Autonics

COUNTER / TIMER
FXY SERIES
INSTRUCTION MANUAL

CE c UL us

Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.
※Safety considerations are categorized as follows.
⚠ **Warning** Failure to follow these instructions may result in serious injury or death.
⚠ **Caution** Failure to follow these instructions may result in personal injury or product damage.
※The symbols used on the product and instruction manual represent the following
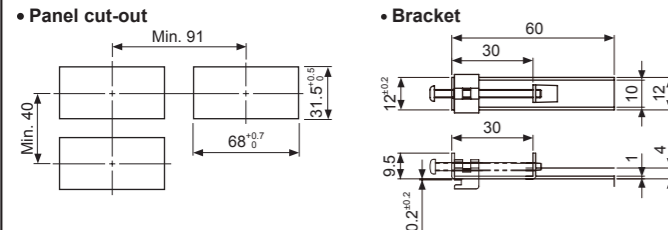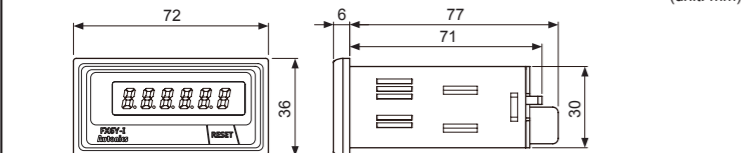⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠ Warning

1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
Failure to follow this instruction may result in fire, personal injury, or economic loss.
2. **Install on a device panel to use.**
Failure to follow this instruction may result in electric shock or fire.
3. **Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in electric shock or fire.
4. **Check 'Connections' before wiring.**
Failure to follow this instruction may result in fire.
5. **Do not disassemble or modify the unit.**
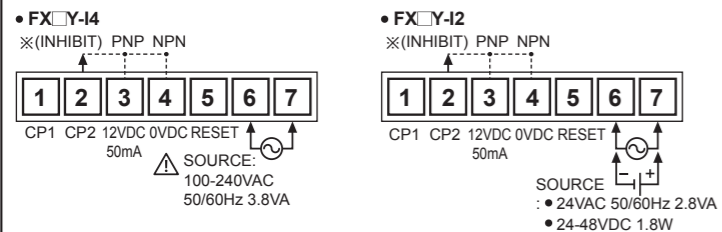Failure to follow this instruction may result in electric shock or fire.

⚠ Caution

1. **When connecting the power/sensor input, use AWG 20(0.50mm²) cable or over, and tighten the terminal screw with a tightening torque of 0.74 to 0.90N·m.**
Failure to follow this instruction may result in fire or malfunction due to contact failure.
2. **Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
3. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in electric shock or fire.
4. **Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
Failure to follow this instruction may result in fire or explosion.
5. **Keep metal chip, dust, and wire residue from flowing into the unit.**
Failure to follow this instruction may result in fire or product damage.

Dimensions
(unit: mm)

