3505 HUTCHINSON ROAD
CUMMING, GA 30040-5860, USA

STRIDE® FIELD I/O MODULES

DISCRETE COMBO MODULE: 8-POINT IN, 4-POINT OUT (PN# SIO-MB12CDR)

FEATURES

- **Interface Ethernet 10/100 Base-T, Modbus TCP Server**
- **8 digital inputs**
- **4 relay outputs (SPDT Form C)**
- **Integrated web server to acquire the status of the digital inputs and drive the digital outputs via browser**
- **Remotely configurable**
- **Connection by removable screw terminals**
- **LED signaling for Link/Act Ethernet, power supply**
- **LED signaling for digital input and output states**
- **Galvanic isolation**
- **UL listed / CE mark**
- **In compliance with EN-50022 DIN rail mounting**

GENERAL DESCRIPTION

The SIO-MB12CDR device is a Modbus TCP server with 8 digital input channels and 4 SPDT relay outputs.
For the digital inputs, up to four 32-bit counters are available with measurement frequency of up to 300Hz.
The Ethernet interface allows reading and writing the values of the internal registers of the device in real time.
The built-in Web Server allows remote visualization, acquisition of the digital input states, driving of the relay outputs and access to the configuration parameters.
Signal LEDs for Ethernet activity, input state, output state and power supply allow direct monitoring of the system.
Connections are made by removable screw terminals (inputs, outputs and power supply) and RJ45 plug (Ethernet).
The SIO-MB12CDR is in compliance with Directive UL 61010-1 for the US market and with Directive CSA C22.2 No 61010-1 for the Canadian market.
The device has full electrical isolation between the lines, providing protection against the effects of ground loops existing in industrial applications.
It is housed in a tough self-extinguishing plastic enclosure which, thanks to its thin 22.5 mm profile, allows high-density mounting on EN-50022 standard DIN rail.

USER INSTRUCTIONS

Before installing the device, please read the “Installation Instructions” section.
To configure the device in INIT mode, refer to the User Guide. Connect the INIT terminal to the V- terminal (refer to the User Guide). Connect power supply, Ethernet, digital inputs and relay outputs as shown in the “Wiring” section. The LED states indicate the working condition of the device; see the “Front Panel LEDs” table to verify the device working state.
Instructions for configuration and calibration operations are contained in the User Guide.
To simplify handling or replacing of the device, it is possible to remove the wired terminals even with the device powered.

TECHNICAL SPECIFICATIONS (typical @ 25°C, nominal conditions)

NETWORK CONNECTIVITY	
Standard	In compliance with IEEE 802.3
Network Interface	Ethernet 10/100Base-T
Protocol	Modbus TCP
Protocol: Embedded Web Server	HTTP (Unsecure)
Max. Cable Length	100m [328ft]
Number of Sockets	16 simultaneous Modbus TCP connections

DIGITAL INPUTS	
Channels	8
Input Voltage (Bipolar) *OFF State* *ON State*	 0–3V 10–30V
Impedance	4.7 kΩ
Sample Time	5ms
Number of Counters	4
Counters Register Bit Length	32 bit
Counters Frequency	Up to 300Hz
Minimum Pulse Width	1ms

DIGITAL OUTPUTS	
Channels	4
Type	SPDT relay
Max. Switching Power with Resistive Load, per Contact	2A @ 250VAC 2A @ 30VDC
Max. Voltage	250VAC (50/60Hz) 30VDC
Dielectric Strength Between Contacts	1000VAC, 50Hz, 1 min.
Dielectric Strength Between Coil and Contacts	4000VAC, 50Hz, 1 min.

