

Power Transducer Series L-UNIT

PHASE ANGLE TRANSDUCER

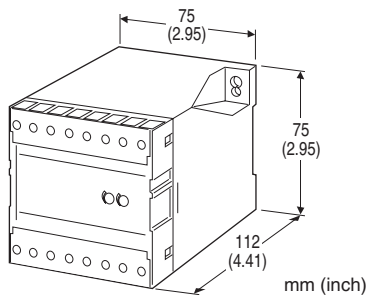
(for unbalanced load; self-powered)

Functions & Features

- Provides a DC output signal in proportion to phase angle
- Usable with unbalanced load
- DC output containing little ripple is ideal for computer input
- 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
- Measuring phase angle for a motor



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

ORDERING INFORMATION

- **Code number:** LPAUN-[1][2][3][4][5][6]
- Specify a code from below for each [1] through [6].
(e.g. LPAUN-111PA/Q)
- Special 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 (unbalanced 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)
- (220 V in code 5 and 6, and 110 V in code 7 and 8 are phase voltage)

[3] FREQUENCY

- 1: 50 Hz
- 2: 60 Hz

[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 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)

[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

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: 2.5 VA

Operational range: 85 - 110 % of rating

Overload capacity: 150 % of rating for 10 sec., 110 % 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

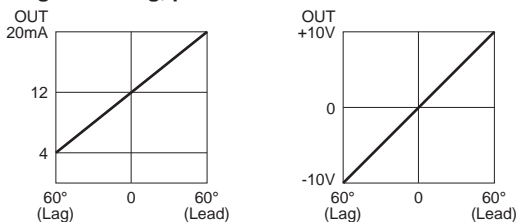
Minimum span: 5 mV

Offset: Max. 1.5 times span

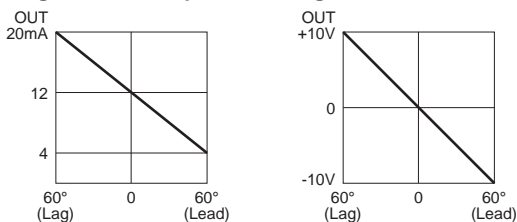
Load resistance: Output drive 1 mA max. at ≥ 0.5 V

■ OPERATION DIAGRAM (example)

• Negative in lag, positive in lead



• Negative in lead, positive in lag



Remark: When there is 5% or less of the rated input current, the transducer output equals approximately to '0' (phase angle).

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 % (at 23°C ±10°C or 73.4°F ±18°F, at rated frequency ±5 %)

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)

