

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.
- ⚠ 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.

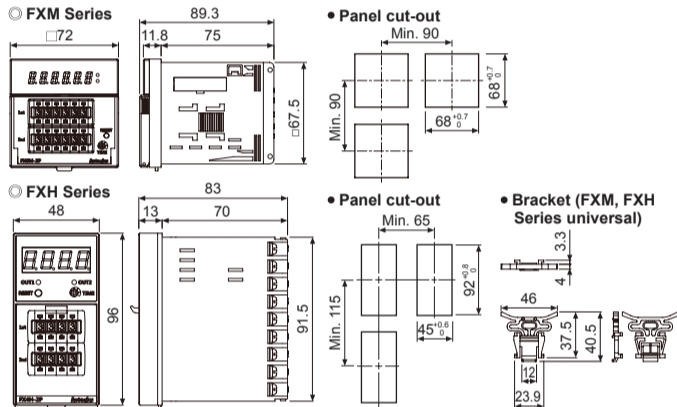
Warning

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 or relay output cables, make sure to use AWG 20 (0.50mm²) 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

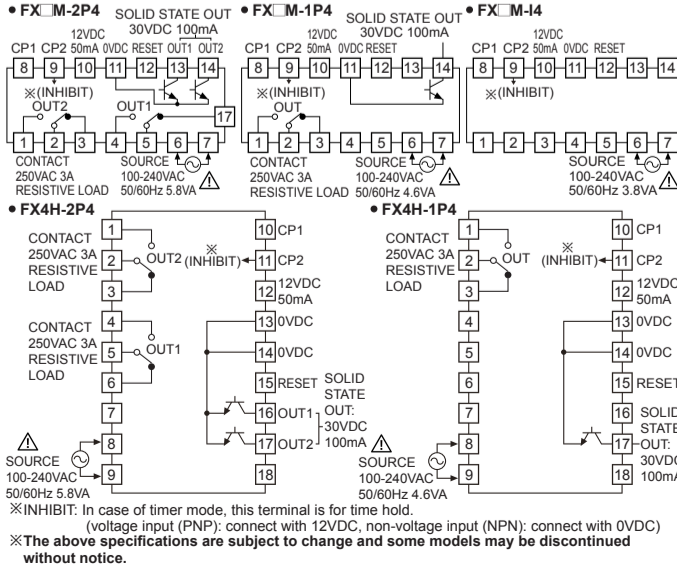


Specifications

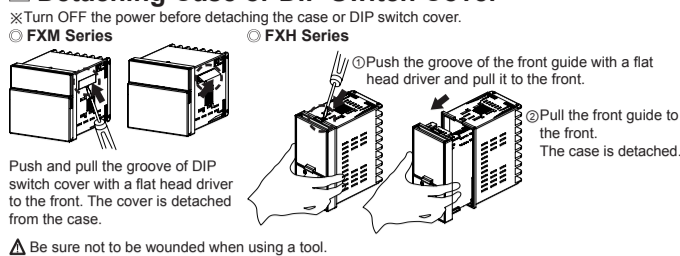
Model	1-stage setting	FX4H-1P4	FX4M-1P4	FX6M-1P4	FX8M-1P4
2-stage setting	FX4H-2P4	FX4M-2P4	FX6M-2P4	FX8M-2P4	
Indicator	—	FX4M-I4	FX6M-I4	FX8M-I4	
Display digit	4-digit	6-digit	6-digit	8-digit	
Character size (W×H)	6×10mm	6×10mm	6×10mm	8×7.6mm	
Power supply	100-240VAC~50/60Hz	100-240VAC~50/60Hz	100-240VAC~50/60Hz	100-240VAC~50/60Hz	
Permissible voltage range	90 to 110% of rated voltage	90 to 110% of rated voltage	90 to 110% of rated voltage	90 to 110% of rated voltage	
Power consumption	1-stage: max. 4.6VA	2-stage: max. 5.8VA	1-stage: max. 4.6VA	2-stage: max. 5.8VA	
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	Type: 1-stage: Instantaneous SPDT (1c), 2-stage: OUT1-Instantaneous SPDT (1c), OUT2-Instantaneous SPDT (1c)			
	Solid state	Capacity: 250VAC~3A resistive load Type: 1-stage: 1 NPN open collector, 2-stage: OUT1-1 NPN open collector, OUT2-1 NPN open collector Load voltage: max. 30VDC, Load current: max. 100mA, Residual voltage: max. 1VDC~			
Relay life cycle	Mechanical	Min. 10,000,000 operations			
	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	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	±2kV 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			
Environ-Ambient temp.	-10 to 55°C, storage: -25 to 65°C				
Environ-Ambient humi.	35 to 85%RH, storage: 35 to 85%RH				
Protection structure	IP20 (front part, IEC standard)				
Approval	CE, RoHS				
Weight	1-stage setting	Approx. 245g (approx. 180g)			
	2-stage setting	Approx. 285g (approx. 200g)			
	Indicator	Approx. 225g (approx. 160g)			

