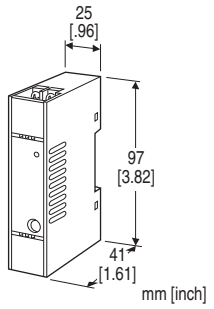
Super-mini Terminal Block Signal Conditioners M5X-UNIT

MULTI POWER TRANSDUCER

(self-powered, PC programmable)

Functions & Features

- Super-mini power transmitter
- 5 to 600 A clamp CT use for current sensor
- Single-phase/2-wire, single-phase/3-wire and 3-phase/3-wire are available
- High-density mounting
- Power LED
- No auxiliary power source required



MODEL: M5XWTU-11[1][2]

ORDERING INFORMATION

- Code number: M5XWTU-11[1][2]

Specify a code from below for each of [1] and [2].
(e.g. M5XWTU-113/Q)

- Specify the specification for option code /Q
(e.g. /C01/S01/SET)

CONFIGURATION

1: Single phase / 2-wire and 3-wire, 3-phase / 3-wire

INPUT

1: 240 V AC / CLSE
Clamp-on current sensor is selectable from below.
CLSE (5A, 50A, 100A, 200A, 400A, 600A)
5A is available as CT's secondary.

[1] EXTERNAL INTERFACE

1: Analog output -Field selectable
· DC current output: 0 - 20 mA DC
· DC voltage output: -5 - +5 V DC
· DC voltage output: -10 - +10 V DC
2: Pulse / alarm output
3: Modbus communication

[2] OPTIONS

Other Options
blank: none
/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating
TERMINAL SCREW MATERIAL
/S01: Stainless steel
EX-FACTORY SETTING
/SET: Preset according to the Ordering Information Sheet (No. ESU-2768)

RELATED PRODUCTS

- PC Configurator cable (model: COP-US)
- PC configurator software (model: PMCFG)

Downloadable at our web site.

- Clamp-on current sensor (model: CLSE)

GENERAL SPECIFICATIONS

Construction: Terminal block
Connection: M3.5 screw terminals (torque 0.8 N·m)
Screw terminal: Nickel-plated steel (standard) or stainless steel
Housing material: Flame-resistant resin (black)
Isolation: Current input or voltage input to analog output or pulse output or Modbus
Measured variables
Voltage: R-S, S-T, T-R
Current: R, S, T
Active power
Reactive power
Apparent power
Power factor
Frequency
Active energy: Incoming / outgoing
Reactive energy: Incoming / outgoing / lag (inductive) /lead (capacitive)
Apparent energy
Average active power (demand)
Average reactive power (demand)
Average apparent power (demand)
Average (demand) current: R, S, T
Harmonic distortion
Overall distortion ratio, content rate (2nd to 31st)
Voltage: R-S, S-T, T-R
Current: R, S, T
Max. and min. values

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Simplified measurement mode: Calculates power from current values with fixed voltage values and power factor.
Power indicator LED: Green LED; Blinking patterns indicate different operating status of the transmitter.

MODBUS COMMUNICATION

Communication: Half-duplex, asynchronous, no procedure
Standard: Conforms to TIA/EIA-485-A
Transmission distance: 500 meters max.
Baud rate: 1200, 2400, 4800, 9600, 19200, 38400 bps (default: 38400 bps)
Protocol: Modbus RTU
Node address: 1 to 247 (default: 1)
Parity: None, even or odd (default: odd)
Stop bit: 1 or 2 (default: 1)
Max. number of nodes: 31 (excluding master)
Transmission media: Shielded twisted-pair cable (CPEV-S 0.9 dia.)
Internal terminating resistor: 110 Ω

INPUT SPECIFICATIONS

Frequency: 50 / 60 Hz (45 – 66 Hz)
• **Voltage Input**
Rated voltage: 240 V AC
Input range: 80 - 260 V AC
(Phase voltage range is 80 - 130 V for single-phase/3-wire)
Consumption VA:
• P1 - P2: ≤ 3 VA (power consumption of internal circuit)
• P2 - P3: voltage^2/≤ 1.5MΩ VA
Selectable primary voltage range: 50 – 400 000 V
• **Current Input**
CLSE-R5: 0 – 5 A AC
CLSE-05: 0 – 50 A AC
CLSE-10: 0 – 100 A AC
CLSE-20: 0 – 200 A AC
CLSE-40: 0 – 400 A AC
CLSE-60: 0 – 600 A AC
Input range: 0 - 120% of the rating
Low-end cutout (current): 0 - 99.9% (default setting: 1%)
Selectable primary current range: 1 – 20 000 A (only with CLSE-R5, refer to the configurator settings)

