

PM3Px Power Meter User Manual

Specification

Model	PM3P50, PM3P100, PM3P150, PM3P400
Wiring System	3-phase/4-wire
Range	0 ~ 460 V (RMS), 50 A 100 A 150 A 400 A (RMS), 50 ~ 60 Hz
Measurement	Active Power (W), Reactive Power (VAR), Apparent Power (VA), Current RMS (A), Voltage RMS (V), Power Factor (PF), Line Frequency (Hz), Power Consumption (kWh)
Accuracy	± 1%
Communication	Modbus RS-485 (RTU), Modbus TCP (via Wi-Fi module)
Monitoring	Wi-Fi module, Mobile app such as Elect Monitoring (Android only)

Power System Wiring

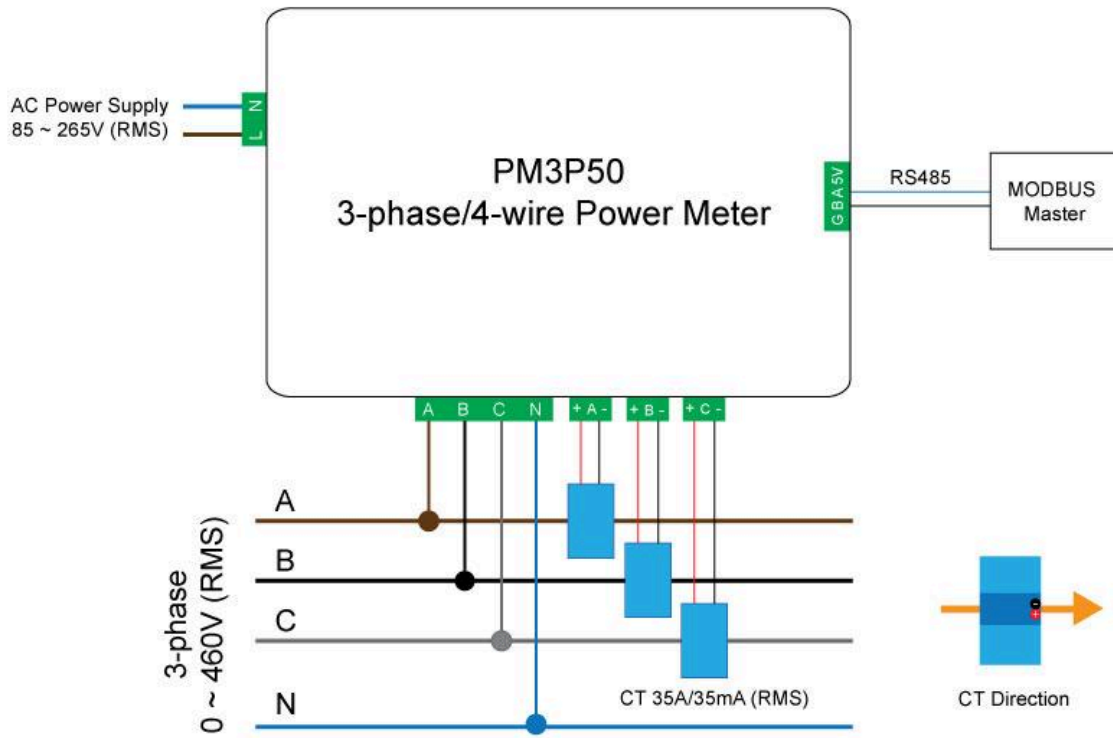


Fig 1. The power system wiring of the power meter

Modbus Communication

About protocol: <https://www.modbustools.com/modbus.html>

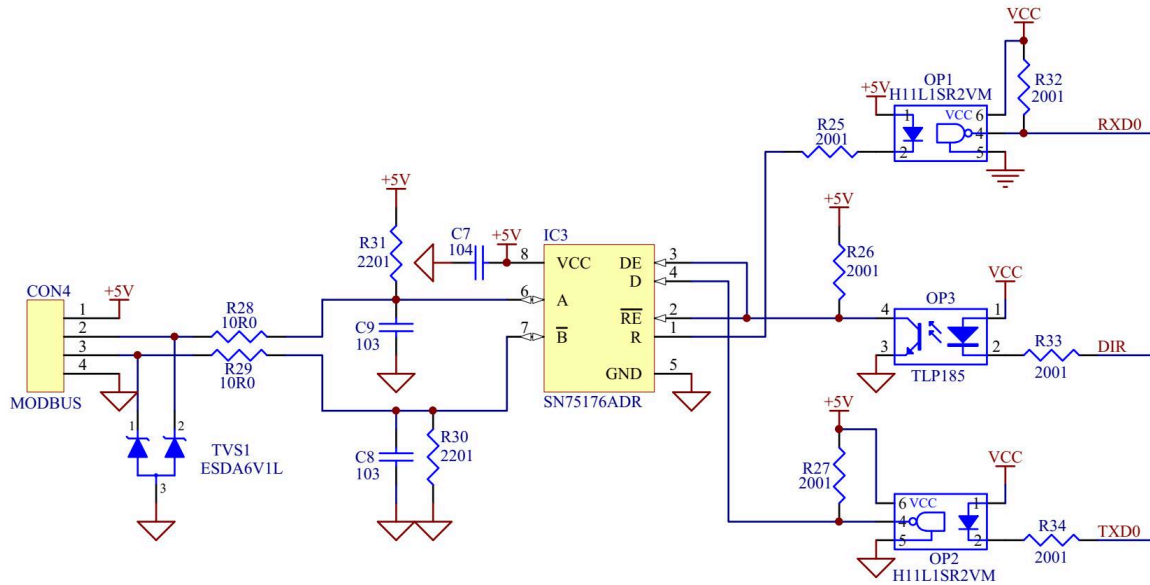


Fig 2. The TTL to RS-485 converter circuit of the power meter for Modbus communication

Setting Registers (R = Read, W = Write)

Address	Title	R/W	Data	Default
0	Voltage Gain of Phase A	R/W	0 ~ 32767	13731
1	Voltage Gain of Phase B	R/W	0 ~ 32767	13731
2	Voltage Gain of Phase C	R/W	0 ~ 32767	13731
3	Current Gain of Phase A	R/W	0 ~ 32767	7451
4	Current Gain of Phase B	R/W	0 ~ 32767	7451
5	Current Gain of Phase C	R/W	0 ~ 32767	7451
6	Relay Command	R/W	0 = OFF, 1 = ON	0
7	Slave ID (Node Address)	R/W	1~247	1
