

# Digital Panel Meter K3TF

CSM\_K3TF\_DS\_E\_4\_1

## Easy-to-use, Low-cost Digital Panel Meter that Accepts AC Input

- Compact DIN-size (96 x 48 (W x H)) body.
- Mounting thickness of only 3.5 mm required.
- Highly visible display with 14.2-mm-high LEDs.
- Detects and displays root-mean-square value of half-wave rectified current.
- Confirms to EMC standards EN61010-1 (IEC61010-1).



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

**Note:** This Panel Meter does not support scaling.

## Model Number Structure

### Model Number Legend

K3TF -      
          1    2    3    4

#### 1, 2. Input Code

- V5: 0 to 199.9 mV
- V6: 0 to 1.999 V
- V7: 0 to 19.99 V
- V8: 0 to 199.9 V
- V9: 0 to 400 V
- A6: 0 to 1.999 mA
- A7: 0 to 19.99 mA
- A8: 0 to 199.9 mA
- A9: 0 to 1.999 A

#### 3. Series No.

- 1: Current series

#### 4. Supply Voltage

- 4: 100 to 120 VAC
- 5: 200 to 240 VAC

## Ordering Information

### List of Models

#### Models with Line Monitor



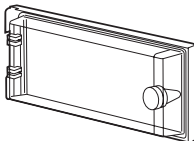
Range	Measuring ranges	Supply voltage	
		100 to 120 VAC	200 to 240 VAC
AC voltage	0 to 199.9 V	K3TF-V814	K3TF-V815
	0 to 400 V	K3TF-V914	K3TF-V915

## Models with Signal Monitor

Range	Measuring ranges	Supply voltage	
		100 to 120 VAC	200 to 240 VAC
AC voltage	0 to 199.9 mV	K3TF-V514	K3TF-V515
	0 to 1.999 V	K3TF-V614	K3TF-V615
	0 to 19.99 V	K3TF-V714	K3TF-V715
AC current	0 to 1.999 mA	K3TF-A614	K3TF-A615
	0 to 19.99 mA	K3TF-A714	K3TF-A715
	0 to 199.9 mA	K3TF-A814	K3TF-A815
	0 to 1.999 A	K3TF-A914	K3TF-A915

**Note:** The K3TF-V8□□ and K3TF-V9□□ do not conform to CE marking standards.

## ■ Accessories (Order Separately)

Name	Appearance	Model
Water-resistive Soft Front Cover		K32-L49SC
Terminal Cover		K32-L49TC
Watertight Cover		Y92A-49N

- Note:**
1. Use the Mounting Bracket included with the K3TF for mounting.
  2. The Terminal Cover is used for finger protection. It has no relation to water resistance.

# Specifications

## ■ Ratings

Supply voltage	100 to 120 VAC (50/60 Hz); 200 to 240 VAC (50/60 Hz)
Operating voltage range	-15% to +10% of supply voltage
Power consumption	4 VA (at max. load)
Insulation resistance	10 MΩ min. (at 500 VDC) between external terminal and case
Dielectric strength	2,000 VAC min. for 1 min between input terminal and power supply 2,000 VAC min. for 1 min between external terminal and case
Noise immunity	±1,500 V on power supply terminals in normal or common mode
Vibration resistance	Malfunction: 10 to 55 Hz, 0.5-mm single amplitude for 10 min each in X, Y, and Z directions Destruction: 10 to 55 Hz, 0.75-mm single amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance	Malfunction: 98 m/s <sup>2</sup> for 3 times each in 6 directions Destruction: 294 m/s <sup>2</sup> for 3 times each in 6 directions
Ambient temperature	Operating: -10° to 55°C (with no icing) Storage: -20° to 65°C (with no icing)
Ambient humidity	Operating: 35% to 85% (with no condensation)
Ambient operating atmosphere	No corrosive gas
EMC	(EMI) EN61326+A1 Industry Emission Enclosure: CISPR 11 Group 1 class A: CISRP16-1/-2 Emission AC Mains: CISPR 11 Group 1 class A: CISRP16-1/-2 (EMS) EN61326+A1 Industry Immunity ESD: EN61000-4-2: 4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference: EN61000-4-3: 10 V/m (amplitude-modulated, 80 MHz to 1 GHz) (level 3) Immunity Fast Transient Noise: EN61000-4-4: 2 kV (power line) (level 3) Immunity Burst Noise: 1 kV line to line (I/O signal line) Immunity Surge: EN61000-4-5: 1 kV line to line 2 kV line to ground (power line) Immunity Conducted Disturbance EN61000-4-6: 3 V (0.15 to 80 MHz) (level 2) Immunity Voltage Dip/Interrupting EN61000-4-11: 0.5 cycles, 0, 180°, 100% (rated voltage)
Approved standard	Conforms to EN61326+A1, EN61010-1 (IEC61010-1) Conforms to VDE0106/P100 (finger protection) when the terminal cover is mounted.

