## Plug-in Signal Conditioners K-UNIT

## WATT TRANSDUCER

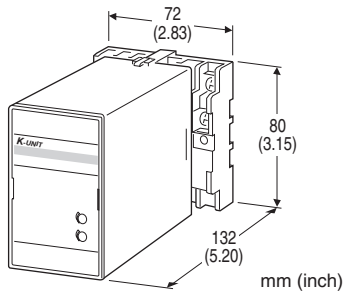
(for 3-phase / 4-wire)

**Functions & Features**

- Providing a DC output signal in proportion to AC active power
- Measuring bidirectional power flow
- 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
- SCR – Silicon Controlled Rectifier




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

## ORDERING INFORMATION

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

Specify a code from below for each of [1] through [4].
(e.g. KUWE-41A-C/Q)

- Calibration range (e.g. 0 – 980W)
- 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)

**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

**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.)
**J**: 0 – 5 mA DC (Load resistance 2400 Ω 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)

## [3] AUXILIARY POWER SUPPLY

**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**

**R**: 24 V DC
**V**: 48 V DC
**P**: 110 V DC

## [4] OPTIONS

**blank**: none
**/Q**: With options (specify the specification)

## SPECIFICATIONS OF OPTION: Q (multiple selections)

**COATING (For the detail, refer to M-System's 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 auxiliary power

**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**: 0 – 120 % of rating

**Overload capacity**: 150 % of rating for 10 sec., 120 % 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 Wattage Range**

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

Check that the required calibration range is within the available range in the table.

[example]

3-phase / 4-wire, measuring wattage 75 kW,

VT 127 / 127 V, CT 250 / 5 A

$(75 \times 10^3\ [W]) \div ((127 \div 127) \times (250 \div 5)) = 1500\ [W]$

■ **INPUT RANGE**

• **3-phase / 4-wire**

| INPUT | STD.RANGE | AVAILABLE RANGE | BURDEN (VA) VOLT. | BURDEN (VA) CURR. |
|---|---|---|---|---|
| $\frac{110V}{\sqrt{3}}$/1A | ±200 W | ±100 – ±240 W | 0.1 /phase | 0.1 /phase |
| $\frac{110V}{\sqrt{3}}$/5A | ±1000 W | ±500 – ±1200 W | | 0.5 /phase |
| $\frac{190V}{\sqrt{3}}$/1A | ±350 W | ±175 – ±420 W | 0.2 /phase | 0.1 /phase |
| $\frac{190V}{\sqrt{3}}$/5A | ±1750 W | ±875 – ±2100 W | | 0.5 /phase |
| $\frac{220V}{\sqrt{3}}$/1A | ±400 W | ±200 – ±480 W | 0.3 /phase | 0.1 /phase |
| $\frac{220V}{\sqrt{3}}$/5A | ±2000 W | ±1000 – ±2400 W | | 0.5 /phase |
| $\frac{380V}{\sqrt{3}}$/1A | ±700 W | ±350 – ±840 W | 0.4 /phase | 0.1 /phase |
| $\frac{380V}{\sqrt{3}}$/5A | ±3500 W | ±1750 – ±4200 W | | 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.

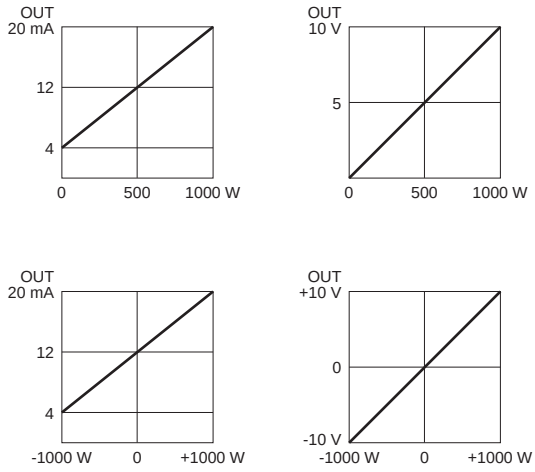
■ **DC Voltage**: -10 – +12 V DC

**Minimum span**: 5 mV

**Offset**: Max. 1.5 times span

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

■ **OPERATION DIAGRAM (example)**




## INSTALLATION

**Auxiliary power supply**

•**AC**: Operational voltage range: rating -15/+10 %, 50/60 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**: -10 to +55°C (14 to 131°F)