8	Baud rate (bps) [2]	R/W	0 = 1200, 1 = 2400, 2 = 4800, 3 = 9600	3
9	Data format	R/W	0 = 8-N-1, 1 = 8-N-2, 2 = 8-O-1 3 = 8-O-2, 4 = 8-E-1, 5 = 8-E-2	0
10	WH Memory Phase A	R	-	0
11	WH Memory Phase A	R	-	0
12	WH Memory Phase B	R	-	0
13	WH Memory Phase B	R	-	0
14	WH Memory Phase C	R	-	0
15	WH Memory Phase C	R	-	0

16	Clear WH Memory	R/W	0 = Idle, 1 = Clear	0
17	Voltage calibration	R/W	1 ~ 32767	0
18	Current calibration	R/W	1 ~ 32767	1
19	Offset ID (0=Disabled) [1]	R/W	0 ~ 200	0
20	CT Model	R/W	0 = Custom 1 = 50A/50mA 2 = 100A/100mA 3 = 400A/50mA 4 = 150A/50mA	1
21	Voltage Base	R/W	1 ~ 32767	3740
22	Current Base	R/W	1 ~ 32767	640
23	Apparent Power Base	R/W	1 ~ 32767	23963
24	Apparent Power Scaler	R/W	1 ~ 32767	1
25	Voltage Zero	R/W	0 ~ 32767	0
26	Current Zero	R/W	0 ~ 32767	0
27	Maximum baud rate	R/W	0 = 1200, 1 = 2400, 2 = 4800, 3 = 9600, 4 = 19200, 5 = 38400	3
28	Reserve	-	-	-
29	Data flash CRC checksum	R	-	0
[1]	Offset ID ใช้สำหรับพีเจอร์ Port Forwarder (RS485 to TTL หรือ TTL to RS485) ตัวอย่างการใช้งาน กรณี(Master ต่อที่ TTL และ Inverter Slave ต่อที่ RS485) ตั้งค่า Offset ID = 20 และ Inverter Slave ID = 1 ดังนั้น Master ต้องเชื่อมต่อ Power Meter ด้วย ID = 20+1 = 21 เพื่อสื่อสารกับ Inverter			
[2]	ค่าสูงสุดของ baud rate (Address 8) ที่สามารถตั้งค่าได้ กำหนดโดยค่าปัจจุบันของ Address 27			

