-2+ High Speed Repeating Pulse Relay is designed to interface with water or gas meters and provides two sets of isolated solid-state Form A (K & Y) dry contacts for interfacing to other systems. The RTR-2+ interfaces with most makes and models equipped with standard pulse outputs. The RTR-2+ will also interface to most gas meters equipped with a pulse output. The RTR-2+'s input is designed for an open-collector transistor, open drain FET or a dry-contact relay. The input is activated when the input(Y) is switched to ground (K) for at least a minimum pulse time. Four input filter times are field-selectable: 50 microseconds, .5, 5 or 20 milliseconds.

When the RTR-2+ relay is inserted in the two-conductor cable between the water or gas meter and the remote equipment, the RTR-2+ provides a replicated signal to the remote equipment, provides a separate isolated (dry contact) Form A contact closure for use with customer-owned monitoring equipment.

Typical applications involve pulse counting, monitoring and recording of water or gas usage. Other applications include interfaces between utility metering devices and customer-owned building automation systems, control and monitoring systems,usage recorders, automated meter reading systems and supervisory control and data acquisition systems (SCADA). A bright yellow LED lamp indicates the system's status at all times thus allowing a rapid check of the system's performance without requiring any additional test equipment.

The microcontroller-based RTR-2+ checks each incoming pulse for its duration. If the incoming pulse is less than the input filter time selected, the RTR-2+ assumes the incoming pulse to be noise and it is rejected. Thus, any valid pulse rate of 200 pulses per second (50 on-50 off form factor) or less is accepted while static and induced high frequency noise is rejected. If used in a very noisy environment this "pulse acceptance window" may be lengthened or shortened as needed to reject noise by selecting a different input filter time.

The RTR-2+'s output closure time is selectable for 50, 100, 200, or 500 milliseconds, regardless of the input pulse's duration. The output duration time may be easily selected by moving jumper locations. In the event that the input pulse rate exceeds the output time such that input pulses are arriving from the meter faster than the output can handle, the microcontroller stores these pulses and outputs them as soon as possible, so that no pulses are lost. The RTR-2+ therefore provides a contact closure of sufficient and fixed length to the remote equipment & allows the revenue water or gas meter display to operate normally. The input and output terminal strip is a "Euro" type connector for easy field wiring and excellent isolation. The "K" lead of the RTR-2+'s outputs are fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc. RTR-2+ models have built-in transient protection for the solid-state relay's contacts that eliminates the need for external or off-the-board transient suppressors.

All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum user protection. The mounting base plate is made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface. The RTR-2 models are designed for mounting in an electrical enclosure appropriate for the application and operating environment.

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	2 Wire	2 Wire
FORM	A	A
SPECIAL FEATURES	• Up to 200 pulses/ second • Open Collector transistor or dry contact switch input	

RTR-2+

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RTR-2+ WATER & GAS METER RELAY

RTR-2+

SPECIFICATIONS

ELECTRICAL

Power Input:	90-130, 208 to 277 VAC. Burden: <10 mA at 120 VAC
Output:	Two sets of dry Form A (K & Y) contacts. Outputs are activated (closed) for a nominal 50, 100, 200, or 500mS following a valid input pulse as selected. The contacts are solid state “no bounce” relays rated at 250 VAC/VDC @ 1/10 Amp. The maximum rating of the contacts is 800mW. Factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 ohms typical
Operate and Release Time:	Turn On: 5 mS maximum, 2-3 mS typical Turn Off: 5 mS maximum, 2-3 mS typical
Input/Output Isolation Voltage:	2500 Vrms

MECHANICAL

Mounting:	Any position.
Size:	3.27” wide, 5.65” high, 1.50” deep
Weight:	13 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

SSI STANDARD

RTR-22+ HIGH-SPEED WATER & GAS METER RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	2	2
TYPE	2 Wire	2 Wire
FORM	A	A
SPECIAL FEATURES	• Up to 200 pulses/ second • Open Collector transistor or dry contact switch input	

RTR-22+

DESCRIPTION

The RTR-22+ high-speed pulse isolation relay is designed to interface two pulse channels from water or gas meters to other systems. Two independent channels, each with their own Form A input and a corresponding Form A (K & Y) isolated solid-state dry contact output. Most water and gas meters with a pulse output will interface to the RTR-22+'s input, whether it is an open-collector transistor, open drain FET, MOSFET solid state relay, read switch or a dry-contact relay. The input is activated when the input (Y) is switched from its "pulled up" state to ground (K) for at least a minimum pulse time. Four input filter times are field-selectable: 50 microseconds, .5, 5 or 20 milliseconds.

When the RTR-22+ relay is inserted in the two-conductor cable between the water or gas meter and the remote equipment, it provides a replicated signal to the remote equipment, provides a separate isolated (dry contact) Form A contact closure for use with customer-owned monitoring equipment.

Typical applications involve pulse counting, monitoring and recording of water or gas usage. Other applications include interfaces between utility metering devices and customer-owned building automation systems, control and monitoring systems, usage recorders, automated meter reading systems and supervisory control and data acquisition systems (SCADA). Bright yellow LED lamps, one for each of the RTR-22+' inputs, indicate the channels' input status at all times, thus allowing the field technician to visually observe pulses being received from the water or gas meter. A bright green LED visually shows each channel's output status.

The microcontroller-based RTR-22+ checks each incoming pulse for its duration. If the incoming pulse is less than the input filter time selected, the RTR-22+ assumes the incoming pulse to be noise and it is rejected. If used in a very noisy environment this "pulse acceptance window" may be lengthened or shortened as needed to reject noise by selecting a different input filter time.

The RTR-22+ has two modes on the output operation: normal and fixed. The normal mode's output follows the input so the duty cycle on the output is a mirrored image of the input and timing is approximately the same. In the fixed mode, each channel has an output closure time selected, either 50, 100, 200, or 500 milliseconds. Pulses can either be "stretched" or shortened to suit the receiving equipment. In the event that the input pulse rate exceeds the output time such that input pulses are arriving from the meter faster than the output can handle, the microcontroller stores up to 255 pulses and outputs them in a 50/50 duty cycle as soon as possible so that no pulses are lost. If more than 255 pulses are stored, then a RED LED lights indicating a count register overflow.

Input and output terminals are "Euro" type connector for easy field wiring and excellent isolation. The "K" lead of the RTR-22+'s outputs are fused and have built-in transient protection for the solid-state relay's. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum user protection. The mounting base plate is made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface. RTR-22+ models are designed for mounting in an electrical enclosure appropriate for the application and operating environment.

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RTR-22+

SPECIFICATIONS

ELECTRICAL

Power Input:	90-130, 208 to 277 VAC. Burden: <10 mA at 120 VAC
Pulse Inputs:	Two Form A (K & Y) pulse inputs with a +8 to +13VDC wetting voltage. Current source inputs provide for fixed current through meter contact.
Output:	Two sets of dry Form A (K & Y) contacts. Outputs are activated (closed) for a nominal 50, 100, 200, or 500mS following a valid input pulse if fixed mode is selected. The contacts are solid state “no bounce” relays rated at 250 VAC/VDC @ 1/10 Amp. The maximum rating of the contacts is 800mW. Factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 ohms typical
Operate and Release Time:	Turn On: 5 mS maximum, 2-3 mS typical Turn Off: 5 mS maximum, 2-3 mS typical
Input/Output Isolation Voltage:	2500 Vrms

MECHANICAL

Mounting:	Any position.
Size:	3.27” wide, 5.65” high, 1.50” deep
Weight:	13 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. 15-48VDC input using the DCS-2 Power Supply. Contact factory for other input voltages.
Input Configurations:	Sourced Voltage inputs are available which receive a voltage from +3 to +48VDC from external systems.

SSI STANDARD

DPR-1 HIGH-SPEED DIVIDING PULSE RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	2 Wire	2 Wire
FORM	A	A

DPR-1

DESCRIPTION

The DPR-1 is a high-speed dividing pulse relay designed specifically for water and gas meter for pulse applications up to 200 pulses per second. It provides two sets of isolated “dry” 2-wire Form A contacts (K, Y, & Z) from a 2-wire (Form A) pulse input. The output is divided by a user-selected binary number, ranging from 2^1 to 2^{12}. The divider’s ratio of input to output pulses ranges from 2 to 4096. The desired division ratio is selected with a single jumper shunt mounted on the relay’s board and is easily adjustable by hand or with a set of needle nose pliers. The DPR-1 counts the input pulses for division only when a correct and valid sequence of pulses occur. Bright yellow and green LED lamps indicate the input and output status of the system at all times thus allowing a rapid visual check-out of the system’s performance without requiring any additional test equipment.

The input and output circuits’ terminal strip are “Euro” type connectors. The K leads of each of the DPR-1’s isolated outputs are fused to prevent damage to the relays under almost any condition a user might subject it to such as excessive current, voltage, or incorrect wiring. The DPR-1 provides a “pulled up” sense voltage of approximately +13 VDC on the Y input terminal to the sending device’s dry contact output. The K terminal is system ground allowing the use of standard mechanical, electro-mechanical, dry contact switches or solid state open-collector NPN or open-drain FET transistor pulse initiators. The DPR-1 has built-in MOV transient protection for the solid-state relay contacts that eliminates the need for external or off-the-board transient suppressors. All component parts of the DPR-1, which have power applied to them with the exception of the input/output terminal strips, are enclosed in a polycarbonate cover for maximum user protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation. The DPR-1 is intended for mounting in an enclosure appropriate for the application and the operating environment.

The DPR-1 may be powered from a 120VAC source or by either of SSI’s optional DCS power supplies. Contact the factory for more information.

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SSI STANDARD

DPR-1 HIGH SPEED DIVIDING PULSE RELAY

DPR-1

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 3.5 VA
Pulse Input Voltage:	+13VDC “pulled-up” on Yin terminal. Common return is Kin terminal.
Pulse Output:	Two sets of dry Form “A” contacts (K & Y). Contacts are solid-state relays rated at 250VAC/VDC, 100 mA MAX. The maximum power dissipation rating of the contacts is 800 mW. Factory fused at 1/10 amp. (3AG)
Contact Resistance:	25 ohms maximum, 18 ohms typical
Operate and Release Time:	2.5 milliseconds max. operate (turn-on) 2.5 milliseconds max. release (turn off)
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position.
Size:	3.27’’ wide, 5.65’’ high, 1.50’’ deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125VDC or 15-48VAC. Contact Factory.
Enclosure:	NEMA 3R or 4X

SSI STANDARD

DPR-2 PROGRAMMABLE DIVIDING PULSE RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	2 Wire	2 Wire
FORM	A	A

DPR-2

DESCRIPTION

The DPR-2 is a programmable microcontroller-based, high-speed dividing pulse relay designed to provide two independent “dry” 2-wire Form A contacts (K & Y) from a 2-wire Form A pulse input. An output pulse occurs when a specified number of input pulses have been received. The divider’s ratio of input to output pulses may be set between .00001 and 100,000. Using floating point math, the DPR-2 can be configured to scale input to output pulses to an exact ratio desired.

The DPR-2 is a programmable microcontroller-based, high-speed dividing pulse relay designed to provide two independent “dry” 2-wire Form A contacts (K & Y) from a 2-wire Form A pulse input. An output pulse occurs when a specified number of input pulses have been received. The divider’s ratio of input to output pulses may be set between .00001 and 100,000. Using floating point math, the DPR-2 can be configured to scale input to output pulses to an exact ratio desired.

The DPR-2 has two modes of operation, Pulse Divider mode and Pulse Conversion mode. In the Pulse Divider mode, the number of input pulses is specified to produce an output pulse, without regard to the specific value of the pulse, only the number of pulses. In Pulse Conversion mode, the value of a pulse is entered into the system. Upon a pulse being received, the exact units of accumulated water, electricity or gas consumed are added to an accumulator register. Units are programmable are either gallons, kilowatt-hours or CCF’s (hundred cubic feet). An output pulse value is programmed into the DPR-2 to the desired value in the same units as the input units. Once the accumulator register reaches the desired value of units, an output pulse is generated. Extremely precise conversions of values can be accomplished using the pulse conversion mode.

Output pulses may be set in length from 5 mS to 1000mS. In addition, the minimum-off time between pulses is also be set. This keeps pulses from being outputted too rapidly to the receiving equipment. In the event that power is lost while there is a pulse count in the accumulator register, the pulse count is stored in non-volatile EEPROM memory. Upon power-up, the pulse count is entered into the register and operation resumed.

If the number of output pulses exceeds the timing constraints of the pulse on time and minimum-off time, the microcontroller will store up to 65,383 output pulses in a cue waiting to be output. This output pulse number is also stored in EEPROM memory, so that no pulses are lost.

The DPR-2 microcontroller checks the input pulse for valid timing or “debounce” to make sure that pulses are of sufficient length to be legitimate pulses. Thus, input pulses are counted only when valid pulses occur, assuring a high degree of noise rejection. Bright red and green LED lamps indicate the input and output status, respectively, all times thus allowing a rapid visual check-out of the system’s performance without requiring any additional test equipment.

The DPR-2 can be programmed using a USB A-B Programming cable with either a terminal program, like TeraTerm, Puddy or HyperTerminal, or with SSI’s Universal Programmer software available on the website.

The input and output circuits’ terminal strip are “Euro” type connectors. The K leads of each of the DPR-2’s isolated outputs are fused to prevent damage to the relays under almost any condition a user might subject it to such as excessive current, voltage, or incorrect wiring. The DPR-4 provides a “pulled up” sense voltage of approximately +13 VDC on the Yin terminal of the input to the external sending contacts. The K terminal is system ground allowing the use of standard electro-mechanical, dry contact switches or solid-state open-collector transistor or MOS-FET pulse initiators. The DPR-2 has built-in MOV transient protection for the solid-state relay contacts that eliminates the need for external or off-the-board transient suppressors. All component parts of the DPR-2, which have power applied to them with the exception of the input/output terminal strips and the USB programming port connector, are enclosed in a polycarbonate cover for maximum user protection. The mounting base is also made of polycarbonate and offers excellent electrical insulation. Mounting tabs on the base plate allow the DPR-2 to be mounted in an appropriate enclosure for the application and the operating environment.

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DPR-2 PROGRAMMABLE DIVIDING PULSE RELAY

DPR-2

SPECIFICATIONS

ELECTRICAL

Power Input:	120 VAC, 208-277 VAC; Burden: 10 mA at 120 VAC
Pulse Input Voltage:	+13VDC “pulled-up” on Yin terminal. Common return is Kin terminal.
Pulse Output:	Two sets of dry Form “A” contacts (K & Y). Contacts are solid-state relays rated at 250VAC/VDC, 100 mA MAX. The maximum power dissipation rating of the contacts is 800 mW. Factory fused at 1/10 amp. (3AG)
Contact Resistance:	25 ohms maximum, 18 ohms typical
Operate and Release Time:	1 milliseconds max. operate (turn-on) 1 milliseconds max. release (turn off)
Input/Output Isolation Voltage:	3500Vrms

MECHANICAL

Mounting:	Any position.
Size:	3.50’’ wide, 7.20’’ high, 1.50’’ deep
Weight:	1 pound

TEMPERATURE

Temperature Range:	-38° C to +70° C, -38.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	12VDC, 24VAC/VDC, 15-48VDC, 125VDC; For others contact factory
Enclosure:	NEMA 3R or 4X

SSI STANDARD

DPR-4 HIGH SPEED DIVIDING PULSE RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	2 Wire	2 Wire
FORM	A	A

DESCRIPTION

The DPR-4 is a microcontroller-based, high-speed dividing pulse relay designed to provide two sets of isolated “dry” 2-wire Form A contacts (K & Y) from a field selectable 2-wire Form A pulse input which have been divided by a user-selected count number. The divider’s ratio of input pulses to output pulses may be set between 1 and 10,000. Selection of the desired division ratio is made by a setting a BCD rotary selection switch (0-9) and the appropriate multiplication jumper, either X10, X100 or X1000. The output may be configured as either toggle or pulse. In toggle mode, the output changes to the opposite state when the input preset count is reached. In pulse mode, a 100mS output pulse is generated when the preset count is reached. Pulse count is stored in non-volatile EEPROM memory so that any power failure will not lose the current pulse count. In the event that the divider ratio is low and pulse rate is high in the pulse output mode, the microcontroller will store up to 255 output pulses waiting to be output. This output pulse number is also stored in EEPROM memory, so that no pulses are lost.

The DPR-4 microcontroller checks the input pulse for valid timing, and counts the input pulses for division only when valid pulses occur, thus assuring a high degree of noise rejection. Bright red and green LED lamps indicate the input and output status, respectively, all times thus allowing a rapid visual check-out of the system’s performance without requiring any additional test equipment.

The input and output circuits’ terminal strip are “Euro” type connectors. The K leads of each of the DPR-4’s isolated outputs are fused to prevent damage to the relays under almost any condition a user might subject it to such as excessive current, voltage, or incorrect wiring. The DPR-4 provides a “pulled up” sense voltage of approximately +13 VDC on the Y and Z terminals of the input to the external sending contacts. The K terminal is system ground allowing the use of standard electro-mechanical, dry contact switches or solid-state open-collector transistor or MOS-FET pulse initiators. The DPR-4 has built-in MOV transient protection for the solid-state relay contacts that eliminates the need for external or off-the-board transient suppressors. All component parts of the DPR-4, which have power applied to them with the exception of the input/ output terminal strips and the divider switches, are enclosed in a polycarbonate cover for maximum user protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation. Mounting tabs on the base plate allow the DPR-4 to be mounted in an appropriate enclosure for the application and the operating environment.

DPR-4

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DPR-4 HIGH SPEED DIVIDING PULSE RELAY

DPR-4

SPECIFICATIONS

ELECTRICAL

Power Input:	120,208-277 VAC; Burden:10 mA at 120 VAC
Pulse Input Voltage:	+13VDC “pulled-up” on Yin and Zin terminal. Common return is Kin terminal.
Pulse Output:	Two sets of dry Form “A” contacts (K & Y) for time or energy pulses. The contacts are solid-state relays rated at 250VAC/VDC @ 100 mA MAX. The maximum rating of the contacts is 800 mW. Factory fused at 1/10 amp. (3AG)
Contact Resistance:	25 ohms maximum, 18 ohms typical
Operate and Release Time:	5 milliseconds max. operate (turn-on) 5 milliseconds max. release (turn off)
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position.
Size:	3.27” wide, 5.65” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory
Enclosure:	NEMA 3R or 4X

SSI STANDARD

ETR-3 EVENT TIME-BASE RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	2 Wire	2 Wire
FORM	A	A

ETR-3

DESCRIPTION

The ETR-3 Event Time-Base Relay is a device designed to divide down 60 Hz line frequency to time base pulses of a specific number of pulses per interval. For example, the ETR-3A can output 1 pulse per second, while the ETR-3B outputs 1 pulse per minute. An enable line is available to allow the count to be started and stopped. One application would be to count the elapsed time a particular device has operated. The output pulse duty cycle is 50/50. Upon receiving each pulse from the meter, the ETR-3's circuitry counts the incoming pulses and keeps in a running count in the count register. When the count register reaches the pre-determined count then a pulse is outputted the next count cycle begins.

LED lights are included to monitor system status. A Red LED shows that the input count is enabled. A Yellow LED shows the input pulses from the line. This of course appears to be in a constant "on" state but is actually turning on and off at 60 Hz, and generally indicates that pulses are present and being received from the power line. It is not intended to be a indication of individual pulses. A Green LED on the output of the divider indicates the pulses being outputted at the pre-determined rate.

Typical applications include interfaces between utility metering devices and SCADA systems, recorders or programmable logic controllers. A +13VDC wetting voltage is provided on the Enable input terminal and is suitable for connection to any dry contact output, open-collector bipolar transistor or open-drain FET outputs. Two standard non-polarized isolated Form A (2-wire) pulse outputs are provided. Each output is rated at .1A (100mA) at 120V with a total contact VA rating of 800mW.

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SSI STANDARD

ETR-3 EVENT TIME-BASE RELAY

ETR-3

SPECIFICATIONS

ELECTRICAL

Power Input:	120VAC; 208-277VAC. Burden: 10 MA. at 120 VAC, 60 Hz
Enable Input:	One KY Form A (2-wire) input with +13VDC wetting voltage compatible with dry contact relay output, open-collector transistor output, or open-drain FET output for enable input.
Output:	Two KY Form A (2-wire) outputs rated at 125VAC/VDC at 100mA. Maximum power rating of each contact is 800mW. Factory fused at .1A with standard 1-1/4" 3AG (AGC) type fuses.
Output On-State Resistance:	25 ohms maximum, 18 ohms typical
Input to Output Isolation Voltage:	2500 Vrms
Contact Resistance:	50 megohms typical
Operate and Release Time:	2-3 mS typlical

MECHANICAL

Size:	3.27 inches wide, 5.70 inches high, 1.50 inches deep
Weight:	8 Ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +185° F
Humidity:	0 to 98% non-condensing

MODELS AVAILABLE

ETR-3A:	Output 1 pulse per second
ETR-3B:	Output 1 pulse per minute
Other Times Available:	Contact factory

AVAILABLE OPTIONS

Input Voltages:	12 & 24 VAC, 60 Hz – Contact factory

SSI ELITE

SPR-3E SELF-CONTAINED PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	3
TYPE	2 or 3 Wire	3-wire
FORM	A or C	C

SPR-3E

DESCRIPTION

The SPR-3E self-contained pulse isolation relay is designed to provide three sets of isolated dry, solid state Form C (K, Y, & Z) contacts from a single field-selectable Form A or C input in a NEMA 4X enclosure for complete weather proof operation. The SPR-3E utilizes solid state (silicon) outputs and is functionally equivalent to the SPR-3, but designed for outdoor operation. The wetting or "sense" voltage of +13VDC is available on the "Yin" and "Zin" inputs, and is "pulled up." The "Kin" terminal is the common return. The SPR-3E is compatible with most meters having mechanical or high or low voltage semiconductor pulse outputs and operates over a wide voltage range for maximum flexibility.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand response applications, pulse recorders and supervisory control system (SCADA) interfaces. The SPR-3E's input has a switch-selectable Form A or Form C input and input filtering circuitry to prevent noise from triggering the output. Any pulses less than 18mS are considered to be noise and will not be detected as a valid pulse. Once an input pulse greater than 18mS in length is detected, the outputs will be changed according to the status of the input, thus eliminating any false pulses.

Bright red and green LED indicators display the system status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-3E's input and output terminal strip is a "Euro" type connector. When the stripped wire has been correctly installed in the terminals "slot", no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each "K" lead of the SPR-3E's outputs is fused to prevent damage to the relays under almost any condition users might cause such as excessive current, incorrect wiring, etc.

The SPR-3E has built-in MOV transient protection for the solid state (silicon) relays contacts which eliminates the need for external protection. The SPR-3E's tough polycarbonate enclosure offers excellent electrical insulation and measures approximately 9" x 8" x 3", allowing ample wiring room for field terminations. All component parts which have power applied to them, with the exception of the input/output terminal strip are enclosed with an acrylic cover for maximum protection.

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SPR-3E SELF CONTAINED PULSE ISOLATION RELAY

SPR-3E

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10mA at 120 VAC
Pulse Input:	One switch-selectable Form A or Form C input. “Kin” is common return. Input has “Yin” and “Zin” input terminals for pulse signal from meter. “Yin” terminal used for 2-Wire mode. Both used for 3-Wire.
Pulse Output:	Three sets of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are rated at 125VAC/VDC at 100milliamps. The maximum rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position.
Interior:	8.00” wide, 9.00” high, 2.00” deep
Exterior:	10.00” wide, 11.00 high, 3.51” deep
Weight:	2.5 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

SSI ELITE

SPR-24E SELF-CONTAINED PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	2	4
TYPE	2 or 3 Wire	3-wire
FORM	A or C	C

SPR-24E

DESCRIPTION

The SPR-24E self-contained pulse isolation relay is designed to provide four sets of isolated dry, solid state Form C (K, Y, & Z) contacts from two field-selectable Form A or C inputs in a NEMA 4X enclosure. The SPR-24E utilizes solid state (silicon) outputs and is functionally equivalent to the SPR-24, but designed for outdoor operation. Each input's wetting or "sense" voltage of +13VDC is available on each "Yin" and "Zin" inputs, and is "pulled up." The "Kin" terminal is the common return. The SPR-24E is compatible with most meters having mechanical, electromechanical or solid state pulse outputs and operates over a wide voltage range for maximum flexibility.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand response applications, pulse recorders and supervisory control system (SCADA) interfaces. The SPR-24E's input has a switch-selectable Form A or Form C input and input filtering circuitry to prevent noise from triggering the output. Any pulses less than 18mS are considered to be noise and will not be detected as a valid pulse. Once an input pulse greater than 18mS in length is detected, the outputs will be changed according to the status of the input, thus eliminating any false pulses.

Bright red and green LED indicators display the system status for both input channels at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-24E's input and output terminal strip allows maximum protection from accidental electrical shock. Each output's "K" lead is fused to prevent damage to the relays under almost any condition users might cause such as excessive current, incorrect wiring, etc.

The SPR-24E has built-in MOV transient protection for the solid state (silicon) relays contacts which eliminates the need for external protection. The SPR-24E's tough polycarbonate enclosure offers excellent electrical insulation and measures approximately 9" x 8" x 2", allowing ample wiring room for field terminations. All component parts which have power applied to them, with the exception of the input/output terminal strip are enclosed with an acrylic cover for maximum protection.

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SPR-24E SELF-CONTAINED PULSE ISOLATION RELAY

SPR-24E

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10mA at 120 VAC
Pulse Input:	Two switch-selectable Form A or Form C input. “Kin” is common return. Inputs have “Yin” and “Zin” input terminals for pulse signals from meter. “Yin” terminal used for 2-Wire mode. Both used for 3-Wire.
Pulse Output:	Four sets of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are rated at 125VAC/VDC at 100milliamps. The maximum rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position.
Interior:	8.00” wide, 9.00” high, 2.00” deep
Exterior:	10.00” wide, 11.00 high, 3.51” deep
Weight:	2.5 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

SSI ELITE

SPR-510 PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	5	10
TYPE	2 Wire	2 Wire
FORM	A	A

SPR-510

DESCRIPTION

The SPR-510 is a 5-channel pulse isolation relay designed for high-density pulse applications where up to five RPR-2PS or SPR-2 relays would be required. Ten isolated solid-state Form A (K &Y) dry-contact outputs are provided, two each from five Form A inputs. The SPR-510 relay contains standard-duty solid state outputs. The wetting voltage provided by the SPR-510 to the sending devices (typically electric meters) is +13 VDC. The SPR-510 may be used with meters having high or low voltage semiconductor outputs, or electro-mechanical output contacts (relays).

