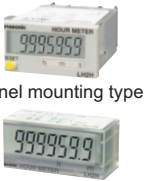





# Hour Meters Selection Guide

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- LASER SENSORS
- PHOTOELECTRIC SENSORS
- MICRO PHOTOELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
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- LH2H**
- TH63/64**
- TH13/23**
- TH14/24**









		LH2H series 24 × 48 mm 0.945 × 1.890 in		TH Hour Meter series 24 × 48 mm 0.945 × 1.890 in	
Product name		LH2H Hour Meters	LH2H Preset Hour Meters	TH63 Hour Meters (without reset button)	TH64 Hour Meters (with reset button)
Appearance		 <p>Panel mounting type PC board mounting type</p>			
Counting range		Panel mounting type: 0 to 999999.9 hours/ 0 to 3999 days 23.9 hours (selectable) 0 to 999 hours 59 min 59 sec/ 0 to 9999 hours 59.9 min (different type) PC board mounting type: 0 to 999999.9 hours/ 9999 hours 59.9 min (different type)	0 to 999999.9 hours/ 0 to 3999 days 23.9 hours (selectable) 0 to 999 hours 59 min 59 sec/ 0 to 9999 hours 59.9 min (selectable) (different type)	0 to 99999.9 hours	0 to 9999.9 hours
Features		8.7 mm 0.343 in letter height Plenty of digits: 7 digits Installation type: One-touch installation, Installation frame, and PC board mounting types	Preset function equipped in half size	For controlling total integrated hours	With zero reset function For controlling measured integrated hours
Driving method		Quartz oscillation type	Quartz oscillation type	AC motor	AC motor
Counting direction		Addition (UP)	Addition (UP) or subtraction (DOWN) (selectable)	Addition (UP)	Addition (UP)
Power	Voltage	Flush mounting type: Unnecessary (Built-in battery) PC board mounting type: 3 V DC (Battery is externally installed.)	24 V DC	12 V AC, 24 V AC, 48 V AC, 100 V AC, 110 V AC, 115 to 120 V AC, 200 V AC, 220 V AC, 240 V AC	12 V AC, 24 V AC, 48 V AC, 100 V AC, 110 V AC, 115 to 120 V AC, 200 V AC, 220 V AC, 240 V AC
	Frequency	—	—	50/60 Hz (common)	50/60 Hz (common)
Time accuracy		±100 ppm (at 25 °C 77 °F)	±0.01 % ±50 ms in case of power on start ±0.01 % ±30 ms in case of input signal start	Synchronizing with power supply frequency	Synchronizing with power supply frequency
Min. counting unit		0.1 h, 0.1 min, 1 s	0.1 h, 0.1 min, 1 s	0.1 h (6 min)	0.1 h (6 min)
Reset input		<ul style="list-style-type: none"> <li>Front reset button and external reset input terminal</li> <li>External reset DIP terminal</li> </ul>	Front reset button and external reset input terminal	—	Manual reset
Power consumption		—	Max. 1.5 W	Approx. 1.5 W	Approx. 1.5 W
Weight		Flush mounting type: 55 g PC board mounting type: 15 g	50 g	80 g	90 g
Available standards		UL, c-UL, CE	UL, c-UL, CE	UL, CSA, CE The standard products are UL-recognized as well as CSA-certified. (There is no need to add "U" at the end of the part number.)	
Remarks		Panel installation types without reset button are also available (made to order).	—	—	—
				TH63 and 64 series have numbers at the end of the model number that indicate the voltage required as follows: 1:100V, 2:200V, 3:12V, 4:24V, 5:48V, 6:110V, 7:115-120V, 8:220V, 9:240V	
Page		P.1275	P.1277~	P.1279	P.1279

TH Hour Meter series

DINø48 mm 1.890 in

52 × 52 mm 2.047 × 2.047 in

Round type : ø62 mm ø2.441 in

	TH14 Hour Meters (without reset button)	TH24 Hour Meters (with reset button)	TH40 Hour Meters (dual indicator)	TH50 Hour Meters (minutes indicator)	TH70 Hour Meters (DC type)	TH13 Hour Meters (without reset button)	TH23 Hour Meters (with reset button)	TH8 Hour Meters (DC type)
								