- **Panel cut-out**
- **Bracket**

Connections

- **FX□Y-I4**
※(INHIBIT) PNP NPN

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

CP1 CP2 12VDC 0VDC RESET
50mA
※ SOURCE:
100-240VAC
50/60Hz 3.8VA

- **FX□Y-I2**
※(INHIBIT) PNP NPN

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

CP1 CP2 12VDC 0VDC RESET
50mA
SOURCE
: 24VAC 50/60Hz 2.8VA
• 24-48VDC 1.8W

※INHIBIT: In case of timer mode, this terminal is for time hold.
voltage input (PNP): connect with 12VDC, non-voltage input (NPN): connect with 0VDC)
※**The above specifications are subject to change and some models may be discontinued without notice.**
※**Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).**
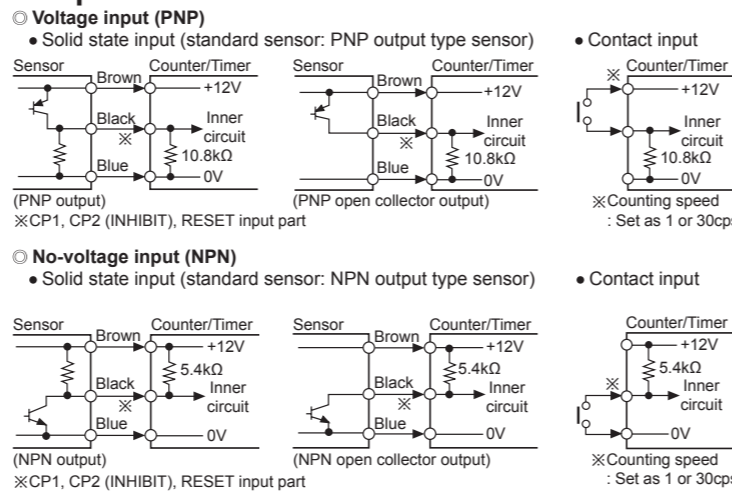
Model

Model	Display digit	Size	Output	Power supply
FX4Y-I2	9999 (4-digit)	DIN W72×H36mm	Indicator	24VAC 50/60Hz, 24-48VDC
FX4Y-I4				100-240VAC 50/60Hz
FX6Y-I2	999999 (6-digit)			24VAC 50/60Hz, 24-48VDC
FX6Y-I4				100-240VAC 50/60Hz

Specifications

Model	Indicator	FX4Y-I2	FX4Y-I4	FX6Y-I2	FX6Y-I4
Display digit		4-digit		6-digit	
Character size (W×H)		8×14mm		4×8mm	
Power supply		24VAC∼ 50/60Hz, 24-48VDC=	100-240VAC∼ 50/60Hz	24VAC∼ 50/60Hz, 24-48VDC=	100-240VAC∼ 50/60Hz
Permissible voltage range		90 to 110% of rated voltage			
Power consumption		Max. 2.8VA (24VAC∼ 50/60Hz) Max. 1.8W (24-48VDC=)	Max. 3.8VA (240VAC∼ 50/60Hz)	Max. 2.8VA (24VAC∼ 50/60Hz) Max. 1.8W (24-48VDC=)	Max. 3.8VA (240VAC∼ 50/60Hz)
Max. counting speed of CP1/CP2		Selectable 1cps/30cps/2kcps/5kcps (DIP switch)			
Return time		Max. 500ms			
Min. signal width		INHIBIT, RESET: approx. 20ms			
Input method		Selectable voltage input (PNP) method or no-voltage input (NPN) method [Voltage input (PNP) method]-input impedance: max. 10.8kΩ, [H]: 5-30VDC=, [L]: 0-2VDC [No-voltage input (NPN) method]-short-circuit impedance: max. 470Ω, short-circuit residual voltage: max. 1VDC, open-circuit impedance: min. 100kΩ			
Repeat/Set/Voltage/Temp. error		Max. ±0.01% ±0.05 sec			
Insulation resistance		Over 100MΩ (at 500VDC megger)			
External power supply		Max. 12VDC= ±10% 50mA			
Memory retention		Approx. 10 years (non-volatile memory)			
Dielectric strength		2,000VAC 50/60Hz for 1 min (between all terminals and case)			
Noise immunity	AC voltage	±2kV the square wave noise (pulse width 1μs) by noise simulator			
	AC/DC voltage	±500V the square wave noise (pulse width 1μs) by noise simulator			
Vibration	Mechanical	0.75mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour			
	Malfunction	0.5mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes			
Shock	Mechanical	300m/s² (approx. 30G) in each X, Y, Z direction for 3 times			
	Malfunction	100m/s² (approx. 10G) in each X, Y, Z direction for 3 times			
Environ-ment	Ambient temp.	-10 to 55℃, storage: -25 to 65℃			
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH			
Protection structure		IP40 (front part, IEC standard)			
Approval		CE c UL us			
Weight※1		Approx. 175g (approx. 120g)			