**Note:** The K3TF-V8□□ and K3TF-V9□□ do not conform to CE marking standards.

## ■ Characteristics

Input signal	AC voltage/current
A/D conversion method	Double integral method
Root-mean-square value indication	Root-mean-square value of half-wave rectified current detected
Sampling period	2.5 times/s
Display refresh period	2.5 times/s
Max. displayed digits	3 1/2 digits (1999)
Display	7-segment red LED
Decimal point display position	Selected with slide switch (see note 1)
Overflow display	Overflow: #□□□
Zero suppression	Not supported.
External control	Process value hold (terminals on rear panel short-circuited)
Degree of protection	Front panel: IEC IP51 (see note 2) Case: IEC IP20 Terminals: IEC IP00

**Note:** 1. Only for models with signal monitor.

2. IP51 is maintained when the water-resistant soft cover and bracket are used. IP50 will be, however, maintained without these water-resistant accessories.

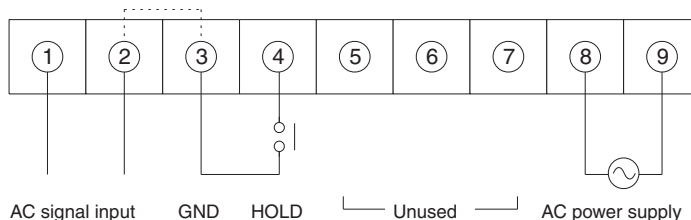
## Measuring Ranges

Monitor	Input range	Measuring range	Max. resolution	Input impedance	Accuracy	Max. permissible load
Line monitor	AC voltage	0 to 199.9 V	100 mV	10 MΩ	±0.3%rdg ±1 digit (see note 1)	500 V
		0 to 400 V	1 V	10 MΩ	±0.3%rdg ±1 digit	500 V
Signal monitor	AC voltage	0 to 199.9 mV	100 μV	10 MΩ	±0.3%rdg ±1 digit	250 V
		0 to 1.999 V	1 mV	10 MΩ	±0.3%rdg ±1 digit	250 V
		0 to 19.99 V	10 mV	1 MΩ	±0.3%rdg ±1 digit	250 V
	AC current	0 to 1.999 mA	1 μA	100 Ω	±0.5%rdg ±1 digit	50 mA
		0 to 19.99 mA	10 μA	10 Ω	±0.5%rdg ±1 digit	150 mA
		0 to 199.9 mA	100 μA	1 Ω	±0.5%rdg ±1 digit	500 mA
	0 to 1.999 A	1 mA	0.1 Ω	±0.5%rdg ±1 digit	3 A	

- Note:**
1. With 100% input. ±0.3% FS±1 digit when the input is less than 35% FS.
  2. The above accuracy is at an input frequency range of 40 Hz to 1 kHz and an ambient temperature of 23±5°C.
  3. A large error will result if a signal that is not a sine wave is used (e.g., a signal from thyristor control).

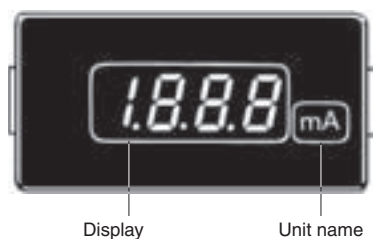
## Connections

### External Connections



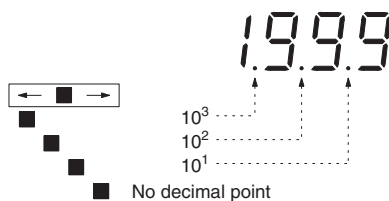
**Note:** Terminals 2 and 3 of the models are not internally insulated. Connect a relay with high contact reliability and insulation (with a minimum load current of 0.3 mA) or a photocoupler with high insulation (with a residual voltage of 1 V max. and a current leakage of 0.1 mA max.) to these terminals for external control.

## Nomenclature



Display

Unit name



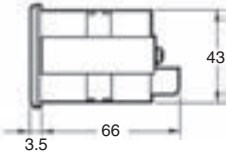
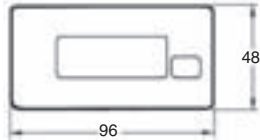
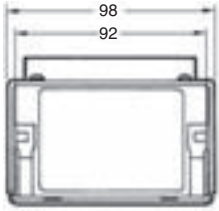
Select the decimal position with the slide switch under the cover on the front panel (signal monitor only).

Remove the front panel by using a flat-blade screwdriver or your fingernail in the two notches at the bottom.

