

Power Transducer Series LT-UNIT

VAR TRANSDUCER

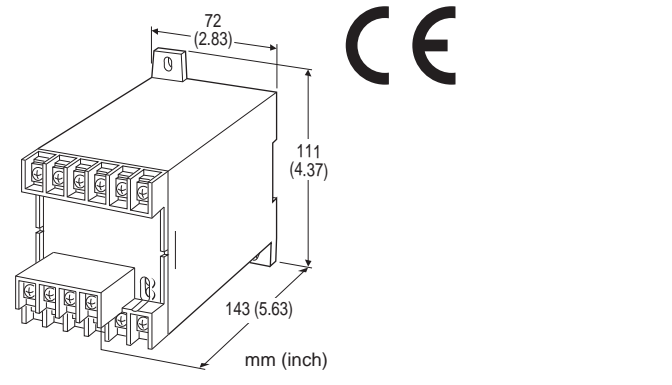
(self-powered)

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 [1] through [6].
- Code number (e.g. LTRPN-115PA/T)
- Special output range (For codes Z & 0)
- 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 Ω max.)
- FW: -10 - +10 mA DC (Load resistance 1000 Ω max.)
- GW: -1 - +1 mA DC (Load resistance 10 k Ω 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 k Ω min.)
- 2W: -100 - +100 mV DC (Load resistance 100 k Ω min.)
- 3W: -1 - +1 V DC (Load resistance 1000 Ω min.)
- 4W: -10 - +10 V DC (Load resistance 10 k Ω min.)
- 5W: -5 - +5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

[6] OPTIONS

Terminal Cover

- blank: Without
- /T: With

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

$(75 \times 10^3 \text{ [var]}) \div ((220 / 110) \times (250 / 5)) = 750 \text{ [var]}$

3-phase / 3-wire

INPUT		USABLE RANGE	BURDEN (VA)	
VT / CT CODE	STD.RANGE		VT	CT
1 / 1	200 var	100 – 240 var	P ₁ : 2.5 P ₃ : 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 ₁ : 2.5 P ₃ : 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 ₁ – P ₂ : 2.5	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 ₁ – P ₂ : 2.5	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 ₁ : 2.5	0.1/ph
4 / 2	1600 var	800 – 1760 var	P ₂ : 0.4	0.2/ph
4 / 5	4000 var	2000 – 4400 var	P ₃ : 0.4	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

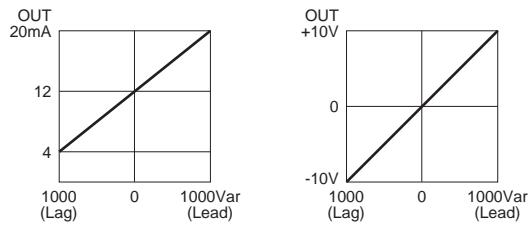
Minimum span: 5 mV

Offset: Max. 1.5 times span

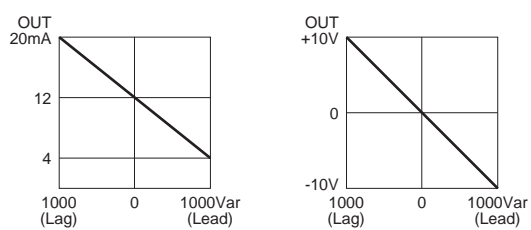
Load resistance: Output drive 1 mA max. at $\geq 0.5 \text{ V}$

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: $\pm 0.5 \%$ (at 23°C $\pm 10^\circ\text{C}$ or 73.4°F $\pm 18^\circ\text{F}$, 45 - 65 Hz)

Magnetic field (ext. origin) effect: $\pm 0.5 \%$ (400 A/m)

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

Ripple: 0.5 % p-p max.

