

Power Transducer Series *L-UNIT*

MULTI POWER TRANSDUCER

MODEL **LSMT**

MODEL & SUFFIX CODE SELECTION

LSMT-□□-□□□□-□

MODEL _____

CONFIGURATION _____

1 : 3-phase / 3-wire

2 : Single-phase / 2-wire*

3 : Single-phase / 3-wire*

*Specify input frequency.

INPUT (unbalanced load) _____

1 : 110V / 5AAC

2 : 110V / 1AAC

3 : 220V / 1AAC

4 : 220V / 5AAC

A : 100V / 200V / 1AAC**

B : 100V / 200V / 5AAC**

*Selectable with single-phase / 3-wire system

MEASURING ITEM _____

1 : V₁, I₁, W, var, PF, Hz

2 : V₁, I₁, I₂, I₃, W, PF***

3 : V₁, I₁, I₂, I₃, W, var***

4 : V₁, I₁, I₂, I₃, W, Hz***

5 : V₁, V₂, V₃, I₁, I₂, I₃***

6 : V₁, I₁, W, var

7 : V₁, I₁, W

8 : V₁, I₁, Hz

*Selectable with 3-phase / 3-wire system

OUTPUT SIGNAL POLARITY (var & PF) _____

Z : No var or PF measuring

P : Negative in lag, positive in lead

M : Negative in lead, positive in lag

FREQUENCY (V₁) _____

0 : No frequency measuring

1 : 45 – 55 Hz

2 : 55 – 65 Hz

3 : 45 – 65 Hz

OUTPUT _____

Current

Voltage

A : 4 – 20mA DC

1 : 0 – 10mV DC

G : 0 – 1mA DC

2 : 0 – 100mV DC

J : 0 – 5mA DC

3 : 0 – 1V DC

Z : Specify current

4 : 0 – 10V DC

5 : 0 – 5V DC

6 : 1 – 5V DC

0 : Specify voltage

AUXILIARY POWER SUPPLY _____

AC Power

DC Power

B : 100V AC

R : 24V DC

C : 110V AC H : 220V AC

V : 48V DC

F : 120V AC J : 240V AC

P : 110V DC

DISCONTINUED MODEL *Replaced with Model LSMT4*

Functions & Features

- Converting all major factors required for power management into DC outputs
- Compact design for 6 measuring items
- Saving installation work and space
- DC output containing little ripple is ideal for computer input
- Isolation up to 2000V AC

Typical Applications

- Monitoring panels

Remark 1: Both voltage and current loads must be balanced for measuring power factor.

Remark 2: V₁, V₂ and V₃ = voltage between each line; I₁, I₂ and I₃ = each line current; W = active power; var = reactive power; PF = power factor; Hz = frequency

ORDERING INFORMATION

Specify code number and variables. Use Ordering Informations Sheet (No. ESU-1992) for single-phase system.

• **Code number** (e.g. LSMT-11-1P1A-C)

• **Watt range** (e.g. 0 – 1000W)

• **Var range** (e.g. lag 1000 – 0 – lead 1000 var)

• **Frequency range**

(for single phase input only; e.g. 50 Hz)

• **Special DC output range** (For codes Z & 0)

GENERAL SPECIFICATIONS

Construction: stand-alone; terminal access at the front

Connection: M4 screw terminals (torque ≤1.2 N·m)

Coating: melamine resin fired (black)

Isolation: voltage input to current input to output to to power; negatives common to all outputs

Computation

Voltage & current: RMS sensing

Active/reactive power: time division multiplication

Power factor: phase angle detection

Frequency: one-shot

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

Front adjustments: zero and span; ±5% independently adjustable for each measuring item

Overrange output limit: approx. 120%

INPUT & OUTPUT**■INPUT****•Voltage Input**

Input burden: 0.22VA/phase for 110V AC
0.44VA/phase for 220V AC

Operational range

Voltage & active/reactive power: 0 – 120% of rating

Power factor & frequency: 85 – 120% of rating

Overload capacity: 150% of rating for 10 sec.,
120% continuous

•Current Input

Input burden: 0.5VA/phase

Operational range

Current & active/reactive power: 0 – 120% of rating

Power factor: 20 – 120% of rating

Overload capacity: 1000% of rating for 3 sec., 200%
for 10 sec., 120% continuous

■INPUT RANGE**•Voltage**

VOLTAGE RATING	INPUT RANGE	CURRENT RATING	INPUT RANGE
110V	0 – 150V	1A	0 – 1A
220V	0 – 300V	5A	0 – 5A

•Current

Voltage input for single-phase/3-wire system is 0 – 150V.

