New Product

Solid-state Timers
H3DT

DIN 17.5-mm-wide Slim Timers with Push-in Plus Terminal Blocks for In-panel Applications

- Saves space and reduces work in control panels.
- Slim Timers (17.5-mm width) with two sets of contacts: One of the slimmest Timers worldwide. *1
- Reduces power consumption (active power) by up to 60% to help reduce heat generation in control panels. *2
- Certified for maritime standards (LR/DNV GL). *3

*1. According to OMRON investigation in October 2015.
*2. Based on OMRON comparison (excluding the H3DT-H).
*3. Certification is pending for DNV GL.

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

Model Number Structure

The Entire H3DT Series

H3DT-N/-L Multi-range, Multi-mode Timers
H3DT-A Power ON-delay Timers
H3DT-F Twin Timers
H3DT-G Star-delta Timers
H3DT-H Power OFF-delay Timers

Model Number Legend

H3DT-@@@@
1 2 3 4

1. Type
Symbol Meaning
N Standard Eight-mode Timer
L Expansion Eight-mode Timer
A Power ON-delay Timer
F Twin Timer
G Star-delta Timer
H Power OFF-delay Timer

2. Control Output ★
Symbol Meaning
1 SPDT
2 DPDT
★ N-, L- and A-type models only.

3. Supply Voltage
Symbol Meaning
Blank 24 to 240 VAC/DC
B ★ 24 to 48 VAC/DC
C ★ 100 to 120 VAC
D ★ 200 to 240 VAC
★ H-type models only.

4. Time Ranges ★
Symbol Meaning
S 0.1 to 1.2 s or 1 to 12 s
L 1 to 12 s or 10 to 120 s
★ H-type models only.
Multi-range, Multi-mode Timer

H3DT-N/H3DT-L

- Multiple time ranges and operating modes for a wide range of applications.
- The time-limit DPDT output contacts can be changed to time-limit SPDT and instantaneous SPDT output contacts using a switch.
- Sequence checks are easily performed by setting an instantaneous output to 0.
- Start signal control for some operating modes.

Ordering Information

List of Models

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<thead>
<tr>
<th>Supply voltage</th>
<th>Control output</th>
<th>H3DT-N/H3DT-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 to 240 VAC/DC</td>
<td>Contact output, DPDT (time-limit DPDT, or time-limit SPDT + instantaneous SPDT) Changed using a switch.</td>
<td>Model</td>
</tr>
<tr>
<td></td>
<td>Contact output, SPDT (time-limit SPDT)</td>
<td>H3DT-N2</td>
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<tr>
<td></td>
<td></td>
<td>H3DT-N1</td>
</tr>
</tbody>
</table>

Model Structure

<table>
<thead>
<tr>
<th>Model</th>
<th>Operating modes</th>
<th>Terminal block</th>
<th>Input type</th>
<th>Output type</th>
<th>Mounting method</th>
<th>Safety standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-N2</td>
<td>A2: ON Delay (Power ON Delay) B3: Flicker OFF Start (Power ON Start) B4: Flicker ON Start (Power ON Start) D: Signal OFF Delay</td>
<td>10 terminals</td>
<td></td>
<td>Relay, DPDT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E2: Interval (Power ON Start) E3: Signal OFF Interval F2: Cumulative (ON Delay) F3: Cumulative (Interval)</td>
<td>8 terminals</td>
<td>Voltage input</td>
<td>Relay, SPDT</td>
<td>DIN Track mounting</td>
<td>cULus (UL 508 CSA C22.2 No.14) CCC LR DNV GL © EN 61812-1 IEC 60664-1 4 kV/2</td>
</tr>
<tr>
<td>H3DT-N1</td>
<td>A: ON Delay (Signal ON Delay) B: Flicker OFF Start (Signal Start) B2: Flicker ON Start (Signal Start) C: Signal ON/OFF Delay E: Interval (Signal Start) G: Signal ON/OFF Delay J: One-shot Output (Signal Start) J2: One-shot Output (Power ON Start)</td>
<td>10 terminals</td>
<td></td>
<td>Relay, DPDT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H3DT-L1</td>
<td>A: ON Delay (Signal ON Delay) B: Flicker OFF Start (Signal Start) B2: Flicker ON Start (Signal Start) C: Signal ON/OFF Delay E: Interval (Signal Start) G: Signal ON/OFF Delay J: One-shot Output (Signal Start) J2: One-shot Output (Power ON Start)</td>
<td>8 terminals</td>
<td></td>
<td>Relay, SPDT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Certification is pending for DNV GL.

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

### Time Ranges

<table>
<thead>
<tr>
<th>Time range setting</th>
<th>0.1 s</th>
<th>1 s</th>
<th>10 s</th>
<th>1 min</th>
<th>10 min</th>
<th>1 h</th>
<th>10 h</th>
<th>100 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set time range</td>
<td>0.1 to 1.2 s</td>
<td>1 to 12 s</td>
<td>10 to 120 s</td>
<td>1 to 12 min</td>
<td>10 to 120 min</td>
<td>1 to 12 h</td>
<td>10 to 120 h</td>
<td>100 to 1,200 h</td>
</tr>
<tr>
<td>Scale numbers</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage #1</td>
<td>24 to 240 VAC/DC, 50/60 Hz #2</td>
</tr>
<tr>
<td>Allowable voltage fluctuation range</td>
<td>85% to 110% of rated voltage</td>
</tr>
<tr>
<td>Power reset</td>
<td>Minimum power-OFF time: 0.1 s</td>
</tr>
<tr>
<td>Reset voltage</td>
<td>10% of rated voltage</td>
</tr>
<tr>
<td>Voltage input</td>
<td>24 to 240 VAC/DC, High level: 20.4 to 264 VAC/DC, Low level: 0 to 2.4 VAC/DC</td>
</tr>
<tr>
<td>Power consumption H3DT-N2/-L2</td>
<td>At 240 VAC: 2.3 VA max., at 240 VDC: 1.0 W max., at 24 VDC: 0.3 W max.</td>
</tr>
<tr>
<td>H3DT-N1/-L1</td>
<td>At 240 VAC: 2.0 VA max., at 240 VDC: 0.9 W max., at 24 VDC: 0.3 W max.</td>
</tr>
<tr>
<td>Rated Insulation Voltage</td>
<td>250 VAC</td>
</tr>
<tr>
<td>Control output</td>
<td>Contact output: 5 A at 250 VAC with resistive load (cosφ = 1), 5 A at 30 VDC with resistive load</td>
</tr>
<tr>
<td></td>
<td>0.15 A max. at 125 VDC with resistive load, 0.1A max. at 125 VDC with L/R of 7 ms.</td>
</tr>
<tr>
<td></td>
<td>Contact materials : Ag-alloy + Gold plating (Recommended fuse: BLN5 (Littelfuse) or 0216005MXEP)</td>
</tr>
<tr>
<td>Ambient operating temperature</td>
<td>-20 to 60°C (with no icing)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40 to 70°C (with no icing)</td>
</tr>
<tr>
<td>Surrounding air operating humidity</td>
<td>25% to 85%</td>
</tr>
</tbody>
</table>

#1. When using a 24-VDC power supply voltage, there will be an inrush current of approximately 0.5 A. Allow for this inrush current when turning ON and OFF the power supply to the Timer with device with a solid-state output, such as a sensor.

#2. DC ripple: 20% max.

#3. The power consumption is for after the Timer times out in mode F2 for the H3DT-N and mode A for the H3DT-L. The maximum power consumption is given, including the current consumed by the input circuit.
Characteristics

<table>
<thead>
<tr>
<th>Item</th>
<th>H3DT-N/L</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy of operating time</strong></td>
<td>±1% of FS max. (±1% ±10 ms max. at 1.2-s range)</td>
</tr>
<tr>
<td><strong>Setting error</strong></td>
<td>±10% of FS ±0.05 s max.</td>
</tr>
<tr>
<td><strong>Minimum input signal width</strong></td>
<td>50 ms (start input)</td>
</tr>
<tr>
<td><strong>Influence of voltage</strong></td>
<td>±0.5% of FS max. (±0.5% ±10 ms max. at 1.2-s range)</td>
</tr>
<tr>
<td><strong>Influence of temperature</strong></td>
<td>±2% of FS max. (±2% ±10 ms max. at 1.2-s range)</td>
</tr>
<tr>
<td><strong>Insulation resistance</strong></td>
<td>100 MΩ min. at 500 VDC</td>
</tr>
<tr>
<td><strong>Dielectric strength</strong></td>
<td>Between charged metal part and operating section: 2,900 VAC 50/60 Hz for 1 min. Between control output terminals and operating circuit: 2,000 VAC 50/60 Hz for 1 min. Between contacts not located next to each other: 1,000 VAC 50/60 Hz for 1 min.</td>
</tr>
<tr>
<td><strong>Impulse withstand test voltage</strong></td>
<td>5 kV between power terminals, 7.4 kV between conductor terminal and operating section</td>
</tr>
<tr>
<td><strong>Noise immunity</strong></td>
<td>Square-wave noise generated by noise simulator (pulse width: 100 ns/1 μs, 1-μs rise): ±1.5 kV</td>
</tr>
<tr>
<td><strong>Static immunity</strong></td>
<td>Malfunction: 4 kV, Destruction: 8 kV</td>
</tr>
<tr>
<td><strong>Vibration resistance</strong></td>
<td>Destruction: 0.75-mm single amplitude at 10 to 55 Hz for 2 h each in 3 directions</td>
</tr>
<tr>
<td></td>
<td>Malfunction: 0.5-mm single amplitude at 10 to 55 Hz for 10 min each in 3 directions</td>
</tr>
<tr>
<td><strong>Shock resistance</strong></td>
<td>Destruction: 1,000 mV/3 times each in 6 directions</td>
</tr>
<tr>
<td></td>
<td>Malfunction: 100 mV/3 times each in 6 directions</td>
</tr>
<tr>
<td><strong>Life expectancy</strong></td>
<td>Mechanical: 10 million operations min. (under no load at 1,800 operations/h)</td>
</tr>
<tr>
<td></td>
<td>Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 360 operations/h)</td>
</tr>
<tr>
<td><strong>Degree of protection</strong></td>
<td>IP30 (Terminal block: IP20)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 100 g</td>
</tr>
</tbody>
</table>

