Autonics

DIGITAL COUNTER
FS 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 "Caution for your safety" to avoid accidents or damages as using it correctly.

※The meaning of 'Warning' and 'Caution' is as follows;
⚠ Warning In case a serious injury or dead may be occurred.
⚠ Caution In case a little injury or a damage of this unit may be occurred.

※The meaning of the mark on the product and manual is as follows;
⚠ is a caution mark for danger in special condition.

⚠ Warning

1. **Please use it with double safety devices when it is used at the equipments which may cause damages to human life or assets(Ex:Nuclear power control, Medical equipment, Vehicle, Train, Air plane, Combustion apparatus, Entertainment or Safety device etc.)**
   It may cause a fire, human life or assets.
2. **This unit must be mounted on Panel.**
   It may give an electric shock.
3. **Do not repair or checkup when power on.**
   It may give an electric shock.
4. **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

1. **This unit shall not be used outdoors.**
   It might shorten the life cycle of the product or give an electric shock.
2. **Please observe specification rating.**
   It might shorten the life cycle of the product and cause a fire.
3. **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.
4. **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.
5. **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.
6. **Do not inflow dust or wire dregs into inside of this unit.**
   It may cause a fire or mechanical trouble.

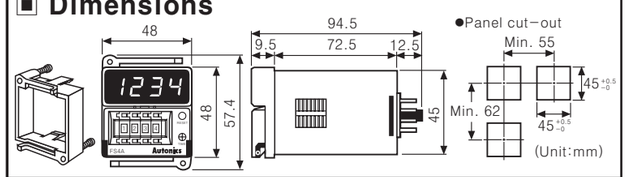
▣ Ordering information

Counter
Preset | Indication type
Single preset

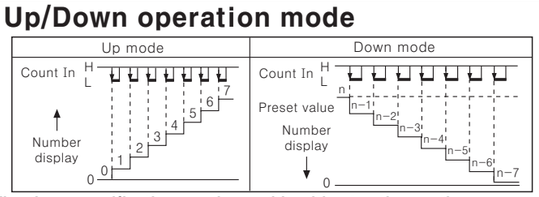
Digit	Model	Model
4 Digit	FS4A	———
5 Digit	———	FS5B

FS 4 A
- A : Single preset
- B : Indication
- 4 : 9999(Digit)
- 5 : 99999(Digit)
- Series (DIN Size W48×H48mm)

▣ Dimensions



▣ Up/Down operation mode



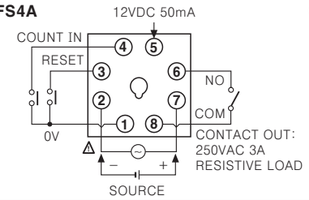
※**The above specification are changeable without notice anytime.**

▣ Specifications

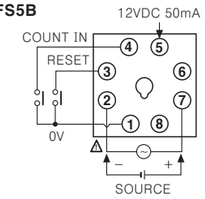
Series			FS	
Digit			4	5
Model	Single preset		FS4A	———
	Double preset		———	———
	Indication		———	FS5B
Power supply	AC power		100–240VAC 50/60Hz	
	AC/DC power		12–24VAC 50/60Hz, 12–24VDC	
Allowable voltage range			90 to 110% of rated voltage	
Power consumption	AC power		Indication:Approx. 4.7VA, Single preset:Approx. 5.7VA(240VAC 50/60Hz)	
	AC/DC power		Indication:Approx. 4.5VA, Single preset:Approx. 5.5VA(24VAC 50/60Hz) Indication:Approx. 2.8W, Single preset:Approx. 3W(24VDC)	
Max. counting speed			1cps/30cps/2kcps/5kcps selectable by DIP switch	
Min. RESET input width			Approx. 20ms	
Input method	COUNT IN		• No-voltage input ☞ Short-circuit impedance : Max. 470Ω, Residual voltage : Max. 1VDC, Open-circuit impedance : Min. 100kΩ	
	RESET			
One-shot output time			0.05 to 5sec.	
Control output	Solid-State	Type	SPDT(1a)	———
		Capacity	250VAC 3A resistive load	
Memory retention			10 years(EEPROM)	
Power for external sensor			12VDC ±10% 50mA max.	
Ambient temperature			-10 to 55℃(at non-freezing status)	
Storage temperature			-25 to 65℃(at non-freezing status)	
Ambient humidity			35 to 85%RH	
Insulation resistance			Min. 100MΩ(at 500VDC)	
Dielectric strength			2000VAC 50/60Hz for 1 minute	
Noise immunity	AC power		±2kV the square wave noise(pulse width:1㎲) by the noise simulator	
	AC/DC power		±500V the square wave noise(pulse width:1㎲) 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/s² (30G) 3 times at X, Y, Z direction	
	Malfunction		100m/s² (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)	
Weight			Approx. 130g	Approx. 120g