	0 to 99999.9 hours	0 to 9999.9 hours	Reset side 0 to 9999.9 hours Without reset side 0 to 99999.9 hours	0 to 9999.9 min	0 to 99999.9 hours	0 to 99999.9 hours	0 to 9999.9 hours	0 to 9999.9 hours
	For controlling total integrated hours	With zero reset function For controlling measured integrated hours	Composite function for total integrated hours monitoring and measuring each zero reset	Zero reset for minute unit time monitoring	For monitoring integrated hours on DC power line	For controlling total integrated hours	With zero reset function For controlling measured integrated hours	Driven on DC power
	AC motor	AC motor	AC motor	AC motor	Quartz oscillation + AC motor	AC motor	AC motor	Ceramic oscillation + AC motor
	Addition (UP)	Addition (UP)	Addition (UP)	Addition (UP)	Addition (UP)	Addition (UP)	Addition (UP)	Addition (UP)
	12 V AC, 24 V AC, 48 V AC, 100 V AC, 110 V AC, 115 to 120 V AC, 200 V AC, 220 V AC, 240 V AC	12 V AC, 24 V AC, 48 V AC, 100 V AC, 110 V AC, 115 to 120 V AC, 200 V AC, 220 V AC, 240 V AC	12 V AC, 24 V AC, 48 V AC, 100 V AC, 110 V AC, 115 to 120 V AC, 200 V AC, 220 V AC, 240 V AC	12 V AC, 24 V AC, 48 V AC, 100 V AC, 110 V AC, 115 to 120 V AC, 200 V AC, 220 V AC, 240 V AC	12 V DC, 24 V DC	100 V AC, 200 V AC, 110 V AC, 115 to 120 V AC, 220 V AC, 240 V AC	100 V AC, 200 V AC, 110 V AC, 115 to 120 V AC, 220 V AC, 240 V AC	12 V DC, 24 V DC
	50/60 Hz (common)	50/60 Hz (common)	50/60 Hz (common)	50/60 Hz (common)	—————	50 Hz or 60 Hz	50 Hz or 60 Hz	—————
	Synchronizing with power supply frequency	Synchronizing with power supply frequency	Synchronizing with power supply frequency	Synchronizing with power supply frequency	Monthly error: ±15 sec (at 25 °C 77 °F)	Synchronizing with power supply frequency	Synchronizing with power supply frequency	±0.2 % (at 25 °C 77 °F)
	0.1 h (6 min)	0.1 h (6 min)	0.1 h (6 min)	0.1 min (6 s)	0.1 h (6 min)	0.1 h (6 min)	0.1 h (6 min)	0.1 h (6 min)
	—————	Manual reset	Manual reset	Manual reset	—————	—————	Manual reset	—————
	Approx. 1.5 W	Approx. 1.5 W	Approx. 1.5 W	Approx. 1.5 W	Approx. 1.5 W	Approx. 1.5 W	Approx. 1.5 W	Approx. 1.5 W (with rated voltage applied) at 25 °C 77 °F
	145 g	150 g	160 g	150 g	170 g	130 g	135 g	170 g
	UL, CSA, CE Only the black-panel type is UL-recognized and CSA-certified. For this type, specify "U" at the end of the part number.		CE	CE	—————	UL, CSA, CE The 115 to 120 V, 220 V and 240 V AC type are UL-recognized and CSA-certified. For these type, specify "U" at the end of the part number.		UL, c-UL, CE The standard products are UL-recognized as well as c-UL-recognized. (There is no need to add "U" at the end of the part number.)
	—————	TH50 series displays time in minute.	—————	—————	The unit with a reset function is also available. (Manufacturing after receiving an order)	—————	—————	—————
	TH14, 24, 40 and 50 series have numbers at the end of the model number that indicate the voltage required as follows: 1:100 V, 2:200 V, 3:12 V, 4:24 V, 5:48 V, 6:110 V, 7:115 to 120 V, 8:220 V, 9:240 V Ex.) The model number of TH24 series with 220 V is TH248. When "S" is specified at the end of the model number, a silver panel is equipped at the front.					Both TH13 and 23 series have numbers at the end of the model number that indicate the voltage and frequency required. The third number from the front of the model number indicates the required voltage as follows: 4:100 V, 5:200 V, 6:110 V, 7:115 V (for 50 Hz only) or 115 V to 120 V (for 60 Hz only), 8:220 V, 9:240 V The fourth number from the front of the model number indicates the required frequency as follows: 5:50 Hz, 6:60 Hz Ex.) The model number for TH13 series of 220 V & 50 Hz specification is TH1385.		
	P.1281	P.1281	P.1282	P.1283	P.1284	P.1280	P.1280	P.1285

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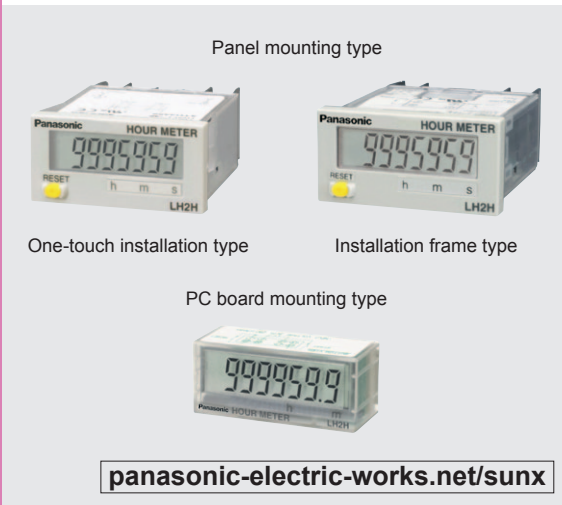
LH2H

TH63/64

TH13/23

TH14/24

Related Information ■ Options ..... P.1289



### Features

- 7-segment LCD with 8.7 mm **0.343 in** letter height (total digits: 7)
- Select by switch between two time ranges in a single meter.
- Battery replacement easy on environment
- Screw terminals are constructed to protect fingers to ensure safety.
- Backlight can be switched between green and red (for backlight type)
- IP66 compliant for resistance against negative environmental influences (only when panel surface uses rubber packing) (for installation frame type)
- Replaceable panel cover  
Panel design can be changed from standard (ash gray) to black (sold separately).

