

MOD-DIO4 Modbus Digital Input / Output Module, Wall Mounted

MOD-DIO4 has been designed to be a compact wall mounted Modbus RTU input and output module.

The module has 2 volt-free digital inputs for measurements e.g. for windows, occupancy sensors, door contacts etc.

The module has also 2 digital outputs, 24Vac triacs switching the plant items on/off.

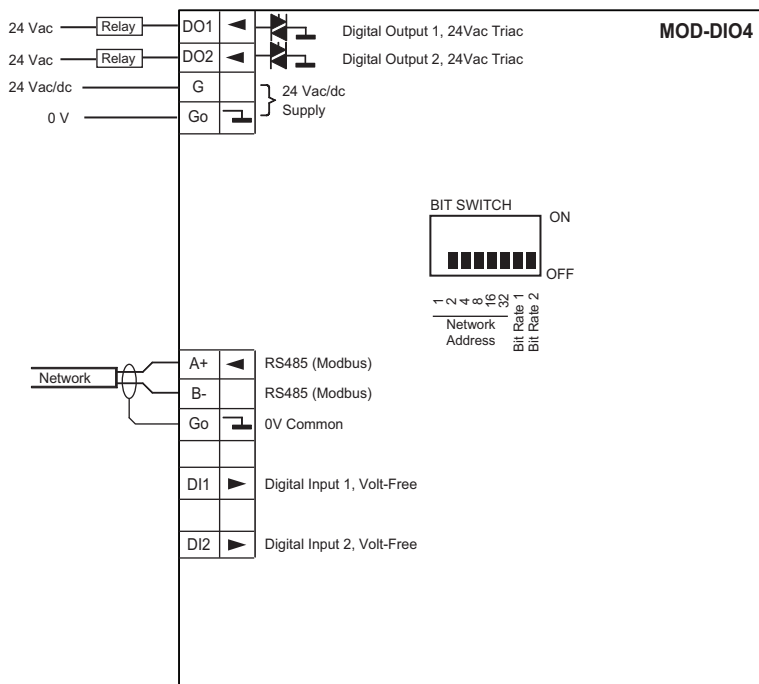
The module supports Modbus RTU communications with most commonly used baud rates and parity settings.



Model Type	Model	Description
	MOD-DIO4	Modbus RTU Digital Input / Output Module, 2DI, 2DO
Technical Data		
Power Supply	Power supply	24Vac/dc -10%/+15%
Signal Outputs	Digital Outputs	2 x 24Vac Triacs; 2A maximum; requires 24Vac Power Supply
Signal Inputs	Digital Inputs	2 x Volt-Free Contact, Impedance <1KOhm Pulse Counting: Max 25Hz, Min Pulse Length 20mA (Volatile)
Communication	Modbus Communications	
	Protocol	Modbus RTU
	Interface	RS485; maximum 63 devices
	Addressing	1..63 via a bit switch; 1..247 via tool / network
	Communication	9k6/19k2/38k4/57k6 Baud; Parity None/Even/Odd, 1 or 2 Stop Bits (baud rate adjustable through bit switch or network)
Connections	Terminal Connections	Solid and Stranded Cable; 55° Angle for Wiring Maximum Size: 0.05 to 1.5mm ² (EN ISO) / 14 to 30 AWG (UL) Rising Clamp: Size 2.5 x 1.9mm
Environmental Conditions	Operating	
	Temperature	0°C...+50°C (32..122°F)
	Humidity	0...95%rh (non-cond.)
	Storage	
	Temperature	-30°C...+70°C (-22..158°F)
	Humidity	0...95%rh (non-cond.)
Standards	CE Conformity	CE Directive 2004/108/EY EN61000-6-3: 2001 (Generic Emission) EN61000-6-1: 2001 (Generic Immunity).
	Degree of Protection	IP20
Housing	Housing Material	ABS Plastics, Self Extinguishing

Mounting	Wall or Junction Box Mounting, RAL9010 Pure White
Dimensions	W86 x H120 x D29mm
Weight	180g

Wiring Terminals



DO1	Digital Output; 24Vac Triac Switching to 0V; max. 2A
DO2	Digital Output; 24Vac Triac Switching to 0V; max. 2A
G	24Vac/dc Power Supply
Go	0V Common
A+	RS485 A+ Connection (Modbus)
B-	RS485 B- Connection (Modbus)
Go	0V Common
DI1	Digital Input; Volt-Free, Max 25Hz, Min Pulse Length 20mS
DI2	Digital Input; Volt-Free, Max 25Hz, Min Pulse Length 20mS

Digital Input Pulse Counting

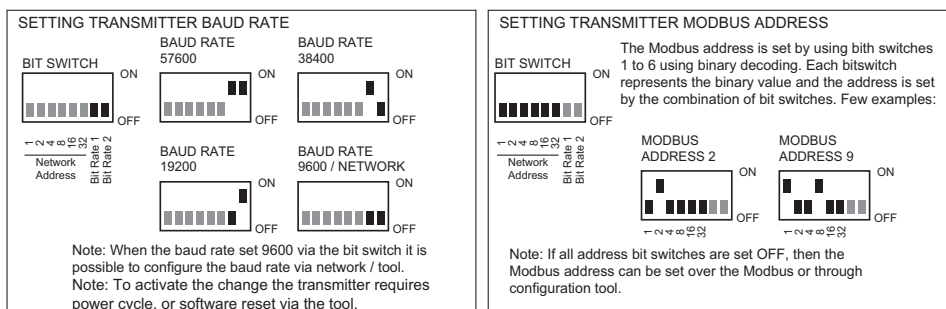
Digital Inputs can be used for pulse counting up to 25Hz, minimum pulse length 20mS. The pulse count is stored in a dedicated register and can be read over the network. It is possible to write to this register to reset the value.

