

## Super-mini Terminal Block Signal Conditioners M5-UNIT

### CT TRANSMITTER

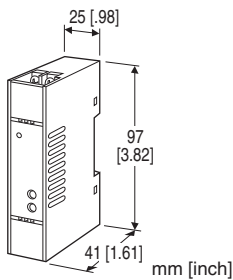
(clamp-on current sensor)

#### Functions & Features

- Converts an alternating current into a standard process signal
- Easy-to-install clamp-on type current sensor without needing a current transformer
- Clamp-on current sensor included
- Wide input range from 10 A up to 600 A
- True RMS sensing
- High-density mounting
- Power LED

#### Typical Applications

- Centralized monitoring and control of motors at a supervisory panel
- Monitoring abnormal load current at motors to detect pump malfunctions



### MODEL: M5CTC-[1][2][3]-[4][5]

#### ORDERING INFORMATION

- Code number: M5CTC-[1][2][3]-[4][5]
- Specify a code from below for each of [1] through [5].  
(e.g. M5CTC-150A-R/Q)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] SENSOR

- 1: Leadwire type CLSA
- 2: Screw terminal type CLSB

#### [2] INPUT

- 10: 0 - 10 A AC
- 15: 0 - 15 A AC
- 20: 0 - 20 A AC
- 30: 0 - 30 A AC

- 40: 0 - 40 A AC
- 50: 0 - 50 A AC
- 60: 0 - 60 A AC
- 75: 0 - 75 A AC
- 100: 0 - 100 A AC
- 125: 0 - 125 A AC
- 150: 0 - 150 A AC
- 175: 0 - 175 A AC
- 200: 0 - 200 A AC
- 225: 0 - 225 A AC
- 250: 0 - 250 A AC
- 300: 0 - 300 A AC
- 350: 0 - 350 A AC
- 400: 0 - 400 A AC
- 500: 0 - 500 A AC
- 600: 0 - 600 A AC (Not selectable with the sensor type code 1 'Leadwire type CLSA')

#### [3] OUTPUT

Current

- A: 4 - 20 mA DC (Load resistance 550 Ω max.)  
Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 4: 0 - 10 V DC (Load resistance 1000 Ω min.)  
5: 0 - 5 V DC (Load resistance 500 Ω min.)  
6: 1 - 5 V DC (Load resistance 500 Ω min.)  
4W: -10 - +10 V DC (Load resistance 8000 Ω min.)  
5W: -5 - +5 V DC (Load resistance 4000 Ω min.)  
0: Specify voltage (See OUTPUT SPECIFICATIONS)

#### [4] POWER INPUT

AC Power

- M: 85 - 264 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

DC Power

- R: 24 V DC  
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

#### [5] OPTIONS

blank: none

/Q: With options (specify the specification)

#### SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

TERMINAL SCREW MATERIAL

/S01: Stainless steel

## ACCESSORIES

The clamp-on current sensor is included in the product package.

### ■ CLAMP-ON CURRENT SENSOR (leadwire type CLSA)

- 0 – 10 A through 0 – 75 A Use

Sensor model No.: CLSA-08

Sensor cable model No.: CLSA-08C-30

Applicable cable diameter: Max. 10.0

Sensor leadwire: AWG 22

Weight: 45 g (1.6 oz)

- 0 – 100 A Use

Sensor model No.: CLSA-12

Sensor cable model No.: CLSA-08C-30

Applicable cable diameter: Max. 16.0

Sensor leadwire: AWG 22

Weight: 70 g (2.5 oz)

- 0 – 125 A through 0 – 300 A Use

Sensor model No.: CLSA-30

Applicable cable diameter: Max. 24.0

Sensor leadwire: AWG 18, 200 mm

Weight: 200 g (7.1 oz)

- 0 – 350 A through 0 – 500 A Use

Sensor model No.: CLSA-50

Applicable cable diameter: Max. 36.0

Sensor leadwire: AWG 18, 200 mm

Weight: 300 g (10.6 oz)

### ■ CLAMP-ON CURRENT SENSOR (screw terminal type CLSB)

Connection: M3 screw terminal (torque 0.5 N·m)

Screw terminal: Nickel-plated steel

Output wiring: Use AWG22 or thicker wires for the output.

