

Super-mini Terminal Block Signal Conditioners M50X-UNIT

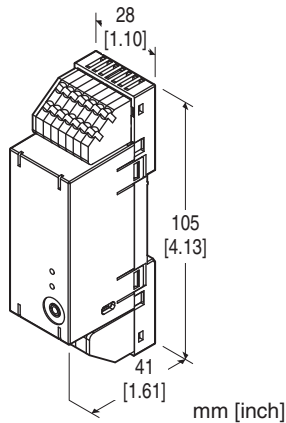
UL approval

MULTI POWER TRANSDUCER

(PC programmable)

Functions & Features

- Super-mini power transducer
- 5 to 600 A clamp CT use for current sensor
- Single-phase/2-wire, single-phase/3-wire 3-phase/3-wire and 3-phase/4-wire are available
- Single phase can measure up to four circuits, single-phase/3-wire, Three-phase/2-wire can measure up to two circuits
- For mounting in equipment and machine
- Power LED and communication LED



MODEL: M50XWTU-U-213-M2[1]

ORDERING INFORMATION

- Code number: M50XWTU-U-213-M2[1]
Specify a code from below for [1].
(e.g. M50XWTU-U-213-M2/Q)
- Specify the specification for option code /Q
(e.g. /SET)

CONFIGURATION

- 2: Single phase / 2-wire and 3-wire,
3-phase / 3-wire and 4-wire

INPUT

1: 240 V AC / CLSE-U

Clamp-on current sensor is selectable from below.

CLSE-U (5A, 50A, 100A, 200A, 400A, 600A)

5A is available as CT's secondary.

EXTERNAL INTERFACE

3: Modbus communication

POWER INPUT

AC Power

M2: 100 – 240 V AC (Operational voltage range 85 – 264 V, 47 – 66 Hz)

[1] OPTIONS

Other Options

blank: none

/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet
(No. ESU-2498)

RELATED PRODUCTS

- PC Configurator cable (model: COP-US)
 - PC configurator software (model: PMCFG)
- Downloadable at our web site.
- Clamp-on current sensor (model: CLSE-U)

GENERAL SPECIFICATIONS

Connection: Tension clamp terminal

Applicable wire size (wire material: Copper):

Lower connector (voltage input, power, Modbus)

0.2 - 1.5 mm²(AWG 16-24), stripped length 8 - 9 mm

Upper connector (current sensor input, pulse output)

0.2 - 1.5 mm²(AWG 16-24), stripped length 10 - 11 mm

Housing material: Flame-resistant resin (black)

Isolation: Voltage input or current input to Modbus to pulse output 1 to pulse output 2 to power

Measured variables

Voltage: 1-N, 2-N, 3-N, 1-2, 2-3, 3-1

Current: 1, 2, 3, N

Active power

Reactive power

Apparent power

Power factor

Frequency

Active energy: Incoming / outgoing

Reactive energy: Incoming / outgoing / lag (inductive)
/lead (capacitive)

Harmonic distortion:

Overall distortion ratio, content rate (2nd to 31st)

Max. and min. values

CO₂ emissions (energy conversion value)

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
Communication indicator LED: Green LED turns ON while Modbus communication

INPUT SPECIFICATIONS

Frequency: 50 / 60 Hz (45 – 66 Hz)
• Voltage Input
Rated voltage for each wiring:
•Phase voltage (1-N, 2-N, 3-N)
 240 V AC
•Line voltage (1-2, 2-3, 3-1)
 240 V AC
Type for each wiring:
•Single-phase/2-wire
•Single-phase/3-wire
•Three-phase/3-wire
•Three-phase/4-wire
Input range: 1-N, 2-N, 3-N 50 to 277 V AC
 1-2, 2-3, 3-1 50 to 277 V AC
Consumption VA: Voltage circuit $\leq$ ULN² / 250 kΩ / ph
Selectable primary voltage range: 50 – 400 000 V
• Current Input
 Current sensor (default: CLSE-U-R5)
CLSE-U-R5: 0 – 5 A AC
CLSE-U-05: 0 – 50 A AC
CLSE-U-10: 0 – 100 A AC
CLSE-U-20: 0 – 200 A AC
CLSE-U-40: 0 – 400 A AC
CLSE-U-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-U-R5, refer to the configurator settings)

OUTPUT SPECIFICATIONS

■Pulse output
Outputs assignable to pulse: various energy
Output type: Photo MOSFET relay
Rated load: 30 V 200 mA AC/DC at peak
ON resistance: 1 Ω max.
Leakage current during opening: 2 μA max.

