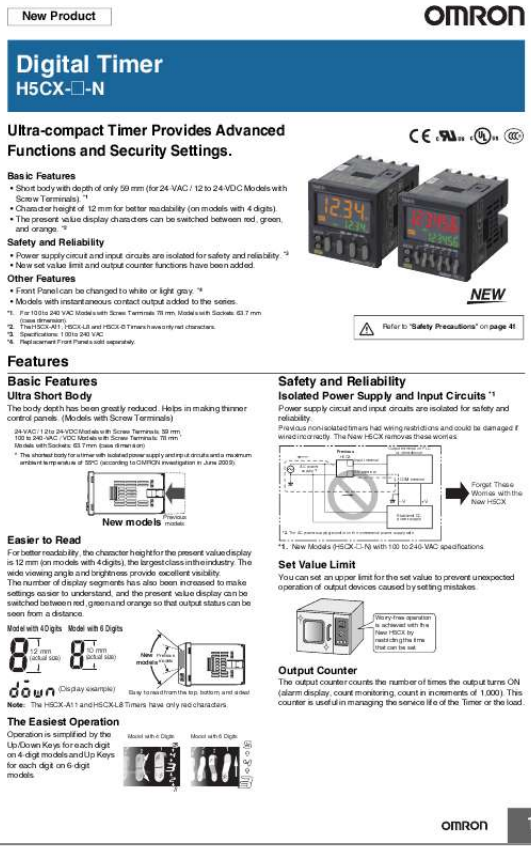

New Product

OMRON

Digital Timer
H5CX-□-N

Ultra-compact Timer Provides Advanced Functions and Security Settings.

Basic Features
- Short body with depth of only 59 mm (for 24-VAC / 12 to 24-VDC Models with Screw Terminals). *1
- Character height of 12 mm for better readability (on models with 4 digits).
- The present value display characters can be switched between red, green, and orange. *2

Safety and Reliability
- Power supply circuit and input circuits are isolated for safety and reliability. *3
- New set value limit and output counter functions have been added.

Other Features
- Front Panel can be changed to white or light gray. *4
- Models with instantaneous contact output added to the series.

*1. For 100 to 240 VAC Models with Screw Terminals 78 mm, Models with Sockets 63.7 mm (case dimension).
*2. The H5CX-A11, H5CX-L8 and H5CX-B Timers have only red characters.
*3. Specifications: 100 to 240 VAC
*4. Replacement Front Panels sold separately.

NEW

Refer to "Safety Precautions" on page 4!

Features

Basic Features

Ultra Short Body

The body depth has been greatly reduced. Helps in making thinner control panels. (Models with Screw Terminals)

24-VAC / 12 to 24-VDC Models with Screw Terminals: 59 mm
100 to 240-VAC / VDC Models with Screw Terminals: 78 mm
Models with Sockets: 63.7 mm (case dimension)

* The shortest body for a timer with isolated power supply and input circuits and a maximum ambient temperature of 55°C (according to OMRON investigation in June 2009).

New models / Previous models

Easier to Read

For better readability, the character height for the present value display is 12 mm (on models with 4 digits), the largest class in the industry. The wide viewing angle and brightness provide excellent visibility.
The number of display segments has also been increased to make settings easier to understand, and the present value display can be switched between red, green and orange so that output status can be seen from a distance.

Model with 4 Digits: 12 mm (actual size)
Model with 6 Digits: 10 mm (actual size)
down (Display example)
New models / Previous models
Easy to read from the top, bottom, and sides!

Note: The H5CX-A11 and H5CX-L8 Timers have only red characters.

The Easiest Operation

Operation is simplified by the Up/Down Keys for each digit on 4-digit models and Up Keys for each digit on 6-digit models.

Model with 4 Digits
Model with 6 Digits

Safety and Reliability

Isolated Power Supply and Input Circuits *1

Power supply circuit and input circuits are isolated for safety and reliability.
Previous non-isolated timers had wiring restrictions and could be damaged if wired incorrectly. The New H5CX removes these worries.

Previous
New
Forget These Worries with the New H5CX

*1. New Models (H5CX-□-N) with 100 to 240-VAC specifications.

Set Value Limit

You can set an upper limit for the set value to prevent unexpected operation of output devices caused by setting mistakes.

Worry-free operation is achieved with the New H5CX by restricting the time that can be set.

Output Counter

The output counter counts the number of times the output turns ON (alarm display, count monitoring, count in increments of 1,000). This counter is useful in managing the service life of the Timer or the load.

Manual abstract:

*Other Features · Front Panel can be changed to white or light gray. *4 · Models with instantaneous contact output added to the series. *1. For 100 to 240 VAC Models with Screw Terminals 78 mm, Models with Sockets: 63.7 mm (case dimension). *2. The H5CX-A11, H5CX-L8 and H5CX-B Timers have only red characters. *3. Specifications: 100 to 240 VAC *4. Replacement Front Panels sold separately.*

*Refer to "Safety Precautions" on page 41. Features Basic Features Ultra Short Body The body depth has been greatly reduced. Helps in making thinner control panels. (Models with Screw Terminals) 24-VAC / 12 to 24-VDC Models with Screw Terminals: 59 mm 100 to 240-VAC / VDC Models with Screw Terminals: 78 mm * Models with Sockets: 63.7 mm (case dimension) * The shortest body for a timer with isolated power supply and input circuits and a maximum ambient temperature of 55°C (according to OMRON investigation in June 2009).*

*Safety and Reliability Isolated Power Supply and Input Circuits *1 Power supply circuit and input circuits are isolated for safety and reliability. Previous non-isolated timers had wiring restrictions and could be damaged if wired incorrectly. The New H5CX removes these worries. Previous H5CX AC power supply *2 Output terminal on PLC or other device Input terminal 0-V terminal COM terminal V +V Forget These Worries with the New H5CX New models Previous models Stabilized DC power supply *2. The AC power supply ground is on the commercial power supply side.*

*Easier to Read For better readability, the character height for the present value display is 12 mm (on models with 4 digits), the largest class in the industry. The wide viewing angle and brightness provide excellent visibility. The number of display segments has also been increased to make settings easier to understand, and the present value display can be switched between red, green and orange so that output status can be seen from a distance. *1. New Models (H5CX-@-N) with 100 to 240-VAC specifications. Set Value Limit You can set an upper limit for the set value to prevent unexpected operation of output devices caused by setting mistakes. Model with 4 Digits Model with 6 Digits 12 mm (actual size) 10 mm (actual size) New Previous models models Worry-free operation is achieved with the New H5CX by restricting the time that can be set. Output Counter (Display example) Easy to read from the top, bottom, and sides! Note: The H5CX-A11 and H5CX-L8 Timers have only red characters. The output counter counts the number of times the output turns ON (alarm display, count monitoring, count in increments of 1,000). This counter is useful in managing the service life of the Timer or the load.*

The Easiest Operation Operation is simplified by the Up/Down Keys for each digit on 4-digit models and Up Keys for each digit on 6-digit models. Model with 4 Digits Model with 6 Digits 1 H5CX-@-N Other Features Change the Front Panel Color The Front Panel can be replaced with an optional Front Panel (order separately) with a different color to match the installation site. Select from black, white, and light gray. Universal NPN/PNP Input DC 2-wire sensors can be connected for a wide range of input devices. Waterproof, Dust-proof Structure (UL508 Type 4X and IP66) Worry-free application is possible in locations subject to water. Note: When the Y92S-29 Waterproof Packing is used. Key Protection Black (standard) White Light gray You can replace the Front Panel. Select from any of seven protection patterns. Use the best one for the application. New Modes Modes, such as a stopwatch mode (Mode S), have been added.

Select any of 15 modes. Models with Instantaneous Contact Output Models with instantaneous contact outputs have been added to the lineup for use with self-holding circuits and as auxiliary relays. These models are also convenient when replacing analog timers. Model Number Structure Model Configuration H5CX Series Standard Type H5CX-A Series Economy Type H5CX-L Series Six-digit Type H5CX-B Series Type Model Timer Function Twin timer Two-stage settings/ forecast output Operating modes Input External connections Present value display character color Number of display digits Instantaneous contacts Gate input DIP switch settings Power supply voltage H5CX-A@-N Yes Yes No H5CX-A11@-N H5CX-L8@-N Yes Yes No H5CX-L8E@-N H5CX-B@-N No No Yes Timer Mode: 11 modes Twin Timer Mode: 4 modes NPN/PNP input Screw terminal block Red, green, or orange 4 None Supported Provided 11-pin socket NPN input Timer Mode : 4 modes Twin Timer Mode : 2 modes None Timer Mode: 2 modes NPN/PNP input Screw terminal block 8-pin socket Red 6 Provided Not supported None None Supported Provided 12 to 24 VDC 100 to 240 VAC or 24 VAC/12 to 24 VDC 2 H5CX-@-N Model Number Legend (Not all possible combinations of functions are available.) H5CX- @@@@@-N 12345 1.