The SPR-510 relay's Form A inputs feature input filtering circuitry to prevent noise from false triggering the outputs. Pulses less than 18 mS are considered to be noise and will not be detected as a valid pulse. Once an input pulse, greater in length than 18 mS, is detected the correspond-ing outputs will be changed to match the state of the input.

Bright red and green LED indicators display the system's status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-510's input and output terminal strip is a "Euro" type. When the stripped wire has been correctly installed in the terminal's slot, no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The "K" lead of the
SPR-510's outputs are fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-510 has built-in MOV transient protection for the solid state relay contacts that eliminates the need for external protection. The SPR-510 is normally mounted inside another enclosure, suitable for the user's intended application. An optional NEMA 4X enclosure is available with the SPR-510 mounted on an internal mounting plate.

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SPR-510 PULSE ISOLATION RELAY

SPR-510

SPECIFICATIONS

ELECTRICAL

Power Input:	120 or 208-277VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Five Form A (K & Y) inputs. "Kin" is common return. Input has "Yin" input terminals "pulled up" to +13VDC for pulse signal from meter.
Pulse Output:	Ten (10) sets of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum power rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position.
Size:	7.00" wide, 9.00" high, 1.8" deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38º C to +70º C, -38.4º F to +158º F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	• 125 VDC input using the DCS-1 Power Supply. • +15-48VDC input using the DCS-2 Power Supply • +12VDC & +24VDC/24VAC are also available Contact factory for other input voltages.

SSI ELITE

SPR-610 PULSE ISOLATION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	6	10
TYPE	2 Wire	2 Wire
FORM	A	A

SPR-610

DESCRIPTION

The SPR-610 is a 6-channel pulse isolation relay designed for high-density pulse applications where up to six RPR or SPR relays would be required. Twelve isolated solid-state Form A (K &Y) dry-contact outputs are provided, two each from four Form A inputs and one each for two Form A inputs. The SPR-610 relay contains standard-duty solid state outputs. The wetting voltage provided by the SPR-610 to the sending devices (typically electric meters) is +13 VDC. The SPR-610 may be used with meters having high or low voltage semiconductor outputs, or electro-mechanical output contacts (relays).

The SPR-610 relay's Form A inputs feature input filtering circuitry to prevent noise from false triggering the outputs. Pulses less than 18 mS are considered to be noise and will not be detected as a valid pulse. Once an input pulse, greater in length than 18 mS, is detected the correspond-ing outputs will be changed to match the state of the input.

Bright red and green LED indicators display the system's status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The SPR-610's input and output terminal strip is a "Euro" type. When the stripped wire has been correctly installed in the terminal's slot, no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The "K" lead of the SPR-610's outputs are fused to prevent damage to the relays under almost any condition a user might cause such as excessive current, incorrect wiring, etc.

The SPR-610 has built-in MOV transient protection for the solid state relay contacts that eliminates the need for external protection. The SPR-610 is normally mounted inside another enclosure, suitable for the user's intended application. An optional NEMA 4X enclosure is available with the SPR-610 mounted on an internal mounting plate.

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SPR-610

SPECIFICATIONS

ELECTRICAL

Power Input:	120 or 208-277VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Six Form A inputs. “Kin” is common return. Input has “Yin” input terminals are “pulled up” to +13VDC for pulse signal from meter.
Pulse Output:	Twelve (12) Form A dry contacts (K & Y) for energy pulses. The contacts are solid state rated at 125VAC/VDC at 100milliamps. The maximum power rating of the contacts is 800mW. Each output is factory fused at 1/10 amp. (3AG)
Contact On-State Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	2 to 3 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position.
Size:	7.00” wide, 9.00” high, 1.8” deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38º C to +70º C, -38.4º F to +158º F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	• 125 VDC input using the DCS-1 Power Supply. • +15-48VDC input using the DCS-2 Power Supply • +12VDC & +24VDC/24VAC are also available Contact factory for other input voltages.

All specifications are subject to change without notice.

SSI ELITE

RPR-1PS PULSE ISOLATION RELAY

B-SERIES

FORMERLY THE RPR-1PS A-SERIES

RPR-1PS

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	3 Wire	3 Wire
FORM	C	C

DESCRIPTION

The RPR-1PS pulse isolation relay is designed to provide a single isolated solid state Form C (K, Y, & Z) contact from a single Form C input. The RPR-1PS supplies its own sense voltage to the pulse sending unit, usually an electric meter's pulse initiator.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces.

The RPR-1PS relay is designed to filter noise and transients from its input to prevent any false pulses at its output. Bright red and green LED indicators display the system's status at all times, thus allowing a rapid visual check of the system's performance without requiring any additional test equipment.

The RPR-1PS' input and output circuit's terminal strip is a "Euro" type connector. The "K" lead of the RPR-1PS' output is fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The RPR-1PS' robust solid state switching device is rated at 800V and 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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RPR-1PS PULSE ISOLATION RELAY

B-SERIES
FORMERLY THE RPR-1PS A-SERIES

RPR-1PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120 VAC, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Output:	One set of Form C dry contacts (K, Y & Z) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate & Release Time:	Turn-on time - 8 milliseconds typical, 20mS max Turn-off time - 1 milliseconds typical, 5mS max
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.65” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC - call factory for details

SSI ELITE

RPR-2PS PULSE ISOLATION RELAY

B-SERIES

FORMERLY THE RPR-2PS A-SERIES

RPR-2PS

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	3 Wire	3 Wire
FORM	C	C

DESCRIPTION

The RPR-2PS pulse isolation relay is designed to provide two isolated solid state Form C (K, Y, & Z) contacts from a single Form C input. The RPR-2PS supplies its own sense voltage to the pulse sending unit, usually an electric meter's pulse initiator.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces.

The RPR-2PS relay is designed to filter noise and transients from its input to prevent any false pulses at its output. Bright red and green LED indicators display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment.

The RPR-2PS' input and output circuit's terminal strip is a "Euro" type connector. The "K" lead of the RPR-2PS' output is fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The RPR-2PS' robust solid state switching device is rated at 800V and 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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RPR-2PS PULSE ISOLATION RELAY

B-SERIES
FORMERLY THE RPR-2PS A-SERIES

RPR-2PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120 VAC, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Output:	Two sets of Form C dry contacts (K, Y & Z) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate & Release Time:	Turn-on time - 8 milliseconds typical, 20mS max Turn-off time - 1 milliseconds typical, 5mS max
Input/Output Isolation Voltage:	2500V

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.65” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC - call factory for details

SSI ELITE

RPR-3PS PULSE ISOLATION RELAY

B-SERIES

FORMERLY THE RPR-3PS A-SERIES

RPR-3PS

FUNCTIONAL SUMMARY

	IN	OUT
#	1	3
TYPE	3 Wire	3 Wire
FORM	C	C

DESCRIPTION

The RPR-3PS pulse isolation relay provides three isolated solid state Form C (K, Y, & Z) contacts from a single Form C input. The RPR-3PS supplies its own sense voltage to the pulse sending unit, usually an electric meter's pulse initiator.

Typical applications include demand recorder applications, interfaces between utility metering devices and customer-owned energy control systems, and supervisory control systems (SCADA) interfaces.

The RPR-3PS relay is designed to filter noise and transients from its input to prevent any false pulses at its output. Bright red and green LED indicators display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment.

The RPR-3PS' input and output circuit's terminal strip connector is a "Euro" type, providing excellent insulation from live electrical contacts. The "K" lead of the RPR-3PS' output is fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc. The RPR-3PS' robust solid state switching device is rated at 800V at 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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RPR-3PS PULSE ISOLATION RELAY

B-SERIES
FORMERLY THE RPR-3PS A-SERIES

RPR-3PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120 VAC, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Output:	Three sets of Form C dry contacts (K, Y & Z) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn-on time - 8 mS typical, 20 mS max Turn-off time - 1 mS typical, 5 mS max
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC - call factory for details

SSI ELITE

RPR-22PS PULSE ISOLATION RELAY

FORMERLY THE RPR-22 & IPR-1

RPR-22PS

FUNCTIONAL SUMMARY

	IN	OUT
#	2	2
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C

DESCRIPTION

The RPR-22PS pulse isolation relay incorporates two independent signal channel isolation relays in one compact package. It provides two isolated solid-state Form C (K, Y, & Z) contacts from two Form A or C inputs. Each input of the RPR-22PS supplies its own sense voltage to the pulse sending unit(s), usually an electric meter's pulse initiator.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, or supervisory control systems (SCADA) interfaces. The RPR-22PS is particularly useful in applications where one channel is Kwh pulses and the second channel is Kvarh pulses.

The RPR-22PS relay is designed to filter noise and transients from its input to prevent any false pulses at its output. Bright red and green LED lamps indicate the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment.

In addition to selecting the Input type, the output timing configuration may be selected between long or short modes. In the long mode, the output directly follows the input creating a "mirror image" of the input pulse. In the short mode, the output will close for a fixed 100mS "short" pulse. The short output mode is generally used with a Form A end-of-interval or timing pulse.

The RPR-22PS' input and output circuit's terminal strip connector is a "EURO" type, providing excellent insulation from live electrical contacts. Each K lead of the RPR-22PS' outputs is fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc. The RPR-22PS' robust solid-state switching device is rated at 800V at 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid-state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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SSI ELITE

RPR-22PS PULSE ISOLATION RELAY

FORMERLY THE RPR-22 & IPR-1

RPR-22PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Two Form A or C field-selectable
Pulse Output:	Two sets of Form C dry contacts (K, Y & Z) for energy pulses. The solid-state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn-on time - 8 mS typical, 20mS MAX Turn-off time - 1 mS typical, 5mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.5’’ wide, 7.2’’ high, 1.5’’ deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SSI ELITE

RPR-23PS PULSE ISOLATION RELAY

FORMERLY THE RPR-23S

RPR-23PS

FUNCTIONAL SUMMARY

	IN	OUT
#	2	3
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C
SPECIAL FEATURES	Each output mappable to each input	

DESCRIPTION

The RPR-23PS pulse isolation relay provides three isolated solid state Form C (K, Y, & Z) contacts from two Form A or C inputs. Each input of the RPR-23PS supplies its own sense voltage to the pulse sending unit(s), usually an electric meter's pulse initiator.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, or supervisory control systems (SCADA) interfaces.

The RPR-23PS relay is designed to filter noise and transients from its input to prevent any false pulses at its output. Bright red and green LED indicators display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment.

The RPR-23PS' input and output circuit's terminal strip connector is a "Euro" type, providing excellent insulation from live electrical contacts. Each "K" lead of the RPR-23PS' outputs is fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The RPR-23PS' robust solid state switching device is rated at 800V at 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid-state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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RPR-23PS PULSE ISOLATION RELAY

FORMERLY THE RPR-23S

RPR-23PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Two Form A or C field-selectable.
Pulse Output:	Three sets of Form C dry contacts (K, Y & Z) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn-on time - 8 mS typical, 20mS MAX Turn-off time - 1 mS typical, 5mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SSI ELITE

RPR-24PS PULSE ISOLATION RELAY

FORMERLY THE RPR-24S

RPR-24PS

FUNCTIONAL SUMMARY

	IN	OUT
#	2	4
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C
SPECIAL FEATURES	Each output mappable to each input	

DESCRIPTION

The RPR-24PS pulse isolation relay provides four isolated solid state Form C (K, Y, & Z) contacts from two Form A or C inputs. Each input of the RPR-24PS supplies its own sense voltage to the pulse sending unit(s), usually an electric meter's pulse initiator.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, or supervisory control systems (SCADA) interfaces.

The RPR-24PS relay is designed to filter noise and transients from its input to prevent any false pulses at its output. Bright red and green LED indicators display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment.

The RPR-24PS' input and output circuit's terminal strip connector is a "Euro" type, providing excellent insulation from live electrical contacts. Each "K" lead of the RPR-24PS' outputs is fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The RPR-24PS' robust solid state switching device is rated at 800V at 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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RPR-24PS PULSE ISOLATION RELAY

FORMERLY THE RPR-24S

RPR-24PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Two Form A or C field-selectable
Pulse Output:	Four sets of Form C dry contacts (K, Y & Z) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn On Time - 8 mS typical, 20mS MAX Turn Off Time - 1 mS typical, 5mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SSI ELITE

RPR-33PS PULSE ISOLATION RELAY

B-SERIES
FORMERLY THE RPR-33 A-SERIES

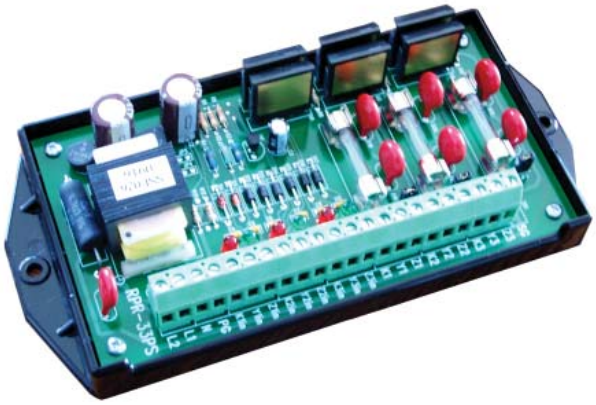
FUNCTIONAL SUMMARY

	IN	OUT
#	3	3
TYPE	3 Wire	3 Wire
FORM	C	C

RPR-33PS

DESCRIPTION

The RPR-33PS pulse isolation relay provides three isolated solid state Form C (K, Y, & Z) contacts from three Form A or C inputs. The RPR-33PS supplies its own sense voltage to the pulse sending units, usually electric meters' pulse initiators.



Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications (particularly useful in applications KWh, kVarh, and EOI), or supervisory control systems (SCADA) interfaces.

The RPR-33PS relay is designed to filter noise and transients from its input to prevent any false pulses at its output. Bright red and green LED indicators display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment.

The RPR-33PS' input and output circuit's terminal strip connector is a "Euro" type, providing excellent insulation from live electrical contacts. The "K" lead of the RPR-3PS' output is fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc. The RPR-33PS' robust solid state switching device is rated at 800V at 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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RPR-33PS PULSE ISOLATION RELAY

B-SERIES
FORMERLY THE RPR-33 A-SERIES

RPR-33PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Three (3) Form A or Form C inputs are provided. Inputs contain +13VDC transformer-isolated power supply for wetting voltage. On each input, “Y” and “Z” terminals are “pulled-up” to +13VDC. “K” terminal is common return. +18VDC auxiliary power supply is optionally available for applications requiring a separate wetting voltage on outputs to receiving devices’ inputs.
Pulse Output:	Three sets of Form C dry contacts (K, Y & Z) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn-on time - 8 mS typical, 20 mS max Turn-off time - 1 mS typical, 5 mS max
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

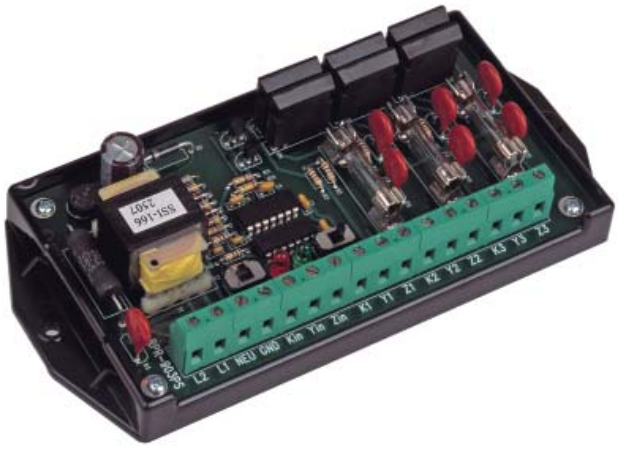
Input Voltages:	24 VAC/24VDC, 125VDC

SSI ELITE

RPR-903PS PULSE ISOLATION RELAY

FORMERLY THE RPR-903

DESCRIPTIONS



The RPR-903PS pulse isolation relay provides three isolated solid state Form C (K, Y, & Z) contacts from a field-selectable Form A or C inputs. The RPR-903PS' input supplies its own sense voltage to the pulse sending unit(s), usually an electric meter's pulse initiator. The RPR-903PS has two fixed Form C outputs. In addition, the third output features two field-selectable modes, Normal mode or Pulse Doubling mode. In the Pulse Doubling mode the output provides a true Form C to Form A pulse value conversion.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, or supervisory control systems (SCADA) interfaces.

The RPR-903PS relay is designed to filter noise and transients from its input to prevent any false pulses at its output. Bright red and green LED Indicators Display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment.

The RPR-903PS' input and output circuit's terminal strip connector is a "Euro" type, providing excellent insulation from live electrical contacts. Each "K" lead of the RPR-903PS' outputs is fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The RPR-903PS' robust solid state switching device is rated at 800V at 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

FUNCTIONAL SUMMARY

	IN	OUT
#	1	3
TYPE	2 or 3 Wire	(2) 3 Wire, (1) 2 or 3 Wire
FORM	A or C	C, A or C

RPR-903PS

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SSI ELITE

RPR-903PS PULSE ISOLATION RELAY

FORMERLY THE RPR-903

RPR-903PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Form A or C field-selectable +13VDC wetting voltage supplied to meter.
Pulse Output:	Three sets of Form C dry contacts (K, Y & Z) for energy pulses, two fixed and one field-selectable Form A or C. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn-on time - 8 mS typical, 20mS MAX Turn-off time - 1 mS typical, 5mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50“ deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SSI ELITE

PIR-1PS+ PULSE ISOLATION RELAY

FORMERLY THE PIR-1

PIR-1PS+

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	2 Wire	2 Wire
FORM	A	A

DESCRIPTION

The PIR-1PS+ repeating pulse relay is designed to provide one isolated solidstate Form A (K & Y) contacts from a single Form A input. The PIR-1PS+ supplies its own isolated +13VDC wetting voltage to the pulse sending unit, usually an electric meter's pulse initiator. Typical applications include interfaces between utility metering devices and customer owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces.

The PIR-1PS+' dual-dielectric barrier design uses two optical isolation barriers insuring maximum protection from electric disruptions between the input and output. The microcontroller-based PIR-1PS+ has two operating modes: normal and fixed. In the normal mode, output pulses are the same time duration as the input pulse duration. In fixed mode, the output time is fixed regardless of the input pulse length. In both modes the PIR-1PS+ filters noise and transients at its input to prevent any false pulses at its output. If the incoming pulse is less than the specified time – 2,5, 10 or 20 milliseconds - the PIR-1PS+ assumes that the incoming pulse is noise and disregards it. Thus, any valid pulse rate of 25 pulses per second (50-on/50-off form factor) or less is accepted while static and induced noise is rejected. If used in a very noisy environment, the pulse acceptance window can be lengthened or shortened.

The PIR-1PS+' output closure time (in the fixed mode) is selectable for 100, 300, 500 or 1000 milliseconds, regardless of the input pulse's duration. The output duration time may be easily selected by moving jumper locations. In the event that the input pulse rate exceeds the output time such that input pulses are arriving from the meter faster than the output can handle, the microcontroller stores these pulses and outputs them as soon as possible, so that no pulses are lost. Bright red and green LED indicators display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment. The input and output terminal strip connector is a "Euro" type providing excellent electrical insulation. The "K" lead of the PIR-1PS+' outputs are fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The PIR-1PS+' robust solid state switching device is rated at 800V and 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid-state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the PIR-1PS+ mounting surface.

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SSI ELITE

PIR-1PS+ PULSE ISOLATION RELAY

FORMERLY THE PIR-1

PIR-1PS+

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Output:	One Form A dry contacts (K & Y) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn-on time - 8 mS typical, 20mS MAX Turn-off time - 1 mS typical, 5mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.65” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SSI ELITE

PIR-2PS+ PULSE ISOLATION RELAY

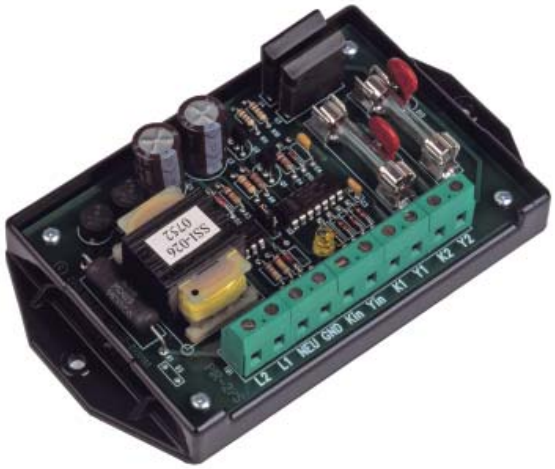
FORMERLY THE PIR-2

PIR-2PS+

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	2 Wire	2 Wire
FORM	A	A

DESCRIPTION



The PIR-2PS+ pulse isolation relay is designed to provide two isolated solid state Form A (K & Y) contacts from a single Form A input. The PIR-2PS+ supplies its own isolated +13VDC wetting voltage to the pulse sending unit, usually an electric meter's pulse initiator. Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces.

The PIR-2PS+' dual-dielectric barrier design uses two optical isolation barriers insuring maximum protection from electric disruptions between the input and output. The PIR-2PS+ is designed to filter noise and transients at its input to prevent any false pulses at its output. If the incoming pulse is less than 20 milliseconds in length, the PIR-2PS+ assumes that the incoming pulse is noise and it is disregarding. Thus, any valid pulse rate of 25 pulses per second (50-on/50-off form factor) or less is accepted while static and induced noise is rejected. If used in a very noisy environment, the pulse acceptance window can be lengthened or shortened.

The PIR-2PS+'s output closure time (in the fixed mode) is selectable for 100, 300, 500 or 1000 milliseconds, regardless of the input pulse's duration. The output duration time may be easily selected by moving jumper locations. In the event that the input pulse rate exceeds the output time such that input pulses are arriving from the meter faster than the output can handle, the microcontroller stores these pulses and outputs them as soon as possible, so that no pulses are lost.

Bright red and green LED indicators display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment. The input and output terminal strip connector is a "Euro" type providing excellent electrical insulation. The "K" lead of the PIR-2PS+'s outputs are fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The PIR-2PS+'s robust solid state switching device is rated at 800V and 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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PIR-2PS+ PULSE ISOLATION RELAY

FORMERLY THE PIR-2

PIR-2PS+

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Output:	Two Form A dry contacts (K & Y) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn-on time - 8 mS typical, 20mS MAX Turn-off time - 1 mS typical, 5mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.65” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC
Enclosure:	NEMA 3R or 4X

SSI ELITE

PIR-3PS+ PULSE ISOLATION RELAY

FORMERLY THE PIR-3

PIR-3PS+

FUNCTIONAL SUMMARY

	IN	OUT
#	1	3
TYPE	2 Wire	2 Wire
FORM	A	A

DESCRIPTION

The PIR-3PS+ pulse isolation relay is designed to provide two isolated solid state Form A (K & Y) contacts from a single Form A input. The PIR-3PS+ supplies its own isolated +13VDC wetting voltage to the pulse sending unit, usually an electric meter's pulse initiator. Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces.

The PIR-3PS+' dual-dielectric barrier design uses two optical isolation barriers insuring maximum protection from electric disruptions between the input and output. The PIR-3PS+ is designed to filter noise and transients at its input to prevent any false pulses at its output. If the incoming pulse is less than 20 milliseconds in length, the PIR-3PS+ assumes that the incoming pulse is noise and it is disregarding. Thus, any valid pulse rate of 25 pulses per second (50-on/50-off form factor) or less is accepted while static and induced noise is rejected. If used in a very noisy environment, the pulse acceptance window can be lengthened or shortened.

The PIR-3PS+' output closure time (in the fixed mode) is selectable for 100, 300, 500 or 1000 milliseconds, regardless of the input pulse's duration. The output duration time may be easily selected by moving jumper locations. In the event that the input pulse rate exceeds the output time such that input pulses are arriving from the meter faster than the output can handle, the microcontroller stores these pulses and outputs them as soon as possible, so that no pulses are lost.

Bright red and green LED indicators display the system's status at all times thus allowing a rapid visual check of the system's performance without requiring any additional test equipment. The input and output terminal strip connector is a "Euro" type providing excellent electrical insulation. The "K" lead of the PIR-3PS+' outputs are fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The PIR-3PS+' robust solid state switching device is rated at 800V and 750mA giving maximum protection from lightning or transient voltage damage. Its built-in transient protection for the solid state switch contacts eliminates the need for external or off-board transient suppression devices. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.

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SSI ELITE

PIR-3PS+ PULSE ISOLATION RELAY

FORMERLY THE PIR-3

PIR-3PS+

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Output:	Two Form A dry contacts (K & Y) for energy pulses. The solid state “no bounce” relay contacts are rated at 250 VAC/VDC @ 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn-on time - 8 mS typical, 20mS MAX Turn-off time - 1 mS typical, 5mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.5” wide, 7.2” high, 1.50” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC
Enclosure:	NEMA 3R or 4X

PULSE ISOLATION RELAY - SOLID STATE

PCR-3PS PULSE CONVERSION RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C

PCR-3PS

DESCRIPTIONS

The PCR-3PS Universal Pulse Conversion Relay is designed to provide TRUE 3-Wire to 2-Wire OR 2-Wire to 3-Wire conversion in a single microcontroller-based relay. The conversion mode is field-selectable and does not require the use of any special tools or equipment. In addition, the PCR-3PS has a normal “Straight-through” mode that allows the PCR-3PS to act as a non-converting normal isolation relay. In this mode, a Form A (2-wire) input will result in a Form A output. A Form C (3-wire) input will result in a Form C output.

In the 3-Wire to 2-Wire Mode, the PCR-3PS provides “true” conversion of each change of state of the 3-wire KYZ input circuit into a fixed 100 millisecond long 2-wire isolated output contact closure. The PCR-3PS checks for the correct sequence of the input pulses before allowing an output pulse to occur. A K to Y input contact closure followed by a K to Z input contact closure will result in an output closure. A K to Y input contact closure followed by an interruption and then another K to Y contact closure will only result in an output closure for the first input closure. The second and all future K to Y input closures will be ignored until a valid K to Z input closure occurs. An input closure must be at least 20mS long to be recognized as a valid input pulse.

