Autonics

COUNTER/TIMER
FX/FXH/FXL SERIES
M A N U A L

c us

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

1. **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.
2. **This unit must be mounted on panel.**
It may cause electric shock.
3. **Do not connect terminals when it is power ON.**
It may cause electric shock.
4. **Do not disassemble and modify this unit. Please contact us, if it is required.**
It may cause electric shock and a fire.

⚠ Caution

1. **This unit shall not be used outdoors.**
It might shorten the life cycle of the product or cause electric shock.
2. **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.
3. **Please observe the rated specifications.**
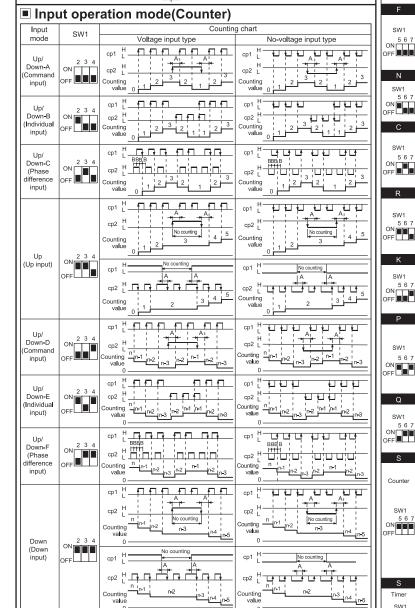It might shorten the life cycle of the product and cause a fire.
4. **Do not use the load beyond the rated switching capacity of Relay contact.**
It may cause insulation failure, contact melt, contact failure, relay broken, fire, etc.
5. **In cleaning the unit, do not use water or organic solvents.**
It might cause electric shock or fire that will result in damage to the product.
6. **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.
7. **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 changable by input logic selection switch located at the one-side of case.	Input logic is changable by input logic selection switch located at the terminal block.	Input logic is changable by input logic selection switch(SW3) located at the inside of the case.

◼ Panel cut-out
(unit: mm)

● FX Series   ● FXH Series   ● FXL Series

◼ Input operation mode(Counter)

※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	4 digit	6 digit
Model Single preset	FX4	FX6	FX4H	—	—
Dual preset	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), Indiction:Approx. 6VA				
AC/DC power	Single preset:Approx. 6.8VA, Dual preset:Approx. 7.6VA(24VAC 50/60Hz), Indiction:Approx. 5.8VA, Single preset:Approx. 3.3W, Dual preset:Approx. 3.8W(24VDC), Indiction: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 CP1, CP2 (INHIBIT)	[Voltage input] Input impedance:5.4kΩ, "H" level:5-30VDC, "L" level:0-2VDC [No-voltage input] Short-circuit impedance:Max. 1kΩ				
RESET input	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 open collector				
Memory retention	10 years(EEPROM)				
External power supply	12VDC ± 10% 50mA Max.				
Environ-ment Ambient temperature	-10 to 55℃, Storage: -25 to 65℃				
Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH				
Approval	us (Except for AC/DC power type)				

※Environment resistance is rated at no freezing or condensation.
※1 : This weight is with packaging and the weight in parentheses is only unit weight.
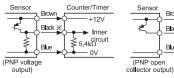
◼ Input connection
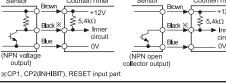
◼Input logic : Voltage input(PNP)
● No-voltage input(Standard input sensor : PNP output type sensor)   ● Contact input

◼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.
● FXH Series   ● FXL Series   ● FX Series
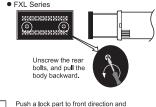
◼ Output operation mode

◼ Counting operation of indication model
●Up input mode ●Down input mode ●Up/Down-A, B, C input mode ●Up/Down-D, E, F input mode

◼ 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
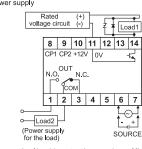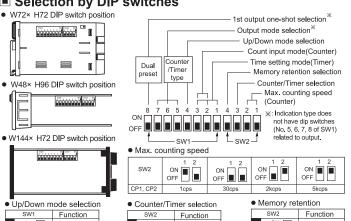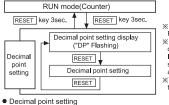
◼ Selection by DIP switches
● W72× H72 DIP switch position
● W48× H96 DIP switch position
● W144× H72 DIP switch position

◼ Decimal point setting(Counter)

◼ Time setting mode(Timer)

	SW1	4 digit	6 digit
A	ON OFF 1 2 3	99.99sec	99999.9sec
B	ON OFF 1 2 3	999.9sec	999999sec
C	ON OFF 1 2 3	9999sec	99min 59.99sec
D	ON OFF 1 2 3	99min 59sec	999min 59.9sec
E	ON OFF 1 2 3	999.9min	99999.9min
F	ON OFF 1 2 3	99hour 59min	99hour 59min 59sec
G	ON OFF 1 2 3	999.9hour	9999hour 59min
H	ON OFF 1 2 3	9999hour	99999.9hour

◼ Caution for using

1. **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.
2. **Error**

Error display	Error contents	Return method
Err0	The state that second preset is 0	Change setting value which is not zero

※Output is OFF when error is displayed.
※If 1st preset value is changed to zero("0"), 1st output keeps OFF status.
※If 2nd preset value is to lower than 1st preset value, 2nd preset value operates only. (1st preset value is not valid)
※No Error display is appeared in indication type.
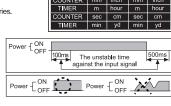
3. **Unit sticker**
The unit sticker is found at the inner box of FX/FXL Series.
According to the usage, the unit sticker can be used.

COUNTER	mm	inch	mm	inch
TIMER	m	hour	m	hour
COUNTER	sec	cm	sec	cm
TIMER	min	yd	min	yd

4. **Power**
①The 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.
②Please use the power within rating power and supply or cut the power at once to prevent from chattering.
5. **Input signal line**
①Shorten the cable distance between the sensor and this product.
②Please use shielded wire for input signal line.
③Please wire input signal line separated from power line.
6. **When test dielectric strength and insulation resistance of the control panel with this unit installed.**
①Please isolate this unit from the circuit of control panel.
②Please make all terminals of this unit short-circuited.
7. **Do not use this unit at below places.**
①Place where there are severe vibration or impact.
②Place where there are strong alkalis or acids are used.
③Place where there are direct ray of the sun.
④Place where strong magnetic field or electric noise are generated.
8. **Installation environment**
①It shall be used indoor ②Altitude Max. 2000m ③Pollution Degree 2 ④Installation CategoryⅡ
※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
■Switching mode power supplies
■Control switches/Lamps/Buzzers
■I/O Terminal Blocks & Cables
■Stepper motors/drives/motion controllers
■Graphic/Logic panels
■Field network devices
■Laser marking system(Fiber, CO2, 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
■Switching/Connectors

EP-KE-01-008M