

Autonics 8-PIN PLUG TYPE COUNTER FS 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.

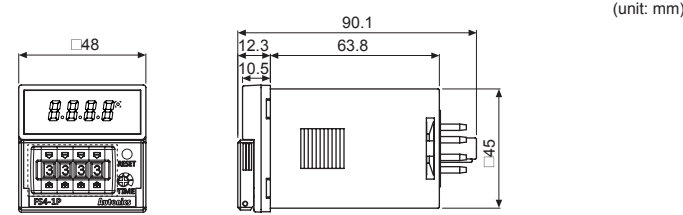
Warning

- 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.
- Install on a device panel to use.** Failure to follow this instruction may result in electric shock or fire.
- 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.
- Check 'Connections' before wiring.** Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit.** Failure to follow this instruction may result in electric shock or fire.

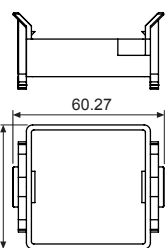
Caution

- 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.
- Use the unit within the rated specifications.** Failure to follow this instruction may result in fire or product damage.
- 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.
- 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.
- Keep metal chip, dust, and wire residue from flowing into the unit.** Failure to follow this instruction may result in fire or product damage.

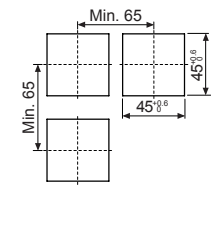
Dimensions



Bracket



Panel cut-out



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
FS4-1P2	9999 (4-digit)	DIN W48xH48mm	1-stage setting	24VAC 50/60Hz, 24-48VDC
FS4-1P4	9999 (4-digit)			100-240VAC 50/60Hz
FS5-14	99999 (5-digit)			100-240VAC 50/60Hz

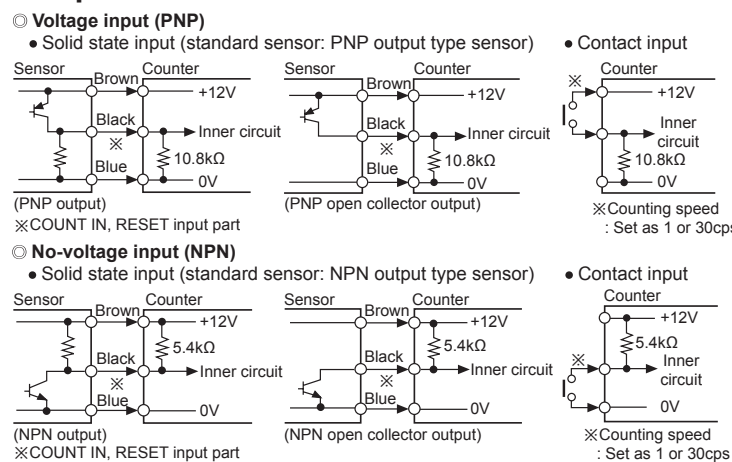
※Sockets (PG-08, PS-08(N)) are sold separately.

Specifications

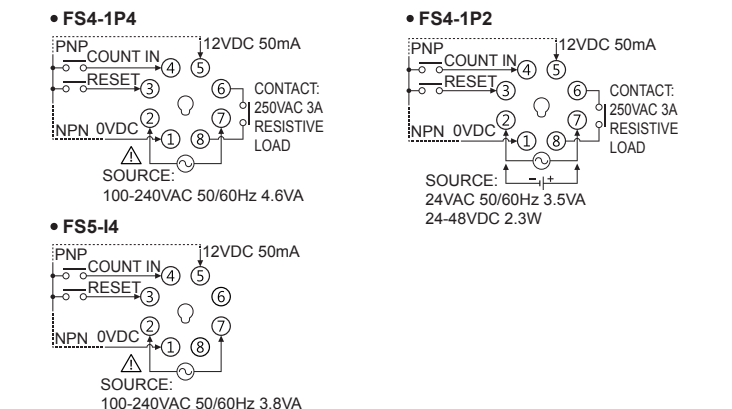
Model	1-stage setting	FS4-1P2	FS4-1P4	FS5-14
Display digit	Indicator	4-digit	—	5-digit
Character size (W×H)	—	3.8×7.6mm	—	4×8mm
Power supply	—	24VAC~ 50/60Hz, 24-48VDC	100-240VAC~ 50/60Hz	—
Permissible voltage range	—	90 to 110% of rated voltage		
Power consumption	—	Max. 3.5VA (24VAC~ 50/60Hz), Max. 2.3W (24-48VDC)	Max. 4.6VA (100-240VAC~ 50/60Hz)	Max. 3.8VA (100-240VAC~ 50/60Hz)
Max. counting speed for COUNT IN	—	Selectable 1cps/30cps/2kcps/5kcps (DIP switch)		
Return time	—	Max. 500ms		
Min. signal width	—	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	—	0.05 to 5 sec		
Control output	Contact	Type	Instantaneous SPST (1a)	—
Relay life cycle	Mechanical	Capacity	250VAC~ 3A resistive load	—
Insulation resistance	Electrical	Relay	Min. 5,000,000 operations (250VAC 3A resistive load)	—
External power supply	—	life cycle	Min. 100,000 operations (250VAC 3A resistive load)	—
Memory retention	—	Insulation resistance	Over 100MΩ (at 500VDC megger)	—
Dielectric strength	—	External power supply	Max. 12VDC ±10% 50mA	—
Noise immunity	AC voltage	Memory retention	Approx. 10 years (non-volatile memory)	—
AC/DC voltage	±2kV the square wave noise (pulse width 1μs) by noise simulator	Dielectric strength	2,000VAC 50/60Hz for 1 min (between all terminals and case)	—
Mechanical	±500V the square wave noise (pulse width 1μs) by noise simulator	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	—
Malfunction	0.75mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour	Vibration	Mechanical 0.75mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes Malfunction 0.5mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes	—
Mechanical	300m/s ² (approx. 30G) in each X, Y, Z direction for 3 times	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	—
Malfunction	100m/s ² (approx. 10G) in each X, Y, Z direction for 3 times	Environment	Ambient temp. -10 to 55°C, storage: -25 to 65°C Ambient humi. 35 to 85%RH, storage: 35 to 85%RH	—
Protection structure	IP20 (front part, IEC standard)	Approval	CE, RoHS	—
Weight	Approx. 130g (approx. 90g)	Weight	Approx. 120g (approx. 80g)	—

