

Modbus 4 Channel 2AI/2AO Module DMB 96400



Read these instructions before using the product and retain for future information.

DMB 96400

► Before Startup



When operating the module, certain parts can carry dangerous voltage! Ignoring the warnings can lead to serious injury and/or cause damage!

The module should only be installed and put into operation by qualified staff. The staff must have studied the warnings in these operating instructions thoroughly.

The module may not be put into operation if the housing is open.

In applications with high operating voltages sufficient distance and isolation as well as shock protection must be ensured.

Safe and trouble-free operation of this device can only be guaranteed if transport, storage and installation are carried out correctly and operation and maintenance are carried out with care.



Appropriate safety measures against electrostatic discharge (ESD) should be taken during range selection and assembly on the transmitter.

► Short description

The Modbus 4 channel 2AI/2AO Module provides four fully isolated, independently configurable signal ports.

- Two inputs can be configured as current or voltage inputs. In addition, these can be configured as digital inputs or digital outputs (Open Collector).
- Two outputs can be configured as current or voltage outputs.

The 5 port isolation ensures reliable decoupling of the I/Os from each other and from the processing circuit and the power supply.

Power supply and Modbus RTU are connected via the rear In-Rail-Bus with a connection module (see accessories).

► Configuration and startup

Configuration via Modbus RTU and programming interface

All parameters can be set via the Modbus RTU interface and via the DRAGO programming interface DZU1201 (see accessories) on programming socket behind the front cover. All DIP switches must be switched off (PC mode). The free DRAGO PC configuration software offers extended setting options and extensive diagnostic functions during operation. Changes to the configuration can also be made during operation.

A manual with the register assignment is available in the download area of the product information page: <http://4ez.de/603>

Configure with DIP switch

A subset of the device parameters can be set via DIP switches according to the following table.

► DIP Switch Settings

DIP switch					• = ON				
1	2	3	4	5	Baudrate				
		•			9600				
					19200				
			•		38400				
		•	•		115200				
					Parity Even, 1 Stop Bit				
					• Parity None, 2 Stop Bits				
				6	7	8	9	10	Address
								•	1
									2
								•	3
									4
					•	•	•	•	... 31
					Inputs 0 ... 10 V				
		•			Inputs 0 ... 20 mA				
					Outputs 0 ... 10 V				
		•			Outputs 0 ... 20 mA				
					PC Mode				

Factory setting: all switches in OFF position (PC Mode), the default configuration in PC-Mode: Address 1, 19200 Baud, Parity Even.

► LED indication

LED		Announcement
Green	continuous	Power LED
Green	flashing (1.5 Hz)	Input outside the measuring range
Green	flashing (5 Hz)	"Here I am"-mode active
Yellow	flashing	Modbus communication
Red	continuous	Device error
Red	flashing	Configuration error

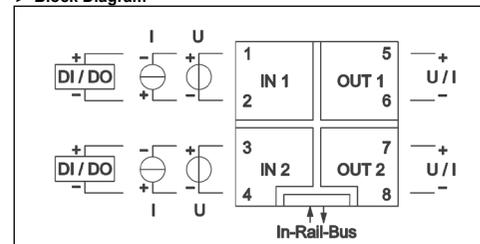
Note: The red LED lights shortly at startup. This is not an error.