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

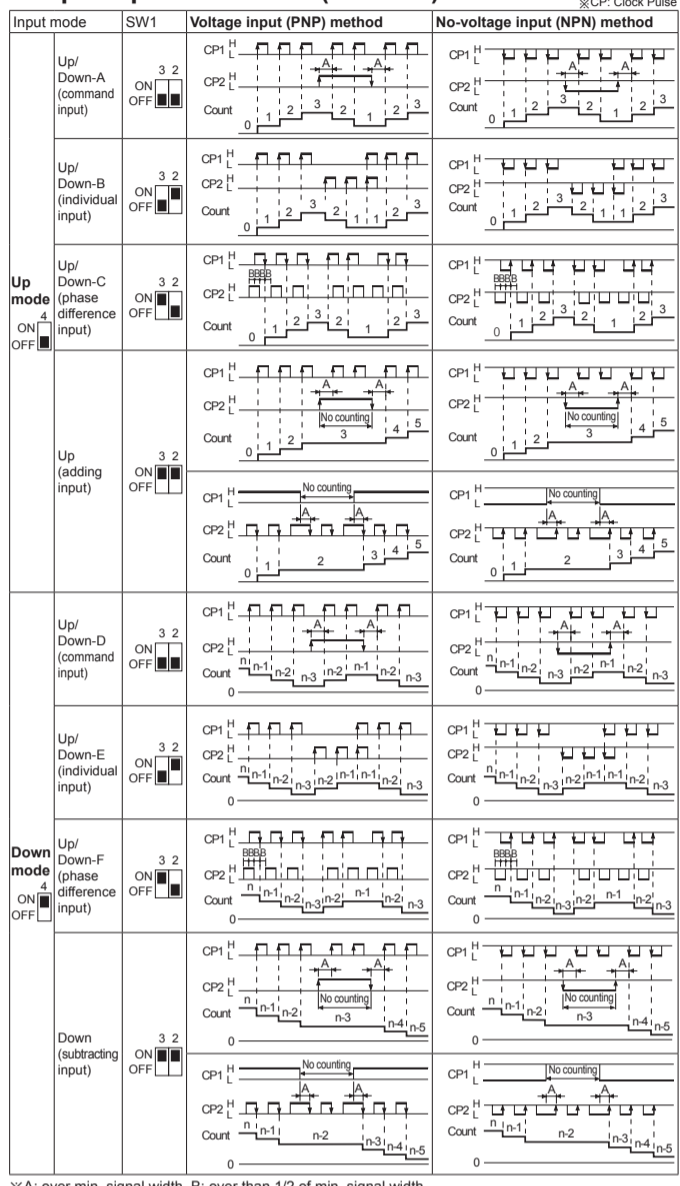
Connections



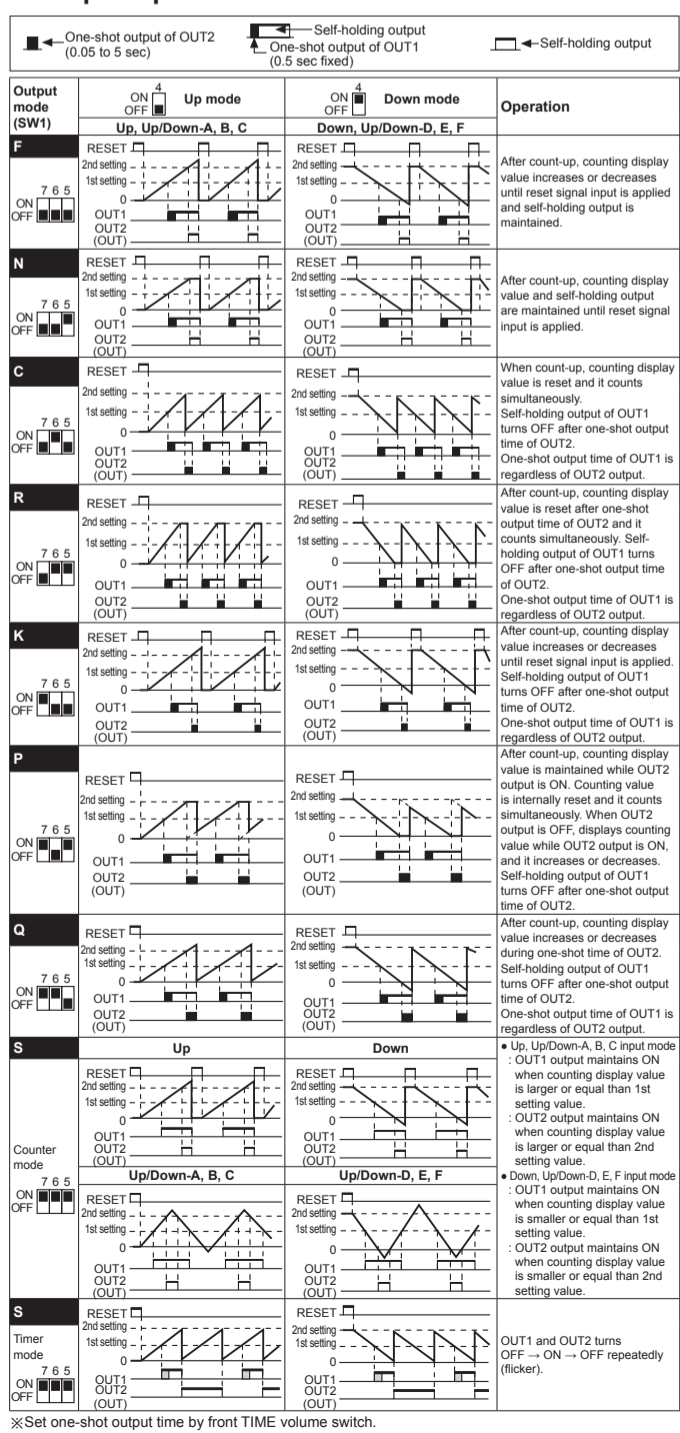
