

## Plug-in Signal Conditioners K-UNIT

### VAR TRANSDUCER

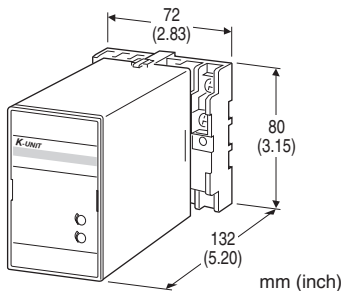
(for 3-phase / 4-wire, self-powered)

#### 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: KUREN-4[1][2][3][4]

### ORDERING INFORMATION

- Code number: KUREN-4[1][2][3][4]
- Specify a code from below for each of [1] through [4]. (e.g. KUREN-41PA/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

4: 3-phase / 4-wire

#### [1] INPUT (unbalanced load)

(Voltage must be balanced.)

- 1: 63.5 V / 110 V / 5 A AC
- 2: 63.5 V / 110 V / 1 A AC
- 3: 127 V / 220 V / 1 A AC
- 4: 127 V / 220 V / 5 A AC

- 5: 220 V / 380 V / 1 A AC
- 6: 220 V / 380 V / 5 A AC
- 7: 110 V / 190 V / 1 A AC
- 8: 110 V / 190 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 / 4-wire, measuring range 75 kvar,

VT 127 / 127 V, CT 250 / 5 A

$(75 \times 10^3 [\text{var}]) \div ((127 \div 127) \times (250 \div 5)) = 1500 [\text{var}]$

### ■ INPUT RANGE

#### • 3-phase / 4-wire

INPUT		AVAILABLE RANGE	BURDEN (VA)	
STD.RANGE			VOLT.	CURR.
$\frac{110V}{\sqrt{3}} / 1A$	200 var	100 - 240 var	P <sub>1</sub> -P <sub>2</sub> : 2.5 P <sub>3</sub> : 0.1	0.1 /phase
$\frac{110V}{\sqrt{3}} / 5A$	1000 var	500 - 1200 var		0.5 /phase
$\frac{190V}{\sqrt{3}} / 1A$	350 var	175 - 420 var	P <sub>1</sub> : 2.5 P <sub>2</sub> , P <sub>3</sub> : 0.2	0.1 /phase
$\frac{190V}{\sqrt{3}} / 5A$	1750 var	875 - 2100 var		0.5 /phase
$\frac{220V}{\sqrt{3}} / 1A$	400 var	200 - 480 var	P <sub>1</sub> -P <sub>2</sub> : 2.5 P <sub>3</sub> : 0.3	0.1 /phase
$\frac{220V}{\sqrt{3}} / 5A$	2000 var	1000 - 2400 var		0.5 /phase
$\frac{380V}{\sqrt{3}} / 1A$	700 var	350 - 840 var	P <sub>1</sub> : 2.5 P <sub>2</sub> , P <sub>3</sub> : 0.4	0.1 /phase
$\frac{380V}{\sqrt{3}} / 5A$	3500 var	1750 - 4200 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 max.

■ **DC Voltage:** -10 - +12 V DC

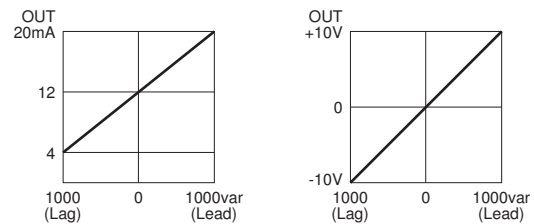
**Minimum span:** 5 mV

**Offset:** Max. 1.5 times span

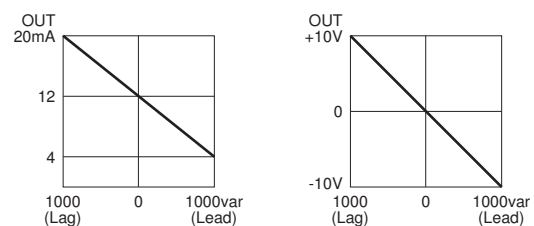
**Load resistance:** Output drive 1 mA max. at ≥ 0.5 V