In the 2-Wire to 3-Wire Mode, the PCR-3PS provides “true” conversion of each change of state of the K-Y input 2-wire circuit into alternating changes of state of the 3-wire Form C isolated output contact closure. The PCR-3PS checks for the correct sequence of the input pulses before allowing an output pulse to occur. A K to Y input contact closure of at least 20mS will result in an output closure. The K to Y input contact closure must be open or interrupted for at least 20mS for the input to be reset and prepared for the next K to Y contact closure. An input closure less than 20mS is ignored.

Typical applications include supervisory control (SCADA) systems, energy management systems and energy demand/KWH counters. Two sets of bright Red and Green LEDs lamps show the status of the input and output at all times, thus allowing a rapid visual check-out of the systems performance without the use of any additional tools or test instruments.

The PCR-3PS’s input and output circuit’s terminal strip is “EURO” type connector strip. When the stripped wire has been correctly installed in the terminals’ “slot” no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The K lead of the PCR-3PS’s output is fused to prevent damage to the relay under almost any conditions a user might subject the system to such as excessive current, voltages, and incorrect wiring, etc. The PCR-3PS has built-in transient protection for the solid-state relay’s contacts that eliminates the need for external or off-the-board transient suppressors.

All component parts that have power applied to them, with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum user protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation. The PCR-3PS is designed to mount in an electrical enclosure appropriate for the application and operating environment.

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PULSE ISOLATION RELAY - SOLID STATE

PCR-3PS PULSE CONVERSION RELAY

PCR-3PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Output:	One set of dry Form C contacts (K, Y, & Z) for energy pulses. The contacts are solid state relays rated at 250 VAC/VDC @ 500mA. The maximum rating of the contacts is 100 VA. Factory fused at 1/4 amp @ 250VAC (3AG).
Contact On-State Resistance:	2.3 ohms max, 1.7 ohms typical
Insulation Resistance	50 megohms typical
Operate and Release Time:	Turn on-time - 8 mS typical; 20 mS MAX Turn off-time - 1 mS typical; 5 mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.65” high, 1.50” deep
Weight:	9 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory

DPR-22PS PULSE DIVIDING RELAY

DPR-22PS

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C
SPECIAL FEATURES	Divide by 1 to 255	

DESCRIPTION

The DPR-22PS is a microcontroller-based dividing pulse relay designed to provide two sets of isolated "dry" 3-wire Form C contacts (K, Y, & Z) from a field selectable 2-wire (Form A) or 3-wire (Form C) pulse input. The output is divided by a user-selected number. The divider's ratio of input pulses to output pulses may be set between 1 and 255. Selection of the desired division ratio is by two small selection switches mounted on the relay's board and is easily adjustable with a small screwdriver. The DPR-22PS microcontroller checks the input pulses for the correct sequence and timing, and counts the input pulses for division only when a correct and valid sequence of pulses occur, thus assuring a high degree of noise rejection. Two sets of bright red and green LED lamps indicate the input and output status of the system at all times thus allowing a rapid visual check-out of the system's performance without requiring any additional test equipment.

The input and output circuits' terminal strip are "Euro" type connectors. The K leads of each of the DPR-22PS's isolated outputs are fused to prevent damage to the relays under almost any condition a user might subject it to such as excessive current, voltage, or incorrect wiring. The DPR-22PS provides a "pulled up" sense voltage of approximately +13 VDC on the Y and Z terminals of the input to the external sending contacts. The K terminal is system ground allowing the use of standard electro-mechanical, dry contact switches or solid state open-collector NPN or open-drain FET transistor pulse initiators. The DPR-22PS has built-in MOV transient protection for the solid-state relay contacts that eliminates the need for external or off-the-board transient suppressors. All component parts of the DPR-22PS, which have power applied to them with the exception of the input/output terminal strips and the divider switches, are enclosed in a polycarbonate cover for maximum user protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation. The DPR-22PS is intended to be mounted in an enclosure appropriate for the application and the operating environment.

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SSI ELITE

DPR-22PS PULSE DIVIDING RELAY

DPR-22PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120,208-277 VAC; Burden: 10 mA at 120 VAC
Pulse Input Voltage:	+13VDC “pulled-up” on Yin and Zin terminals. Common return is Kin terminal.
Pulse Output:	Two sets of dry Form “C” contacts (K, Y, & Z) for time or energy pulses. The contacts are solid state relays rated at 250VAC/VDC @ 500 mA MAX. The maximum rating of the contacts is 100 VA. Factory fused at 1/4 amp. (3AG)
Contact On-State Resistance:	2.7 ohms maximum, 1.7 ohms typical
Operate and Release Time:	Turn on-time - 8 mS typical; 20 mS MAX Turn off-time - 1 mS typical; 5 mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.5” wide, 7.2” high, 1.5” deep
Weight:	12 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory

SELF-CONTAINED RELAYS (OUTDOOR) - SOLID STATE

CIR-13PS CUSTOMER INTERFACE RELAY

FORMERLY THE CIR-13S

FUNCTIONAL SUMMARY

	IN	OUT
#	1	3
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C

CIR-13PS

DESCRIPTION

The CIR-13PS Customer Interface Relay provides three isolated solid state dry Form C contacts from a single Form A or C input. Each set of output contacts may be used as either a Form A (K & Y) or a Form C (K, Y, & Z) contact. The typical application is the utility's interface between the KWH meter and a customer-owned energy control system. The CIR-13PS includes everything necessary to provide a customer with energy pulses in one compact ready-to-use weather-resistant enclosure.

The CIR-13PS is internally divided into two compartments. Once installed, the upper compartment is normally locked and only accessible to utility metering personnel. It contains all of the electronics along with fusing that is coordinated with the fuse contained within the customer compartment. The lower compartment (customer compartment) contains a terminal strip, fusing, and output status LEDs. Using a jumper selector, the outputs can be configured in the "Long" or "Short" pulse output mode. With the selector in the long mode, the relays' contact closure is the same duration as the input's closure duration. In the short mode, the output is closed for a approximately 100 milliseconds regardless of the input's closure duration. Red and green LEDs located in the customer's compartment light alternately depending upon input's status. The use of LEDs allows a rapid visual check of the system's performance by inexperienced personnel without requiring any additional test equipment. Because of the redundant, coordinated fusing in both the utility's and customer's compartments, the meter shop service coordinator can usually determine the location of the service problem as to either utility or customer responsibility by the simple question "are the LEDs flashing". The double "K" lead coordinated fusing of the CIR-13PS's output will prevent damage to the relay under almost any condition a user might cause such as that caused by excessive current, incorrect wiring, etc. The CIR-13PS' robust solid state switching device is rated at 800V and 750mA giving maximum protection from lightning or transient voltage damage. The CIR-13PS has built-in transient protection for the solid state switching devices that eliminates the need for external or off-the-board transient suppressors.

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CIR-13PS CUSTOMER INTERFACE RELAY

FORMERLY THE CIR-13S

CIR-13PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	One Form A (2-Wire) or C (3-Wire) input with +13VDC wetting voltage on the Y and Z terminals
Pulse Output:	Three sets of dry contact solid state outputs. Output 1: one set of Form C contacts (K, Y, & Z) located in the customer's compartment. Output 2 & 3: two sets of Form C contacts located in the utility compartment. The contacts are solid state "no bounce" relays rated at 250 VACVDC at 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/4 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn on-time - 8 mS typical; 20 mS MAX Turn off-time - 1 mS typical; 5 mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	9.0" wide, 11.0" high, 4.50" deep
Weight:	9 pounds
Type/Material:	NEMA 4X Fiberglass Case

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SELF-CONTAINED RELAYS (OUTDOOR) - SOLID STATE

CIR-22PS CUSTOMER INTERFACE RELAY

FORMERLY THE CIR-22S & CIR-22A/B

FUNCTIONAL SUMMARY

	IN	OUT
#	2	2
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C

CIR-22PS

DESCRIPTION

The CIR-22PS Customer Interface Relay provides two isolated solid state dry Form C contacts from two Form A or C inputs. Each set of output contacts may be used as either a Form A (K & Y) or a Form C (K, Y, & Z) contact. The typical application is the utility's interface between the KWH meter and a customer-owned energy control system where two types of pulses are used. For example, one channel might be for watt-hour pulses and the second channel for var-hour pulses. The CIR-22 provides two independent isolation relay channels in one ready-to-use weather-resistant package.

The CIR-22PS is internally divided into two compartments. Once installed, the upper compartment is normally locked and only accessible to utility metering personnel. It contains all of the electronics along with fusing that is coordinated with the fuse contained within the customer compartment. The lower compartment (customer compartment) contains a terminal strip, fusing, and output status LEDs. Using jumper selector, the inputs can be configured as 2-Wire or 3-Wire inputs and the outputs can be configured in the "Long" or "Short" pulse output mode. With the output selector in the long mode, the relays' contact closure is the same duration as the input's closure duration. In the short mode, the output is closed for a approximately 100 milliseconds regardless of the input's closure duration. Red and green LEDs, one for each channel, are located in the customer's compartment and light alternately depending upon input's status. The use of LEDs allows a rapid visual check of the system's performance by inexperienced personnel without requiring any additional test equipment. Because of the redundant, coordinated fusing in both the utility's and customer's compartments, the meter shop service coordinator can usually determine the location of the service problem as to either utility or customer responsibility by the simple question "are the LEDs flashing". The double "K" lead coordinated fusing of the CIR-22PS's output will prevent damage to the relay under almost any condition a user might cause such as that caused by excessive current, incorrect wiring, etc. The CIR-22PS' robust solid state switching device is rated at 800V and 750mA giving maximum protection from lightning or transient voltage damage. The CIR-22PS has built-in transient protection for the solid state switching devices that eliminates the need for external or off-the-board transient suppressors.

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CIR-22PS CUSTOMER INTERFACE RELAY

FORMERLY THE CIR-22S & CIR-22A/B

CIR-22PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Two Form A (2-Wire) or C (3-Wire) input with +13VDC wetting voltage on the “Y” and “Z” terminals.
Pulse Output:	Two sets of dry contact solid state outputs located in the customer’s compartment. The contacts are solid state “no bounce” relays rated at 250VACVDC at 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/4 amp. (3AG)
Contact Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn on-time - 8 mS typical; 20 mS MAX Turn off-time - 1 mS typical; 5 mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	9.0’’ wide, 11.0” high, 4.50” deep
Weight:	9 pounds
Type/Material:	NEMA 4X Fiberglass Case

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SELF-CONTAINED RELAYS (OUTDOOR) - SOLID STATE

CIR-24PS CUSTOMER INTERFACE RELAY

FORMERLY THE CIR-24S

FUNCTIONAL SUMMARY

	IN	OUT
#	2	4
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C

CIR-24PS

DESCRIPTION

The CIR-24PS Customer Interface Relay provides four isolated solid state dry Form C contacts from two Form A or C inputs. Each set of output contacts may be used as either a Form A (K & Y) or a Form C (K, Y, & Z) contact. The typical application is the utility's interface between the KWH meter and a customer-owned energy control system where two types of pulses are used. For example, one input channel might be for watt-hour pulses and the second input channel for var-hour pulses. The CIR-22 provides two independent isolation relay channels in one ready-to-use weather-resistant package.

The CIR-24PS is internally divided into two compartments. Once installed, the upper compartment is normally locked and only accessible to utility metering personnel. It contains all of the electronics along with fusing that is coordinated with the fuse contained within the customer compartment. The lower compartment (customer compartment) contains a terminal strip, fusing, and output status LEDs. Using jumper selector, the inputs can be configured as 2-Wire or 3-Wire inputs and the outputs can be configured in the "Long" or "Short" pulse output mode. With the output selector in the long mode, the relays' contact closure is the same duration as the input's closure duration. In the short mode, the output is closed for a approximately 100 milliseconds regardless of the input's closure duration. Red and green LEDs, one for each channel, are located in the customer's compartment and light alternately depending upon input's status.

Each output is assigned to one of the two inputs by means of a switch, thereby allowing flexibility in directing pulses to the appropriate output.

The use of LEDs allows a rapid visual check of the system's performance by inexperienced personnel without requiring any additional test equipment. Because of the redundant, coordinated fusing in both the utility's and customer's compartments, the meter shop service coordinator can usually determine the location of the service problem as to either utility or customer responsibility by the simple question "are the LEDs flashing". The double "K" lead coordinated fusing of the CIR-24PS's output will prevent damage to the relay under almost any condition a user might cause such as that caused by excessive current, incorrect wiring, etc. The CIR-24PS' robust solid state switching device is rated at 800V and 750mA giving maximum protection from lightning or transient voltage damage. The CIR-24PS has built-in transient protection for the solid state switching devices that eliminates the need for external or off-the-board transient suppressors.

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CIR-24PS CUSTOMER INTERFACE RELAY

FORMERLY THE CIR-24S

CIR-24PS

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Inputs:	Two Form A (2-Wire) or C (3-Wire) input with +13VDC wetting voltage on the “Y” and “Z” terminals.
Pulse Outputs:	Four sets of dry contact solid state outputs – two located in the customer’s compartment and two in the utility compartment. The contacts are solid state “no bounce” relays rated at 250VACVDC at 1/2 Amp. The maximum rating of the contacts is 100 VA. Factory fused at 1/4 amp. (3AG)
Contact On-State Resistance:	2.3 ohms maximum, 1.7 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn on-time - 8 mS typical; 20 mS MAX Turn off-time - 1 mS typical; 5 mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	9.0” wide, 11.0” high, 4.50” deep
Weight:	9 pounds
Type/Material:	NEMA 4X Fiberglass Case

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SELF-CONTAINED RELAYS (OUTDOOR) - SOLID STATE

CIR-24NG CUSTOMER INTERFACE RELAY

CIR-24NG

FUNCTIONAL SUMMARY

	IN	OUT
#	2	4
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C

The CIR-24NG Customer Interface Relay provides four isolated solid-state Form A or C dry-contact outputs from two Form A or C inputs. Each set of output contacts may be used as either a Form A (K & Y) or a Form C (K, Y, & Z) contact. The typical application is the utility's interface between the KWH meter and a customer-owned energy control system where two types of pulses are used. For example, one input channel might be for watt-hour pulses and the second input channel for var-hour pulses. The CIR-24NG provides two independent isolation relay channels in one ready-to-use weather-resistant package.

The CIR-24NG is internally divided into two compartments. Onceinstalled, the upper compartment is normally locked and only accessible to utility metering personnel. It contains the Power Supply input terminals, all of the system electronics and programming accessibility. The lower compartment (customer compartment) contains an Output terminal strip, fusing, and output status LEDs. Using SSI's Universal Programmer software, the inputs and outputs can be configured as 2-Wire(Form A) or 3-Wire(Form C) and each output mapped to an input. Pulse output timing for Form A pulse widths can also be set. With the outputs having like form Settings to the inputs, the channel is in Normal mode and the outputs follow the inputs with equal time. If the outputs are Form A, a fixed pulse width may be programmed into the that particular relay output, making it compatible with certain instruments' minimum pulse width requirements. If the outputs have the opposite setting to the input they are following, the that channel is in the conversion mode, either A to C or C to A while keeping the pulse value constant.

Red and green LEDs, one for each input and output, are located next to the terminal blocks for good visibility and easy interpretation of the state of each input and output.

The CIR-24NG' robust solid-state switching device is rated at 1000V and 180mA giving maximum protection from lightning or transient voltage damage. The CIR-24NG has built-in transient protection for the solid-state switching devices that eliminates the need for external or off-the-board transient suppressors.

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CIR-24NG CUSTOMER INTERFACE RELAY

FORMERLY THE CIR-24S

CIR-24NG

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Inputs:	Two Form A (2-Wire) or C (3-Wire) input with +13VDC wetting voltage on the “Y” and “Z” terminals.
Pulse Outputs:	Four sets of dry contact solid state outputs – located in the customer compartment. The contacts are solid state “no bounce” relays rated at 125VACVDC at 1/4 Amp. The maximum rating of the contacts is 1500 mW. Factory fused at 1/4 amp. (3AG)
Contact On-State Resistance:	12.3 ohms maximum, 18 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn on-time - 10 mS MAX Turn off-time - 5 mS MAX
Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	9.0” wide, 11.0” high, 4.50” deep
Weight:	9 pounds
Type/Material:	NEMA 4X Fiberglass Case

TEMPERATURE

Temperature Range:	-38° C to +85° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	24 VAC/24VDC, 125VDC

SSI TOTALIZERS

MPT-2C METERING PULSE TOTALIZER

REPLACES THE MPT-2C

MPT-2C

FUNCTIONAL SUMMARY

	IN	OUT
#	2	2
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C

DESCRIPTION

The MPT-2C metering pulse totalizer is designed to provide the totalized pulse output from two 2-wire (Form A) or 3-wire (Form C) pulse input sources. Two 2-wire Form A or 3-wire Form C (K, Y, & Z) outputs from isolated, solid state, dry contact relays are provided. Inputs are signed + or – to provide additive and subtractive capability.

The MPT-2C's output module may be operated in 1-channel or 2-channel mode. In 1-channel mode, the MPT-2C operates with a single KYZ output channel. In 2-channel mode, the MPT-2C operates with two independent KY output channels, each having a unique output value. In both configurations, there are two physical outputs on each channel, eliminating the need for an additional "splitting" or pulse duplicating relay.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces. The MPT-2C pulse totalizer may also be used as a pulse value translator if it is desirable to translate odd pulse values such as 0.1234 KWH/pulse to an even value, 0.5000 KWH/pulse. The pulse signal inputs to the MPT-2C is by two sets of "Y" & "Z" leads with a common "K" lead.

The MPT-2C provides a sense voltage of +13VDC to the two pulse sending units, normally two electric meters. The MPT-2C's inputs may be assigned a four-digit pulse value which can be set from 0001 to 9999. The output value setting is a six digit number between 000001 to 999999. Both the input and output values may be field set without the use of any external devices. All settings are saved in non-volatile memory. In addition, the minimum time between output pulses may be set in 10 millisecond increments between 20 milliseconds and 1000 milliseconds.

An LCD display contained within the unit displays the status of each of the inputs and the output as a Y or Z. In addition, all programming of system values is done using the LCD display and pushbutton switches. With a software debouncing technique, all inputs are first checked for the correct sequence and then a minimum time of contact closure duration to assure a maximum noise rejection. The "K" lead of the MPT-2C's output is fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc.

The MPT-2C has built-in MOV transient protection for the solid state relay contacts which eliminates the need for external or off-the-board transient suppressors. All component parts of the MPT-2C, which have power applied to them with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation.

MPT-2C METERING PULSE TOTALIZER

REPLACES THE MPT-2C

MPT-2C

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Two 2-wire (Form A) or 3-wire (Form C) inputs. “K” terminal are common return from meter; “Y” and “Z” terminals are pulled-up to a sense voltage of +13 VDC. Compatible with dry-contact mechanical, electro-mechanical or semiconductor outputs (i.e. open connector transistor or MOSFET transistor).
Pulse Output:	Two sets of Form C (K, Y, & Z) dry contacts for energy pulses rated at 100mA at 120VAC/VDC. Factory fused at 1/10 Amp with 3AG fuses. 800mW maximum contact power.
Contact Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	1 to 2 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	13 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125VDC with DCS-1; 15-48VDC with DCS-2; contact factory for other voltages

SSI TOTALIZERS

MPT-4C METERING PULSE TOTALIZER

REPLACES THE MPT-4B-PS
AND MPT-4SB-PS

FUNCTIONAL SUMMARY

	IN	OUT
#	4	2
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C

MPT-4C

DESCRIPTION

The MPT-4C metering pulse totalizer is designed to provide the totalized pulse values from four 2-Wire (Form A) or 3-Wire (Form C) input pulse sources. Two 2-Wire Form A or 3-wire Form C (K, Y, & Z) outputs from isolated, solid state, dry contact relays are provided. Inputs are signed + or – to provide additive and subtractive capability.

The MPT-4C's output module may be operated in 1-channel or 2-channel mode. In 1-channel mode, the MPT-4C operates with a single KYZ output channel. In 2-channel mode, the MPT-4C operates with two independent KY output channels, each having a unique output value. In both configurations, there are two physical outputs on each channel, eliminating the need for an additional "splitting" or pulse duplicating relay.

The MPT-4C incorporates a peak demand software module that tracks the average kW demand in any interval and captures the peak demand for later reading in non-volatile memory. A separate demand reset allows for resetting of the peak demand module only. An EOI signal is provided by one of the four meters to signal the end of each interval and the start of the next.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand billing applications, and supervisory control systems (SCADA) interfaces. The pulse signal inputs to the MPT-4C is by four sets of "Y" & "Z" leads with a common "K" lead.

The MPT-4C provides a "wetting" voltage of +13VDC to the four pulse sending units, normally electric meters. Each of the MPT-4C's inputs may be assigned a four digit pulse value which can be set from 0001 to 9999. The output value setting is a six digit number from 000001 to 999999. Both the input and output values may be field set without the use of any external devices. All settings are saved in non-volatile memory. In addition, the minimum time between output pulses may be set in 10 milliseconds increments between 20 milliseconds and 1000 milliseconds.

An LCD display contained within the unit displays the status of each of the inputs and the output as a Y or Z when not being used in the setting of the pulse multiplier values. Using software debouncing technique, all inputs are first checked for the correct sequence and then a minimal time of contact closure duration to assure a maximum noise rejection. The "K" lead of the MPT-4C's outputs are fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc.

The MPT-4C has built-in MOV transient protection for the solid state relay contacts which eliminates the need for external or off-the-board transient suppressors. All component parts of the MPT-4C, which have power applied to them with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation.

MPT-4C METERING PULSE TOTALIZER

REPLACES THE MPT-4B-PS
AND MPT-4SB-PS

MPT-4C

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Four 2-wire Form A or 3-wire Form C inputs. “K” terminal are common return from meter; “Y” and “Z” terminals are pulled-up to a sense voltage of +13 VDC. Compatible with dry-contact mechanical, electro-mechanical or semiconductor outputs (i.e. open connector transistor or MOSFET transistor).
Pulse Output:	Two sets of Form C (K, Y, & Z) dry contacts or two independent Form A channels with two outputs each for energy pulses rated at 100mA at 120VAC/ VDC. Factory fused at 1/10 Amp with 3AG fuses. 800mW maximum contact power.
Contact Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	1 to 2 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	13 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125VDC with DCS-1; 15-48VDC with DCS-2; contact factory for other voltages

SSI TOTALIZERS

MPT-8C METERING PULSE TOTALIZER

REPLACES THE MPT-8B-PS

FUNCTIONAL SUMMARY

	IN	OUT
#	8	2
TYPE	2 Wire	2 or 3 Wire
FORM	A	A or C

MPT-8C

DESCRIPTION

The MPT-8C metering pulse totalizer is designed to provide the totalized pulse values from eight 2-Wire Form A input pulse sources. Two 2-Wire Form A or 3-wire Form C (K, Y, & Z) outputs from isolated, solid state, dry contact relays are provided. Inputs are signed + or – to provide additive and subtractive capability.

The MPT-8C's output module may be operated in 1-channel or 2-channel mode. In 1-channel mode the MPT-8C operates with a single KYZ output channel. In 2-channel mode, the MPT-8C operates with two independent KY output channels, with each having a unique output value. In both configurations, there are two physical outputs, eliminating the need for a "splitting" or pulse duplicating relay.

The MPT-8C incorporates a peak demand software module which keeps track of the average kW demand in any interval and saves the peak demand for later reading and unit a manual reset. An EOI signal is provided by one of the four meters to signal the end of each interval and the start of the next.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand billing applications, and supervisory control systems (SCADA) interfaces. The pulse signal inputs to the MPT-8C is by four sets of "Y" & "Z" leads with a common "K" lead.

The MPT-8C provides a "wetting" voltage of +13VDC to the four pulse sending sources, normally electric meters. Each of the MPT-8C's inputs may be assigned a four digit pulse value which can be set from 0001 to 9999. The output value setting is a six digit number from 000001 to 999999. Both the input and output values may be field set without the use of any external devices. All settings are saved in non-volatile memory. In addition, the minimum time between output pulses may be set in 10 milliseconds increments between 20 milliseconds and 1000 milliseconds.

An LCD display contained within the unit displays the status of each of the inputs and the output as a Y or Z when not being used in the setting of the pulse multiplier values. Using software debouncing technique, all inputs are first checked for the correct sequence and then a minimal time of contact closure duration to assure a maximum noise rejection. The "K" lead of the MPT-8C's output is fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc.

The MPT-8C has built-in MOV transient protection for the solid state relay contacts which eliminates the need for external or off-the-board transient suppressors. All component parts of the MPT-8C, which have power applied to them with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation.

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MPT-8C METERING PULSE TOTALIZER

REPLACES THE MPT-8B-PS

MPT-8C

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Eight 2-wire Form A pulse inputs. “K” terminal are common return from meter; “Y” terminals are pulled-up to a sense voltage of +13 VDC. Compatible with dry-contact mechanical, electro-mechanical or semiconductor outputs (i.e. open connector transistor or MOSFET transistor).
Pulse Output:	Two sets of Form C (K, Y, & Z) dry contacts or two independent Form A channels with two outputs each for energy pulses rated at 100mA at 120VAC/ VDC. Factory fused at 1/10 Amp with 3AG fuses. 800mW maximum contact power.
Contact Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	1 to 2 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	13 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125VDC with DCS-1; 15-48VDC with DCS-2; contact factory for other voltages

MPT-440 METERING PULSE TOTALIZER

MPT-440

FUNCTIONAL SUMMARY

	IN	OUT
#	4	6
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C

DESCRIPTION

The MPT-440 metering pulse totalizer and quad isolation relay is designed to provide the totalized pulse values from four 2-Wire (Form A) or 3-Wire (Form C) input pulse sources and allow each pulse into to “pass through” to an isolated output. Four 2-Wire Form A or 3-wire Form C (K, Y, & Z) outputs are provided, one for each input, plus two additional from isolated, solid state, dry contact relays are provided. Inputs are signed + or – to provide additive and subtractive capability.

The MPT-440’s output module may be operated in 1-channel or 2-channel mode. In 1-channel mode, the MPT-440 operates with a single KYZ output channel. In 2-channel mode, the MPT-440 operates with two independent KY output channels, each having a unique output value. In both configurations, there are two physical outputs on each channel, eliminating the need for an additional “splitting” or pulse duplicating relay.

