

**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 ....**

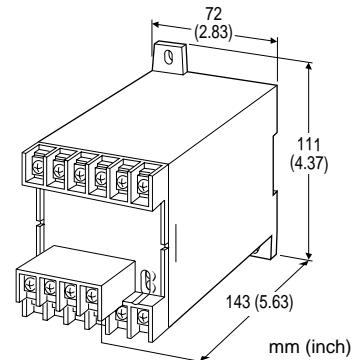
$$\text{Calibration Range [var]} = \frac{\text{Measuring Range}}{(\text{VT Ratio}) \times (\text{CT Ratio})}$$

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

$$\frac{75 \times 10^3 \text{ [var]}}{(220/110) \times (250/5)} = 0 - 750 \text{ [var]}$$



**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  $\leq 1.2$  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;  $\pm 5\%$

**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 <sub>1</sub> : 2.5 P <sub>3</sub> : 0.2	0.5 /phase
1 / 2	400 var	200 – 480 var		
1 / 5	1000 var	500 – 1200 var		
2 / 1	400 var	200 – 480 var	P <sub>1</sub> : 2.5 P <sub>3</sub> : 0.4	0.5 /phase
2 / 2	800 var	400 – 960 var		
2 / 5	2000 var	1000 – 2400 var		

**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	0.5 /phase
1 / 2	400 var	200 – 480 var		
1 / 5	1000 var	500 – 1200 var		
2 / 1	400 var	200 – 480 var	P <sub>1</sub> – P <sub>2</sub> : 2.5 P <sub>3</sub> : 0.3	0.5 /phase
2 / 2	800 var	400 – 960 var		
2 / 5	2000 var	1000 – 2400 var		
4 / 1	800 var	400 – 960 var	P <sub>1</sub> : 2.5 P <sub>1</sub> , P <sub>3</sub> : 0.4	0.5 /phase
4 / 2	1600 var	800 – 1920 var		
4 / 5	4000 var	2000 – 4800 var		

**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

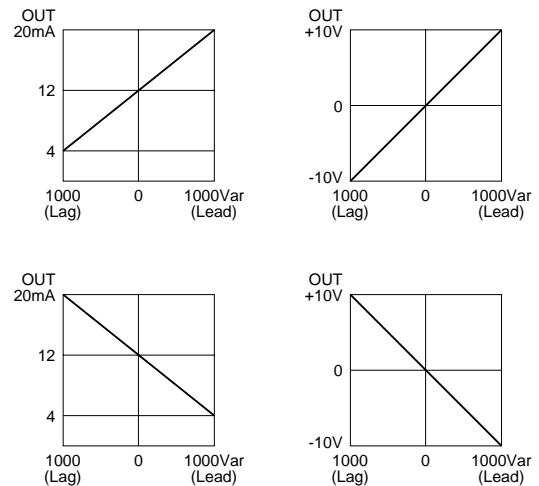
Minimum span: 5mV

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

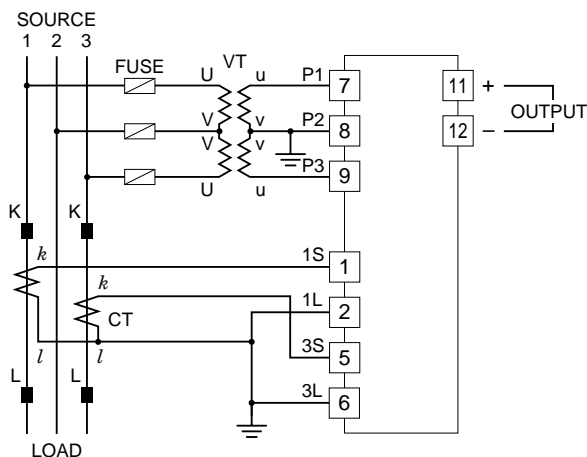
**Accuracy:** ±0.5% (at 23°C ±10°C or 73.4°F ±18°F, 45 – 65 Hz)  
**Magnetic field (ext. origin) effect:** ±0.5% (400A/m)  
**Response time:** ≤2 seconds (0 – 100% ±1%)  
**Ripple:** 0.5% p-p max.  
**Insulation resistance:** ≥100MΩ with 500V DC  
**Dielectric strength:** 2000V AC @1 minute  
 (voltage 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:** Electromagnetic Compatibility Directive (89/336/EEC)  
 EMI EN61000-6-4  
 EMS EN61000-6-2  
 Low Voltage Directive (73/23/EEC)  
 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

