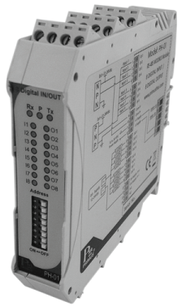
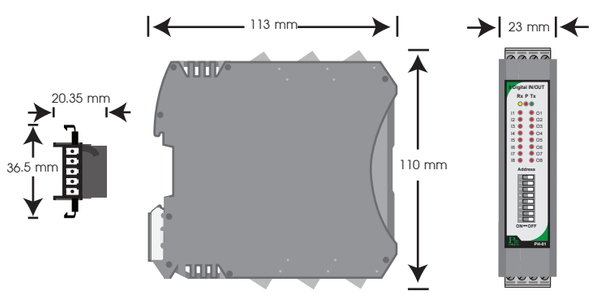
PH-01 / 8 DIGITAL INPUT / 8 DIGITAL OUTPUT MODULE



TECHNICAL SPECIFICATION

Power Supply		9-30 VAC/VDC
Power Consumption		2 VA
Display		LED
Input	Inputs Points	NPN
	Input Voltage Range	12-24 VDC
	Input Current Per Input	5 mA @12 VDC 11 mA @ 24 VDC
	Isolation	1500 Vrms Between Field And Logic
Output	Output Points	NPN
	Maximum Voltage	36 VDC
	Maximum Current	100 mA Per Output
	Isolation	1500 Vrms Between Field And Logic
Communication	PROTOCOL	MODBUS RTU
	Baud Rate	2400, 4800, 9600,19200 38400, 57600
	Parity	None, Even, Odd
	Stop Bits	1, 2
	Data Bits	8
	Maximum Support Node	255
Ambient Operation	Temperature	-10 °C to 60 °C
	Humidity	<85% RH Non-Condensing
Ambient Storage	Temperature	-20 °C to 80 °C
	Humidity	<85% RH Non-Condensing
Protection Degree		IP20
Installation		DIN RAIL
Enclosure		ABS-V0
Size		23 x 113 x 110 mm.
Weight		150 g.

DIMENSION



DESCRIPTION

- Device use with RS-485 MODBUS PROTOCOL system 8 Input and 8 Output
- Input receive both NPN and PNP Open Collector, Isolated
- Output NPN Open Collector, Isolated
- 3 Mode for Counter are Disable, Count Up and Count Up + Down
- Operate via RS-485 MODBUS PROTOCOL
- LED show status in each Input and Output

OPERATION

PH-01 has 8 Isolate Input and 8 Isolate Output inside device can read and write data via RS-485 MODBUS PROTOCOL beside Input can operate as Counter Function size 32 Bit for Function size 32 Bit for count Input from reading.

Digital Input operation

Input of PH-01 can use with Proximity Switch, Photo Switch, Emcoder etc. both NPN and PNP by operation of Counter Function there 3 mode are

Mode 0 : Operate Digital Input read ON/OFF status only no counting

Mode 1 : Operate as Digital Input read status ON/OFF and Function Counter Up of each Input operate with value from counting it will be collected 32 Bit Register of Counter 1 to Counter 8 Register.

Mode 2 : operate as Digital Input read ON/OFF status and Function Counter Up/Down this mode will use 2 Input for counting are

Input 1 for count up and Input 2 for count down value will be collected in Counter 1 Register

Input 3 for count up and Input 4 count down value will be collected in Counter 2 Register

Input 5 for count up and Input 6 count down value will be collected in Counter 3 Register

Input 7 for count up and Input 8 count down value will be collected in Counter 4 Register

Input Filter (Input Filter operation pattern)

0 is can read Input frequency maximum 1 KHz

1 is can read Input frequency maximum 10 Hz if frequncy Input over 10 Hz device will cannot count suite to count Input in Switch type.

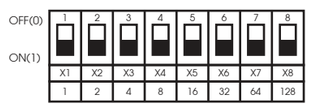
How to choose Input type

- NPN : Input count when it is changed from +12V to +24V to be 0V (Active Low)
- PNP : Input count when it is changed from 0V to be +12 to +24V (Active High)

Digital Output operation

Output of PH-01 has 8 Output to be NPN.

