#### **Autonics**

### COUNTER/TIMER FX/FXH/FXL SERIES







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

#### Caution for your safety

 $\ensuremath{\mathbb{X}}$  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.

#### 

- 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
- 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.

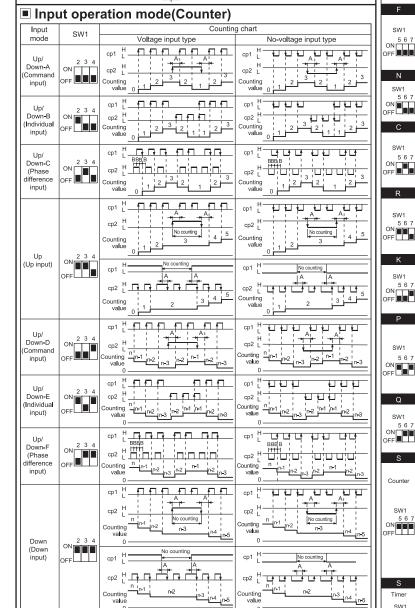
  4. Do not use the load beyond the rated switching capacity of Relay contact.
- It may cause insulation failure, contact melt, contact failure, relay broken, fire, etc. In cleaning the unit, do not use water or organic solvents.

  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 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.		
No-voltage	No-voltage input(NPN) F S  Voltage input(PNP) F S  S	• No-voltage input (PNP)  NPN UUU PNP  LED display direction		

# Panel cut-out



\*The above specifications are subject to change and some models may be discontinued without notice

#### Specifications

Series		FX		FXH	F	FXL		
Digit		4 digit	6 digit	4 digit	4 digit	6 digit		
Model	Single	preset	FX4	FX6	FX4H		l ——	
	Dual p	reset	FX4-2P	FX6-2P	FX4H-2P	FX4L-2P	FX6L-2P	
	Indication		FX4-I	FX6 <b>-I</b>	FX4H-I	FX4L-I	FX6L-I	
Power	AC power		100-240VAC	100-240VAC 50/60Hz				
supply AC/DC power		12-24VAC 50/60Hz, 12-24VDC						
Allowable voltage range		90 to 110% of rated voltage						
Power AC/DC power		Single preset:Approx. 7VA, Dual preset:Approx. 8VA(240VAC 50/60Hz), Indiction:Approx. 6VA						
		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			Input logic is selectable [Voltage input] impedance: $5.4k\Omega$ , "H" level: $5-30$ VDC, "L" level: $0-2$ VDC [No-voltage input] Short-circuit impedance:Max. $1k\Omega$ , Residual Voltage:Max. $2$ VDC, Open-circuit impedance:Min. $100k\Omega$					
RESET input One-shot output time		1st output: 0.5sec 2nd output: 0.05 to 5sec.						
One-sno	outpu	Turne	· '		ut . 0.05 to 5sec.			
Control output	Con-	Туре	Single preset type:SPDT(1c) Dual preset type:1st output SPDT(1c), 2nd output:SPDT(1c)					
	tact	Capacity	250VAC 3A resistive load					
	Solid-	Туре	Single preset type:NPN open collector Dual preset type:1st output NPN open collector, 2nd output NPN open collector					
	state	Rating	30VDC Max.	100mA Max.				
Memory	Memory retention		10 years(EEPROM)					
External	power	supply	12VDC ± 10% 50mA Max.					
Environ Ambient temperature ment Ambient humidity		-10 to 55°C, Storage: -25 to 65°C						
		humidity	35 to 85%RH, , Storage: 35 to 85%RH					
Approva	Approval		EXUs (Except for AC/DC power type)					
Weight <sup>≋1</sup>			FX4: Approx. 385g (Approx. 249g) FX4-2P: Approx. 396g	FX6: Approx. 395g (Approx. 259g) FX6-2P: Approx. 398g	FX4H: Approx. 349g (Approx. 234g) FX4H-2P: Approx. 375g	FX4L-2P: Approx. 651g (Approx. 467g) FX4L-1:	FX6L-2P: Approx. 678 (Approx. 494 FX6L-1:	

※Environment resistance is rated at no freezing or condensation.

