

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

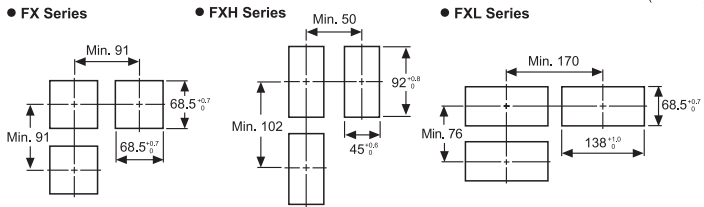
- This unit shall not be used outdoors. It might shorten the life cycle of the product or cause electric shock.
- When wiring connection, AWG20(0.50mm²) should be used and screw bolt on terminal block with 0.74N·m to 0.90N·m strength. It may cause malfunction or fire due to contact failure.
- Please 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. • No-voltage input(NPN) • Voltage input(PNP) LED display direction	Input logic is changeable by input logic selection switch located at the terminal block. • No-voltage input(NPN) • Voltage input(PNP) LED display direction	Input logic is changeable by input logic selection switch(SW3) located at the inside of the case. • No-voltage input(NPN) • Voltage input(PNP) LED display direction

Panel cut-out



Input operation mode(Counter)

Input mode	SW1	Counting chart
Up/Down-A (Command input)	ON	Counting value: 0, 1, 2, 3, 2, 1, 0
Up/Down-B (Individual input)	OFF	Counting value: 0, 1, 2, 3, 2, 1, 0
Up/Down-C (Phase difference input)	ON	Counting value: 0, 1, 2, 2, 1, 2, 3
Up (Up input)	OFF	Counting value: 0, 1, 2, 3, 4, 5
Up/Down-D (Command input)	ON	Counting value: 0, n-1, n-2, n-3, n-1, n-2, n-3
Up/Down-E (Individual input)	OFF	Counting value: 0, n-1, n-2, n-3, n-1, n-2, n-3
Up/Down-F (Phase difference input)	ON	Counting value: 0, n-1, n-2, n-3, n-1, n-2, n-3
Down (Down input)	OFF	Counting value: 0, n-1, n-2, n-3, n-4, n-5

※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 specifications are subject to change and some models may be discontinued without notice.

Specifications

Series	FX	FXH	FXL
Digit	4 digit	6 digit	4 digit
Model	FX4-2P FX4-1	FX6-2P FX6-1	FX4H-2P FX4H-1
Power supply	AC power 100-240VAC 50/60Hz AC/DC power 12-24VDC 50/60Hz, 12-24VDC	AC power 100-240VAC 50/60Hz AC/DC power 12-24VDC 50/60Hz, 12-24VDC	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	Single preset: Approx. 7VA, Dual preset: Approx. 8VA(240VAC 50/60Hz), Indication: Approx. 6VA		
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 Type: Single preset type: SPDT(1c) Dual preset type: 1st output SPDT(1c), 2nd output: SPDT(1c) Capacity: 250VAC 3A resistive load Solid-state Type: 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 ^{※1}	FX4: Approx. 385g (Approx. 249g) FX4-2P: Approx. 396g (Approx. 258g) FX4H: Approx. 353g (Approx. 216g)	FX6: Approx. 395g (Approx. 259g) FX6-2P: Approx. 398g (Approx. 262g) FX6H: Approx. 351g (Approx. 214g)	FX4H: Approx. 349g (Approx. 234g) FX4H-2P: Approx. 375g (Approx. 261g) FX4H-1: Approx. 321g (Approx. 206g)

※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

Input logic: Voltage input(PNP)

- No-voltage input(Standard input sensor: PNP output type sensor)
- Contact input

Input logic: No-voltage input(NPN)

- No-voltage input(Standard input sensor: NPN output type sensor)
- Contact input

※CP1, CP2(INHIBIT), RESET input part.

Case & DIP switch detachment

Please turn off the power before detaching the case.

- FX Series: Push down the front guide, Pull out the front guide.
- FXL Series: Push a lock part to front direction and widen it simultaneously.

Output operation mode

One-shot output (0.05 to 5sec) of 2nd output

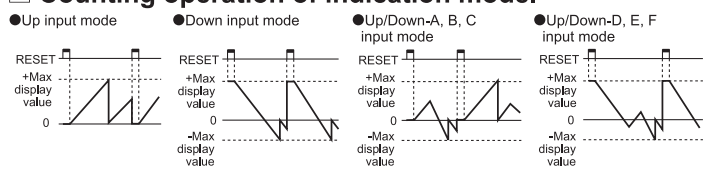
Retained output (0.5sec) of 1st output

Retained output

※The output of single preset type is operated at the status of the second output mode

Output mode	Input mode	Operation after Count up
F	Up, Up/Down-A, B, C mode	The display value continues until Reset signal applied and the output will be held.
N	Down, Up/Down-D, E, F mode	The display value and output will be held until Reset signal applied.
C	Up, Up/Down-A, B, C mode	The display returns to initial status and 2nd output will be reset after one-shot time.
R	Down, Up/Down-D, E, F mode	The display value will be held until 2nd output is OFF then reset.
K	Up, Up/Down-A, B, C mode	The display value continues until Reset signal applied.
P	Down, Up/Down-D, E, F mode	The display value is held during 2nd output one-shot time, counting process is returned to reset start status as soon as 2nd output ON.
Q	Up, Up/Down-A, B, C mode	The display continues until 2nd output is OFF.
S	Down, Up/Down-D, E, F mode	The display continues until 2nd output is OFF.

Counting operation of indication model



Input/output connection

In case of operating the load by power supply of the sensor

In case of operating the load by external power supply

- ※1: Please select proper capacity of Load 1, because total current consumption should not exceed current capacity(50mA max.).
- ※2: Contact capacity: 250VAC 3A Max.

Selection by DIP switches

- W72× H72 DIP switch position
- W48× H96 DIP switch position
- W144× H72 DIP switch position

Max. counting speed

Up/Down mode selection

Counter/Timer selection

Memory retention

Decimal point setting(Counter)

RUN mode(Counter)

Decimal point setting

※It returns to decimal point setting status if pressing RESET button for over 3sec. in RUN mode.

- Decimal point setting

※Existing decimal point setting is displayed when entering into decimal point setting mode.

Time setting mode(Timer)

SW1	4 digit	6 digit
A	99.99sec	99999.9sec
B	999.9sec	99999.9sec
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	99999.9hour
H	9999hour	99999.9hour

Caution for using

- DIP switch setting
- Error
- Unit sticker
- Power
- Input signal line
- When test dielectric voltage and insulation resistance of the control panel with this unit installed.
- Do not use this unit at below places.
- Installation environment

Main products

- Photoelectric sensors
- Temperature controllers
- Fiber optic sensors
- Temperature/Humidity transducers
- Door sensors
- SSR/Power controllers
- Door side sensors
- Counters
- Area sensors
- Timers
- Proximity sensors
- Panel meters
- Pressure sensors
- Tachometer/Pulse(Rate)meters
- Rotary encoders
- Display units
- Connector/Sockets
- Sensor controllers
- 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, CO₂, Nd:YAG)
- Laser welding/soldering system

Autonics Corporation
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