#### 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

XPlease keep these instructions and review them before using this unit.

XPlease 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.  $\Delta$ Caution:Injury or danger may occur under special conditions.

#### 

- 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
- 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.

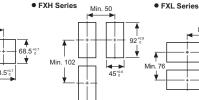
  7. Do not inflow dust or wire dregs into this unit.
- It may cause a fire or mechanical trouble

#### Input logic selection

XTurn 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 input (PNP)  NPN PNP PNP PNP  LED display direction	No-voltage input(NPN) F S  Voltage input(PNP) F S  S	No-voltage

#### Panel cut-out FX Series Min. 91



## Input operation mode(Counter)

Input	SW1	Countin					
mode		Voltage input type	No-voltage input type				
Up/ Down-A (Command input)	2 3 4 ON OFF	cp1 H A A A COunting value 0 1 1 2 1 2 1 1	cp1 H A A A A A A C A C A C A C A C A C A C				
Up/ Down-B (Individual input)	2 3 4 ON OFF	cp1 H	cp1 H				
Up/ Down-C (Phase difference input)	ON 2 3 4 ON OFF	cp1 H BBB C C C C C C C C C C C C C C C C C	cp1 H BBBB I I I I I I I I I I I I I I I I				
Up (Up input)	ON 2 3 4 OFF	cp1 H A A A A COUNTING Solution Solutio	cp1 H A A A C Counting Value 0 1 2 3 4 5				
(op input)		cp2 L A A A C Counting value 0 1 2 3 4 5	cp2 L J J J J J S Counting value 11 2 3 4 5				
Up/ Down-D (Command input)	ON 2 3 4 OFF	cp1	cp1 H				
Up/ Down-E (Individual input)	ON 2 3 4	cp1 H	cp1				
Up/ Down-F (Phase difference input)	ON 2 3 4 OFF	cp1 H BBB8 cp2 H Counting n-1 n-2 n-3 n-2 n-1 n-2 n-3	cp1				
Down (Down input)	ON 2 3 4 ON OFF	cp1 H cp2 H nn-1 n2 n3 n4 n5  Counting value 0  cp1 H No counting cp1 H No counting cp2 H A A A A A A A A A A A A A A A A A A A	cp1				
		Counting value n-2 n-3 n-4 n-5	Counting n-1 n-2 n-3 n-4 n-5				

The above specification are subject to change without notice.

#### Specifications

Series		FX		FXH	F.	XL			
Digit			4 digit	6 digit	4 digit	4 digit	6 digit		
	Single	preset	FX4	FX6	FX4H				
Model	Dual p	reset	FX4-2P	FX6-2P	FX4H-2P	FX4L-2P	FX6L-2P		
	Indica	tion	FX4-I	FX6-I	FX4H-I	FX4L-I	FX6L-I		
Power	AC po		100-240VAC 50/60Hz						
supply	AC/D0	C power	12-24VAC 50/60Hz, 12-24VDC						
Allowabl	ble voltage range		90 to 110% of rated voltage						
Power	AC power		Single preset:Approx. 7VA, Dual preset:Approx. 8VA(240VAC 50/60Hz), Indiction:Approx. 6VA						
consum		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. co speed fo		CP2	Selectable 1cps/30cps/2kcps/5kcps by inner DIP switch						
Min. inp	ut signa	l width	RESET input, INHIBIT input : Approx. 20ms						
Input method	(INH	, CP2 IBIT)	Input logic is selectable [Voltage input] Input Impedance:5.4k\Omega, "H" level:5-30VDC, "L" level:0-2VDC [No-voltage input] Short-circuit impedance:Max. 1k\Omega,						
	RES	ET input	Residual voltage:Max. 2VDC, Open-circuit impedance:Min. 100kΩ						
One-sho	t output time		1st output: 0.5sec., 2nd output: 0.05 to 5sec.						
	Con-	Туре	Single preset type:SPDT(1c) Dual preset type:1st output SPDT(1c), 2nd output:SPDT(1c)						
Control	tact	Capacity	250VAC 3A re	250VAC 3A resistive load					
output	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	retenti	on	10 years(EEPROM)						
External	power	supply	12VDC ± 10% 50mA Max.						
Environ /	Ambient t	emperature	-10 to 55°C, S	torage: -25 to 6	5°C				
-ment /	Ambient	humidity	35 to 85%RH, , Storage: 35 to 85%RH						
Approval			c us (Excep	c Nus (Except for AC/DC power type)					
			FX4:	FX6:	FX4H:				
Weight <sup>≋1</sup>		FX4-I:	Approx. 395g (Approx. 259g) FX6-2P: Approx. 398g (Approx. 262g) FX6-1:	FX4H-I:	FX4L-2P: Approx. 651g (Approx. 467g) FX4L-1: Approx. 593g (Approx. 400g)	FX6L-2P: Approx. 678 (Approx. 494 FX6L-1: Approx. 586 (Approx. 404			
VEnvironment registance			Approx. 353g (Approx. 216g)	Approx. 351g (Approx. 214g)	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.