The MPT-440 incorporates a peak demand software module that tracks the average kW demand in any interval and captures the peak demand for later reading in non-volatile memory. A separate demand reset allows for resetting of the peak demand module only. An EOI signal is provided by one of the four meters to signal the end of each interval and the start of the next.

Typical include interfaces between utility metering devices and customer-owned energy control systems, demand billing applications, and supervisory control systems (SCADA) interfaces. The pulse signal inputs to the MPT-440 is by four sets of “Y” & “Z” leads with a common “K” lead.

The MPT-440 provides a “wetting” voltage of +13VDC to the four pulse sending units, normally electric meters. Each of the MPT-440’s inputs may be assigned a four digit pulse value which can be set from .0001 to 99999. The output value setting is a six digit number from .000001 to 999999. Both the input and output values may be field set without the use of any external devices. All settings are saved in non-volatile memory. In addition, the minimum time between output pulses may be set in 10 milliseconds increments between 20 milliseconds and 1000 milliseconds.

An LCD display contained within the unit displays the status of each of the inputs and the output as a Y or Z when not being used in the setting of the pulse multiplier values. Using software debouncing technique, all inputs are first checked for the correct sequence and then a minimal time of contact closure duration to assure a maximum noise rejection. The “K” lead of the MPT-440’s outputs are fused to prevent damage to the relay under almost any conditions a user might cause such as excessive current, incorrect wiring, etc.

The MPT-440 has built-in MOV transient protection for the solid state relay contacts which eliminates the need for external or off-the-board transient suppressors. All component parts of the MPT-440, which have power applied to them with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation.

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MPT-440 METERING PULSE TOTALIZER

MPT-440

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 mA at 120 VAC
Pulse Input:	Four 2-wire Form A or 3-wire Form C inputs. “K” terminal are common return from meter; “Y” and “Z” terminals are pulled-up to a sense voltage of +13 VDC. Compatible with dry-contact mechanical, electro-mechanical or semiconductor outputs (i.e. open-connector bi-polar NPN transistor or open-drain FET transistor).
Pulse Output:	Six Form C (K,Y, & Z) outputs: Four “straight-thru” isolated outputs, one for each pulse input; Two totalized outputs-configurable as two Form C (K, Y, & Z) or four Form A(independent K&Y or K&Z); Outputs are dry-contact for energy pulses rated at 100mA at 120VAC/VDC. Factory fused at 1/10 Amp with 3AG fuses. 800mW maximum contact power.
Output Contact Type:	Solid State MOSFET
Output Contact Resistance:	25 ohms maximum, 18 typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	1 to 2 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	7” wide, 9” high, 2” deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -38.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact factory

NPR-1 NET METERING REGISTER RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	4	1
TYPE	2 Wire	2 Wire
FORM	A	A

NPR-1

DESCRIPTION

The NPR-1 Net Pulse Register is a simplified pulse totalizer designed to provide a totalized net pulse count from up to four 2-Wire (Form A) input pulse sources. It is designed to work with an End-of-Interval (EOI) pulse input that coordinates and synchronizes the operation of the NPR-1. To simplify the operation of the NPR-1 all pulse values (weights) must be equal to each other, and are assigned a positive or negative pulse weight.

Once an EOI pulse is received, the NPR-1 begins a new interval and counts positive and negative pulses in a count register. A positive pulse increments the count register by 1 while a negative pulse decrements the count register by 1. At the end of the demand interval, the EOI input line is activated and the existing net count is transferred to an output register. Once the new interval is started, the normal count pulse counting operation resumes. While this is occurring, the output register begins outputting the number of pulses equal to the net count at a rate of 5 pulses per second. These are generally fed into an electric meter pulse input, recorder, SCADA system or other telemetry device. If at the end of a demand interval the net count is zero or negative, no pulses are outputted to the external device.

Two Form A (K&Y) solid state isolated, dry-contact outputs are provided. Typical applications include interfaces between utility metering devices, demand recorder applications, and supervisory control systems (SCADA) interfaces. The NPR-1 provides a sense voltage of +13 VDC to the four K-Y pulse sending source contacts, normally four meters, as well as to the EOI pulse input.

Installation and setup are amazingly simple since the only programmable parameters are to set the pulse weight as positive or negative. Non-volatile EEPROM memory “remembers” all register values in the event of power loss. Upon power-up all register values are restored, so there is no loss of pulse counts or register values.

The “K” lead of the NPR-1’s outputs are fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The NPR-1 utilizes SSI’s standard built-in transient protection for the solid sate relay contacts that eliminates the need for external or off-the-board transient suppressors. All component parts of the NPR-1, which have power applied to them with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation.

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NPR-1 NET METERING REGISTER RELAY

NPR-1

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 4 mA at 120 VAC
Pulse Input:	Four 2-Wire Form A inputs. The “K” input terminal is the common return for all meters. The “Y” terminal is “pulled-up” to +13 VDC making it compatible with open-collector transistors, open-drain FETs or virtually any kind of KYZ switch (i.e. mechanical, electro-mechanical or solid state).
Pulse Output:	Two dry Form A contacts (K & Y). Factory fused at 1/10 Amp with 3AG fuses. Solid state contacts have a maximum output rating of 250VAC/VDC at 1/10 Amp. The maximum power rating of the contacts is 800 MW, without exceeding the maximum voltage and current ratings of the solid state switch.
Contact On-State Resistance:	25 ohms maximum, 18 ohms typical
Input to Output Isolation Voltage:	2500Vrms
Operate and Release Time:	3 milliseconds max. operate (turn-on) 1 milliseconds max. release (turn off)

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	1 pound

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact factory for input voltages.

NPR-8 NET METERING REGISTER RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	8	2
TYPE	2 Wire	2 Wire
FORM	A	A

NPR-8

DESCRIPTION

The NPR-8 Net Pulse Register is a simplified pulse totalizer designed to provide a totalized "net" pulse count from up to eight 2-Wire (Form A) input pulse sources. It is designed to work with an End-of-Interval (EOI) pulse input that coordinates and synchronizes the operation of the NPR-8. To simplify the operation of the NPR-8 all pulse values (weights) must be equal to each other, and are assigned a positive or negative sign for the pulse weight.

Once an EOI pulse is received, the NPR-8 begins a new interval and counts positive and negative pulses in a Count Register. Each time a positive pulse is received on one of the designated positive inputs, the Count Register increments by 1. When a negative pulse is received, the Count Register decrements by 1 pulse count. At the end of the demand interval, the EOI input line receives a pulse, and the existing net count is transferred to the Output Register. Once the new interval is started, the normal count pulse counting operation resumes. While this is occurring, the Output Register begins outputting the number of pulses equal to the net count at a rate of 5 pulses per second, or a faster rate, if selected. These are generally fed into an electric meter pulse input, recorder, SCADA system or other telemetry device. If, at the end of a demand interval, the net count is zero or negative, no pulses are outputted to the external device. In this way, the "net" energy represented by the positive pulses minus the negative pulses is derived.

Two Form A (K&Y) solid state isolated, dry-contact outputs are provided. Typical applications include renewable energy application with wind generation or PV solar electric systems requiring interfaces between utility metering devices, demand recorder applications, and supervisory control and data acquisition (SCADA) systems. The NPR-8 provides a sense voltage of +13 VDC to the eight K-Y pulse sending source contacts, normally eight meters, as well as to the EOI pulse input. Each pulse input and the EOI input has a bright LED for system display. An output LED flashing to indicate the pulses being outputted to the external device.

Installation and setup are amazingly simple. Programmable parameters are the pulse sign (positive or negative) and the output pulse width. Non-volatile EEPROM memory "remembers" the Count and Output Register values in the event of power loss. Upon power-up all Register values are restored, so there is no loss of pulse counts or Register values.

The "K" lead of the NPR-8's outputs are fused to prevent damage to the relay under almost any condition a user might cause such as excessive current, incorrect wiring, etc. The NPR-8 utilizes SSI's standard built-in transient protection for the solid sate relay contacts that eliminates the need for external or off-the-board transient suppressors. All component parts of the NPR-8, which have power applied to them with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation.

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NPR-8 NET METERING REGISTER RELAY

NPR-8

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 8 mA at 120 VAC
Pulse Input:	Eight 2-Wire Form A inputs. Two “Kin” input terminals are the common return for all meters. The “Yin” terminal is “pulled-up” to +13 VDC making it compatible with open-collector transistors, open-drain FETs or virtually any kind of KYZ switch (i.e. mechanical, electro-mechanical or solid state).
Pulse Output:	Two dry Form A contacts (K & Y). Factory fused at 1/10 Amp with 3AG fuses. Solid state contacts have a maximum output rating of 250VAC/VDC at 1/10 Amp. The maximum power rating of the contacts is 800 MW, without exceeding the maximum voltage and current ratings of the solid state switch.
Output Pulse Rate:	The output pulse rate is selectable between 100mS, 67mS or 33mS with 100 being the default.
Overflow LED:	The Overflow LED indicates that the contents of the output register was too large for the output speed selected and was not able to output all of the contents of the output register before the next end of interval signal was received. This LED is resettable only by the reset function or cycling the power.
Input/Output Isolation Voltage:	2500Vrms
Operate and Release Time:	3 milliseconds max. operate (turn-on) 1 milliseconds max. release (turn off)

MECHANICAL

Mounting:	Any position
Size:	3.50” wide, 7.20” high, 1.50” deep
Weight:	1 pound

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact factory for input voltages.

PRL-1200 WIRELESS PULSE LINK

PRL-1200

FUNCTIONAL SUMMARY

	IN	OUT
#	4 or 2	4 or 2
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C

DESCRIPTION

The PRL-1200 wireless pulse link is primarily a point-to-point system with one transmitter and one receiver for short-hop pulse applications like parking lots, fields, roads, railroad tracks or anywhere where it is difficult to get a KYZ pulse from the meter. Using Frequency Hopping Spread Spectrum (FHSS) technology allows excellent reliability and rejection of any other noise sources. There are 6 channels and each channel incorporates 25 of the 32 possible frequencies within the 900 MHz band. The same channel is selected on both the transmitter and receiver. Other PRL-1200 systems within the same radio airspace (~2 mile radius) will need to be on a different channel number. Each Transmitter and Receiver are "paired-up" such that the Receiver will only accept pulse meter data from its specified Transmitter.

The PRL-1200 can transmit either 2 Form C (3-wire) pulses or 4 Form A (2-Wire) pulses. Approximately 4 pulses per second (Form C) while 2 Form A pulses are possible which should be more than acceptable for most pulse applications.

The PRL-1200 Wireless Pulse Link system consists of one PRT-1200 Transmitter and one PRR-1200 Receiver. The system operates in the 900MHz band, and is FCC certified, thus allowing unlicensed operation by the user. The PRL-1200 will transmit pulses up to 5,000 to feet in a line-of-sight (LOS) configuration. Distances vary with the terrain, obstacles and greater elevation above the ground.

PRT-1200 PULSE RADIO TRANSMITTER UNIT

The PRT-1200 Pulse Radio Transmitter unit is made up of two parts: The PRT-12 Transmitter Base unit and the PRNT-1200 Transmitter Radio/Antenna unit which contains the radio transceiver and the antenna. The PRT-12 Base has a built-in low voltage transformer isolated power supply generating a +13VDC sense (wetting) voltage. The sense voltage is connected to pulse sending devices, typically an electric meter's KYZ pulse initiator. Each time a pulse is received by the PRNT-1200, it validates the pulse width and transmits the pulse to the Receiver. Propagation delay is very short so the pulse output at the Receiver closely resembles the pulse widths received from the meter. The PRT-1200 can be operated using 120V or 277V AC line power or a +12VDC voltage source like SSI's SPS-1 solar power supply.

PRR-1200 PULSE RADIO RECEIVER UNIT

The PRR-1200 can be configured as 2 Form C or 4 Form A output channels and acts as the Receiver. The PRR-1200 consists of a PRR-12 Receiver Base Unit where all connections are made and a PRNR-1200 Receiver Radio/Antenna unit which contains the radio transceiver and antenna. The PRNR-1200 is intended to be mounted outdoors, in direct line-of-sight with the PRNT-1200 radio/antenna unit and should not be obstructed by trees, buildings or other objects. Each time a pulse is received from the PRT-1200, the Receiver validates this pulse and outputs it's respective output channel. An encoded FHSS communication scheme is used to ensure the accurate number of pulses are sent and received. The PRR-1200 consumes extremely low power and can be operated using 120V or 277V AC line power or a +12VDC voltage source. The pulse rate is up to 4pps (Form C).

*Both the Transmitter and Receiver units are capable of operating on supply voltages of 120, 208-277VAC, as well as +125VDC, +12VDC, and +15 to +48VDC by employing the special SSI power supply options.

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PRL-1200 WIRELESS PULSE LINK

PRL-1200

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC Burden: <10 mA at 120 VAC
Input Wetting Voltage to Meter:	+13VDC wetting voltage generated by the PRT-12 Transmitter Base unit.
Output:	Four sets of dry Form A contacts (K & Y) for energy pulses. These can be configured as two sets for dry Form C contacts. The contacts are solid state “no bounce” relays rated at 350 VDC or 250 VAC 1/10th Amp, 800mW max. Factory fused at 1/10 amp. (3AG)
Output Contact On-State Resistance:	18 ohms typical, 25 ohms maximum
Operate and Release Time:	1 to 3 milliseconds typical for solid state relay; Total propagation time up to 20mS.
Input/Output Isolation Voltage:	2500V

MECHANICAL

Mounting:	Any position for base units; Must be line of sight for transceiver/antenna units
Size:	3.27” wide, 5.7” high, 1.50” deep
Weight:	2 pounds each

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory
Enclosures:	10” x 8” x 4” NEMA 4X Fiberglass Enclosure for Base Units

SPS-1D SOLAR POWER SUPPLY
FOR PRT-1200 TRANSMITTER

SPS-1D

DESCRIPTION

The SPS-1D Solar Power Supply provides a power source for times when a 120VAC or 12VDC power supply is not be available at the meter for the PRL-1200 Wireless Pulse Link's PRT-1200 Transmitter. The SPS-1D Solar Power Supply includes everything you need to implement a solar-powered PRT-1200 Pulse Radio Transmitter at the meter:

- Solar Panel
- Solar Panel Mounting Bracket
- Charge Controller
- Battery
- NEMA 4X Enclosure

A full battery charge results in an excess of two weeks of operation of the PRT-1200. All components, except the solar panel, mount inside a 12" X 10" X 6" NEMA 4X fiberglass enclosure providing and rain-tight and dust-tight environment, pre-wired for a truly quick and convenient implementation. The PRT-1200's base unit, the PRT-12-12VDC (sold as part of the PRL-1200 System) mounts in the enclosure also. Installation is quick and easy. Simply mount the enclosure and solar panel on the supplied bracket. Then make the connections of the solar panel to the charge controller and the pulse output of the meter to the Base Unit.

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SPS-1D SOLAR POWER SUPPLY
FOR PRT-1200 TRANSMITTER

SPS-1D

SPECIFICATIONS

ELECTRICAL

Power Input:	10 Watt Solar Panel
Output Voltage:	12 VDC
Charge Current:	500 mA Max
Battery Capacity:	12 Amp-hour
Battery Discharge Rate:	6 mA
Battery Recharge Time:	Approximately 6 hours

MECHANICAL

Mounting:	Any position for enclosure; Properly oriented for solar panel
Enclosure Material and Rating:	Fiberglass NEMA 4X
Enclosure Size:	12” wide, 10” high, 6” deep
Weight:	2 pounds

Environmental

Temperature Range:	-40° C to +85° C, -40° F to +185° F
Humidity:	0 to 98% non-condensing

PULSE LINKS

OPL-1B OPTICAL FIBER PULSE LINK

OPL-1B

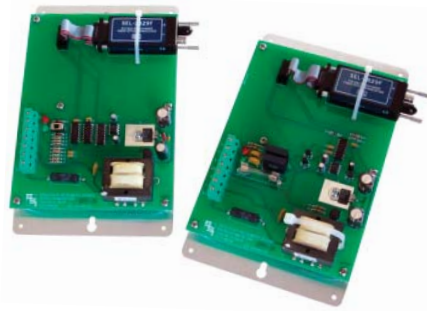
OPT-1B FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	2 or 3 Wire	Optical Fiber
FORM	A or C	-

OPR-1B FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	Optical Fiber	2 or 3 Wire
FORM	-	C

DESCRIPTION



The OPL-1B optical fiber pulse link system is a transmitter/receiver pair that uses fiber optic cable to send metering pulses over long distances. The OPL-1B can receive and transmit pulses over distances up to approximately 3 miles, using multimode fiber or up to 15 miles using the standard single mode fiber cable. The output is configured as a Form C, but can be used as a Form A (2-wire) or a Form C (3-wire) depending on the transmitter's input configuration selection. This system makes it possible to quickly implement an optical pulse link with minimal effort and includes all power supplies, wetting voltages, isolation relays and connectors.

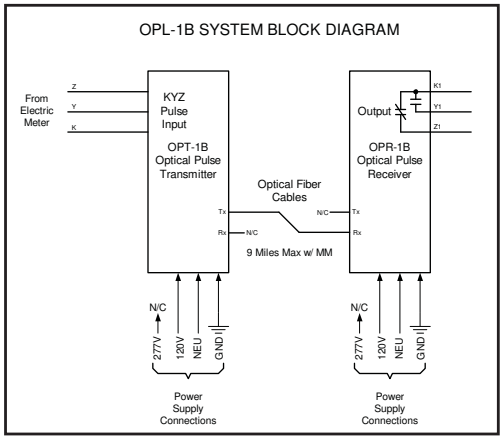
Each system consists of an OPT-1B transmitter and an OPR-1B receiver. The OPT-1B transmitter is designed to receive pulses from an electric meter's KYZ pulse initiator. Pulses are conditioned and sent by fiber optic cable to an OPR-1B receiver where the pulse information is validated and implemented into the correct pulse state. The OPT-1B transmitter and OPR-1B receiver must be paired and cannot be used independently. Fiber optic cable not included.

Bright red and green LEDs monitor the input status on the OPT-1B transmitter and provide easy and immediate visual system checking without test equipment. A selector switch allows selection of Form A (2-wire) or Form C (3-wire) input configuration.

The OPR-1B receiver also includes bright red LEDs to monitor the K-Y output status. The dry contact output features a 1/4 amp solid-state relay for a no-bounce contact with internal MOV transient suppression circuitry to eliminate contact noise. Rapid pulse rates in excess of 20 pulses per second are possible.

Both the OPT-1B transmitter and OPR-1B receiver come standard mounted on a .062" aluminum base plate with mounting tabs and keyhole mounting slot, intended for mounting in another control equipment enclosure. Each unit weighs approximately 2 pounds and can be mounted in any position. NEMA 4X rain-tight enclosures are available for both the transmitter and receiver units.

The standard OPL-1B is a multi-mode fiber system. A single mode fiber OPL-1B system is available by special order. Contact the factory for current pricing.



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OPL-1B OPTICAL FIBER PULSE LINK

OPL-1B

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 3.5 VA
Signal Input:	Optical fiber input from OPT-1B transmitter; One Form C (K,Y, & Z) input from the sending device to the OPT-1B transmitter
Output:	One Form C (K,Y & Z) solid state, dry contact output from the OPR-1B receiver
Maximum Pulse Rate:	OPR-1B: >40 Pulses per second (Form C), 20 pulses per second (Form A) OPT-1B: >200 Pulses per second (Form C), 100 pulses per second (Form A)
Maximum Output Voltage:	250 VAC
Maximum Output Current:	1/4 Amp
Maximum Power Rating:	25 VA
Sense Voltage:	+13VDC provided to the sending device(s)
Contact On-State Resistance:	5 ohms maximum, 3 ohms typical
Switching Time:	Turn On: 8 milliseconds typical Turn Off: 1 milliseconds typical
Input/Output Isolation Voltage:	2500Vrms (of relay alone)

MECHANICAL

Mounting:	Any position.
Size:	5.5” wide, 9.5” high, 3.5” deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory
Enclosure:	NEMA 4X rain-tight and dust-proof enclosure available. 12.0” high, 10.0” wide, 6.0” deep
Fiber:	Long distance single-mode model available by special order

PULSE LINKS

OPL-1C OPTICAL FIBER PULSE LINK

FUNCTIONAL SUMMARY

	IN	OUT
#	2/1	2/1
TYPE	2 - 2Wire or 1 - 3 Wire	2 - 2Wire or 1 - 3Wire
FORM	2A or 1C	2A or 1C

OPL-1C

DESCRIPTION

The OPL-1C optical fiber pulse link system is a transmitter/receiver pair that uses fiber optic cable to send metering pulses over short to medium distances. The OPL-1C can receive and transmit pulses over distances up to approximately 1 mile using multimode fiber. The output is configured as either one Form C (KYZ), or as a two Form A (KY and KZ) channels depending on the transmitter's operating mode selection. This system makes it possible to quickly implement an optical pulse link with minimal effort and includes all power supplies, wetting voltages, isolation relays and connectors.

Each system consists of an OPT-1C transmitter and an OPR-1C receiver. The OPT-1C transmitter is designed to receive pulses from an electric meter's KYZ pulse initiator. Pulses are conditioned, encoded and sent by fiber optic cable to an OPR-1C receiver where the pulse information is decoded, validated and implemented into the correct pulse state. The OPT-1C transmitter and OPR-1C receiver must be paired and cannot be used independently. Fiber optic cable not included.

Bright red, yellow, and green LEDs monitor the system status on both the transmitter and receiver, and provides an easy and immediate visual system check without test equipment. A mode switch on the OPT-1C allows selection of 2Form A (2-wire) or 1Form C (3-wire) mode configuration.

The OPR-1C receiver also includes bright red and green LEDs to monitor the K-Y and K-Z output status. The dry contact output features a 1/10 amp solid-state relay for a no-bounce contact with internal MOV transient suppression circuitry to eliminate contact noise. Rapid pulse rates in excess of 10 pulses per second are possible.

Both the OPT-1C transmitter and OPR-1C receiver are packaged in the standard SSI large enclosure with mounting tabs, intended for mounting in another control equipment enclosure. Each unit weighs approximately 1 pound and can be mounted in any position. NEMA 4X and 3R rain-tight enclosures are available for both the transmitter and receiver units.

The standard OPL-1C is a multi-mode fiber system. Contact the factory for current pricing.

Applications include IEEE487 compliance for getting KYZ meter pulses from substation meters without copper wire; Longer distance pulse links where copper wire is not available or must be replaced.

INCLUDED IN SYSTEM

OPT-1C Transmitter, OPR-1C Receiver, ordered separately

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OPL-1C OPTICAL FIBER PULSE LINK

OPL-1C

SPECIFICATIONS

ELECTRICAL

Power Input (OPT and OPR):	120, 208-277 VAC. Burden: 2 VA
OPT-1C Signal Input:	One Form C or two Form A (KYZ or KY/KZ) inputs from the sending device (electric meters' pulse outputs)
OPT-1C Output:	Optical Fiber Output to OPR-1C Receiver
OPR-1C Signal Input:	Optical Fiber Input from OPT-1C Transmitter
OPR-1C Output:	One Form C (3-Wire) or two Form A Solid State dry-contact outputs rated at 100mA at 120V, 800mW maximum, fused at .1A
Maximum Pulse Rate:	>10 Pulses per second (Form C), 5 pulses per second (Form A)
OPT-1C Input Debounce Time:	20ms
Sense Voltage:	+13VDC provided to the sending device(s)
Transmission Distance:	Up to approx. 1 mile(1500 meters) using standard multi-mode fiber, depending on fiber quality.
Response Time:	30 mS typical

MECHANICAL

Mounting:	Any position. Mounted on aluminum base plate with mounting tabs and keyhole mounting slots.
Size:	3.1'' wide, 7.2'' high, 1.5'' deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125VDC with DCS-1; 15-48VDC with DCS-2; contact factory for other voltages
Enclosures:	NEMA 4X raintight and dustproof enclosure available. 12.0" high, 10.0" wide, 6.0" deep NEMA 3R raintight enclosure available. 8" high, 8" wide, 4" deep

PULSE LINKS

OPL-4B OPTICAL FIBER PULSE LINK

FUNCTIONAL SUMMARY

	IN	OUT
#	4	4
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C

OPL-4B

DESCRIPTION

The OPL-4B optical fiber pulse link system is a transmitter/receiver pair designed to send four multiplexed channels of metering pulses over long distances. The OPL-4B can receive and transmit pulses over distances up to 9 miles using multi-mode fiber, or up to 65 miles using single-mode fiber. Transmission distances vary depending on the quality of the fiber.

The OPL-4B system makes it possible to quickly implement a 4-channel optical pulse link with minimal effort. The system includes the power supplies, wetting voltage, isolation relays, and terminal block connectors making it possible to have a multichannel optical link up and running in minutes. The OPL-4B utilizes standard “ST” twist lock connectors and makes connections reliable, quick and easy. The fiber optic cable is not included.

Each OPL system consists of an OPT-4B transmitter and an OPR-4B receiver. The transmitter and receiver are mounted on 5.5”x9.5” panels for assembly in another control enclosure on into an optional NEMA 4X raintight enclosure. The OPT-4B transmitter is designed to receive pulses from electric meters’ KYZ pulse initiators. Pulses are conditioned, multiplexed, and sent by fiber to an OPR-4B receiver where the pulse information is validated, de-multiplexed, and implemented into the correct pulse state. Each input can be configured as either Form A (2-wire) or Form C (3-wire). The OPT-4B transmitter requires an OPR-4B receiver of the same fiber type.

Bright red and green LEDs monitor the input status to the OPT-4B transmitter and provide easy & immediate visual system checking without additional test equipment. An incorrect sequence of input pulses will not be recognized and only the first valid pulse of the sequence will be transmitted. While the OPT-4B transmitter is primarily designed for the transmission of metering pulses, it is capable of transmitting any desired Form A or C contact closures such as a relay, switch, breaker status, etc. to an OPR-4B receiver.

The OPR-4B receiver also includes bright red and green LEDs to monitor the KYZ output status. The OPR-4B features a solid-state Form C Contact relay (SPDT) for a no-bounce contact with internal transient suppression circuitry to eliminate contact wear and noise.