NOTE: The pulse count value is not battery backed, and therefore the network master is required to manage the data synchronisation in case of power failure.

Setting Up Modbus Address and Baud Rate

The Modbus address and the baud rate is normally set through the bit switch. It is also possible to set the address and baud rate over the Modbus communication network.

NOTE: The new settings are activated automatically after approx 5 seconds if the bit switch positions have not been moved. In this case the controller reset is applied to activate the new settings.



Modbus Registers

The IO-module supports the following Modbus registers and function codes. The default communication speed is 9600 bps, 8 data bits, Parity None and 1 Stop Bit. The default Modbus Slave address is 0. The device Parity can be changed between Odd, None and Even. The baud rate is selectable between 9600, 19200, 38400 and 57600 bps. The baud rate speeds can be selected using the built-in bit switch, or over the network if BR1 and BR2 are set to OFF. The sensor addresses 1 to 63 can be set using the local bit switch, and over the Modbus the adjustable address range is 1 to 247.

Please note that Modbus register space is specified from the Modbus master perspective as in the Modbus Application Protocol specification. The Modbus registers for Function Codes 02, 03, 06 and 16 have presentation for both Modbus "address blocks" and for actual Modbus register offsets. For example, the Temperature is read from Modbus register 1 using Function Code 04. Some Modbus masters will require Function Code 04, register 1 to be entered, whereas the others will require register 30001 and Function Code 04. The Modbus addressing starts from the zero Base address. (Some Modbus masters start addressing from 1, in this case add one to the listed register values).

Register	Parameter Description	Data Type	Raw Data	Range
FUNCTION CODE 01 - READ COILS FUNCTION CODE 05 - WRITE SINGLE COIL FUNCTION CODE 15 - WRITE MULTIPLE COILS				
0	Digital Output 1 Override (Network Write)		0..1	Off - On
1	Digital Output 2 Override (Network Write)		0..1	Off - On
FUNCTION CODE 02 - READ DISCRETE INPUTS				
10000	Digital Input 1 Status		0..1	Off - On
10001	Digital Input 2 Status		0..1	Off - On
10002	Digital Output 1 Status		0..1	Off - On
10003	Digital Output 2 Status		0..1	Off - On
FUNCTION CODE 04 - READ INPUT REGISTERS				
30100	Firmware Version	Unsigned 16	n/a	n/a
FUNCTION CODE 03 - READ HOLDING REGISTERS FUNCTION CODE 06 - WRITE SINGLE HOLDING REGISTER FUNCTION CODE 16 - WRITE MULTIPLE HOLDING REGISTERS				
40050	Modbus Address	Unsigned 16	0..247 See Note 1	0..247 (Default 1)
40051	Modbus Baud Rate	Unsigned 16	0..3 See Note 2	0 = 9600 (Default) 1 = 19200 2 = 38400 3 = 57600
40052	Modbus Parity	Unsigned 16	0..2	0 = None (Default) 1 = Odd 2 = Even
40053	Stop Bits	Unsigned 16	0..1	0 = 1 Stop Bit (Default) 1 = 2 Stop Bits
40067	Hold On Delay Setting for Digital Input 1	Unsigned 16	1..7200	1..7200 Seconds (Default 10s)
40068	Hold On Delay Setting for Digital Input 2	Unsigned 16	1..7200	1..7200 Seconds (Default 10s)
40072	DI1 Pulse Count Most Significant 16 Bits	Unsigned 16	0..65280	0..65280

Register	Parameter Description	Data Type	Raw Data	Range
40073	DI1 Pulse Count Least Significant 16 Bits	Unsigned 16	0..65535	0..655350
40074	DI2 Pulse Count Most Significant 16 Bits	Unsigned 16	0..65280	0..65280
40075	DI2 Pulse Count Least Significant 16 Bits	Unsigned 16	0..65535	0..655350
40100	Force Reset	Unsigned 16	0..1	0 = Normal 1 = Force Reset
40101	Non Volatile Memory Update	Unsigned 16	0..1 Note 3	0 = Normal 1 = Update
40103	Force Factory Defaults	Unsigned 16	0..1	0 = Normal 1 = Force Defaults
40104	Force 0..10V Output Calibration Routine	Unsigned 16	0..1	0 = Normal 1 = Force Calibration

Note 1. Modbus address can be configured via network only if the bit switches 1-6 are switched off. Please note if changed over the Modbus, the Non Volatile Memory Updated parameter MUST BE exercised before power cycle or reset.

Note 2. Modbus Baud Rate can be configured over the Modbus if bit switches 7 & 8 are in off state (9600). Please note if changed over the Modbus, the Non Volatile Memory Updated parameter MUST BE exercised before power cycle or reset.

Note 3. When the settings are changed over the communication bus, the changes for the configuration parameters are not stored in the non-volatile memory automatically. In order to store the changes "Non Volatile Memory Update" is required to be set true.

Dimensions