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

#### Input connection

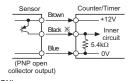
ົງInput logic : Voltage input(PNP)

Counter/Timer Brown +12V Black X Inner circuit \$5.4kΩ Blue (PNP voltage

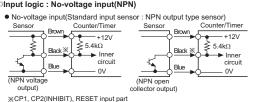
output)

(NPN voltage

output)



# □Input logic : No-voltage input(NPN)



## Contact input Counter/Timer +12V \$5.4kΩ Inner circuit Counting speed: 1 or 30cps setting

Contact input

Counter/Tim

5.4kΩ 0V

Counting speed : 1 or 30cps setting

+12V

#### Case & DIP switch detachment

– 0V

Please turn off the power before detaching the case

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

FX Series

Q

S

Timer

SW1

RESET

1st preset

1st output

(unit: mm

138 1.0

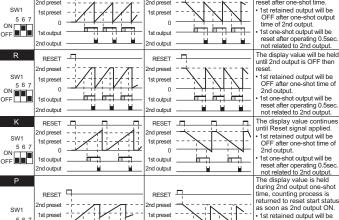


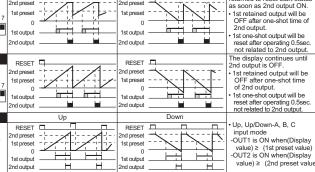


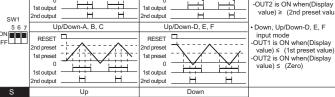


#### Output operation mode

■ ((	ne-shot ou 0.05 to 5se nd output		ned outpu out t output	t Retained ×	The output of single preset type is operated at the status of the second output mode
Output mode	Up, Up	Input n	node Down, Up/Down-D, E, F mode		Operation after Count up
SW1 ON OFF	RESET 2nd preset 1st preset 0 1st output 2nd output		RESET 2nd preset 1st preset 0 1st output 2nd output		The display value continues until Reset signal applied and the output will be held.  1st retained output and 2nd output will be held until Reset signal applied.  When using 1st output as one shot output, it will return after operating for 0.5sec.
SW1 5 6 7 ON OFF	RESET 2nd preset 1st preset 0 1st output 2nd output		RESET 2nd preset 1st preset 0 1st output 2nd output		The display value and output will be held until Reset signal.
SW1 5 6 7 ON OFF	RESET 2nd preset 1st preset 0 1st output		RESET 2nd preset 1st preset 0 1st output		The display returns to initial status and 2nd output will be reset after one-shot time.  • 1st retained output will be OFF after one-shot output time of 2nd output.  • 1st one-shot output will be







RESET

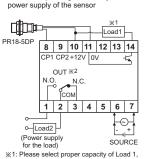
When it is used as Timer, 1st output and 2nd output are flashing repeatedly. 1st output

#### ■ Counting operation of indication model

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

#### **■** Input/output connection

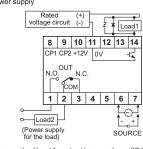
Oln case of operating the load by



X1: Please select proper capacity of Load 1, because total current consumption shoul not exceed current canacity(50mA max ) ※2: Contact capacity: 250VAC 3A Max.

