

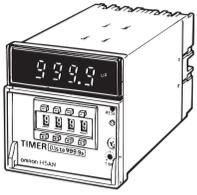
**Model H5AN**

Digital Timer

English INSTRUCTION MANUAL

Thank you for purchasing this OMRON product. This manual primarily describes the functions, performance and application methods needed for optimum use of the product. Please observe the following items when using the product.

- This product is designed for use by qualified personnel with a knowledge of electrical systems.
- Before using the product, thoroughly read and understand this manual to ensure correct use.
- Keep this manual in a safe location so that it is available for reference whenever required.



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2288981-2A (Side-A)

**Safety Precautions**

● **Key to WARNING Symbols**

⚠ **CAUTION** Indicates a potentially hazardous situation which, if not avoided, is likely to result in minor or moderate injury or property damage.

● **Warning Symbols**

⚠ **CAUTION**

Do not touch the terminals while power is being supplied. Doing so may occasionally result in minor injury due to electric shock.

Do not use the product where subject to flammable or explosive gas. Otherwise, minor injury from explosion may occasionally occur.

Never disassemble, modify or repair the product or touch any of the internal parts. Minor electric shock, fire, or malfunction may occasionally occur.

The life expectancy of output relays varies considerably with the output load and switching conditions. Always consider the application conditions and use the output relays within their rated load and electrical life expectancy. If the output relays are used past their life expectancy, contact fusing or burning may occasionally occur. Also, never exceed the rated load current. When using a heater, surely use a thermo switch in the load circuit.

Tighten the terminal screws to between 0.74 and 0.90 N·m. Loose screws may occasionally result in fire.

Do not allow pieces of metal, wire clippings, or fine metallic shavings or filings from installation to enter the product. Doing so may occasionally result in electric shock, fire, or malfunction.

**Precautions for Safety Use**

- Please comply strictly with the following instructions which are intended to ensure safe operation of the controller.
- Make sure the proper product is specified for the application.
  - For correct use, do not subject the product to the following conditions:
    - Dramatic temperature fluctuations
    - High humidity or where condensation may occur
    - Severe vibration and shock
    - Where excessive dust, corrosive gas, or direct sunlight may be present
  - This product is not waterproof or oil resistance. Do not use the product in any of the places subject to splashing liquid or oil atmosphere.
  - Use and store the product within the rated ranges given for the product model you are using. If necessary, use forced cooling. If the product is stored below -10°C, allow it to warm up for three hours at room temperature before turning ON the power supply.
  - Do not cover the vent holes on the products and the area around the product in order to ensure thermal dissipation.
  - Wiring all terminals correctly.
  - Do not wire the terminals which are not used.
  - Use specified size crimped terminals (M3.5, thickness 7.2 mm max.) for wiring with a gage of AWG 24 to AWG 18 (equal to a cross section area of 0.205 to 0.823 mm<sup>2</sup>). (The wiring stripping length is 5 to 6 mm.) Up to two wires of same size and type, or two crimped terminals can be inserted into a single terminal.
  - Use this product within the rated power supply voltage and control output.
  - Use a switch, relay, or other contact to turn the power supply ON instantaneously. If the voltage is applied gradually, the power may not be reset or output malfunctions may occur.
  - Install and clearly label a switch or circuit breaker so that the operator can quickly turn OFF the power supply.
  - Install the input signal resource and the product itself apart from noise generating sources and wiring which is carrying the high power current to cause noise.
  - Separate the product from any sources of excessive static electricity, such as forming materials and pipes carrying power and liquid materials.
  - Interlock the power to the product with a relay so that the product will not be left in an output on condition for long periods. Leaving the product in an output-on condition for a month or longer, especially in places with high temperatures, may result in deterioration to internal parts, such as an electrolytic capacitor.
  - Internal circuit voltage (12 V) is output to the no-voltage input terminals, which may cause some connected devices to malfunction or fail. Check the specifications of the input device (e.g., rated output voltage or whether a power supply circuit diode is built in). To prevent power supply devices from being subjected to charging accidents, connect a diode as in the diagram when using a power supply voltage of 12 V or less to operate input devices that do not have a diode built into the power supply circuit.
  - Do not apply the supply voltage directly from external to transistor output and external power supply terminal.
  - The exterior of the product may be damaged by organic solvents (such as thinners or benzene), strong alkali, or strong acids. Use commercially-sold alcohol when cleaning.
  - Check that the LED 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.
  - When changing the set time while power is being supplied, an inadequate push of the thumb wheel switches will display two numbers in one display window, causing the operating count to drift widely. Therefore, press the thumb wheel switches surely. Take particular care when the other three digits are all zeroes, because the improper setting of the fourth switch to create four zeroes will cause an instantaneous output.
  - Turn the power OFF first when removing the body from the case, never touch the terminals or electronic components with your hands or subject them to shock. When inserting the body, do not allow electronic components to come in contact with the case.
  - Static electricity may destroy internal components. When removing the body from the case, do not touch an electronic components other than the setting switches with your hands.
  - Use tools when separating parts for disposal.
  - When disposing of the product, observe all local ordinances as they apply.

