Autonics

COUNTER / TIMER
FXY SERIES
INSTRUCTION MANUAL

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

■ Safety Considerations

※Please observe all safety considera ions for safe and proper product operation to avoid hazards.
※⚠ symbol represents cau ion due to special circumstances in which hazards may occur.

⚠ 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.

⚠ Warning

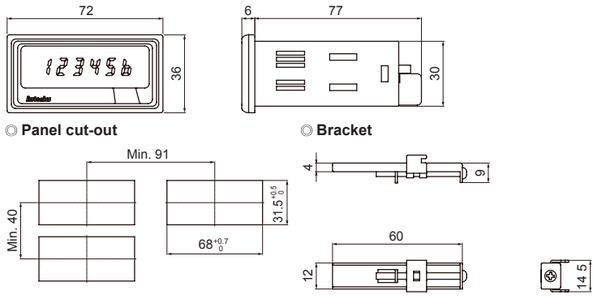
1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
   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

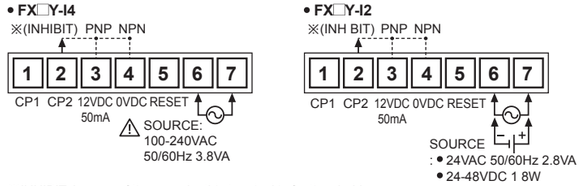
1. **When connecting the power/sensor input, use AWG 20(0.50mm²) cable or over, and tighten the terminal screw with a tightening torque of 0.74 to 0.90N·m.**
   Failure to follow this instruction may result in fire or malfunction due to contact failure.
2. **Use the unit within the rated specifications.**
   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)



■ Connections



※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)	D N 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

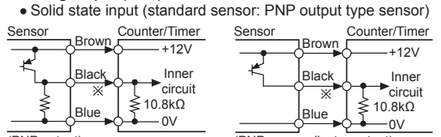
Model	Indicator	FX4Y-I2	FX4Y-I4	FX6Y-I2	FX6Y-I4
Display digit		4-digit		6-digit	
Character size (W×H)		8×14mm		4×8mm	
Power supply		24VAC~ 50/60Hz, 24-48VDC⎓	100-240VAC~ 50/60Hz	24VAC~ 50/60Hz, 24-48VDC⎓	100-240VAC~ 50/60Hz
Permissible voltage range		90 to 110% of rated voltage			
Power consumption		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 (D P 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			
Environment	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 cULus			
Weight※1		Approx. 175g (approx. 120g)			

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

■ Input Connection

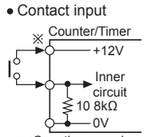
◎ **Voltage input (PNP)**

• Solid state input (standard sensor: PNP output type sensor)



※CP1, CP2 (INHIBIT), RESET input part

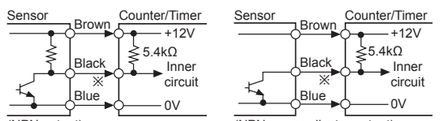
• Contact input



※Counting speed
: Set as 1 or 30cps

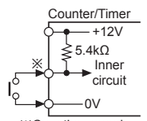
◎ **No-voltage input (NPN)**

• Solid state input (standard sensor: NPN output type sensor)