※1: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

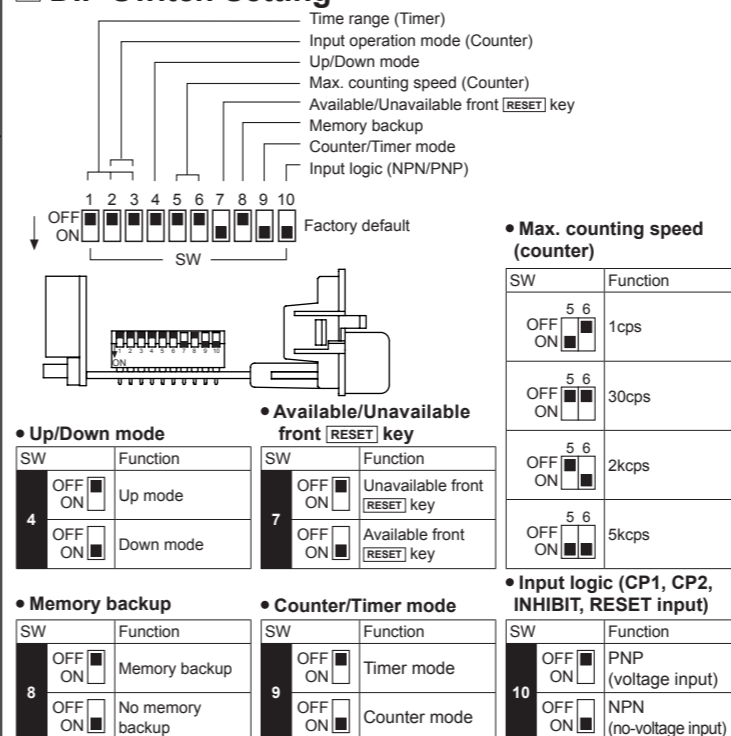## Input Connection

○ **Voltage input (PNP)**
- Solid state input (standard sensor: PNP output type sensor)
- Contact input

(PNP output)
(PNP open collector output)
※Counting speed : Set as 1 or 30cps
※CP1, CP2 (INHIBIT), RESET input part

○ **No-voltage input (NPN)**
- Solid state input (standard sensor: NPN output type sensor)
- Contact input

(NPN output)
(NPN open collector output)
※Counting speed : Set as 1 or 30cps
※CP1, CP2 (INHIBIT), RESET input part

Dot for Decimal Point / Hour. Min. Second

RUN mode
RESET 3 sec
RESET 3 sec
Setting mode
Counter mode
Timer mode

Set decimal point by front RESET
[Clr]
[SEt]

Hour, Min, Sec are not divided with dot.
E.g.) 5959: 59 min 59 sec

Hour, Min, Sec are divided with dot.
E.g.) 59.59: 59 min 59 sec

※In run mode, hold the RESET key for over 3 sec, and it enters setting mode [dP].
※In setting mode, hold the RESET key for over 3 sec, and it saves the setting and returns to RUN mode.
※If there is no RESET key input for 60 sec when entering setting mode, it returns to RUN mode.

DIP Switch Setting

- Time range (Timer)
- Input operation mode (Counter)
- Up/Down mode
- Max. counting speed (Counter)
- Available/Unavailable front RESET key
- Memory backup
- Counter/Timer mode
- Input logic (NPN/PNP)

