

COMMUNICATION MODULES

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RS485MS-2W

Communication Module

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R5485MS-2W (6

Wiring Diagram

TYPICAL RS485 NETWORK



Refer to the manual for basic and extended network diagrams.

For dimensional drawing see: Appendix, page 507, Figure 2.

Specifications

Functional Specifications Remote Reset (for optional use with 777 Series)

General Characteristics

Ambient Operating Temperature **Terminal (depluggable** terminal block) Torque Wire AWG **Class of Protection Relative Humidity Standards Passed**

Radio Frequency

Immunity, Radiated Fast Transient Burst **Hi-Potential Test**

Normally open pushbutton rated 24VDC, 10mA (min.)

-20° to 50°C (-4° to 122°F)

3 in.-lbs. (max.) 12-20 AWG IP20 10-95%, non-condensing per IEC 68-2-3

Electrostatic Discharge (ESD) IEC 61000-4-2, Level 3, 6kV contact, 8kV air 150 MHz, 10V/m IEC 61000-4-4, Level 3, 4kV input power

Meets UL508 (2 x rated V + 1000V for 1 min)

Description

The RS485MS-2W is required to enable the Modbus communications function on Model 77x-type products. This module is required when the RM1000, RM2000 or other Modbus capable device is used with 77x-type products.

Features

- Optical isolation from line potentials
- Powered by the 77x product
- RS-485 compliant bus drive capability
- Remote reset input connection
- Power connection for the Model RM1000

RS485-USB

Accessories



RS485-RS232 Converter with cable & plug

Allows RS485 devices to be connected to a PC via the RS232 (serial) port. Provides convenient terminal blocks for making signal and DC power supply connections. Pre-wired.



Converter with cable & plug/RS232:USB

Allows RS485 devices to be connected to a PC via the USB port. Provides convenient terminal blocks for making signal and DC power supply connections. Pre-wired.

Surge

Input Power Inputs/Data Lines Safety Marks UL CE Enclosure Dimensions

Weight **Mounting Method** IEC 61000-4-5, Level 1 IEC 61000-4-5, Level 2

UL508 (File #E68520) IEC 60947 Polycarbonate H 52.83 mm (2.08"); W 73.66 mm (2.9"); **D** 19.56 mm (.77") 0.26 lb. (4.16oz., 117.93 g) 9-pin D-Sub connector on the side of a 777-Series

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CIO-MB / CIO-120-MB

Communication Link to PLC/SCADA/ Monitoring Systems





Wiring Diagram

TYPICAL WIRING FOR CIO-MB





For dimensional drawing see: Appendix, page 507, Figure 3.

Ordering Information

MODEL	LINE VOTAGE
CIO-MB	12 to 24VDC
CIO-120-MB	90 to 130VAC

Description

The CIO-MB/CIO-120-MB Modules are convenient and cost-effective Modbus-RTU interfaces capable of providing discrete control and monitoring of an overload relay over a Modbus network.

Features & Benefits

FEATURES	BENEFITS
Compact size 3.46" H x 1.0" W x 5.0" D	Easily adapts to existing as well as new applications
Flexible addressing standard allows function as stand-alone interface or in conjunction with 777 series overload relay	Provides flexibility for control and monitoring
Remote reset option	Additional remote reset input allows user to reset 777 series relays without opening the panel
DIN rail or surface mountable	Allows installation flexibility
Unpluggable terminal block connections	Allows user to wire terminal blocks before installing the module and reduces field wiring

Specifications

Functional Specifications Remote Reset (for use with

optional 777 Series)

Power Requirements: Voltage Current Power **Ethernet Controller** Capability **Input Characteristics General Purpose (4) Voltage Range:** CIO-MB CIO-120-MB Current **Output Characteristics SPDT (1), SPST (1) Pilot Duty General Purpose**

General Characteristics

Ambient Operating Temperature Terminal (depluggable terminal block) Torque Wire AWG Class of Protection Relative Humidity Normally open pushbutton rated 24VDC, 10mA (min.)

24VDC +10% 95mA (max.) 70mA (typical) 2.28 W (max.) 1.7 W (typical) IEEE 802.3 10Base-T

12-24VDC 90-130VAC 2mA (typical)

480VA & 240VAC, B300 5A @ 240VAC

-20° to 70°C (-4° to 158°F)

3 in.-lbs. (max.) 12-20 AWG IP20, NEMA 1 (finger safe) 10-95%, non-condensing per IEC 68-2-3 11

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CIO-MB / CIO-120-MB

Standards Passed

Electrostatic Discharge (ESD) IEC 61000-4-2, Level 3, 6kV contact, 8kV air **Radio Frequency Immunity,** Radiated Fast Transient Burst **Hi-Potential Test** Surge Input Power Inputs/Data Lines **Safety Marks** UL CSA CE Enclosure Dimensions

Weight

Mounting Methods

150 MHz, 10V/m

IEC 61000-4-4, Level 3, 4kV input power Meets UL508 (2 x rated V + 1000V for 1 min)

IEC 61000-4-5, Level 1 IEC 61000-4-5, Level 2

UL508 (File #E68520) C22.2 (File #46510) IEC 60947-6-2 Polycarbonate **H** 86.36 mm (3.40"); **W** 25.40 mm (1.00"); **D** 138.68 mm (5.46") (w/depluggable connectors) 0.25 lb. (4 oz., 113.4 g) DIN Rail or surface mount (w/two #8 screws)

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CIO-DN-P / CIO-120-DN-P

Communication Link to PLC/SCADA/ Monitoring Systems





Wiring Diagram

TYPICAL WIRING FOR CIO-DN-P



Description

The CIO-DN-P/CIO-120-DN-P are convenient and cost-effective Devicenet[™] interfaces capable of providing discrete control and monitoring of motor starters, drives and other devices over a Devicenet[™] network.

