

# Autonics COUNTER/TIMER

## FX/FXH/FXL SERIES

### MANUAL



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

### Caution for your safety

- Please keep these instructions and review them before using this unit.
- Please observe the cautions that follow;
  - Warning** Serious injury may result if instructions are not followed.
  - Caution** Product may be damaged, or injury may result if instructions are not followed.
- The following is an explanation of the symbols used in the operation manual.
- Caution: Injury or danger may occur under special conditions.

### Warning

- In case of using this unit with machinery (ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device. contact us for information required. It may cause a fire or human injury or damage to property.
- This unit must be mounted on panel. It may cause electric shock.
- Do not connect terminals when it is power ON. It may cause electric shock.
- Do not disassemble and modify this unit. Please contact us, if it is required. It may cause electric shock and a fire.

### Caution

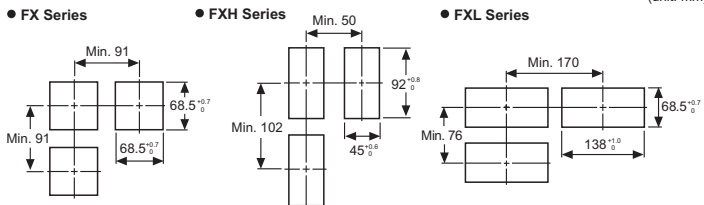
- This unit shall not be used outdoors. It might shorten the life cycle of the product or cause electric shock.
- When wiring connection, AWG20(0.50mm<sup>2</sup>) should be used and screw bolt on terminal block with 0.74N·m to 0.90N·m strength. It may cause malfunction or fire due to contact failure.
- Please observe the rated specifications. It might shorten the life cycle of the product and cause a fire.
- Do not use the load beyond the rated switching capacity of Relay contact. It may cause insulation failure, contact melt, contact failure, relay broken, fire, etc.
- In cleaning the unit, do not use water or organic solvents. It might cause electric shock or fire that will result in damage to the product.
- 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.
- Do not inflow dust or wire dregs into this unit. It may cause a fire or mechanical trouble.

### Input logic selection

Turn OFF the power of this unit before changing input logic.

FX Series	FXL Series	FXH Series
Input logic is changeable by input logic selection switch located at the one-side of case.	Input logic is changeable by input logic selection switch located at the terminal block.	Input logic is changeable by input logic selection switch(SW3) located at the inside of the case.
<ul style="list-style-type: none"> <li>No-voltage input(NPN)</li> <li>Voltage input(PNP)</li> </ul>	<ul style="list-style-type: none"> <li>No-voltage input(NPN)</li> <li>Voltage input(PNP)</li> </ul>	<ul style="list-style-type: none"> <li>No-voltage input(NPN)</li> <li>Voltage input(PNP)</li> </ul>

### Panel cut-out



### Input operation mode(Counter)

Input mode	SW1	Counting chart	
		Voltage input type	No-voltage input type
Up/Down-A (Command input)	ON		
Up/Down-B (Individual input)	OFF		
Up/Down-C (Phase difference input)	ON		
Up (Up input)	OFF		
Up/Down-D (Command input)	ON		
Up/Down-E (Individual input)	OFF		
Up/Down-F (Phase difference input)	ON		
Down (Down input)	ON		

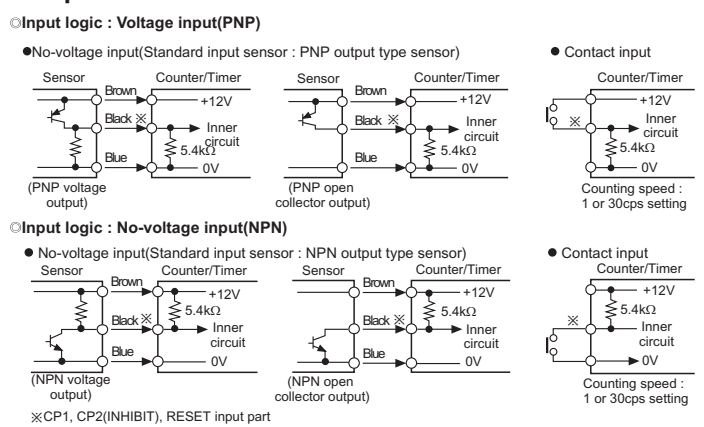
※A: Over Min. signal width, B: Over 1/2 of Min. signal width.  
Counting miss by one(± 1) occurs if the signal width of A or B is less than min. signal width.  
※The above specification are subject to change without notice.

