

COUNTER/TIMER FXS SERIES

M A N U A L



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

- Please keep these instructions and review them before using this unit.
- Please observe the cautions that follow:
 - Warning** Serious injury may result if instructions are not followed.
 - Caution** Product may be damaged, or injury may result if instructions are not followed.
- The following is an explanation of the symbols used in the operation manual.
 - caution: Injury or danger may occur under special conditions.

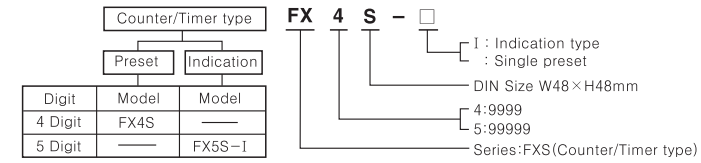
Warning

- In case of using this unit with machineries (Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc.), it requires installing fail-safe device, or contact us for information required.
 - It may result in serious damage, fire or human injury
- This unit must be mounted on Panel.
 - It may give an electric shock.
- Do not connect terminals when it is power on.
 - It may give an electric shock.
- Do not disassemble and modify this unit, when it requires. If needs, please contact us.
 - It may give an electric shock and cause a fire.

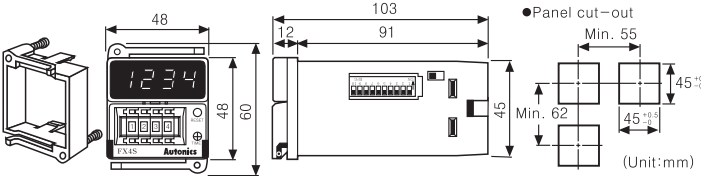
Caution

- This unit shall not be used outdoors.
 - It might shorten the life cycle of the product or give an electric shock.
- When wire connection, No.20AWG(0.50mm²) should be used and screw bolt on terminal block with 0.74N·m to 0.90N·m strength.
 - It may result in malfunction or fire due to contact failure.
- Please observe specification rating.
 - It might shorten the life cycle of the product and cause a fire.
- Do not use the load beyond rated switching capacity of Relay contact.
 - It may cause insulation failure, contact melt, contact failure, relay broken, fire etc.
- In cleaning the unit, do not use water or an organic solvents.
 - It might cause an electric shock or fire that will result in damage to the product.
- Do not use this unit at place where there are flammable or explosive gas, humidity, direct ray of the sun, radiant heat, vibration, impact etc.
 - It may cause explosion.
- Do not inflow dust or wire dregs into inside of this unit.
 - It may cause a fire or mechanical trouble.

Ordering information



Dimensions



Input operation mode(Counter)

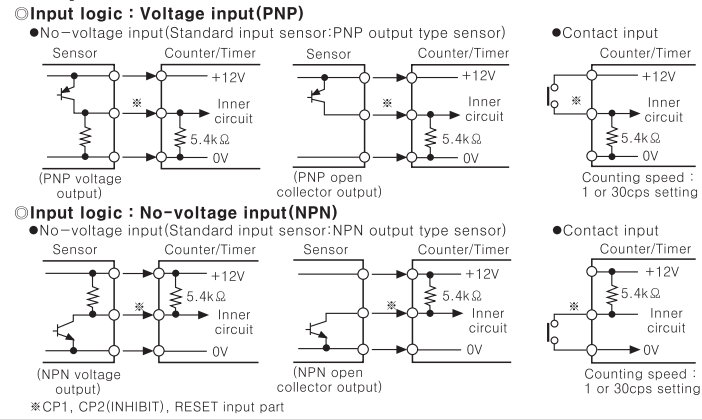
Input mode	SW1	Counting chart	
		No-voltage input type	Voltage input type
Up/Down-A (Command input)	ON/OFF	[Timing diagram]	[Timing diagram]
Up/Down-B (Individual input)	ON/OFF	[Timing diagram]	[Timing diagram]
Up/Down-C (Phase difference input)	ON/OFF	[Timing diagram]	[Timing diagram]
Up (Up input)	ON/OFF	[Timing diagram]	[Timing diagram]
Up/Down-D (Command input)	ON/OFF	[Timing diagram]	[Timing diagram]
Up/Down-E (Individual input)	ON/OFF	[Timing diagram]	[Timing diagram]
Up/Down-F (Phase difference input)	ON/OFF	[Timing diagram]	[Timing diagram]
Down (Down input)	ON/OFF	[Timing diagram]	[Timing diagram]

