

Power Transducer Series *LT-UNIT*

**VAR TRANSDUCER
(self-powered)**

MODEL **LTRPN**

MODEL & SUFFIX CODE SELECTION

LTRPN-□□□□□□

MODEL _____

CONFIGURATION _____

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

VT INPUT (balanced load) _____

1 : 110V AC
2 : 220V AC
4 : $\frac{380V}{\sqrt{3}}$ / 380V AC (3-phase/4-wire only)

For 3-phase/4-wire, phase voltages (e.g. 110V/ $\sqrt{3}$) are used.

CT INPUT (unbalanced load) _____

1 : 1A AC
2 : 2A AC
5 : 5A AC

OUTPUT SIGNAL POLARITY _____

P : Negative in lag, positive in lead
M : Negative in lead, positive in lag

OUTPUT _____

| Current | Voltage |
|---------------------|-----------------------|
| A : 4 – 20mA DC | 6 : 1 – 5V DC |
| FW : -10 – +10mA DC | 1W : -10 – +10mV DC |
| GW : -1 – +1mA DC | 2W : -100 – +100mV DC |
| JW : -5 – +5mA DC | 3W : -1 – +1V DC |
| Z : Specify current | 4W : -10 – +10V DC |
| | 5W : -5 – +5V DC |
| | 0 : Specify voltage |

OPTIONS _____

/T : Terminal cover

How To Determine Var Range

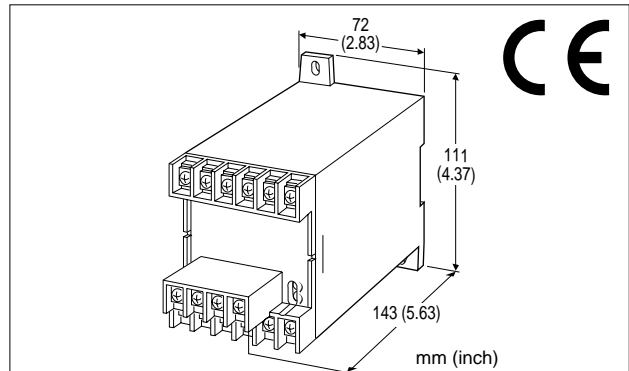
$$\text{Calibration Range [var]} = \frac{\text{Measuring Range}}{(\text{VT Ratio}) \times (\text{CT Ratio})}$$

Check that the required calibration range is within the available range in the table. Specify this range when ordering.

[example]

3-phase / 3-wire, measuring range 75 kvar,
VT 220/110V, CT 250/5A

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



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 2000V 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

ORDERING INFORMATION

Specify code number and variables. Use Ordering Information Sheet (No. ESU-3355).

- **Code number** (e.g. LTRPN-115PA)

GENERAL SPECIFICATIONS

Construction: stand-alone; terminal access at the front

Connection: M4 screw terminals

(chrome-plated steel; torque 1.2 N·m)

Housing material: flame-resistant resin (black)

Isolation: voltage input to current input to output

Computation: time division multiplication

Overrange output: approx. -10 – +120% at 1 – 5V

Front adjustments: zero and span; ±5%

INPUT & OUTPUT

INPUT

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

INPUT RANGE

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 | 0.1/ph |
| 1 / 2 | 400 var | 200 – 480 var | P ₃ : 0.2 | 0.2/ph |
| 1 / 5 | 1000 var | 500 – 1200 var | | 0.5/ph |
| 2 / 1 | 400 var | 200 – 480 var | P ₁ : 2.5 | 0.1/ph |
| 2 / 2 | 800 var | 400 – 960 var | P ₃ : 0.4 | 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 | 0.1/ph |
| 1 / 2 | 400 var | 200 – 480 var | : 2.5 | 0.2/ph |
| 1 / 5 | 1000 var | 500 – 1200 var | P ₃ : 0.1 | 0.5/ph |
| 2 / 1 | 400 var | 200 – 480 var | P ₁ – P ₂ | 0.1/ph |
| 2 / 2 | 800 var | 400 – 960 var | : 2.5 | 0.2/ph |
| 2 / 5 | 2000 var | 1000 – 2400 var | P ₃ : 0.3 | 0.5/ph |
| 4 / 1 | 800 var | 400 – 960 var | P ₁ : 2.5 | 0.1/ph |
| 4 / 2 | 1600 var | 800 – 1920 var | P ₁ , P ₃ | 0.2/ph |
| 4 / 5 | 4000 var | 2000 – 4800 var | : 0.4 | 0.5/ph |