Applicable standards

<table>
<thead>
<tr>
<th>Safety standards</th>
<th>cULus: UL 508/CSA C22.2 No. 14 EN 61812-1: Pollution degree 2, Overvoltage category III CCC: Pollution degree 2, Overvoltage category II, section GB 14048.5 LR: Category ENV1.2 DNV GL*</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>EMC</th>
<th>EN 61812-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>(EMI) Radiated Emissions:</td>
<td>EN 55011 class B</td>
</tr>
<tr>
<td>Emission AC Mains:</td>
<td>EN 55011 class B</td>
</tr>
<tr>
<td>Harmonic Current:</td>
<td>EN 61000-3-2</td>
</tr>
<tr>
<td>Voltage Fluctuations and Flicker:</td>
<td>EN 61000-3-3</td>
</tr>
<tr>
<td>(EMS) Immunity ESD:</td>
<td>EN 61000-4-2</td>
</tr>
<tr>
<td>Immunity RF-interference:</td>
<td>EN 61000-4-3</td>
</tr>
<tr>
<td>Immunity Burst:</td>
<td>EN 61000-4-4</td>
</tr>
<tr>
<td>Immunity Surge:</td>
<td>EN 61000-4-5</td>
</tr>
<tr>
<td>Immunity Conducted Disturbance:</td>
<td>EN 61000-4-6</td>
</tr>
<tr>
<td>Immunity Voltage Dip/Interruption:</td>
<td>EN 61000-4-11</td>
</tr>
</tbody>
</table>

*Certification is pending for DNV GL.

Relation between H3DT Ambient Temperature and Mounting Interval (Reference Values)

The relation between the ambient temperature and mounting interval is shown in the following graph.

If the Timer is used at 55°C or higher with a mounting interval that is smaller than that shown in the following diagram, the temperature inside the Timer will increase, reducing the life expectancy of internal parts.

![Relation between H3DT Ambient Temperature and Mounting Interval](image)

Testing Method

Tested Timer: H3DT-N/L

Applied voltage: 240 VAC

Installation pitch: 0 and 10 mm

Load current: 5 A

<table>
<thead>
<tr>
<th>Test timer 1</th>
<th>Test timer 2</th>
<th>Test timer 3</th>
<th>Test timer 4</th>
<th>Test timer 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN Track</td>
<td>Timer installation pitch: d</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I/O

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>H3DT-N/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Start</td>
<td>Functions to start timing.</td>
</tr>
<tr>
<td>Output</td>
<td>Control output</td>
<td>The output is turned ON/OFF according to the operating mode when the value that is set on the dial is reached. *</td>
</tr>
</tbody>
</table>

*If the INST/TIME switch on the front of the Timer is set to INST, relay R2 will operate as instantaneous contacts and will turn ON/OFF in synchronization with the power supply.
Connections

Block Diagrams

H3DT-N/L

Terminal Arrangement

1. The relay R2 can be set to either instantaneous or time-limit contacts using the switch on the front of the Timer.
2. The power supply terminals do not have polarity.
H3DT-N/H3DT-L

Input Connections
The start input is a voltage input.

PNP Transistor Input

Operates when PNP transistor turns ON.

NPN Transistor Input

Operates when NPN transistor turns ON.

Relay Input

Operates when relay turns ON.

Consider the minimum load of the relay. (See signal levels on the right.)

Voltage Input Signal Levels

1. Transistor ON
   - Residual voltage: 1 V max.
   - Voltage between terminals B1 and A2 must be equal to or higher than the rated high level voltage (20.4 VDC min.).

2. Transistor OFF
   - Leakage current: 0.01 mA max.
   - Voltage between terminals B1 and A2 must be equal to or below the rated low level voltage (2.4 VDC min.).

Use relays that can adequately switch 0.1 mA at the imposed voltage.

When the relay is ON or OFF, the voltage between terminals B1 and A2 must be within the following ranges:

- 24 to 240 VAC/DC
  - When relay is ON: 20.4 to 264 VAC/DC
  - When relay is OFF: 0 to 2.4 V
- 12 VDC
  - When relay is ON: 10.8 to 13.2 V
  - When relay is OFF: 0 to 1.2 V

Nomenclature

H3DT-N2/L2

INIT/TIME switch for relay R2
( Default setting is for time-limit output. )

Operation/power indicator (green)
(Flashes while Timer is operating.
Lit when Timer is stopped.)

Output indicator (orange)
(Lit while Timer gives output.)

Operating mode switch

H3DT-N1/L1

Time range switch

Main dial
(for setting the time)

Operation/power indicator (green)
( Flashes while Timer is operating.
Lit when Timer is stopped. )

Output indicator (orange)
( Lit while Timer gives output. )

Operating mode switch

If the switch is left between settings, proper operation may not be possible. Make sure that the switch is set properly.

Note: The default settings are for 0.1 s in mode A2 for the H3DT-N and mode A for the H3DT-L.

H3DT-N1/L1

Time range switch

Main dial
(for setting the time)

If the switch is left between settings, proper operation may not be possible. Make sure that the switch is set properly.

Note: The default settings are for 0.1 s in mode A2 for the H3DT-N and mode A for the H3DT-L.
### Dimensions

**Timers**

<table>
<thead>
<tr>
<th>H3DT-N</th>
<th>H3DT-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-N2</td>
<td>H3DT-L2</td>
</tr>
<tr>
<td>H3DT-N1</td>
<td>H3DT-L1</td>
</tr>
</tbody>
</table>

![Dimensions Diagram]

### Track Mounting Products (Sold Separately)

Refer to page 29 for details.

### Options (Order Separately)

**Front Cover**

Refer to page 29 for details.

### Operating Procedures

#### Basic Operation

##### Setting Switches

- Each switch has a snap mechanism that secures the switch at given positions. Set the switch to one of these positions.
- Do not set it midway between two positions. Malfunction could result from an improper setting.

- **Setting the Operating Mode**
  - The H3DT-N/L can be set to any of eight operating modes. Turn the operating mode switch with a flat-blade or Phillips screwdriver.

- **Setting the INIT/TIME Switch**
  - Switching Relay R2 between Instantaneous and Time-limit Contacts (H3DT-N2/-L2 Only)
  - The INIT/TIME switch can be used to switch relay R2 between instantaneous and time-limit operation.

- **Setting the Time Range**
  - Setting the Time Range
  - The time range switch can be used to set the time range. Turn the switch with a flat-blade or Phillips screwdriver.
Timing Charts

- There is no instantaneous output with the H3DT-N1/L1.

A2: ON Delay (Power ON Delay)

B3: Flicker OFF Start (Power ON Start)

B4: Flicker ON Start (Power ON Start)

D: Signal OFF Delay

Note: 1. The reset time is 0.1 s min. Make sure the signal input time is 0.05 s or longer.
2. “t” is the set time. “t–a” is a time that is less that the set time.
Note: 1. The reset time is 0.1 s min. Make sure the signal input time is 0.05 s or longer.
2. "t" is the set time. "t−a" is a time that is less than the set time.
H3DT-N/H3DT-L

**A: ON Delay (Signal ON Delay)**

<table>
<thead>
<tr>
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</table>

**Basic Operation**

- Power
- Start input
- Output
- Timing

- The start input is ignored while the Timer is in operation.

**B: Flicker OFF Start (Signal Start)**

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<thead>
<tr>
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</table>

**Basic Operation**

- Power
- Start input
- Output
- Timing

- The start input is ignored while the Timer is in operation.

**B2: Flicker ON Start (Signal Start)**

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<thead>
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</table>

**Basic Operation**

- Power
- Start input
- Output
- Timing

- The start input is ignored while the Timer is in operation.

**C: Signal ON/OFF Delay**

<table>
<thead>
<tr>
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</tr>
</tbody>
</table>

**Basic Operation**

- Power
- Start input
- Output

- The start input is valid while the Timer is in operation.

**Note:**
1. The reset time is 0.1 s min. Make sure the signal input time is 0.05 s or longer.
2. "t" is the set time. "t−a" is a time that is less that the set time.
Note: 1. The reset time is 0.1 s min. Make sure the signal input time is 0.05 s or longer.
2. "t" is the set time. "t−a" is a time that is less that the set time.
Power ON-delay Timer
H3DT-A

• Single Mode Timers with power ON delay operation.

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

Ordering Information

List of Models

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<tr>
<th>Supply voltage</th>
<th>Control output</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 to 240 VAC/DC</td>
<td>Contact output, DPDT (time-limit DPDT)</td>
<td>H3DT-A2</td>
</tr>
<tr>
<td></td>
<td>Contact output, SPDT (time-limit SPDT)</td>
<td>H3DT-A1</td>
</tr>
</tbody>
</table>

Model Structure

<table>
<thead>
<tr>
<th>Model</th>
<th>Operating modes</th>
<th>Terminal block</th>
<th>Output type</th>
<th>Mounting method</th>
<th>Safety standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-A2</td>
<td>Power ON-delay</td>
<td>8 terminals</td>
<td>Relay, DPDT</td>
<td>DIN Track mounting</td>
<td>cULus (UL508 CSA C22.2 No.14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CCC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LR</td>
</tr>
<tr>
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<td></td>
<td>DNV GL</td>
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<td></td>
<td>*</td>
</tr>
<tr>
<td>H3DT-A1</td>
<td></td>
<td>6 terminals</td>
<td>Relay, SPDT</td>
<td></td>
<td>EN61812-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IEC60664-1 4 kV/2</td>
</tr>
</tbody>
</table>

*Certification is pending for DNV GL.