※1: This weight is with packaging and the weight in parentheses is only unit weight.

• This weight is with packaging and the weight in parentheses is only unit weight.

• This weight is with packaging and the weight in parentheses is only unit weight.

• This weight is with packaging and the weight in parentheses is only unit weight.

• This weight is with packaging and the weight in parentheses is only unit weight.

• This weight is with packaging and the weight in parentheses is only unit weight.

• This weight is with packaging and the weight in parentheses is only unit weight.

• This weight is with packaging and the weight in parentheses is only unit weight.

• This weight is weight in the weight in parentheses is only unit weight.

• This weight is weight in the weight in parentheses is only unit weight.

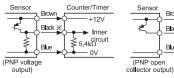
• This weight is weight in the weight in the

(Approx. 216g) (Approx. 214g) (Approx. 206g)

#### Input connection

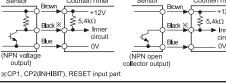
#### ○Input logic : Voltage input(PNP)

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



---- +12V Black × — 0V collector output) □Input logic : No-voltage input(NPN)

 No-voltage input(Standard input sensor : NPN output type sensor) ge input(Standard input S Counter/Timer +12V Black ★ 5.4kΩ Inner circuit Description of the content of the c



# +12V \$5.4kΩ Inner circuit Counting speed: 1 or 30cps setting

Contact input

Counter/Tin

\$5.4kΩ 0V

Contact input Counter/Time

Counting speed: 1 or 30cps setting

---+12V

#### Case & DIP switch detachment

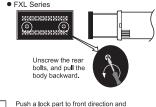
Please turn off the power before detaching the case

 FXH Series ①Push down the front guide. ②Pull out the front Separate the case by

(NPN voltage

FX Series





widen it simultaneously.

\*\*Be careful in order not to be wounded.

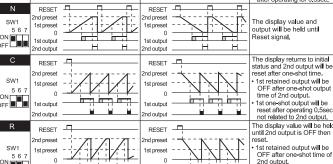
#### Output operation mode

RESET -

SW1

One-shot output type is operated at the status of the second output mode (0.5sec) of 1st outpu Input mode Operation after Count up Up, Up/Do The display value continue until Reset signal applied and the output will be held. F RESET RESET 4 1st retained output and 2nd output will be held until SW1 1st preset 1st preset When using 1st output as one -shot output, it will return nd output nd output

- Retained output



1st retained output will be OFF after one-shot time of 1st output 1st output he display value continu ntil Reset signal applied. RESET \_\_\_\_ RESET \_\_\_\_ nd preset 2nd output.

1 st one-shot output will be reset after operating 0.5sec. not related to 2nd output.

The display value is held during 2nd output one-shot time, counting process is returned to reset start status. OFF 1st output --1st output 2nd output 2nd output eturned to reset start statu s soon as 2nd output ON. 1st retained output will be OFF after one-shot time of 2nd output. 1st one-shot output will be reset after operating 0.5sec 2nd output nd output

> and output is OFF.
>
> 1st retained output will be
> OFF after one-shot time
> of 2nd output.
>
> 1st one-shot output will be
> reset after operating 0.5sec.
> not related to 2nd output. \_\_ 2nd output nd output Up Up, Up/Down-A, B, C RESET [ input mode
> -OUT1 is ON when(Display value) ≥ (1st preset value)
> -OUT2 is ON when(Display value) ≥ (2nd preset value) Up/Down-A, B, C Up/Down-D, E, F Down, Up/Down-D, E, F RESET □ input mode OUT1 is ON when(Display RESET

d preset

RESET -

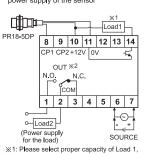
Ť S Up Down Timer RESET 🗖 RESET When it is used as Timer, 1st output and 2nd output are flashing repeatedly. SW1 1st preset 1st output

#### Counting operation of indication model

•Up/Down-A, B, C input mode ●Up/Down-D, E, F RESET 4 RESET -

#### Input/output connection

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



X1: Please select proper capacity of Load 1, because total current consumption should be a select proper capacity of Load 1.