*Type Classifier Symbol A B L Meaning Standard type 6-digit type Economy type 2. External Connections Symbol None 8 11 Meaning Screw terminals 8-pin socket 11-pin socket 3. Settings Symbol None W Meaning One stage Two stages 4. Output type Symbol None E S Meaning Contact output (time-limit SPDT) Contact output (time-limit SPDT + instantaneous SPDT) * Transistor output 5. Supply voltage Symbol None D Meaning 100 to 240 VAC 50/60 Hz 12 to 24 VDC/24 VAC 50/60 Hz * * The H5CX-BWSD-N is available only for 12 to 24 VDC.*

** Can be used as a time-limit DPDT output. Ordering Information List of Models Type Time specifications Operating modes External connections Inputs Outputs Contact output (time-limit SPDT) Screw terminals Signal, Reset, Gate (NPN/ PNP inputs) 11-pin socket Transistor output (SPST) Contact output (time-limit SPDT) Transistor output (SPST) Timer Mode A-2: Power ON Delay I b: Repeat cycle 1 E: Interval Z: ON/OFF-duty-adjustable flicker Twin Timer Mode toff: Flicker OFF Start 1 ton: Flicker ON Start 1 H5CX-B 0.01 to 9999.99 s 1 s to 99 h 59 min 59 s A: Signal ON Delay I 0.1 to 99999.9 min F-1: Cumulative 0.1 to 99999.9 h Screw terminals Signal, Reset, Gate (NPN/ PNP inputs) 8-pin socket Contact output (time-limit SPDT 100 to 240 VAC + instantaneous SPDT) Models with 12 to 24 VDC/ instantaneous contact outputs 24 VAC H5CX-L8E-N Transistor output (SPST) Contact output (time-limit SPDT) Supply voltage 100 to 240 VAC 12 to 24 VDC/ 24 VAC 100 to 240 VAC 12 to 24 VDC/ 24 VAC 100 to 240 VAC 12 to 24 VDC/ 24 VAC 100 to 240 VAC 12 to 24 VDC/ 24 VAC 100 to 240 VAC 12 to 24 VDC/ 24 VAC 100 to 240 VAC 12 to 24 VDC/ 24 VAC Models H5CX-A-N H5CX-AD-N H5CX-AS-N H5CX-ASD-N H5CX-A11-N H5CX-A11D-N H5CX-A11S-N H5CX-A11SD-N H5CX-L8-N H5CX-L8D-N H5CX-L8S-N H5CX-L8SD-N H5CX-A 0.001 to 9.999 s 0.*

01 to 99.99 s 0.1 to 999.9 s 1 to 9999 s 1 s to 99 min 59 s 0.1 to 999.9 min 1 to 9999 min 1 min to 99 h 59 min 0.1 to 999.9 h 1 to 9999 h Timer Mode A: Signal ON Delay I A-1: Signal ON Delay II A-2: Power ON Delay I A-3: Power ON Delay II b: Repeat cycle 1 b-1: Repeat cycle 2 d: Signal OFF Delay E: Interval F: Cumulative Z: ON/OFF-duty-adjustable flicker S: Stopwatch Twin Timer Mode toff: Flicker OFF Start 1 ton: Flicker ON Start 1 toff-1: Flicker OFF Start 2 ton-1: Flicker ON Start 2 Signal, Reset (NPN inputs) H5CX-L None H5CX-L8ED-N Transistor output (DPST) 12 to 24 VDC H5CX-BWSD-N Note: 1.

The functions that are provided depend on the model. Check detailed specifications before ordering.
2. Refer to page 33 and later for information on H5CX-B Timers (6-digit display). 3 H5CX-@-N Accessories (Order Separately) Front Panels (Replacement Parts) Models Y92P-CXT4G Y92P-CXT4S Y92P-CXT4B Color Light gray (5Y7/1) White (5Y9.2 / 0.5) Black (N1.
5) Four-digit models 12 Applicable Timers Page Note: 1. You can change the color of the front panel when mounting the Timer. The Timer is shipped with a black (N1.5) Front Panel. 2.
"TIMER" is printed on the front of Replacement Front Panels. Soft Cover Models Y92A-48F1 Remarks --Page 12 Hard Cover Models Y92A-48 Remarks --Page 12 Flush Mounting Adapter Models Y92F-30 Y92F-45 Remarks Included with models with terminal blocks. Use this Adapter to install the Timer in a cutout previously made for a DIN 72 x 72 mm device (panel cutout: 68 x 68 mm). 12 Page Waterproof Packing Models Y92S-29 Remarks Included with models with terminal blocks. Page 12 Connection Sockets Models P2CF-08 P2CF-08-E P2CF-11 P2CF-11-E P3G-08 Back Connecting Socket P3GA-11 H5CX-A11@ Type Front Connecting Socket Front Connecting Socket (Finger-safe Type) Front Connecting Socket Front Connecting Socket (Finger-safe Type) H5CX-A11@ Round crimp terminals cannot be used on Finger-safe Sockets. Use forked crimp terminals. A Y92A-48G Terminal Cover can be used with the Socket to create a finger-safe construction. H5CX-L8@ Round crimp terminals cannot be used on Finger-safe Sockets. Use forked crimp terminals. Connectable Timers Remarks Page 13 H5CX-L8@ Terminal Covers for P3G-08 and P3GA-11 Back-connecting Sockets Models Y92A-48G Remarks --Page 14 4 H5CX-A@-N/-L@-N H5CX-A@-N/-L@-N Digital Timers · Switch the display color between red, green, and orange to see the output status from a distance.*

*· Up/Down Keys for each digit enable easy operation. · Cyclic control is easy with the Twin Timer and Variable ON/OFF Duty modes. * Not supported by the H5CX-A11@ or H5CX-L8@. Specifications Ratings Item Models Classification Power supply voltage *1 Ratings Operating voltage fluctuation range Power consumption Mounting method External connections Degree of protection Digits Time ranges Timer mode Input signals H5CX-A@-N Standard Type · 100 to 240 VAC 50/60 Hz · 12 to 24 VDC/24 VAC 50/60 Hz H5CX-A11@-N H5CX-L8@-N Economy Type 85% to 110% of rated supply voltage (90% to 110% at 12 to 24 VDC) Approx. 6.2 VA at 100 to 240 VAC, Approx. 5.1 VA/2.4 W at 24 VAC/12 to 24 VDC *2 Flush mounting Flush mounting, surface mounting, DIN track mounting Screw terminals 11-pin socket 8-pin socket IEC IP66, UL508 Type 4X (indoors) for panel surface only and when Y92S-29 Waterproof Packing is used 4 digits 0.001 s to 9.*
999 s, 0.01 s to 99.99 s, 0.1 s to 999.9 s, 1 s to 9999 s, 1 s ti 99 min 59 s 0.
1 m to 999.9 min, 1 min to 9999 min, 1 min to 99 h 59 min, 0.1 h to 999.9 h, 1 h to 9999 h Elapsed time (Up), remaining time (Down) (selectable) Signal, Reset Signal, Reset, Gate (no inputs on models with instantaneous contact outputs) No-voltage Input ON impedance: 1 k max. (Leakage current: 12 mA when 0) No-voltage Input ON residual voltage: 3 V max.
ON impedance: 1 k max. OFF impedance: 100 k min. (Leakage current: 12 mA when 0) Voltage Input High (logic) level: 4.5 to 30 VDC ON residual voltage: 3 V max. Low (logic) level: 0 to 2 VDC (Input resistance: approx. 4.7 k) OFF impedance: 100 k min. No-voltage input/voltage input (switchable) Minimum input signal width: 1 or 20 ms (selectable, same for all input) Power reset (depending on output mode), external reset, manual reset, automatic reset (depending on output mode) Minimum power-opening time: 0.5 s (except for A-3, b-1, F, ton-1, and toff-1 mode) 10% max. of rated supply voltage 250 ms max.