Specifications

Time Ranges

<table>
<thead>
<tr>
<th>Time range setting</th>
<th>0.1 s</th>
<th>1 s</th>
<th>10 s</th>
<th>1 min</th>
<th>10 min</th>
<th>1 h</th>
<th>10 h</th>
<th>100 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set time range</td>
<td>0.1 to 1.2 s</td>
<td>1 to 12 s</td>
<td>10 to 120 s</td>
<td>1 to 12 min</td>
<td>10 to 120 min</td>
<td>1 to 12 h</td>
<td>10 to 120 h</td>
<td>100 to 1,200 h</td>
</tr>
</tbody>
</table>

Scale numbers: 12

Ratings

<table>
<thead>
<tr>
<th>Power supply voltage</th>
<th>24 to 240 VAC/DC, 50/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable voltage fluctuation range</td>
<td>85% to 110% of rated voltage</td>
</tr>
<tr>
<td>Power reset</td>
<td>Minimum power-OFF time: 0.1 s</td>
</tr>
<tr>
<td>Reset voltage</td>
<td>10% of rated voltage</td>
</tr>
<tr>
<td>Power consumption</td>
<td>H3DT-A2: At 240 VAC: 2.2 VA max., at 240 VDC: 0.7 W max., at 24 VDC: 0.3 W max.</td>
</tr>
<tr>
<td></td>
<td>H3DT-A1: At 240 VAC: 1.8 VA max., at 240 VDC: 0.6 W max., at 24 VDC: 0.3 W max.</td>
</tr>
<tr>
<td>Rated Insulation Voltage</td>
<td>250 VAC</td>
</tr>
</tbody>
</table>

Control output: Contact output: 5 A at 250 VAC with resistive load (cosφ = 1), 5 A at 30 VDC with resistive load, 0.15 A max. at 125 VDC with resistive load, 0.1A max. at 125 VDC with L/R of 7 ms. The minimum applicable load is 10 mA at 5 VDC (P reference value). Contact materials : Ag-alloy (Recommended fuse: BLN5 (Littelfuse) or 0216005MXEP)

Ambient operating temperature: -20 to 60°C (with no icing)
Storage temperature: -40 to 70°C (with no icing)
Surrounding air operating humidity: 25% to 85%

*1. When using a 24-VDC power supply voltage, there will be an inrush current of approximately 0.5 A. Allow for this inrush current when turning ON and OFF the power supply to the Timer with device with a solid-state output, such as a sensor.
*2. DC ripple: 20% max.
*3. The power consumption is the value after the Timer times out.
Characteristics

Accuracy of operating time
±1% of FS max. (±1% ±10 ms max. at 1.2-s range)

Setting error
±10% of FS ±0.05 s max.

Influence of voltage
±0.5% of FS max. (±0.5% ±10 ms max. at 1.2-s range)

Influence of temperature
±2% of FS max. (±2% ±10 ms max. at 1.2-s range)

Insulation resistance
100 MΩ min. at 500 VDC

Dielectric strength
Between charged metal part and operating section: 2,900 VAC 50/60 Hz for 1 min.
Between control output terminals and operating circuit: 2,000 VAC 50/60 Hz for 1 min.
Between contacts not located next to each other: 1,000 VAC 50/60 Hz for 1 min.

Impulse withstand test voltage
5 kV between power terminals, 7.4 kV between conductor terminal and operating section

Noise immunity
Square-wave noise generated by noise simulator (pulse width: 100 ns/1 µs, 1-ns rise): ±1.5 kV

Static immunity
Malfunction: 4 kV, Destruction: 8 kV

Vibration resistance
Destruction: 0.75-mm single amplitude at 10 to 55 Hz for 2 h each in 3 directions
Malfunction: 0.5-mm single amplitude at 10 to 55 Hz for 10 min each in 3 directions

Shock resistance
Destruction: 1,000 m/s² 3 times each in 6 directions
Malfunction: 100 m/s² 3 times each in 6 directions

Life expectancy
Mechanical: 10 million operations min. (under no load at 1,800 operations/h)
Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 360 operations/h)

Degree of protection
IP30 (Terminal block: IP20)

Weight
Approx. 100 g

Applicable standards

Safety standards
cULus: UL 508/CSA C22.2 No. 14
EN 61812-1: Pollution degree 2, Overvoltage category III
CCC: Pollution degree 2, Overvoltage category II, section GB 14048.5
Lr: Category ENV1.2
DNV GL *

EMC
(EMI) EN 61812-1
Radiated Emissions: EN 55011 class B
Emission AC Mains: EN 55011 class B
Harmonic Current: EN 61000-3-2
Voltage Fluctuations and Flicker: EN 61000-3-3
(EMS) EN 61812-1
Immunity ESD: EN 61000-4-2
Immunity RF-interference: EN 61000-4-3
Immunity Burst: EN 61000-4-4
Immunity Surge: EN 61000-4-5
Immunity Conducted Disturbance: EN 61000-4-6
Immunity Voltage Dip/Interrupt: EN 61000-4-11

* Certification is pending for DNV GL.

I/O

Input
None

Output
Control output
The output is turned ON/OFF according to the operating mode when the value that is set on the dial is reached.

Relation between H3DT Ambient Temperature and Mounting Interval (Reference Values)
The relation between the ambient temperature and mounting interval is shown in the following graph.
If the Timer is used at 55°C or higher with a mounting interval that is smaller than that shown in the following diagram, the temperature inside the Timer will increase, reducing the life expectancy of internal parts.
The power supply terminals do not have polarity.
**Nomenclature**

**H3DT-A2**

Front View

- Operation/power indicator (green) (Flashes while Timer is operating. Lit when Timer is stopped.)
- Main dial (for setting the time)
- Output indicator (orange) (Lit while Timer gives output.)
- Time range switch *

* If the switch is left between settings, proper operation may not be possible.
Note: The default settings are for 0.1 s.

**H3DT-A1**

Front View

- Operation/power indicator (green) (Flashes while Timer is operating. Lit when Timer is stopped.)
- Main dial (for setting the time)
- Output indicator (orange) (Lit while Timer gives output.)
- Time range switch *

* If the switch is left between settings, proper operation may not be possible.
Note: The default settings are for 0.1 s.

**Dimensions**

(Unit: mm)

**Timers**

**H3DT-A**

![H3DT-A Dimensions Diagram](image)

---

**Track Mounting Products (Sold Separately)**

Refer to page 29 for details.

**Options (Order Separately)**

**Front Cover**

Refer to page 29 for details.
H3DT-A

Operating Procedures

Basic Operation

Setting Switches

- Each switch has a snap mechanism that secures the switch at given positions. Set the switch to one of these positions. Do not set it midway between two positions. Malfunction could result from an improper setting.

| Setting the Time Range |

Setting the Time Range

The time range switch can be used to set the time range. Turn the switch with a flat-blade or Phillips screwdriver.

Timing Charts

| Timing Charts |

ON Delay (Power ON Delay)

1. The reset time is 0.1 s min.
2. "t" is the set time. "t–a" is a time that is less that the set time.
Twin Timer
H3DT-F

• Switch between flicker-OFF or flicker-ON start mode.
• Independent ON time and OFF time settings.
• Eight time ranges from 0.1 s to 1,200 h.

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

Ordering Information

List of Models

<table>
<thead>
<tr>
<th>Operating modes</th>
<th>Supply voltage</th>
<th>Control output</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flicker OFF start/flicker ON start</td>
<td>24 to 240 VAC/DC</td>
<td>Contact output: SPDT</td>
<td>H3DT-F</td>
</tr>
</tbody>
</table>

Model Structure

<table>
<thead>
<tr>
<th>Model</th>
<th>Operating modes</th>
<th>Terminal block</th>
<th>Output type</th>
<th>Mounting method</th>
<th>Safety standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-F</td>
<td>Flicker OFF start/flicker ON start</td>
<td>6 terminals</td>
<td>Relay, SPDT</td>
<td>DIN Track mounting</td>
<td>cULus (UL508 CSA C22.2 No. 14) CCC LR DNV GL EN 61812-1 EN 60664-1 4 kV/2</td>
</tr>
</tbody>
</table>

* Certification is pending for DNV GL.

Specifications

Time Ranges

<table>
<thead>
<tr>
<th>Time range setting</th>
<th>0.1 s</th>
<th>1 s</th>
<th>10 s</th>
<th>1 min</th>
<th>10 min</th>
<th>1 h</th>
<th>10 h</th>
<th>100 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale numbers</td>
<td>0.1 to 1.2 s</td>
<td>1 to 12 s</td>
<td>10 to 120 s</td>
<td>1 to 12 min</td>
<td>10 to 120 min</td>
<td>1 to 12 h</td>
<td>10 to 120 h</td>
<td>100 to 1,200 h</td>
</tr>
</tbody>
</table>

Ratings

<table>
<thead>
<tr>
<th></th>
<th>H3DT-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
<td>24 to 240 VAC/DC, 50/60 Hz #2</td>
</tr>
<tr>
<td>Allowable voltage fluctuation range</td>
<td>85% to 110% of rated voltage</td>
</tr>
<tr>
<td>Power reset</td>
<td>Minimum power-OFF time: 0.1 s</td>
</tr>
<tr>
<td>Reset voltage</td>
<td>10% of rated voltage</td>
</tr>
<tr>
<td>Power consumption</td>
<td>At 240 VAC: 1.9VA max., at 240 VDC: 0.6W max., at 24 VDC: 0.3W max.</td>
</tr>
<tr>
<td>Rated Insulation Voltage</td>
<td>250 VAC</td>
</tr>
<tr>
<td>Control output</td>
<td>Contact output: 5 A at 250 VAC with resistive load (cosφ = 1), 5 A at 30 VDC with resistive load, 0.15 A max. at 125 VDC with resistive load, 0.1 A max. at 125 VDC with LR of 7 ms. The minimum applicable load is 10 mA at 5 VDC (P reference value). Contact materials : Ag-alloy (Recommended fuse: BLN5 (Littelfuse) or 0216005MXEP)</td>
</tr>
<tr>
<td>Ambient operating temperature</td>
<td>-20 to 60°C (with no icing)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40 to 70°C (with no icing)</td>
</tr>
<tr>
<td>Surrounding air operating humidity</td>
<td>25% to 85%</td>
</tr>
</tbody>
</table>

#1. When using a 24-VDC power supply voltage, there will be an inrush current of approximately 0.5 A. Allow for this inrush current when turning ON and OFF the power supply to the Timer with device with a solid-state output, such as a sensor.