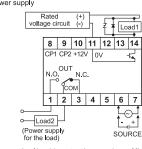
Output

Description:

Desc not exceed current capacity(50mA max.). ※2: Contact capacity: 250VAC 3A Max.

RESISTIVE LOAD

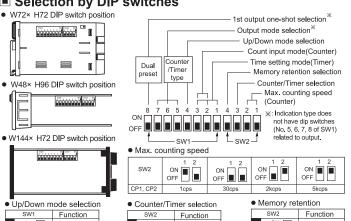
OIn case of operating the load by external



- The capacity of Load 1 must not be exceed max. 300 max. 100mA of the switching capacity of the transplease do not supply the reverse polarity voltage.
- etc.) at both terminals of Load1, in case of using the

## inductive load.

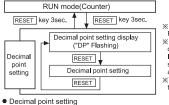
#### Selection by DIP switches



Counter

Timer

#### Decimal point setting(Counter)



Down mode

Up mode

ON F

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

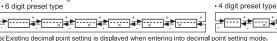
RESET button for over 3sec. in RUN mode.

RIt 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(2nd preset type:2nd preset digital switch) is applied for 60sec, in decimal point setting status.

XThe decimal point setting does not exist in indication type.

6 digit preset type



ON OFF

Memory

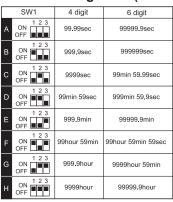
\*Existing decimal point setting is displayed when entering into decimal point setting mode.

If pressing one of digital switch/2nd preset type:2nd preset digital switch) Up(+) buttons in decimal point setting mode, decimal point will be moved to Up(+) direction.

If pressing one of digital switch/2nd preset type:2nd preset digital switch) Down(-) buttons, decimal If pressing one of digital switch(2nd preset type:2nd preset digital switch) Down(-) buttons, decimal point will be moved to Down(-) direction.

ON OFF

#### Time setting mode(Timer)



Selection of one-shot output or hold output for 1st output.

	SW1	Function			
	ON OFF	1st output:One-shot output			
	ON OFF	1st output:Hold output			
	*This mode selects a one-shot output(0.5sec. fixed) or retained output(Until 2nd output turn OFF				
3	for 1st output at the dual preset counter.				
_	Re	set — I			
	Dual pre Single pre				
ec	1st output(OUT	×1 ×1			
	2nd output(OUT	Г2)			
1	※1: One-shot output(0.5sec) of 1st output				
	Retained output				

#### 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.

Return method The state that second preset is 0 Change setting value which is not zero

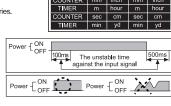
Change setting value with the South of the South of the South of S

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.

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.

@Please use the power within rating power and supply or cut the power at once to prevent from chattering.

5. Input signal line



not related to 2nd output

The display continues until

value) ≤ (1st preset value) OUT2 is ON when(Display value) ≤ (Zero)

①Shorten the cable distance between the sensor and this product. ②Please shielded wire for input signal needed to be long.

(3) Please wire input signal line separated from power line 6. When test dielectric voltage 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.

OPlace where there are severe vibration or impact.
Place where strong alkalis or acids are used.
Place where there are direct ray of the sun.

(4) Place 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

#### XIt may cause malfunction if above instructions are not followed. Main products

■ Graphic/Logic panels

■ Main products
■ Photoelectric sensors
■ Temperature/Humidity transducer
■ Door side sensors
■ Contessensors
■ Pressure sensors
■ Rotary encoders
■ Witching mode power supplies
■ Control switches/Lamps/Buzzers
■ I/O Teminial 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

#### Autonics Corporation http://www.autonics.com Satisfiable Partner For Factory Automation

HEAD QUARTERS

■ E-mail: sales@autonics.com

18, Bansong-ro 513beon-gil, Haeundae-gu, Busan, Korea

#WRRBAS SALES:
##02-404, Bucheon Techno Park, 655, Pyeongcheon-ro,
Womni-gu, Bucheon, Gyeonggi-to, Korea
TEL: 82-32-610-2730 | FAX: 82-32-329-0728

EP-KE-01-008M