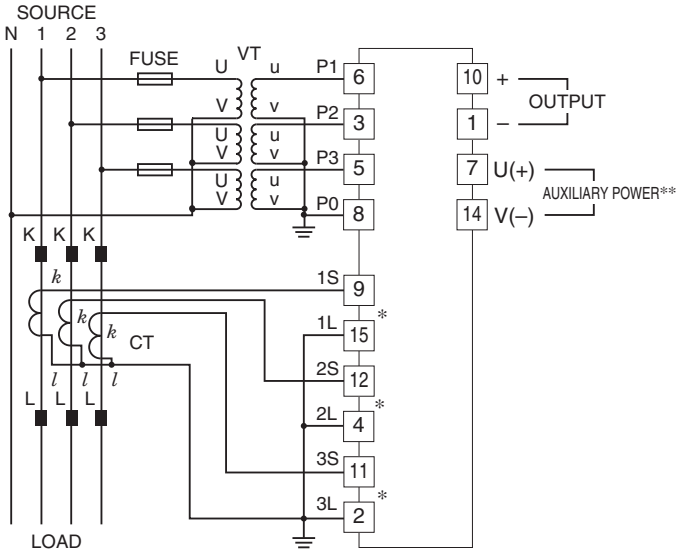
**Operating humidity**: 30 to 85 %RH (non-condensing)
**Mounting**: Surface or DIN rail
**Weight**: 500 g (1.1 lb)

## 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.(The output ripple may increase when there is great difference between the frequencies of input signal and power supply)
**Line voltage effect**: ±0.1 % over voltage range
**Insulation resistance**: ≥ 100 MΩ with 500 V DC
**Dielectric strength**: 2000 V AC @ 1 minute
(voltage input to current input to output to auxiliary power to ground)
**Impulse withstand voltage**: 1.2 / 50 µsec., ±5 kV
(input to output or ground)

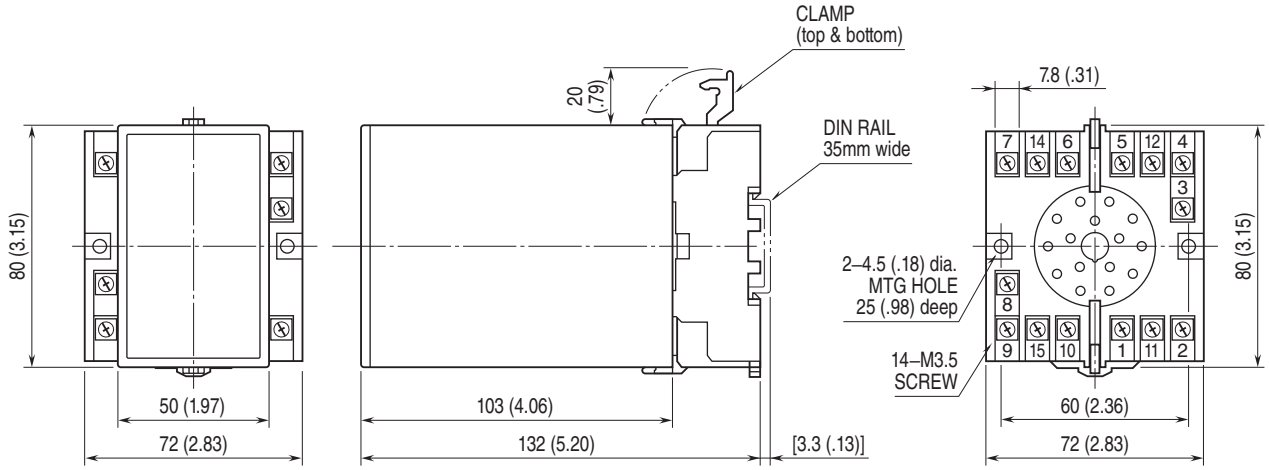
## CONNECTION DIAGRAM

■ **3-PHASE/4-WIRE**



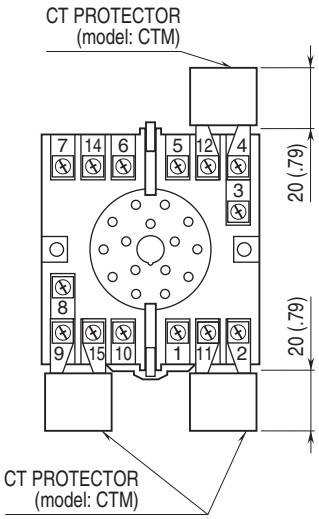

*CT Protector (model: CTM) attached to these terminals.
**The transducer can be powered from the input voltage when the voltage is sufficiently stable and meets within the range of auxiliary power supply of the unit specified in the data sheet/instruction manual.

## 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.