

# ATS Series

## Multi Function Timer with Free power, Compact size W38×H42mm

### ■ Features

- Wide power supply range  
: 100-240VAC 50/60Hz, 24-240VDC (universal),  
24VAC 50/60Hz / 24VDC (universal), 12VDC
- Various output operations(6 operation modes)
- Multi time range (12 types of time range)
- Wide time setting range (0.1 sec to 30 hour)
- Close and DIN rail mounting  
with a dedicated socket (PS-M8) width 41mm
- Easy mounting and installation/maintenance  
with dedicated bracket for DIN 48×48mm



**⚠ Please read "Caution for your safety" in operation manual before using.**



### ■ Ordering information

|            |          |          |          |          |                        |
|------------|----------|----------|----------|----------|------------------------|
| <b>ATS</b> | <b>8</b> | <b>—</b> | <b>4</b> | <b>1</b> |                        |
|            |          |          |          |          | Time range             |
|            |          |          |          |          | 1                      |
|            |          |          |          |          | 3                      |
|            |          |          |          |          | Power supply           |
|            |          |          |          |          | 1                      |
|            |          |          |          |          | 2                      |
|            |          |          |          |          | 4                      |
|            |          |          |          |          | Number of plug pins    |
|            |          |          |          |          | 8                      |
|            |          |          |          |          | Item                   |
|            |          |          |          |          | ATS Small Analog Timer |

※Sockets (PG-08, PS-08, PS-M08) are sold separately.

|            |           |          |          |          |                        |
|------------|-----------|----------|----------|----------|------------------------|
| <b>ATS</b> | <b>11</b> | <b>—</b> | <b>4</b> | <b>1</b> | <b>D</b>               |
|            |           |          |          |          | Output                 |
|            |           |          |          |          | D                      |
|            |           |          |          |          | E                      |
|            |           |          |          |          | Time range             |
|            |           |          |          |          | 1                      |
|            |           |          |          |          | 3                      |
|            |           |          |          |          | Power supply           |
|            |           |          |          |          | 1                      |
|            |           |          |          |          | 2                      |
|            |           |          |          |          | 4                      |
|            |           |          |          |          | Number of plug pins    |
|            |           |          |          |          | 11                     |
|            |           |          |          |          | Item                   |
|            |           |          |          |          | ATS Small Analog Timer |

※Sockets (PG-11, PS-11) are sold separately.

### ■ Specifications

| Model                      | ATS8-□1   | ATS8-□3   | ATS11-□1D   | ATS11-□3D            | ATS11-□1E  | ATS11-□3E                                     |
|----------------------------|---|---|---|----------------------|--|---|
| Function                   | Multi Function Timer  |   |   |                      |  |   |
| Control time setting range | 0.1sec to 10hour  | 0.3sec to 30hour  | 0.1sec to 10hour  | 0.3sec to 30hour     | 0.1sec to 10hour   | 0.3sec to 30hour                              |
| Power supply               | •100-240VAC 50/60Hz, 24-240VDC, universal •24VAC 50/60Hz, 24VDC, universal •12VDC |   |   |                      |  |   |
| Allowable voltage range    | 90 to 110% of rated voltage   |   |   |                      |  |   |
| Power consumption          | •100-240VAC: 4.2VA, 24-240VDC: 2W<br>•24VAC: 4.5VA, 24VDC: 2W •12VDC: 1.5W        |   | •100-240VAC : 3.5VA, 24-240VDC : 1.5W<br>•24VAC : 4VA, 24VDC :1.5W •12VDC : 1W  |                      | •100-240VAC : 4.2VA, 24-240VDC : 2W<br>•24VAC : 4.5VA, 24VDC : 2W<br>•12VDC : 1.5W |   |
| Return time                | Max. 100ms  |   |   |                      |  |   |
| Min. input signal width    | START<br>INHIBIT<br>RESET   |   | Max. 50ms   |                      |  |   |
| Input                      | START<br>INHIBIT<br>RESET   |   | No-voltage input - Short-circuit impedance : Max. 1kΩ,<br>Residual voltage : Max. 0.5V<br>Open-circuit impedance : Max. 100kΩ |                      |  |   |
| Time operation             | Power ON Start  |   | Signal ON Start   |                      |  |   |
| Control output             | Contact type  | Time limit DPDT(2c) or Instantaneous SPDT(1c)+Time limit SPDT(1c) selectable by output operation mode |   | Time limit DPDT (2c) |  | Time limit SPDT (1c), Instant limit SPDT (1c) |
|                            | Contact capacity  | 250VAC 3A resistive load  |   |                      |  |   |
| Relay life cycle           | Mechanical  | Min. 10,000,000 operations  |   |                      |  |   |
|                            | Electrical  | Min. 100,000 operations (250VAC 3A resistive load)  |   |                      |  |   |

