USER INSTRUCTIONS English

Modbus
4 Channel DI/DO Module
DMB 96700

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

DMB 96700

► 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 DI / DO module has four independently configurable inputs / outputs. The inputs can be used either as a binary, frequency or counter input with three selectable input levels. The open collector outputs are usable as binary, frequency, pulse or PWM outputs. Various time functions can be used to influence the switching behaviour. All parameters can be set via the Modbus RTU interface. A subset of the settings is available via DIP switches.

The 5-way isolation ensures reliable decoupling of the inputs / outputs from the processing circuit and the power supply. Power supply and Modbus RTU must be connected via the In-Rail-Bus connection (see accessories).

► Configuration and startup

Configuration via Modbus RTU
All settings can be made via the Modbus RTU interface. All DIP switches must be set OFF (the so called PC mode). Configuration changes can be made during operation.

A manual with the complete register assignment is available in the download area of the product information page:
http://4ez.de/604

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							
	●			9600 Baud						
				19200 Baud						
		●		38400 Baud						
	●	●		115200 Baud						
				Parity Even, 1 Stop Bit						
			●	Parity None, 2 Stop Bits						
				5	6	7	8	9	10	Address
									●	1
								●		2
								●	●	3
							●			4
							●		●	5
				●	●	●	●	●	●	… 63
	All Channels Digital Input, 24 V									
●	All Channels Digital Output, Open Collector									
										PC Mode

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

► Mounting, Electrical Connection

The Modbus Module is mounted on standard 35 mm DIN rail with In-Rail-Bus (see accessories).

Terminal / In-Rail-Bus assignments

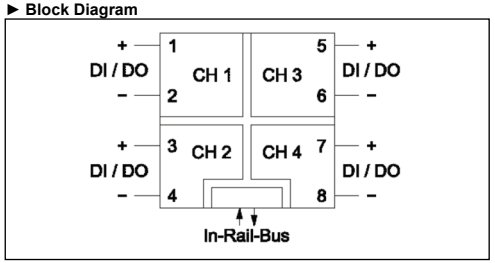
1	Channel 1 +	5	Channel 3 +
2	Channel 1 –	6	Channel 3 –
3	Channel 2 +	7	Channel 4 +
4	Channel 2 –	8	Channel 4 –
A	Modbus A	C	Power supply –
B	Modbus B	D	Power supply +

► Technical Data

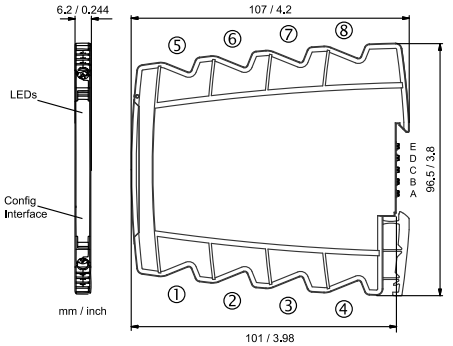
Bus-Interface				
Protocol	Modbus RTU (RS485)			
Module addressing	1 … 247			
Response delay	1 … 1000 ms			
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200			
Configuration	Parity: Even, Odd, None with 2 stop bits, None with 1 stop bit			
Connectivity	Up to 247 DRAGO Modbus Devices without additional repeater (1/8 Load)			
Indication	Yellow LED on front panel			
Input				
Input level	5 V	12 V	24 V	
Input resistance	4 kΩ			
Input voltage	< 32 V DC			
Min. pulse width	0.5 ms			
Functions	Binary	Frequency 0.1 Hz to 1 kHz	Counter 16 / 32 Bit	
Output				
Output type	Open collector			
Max. voltage / current	32 V DC	100 mA		
Residual voltage	< 1.5 V DC			
Min. pulse width	0.3 ms			
Functions	Binary	Frequency 0.1 Hz to 1 kHz	Pulse 1 to 60000 x 1 / min	PWM 500 Hz 10 to 90 %
General data				
Indication	Yellow LED for each channel on front panel			
Test voltage	3 kV, 50 Hz, 1 min. All channels against each other and against Bus-Interface/Power supply			
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 and storage -40 °C to +85 °C (-40 to +185 °F)			
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



► Dimensions



► Connection data

Connection	Screw terminals	Push-In terminals
Wire cross-section stranded ferruled	0.5 mm² - 2.5 mm² AWG 20 - 14	0.5 mm² - 1.5 mm² AWG 20 - 16
Wire cross-section solid wire	0.5 mm² - 2.5 mm² AWG 20 - 14	0.5 mm² - 2.5 mm² 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 DI/DO Module	Order No.
Screw terminals	DMB 96700 B
Push-In terminals	DMB 96704 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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