► Technical Data

Bus Interface		
Protocol	Modbus RTU (RS485)	
Module addressing	1 ... 247	
Response delay	1 ... 1000 ms	
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	
Configuration	Parity: Even, Odd, None with 2 stop bits, None with 1 stop bit	
Connectivity	Up to 247 DRAGO Modbus Devices without additional repeater (1/8 Load)	
Inputs		
Voltage	Current	
Input signal	0 to 10 V	0 to 20 mA
Input resistance	≥ 100 kΩ	≤ 25 Ω
Overload	≤ 30 V	≤ 100 mA
Additional function (see manual)	DI: 12/24 V (L < 2.0 V H > 8.4 V)	DO: Open collector switching output ≤ 30 V / ≤ 100 mA (drop voltage < 2V)
Outputs		
Voltage	Current	
Output signal	0 to 10 V	0 to 20 mA
Load	≤ 5 mA (2 kΩ at 10 V)	≤ 12 V (600 Ω at 20 mA)
Residual ripple	< 10 mV _{rms}	
General data		
Measuring error	< 0.1 % full scale	
Temperature coefficient ¹⁾	< 100 ppm/K	
Resolution	14 bit	
Update rate	50 /s	
Test voltage	3 kV, 50 Hz, 1 min.	
Protection against dangerous body currents ¹⁾		
Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2		
Ambient temperature	Operation	-25 °C to +70 °C (-13 to +158 °F)
	Transport	-40 °C to +85 °C (-40 to +185 °F) and storage
Power supply	24 V DC	16.8 V ... 31.2 V, approx. 0.5 W
EMC ²⁾	EN 61326-1	
Construction	6.2 mm (0.244") housing, protection type: IP 20 mounting on 35 mm DIN rail acc. to EN 60715	
Connection terminals (see order information)	- Screw terminals (plus-minus clamp screws) - Cage clamp terminals (Push-In)	
Weight	Approx. 70 g	

- 1) As far as relevant the standards and rules mentioned above are considered by development and production of our devices. In addition relevant assembly rules are to be considered by installation of our devices in other equipment. For applications with high working voltages, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent situated devices.
- 2) Minor deviations possible during interference

► Block Diagram



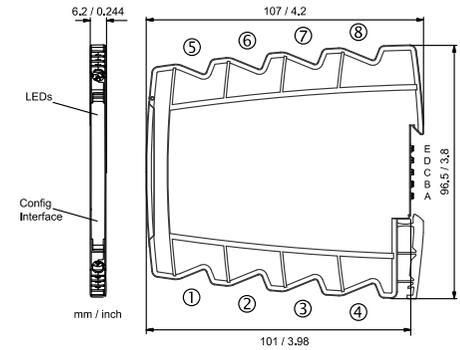
► Mounting, Electrical Connection

The Modbus Module is mounted on standard 35 mm DIN rail with In-Rail-Bus. Power supply and Modbus RTU are connected via the power terminal DZU1401 (see accessories).

Terminal / In-Rail-Bus assignments

1 + U - I	Input 1	5 + U/I	Output 1
2 - U + I		6 - U/I	
3 + U - I	Input 2	7 + U/I	Output 2
4 - U + I		8 - U/I	
A Modbus A		C Power supply -	
B Modbus B		D Power supply +	
		E Group message	

► Dimensions



► Connection data

Connection	Screw terminals	Push-In terminals
Wire cross-section stranded ferruled	0.5 mm ² - 2.5 mm ² AWG 20 - 14	0.5 mm ² - 1.5 mm ² AWG 20 - 16
Wire cross-section solid wire	0.5 mm ² - 2.5 mm ² AWG 20 - 14	0.5 mm ² - 2.5 mm ² AWG 20 - 14
Stripped length	8 mm / 0.3 in	8 mm / 0.3 in
Screw terminal torque	0.6 Nm / 5 lbf in	-

► Order Information

Modbus 4 Channel 2AI/2AO Module	Order No.
Screw terminals	DMB 96400 B
Push-In terminals	DMB 96404 B

LIMITED WARRANTY

DRAGO Automation GmbH hereby warrants that the Product will be free from defects in materials or workmanship for a period of **five (5) years** from the date of delivery ("Limited Warranty"). This Limited Warranty is limited to repair or replacement at DRAGO's option and is effective only for the first end-user of the Product. This Limited Warranty applies only if the Product:

1. is installed according to the instructions furnished by DRAGO;
2. is connected to a proper power supply;
3. is not misused or abused; and
4. there is no evidence of tampering, mishandling, neglect, accidental damage, modification or repair without the approval of DRAGO or damage done to the Product by anyone other than DRAGO.

Delivery conditions are based upon the „GENERAL CONDITIONS FOR THE SUPPLY OF PRODUCTS AND SERVICES OF THE ELECTRICAL AND ELECTRONICS INDUSTRY“, recommended by the Zentralverband Elektrotechnik- und Elektronikindustrie (ZVEI) e.V. .

Subject to change!

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