

## Power Transducer Series LT-UNIT

### PHASE ANGLE TRANSDUCER

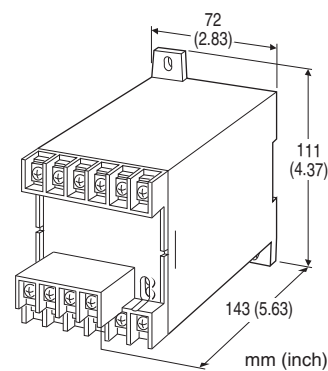
(self-powered)

#### Functions & Features

- Provides a DC output signal in proportion to phase angle
- DC output containing little ripple is ideal for computer input
- Isolation up to 2000 V AC
- High-density mounting
- Conforms to IEC 60688
- No auxiliary power supply required

#### Typical Applications

- Centralized monitoring and control of power management system in a manufacturing facility or building
- Measuring phase angle for a motor



## MODEL: LTPAN-[1][2][3][4][5][6]

### ORDERING INFORMATION

- Code number: LTPAN-[1][2][3][4][5][6]
- Specify a code from below for each of [1] through [6].  
(e.g. LTPAN-115PA/T/Q)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q  
(e.g. /C01)

### [1] CONFIGURATION

- 1: 3-phase / 3-wire
- 4: 3-phase / 4-wire

### [2] VT INPUT (balanced load)

For 3-phase / 4-wire, phase voltages (e.g. 110 V /  $\sqrt{3}$ ) are used.

- 1: 110 V AC
- 2: 220 V AC
- 4: 220 V / 380 V AC (3-phase/4-wire only)

### [3] CT INPUT (balanced load)

- Current
- 1: 1 A AC
- 2: 2 A AC
- 5: 5 A AC

### [4] OUTPUT SIGNAL POLARITY

- P: Negative in lag, positive in lead
- M: Negative in lead, positive in lag

### [5] OUTPUT

- Current
- A: 4 - 20 mA DC (Load resistance 500  $\Omega$  max.)
- FW: -10 - +10 mA DC (Load resistance 1000  $\Omega$  max.)
- GW: -1 - +1 mA DC (Load resistance 10 k $\Omega$  max.)
- JW: -5 - +5 mA DC (Load resistance 2000  $\Omega$  max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)
- Voltage
- 6: 1 - 5 V DC (Load resistance 5000  $\Omega$  min.)
- 1W: -10 - +10 mV DC (Load resistance 10 k $\Omega$  min.)
- 2W: -100 - +100 mV DC (Load resistance 100 k $\Omega$  min.)
- 3W: -1 - +1 V DC (Load resistance 1000  $\Omega$  min.)
- 4W: -10 - +10 V DC (Load resistance 10 k $\Omega$  min.)
- 5W: -5 - +5 V DC (Load resistance 5000  $\Omega$  min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

### [6] OPTIONS (multiple selections)

- Terminal Cover
- blank: Without
- /T: With
- Other Options
- blank: none
- /Q: Option other than the above (specify the specification)

### SPECIFICATIONS OF OPTION: Q

- COATING (For the detail, refer to our web site.)
- /C01: Silicone coating
- /C02: Polyurethane coating
- /C03: Rubber coating

### GENERAL SPECIFICATIONS

- Connection: M4 screw terminals (torque 1.2 N·m)
- Screw terminal: Chrome-plated steel
- Housing material: Flame-resistant resin (black)
- Isolation: Voltage input to current input to output
- Computation: Phase angle detection
- 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

Input burden: 2.5 VA

### ■ CURRENT INPUT

Operational range: 10 - 120 % of rating

Overload capacity: 4000 % of rating for 1 sec., 2000% for 4 sec., 120 % continuous

Input burden: 0.1 VA (input 1 A)

0.2 VA (input 2 A)

0.5 VA (input 5 A)

### ■ Input range:

lag 60°- 0 - lead 60°

lead 60°- 0 - lag 60°

## OUTPUT SPECIFICATIONS

■ DC Current: -10 - +20 mA DC

Span: Min. 1 mA, max. 20 mA

Offset: Max. 1.5 times span

Load resistance: Output drive 10 V max.

■ DC Voltage: -10 - +12 V DC

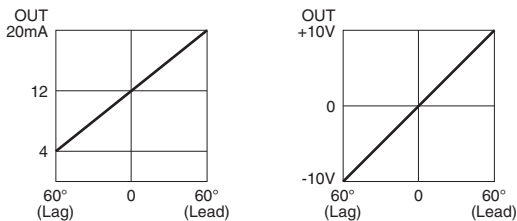
Minimum span: 5 mV

Offset: Max. 1.5 times span

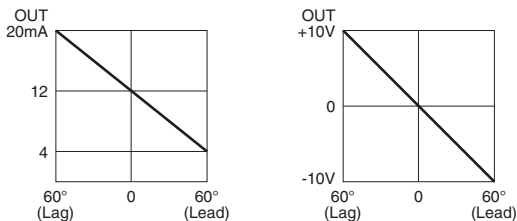
Load resistance: Output drive 1 mA max. at  $\geq 0.5$  V

### ■ OPERATION DIAGRAM (example)

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



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



Note: When there is 5% or less of rated input current, the output may become unstable (hunting).