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

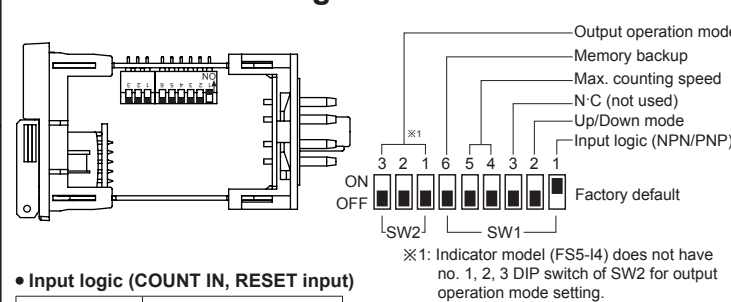
Input Connection



Connections



DIP Switch Setting



Input logic (COUNT IN, RESET input)

SW1	Function
ON	NPN (no-voltage input)
OFF	PNP (voltage input)

Up/Down mode

SW1	Function
ON	Down mode
OFF	Up mode

Memory backup

SW1	Function
ON	No memory backup
OFF	Memory backup

Max. counting speed

SW1	Function
ON	1cps
OFF	30cps
ON	2kcps
OFF	5kcps

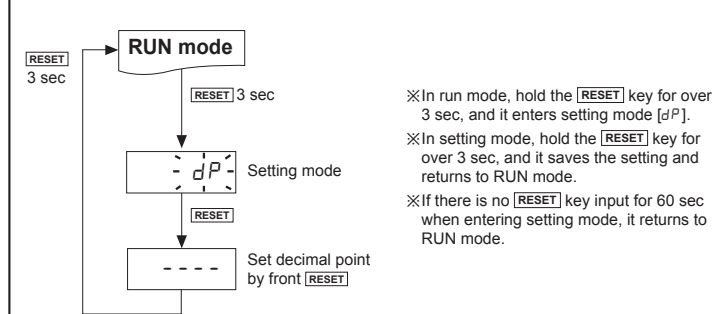
How to change settings: Power OFF → change settings → power ON → press RESET key or input signal (min. 20ms)

Output Operation Mode

Output mode (SW2)	SW1 ON	SW1 OFF	Operation
F	Up mode	Down mode	After count-up, counting display value increases or decreases until reset signal input is applied and self-holding output is maintained.
N	Up mode	Down mode	After count-up, counting display value and self-holding output are maintained until reset signal input is applied.
C	Up mode	Down mode	When count-up, counting display value is reset and it counts simultaneously.
R	Up mode	Down mode	After count-up, counting display value is reset after one-shot output time and it counts simultaneously.
K	Up mode	Down mode	After count-up, counting display value increases or decreases until reset signal input is applied.
P	Up mode	Down mode	After count-up, counting display value is maintained while output is ON. Counting value is internally reset and it counts simultaneously.
Q	Up mode	Down mode	After count-up, counting display value increases or decreases during one-shot output time.
S	Up mode	Down mode	Output maintains ON when counting display value is larger or equal than setting value.

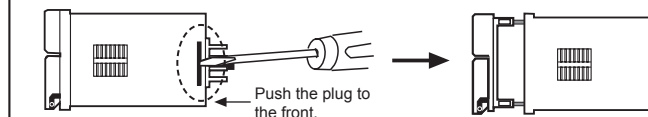
Set one-shot output time by front TIME volume switch.

Dot for Decimal Point



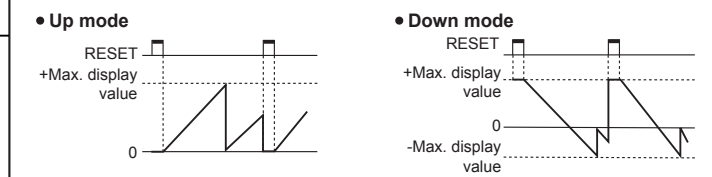
Detaching Case

Turn OFF the power before detaching the case.



Push the grooves at both side of the unit with a flat head driver to the outside and push the plug part to the front. The plug is detached. Be sure not to be wounded when using a tool.

Counting Operation for Indicator (FS5-14)



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

Error Display and Output Operation

Error Display	Error description	Troubleshooting
Err 0	Setting value is 0.	Change the setting value anything but 0.

When error occurs, the output turns OFF. Indicator model does not have error display function.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 24-48VDC, 24VAC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Use the product, 0.1 sec after supplying power.
- When supplying or turning off the power, use a switch or etc. to avoid chattering.
- Install a power switch or circuit 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 30 cps) 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 shielded wire at input signal line. Do not use near the equipment which generates strong magnetic force or high frequency noise.
- This product may be used in the following environments.
 - Indoors (in the environment condition rated in 'Specifications')
 - Altitude max. 2,000m
 - Pollution degree 2
 - Installation 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, Co., Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometers/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

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