

**Power Transducer Series LT-UNIT**

**VAR TRANSDUCER**

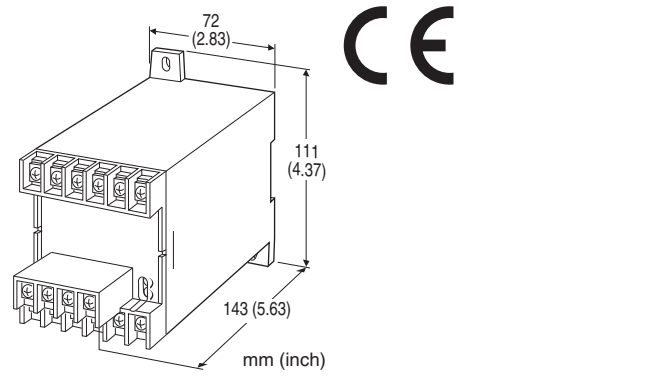
(self-powered)

**Functions & Features**

- Providing a DC output signal in proportion to AC reactive power
- 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
- 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



**MODEL: LTRPN-[1][2][3][4][5][6]**

**ORDERING INFORMATION**

- Code number: LTRPN-[1][2][3][4][5][6]
- Specify a code from below for each of [1] through [6].  
(e.g. LTRPN-115PA/T/Q)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q  
(e.g. /C01)
- Use Ordering Information Sheet (No. ESU-3355).

**[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 (unbalanced 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 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:** 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: 85 - 110 % of rating  
Overload capacity: 150 % of rating for 10 sec., 110 % continuous

### CURRENT INPUT

Operational range: 0 - 120 % of rating  
Overload capacity: 4000 % of rating for 1 sec., 2000 % for 4 sec., 120 % continuous

### How To Determine Var Range

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

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

[example]

3-phase / 3-wire, measuring range 75 kvar,  
VT 220 / 110 V, CT 250 / 5 A  
(75 × 10<sup>3</sup> [var]) ÷ ((220 ÷ 110) × (250 ÷ 5)) = 750 [var]

### 3-phase / 3-wire

INPUT		USABLE RANGE	BURDEN (VA)	
VT / CT CODE	STD. RANGE		VT	CT
1 / 1	200 var	100 - 240 var	P <sub>1</sub> : 2.5 P <sub>3</sub> : 0.2	0.1/ph
1 / 2	400 var	200 - 480 var		0.2/ph
1 / 5	1000 var	500 - 1200 var		0.5/ph
2 / 1	400 var	200 - 480 var	P <sub>1</sub> : 2.5 P <sub>3</sub> : 0.4	0.1/ph
2 / 2	800 var	400 - 960 var		0.2/ph
2 / 5	2000 var	1000 - 2400 var		0.5/ph

### 3-phase / 4-wire

INPUT		USABLE RANGE	BURDEN (VA)	
VT / CT CODE	STD. RANGE		VT	CT
1 / 1	200 var	100 - 240 var	P <sub>1</sub> - P <sub>2</sub> : 2.5 P <sub>3</sub> : 0.1	0.1/ph
1 / 2	400 var	200 - 480 var		0.2/ph
1 / 5	1000 var	500 - 1200 var		0.5/ph
2 / 1	400 var	200 - 480 var	P <sub>1</sub> - P <sub>2</sub> : 2.5 P <sub>3</sub> : 0.3	0.1/ph
2 / 2	800 var	400 - 960 var		0.2/ph
2 / 5	2000 var	1000 - 2400 var		0.5/ph
4 / 1	800 var	400 - 880 var	P <sub>1</sub> : 2.5 P <sub>2</sub> : 0.4 P <sub>3</sub> : 0.4	0.1/ph
4 / 2	1600 var	800 - 1760 var		0.2/ph
4 / 5	4000 var	2000 - 4400 var		0.5/ph

## 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

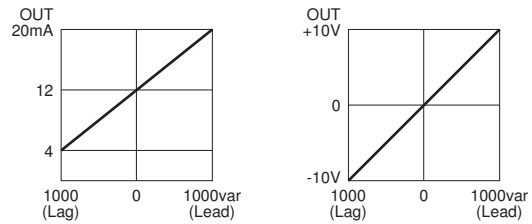
Minimum span: 5 mV

Offset: Max. 1.5 times span

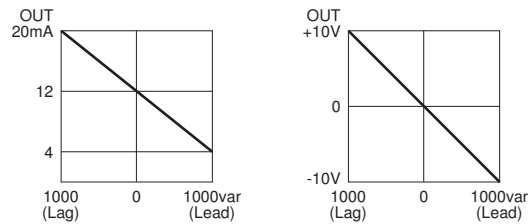
Load resistance: Output drive 1 mA max. at ≥ 0.5 V