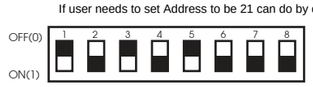
Device Address ID SETTING



Address = X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8

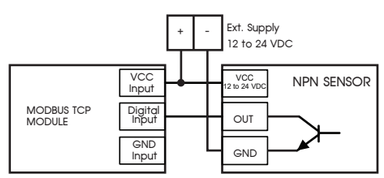
Device Address ID setting Example

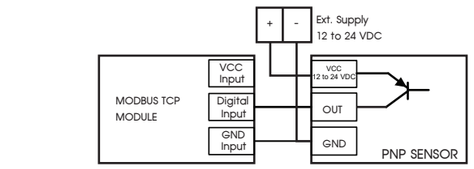
If user needs to set Address to be 21 can do by choose switch as below



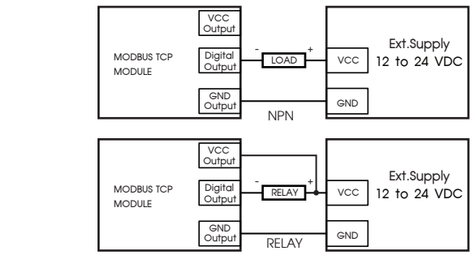
Address = 1 + 4 + 16 = 21

Input wiring diagram

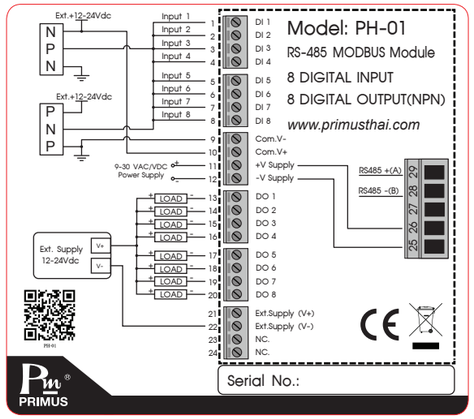




Output Wiring Diagram



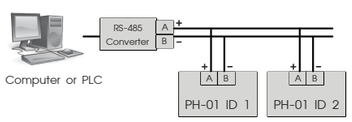
WIRING DIAGRAM



SERIAL COMMUNICATION

The PH-01 are Equipped With a RS-485 Series Communication Interface to Allow Connection to Computer or PLCs. MODBUS PROTOCOL is Provided as Standard Communication. The User Can Connect PH-01 as Network Up to 128 Device.

Wiring Diagram



MODBUS PROTOCOL

This MODBUS PROTOCOL Has Been Implement In Accordance With MODBUS.ORG MODBUS Application PROTOCOL Specification V1.1 With The Following Conditions Applying. The Following Conditions Apply Baudrate Can Selected Refer 22. Speed Setting The Format Is MODBUS RTU Refer 22. Speed Setting The Format Is MODBUS RTU UART Data Can Selected Refer 23. Communication Setting Data Is Considered To Be Half Duplex Using 2 Wire.

Modbus Function code

Function code	Operation	Brodcast
0x01	Read Coil Status	No
0x02	Read Input Status	No
0x03	Read Holding Registers	No
0x04	Read Multiple Registers	No
0x05	Force Single Coil	Yes
0x06	Preset Single Registers	Yes
0x0F	Force Multiple Coil	Yes
0x10	Preset Multiple Registers	Yes

Modbus Exception code

Code	Name	Meaning
01	ILLEGAL FUNCTION	The function code received in the query is not an allowable action for the server (or slave).
02	ILLEGAL DATA ADDRESS	The data address received in the data field is not an allowable value for server (or slave).
03	ILLEGAL DATA VALUE	A value contained in the query data field is not an allowable value for server (or slave).

