

**Autonics**

**DIGITAL COUNTER  
FS SERIES**

**M A N U A L**



Thank you very much for selecting Autonics products.  
For your safety, please read the following before using.

**Caution for your safety**

- \*Please keep "Caution for your safety" to avoid accidents or damages as using it correctly.
- \*The meaning of 'Warning' and 'Caution' is as follows:  
**Warning** In case a serious injury or dead may be occurred.  
**Caution** In case a little injury or a damage of this unit may be occurred.
- \*The meaning of the mark on the product and manual is as follows:  
 is a caution mark for danger in special condition.

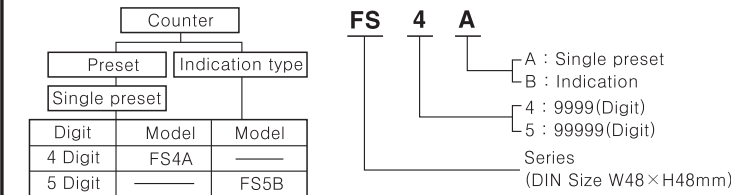
**Warning**

- 1. Please use it with double safety devices when it is used at the equipments which may cause damages to human life or assets(Ex:Nuclear power control, Medical equipment, Vehicle, Train, Air plane, Combustion apparatus, Entertainment or Safety device etc.)**  
It may cause a fire, human life or assets.
- 2. This unit must be mounted on Panel.**  
It may give an electric shock.
- 3. Do not repair or checkup when power on.**  
It may give an electric shock.
- 4. Do not disassemble and modify this unit, when it requires.**  
If needs, please contact us.  
It may give an electric shock and cause a fire.

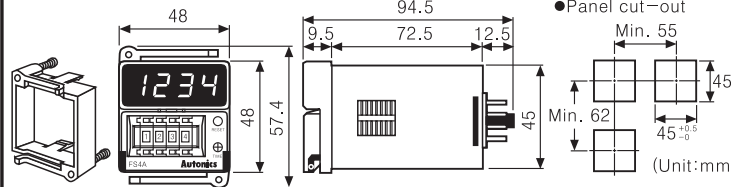
**Caution**

- 1. This unit shall not be used outdoors.**  
It might shorten the life cycle of the product or give an electric shock.
- 2. Please observe specification rating.**  
It might shorten the life cycle of the product and cause a fire.
- 3. Do not use the load beyond rated switching capacity of Relay contact.**  
It may cause insulation failure, contact melt, contact failure relay broken, fire etc.
- 4. In cleaning the unit, do not use water or an organic solvents.**  
It might cause an electric shock or fire that will result in damage to the product.
- 5. Do not use this unit at place where there are flammable or explosive gas, humidity, direct ray of the sun, radiant heat, vibration, impact etc.**  
It may cause explosion.
- 6. Do not inflow dust or wire dregs into inside of this unit.**  
It may cause a fire or mechanical trouble.