*(Control output is turned OFF and no input is accepted during sensor waiting time.) A: Signal ON Delay I, A-1: Signal ON Delay II, A-2: Power ON Delay I, A-3: Power ON Delay II, b: Repeat Cycle 1, b-1: Repeat Cycle 2, d: Signal OFF Delay, E: Interval, F: Cumulative, Z: ON/OFF-duty-adjustable flicker, S: Stopwatch, toff: Flicker OFF Start 1, ton: Flicker ON Start 1, toff-1: Flicker OFF Start 2, ton-1: Flicker ON Start 2 Models with Instantaneous Contact Outputs A-2: Power ON Delay I, b: Repeat Cycle 1, E: Interval, Z: ON/OFF-duty-adjustable flicker, toff: Flicker OFF Start 1, ton: Flicker ON Start 1 Inputs Input method Signal, reset, gate Reset system Power reset Reset voltage Sensor waiting time Output modes Output One-shot output time 0.01 to 99.99 s · Models with Contact Outputs 5 A at 250 VAC/30 VDC, resistive load (cos =1) Minimum applied load: 10 mA at 5 VDC (failure level: P, reference value) · Transistor outpu at 125 VDC (cos =1) and a maximum current of 0.1 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected. Noise immunity Static immunity Vibration resistance Shock resistance Life expectancy Weight * Refer to Life-test Curve. 6 H5CX-A@-N/-L@-N Applicable Standards Approved safety standards UL508/Listing, UL50 Type 4X for indoor use (enclosure rating), CSA C22.2 No. 14 *1, conforms to EN61812-1 (Pollution degree 2/overvoltage category III) B300 PILOT DUTY 1/4 HP 120 VAC, 1/3 HP, 240 VAC, 5 A resistive load VDE0106/P100 CCC: Pollution degree 2, Overvoltage category II *2 (EMI) Emission Enclosure: Emission AC mains: (EMS) Immunity ESD: EMC Immunity RF-interference: Immunity Conducted Disturbance: Immunity Burst: Immunity Surge: Immunity Voltage Dip/Interruption: EN61812-1 EN55011 Group 1 class A EN55011 Group 1 class A EN61812-1 EN61000-4-2: 6 kV contact discharge (level 2) 8 kV air discharge (level 3) EN61000-4-3: 10 V/m (Amplitude-modulated, 80 MHz to 1 GHz) (level 3); 10 V/m (Pulse-modulated, 900 MHz 5 MHz) (level 3) EN61000-4-6: 10 V (0.*
*15 to 80 MHz) (level 3) EN61000-4-4: 2 kV power-line (level 3); 1 kV I/O signal-line (level 4) EN61000-4-5: 1 kV line to lines (power and output lines) (level 3); 2 kV line to ground (power and output lines) (level 3) EN61000-4-11: 0.5 cycle, 100% (rated voltage) *1. The following safety standards apply to models with sockets (H5CX-A11@ or H5CX-L8@). cUL (Listing): Applicable when an OMRON P2CF (-E) Socket is used. cUR (Recognition): Applicable when any other socket is used.*
**2. Excluding the H5CX-ASD-N/-A11SD-N/-L8SD-N. I/O Functions For details, refer to the timing charts on page 20 and page 29. Start signal Normally functions to start timing. In modes A-2 and A-3, disable timing.*
In mode S, starts and stops timing. · Resets present value. (In elapsed time mode, the present value returns to 0; in remaining time mode, the present value returns to the set value.) · Count inputs are not accepted and control output turns OFF while reset input is ON. · Reset indicator is lit while reset input is ON. Disables timing. (If a reset occurs while the gate input is ON, a reset will be performed.

*) Outputs take place according to designated operating mode when timer reaches corresponding set value. Inputs *1 Reset Gate *2 Outputs Control output (OUT) *1. The H5CX-L8E@ does not have an input.*

2. The H5CX-L@ does not have a gate input. Response Delay Time When Resetting (Transistor Output) The following table shows the delay from when the reset signal is input until the output is turned OFF. (Reference value) Minimum reset signal width 1 ms 20 ms Output delay time 0.8 to 1.2 ms 15 to 25 ms 7 H5CX-A@-N/-L@-N Connections Block Diagram (Basic insulation) Output circuit (Basic insulation) Power supply circuit (See note.) Display circuit Input circuits Internal control circuit Key switch circuit Note: Basic insulation is provided between the power supply circuit and the input circuits. However, basic insulation is not provided in the H5CX-@D-N. Terminal Arrangement Confirm that the power supply meets specifications before use. H5CX-A-N/-AD-N Signal Reset Signal Reset Gate Gate H5CX-AS-N/-ASD-N 0V 6 0V 9 6 7 8 7 8 9 1 2 3 4 5 1 2 3 4 5 Contact output (-) (+) Terminals 1 and 6 of the H5CX-AD-N are connected internally.

H5CX-A11-N/-A11D-N Transistor output (-) (+) Terminals 1 and 6 of the H5CX-ASD-N are connected internally. H5CX-A11S-N/-A11SD-N Reset Signal Gate 567 Reset Signal Internal circuit 8 9 10 Gate 567 Internal circuit 8 Unused 4 0V 3 2 1 11 Contact output Unused 4 0V 3 2 1 11 9 10 Transistor output Unused Terminals 2 and 3 of the H5CX-A11D-N are connected internally. (+) Unused Terminals 2 and 3 of the H5CX-A11SD-N are connected internally. (+) (-) (-) H5CX-L8-N/-L8D-N Internal circuit Signal Reset 4 3 2 1 0V 8 0V 5 6 7 H5CX-L8S-N/-L8SD-N Internal circuit Signal Reset 4 3 2 1 8 5 6 7 Unused Contact output Transistor output (-) (+) Terminals 1 and 2 of the H5CX-L8D-N are connected internally. H5CX-L8E-N/-L8ED-N (-) (+) Terminals 1 and 2 of the H5CX-L8SD-N are connected internally.

Transistor Output · The transistor output of the H5CX is insulated from the internal circuitry by a photocoupler, so the transistor output can be used as both NPN and PNP output. · The diode connected to the collector of the output transistor is used to absorb inverted voltage that is generated when an inductive load is connected to the H5CX. NPN Output PNP Output Internal circuit 4 5 6 7 1 8 Internal circuit Instantaneous contact output OUT1 3 2 Time-limit contact output OUT2 Load + Power for load Load + Power for load () (+) Timer Note: Do not connect unused terminals as relay terminals. + Power for load Inductive load 8 H5CX-A@-N/-L@-N Input Circuits Signal, Reset, and Gate Input No-voltage Inputs (NPN Inputs) +14 V 1 k IN Internal circuit Approx. 4. 7 k IN Internal circuit Voltage Inputs (PNP Inputs) Input Connections The inputs are no-voltage (closed or open) inputs or voltage inputs except for the H5CX-L8@. (The inputs of the H5CX-L8@ are no-voltage inputs only. The H5CX-L8E@ does not have an input.) No-voltage Inputs (NPN Inputs) Open Collector PLC or sensor Voltage Output Sensor Contact Input DC Two-wire Sensor Reset input 0 V for inputs Signal input Gate input Reset input Signal input Gate input Reset input 0 V for inputs 0 V for inputs Signal input Gate input Reset input H5CX-A@ H5CX-A11@ H5CX-L8@ 6 3 1 7 7 3 8 6 4 9 5 - H5CX-A@ H5CX-A11@ H5CX-L8@ 6 3 1 7 7 3 8 6 4 9 5 - H5CX-A@ H5CX-A11@ H5CX-L8@ 6 3 1 7 7 3 8 6 4 9 5 - H5CX-A@ H5CX-A11@ H5CX-L8@ 6 3 1 0 V for inputs 7 7 3 8 6 4 Signal input 9 5 - Note: Operate with transistor ON Note: Operate with transistor ON Note: Operate with relay ON Note: Operate with transistor ON No-voltage Input Signal Levels Short-circuit level Transistor ON · Residual voltage: 3 V max. · Impedance when ON: 1 k max. (The leakage current is approx. 12 mA when the impedance is 0 .) Open level Transistor OFF · Impedance when OFF: 100 k min. Contact input Note: Applicable Two-wire Sensor · Leakage current: 1.5 mA max.