## Specifications

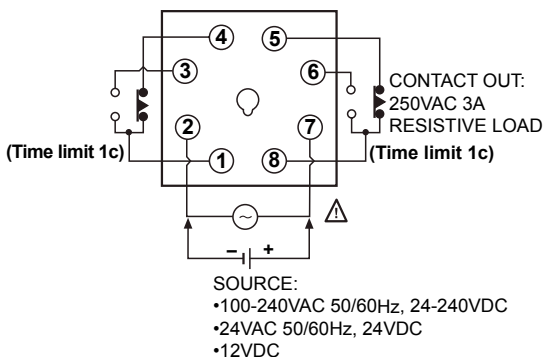
| Model                 | ATS8-□1   | ATS8-□3  | ATS11-□1D | ATS11-□3D | ATS11-□1E | ATS11-□3E |
|-----------------------|---|--|-----------|-----------|-----------|-----------|
| Repeat error          | Max. ±0.2% ±10ms  |  |           |           |           |           |
| Setting error         | Max. ±5% ±50ms  |  |           |           |           |           |
| Voltage error         | Max. ±0.5%  |  |           |           |           |           |
| Temperature error     | Max. ±2%  |  |           |           |           |           |
| Insulation resistance | 100MΩ(at 500VDC megger)   |  |           |           |           |           |
| Dielectric strength   | 2000VAC 50/60Hz for 1 min.                                      |  |           |           |           |           |
| Noise resistance      | ±2kV the square wave noise (pulse width 1μs) by noise simulator |  |           |           |           |           |
| Vibration             | Mechanical  | 0.75mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 1 hour |           |           |           |           |
|                       | Malfunction   | 0.5mm mplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 10 min.  |           |           |           |           |
| Shock                 | Mechanical  | 300m/s <sup>2</sup> (approx. 30G) in each of X, Y, Z directions 3 times                          |           |           |           |           |
|                       | Malfunction   | 100m/s <sup>2</sup> (approx. 10G) in each of X, Y, Z directions 3 times                          |           |           |           |           |
| Environment           | Ambient temperature   | -10 to 55°C, storage: -25 to 65°C  |           |           |           |           |
|                       | Ambient humidity  | 35 to 85%RH, storage: 35 to 85%RH  |           |           |           |           |
| Approval              | CE, RoHS  |  |           |           |           |           |
| Accessory             | Bracket   |  |           |           |           |           |
| Unit weight           | Approx. 72g   |  |           |           |           |           |

※Environment resistance is rated at no freezing or condensation.