POWER SUPPLY	
Power Supply Voltage	10–30VDC To maintain a UL 508 panel listing use a Class 2 power supply.
Reverse Polarity Protection	60VDC max
Current Consumption	290mA max (2)

ISOLATION	
Power Supply / Ethernet	1500VAC, 50Hz, 1 min
Inputs / Power Supply	1500VAC, 50Hz, 1 min
Inputs / Ethernet	1500VAC, 50Hz, 1 min
Input / Output	1500VAC, 50Hz, 1 min

ENVIRONMENTAL CONDITIONS	
Operating Temperature	-10°C to +60°C [+14°F to +140°F]
UL Operating Temperature	-10°C to +40°C [+14°F to +104°F]
Storage Temperature	-40°C to +85°C [-40°F to +185°F]
Humidity (non-condensing)	0 to 90%
Maximum Altitude	2000m [6500ft]
Installation	Indoor
Pollution Degree	2

CONNECTIONS	
Ethernet	RJ-45
Inputs/Outputs/Power Supply	Removable screw terminals

MECHANICAL SPECIFICATIONS	
Material	Self-extinguishing plastic
IP Code	IP20
Wire diameter	0.8 to 2.1 mm² / AWG 14–18
Tightening Torque	0.5 N·m [4.4 in·lb]
Mounting	In compliance with DIN rail standard EN-50022
Weight	About 190g [6.7 oz]

EMC (for industrial environments)	
Immunity	EN 61000-6-2
Emission	EN 61000-6-4

UL	
US Standard	UL 61010-1
Canadian Standard	CSA C22.2 No 61010-1
CCN	NRAQ/NRAQ7
UL Type Designation	Open Type device
Classification	Industrial Control Equipment
File Number	E157382

Please refer to the User Guide for more information, including the compete Modbus address list. Access the user guide by visiting https://www.automationdirect.com/pn/doc/manual/SIO-MB12CDR or scan the QR code below.

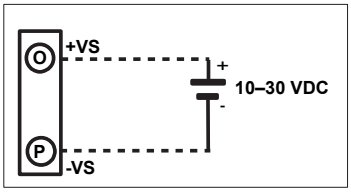
INSTALLATION INSTRUCTIONS

The device shall be mounted on DIN rail in a vertical and upright orientation.
For optimum operation and long life follow these instructions:
When the devices are installed side by side it is necessary to separate them by the following minimum distances:

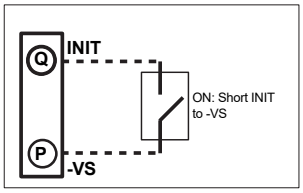
- **10 mm if UL certification is required.**
- **5 mm if UL certification is not required.**

Make sure that sufficient air flow is provided for the device. Avoid placing raceways or other objects where they could obstruct the ventilation slits.
Avoid mounting the devices above appliances generating heat; ideally locate them in the lower part of the panel.
Install the device in a place without vibrations.
Avoid routing conductors near power signal cables (motors, induction ovens, inverters, etc.). Use shielded cable for connecting signals; ground shield at one end only.

POWER SUPPLY (1)



INIT FUNCTION (2)



NOTE: (1) To maintain the UL listing use a Class 2 or SELV and limited energy power supply.
(2) See User Guide for instructions on using the INIT feature.

DEFAULT CONFIGURATION

- IP Address: 192.168.1.100
- Modbus Address: 1
- Default user name: admin
- Default password: password

MODBUS REGISTERS

Register	Description	Access
40002	Firmware [0]	RO
40003	Firmware [1]	RO
40004	-Reserved-	RO
40005	-Reserved-	RO
40007	Node ID	R/W
40011	System Flags	R/W
40012	Power Up / Safe	R/W
40013	Watchdog timer	R/W
40031	Digital Outputs	R/W
40032	Digital Inputs	RO
40033	Digital Inputs Rise Latch	R/W
40034	Digital Inputs Fall Latch	R/W
40035	Frequency, Digital Input 0	RO
40036	Frequency, Digital Input 1	RO
40037	Frequency, Digital Input 2	RO
40038	Frequency, Digital Input 3	RO
40039	32-bit Counter, Digital Input 0	R/W
40041	32-bit Counter, Digital Input 1	R/W
40043	32-bit Counter, Digital Input 2	R/W
40045	32-bit Counter, Digital Input 3	R/W

OUTPUTS PINOUT

Pin	Description	Channel
1	N.C.	OUT 0
2	COM0	
3	N.O.	
4	N.C.	OUT 1
5	COM1	
6	N.O.	
7	N.C.	OUT 2
8	COM2	
9	N.O.	
10	N.C.	OUT 3
11	COM3	
12	N.O.	

