DRW161281AA

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 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

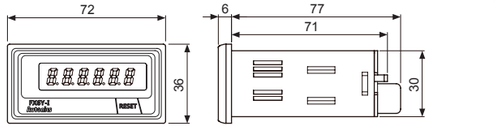
1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
   Failure to follow this instruction may result in personal injury, fire, or economic loss.
2. **The unit must be installed on a device panel before use.**
   Failure to follow this instruction may result in electric shock.
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.
4. **Do not disassemble or modify the unit. Please contact us if necessary.**
   Failure to follow this instruction may result in electric shock or fire.

⚠ Caution

1. **Do not use the unit outdoors.**
   Failure to follow this instruction may result in shortening the life cycle of the unit, or electric shock.
2. **When connecting the power input cables, make sure to use AWG 20 (0.50mm^2) cables and make sure to tighten the terminal screw bolt above 0.74 to 0.90N·m.**
   Failure to follow this instruction may result in fire due to contact failure.
3. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in shortening the life cycle of the unit, or fire.
4. **Do not use loads beyond the rated switching capacity of the relay contact.**
   Failure to follow this instruction may result in insulation failure, contact melt, contact failure, relay broken, or fire.
5. **Do not use water or oil-based detergent when cleaning the unit. Use dry cloth to clean the unit.**
   Failure to follow these instructions may result in electric shock or fire.
6. **Do not use the unit where flammable or explosive gas, humidity, direct sunlight, radiant heat, vibration, and impact may be present.**
   Failure to follow this instruction may result in fire or explosion.
7. **Keep dust and wire residue from flowing into the unit.**
   Failure to follow this instruction may result in fire or product malfunction.

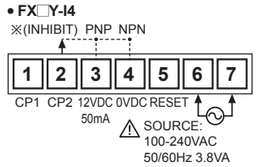
■ Dimensions

(unit: mm)

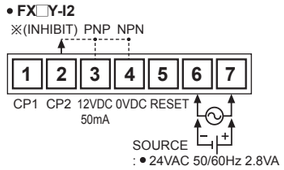


■ Connections

• **FX□Y-I4**



• **FX□Y-I2**



※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.

■ 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

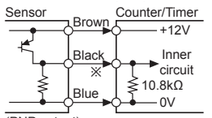
Model	Indicator	FX4Y-I2	FX4Y-I4	FX6Y-I2	FX6Y-I4
Display digit		4-digit		6-digit	
Character size (W×H)		8×14mm		4×8mm	
Power supply		24VAC~ 50/60Hz, 24-48VDC⎓	100-240VAC~ 50/60Hz	24VAC~ 50/60Hz, 24-48VDC⎓	100-240VAC~ 50/60Hz
Permissible voltage range		90 to 110% of rated voltage			
Power consumption		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/s^2 (approx. 30G) in each X, Y, Z direction for 3 times			
	Malfunction	100m/s^2 (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 parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

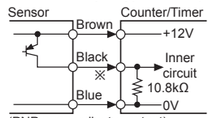
■ Input Connection

◎ **Voltage input (PNP)**

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



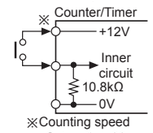
(PNP output)



(PNP open collector output)

※CP1, CP2 (INHIBIT), RESET input part

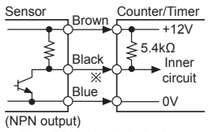
• Contact input



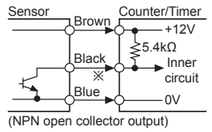
※Counting speed
: Set as 1 or 30cps

◎ **No-voltage input (NPN)**

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



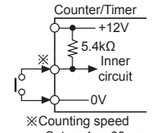
(NPN output)



(NPN open collector output)