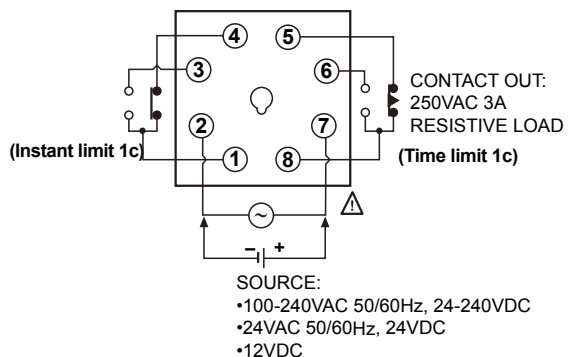
## Connections

### ○ ATS8

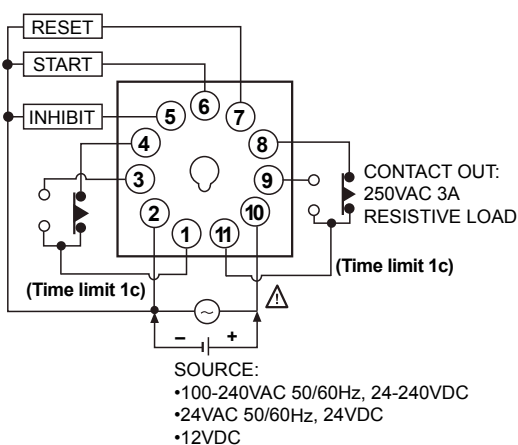
●When selecting [A], [F]  
output operation mode



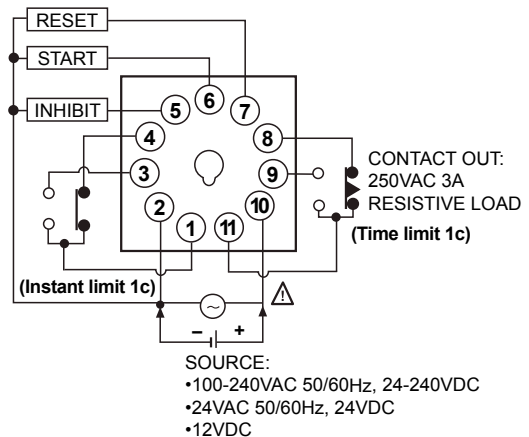
●When selecting [A1], [B], [F1], [I]  
output operation mode



### ○ ATS11-□□D



### ○ ATS11-□□E



(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/Socket

(H) Temp. controller

(I) SSR/ Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/ Speed/ Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching mode power supply

(Q) Stepper motor& Driver&Controller

(R) Graphic/ Logic panel

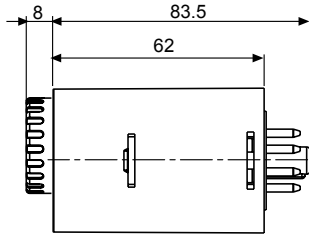
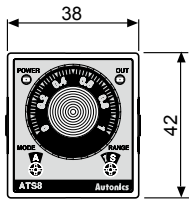
(S) Field network device

(T) Software

(U) Other

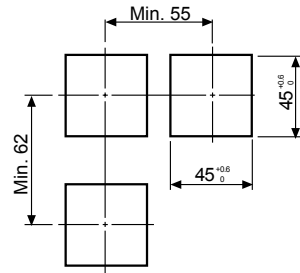
# ATS Series

## ■ Dimensions

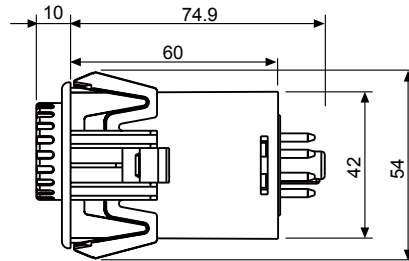
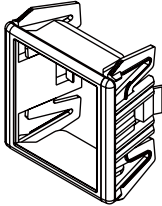


## ● Panel cut-out

(unit : mm)



## ● Bracket



## ■ Parts description

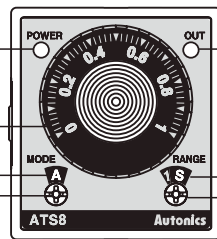
Operation/Power indication LED  
(Flashes for timer operation,  
Turns ON for timer stop)

Time setting dial

Output operation mode indicator

- ATS8  
(A, A1, B, F, F1, I mode)
- ATS11  
(A, F, F1, C, D, I mode)

Output operation mode setting SW



Output operation indication LED  
[Time limit output operation(ON) : Turns ON]

Time range indication  
(1S, 10S, 1M, 10M, 1H, 10H)

Time range setting switch

※Turn the time range setting switch and the output operation mode setting switche to clockwise(CW) direction.