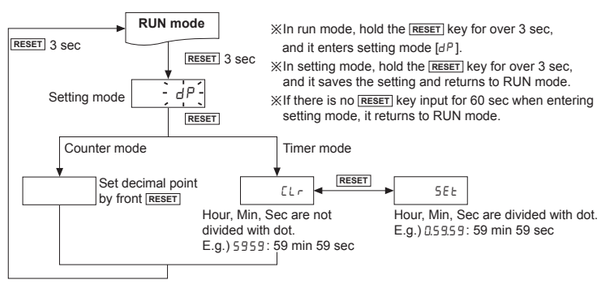
※CP1, CP2 (INHIBIT), RESET input part

• Contact input



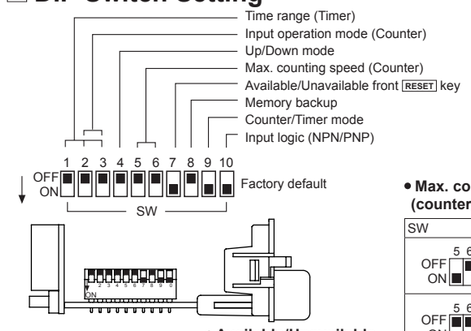
※Counting speed
: Set as 1 or 30cps

■ Dot for Decimal Point / Hour. Min. Second



※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



• **Up/Down mode**

SW		Function
4	OFF / ON	Up mode
	OFF / ON	Down mode

• **Available/Unavailable front RESET key**

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

• **Max. counting speed (counter)**

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

• **Memory backup**

SW		Function
8	OFF / ON	Memory backup
	OFF / ON	No memory backup

• **Counter/Timer mode**

SW		Function
9	OFF / ON	Timer mode
	OFF / ON	Counter mode

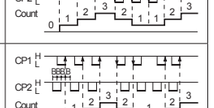
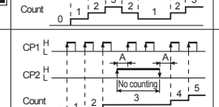
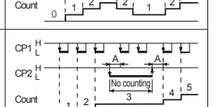
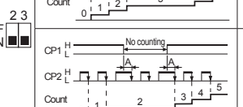
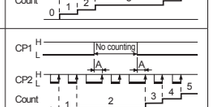
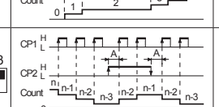
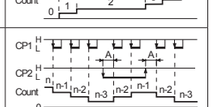
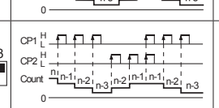
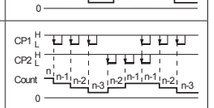
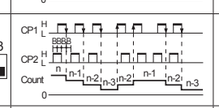
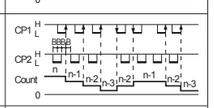
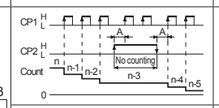
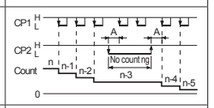
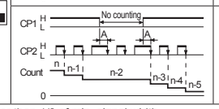
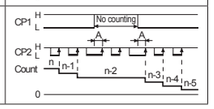
• **Input logic (CP1, CP2, INHIBIT, RESET input)**

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

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

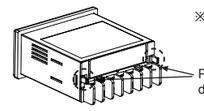
■ Input Operation Mode (Counter)

※CP: Clock Pulse

Input mode		SW1	Voltage input (PNP) method	No-voltage input (NPN) method
Up mode 4 OFF ON	Up/ Down-A (command input)	2 3 OFF ON		
	Up/ Down-B (individual input)	2 3 OFF ON		
	Up/ Down-C (phase difference input)	2 3 OFF ON		
	Up (adding input)	2 3 OFF ON		
Down mode 4 OFF ON	Up/ Down-D (command input)	2 3 OFF ON		
	Up/ Down-E (individual input)	2 3 OFF ON		
	Up/ Down-F (phase difference input)	2 3 OFF ON		
	Down (subtracting input)	2 3 OFF 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)

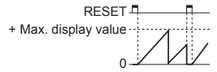
SW	4-digit	6-digit
1 2 3 OFF ON	99.99sec	99999 9sec
1 2 3 OFF ON	999.9sec	999999sec
1 2 3 OFF ON	9999sec	99min 59 99sec
1 2 3 OFF ON	99min 59sec	999min 59 9sec

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	999 9hour	9999hour 59min
1 2 3 OFF ON	9999hour	99999.9hour

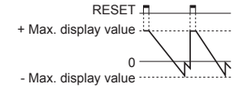
■ Counting & Time Operation

◎ **Counting operation**

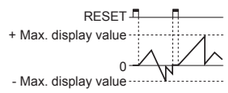
• **Input mode: Up**



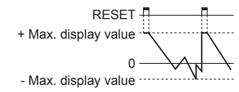
• **Input mode: Down**



• **Input mode: Up/Down-A, B, C**

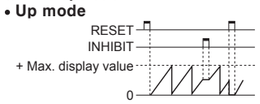


• **Input mode: Up/Down-D, E, F**

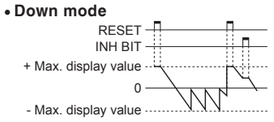


◎ **Time operation**

• **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 he 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 induc ive 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 he equipment which generates strong magne ic force or high frequency noise.
8. This product may be used in he following environments.
   ①Indoors (in he environment condi ion rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollu ion 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