## ATN Series

### Multi Function Timer

**DIN W48×H48mm, Universal voltage multi-function timer**

### Features
- Realization of wide range of power supply: 100-240VAC 50/60Hz / 24-240VDC universal, 24VAC 50/60Hz / 24VDC universal, 12VDC
- Various output operation (6 kinds modes)
- Multi time range (16 kinds of time range)
- Wide control time (0.05sec. to 100hour)
- Easy setting of time, time range, output operation mode
- Easy to check output status by LED display

### Ordering information

<table>
<thead>
<tr>
<th>Model</th>
<th>AT8N-</th>
<th>AT11EN-</th>
<th>AT11DN-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Multi function timer</td>
<td>Multi function timer</td>
<td>Multi function timer</td>
</tr>
<tr>
<td>Control time setting range</td>
<td>0.05 sec. to 100 hour</td>
<td>0.05 sec. to 100 hour</td>
<td>0.05 sec. to 100 hour</td>
</tr>
<tr>
<td>Power supply</td>
<td>100-240VAC/24-240VDC universal</td>
<td>100-240VAC/24-240VDC universal</td>
<td>100-240VAC/24-240VDC universal</td>
</tr>
<tr>
<td>Allowable voltage range</td>
<td>90 to 110% of rated voltage</td>
<td>90 to 110% of rated voltage</td>
<td>90 to 110% of rated voltage</td>
</tr>
<tr>
<td>Power consumption</td>
<td>100-240VAC : 4.3VA, 24-240VDC : 2W</td>
<td>100-240VAC : 4.3VA, 24-240VDC : 2W</td>
<td>100-240VAC : 4.3VA, 24-240VDC : 2W</td>
</tr>
<tr>
<td>Reset time</td>
<td>Max. 100ms</td>
<td>Max. 100ms</td>
<td>Max. 100ms</td>
</tr>
<tr>
<td>Min. input signal width</td>
<td>START</td>
<td>INHIBIT</td>
<td>RESET</td>
</tr>
<tr>
<td>Input</td>
<td>START</td>
<td>INHIBIT</td>
<td>RESET</td>
</tr>
<tr>
<td>Timing operation</td>
<td>Power ON start type</td>
<td>Signal ON Start type</td>
<td>Power ON start type</td>
</tr>
<tr>
<td>Control output</td>
<td>Contact type</td>
<td>Contact type</td>
<td>Contact type</td>
</tr>
<tr>
<td>Contact capacity</td>
<td>250VAC 5A resistive load</td>
<td>250VAC 5A resistive load</td>
<td>250VAC 5A resistive load</td>
</tr>
<tr>
<td>Relay life cycle</td>
<td>Mechanical</td>
<td>Min. 10,000,000 operations</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Electrical</td>
<td>Min. 100,000 operations (250VAC 5A resistive load)</td>
<td>Min. 100,000 operations</td>
<td>Min. 100,000 operations</td>
</tr>
<tr>
<td>Repeat error</td>
<td>Max. ±0.2% ±10ms</td>
<td>Max. ±0.2% ±10ms</td>
<td>Max. ±0.2% ±10ms</td>
</tr>
<tr>
<td>SET error</td>
<td>Max. ±5% ±50ms</td>
<td>Max. ±5% ±50ms</td>
<td>Max. ±5% ±50ms</td>
</tr>
<tr>
<td>Voltage error</td>
<td>Max. ±0.5%</td>
<td>Max. ±0.5%</td>
<td>Max. ±0.5%</td>
</tr>
<tr>
<td>Temperature error</td>
<td>Max. ±2%</td>
<td>Max. ±2%</td>
<td>Max. ±2%</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>Min. 100MO at 500VDC megger</td>
<td>Min. 100MO at 500VDC megger</td>
<td>Min. 100MO at 500VDC megger</td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>2000VAC 50/60Hz for 1 minute</td>
<td>2000VAC 50/60Hz for 1 minute</td>
<td>2000VAC 50/60Hz for 1 minute</td>
</tr>
<tr>
<td>Environment</td>
<td>Ambient temperature -10 to 55℃, storage: -25 to 65℃</td>
<td>Ambient temperature -10 to 55℃, storage: -25 to 65℃</td>
<td>Ambient temperature -10 to 55℃, storage: -25 to 65℃</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>35 to 85%RH</td>
<td>35 to 85%RH</td>
<td>35 to 85%RH</td>
</tr>
<tr>
<td>Approval</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Accessory</td>
<td>Bracket</td>
<td>Bracket</td>
<td>Bracket</td>
</tr>
<tr>
<td>Unit weight</td>
<td>Approx. 90g</td>
<td>Approx. 90g</td>
<td>Approx. 90g</td>
</tr>
</tbody>
</table>