OUTPUT SPECIFICATIONS

■Analog output
Default setting is DC current output 4 - 20 mA
Types
• DC current output: 0 - 20 mA DC
• DC voltage output: -10 - +10 V DC
• DC voltage output: -5 - +5 V DC
(3 types can be switched by DIP switch and PC)
Outputs: Voltage, current, various powers, power factor, frequency, harmonic current and harmonic voltage
●DC current output
Output range 0 - 20 mA DC
Output available range: 0 - 23 mA DC
Minimum span: 1 mA
Load resistance: 550 Ω
●DC voltage output
Output range -10 - +10 V DC
Output available range: -11.5 - +11.5 V DC
Minimum span: 1 V
Load resistance: Output drive 1 mA max.
(e.g. When 0 - 10 V DC, 10 V÷1 mA = 10kΩ)
●DC voltage output
Output range -5 - +5 V DC
Output available range: -5.75 - +5.75 V DC
Minimum span: 500 mV
Load resistance: Output drive 1 mA max.
(e.g. When 1 - 5 V DC, 5 V÷1 mA = 5000Ω)
■**Pulse / alarm output**
Outputs assignable to pulse: various energy
Outputs assignable to alarm: Voltage, current, various powers, power factor, frequency, various energy average, current average, harmonic current and harmonic voltage
Output type: Photo MOSFET relay
Rated load: 160 V 150 mA AC/DC at peak
ON resistance: 8 Ω max.
Leakage current during opening: 2 μA max.

INSTALLATION

Operating temperature: -20 to +65°C (-4 to +149°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Atmosphere: No corrosive gas or heavy dust
Mounting: DIN rail
Weight: 80 g (2.8 oz)

PERFORMANCE

Input Accuracy[*1]
Voltage: ±0.5 %[*2]
Current: ±0.5 %[*2]
Power: ±0.5 %[*2]
Power factor: ±1.5 %
Frequency: ±0.5 Hz
Energy: ±2 % (power factor ≥ 0.5, input ≥ 10%)
*1. Sensor error margin not included. Add sensor error margin when using with the combination of the sensor.
*2. An accuracy for rated input. The described accuracy levels are ensured at the input 1% or more for neutral current in a single-phase/3-wire circuit and phase-S current in an 3-phase/3-wire circuit.
Analog output accuracy:
Output accuracy for the setting value span is shown as

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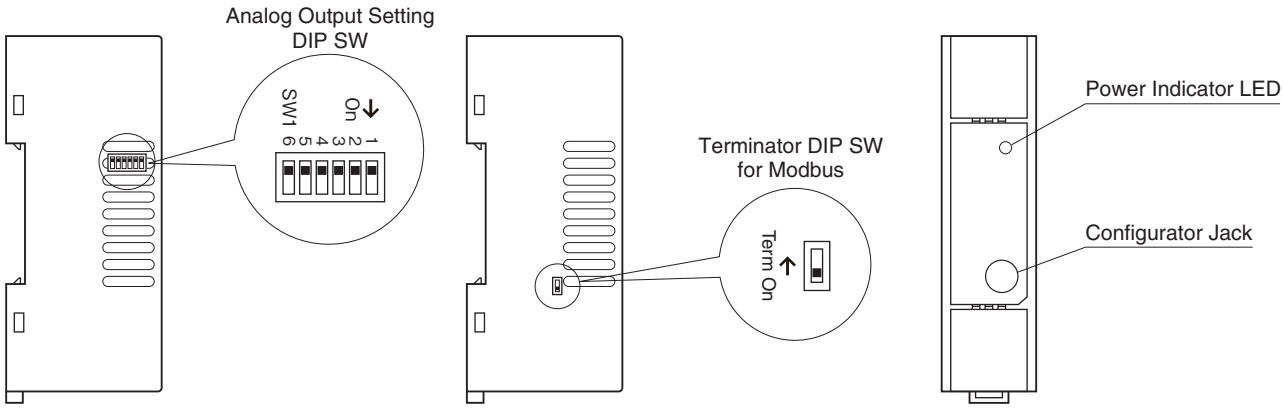
following formula.
Output accuracy = (output range ÷ output setting value span) × 0.02%
For current output,
Output accuracy = (output range ÷ output setting value span) × 0.04%
Ex1: DC current output 4 - 20 mA
Output accuracy = (20 mA ÷ 16A) × 0.04% = 0.05%
Input accuracy and sensor error are added to total accuracy.
Temp. coefficient: ±0.0075 %/°C (0.004 %/°F)
Sampling time: ≤ 500 msec.
Analog output response time: ≤ 1.5 sec. (0 to 99%)
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 2000 V AC @ 1 minute
(current input or voltage input to analog output or pulse output or Modbus to ground)