· Switching capacity: 5 mA min. · Residual voltage: 3.0 VDC max. · Operating voltage: 10 VDC No-contact input Use contacts which can adequately switch 5 mA at 10 V The DC voltage must be 30 VDC max. Voltage Inputs (PNP Inputs) The inputs of the H5CX-L8@ are no-voltage inputs only. No-contact Input (NPN Transistor) Sensor No-contact Input (PNP Transistor) Sensor Contact Input Reset input Signal input 0 V for inputs Gate input Signal input Reset input Gate input Signal input Reset input 0 V for inputs H5CX-A@ H5CX-A11@ 6 3 7 7 8 6 9 5 H5CX-A@ H5CX-A11@ 6 3 7 7 8 6 9 5 H5CX-A@ H5CX-A11@ 6 3 0 V for inputs 7 7 8 6 9 5 Note: Operate with transistor OFF Note: Operate with transistor ON Note: Operate with relay ON Voltage Input Signal Levels High level (Input ON): 4.5 to 30 VDC Low level (Input OFF): 0 to 2 VDC Note: 1. 2. The DC voltage must be 30 VDC max. Input resistance: Approx. 4.7 k Gate input Gate input 9 H5CX-A@-N/-L@-N Nomenclature Display Section 1. Key Protect Indicator (orange) 2. Control Output Indicator (orange) 3. Reset Indicator (orange) 4.

*Present Value Display (Main display) (Character height: 12 mm, red *) * Characters on models with screw terminals (H5CX-A@) can be switched between red, green, and orange. 1 2 3 8 Operation Key 4 5 6 7 10 11 8. Mode Key (Changes modes and setting items) 9. Reset Key (Resets present value and output) 10. Up Keys 1 to 4 11.*

Down Keys 1 to 4 9 Front View 5. Time Unit Indicators (Color is same as present value display.) (If the time range is 0 min, 0 h, 0.0 h, or 0 h 0 min, these indicators flash to indicate timing operation.) (Default setting) Switches 12. Key-protect Switch OFF (Disabled) ON (Enabled) 12 13 6. Set Value Display (Sub-display) (Character height: 6 mm, green) 7. Set Value 1, 2 Indicator (green) Character Size for Present Value Display Character Size for Set Value Display 13. DIP Switch ON OFF 12mm 6mm 12345678 Note: There is no DIP switch on the H5CX-L8@. Dimensions Digital Timers Digital Timers H5CX-A-N/-AS-N (Flush Mounting Models) H5CX-AD-N/-ASD-N (Flush Mounting Models) (unit: mm) 48×48 6 78 48×48 6 59 44.

8×44.8 44.8×44.8 Note: M3.5 terminal screw (effective length: 6 mm) Note: M3.5 terminal screw (effective length: 6 mm) H5CX-A11@-N (Flush Mounting/Surface Mounting Models) H5CX-L8@-N (Flush Mounting/Surface Mounting Models) 48×48 6 63.7 14.4 48×48 6 63.7 14.2 44. 8×44.8 44.8×44.8 10 H5CX-A@-N/-L@-N Dimensions with Flush Mounting Adapter H5CX-A-N/-AS-N (Provided with Adapter and Waterproof Packing) Y92S-29 (provided) Waterproof Packing Panel Y92F-30 (provided) Flush Mounting Adapter Panel Cutouts Panel cutouts areas shown below.

(according to DIN43700).
60 min. 45+0.6 0 45+0.6 0 58 (51) 15 min. 60 min.
48 7.5 76.5 H5CX-AD-N/-ASD-N (Provided with Adapter and Waterproof Packing) Y92S-29 (provided) Waterproof Packing Panel Y92F-30 (provided) Flush Mounting Adapter 58 (51) Note: 1. The mounting panel thickness should be 1 to 5 mm. 2. To allow easier operation, it is recommended that Adapters be mounted so that the gap between sides with hooks is at least 15 mm (i.e., with the panel cutouts separated by at least 60 mm). 3. It is possible to mount Timers side by side, but only in the direction without the hooks.

*(However, if Timers are mounted side by side, water resistance will be lost.) n Units mounted side-by-side 48 7.5 57.5 H5CX-A11@-N (Adapter and Waterproof Packing Ordered Separately) Y92S-29 (order separately) Panel Waterproof Packing Y92F-30 (order separately) Flush Mounting Adapter P3GA-11 (order separately) Back-connecting Socket A A=(48n-2.5) +1 0 With Y92A-48F1 attached. A={48n-2.5+(n-1)×4} +1 0 With Y92A-48 attached. A = (51n - 5.5) +1 0 Dimensions with Front Connecting Socket 58 (51) * 103.2 48 7.*
*5 89.9 H5CX -A11@-N 100.9 H5CX-L8@-N (Adapter and Waterproof Packing Ordered Separately) Y92S-29 (order separately) Panel Y92F-30 (order separately) P3G-08 (order Waterproof Packing Flush Mounting Adapter separately) Back-connecting Socket P2CF-11(-E) (order separately) Front Connecting Socket * 92.3 58 (51) H5CX -L8@-N 90 P2CF-08(-E) (order separately) Front Connecting Socket 48 7.5 84.*
*8 * These dimensions vary with the type of DIN track (reference value). 11 H5CX-A@-N/-L@-N Accessories (Order Separately) Note: Depending on the operating environment, the condition of resin products may deteriorate, and may shrink or become harder. Therefore, it is recommended that resin products are replaced regularly. Soft Cover Y92A-48F1 Hard Cover Y92A-48 Front Panel (Replacement Part) You can change the color of the front panel when mounting the Timer. The Timer is shipped with a black (N1.*
5) Front Panel. Protecting the Timer in Environments Subject to Oil The H5CX's panel surface is water-resistive (IP@6, UL Type 4X) and so even if drops of water penetrate the gaps between the keys, there will be no adverse effect on internal circuits. If, however, there is a possibility of oil being present on the operator's hands, use the Soft Cover. The Soft Cover ensures protection equivalent to IP54 against oil. Do not, however, use the H5CX in locations where it would come in direct contact with oil. Y92P-CXT4S Cover for Timer with 4 Digits White (5Y9.2/0.5) Y92P-CXT4G Cover for Timer with 4 Digits Light gray (5Y7/1) Y92P-CXT4B Cover for Timer with 4 Digits Black (N1.5) Flush Mounting Adapter Y92F-30 Order the Flush Mounting Adapter separately if it is lost or damaged. Note: A Flush Mounting Adapter is included with models with screw terminals.

Y92F-45 Use this Adapter to install the Timer in a cutout previously made for a DIN 72 x 72 mm device (panel cutout: 68 x 68 mm). Replacement Method The Front Panel is attached to the Terminal with tabs in four locations. To remove the Front Panel, open the tabs and pull the Front Panel forward. To attach the Front Panel, press it onto the Timer so that all four tabs lodge into the groves on the body of the Timer. Tabs Grooves Waterproof Packing Y92S-29 Note: The Waterproof Packing is included with models with screw terminals. Order the Waterproof Packing separately if it is lost or damaged. The Waterproof Packing can be used to achieve IP66 protection. The Waterproof Packing will deteriorate, harden, and shrink depending on the application environment. To ensure maintaining the IP@6, UL Type 4X waterproof level, periodically replace the Waterproof Packing. The periodic replacement period will depend on the application environment.
You must confirm the proper replacement period. Use 1 year or less as a guideline. If the Waterproof Packing is not replaced periodically, the waterproof level will not be maintained. It is not necessary to mount the Waterproof Packing if waterproof construction is not required. 12 H5CX-A@-N/-L@-N Connection Sockets Front-connecting Sockets Model P2CF-08 Dimensions 20.
3 max. 50 max. Terminal arrangement and internal connections Mounting hole dimensions Two, 4.5-dia. holes 70 max.
35.4 4 6 5 4 3 Eight, M3.5 x 7.5 sems screws 7.8 Two, M4 or 4.5-dia. holes 3 21.5 max. 4.5 40±0.