### ■ 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:** 500 g (1.1 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

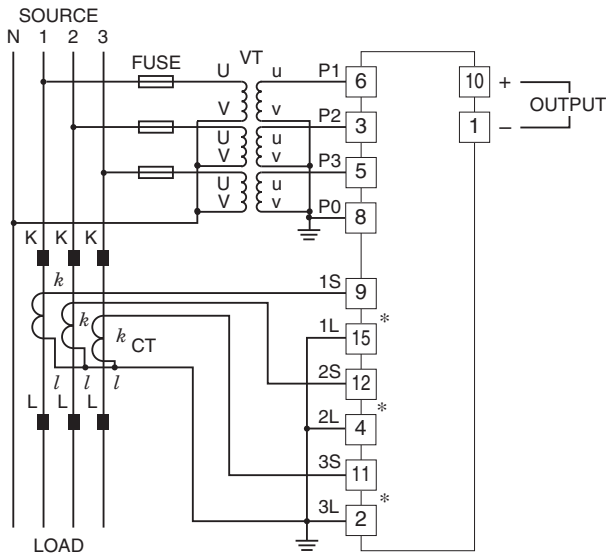
(voltage input to current input to output to ground)

**Impulse withstand voltage:** 1.2 / 50 μsec., ±5 kV

(input to output or ground)

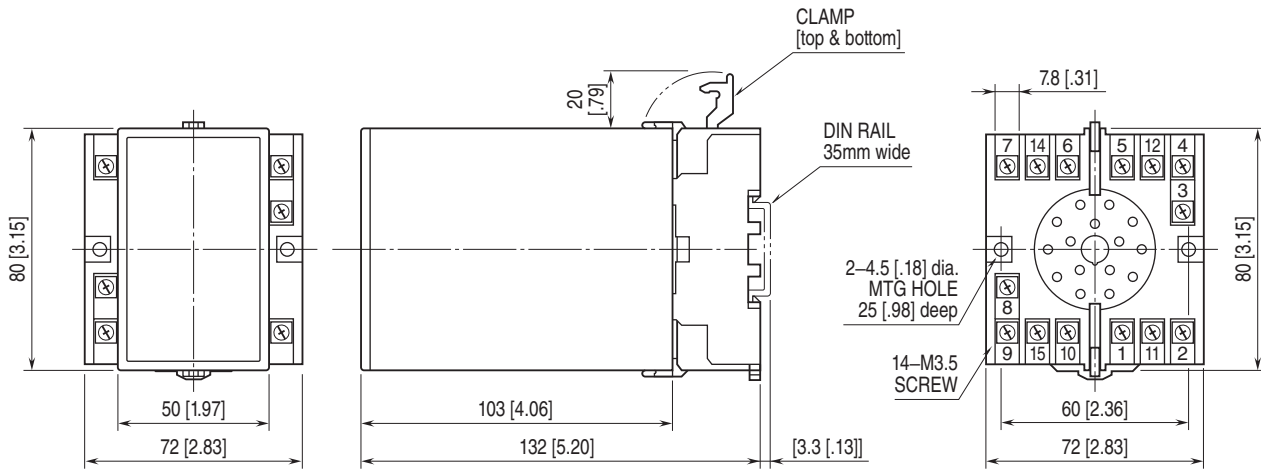
## CONNECTION DIAGRAM

### ■ 3-PHASE/4-WIRE



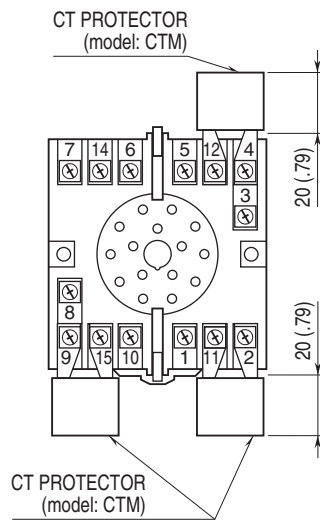
\*CT Protector (model: CTM) attached to these terminals.

## 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.