## 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:  $\pm 2$  % with balanced load

(at 23°C  $\pm 10$ °C or 73.4°F  $\pm 18$ °F, 45 - 65 Hz)

Magnetic field (ext. origin) effect:  $\pm 2$  % (400 A/m)

Response time:  $\leq 2$  sec. (0 - 100 %  $\pm 1$  %)

Ripple: 0.5 %p-p max.

Insulation resistance:  $\geq 100$  M $\Omega$  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  $\mu$ sec.,  $\pm 5$  kV

(input to output or ground)

## STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Measurement Category II (input)

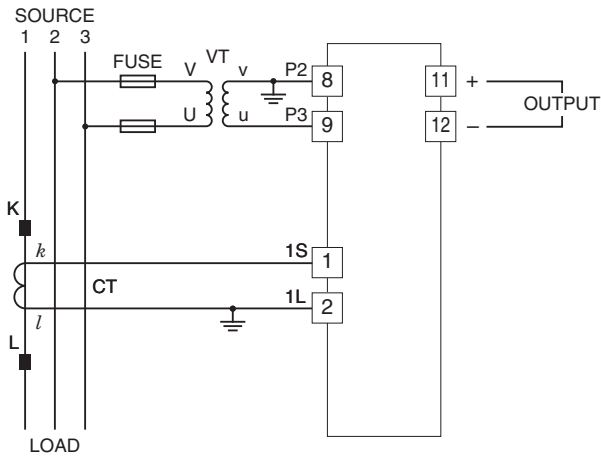
Pollution Degree 2

Input to output: Reinforced insulation (300 V)

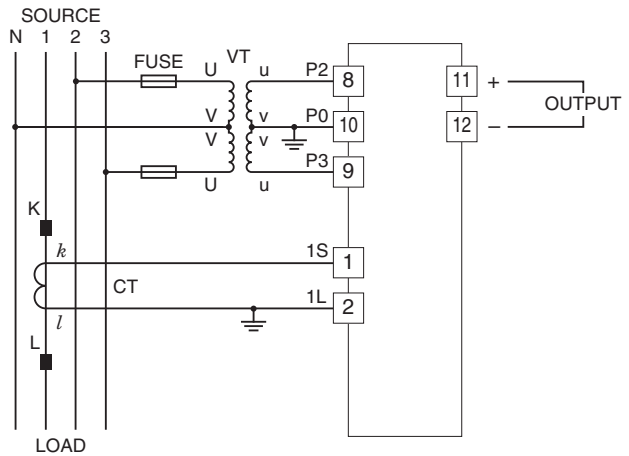
RoHS Directive

## CONNECTION DIAGRAM

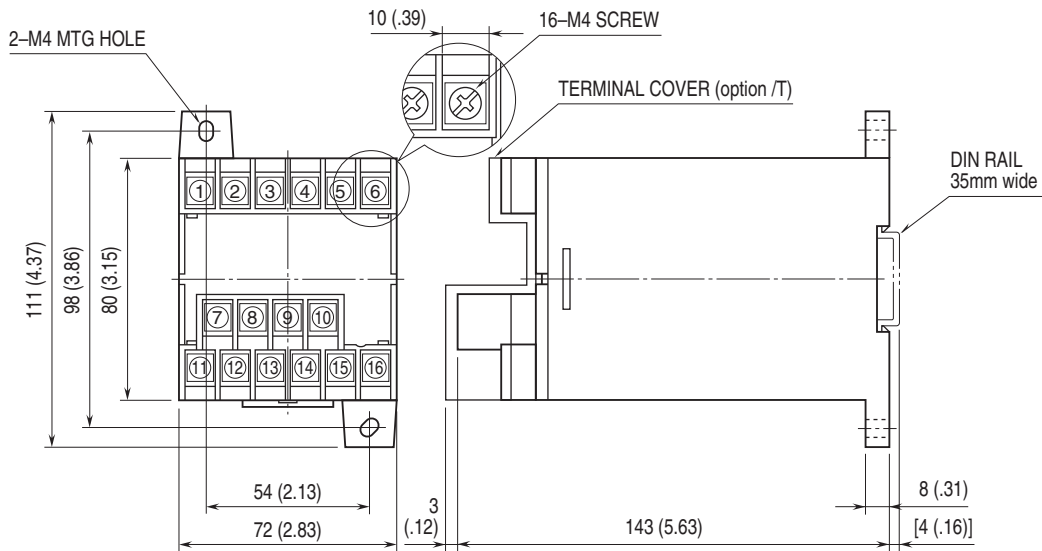
### ■ 3-PHASE/3-WIRE



### ■ 3-PHASE/4-WIRE



## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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



Specifications are subject to change without notice.