**Precautions for Correct Use**

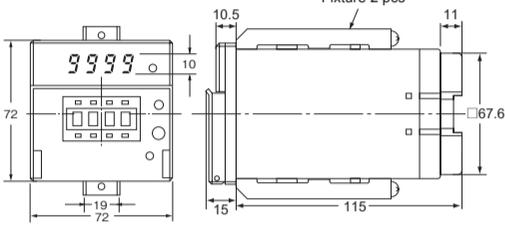
- Inrush current will be carried when turning on the power. If the capacity of the power for the product is insufficient, the product cannot start. Use a power supply, breakers, contacts which sufficient capacity.
  - 100 to 240 VAC specifications Approx. 23 A for 264 VAC
  - 100 VDC Approx. 8 A for 100 VDC
  - 12 to 24 VDC specifications Approx. 15 A for 26.4 VDC
- Since 50 ms after the power is turned ON is required as the raise time of the internal circuit voltage, note that the product may not operate in response to any input signal during this period.
- Since 50 ms after the power is turned OFF (or momentary power failures) is required as the fall time of the internal circuit voltage, note that the product may respond to input signals during this period.
- The product memorizes the status just before occurring the electric failure memory with non-volatile memory. The rewriting lifespan of the non-volatile memory is 1,000,000 or more. The non-volatile memory rewrites the setting condition into the initial setting one when the power OFF and reset input. (-M type only)
- The residual voltage between the short-circuited terminals when the reset input and the gate input are turned on, is to be 3 V Max.

**Specifications**

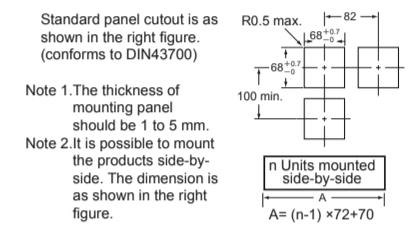
Power supply voltage	100 to 240 VAC 50/60 Hz 12 to 24 VDC, 100 VDC (20% max. ripple)
Operating voltage range	85 to 110% of rated power voltage
Power consumption	Approx. 10 VA (for 240 VAC) Approx. 5 W (for 24 VDC)
Reset, gate	0.5 sec reset time (min.) (except -M type with memory backup)
External reset, gate	0.02 sec reset signal width (min.) *Contact and transistor signal input use common terminal.
Control output	3 A 250 VAC resistive load (cosφ=1)
Contact output	Minimum load 10 mA, 5 VDC (P level, reference value) Open collector 100 mA, 30 VDC max.
Transistor output	80 mA max., 12 VDC ± 10% (with no icing and condensation) -10 to 55°C (with no icing and condensation) 35 to 85% RH
External power source	-25 to 65°C (with no icing and condensation)
Operating ambient temperature	2,000 m max.
Operating ambient humidity	Approx. 360 g
Storage temperature	100,000 operations min. (3 A 250 VAC resistive load)
Altitude	10,000,000 operations min.
Weight	
Electrical lifespan of relay	
Mechanical lifespan of relay	

**Dimensions and Installation**

■ DIMENSIONS [mm]



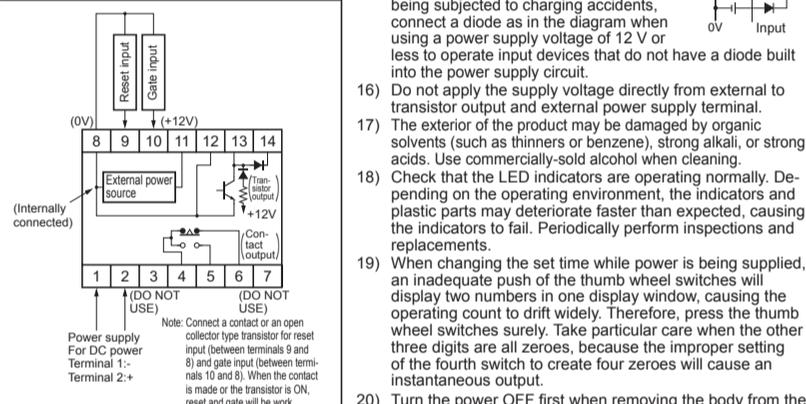
■ PANEL CUTOUT [mm]