Detaching Case or DIP Switch Cover



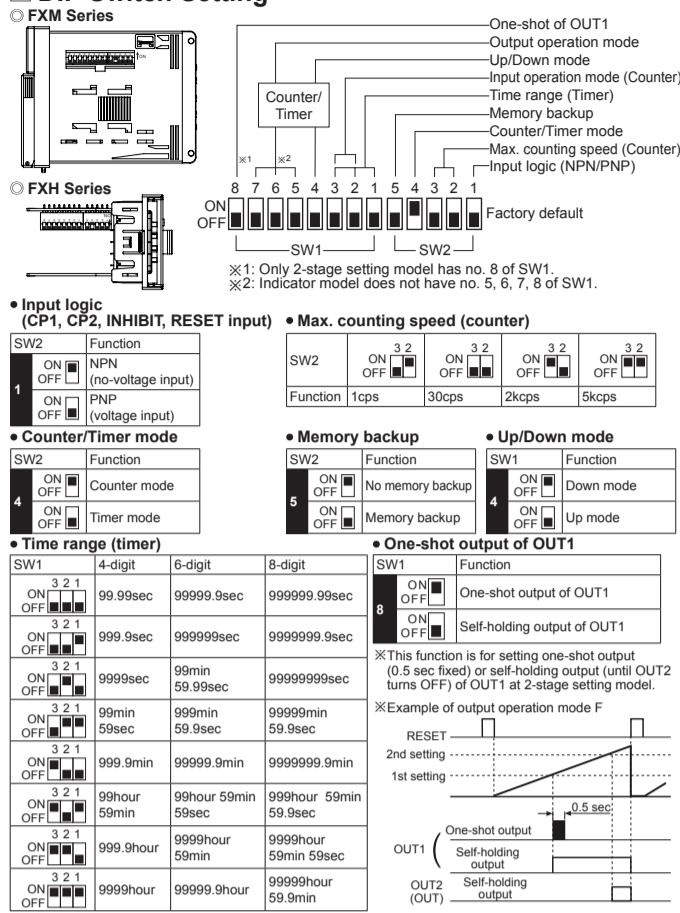
Input Operation Mode (Counter)