•Active power, single-phase / 2-wire

INPUT		AVAILABLE RANGE
	STD. RANGE	
110V / 1A	100W	50 – 120W
110V / 5A	500W	250 – 600W
220V / 1A	200W	100 – 240W
220V / 5A	1000W	500 – 1200W

single-phase / 3-wire

INPUT		AVAILABLE RANGE
	STD. RANGE	
100V / 200V / 1A	200W	100 – 240W
100V / 200V / 5A	1000W	500 – 1200W

3-phase / 3-wire

INPUT		AVAILABLE RANGE
	STD. RANGE	
110V / 1A	200W	100 – 240W
110V / 5A	1000W	500 – 1200W
220V / 1A	400W	200 – 480W
220V / 5A	2000W	1000 – 2400W

•Reactive power, single-phase / 2-wire

INPUT		AVAILABLE RANGE
	STD. RANGE	
110V / 1A	100 var	50 – 120 var
110V / 5A	500 var	250 – 600 var
220V / 1A	200 var	100 – 240 var
220V / 5A	1000 var	500 – 1200 var

single-phase / 3-wire

INPUT		AVAILABLE RANGE
	STD. RANGE	
100V / 200V / 1A	200 var	100 – 240 var
100V / 200V / 5A	1000 var	500 – 1200 var

3-phase / 3-wire

INPUT		AVAILABLE RANGE
	STD. RANGE	
110V / 1A	200 var	100 – 240 var
110V / 5A	1000 var	500 – 1200 var
220V / 1A	400 var	200 – 480 var
220V / 5A	2000 var	1000 – 2400 var

Power factor: lag 0.5 – 1 – lead 0.5

lead 0.5 – 1 – lag 0.5

Frequency: 45 – 55 Hz, 55 – 65 Hz or 45 – 65 Hz

■OUTPUT

•DC Current: -5 – +20mA DC

Span: min. 1mA, max. 20mA

Zero suppression/elevation: max. 1.5 times span

Load resistance: output drive 6V maximum

Output	Load Resistance
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4 – 20mA	: 300 (Ω maximum)
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0 – 1mA [±1mA]	: 6000
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0 – 5mA [±5mA]	: 1200
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Reactive power and power factor output ranges in brackets. 4 – 20mA is centered at 12mA.

•DC Voltage: -10 – +10V DC

Minimum span: 5mV

Zero suppression/elevation: max. 1.5 times span

Load resistance: output drive 1mA maximum

Output	Load Resistance
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0 – 10mV [±10mV]	: 10k (Ω minimum)
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0 – 100mV [±100mV]	: 100k
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0 – 1V [±1V]	: 1000
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0 – 10V [±10V]	: 10k
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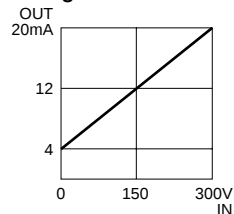
0 – 5V [±5V]	: 5000
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1 – 5V	: 5000
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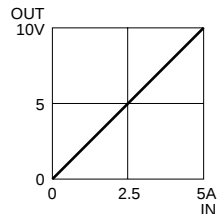
Reactive power and power factor output ranges in brackets. 1 – 5V is centered at 3V.

■ OPERATION DIAGRAM (example)

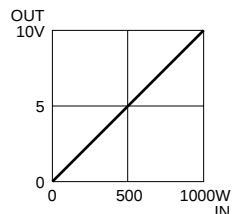
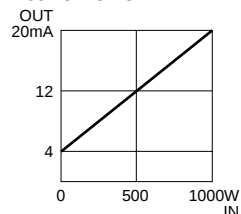
• Voltage



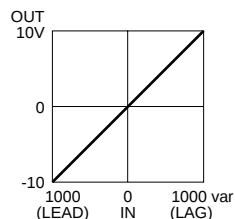
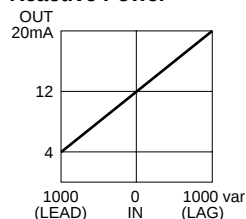
• Current



