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SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

Repair Policy

In the event that the Product should fail during or after the warranty period, a Return Material Authorization number (RMA) can be requested verbally or in writing from CTI main offices. Whether this equipment is in or out of warranty, a Purchase Order number provided to CTI when requesting the RMA number will aid in expediting the repair process. The RMA number that is issued and your Purchase Order number should be referenced on the returning equipment's shipping documentation. Additionally, if under warranty, proof of purchase date and serial number must accompany the returned equipment. The current repair and/or exchange rates can be obtained by contacting CTI's main office at 1-800-537-8398.

Other CTI Series 500 Modules

CTI manufactures a number of I/O modules and peripherals for the TI500 series PLCs.

TTL Output Module - The TTL-2017 is an 8 output TTL/CMOS compatible output module capable of fully driving 10 TTL or CMOS loads per output. The TTL-2017 may be used to interface to board level computers, message displays, low level indicators, and stepper motors.

2 x 4 Point Relay Contact Module - The RCM-2020 is a relay contact module with 8 outputs. The outputs are arranged in two isolated banks of 4 Form A relay contacts. Each individually fused contact has a capacity of 2 amps, sufficient to directly drive NEMA size 2 motor starters.

Analog Input Module - The Model 2050 8-channel analog input module translates analog input signals into an equivalent digital word. No external power supply or resistor required. The module accepts voltage and current inputs in bipolar or unipolar mode. Other features include fast 1 mSec update time, 1500VDC channel-to-channel isolation, and a digital filtering circuit.

Analog Output Module - The Model 2060 8-channel isolated analog output module translates a digital word from the controller into equivalent analog outputs with 12-bit resolution. Features include fast 4mSec update time, 1500VDC channel-to-channel isolation, 0 - 10VDC or 0 - 20mA outputs. Voltage and current outputs are available simultaneously.

16 - Point Discrete Input Modules - The Models 2080, 2081, and 2082 16 - point discrete input modules each accept sixteen inputs to the series 500 I/O base. The Model 2080 accepts 120VAC or 130VDC inputs. The Model 2081 accepts 24V AC or DC inputs. The Model 2082 accepts 90 to 146VDC inputs. Features include isolation in groups of 4 outputs. The Model 2082 is ideal for power utility substations.

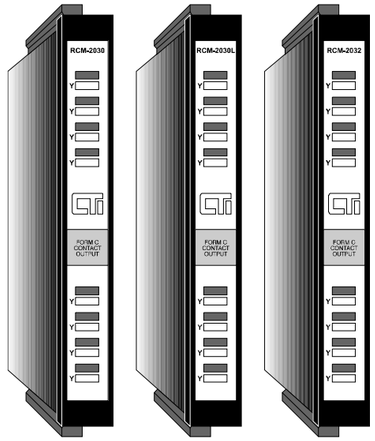
16 - Point Discrete Output Modules - The Models 2090 and 2091 16 - point discrete output modules provide sixteen AC/DC outputs from the series 500 I/O base. The Model 2090 provides 120VAC outputs and the Model 2091 provides 24VDC outputs. Features include isolation in groups of 4 outputs with individually fused outputs.

TCAM - The TCAM-5240 has been designed as a convenient panel mounted operator interface unit for use with PLC Models 520, 520C, 530, 530C, 530T, 545, 555, 560, 565, 565T. It provides the operator with the ability to monitor and adjust timers, counters, drums, and variable (V) memory values. The TCAM-5240 will also display discrete I/O states and word X/Y memory values.

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2000 Series I/O Product Bulletin

2030 / 2030-L / 2032 8-Point Relay Contact Modules



Description

The RCM-2030, 2030L, and 2032 Relay Contact Modules each provide eight isolated "Form C" relay outputs for the 500 Series I/O base. These modules plug directly into the 500 I/O base and respond to Series 500 instructions.

The Model 2030 is designed for high current applications such as switching motor starters.

The Model 2030L is designed for low current applications such as switching analog and TTL level signals.

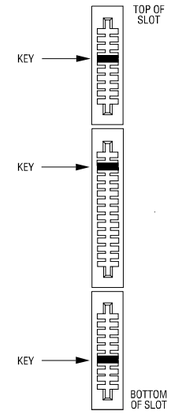
The Model 2032 is designed for 125VDC (nominal) low level current applications. The Model 2032 requires no external power supply, module power is taken directly from the I/O base backplane.