*A: Over Min. signal width, B: Over 1/2 of Min. signal width.
Counting miss by one (±1) is occurred if the signal width of A or B is less than min. signal width.
*The above specifications are subject to change and some models may be discontinued without notice.

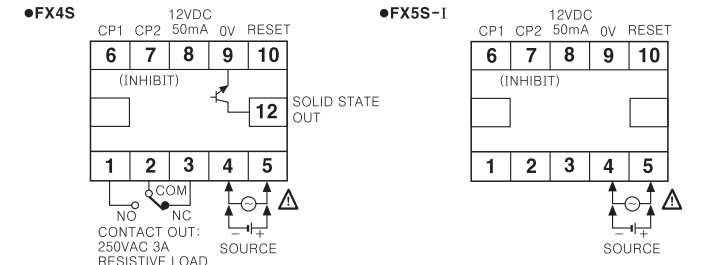
Specifications

Series	FXS	
Digit	4	5
Model	Single preset: FX4S Double preset: — Indication type: —	—
Power supply	100-240VAC 50/60Hz	
AC/DC power	12-24VAC 50/60Hz, 12-24VDC	
Allowable voltage range	90 to 110% of rated voltage	
Power consumption	AC power: Indication type: Approx. 4.7VA, Single preset: Approx. 5.7VA(240VAC 50/60Hz) AC/DC power: Indication type: Approx. 4.5VA, Single preset: Approx. 5.6VA(24VAC 50/60Hz) Indication type: Approx. 2.8W, Single preset: Approx. 3W(24VDC)	
Max. counting speed of CP1, CP2	1cps/30cps/2kcps/5kcps selectable by DIP switch	
Min. input signal width	INHIBIT input, RESET input: Approx. 20ms	
Input method	Input logic is selectable [Voltage input] Input impedance is 5.4kΩ, "H" level: 5-30VDC, "L" level: 0-2VDC [No-voltage input] Short-circuit impedance: Max. 1kΩ, Residual voltage: Max. 2VDC, Open-circuit impedance: Min. 100kΩ	
One-shot output time	0.05-5sec.	
Control output	Con-tact Type: SPDT(1c) Capacity: 250VAC 3A resistive load Solid-state Type: NPN open collector state Capacity: 30VDC Max. 100mA Max.	
Memory retention	10 years (EEPROM)	
External sensor power	12VDC ±10% 50mA Max.	
Ambient temperature	-10 to 55°C (at non-freezing status)	
Storage temperature	-25 to 65°C (at non-freezing status)	
Ambient humidity	35-85%RH	
Insulation resistance	100MΩ (at 500VDC)	
Dielectric strength	2000VAC 50/60Hz for 1 minute	
Noise immunity	AC power: ±2kV the square wave noise (pulse width: 1μs) by the noise simulator AC/DC power: ±500V the square wave noise (pulse width: 1μs) by the noise simulator	
Vibration	Mechanical: 0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1 hour Malfunction: 0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes	
Shock	Mechanical: 300m/s ² (Approx. 30G) 3 times at X, Y, Z direction Malfunction: 100m/s ² (Approx. 10G) 3 times at X, Y, Z direction	
Relay life cycle	Mechanical: Min. 10,000,000 times Electrical: Min. 100,000 times (250VAC 3A resistive load)	
Unit weight	Approx. 153g (FX4S), Approx. 143g (FX5S-I)	
Approval	Autonics (100-240VAC 50/60Hz)	