※Environment resistance is rated at no freezing or condensation.
ATN Series

Connections

**AT8N**
- [A], [F] mode
  - SOURCE:
    - 100-240VAC 50/60Hz, 24-240VDC
    - 24VAC 50/60Hz, 24VDC
    - 12VDC

**AT11DN**
- [A1], [B], [F1], [I] mode
  - CONTACT:
    - 250VAC 5A RESISTIVE LOAD
  - SOURCE:
    - 100-240VAC 50/60Hz, 24-240VDC
    - 24VAC 50/60Hz, 24VDC
    - 12VDC

**AT11DEN**
- [A1], [B], [F1], [I] mode
  - CONTACT:
    - 250VAC 5A RESISTIVE LOAD
  - SOURCE:
    - 100-240VAC 50/60Hz, 24-240VDC
    - 24VAC 50/60Hz, 24VDC
    - 12VDC

Dimensions

- Bracket
- Panel cut-out

Panel cut-out
- 8-pin socket: PG-08 (Sold separately)
- 11-pin socket: PG-11 (Sold separately)

※Refer to the G-15 page.
### Parts description

- **Operation/Power LED**
  - Timer operation: Flashing
  - Timer stop: LED ON

- **Output LED**
  - Time limit output operation (ON): Light on

- **Operation mode display**
  - AT8 (A, A1, B, F, F1, I mode)
  - AT11DN/AT11EN (A, F, F1, C, D, I mode)

- **Operation mode selector**

- **Time range display**

- **Time range selector**
  - Changing the time unit per 4 revolutions

- **Time unit**
  - (sec, min, hour, 10h)

※Please rotate the time range switch and operation mode switch to CW (Clockwise) direction.

### Time specifications

<table>
<thead>
<tr>
<th>Time range</th>
<th>Time unit</th>
<th>Time setting range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>sec</td>
<td>0.05 to 0.5 sec.</td>
</tr>
<tr>
<td>1.0</td>
<td>sec</td>
<td>0.1 to 1.0 sec.</td>
</tr>
<tr>
<td>5</td>
<td>sec</td>
<td>0.5 to 5 sec.</td>
</tr>
<tr>
<td>10</td>
<td>sec</td>
<td>1 to 10 sec.</td>
</tr>
<tr>
<td>0.5</td>
<td>min</td>
<td>0.05 to 0.5 min.</td>
</tr>
<tr>
<td>1.0</td>
<td>min</td>
<td>0.1 to 1.0 min.</td>
</tr>
<tr>
<td>5</td>
<td>min</td>
<td>0.5 to 5 min.</td>
</tr>
<tr>
<td>10</td>
<td>min</td>
<td>1 to 10 min.</td>
</tr>
<tr>
<td>0.5</td>
<td>hour</td>
<td>0.05 to 0.5 hour</td>
</tr>
<tr>
<td>1.0</td>
<td>hour</td>
<td>0.1 to 1.0 hour</td>
</tr>
<tr>
<td>5</td>
<td>hour</td>
<td>0.5 to 5 hour</td>
</tr>
<tr>
<td>10</td>
<td>hour</td>
<td>1 to 10 hour</td>
</tr>
<tr>
<td>0.5</td>
<td>10h</td>
<td>0.5 to 5 hour</td>
</tr>
<tr>
<td>1.0</td>
<td>10h</td>
<td>1 to 10 hour</td>
</tr>
<tr>
<td>5</td>
<td>10h</td>
<td>5 to 50 hour</td>
</tr>
<tr>
<td>10</td>
<td>10h</td>
<td>10 to 100 hour</td>
</tr>
</tbody>
</table>

### Output operation mode of each model

#### AT8N

<table>
<thead>
<tr>
<th>Display</th>
<th>Output operation mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Power ON Delay</td>
</tr>
<tr>
<td>A1</td>
<td>Power ON Delay 1</td>
</tr>
<tr>
<td>B</td>
<td>Power ON Delay 2</td>
</tr>
<tr>
<td>F</td>
<td>Flicker (OFF Start)</td>
</tr>
<tr>
<td>F1</td>
<td>Flicker 1 (ON Start)</td>
</tr>
<tr>
<td>I</td>
<td>Interval</td>
</tr>
</tbody>
</table>