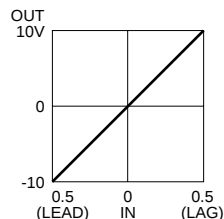
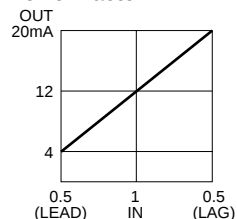
• Active Power



• Reactive Power

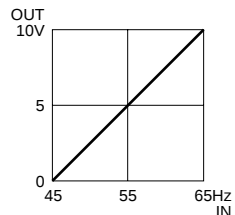
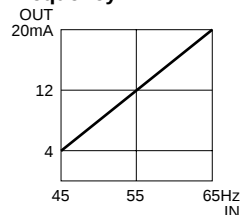


• Power Factor



When there is no voltage input or when input current is 1/20 or less of rating, output may become unsteady (hunting).

• Frequency



When there is no voltage input, the transducer will produce a downscale output.

INSTALLATION

Auxiliary power supply

AC: rating -15/+10%, 50/60 Hz, approx. 12VA

DC: rating $\pm 10\%$, or 85 – 150V for 110V rating (ripple 10% p-p max.)
approx. 10W (90mA at 110V)

Operating temperature: -10 to +55°C (14 to 131°F)

Operating humidity: 30 to 85% RH (non-condensing)

Mounting: surface

Dimensions: W175×H120×D134 mm (6.89"×4.72"×5.28")

Weight: 2 kg (4.41 lbs)

PERFORMANCE in percentage of span

Accuracy

(at 23°C $\pm 10^\circ\text{C}$ or 73.4°F $\pm 18^\circ\text{F}$, 45 – 65 Hz for 3-phase system, 50/60 ± 2 Hz for single-phase system)

Voltage, current, active/reactive power: $\pm 0.5\%$

Power factor: $\pm 2\%$ with input 1 – 0.866, balanced load
 $\pm 4\%$ with input 0.866 – 0.5, balanced load

Frequency: $\pm 1\%$

Response time (0 – 100% $\pm 1\%$)

Voltage, current & frequency: ≤ 1 second

Active/reactive power & power factor: ≤ 2 seconds

Ripple: 0.5% p-p max.

Line voltage effect: $\pm 0.1\%$ over voltage range

Insulation resistance: $\geq 100\text{M}\Omega$ with 500V DC

Dielectric strength: 2000V AC @1 minute

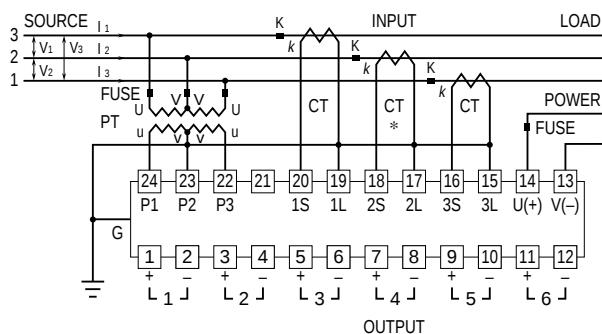
(voltage input to current input to output
to power to ground)

Surge withstand voltage: 1.2/50 $\mu\text{sec.}$, $\pm 5\text{kV}$

(input to output or ground)

CONNECTION DIAGRAM

■ 3-PHASE/3-WIRE

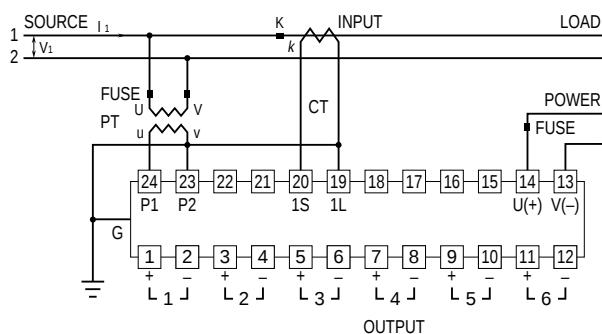


*Connected only when measuring item I2.

