

Power Transducer Series L-UNIT

(220 V in code 5 and 6, and 110 V in code 7 and 8 are phase voltage)

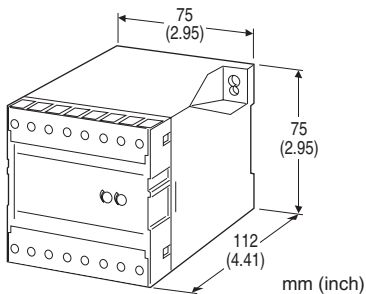
PHASE ANGLE TRANSDUCER

Functions & Features

- Providing 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

Typical Applications

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



MODEL: LPA-[1][2][3][4]-[5][6]

ORDERING INFORMATION

- Code number: LPA-[1][2][3][4]-[5][6]
Specify a code from below for each [1] through [6].
(e.g. LPA-11PA-C/Q)
- Special DC output range (For codes Z & 0)
- Specify the specification for option code /Q
(e.g. /C01/S01)

[1] CONFIGURATION

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

[2] INPUT (balanced load)

- 1: 110 V / 5 A AC
- 2: 110 V / 1 A AC
- 3: 220 V / 1 A AC
- 4: 220 V / 5 A AC
- 5: 220 V / 380 V / 1 A AC (3-phase / 4-wire)
- 6: 220 V / 380 V / 5 A AC (3-phase / 4-wire)
- 7: 110 V / 190 V / 1 A AC (3-phase / 4-wire)
- 8: 110 V / 190 V / 5 A AC (3-phase / 4-wire)

[3] OUTPUT SIGNAL POLARITY

P: Negative in lag, positive in lead

M: Negative in lead, positive in lag

[4] OUTPUT

Current

A: 4 – 20 mA DC (Load resistance 600 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)

[5] 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

[6] 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: Stand-alone; terminal access at the front

Connection: M3.5 screw terminals (torque 0.8 N·m)

Screw terminal: Nickel-plated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Voltage input to current input to output to auxiliary power

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

■ INPUT

Frequency: 50 or 60 Hz

• Voltage Input

Input burden: 0.5 VA

Operational range: 85 - 120 % of rating

Overload capacity: 150 % of rating for 10 sec., 120 % continuous

• Current Input

Input burden: 0.1 VA (input 1 A)

0.5 VA (input 5 A)

Operational range: 10 - 120 % of rating

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

■ 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 12 V maximum; 10 V for [±] output

■ DC Voltage: -10 - +12 V DC

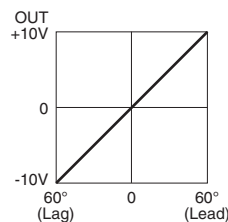
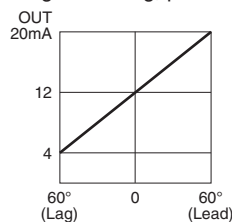
Minimum span: 5 mV

Offset: Max. 1.5 times span

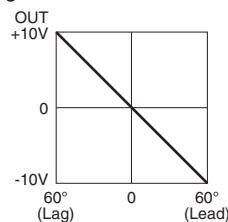
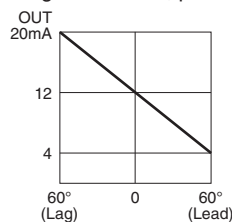
Load resistance: Output drive 1 mA max. at ≥ 0.5 V

■ OPERATION DIAGRAM (example)

• Negative in lag, positive in lead



• Negative in lead, positive in lag



Remark: When there is no input voltage or 5% or less of the rated input current, the output may become unstable (hunting).

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: 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)

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

Ripple: 0.5 %p-p max.