Example of a client request and server exception response

Request		Response	
Field Name	(Hex)	Field Name	(Hex)
Slave Address	01	Slave Address	01
Function	04	Function	84
Starting Address Hi	00	Exception Code	02
Starting Address Lo	00	CRC Hi	C2
Quantity of Input Reg. Hi	00	CRC Lo	C1
Quantity of Input Reg. Lo	1E		
CRC Hi	70		
CRC Lo	02		

Input Registers

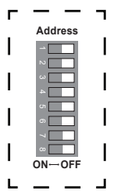
Modbus Address	Register Name	Low Limit	High Limit	Access
0	Digital Input 1	0	1	R
1	Digital Input 2	0	1	R
2	Digital Input 3	0	1	R
3	Digital Input 4	0	1	R
4	Digital Input 5	0	1	R
5	Digital Input 6	0	1	R
6	Digital Input 7	0	1	R
7	Digital Input 8	0	1	R

Coil Registers

Modbus Address	Register Name	Low Limit	High Limit	Access
0	Digital Output 1	0	1	R/W
1	Digital Output 2	0	1	R/W
2	Digital Output 3	0	1	R/W
3	Digital Output 4	0	1	R/W
4	Digital Output 5	0	1	R/W
5	Digital Output 6	0	1	R/W
6	Digital Output 7	0	1	R/W
7	Digital Output 8	0	1	R/W

Reset Buad Rate, Parity, Stop bits

1. Dip Switch Address setting of PH-01
   device to be All OFF follow picture 1 after slide Dip Switch
   turn to OFF wait for 4 seconds until LED continue on.
2. Default after Reset is
   Buad Rate 9600, Parity None, Stop Bits 1.



Picture1

ORDERING CODE

PH - 01

Data Registers

Modbus Address	Register Name	Low Limit	High Limit	Access	Format	Comment
0	Digital Input 1	0	1	R	Int	Status of Digital Inputs
1	Digital Input 2	0	1	R	Int	"
2	Digital Input 3	0	1	R	Int	"
3	Digital Input 4	0	1	R	Int	"
4	Digital Input 5	0	1	R	Int	"
5	Digital Input 6	0	1	R	Int	"
6	Digital Input 7	0	1	R	Int	"
7	Digital Input 8	0	1	R	Int	"
8	Digital Output 1	0	1	R/W	Int	Status of Digital Outputs
9	Digital Output 2	0	1	R/W	Int	"
10	Digital Output 3	0	1	R/W	Int	"
11	Digital Output 4	0	1	R/W	Int	"
12	Digital Output 5	0	1	R/W	Int	"
13	Digital Output 6	0	1	R/W	Int	"
14	Digital Output 7	0	1	R/W	Int	Status of Digital Outputs
15	Digital Output 8	0	1	R/W	Int	"
16	Counter Mode	0	2	R/W	Int	0 = Disable 1 = Up Counting 2 = Up-Down Count
17	Input Filter	0	1	R/W	Int	0 = Disable 1 = <10Hz
18	Baud Rate	2400	57600	R/W	Int	2400, 4800, 9600, 19200, 38400, 57600
19	Parity	0	2	R/W	Int	0 = None 1 = Even 2 = Odd
20	Stop bits	1	2	R/W	Int	1 = 1 Stop bit 2 = 2 Stop bits
21	Delay Reply	0	255	R/W	Int	0 = Disable >0 = Enable.(x10 ms)
22	Sofware Version	n/a	n/a	R	Int	Sofware Version = 101

Data Registers

Modbus Address	Register Name	Low Limit	High Limit	Access	Format	Comment
256	Counter 1 MSB	0	4294967295	R/W	long	Counter MSB and LSB combine to give 32 bit Counter with range 0 to 4294967295.
257	Counter 1 LSB					
258	Counter 2 MSB	0	4294967295	R/W	long	
259	Counter 2 LSB					
260	Counter 3 MSB	0	4294967295	R/W	long	
261	Counter 3 LSB					
262	Counter 4 MSB	0	4294967295	R/W	long	
263	Counter 4 LSB					
264	Counter 5 MSB	0	4294967295	R/W	long	
265	Counter 5 LSB					
266	Counter 6 MSB	0	4294967295	R/W	long	
267	Counter 6 LSB					
268	Counter 7 MSB	0	4294967295	R/W	long	
269	Counter 7 LSB					
270	Counter 8 MSB	0	4294967295	R/W	long	
271	Counter 8 LSB					
272	Digital Inputs MSB	0	255	R/W	long	Digital Input in 8 bits. 1-8
273	Digital Inputs LSB					
274	Digital Outputs MSB	0	255	R/W	long	Digital Output in 8 bits. 1-8
275	Digital Outputs LSB					

PH-01

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