**Large display in a small body, achieving high viewability and user-friendliness**

IP66 Time selectable

## PRODUCT TYPES

### Panel mounting type

Installation type	Input method	Measurement time range (switchable)		Backlight	Front reset	Part No.
		0 to 999999.9 h	0 to 999 h 59 m 59 s			
		0 to 3999 d 23.9 h	0 to 9999 h 59.9 m			
One-touch installation type	Non-voltage input type	Yes	No	No	Yes	LH2H-FE-DHK
		No	Yes	No	Yes	LH2H-FE-HMK
	Voltage input type (4.5 to 30 V DC)	Yes	No	No	Yes	LH2H-FE-DHK-DL
		No	Yes	No	Yes	LH2H-FE-HMK-DL
		Yes	No	Yes	Yes	LH2H-FE-DHK-DL-B
		No	Yes	Yes	Yes	LH2H-FE-HMK-DL-B
Free voltage input type (24 to 240 V AC/DC)	Yes	No	No	Yes	LH2H-FE-DHK-FV	
	No	Yes	No	Yes	LH2H-FE-HMK-FV	
Installation frame type	Non-voltage input type	Yes	No	No	Yes	LH2H-F-DHK
		No	Yes	No	Yes	LH2H-F-HMK
	Voltage input type (4.5 to 30 V DC)	Yes	No	No	Yes	LH2H-F-DHK-DL
		No	Yes	No	Yes	LH2H-F-HMK-DL
		Yes	No	Yes	Yes	LH2H-F-DHK-DL-B
		No	Yes	Yes	Yes	LH2H-F-HMK-DL-B
	Free voltage input type (24 to 240 V AC/DC)	Yes	No	No	Yes	LH2H-F-DHK-FV
		No	Yes	No	Yes	LH2H-F-HMK-FV

Note: Please ask us about products without front reset button.

### PC board mounting type

Input method	Measurement time range		Backlight	Front reset	Part No.
Non-voltage input type	0 to 999999.9 h	No	No	No	LH2H-C-H-N
	No	0 to 9999 h 59.9 m	No	No	LH2H-C-HM-N

Note: There is no front panel reset button on the PC board mounting type.

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- TH13/23
- TH14/24

## CAUTIONS FOR USE

### Non-voltage input type

For both panel mounting and PC board mounting types

- Never apply voltage to the non-voltage input type. This will damage the internal elements.
- Since the current flow is very small from the start input and reset input terminals (① and ③ on panel mounting type and ⑮ to ⑰ and ⑳ to ㉓ on PC board mounting type) please use relays and switches with high contact reliability. When inputting with an open collector of a transistor, use a transistor for small signals in which  $I_{CBO}$  is  $1 \mu A$  or less and always input with no voltage.
- When wiring, try to keep all the input lines to the start and reset inputs as short as possible and avoid running them together with high voltage and power transmission lines or in a power conduit. Also, malfunctions might occur if the floating capacitance of these wires exceeds  $500 \text{ pF}$  (10 m 32.808 ft. for parallel wires of  $2 \text{ mm}^2$ ). In particular, when using shielded wiring, be careful of the capacitance between wires.

### PC board mounting type

- For external power supply use manganese dioxide or lithium batteries (CR type: 3 V).
- Always reset after external power is applied and confirm that the display reads "0".
- Make the wiring from the battery to the hour meter unit as short as absolutely possible. Also, be careful of polarity.
- Calculate battery life with the following formula.

$$t = A/I$$

t: battery life [h]

I: LH2H current consumption [mA]

A: battery capacity until minimum operation voltage is reached [mAh]

- Hand solder to the lead terminal. Do not dip solder. With the tip of the soldering iron at  $300 \text{ }^\circ\text{C}$  572 °F perform soldering within 3 seconds (for 30 to 60 W soldering iron).

### Voltage input type

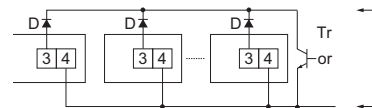
- Be aware that applying more than 30 V DC to start input terminals ① and ②, and reset input terminals ③ and ④ will cause damage to the internal elements.
- For external resetting use H level (application of 4.5 to 30 V DC) between reset terminals ③ and ④ of the rear terminals. In this case, connect + to terminal ③ and - to terminal ④. This is the valid polarity; therefore, the hour meter will not work if reversed.
- When wiring, try to keep all the input lines to the start and reset inputs as short as possible and avoid running them together with high voltage and power transmission lines or in a power conduit. Also, malfunctions might occur if the floating capacitance of these wires exceeds  $500 \text{ pF}$  (10 m 32.808 ft. for parallel wires of  $2 \text{ mm}^2$ ).