**Note:** The decimal position cannot be changed for the K3TF-V81□ or K3TF-V91□.

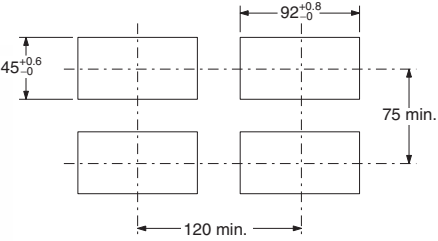
# Dimensions

Note: All units are in millimeters unless otherwise indicated.



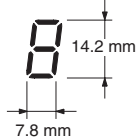
The K3TF uses M3.5 terminals.

### Panel Cutouts



Note: The values above are recommended values. Do not group-mount the meters at intervals less than the recommended ones.

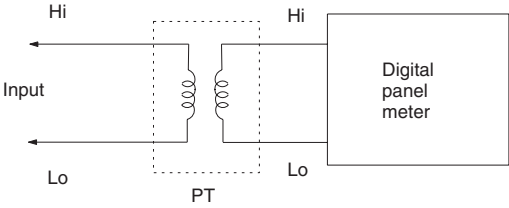
### LED Indicator Size



# Application Examples

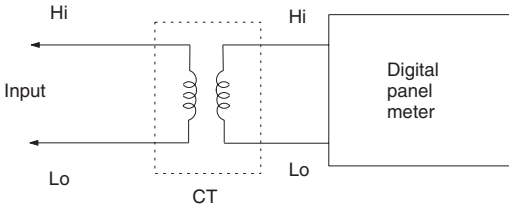
### High AC Voltage Measurement

When voltage exceeding the maximum voltage in the standard range is measured (for example: more than 400 V), a divider or potential transformer (PT) is connected externally.



### Large AC Current Measurement

When AC current exceeding 2 A is measured, a current transformer (CT) is connected externally.

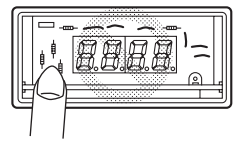


# Safety Precautions

Refer to *Safety Precautions for All Digital Panel Meters*.

## Precautions for Safe Use

The front panel cover is removed when setting the decimal point position or performing calibration. Do not, however, touch any parts other than the slide switches or adjustment knob or come close to any metal parts.



## Precautions for Correct Use

### Mounting

Recommended panel thickness is 1 to 3.2 mm.

Mount the Digital Panel Meter by attaching the mounting bracket supplied as an accessory from the rear of the Digital Panel Meter, hook the mounting bracket to the Digital Panel Meter securely, and tighten the mounting screws by turning them clockwise with a tightening torque of 5 kgf·cm (0.49 N·m). For dismounting, loosen the screws and widen the hooks.

Always attach the Mounting Bracket before wiring the terminals. Also, always remove the wiring before removing the Mounting Bracket.

Mount the Digital Panel Meter as horizontally as possible.

Never use the Digital Panel Meter in locations where corrosive gas (particularly sulfide or ammonia gas) is generated.

As much as possible avoid use of the Digital Panel Meter in a location subject to severe shock or vibration, excessive dust, or excessive moisture.

Select a mounting location where the Digital Panel Meter can be used at an ambient operating temperature  $-10^{\circ}$  to  $55^{\circ}\text{C}$ .

No product is shipped with the unit label attached. Select a unit label from the sheet provided, and attach it to the Digital Panel Meter.



## Calibration

Calibrate the Digital Panel Meter regularly so that the Digital Panel Meter can maintain processing accuracy.

Use a standard signal generator with an accuracy of 99.99% min. for calibration.

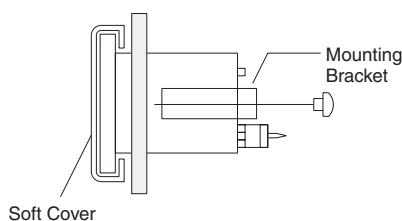
For the precise calibration methods, refer to the Instruction Sheet for the Digital Panel Meter.

After the front panel cover is removed to calibrate the K3TF or set the decimal position, do not touch components other than the slide switch and calibration adjuster. Keep metal objects off the K3TF after the cover is removed, especially when power is turned on.

## Accessories (Order Separately)

### Water-resistant Soft Front Cover

Before mounting the Digital Panel Meter to a panel, attach the water-resistant soft front cover and mounting bracket to the Digital Panel Meter properly so that the Digital Panel Meter will maintain IP51 water-resistant standards. Before you calibrate Digital Panel Meters, remove the water-resistant soft front cover. Refer to the operation manual included with the Digital Panel Meter for the calibration procedure.



**Note:** Be sure to use the Water-resistant Soft Front Cover and mounting bracket together.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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