### Specifications

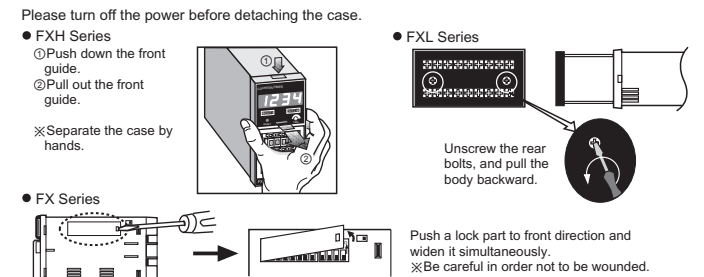
Series	FX		FXH	FXL	
	4 digit	6 digit	4 digit	4 digit	6 digit
Digit	4 digit	6 digit	4 digit	4 digit	6 digit
Model	FX4-2P	FX6-2P	FX4H-2P	FX4L-2P	FX6L-2P
Indication	FX4-I	FX6-I	FX4H-I	FX4L-I	FX6L-I
Power supply	AC power: 100-240VAC 50/60Hz AC/DC power: 12-24VAC 50/60Hz, 12-24VDC				
Allowable voltage range	90 to 110% of rated voltage				
Power consumption	AC power: Single preset: Approx. 7VA, Dual preset: Approx. 8VA(240VAC 50/60Hz), Indication: Approx. 6VA AC/DC power: Single preset: Approx. 6.8VA, Dual preset: Approx. 7.6VA(24VAC 50/60Hz), Indication: Approx. 5.8VA Single preset: Approx. 3.3W, Dual preset: Approx. 3.8W(24VDC), Indication: Approx. 2.7W				
Max. counting speed for CP1, CP2	Selectable 1cps/30cps/2kcps/5kcps by inner DIP switch				
Min. input signal width	RESET input, INHIBIT input: Approx. 20ms				
Input method	Input logic is selectable [Voltage input] Input impedance: 5.4kΩ, "H" level: 0-5VDC, "L" level: 0-2VDC [No-voltage input] Short-circuit impedance: Max. 1kΩ Residual voltage: Max. 2VDC, Open-circuit impedance: Min. 100kΩ				
One-shot output time	1st output: 0.5sec., 2nd output: 0.05 to 5sec.				
Control output	Contact: Single preset type: SPDT(1c) Dual preset type: 1st output: SPDT(1c), 2nd output: SPDT(1c) Capacity: 250VAC 3A resistive load Solid-state: Single preset type: NPN open collector Dual preset type: 1st output: NPN open collector, 2nd output: NPN open collector Rating: 30VDC Max. 100mA Max.				
Memory retention	10 years(EEPROM)				
External power supply	12VDC ± 10% 50mA Max.				
Environment	Ambient temperature: -10 to 55°C, Storage: -25 to 65°C Ambient humidity: 35 to 85%RH, Storage: 35 to 85%RH				
Approval	UL (Except for AC/DC power type)				
Weight <sup>※1</sup>	FX4: Approx. 385g (Approx. 249g) FX4-2P: Approx. 396g (Approx. 258g) FX4-I: Approx. 353g (Approx. 216g)	FX6: Approx. 395g (Approx. 259g) FX6-2P: Approx. 398g (Approx. 262g) FX6-I: Approx. 351g (Approx. 214g)	FX4H: Approx. 349g (Approx. 234g) FX4H-2P: Approx. 375g (Approx. 261g) FX4H-I: Approx. 321g (Approx. 206g)	FX4L-2P: Approx. 651g (Approx. 467g) FX4L-I: Approx. 593g (Approx. 400g)	FX6L-2P: Approx. 678g (Approx. 494g) FX6L-I: Approx. 586g (Approx. 404g)

※Environment resistance is rated at no freezing or condensation.  
※1: This weight is with packaging and the weight in parentheses is only unit weight.

### Input connection



### Case & DIP switch detachment

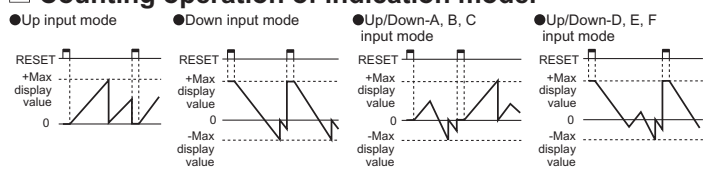


### Output operation mode

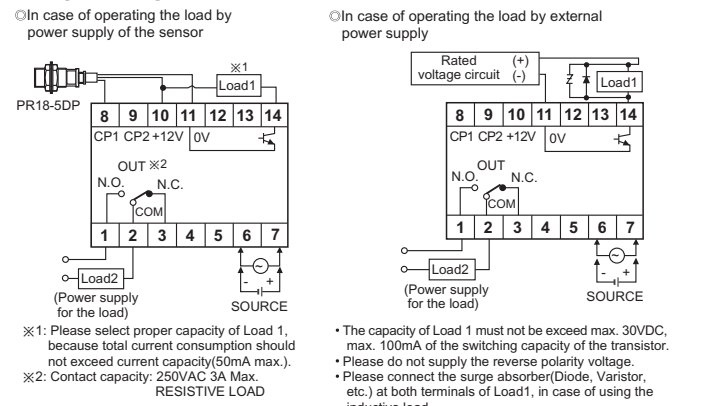
Output mode	Input mode	Operation after Count up	
		Up, Up/Down-A, B, C mode	Down, Up/Down-D, E, F mode
F	SW1 ON 5 6 7 OFF		
N	SW1 ON 5 6 7 OFF		
C	SW1 ON 5 6 7 OFF		
R	SW1 ON 5 6 7 OFF		
K	SW1 ON 5 6 7 OFF		
P	SW1 ON 5 6 7 OFF		
Q	SW1 ON 5 6 7 OFF		
S	SW1 ON 5 6 7 OFF		