### Free voltage input type

- Use start input terminals ① and ② for free voltage input and reset input terminals ③ and ④ for non-voltage input.
- Be aware that the application of voltage that exceeds the voltage range of the H level to the start input terminal, and the application of voltage to the reset input terminal, can cause damage to the internal elements.
- Since the current flow is very small from reset input terminal ③, please use relays and switches with high contact reliability.
- When inputting a reset with an open collector of a transistor, use a transistor for small signals in which  $I_{CBO}$  is  $1 \mu A$  or less and always input with no voltage.
- To reset externally, short reset input terminals ③ and ④ on the rear.
- Input uses a high impedance circuit; therefore, erroneous operation may occur if the influence of induction voltage is present. If you plan to use wiring for the input signal that is 10 m 32.808 ft. or longer (wire capacitance  $120 \text{ pF/m}$  at normal temperature), we recommend the use of a CR filter or the connection of a bleeder resistor.

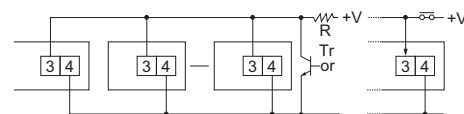
### How to reset multiple panel mounting type counters all at once (input is the same for count)

#### Non-voltage input type



- Notes: 1) Use the following as a guide for choosing transistors used for input (Tr).  
Leakage current  $< 1 \mu A$
- 2) Use as small a diode (D) as possible in the forward voltage so that the voltage between terminals 3 and 4 during reset input meets the standard value (0.5 V). (At  $I_F = 20 \mu A$ , forward voltage: Max. 0.1 V)

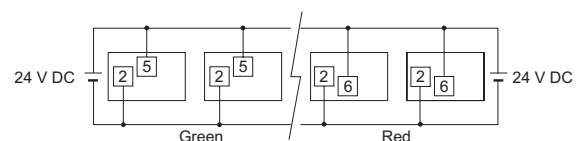
#### Voltage input type



Note: Make sure that H (reset ON) level is at least 4.5 V.

### Backlight luminance

To prevent varying luminance among backlights when using multiple backlight types, please use the same backlight power supply.



### Terminal connection

Tighten the terminal screws with a torque of 0.8 N·m or less.

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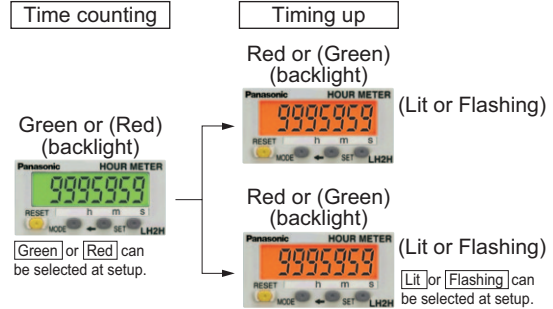
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Related Information ■ Options ..... P.1289



## Features

- Preset function equipped in half size (24 × 48 mm 0.945 × 1.890 in)
- Display has backlight for instant recognition



**Half-size body (24 × 48 mm 0.945 × 1.890 in) equipped with a preset function. Time-out can be indicated by lighting or flashing of the display**

- 8.7 mm 0.343 in letter height (7 digits)
- Select by switch between two time ranges in a single hour meter
- Screw terminals are constructed to protect fingers to ensure safety

IP66

## PRODUCT TYPES

Operation mode	Output	Operating voltage	Measurement time range	Part No.
G (Totalizing ON delay) B (Signal ON delay) F (Signal flicker) E (Pulse ON delay)	Tr (1a)	24 V DC	0 to 999999.9 h / 0 to 3999 d 23.9 h selectable	LH2HP-FEW-DHK-B-DC24V
			0 to 999 h 59 m 59 s / 0 to 9999 h 59.9 m selectable	LH2HP-FEW-HMK-B-DC24V

Note: Mounting frame and rubber gasket are not included.

## Options

Product name	Description	Part No.
Mounting frame	Use for waterproofing (front panel surface)	ATH3803
Rubber gasket		ATH3804

## CHANGING THE SET TIME (PRESET VALUE)

- It is possible to change the set time even during time delay with the timer. However, be aware of the following points.
  - (1) If the set time is changed to less than the elapsed time (elapsed value) with the time delay set to the addition direction, time delay will continue until the elapsed time reaches full scale, returns to "0 (zero)", and then reaches the new set time. If the set time is changed to a time above the elapsed time, the time delay will continue until the elapsed time reaches the new set time.
  - (2) If the time delay is set to the subtraction direction, time delay will continue until "0 (zero)" regardless of the new set time.
- If the set time is changed to "0 (zero)", the hour meter will operate differently depending on the operation mode. In the G (Totalizing ON delay), B (Signal ON delay), and E (Pulse ON delay) modes, the output turns ON when the start input is ON. However, the output will be OFF while reset is being input. In the F (Signal flicker) mode, the flicker operation will not work even if start input is turned ON.

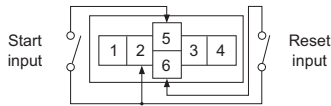
## CAUTIONS FOR USE

### Input and output connection

#### Input connection

- Contact input

Use highly reliable metal plated contacts. Since the contact's bounce time leads directly to error in the timer operating time, use contacts with as short a bounce time as possible.



- Non-contact input (Transistor input)

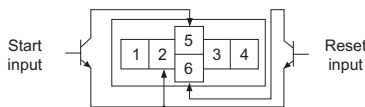
Connect with an open collector.