#2. DC ripple: 20% max.
Characteristics

- **Accuracy of operating time**: ±1% of FS max. (±1% ±10 ms max. at 1.2-s range)
- **Setting error**: ±10% of FS ±0.05 s max.
- **Influence of voltage**: ±0.5% of FS max. (±0.5% ±10 ms max. at 1.2-s range)
- **Influence of temperature**: ±2% of FS max. (±2% ±10 ms max. at 1.2-s range)
- **Insulation resistance**: 100 MΩ min. at 500 VDC
- **Dielectric strength**: Between charged metal part and operating section: 2,900 VAC 50/60 Hz for 1 min.
- **Impulse withstand test voltage**: 5 kV between power terminals, 7.4 kV between conductor terminal and operating section
- **Noise immunity**: Square-wave noise generated by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise): ±1.5 kV
- **Static immunity**: Malfunction: 4 kV, Destruction: 8 kV
- **Vibration resistance**: Destruction 0.75-mm single amplitude at 10 to 55 Hz for 2 h each in 3 directions
- **Shock resistance**: Destruction 1,000 m/s² 3 times each in 6 directions
- **Life expectancy**: Mechanical 10 million operations min. (under no load at 1,800 operations/h)
- **Degree of protection**: IP30 (Terminal block: IP20)
- **Weight**: Approx. 90 g

**Applicable standards**

<table>
<thead>
<tr>
<th>Safety standards</th>
<th>EN 61812-1: Pollution degree 2, Overvoltage category III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CCC: Pollution degree 2, Overvoltage category II, section GB 14048.5</td>
</tr>
<tr>
<td></td>
<td>DIN V ENV1.2</td>
</tr>
<tr>
<td></td>
<td>cULus: UL 508/CSA C22.2 No. 14</td>
</tr>
<tr>
<td></td>
<td>EN 61000-3-2</td>
</tr>
<tr>
<td></td>
<td>EN 55011 class B</td>
</tr>
<tr>
<td></td>
<td>EN 55011 class B</td>
</tr>
<tr>
<td></td>
<td>EN 61000-3-3</td>
</tr>
<tr>
<td></td>
<td>EN 6100-4-2</td>
</tr>
<tr>
<td></td>
<td>EN 6100-4-3</td>
</tr>
<tr>
<td></td>
<td>EN 6100-4-4</td>
</tr>
<tr>
<td></td>
<td>EN 6100-4-5</td>
</tr>
<tr>
<td></td>
<td>EN 6100-4-6</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-11</td>
</tr>
</tbody>
</table>

**Relation between H3DT Ambient Temperature and Mounting Interval (Reference Values)**

The relation between the ambient temperature and mounting interval is shown in the following graph.

If the Timer is used at 55°C or higher with a mounting interval that is smaller than that shown in the following diagram, the temperature inside the Timer will increase, reducing the life expectancy of internal parts.

**Testing Method**

Tested Timer: H3DT-F

- Applied voltage: 240 VAC
- Installation pitch: 0 and 10 mm
- Load current: 5 A

**I/O**

- **Input**: None
- **Output**: Control output
  - Output is turned ON/OFF according to the time set on the ON time setting dial and OFF time setting dial.
Connections

Block Diagrams

H3DT-F

Terminal Arrangement

H3DT-F

Nomenclature

H3DT-F

Front View

ON/OFF start switch
(Default setting is for an OFF start.)

Operation/power indicator (green)
(Lit while the power is ON.)

ON output indicator (orange)

OFF output indicator (orange)

ON/OFF time setting dial
(Sets the ON time.)

OFF time setting dial
(Sets the OFF time.)

ON time range switch

OFF time range switch

* The power supply terminals do not have polarity.

The power supply terminals do not have polarity.
Track Mounting Products (Sold Separately)
Refer to page 29 for details.

Options (Order Separately)
Front Cover
Refer to page 29 for details.

Operating Procedures

Basic Operation

Setting the Time Ranges

Setting the Time Ranges
Use the ON time range switch to set the ON time range and the OFF time range switch to set the OFF time range. Turn the switches with a flat-blade or Phillips screwdriver.

Setting the ON/OFF Start Switch

Setting an ON Start or OFF Start
The ON/OFF start switch can be used to switch between ON-start and OFF-start operation.

Setting the Times

Setting the Times
Use the ON time setting dial and the OFF time setting dial to set the ON time and OFF time.

Timing Charts

<table>
<thead>
<tr>
<th>Power (A1 and A2)</th>
<th>ON indicator (15 and 18)</th>
<th>OFF indicator (15 and 16)</th>
<th>Output (15 and 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flicker OFF start</td>
<td>ON</td>
<td>OFF</td>
<td>tON: ON set time</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td></td>
<td>tOFF: OFF set time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power (A1 and A2)</th>
<th>ON indicator (15 and 18)</th>
<th>OFF indicator (15 and 16)</th>
<th>Output (15 and 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flicker ON start</td>
<td>ON</td>
<td>OFF</td>
<td>性: ON set time</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td></td>
<td>性: OFF set time</td>
</tr>
</tbody>
</table>

Note: The reset time is 0.1 s min.
Star-delta Timer
H3DT-G

- Set two time ranges between 1 and 120 s with one Timer.

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

Ordering Information

List of Models

<table>
<thead>
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<th>Operating modes</th>
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<th>Control output</th>
<th>H3DT-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Star-delta Timer</td>
<td>24 to 240 VAC/DC</td>
<td>Contact outputs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delta circuit: SPDT, Star circuit: SPDT</td>
<td></td>
</tr>
</tbody>
</table>

Model Structure

<table>
<thead>
<tr>
<th>Model</th>
<th>Terminal block</th>
<th>Operating/resetting method</th>
<th>Output type</th>
<th>Mounting method</th>
<th>Safety standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-G</td>
<td>8 terminals</td>
<td>Time-limit operation/ self-resetting</td>
<td>Time-limit (relay)</td>
<td>DIN Track mounting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Star circuit: SPDT Delta circuit: SPDT</td>
<td>cULus (UL 508 CSA C22.2 No. 14) CCC LR DNV GL EN 61812-1 IEC 60664-1 4 kV/2</td>
<td></td>
</tr>
</tbody>
</table>

*Certification is pending for DNV GL.

Specifications

Time Ranges

<table>
<thead>
<tr>
<th>Time range setting</th>
<th>t1x1</th>
<th>t1x10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Star set time (t1) range</td>
<td>1 to 12 s</td>
<td>10 to 120 s</td>
</tr>
<tr>
<td>Star-Delta transfer time (t2)</td>
<td>Select from 0.05, 0.1, 0.25, or 0.5 s.</td>
<td></td>
</tr>
</tbody>
</table>

Ratings

<table>
<thead>
<tr>
<th>Power supply voltage</th>
<th>24 to 240 VAC/DC, 50/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable voltage fluctuation range</td>
<td>85% to 110% of rated voltage</td>
</tr>
<tr>
<td>Power reset</td>
<td>Minimum power-OFF time: 0.1 s</td>
</tr>
<tr>
<td>Reset voltage</td>
<td>10% of rated voltage</td>
</tr>
<tr>
<td>Power consumption H3DT-G</td>
<td>At 240 VAC: 1.9 VA max., at 240 VDC: 0.6 W max., at 24 VDC: 0.3 W max.</td>
</tr>
<tr>
<td>Rated Insulation Voltage</td>
<td>250 V</td>
</tr>
</tbody>
</table>

Control output

- Contact output:
  - 5 A at 250 VAC with resistive load (cosφ = 1), 5 A at 30 VDC with resistive load
  - 0.15 A max at 125 VDC with resistive load, 0.1 A max at 125 VDC with L/R of 7 ms.
- The minimum applicable load is 10 mA at 5 VDC (P reference value).
- Contact materials: Ag-alloy
  - (Recommended fuse: BLN5 (Littelfuse) or 0216005MXEP)

Ambient operating temperature -20 to 60°C (with no icing)
Storage temperature -40 to 70°C (with no icing)
Surrounding air operating humidity 25% to 85%

*1. When using a 24-VDC power supply voltage, there will be an inrush current of approximately 0.5 A. Allow for this inrush current when turning ON and OFF the power supply to the Timer with a solid-state output, such as a sensor.

*2. DC ripple: 20% max.
Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy of operating time</td>
<td>±1% of FS max.</td>
</tr>
<tr>
<td>Setting error</td>
<td>±10% of FS ±0.05 s max.</td>
</tr>
<tr>
<td>Transfer time</td>
<td>Total error (25% of transfer time + 5 ms) max.</td>
</tr>
<tr>
<td>Influence of voltage</td>
<td>±0.5% of FS max.</td>
</tr>
<tr>
<td>Influence of temperature</td>
<td>±2% of FS max.</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>100 MΩ min. at 500 VDC</td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>Between charged metal part and operating section: 2,900 VAC 50/60 Hz for 1 min. Between control output terminals and operating circuit: 2,000 VAC 50/60 Hz for 1 min. Between contacts not located next to each other: 1,000 VAC 50/60 Hz for 1 min.</td>
</tr>
<tr>
<td>Impulse withstand test voltage</td>
<td>5 kV between power terminals, 7.4 kV between conductor terminal and operating section</td>
</tr>
<tr>
<td>Noise immunity</td>
<td>Square-wave noise generated by noise simulator (pulse width: 100 ns/1 μs, 1 ns rise): ±1.5 kV</td>
</tr>
<tr>
<td>Static immunity</td>
<td>Malfunction: 4 kV, Destruction: 8 kV</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>Destruction: 0.75-mm single amplitude at 10 to 55 Hz for 2 h each in 3 directions</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>Malfunction: 0.5-mm single amplitude at 10 to 55 Hz for 10 min each in 3 directions</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>Mechanical: 10 million operations min. (under no load at 1,800 operations/h)</td>
</tr>
<tr>
<td></td>
<td>Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 360 operations/h)</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP30 (Terminal block: IP20)</td>
</tr>
</tbody>
</table>

Applicable standards

<table>
<thead>
<tr>
<th>Type</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety standards</td>
<td>cULus: UL 508/CSA C22.2 No. 14</td>
</tr>
<tr>
<td></td>
<td>EN 61812-1: Pollution degree 2, Overvoltage category III</td>
</tr>
<tr>
<td></td>
<td>CCC: Pollution degree 2, Overvoltage category II, section GB 14048.5</td>
</tr>
<tr>
<td></td>
<td>LR: Category ENV1.2</td>
</tr>
<tr>
<td></td>
<td>DIN GL *</td>
</tr>
<tr>
<td>EMC</td>
<td>EN 61812-1: Radiated Emissions: EN 55011 class B</td>
</tr>
<tr>
<td></td>
<td>Emission AC Mains: EN 55011 class B</td>
</tr>
<tr>
<td></td>
<td>Harmonic Current: EN 61000-3-2</td>
</tr>
<tr>
<td></td>
<td>Voltage Fluctuations and Flicker: EN 61000-3-3</td>
</tr>
<tr>
<td></td>
<td>EN 61812-1: Immunity ESD: EN 61000-4-2</td>
</tr>
<tr>
<td></td>
<td>Immunity RF-Interference: EN 61000-4-3</td>
</tr>
<tr>
<td></td>
<td>Immunity Burst: EN 61000-4-4</td>
</tr>
<tr>
<td></td>
<td>Immunity Surge: EN 61000-4-5</td>
</tr>
<tr>
<td></td>
<td>Immunity Conducted Disturbance: EN 61000-4-6</td>
</tr>
<tr>
<td></td>
<td>Immunity Voltage Dip/Interruption: EN 61000-4-11</td>
</tr>
</tbody>
</table>

※Certification is pending for DNV GL.