2 P2CF-08-E (Finger Safe Terminal) 50 max. 40±0.2 20.3 19 7 8 1 2 Two, 4.5-dia. holes 6 5 4 3 3 1.3 (Top View) Note: The Socket can also be mounted to DIN track. P2CF-08-E 70 max. 10A250VAC RESISTIVE 35.4 7 8 1 2 4 Eight, M3.
5 x 7.5 set screws 7.8 50 max. 5 31.2 max.
4.5 P2CF-11 Two, 4.5-dia. holes 70 max. 35.
4 4 8 7 6 5 4 Two, M4 or 4.5-dia. holes Eleven, M3.5 x 7.5 sems screws 7.8 3 31.2 max. 30 4.5 40±0.2 9 10 11 1 3 2 P2CF-11-E (Finger Safe Terminal Type) 8 7 50 max.

40±0.2 6 5 Two, 4.5-dia. holes 3 P2CF-11-E (Top View) 35.4 Note: The Socket can also be mounted to DIN track. 4 70 max. 9 10A250VAC RESISTIVE 1.2 3 10 11 1 2 4 Eleven, M3.5 x 7.5 set screws 7.
8 5 4.5 Note: Round crimp terminals cannot be used on Finger-safe Sockets. Use forked crimp terminals. Back-connecting Sockets Model P3G-08 27 dia 3 4 5 6 Dimensions Terminal arrangement and internal connections 45 2 1 8 7 45 4.9 17 (Bottom View) P3GA-11 27 dia 5 4 6 7 8 45 25.
6 3 2 9 1 11 10 45 4.5 16.3 6.2 (Bottom View) Note: A Y92A-48G Terminal Cover can be used with the Socket to create a finger-safe construction. 13 H5CX-A@-N/-L@-N Terminal Covers for P3G-08 and P3GA-11 Back-connecting Sockets Model Y92A-48G Twelve, 6.
4 dia Dimensions 34 Y92A-48G UP 47.7×47.7 48×48 PC 16.5 24.6 27.6 47.4 Note: The Terminal Cover can be used with a Back-mounting Socket (P3G-08 or P3GA-11) to create a finger-safe construction. Optional Products for Track Mounting Mounting Track PFP-100N PFP-50N 7.3±0.15 4.

*5 35±0.3 15 (5) * 27±0.15 15 25 10 25 1,000 (500) * 25 10 25 1 * The values shown in parentheses are for the PFP-50N. Mounting Track PFP-100N2 4.5 35±0.3 27 24 16 29.2 15 25 10 25 1,000 25 10 25 15 1 1.5 End Plate PFP-M M4 x 8 pan head screw 10 6.2 1.8 1 50 1.*
8 11.5 10 M4 spring washer 35.5 35.3 1.3 4.
*8 16 12 Spacer PFP-S 5 44.3 34.8 16.5 Note: Order Spacers in increments of 10. 14 Operating Procedures Setting Procedure Guide Settings for Timer Operation * Use the following settings.*
*H5CX-A@-N/-L@-N Timer Settings for Twin Timer Operation * Refer to page 25. * It is not necessary to mount the Waterproof Packing if waterproof construction is not required.*

Operating Procedures for Timer Function Step1 Settings for basic functions can be performed with just the DIP switch. Note: There is no DIP switch on the H5CX-L8@. Go to Step2 . Key-protect Switch Be sure to set pin 1 to ON when using the DIP switch. ON OFF 12345678 Item 1 2 3 4 5 6 7 8 OFF ON Pin 2 ON OFF Pin 3 ON OFF OFF ON ON OFF OFF ON Pin 4 ON OFF OFF OFF OFF ON ON ON Time range 0.001 s to 9.999 s 0.01 s to 99.

99 s 0.1 s to 999.9 s 1 s to 9999 s 0 min 01 s to 99 min 59 s 0.1 min to 999.9 min 0 h 01 min to 99 h 59 min 0.1 h to 999.9 h DIP switch settings Disabled Enabled Time range Refer to the table on the right. Refer to the table on the right. UP 20 ms DOWN 1 ms ON OFF ON OFF ON OFF Output modes Timer mode Input signal width Note: All the pins are factory-set to OFF. Pin 5 Pin 6 OFF OFF ON Output mode Mode A: Signal ON delay 1 (Timer resets when power comes ON.

) Mode A-2: Power ON delay 1 (Timer resets when power comes ON.) Mode E: Interval (Timer resets when power comes ON.) Mode F: Cumulative (Timer does not reset when power comes ON.) Be sure to turn ON pin 1 of the DIP switch. Changes to DIP switch settings are enabled when the power is turned ON. (Set the DIP switch while the power is OFF.) OFF ON OFF ON ON After making DIP switch settings for basic operation, advanced functions can be added using the operation keys on the front panel. Refer to Step2 on page 16 for details. 15 H5CX-A@-N/-L@-N Timer Step2 Settings that cannot be performed with the DIP switch are performed with the operation keys. · Change to Function Setting Mode.

*Power ON 3 s min. *1 For details on operations in run mode, refer to page 19. Run mode Function setting mode 3 s min. *2 *1. If the mode is switched to the function setting mode during operation, operation will continue. *2. Changes made to settings in function setting mode are enabled for the first time when the mode is changed to run mode. Also, when settings are changed, the timer is reset (time initialized and output turned OFF). The characters displayed in reverse video are the default settings. @@If pin 1 of the DIP switch is set to ON, the setting items indicated in will not be displayed.*

Set the time range using the Time range keys. Time Range List s s s ..... h s Display Set Value 0.01 s to 99.99 s (default setting) 0.

1 s to 999.9 s For details, refer to the Time Range List. Set the timer mode using the keys. Timer mode (UP) up (DOWN) 0 min 01 s to 99 min 59 s 0.1 min to 999.

9 min 1 min to 9999 min 0 h 01 min to 99 h 59 min 0.1 h to 999.9 h down 1 s to 9999 s Set the output mode using the Output modes keys. a (A) a-1 (A-1) a-2 (A-2) a-3 (A-3) b (b) b-1 (b-1) d (d) e (E) f (F) z (Z) s (S) Note: Only modes A-2, b, E, and Z can be selected for models with instantaneous contact outputs. Set each digit for the output time using the corresponding Function setting mode Output time keys.

hold 0.01 ~ 99.99 (99.99s) (Output hold) (0.01s) (If the output time is set to 0.00, hold is displayed.) Note: Displayed for modes A, A-1, A-2, A-3, b, b-1 and S only. 1 h to 9999 h 0.001 s to 9.999 s Set the input signal width using the Input signal keys.

*(20ms) 20ms 1ms (1ms) Note: Not displayed for models with instantaneous contact outputs. NPN/PNP input Set the NPN/PNP mode using the keys. npn pnp (NPN input) (PNP input) Note: Only displayed for the H5CX-A@ and H5CX-A11@. Set the display color using the Display color keys. red (Red) grn (Green) org (Orange) r-g (Red-green) g-r (Green-red) r-o (Red-orange) o-r g-o o-g (Orange-red) (Green-orange)(Orange-green) Note: Displayed only for models with terminal screws (H5CX-A@). Instantaneous/ time-limit Set the function (instantaneous or time-limit operation) for the instantaneous output (output 1) using the Keys. 1c1c From next page To next page 2c (Instantaneous) (Time-limit) Note: Displayed only for models with instantaneous contact outputs. 16 H5CX-A@-N/-L@-N Timer From previous To previous page page Set value upper limit Set the digits for the set value limit using the corresponding keys. 1 Function setting mode 9999 (9999) (1) Key protect level Set the key protect level using the keys. kp-1 (KP-1) *1 kp-2 (KP-2) kp-3 (KP-3) kp-4 (KP-4) kp-5 (KP-5) kp-6 (KP-6) kp-7 (KP-7) Output ON count alarm set value/ monitor value *1.*

Set each digit for the output time using the corresponding keys. · Models without Instantaneous Contact Outputs Output ON count alarm set value 0 ~ 9999 (0 x 1000 times) (9999 x 1000 times) Output ON count monitor value Note: The monitor value is only displayed. @@@@It cannot be set. 17 H5CX-A@-N/-L@-N Timer Explanation of Functions Operating Procedures for Timer Function Items marked with stars ( ) can be set using the DIP switch. Time Range (timr) Set the range to be timed in the range 0.

001 s to 9,999 h. Settings of type ---- h (9,999 h) and ---- min (9,999 min) cannot be made with the DIP switch. Use the operation keys if these settings are required. Display Color (colr) (Terminal block model: H5CX-A@ only) Set the color used for the present value. Output OFF Output ON Red (fixed) Green (fixed) Orange (fixed) Red Green Red Orange Green Orange Green Red Orange Red Orange Green Timer Mode (timm) Set either the elapsed time (UP) or remaining time (DOWN) mode.