Twist the paired wires, extendable up to 30 meters.

- 0 – 10 A through 0 – 50 A Use

Sensor model No.: CLSB-05

Applicable cable diameter: Max. 10.0

Weight: 45 g (1.6 oz)

- 0 – 60 A through 0 – 100 A Use

Sensor model No.: CLSB-10

Applicable cable diameter: Max. 16.0

Weight: 80 g (2.8 oz)

- 0 – 125 A through 0 – 200 A Use

Sensor model No.: CLSB-20

Applicable cable diameter: Max. 24.0

Weight: 200 g (7.1 oz)

- 0 – 225 A through 0 – 400 A Use

Sensor model No.: CLSB-40

Applicable cable diameter: Max. 35.0

Weight: 300 g (10.6 oz)

- 0 – 500 A through 0 – 600 A Use

Sensor model No.: CLSB-60

Applicable cable diameter: Max. 35.0

Weight: 360 g (12.7 oz)

Note 1: The output values may vary depending on the

accuracy of engagement at the clamp connection.

Note 2: The sensor is detachable up to 100 times (approx.).

Note 3: The sensor's mechanical construction may cause it to generate resonance sound. However, it does not affect the performance of the sensor.

## GENERAL SPECIFICATIONS

**Construction:** Terminal block

**Connection:** M3.5 screw terminals (torque 0.8 N·m)

**Screw terminal:** Nickel-plated steel (standard) or stainless steel

**Housing material:** Flame-resistant resin (black)

**Isolation:** Sensor core to input or output to power

**Input waveform**

**RMS sensing:** Up to 15 % of 3rd harmonic content

**Overrange output:** Approx. 0 to 110 % at 1 – 5 V

**Zero adjustment:** -2 to +2 % (front)

**Span adjustment:** 98 to 102 % (front)

**Power indicator LED:** Green LED turns on when the power is supplied.

## INPUT SPECIFICATIONS

**Frequency:** 50 / 60 Hz

**Overload capacity**

**CLSA - 08:** 120 A continuous

**CLSA - 12:** 300 A continuous

**CLSA - 30:** 360 A continuous

**CLSA - 50:** 600 A continuous

**CLSB - 05:** 100 A continuous

**CLSB - 10:** 200 A continuous

**CLSB - 20:** 300 A continuous

**CLSB - 40:** 600 A continuous

**CLSB - 60:** 720 A continuous

**Operational range:** 5 – 120 % of rating

Be sure that the input voltage is of 440 V or less.

## OUTPUT SPECIFICATIONS

■ **DC Current:** 0 – 20 mA DC

**Minimum span:** 1 mA

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 11 V max.

■ **DC Voltage:** 0 – 10 V DC

**Minimum span:** 1 V

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 10 mA max.; at  $\geq 1$  V

## INSTALLATION

### Power Consumption

#### •AC:

Approx. 2 VA at 100 V

Approx. 3 VA at 200 V

Approx. 3 VA at 264 V

#### •DC: Approx. 2 W

**Operating temperature:** -5 to +55°C (23 to 131°F)

**Operating humidity:** 0 to 90 %RH (non-condensing)

**Mounting:** DIN rail

**Weight:** 80 g (2.8 oz)

## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.5\%$  with input 5 - 100 %

(Input 10 - 100 % for the output codes 4W and 5W)

**Temp. coefficient:**  $\pm 0.015\%/^{\circ}\text{C}$  ( $\pm 0.008\%/^{\circ}\text{F}$ )

**Response time:**  $\leq 0.5$  sec. (0 - 90 %)

**Ripple:** 0.5 %p-p max.

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

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

### Dielectric strength

#### DC powered:

2000 V AC @1 minute (input or output to power to ground)

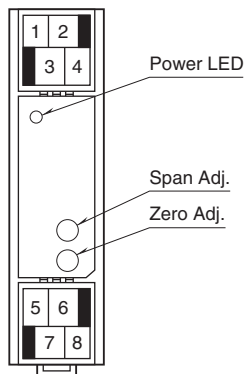
1000 V AC @1 minute (sensor core to sensor output)

