

Power Transducer Series

MULTI POWER MONITOR

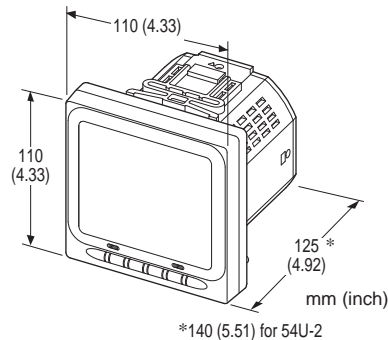
(4 digital displays, CC-Link)

Functions & Features

- Measures simultaneously several variables of a heavy-current power system: current, voltage, active, reactive and apparent power, active and reactive energy, power factor, frequency, etc.
- All measured values, counter values, display mode, setting data are stored in the non-volatile memory at the power off
- Parameters are programmable using the front keys or the PC via infrared interface
- Mounted using M5 screws or mounting brackets
- 60-segment bargraph
- Displayed measurands are freely selectable
- Open collector output for alarm or energy count
- Loop test output

Typical Applications

- Multi-functional power monitor incorporated in an electric device: saves space, wiring works, and cost



MODEL: 54UC-[1][2][3][4]-AD4[5]

ORDERING INFORMATION

- Code number: 54UC-[1][2][3][4]-AD4[5]
- Specify a code from below for each [1] through [5]. (e.g. 54UC-1211-AD4)

[1] CONFIGURATION

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

[2] INPUT

- 1: 480 V / 1 A AC
- 2: 480 V / 5 A AC

[3] DISCRETE INPUT

- 0: None ('External Interface' code 1 Not selectable.)
- 1: 24V DC ('External Interface' codes 2 Not selectable.)
- 2: 110V DC ('External Interface' codes 2 Not selectable.)

[4] EXTERNAL INTERFACE

- 1: CC-Link, Do × 1, Di × 1
- 2: CC-Link, Do × 2

AUXILIARY POWER SUPPLY

- AD4:** universal
 100 - 240 V AC (Operational range 85 - 264 V, 50 / 60 Hz) /
 110 - 240 V DC (Operational range 99 - 264 V, ripple 10 %p-p max)

[5] OPTIONS

- Language**
blank: Japanese
/E: English

RELATED PRODUCTS

- Infrared Communication Adaptor (model: COP-IRU)
 - PC configurator software (model: PMCFG)
- Downloadable at M-System's web site.

GENERAL SPECIFICATIONS

- Construction:** 110-mm square panel flush mounted
Degree of protection
Front panel: IP 50
Terminal block, housing: IP 30
Connection
Voltage input: M4 screw terminals (torque 1.4 N·m)
Current input: M4 screw terminals (torque 1.4 N·m)
Output, power, transmission: M3 screw terminals (torque 0.6 N·m)
Configuration
Code 1: Single phase/2-wire and 3-wire, 3-phase/3-wire balanced/unbalanced load
Code 2: Single phase/2-wire and 3-wire, 3-phase/3-wire balanced/unbalanced load, 3-phase/4-wire balanced/unbalanced load
Housing material: Flame-resistant resin (black)
Isolation: Voltage input to current input to discrete input to CC-Link to discrete output to power to FG1
Measured variables



Voltage: 1 - 2, 2 - 3, 3 - 1, 1 - N, 2 - N, 3 - N
Current: 1, 2, 3, N
Active / reactive / apparent power: 1, 2, 3, Σ
Power factor: 1, 2, 3, Σ
Frequency
Phase angle between voltages: 1 - 2, 2 - 3, 3 - 1
Active energy incoming / outgoing: Σ
Reactive energy inductive / capacitive: Σ
Apparent energy: Σ
Active / reactive / apparent power intervals (demand)
Current intervals (demand): 1, 2, 3, N
Harmonic contents: Σ , 2nd to 31st
Voltage: 1 - 2, 2 - 3, 3 - 1, 1 - N, 2 - N, 3 - N
Current: 1, 2, 3, N
Max. and min. values: 1 = R, 2 = S, 3 = T
■ DISPLAY: LCD with LED backlight (LED OFF timer available)
Signed: 4 digits, 2 lines
Energy: 9 digits, 1 line
Bargraph: 1 point (60 segments)

