

### 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.
- Water-resistant (IP51) construction (optional).

## Ordering Information

### Models with Line Monitor

Range	Measuring ranges	Supply voltage		
		100 to 120 VAC	200 to 240 VAC	24 VAC
AC voltage	0 to 199.9 V	K3TF-V814	K3TF-V815	K3TF-V818
	0 to 400 V	K3TF-V914	K3TF-V915	K3TF-V918

### Models with Signal Monitor

Range	Measuring ranges	Supply voltage		
		100 to 120 VAC	200 to 240 VAC	24 VAC
AC voltage	0 to 199.9 mV	K3TF-V514	K3TF-V515	K3TF-V518
	0 to 1.999 V	K3TF-V614	K3TF-V615	K3TF-V618
	0 to 19.99 V	K3TF-V714	K3TF-V715	K3TF-V718
AC current	0 to 1.999 mA	K3TF-A614	K3TF-A615	K3TF-A618
	0 to 19.99 mA	K3TF-A714	K3TF-A715	K3TF-A718
	0 to 199.9 mA	K3TF-A814	K3TF-A815	K3TF-A818
	0 to 1.999 A	K3TF-A914	K3TF-A915	K3TF-A918

### 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

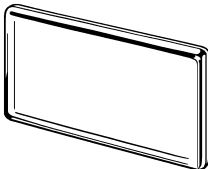

#### 3. Series No.

1: Current series

#### 4. Supply Voltage

4: 100 to 120 VAC  
 5: 200 to 240 VAC  
 8: 24 VAC (24-VAC type is available by request)

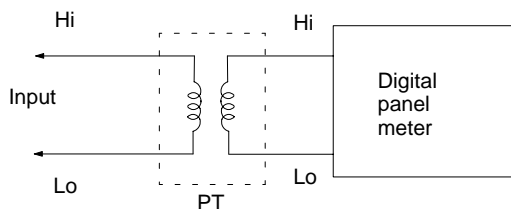
## ■ Accessories (Order Separately)

Name	Appearance	Model
Water-resistive Soft Front Cover		K32-L49SC
Terminal Cover		K32-L49TC

## Application Examples

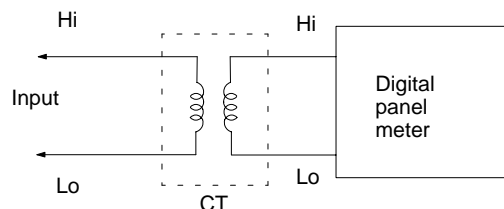
### High AC Voltage Measurement

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.



## Specifications

### ■ Ratings

<b>Supply voltage</b>	24 VAC (50/60 Hz); 100 to 120 VAC (50/60 Hz); 200 to 240 VAC (50/60 Hz)
<b>Operating voltage range</b>	-15% to +10% of supply voltage
<b>Power consumption</b>	4 VA (at max. load)
<b>Insulation resistance</b>	10 MW min. (at 500 VDC) between external terminal and case
<b>Dielectric withstand voltage</b>	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
<b>Noise immunity</b>	+1,500 V on power supply terminals in normal or common mode
<b>Vibration resistance</b>	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
<b>Shock resistance</b>	Malfunction: 100 m/s <sup>2</sup> (approx. 10G) for 3 times each in 6 directions Destruction: 300 m/s <sup>2</sup> (approx. 30G) for 3 times each in 6 directions
<b>Ambient temperature</b>	Operating: -10% to 55°C (with no icing) Storage: -20% to 65°C (with no icing)
<b>Ambient humidity</b>	Operating: 35% to 85% (with no condensation)
<b>Ambient atmosphere</b>	Must be free of corrosive gas

## ■ 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 LED
Decimal point display position	Selected with slide switch (see note 1)
Overflow display	Overflow: 1__
External control	Process value hold (terminals on rear panel short-circuited)
Enclosure ratings	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.

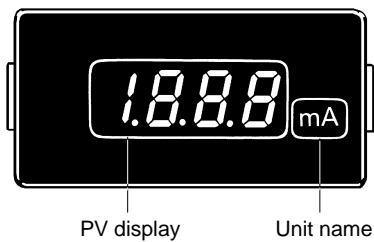
## ■ Measuring Ranges

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 MW	+0.3%rdg +1 digit (see note 1)	500 V
		0 to 400 V	1 V	10 MW	+0.3%rdg +1 digit	500 V
Signal monitor	AC voltage	0 to 199.9 mV	100 mV	10 MW	+0.3%rdg +1 digit	250 V
		0 to 1.999 V	1 mV	10 MW	+0.3%rdg +1 digit	250 V
		0 to 19.99 V	10 mV	1 MW	+0.3%rdg +1 digit	250 V
	AC current	0 to 1.999 mA	1 mA	100 W	+0.5%rdg +1 digit	50 mA
		0 to 19.99 mA	10 mA	10 W	+0.5%rdg +1 digit	150 mA
		0 to 199.9 mA	100 mA	1 W	+0.5%rdg +1 digit	500 mA
		0 to 1.999 A	1 mA	0.1 W	+0.5%rdg +1 digit	3 A

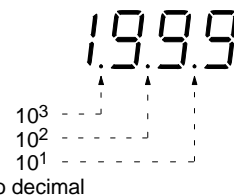
**Note:** 1. With 100% input. +0.3% FS+1 digit when the input is less than 35% FS.