### OPERATION DIAGRAM (example)

#### Negative in lag, positive in lead



#### Negative in lead, positive in lag



## 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: ±0.5 % (at 23°C ±10°C or 73.4°F ±18°F, 45 - 65 Hz)

Magnetic field (ext. origin) effect: ± 0.5 % (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)

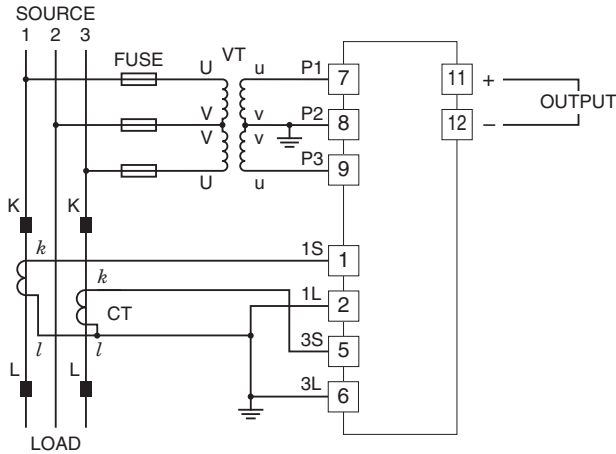
Pollution Degree 2

Input to output: Reinforced insulation (300 V)

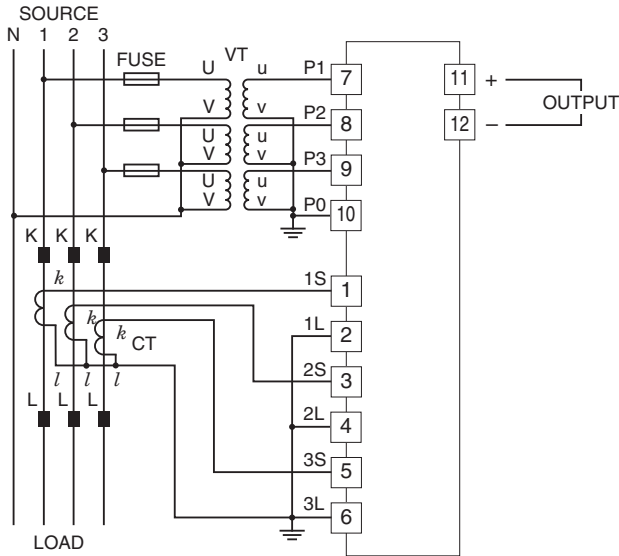
RoHS Directive

**CONNECTION DIAGRAM**

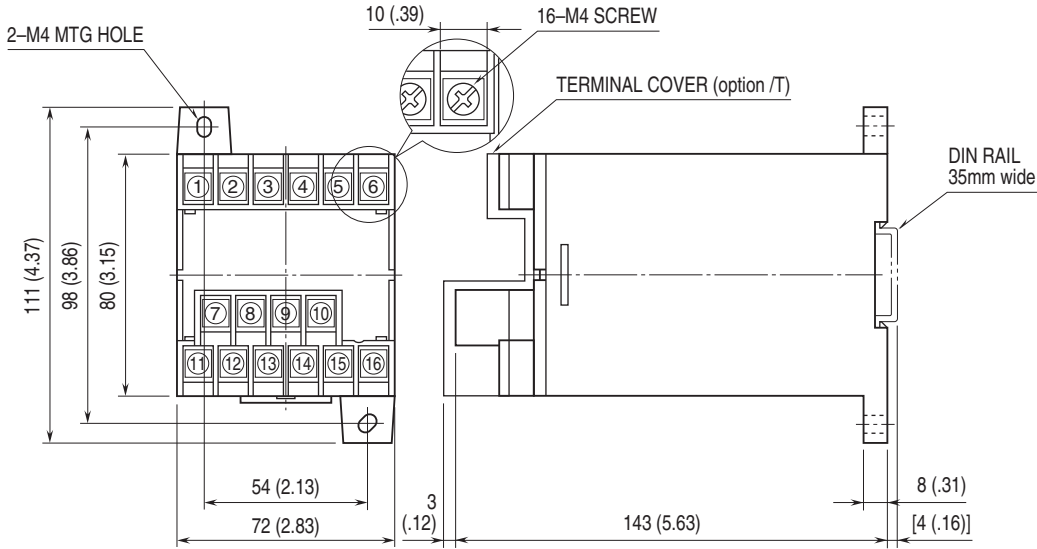
■ 3-PHASE/3-WIRE



■ 3-PHASE/4-WIRE



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



Specifications are subject to change without notice.