I/O

<table>
<thead>
<tr>
<th>Input</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>Control output</td>
</tr>
<tr>
<td></td>
<td>The star output is turned OFF when the dial set value is reached and the delta output is turned ON after the preset transfer time elapses.</td>
</tr>
</tbody>
</table>

Relation between H3DT Ambient Temperature and Mounting Interval (Reference Values)

The relation between the ambient temperature and mounting interval is shown in the following graph. If the Timer is used at 55°C or higher with a mounting interval that is smaller than that shown in the following diagram, the temperature inside the Timer will increase, reducing the life expectancy of internal parts.

![Graph showing the relationship between ambient temperature and mounting interval.](image-url)

Testing Method

Tested Timer: H3DT-G

Applied voltage: 240 VAC

Installation pitch: 0 and 10 mm

Load current: 5 A
Connections

Block Diagrams

H3DT-G

AC (DC) input
Power supply circuit

Star time setting switch

Star-delta transfer time switch

ROM

RAM

Clock

One-chip microcomputer

Output circuit

Indicator circuit

Star output ON indicator

Delta output ON indicator

Output circuit

Front View

Operation/power indicator (green)
(Lit while the power is ON.)

Star operation indicator (orange)

Delta operation indicator (orange)

Main dial
(Sets the star time.)

Star-delta transfer time switch

Terminal Arrangement

H3DT-G

Star contacts
R1
15

Star contacts
R2
25

Delta contacts
18
16
28
26

25
28

18
15

(DIN notation)

* The power supply terminals do not have polarity.

Nomenclature

H3DT-G

AC (DC) input
Power supply circuit

Star time setting switch

Star-delta transfer time switch

ROM

RAM

Clock

One-chip microcomputer

Output circuit

Indicator circuit

Star output ON indicator

Delta output ON indicator

Output circuit

Front View

Operation/power indicator (green)
(Lit while the power is ON.)

Star operation indicator (orange)

Delta operation indicator (orange)

Main dial
(Sets the star time.)

Star-delta transfer time switch

Terminal Arrangement

H3DT-G

Star contacts
R1
15

Star contacts
R2
25

Delta contacts
18
16
28
26

25
28

18
15

(DIN notation)

* The power supply terminals do not have polarity.
**Operating Procedures**

**Basic Operation**

<table>
<thead>
<tr>
<th>Setting the Time Ranges</th>
<th>Setting the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setting the Delta Time Range (t1) and the Star-delta Transfer Time (t2)</strong></td>
<td><strong>Setting the Time</strong></td>
</tr>
<tr>
<td></td>
<td>The start time is set with the main dial.</td>
</tr>
</tbody>
</table>

If the Delta Time Range (t1) is set to $\times 1$ (1 to 12 s), set the Star-delta Transfer Time on side (A) (the side labeled $t1 \times 1$).

If the Delta Time Range (t1) is set to $\times 10$ (10 to 120 s), set the Star-delta Transfer Time on side (B) (the side labeled $t1 \times 10$).

**Timing Chart**

<table>
<thead>
<tr>
<th>Power (A1 and A2)</th>
<th>Star contacts (15 and 18)</th>
<th>Delta contacts (25 and 28)</th>
<th>Star operation indicator</th>
<th>Delta operation indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

**Note:**
1. The reset time is 0.1 s min.
2. "t1" is the start set time. "t2" is the transfer time.
Power OFF-delay Timer
H3DT-H

• Set two time ranges with each Timer, from 0.1 to 12 seconds for the S Series and from 1.0 to 120 seconds for the L Series.

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

Ordering Information

List of Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Terminal block</th>
<th>Operating/resetting method</th>
<th>Output type</th>
<th>Mounting method</th>
<th>Safety standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-H</td>
<td>6 terminals</td>
<td>Instantaneous operation/ time-limit reset</td>
<td>Relay, SPDT</td>
<td>DIN Track mounting</td>
<td>cULus (UL 508 CSA C22.2 No. 14) CCC LR DNV GL &amp; EN 61812-1 IEC 60664-1 4 kV/2</td>
</tr>
</tbody>
</table>

Model Structure

<table>
<thead>
<tr>
<th>Model</th>
<th>Terminal block</th>
<th>Operating/resetting method</th>
<th>Output type</th>
<th>Mounting method</th>
<th>Safety standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-H</td>
<td>6 terminals</td>
<td>Instantaneous operation/ time-limit reset</td>
<td>Relay, SPDT</td>
<td>DIN Track mounting</td>
<td>cULus (UL 508 CSA C22.2 No. 14) CCC LR DNV GL &amp; EN 61812-1 IEC 60664-1 4 kV/2</td>
</tr>
</tbody>
</table>

※Certification is pending for DNV GL.

Specifications

Time Ranges

<table>
<thead>
<tr>
<th>Time range setting</th>
<th>S Series</th>
<th>L Series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x0.1</td>
<td>x1</td>
</tr>
<tr>
<td>Set time range</td>
<td>0.1 to 1.2 s</td>
<td>1 to 12 s</td>
</tr>
<tr>
<td>Power ON time</td>
<td>0.1 s min.</td>
<td>0.3 s min.</td>
</tr>
<tr>
<td>Scale numbers</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Ratings

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>H3DT-HCS/HCL</th>
<th>100 to 120 VAC, 50/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-HDS/HDL</td>
<td>200 to 240 VAC, 50/60 Hz</td>
<td></td>
</tr>
<tr>
<td>H3DT-HBS/HBL</td>
<td>24 to 48 VAC/DC, 50/60 Hz</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power consumption</th>
<th>H3DT-HCS</th>
<th>At 120 VAC: 8.7 VA max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3DT-HCL</td>
<td>At 120 VAC: 8.8 VA max.</td>
<td></td>
</tr>
<tr>
<td>H3DT-HDS</td>
<td>At 240 VAC: 21.6 VA max.</td>
<td></td>
</tr>
<tr>
<td>H3DT-HDL</td>
<td>At 240 VAC: 21.7 VA max.</td>
<td></td>
</tr>
<tr>
<td>H3DT-HBS/HBL</td>
<td>At 48 VAC: 1.0 VA max., at 24 VDC: 0.4 W max.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Allowable voltage fluctuation range</th>
<th>85% to 110% of rated voltage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Timer operation starting voltage</th>
<th>30% or less of power supply voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Insulation Voltage</td>
<td>250 VAC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control output</th>
<th>Contact output, 5 A at 250 VAC with resistive load (cosφ = 1), 5 A at 30 VDC with resistive load Contact materials : Ag-alloy (Recommended fuse: BLN5 (Littelfuse) or 0216005MXEP)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ambient operating temperature</th>
<th>-20 to 60°C (with no icing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage temperature</td>
<td>-40 to 70°C (with no icing)</td>
</tr>
<tr>
<td>Surrounding air operating humidity</td>
<td>25% to 85%</td>
</tr>
</tbody>
</table>

※ DC ripple: 20% max.
## Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy of operating time</td>
<td>±1% of FS max. (±1% ±10 ms max. at 1.2-s range)</td>
</tr>
<tr>
<td>Setting error</td>
<td>±10% of FS ±0.05 s max.</td>
</tr>
<tr>
<td>Influence of voltage</td>
<td>±0.5% of FS max. (±0.5% ±10 ms max. at 1.2-s range)</td>
</tr>
<tr>
<td>Influence of temperature</td>
<td>±2% of FS max. (±2% ±10 ms max. at 1.2-s range)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>100 MΩ min. at 500 VDC</td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>Between charged metal part and operating section: 2,900 VAC 50/60 Hz for 1 min.</td>
</tr>
<tr>
<td></td>
<td>Between control output terminals and operating circuit: 2,000 VAC 50/60 Hz for 1 min.</td>
</tr>
<tr>
<td></td>
<td>Between contacts not located next to each other: 1,000 VAC 50/60 Hz for 1 min.</td>
</tr>
<tr>
<td>Impulse withstand test voltage</td>
<td>Between power supply terminals: 1 kV for 24-VAC/DC and 48-VAC/DC models, 5 kV for all other models.</td>
</tr>
<tr>
<td></td>
<td>Between conductor terminal and operating section: 7.4 kV</td>
</tr>
<tr>
<td>Noise immunity</td>
<td>Square-wave noise generated by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise): ±1.5 kV (between power supply terminals)</td>
</tr>
<tr>
<td>Static immunity</td>
<td>Malfunction: 4 kV, Destruction: 8 kV</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>Destruction: 0.75-mm single amplitude at 10 to 55 Hz for 2 h each in 3 directions</td>
</tr>
<tr>
<td></td>
<td>Malfunction: 0.5-mm single amplitude at 10 to 55 Hz for 10 min each in 3 directions</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>Destruction: 1,000 m/s² 3 times each in 6 directions</td>
</tr>
<tr>
<td></td>
<td>Malfunction: 100 m/s² 3 times each in 6 directions</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>Mechanical: 10 million operations min. (under no load at 1,800 operations/h)</td>
</tr>
<tr>
<td></td>
<td>Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 360 operations/h)</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP30 (Terminal block: IP20)</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 90 g</td>
</tr>
</tbody>
</table>