#### AT11DN/AT11EN

<table>
<thead>
<tr>
<th>Display</th>
<th>Output operation mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Signal ON Delay</td>
</tr>
<tr>
<td>F</td>
<td>Flicker (OFF Start)</td>
</tr>
<tr>
<td>F1</td>
<td>Flicker 1 (ON Start)</td>
</tr>
<tr>
<td>C</td>
<td>Signal OFF Delay</td>
</tr>
<tr>
<td>D</td>
<td>Signal ON/OFF Delay</td>
</tr>
<tr>
<td>I</td>
<td>Interval</td>
</tr>
</tbody>
</table>
### AT8N Output operation mode

ATN Series

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

<table>
<thead>
<tr>
<th>Mode</th>
<th>Time chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td><img src="true" alt="Mode A Diagram" /></td>
</tr>
<tr>
<td><strong>Power ON Delay</strong></td>
<td><img src="true" alt="Power ON Delay Diagram" /></td>
</tr>
<tr>
<td>A1</td>
<td><img src="true" alt="Mode A1 Diagram" /></td>
</tr>
<tr>
<td><strong>Power ON Delay 1 (One-shot output)</strong></td>
<td><img src="true" alt="Power ON Delay 1 Diagram" /></td>
</tr>
<tr>
<td>B</td>
<td><img src="true" alt="Mode B Diagram" /></td>
</tr>
<tr>
<td><strong>Power ON Delay 2</strong></td>
<td><img src="true" alt="Power ON Delay 2 Diagram" /></td>
</tr>
<tr>
<td>F</td>
<td><img src="true" alt="Mode F Diagram" /></td>
</tr>
<tr>
<td><strong>Flicker</strong></td>
<td><img src="true" alt="Flicker Diagram" /></td>
</tr>
<tr>
<td>F1</td>
<td><img src="true" alt="Mode F1 Diagram" /></td>
</tr>
<tr>
<td><strong>Flicker 1</strong></td>
<td><img src="true" alt="Flicker 1 Diagram" /></td>
</tr>
<tr>
<td>I</td>
<td><img src="true" alt="Mode I Diagram" /></td>
</tr>
<tr>
<td><strong>Interval</strong></td>
<td><img src="true" alt="Interval Diagram" /></td>
</tr>
</tbody>
</table>

※ When using F, F1 output operation modes, if the time is set too short, the output may not work properly. Please set the time at least over 100ms.
Multi Function Timer

AT11DN/AT11EN Output operation mode

[t: Setting time, t=t1+t2, t>t-a]

Mode | Time chart
--- | ---
**A** | Signal ON Delay

- Power 2-10
- START 2-6
- INHIBIT 2-5
- RESET 2-7
- Time limit contact N.C.
- Time limit contact N.O.
- Time limit output operation LED
- Operation/Power LED

**F** | Flicker

- Power 2-10
- START 2-6
- INHIBIT 2-5
- RESET 2-7
- Time limit contact N.C.
- Time limit contact N.O.
- Time limit output operation LED
- Operation/Power LED

**F1** | Flicker 1

- Power 2-10
- START 2-6
- INHIBIT 2-5
- RESET 2-7
- Time limit contact N.C.
- Time limit contact N.O.
- Time limit output operation LED
- Operation/Power LED

**C** | Signal OFF Delay

- Power 2-10
- START 2-6
- INHIBIT 2-5
- RESET 2-7
- Time limit contact N.C.
- Time limit contact N.O.
- Time limit output operation LED
- Operation/Power LED

**D** | Signal ON-OFF Delay

- Power 2-10
- START 2-6
- INHIBIT 2-5
- RESET 2-7
- Time limit contact N.C.
- Time limit contact N.O.
- Time limit output operation LED
- Operation/Power LED

**I** | Interval

- Power 2-10
- START 2-6
- INHIBIT 2-5
- RESET 2-7
- Time limit contact N.C.
- Time limit contact N.O.
- Time limit output operation LED
- Operation/Power LED

※1: If power is removed or the RESET terminal is short-circuited, the timer will be reset.
※2: If the INHIBIT terminal is short-circuited during a timing cycle, 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. Please set the time at least over 100ms.
Proper usage

Repeat function (Flicker)
- It enables to use one ATN timer for 3 sub relays and 2 timers (Flicker function).
- Simple to use flicker function with only one ATN timer.
- Switch A: Start, Switch B: Reset.

Interval mode
- It enables to make instantaneous ON and time limit OFF (remained circuit) with using Interval mode.

Input signal condition (AT11DN, AT11EN)
1. Relay contact input
   - Please use gold-plated switches with good contact assurance and short bouncing time for contact input.
     (Open resistance: Over 100kΩ, Short-circuit resistance: Under 1kΩ)
   - Please use a contact that can function reliably at 5VDC 0.4mA.