Measurement Registers (R = Read, W = Write)

Address	Title	R/W	Data	Note
3000	RMS Voltage of Phase A	R	0 ~ 4600 (0.0 ~ 460.0 V)	
3001	RMS Current of Phase A	R	0 ~ 500 (0.0 ~ 50.0 A)	[3]
3002	Active Power of Phase A	R	-32768 ~ 32767 (-32768 ~ 32767 W)	[2]
3003	Reactive Power of Phase A	R	0 ~ 32767 (0 ~ 32767 VAR)	[2]
3004	Apparent Power of Phase A	R	0 ~ 32767 (0 ~ 32767 VA)	[2]
3005	Power Factor of Phase A	R	-1000 ~ 1000 (-1.000 ~ 1.000)	
3006	Consumption Energy of Phase A (Low Word)	R	-2147483648 ~ 2147483647 (-2147483648 ~ 2147483647 Wh)	[1][2]
3007	Consumption Energy of Phase A (High)	R		

	Word)			
3008	Line frequency of Phase A	R	500 ~ 600 (50.0 ~ 60.0 Hz)	
3009	Operating status	R	Binary 16-bits value Bit 0~5: Reserved Bit 6: TOOL (0 = LOW, 1 = HIGH) Bit 7: RELAY (0 = OFF, 1 = ON) Bit 8 ~ 15: Reserved	
3010	RMS Voltage of Phase B	R	0 ~ 4600 (0.0 ~ 460.0 V)	
3011	RMS Current of Phase B	R	0 ~ 500 (0.0 ~ 50.0 A)	
3012	Active Power of Phase B	R	-32768 ~ 32767 (-32768 ~ 32767 W)	[2]
3013	Reactive Power of Phase B	R	0 ~ 32767 (0 ~ 32767 VAR)	[2]
3014	Apparent Power of Phase B	R	0 ~ 32767 (0 ~ 32767 VA)	[2]
3015	Power Factor of Phase B	R	-1000 ~ 1000 (-1.000 ~ 1.000)	
3016	Consumption Energy of Phase B (Low Word)	R	-2147483648 ~ 2147483647 (-2147483648 ~ 2147483647 Wh)	[1][2]
3017	Consumption Energy of Phase B (High Word)	R		
3018	Line frequency of Phase B	R	500 ~ 600 (50.0 ~ 60.0 Hz)	
3019	Apparent Power (VA) Scaler	R	According Address 24	
3020	RMS Voltage of Phase C	R	0 ~ 4600 (0.0 ~ 460.0 V)	
3021	RMS Current of Phase C	R	0 ~ 500 (0.0 ~ 50.0 A)	
3022	Active Power of Phase C	R	-32768 ~ 32767 (-32768 ~ 32767 W)	[2]
3023	Reactive Power of Phase C	R	0 ~ 32767 (0 ~ 32767 VAR)	[2]
3024	Apparent Power of Phase C	R	0 ~ 32767 (0 ~ 32767 VA)	[2]
3025	Power Factor of Phase C	R	-1000 ~ 1000 (-1.000 ~ 1.000)	
3026	Consumption Energy of Phase C (Low Word)	R	-2147483648 ~ 2147483647 (-2147483648 ~ 2147483647 Wh)	[1][2]
3027	Consumption Energy of Phase C (High Word)	R		
3028	Line frequency of Phase C	R	500 ~ 600 (50.0 ~ 60.0 Hz)	
3029	Firmware Version	R	v x.xx	

[1] ค่าของ Register เป็นตัวแปรประเภท Long (4 bytes) สามารถตั้งค่า Display ในโปรแกรม Modbus Poll = Long เพื่ออ่านค่าจริงของ Register ได้

[2] ค่าจริง = Modbus Value x Apparent Power Scaler เช่น Modbus Value = 1250 และ Apparent Power Scaler = 11 ดังนั้น ค่าจริง = 1250 x 11 = 13750

[3] ค่ากระแสสูงสุดที่วัดได้ขึ้นกับขนาดของ CT เช่น รุ่น PM3P50 (CT ขนาด 50 A) วัดค่าได้สูงสุด 50 A เป็นต้น