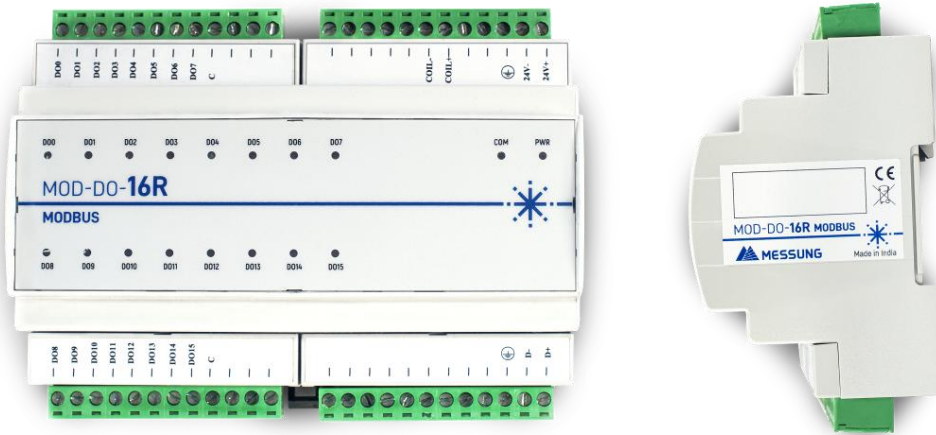


16 CH Digital Output Relay Module-Modbus RTU Technical Documentation

MOD-DO-16R



Features:

- 16 Channel Relay Output(250VAC-2A/30VDC-2A)
- Two isolated groups of 8 output channels each
- LED indication for each output status, communication and power
- DIN rail mount assembly
- DIP switch for Modbus RTU slave configuration
- No configuration software needed
- CE Mark

General Product Specifications		
Device Type	Electric Operation Control Device	
Main Supply	Voltage (typical)	24VDC
	Voltage Range	18-30 VDC
	Connection Type	Pluggable Terminal Connector
Connection Type	Terminal Connector	
Communication Interface & Protocol	RS485 & MODBUS RTU	
Output Type	Relay output NO type	
No. of Output	16	
Control for Each Channel	ON/OFF	
Output Rating	250VAC/2A , 30VDC/2A	
Relay Operate Time	10ms	
Relay Release Time	5ms	
Module Protection	Power supply polarity inversion protection, protection against surge voltages	
Isolation	Isolation between I/O and Logic	
Operating Temperature	0 to 70°C	
Storage Temperature	-40°C to 125°C	
Humidity	75%	
Mounting	DIN rail mounting	
Dimension:	142.3 (L) X 90.5 (H) X 62 (D) mm [8 DIN Units]	
Module Dimension (L x W x H)	142.3 x 90.5 x 62	
Indication	Red LED - Power Supply Yellow LED - Communication Green LED -per Output Channel	
COM Port Setting	10 Pin DIP Switch	
Certification	CE	
Usage	Indoor, to be mounted inside distribution boxes or electrical panels with DIN rail	
Power Failure Response	When power resumes, all output will be reset	

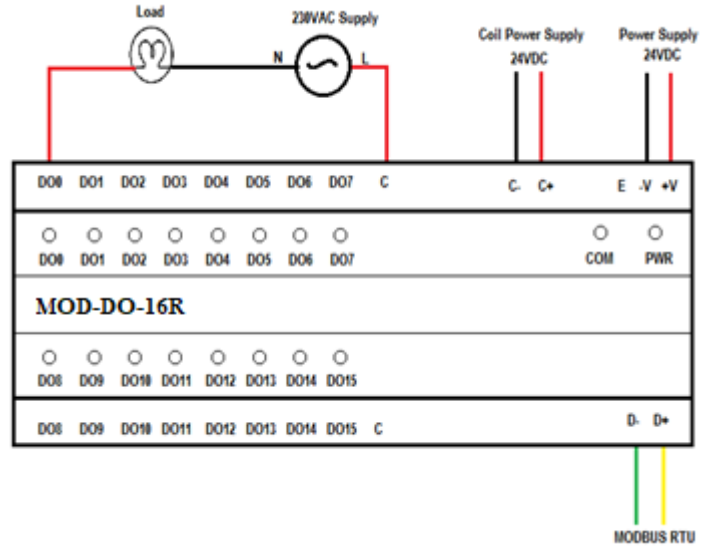
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WIRING DIAGRAM