Line voltage effect: ± 0.1 % over voltage range

Insulation resistance: ≥ 100 M Ω with 500 V DC

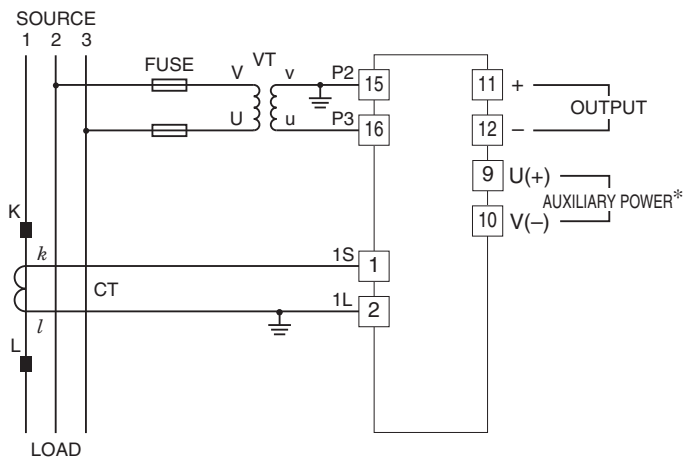
Dielectric strength: 2000 V AC @ 1 minute

(voltage input to current input to output to auxiliary power to ground)

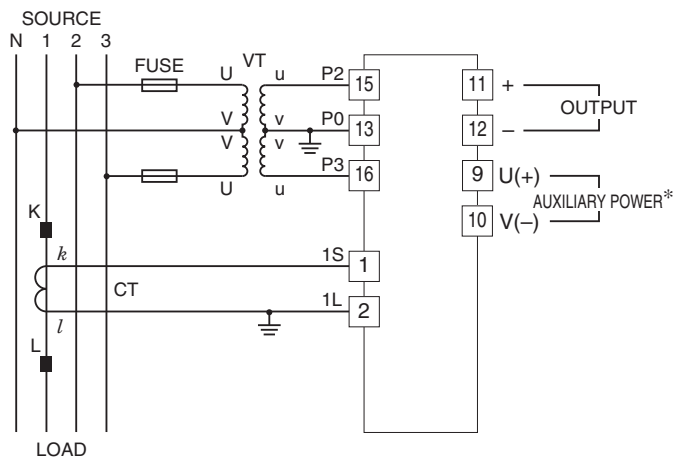
Impulse withstand voltage: 1.2 / 50 μ sec., ± 5 kV (input to output or ground)

CONNECTION DIAGRAM

3-PHASE/3-WIRE

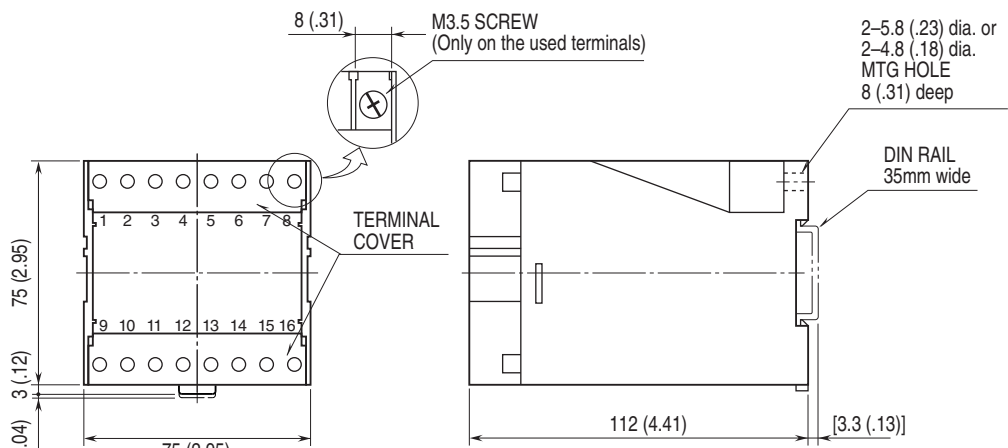


3-PHASE/4-WIRE



*The transducer can be powered from the input voltage when the voltage is sufficiently stable and meets other supply voltage requirements.

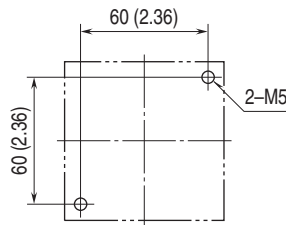
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



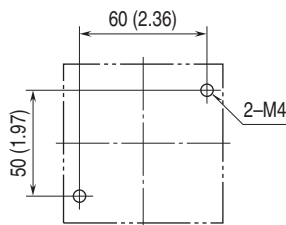
•When mounting, no extra space is needed between units.

MOUNTING REQUIREMENTS unit: mm (inch)

M5 SCREWS



M4 SCREWS



Specifications are subject to change without notice.