In UP mode, the elapsed time is displayed, and in DOWN mode, the remaining time is displayed. red grn org r-g g-r r-o o-r g-o o-g Output Mode (outm) Set the output mode. The possible settings are A, A-1, A-2, A-3, b, b-1, d, E, F, Z and S. Only output modes A, A-2, E, and F can be set using the DIP switch. Use the operation keys if a different setting is required. (For details on output mode operation, refer to "Timing Charts" on page 20.) Key Protect Level (kypt) Set the key protect level. Refer to "Key Protect Level" on page 32. Output Time (otim) When using one-shot output, set the output time for one-shot output (0.01 to 99.

99 s). One-shot output can be used only if the selected output mode is A, A-1, A-2, A-3, b, b-1 or S. If the output time is set to 0.00, hold is displayed, and the output is held. Instantaneous/Time-limit (otmd) Set the contact output to time-limit SPDT + instantaneous SPDT or time-limit SPDT operation. Set Value Upper Limit (sl-h) Set the upper limit for the set value when it is set in Run Mode. The limit can be set to between 1 and 9999. This setting does not apply to the ON duty in Z mode. Input Signal Width (iflt) Set the minimum signal input width (20 ms or 1 ms) for signal, reset, and gate inputs. @@@@Processing to eliminate chattering is performed for this setting.

Output ON Count Alarm Set Value (on-a) Set the alarm value for the output ON count.

The limit can be set to between 0 x 1000 (0 times) and 9999 x 1000 (9,999,000 times). Only the underlined values are set. The alarm will be disabled if 0 is set. If the total ON count of the output exceeds the alarm set value, e3 will be displayed on the Timer to indicate that the output ON count alarm value was exceeded.
Refer to "Self-diagnostic Function" on page 32 for information on the e3 display. NPN/PNP Input Mode (imod) Select either NPN input (no-voltage input) or PNP input (voltage input) as the input format. Set an NPN input when using a 2-wire sensor. For details on input connections, refer to "Input Connections" on page 9. ON Count Alarm Set Values for Outputs 1 and 2 (OUT1 and OUT2) (on1a and on2a) Set the ON count alarm values for the outputs 1 and 2.
The limit can be set to between 0 x 1000 (0 times) and 9999 x 1000 (9,999,000 times). Only the underlined values are set. The alarm will be disabled if 0 is set. If the total ON count of instantaneous output 1 or 2 exceeds the alarm set value, e3 will be displayed on the Timer to indicate that the output ON count alarm value was exceeded. Refer to "Self-diagnostic Function" on page 32 for information on the e3 display. Output ON Count Monitor Value (on-c) The monitor value is only displayed. It cannot be set. The output ON count will be 1,000 times the displayed value. ON Count Monitor Values for Outputs 1 and 2 (OUT1 and OUT2) (on1c and on2c) The monitor value for output 1 or 2 is only displayed. It cannot be set.

The output ON count will be 1,000 times the displayed value. 18 H5CX-A@-N/-L@-N Timer Operation in Run Mode Operating Procedures for Timer Function Present value Set value Set each digit for the output time using the corresponding keys. Note: H5CX-L8E@-N Precautions Set the Timer's set value before using the Timer in a self-holding circuit. When Output Mode Z Is Selected Present value ON duty ratio Set each digit for the output time using the corresponding (The keys for the 4th digit cannot be used.) keys. Present value Cycle time Set each digit for the output time using the corresponding keys. Present Value and Set Value These items are displayed when the power is turned ON. The present value is displayed in the main display and the set value is displayed in the sub-display. The values displayed will be determined by the settings made for the time range and the timer mode in function setting mode. Present Value and ON Duty Ratio (Output Mode = Z) The present value is displayed in the main display and the ON duty ratio is displayed in the sub-display. Set the ON duty ratio used in ON/ OFF-duty-adjustable flicker mode (Z) as a percentage. ON time = Cycle time x ON duty ratio (%) 100 Elapsed cycle time ON duty set as a percentage Up/Down keys used for analog adjustment of the ON duty The output accuracy will vary with the time range, even if the ON duty ratio setting is the same. Therefore, if fine output time adjustment is required, it is recommended that the time range for the cycle time is set as small as possible. Examples: 1. When Time Range = - - - - s (9999 s) 20(s) x 31(%) 100 ON duty (%) Cycle time Close Open = 6.
2(s) Control output Opening/ closing valve ON duty Fully closed Fully open 0%100% Rounded off to the nearest integer (because of the time range setting) ON time = 6 s 2. When Time Range = - -. - - s (99.99 s) 20.00(s) x 31(%) 100 = 6.
*200(s) Rounded off to 2 decimal places (because of the time range setting) ON time = 6.20 s If a cycle time is set, cyclic control can be performed in ON/OFF-dutyadjustable flicker mode simply by changing the ON duty ratio. Present Value and Cycle Time (Output Mode = Z) The present value is displayed in the main display and the cycle time is displayed in the sub-display. Set the cycle time. 19 H5CX-A@-N/-L@-N Timer Timing Charts Operating Procedures for Timer Function Models without Instantaneous Contact Outputs The gate input is not included in the H5CX-L8@ models. Mode A: Signal ON delay 1 (Timer resets when power comes ON.) Basic operation Detailed operation Power Either one-shot output or sustained output can be selected. Power Start signal * Start signal input Output Timing Gate Reset * Start signal input is disabled during timing. Timing starts when the start signal goes ON. While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF.*

The control output is controlled using a sustained or one-shot time period. Note: Output is instantaneous when setting is 0. Control output Timing diagram t t Set value UP 0 Set value DOWN 0 Mode A-1: Signal ON delay 2 (Timer resets when power comes ON.) Basic operation Detailed operation Power Power Start signal Start signal input Output Timing Gate Reset Timing diagram Timing starts when the start signal goes ON, and resets when the start signal goes OFF. While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. The control output is controlled using a sustained or one-shot time period. Note: Output is instantaneous when setting is 0. t Control output Set value UP 0 Set value DOWN 0 Mode A-2: Power ON delay 1 (Timer resets when power comes ON.) Basic operation Detailed operation Power Power Timing Output Start signal Gate Timing diagram Timing starts when the reset input goes OFF. The start signal disables the timing function (i.
e., same function as the gate input). The control output is controlled using a sustained or one-shot time period. Note: Output is instantaneous when setting is 0. Reset t Control output Set value UP 0 Set value DOWN 0 Mode A-3: Power ON delay 2 (Timer does not reset when power comes ON.
*) Basic operation Detailed operation Power Power Timing Start signal Sustained Output Gate Timing diagram Timing starts when the reset input goes OFF. The start signal disables the timing function (i.e., same function as the gate input). The control output is controlled using a sustained or one-shot time period. Note: Output is instantaneous when setting is 0. Reset t Control output Set value UP 0 Set value DOWN 0 t t 20 H5CX-A@-N/-L@-N Timer Mode b: Repeat cycle 1 (Timer resets when power comes ON.) Basic operation Detailed operation Sustained Output Power Power * Start signal input Output Start signal Timing Timing Timing Timing Gate * Start signal input is disabled during timing. Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (OFF at start). While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type). Reset Control output Timing diagram Set value UP 0 Set value DOWN 0 One-shot Output Power Power * Start signal input Output Start signal Timing Timing Timing Timing Gate * Start signal input is disabled during timing.*

Timing starts when the start signal goes ON.