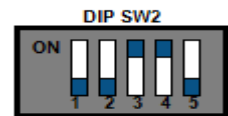
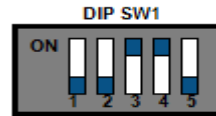
Modbus Communication Specifications	
Protocol	Slave Modbus RTU
Baud Rate	9600,19200,57600,115200
Slave Address	1-31
Data bit	8
Stop bit	1
Parity	None,Odd,Even
Response Time	<100ms
Termination Resistance	120ohm (Switchable)
Control Registers	Holding Register 0 – 6 (for output & parameter setting)
Distance	Up to 1200m



Modbus Configuration DIP Switch Access

Steps:

1. Open the upper fascia plate of the module.
2. DIP switch S1 for address and DIP switch S2 for baud rate parity.
3. Adjust the DIP switch according to requirements. Refer below image.



DIP Switch 1					
Slave ID Configuration					
Slave ID	Pin 5	Pin 4	Pin 3	Pin 2	Pin 1
1	OFF	OFF	OFF	OFF	ON
2	OFF	OFF	OFF	ON	OFF
3	OFF	OFF	OFF	ON	ON
4	OFF	OFF	ON	OFF	OFF
5	OFF	OFF	ON	OFF	ON
6	OFF	OFF	ON	ON	OFF
...
...
...
31	ON	ON	ON	ON	ON

DIP Switch 2		
Baud Rate configuration		
Baud Rate	Pin 2	Pin 1
9600	OFF	OFF
19200	OFF	ON
57600	ON	OFF
15200	ON	ON
Parity Configuration		
Parity	Pin 4	Pin 3
NONE	OFF	OFF
ODD	OFF	ON
EVEN	ON	OFF
Termination Resistor Configuration (120Ω)		
Termination	Pin 5	
ON	ON	
OFF	OFF	

Modbus Address Mapping

Modbus Register	Digital Output
O/P 1 - DO_0	40001_0 (Bit 0)
O/P 2 - DO_1	40001_1 (Bit 1)
O/P 3 - DO_2	40001_2 (Bit 2)
O/P 4 - DO_3	40001_3 (Bit 3)
O/P 5 - DO_4	40001_4 (Bit 4)
O/P 6 - DO_5	40001_5 (Bit 5)
O/P 7 - DO_6	40001_6 (Bit 6)
O/P 8 - DO_7	40001_7 (Bit 7)
O/P 9 - DO_8	40001_8 (Bit 8)
O/P 10 - DO_9	40001_9 (Bit 9)
O/P 11 - DO_10	40001_10 (Bit 10)
O/P 12 - DO_11	40001_11 (Bit 11)
O/P 13 - DO_12	40001_12 (Bit 12)
O/P 14 - DO_13	40001_13 (Bit 13)
O/P 15 - DO_14	40001_14 (Bit 14)
O/P 16 - DO_15	40001_15 (Bit 15)

*Note: Following parameters are to decide the behavior of module when communication port is ideal for specific time.

Modbus Register	Name	Type	Default Value	Valid Range	Description
40005	Mode	Retentive	0	0 or 1	0 - Normal Mode - 0 i.e. if module declares communication is break then there will be no effect on output. 1 - Safe Mode - i.e. if module declares communication is break then output will perform according to what PARAMETER(40006) is set by user.
40006	Parameter	Retentive	0	1/2/3	If MODE is SAFE MODE then only set below value to decide behavior of module otherwise set 0 0 - Normal mode 1 - Turn OFF by default time 2 - Stay ON after default time 3 - Turn OFF after user define time (Enter time in 40007 register) *default time – 10 sec
40007	Time	Retentive	0	1 to 65535	Time in sec



SAFETY INSTRUCTIONS

- Installation should only be performed by qualified professionals according to the laws and regulations.
- Do not connect the mains voltage nor any other external voltage to any point of the Modbus connector; it would represent a risk for the entire system. The facility must have enough insulation between the mains (or auxiliary) voltage and the Modbus or the wires of other accessories, in case of being installed.
- Keep the device away from water and do not cover it with clothes, paper or any other material while in use.