INPUT SPECIFICATIONS

Frequency: 50 / 60 Hz (45 - 65 Hz)
• Voltage Input
Rated voltage
Line-to-line (delta voltage): 480 V
Line-neutral (phase voltage): 277 V
Consumption VA: $\leq U_{LN}^2 / 300 \text{ k}\Omega / \text{phase}$
Overload capacity: 200 % of rating for 10 sec., 120 % continuous
Selectable primary voltage range: 50 - 400 000 V
• Current Input
Rated current: 1 A or 5 A
Consumption VA: $\leq I^2 \cdot 0.01 \Omega / \text{phase}$
Overload capacity: 4000 % of rating for 1 sec., 2000 % for 4 sec., 120 % continuous
Selectable primary current range: 1 - 20 000 A
Operational range
Voltage, current, apparent power: $\leq 120 \%$ of the rating
Active / reactive power: -120 to +120 % of the rating
Frequency: 45 - 65 Hz
Power factor: -1 to +1
■ Discrete Input: 24 V DC or 110 V DC (input resistance 6 k Ω)
Detecting voltage: External 24 V DC $\pm 10 \%$ or 110 V DC $\pm 10 \%$
ON current: $\geq 1 \text{ mA}$ ($\leq 24 \text{ k}\Omega @ 24 \text{ V}$, $\leq 110 \text{ k}\Omega @ 110 \text{ V}$)
OFF current: $\leq 0.1 \text{ mA}$ ($\geq 240 \text{ k}\Omega @ 24 \text{ V}$, $\geq 1.1 \text{ M}\Omega @ 110 \text{ V}$)
Detecting time: 10 - 1000 msec.
 The status can be monitored on the CC-Link; usable to reset energy count or to update average (demand) value

OUTPUT SPECIFICATIONS

■ Network Interface
Transmission: CC-Link Version 1.10
Transmission cable: Conforms to CC-Link
Node address setting: Control buttons; 1 - 64
Device type: Remote device station
Required node: 1
Transfer rate: Control buttons
Indication: 'COM' segment turns on in normal communications
■ Open Collector
 Programmable for either alarm or energy count.
Max. rated load: 130 V DC @50 mA
Continuous rated load: 130 V DC @30 mA
Saturation voltage: 1.5 V DC
Measurands applicable to alarm: Voltage, current, average current (demand), neutral current, frequency, power, average power (demand) (ON delay, deadband and other parameters are selectable)
Measurands applicable to count: Energy; Pulse rate selectable within 0.1 - 10 000.0 kWh/p, kvarh/p, kVAh/p

INSTALLATION

Power input
• AC: < 8 VA
• DC: < 4 W
Operating temperature: -10 to +55°C (14 to 131°F)
Storage temperature: -20 to +80°C (-4 to +176°F)
Operating humidity: 90 % RH max. (non-condensing)
Mounting: Panel flush mounting (M5 screws (torque 2 N·m) or mounting brackets)
Weight
Configuration Code 1: 500 g (1.1 lb)
Configuration Code 2: 525 g (1.16 lb)

PERFORMANCE

Accuracy
 (at 23°C $\pm 10^\circ\text{C}$ or 73.4°F $\pm 18^\circ\text{F}$, 45 - 65 Hz)
Voltage: $\pm 0.3 \%$; Rated voltage at $\geq 100 \text{ V}$, 100 V at < 100 V
Current: $\pm 0.3 \%$; of Span 1 A or 5 A
Power: $\pm 0.5 \%$; Rated voltage/current at $\geq 100 \text{ V}$
 Wattage as listed below at < 100 V:
 173.2 W (1 A) or 866 W (5 A) for 3ph/3w
 100 W (1 A) or 500 W (5 A) for 1ph/2w
 200 W (1 A) or 1000 W (5 A) for 1ph/3w
 300 W (1 A) or 1500 W (5 A) for 3ph/4w
PF: $\pm 0.5 \%$
Frequency: $\pm 0.1 \%$ of Span
Energy: $\pm 1 \%$