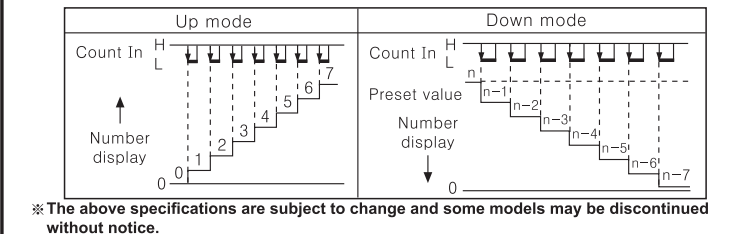
**Ordering information**



**Dimensions**



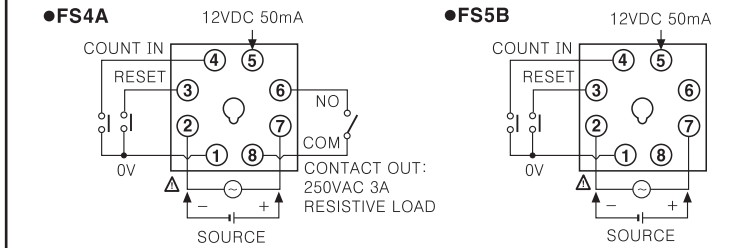
**Up/Down operation mode**



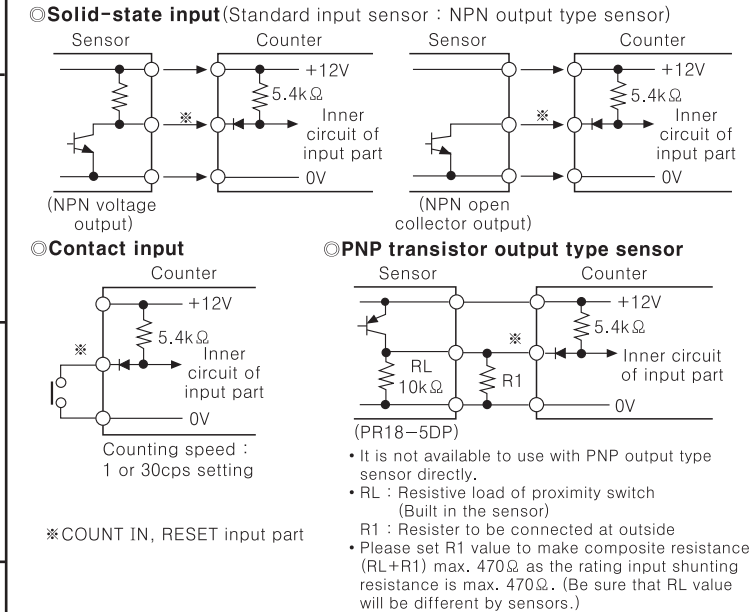
**Specifications**

|                           |   |   |
|---------------------------|---|---|
| Series                    | FS  |   |
| Digit                     | 4   | 5   |
| Model                     | Single preset                                   | FS4A  |
|                           | Double preset                                   | —   |
|                           | Indication                                      | FS5B  |
| Power supply              | AC power  | 100-240VAC 50/60Hz  |
|                           | AC/DC power                                     | 12-24VDC 50/60Hz, 12-24VDC  |
| Allowable voltage range   | 90 to 110% of rated voltage                     |   |
| Power consumption         | AC power  | Indication:Approx. 4.7VA,<br>Single preset:Approx. 5.7VA(240VAC 50/60Hz)  |
|                           | AC/DC power                                     | Indication:Approx. 4.5VA,<br>Single preset:Approx. 5.5VA(24VAC 50/60Hz)<br>Indication:Approx. 2.8W, Single preset:Approx. 3W(24VDC) |
| Max. counting speed       | 1cps/30cps/2kcps/5kcps selectable by DIP switch |   |
| Min. RESET input width    | Approx. 20ms                                    |   |
| Input method              | COUNT IN  | *No-voltage input ⇒ Short-circuit impedance : Max. 470Ω,<br>Residual voltage : Max. 1VDC,<br>Open-circuit impedance : Min. 100kΩ    |
|                           | RESET   | —   |
| One-shot output time      | 0.05 to 5sec.                                   |   |
| Control output            | Solid-State                                     | SPDT(1a)  |
|                           | Capacity  | 250VAC 3A resistive load  |
| Memory retention          | 10 years(EEPROM)                                |   |
| Power for external sensor | 12VDC ±10% 50mA max.                            |   |
| Ambient temperature       | -10 to 55°C(at non-freezing status)             |   |
| Storage temperature       | -25 to 65°C(at non-freezing status)             |   |
| Ambient humidity          | 35 to 85%RH                                     |   |
| Insulation resistance     | Min. 100MΩ(at 500VDC)                           |   |
| Dielectric strength       | 2000VAC 50/60Hz for 1 minute                    |   |
| Noise immunity            | AC power  | ±2kV the square wave noise(pulse width:1μs) by the noise simulator  |
|                           | AC/DC power                                     | ±500V the square wave noise(pulse width:1μs) by the noise simulator   |
| Vibration                 | Mechanical                                      | 0.75mm amplitude at frequency of 10 to 55Hz<br>in each of X, Y, Z directions for 1 hour   |
|                           | Malfunction                                     | 0.5mm amplitude at frequency of 10 to 55Hz<br>in each of X, Y, Z directions for 10 minutes  |
| Shock                     | Mechanical                                      | 300m/s <sup>2</sup> (30G) 3 times at X, Y, Z direction  |
|                           | Malfunction                                     | 100m/s <sup>2</sup> (10G) 3 times at X, Y, Z direction  |
| Relay life cycle          | Mechanical                                      | Min. 10,000,000 times   |
|                           | Electrical                                      | Min. 100,000 times(250VAC 3A resistive load)  |
| Weight                    | —   | Approx. 130g  |
|                           | —   | Approx. 120g  |