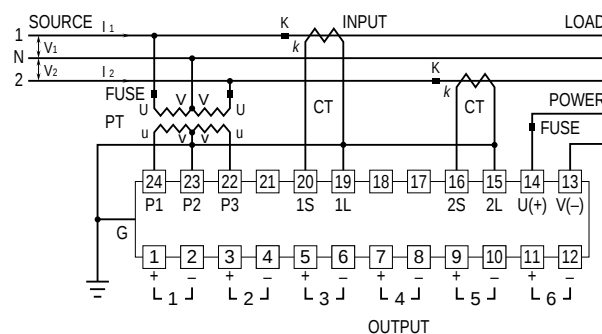
OUTPUT CH.	1	2	3	4	5	6
ITEM CODE	V ₁	I ₁	I ₂	I ₃	W	var
1	V ₁	I ₁	I ₂	I ₃	W	var
2	V ₁	I ₁	I ₂	I ₃	W	var
3	V ₁	I ₁	I ₂	I ₃	W	Hz
4	V ₁	I ₁	I ₂	I ₃	W	Hz
5	V ₁	V ₂	V ₃	I ₁	I ₂	I ₃
6	V ₁	I ₁	W	var	---	---
7	V ₁	I ₁	W	---	---	---
8	V ₁	I ₁	Hz	---	---	---

Input Codes 2, 3, 4 and 5 are selectable with 3-phase/3-wire system.

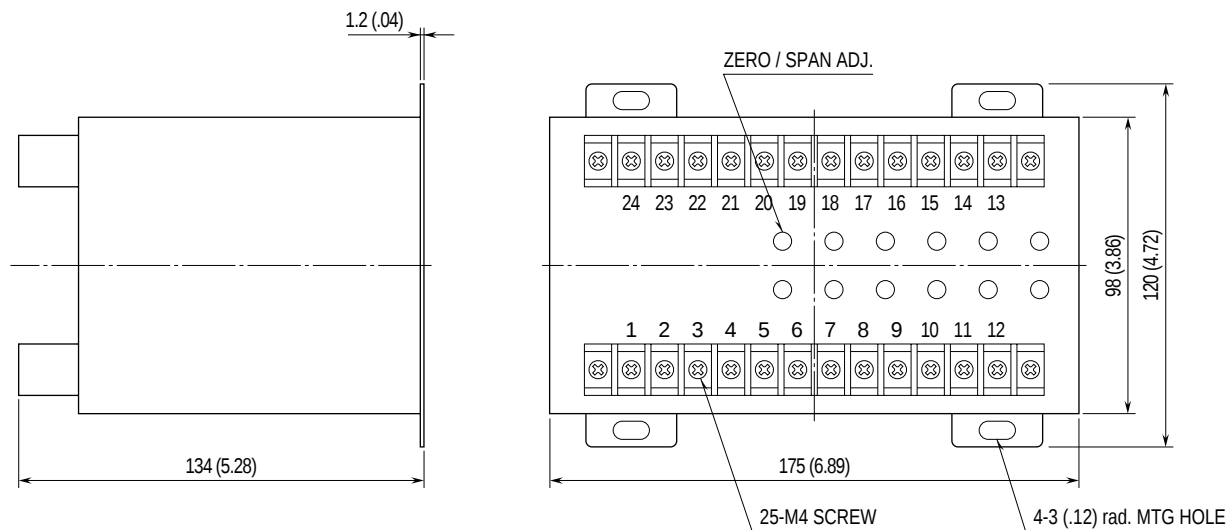
■ SINGLE-PHASE/2-WIRE



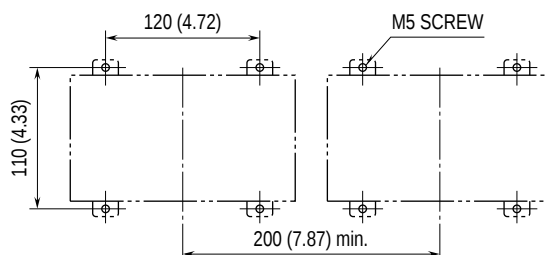
■ SINGLE-PHASE/3-WIRE



EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENT mm (inch)



MOUNTING REQUIREMENTS mm (inch)



Specifications subject to change without notice.