▣ Connections

●FS4A 12VDC 50mA

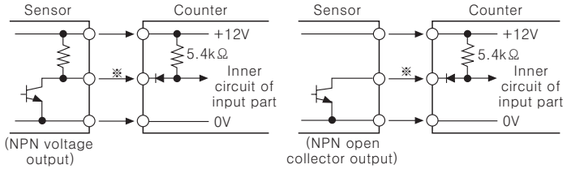


●FS5B 12VDC 50mA

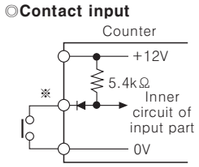


▣ Input connections

◎**Solid-state input**(Standard input sensor : NPN output type sensor)

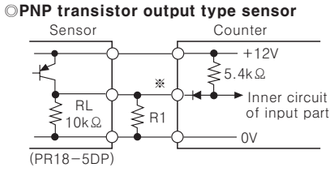


◎**Contact input**



※COUNT IN, RESET input part

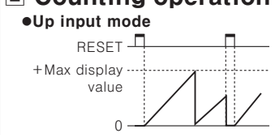
◎**PNP transistor output type sensor**



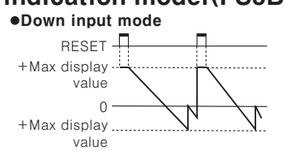
- It is not available to use with PNP output type sensor directly.
- RL : Resistive load of proximity switch (Built in the sensor)
  R1 : Resister to be connected at outside
- Please set R1 value to make composite resistance (RL+R1) max. 470Ω as the rating input shunting resistance is max. 470Ω. (Be sure that RL value will be different by sensors.)

▣ Counting operation of indication model(FS5B)