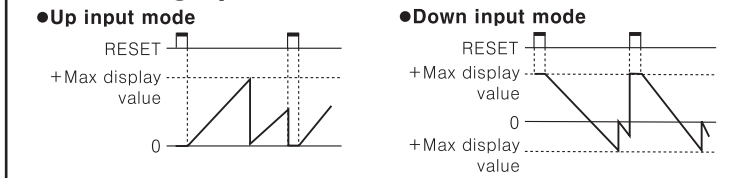
**Connections**



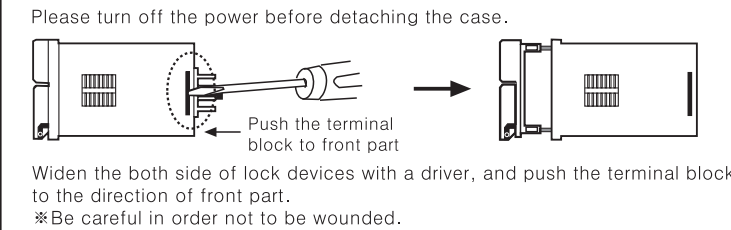
**Input connections**



**Counting operation of indication model(FS5B)**



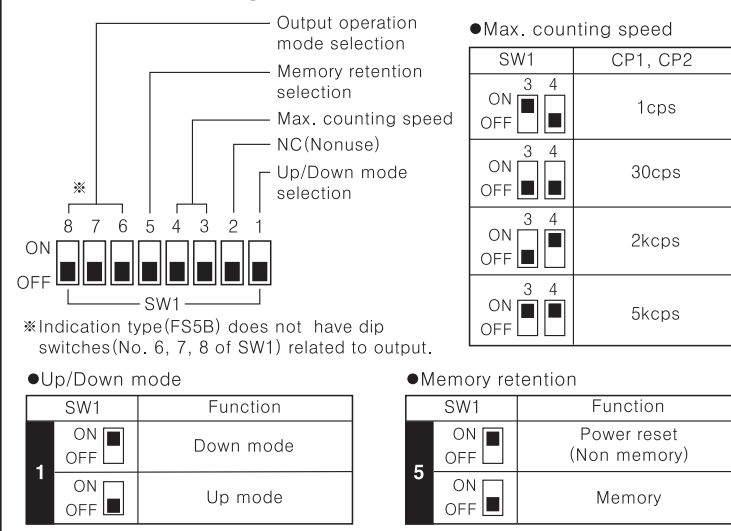
**Case detachment**



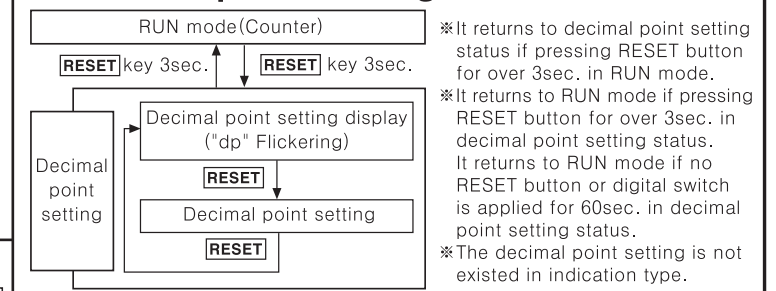
**Output operation mode**

|             | One-shot output(0.05 to 5sec. setting) |                    | Hold output  |
|-------------|--|--------------------|--|
| Output mode | Input mode                             |                    | Operation after count up   |
|             | Up mode                                | Down mode          |  |
| <b>F</b>    | SW1<br>ON<br>6 7 8                     | SW1<br>ON<br>6 7 8 | The display value continues until reset signal is applied then output is held  |
| <b>N</b>    | SW1<br>ON<br>6 7 8                     | SW1<br>ON<br>6 7 8 | The display value and hold output are held until reset signal is applied.  |
| <b>C</b>    | SW1<br>ON<br>6 7 8                     | SW1<br>ON<br>6 7 8 | The display value returns to reset start status as soon as display value is reached to preset value.                                       |
| <b>R</b>    | SW1<br>ON<br>6 7 8                     | SW1<br>ON<br>6 7 8 | The display value is held until output is OFF then returns to reset start status.  |
| <b>K</b>    | SW1<br>ON<br>6 7 8                     | SW1<br>ON<br>6 7 8 | The display value continues until reset signal is applied.   |
| <b>P</b>    | SW1<br>ON<br>6 7 8                     | SW1<br>ON<br>6 7 8 | The display value is held during one-shot output time, counting process is returned to reset start status as soon as output is ON.         |
| <b>Q</b>    | SW1<br>ON<br>6 7 8                     | SW1<br>ON<br>6 7 8 | The display value continues during one-shot output time.   |
| <b>S</b>    | SW1<br>ON<br>6 7 8                     | SW1<br>ON<br>6 7 8 | • Up input mode<br>-Output is ON when (Display value) ≥ (Preset value)<br>• Down input mode<br>-Output is ON when (Display value) ≤ (Zero) |

**Selection by DIP switches**



**Decimal point setting**



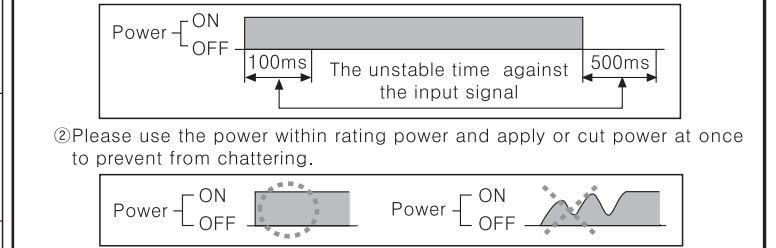
- \*It returns to decimal point setting status if pressing RESET button for over 3sec. in RUN mode.
- \*It returns to RUN mode if pressing RESET button for over 3sec. in decimal point setting status. It returns to RUN mode if no RESET button or digital switch is applied for 60sec. in decimal point setting status.