MODEL OPTIONS

OPT-4B-1 Transmitter, OPR-4B-1 Receiver, ordered separately, multi-mode fiber, 3 miles

OPT-4B-2 Transmitter, OPR-4B-2 Receiver, ordered separately, multi-mode fiber, 9 miles

OPT-4B-3 Transmitter, OPR-4B-3 Receiver, ordered separately, single-mode fiber, 14 miles

OPT-4B-4 Transmitter, OPR-4B-4 Receiver, ordered separately, single-mode fiber, 50 miles

OPT-4B-5 Transmitter, OPR-4B-5 Receiver, ordered separately, single-mode fiber, 65 miles

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OPL-4B OPTICAL FIBER PULSE LINK

OPL-4B

SPECIFICATIONS

ELECTRICAL

Power Input (OPT and OPR):	120, 208-277 VAC. Burden: 4 VA
OPT-4B Signal Input:	Four Form A or C (KYZ & KY) or inputs from the sending device's dry-contact output (electric meters' KYZ outputs)
OPT-4B Output:	Optical Fiber Output to OPR-4B Receiver
OPR-4B Signal Input:	Optical Fiber Input from OPT-4B Transmitter
OPR-4B Output:	Four Form C (3-Wire) Solid State dry-contact outputs rated at 750mA at 250V, 100VA maximum, fused at .5A
Maximum Pulse Rate:	>10 Pulses per second (Form C), 5 pulses per second (Form A)
OPT-4B Input Debounce Time:	20ms
Sense Voltage:	+13VDC provided to the sending device(s)
Transmission Distance:	Approx. 3 to 9 miles using multi-mode fiber; 14 to 65 miles using single-mode fiber, depending on exact model

MECHANICAL

Mounting:	Any position. Mounted on aluminum base plate with mounting tabs and keyhole mounting slots.
Size:	5.5" wide, 9.5" high, 3.5" deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory
Enclosure:	NEMA 4X raintight and dustproof enclosure available. 12.0" high, 10.0" wide, 6.0" deep

PULSE LINKS

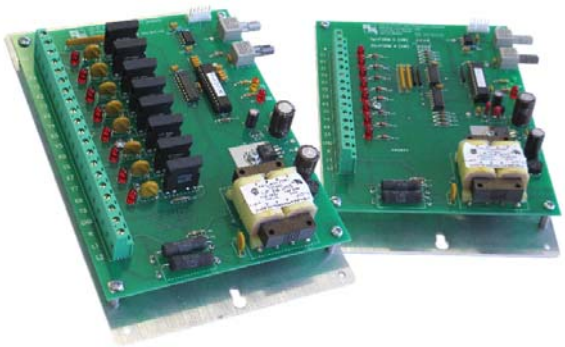
OPL-4C OPTICAL FIBER PULSE LINK

FUNCTIONAL SUMMARY

	IN	OUT
#	4	4
TYPE	2 or 3 Wire	3 Wire
FORM	A or C	C

OPL-4C

DESCRIPTION



The OPL-4C optical fiber pulse link system is a transmitter/receiver pair designed to send four multiplexed channels of metering pulses over short-to-mid range distances using multi-mode fiber optic cable. The low cost OPL-4C System has a range of approximately 1 mile (1600 meters). Transmission distances vary depending on the quality of the fiber.

The OPL-4C system makes it possible to quickly implement a 4-channel optical pulse link with minimal effort. The system includes the power supply, wetting voltage, isolation relay and terminal block connectors making it possible to have a multichannel optical link up and running in minutes. The OPL-4C utilizes standard “ST” twist lock connectors and makes connections reliable, quick and easy. The multimode fiber optic cable is not included.

Each OPL system is made up of an OPT-4C transmitter and an OPR-4C receiver. The OPT-4C transmitter is designed to receive pulses from electric meters’ KYZ pulse initiators. Pulses are conditioned and sent by fiber to an OPR-4C receiver where the pulse information is validated and implemented into the correct pulse state. Each input can be configured as either Form A (2-wire) or Form C (3-wire). The OPT-4C transmitter requires an OPR-4C receiver.

Bright red and green LEDs monitor the input status to the OPT-4C transmitter and provide easy & immediate visual system checking without additional test equipment. An incorrect sequence of input pulses will not be recognized and only the first valid pulse of the sequence will be transmitted. While the OPT-4C transmitter is primarily designed for the transmission of metering pulses, it is capable of transmitting any desired Form A or C contact closures such as a relay, switch, breaker status, etc. to an OPR-4C receiver.

The OPR-4C receiver also includes bright red and green LEDs to monitor the KYZ output status. The OPR-4C features a solid-state Form C Contact relay (SPDT) for a no-bounce contact with internal transient suppression circuitry to eliminate contact wear and noise.

INCLUDED IN SYSTEM
OPT-4C Transmitter, OPR-4C Receiver, ordered separately.

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OPL-4C OPTICAL FIBER PULSE LINK

OPL-4C

SPECIFICATIONS

ELECTRICAL

Power Input (OPT and OPR):	120, 208-277 VAC. Burden: 4 VA
OPT-4C Signal Input:	Four Form A or C (KYZ & KY) or inputs from the sending device (electric meters' KYZ outputs)
OPT-4C Output:	Optical Fiber Output to OPR-4C Receiver
OPR-4C Signal Input:	Optical Fiber Input from OPT-4C Transmitter
OPR-4C Output:	Four Form C (3-Wire) Solid State dry- contact outputs rated at 750mA at 250V, 100VA maximum, fused at .5A
Maximum Pulse Rate:	>10 Pulses per second (Form C), 5 pulses per second (Form A)
OPT-4C Input Debounce Time:	20ms
Sense Voltage:	+13VDC provided to the sending device(s)
Transmission Distance:	Approx. 1 mile, 1600 meters using standard multi-mode fiber

MECHANICAL

Mounting:	Any position. Mounted on aluminum base plate with mounting tabs and keyhole mounting slots.
Size:	5.5" wide, 9.5" high, 3.5" deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory
Enclosure:	NEMA 4X raintight and dustproof enclosure available. 12.0" high, 10.0" wide, 6.0" deep

PULSE LINKS

OPL-8B OPTICAL FIBER PULSE LINK

OPL-8B

FUNCTIONAL SUMMARY

	IN	OUT
#	8	8
TYPE	2 Wire	2 Wire
FORM	A	A

DESCRIPTION

The OPL-8B optical fiber pulse link system is a transmitter/receiver pair designed to send eight multiplexed channels of metering pulses over long distances. The OPL-8B can receive and transmit pulses over distances up to 9 miles using multi-mode fiber, or up to 65 miles using single-mode fiber. Transmission distances vary depending on the quality of the fiber.

The OPL-8B system makes it possible to quickly implement an 8-channel optical pulse link with minimal effort. The system includes the power supplies, wetting voltage, isolation relays, and terminal block connectors making it possible to have a multichannel optical link up and running in minutes. The OPL-8B utilizes standard “ST” twist lock connectors and makes connections reliable, quick and easy. The fiber optic cable is not included.

Each OPL system consists of an OPT-8B transmitter and an OPR-8B receiver. The transmitter and receiver are mounted on 5.5”x9.5” panels for assembly in another control enclosure on into an optional NEMA 4X raintight enclosure. The OPT-8B transmitter is designed to receive pulses from electric meters’ KYZ pulse initiators. Pulses are conditioned, multiplexed, and sent by fiber to an OPR-8B receiver where the pulse information is validated, de-multiplexed, and implemented into the correct pulse state. Each input is configured as Form A (2-wire). The OPT-8B transmitter requires an OPR-8B receiver of the same fiber type.

Bright red and green LEDs monitor the input status to the OPT-8B transmitter and provide easy & immediate visual system checking without additional test equipment. An incorrect sequence of input pulses will not be recognized and only the first valid pulse of the sequence will be transmitted. While the OPT-8B transmitter is primarily designed for the transmission of metering pulses, it is capable of transmitting any desired Form A contact closures such as a relay, switch, breaker status, etc. to an OPR-8B receiver.

The OPR-8B receiver also includes bright red and green LEDs to monitor the KYZ output status. The OPR-8B features eight solid-state Form A dry-contact output relays (SPST) for a no-bounce contact with internal transient suppression circuitry to eliminate electrical noise and harmful voltage transients.

MODEL OPTIONS

OPT-8B-1 Transmitter, OPR-4B-1 Receiver, ordered separately, multi-mode fiber, 2.5 miles

OPT-8B-2 Transmitter, OPR-4B-2 Receiver, ordered separately, multi-mode fiber, 9 miles

OPT-8B-3 Transmitter, OPR-4B-3 Receiver, ordered separately, single-mode fiber, 14 miles

OPT-8B-4 Transmitter, OPR-4B-4 Receiver, ordered separately, single-mode fiber, 50 miles

OPT-8B-5 Transmitter, OPR-4B-5 Receiver, ordered separately, single-mode fiber, 65 miles

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OPL-8B OPTICAL FIBER PULSE LINK

OPL-8B

SPECIFICATIONS

ELECTRICAL

Power Input (OPT and OPR):	120, 208-277 VAC. Burden: 4 VA
Signal Input:	Eight Form A (K & Z) inputs from the sending device's dry contact (electric meters' KY output)
Output:	Optical Fiber Output to OPR-8B Receiver
Maximum Pulse Rate:	>10 pulses per second (Form A)
Sense Voltage:	+13VDC provided to the sending device(s)
Transmission Distance:	Approx. 2.5 to 9 miles using multi-mode fiber; 14 to 65 miles using single-mode fiber, depending on exact model

MECHANICAL

Mounting:	Any position. Mounted on aluminum base plate with mounting tabs and keyhole mounting slots.
Size:	5.5" wide, 9.5" high, 3.5" deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory
Enclosure:	NEMA 4X raintight and dustproof enclosure available. 12.0" high, 10.0" wide, 6.0" deep

PULSE LINKS

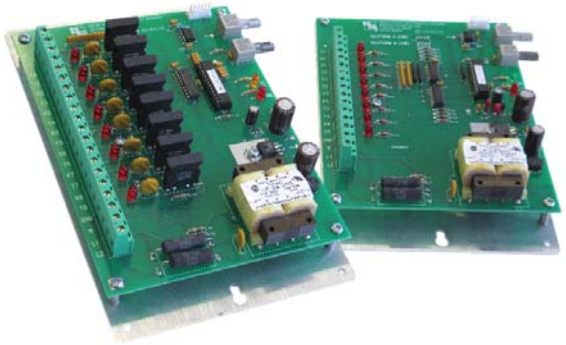
OPL-8C OPTICAL FIBER PULSE LINK

FUNCTIONAL SUMMARY

	IN	OUT
#	8	8
TYPE	2 Wire	2 Wire
FORM	A	A

OPL-8C

DESCRIPTION



The OPL-8C optical fiber pulse link system is a transmitter/receiver pair designed to send eight multiplexed channels of metering pulses over short-to-mid range distances using multi-mode fiber optic cable. The low cost OPL-8C system has a range of approximately 1 mile (1600 meters). Transmission distances vary depending on the quality of the fiber.

The OPL-8C system makes it possible to quickly implement an 8-channel optical pulse link with minimal effort. The system includes the power supply, wetting voltage, isolation relay and terminal block connectors making it possible to have a multichannel optical link up and running in minutes. The OPL-8C utilizes standard “ST” twist lock connectors and makes connections reliable, quick and easy. The multimode fiber optic cable is not included.

Each OPL-8C system is made up of an OPT-8C transmitter and an OPR-8C receiver. The OPT-8C transmitter is designed to receive pulses from the electric meters’ K-Y pulse initiators. Pulses are conditioned and sent by fiber to an OPR-8C receiver where the pulse information is de-multiplexed, validated and implemented into the correct pulse state. The inputs are configured as Form A (2-wire) channels. The OPT-8C transmitter requires an OPR-8C receiver.

Bright red LEDs monitor the input status to the OPT-8C transmitter and provide easy & immediate visual system checking without additional test equipment. The inputs are debounced such that pulses with less than the minimum width timing are not be recognized, and only valid pulses are transmitted. While the OPT-8C transmitter is primarily designed for the transmission of metering pulses, it is capable of transmitting any desired Form A contact closure such as a relay, switch, breaker status, etc. to an OPR-8C receiver.

The OPR-8C receiver also includes bright red LEDs to monitor the K-Y output status. The OPR-8C features a solid-state Form A Contact relay (SPST) for a no-bounce contact with internal transient suppression circuitry to eliminate contact wear and noise. The Receiver uses SSI’s heavy duty solid state relay rated at 750mA at 800V for maximum pulse switching capability in most any application.

INCLUDED IN SYSTEM
OPT-8C Transmitter, OPR-8C Receiver, ordered separately.

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OPL-8C OPTICAL FIBER PULSE LINK

OPL-8C

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 5 VA
Signal Input:	Eight Form A (K & Z) inputs from the sending device (electric meters' KY output)
Output:	Optical Fiber Output to OPR-8C Receiver
Maximum Pulse Rate:	>50 Pulses per second (Form C), 25 pulses per second (Form A)
Sense Voltage:	+13VDC provided to the sending device(s)
Transmission Distance:	Approx. 1 mile (1600 meters) using standard multi-mode fiber

MECHANICAL

Mounting:	Any position. Mounted on aluminum base plate with mounting tabs and keyhole mounting slots.
Size:	5.5" wide, 9.5" high, 3.5" deep
Weight:	2 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory
Enclosure:	NEMA 4X raintight and dustproof enclosure available. 12.0" high, 10.0" wide, 6.0" deep

PULSE LINKS

PTR-1PS PULSE TRANSMITTING RELAY

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	3 Wire	CL
FORM	C	CL

PTR-1PS

DESCRIPTION

The PTR-1PS pulse transmitting relay is designed to transmit KYZ pulses over long distances up to approximately 4 miles. It provides a 2-wire current loop output and must be connected to a CLR-1, CLR-2 or CLR-3 to receive the pulses. These units are a functional replacement for the GE DC-1 Power Supply and S-4 Relay, or other older devices used for long distance pulse transmission.

The PTR-1PS contains a 3-Wire Form C input (K, Y, & Z). A +9VDC sense voltage is sent from the K input terminal to the pulse-sending device, typically an electric meter, and returns to the PTR-1PS from the Y and Z outputs of the meter. Each time the input changes state, the polarity of the current loop is reversed causing the CLR receiving relay at the remote end of the cable to switch to the opposite state. Wire size in the current loop is not critical but longer distances may be obtained with larger gauge wire.

The PTR-1PS has a built-in low voltage transformer isolated powered power supply and may be used with meters having mechanical output contacts (relays), or high or low voltage semiconductor outputs.

Typical applications include interfaces between utility metering devices and customer-owned energy control systems, demand recorder applications, and supervisory control systems (SCADA) interfaces. The PTR-1PS relay contains circuitry designed to prevent false outputs from occurring. An incorrect sequence of input pulses is detected and only the first valid pulse will result in an output.

Bright red and green LED lamps indicate the system's status at all times thus allowing a rapid check of the system's performance without requiring any additional test equipment. The PTR-1PS's input and output circuit's terminal strip is a "EURO" type connector. When the stripped wire has been correctly installed in the terminals "slot" no conductive parts are exposed on the surface of the terminal strip. Due to the inherent current-limited nature of the design, no fusing is necessary on the output. No damage will result if the current loop is shorted.

The PTR-1PS has built-in MOV transient protection for the solid-state relay contacts as well as for the current loop, eliminating the need for external surge suppression. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface. The PTR-1PS is designed to mount in a suitable electrical enclosure for the application.

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PTR-1PS PULSE TRANSMITTING RELAY

PTR-1PS

SPECIFICATIONS

ELECTRICAL

Power Input:	90 to 300 VAC. Burden: 10 mA at 120 VAC
Output:	Current loop output for CLR Series relays. Factory fused at 1/2 amp. (3AG)
Contact On-State Resistance:	5 ohms maximum, 3.4 Ohms typical
Operate and Release Time:	Turn-On: 5 milliseconds maximum Turn-Off: 3 milliseconds maximum
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.5” wide, 7.2” high, 1.5” deep
Weight:	17 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DSC-1 Power Supply. Contact factory for other input voltages.

PULSE LINKS

PTR-2PS PULSE TRANSCEIVING RELAY

PTR-2PS

FUNCTIONAL SUMMARY

	IN	OUT
#	1	3
TYPE	2 Wire	2 Wire
FORM	A	A

DESCRIPTION

The PTR-2PS is a specialized pulse isolation and repeating relay system designed to receive pulses over long distances (up to approximately 2 miles) and protect customer equipment. It utilizes a 2-wire current loop to source a nominal +12VDC wetting voltage to the electric meter's dry contact output. It receives the switched voltage back to activate the PTR-2PS' output relays. The PTR-2PS is available in 1, 2, and 3 Form A outputs (K & Y). Its current loop design will adjust the output voltage to overcome and compensate for the resistance of the wire loop.

The PTR-2PS is intended to be located at the location of the receiving equipment – usually a customer-owned energy management system. It acts primarily to protect the customer equipment from large transients that could be coupled into long wire runs between it and the electric meter. Transients which are coupled into the wire loop between the originating pulse output and the receiving relay are contained within the loop and suppressed by means of heavy duty transient suppression devices.

Each time the pulse output closes, the current loop sends sufficient current though the wire loop so as to receive back the required current to activate the relay outputs. If the resistance of the wire loop is high, the PTR-2PS will automatically raise the wetting voltage until the optimum current is received back. In this manner, wire length and size in the current loop are not critical. Longer distances may be obtained with larger gauge wire.

The PTR-2PS has a built-in low voltage transformer-isolated power supply and may be used with meters having high or low voltage semiconductor outputs, or mechanical output contacts (relays). Typical applications include interfaces between utility metering devices and customer-owned energy control systems. A bright red LED lamp indicates the system's status at all times, thus allowing a rapid check of the system's performance without requiring any additional test equipment. The PTR-2PS's input and output circuit's terminal strip is a "EURO" type connector. When the stripped wire has been correctly installed in the terminal "slot" there are no conductive parts exposed on the surface of the terminal strip. Due to the inherent current-limited nature of the design, no fusing is necessary on the input. No damage will result if the current loop is shorted to itself or to ground.

The PTR-2PS has built-in MOV transient protection for the three solid-state relay outputs as well as for the current loop, eliminating the need for external surge suppression. In addition, each of the three solid-state outputs have fusing with standard 3AG or AGC fuses. All component parts that have power applied to them, with the exception of the input/output terminal strip, are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface. The PTR-2PS is designed to mount in a suitable electrical enclosure for the application.

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PTR-2PS PULSE TRANSCEIVING RELAY

PTR-2PS

SPECIFICATIONS

ELECTRICAL

Power Input:	90 to 300 VAC. Burden: 12.4 mA at 120 VAC
Signal Input:	Current loop 20mA at +8 to +15VDC
Outputs:	Three solid-state relays rated at 500 mA at 250V. Factory fused at 1/2 amp. (3AG or AGC)
Output Contact On-State Resistance:	2.3 ohms maximum, 1.7 Ohms typical
Operate and Release Time:	Turn-On: 20 milliseconds maximum, 8mS typical Turn-Off: 5 milliseconds maximum, 1mS typical
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.5” wide, 7.2” high, 1.5” deep
Weight:	17 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	125 VDC input using the DCS-1 Power Supply. 15-48VDC input using the DCS-2 Power Supply. Contact factory for other input voltages.

MODELS

PTR-2PS-1	1 output
PTR-2PS-2	2 outputs
PTR-2PS-3	3 outputs

CLR SERIES CURRENT LOOP RELAYS

CLR-SERIES

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1, 2 or 3
TYPE	CL	3 Wire
FORM	CL	C

DESCRIPTION

The CLR Series of Current Loop Receiving relays is designed to receive KYZ pulse information from the PTR-1PS Pulse Transmitting Relay over a twisted pair current loop. Since the CLR Series is powered by and operated from the PTR-1PS's current loop output, it needs no separate power supply. The CLR Series is available with one to three outputs. Each output is an isolated solid-state Form C (K, Y, & Z) relay contact.

Applications include long distance pulse transmission interfaces up to 2-4 miles between utility metering devices and customer-owned energy control systems, demand recorders, or supervisory control (SCADA) systems.

The CLR Series relays contain high light output red and green LED indicators that display the system's status at all times thus allowing a rapid check of the metering system's pulse pick-up and relay's performance without requiring any additional test equipment.

The CLR Series' input and output circuit's terminal strip is a "Euro" type connector. When the stripped wire has been correctly installed in the terminal's slot, no conductive parts are exposed on the surface of the terminal strip. Due to the inherent current-limited nature of the design, no fusing is necessary on the input. No damage will result if the current loop is shorted.

The "K" lead of each of the CLR relay's outputs is fused to prevent damage to the relay under almost any conditions a user might encounter such as excessive current, incorrect wiring, etc. The CLR's output relays have built-in MOV transient protection for the solid-state relay contacts. Transient suppression for the current loop is provided by metal-oxide varistors (MOV's) between the current loop input terminals and ground. This eliminates the need for external or off-the-board transient suppressors. All component parts which have voltage applied to them, with the exception of the input-output terminal strip, are enclosed in a polycarbonate cover for maximum user protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface. The CLR series relays are designed to mount inside another enclosure, suitable for the user's intended application.

AVAILABLE MODELS
CLR-1PS - One Form C output (up to 4 miles* from the PTR-1PS)
CLR-2PS - Two Form C outputs (up to 3 miles* from the PTR-1PS)
CLR-3PS - Three Form C outputs (up to 2 miles* from the PTR-1PS)
(* Actual distance depending on wire gauge used.)

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CLR SERIES CURRENT LOOP RELAYS

CLR-SERIES

SPECIFICATIONS

ELECTRICAL

Power Input:	No separate power supply required; powered by current loop. Ground connection to earth (electrical system) ground only
Contact On-State Resistance:	5 Ohms Typical max, 3.4 ohms typical
Insulation Resistance:	50 megohms typical
Operate and Release Time:	Turn On Time - 8 mS typical; 20 mS MAX Turn Off Time - 1 mS typical; 5 mS MAX
Input/Output Isolation Voltage:	2500Vrms

MECHANICAL

Mounting:	Any position
Size:	3.5” wide, 7.2” high, 1.5” deep
Weight:	10 - 12 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

MPG-3 WIRELESS PULSE GENERATOR

MPG-3

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	USB Zigbee® Radio Module	2 Wire or 3 Wire
FORM	---	A or C

DESCRIPTION

The MPG-3 Wireless Meter Pulse Generator is SSI's third generation Zigbee Pulse Generator. It integrates AMI smart meters with legacy KYZ pulse metering. Using Zigbee® radio technology, the MPG-3 receives usage data from the meter's HAN network, interprets power usage, and converts it into KYZ pulses. With the MPG-3, pulses are synthesized without having an actual KYZ output in the meter. By using the MPG-3, utilities can implement the new advanced AMI meters and still provide pulses to customers that may need them.

The MPG-3 features integral Zigbee radio module and two KYZ pulse outputs. As the MPG-3 receives periodic data from utility's meter, the data is read and interpreted to obtain the current demand information. Accumulated energy is computed, and pulses are outputted according to a selected pulse value. All system settings are accomplished through a USB programming port that provides for pulse value, meter multiplier, output mode, and pulse timing. The output is selectable as either Form A (2-Wire) or Form C (3-Wire) and operates in either the momentary or toggle mode, respectively. The momentary mode has six pulse width time settings: 25mS, 50mS, 100mS, 200mS or 500mS and 1000mS. The toggle mode toggles back and forth to the opposite state upon each new pulse being generated. There are two LED's, one red and one green, which show pulse output status.

The output pulse value is selectable from 1 to 99999 watt-hours per pulse. A meter multiplier of 1 to 99999 may be programmed into the MPG-3 using the SSI Universal Programmer software.

A 30mS fixed minimum-off time delay prevents pulses from occurring too rapidly. Bright red, yellow and green LEDs monitor the system communications status and provide an easy and immediate visual system check without test equipment.

The Zigbee module must be paired or "provisioned" with the AMI meter with a HAN network radio, a process that is performed by the participating utility or on the utility's website. Once paired with the meter, the MPG-3 will begin receiving information from the meter and generating pulses.

The MPG-3 is compatible with Self-Contained or Instrument-rated electric meters. The MPG-3's USB programming port is used to enter the specific site's meter multiplier from 1 to 99999. In addition, the MPG-3can be configured for Normal mode (kWh delivered only) for unidirectional energy fl ow, or for Signed mode (kWh delivered and received) for bi-directional energy flow.

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MPG-3 WIRELESS PULSE GENERATOR

MPG-3

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 VA
Input:	Zigbee HAN Network with AMI meter
Output:	Two Form A (2-Wire) or Form C (3-wire) Solid State dry-contact outputs rated at 100mA at 120V, 800mW maximum, fused at .1A
Maximum Pulse Output Rate:	≈15 Pulses per second (Form C) ≈10 pulses per second (Form A)
Minimum Time between Output Pulses:	30ms
Form A Pulse Width:	25, 50, 100, 200, 500, 1000 mS
Output Pulse Values:	1-99999 Wh/pulse

MECHANICAL

Mounting:	Any position
Size:	3.1'' wide, 7.2'' high, 1.5'' deep
Weight:	1 pound

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact factory
Enclosures:	NEMA 4X fi berglass raintight and dustproof enclosure available. 10.0" high, 8.0" wide, 4.0" deep, includes mounting plate

SPECIALTY DEVICES

MPG-3E WIRELESS PULSE GENERATOR

MPG-3E

FUNCTIONAL SUMMARY

	IN	OUT
#	1	2
TYPE	USB Zigbee® Radio Module	2 Wire or 3 Wire
FORM	---	A or C

DESCRIPTION

The MPG-3E Wireless Meter Pulse Generator is SSI's third generation Zigbee Pulse Generator. It integrates AMI smart meters with legacy KYZ pulse metering. Using Zigbee® radio technology, the MPG-3E receives usage data from the meter's HAN network, interprets power usage, and converts it into KYZ pulses. With the MPG-3E, pulses are synthesized without having an actual KYZ output in the meter. By using the MPG-3E, utilities can implement the new advanced AMI meters and still provide pulses to customers that may need them.