**Programming of Specifications**

- Taking off the case**  
Open the transparent front cover and loosen the screw as shown in the figure. And then, hold the front case and draw out the body of the counter from the rear case.
- Selection of specifications**  
By changing the position of the rotary switches and the slide switches on the right PWB (SW1-SW3), you can choose various functional specifications.
- Mounting the body to the case**  
After programming, mount the body to the case. First, insert the body straightly into the case until it stops. Then, tighten the screw on the lower right side of the front case with a driver until the body is mounted to the rear case completely.
- Reset (-M type only)**  
Memory back up type needs external reset or manual reset after applying the power. Note that the operation will remain the same if without resetting.

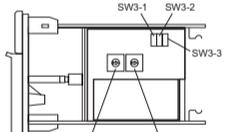
**Connection**



**Factory Settings**

Functions	SW	Factory Settings
Rated time	SW1	0.01 to 99.99s SW position: 0
Operation mode	SW2	N-mode UP operation SW position: 8
Manual reset	SW3-1	Valid
Transistor output	SW3-2	Output level "L" → "H" when time up
Memory back up (-M type only)	SW3-3	Valid

The figure below shows the position of the switches with the body draw. SW3-3 is only available for H5AN-4DM



**Self-diagnosis Function**

When an error has occurred, the bellow error codes are shown.

7 segment display	Time UP display	Description	Output
E1	OFF	CPU error	OFF
E2	OFF	Memory error (RAM)	OFF
E3	OFF	Memory error (non-volatile memory)*	OFF

\*Including the case when the rewriting lifespan of the non-volatile memory is reached.  
Recovery method  
As an action, turn the power OFF then back ON again. If the display restored to normal, then a probable cause can be external noise affecting the system. Check for external noise. In the case of E3, input gate ("0000" will be displayed) and turn power ON again. After that, if it still remains the same, the product must be repaired.

**Suitability for 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 ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases. NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

**Switch Operation and Timing Chart**

SW 1 Time Range Selector Switch

Rated time	Switch position	Setting range
99.99s	0,8	0.01 to 99.99 s
999.9s	1,9	0.1 to 999.9 s
9999s	2	1 to 9999 s
99m59s	3	1 s to 99 min 59 s
999.9m	4	0.1 to 999.9 min
99h59m	5	1 min to 99 hrs 59 min
999.9h	6	0.1 to 999.9 hrs
9999h	7	1 to 9999 hrs

Select the appropriate rating label from the rate time labels supplied as accessories, and affix it below the switches on the front panel.

**Operation Time Setting**

- The rated time is determined by the digital switches in the center of the front panel. When a rated time of 99 min 59 s or 99 hrs 59 min is selected, any value set to 6 or more (i.e. 6-9) in the order of x 10 s or x 10 min respectively will be rated as 5. Note that the digital display does not include any unit, decimal point or colon.
- The H5AN Timer is capable of reading the input data at any time during normal operation. This means that the set time can be changed during power application. This feature sets back the output from the timer by temporarily setting the longer time or quickens the output by setting the shorter time. During normal operation, the set time may be accidentally changed by touching a thumb wheel switch, causing the timer to operate with a different set time. To prevent this possibility, keep the front cover closed except when changing the set time.
- When the set time is all zeroes (e.g., 000.0 s or 00 h 00 min), there will be a momentary control output upon power application, which can be used to check normal output. When changing the set time during normal operation, pay attention not to alter the set value to this all zeroes.

