

Plug-in Signal Conditioners M-UNIT

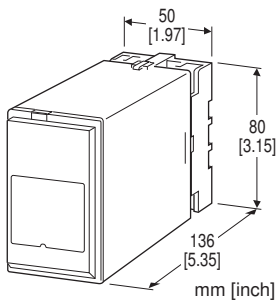
VAR TRANSDUCER

Functions & Features

- Providing a DC output signal in proportion to AC reactive power
- DC output containing little ripple is ideal for computer input
- "Time division multiplication" method accepts distorted waveforms
- Isolation up to 2000 V AC
- High-density mounting

Typical Applications

- Centralized monitoring and control of power management system in a manufacturing facility or building



MODEL: MERP-1[1][2][3]-[4][5]

ORDERING INFORMATION

- Code number: MERP-1[1][2][3]-[4][5]
- Specify a code from below for each of [1] through [5]. (e.g. MERP-11PA-C/Q)
- Calibration range (e.g. lag 1000 - lead 1000 var)
- VT ratio, CT ratio (e.g. VT 3300/110 V, CT 250/5 A)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q (e.g. /C01/S01)

CONFIGURATION

1: 3-phase / 3-wire

[1] INPUT (unbalanced load)

(Voltage must be balanced.)

- 1: 110 V / 5 A AC
- 2: 110 V / 1 A AC
- 3: 220 V / 1 A AC
- 4: 220 V / 5 A AC

[2] OUTPUT SIGNAL POLARITY

P: Negative in lag, positive in lead

M: Negative in lead, positive in lag

[3] OUTPUT

Current

A: 4 - 20 mA DC (Load resistance 600 Ω max.)

B: 2 - 10 mA DC (Load resistance 1200 Ω max.)

C: 1 - 5 mA DC (Load resistance 2400 Ω max.)

D: 0 - 20 mA DC (Load resistance 600 Ω max.)

E: 0 - 16 mA DC (Load resistance 750 Ω max.)

F: 0 - 10 mA DC (Load resistance 1200 Ω max.)

G: 0 - 1 mA DC (Load resistance 12 kΩ max.)

GW: -1 - +1 mA DC (Load resistance 10 kΩ max.)

Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

1: 0 - 10 mV DC (Load resistance 10 kΩ min.)

2: 0 - 100 mV DC (Load resistance 100 kΩ min.)

3: 0 - 1 V DC (Load resistance 1000 Ω min.)

4: 0 - 10 V DC (Load resistance 10 kΩ min.)

5: 0 - 5 V DC (Load resistance 5000 Ω min.)

6: 1 - 5 V DC (Load resistance 5000 Ω min.)

1W: -10 - +10 mV DC (Load resistance 10 kΩ min.)

2W: -100 - +100 mV DC (Load resistance 100 kΩ min.)

3W: -1 - +1 V DC (Load resistance 1000 Ω min.)

4W: -10 - +10 V DC (Load resistance 10 kΩ min.)

5W: -5 - +5 V DC (Load resistance 5000 Ω min.)

0: Specify voltage (See OUTPUT SPECIFICATIONS)

[4] POWER INPUT

AC Power

B: 100 V AC

C: 110 V AC

D: 115 V AC

F: 120 V AC

G: 200 V AC

H: 220 V AC

J: 240 V AC

DC Power

S: 12 V DC

R: 24 V DC

V: 48 V DC

P: 110 V DC

[5] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

TERMINAL SCREW MATERIAL

/S01: Stainless steel

GENERAL SPECIFICATIONS

Construction: Plug-in

Connection: M3.5 screw terminals

Screw terminal: Chromated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Voltage input to current input to output to power

Overrange output: Approx. -10 to +120 % at 1 - 5 V

Zero adjustment: -5 to +5 % (front)

Span adjustment: 95 to 105 % (front)

INPUT SPECIFICATIONS

Frequency: 50 or 60 Hz

• Current Input

Operational range: 0 - 120 % of rating

Overload capacity: 1000 % of rating for 3 sec., 200 % for 10 sec., 120% continuous

• Voltage Input

Operational range: 0 - 120 % of rating

Overload capacity: 150 % of rating for 10 sec., 120 % continuous

■ Input Range

How To Determine Var Range:

Calibration Range [var] = Measuring Range ÷ ((VT Ratio) × (CT Ratio))

Check that the required calibration range is within the available range in the table. Specify this range when ordering.

[example]

3-phase / 3-wire, measuring range 75 kvar, VT 220 / 110 V, CT 250 / 5 A

$75 \times 10^3 \text{ [var]} \div ((220 \div 110) \times (250 \div 5)) = 750 \text{ [var]}$

• 3-phase / 3-wire

INPUT		AVAILABLE RANGE	BURDEN (VA)	
STD.RANGE			VOLT.	CURR.
110V/1A	200 var	100 - 240 var	0.2 /phase	0.1/phase
110V/5A	1000 var	500 - 1200 var		0.5/phase
220V/1A	400 var	200 - 480 var	0.4 /phase	0.1/phase
220V/5A	2000 var	1000 - 2400 var		0.5/phase