- \*The decimal point setting is not existed in indication type.

**Caution for using**

- DIP switch setting  
Please be sure to turn power OFF before changing Counter DIP switches setting. If DIP switches setting is changed in power OFF, Counter must be reset by manual reset or external reset after power ON.
- Error  

| Error display | Error contents            | Return method                          |
|---------------|---------------------------|--|
| Err0          | Zero setting value status | Change setting value which is not zero |

  - \*Output is OFF when error is displayed.
  - \*No Error display is appeared in indication type.
- Power  
  - The inner circuit voltage starts to rise up for the first 100ms after power on, the input may not work at this time. And also the inner circuit voltage drops down for the last 500ms after power off, the input may not work at this time.



- Input signal line  
  - Shorten the cable distance between the sensor and this product.
  - Please shielded wire for input signal needed to be long.
  - Please wire input signal line separated from power line.
- When test dielectric voltage and insulation resistance of the control panel with this unit installed.  
  - Please isolate this unit from the circuit of control panel.
  - Please make all terminals of this unit short-circuited.
- 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 ray 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.

\*It may cause malfunction if above instructions are not followed.

**Main products**

- Photoelectric sensors
- Fiber optic sensors
- Door sensors
- Door side sensors
- Area sensors
- Proximity sensors
- Pressure sensors
- Rotary encoders
- Connector/sockets
- Switching mode power supplies
- Control switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper motors/drivers/motion controllers
- Graphic/Logic panels
- Field network devices
- Laser marking system(Fiber, CO<sub>2</sub>, Nd:YAG)
- Laser welding/soldering system
- Temperature controllers
- Temperature/Humidity transducers
- SSR/Power controllers
- Counters
- Timers
- Panel meters
- Tachometer/Pulse(Rate) meters
- Display units
- Sensor controllers

**Autonics Corporation**  
<http://www.autonics.com>  
**Satisfiable Partner For Factory Automation**

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