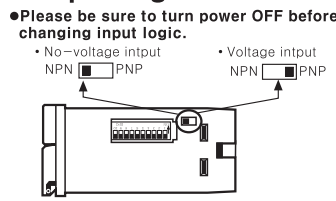
Input connection



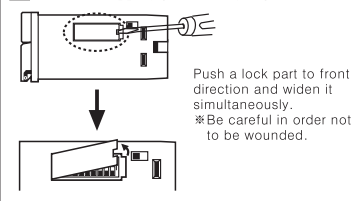
Connections



Input logic selection



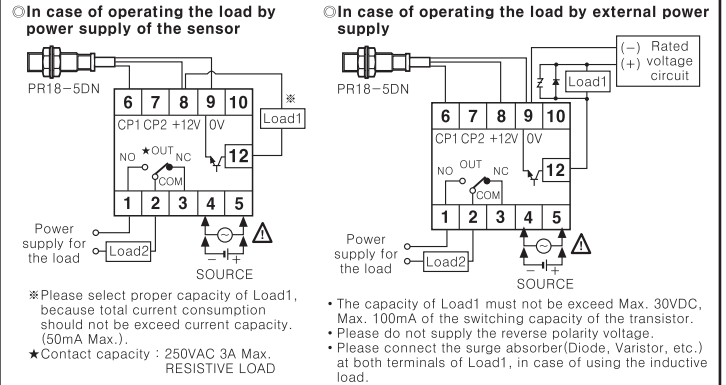
DIP switch detachment



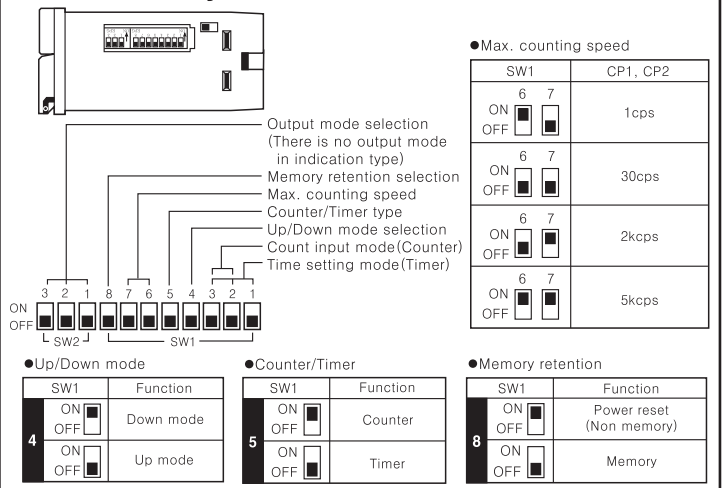
Output operation mode

Output mode	Input mode		Operation after count up
	Up, Up/Down-A, B, C	Down, Up/Down-D, E, F	
F	[Timing diagram]	[Timing diagram]	The display value continues until reset signal is applied then output is held.
N	[Timing diagram]	[Timing diagram]	The display value and hold output are held until reset signal is applied.
C	[Timing diagram]	[Timing diagram]	The display value returns to reset start status as soon as display value is reached to preset value.
R	[Timing diagram]	[Timing diagram]	The display value is held until output is OFF then returns to reset start status.
K	[Timing diagram]	[Timing diagram]	The display value continues until reset signal is applied.
P	[Timing diagram]	[Timing diagram]	The display value is held during one-shot output time, counting process is returned to reset start status as soon as output is ON.
Q	[Timing diagram]	[Timing diagram]	The display value continues during one-shot output time.
S	[Timing diagram]	[Timing diagram]	Up, Up/Down-A, B, C input mode Output is ON when (Display value) ≥ (Preset value) Down, Up/Down-D, E, F input mode Output is ON when (Display value) ≤ (Zero)
S	[Timing diagram]	[Timing diagram]	The output turns ON after the setting time and then turns OFF after the setting time. This operation is repeated sequentially.