Factory default

- **Up/Down mode**

SW	Function
4 OFF	Up mode
4 ON	Down mode

- **Available/Unavailable front RESET key**

SW	Function
7 OFF	Unavailable front RESET key
7 ON	Available front RESET key

- **Max. counting speed (counter)**

SW 5 6	Function
OFF	1cps
ON	30cps
	2kcps
	5kcps

- **Memory backup**

SW	Function
8 OFF	Memory backup
8 ON	No memory backup

- **Counter/Timer mode**

SW	Function
9 OFF	Timer mode
9 ON	Counter mode

- **Input logic (CP1, CP2, INHIBIT, RESET input)**

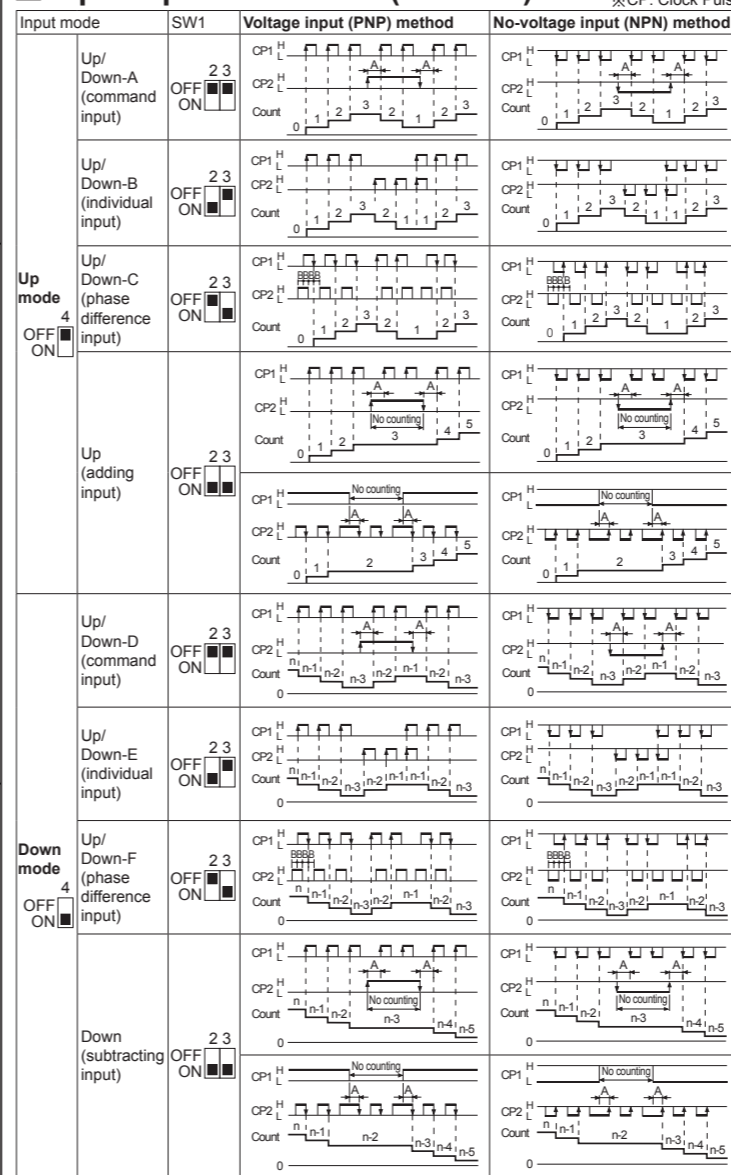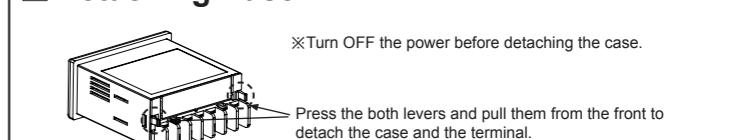| SW	Function
10 OFF	PNP (voltage input)
10 ON	NPN (no-voltage input)

※How to change settings
Power OFF → change settings → power ON → press RESET key or input signal (min. 20ms)

Input Operation Mode (Counter)
※CP: Clock Pulse

Input mode		SW1	Voltage input (PNP) method	No-voltage input (NPN) method
Up mode	Up/Down-A (command input)	OFF 2 3 ON		
	Up/Down-B (individual input)	OFF 2 3 ON		
	Up/Down-C (phase difference input)	OFF 2 3 ON		
	Up (adding input)	OFF 2 3 ON		
Down mode	Up/Down-D (command input)	OFF 2 3 ON		
	Up/Down-E (individual input)	OFF 2 3 ON		
	Up/Down-F (phase difference input)	OFF 2 3 ON		
	Down (subtracting input)	OFF 2 3 ON		