INSTALLATION

Power consumption
•AC: $\leq$ 3 VA
Operating temperature: -20 to +55°C (-4 to +131°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Mounting: DIN rail
Weight: 70 g (2.5 oz)

PERFORMANCE

Input Accuracy^{*1}
Voltage: ± 0.5 %^{*2}
Current: ± 0.5 %^{*2}
Power: ± 0.5 %^{*2}
Power factor: ± 1.5 %
Frequency: ± 0.1 Hz
Energy: ± 2 % (power factor $\geq$ 0.5, input $\geq$ 10 %)
^{*1}1. Sensor error margin not included. Add sensor error margin when using with the combination of the sensor.
^{*2}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, phase-2 current in a 3-phase/3-wire circuit and phase-N current in a 3-phase/4-wire circuit.
Temp. coefficient: ± 0.0075 %/°C (0.004 %/°F)
Sampling time: $\leq$ 500 msec.
Insulation resistance: $\geq$ 100 MΩ with 500 V DC
Dielectric strength: 2000 V AC @ 1 minute
 (current input or voltage input to Modbus to pulse output 1 to pulse output 2 to power)

STANDARDS & APPROVALS

EU conformity:
 EMC Directive
 EMI EN 61000-6-4
 EMS EN 61000-6-2
 Low Voltage Directive
 EN 61010-1
 Measurement Category II (input)
 Installation Category II (power supply)
 Pollution Degree 2
 Voltage input to current input or Modbus or pulse output:
 Reinforced insulation (300 V)
 Power to current input or Modbus or pulse output:

Reinforced insulation (300 V)

RoHS Directive

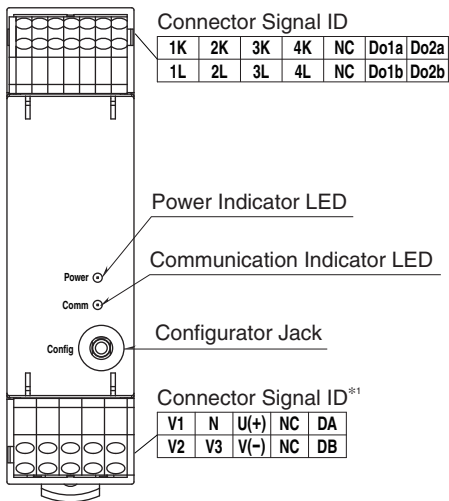
Approval:

UL/C-UL general safety requirements

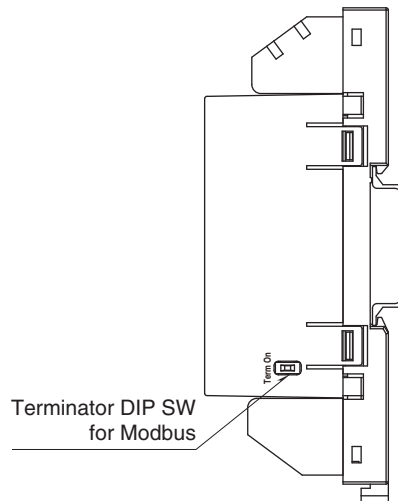
(UL 61010-1, CAN/CSA-C22.2 No.61010-1)

EXTERNAL VIEW

■ FRONT VIEW



■ RIGHT VIEW



*1. For UL, DA and DB are one set.

TERMINAL CONNECTIONS

System/ Application	Terminal	System/ Application	Terminal
Single-phase/ 2-wire 4-circuit		Single-phase/ two-wire branched from single-phase three-wire 4-circuit (Voltage can be selected from any line)	
Single-phase/ 3-wire 2-circuit		Single-phase/ 3-wire + Single-phase/ 2-wire 2-circuit (Voltage for single-phase/ 2-wire can be selected from any line)	
Three-phase/ 3-wire 2-circuit		Three-phase/ 4-wire	

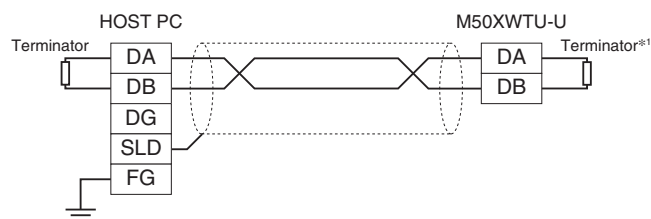
Note: VT can be used for voltage input, but is omitted in this connecting diagram.