Use transistors whose characteristics satisfy the criteria given below.  $V_{CE0} = \text{Min. } 20 \text{ V}$   $I_C = \text{Min. } 20 \text{ mA}$   $I_{CBO} = \text{Max. } 6 \mu\text{A}$  Also, use transistors with a residual voltage of less than 2 V when the transistor is on.

\* The short-circuit impedance should be less than 1 k $\Omega$ .

[ When the impedance is 0  $\Omega$ , the current coming from the start input terminal is approximately 5 mA and from the reset input terminal is approximately 1.5 mA. ]

Also, the open-circuit impedance should be more than 100 k $\Omega$ .

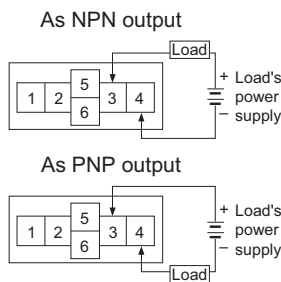


- Input wiring

When wiring, use shielded wires or metallic wire tubes, and keep the wire lengths as short as possible.

#### Output connection

Since the transistor output of hour meter is insulated from the internal circuitry by a photo-coupler, it can be used as an NPN output or PNP (equal value) output.



### Self-diagnosis function

If a malfunction occurs, one of the following displays will appear.

Display	Contents	Output condition	Restoration procedure	Preset values after restoration
Err-00	Malfunctioning CPU	OFF	Enter front reset key or restart hour meter	Preset value at start-up before the CPU malfunction occurred
Err-01	Malfunctioning memory*			"0"

\* Includes the possibility that the EEPROM's life has expired.

### Power failure memory

The EEPROM is overwriting with the following timing.

Operation mode	Overwrite timing
G (Totalizing ON delay) mode	Change of preset value or when power is OFF after start and reset input turns ON
Other modes	When power is OFF after changing preset value

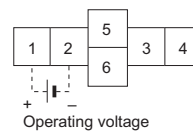
### Terminal connection

When wiring the terminals, refer to the terminal layout and wiring diagrams and be sure to perform the wiring properly without errors.

Tighten the terminal screws with a torque of 0.8 N·cm or less.

An external power supply is required in order to run the main unit.

Power (24 V DC) should be applied between terminals ① and ②. Terminal ① acts as the positive "+" connection and terminal ② as the negative "-".



- After turning the hour meter off, make sure that any resulting induced voltage or residual voltage is not applied to power supply terminals ① through ②. (If the power supply wire is wired parallel to the high voltage wire or power wire, an induced voltage may be generated at the power supply terminal.)
- Have the power supply voltage pass through a switch or relay so that it is applied at one time.

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LH2H

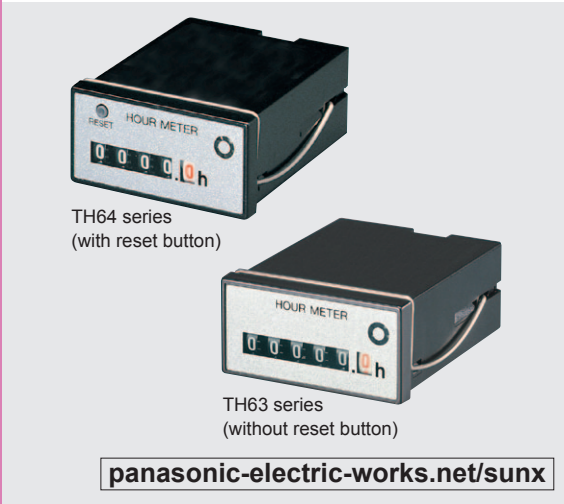
TH63/64

TH13/23

TH14/24

# TH63/TH64 Hour Meter (half size)

Related Information ■ Precautions in using ..... P.1286



### Features

- Compact to save panel space
- Reset button (for TH64 series)
- Wide-ranging measurement display (for TH63 series)
- Flat terminals for easy wiring  
To weld the #187 flat connection terminals (receptacles), please use a "YC-051" tool manufactured by J.S.T. Mfg. Co. Ltd.
- High-performance synchronous motor with 50/60 Hz selector
- Rotary indicator (Counterclockwise, one rotation is 72 seconds)

### Typical applications

- Management of small generators and food processing machines
- Hour counting for leased equipment
- Maintenance management of various equipments, etc.

**Compact size (24 × 48 mm  
0.945 × 1.890 in) that allows  
for efficient use of the  
control panel space**

## PRODUCT TYPES

Type	Operating voltage	Part No.	Operating voltage	Part No.	Operating voltage	Part No.
TH63 series (without reset button)	100 V AC	TH631	24 V AC	TH634	115 to 120 V AC	TH637
	200 V AC	TH632	48 V AC	TH635	220 V AC	TH638
	12 V AC	TH633	110 V AC	TH636	240 V AC	TH639
TH64 series (with reset button)	100 V AC	TH641	24 V AC	TH644	115 to 120 V AC	TH647
	200 V AC	TH642	48 V AC	TH645	220 V AC	TH648
	12 V AC	TH643	110 V AC	TH646	240 V AC	TH649

Notes: 1) Only the metallic-looking (silver) panel mounting type is available.  
2) Standard products are UL-recognized as well as CSA-certified. There is no need to add "U" at the end of the part No.