※A: over min. signal width, B: over than 1/2 of min. signal width.
If the signal is smaller than these width, it may cause counting error (±1).
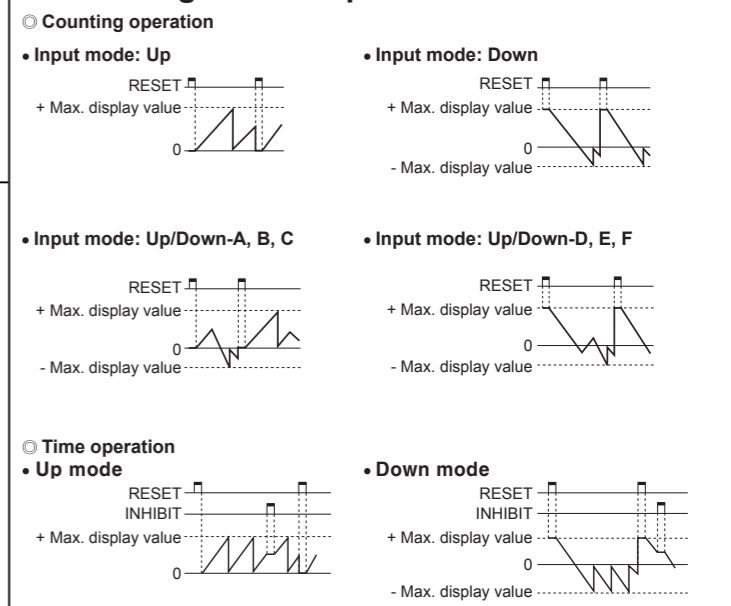※n: +Max. display value (FX4Y-I: 9999, FX6Y-I: 999999)

Detaching Case

※Turn OFF the power before detaching the case.

Press the both levers and pull them from the front to detach the case and the terminal.

Time Range (Timer)

SW	4-digit	6-digit
1 2 3 OFF/ON	99.99sec	99999.9sec
1 2 3 OFF/ON	999.9sec	999999sec
1 2 3 OFF/ON	9999sec	99min 59.99sec
1 2 3 OFF/ON	99min 59.99sec	99min 59sec

SW	4-digit	6-digit
1 2 3 OFF/ON	999.9min	99999.9min
1 2 3 OFF/ON	99hour 59min	99hour 59min 59sec
1 2 3 OFF/ON	9999hour	9999hour 59min
1 2 3 OFF/ON	9999hour	99999.9hour

Counting & Time Operation

○ **Counting operation**
- **Input mode: Up**
- **Input mode: Down**
- **Input mode: Up/Down-A, B, C**
- **Input mode: Up/Down-D, E, F**

○ **Time operation**
- **Up mode**
- **Down mode**

Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
2. 24-48VDC, 24VAC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Use the product, 0.1 sec after supplying power.
4. When supplying or turning off the power, use a switch or etc. to avoid chattering.
5. Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
6. In case of contact input, set count speed to low speed mode (1cps or 30cps) to operate.
If set to high speed mode (2kcps or 5kcps), counting error occurs due to chattering.
7. Keep away from high voltage lines or power lines to prevent inductive noise.
In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
Do not use near the equipment which generates strong magnetic force or high frequency noise.
8. This product may be used in the following environments.
①Indoors (in the environment condition rated in 'Specifications')
②Altitude max. 2,000m
③Pollution degree 2
④Installation category II

Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connector/Sockets
- 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/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSR/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

Autonics Corporation
http://www.autonics.com

■ **HEAD QUARTERS:**
18, Bansong-ro 513 beon-gil, Haeundae-gu, Busan, South Korea, 48002
TEL: 82-51-519-3232
■ **E-mail:** sales@autonics.com