### Applicable standards

<table>
<thead>
<tr>
<th>Safety standards</th>
<th>EN 61812-1: Pollution degree 2, Overvoltage category III</th>
</tr>
</thead>
<tbody>
<tr>
<td>cULus</td>
<td>EN 508/CSA C22.2 No. 14</td>
</tr>
<tr>
<td>CCC</td>
<td>Pollution degree 2, Overvoltage category II, section GB 14048.5</td>
</tr>
<tr>
<td>LR</td>
<td>Category ENV1/2</td>
</tr>
<tr>
<td>DNV GL</td>
<td></td>
</tr>
</tbody>
</table>

### EMC

<table>
<thead>
<tr>
<th>(EMI)</th>
<th>EN 61812-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiated Emissions</td>
<td>EN 55011 class B</td>
</tr>
<tr>
<td>Emission AC Mains</td>
<td>EN 55011 class B</td>
</tr>
<tr>
<td>Harmonic Current</td>
<td>EN 61000-3-2</td>
</tr>
<tr>
<td>Voltage Fluctuations and Flicker</td>
<td>EN 61000-3-3</td>
</tr>
<tr>
<td>(EMS)</td>
<td>EN 61812-1</td>
</tr>
<tr>
<td>Immunity ESD</td>
<td>EN 61000-4-2</td>
</tr>
<tr>
<td>Immunity RF-interference</td>
<td>EN 61000-4-3</td>
</tr>
<tr>
<td>Immunity Burst</td>
<td>EN 61000-4-4</td>
</tr>
<tr>
<td>Immunity Surge</td>
<td>EN 61000-4-5</td>
</tr>
<tr>
<td>Immunity Conducted Disturbance</td>
<td>EN 61000-4-6</td>
</tr>
<tr>
<td>Immunity Voltage Dip/Interruption</td>
<td>EN 61000-4-11</td>
</tr>
</tbody>
</table>

### Testing Method

- **Tested Timer**: H3DT-H
- **Applied voltage**: 240 VAC
- **Installation pitch**: 0 and 10 mm
- **Load current**: 5 A

---

### Relation between H3DT Ambient Temperature and Mounting Interval (Reference Values)

The relation between the ambient temperature and mounting interval is shown in the following graph. If the Timer is used at 55°C or higher with a mounting interval that is smaller than that shown in the following diagram, the temperature inside the Timer will increase, reducing the life expectancy of internal parts.

---

### I/O

<table>
<thead>
<tr>
<th>Input</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>Control output</td>
</tr>
</tbody>
</table>

The Timer operates as soon as the Timer is turned ON. The Timer starts timing when the power is turned OFF and the output is turned OFF when the time set on the dial elapses.
Connections

Block Diagrams

- AC (DC) input
- Power supply circuit
- Oscillation circuit
- Counting circuit
- Output circuit
- Indicator circuit
- Time specification switches
- Power interruption detection circuit

Terminal Arrangement

Note: The above figure shows the terminal arrangement for a 24 to 48-VAC/DC model. Models with 100 to 120-VAC or 200 to 240-VAC power input do not have a DC input.

* The power supply terminals do not have polarity.

Nomenclature

- Front View
- Power indicator (green) (Lit while the power is ON.)
- Main dial (for setting the time)
- Time range switch (S Series: ×0.1 or ×1, L Series: ×1 or ×10)
H3DT-H

Dimensions

Timers

H3DT-H

Track Mounting Products (Sold Separately)
Refer to page 29 for details.

Options (Order Separately)
Front Cover
Refer to page 29 for details.

Operating Procedures

Basic Operation

Setting the Time Ranges
The scale multiplier can be changed with the timer range switch. It can be changed between $\times 0.1$ s and $\times 1$ s for an S-series Timer and between $\times 1$ s and $\times 10$ s for an L-series Timer.

Setting the Time
The operation time is set with the main dial.

Timing Charts

$t$: Set time
$R_t$: Minimum power-ON time
- S Series: 0.1 s min.
- L Series: 0.3 s min.
(The output may never turn ON if the power is not ON for at least this time.)
Track Mounting Products (Sold Separately)

(Unit: mm)

DIN Track
PFP-100N
PFP-50N

DIN Track
PFP-100N2

End Plate
PFP-M

Spacer
PFP-S

Note: 1. Order the above products in multiples of 10.
2. The Tracks conform to DIN standards.

Options (Order Separately)

Front Cover
Y92A-D1A
H3DT

Safety Precautions

Refer to Safety Precautions for All Timers.

Format of Warning Indications

<table>
<thead>
<tr>
<th>CAUTION</th>
<th>Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precautions for Safe Use</td>
<td>Indicates supplementary comments on what to do or avoid doing, to use the product safely.</td>
</tr>
<tr>
<td>Precautions for Correct Use</td>
<td>Includes operating precautions to ensure that the product will operate properly and that performance and functions will not be adversely affected.</td>
</tr>
</tbody>
</table>

Meaning of Graphic Symbols for Ensuring Product Safety

![Symbol](image)

- Indicates the possibility of electric shock under specific conditions.
- Indicates the instructions of unspecified prohibited action.
- Indicates the possibility of injuries, such as electric shock by disassembling the device, prohibiting disassembly.
- Indicates the instructions of unspecified general action.

CAUTION

Switching arcs or relay heating may cause fire or explosion. Do not use the Timer in the presence of inflammable or explosive gases.

The H3DT Series uses a transformerless power supply system. An electrical shock may occur if an input terminal is touched while power is being supplied.

The inrush current will depend on the type of load and may influence the contact switching frequency and number of operations. Check both the rated current and the inrush current, and allow leeway in the circuit design.

The life of the output relay largely depends on the switching current and other switch conditions. Consider the actual application conditions and do not exceed the rated load or electrical life. If the output relay is used beyond its service life, the contacts may fuse or burning may occur. Also, never exceed the rated load current. When using a heater, also place a thermal switch in the load circuit.

Do not remove the external case.

Minor electric shock, fire, or equipment failure may sometimes occur. Do not disassemble, modify, or repair the Timer or touch any internal parts.

Precautions for Safe Use

- Rapid changes in temperature or high humidity may cause condensation in Timer circuits, possibly resulting in malfunction or damage to components. Check the application environment.
- Use the Timer within the ambient operating temperature and ambient operating humidity ranges given for the Timer model you are using.
- Do not use or store a Timer in the following locations.
  - Locations subject to water, oil, or chemicals
  - Outdoor locations or under direct sunlight
  - Locations subject to dust or corrosive gases (sulfurizing gases, ammonia, chloride gas, silicon gas, etc.)
  - Locations subject to vibration and large shocks
  - Locations subject to wind and rain
  - Locations subject to insects or small animals
- Each switch has a snap mechanism that secures the switch at given positions. Set each switch to one of these positions. Do not set a switch midway between two positions. Malfunction or failure could result from an improper setting.
- Separate the Timer from any sources of excessive static electricity, such as forming materials and pipes carrying power or liquid materials.
- Maintain the variations in the power supply voltage to within the specified allowable range.
- If a voltage that exceeds the rating is applied, internal components may be destroyed.
- The terminal block may be damaged if you insert a screwdriver in the release hole with excessive force.
- Do not wire anything to the release holes.
- Do not tilt or twist a flat-blade screwdriver while it is inserted into a release hole on the terminal block. The terminal block may be damaged.
- Insert a flat-blade screwdriver into the release holes at an angle. The terminal block may be damaged if you insert the screwdriver straight in.
- Do not allow the flat-blade screwdriver to fall out while it is inserted into a release hole.
- Do not bend a wire past its natural bending radius or pull on it with excessive force. Doing so may cause the wire disconnection.
- Do not insert more than one wire into each terminal insertion hole.
- To prevent wiring materials from smoking or ignition, use the wiring materials given in the following table.

<table>
<thead>
<tr>
<th>Recommended wire</th>
<th>Stripping length</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Ferrules</td>
<td>Without Ferrules</td>
</tr>
<tr>
<td>0.25 to 1.5mm²/AWG24 to 16</td>
<td>10 mm</td>
</tr>
</tbody>
</table>

Note: Please use Ferrules with UL certification (R/C).

- Use only the specified wires for wiring.
- When wiring the terminals, allow some leeway in the wire length.
- Install and clearly label a switch or circuit breaker so that the operator can quickly turn OFF the power supply.
- If the Timer is left in the timed out condition for a long period of time at high temperatures, internal components (such as electrolytic capacitors) may deteriorate quickly.
- The exterior of the Timer may be damaged by organic solvents (such as thinners or benzene), strong alkali, or strong acids.
- For Timers with AC power input, use a commercial power supply for the power supply voltage. Although some inverters give 50/60 Hz as the output frequency, do not use an inverter output as the power supply for a Timer. Doing so may result in smoking or burning due to internal temperature increases in the Timer.
- When disposing of the Timer, observe all local ordinances as they apply.
• The Timer may not operate properly in locations that are subject to sulfide gas, such as in sewers or incinerators. Products that are suitable for operation in sulfide gas are not available for OMRON Timers or general control devices. Seal the Timer to isolate it from sulfide gas. If the Timer cannot be sealed, OMRON can make special products with resistance to sulfide gas for some Timers.
Ask your OMRON representative for details.
• Confirm that the power and output indicators are operating normally. Depending on the operating environment, the indicators and plastic parts may deteriorate faster than expected, causing the indicators to fail. Periodically perform inspections and replacements.

Precautions for Correct Use
Be sure you understand the contents of this document and handle the Timers according to the instructions provided.

Changing Switch Settings
Do not change the time unit, operating mode, or INIT/ TIME switch while the power is being supplied to the Timer. Doing so may result in malfunction. Turn OFF the power supply before changing the setting of any switch.

