

## Plug-in Signal Conditioners K-UNIT

### VAR TRANSDUCER

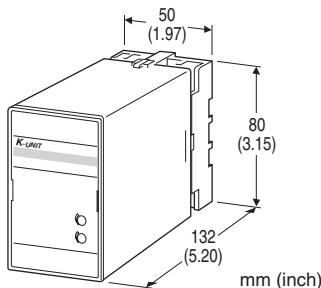
(self-powered)

#### 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
- No auxiliary power source required

#### Typical Applications

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



## MODEL: KERPN-1[1][2][3][4]

### ORDERING INFORMATION

- Code number: KERPN-1[1][2][3][4]

Specify a code from below for each of [1] through [4].  
(e.g. KERPN-11PA/Q)

- Calibration range (e.g. lag 1000 - 0 - 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] 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

Computation: Time division multiplication

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

### • Voltage Input

Operational range: 85 - 110 % of rating

Overload capacity: 150 % of rating for 10 sec., 110 % continuous

### • Current Input

Operational range: 0 - 120 % of rating

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

### ■ 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.

[example]

3-phase / 3-wire, measuring range 75 kvar,

VT 220 / 110 V, CT 250 / 5 A

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

### ■ INPUT RANGE

#### • 3-phase / 3-wire

INPUT		AVAILABLE RANGE	BURDEN (VA)	
STD.RANGE			VOLT.	CURR.
110V/1A	200 var	100 - 240 var	P <sub>1</sub> : 2.5 P <sub>3</sub> : 0.2	0.1/ph 0.5/ph
110V/5A	1000 var	500 - 1200 var		
220V/1A	400 var	200 - 480 var	P <sub>1</sub> : 2.5 P <sub>3</sub> : 0.4	0.1/ph 0.5/ph
220V/5A	2000 var	1000 - 2400 var		

## 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 max.

■ DC Voltage: -10 - +12 V DC

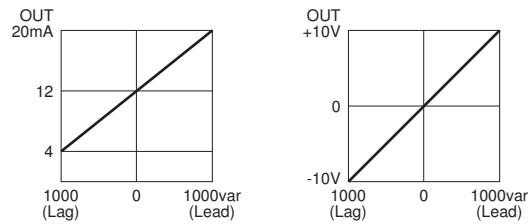
Minimum span: 5 mV

Offset: Max. 1.5 times span

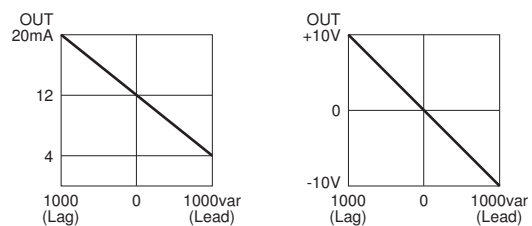
Load resistance: Output drive 1 mA max. at ≥ 0.5 V

### ■ OPERATION DIAGRAM (example)

#### • Negative in lag, positive in lead



#### • Negative in lead, positive in lag



## INSTALLATION

Operating temperature: -10 to +55°C (14 to 131°F)

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

Mounting: Surface or DIN rail

Weight: 450 g (0.99 lb)

## PERFORMANCE in percentage of span

Accuracy: ±0.5 % (at 23°C ±10°C or 73.4°F ±18°F, 45 - 65 Hz)

Response time: ≤ 2 sec. (0 - 100 % ±1 %)

Ripple: 0.5 %p-p max.

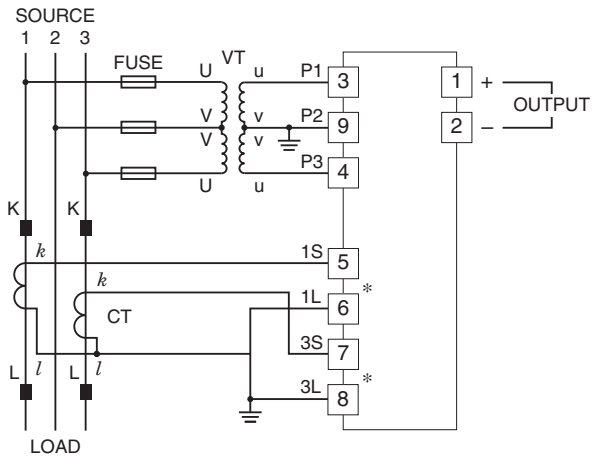
Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute (voltage input to current input to output to ground)

Impulse withstand voltage: 1.2 / 50 μsec., ±5 kV (input to output or ground)

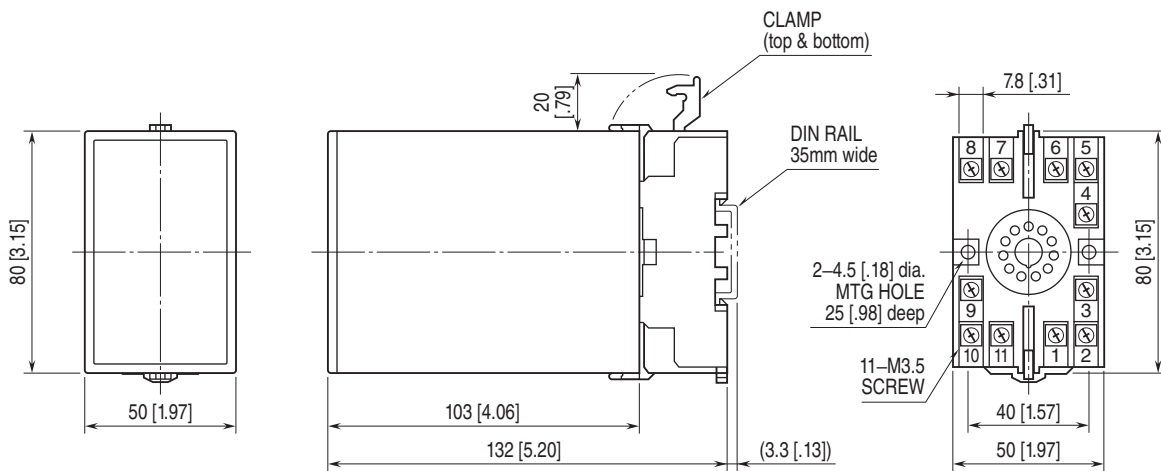
## CONNECTION DIAGRAM

### ■ 3-PHASE/3-WIRE



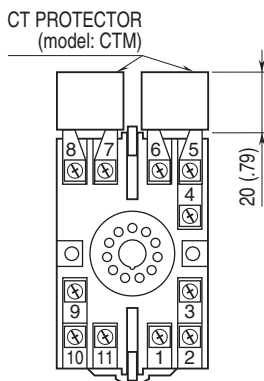
\*CT Protector (model: CTM) attached to these terminals.

## 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.