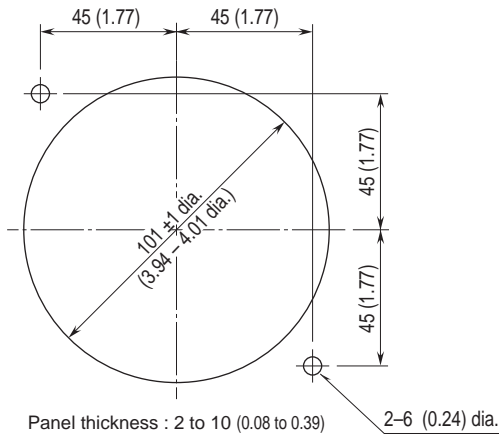
- Harmonic:** $\pm 1\%$ of Span
- Response time:** ≤ 2 sec. (0 - 99 %),
 ≤ 3 sec. for frequency and harmonic contents
- Sampling time:**
 - Harmonic contents and frequency:** ≤ 1.1 sec.
 - Other:** ≤ 600 msec.
- Insulation resistance:** ≥ 100 M Ω with 500 V DC
- Dielectric strength:** 2000 V AC @ 1 minute
(voltage input to current input to discrete input to CC-Link
to discrete output to power to FG1)
2000 V AC @1 minute (circuits to housing)

MOUNTING REQUIREMENTS

■ PANEL CUTOUT unit: mm (inch)

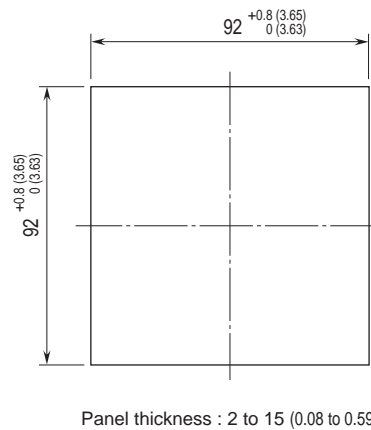
• USING MOUNTING SCREWS

Remove the mounting brackets.



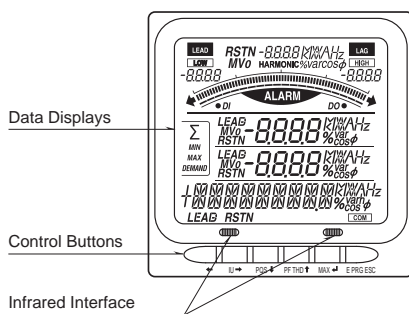
• USING MOUNTING BRACKETS

Remove the mounting screws.