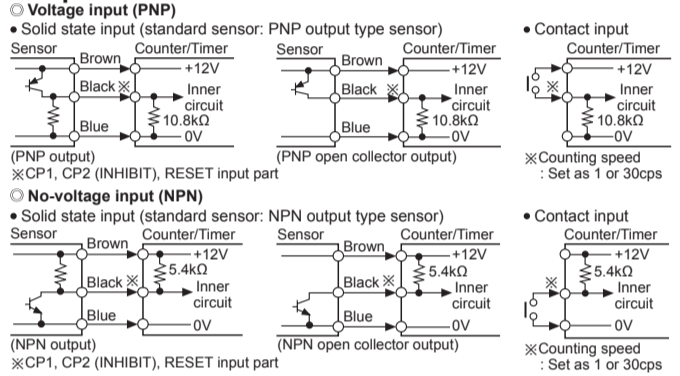
Output Operation Mode



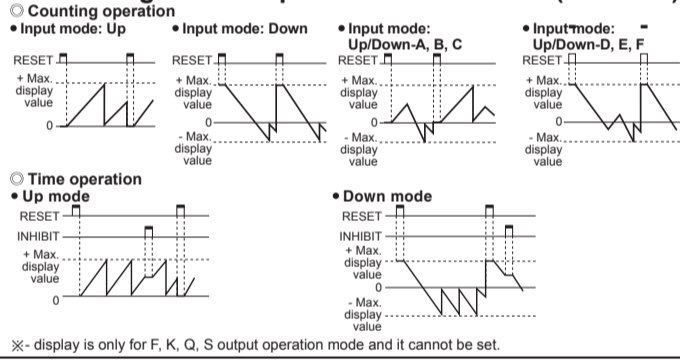
DIP Switch Setting



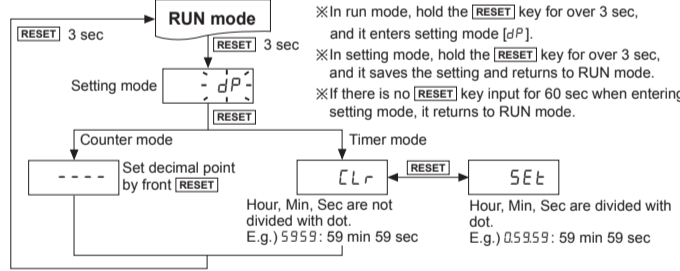
Input Connection



Counting & Time Operation for Indicator (FXM-I4)



Dot for Decimal Point / Hour. Min. Second



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. Error: Display Error Setting value is 0. Troubleshooting: Change the setting value anything but 0.
 - ※If error occurs, the output turns OFF.
 - ※In case of 2-stage setting mode, error displays when 2nd setting value is 0 (zero).
 - ※1st setting value is set as 0 (zero), OUT1 maintains OFF.
 - ※2nd setting value is smaller than 1st setting value, 1st setting value is ignored and only OUT2 output operates.
 - ※Indicator model does not have error display function.
 3. Unit sticker: FXM Series provides unit sticker. Unit sticker is useful to your application.
 4. Power: The 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.
 - ① Use the unit within the rated power supply. When supplying or cutting the power, use a switch not to occur chattering.
 5. Input signal line: Shorten the cable from the sensor to the unit. Use shield cable when input cable is longer. Wire the input signal line separately from power line.
 6. Testing dielectric voltage or insulation resistance when the unit is installed at control panel: Isolate the unit from the circuit of control panel. Short all terminals of the unit.
 7. Do not use the unit in the following environments:
 - ① Environments with high vibration or shock.
 - ② Environments with strong alkali or strong acidic materials.
 - ③ Environments with exposure to direct sunlight.
 - ④ Near machinery which produces strong magnetic force or electric noise.
 8. This product may be used in the following environments:
 - ① Indoor
 - ② Altitude max. 2,000m
 - ③ Pollution degree 2
 - ④ Installation 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
- Field Network Devices
- Laser Marking System (Fiber, Co., 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
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Rotary Encoders
- Display Units
- Sensor Controllers

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