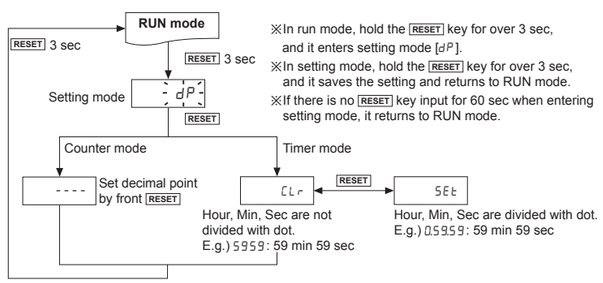
※CP1, CP2 (INHIBIT), RESET input part

• Contact input



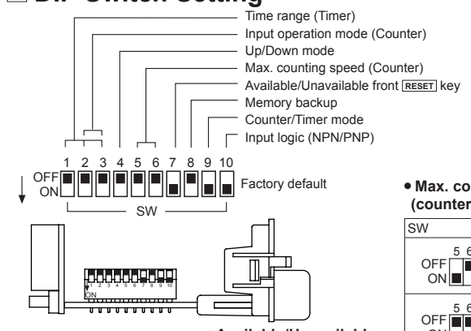
※Counting speed
: Set as 1 or 30cps

■ 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**

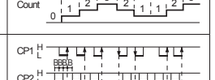
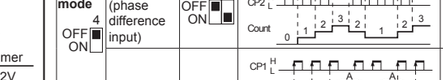
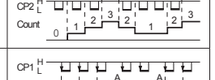
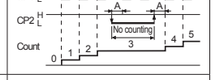
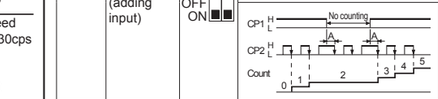
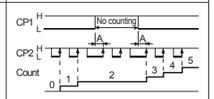
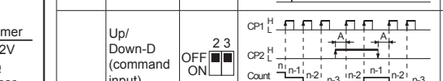
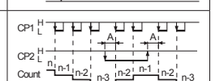
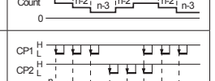
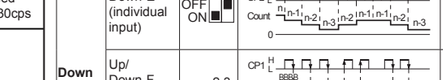
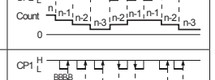
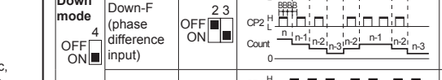
SW		Function
9	OFF / ON	Timer mode
	OFF / ON	Counter mode

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

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

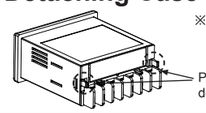
■ Input Operation Mode (Counter)

※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)

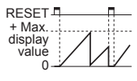
SW	4-digit	6-digit
1 2 3 OFF / ON	99.99sec	99999.9sec
1 2 3 OFF / ON	999.9sec	999999sec
1 2 3 OFF / ON	9999sec	99min 59.99sec
1 2 3 OFF / ON	99min 59sec	999min 59.9sec

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

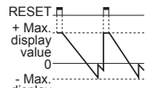
■ Counting & Time Operation

◎ **Counting operation**

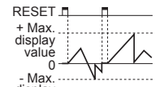
• **Input mode: Up**



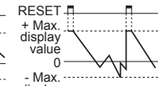
• **Input mode: Down**



• **Input mode: Up/Down-A, B, C**

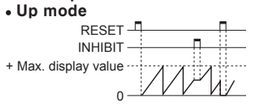


• **Input mode: Up/Down-D, E, F**

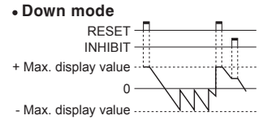


◎ **Time operation**

• **Up mode**

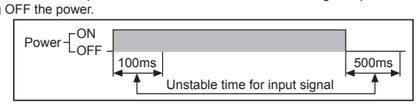


• **Down mode**

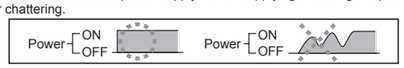


■ Cautions During Use

1. **DIP switch setting**
   Turn OFF the power before setting the DIP switch to the Counter/Timer.
   After DIP switch setting when cutting off the power, press the front RESET key or supplying the external reset.
2. **Power**
   ①In case of 24VAC, 24-48VDC model, power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
   ②The inner circuit voltage rises within 100ms after supplying the power to the unit. The input may be unavailable at this period. Be sure that the inner circuit voltage drops within 500ms after turning OFF the power.



   ③Use the unit within the rated power supply. When supplying or cutting the power, use a switch not to occur chattering.



3. **Input signal line**
   ①Shorten the cable from the sensor to the unit.
   ②Use shield cable when input cable is longer.
   ③Wire the input signal line separately from power line.
4. **Testing dielectric voltage or insulation resistance when the unit is installed at control panel**
   ①Isolate the unit from the circuit of control panel.
   ②Short all terminals of the unit.
5. **Do not use the unit in the following environments.**
   ①Environments with high vibration or shock.
   ②Environments with strong alkali or strong acid materials
   ③Environments with exposure to direct sunlight
   ④Near machinery which produces strong magnetic force or electric noise
6. **This product may be used in the following environments.**
   ①Indoor ②Altitude max. 2,000m
   ③Pollution degree 2 ④Installation category II

※Failure to follow these instructions may result in product damage.

■ 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, Co_2, 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

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