#### AC powered:

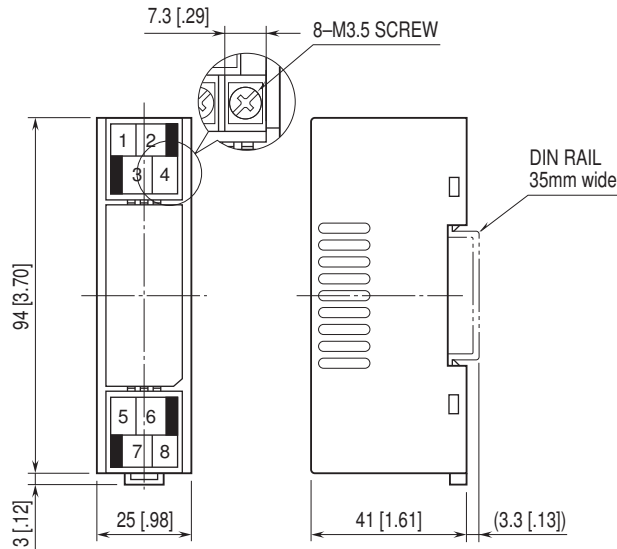
1500 V AC @1 minute (input or output to power to ground)

1000 V AC @1 minute (sensor core to sensor output)

## FRONT VIEW

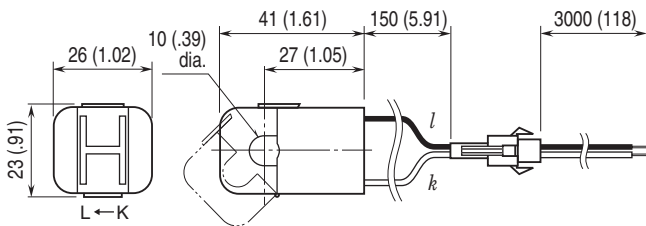


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]

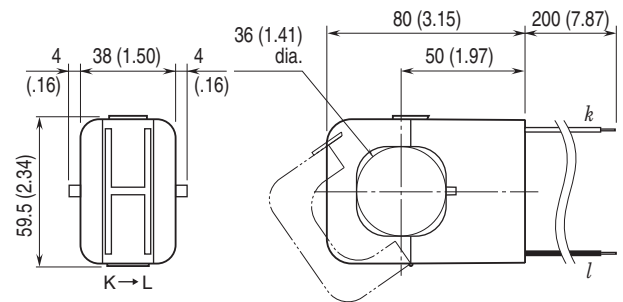


• When mounting, no extra space is needed between units.