Mounting and Dismounting
• Although there are no particular mounting restrictions, the Timer should be mounted as horizontally as possible.
• To mount the Timer to a DIN Track, hook the Timer onto the DIN Track and press the Timer in the direction of the arrow until you hear it lock into place.
• To remove the Timer, insert a screwdriver into the hook on the top or bottom and pull out the hook to release the Timer.
• It will be easier to mount and dismount the Timer if a distance of 30 mm or more is provided between the bottom of the Timer and other equipment.

Screw Mounting
1. Pull out the two hooks on the back of the Timer to the outside until you hear them click in place.
2. Insert M3 screws into the hook holes and secure the Timer.

Power Supply
• The power supply can be connected to the power input terminals without considering polarity.
• A DC power supply can be connected if its ripple factor is 20% or less and the average voltage is within the allowable voltage fluctuation range of the Timer.
• For the power supply of the input device, use an isolating transformer in which the primary and secondary windings are mutually isolated and the secondary winding is not grounded. (H3DT-N and H3DT-L only)
• The H3DT-H has a large inrush current. Provide sufficient power supply capacity.
If the power supply capacity is too small, there may be delays in turning ON the output.

Relationship between Input and Power Supply Circuits (H3DT-N/L)
• The input circuit and the power supply circuit are configured independently. The input circuit can be turned ON and OFF without considering the ON/OFF state of the power supply. A voltage equivalent to the power supply voltage is also applied to the input circuit.
If a relay or transistor is connected to two or more Timers, the input terminals of those Timers must be wired properly so that they will not be different in phase or the terminals will be short-circuited to one another. Always use the same power supply phases.

The power supply circuits for H3DT-series Timers use switching mode. Therefore, if there is a transformer or other device with a large inductance component on the power supply line, the inductance will cause a reverse voltage. If that occurs, insert a CR filter in the power supply line to reduce the reverse voltage.

When using the Timer in an area with excessive electronic noise, separate the Timer and input device as far as possible from the noise sources. It is also recommended to shield the input signal wiring to prevent electronic interference.

The external impulse voltage entering across the power supply terminals has been checked against a ±1.2×50 μs standard waveform according to JEC-210, Impulse Voltage/Current Test, of The Institute of Electrical Engineers of Japan. Surge or noise superimposed on the power supply may damage internal components or cause them to malfunction. We recommend that you check the circuit waveform and use surge absorbers. The effects on components depend on the type of surge and noise that are generated. Always perform testing with the actual equipment.

The Timer may be affected by incoming radio wave interference. Do not use the Timer near radio wave receivers.

Do not use the Timer in circuits with waveform distortion. Error will be large due to waveform distortion.

Do not install the Timer immediately next to heat sources.

Wiring
1. Connecting Wires to the Push-In Plus Terminal Block

Part Names of the Terminal Block

Connecting Wires with Ferrules and Solid Wires
Insert the solid wire or ferrule straight into the terminal block until the end touches the terminal block.

Connecting Stranded Wires
Use the following procedure to connect the wires to the terminal block.
1. Hold a flat-blade screwdriver at an angle and insert it into the release hole. The angle should be between 10° and 15°. If the flat-blade screwdriver is inserted correctly, you will feel the spring in the release hole respond.
2. With the flat-blade screwdriver still inserted into the release hole, insert the wire into the terminal hole until it strikes the terminal block.
3. Remove the flat-blade screwdriver from the release hole.

Checking Connections
After the insertion, pull gently on the wire to make sure that it will not come off and the wire is securely fastened to the terminal block.

To prevent short circuits, insert the stripped part of a stranded or solid wire or the conductor part of a ferrule until it is hidden inside the terminal insertion hole. (See the following diagram.)
2. Removing Wires from the Push-In Plus Terminal Block

Use the following procedure to remove wires from the terminal block. The same method is used to remove stranded wires, solid wires, and ferrules.

1. Hold a flat-blade screwdriver at an angle and insert it into the release hole.
2. With the flat-blade screwdriver still inserted into the release hole, remove the wire from the terminal insertion hole.
3. Remove the flat-blade screwdriver from the release hole.

3. Recommended Ferrules and Tools

**Recommended ferrules**

<table>
<thead>
<tr>
<th>Wire (mm²)</th>
<th>Ferrule length (mm)</th>
<th>Recommended ferrules</th>
<th>Manufacturer by Phoenix Contact</th>
<th>Manufacturer by Weidmuller</th>
<th>Manufacturer by Wago</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25</td>
<td>24</td>
<td>A10.25-8</td>
<td>H0.25/12</td>
<td>FE-0.25-8N-YE</td>
<td></td>
</tr>
<tr>
<td>0.34</td>
<td>22</td>
<td>A10.34-8</td>
<td>H0.34/12</td>
<td>FE-0.34-8N-TQ</td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td>20</td>
<td>A10.5-8</td>
<td>H0.5/14</td>
<td>FE-0.5-8N-WH</td>
<td></td>
</tr>
<tr>
<td>0.75</td>
<td>18</td>
<td>A10.75-8</td>
<td>H0.75/14</td>
<td>FE-0.75-8N-GY</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>18</td>
<td>A11-8</td>
<td>H1.0/14</td>
<td>FE-1.0-8N-RD</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>16</td>
<td>A11.5-8</td>
<td>H1.5/14</td>
<td>FE-1.5-8N-BK</td>
<td></td>
</tr>
</tbody>
</table>

**Recommended crimp tool**

- CRIMPFOX6
- CRIMPFOX6-F
- CRIMPFOX10S
- PZ6 roto
- Varioicrimp4

**Note:**

1. Make sure that the outer diameter of the wire coating is smaller than the inner diameter of the insulation sleeve of the recommended ferrule.
2. Make sure that the ferrule processing dimensions conform to the following figures.

![Diagram of wire and ferrule dimensions]

- 8 mm max
- 2.1 mm max
- 2.7 mm max

**Recommended Flat-blade Screwdriver**

Use a flat-blade screwdriver to connect and remove wires. Use the flat-blade screwdriver from below the list.

The following table shows manufacturers and models as of 2015/Dec.

<table>
<thead>
<tr>
<th>Model</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>XW4Z-00B</td>
<td>Omron</td>
</tr>
<tr>
<td>ESD0.40X2.5</td>
<td>Wera</td>
</tr>
<tr>
<td>SZF 0.4X2.5</td>
<td>Phoenix Contact</td>
</tr>
<tr>
<td>0.4X2.5X75</td>
<td>Wago</td>
</tr>
<tr>
<td>AEF.2.5X75</td>
<td>Facom</td>
</tr>
<tr>
<td>210-719</td>
<td>Weidmuller</td>
</tr>
<tr>
<td>SDI 0.4X2.5X75</td>
<td></td>
</tr>
</tbody>
</table>

If you wire crossovers and connect terminal blocks in parallel, a large current will flow. Make sure that the current does not exceed 10 A.

- Do not connect anything to unused terminals.
- Wire all terminals correctly.
- Check all wiring before you turn ON the power supply to the Timer.
- The H3DT-H acts like a high-impedance circuit. Therefore, the Timer may not reset if it is influenced by inductive voltage. To eliminate inductive voltage, the wires connected to the Timer must be as short as possible and should not be installed parallel to power lines. If the Timer is influenced by inductive voltage that is 30% or more of the rated voltage, connect a CR filter with a capacitance of approximately 0.1 μF and a resistance of approximately 120 Ω or a bleeder resistor between the power supply terminals.
- If there is any residual voltage due to current leakage, connect a bleeder resistor between the power supply terminals.

**Operating Frequency**

- **Timer Repeatedly Times Out in Cycles of 3 s or Less**

If the above case, use the H3DT-N/L in D mode (signal OFF delay).
- If you use Flicker Mode and set the dial on the H3DT-F to the minimum setting, the contacts may be damaged. Avoid this type of application.

**Options**

- Use the Y92A-D1A for the Front Cover.
- If you use the Front Cover, make sure that it is attached securely.
Other Precautions
- If the Timer is mounted on a control panel, dismount the Timer from the control panel before carrying out a voltage withstand test between the electric circuits and non-current-carrying metal parts of the Timer. (Otherwise, the internal circuits of the Timer may be damaged.)
- The H3DK-H uses a latching relay for the output. Shock, such as dropping the H3DK-H during shipment or handling, can cause the output contacts to reverse to the neutral position. Check the output status with a tester before using the H3DK-H.
- The life expectancy of the control output contacts is greatly affected by switching conditions. Always confirm operation using the actual conditions and equipment before using the Timer and make sure that the number of switching operations presents no problems in performance. If Timer application is continued after performance has deteriorated, insulation failure between circuits, burning of the control output relay, or other problem will eventually occur.
- If the power supply voltage is gradually increased, a power reset may occur or the Timer may time out. Use a switch, relay, or other device with contacts to apply the power supply voltage all at once.
- Make sure that residual voltage or inductive voltage is not applied after the power turns OFF.
- Error in the operation time of the Timer is given as a percentage of the full-scale time. The absolute value of the error will not change even if the set time is changed. Therefore, always use the Timer with the set time set as close as possible to the full-scale value of the set time range.
- When switching a microload, check the specified minimum load given for the Timer model you are using.
- When setting the operating time, do not turn the dial beyond the scale range.
- Store the Timer within the rated ranges given for the Timer model you are using. If the Timer is stored below −20°C, allow it to warm up for three hours at room temperature before turning ON the power supply.
- Do not install the Timer in any way that would place a load on it.
- When cleaning the Timer, do not use thinners or solvents. Use commercial alcohol.
- If better accuracy is required in the set time, adjust the dial while measuring the operation time.
- Do not construct a circuit for the H3DT-H that would allow overcurrent and burning to occur if the NO, NC and SPDT contacts are short-circuited. Arcing may generate short-circuiting between contacts if there is short-circuiting because of conversion to the MBB contacts caused by asynchronous operation of the NO and NC contacts, the interval between the NO and NC contacts is small, or a large current is left open.
- If the Timer is reset immediately after timing out, make sure that the circuit configuration allows sufficient resetting time. Errors will occur in the sequence if there is not sufficient resetting time.
- When directly switching a DC load, the switching capacity will be lower than when switching an AC load.