The MPG-3E features integral Zigbee radio module and two KYZ pulse outputs. As the MPG-3E receives periodic data from utility's meter, the data is read and interpreted to obtain the current demand information. Accumulated energy is computed, and pulses are outputted according to a selected pulse value. All system settings are accomplished through a USB programming port that provides for pulse value, meter multiplier, output mode, and pulse timing. The output is selectable as either Form A (2-Wire) or Form C (3-Wire) and operates in either the momentary or toggle mode, respectively. The momentary mode has six pulse width time settings: 25mS, 50mS, 100mS, 200mS or 500mS and 1000mS. The toggle mode toggles back and forth to the opposite state upon each new pulse being generated. There are two LED's, one red and one green, which show pulse output status.

The output pulse value is selectable from 1 to 99999 watt-hours per pulse. A meter multiplier of 1 to 99999 may be programmed into the MPG-3E using the SSI Universal Programmer software.

A 30mS fixed minimum-off time delay prevents pulses from occurring too rapidly. Bright red, yellow and green LEDs monitor the system communications status and provide an easy and immediate visual system check without test equipment.

The Zigbee module must be paired or "provisioned" with the AMI meter with a HAN network radio, a process that is performed by the participating utility or on the utility's website. Once paired with the meter, the MPG-3E will begin receiving information from the meter and generating pulses.

The MPG-3E is compatible with Self-Contained or Instrument-rated electric meters. The MPG-3E's USB programming port is used to enter the specific site's meter multiplier from 1 to 99999. In addition, the MPG-3Ecan be confi gured for Normal mode (kWh delivered only) for unidirectional energy flow, or for Signed mode (kWh delivered and received) for bi-directional energy flow.

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MPG-3E WIRELESS PULSE GENERATOR

MPG-3E

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 VA
Input:	Zigbee HAN Network with AMI meter
Output:	Two Form A (2-Wire) or Form C (3-wire) Solid State dry-contact outputs rated at 100mA at 120V, 800mW maximum, fused at .1A
Maximum Pulse Output Rate:	≈15 Pulses per second (Form C) ≈10 pulses per second (Form A)
Minimum Time between Output Pulses:	30ms
Form A Pulse Width:	25, 50, 100, 200, 500, 1000 mS
Output Pulse Values:	1-99999 Wh/pulse

MECHANICAL

Mounting:	Any position
Size:	8” wide, 9” high, 3” deep
Weight:	4 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact factory
Enclosures:	NEMA 4X fi berglass raintight and dustproof enclosure available. 10.0” high, 8.0” wide, 4.0” deep, includes mounting plate

MPG-3ES WIRELESS PULSE GENERATOR

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	USB Zigbee® Radio Module	2 Wire
FORM	---	A

MPG-3ES

DESCRIPTION

The MPG-3ES Wireless Meter Pulse Generator is part of SSI's third generation Zigbee Pulse Generator family. It integrates AMI smart meters with legacy KYZ pulse metering. Using Zigbee® radio technology, the MPG-3ES receives usage data from the meter's HAN network, interprets power usage, and converts it into KY pulses. With the MPG-3ES, pulses are synthesized without having an actual KYZ output in the meter. By using the MPG-3ES, utilities and energy management contractors, value-added resellers and consultants can quickly and easily provide pulses to customer equipment.

The low-cost "bare bones" MPG-3ES features integral Zigbee radio module and one KY (Form A, 2-Wire) pulse output. The MPG-3ES has a low-voltage AC or DC power supply input for use with other control products having a low voltage source already available. No line voltage source is required.

As the MPG-3ES receives periodic data from utility's meter, the data is read and interpreted to obtain the current demand information. Accumulated energy is computed, and pulses are outputted according to a selected pulse value.

All system settings are accomplished through a USB programming port using the SSI Universal Programmer software. Programmable settings are available for pulse value, meter multiplier, output mode, pulse timing and several other system settings.

An output pulse value is selectable from 1 to 99999 watt-hours per pulse, while a meter multiplier of 1 to 99999 may be programmed. The output mode is selectable as either Form A (momentary) or Form C (toggle). The momentary mode has six pulse width time settings: 25mS, 50mS, 100mS, 200mS or 500mS and 1000mS. The toggle mode toggles on and off in a 50/50 duty cycle format. A red LED indicates the pulse output status. A 30mS fixed minimum-off time delay prevents pulses from occurring too rapidly. Bright red, yellow and green LEDs monitor the system communications status and provide an easy and immediate visual system check without test equipment.

The Zigbee module must be paired or "provisioned" with the AMI meter with a HAN network radio, a process that is performed by the participating utility or on the utility's website. Once paired with the meter, the MPG-3ES will begin receiving information from the meter and generating pulses.

The MPG-3ES is compatible with both Self-contained or Instrument-rated electric meters. In addition, unidirectional and bi-directional energy flow applications can be accommodated with the MPG-3ES by selecting Normal mode (kWh delivered only) or Signed mode (kWh delivered and received) in the configuration.

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MPG-3ES WIRELESS PULSE GENERATOR

MPG-3ES

SPECIFICATIONS

ELECTRICAL

Power Input:	10-60VDC, 12-48VAC
Input:	Zigbee HAN Network with AMI meter
RF:	Zigbee Module
Output:	One Form A (2-Wire) Solid State dry-contact output rated at 100mA at 120V, 800mW maximum, fused at .1A
Maximum Pulse Output Rate:	≈15 Pulses per second (Form C) ≈8 pulses per second (Form A)
Minimum Time between Output Pulses:	30ms
Form A Pulse Width:	25, 50, 100, 200, 500, 1000 mS
Output Pulse Values:	1-99999 Wh/pulse

MECHANICAL

Mounting:	Any position; Four Mounting tabs provided
Size:	4” wide, 4” high, 2” deep
Weight:	1 pound

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

MPG-3SC WIRELESS PULSE GENERATOR

MPG-3SC

FUNCTIONAL SUMMARY

	IN	OUT
#	1, 1	2+1A
TYPE	USB Zigbee® Radio Module	2 Wire or 3 Wire
FORM	---	A or C, A for EOI

DESCRIPTION

The MPG-3SC Wireless Meter Pulse Generator is SSI's third generation Zigbee Pulse Generator. It integrates AMI smart meters with legacy KYZ pulse metering. Using Zigbee® radio technology, the MPG-3SC receives usage data from the meter's HAN network, interprets power usage, and converts it into KYZ pulses. With the MPG-3SC, pulses are synthesized without having an actual KYZ output in the meter. By using the MPG-3SC, utilities can implement the new advanced AMI meters and still provide pulses to customers that may need them.

The MPG-3SC features integral Zigbee radio module and two KYZ pulse outputs, in a fi berglass NEMA 4X enclosure. As the MPG-3SC receives periodic data from utility's meter, the data is read and interpreted to obtain the current demand information. Accumulated energy is computed, and pulses are outputted according to a selected pulse value.

All system settings are accomplished through a USB programming port that provides for pulse value, meter multiplier, output mode, and pulse timing. The output is selectable as either Form A (2-Wire) or Form C (3-Wire) and operates in either the momentary or toggle mode, respectively. The momentary mode has six pulse width time settings: 25mS, 50mS, 100mS, 200mS or 500mS and 1000mS. The toggle mode toggles back and forth to the opposite state upon each new pulse being generated. There are two LED's, one red and one green, which show pulse output status.

The output pulse value is selectable from 1 to 99999 watt-hours per pulse. A meter multiplier of 1 to 99999 may be programmed into the MPG-3SC using the SSI Universal Programmer software.

A 30mS fi xed minimum-off time delay prevents pulses from occurring too rapidly. Bright red, yellow and green LEDs monitor the system communications status and provide an easy and immediate visual system check without test equipment.

The Zigbee module must be paired or "provisioned" with the AMI meter with a HAN network radio, a process that is performed by the participating utility or on the utility's website. Once paired with the meter, the MPG-3SC will begin receiving information from the meter and generating pulses.

The MPG-3SC is compatible with Self-Contained or Instrument-rated electric meters. The MPG-3SC's USB programming port is used to enter the specified c site's meter multiplier from 1 to 99999. In addition, the MPG-3SC can be confi gured for Normal mode (kWh delivered only) for unidirectional energy fl ow, or for Signed mode (kWh delivered and received) for bi-directional energy fl ow. The MPG-3 also supports End-Of-Interval capability with a Form A (2-wire) output for intervals over a wide range.

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MPG-3SC WIRELESS PULSE GENERATOR

MPG-3SC

SPECIFICATIONS

ELECTRICAL

Power Input:	120, 208-277 VAC. Burden: 10 VA
Input:	Zigbee HAN Network with AMI meter
Output:	Two Form A (2-Wire) or Form C (3-wire) Solid State dry-contact outputs rated at 100mA at 120V, 800mW maximum, fused at .1A
Maximum Pulse Output Rate:	≈15 Pulses per second (Form C) ≈10 pulses per second (Form A)
Minimum Time between Output Pulses:	30ms
Form A Pulse Width:	25, 50, 100, 200, 500, 1000 mS
Output Pulse Values:	1-99999 Wh/pulse
End of Interval Output:	1 Form A (2-wire) output for EOI
Interval Lengths:	1,5,10,15,30,60 minutes
Interval Pulse Widths:	50,100,250,500,1000, 2000, 5000, 10000mS

MECHANICAL

Mounting:	Any position
Size:	9.5’ wide, 11.5’ high, 4 3/8’’ deep
Weight:	7 pounds

TEMPERATURE

Temperature Range:	-38° C to +70° C, -38.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact factory
Enclosures:	NEMA 4X fi berglass raintight and dustproof enclosure available. 10.0” high, 8.0” wide, 4.0” deep, includes mounting plate

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SPECIALTY DEVICES

PMC-1 PULSE-TO-MODBUS CONVERTER

PMC-1

FUNCTIONAL SUMMARY

	IN	OUT
#	2	-
TYPE	2 Wire	-
FORM	A	-

DESCRIPTION

The PMC-1 Pulse-to-Modbus Converter is a device designed to read, record and store pulses from two 2-Wire KY pulse inputs and provide access to the energy use and demand information using the Modbus TCP protocol. Pulse inputs are recorded in the count register and the equivalent energy value is calculated and recorded in the energy use register. The PMC-1's inputs provide a +13VDC wetting voltage for the meters' dry-contact outputs. Upon receiving each pulse from the meter, the PMC-1's microcontroller converts the pulse to the kWh value and adds it to the energy use register. The instantaneous, average and peak demand (kW) are also captured and available in three separate registers for each channel. Average and Peak Demands are based on a 15 minute demand interval.

Energy use information collected and stored in non-volatile memory and accessible by using the RJ-45 Ethernet connection of the PMC-1. The Modbus protocol allows accessing the specific PMC-1 device using a unique IP address, and the register for the information of the pulse channel desired. A RS-232C DB9 serial port allows quick programming of the IP address and pulse value. A master reset capability allows all registers to be cleared.

The PMC-1's bright red LED lamps indicate the Pulse input's status at all times. Eight additional green LED's indicate device and network status.

Read-only Registers accessible for each channel are:
- Cumulative energy since last reset or rollover (kWh)
- Instantaneous Demand (kW)
- Average Demand (kW)
- Peak Demand since last reset (kW)
- Time since last power up (seconds)
- Pulse Count since last reset (number)

Programmable values are:
- Pulse Constant (kWh/pulse) for each channel
- Pulse Value Type (2-wire or 3-wire)
- Reset all registers

Typical applications include:
- Provide real-time energy and power measurements for Energy Management Systems, Dashboards, software applications or web clients
- Access, View and Track Energy Use and Demand information
- Generate interval data and load profiles
- Demand Response program monitoring
- Utility submetering (electricity, gas, water, etc.)
- M&V Measurement and Verification of Energy Efficiency Measures
- Utility meter Verification

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PMC-1 PULSE-TO-MODBUS CONVERTER

PMC-1

SPECIFICATIONS

ELECTRICAL

Power Input:	120VAC by 12VAC wall transformer (included); Burden: 10 MA. at 120 VAC
Pulse Input:	Two KY Form A (2-wire) inputs with +13VDC wetting voltage compatible with dry contact or open-collector transistor output. Detachable terminal block.
Maximum Input Pulse Rate:	10 pulses per second
Pulse value:	.001kWh/p to 655.35 kwh/p, in .0001 kWh increments.
Output:	No Hardware outputs; Register reads only
Network Interface:	RJ-45 Ethernet
Protocol:	Modbus TCP
Demand Averaging Interval Selection:	15 minutes
Peak Demand Reset, by channel:	Yes
Reset Cumulative Energy, by channel:	Yes
Reset Cumulative Raw Pulse Count, by channel:	Yes

MECHANICAL

Mounting:	Any position.
Size:	2.30“ wide, 4.8” long, 1.50” deep
Weight:	17 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	12VAC. Contact Factory.

CID-1 CUSTOMER INTERFACE DEVICE

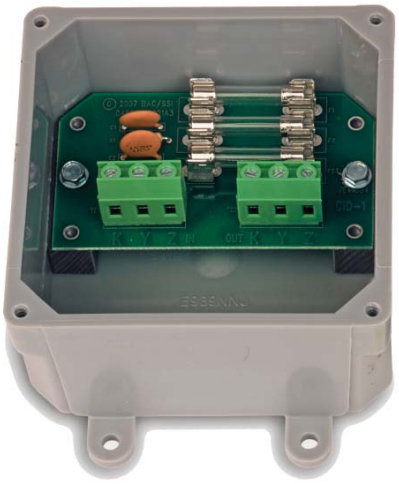
FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C

CID-1

DESCRIPTION

The CID-1 Customer Interface Device is a low-cost, fused KYZ termination device which supplements the electric meter's KYZ pulse initiator. It provides two sets of K, Y, & Z connector terminals, one for connection to the meter's K, Y, and Z output terminals and the other for the utility customer's energy control system input terminals.



The CID-1's mounting configurations incorporates four knockouts for ½" electrical conduit which can be used in a wide range of connection schemes to the electric meter's enclosure.

The CID-1's input and output circuit's terminal strips are "EURO" type. When the stripped wire has been correctly installed in the terminals "slot", no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each lead of the CID-1 is individually fused. The K fuse and either the Y or the Z fuse are in series at all times providing a coordinated fusing scheme designed to prevent damage to the meter or the customer's energy control system. In addition, this fuse configuration provides the provision for master/slave fusing. A built-in "snubber" network is installed to suppress excessive transient voltages.

The CID-1 features a watertight Noryl enclosure and offers excellent electrical insulation. A beaded-gasket lid ensures that the circuit inside remains dry and clean.

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CID-1 CUSTOMER INTERFACE DEVICE

CID-1

SPECIFICATIONS

ELECTRICAL

Maximum Voltage:	250VAC/VDC
Input/Output Resistance:	50 milliohms maximum
Insulation Resistance:	50 megohms typical

MECHANICAL

Mounting:	Any position
Size:	4.5” wide, 4.5” high, 2.25” deep
Weight:	~1 pound, depending on mounting configu-ration

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

CID-2 CUSTOMER INTERFACE DEVICE

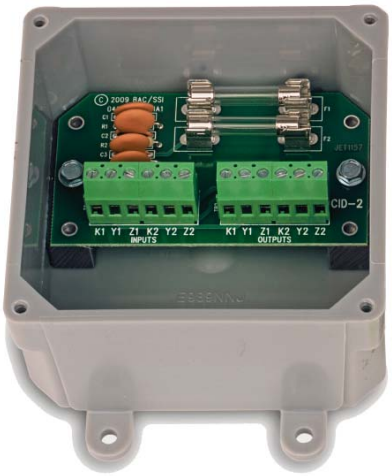
FUNCTIONAL SUMMARY

	IN	OUT
#	2	2
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C

CID-2

DESCRIPTION

The CID-2 Customer Interface Device is a 2-channel low-cost, fused KYZ termination device which supplements the electric meters' KYZ pulse initiators. It provides two sets of K, Y, & Z connector terminals, one for connection to the two meters' K, Y, and Z output terminals and the other for the utility customer's energy control system input terminals.



The CID-2's mounting configurations incorporates four knockouts for ½" electrical conduit which can be used in a wide range of connection schemes to the electric meter's enclosure.

The CID-2's input and output circuit's terminal strips are "EURO" type. When the stripped wire has been correctly installed in the terminals "slot", no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The K lead of each channel is individually fused designed to prevent damage to the meter or the customer's energy control system. A built-in "snubber" network is installed to suppress excessive transient voltages.

The CID-2 features a watertight Noryl enclosure and offers excellent electrical insulation. A beaded-gasket lid ensures that the circuit inside remains dry and clean.

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CID-2 CUSTOMER INTERFACE DEVICE

CID-2

SPECIFICATIONS

ELECTRICAL

Maximum Voltage:	250VAC/VDC
Input/Output Resistance:	50 milliohms maximum
Insulation Resistance:	50 megohms typical

MECHANICAL

Mounting:	Any position
Size:	4.5” wide, 4.5” high, 2.25” deep
Weight:	~1 pound, depending on mounting configuration

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

CID-3 CUSTOMER INTERFACE DEVICE

FUNCTIONAL SUMMARY

	IN	OUT
#	3	3
TYPE	2 Wire	2 Wire
FORM	A	A

DESCRIPTION

The CID-3 Customer Interface Device is a low-cost 3-channel, fused KYZ termination device which supplements the electric meters' KYZ pulse initiators. It provides three sets of K & Y connector terminals, one for connection to the three meters' K and Y output terminals and the other for the utility customer's energy control system input terminals.

The CID-3's mounting configurations incorporates four knockouts for ½" electrical conduit which can be used in a wide range of connection schemes to the electric meter's enclosure.

The CID-3's input and output circuit's terminal strips are "EURO" type. When the stripped wire has been correctly installed in the terminals "slot", no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. Each K lead of the CID-3 is individually fused. A built-in "snubber" network is installed for transient suppression.

The CID-3 features a watertight Noryl enclosure and offers excellent electrical insulation. A beaded-gasket lid ensures that the circuit inside remains dry and clean.

CID-3

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CID-3 CUSTOMER INTERFACE DEVICE

CID-3

SPECIFICATIONS

ELECTRICAL

Maximum Voltage:	250VAC/VDC
Input/Output Resistance:	50 milliohms maximum
Insulation Resistance:	50 megohms typical

MECHANICAL

Mounting:	Any position
Size:	4.5” wide, 4.5” high, 2.25” deep
Weight:	~1 pound, depending on mounting configuration

TEMPERATURE

Temperature Range:	-38° C to +70° C, -38.4° F to +158° F
Humidity:	0 to 98% non-condensing

CID-4 CUSTOMER INTERFACE DEVICE

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	2 or 3 Wire	2 or 3 Wire
FORM	A or C	A or C
TELCO	RJ-11 (std)	RJ-11 (std)

CID-4

DESCRIPTION

The CID-4 customer interface device is a low-cost, fused KYZ pulse termination and telecom device which supplements the electric meter's KYZ pulse initiator and modem. It provides two sets of K, Y, & Z connector terminals, one for connection to the meter's K, Y, and Z output terminals and the other for the utility customer's energy control system input terminals. In addition, the CID-4 provides two RJ-11 or RJ12 phone jacks as a termination point for the meter's modem and the incoming phone line, while supplying additional surge protection against transient voltage that may affect the inner wirings of the site. Connections to an electric meter's modem to the telephone line are compact, simple and easy.

The CID-4's mounting configurations incorporates four knockouts for ½" electrical conduit which can be used in a wide range of connection schemes to the electric meter's enclosure.

The CID-4's pulse input and output circuit's terminal strips are "EURO" type. When the stripped wire has been correctly installed in the terminals "slot", no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock. The K output of the CID-4 is fused providing current limiting designed to prevent damage to the meter or the customer's energy control system. In addition, a built-in MOV transient voltage network is installed to suppress excessive transient voltages. Specialized Telecom surge suppression and fusing is included.

The CID-4 features a watertight Noryl enclosure and offers excellent electrical insulation. A beaded-gasket lid ensures that the circuit inside remains dry and clean.

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CID-4 CUSTOMER INTERFACE DEVICE

CID-4

SPECIFICATIONS

ELECTRICAL

Input/Output Voltage:	120 VAC
Input/Output Resistance:	50 milliohms maximum
Insulation Resistance:	50 megohms typical

MECHANICAL

Mounting:	Any position
Size:	4.5” wide, 4.5” high, 2.25” deep
Weight:	~1 pound, depending on mounting configuration

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

All specifications are subject to change without notice.

APU-1B/1C AUXILIARY SWITCHOVER DEVICE

APU-1

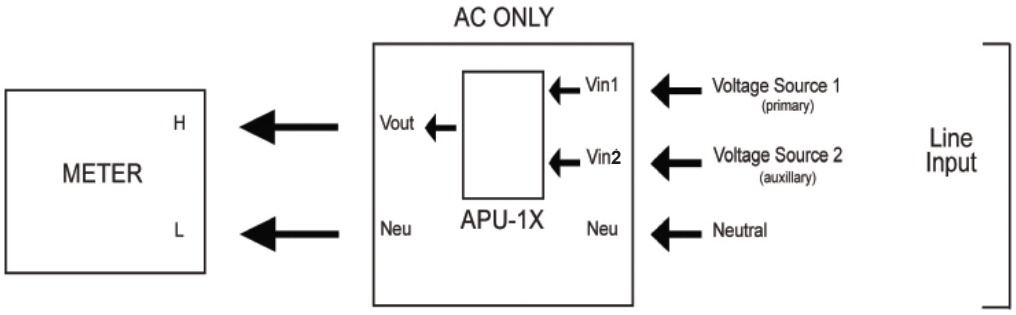
DESCRIPTION

The APU-1 Series are auxiliary power switchover devices designed for instrument metering applications. In the event of power loss to the meter from the primary source, the APU-1 automatically switches the meter potential to the auxiliary source. By using this approach, loss of revenue is avoided.

The APU-1B is for 120 VAC applications, while the APU-1C is for 208-277 VAC applications. The application for the APU-1x is metering configurations where dual service is provided to the customer, but meter potentials are only on one service. To insure that the meter is always energized and measuring energy use, the APU-1x switches from the primary source to the auxiliary source if the primary source is lost.

When power to the meter is interrupted, the alternate contacts close and the meter remains powered. The same phase of each service should be used to insure that there is no potential difference between the phases if they are both powered. Housed in a polycarbonate case for maximum electrical protection, the APU-1x is normally mounted inside another enclosure, suitable for the user's intended application.

A green LED indicates voltage available form the primary source. A red LED indicates that voltage from the primary source has been interrupted and the output is being powered from the secondary source.



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APU-1B/1C AUXILIARY SWITCHOVER DEVICE

SPECIFICATIONS

ELECTRICAL

Power Input:	APU-1B –120 VAC APU-1C – 277 VAC
Output Voltage:	APU-1B –120 VAC APU-1C – 277 VAC
Output Current:	2 Amp Max
Fuse:	1/2 Amp Nominal, 2 Amp Max.

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.7” high, 1.50” deep
Weight:	6 ounces

TEMPERATURE

Temperature Range:	-40° C to +85° C; -40° F to +185° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory

APU-1

APU-3 AUXILIARY SWITCHOVER DEVICE

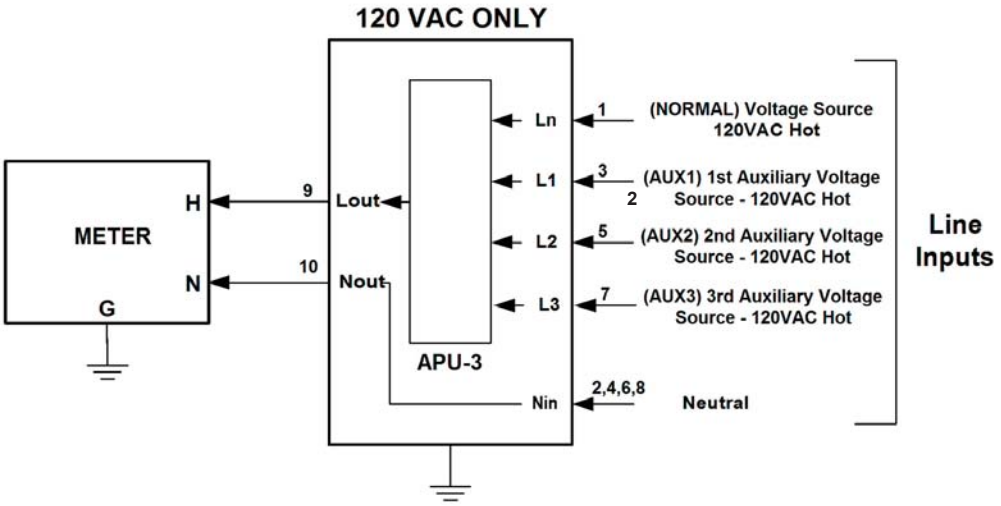
APU-3

DESCRIPTION

The APU-3 Series are auxiliary power switchover devices designed for instrument metering applications. In the event of power loss to the meter from the primary source, the APU-3 automatically switches the meter potential to one of three auxiliary sources. By using this approach, potential loss of revenue is avoided.

The APU-3 is for 120 VAC applications. The application for the APU-3 is metering configurations where two or more services are provided to the customer, but meter potentials are only on one service. To insure that the meter is always energized and measuring energy use, the APU-3 switches from the primary source to one of 3 auxiliary source if the primary source is lost.

When power to the meter is interrupted, the 1st alternative power source take over, contacts close and the meter remains powered. If the 1st alternative power source drops out, the APU-3 will automatically switch to the “2nd alternative” power source and so on. The APU-3 will always select the highest alternative power source available and will always run (or switch back to) the normal power source if it senses 120 VAC present. The same phase of each service should be used to insure that there is no potential difference between the phases if they are both powered. Housed in a NEMA 1 enclosure for maximum electrical protection, the APU-3 is normally mounted next to the meter enclosure to make wiring fast and convenient, suitable for the user’s intended application.