Features & Benefits

FEATURES	BENEFITS
Compact size 3.4" H x 1.0" W x 5.46" D	Easily adapts to existing as well as new applications
Flexible addressing standard allows function as stand-alone interface or in conjunction with 777 series overload relay	Provides flexibility for control and monitoring
Remote reset option	Additional remote reset input allows user to reset 777 series relays without opening the panel
DIN rail or surface mountable	Allows installation flexibility
Unpluggable terminal block connections	Allows user to wire terminal blocks before installing the module and reduces field wiring

TYPICAL WIRING FOR CIO-120-DN-P



For dimensional drawing see: Appendix, page 507, Figure 3.

Ordering Information

MODEL	LINE VOTAGE
CIO-DN-P	12 to 24VAC
CIO-120-DN-P	90 to 130VAC



CIO-DN-P / CIO-120-DN-P

Specifications

Input Characteristics Power Requirements Voltage (nominal) Current Power Digital Inputs Voltage Range CIO-DN-P CIO-120-DN-P Frequency Maximum Current Remote Reset Output Characteristics

Form A & Form C Contactors Pilot Duty General Purpose

General Characteristics Temperature Range Relative Humidity Wire Gauge Terminal Torque Hi-Potential Test (relays to other circuits) 24VDC 137mA (max.) 3.28 W (max.)

12-24 VAC 90-130VAC 50/60Hz 2mA (typical) 24VDC, 10mA (min.), NO pushbutton

480VA @ 240VAC, B300 5A @ 240VAC

-20° to 70°C (-4° to 158°F) 10-95%, non-condensing Solid or stranded, 12-20 AWG 3 in.-lbs.

(2 x rated V + 1000V for 1 minute)

EMC Standards

Electrostatic Discharge (ES Radio Frequency Immunity, Radiated Fast Transient Burst Safety Marks UL, ULC Listed, CSA Enclosure Dimensions

Weight Mounting Methods

Electrostatic Discharge (ESD) IEC 61000-4-2, Level 3, 6kV contact, 8kV air **Radio Frequency Immunity**,

150 MHz, 10V/m IEC 61000-4-4, Level 3, 4kV input power

UL508 (File #E68520), C22.2 (File #46510) Polycarbonate H 86.36 mm (3.4"); W 25.4 mm (1.0"); D 138.68 mm (5.46") (w/depluggable connectors) 0.25 lb. (4 oz., 113.4 g) (w/depluggable connectors) DIN Rail or surface mount (w/two #8 screws)



CIO-777-PR

Communication Link to PLC/SCADA/ **Monitoring Systems**





Wiring Diagram



For dimensional drawing see: Appendix, page 507, Figure 3.

Specifications

Input Characteristics

Power Requirements Voltage (nominal) Current Power **Digital Inputs Voltage Range Maximum Current Remote Reset Output Characteristics** Form A & Form C Contactors **Pilot Duty General Purpose General Characteristics Ambient Temperature Range** Operating Storage **Relative Humidity** Wire Gauge **Terminal Torque Hi-Potential Test** (relays to other circuits)

12-24VDC 150mA (max.) 3.6 W (max.)

12-24VAC 2mA (typical) 24VDC, 10mA, (min.), NO pushbutton

480VA @ 240VAC, B300 5A @ 240VAC

-20° to 70°C (-4° to 158°F) -40° to 80°C (-40° to 176°F) 10-95%, non-condensing per IEC 68-2-3 Solid or stranded, 12-20 AWG 3 in.-lbs.

Meets UL508 (2 x rated V + 1000V for 1 min.)

Description

The CIO-777-PR Module is a convenient and cost-effective Profibus interface capable of providing discrete control and monitoring of motor starters, drives and other devices over a Profibus network.