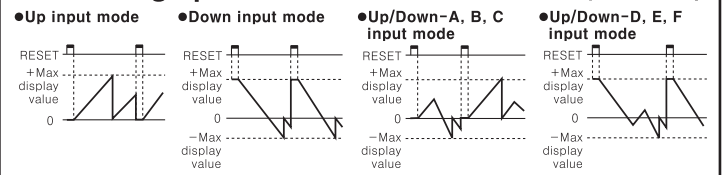
Input & output connection



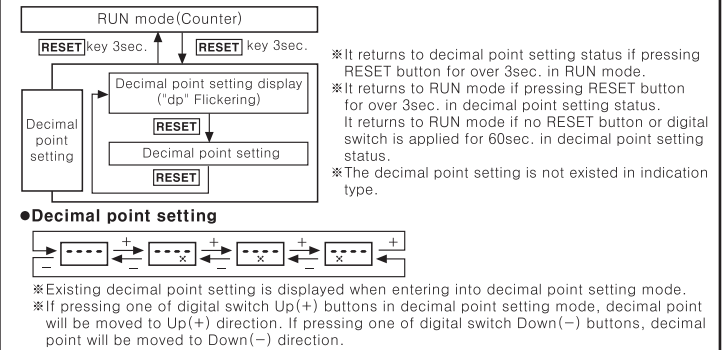
Selection by DIP switches



Counting operation of indication model (FX5S-I)



Decimal point setting (Counter)



Input operation mode (Timer)

SW1	4Digit	5Digit	SW1	4Digit	5Digit
ON	99.99sec	9999.9sec	ON	999.9min	9999.9min
OFF	999.9sec	99999sec	OFF	99hour 59min	9hour 59min 59sec
ON	9999sec	9min 59.99sec	ON	999.9hour	999hour 59min
OFF	99min 59sec	99min 59.9sec	OFF	9999hour	9999.9hour

Caution for using

- DIP switch setting
Please be sure to turn power OFF before changing Counter/Timer DIP switches setting. If DIP switches setting is changed in power OFF, Counter/Timer must be reset by manual reset or external reset after power ON.
 - INHIBIT (When using as Timer)
 - Please apply INHIBIT signal when stopping the time processing in a while.
 - The time continues when taking off INHIBIT signal.
 - Min. signal width of CP1, CP2 input
*Please make duty ratio (ON/OFF) 1:1.
 - Max. counting speed
This is respond speed per 1sec. when the duty ratio (ON/OFF) of input signal is 1:1. If duty ratio is not 1:1, the respond speed will be getting slow against input signal and also the width between ON and OFF should be over min. signal width. And also one of ON width and OFF width is under min. signal width, this product may not response.
 - Error

Error display	Error contents	Return method
Err	Zero setting value status	Change setting value which is not zero

 - *Output is OFF when error is displayed.
 - *No Error display is appeared in indication type.
 - Power
 - The inner circuit voltage starts to rise up for the first 100ms after power on, the input may not work at this time. And also the inner circuit voltage drops down for the last 500ms after power off, the input may not work at this time.
 - Please use the power within rating power and apply or cut the power at once to prevent from chattering.
 - Input signal line
 - Shorten the cable distance between the sensor and this product.
 - Please shielded wire for input signal needed to be long.
 - Please wire input signal line separated from power line.
 - When test dielectric voltage and insulation resistance of the control panel with this unit installed.
 - Please isolate this unit from the circuit of control panel.
 - Please make all terminals of this unit short-circuited.
 - Do not use this unit at below places.
 - Place where there are severe vibration or impact.
 - Place where strong alkalis or acids are used.
 - Place where there are direct ray of the sun.
 - Place where strong magnetic field or electric noise are generated.
 - Installation environment
 - It shall be used indoor
 - Altitude Max. 2000m
 - Pollution Degree 2
 - Installation Category II.
- *It may cause malfunction if above instructions are not followed.

Main 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/soldering system
- Temperature controllers
- Temperature/humidity transducers
- SSR/Power controllers
- Counters
- Timers
- Panel meters
- Tachometer/Pulse(Rate)/meters
- Display units
- Sensor controllers

Autonics Corporation
http://www.autonics.com

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