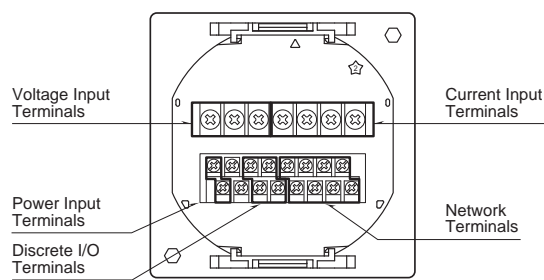
EXTERNAL VIEW

■ FRONT VIEW

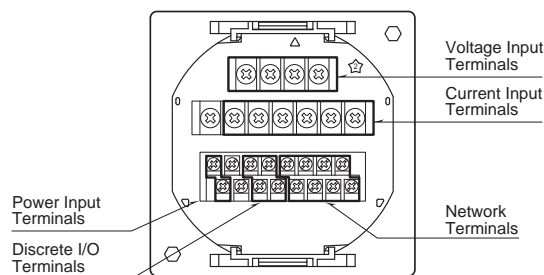


■ REAR VIEW

• 54UC-1

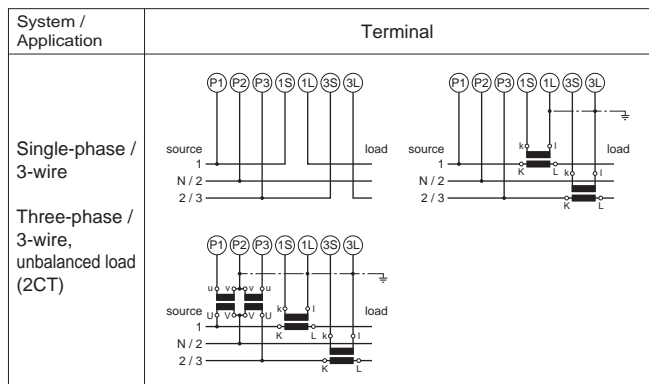
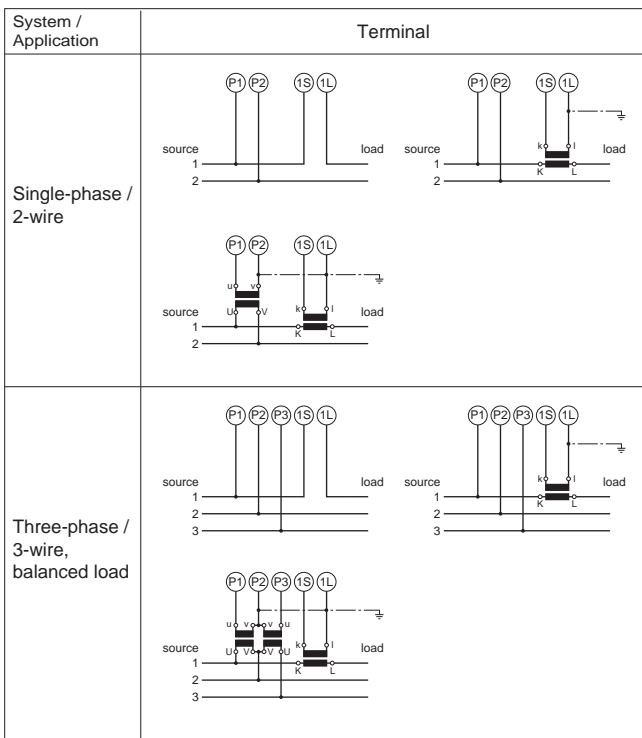
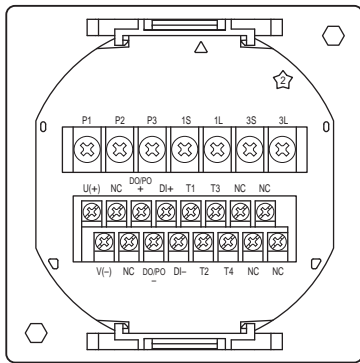


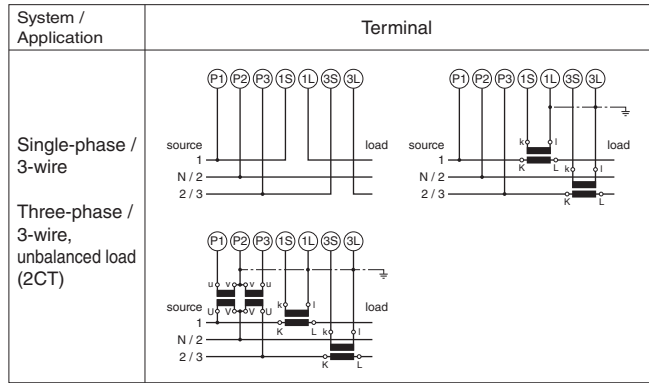
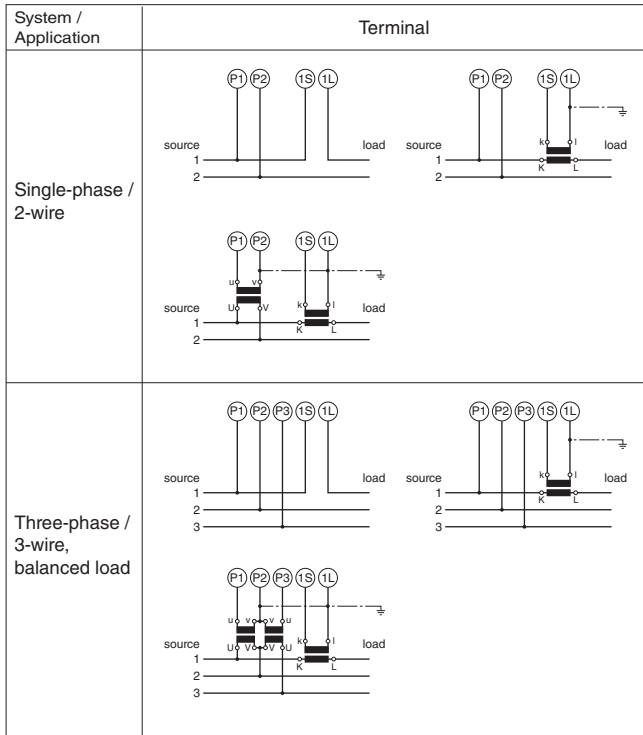
• 54UC-2