OUTPUT

•DC Current: -10 – +20mA DC

Span: min. 1mA, max. 20mA

Zero suppression/elevation: max. 1.5 times span

Load resistance: output drive 10V maximum

| Output | Load Resistance |
|-------------|-------------------|
| 4 – 20mA | : 500 (Ω maximum) |
| -10 – +10mA | : 1000 |
| -1 – +1mA | : 10k |
| -5 – +5mA | : 2000 |

•DC Voltage: -10 – +12V DC

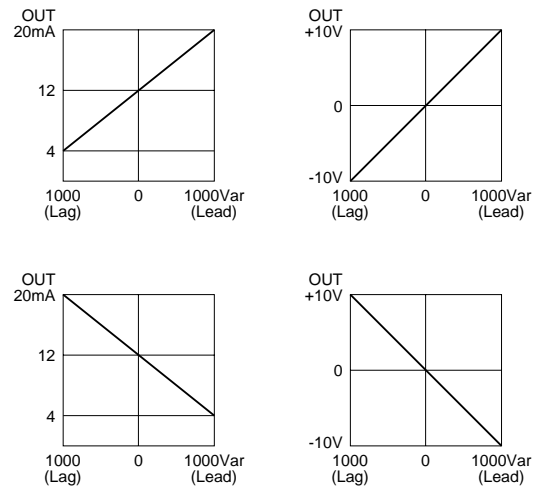
Minimum span: 5mV

Zero suppression/elevation: max. 1.5 times span

Load resistance: output drive 1mA maximum at ≥0.5V

| Output | Load Resistance |
|---------------|--------------------|
| 1 – 5V | : 5000 (Ω minimum) |
| -10 – +10mV | : 10k |
| -100 – +100mV | : 100k |
| -1 – +1V | : 1000 |
| -10 – +10V | : 10k |
| -5 – +5V | : 5000 |

OPERATION DIAGRAM (example)



Specifications subject to change without notice.

INSTALLATION

Operating temperature: -10 to +55°C (14 to 131°F)
Operating humidity: 30 to 85% RH (non-condensing)
Mounting: surface or DIN rail
Dimensions: W72×H111×D143* mm (2.83"×4.37"×5.63")
 *D147 mm (5.79") with terminal cover
 See General Spec. Sheet Figure C-1.
Weight: 450 g (0.99 lbs)
Terminal assignment: See General Spec. Sheet Figure D-1.

PERFORMANCE in percentage of span

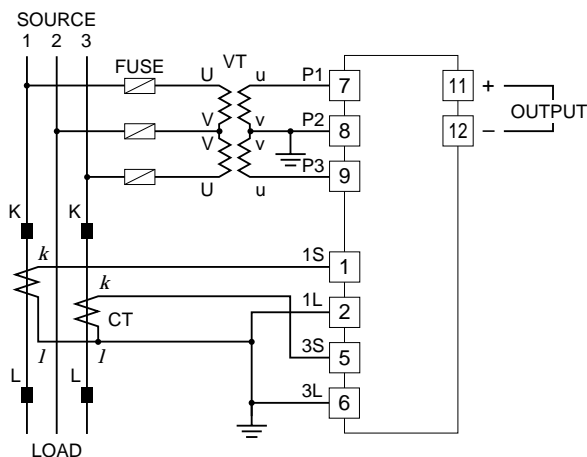
Accuracy: ±0.5% (at 23°C ±10°C or 73.4°F ±18°F, 45 – 65 Hz)
Magnetic field (ext. origin) effect: ±0.5% (400A/m)
Response time: ≤2 seconds (0 – 100% ±1%)
Ripple: 0.5% p-p max.
Insulation resistance: ≥100MΩ with 500V DC
Dielectric strength: 2000V AC @1 minute
 (voltage input to current input to output to ground)
Impulse withstand voltage: 1.2/50 μsec., ±5kV
 (input to output or ground)

STANDARDS & APPROVALS

CE conformity: EMC Directive (89/336/EEC)
 EMI EN61000-6-4
 EMS EN61000-6-2
 Low Voltage Directive (73/23/EEC)
 EN61010-1
 Installation category II
 Pollution degree 2
 Input to output – Reinforced insulation
 Max. operating voltage 300V
IEC Standard: IEC 60688

CONNECTION DIAGRAM

3-PHASE/3-WIRE



3-PHASE/4-WIRE