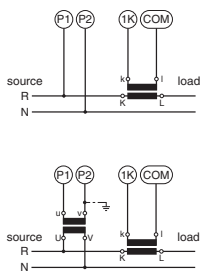
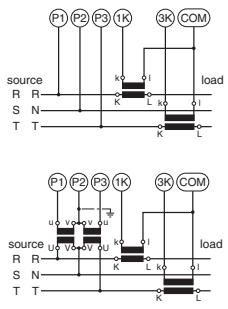
EXTERNAL VIEW

■ **LEFT VIEW**
Analog output **Modbus**

■ **FRONT VIEW**



TERMINAL CONNECTIONS

System/ Application	Terminal	System/ Application	Terminal
Single-phase/ 2-wire		Single-phase/ 3-wire 3-phase/ 3-wire	

Note: Use CLSE for CT.
Grounding is unnecessary for low-voltage circuit.
Apply voltage to P1 - P2 to generate internal power when using simplified measuring mode (fixed voltage value and power factor).

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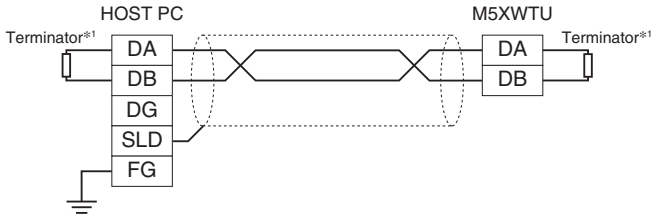
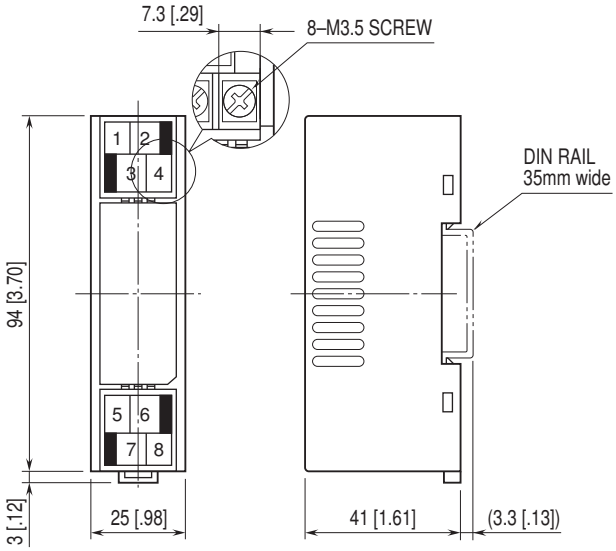
MODBUS WIRING CONNECTION

■ **HOST PC WIRING**



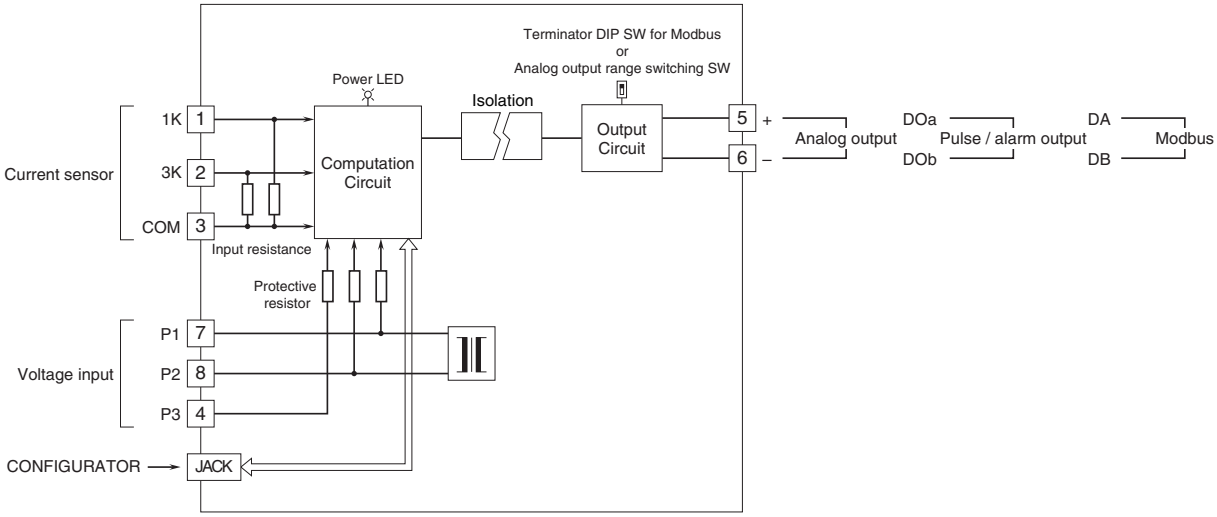
*1. Turn the terminator DIP SW ON to use internal terminator.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



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⚠ Specifications are subject to change without notice.

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