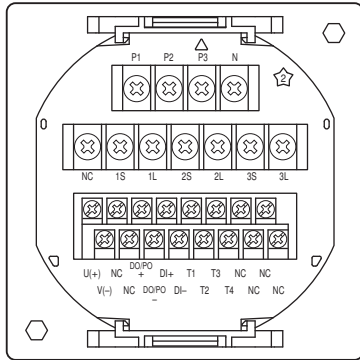
TERMINAL CONNECTIONS

■ 54UC-1





■ 54UC-2



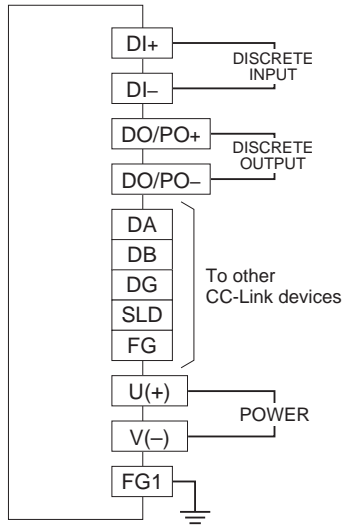
System / Application	Terminal	System / Application	Terminal
Single-phase / 2-wire		Single-phase / 3-wire	
Three-phase / 3-wire, balanced load		Three-phase / 4-wire, balanced load	
Three-phase / 3-wire, unbalanced load (3CT)		Three-phase / 4-wire, unbalanced load	



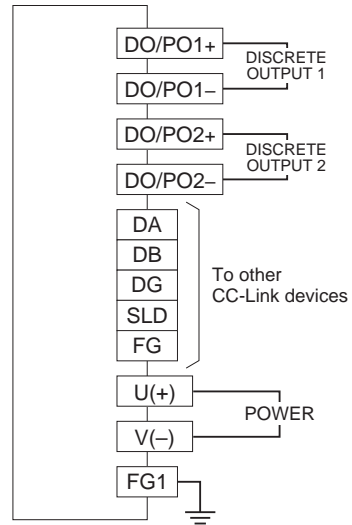
System / Application	Terminal	System / Application	Terminal
Single-phase / 2-wire		Single-phase / 3-wire Three-phase / 3-wire, unbalanced load (2CT)	
Three-phase / 3-wire, balanced load		Three-phase / 4-wire, balanced load	
Three-phase / 3-wire, unbalanced load (3CT)		Three-phase / 4-wire, unbalanced load	



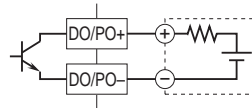
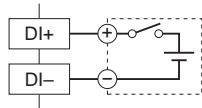
EXTERNAL INTERFACE CODE: 1



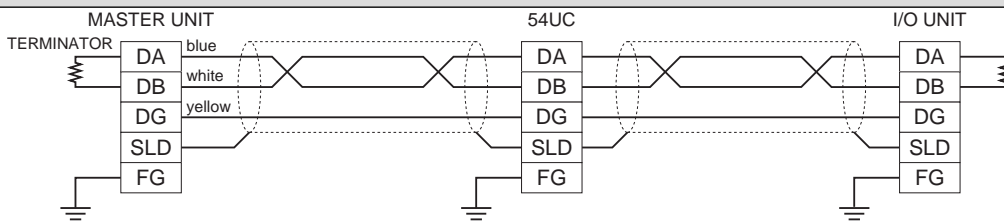
EXTERNAL INTERFACE CODE: 2



- Discrete Input Connection E.g.
- Discrete Output Connection E.g.