SW2 Operation Mode Selector Switch

Operation mode	SW position	UP operation	DOWN operation
N	0,7 (DOWN) 8,F (UP)	Timing chart showing self-holding output	Timing chart showing self-holding output
F	1 (DOWN) 9 (UP)	Timing chart showing one shot output	Timing chart showing one shot output
C	2 (DOWN) A (UP)	Timing chart showing self-holding output	Timing chart showing self-holding output
R	3 (DOWN) B (UP)	Timing chart showing self-holding output	Timing chart showing self-holding output

Operation Mode	SW position	UP operation	DOWN operation
K	4 (DOWN) C (UP)	Timing chart showing self-holding output	Timing chart showing self-holding output
P	5 (DOWN) D (UP)	Timing chart showing self-holding output	Timing chart showing self-holding output
Q	6 (DOWN) E (UP)	Timing chart showing self-holding output	Timing chart showing self-holding output

Legend: Self-holding output One shot output (0.1 to 1 s variable)

SW3-1 Manual Reset

SW position	Timing Chart
Valid (ON)	Timing chart showing manual reset input, external reset, and reset signals.
Invalid (OFF)	Timing chart showing manual reset input, external reset, and reset signals.

SW3-2 Transistor Output Level

SW position	Timing Chart
Output level "L" → "H" when time up (ON)	Timing chart showing power supply input, transistor H output L, and time up.
Output level "H" → "L" when time up (OFF)	Timing chart showing power supply input, transistor H output L, and time up.

SW3-3 Memory Back Up (-M type only)

SW position	Timing Chart
Valid (ON)	Timing chart showing manual reset input, external reset, and reset signals.
Invalid (OFF)	Timing chart showing manual reset input, external reset, and reset signals.

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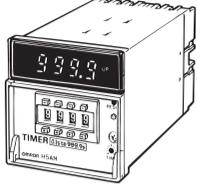
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形H5AN クォーツタイマ

Japanese 取扱説明書

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2288981-2A (Side-B)

安全上のご注意

警告表示の意味
注意
警告表示
感電により軽度の傷害が稀に起こる恐れがあります。
爆発により稀に軽度の傷害の恐れがあります。
軽度の感電、発火、機器の故障が稀に起こる恐れがあります。
出力リレーの寿命は、開閉容量、開閉条件により大きく異なるので必ず実使用条件を考慮し、定格負荷、電氣的寿命回数を必ずご確認ください。

安全上の要点

- 以下に示すような項目は安全を確保する上で必要なことですので必ず守ってください。
1) ご希望通りの製品であるかお確かめの上ご使用ください。
2) 下記環境下での使用は避けてください。
3) 本製品は防水、防油構造ではありません。
4) 周囲温度および湿度は仕様範囲内で使用および保存してください。
5) 放熱を妨げないよう本体の通風孔および周辺をふさがないでください。
6) 端子の極性を確認し、正しく配線してください。
7) 使用しない端子には何も接続しないでください。
8) 配線用圧着端子は、指定サイズ(M3.5、幅7.2mm以下)のものをご使用ください。
9) 電源電圧、制御出力、外部供給電源は仕様、定格の範囲内でご使用ください。
10) 電源投入・遮断はスイッチ、リレーなどの接点を介して一気に行ってください。
11) 作業者がすぐ電源をOFFできるような、スイッチまたはサーキットブレーカを設置し、適切に表示してください。
12) ノイズ発生源、ノイズのつた強電線から入力信号源の機器、入力信号線の配線、および製品本体を離してください。
13) 多量の静電気が発生する環境(成形材料、粉・流体材料のパイプ搬送の場合など)でご使用の場合は静電気発生源を製品本体より離してください。
14) 高温中(長時間、出力ONの状態)で放置されますと、内部部品(長時間、出力ONの状態)の劣化を早める恐れがあります。
15) 無電圧入力端子には内部回路電圧(約12V)が出ています。
16) 無接点出力および、外部供給電源端子には外部から直接電圧を印加しないでください。
17) 本体の外装は有機溶剤(シンナー・ベンジンなど)強アルカリ、強酸化物質に侵されず使用しないでください。
18) 表示(LED)が正常に動作していることをご確認ください。
19) 通電中に設定時間を変更する場合、サムロータリ・スイッチの数字表示窓に2つの数字が見えるような中途半端なプッシュ状態を繰り返すと動作時間が大きく狂いますので、サムロータリ・スイッチは確実にプッシュしてください。
20) ドローアウトする場合は電源をOFFしてから行い、絶対端子や電子部品に手を触れたり、衝撃を与えたりしないでください。
21) 静電気により内部部品が破損する恐れがあります。
22) 廃棄時に分別する時は、工具を使用してください。
23) 本製品を廃棄する場合は、各地方自治体の産業廃棄物処理方法に従って処理してください。