## ■ Time range

| Time range | Time unit | ATS8-□1 / ATS11-□1 | ATS8-□3 / ATS11-□3 |
|------------|-----------|--------------------|--------------------|
|            |           | Time range         | Time range         |
| 1S         | sec       | 0.1 to 1 sec       | 0.3 to 3 sec       |
| 10S        |           | 1 to 10 sec        | 3 to 30 sec        |
| 1M         | min       | 0.1 to 1 min       | 0.3 to 3 min       |
| 10M        |           | 1 to 10 min        | 3 to 30 min        |
| 1H         | hour      | 0.1 to 1 hour      | 0.3 to 3 hour      |
| 10H        |           | 1 to 10 hour       | 3 to 30 hour       |

## ■ Output operation mode for each model

### ●ATS8

| Display | Output operation mode |
|---------|-----------------------|
| A       | Power ON Delay        |
| A1      | Power ON Delay 1      |
| B       | Power ON Delay 2      |
| F       | Flicker (OFF Start)   |
| F1      | Flicker 1 (ON Start)  |
| I       | Interval              |

### ●ATS11

| Display | Output operation mode |
|---------|-----------------------|
| A       | Signal ON Delay       |
| F       | Flicker (OFF Start)   |
| F1      | Flicker 1 (ON Start)  |
| C       | Signal OFF Delay      |
| D       | Signal ON/OFF Delay   |
| I       | Interval              |

## ■ Output operation mode(ATS8)

[ t : Setting time, t>t-a, Rt : Return time, Rt1>Rt ]

| Mode   | Time chart                                 |
|--|--|
| <b>A</b><br><b>Power ON Delay</b>                      |  |
| <b>A1</b><br><b>Power ON Delay 1 (One-shot output)</b> | <p>※One-shot output is 0.5 sec. fixed.</p> |
| <b>B</b><br><b>Power ON Delay 2</b>                    |  |
| <b>F</b><br><b>Flicker (OFF Start)</b>                 |  |
| <b>F1</b><br><b>Flicker 1 (ON Start)</b>               |  |
| <b>I</b><br><b>Interval</b>                            |  |

※When using F, F1 output operation modes, if the time is set too short, the output may not work properly due to contact output response time. Please set the time at least over 100ms.

- (A) Photo electric sensor
- (B) Fiber optic sensor
- (C) Door/Area sensor
- (D) Proximity sensor
- (E) Pressure sensor
- (F) Rotary encoder
- (G) Connector/Socket
- (H) Temp. controller
- (I) SSR/Power controller
- (J) Counter
- (K) Timer
- (L) Panel meter
- (M) Tacho/Speed/Pulse meter
- (N) Display unit
- (O) Sensor controller
- (P) Switching mode power supply
- (Q) Stepper motor& Driver&Controller
- (R) Graphic/Logic panel
- (S) Field network device
- (T) Software
- (U) Other

## Output operation mode (ATS11)

[ t : Setting time,  $t=t_1+t_2$ ,  $t>t-a$  ]

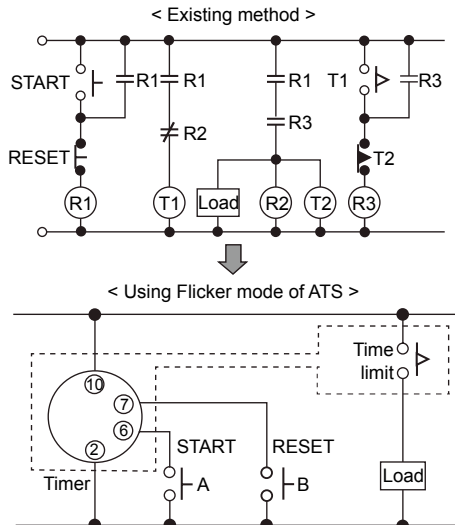
| Mode                                     | Time chart |
|--|------------|
| <b>A</b><br><b>Signal ON Delay</b>       |            |
| <b>F</b><br><b>Flicker (OFF Start)</b>   |            |
| <b>F1</b><br><b>Flicker 1 (ON Start)</b> |            |
| <b>C</b><br><b>Signal OFF Delay</b>      |            |
| <b>D</b><br><b>Signal ON/OFF Delay</b>   |            |
| <b>I</b><br><b>Interval</b>              |            |

- Note) 1. If power is cut or the RESET terminal is short-circuited, the timer will be reset.  
 2. If the INHIBIT terminal is short-circuited during a time limit operation, the time will stop.  
 3. When using F, F1 output operation modes, if the time is set too short, the output may not work properly due to contact output response time. Please set the time at least over 100ms .