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APU-3 AUXILIARY SWITCHOVER DEVICE

APU-3

SPECIFICATIONS

ELECTRICAL

Power Input:	APU-3 –120 VAC
Output Voltage:	APU-3 –120 VAC
Output Current:	3 Amp Max

MECHANICAL

Mounting:	Any position
Size:	8” wide, 8” high, 4” deep
Weight:	6 ounces
Enclosure:	NEMA 1 hinged door

TEMPERATURE

Temperature Range:	-40° C to +85° C; -40° F to +185° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory

MPS-1 METERING POWER SUPPLY

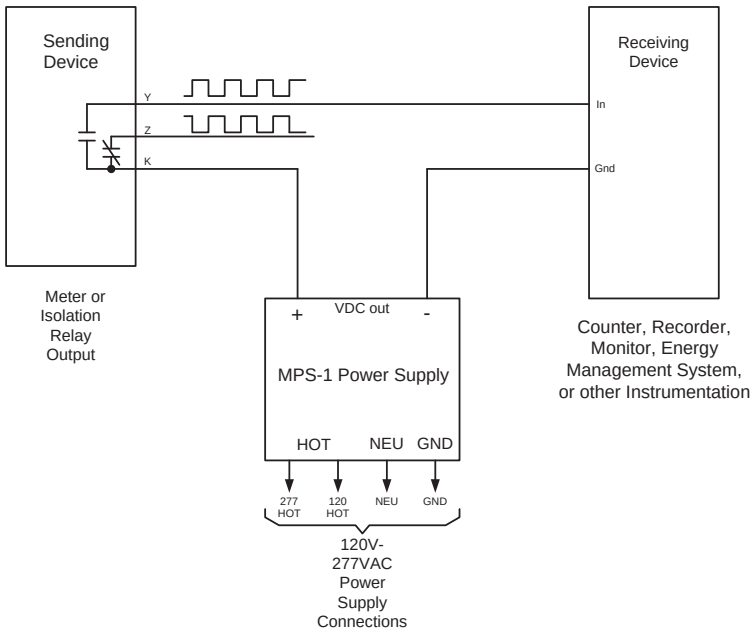
MPS-1

DESCRIPTION

The MPS-1 Meter Power Supply, a low-cost DC power supply option, provides an isolated low-voltage DC wetting voltage designed specifically for KYZ pulse metering applications. Packaged in the convenient SSI “small footprint” case, the MPS-1 can be used in any application where a wetting voltage is needed to go through a KYZ pulse initiator and into another pulse input device such as a SCADA system, RTU, energy management system, KYZ pulse totalizer, electric meter pulse input or other telemetry or control systems which accept pulses.

The MPS-1 is available in a variety of output voltages between 3VDC and 24VDC. The output voltage needed can be specified by adding the DC voltage after the MPS-1 model number (i.e. MPS-1-24 to indicate a 24VDC output).

The power supply’s low-current design provides up to 40mA for the pulse metering circuit. The output is internally current-limited and provides a fuse to prevent damage in the event of a short circuit condition. In addition, the MPS-1 power supply includes MOV transient suppression devices on both the 120/208-277 power supply input and the DC output.



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MPS-1 METERING POWER SUPPLY

MPS-1

SPECIFICATIONS

ELECTRICAL

Power Input:	120/208-277VAC
Output Voltage:	+3VDC to +24VDC, specified at the time of order
Output Current:	Nominal 40mA
Fuse:	.1A (100mA)
Voltage Regulation:	10mV @ 100% load

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.7” high, 1.50” deep
Weight:	1lb

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

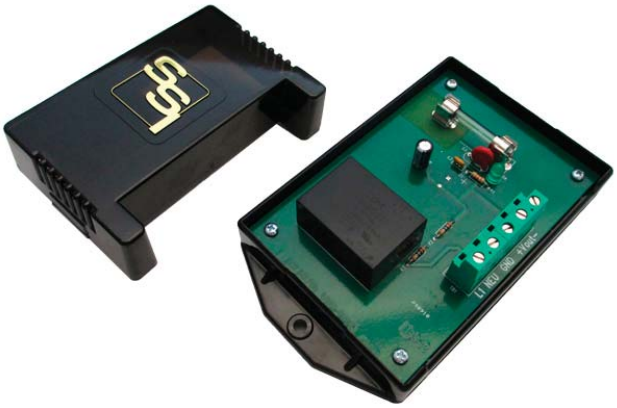
AVAILABLE OPTIONS

Input Voltages:	Contact Factory

MPS-2 METERING POWER SUPPLY

MPS-2

DESCRIPTION



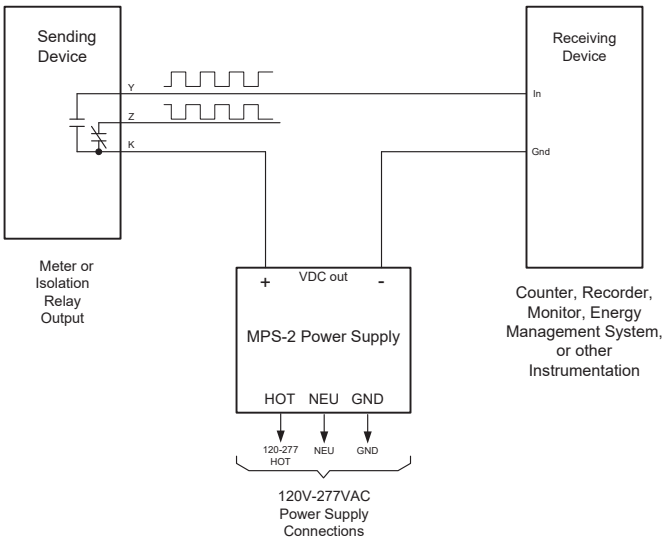
The MPS-2 metering power supply, a low-cost DC power supply option, provides an isolated low-voltage DC wetting voltage designed specifically for KYZ pulse metering applications.

Packaged in the convenient SSI “small footprint” case, the MPS-2 can be used in any application where a wetting voltage is needed to go through a KYZ pulse initiator and into another pulse input device such as a SCADA system, RTU, energy management system, KYZ pulse totalizer, electric meter pulse input or other telemetry or control systems which accept pulses.

The MPS-2 is available in standard outputs of:

- MPS-2-12 (12VDC)
- MPS-2-15 (15VDC)
- MPS-2-24 (24VDC)

The power supply’s low-current design provides up to 300mA for the pulse metering circuit. The output is internally current-limited and provides a fuse to prevent damage in the event of a short circuit condition. In addition, the MPS-2 power supply includes MOV transient suppression devices on both the AC power supply input and the DC output.



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MPS-2 METERING POWER SUPPLY

MPS-2

SPECIFICATIONS

ELECTRICAL

Power Input:	120-277 VAC
Output Voltage:	+12VDC, +18VDC, +24VDC specified at the time of order
Output Current:	300mA @ 12VDC, 250mA @ 15VDC, Nominal 150mA @ 24VDC
Output Fuse:	0.1A (100mA)
Voltage Regulation:	0.5%

MECHANICAL

Mounting:	Any position
Size:	3.27” wide, 5.7” high, 1.50” deep
Weight:	6 ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory

PPC-2 PORTABLE PULSE COUNTER

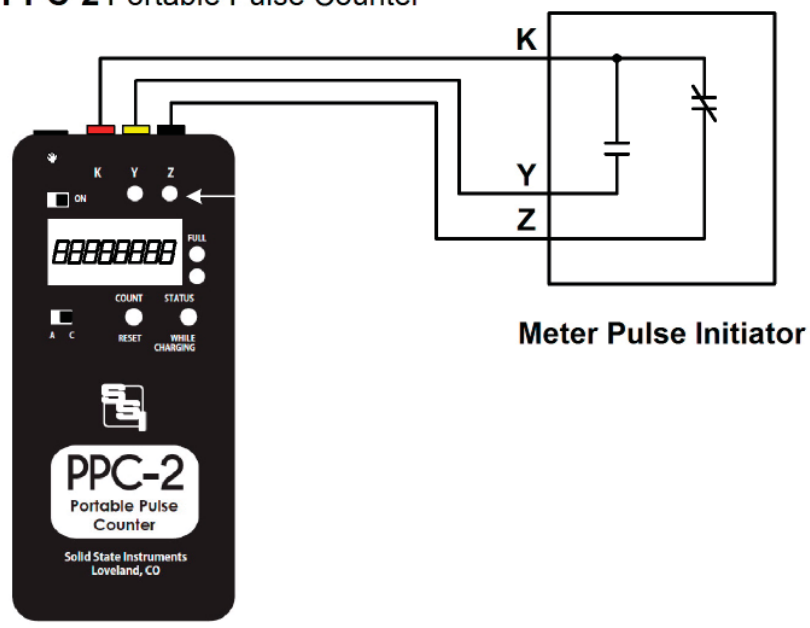
PPC-2

DESCRIPTION

The PPC-2 Portable Pulse Counter is a low-cost field tool for testing a meter's KYZ pulse outputs. The PPC-2 supplies its own wetting (sense) voltage to both Y and Z sides of the meter's KYZ output. The remaining lead(K) is the common return. The PPC-2 counts the closures or "pulses" of the output. It can be configured as either a Form A (2-Wire) or a Form C(3-Wire) device to test one or both sides of the Form C output. The PPC-2 can be used with either electromechanical or solid-state meter outputs, or isolation relay outputs. It is powered by a rechargeable Lithium Ion battery with a working life of 40 hours. Full recharge time is approximately 5 hours.

Designed for the rigors of the field, the PPC-2 is packaged in a nearly indestructible polycarbonate enclosure. Provided are three banana jacks (K,Y, and Z) with standard Red, Yellow and Black input leads with probes for connecting to wires or terminals of the meter's KYZ output. Upon each transition of the KYZ switch, the counter will register a count and update the display. The 8-digit display allows a maximum count of 99,999,999 and can be manually reset by the field technician at any time. Thus, the PPC-2 can be used to ensure that the pulse output is operating correctly.

PPC-2 Portable Pulse Counter



Meter Pulse Initiator

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PPC-2 PORTABLE PULSE COUNTER

SPECIFICATIONS

ELECTRICAL

Power Input:	12VDC Auto Cigarette Lighter cord ore stationary wall transformer; Normal 5-hour fullrecharge time.
Sense Voltage:	6 VDC
Sense Current:	<10 mA

MECHANICAL

Mounting:	Any position
Size:	6.80” high x 3.40” wide x 1.25” deep
Weight:	Approx. 1lb

TEMPERATURE

Temperature Range:	-10º C to +50º C, 14º F to +122º F
Storage Temperature Range:	-20° C to 70° C, -4° F to 158° F

PPC-2

PPT-1 PORTABLE PULSE TESTER

DESCRIPTION

The PPT-1 Portable Pulse Tester is a low-cost field tester for testing a meter's KYZ pulse outputs. The PPT-1 supplies its own wetting (sense) voltage to the relay's output terminals and visually displays the closures or "pulses" of that output. It is configured in Form C (3-Wire) format, but can be used in either Form C or Form A (2-Wire) mode. The PPT-1 can be used with either mercury-wetted or solid state relay outputs. It is battery-powered with two AA replaceable batteries.

Designed for the rigors of the field, the PPT-1 is packaged in a hand-held ABS enclosure. Three leads with alligator clips are provided in standard Red-Yellow-Black colors for K, Y and Z respectively. Upon each closure of the KYZ switch, the tester will display continuity between K and Y or K and Z terminals. Super-bright Red and Green LEDs are sunlight readable to insure that pulse output operation can be easily observed in the field. A momentary Pulse-to-Test pushbutton switch allows for battery use only when intended.

PPT-1

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PPT-1 PORTABLE PULSE TESTER

SPECIFICATIONS

ELECTRICAL

Power Input:	None – Battery Powered; 2 replaceable AA Batteries
Sense Voltage:	3 VDC
Sense Current:	<10 mA

MECHANICAL

Mounting:	Any position
Size:	6.00” high x 1.85” wide x 1.35” deep
Weight:	1lb

TEMPERATURE

Temperature Range:	0° C to +50° C
Humidity:	0 to 85% non-condensing
Storage Temperature Range:	-30° C to 80° C

PPT-1

OPP-1 OPTICAL PULSE PICK-UP

OPP-1

DESCRIPTION

The OPP-1 from Solid State Instruments is a convenient and low-cost way to monitor energy consumption information from compatible electric meters with no physical electrical connection. Using the meter's infrared calibration pulse on the Optocom port, the OPP-1 picks up the infrared light flash (pulse) each time a pre-determined number of watt-hours (usually 1 Kwh) is consumed by the customer's premises. In this way, the utility, their customer or their energy management contractor can read power from their meter temporarily for doing load survey, demand response or energy management activities quicker and at much lower cost.

Solid State Instruments' unique pulse isolation and conditioning technology allows the calibration pulse to be picked up and converted into standard Form C metering KYZ pulses to interface with power monitoring equipment that uses a pulse input. The electric meter must have the calibration pulse as the default mode on the Optocom port when the port is not being used for data uploading, downloading or other programming activities. The OPP-1 is a one directional device with read-only capability. It provides a truly secure method of acquiring power monitoring information with no hassle.

Known meters which are compatible with the OPP-1 are:

Landis + Gyr Model MAXsys Elite

GE Model KV2e

Elster Alpha 3

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OPP-1 OPTICAL PULSE PICK-UP

OPP-1

SPECIFICATIONS

ELECTRICAL

Power Input:	+13VDC provided by PCR-3 Relay (no additional power required)
Input Signal:	Input signal provided by detection of the infrared light flash from the meter's Optocom port.
Output:	Form A transistor output compatible with input of PCR-3. Output has 3-conductor 25 foot control cable for connection to PCR-3.

MECHANICAL

Mounting:	Magnetically mounts on meter's Optocom port with recessed "D" shape key.
Size:	1.20" diameter, 1.00" high.
Weight:	4 oz

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

OPP-1i OPTICAL PULSE PICK-UP

OPP-1i

DESCRIPTION

The OPP-1i from Solid State Instruments is a convenient and low-cost way to monitor energy consumption information from ITRON Sentinel and Centron electric meters with no physical electrical connection. Using the meter's infrared calibration pulse front face of the Sentinel or the light pipe on the top of the Centron, the OPP-1i picks up the infrared light flash (pulse) each time a pre-determined number of watt-hours (usually 1 Kwh) is consumed by the customer's premises. In this way, the utility, their customer or their energy management contractor can quickly read power from their meter for doing load survey work, demand response or energy management activities at much lower cost than other means. Solid State Instruments' unique optical pulse isolation and conditioning technology allows the calibration pulse to be picked up and converted into standard Form C metering KYZ pulses to interface with power monitoring equipment that uses a pulse input.

The OPP-1i is a one-directional device with read-only capability. It provides a truly secure method of acquiring instantaneous power monitoring information with no hassle.

Known meters which are compatible with the OPP-1i are:

ITRON Sentinel

ITRON Centron

GE I-210

GE I-210+

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OPP-1i OPTICAL PULSE PICK-UP

OPP-1i

SPECIFICATIONS

ELECTRICAL

Power Input:	+13VDC provided by PCR-3 Relay (no additional power required)
Input Signal:	Input signal provided by detection of the infrared light flash from the meter's Calibration LED.
Output:	Form A transistor output compatible with input of PCR-3. Output has 3-conductor 25 foot control cable for connection to PCR-3.

MECHANICAL

Mounting:	Mounts to Sentinel Meter face or Centron top with suction cup.
Size:	1.20" diameter, 1.00" high.
Weight:	4 oz

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

CLC-1 CURRENT LOOP CONVERTER

CLC-1

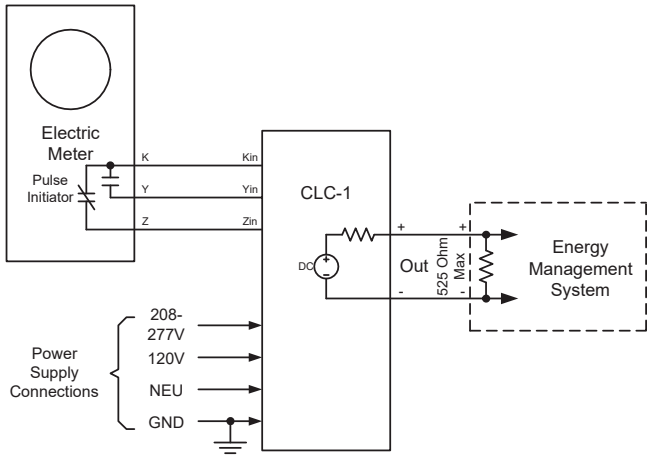
DESCRIPTION

The CLC-1 Current Loop Converter is a device which allows standard KYZ pulses to be converted to a format compatible for use with a 4-20mA current loop. The KYZ output from a meter or isolation relay is fed directly into the CLC-1's KYZ input. The CLC-1's input provides the +13VDC wetting voltage for the meter's dry contact pulse output. The CLC-1's output will toggle between 4mA and 20mA upon each transition of the meter's pulse initiator. There is no scaling of interpretation of a value of a pulse. The output can be configured so that a K-Y closure will result in either 4mA or 20mA. Once set, the K-Z closure becomes the opposite milliamp output. In this way, a KYZ pulse output can be configured to interface directly to a process control system or other instrumentation with a 4-20mA input.

The 4-20mA output is current limited to insure that short circuits or excessive loading will not damage the unit. Bright red and green LED lamps indicate the input's status at all times, thus allowing a rapid check of the input's performance without requiring any special test equipment. Provisions are made to easily read the output's current level with a digital multi-meter (DMM).

Typical applications include interfaces between utility metering devices and customer-owned energy information or control systems. The CLC-1's input and output circuit's terminal strip is a "EURO" type connector strip. When the stripped wire has been correctly installed in the terminals "slot" no conductive parts are exposed on the surface of the terminal strip, thus allowing the user maximum protection from accidental electrical shock.

The CLC-1 has built-in transient protection on the 4-20mA current loop output that eliminates the need for external protection. All component parts that have power applied to them, with the exception of the input/output terminal strip are enclosed in a polycarbonate cover for maximum protection. The mounting base plate is also made of polycarbonate and offers excellent electrical insulation between the circuit and the mounting surface.



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CLC-1 CURRENT LOOP CONVERTER

CLC-1

SPECIFICATIONS

ELECTRICAL

Power Input:	90 to 300 VAC. Burden: 10 mA at 120 VAC
Input:	Standard KYZ pulse input, field configurable as either Form A (2-wire) or Form C (3-wire) +13VDC supplied by the CLC-1's power supply to wet meter contacts.
Output:	One active 4-20mA current loop output. No additional loop power supply is necessary since the CLC-1 provides the DC Voltage for the output.
Output Impedance:	Will drive into 525 ohms maximum, 500 ohms typical
Insulation Resistance:	10 megohms typical
Operate Time:	20 milliseconds typical

MECHANICAL

Mounting:	Any position
Size:	3.50 inches wide, 7.20 inches high, 1.50 inches deep
Weight:	17 Ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	Contact Factory

PCL-1 PULSE-TO-CURRENT LOOP CONVERTER

PCL-1

FUNCTIONAL SUMMARY

	IN	OUT
#	1	1
TYPE	2 Wire	2 Wire
FORM	A	4-20mA

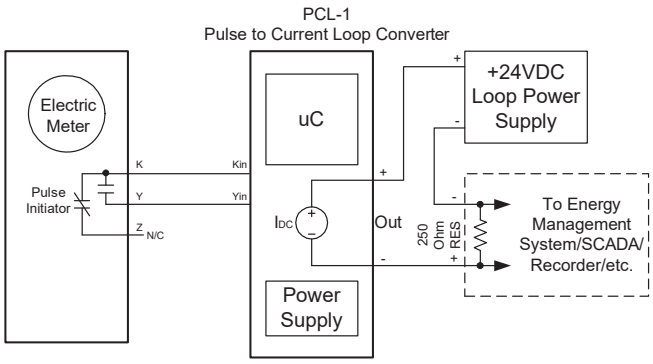
DESCRIPTION

The PCL-1 Pulse-to-Current Loop Converter is a device designed to convert a 2-Wire KY pulse to an analog 4-20mA signal, readable by another device with a 4-20mA input. The 4-20mA current output of the PCL-1 can be configured to represent the current Instantaneous or Average demand in kilowatts. The KY pulse output from a meter or isolation relay is fed directly into the PCL-1's KY input. The PCL-1's input provides a +13VDC wetting voltage for the meter's dry contacts. Upon receiving each pulse from the meter, the PCL-1's microcontroller calculates the instantaneous kW based on the pulse rate and value, and updates the output to a current level between 4mA and 20mA. For example, suppose you have the full scale output of the PCL-1 configured for 500kW. If a current demand of 250kW is calculated, the output would be adjusted to 12mA, the 50% midpoint between 4 and 20mA.

If the Average kW output mode is selected, the output for a selected demand interval --either 1, 2, 5, 10, 15, 30, or 60 minutes – is calculated continuously and the 4-20mA output represents the current interval's rolling average kW demand. A USB port is included to allow quick programming and implementation.

The PCL-1 uses an 8-bit Digital-to-Analog converter so resolution is 1/256th of full scale. A bright red LED lamp indicates the input's status at all times. An additional Yellow LED indicates when the output is written to. Additional provisions are made to easily read the output's current level with a precision digital multimeter.

Typical applications include interfaces between utility metering devices and customer-owned energy management control systems, SCADA systems, recorders or programmable logic controllers. A +24VDC loop power supply is all that is necessary to implement the 4-20mA current loop. The PCL-1 has built-in transient and reverse polarity protection on the 4-20mA current loop output that eliminates the need for external protection.



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PCL-1 PULSE-TO-CURRENT LOOP CONVERTER

PCL-1

SPECIFICATIONS

ELECTRICAL

Power Input:	120VAC; 208-277VAC. Burden: 10 MA. at 120 VAC
Input:	One KY Form A (2-wire)input with +13VDC wetting voltage compatible with dry contact or open-collector transistor output.
Output:	One 4 – 20 mA current loop output. +5VDC maximum voltage output.
Output Impedance:	600 ohms maximum, 250 ohms typical
Loop to Control Isolation Voltage:	5000Vrms
Output Update Time:	Variable based on pulse width, up to 50 milliseconds max.
Maximum Input Pulse Rate:	20 pulses per second
Pulse value:	1wh/p to 65535 wh/p, in 1wh increments.
Full scale selection:	100kW, 200kW, 500kW, 1MW, 2MW, 5MW, 10MW, 20MW
Demand Averaging interval selection:	1, 2, 5, 10, 15, 30, 60 minutes.

MECHANICAL

Mounting:	Within 30 degrees of vertical
Size:	3.50 inches wide, 7.20 inches high, 1.50 inches deep
Weight:	17 Ounces

TEMPERATURE

Temperature Range:	-38° C to +70° C, -36.4° F to +158° F
Humidity:	0 to 98% non-condensing

AVAILABLE OPTIONS

Input Voltages:	15-48VDC, 125VDC, 12 & 24VAC

DCS-1 125VDC AUXILIARY POWER SUPPLY

DCS-1

DESCRIPTION

The DCS-1 Auxiliary Power Supply makes it possible to power virtually any SSI relay directly off of 125VDC station power. The DCS-1 power uses a switching power supply technology to efficiently power most standard SSI relays eliminating the need for an inverter. Because of the small size of the DCS-1, it replaces the power transformer on the host SSI relay and does not require any additional wiring or mounting space. A +12VDC output of the DCS-1 supplies the relay's power supply requirements as well as providing a wetting voltage to the meter.

The DCS-1 must be ordered as a factory-installed option by adding an "-SP2" suffix on the end of the product's part number. LS-Series relays are not available with the DCS-1 option.

SPECIFICATIONS

ELECTRICAL

Power Input:	125VDC
Maximum Output Voltage:	12VDC
Maximum Output Current:	200mA Max

MECHANICAL

Mounting:	Any position
Size:	1.5" wide, 1.0" high, 1.1" deep
Weight:	2 ounces

TEMPERATURE

Temperature Range:	-40° C to +85° C; -40° F to +185° F
Humidity:	0 to 98% non-condensing

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DCS-2 15-48VDC AUXILIARY POWER SUPPLY

DCS-2

DESCRIPTION

The DCS-2 Auxiliary Power Supply allows any SSI relay to be powered from a low voltage DC supply ranging from 15 to 48 VDC. The DCS-2 power uses a switching power supply technology to efficiently power most standard SSI relays eliminating the need for a step-down power transformer or other applicable power supply. The DCS-2's small size allows it to replace the power transformer on the host SSI relay and does not require any additional wiring or mounting space. A +12VDC output of the DCS-2 supplies the relay's power supply requirements as well as providing a wetting voltage to the meter.

The DCS-2 must be ordered as a factory-installed option by adding an "-SP13" suffix on the end of the product's part number. LS-Series relays are not available with the DCS-2 option.