Installation

I/O Base Power Requirements
Each of the 2030 Series modules requires 2 watts (maximum) of power from the I/O base. Use this figure to verify that the base power supply capacity is not exceeded.

Keying the I/O Base Slot

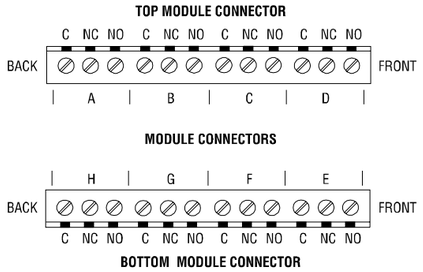
Any 2030 Series module may be inserted into any available slot in the I/O base. To prevent insertion of other types of modules, the slot selected must be keyed as shown in the diagram below. Use long nose pliers to insert keys in the I/O base slot.



WARNING:
Modules manufactured before 1-14-87 use a different keying configuration. If you replace an older Model 2030/2030L with a new module, make sure that the slot is properly keyed to prevent damage to the I/O base.

Wiring and Connecting the Output Connectors

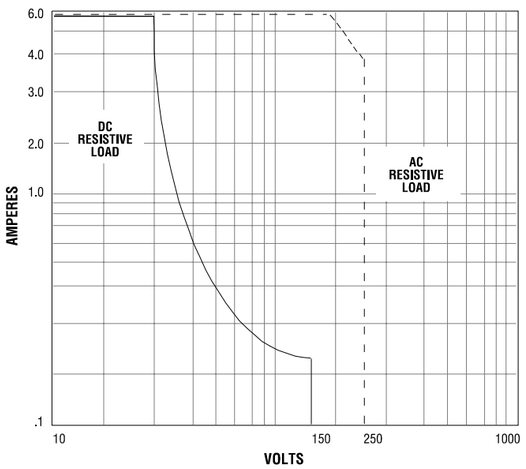
Outputs are available at the terminals of the detachable connectors on the top and bottom of each module. The diagram below illustrates the arrangement of connections for each output point.



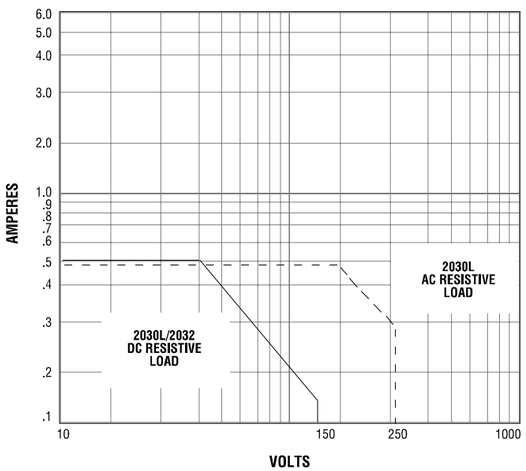
Control Technology Inc.
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Output Current Capacity

The output resistive load capacity of the relay contacts used in the 2030 Series modules varies with the voltage. Use the graphs on this page to determine the maximum resistive load per point for any given voltage. Exceeding the given load will shorten the specified contact life or damage the contacts.



Model 2030 Switching Capacity



Model 2030L and 2032 Switching Capacity

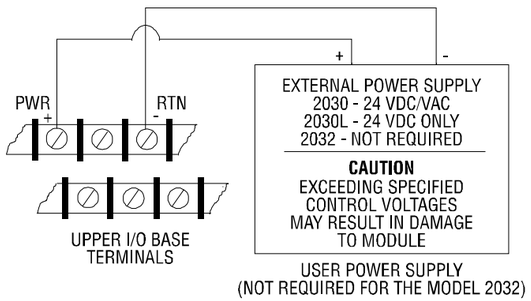
Inrush Current Capacity

The type of load combined with its inrush current characteristics, together with switching frequency can cause contact welding. For loads with inrush current, measure the steady state current and inrush current to determine the proper application. Examples of typical loads, and the inrush current they create are shown in the chart below:

Type of Load	Inrush Current
Resistive load	Steady state current
Solenoid load	10 to 20 times steady state current
Motor load	5 to 10 times steady state current
Incandescent lamp load	10 to 15 times steady state current
Mercury lamp load	Approx. 3 times steady state current
Sodium vapor lamp load	1 to 3 times steady state current
Capacitive load	20 to 40 times steady state current
Transformer load	5 to 10 times steady state current

Relay Control Coil External Power Supply

The Models 2030 and 2030L require a separate external relay control coil power supply. These external power supply connections are shown in the diagram below. The Model 2032 does not require an external relay coil control power supply.