## ■ Proper usage

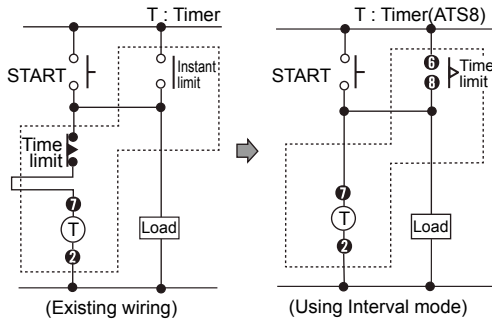
### ○ Flicker mode

- Flicker mode which needs 3 subsidiary relays and 2 timers is available with an ATS timer.
- You can organize flicker function economically.
- Start it with a switch A and reset it with a switch B.



### ○ Interval mode

When using interval mode, you can simply organize instant limit on, time limit off (self hold circuit).



### ○ Conditions of input signal (ATS11-□□D, ATS11-□□E)

#### 1. Input with contact

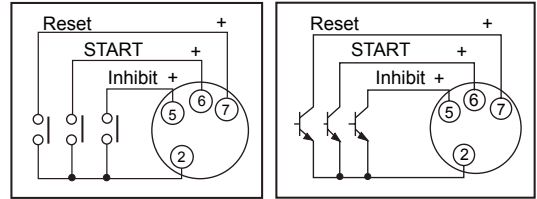
Use a switch which is gilded and has good reliability of contact.

Use a switch which has short bound (chattering) time for input contact because bound(chattering) time of contact timer may be error for operation time. Open resistance should be over 100kΩ and short resistance should be below 1kΩ.

※Use contact which has good reliability to open/close for 0.4mA small current.

#### 2. Input with NPN open collector type

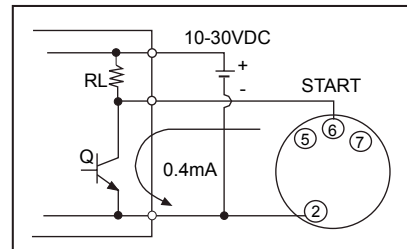
Characteristics of transistor should be  $V_{ce0} = \text{min. } 25V$ ,  $I_c = \text{min. } 10mA$ ,  $I_{cbo} = \text{max. } 0.2\mu A$ , residual voltage = max. 0.5V.



#### 3. Input with NPN universal type

For non-contact circuit (proximity sensor, photoelectric sensor, etc.) which output voltage range is 10-30VDC, voltage output is also available as input signal not as open collector output.

In this case, when signal changes from H to L, a timer starts. Residual voltage should be below 0.5V when transistor (Q) is ON.



### ○ Terminal connection

- Refer to the connection diagrams and wire it correctly.
- Power connection

For power connection of ATS Series, when it is AC power, connect it to the designated power terminal regardless of polarity. When it is DC power, be sure that the polarity for connecting.

| Power voltage | 8-pin type     | 11-pin type    |
|---------------|----------------|----------------|
| AC type       | Terminal ② - ⑦ | Terminal ② - ⑩ |
| DC type       | Terminal ② - ⊖ | Terminal ② - ⊖ |
|               | Terminal ⑦ - ⊕ | Terminal ⑩ - ⊕ |

- Turn OFF a power switch and be sure that not to supply induced voltage, residual voltage between timer power terminals. (When wiring power cable parallel with high voltage line, power line, induced voltage may occur between power terminals.)
- For DC power, ripple should be below 10% and power voltage should be within the allowable range.
- Use contact such as switch, relay, etc to supply power voltage at once. If supplying power slowly, its time may be up regardless of set value or power may be not reset.
- Load for control output should be below the rated load capacity.