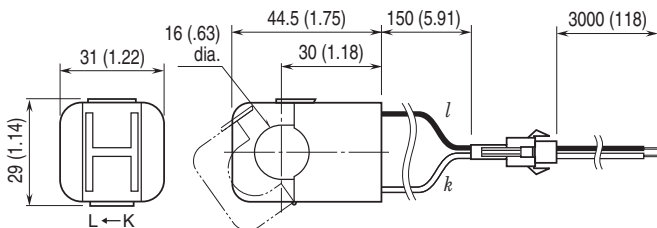
### ■ Sensor model No.: CLSA-08



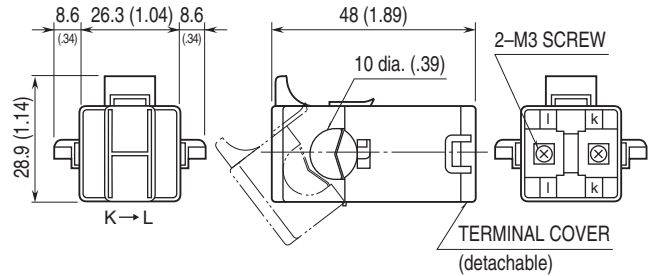
### ■ Sensor model No.: CLSA-50



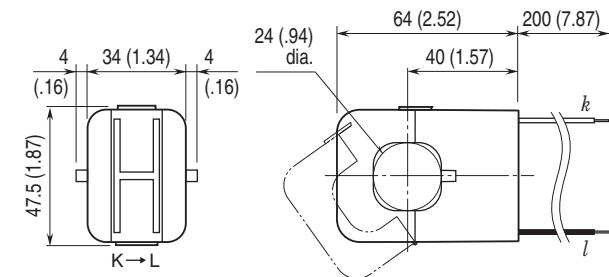
### ■ Sensor model No.: CLSA-12



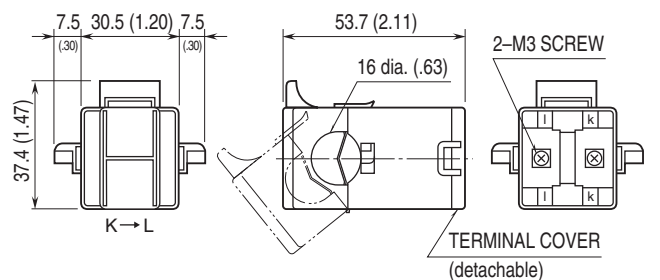
### ■ Sensor model No.: CLSB-05



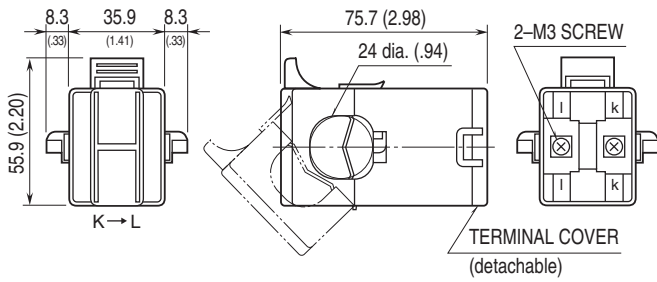
### ■ Sensor model No.: CLSA-30



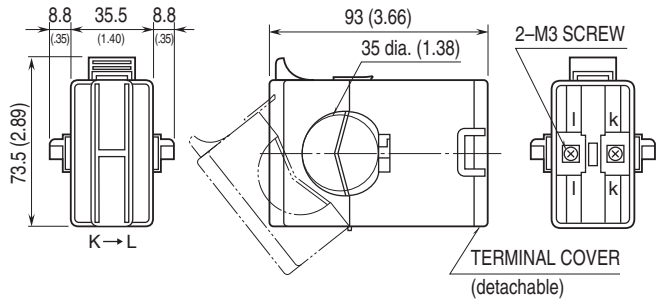
### ■ Sensor model No.: CLSB-10



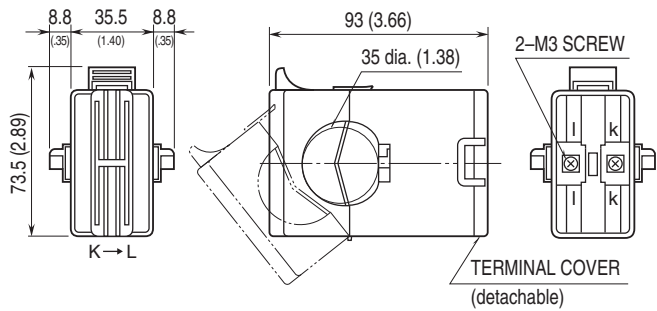
## ■ Sensor model No.: CLSB-20



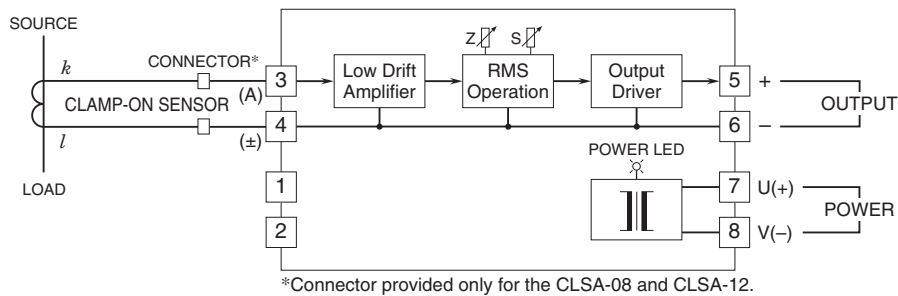
## ■ Sensor model No.: CLSB-40



## ■ Sensor model No.: CLSB-60



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.