- FIBER SENSORS
- LASER SENSORS
- PHOTOELECTRIC SENSORS
- MICRO PHOTOELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
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- STATIC CONTROL DEVICES
- ENDOSCOPE
- LASER MARKERS
- PLC / TERMINALS
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
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- TH63/64
- TH13/23
- TH14/24

# TH13/TH23 Hour Meter

Related Information ■ Precautions in using ..... P.1286



TH23 series  
(with reset button)



TH13 series  
(without reset button)

[panasonic-electric-works.net/sunx](http://panasonic-electric-works.net/sunx)

**Integrating hour meters with high reliability. Equipped with a high performance, ultra-compact synchronous motor**

### Features

- **High-performance compact synchronous motor**
- **Compact and stylish**
- **Flat terminals for easy wiring**  
To weld the #187 flat connection terminals (receptacles), please use a "YC-051" tool manufactured by J.S.T. Mfg. Co. Ltd.
- **Rotary indicator (Clockwise, one rotation per 2 minutes)**

### Typical applications

- **Machine tools, automated machines, control panels**
- **Forming machines, medical equipment, generators, compressors**
- **Water treatment facilities, presses**
- **Motors, etc.**

## PRODUCT TYPES

Type	Operating voltage	Part No.		Operating voltage	Part No.	
		50 Hz	60 Hz		50 Hz	60 Hz
TH13 series (without reset button)	100 V AC	TH1345	TH1346	115 V AC (115 to 120 V AC)	TH1375	TH1376
	200 V AC	TH1355	TH1356	220 V AC	TH1385	TH1386
	110 V AC	TH1365	TH1366	240 V AC	TH1395	TH1396
TH23 series (with reset button)	100 V AC	TH2345	TH2346	115 V AC (115 to 120 V AC)	TH2375	TH2376
	200 V AC	TH2355	TH2356	220 V AC	TH2385	TH2386
	110 V AC	TH2365	TH2366	240 V AC	TH2395	TH2396

Note: The 115 to 120 V AC, 220 V AC and 240 V AC types are UL-recognized and CSA-certified. For those products, specify "U" at the end of the part No. when ordering.

FIBER SENSORS

LASER SENSORS

PHOTOELECTRIC SENSORS

MICRO PHOTOELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

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WIRE-SAVING SYSTEMS

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TH63/64

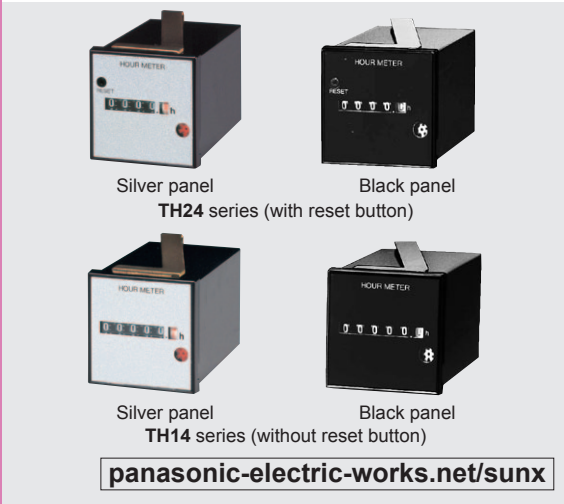
TH13/23

TH14/24



# TH14/TH24 Hour Meter

Related Information ■ Precautions in using ..... P.1286



### Features

- High-performance compact synchronous motor
- Common for 50/60 Hz power frequency
- Flat terminals for easy wiring  
To weld the #187 flat connection terminals (receptacles), please use a "YC-051" tool manufactured by J.S.T. Mfg. Co., Ltd.
- Rotary indicator (Clockwise, one rotation per 2 minutes).

DIN□48

### Typical applications

- Machine tools, automated machines, control panels
- Forming machines, medical equipment, generators, compressors
- Water treatment facilities, presses
- Motors, etc.

**Supports both 50 Hz and 60Hz (lever-switchable)**  
**Equipped with a high performance motor**

### PRODUCT TYPES

Type	Operating voltage	Part No.		Operating voltage	Part No.		Operating voltage	Part No.	
		Silver panel	Black panel		Silver panel	Black panel		Silver panel	Black panel
TH14 series (without reset button)	100 V AC	TH141S	TH141	24 V AC	TH144S	TH144	115 to 120 V AC	TH147S	TH147
	200 V AC	TH142S	TH142	48 V AC	TH145S	TH145	220 V AC	TH148S	TH148
	12 V AC	TH143S	TH143	110 V AC	TH146S	TH146	240 V AC	TH149S	TH149
TH24 series (with reset button)	100 V AC	TH241S	TH241	24 V AC	TH244S	TH244	115 to 120 V AC	TH247S	TH247
	200 V AC	TH242S	TH242	48 V AC	TH245S	TH245	220 V AC	TH248S	TH248
	12 V AC	TH243S	TH243	110 V AC	TH246S	TH246	240 V AC	TH249S	TH249

Note: Only the black-panel type is UL-recognized and CSA-certified. For this type, specify "U" at the end of the part No. when ordering.