(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/Socket

(H) Temp. controller

(I) SSR/ Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/ Speed/ Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching mode power supply

(Q) Stepper motor& Driver&Controller

(R) Graphic/ Logic panel

(S) Field network device

(T) Software

(U) Other

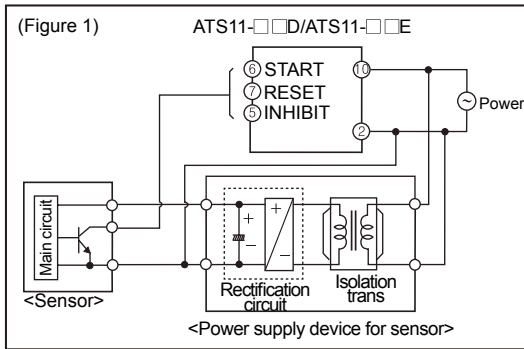
# ATS Series

## ◎ Changing of set time, time range, operation mode

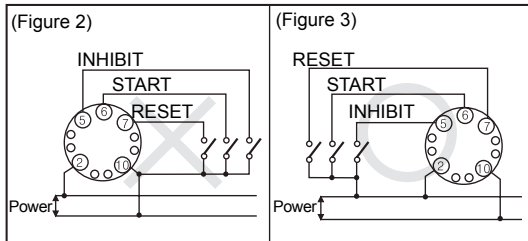
It may cause malfunction when changing set time, time range, or operation mode during timer operation. Turn OFF the power and change set time, time range, or operation mode.

## ◎ Input connection

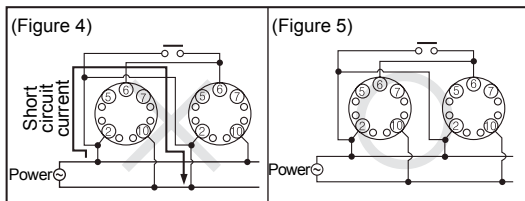
- Power circuit of ATS11-□□D/ATS11-□□E timer does not use trans. Use isolation transformer which secondary part is not grounded as (Figure1) to cut off peripheral current flow for supplied power to external input devices.



- As (Figure 2), if using terminal ⑩ as common terminal of input signal, it may cause damage to inner circuit of ATS11-□□D/ATS11-□□E timer. Use ② terminal as common terminal referring to (Figure 3).



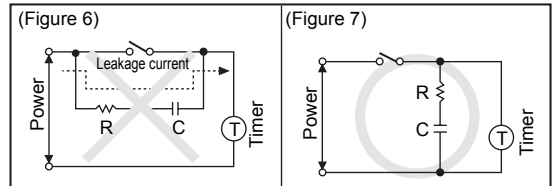
- When controlling several timers by one input contact or transistor, do not wire it as (Figure 4). This wiring causes short current due to not accorded phase of power. Wire it as (Figure 5) to accord to phase of power.



- Inhibit, Start, Reset signal is supplied to short input terminal ②-⑤, ②-⑥, ②-⑦. Be sure that if connecting other terminals or supplying over voltage, inner circuit is damaged.
- Do not wire input(START, RESET, INHIBIT) cable parallel with or same with high voltage line, power line.
- Use shield cable when input(START, RESET, INHIBIT) cable is longer. Cable length should be as short as possible.

## ◎ Common

- Be sure that when using a timer at high temperature for a long time, it may cause deterioration for inner parts(electrolytic condenser, etc.).
  - When supplying the power to timer, do not wire it as (Figure 6). This wiring causes timer malfunction due to path of peripheral leakage current from resistance and condenser.
- Connect resistance and condenser as (Figure 7) to prevent from timer malfunction by peripheral leakage current .



- Do not use this unit at below places.
- Place where temperature or humidity is out of the rated specifications.
- Place where there is condensation by temperature changes.
- Place where flammable gas or corrosive gas.
- Place where there are dust, oil or severe vibration or impact.
- Place where strong alkalis or acids are used.
- Place where there are direct ray of the sun.
- Place where strong magnetic field or electric noise are generated