2. Input with NPN open collector type
   - Characteristics of transistor should be $V_{ceo} = \text{min.} \ 25\text{V}$, $I_c = \text{min.} \ 10\text{mA}$, $I_{cbo} = \text{max.} \ 0.2\mu\text{A}$, residual voltage = max. 0.5V.

3. NPN universal input
   - It enables to use voltage output type as input signal source instead of open collector output in solid-state circuit (proximity sensor, photo-electric sensor) which has range of 10-30VDC output voltage.
   - When H signal change to L, timer will start.
   - When transistor(Q) is ON status, please make residual voltage under 0.5V.

Terminal connection
- Please wire correctly with wiring instructions
- Power connection

Connect the power line without observing polarity for ATN series AC power type, but please be careful of power connection for DC power type.

<table>
<thead>
<tr>
<th>Power supply</th>
<th>8-pin Type</th>
<th>11-pin Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Type</td>
<td>Terminal ② - ⑦</td>
<td>Terminal ② - ⑧</td>
</tr>
<tr>
<td>DC Type</td>
<td>Terminal ② ← ●</td>
<td>Terminal ② ← ●</td>
</tr>
</tbody>
</table>

- When turning off the power, be careful of inductive voltage.
  - (If using power line with another high voltage line or energy line near by, it may cause inductive voltage).
- Power ripple should be under 10% and power supply should be within range of allowable voltage for DC power type.
- Please supply the power quickly when using a switch or a relay contact. Otherwise, it may cause time error or power reset failure.
- The load of Control output should be under rated load capacity.
Multi Function Timer

Setting time, time range, operation mode
Do not change time range or operation mode while time operating. When changing it, please power off or apply reset signal.

Input connection
• AT11DN/AT11EN Timer is non-transformer type, therefore please check following for connecting relay contact for input signal and transistor.

- When using the terminal ③ as a common terminal of input signal as (Fig. 2), it may cause damage to the inner circuit of AT11DN/AT11EN, please use the terminal ② for common terminal as (Fig. 3).

- When using more than one timer with one contact or transistor input, the short current is flowed when it is connected as (Fig. 4). Please connect the power phase correctly as (Fig. 5) correctly.

- INHIBIT, START, RESET signal applied by short input terminal ②-⑤, ②-⑥ or ②-⑦. It may cause internal circuit damaged by wrong connection.
- If using power line with another high voltage line or energy line at the same conduit, it may cause inductive voltage. Therefore please use separated conduit for power line.
- When input(INHIBIT, START, RESET) wire is long, please use shield wire and it should be short.

Common
• For DC power supply type, be sure to check the polarity of terminals.
• In case of 12VDC, 24VAC/DC model, isolated and limited voltage/current or Class 2 source should be provided for power supply.
• When supply the power to the timer, connection shown in (Fig. 6) might cause malfunction due to leakage current through R and C. Please connect R and C as shown in (Fig. 7) to prevent malfunction.

- It might cause malfunction if changing the setting time, time range or operation mode during operating unit. Please change the the setting time, time range or operation mode after cut the power off.
- Do not use this unit at below places.
  - Place where there are severe vibration or impact.
  - Place where strong alkalis or acids are used.
  - Place where there are direct rays of the sun
  - Place where strong magnetic field or electric noise are generated.
- Installation environment
  • It shall be used indoor
  • Altitude Max. 2000m
  • Pollution Degree 2
  • Installation Category II

RESET INHIBIT

Common

Setting time, time range, operation mode
Do not change time range or operation mode while time operating. When changing it, please power off or apply reset signal.

Input connection
• AT11DN/AT11EN Timer is non-transformer type, therefore please check following for connecting relay contact for input signal and transistor.

- When using the terminal ③ as a common terminal of input signal as (Fig. 2), it may cause damage to the inner circuit of AT11DN/AT11EN, please use the terminal ② for common terminal as (Fig. 3).

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- If using power line with another high voltage line or energy line at the same conduit, it may cause inductive voltage. Therefore please use separated conduit for power line.
- When input(INHIBIT, START, RESET) wire is long, please use shield wire and it should be short.

Common
• For DC power supply type, be sure to check the polarity of terminals.
• In case of 12VDC, 24VAC/DC model, isolated and limited voltage/current or Class 2 source should be provided for power supply.
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- It might cause malfunction if changing the setting time, time range or operation mode during operating unit. Please change the the setting time, time range or operation mode after cut the power off.
- Do not use this unit at below places.
  - Place where there are severe vibration or impact.
  - Place where strong alkalis or acids are used.
  - Place where there are direct rays of the sun
  - Place where strong magnetic field or electric noise are generated.
- Installation environment
  • It shall be used indoor
  • Altitude Max. 2000m
  • Pollution Degree 2
  • Installation Category II