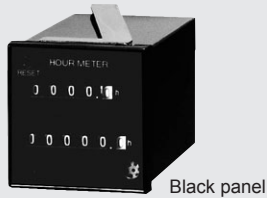
- FIBER SENSORS
- LASER SENSORS
- PHOTOELECTRIC SENSORS
- MICRO PHOTOELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
- PRESSURE / FLOW SENSORS
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- Temperature Controllers
- Selection Guide
- LH2H
- TH63/64
- TH13/23
- TH14/24

# TH40 Dual Indicator Hour Meter

Related Information ■ Precautions in using ..... P.1286



Silver panel



Black panel

[panasonic-electric-works.net/sunx](http://panasonic-electric-works.net/sunx)

**Capable of measuring both the total time and a specific period of time**

## Features

- Upgraded composite function**  
 In a single hour meter, the upper display shows measurement specified-period and the lower display shows the accumulated measured time.
- High-performance compact synchronous motor**
- Common for 50/60 Hz power frequency**  
 A lever is used to select 50 Hz or 60 Hz. There is no need to rearrange the control panel and other signal destinations.
- Flat terminals for easy wiring**  
 To weld the #187 flat connection terminals (receptacles), please use a "YC-051" tool manufactured by J.S.T. Mfg. Co., Ltd.
- Rotary indicator (Clockwise, one rotation per 2 minutes)**

DIN□48

## PRODUCT TYPES

Type	Operating voltage	Part No.		Operating voltage	Part No.		Operating voltage	Part No.	
		Silver panel	Black panel		Silver panel	Black panel		Silver panel	Black panel
TH40 series	100 V AC	TH401S	TH401	24 V AC	TH404S	TH404	115 to 120 V AC	TH407S	TH407
	200 V AC	TH402S	TH402	48 V AC	TH405S	TH405	220 V AC	TH408S	TH408
	12 V AC	TH403S	TH403	110 V AC	TH406S	TH406	240 V AC	TH409S	TH409

FIBER SENSORS

LASER SENSORS

PHOTOELECTRIC SENSORS

MICRO PHOTOELECTRIC SENSORS

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LIGHT CURTAINS

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Hour Meters

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Limit Switches

Fan Motors

Temperature Controllers

TH40

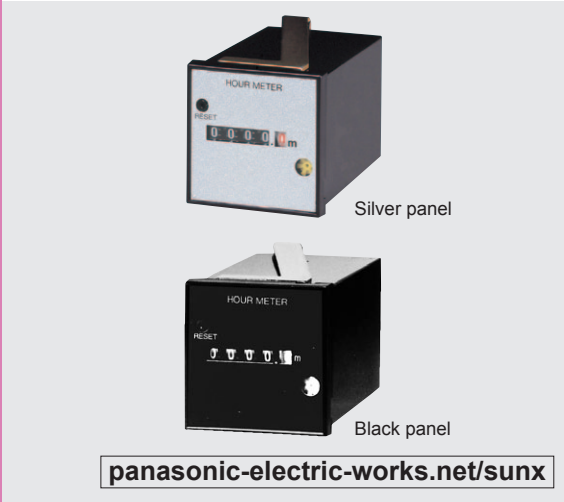
TH50

TH70

TH8

# TH50 Minutes Indicator Hour Meter

Related Information ■ Precautions in using ..... P.1286



### Features

- **Measurement and management in units of minutes**
- **Reset button**  
The hour meters can be reset to zero for repeated measurement.
- **High-performance compact synchronous motor**
- **Common for 50/60 Hz power frequency**  
A lever is used to select 50 Hz or 60 Hz. There is no need to rearrange the control panel and other signal destinations.
- **Flat terminals for easy wiring**  
To weld the #187 flat connection terminals (receptacles), please use a "YC-051" tool manufactured by J.S.T. Mfg. Co., Ltd.
- **Rotary indicator (Clockwise, one rotation per 2 seconds)**

DIN□48

Capable of accurately measuring time in minutes

### PRODUCT TYPES

Type	Operating voltage	Part No.		Operating voltage	Part No.		Operating voltage	Part No.	
		Silver panel	Black panel		Silver panel	Black panel		Silver panel	Black panel
TH50 series	100 V AC	TH501S	TH501	24 V AC	TH504S	TH504	115 to 120 V AC	TH507S	TH507
	200 V AC	TH502S	TH502	48 V AC	TH505S	TH505	220 V AC	TH508S	TH508
	12 V AC	TH503S	TH503	110 V AC	TH506S	TH506	240 V AC	TH509S	TH509

- FIBER SENSORS
- LASER SENSORS
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- UV CURING SYSTEMS
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- Time Switches
- Counters
- Hour Meters
- Options
- Limit Switches
- Fan Motors
- Temperature Controllers
- TH40
- TH50
- TH70
- TH8

# TH70 DC type Hour Meter

Related Information

■ Precautions in using ..... P.1286

FIBER SENSORS

LASER SENSORS

PHOTOELECTRIC SENSORS

MICRO PHOTOELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

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Limit Switches

Fan Motors

Temperature Controllers

TH40

TH50

TH70

TH8



Silver panel



Black panel

[panasonic-electric-works.net/sunx](http://panasonic-electric-works.net/sunx)

## Features

### • Driven on DC power

Machine tools and similar machinery are monitored from the control panel for added safety.