Apply power voltage to V1-N for detecting frequency at simplified measurement (voltage and power factor are fixed).

Select same current sensor for circuit A and B, and circuit C and D.

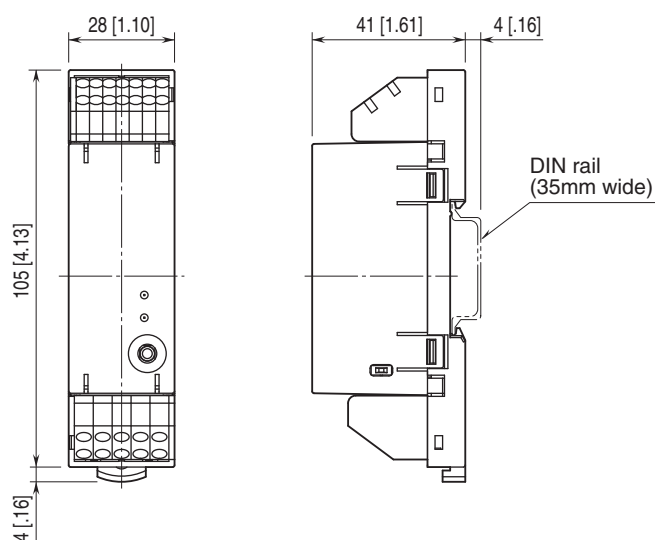
MODBUS WIRING CONNECTION

■ HOST PC WIRING

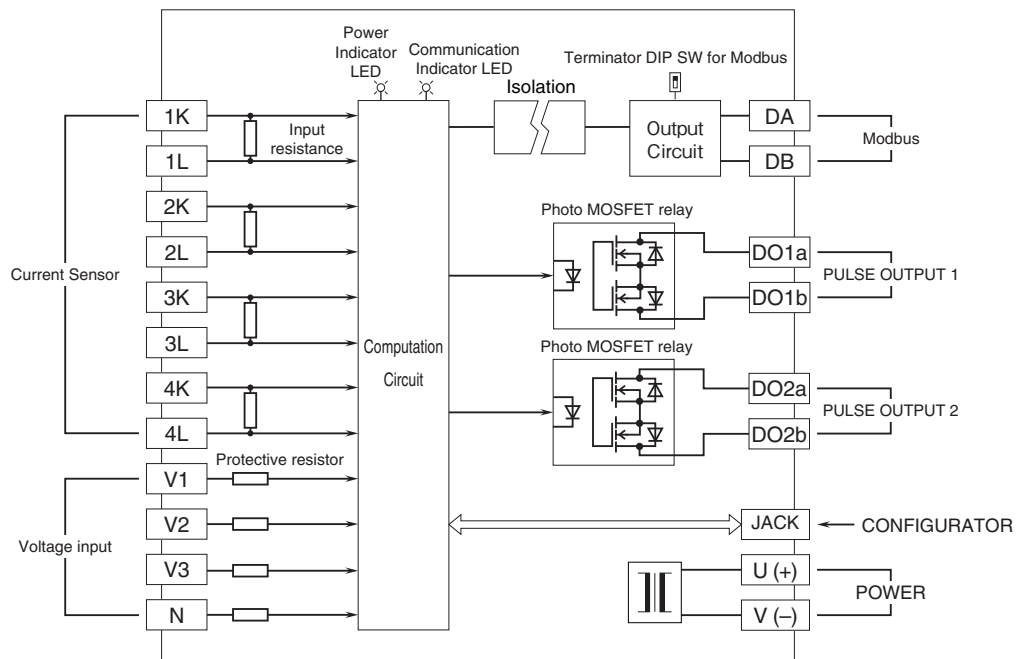


*1. Turn the terminator DIP SW ON to use internal terminator.

EXTERNAL DIMENSIONS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.