2. The above accuracy is at an input frequency range of 40 Hz to 1 kHz and an ambient temperature of 25+5°C.

## Nomenclature

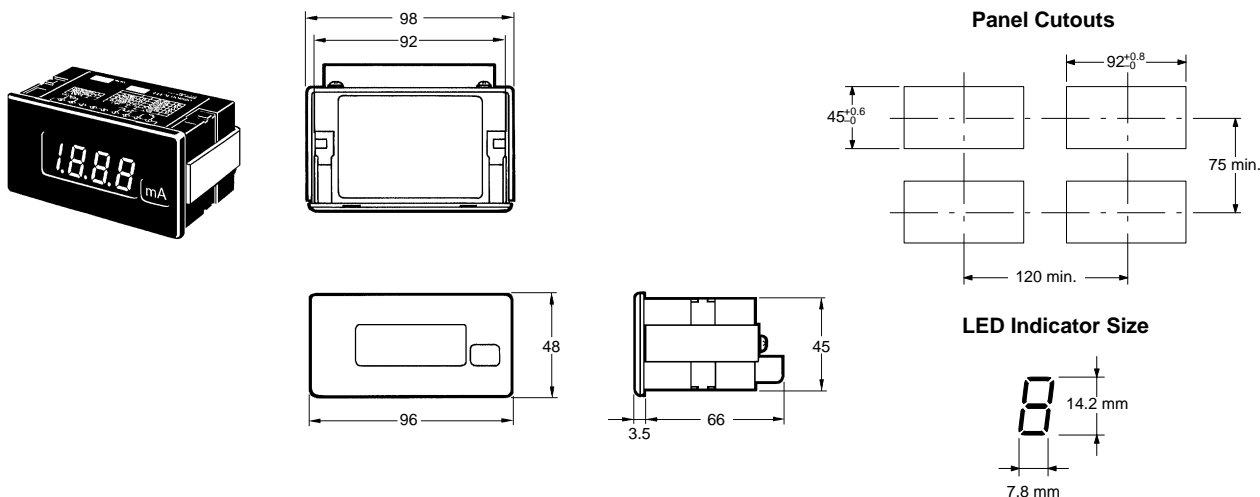


Select the decimal position with the slide switch under the cover on the front panel.



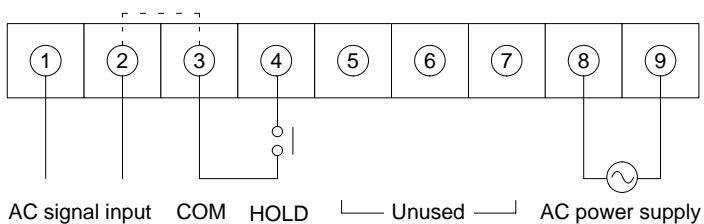
## Dimensions

**Note:** All units are in millimeters unless otherwise indicated.



## Installation

### 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 photo-coupler 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.

## Precautions

### 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 dismantling, 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.

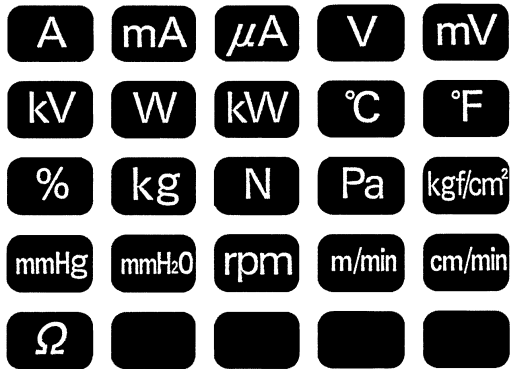
Mount the Digital Panel Meter as horizontally as possible.

Never use the Digital Panel Meter in locations where corrosive gas (particularly sulfureted 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  $-10\%$  to  $55\%$ 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.

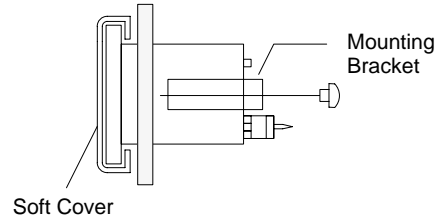
For the precise calibration methods, refer to the Instruction Sheet for the Digital Panel Meter.

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.



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