*The control output is turned ON when time is up. While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type). Reset t Control output Timing diagram t Set value UP 0 Set value DOWN 0 Mode b-1: Repeat cycle 2 (Timer does not reset when power comes ON.) Basic operation Detailed operation Sustained Output Power Power * Start signal input Output TimingTiming Sustained Timing Timing Start signal Timing Gate * Start signal input is disabled during timing. Reset Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (OFF at start). While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short.*

*Set the value to at least 100 ms (contact output type). Control output Timing diagram Set value UP 0 Set value DOWN 0 One-shot Output Power Power * Start signal input Output TimingTiming Sustained Timing Timing Start signal Timing Gate * Start signal input is disabled during timing. Reset Timing starts when the start signal goes ON. The control output is turned ON when time is up. While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF.*

*Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type). t Control output Timing diagram t t t t Set value UP 0 Set value DOWN 0 21 H5CX-A@-N/-L@-N Timer Mode d: Signal OFF delay (Timer resets when power comes ON.) Basic operation Power Detailed operation Power * Start signal input Output Start signal Timing Gate * Start signal input is enabled during timing. The control output is ON when the start signal is ON (except when the power is OFF or the reset is ON).*

*The timer resets when the time is up. Note: Output functions only during start signal input when setting is 0. Reset Control output Timing diagram Set value UP 0 Set value DOWN 0 Mode E: Interval (Timer resets when power comes ON.) Basic operation Power Detailed operation Power * Start signal input Output Start signal Timing Gate * Start signal input is enabled during timing. Timing starts when the start signal comes ON. The timer resets when the time is up. While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. Note: Output is disabled when the setting is 0. Reset Control output Timing diagram Set value UP 0 Set value DOWN 0 Mode F: Cumulative (Timer does not reset when power comes ON.) Basic operation Power Detailed operation Power Start signal input Output Start signal Timing Sustained Timing Gate Start signal enables timing (timing is stopped when the start signal is OFF or when the power is OFF).*

*A sustained control output is used. Note: Output is instantaneous when setting is 0. When the H5CX is used with power start in mode F mode or F-1 (i.e., cumulative operation with output on hold), there will be a timer error (approximately 100 ms each time the H5CX is turned ON) due to the characteristics of the internal circuitry. Use the H5CX with signal start if timer accuracy is required. Reset Control output Timing diagram Set value UP 0 Set value DOWN 0 Mode Z: ON/OFF-duty-adjustable flicker (Timer resets when power comes ON.) Basic operation Power Detailed operation Power * Start signal input Start signal Timing (cycle time) Timing ON duty (%) Timing (cycle time) Timing ON duty (%) Gate Output Reset * Start signal input is disabled during timing. Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (ON at start).*

*While the start signal is ON, the timer starts when power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type). Control output Cycle time UP ON duty setting (%) ON time 0 Cycle time ON duty setting (%) ON time DOWN 0 22 Timing diagram H5CX-A@-N/-L@-N Timer Mode S: Stopwatch (Timer resets when power comes ON.) Basic operation Power Detailed operation Power Start signal Start signal input Gate/Reset Timing Gate/Reset 9999 Set time Timing diagram UP 0 Set time DOWN 0 Display (for elapsed time) * * RST flashes The signal starts and stops timing.*

The display is held and timing is continued if the reset or gate input is received during timing operation. The timer resets if the reset or gate input is received when the timing operation is stopped. Note: Output is instantaneous when setting is 0. Output Models with Instantaneous Contact Outputs Mode A-2: Power ON delay (Timer resets when power comes ON.) Basic operation Detailed operation t-a t Rt Either one-shot output or sustained output can be selected. t t-a Rt t-a Power Timing Time-limit output Instantaneous output Power Reset Key Time-limit contacts, NC Time-limit contacts, NO Instantaneous contacts, NC Instantaneous contacts, NO t = Set time, Rt = Reset time (0.5 s min.), t a < t (Indicates the time is less than the set time.) The Timer starts when the power comes ON or when the reset input goes OFF. Note: Output is instantaneous when setting is 0. Mode b: Repeat cycle 1 (Timer resets when power comes ON.) Basic operation Power t (time) Time-limit output Instantaneous output t (time) t (time) t (time) Power Detailed operation t-a t t t t-a Rt t t t t-a t-a Rt t-a Reset Key Time-limit contacts, NC Sustained Output Time-limit contacts, NO Time-limit contacts, NC One-shot Output Time-limit contacts, NO Instantaneous contacts, NC Instantaneous contacts, NO t = Set time, Rt = Reset time (0.5 s min.), t a < t (Indicates the time is less than the set time.) The Timer starts when the power comes ON or when the reset input goes OFF.

Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms. Note: H5CX-L8E@-N Precautions Set the Timer's set value before using the Timer in a self-holding circuit. 23 H5CX-A@-N/-L@-N Timer Mode E: Interval (Timer resets when power comes ON.) Basic operation Detailed operation t-a t Rt t t-a Rt t-a Power Timing Time-limit output Instantaneous output Power Reset Key Time-limit contacts, NC Time-limit contacts, NO Instantaneous contacts, NC Instantaneous contacts, NO t = Set time, Rt = Reset time (0.5 s min.), t a < t (Indicates the time is less than the set time.) The Timer starts when the power comes ON or when the reset input goes OFF.

Note: Output is not instantaneous when setting is 0. Mode Z: ON/OFF-duty adjustable flicker (Timer resets when power comes ON.) Basic operation Detailed operation t-a t dty t-a dty Rt dty t t-a dty t-a Rt t-a Power Timing (cycle time) Timing (cycle time) Time-limit output Instantaneous output Power Timing (ON duty) Timing (ON duty) Reset Key Time-limit contacts, NC Time-limit contacts, NO Instantaneous contacts, NC Instantaneous contacts, NO t = Set time, dty = ON duty time, Rt = Reset time (0.5 s min.), t a < t (Indicates the time is less than the set time.) The Timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms. Note: H5CX-L8E@-N Precautions Set the Timer's set value before using the Timer in a self-holding circuit. 24 H5CX-A@-N/-L@-N Twin Timer Setting Procedure Guide Operating Procedures for Twin Timer Function Step1 Switching to a Twin Timer Press the or Key to switch to a Twin Timer. Power ON + 1 Timer/twin timer selection mode Hold down for 1 s min. Run mode + 1 Hold down for 1 s min. tim Timer twn Twin timer Step2 Settings for basic functions can be performed with just the DIP switch. Note: There is no DIP switch on the H5CX-L8@. Go to Step3 . Key-protect Switch Be sure to set pin 1 to ON when using the DIP switch. ON OFF 12345678 Item 1 2 3 4 5 6 7 8 OFF ON Pin 2 OFF ON Pin 3 OFF OFF ON ON OFF time range 0.01 s to 99.99 s 0.1 s to 999.9 s 1 s to 9999 s 0 min 01 s to 99 min 59 s DIP switch settings OFF time range Disabled Enabled Refer to the table on the right. OFF ON ON time range Output mode Timer mode Input signal width Refer to the table on the right.

*Flicker OFF start UP 20 ms Flicker ON start DOWN 1 ms Pin 4 OFF ON OFF ON Pin 5 OFF OFF ON ON ON time range 0.01 s to 99.99 s 0.1 s to 999.9 s 1 s to 9999 s 0 min 01 s to 99 min 59 s Note: All the pins are factory-set to OFF. Be sure to turn ON pin 1 on the DIP switch. Changes to DIP switch settings are enabled when the power is turned ON. (Perform DIP switch settings while the power is OFF.) After making DIP switch settings for basic operation, advanced functions can be added using the operation keys on the front panel. Refer to Step3 on page 26 for details. 25 H5CX-A@-N/-L@-N Twin Timer To switch to twin timer operation, use the procedure given below. For details, refer to page 31. Step3 Settings that cannot be performed with the DIP switch are performed with the operation keys. · Change to Function Setting Mode. Power ON 3 s min. *1 For details on operations in run mode, refer to page 28. Run mode Function setting mode 3 s min. *2 *1. If the mode is switched to the function setting mode during operation, operation will continue. *2. Changes made to settings in function setting mode are enabled for the first time when the mode is changed to run mode. Also, when settings are changed, the timer is reset (time initialized and output turned OFF). The characters displayed in reverse video are the default settings. @@@@@@@@@@@@@@@@@@@@Set an NPN input when using a 2-wire sensor. The same setting is used for all external inputs. @@@@@@@@Set either flicker OFF start or flicker ON start. @@@@@@@@@@@@@@Note: 2. @@@@Set the ON time. 28 H5CX-A@-N/-L@-N Twin Timer Timing Charts Operating Procedures for Timer Function Models without Instantaneous Contact Outputs The gate input is not included in the H5CX-L8@ models. Mode toff: Flicker OFF start 1 (Timer resets when power comes ON.*