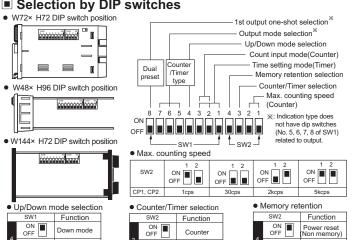
RESISTIVE LOAD

OIn case of operating the load by external



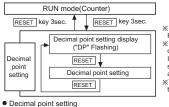
- The capacity of Load 1 must not be exceed max. 30VD max. 100mA of the switching capacity of the transists Please do not supply the reverse polarity voltage.
  Please connect the surge absorber(Diode, Varistor, etc.) at both terminals of Load1, in case of using the
- inductive load.

#### Selection by DIP switches



Timer

#### Decimal point setting(Counter)



Up mode

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

RESET button for over 3sec. in RUN mode.

Kit 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.

The decimal point setting does not exist in indication type.

ON OFF

Memory

6 digit preset type

ON OFF



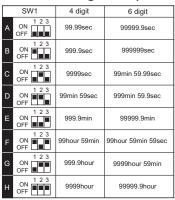
XExisting decimal point setting is displayed when entering into decimal point setting mode.

XIf 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 point will be moved to Down(-) direction.

XIF OF THE PROPERTY OF THE PROPE

#### Time setting mode(Timer)



Selection of one-shot output or hold output for

	SW1	Function			
	ON OFF	1st output:One-shot output			
	ON OFF	1st output:Hold output			
	ior ist output at	the dual preset counter.			
_	Re				
	Dual pre				
	Single pre	set			
ec	1st output(OUT	*1) *1			
	2nd output(OUT	2)			
1	*	1: One-shot output(0.5sec) of 1st output			
		0. 10. 0a.pa.			
		← 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

2. Error						
ı		Error display	Error contents	Return method		
ı		ErrO	The state that second preset is 0	Change setting value which is not zero		
ı	XOutput is OFF when error is displayed.					

XIf 1st preset value is changed to zero("0"), 1st output keeps OFF status. If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 1st preset value, 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

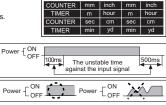
If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates only.

If 2nd preset value is lower than 2nd preset value operates of va (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. 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 oltage 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. nput signal line



#### 5. Input sign ①Shorten the cable distance be

②Please shielded wire for input signal needed to be long.

3Please wire input signal line separated from power line

6. When test dielectric voltage and insulation resistance of the control panel with this unit

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.

 Place where there are severe vibration or impact.
 Place where strong alkalis or acids are used. ③Place 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.

■ Photoelectric sensors

#### Main products

- Proximity sensors
   Area sensors Area sensors
- Door/Door side sensors Counters
- Fiber optic sensors Pressure sensors Timers Display units
- Rotary encoders Power controllers
- Power controllers
  Panel meters
  Graphic/Logic panels
  Temperature controllers
  Tachometer/Pulse(Rate) meters
  Temperature/Humidity transducers
  Stepping meters/frequences

Laser welding/soldering system

- Stepping motors/drivers/motion controllers Laser marking system(CO<sub>2</sub>, Nd:YAG)

### Autonics Corporation Satisfiable Partner For Factory Automation

HEAD QUARTERS: 116, Ungbigongdan-gil, Yangsan-si, Gyeongsangnam-do, OVERSEAS SALES : #402-404 Bucheon Tec

Wonmi-gu, Bucheon, Gyeonggi-do, Korea TEL:82-32-610-2730 / FAX:82-32-329-0728

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

EP-KE-01-008M