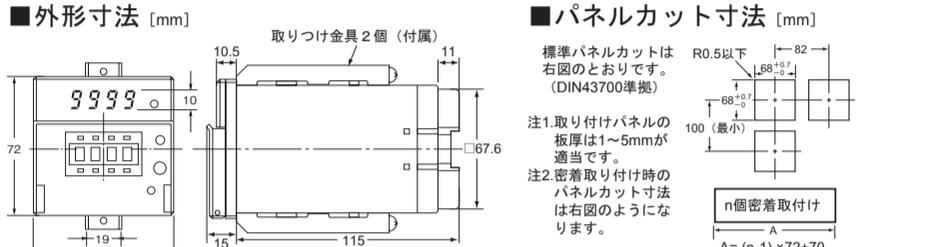
使用上の注意

- 1) 電源投入時に短時間ですが突入電流が流れ、電源の容量によって起動しないことがありますので、十分な容量の電源、ブレーカ、接点をご使用ください。
2) 電源投入後50msの間は内部回路電圧の立ち上がり時間のため、この間の入力信号に対しては作動しないことがあります。
3) 電源開放後(停電直後)50msの間は内部回路電圧の立ち下り時間のため、この間の入力信号に対しては作動してしまふことがあります。
4) 不揮発性メモリにより停電記憶を行っており、書き込み寿命100万回以上です。
5) リセット入力、ゲート入力のON時における短絡両端間の残留(飽和)電圧は、3V以上にならないようご注意ください。

定格(仕様)

Table with specifications: 電源電圧 (AC100~240V 50/60Hz), 許容電圧変動範囲 (定格電源電圧の85~110%), 消費電力 (約10VA), リセット、ゲート電源リセット (最小電源開放時間0.5s), 外部リセット、ゲート制御出力 (AC250V 3A抵抗負荷), 無接点出力 (最小適用負荷 DC5V 10mA), 外部供給電源 (DC12V±10%, 80mA以下), 使用周囲温度 (-10~+55°C), 使用周囲湿度 (35~+85%), 保存周囲温度 (-25~+65°C), 高度 (2,000m以下), 質量 (約360g), リレーの電氣的寿命 (10万回以上), リレーの機械的寿命 (1,000万回以上)

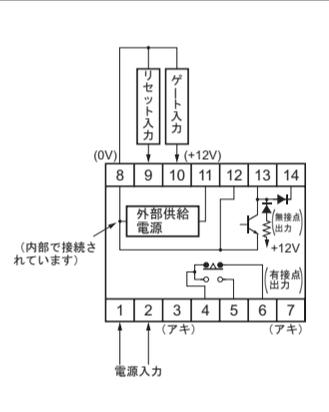
外形および取付寸法



仕様切り替えの方法

1. 本体の引き出し
2. 仕様の選択
3. 本体の収納
4. リセット
手順を説明する図解とテキスト。

端子配列



工場出荷時の設定

Table of factory settings: 機能 (時間仕様, 動作モード, 手動リセット, 無接点出力, 停電記憶), SW (SW1, SW2, SW3-1, SW3-2, SW3-3), 出荷時設定内容 (0.01s~99.99s, Nモード, 有効, タイムアップ動作時, 有効)

動作時間の設定

時間の数値セットは全面中央部のデジタル・スイッチにて行ってください。
“常時読込方式”を採用しており、通電中でも設定が変更できます。
“セット値をオール“0” (たとえば000.0sや00h00min) にしますと制御出力が瞬時にせまらず、時間“ゼロ”でのテストなどに使用できます。

スイッチの操作と動作チャート

SW1 時間仕様選定スイッチ
SW2 動作モード選定スイッチ
動作モードとSW位置の対応表と動作チャート。

自己診断機能

Table for self-diagnosis: 7セグメント表示 (E1, E2, E3), タイムUP表示 (OFF), 内容 (CPU異常, メモリ異常, メモリ異常), 出力 (OFF, OFF, OFF)

ご使用に際してのご承諾事項

当社は、一般工業製品向けの汎用品として設計製造されています。
(a) 高い安全性が必要とされる用途
(b) 高い信頼性が重要な用途
(c) 厳しい条件または環境での用途
(d) カタログ等に記載のない条件や環境での用途

お問い合わせ先

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SW3-1手動リセット
SW3-2無接点出力
SW3-3停電記憶 (-Mタイプのみ)
動作チャートとSW位置の対応表。