*) Basic operation Detailed operation Power Power * Start signal input Output Start signal Timing OFF Timing ON Timing OFF Timing ON Gate Reset * Start signal input is disabled during timing. Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (OFF at start). While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type). Control output OFF time UP ON time 0 OFF time DOWN ON time 0 Mode ton: Flicker OFF start 1 (Timer resets when power comes ON.) Basic operation Detailed operation Power Power Timing diagram * Start signal input Output Start signal Timing ON Timing OFF Timing ON Timing OFF Gate Reset * Start signal input is disabled during timing. Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (ON at start). While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type). Control output OFF time UP ON time 0 Timing diagram OFF time DOWN ON time 0 Mode toff-1: Flicker OFF start 2 (Timer does not reset when power comes ON.) Basic operation Detailed operation Power Power * Start signal input Output Start signal Timing OFF Timing ON Timing OFF a b Gate (a + b = ON time) Reset * Start signal input is disabled during timing. Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (OFF at start). While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type). Control output OFF time UP ON time 0 OFF time DOWN ON time 0 Timing diagram 29 H5CX-A@-N/-L@-N Twin Timer Mode ton-1: Flicker ON start 2 (Timer does not reset when power comes ON.) Basic operation Detailed operation Power Power * Start signal input Output Start signal Timing ON Timing OFF Timing ON a b Gate (a + b = OFF time) Reset * Start signal input is disabled during timing. Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (ON at start). While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type). Control output OFF time UP ON time 0 Timing diagram OFF time DOWN ON time 0 Models with Instantaneous Contact Outputs Mode toff: Flicker OFF start 1 (Timer resets when power comes ON.) Basic operation Power Toff time Time-limit output Instantaneous output Ton time Toff time Ton time Reset Key Time-limit contacts, NC Time-limit contacts, NO Instantaneous contacts, NC Instantaneous contacts, NO t-on = ON time, t-off = OFF time, Rt = Reset time (0.1 s min.), t a < t-off and t b < t-on (Indicates the time is less than the set time.*

*) Detailed operation t-a Power t-off t-on t-off t-b Rt t-off t-on t-off t-b t-a Rt t-a The Timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the ON time and OFF time to at least 100 ms. Mode ton: Flicker ON start 1 (Timer resets when power comes ON.) Basic operation Power Ton time Time-limit output Instantaneous output Toff time Ton time Toff time Reset Key Time-limit contacts, NC Time-limit contacts, NO Instantaneous contacts, NC Instantaneous contacts, NO t-on = ON time, t-off = OFF time, Rt = Reset time (0.1 s min.), t a < t-off and t b < t-on (Indicates the time is less than the set time.) Detailed operation t-b Power t-on t-off t-on t-a Rt t-on t-off t-on t-a t-b Rt t-b The Timer starts when the power comes ON or when the reset input goes OFF. Note: Normal output operation will not be possible if the set time is too short. Set the ON time and OFF time to at least 100 ms. Note: H5CX-L8E@-N Precautions Set the Timer's set value before using the Timer in a self-holding circuit. 30 H5CX-A@-N/-L@-N Timer/Twin Timer Selection Mode (Function Selection) Select whether the H5CX is used as a timer or a twin timer in timer/twin timer selection mode. The H5CX is also equipped with a DIP switch monitor function, a convenient function that enables the settings of the DIP switch pins to be confirmed using the front display. Power ON Key 1 Key Run mode Caution *2 + 1 1 s min.*

1 To change the mode to timer/twin timer selection mode, 1 key for 1 s min. with the hold down the key held down. The 1 key must be pressed before the key. If the key is pressed first, the mode will not change. Timer/Twin Timer Selection Mode Timer/Twin timer selection Select either tim timer operation or twn twin timer operation using the keys.

Note: The H5CX is factory-set for timer operation. Confirm the status of DIP switch pins 1 to 8 using the keys. DIP switch monitor ie ven Con nt Note: 1. This display is not supported with H5CX-L8@-N. 2. This display is only possible when DIP switch pin 1 (DIP switch settings enable/disable) is set to ON (enable). Example ON OFF 12345678 Indicates that DIP switch pin 8 is ON. Indicates that DIP switch pin 7 is OFF. Indicates that DIP switch pin 6 is ON. Indicates that DIP switch pin 5 is OFF.

*Indicates that DIP switch pin 4 is ON. Indicates that DIP switch pin 3 is OFF. Indicates that DIP switch pin 2 is ON. Indicates that DIP switch pin 1 is ON. *1. When the mode is changed to timer/twin timer selection mode, the present value is reset and output turns OFF. Timing operation is not performed in timer/twin timer selection mode. *2. Setting changes made in timer/twin timer selection mode are enabled when the mode is changed to run mode. If settings are changed, the HC5X is automatically reset (present value initialized, output turned OFF).*

*31 H5CX-A@-N/-L@-N Key Protect Level When the key-protect switch is set to ON, it is possible to prevent setting errors by prohibiting the use of certain operation keys by specifying the key protect level (KP-1 to KP-7). The key protect indicator is lit while the key-protect switch is set to ON. OFF * (Disabled) ON (Enabled) * Factory-set to OFF Key protect indicator Details Level Meaning Changing mode* Switching display during operation Reset Key Up/down key KP-1 (default setting) Invalid Valid Valid Valid KP-2 Invalid Valid Invalid Valid KP-3 Invalid Valid Valid Invalid KP-4 Invalid Valid Invalid Invalid KP-5 Invalid Invalid Invalid Invalid KP-6 Invalid Invalid Valid Valid KP-7 Invalid Invalid Invalid Valid * Changing mode to Timer/Twin Timer Selection Mode or Function Setting Mode. Self-diagnostic Function The following displays will appear if an error occurs. Main display Sub-display Not lit Not lit CPU Memory error (RAM) Memory error EEPROM *1 Output ON count alarm set value exceeded Error Output status OFF OFF OFF No change Correction method Either press the reset key or reset the power supply.*

*Reset the power supply. Reset Key Reset Key Set value after reset No change No change Factory setting No change e1 e2 e2 e3 *2 sum No change *1. This includes times when the life of the EEPROM has expired. *2. The normal display and e3 will appear alternately.*

*When the Reset Key is pressed, e3 will no longer be displayed even if the alarm set value is exceeded. (Monitoring is possible, however, because the Timer will continue without clearing the output ON count.) 32 H5CX-B@-N Digital Timer H5CX-B@-N · H5CX Digital Timers with 6-digit Display, 2-stage Setting, and Forecast Output (DIN 48 x 48-mm) · Times the daily operating hours of machinery and tools, predicting and notifying when maintenance is required. · Easy-to-read backlit negative LCD with 6 digits (displays to 99999.9 h). · The 2-stage settings and forecast output are ideal for maintenance applications. Specifications Ratings Classification Power supply voltage Ratings Operating voltage fluctuation range Power consumption Mounting method External connections Degree of protection Digits Time range Timer mode Input signals Digital Timer with 6-digit display, 2-stage setting, and forecast output 12 to 24 VDC 90% to 110% rated supply voltage Approx. 2.3 W *1 Flush mounting Screw terminals IEC IP66, UL508 Type 4X (indoors) for panel front surface only and only when Y92S-29 Waterproof Packing is used 6 digits 0.01 s to 9999.*

99 s, 1 s to 99 h 59 min 59 s, 0.1 min to 99999.9 min, 0.1 h to 99999.9 h Elapsed time (Up) Signal, reset, gate No-voltage Input Inputs Input method ON impedance : 1 k max. (Leakage current: 12 mA when 0) ON residual voltage : 3 V max. OFF impedance : 100 k min. Voltage Input High (logic) level : 4.5 to 30 VDC Low (logic) level : 0 to 2 VDC (Input resistance: approx. 4.

7 k) No-voltage (NPN) input/voltage (PNP) input (switchable) Signal, reset, gate Reset system Power reset Reset voltage Sensor waiting time Output modes Outputs Output type Minimum input signal width: 1 or 20 ms (selectable, same for all input) Power resets (only for A mode), external and manual reset Minimum power-opening time: 0.5 s (except for F-1 mode) 10% max. of rated supply voltage 250 ms max. (Control output is turned OFF and no input is accepted during sensor waiting time.) A, F-1 Transistor output: NPN open collector, 100 mA at 30 VDC max.

residual voltage: 1.5 VDC max. (Approx. 1 V) Leakage current: 0.1 mA max.

*7-segment, negative transmissive LCD; Present value: 10-mm-high characters, red Set value: 6-mm-high characters, green *2 EEPROM (overwrites: 100,000 times min.) that can store data for 10 years min. -10 to 55°C (-10 to 50°C if counters are mounted side by side) (with no icing or condensation) -25 to 70°C (with no icing or condensation) 25 to 85% Black (N1.*