Power Transducer Series LT-UNIT

PHASE ANGLE TRANSDUCER

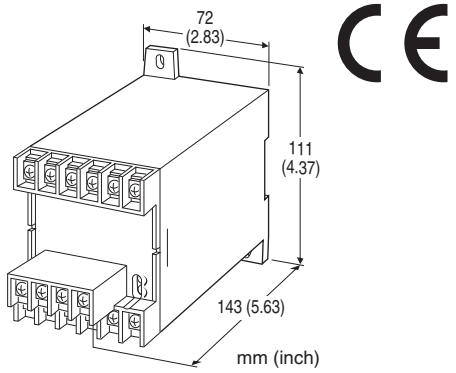
(self-powered)

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 / √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 Ω max.)
FW: -10 – +10 mA DC (Load resistance 1000 Ω max.)
GW: -1 – +1 mA DC (Load resistance 10 kΩ max.)
JW: -5 – +5 mA DC (Load resistance 2000 Ω max.)
Z: Specify current (See OUTPUT SPECIFICATIONS)
Voltage
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)

[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 M-System's 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

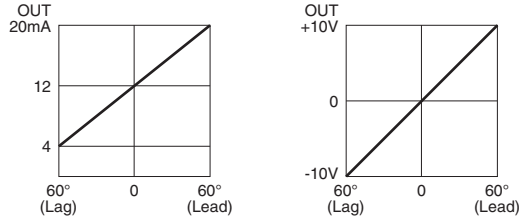
Minimum span: 5 mV

Offset: Max. 1.5 times span

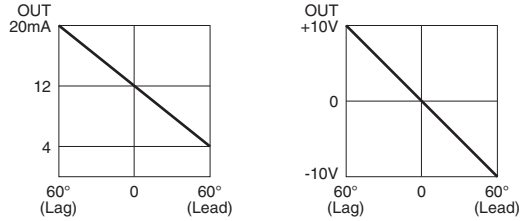
Load resistance: Output drive 1 mA max. at ≥ 0.5 V

■ **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: ± 2 % with balanced load
(at 23°C ±10°C or 73.4°F ±18°F, 45 – 65 Hz)

Magnetic field (ext. origin) effect: ±2 % (400 A/m)

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)

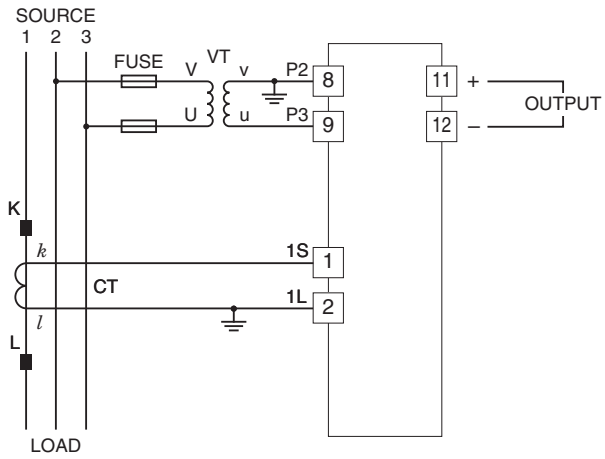
Impulse withstand voltage: 1.2 / 50 µsec., ±5 kV
(input to output or ground)

STANDARDS & APPROVALS

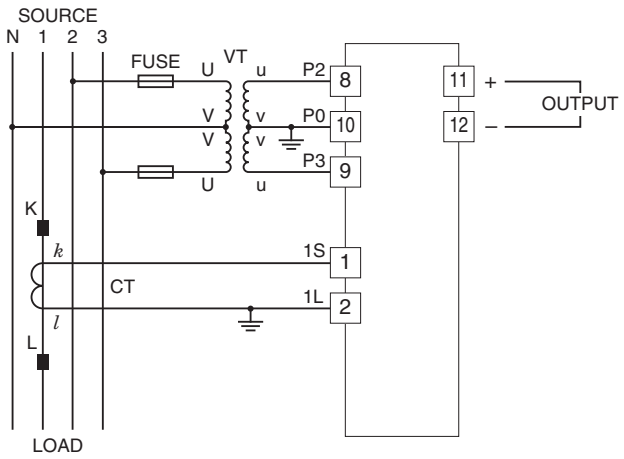
EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
Low Voltage Directive
EN 61010-1
Measurement Category II (input)
Pollution Degree 2
Input to output: Reinforced insulation (300 V)
RoHS Directive

CONNECTION DIAGRAM

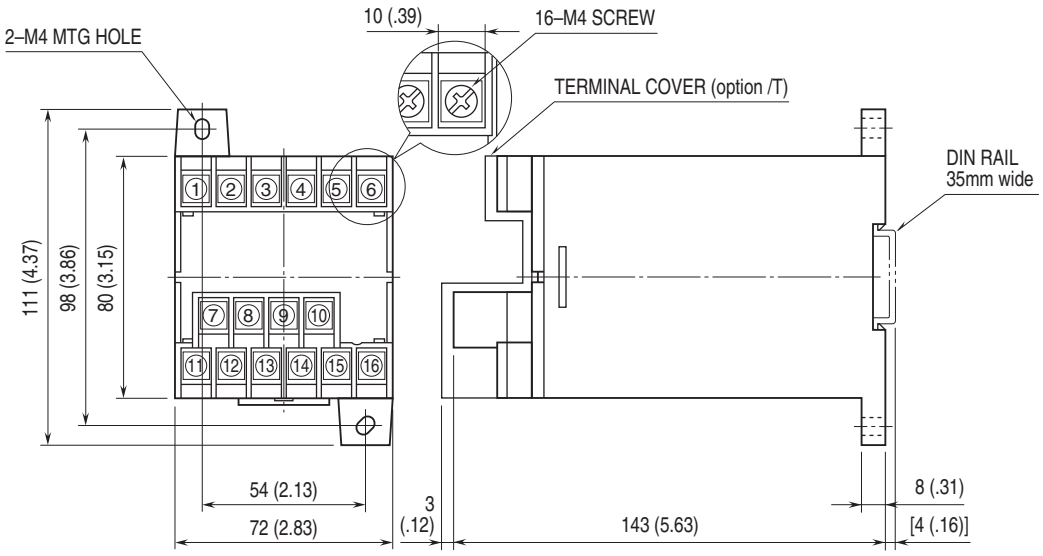
■ 3-PHASE/3-WIRE



■ 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.