### • High-performance compact synchronous motor with accurate quartz oscillator

- The quartz oscillator helps keep the monthly error shorter than 15 seconds (for 720 hours).
- The accurately turning motor is employed to provide for longer period of measurement.

### • Rotary indicator (Clockwise, one rotation per 2 minutes)

DIN□48

## DC-powered hour meters

### PRODUCT TYPES

Type	Operating voltage	Part No.	
		Silver panel	Black panel
TH70 series	12 V DC	TH703S	TH703
	24 V DC	TH704S	TH704

Note: Please consult us about products with reset button.

Related Information ■ Precautions in using ..... P.1286



[panasonic-electric-works.net/sunx](http://panasonic-electric-works.net/sunx)

**Features**

- **IP66 waterproof construction**  
The front panel surface keeps water and dust out.
- **Includes operation light (LED)**  
The operation LED illuminates so you can quickly verify operation status.

IP66

**Typical applications**

- **Hour counting for leased equipment**
- **Maintenance management of various equipments**

**DC-powered hour meters with high environment resistance**

**PRODUCT TYPES**

Installation	Counting range	Operation light	Rated voltage	Part No.
Panel installation	0 to 9999.9 hours	LED illuminates while operating.	12 V DC	<b>TH833C</b>
			24 V DC	<b>TH834C</b>

Note: Products are UL and c-UL certified as standard. (Suffix "U" is not required on part No. when ordering.)

- FIBER SENSORS
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- Timers
- Time Switches
- Counters
- Hour Meters
- Options
- Limit Switches
- Fan Motors
- Temperature Controllers

TH40

TH50

TH70

TH8

For precautions regarding individual products, see the "Precautions in using" section of the individual product pages.

## SAFETY PRECAUTIONS

To prevent injury and accidents, be sure to observe the following instructions.

Make sure to read the operating instructions and the following precautions for use before installation, operation, maintenance, or inspection. Before using the product, the users must have a thorough understanding of the equipment, safety information, and miscellaneous precautions for its use.

**Warning** Indicates a possible hazard that will result in death or serious physical injury of the operator in the event of incorrect handling.

**Caution** Indicates a possible hazard that will result in physical injury of the operator or only property damage in the event of incorrect handling.



- Take safety measures outside the product so that the whole system maintains its safety level even if the product broke down or an external factor caused any abnormality.
- Do not use the product in any flammable gas atmosphere. Otherwise, this may result in an explosion.
- Do not expose the product to fire. The batteries and/or electronic components may explode.



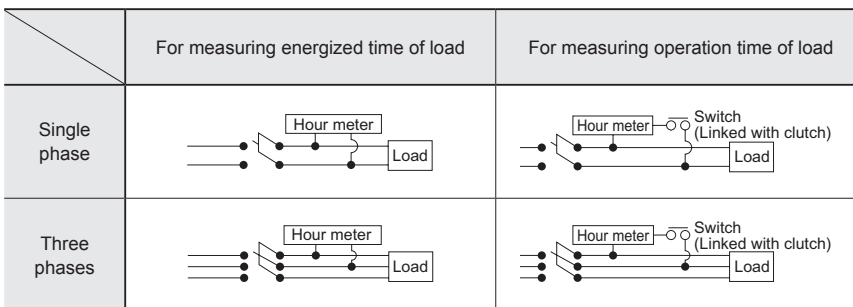
- To prevent overheating or smoke, secure sufficient margins in relation to the guaranteed characteristics and performance values of the product.
- Do not try to disassemble or modify the product. Otherwise, this may result in overheating or smoke.
- Do not touch the terminals while the power is on. Otherwise, this may result in an electric shock.
- Setup emergency stop and interlock circuits outside the product.
- Securely connect the cables and connectors. Otherwise, loose connections may result in overheating or smoke.
- Securely solder the joints. Otherwise, insufficient soldering may result in overheating or smoke.
- Do not put foreign substances, such as liquids, combustibles, or metals, into the product. Otherwise, this may result in overheating or smoke.
- Do not perform any work (e.g. connection, removal) while the power is on. Otherwise, this may result in electric shock.

### Frequency setting

- Frequency is specified for AC motor-driven hour meters. Before installing, be sure to check your local power frequency.

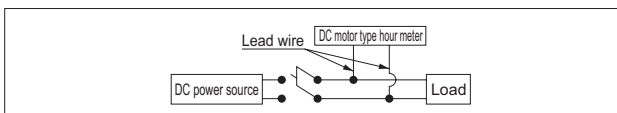
### Connections

- TH13, 23, 14, 24, 40, 50, 63, 64



Note: Make the connection with the accompanying flat connector first and then with the hour meter's terminal (#187). In such case, be sure to cover the connection with the accompanying insulating sleeve.

- TH70, TH8



Note: Solder the lead wires in position.

### Reset-type hour meter

#### Precautions for use

If the number indications are off before use, press reset button and confirm that all zeroes "0" are displayed.

#### Resetting caution

Exercise due caution as an insufficient amount of pressure on reset button may result in abnormal readings.

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- TH40
- TH50
- TH70
- TH8