When it is used as Timer, 1st output and 2nd output are flashing repeatedly.

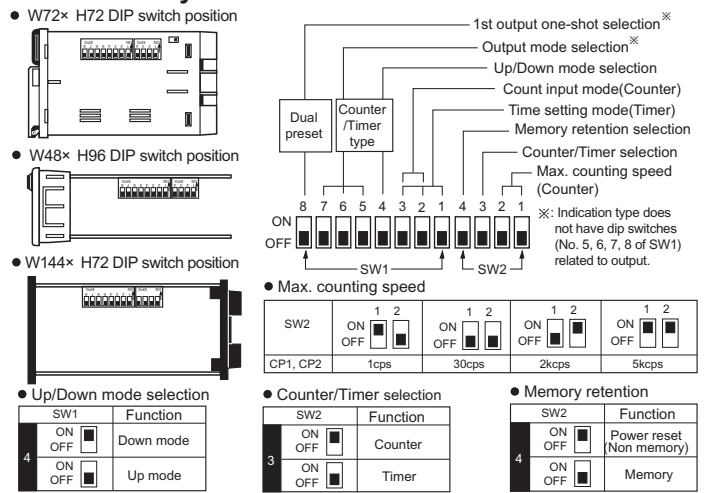
### Counting operation of indication model



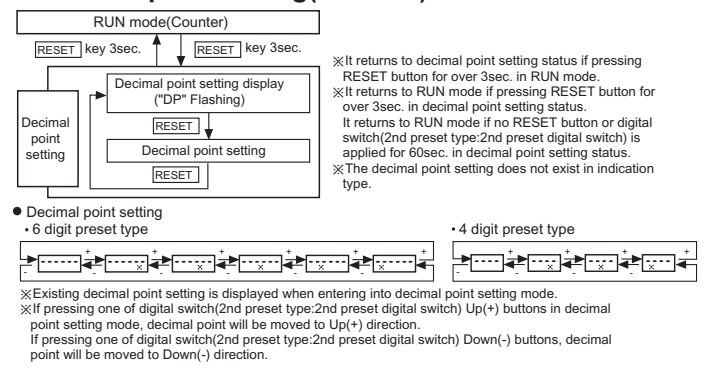
### Input/output connection



### Selection by DIP switches



### Decimal point setting(Counter)



### Time setting mode(Timer)

SW1	4 digit	6 digit
A	99.99sec	99999.9sec
B	999.9sec	999999sec
C	9999sec	99min 59.99sec
D	99min 59sec	999min 59.9sec
E	999.9min	99999.9min
F	99hour 59min	99hour 59min 59sec
G	999.9hour	9999hour 59min
H	9999hour	99999.9hour

### Caution for using

- DIP switch setting: Please be sure to turn power OFF before changing Counter/Timer DIP switches setting. If DIP switches setting is changed in power OFF, Counter/Timer must be reset by manual reset or external reset after power ON.
- Error: Error display. Error contents: The state that second preset is 0. Return method: Change setting value which is not zero.
- Unit sticker: The unit sticker is found at the inner box of FX/FXL Series. According to the usage, the unit sticker can be used.
- Power: The inner circuit voltage starts to rise up for the first 100ms after power on, the input may not work at this time. 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.

### Main products

- Proximity sensors
- Area sensors
- Door/Door side sensors
- Counters
- Rotary encoders
- Power controllers
- Panel meters
- Graphic/Logic panels
- Temperature controllers
- Tachometer/Pulse(Rate) meters
- Temperature/Humidity transducers
- Stepping motors/drivers/motion controllers
- Laser marking system(CO<sub>2</sub>, Nd:YAG)
- Laser welding/soldering system
- Photoelectric sensors
- Fiber optic sensors
- Pressure sensors
- Timers
- Display units
- Sensor controllers

**Autonics Corporation**  
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HEAD QUARTERS:  
116, Ilgigilgongdan-gil, Yangsan-si, Gyeongsangnam-do, Korea

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TEL: 82-32-610-2730 / FAX: 82-32-329-0728  
E-mail: sales@autonics.com

The proposal of a product improvement and development: product@autonics.com

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