SPECIFICATIONS

ELECTRICAL

Power Input:	15 - 48VDC
Maximum Output Voltage:	12VDC
Maximum Output Current:	500mA Max

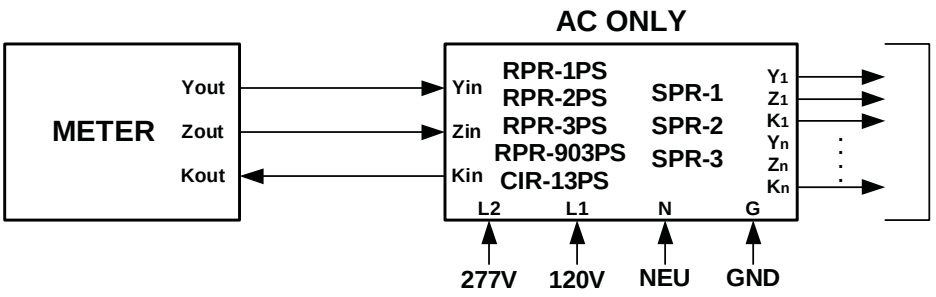
MECHANICAL

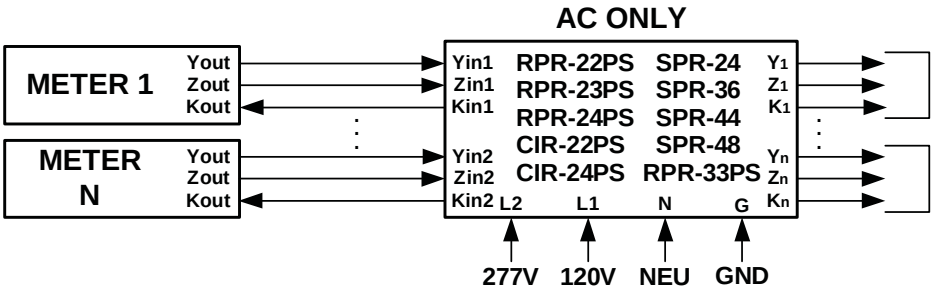
Mounting:	Any position
Size:	1.5" wide, 1.0" high, 1.1" deep
Weight:	2 ounces

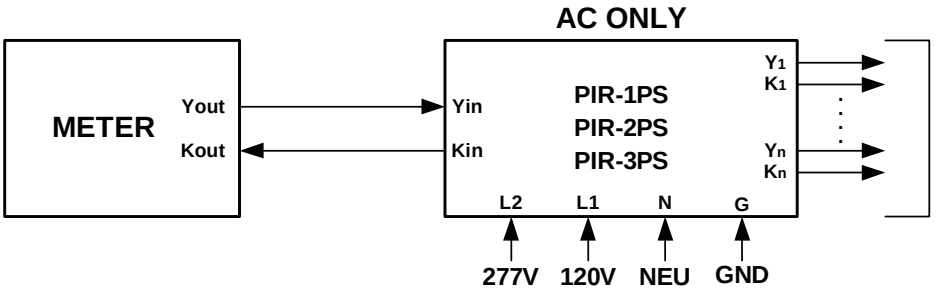
TEMPERATURE

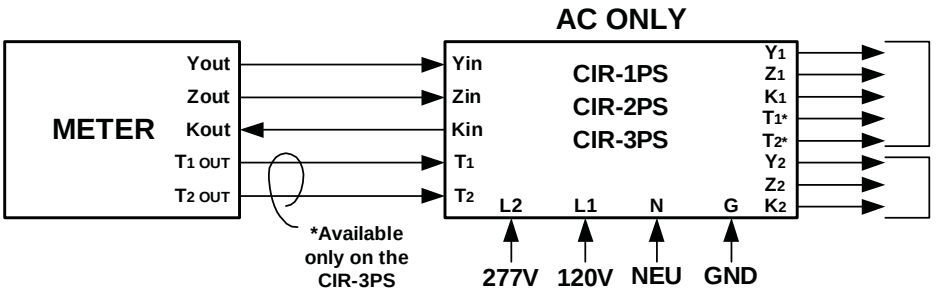
Temperature Range:	-40° C to +85° C; -40° F to +185° F
Humidity:	0 to 98% non-condensing

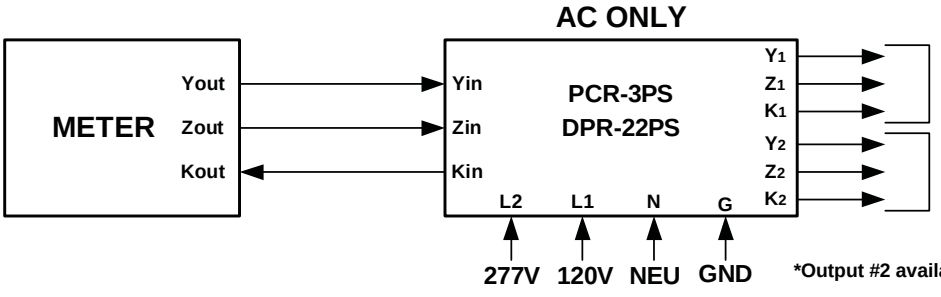
TYPICAL HOOKUPS











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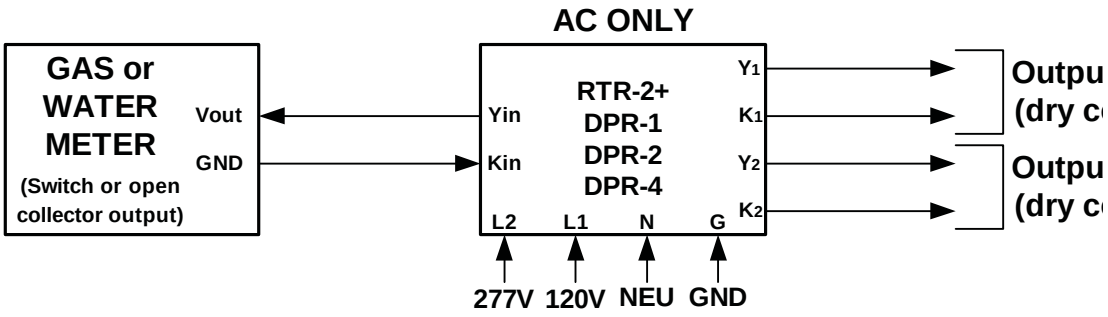
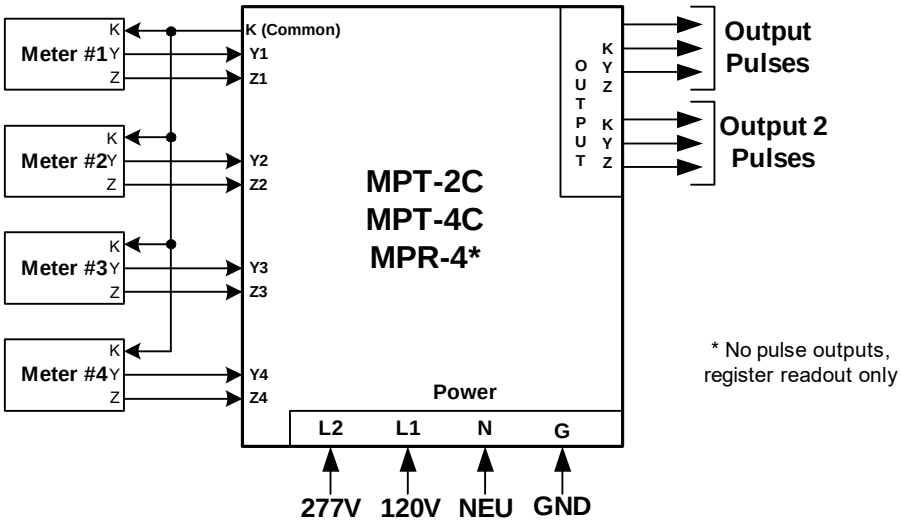
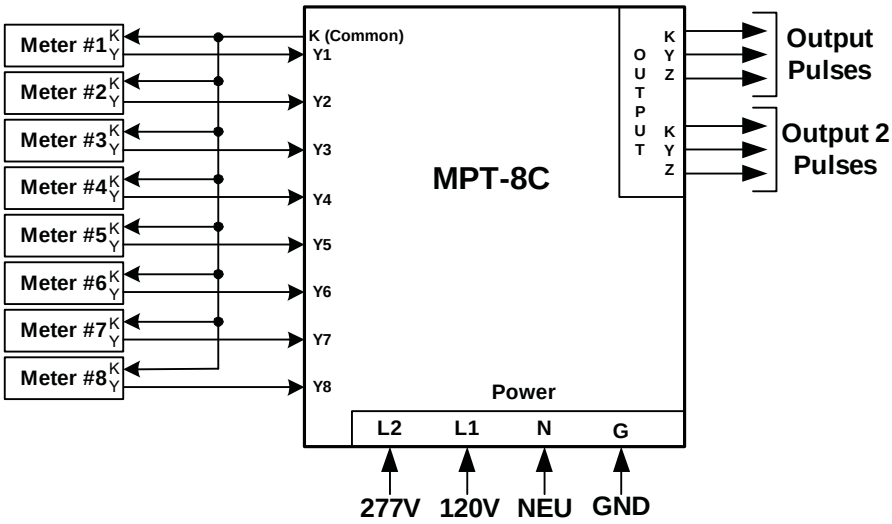
TYPICAL HOOKUPS

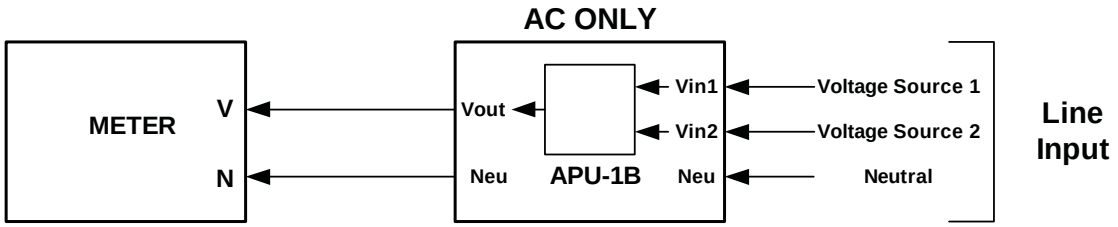


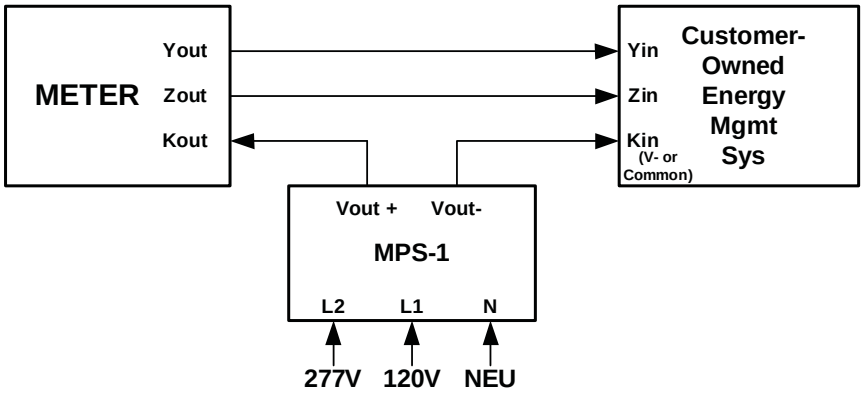


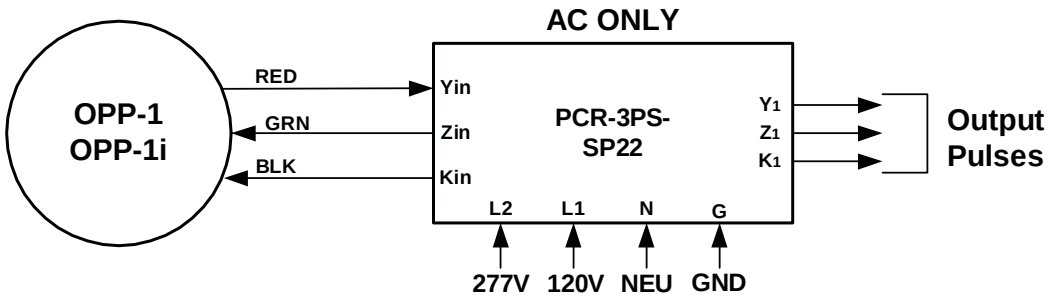
* No pulse outputs, register readout only

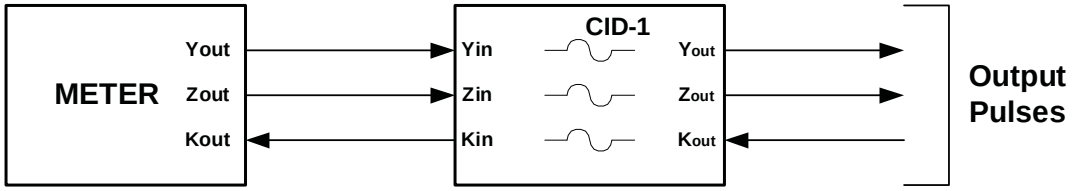


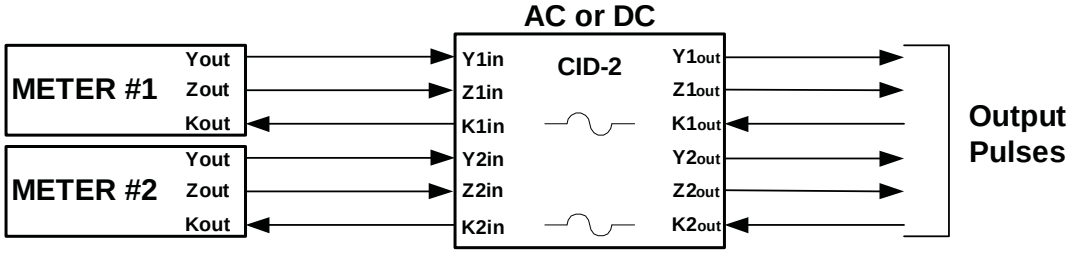
TYPICAL HOOKUPS











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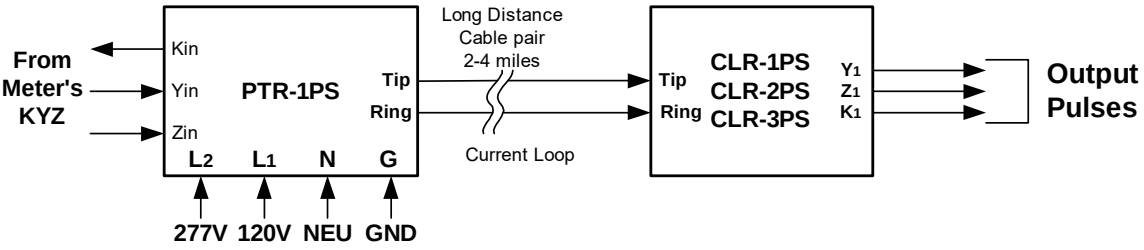
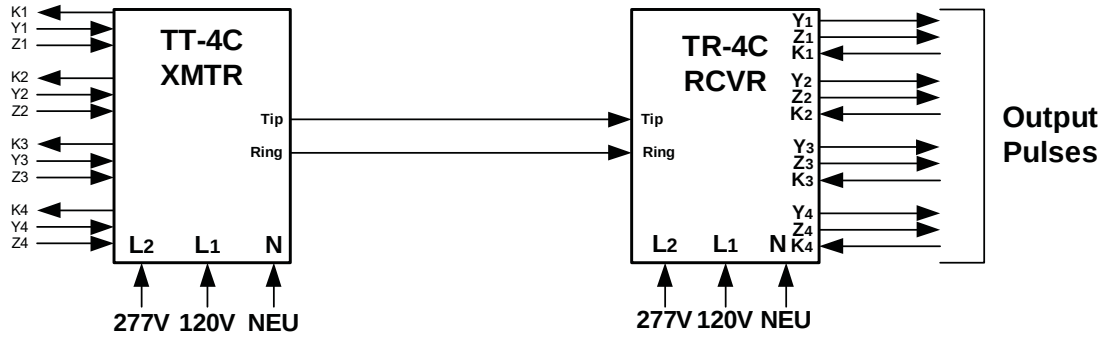
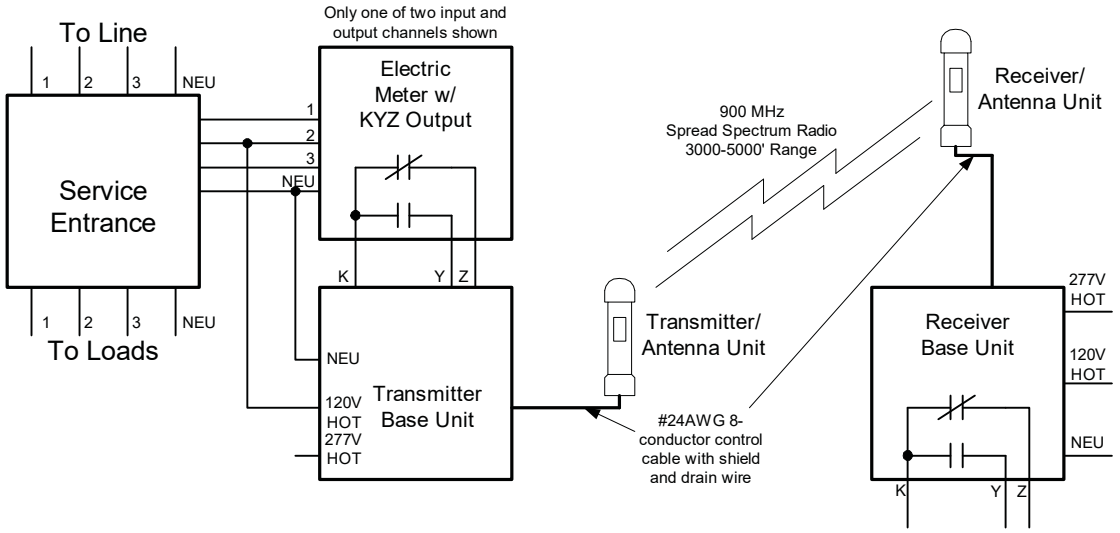
TYPICAL HOOKUPS

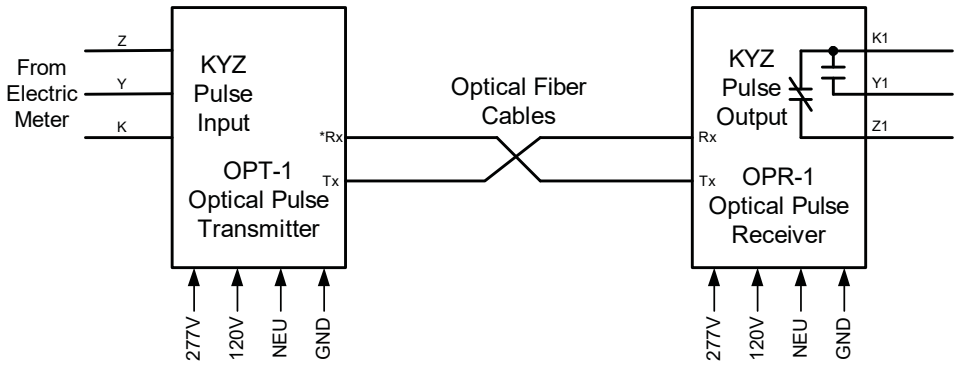




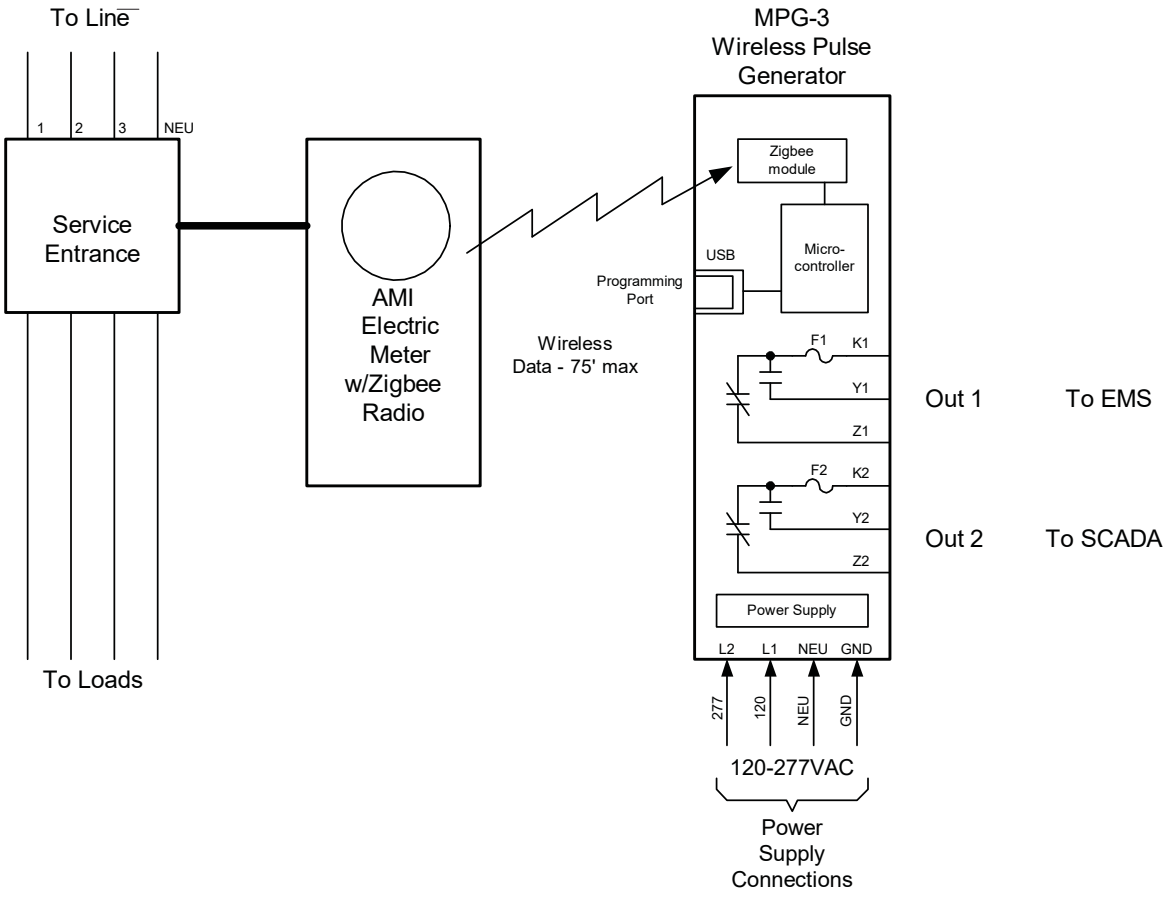


PRL-1200C Wireless Pulse Link System Diagram

TYPICAL HOOKUPS



OPL Optical Pulse Link System Diagram
OPL-1B*, OPL-1C, OPL-4B, OPL-4C, OPL-8B, OPL-8C
***Return fiber not used for the OPL-1B**



MPG-3 & MPG-3SC Zigbee Meter Pulse Generator

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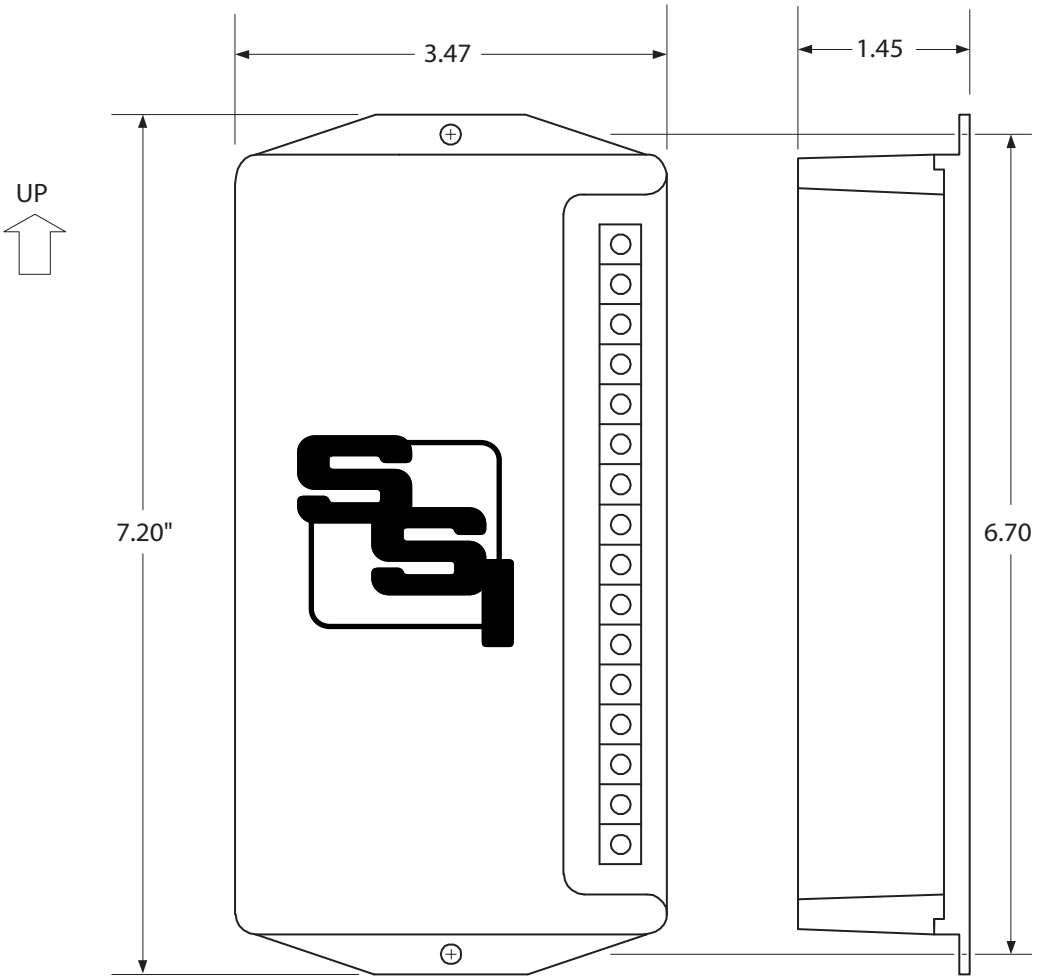
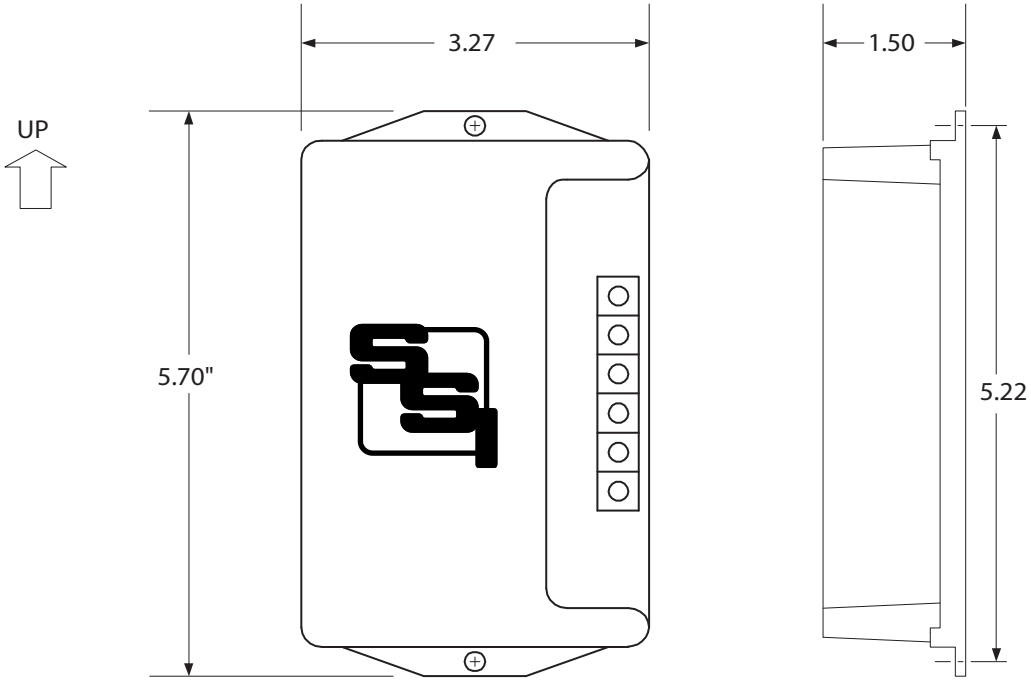
SSI Standard Large & Small Cases

SSI Standard Large Case



SSI Standard Small Case



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