Autonics COUNTER / TIMER FXM/FXH 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 st symbol represents caution due to special circumstances in which hazards may occur.

- A 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

- When connecting the power/sensor input and relay output, 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.

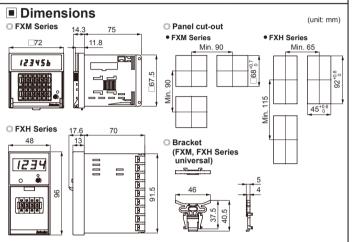
- Failure to follow this instruction may result in fire or malfunction due to contact failure.

 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.



FX4M-1P4

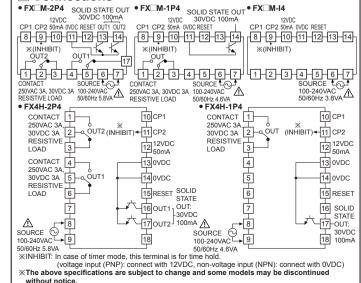
FX6M-1P4

FX8M-1P4

Specifications 1-stage setting FX4H-1P4

Model	2-stage	esetting	FX4H-2P4	FX4M-2P4	FX6M-2P4	_
	Indicat		_	FX4M-I4	FX6M-I4	FX8M-I4
Display digit			4-digit		6-digit	8-digit
Character size (W×H)			6×10mm		4×8mm	3.8×7.6mm
Power supply			100-240VAC~ 50/60Hz			
Permissible voltage range			90 to 110% of rated voltage			
Power consumption			■ 1-stage: max. 4.6VA ■ 2-stage: max. 5.8VA ■ Indicator: max. 3.8VA			
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			
One-shot output time			1-stage: 0.05 to 5 sec 2-stage: 1st setting 0.5 sec fixed, 2nd setting 0.05 to 5 sec			
Control output	Contact	Туре	1-stage: Instantaneuos SPDT (1c) 2-stage: OUT1-Instantaneuos SPDT (1c), OUT2-Instantaneuos SPDT (1c)			
		Capacity	250VAC~ 3A, 30VDC== 3A resistive load			
	Solid	Туре	1-stage: 1 NPN open collector 2-stage: OUT1-1 NPN open collector, OUT2-1 NPN open collector			
	state	Capacity	■Load voltage: max. 30VDC: ■Load current: max. 100mA ■Residual voltage: max. 1VDC:			
			Min. 10,000,000 operations			
life cycle Electrical			Min. 100,000 operations (250VAC 3A resistive load)			
Repeat/Set/Voltage/ Temp. error			Max. ±0.01% ±0.05 sec			
Insulation resistance			Over 100MΩ (at 500VDC megger)			
External power supply						
Memory retention			Approx. 10 years (non-volatile memory)			
Dielectric strength			2,000VAC 50/60Hz for 1 min (between all terminals and case)			
Noise immunity			±2kV the square wave noise (pulse width 1μs) by noise simulator			
Vibration Malfund		echanical	0.75mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour			
		Ifunction	por 10 minutes			
Shock			300m/s² (approx. 30G) in each X, Y, Z o			
			on 100m/s² (approx. 10G) in each X, Y, Z o		firection for 3 times	
			-10 to 55°C, storage			
			35 to 85%RH, storage: 35 to 85%RH			
Protection structure			IP20 (front part, IEC standard)			
Approval			(c N us			
\A/=:=:-			Approx. 245g (approx. 180g)			
vveight			Approx. 265g (approx. 200g)			
VA. T	Indic		Approx. 225g (approx. 160g) es packaging. The weight in parenthesis is for unit only.			
			is packaging. The wi			

Connections



without notice. $\underline{\times}$ Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage)

Detaching Case or DIP Switch Cover



from the case. ⚠ Be sure not to be wounded when using a tool.

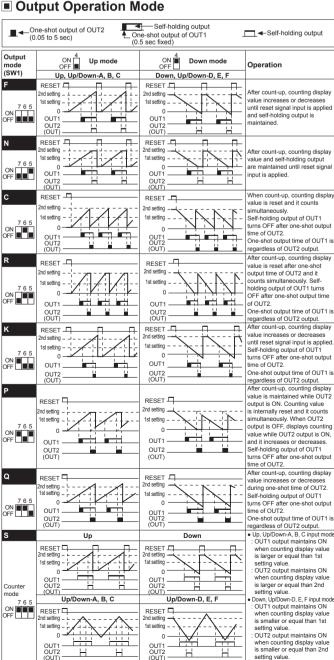
Input Operation Mode (Counter) Voltage input (PNP) method No-voltage input (NPN) method Input mode CP1 H TTTTTT CP2 H ON OFF (command input) 1 2 3 2 1 2 3 CP1 H TTT TTT Up/ 0 1 2 2 1 1 2 3 CP2 H Down-B (individual 0 1 2 3 2 1 1 2 Count Count input) Up/ Down-C (phase difference input) Up ON OFF 1 2 3 2 1 2 3 Cb1 F fifting in fi No counting 4 5 CP2 H No counting 4 5 (adding ON III input) CP1 H = CP2 H TT TT TT CP2 H LI LI LI LI LI LI Count 0 1 2 3 4 2 CP1 H A A A A A CP2 H CP2 H n n-1 n-2 n-3 n-2 n-1 n-2 n-3 Down-D ON OFF (command Count n-1 n-2 n-3 n-2 n-1 n-2 n-3 input) ----CP1 H TITTE CP2 H Count n-1 n-2 n-3 n-2 n-1 n-1 n-2 n-3 CP2 H (individu input) ON OFF Count n-1 n-2 n-3 n-2 | n-1 n-1 n-2 n-3 0 — ON E CP2 H No counting CP2 H No counting Count (subtracting ON III No counting input) CP1 H = Count n-1 n-2 Count n-1 n-2

