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STRIDE® FIELD I/O MODULES

ANALOG OUTPUT MODULE: 4-CHANNEL, CURRENT/VOLTAGE (PN# SIO-MB04DAS)

FEATURES

- **Interface Ethernet 10/100 Base-T, Modbus TCP Server**
- **4 isolated output channels**
- **Configurable analog outputs for mA and Volts**
- **Isolated power source for each channel to power passive loads**
- **Integrated web server to acquire the status of the analog outputs via browser**
- **Remotely configurable**
- **Connection by removable screw terminals**
- **LED signaling for Link/Act Ethernet, power supply**
- **Galvanic isolation**
- **UL listed / CE mark**
- **In compliance with EN-50022 DIN rail mounting**

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GENERAL DESCRIPTION

The SIO-MB04DAS device is a Modbus TCP server that can drive up to 4 analog output signals via digital commands.
It is possible to connect either active or passive current loops up to 20mA or voltage signals up to 10V.
The output channels are electrically isolated from each other.
Each channel is provided with an isolated power source to power passive current loops.
The device guarantees high accuracy and a stable measurement versus time and temperature. The device is equipped with a selectable Watchdog Timer system. The Ethernet interface allows reading and writing the values of the internal registers of the device in real time.
Signal LEDs for Ethernet activity and power supply allow direct monitoring of the system.
The built-in Web Server allows remote visualization, setting of the analog outputs and access to the configuration parameters.
Connections are made by removable screw terminals (outputs and power supply) and RJ45 plug (Ethernet).
The SIO-MB04DAS 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 power supply, Ethernet and analog 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
Max. Cable Length	100m [328ft]
Number of Sockets	16 simultaneous Modbus TCP connections

ANALOG OUTPUTS		
Output Type	*Min*	*Max*
Current (mA)	0mA	+20mA
Voltage (Volt)	0 V	+10V

I/O SPECIFICATIONS		
Output Accuracy (1)	*mA*	±10µA
	Volt	±5mV
Load Resistance	*mA*	≤ 500Ω
	Volt	≥ 5 kΩ
Thermal Drift (1) Full Scale		±0.01%/°C
Auxiliary Supply		≥ 12VDC min @ 20mA (for each channel)
Rise Time (10% to 90%)		15ms
Sampling Time		50ms

(1) Referred to input Span (difference between maximum and minimum values).

POWER SUPPLY	
Power Supply Voltage	18–30VDC To maintain a UL 508 panel listing use a Class 2 power supply.
Reverse Polarity Protection	60VDC max
Current Consumption	200mA max (4 Operative Auxiliary Supply @ 20mA)

ISOLATION	
Power Supply / Ethernet	1500VAC, 50Hz, 1 min
Outputs / Power Supply	1500VAC, 50Hz, 1 min
Outputs / Ethernet	1500VAC, 50Hz, 1 min
Output / 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
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 160g [5.6 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-MB04DAS or scan the QR code below.

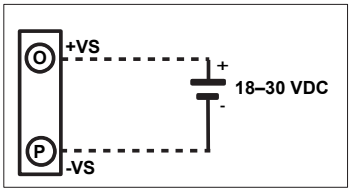
INSTALLATION INSTRUCTIONS

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:

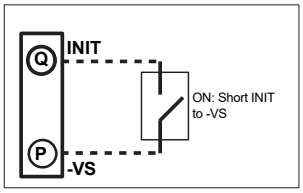
- **10 mm if UL certification is required.**
- **5 mm if UL certification is not required.**

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
40013	Watchdog timer	R/W
40031	Output Type, Channel 0 (Outputs 1-0)	R/W
40032	Output Type, Channel 1 (Outputs 3-2)	R/W
40041	Analog Output (0)	R/W
40042	Analog Output (1)	R/W
40043	Analog Output (2)	R/W
40044	Analog Output (3)	R/W
40049	Power Up (0)	R/W
40050	Power Up (1)	R/W
40051	Power Up (2)	R/W
40052	Power Up (3)	R/W
40057	Safe (0)	R/W
40058	Safe (1)	R/W
40059	Safe (2)	R/W
40060	Safe (3)	R/W