Power Supply Connections

Specifications

Common to the 3 Modules

Number of Output Points: 8
Type of Contacts: Form C
Backplane Loading: 1 Watt (typical), 2 Watts (max.)
Operating Temperature: 0° to 60°C (32° to 140°F)
Storage Temperature: -40° to 85°C (-40° to 185°F)
Relative Humidity: 5% to 95% (non-condensing)

Model 2030 Specifications

Isolation: 1500 Vrms channel-to-channel,
1500 Vrms channel-to-backplane
Relay Coil Control Voltage (externally supplied):
24VAC/VDC ±10%
Nominal Supply Current: 160mA
Switching Rate: 25/second at 100mA
Maximum Contact Life: 2 x 10^5 @ 6 amp
Load Voltage:
Minimum: 15VAC/15VDC
Maximum: 240VAC/150VDC*
Current (Resistive) Per Output Point: 500mA - 6A
In-rush Current: 64A for 2mS (see chart on page 2)
Fuses: Eight 8 Amp 8AGC fuses
*See graph on page 2 for information on switching voltages greater than 30VDC

Model 2030-L Specifications

Isolation: 1500 Vrms channel-to-channel,
1500 Vrms channel-to-backplane
Relay Coil Control Voltage (externally supplied):
24VDC ±10%
Nominal Supply Current: 70mA
Switching Rate: 1/second at 100mA
Maximum Contact Life: 5 x 10^5 @ 0.5 amp
Load Voltage:
Minimum: 0.5VDC/15VAC
Maximum: 230VAC/150VDC*
Current (Resistive) Per Output Point: 1 to 500mA
In-rush Current: 4A for 2mS (see chart on page 2)
*See graph on page 2 for information on switching voltages greater than 30VDC

Model 2032 Specifications

Isolation: 1500 Vrms channel-to-channel,
1500 Vrms channel-to-backplane
Switching Rate: 1/second at 100mA
Maximum Contact Life: 5 x 10^5 @ 15 mA
Load Voltage:
Minimum: 0.5VDC/15VAC
Maximum: 230VAC/150VDC
Current Per Output Point*:
Resistive: 1mA - 250 mA @ 125VDC
Inductive: 1 mA - 125 mA @ 125 VDC
In-rush Current: 4A for 2mS (see chart on page 2)
Backplane Loading: 1 Watt (typical), 2 Watts (Max.)
*See graph on page 2 for general de-rating curves

Limited Product Warranty

CTI warrants that this CTI Industrial Product shall be free from defects in material and workmanship for a period of one (1) year after purchase from CTI or from an authorized CTI Industrial Distributor. This CTI Industrial Product will be newly manufactured from new and/or serviceable used parts which are equal to new in the Product.

Should this CTI Industrial Product fail to be free from defects in material and workmanship at any time during this one (1) year warranty period, CTI will repair or replace (at its option) parts or Products found to be defective and shipped prepaid by the customer to a designated CTI service location along with proof of purchase date and associated serial number. Repair parts and replacement Product furnished under this warranty will be on an exchange basis and will be either reconditioned or new. All exchanged parts or Products will become the property of CTI. Should any Product or part returned to CTI hereunder be found by CTI to be without defect, CTI will return such Product or part to the customer.

This warranty does not include repair of damage to a part or the Product resulting from: failure to provide a suitable environment as specified in applicable Product specifications, or damage caused by an accident, disaster, acts of God, neglect, abuse, misuse, transporation, alterations, attachments, accessories, supplies, non-CTI parts, non-CTI repairs or activities, or to any damage whose proximate cause was utilities or utility like services, or faulty installation or maintenance done by someone other than CTI.

Control Technology Inc. reserves the right to make hanges to the Product in order to improve reliability, function, or design in the pursuit of providing the best possible Product. CTI assumes no responsibility for indirect or consequential damages resulting from the use or application of this equipment.

Warranty continued on page 4.

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