Features & Benefits

FEATURES	BENEFITS
Compact size 3.4" H x 1.0" W x 5.46" D	Easily adapts to existing as well as new applications
Flexible addressing standard allows function as stand-alone interface or in conjunction with 777 series overload relay	Provides flexibility for control and monitoring
Remote reset option	Additional remote reset input allows user to reset 777 series relays without opening the panel
DIN rail or surface mountable	Allows installation flexibility
Built in sub-D connector	Provides a quick and easy connection to a network and reduces field wiring

EMC Standards Electr

Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 3, 6kV contact, 8kV air
Radio Frequency	
Immunity, Radiated	150 MHz, 10V/m
Fast Transient Burst	IEC 61000-4-4, Level 3, 4kV input power
Safety Marks	
UL, ULC Listed	UL508 (File #E68520)
CSA	C22.2 (File #46510)
Enclosure	Polycarbonate
Dimensions	H 86.36 mm (3.4"); W 25.4 mm (1.0");
	D 138.68 mm (5.46")
	(w/depluggable connectors)
Weight	0.25 lb. (4 oz., 113.4 g)
	(w/depluggable connectors)
Mounting Methods	DIN Bail or surface mount (w/ two #8 screws)

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CIO-EN

Communication Link to PLC/SCADA/ Monitoring Systems

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Wiring Diagram



For dimensional drawing see: Appendix, page 507, Figure 3.

Specifications

Input Characteristics Power Requirements:

Power Digital Inputs General Purpose (4) Voltage Range Current Functional Specifications Remote Reset (for use with optional 777 Series) Ethernet Controller Capability

Voltage

Current

Output Characteristics SPDT (1), SPST (1) Pilot Duty General Purpose General Characteristics Ambient Operating Temperature 24VDC +10% 95mA (max.) 70mA (typical) 2.28 W (max.) 1.7 W (typical)

> 12-24VDC 2mA (typical)

Normally open pushbutton rated 24VDC, 10mA (min.) IEEE 802.3 10Base-T

480VA & 240VAC, B300 5A @ 240VAC

-20° to 70°C (-4° to 158°F)

Description

The CIO-EN Module (non-POE) is a convenient and costeffective Modbus-TCP and Modbus-RTU interface capable of providing discrete control and monitoring of an overload relay over a Modbus network.

Features & Benefits

FEATURES	BENEFITS
Compact size 3.4" H x 1.0" W x 5.46" D	Easily adapts to existing as well as new applications
Flexible addressing standard allows function as stand-alone interface or in conjunction with 777 series overload relay	Provides flexibility for control and monitoring
Remote reset option	Additional remote reset input allows user to reset 777 series relays without opening the panel
DIN rail or surface mountable	Allows installation flexibility
Built in Ethernet jack	Reduces field wiring

Terminal (depluggable terminal block)

Torque Wire AWG **Class of Protection Relative Humidity Standards Passed Radio Frequency** Immunity, Radiated **Fast Transient Burst Hi-Potential Test** Surge Input Power Inputs/Data Lines Safety Marks UL CSA CE Enclosure Dimensions Weight

Mounting Methods

3 in.-lbs. (max.) 12-20 AWG IP20, NEMA 1 (finger safe) 10-95%, non-condensing per IEC 68-2-3

Electrostatic Discharge (ESD) IEC 61000-4-2, Level 3, 6kV contact, 8kV air

150 MHz, 10V/m IEC 61000-4-4, Level 3, 4kV input power Meets UL508 (2 x rated V + 1000V for 1 min)

IEC 61000-4-5, Level 1 IEC 61000-4-5, Level 2

UL508 (File #E68520) C22.2 (File #46510) IEC 60947-6-2 Polycarbonate H 86.36 mm (3.4"); W 25.4 mm (1.0"); D 138.68 mm (5.46") 0.25 lb. (4 oz., 113.4 g) DIN Rail or surface mount (w/two #8 screws)

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COM 4-20

Communication Link to PLC/SCADA/ Monitoring Systems





Description

The COM 4-20 Output Module is intended for use with ONLY the Model 777-AccuPower output power monitor. The module will send a 4-20mA signal proportional to the output power. It can also be used to send the input power by setting the efficiency setting on the 777-AccuPower monitor to one. This module allows communication to a PLC with an analog input and no Modbus input.

Features

- Powered by the 777-AccuPower
- Scalable 4-20mA output proportional to Hp or kW
- Signal can be used for displays, controllers, or PLCs

Wiring Diagram

4-20mA OUTPUT MODULE



For dimensional drawing see: Appendix, page 507, Figure 2.

Specifications

Output Characteristics Current General Characteristics Temperature Range Terminal (depluggable terminal block) Torque Wire AWG Class of Protection Relative Humidity Standards Passed Electrostatic Discharge Radio Frequency Immunity, Radiated Fast Transient Burst

Hi-Potential Test

4-20mA

-20° to 50°C (-4° to 122°F)

3 in.-lbs. (max.) 12-20 AWG IP20 10-95%, non-condensing per IEC 68-2-3

IEC 61000-4-2, Level 3, 6kV contact, 8kV air

150 MHz, 10V/m IEC 61000-4-4, Level 3, 4kV input power Meets UL508 (2 x rated V + 1000V for 1 min) Surge Input Power Inputs/Data Lines Safety Marks UL CE Enclosure Dimensions

Weight Mounting Method IEC 61000-4-5, Level 1 IEC 61000-4-5, Level 2

UL508 (File #E68520) IEC 60947 Polycarbonate **H** 52.83 mm (2.08"); **W** 73.66 mm (2.9"); **D** 19.56 mm (0.77") 0.25 lb. (4 oz., 113.4 g) #8 screws; mount to side of 777-AccuPower unit