Insulation resistance: $\geq 100 \text{ M}\Omega$ 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 $\mu\text{sec.}$, $\pm 5 \text{ kV}$
(input to output or ground)

STANDARDS & APPROVALS

CE conformity:

EMC Directive (2004/108/EC)

EMI EN 61000-6-4: 2007

EMS EN 61000-6-2: 2005

Low Voltage Directive (2006/95/EC)

EN 61010-1: 2001

Measurement Category II

Pollution Degree 2

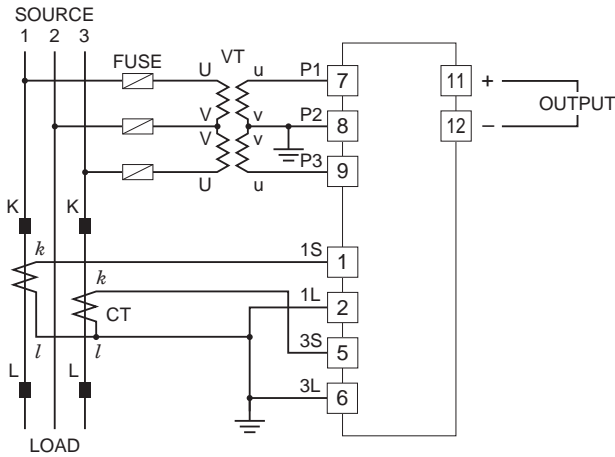
Input to output: Reinforced insulation (300 V)

IEC Standard: IEC 60688

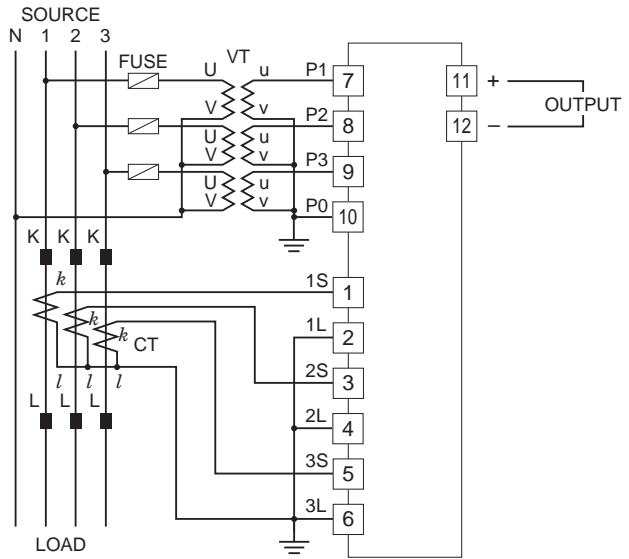


CONNECTION DIAGRAM

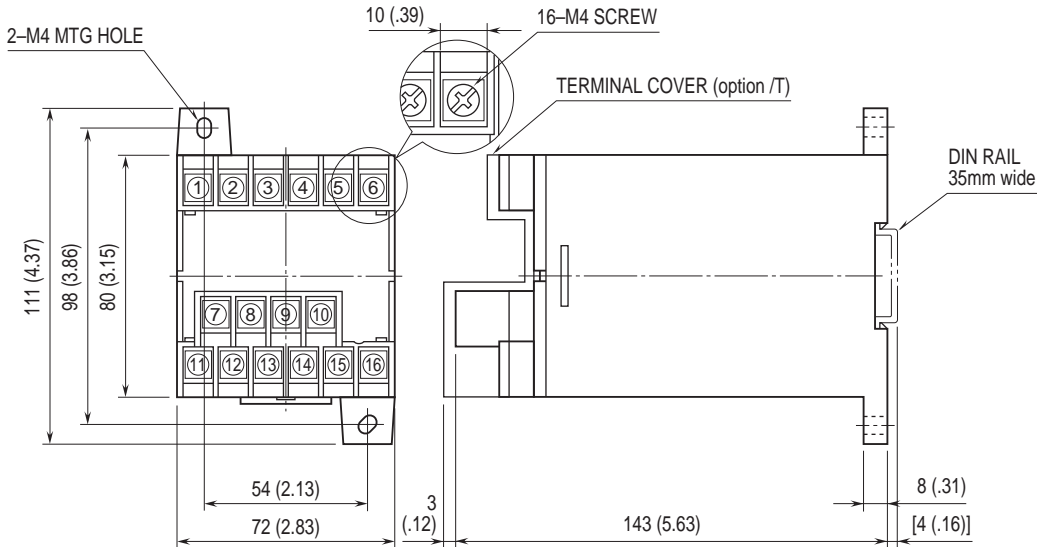
■ 3-PHASE/3-WIRE



■ 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.