PINOUT

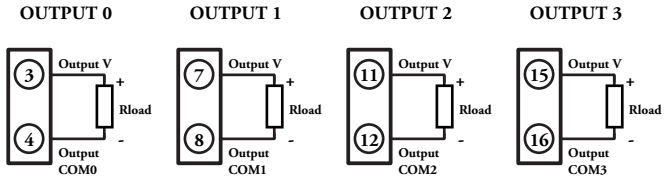
Pin	Description	Channel
1	I0	OUT 0
2	AUX0	
3	V0	
4	COM0	
5	I1	OUT 1
6	AUX1	
7	V1	
8	COM1	
9	I2	OUT 2
10	AUX2	
11	V2	
12	COM2	
13	I3	OUT 3
14	AUX3	
15	V3	
16	COM3	

FRONT PANEL LEDS

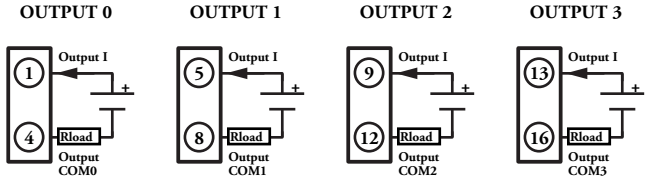
LED	COLOR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	Watchdog alarm
STS	YELLOW	OFF	Device in RUN mode
		BLINK	Device in INIT mode

ANALOG OUTPUTS

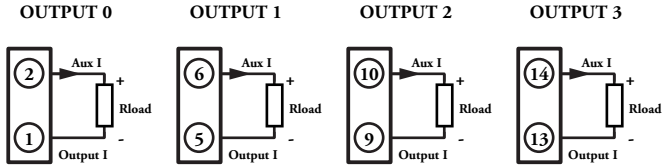
VOLTAGE



PASSIVE mA OUTPUT



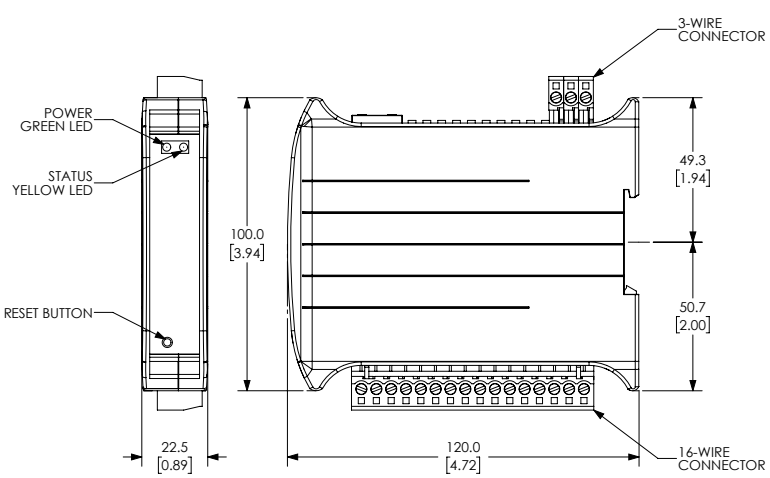
ACTIVE mA OUTPUT



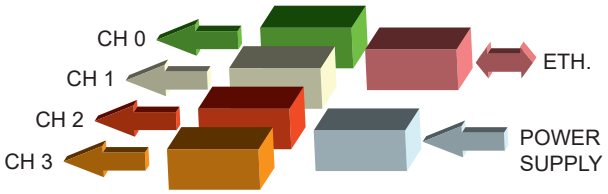
NOTES:
"COM0", "COM1", "COM2" and "COM3" are each isolated commons.

MECHANICAL DIMENSIONS

MM [IN]



ISOLATED ELECTRICAL SUBSYSTEMS



Each block represents a subsystem which is isolated from each other subsystem.

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