EN/IEC Standard Compliance
- Refer to the datasheet for the H3DK for cable selection and other conditions for compliance with EMC standards.

Precaution on EN Standard Compliance
The H3DT complies with EN 61812-1 when it is built into a panel, but observe the following handling methods to ensure compliance with the requirements of this standard.

Wiring
Overvoltage category III
Pollution degree 2
- Open-frame Device
- If basic, double, or reinforced insulation is required, use the basic, double, or reinforced insulation defined in IEC 60664 that is suitable for the maximum applied voltage for the clearance, solid insulation, and other factors.
- The power supply terminals and input terminals are not isolated from each other.
- There is basic insulation between the power supply terminals and output terminals.
- There is basic insulation between the input terminals and output terminals.
- The operating section must have reinforced or double insulation.
- The sides of the case are not isolated.
- Connect the output contacts (contacts with different polarity) so that they reach the same potential.

Recommended Replacement Periods and Periodic Replacement as Preventive Maintenance
The recommended replacement period for preventive maintenance is greatly influenced by the application environment of the product. As a guideline for models that do not have a Maintenance Forecast Monitor, the recommended replacement period is 7 to 10 years. To prevent failures that can be caused by using a product beyond its service life, we recommend that you replace the product as early as possible within the recommended replacement period. However, realize that the recommended replacement period is for reference only and does not guarantee the life of the product. Many electronic components are used in the product and the product depends on the correct operation of these components to achieve product functions and performance. However, the influence of the ambient temperature on aluminum electrolytic capacitors is large, and the service life is reduced by half for each 10°C rise in temperature (Arrhenius law). When the capacity reduction life of the electrolytic capacitor is reached, the product may fail. We therefore recommend that you replace the product periodically to minimize product failures in advance.

Not isolated
Reinforced insulation
(or double insulation)

The following conditions apply: rated input voltage, load rate of 50% max., ambient temperature of 35°C max., and the standalone mounting method. This product model is designed with a service life of 10 years minimum under the above conditions.
Terms and Conditions of Sale

1. Offer; Acceptance. These terms and conditions (these "Terms") are deemed part of Buyer’s order placement, quotations, purchases, transactions or contracts. (a) All documents which are inconsistent with, or in addition to, these Terms. (b) Buyer objects to any terms or conditions proposed in Buyer’s purchase order or other documents which are inconsistent with, or in addition to, these Terms. (c) Omron reserves the right to require or accept orders on the basis ofOmron’s terms and conditions as of the date of order. (d) Buyer accepts offers, including price lists, quotations, orders, sales and contracts, as of the date of acceptance and as modified by Buyer’s acceptance. (e) These Terms are the exclusive terms applicable to the sale of Products and supersede all prior or contemporaneous agreements, oral or written. (f) These Terms are deemed accepted by Buyer when Buyer orders, accepts, uses, or takes delivery of any Products. (g) These Terms are deemed accepted and assented to by Buyer when Buyer modifies an existing order, replaces an existing order, or requests an invoice, delivery, or other information.

2. Prices; Payment Terms. All prices stated are current, subject to change without notice, and are net to the carrier. (a) Deviation in price from that stated in the catalog, order, invoice, or other document may result in a higher invoice amount than stated in the price list, order, invoice, or other document. (b) Payment terms stated on invoices are net within thirty days from the date of delivery or service. (c) Targeted delivery dates are not guaranteed and are subject to variation due to unforeseen circumstances. Buyer should consult with Omron regarding the target delivery date.

3. Discounts. Buyer may be eligible for discounts. (a) Discounts are available on orders meeting certain minimum volume criteria. (b) Discounts are not cumulative with other promotions or offers. (c) Discounts are not available for orders placed by Buyer's agent or representative.

4. Interest. Interest may be charged on any unpaid balance. (a) Interest is charged on any amount not paid in full within thirty days of the invoice date. (b) Interest is calculated on the full amount of the invoice and is charged monthly at the rate of one and one-half percent (1 1/2%) per month. (c) Interest is calculated on the full amount of the invoice and is charged monthly at the rate of one and one-half percent (1 1/2%) per month. (d) Interest is calculated on the full amount of the invoice and is charged monthly at the rate of one and one-half percent (1 1/2%) per month.

5. Orders. Buyer will accept no order less than $200 net billing. (a) Orders are not subject to rescheduling or cancellation. (b) Omron reserves the right to delay or cancel any order. (c) In the event of a delay or cancellation, Omron will notify Buyer in writing and offer alternative solutions or refunds. (d) Omron reserves the right to cancel any order that is not paid in full within thirty days of the invoice date.

6. Governmental Approvals. Buyer shall be responsible for all governmental approvals required for the use of the Product, including import and export licenses.

7. Taxes. All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, exportation, delivery, or use of any Product, shall be paid by Buyer. (a) Buyer shall indemnify Omron against any liability incurred in connection with any such charges.

8. Financial. If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security from Buyer. (a) If Buyer fails to make payment of any invoice in a timely manner, Omron reserves the right to charge interest on the outstanding balance at a rate of one and one-half percent (1 1/2%) per month. (b) If any payment is overdue, Omron reserves the right to charge interest on the overdue amount at a rate of one and one-half percent (1 1/2%) per month. (c) If any payment is overdue, Omron reserves the right to charge interest on the overdue amount at a rate of one and one-half percent (1 1/2%) per month.

9. Cancellation; Etc. Orders are subject to rescheduling or cancellation unless Buyer indemnifies Omron against all costs or expenses. (a) Cancellation of any order requires written notice from Buyer to Omron in advance of the scheduled delivery date. (b) Cancellation of any order requires written notice from Buyer to Omron in advance of the scheduled delivery date. (c) Cancellation of any order requires written notice from Buyer to Omron in advance of the scheduled delivery date.

10. Force Majeure. Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its reasonable control, including acts of God, strikes, wars, civil commotions, embargos, labor disputes, or any other similar causes. (a) Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its reasonable control, including acts of God, strikes, wars, civil commotions, embargos, labor disputes, or any other similar causes. (b) Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its reasonable control, including acts of God, strikes, wars, civil commotions, embargos, labor disputes, or any other similar causes. (c) Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its reasonable control, including acts of God, strikes, wars, civil commotions, embargos, labor disputes, or any other similar causes.

11. Shipping; Delivery. Unless otherwise expressly agreed in writing by Omron:

a. Shipment shall be by a carrier selected by Omron; Omron will not drop ship products unless specifically requested in writing by Buyer.

b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer.

c. All sales and shipments of Products shall be FOB shipping point unless otherwise stated in writing by Omron. (a) At which point and time of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid.

d. Delivery and shipping dates are estimates only; and

e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.

12. Claims. Buyer shall make claims against Omron for shortages or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within ten (10) days after receipt of Products. (a) Any claim for shortages or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within ten (10) days after receipt of Products. (b) Any claim for shortages or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within ten (10) days after receipt of Products. (c) Any claim for shortages or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within ten (10) days after receipt of Products.

13. Inspection; Rejection. Omron’s exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve (12) months from the date of shipment by Omron or such other period stated in writing by Omron. (a) Omron makes no warranty or representation, express or implied, about non-infringement, merchantability, fitness for a particular purpose, satisfactory performance, accuracy, quality, or any type of fitness for a particular purpose. (b) Omron makes no warranty of any kind, whether express or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

14. Limitations of Liability. Omron makes no warranty or representation, express or implied, about non-infringement, merchantability, fitness for a particular purpose, satisfactory performance, accuracy, quality, or any type of fitness for a particular purpose. (a) Omron makes no warranty of any kind, whether express or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

15. Exclusive Warranty. Omron will accept no order less than $200 net billing. (a) Orders are not subject to rescheduling or cancellation. (b) Omron reserves the right to delay or cancel any order. (c) In the event of a delay or cancellation, Omron will notify Buyer in writing and offer alternative solutions or refunds. (d) Omron reserves the right to cancel any order that is not paid in full within thirty days of the invoice date.

16. Property; Confidentiality. Any intellectual property in the Products is the exclusive property of Omron and remains the exclusive property of Omron. (a) Buyer shall have no right to set off any amounts, including amounts payable hereunder, whether or not then due, which may arise in connection with any order. (b) Buyer shall not have any right to set off any amounts, including amounts payable hereunder, whether or not then due, which may arise in connection with any order. (c) Buyer shall not have any right to set off any amounts, including amounts payable hereunder, whether or not then due, which may arise in connection with any order. (d) Buyer shall not have any right to set off any amounts, including amounts payable hereunder, whether or not then due, which may arise in connection with any order.

17. Export Controls. Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (ii) sale of products to "forbidden" or other proscribed persons; and (ii) disclosure to non-citizens of restricted technology or information.

18. Miscellaneous. (a) Waiver. No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) Assignment. Buyer may not assign its rights hereunder without Omron’s written consent. (c) Law. These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Product, unless otherwise agreed in writing by both parties.

19. Delivery. Delivery of the Product shall be by Omron to Buyer at Buyer’s expense unless otherwise agreed in writing by Omron. (a) Buyer will be responsible for all transportation and handling charges. (b) Buyer will be responsible for all transportation and handling charges.

Certain Precautions on Specifications and Use

1. Suitability of Use. Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer’s application or use of the Product. At Buyer’s request, Omron will provide applicable third party certification documents identifying recognized limits and limitations. Any use of the Product which is not recognized itself is not sufficient for a complete determination of the suitability of the Product for Buyer’s use, nor is any application or user’s use of the Product. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer’s application, product, or other end use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer’s application, product, or other end use.

2. Product Compatibility. Omron Companies shall not be responsible for the compatibility of the Product with any other end use. Omron Companies make no representations or warranties as to the compatibility of the Product with any other end use. Omron Companies make no representations or warranties as to the compatibility of the Product with any other end use.

3. Performance Data. Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron’s testing and the user must correlate it to actual application requirements. Actual performance is subject to the Omron’s Warranty and Limitations and may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please contact your Omron representative for published information.

4. Changes in Specifications. Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our policy to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please contact your Omron representative for published information.

5. Errors and Omissions. Information in this document has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.