OUT1 U

(OUT)

Set one-shot output time by front TIME volume switch

7 6 5 ON OFF



OUT1 OUT2 (OUT)

OUT1 OUT2

(OUT)

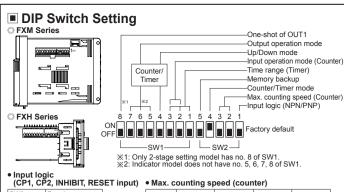
RESET -

Н

Н

setting value.

OUT1 and OUT2 turns OFF \rightarrow ON \rightarrow OFF repeatedly (flicker).



ON NPN (no-voltage input) ON OFF ON OFF ON PNP (voltage input) Function 1cps 2kcps 5kcps

• Up/Down mode • Counter/Timer mode Memory backup SW2 Function SW2 Function SW1 Function ON Counter mode ON No memory backup Down mode ON OFF Memory backup

ON Timer mode • Time range (timer) One-shot output of OUT1 SW1 4-digit 6-digit 8-digit One-shot output of OUT1 ON OFF 99.99sec 99999.9sec 999999.99sec Self-holding output of OUT1 999999sec 999.9sec *This function is for setting one-shot output (0.5 sec fixed) or self-holding output (until OUT2 turns OFF) of OUT1 at 2-stage setting model. 99min ON OFF 9999sec 99999999sec 59.99sec Example of output operation mode F 99999min 999min ON OFF RESET _____ 59sec 59.9sec 59.9sec 2nd setting -9999999.9mir 99999.9min ON OFF 999.9min 99hour 59min 999hour 59mir 99hour __0.5 sec ON OFF 59.9sec 9999hour 9999hour OUT1 Self-holding output ON OFF 999.9hour 59min 59min 59sec ON 9999hour 99999.9hour \Box

Power OFF \rightarrow change settings \rightarrow power ON \rightarrow press RESET key or input signal (min. 20ms)

Input Connection ○ Voltage input (PNP) Solid state input (standard sensor: PNP output type sensor) Contact input Sensor Brown Sensor Brown Counter/Timer Counter/Timer Counter/Timer ---+12V -----+12V Black X ----+12V Black × Inner circuit \$10.8kΩ Blue \$10.8kΩ

en collector Blue ≥ 10.8kΩ 0V (PNP open collector output) (PNP output) **XCounting speed** **CP1, CP2 (INHIBIT), RESET input part : Set as 1 or 30cps O No-voltage input (NPN) • Contact input Counter/Timer

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

Sensor Brown Counter/Timer Sensor Brown Counter

Black × 5.4kΩ Black × 5.4kΩ

Black × 5.4kΩ

Black × 5.4kΩ

Black × 5.4kΩ

Black × 5.4kΩ

Black × 5.4kΩ

Black × 5.4kΩ

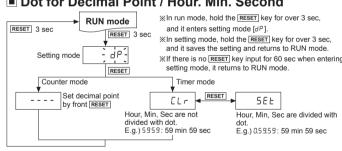
Black × 5.4kΩ Sensor Brown State Blue Blue -0V (NPN output) (NPN open collector output) *CP1, CP2 (INHIBIT), RESET input part

: Set as 1 or 30cps ■ Counting & Time Operation for Indicator (FX□M-I4) Counting operation Input mode: Down Up/Down-D, E, F + Max.___

+ Max. display value ○ Time operation • Up mode RESET RESET-

Dot for Decimal Point / Hour. Min. Second

*- display is only for F. K. Q. S output operation mode and it cannot be set.



Error Display and Output Operation

Troubleshooting Error Display Error description Setting value is 0. Change the setting value anything but 0. When error occurs, the output turns OFF.

*When 1st setting value is set as 0 (zero), OUT1 maintains OFF.

When 2nd setting value is smaller than 1st setting value, 1st setting value is ignored and only OUT2 output operates. XIndicator model does not have error display function *Indicator model does not have error display function.

Unit Sticker

Unit sticker is included.

— 0V

Counting speed

Cautions during Use

- 1. Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents 2. Use the product, 0.1 sec after supplying power.

 3. When supplying or turning off the power, use a switch or etc. to avoid chattering.
- 4. Install a power switch or circuit breaker in the easily accessible place for supplying or
- In taste in power switch or include breaker in the easily accessible place for supplying or disconnecting the power.
 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. 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 input signal line closely.
- line and shielded wire at input signal line.

Do not use near the equipment which generates strong magnetic force or high frequency

7. This product may be used in the following environments. ①Indoors (in the environment condition rated in 'Specifications') ②Altitude max. 2,000m ③Pollution degree 2

(4) Installation category II Major Products

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