OUTPUT SPECIFICATIONS

■ **DC Current:** 0 - 20 mA DC and ± 1 mA

Minimum span: 1 mA

Offset: Max. 1.5 times span

Load resistance: Output drive 12 V maximum; 10 V for [±] output

■ **DC Voltage:** -10 - +12 V DC

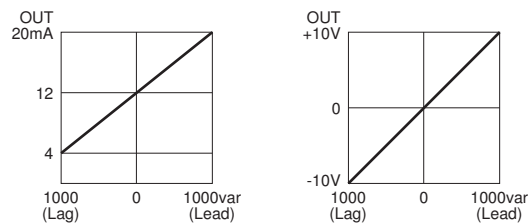
Minimum span: 5 mV

Offset: Max. 1.5 times span

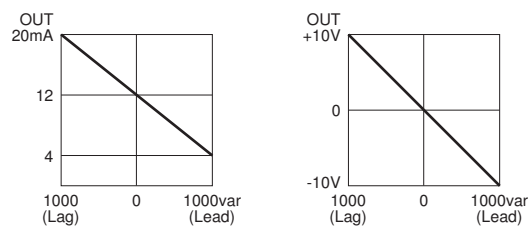
Load resistance: Output drive 1 mA max. at ≥ 0.5 V

■ OPERATION DIAGRAM (example)

• Negative in lag, positive in lead



• Negative in lead, positive in lag



INSTALLATION

Power input

• **AC:** Operational voltage range: rating ±10 %, 50/60 ±2 Hz, approx. 2 VA

• **DC:** Operational voltage range: rating ±10 %, or 85 - 150 V for 110 V rating, ripple 10 %p-p max., approx. 2 W (18 mA at 110 V)

Operating temperature: -5 to +60°C (23 to 140°F)

Operating humidity: 30 to 85 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: 400 g (0.88 lb)

PERFORMANCE in percentage of span

Accuracy: $\pm 0.5\%$

Temp. coefficient: $\pm 0.05\%/^{\circ}\text{C}$ ($\pm 0.03\%/^{\circ}\text{F}$)

Response time: ≤ 1 sec. (0 - 90 %)

Ripple: 0.5 %p-p max. (50/60 Hz)

The output ripple may increase when there is great difference between the frequencies of input signal and power supply.

Line voltage effect: $\pm 0.1\%$ over voltage range

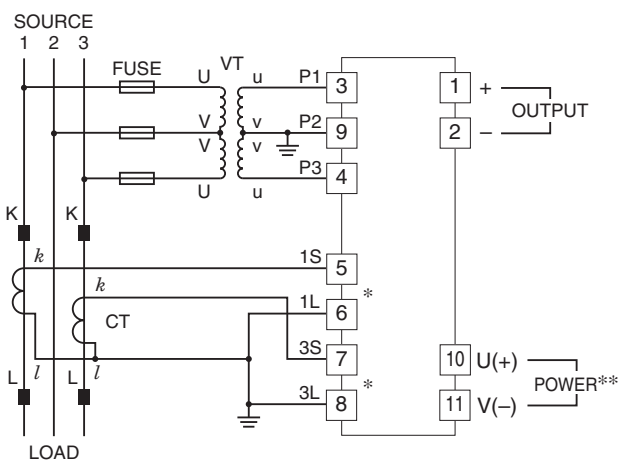
Insulation resistance: $\geq 100\text{ M}\Omega$ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute

(voltage input to current input to output to power to ground)

CONNECTION DIAGRAM

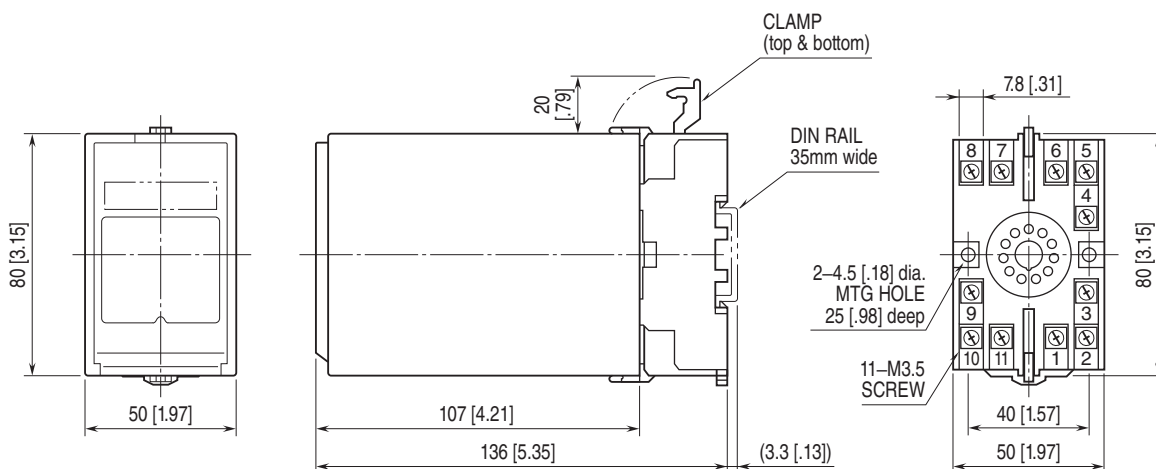
3-PHASE/3-WIRE



*CT Protector (model: CTM) attached to these terminals.

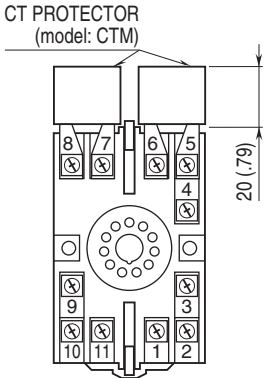
**The transducer can be powered from the input voltage when the voltage is sufficiently stable and meets other supply voltage requirements.

EXTERNAL DIMENSIONS unit: mm [inch]



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

TERMINAL ASSIGNMENTS unit: mm [inch]



Specifications are subject to change without notice.