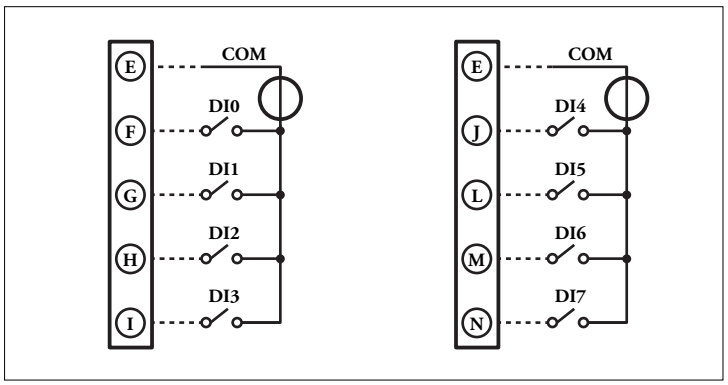
INPUTS PINOUT

Pin	Description
E	COM
F	IN0
G	IN1
H	IN2
I	IN3
J	IN4
L	IN5
M	IN6
N	IN7

FRONT PANEL LEDS

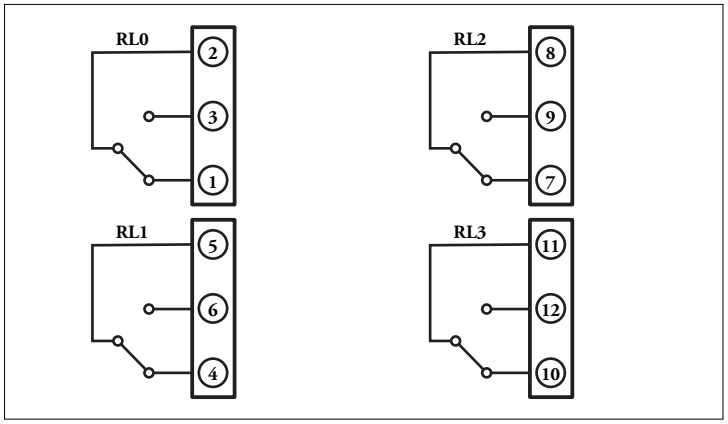
LED	COLOR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	Watchdog alarm
STS	YELLOW	OFF	Device in RUN mode
		BLINK	Device in INIT mode
In	RED	ON	Digital Input High Level (1)
		OFF	Digital Input Low Level (0)
On	RED	ON	Digital Output High Level (1)
		OFF	Digital Output Low Level (0)

DIGITAL INPUTS



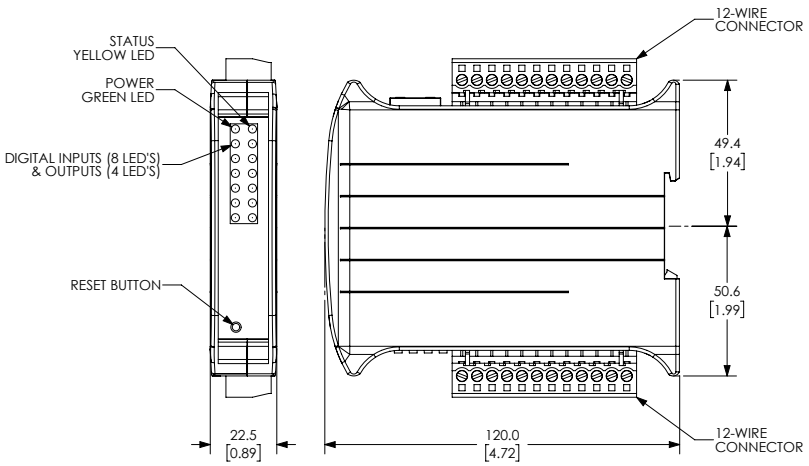
NOTE: The input channels are not isolated from one another.

RELAY OUTPUTS



MECHANICAL DIMENSIONS

MM [IN]



WEEE compliance -
These devices comply with the WEEE directive.
Dispose of properly.