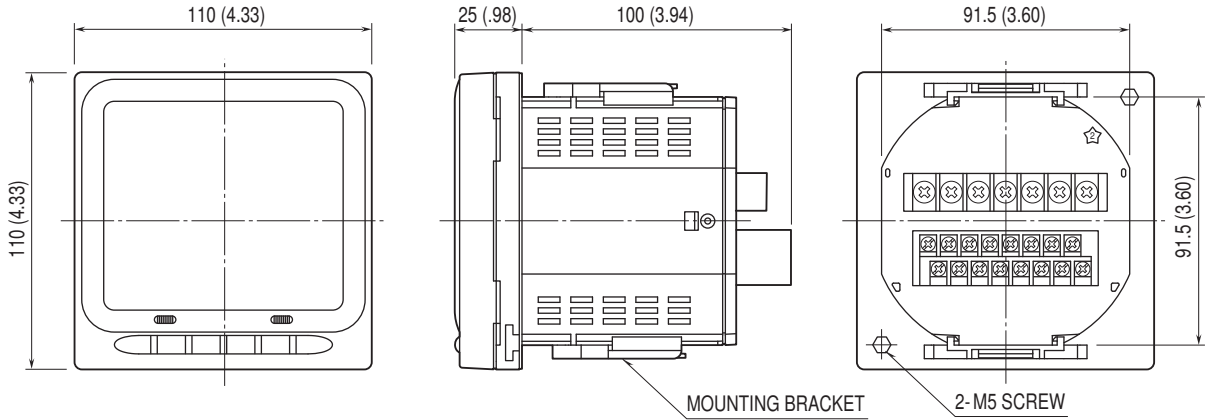


MODBUS WIRING CONNECTION

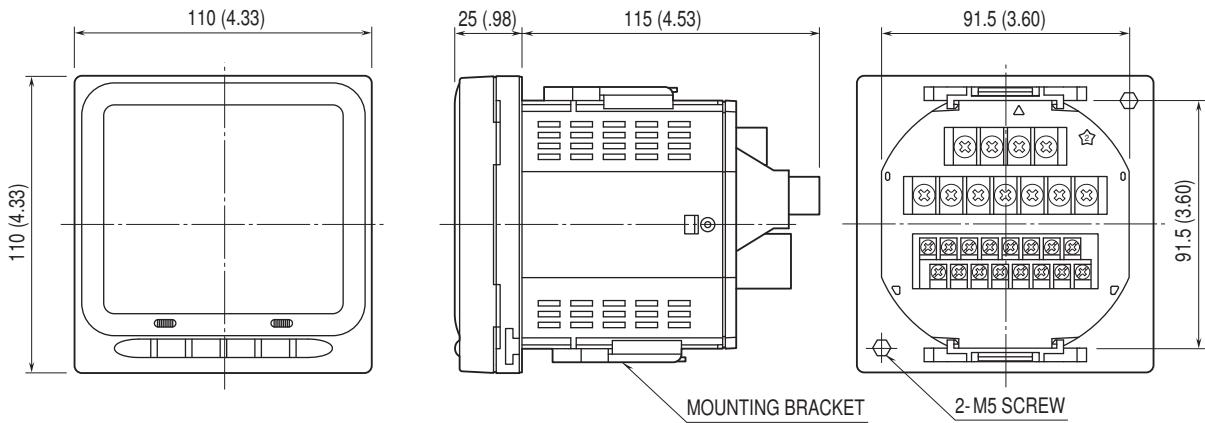


DIMENSIONS unit: mm (inch)

CONFIGURATION CODE 1



CONFIGURATION CODE 2



Specifications are subject to change without notice.