●Up input mode

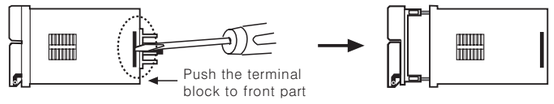


●Down input mode



▣ Case detachment

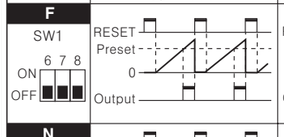
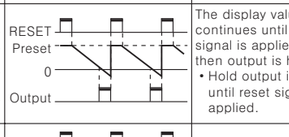
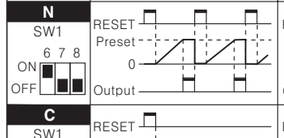
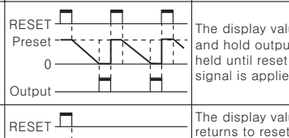
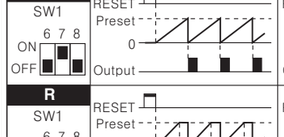
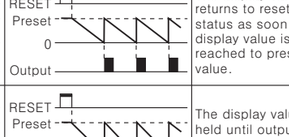
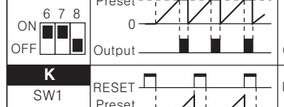
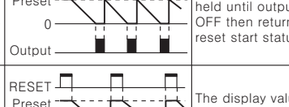
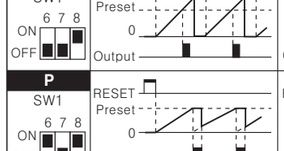
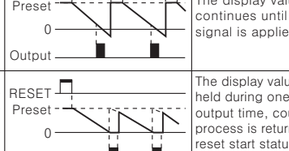
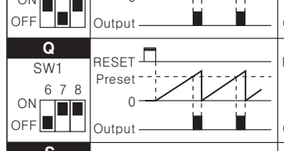
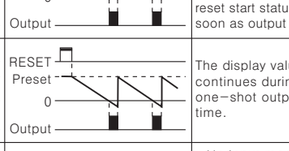
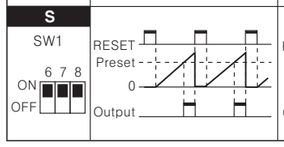
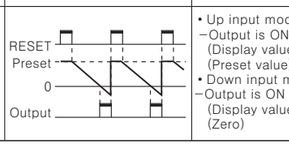
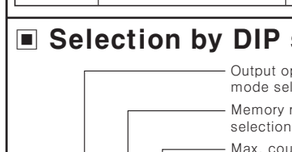
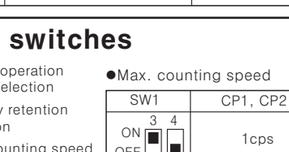
Please turn off the power before detaching the case.



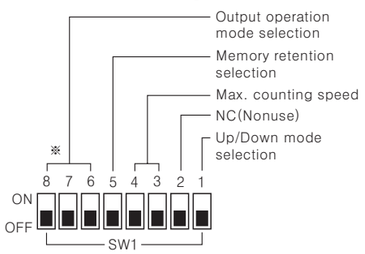
Widen the both side of lock devices with a driver, and push the terminal block to the direction of front part.
※Be careful in order not to be wounded.

▣ Output operation mode

■ ← One-shot output(0.05 to 5sec. setting) ⊓ ← Hold output

Output mode	Input mode: Up mode	Input mode: Down mode	Operation after count up
F			The display value continues until reset signal is applied then output is held • Hold output is held until reset signal is applied.
N			The display value and hold output are held until reset signal is applied.
C			The display value returns to reset start status as soon as display value is reached to preset value.
R			The display value is held until output is OFF then returns to reset start status.
K			The display value continues until reset signal is applied.
P			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			The display value continues during one-shot output time.
S			• Up input mode -Output is ON when (Display value) ≥ (Preset value) • Down input mode -Output is ON when (Display value) ≤ (Zero)

▣ Selection by DIP switches



※Indication type(FS5B) does not have dip switches(No. 6, 7, 8 of SW1) related to output.

●Max. counting speed

SW1	CP1, CP2
ON/OFF 3 4	1cps
ON/OFF 3 4	30cps
ON/OFF 3 4	2kcps
ON/OFF 3 4	5kcps

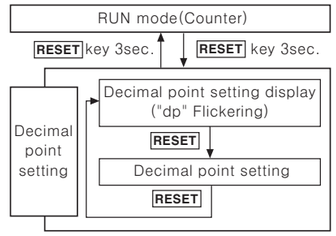
●Up/Down mode

	SW1	Function
1	ON/OFF	Down mode
	ON/OFF	Up mode

●Memory retention

	SW1	Function
5	ON/OFF	Power reset (Non memory)
	ON/OFF	Memory

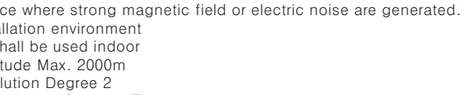
▣ Decimal point setting



※It returns to decimal point setting status if pressing RESET button for over 3sec. in RUN mode.
※It returns to RUN mode if pressing RESET button for over 3sec. in decimal point setting status. It returns to RUN mode if no RESET button or digital switch is applied for 60sec. in decimal point setting status.
※The decimal point setting is not existed in indication type.

●Decimal point setting

- Existing decimal point setting is displayed when entering into decimal point setting mode.
- If pressing one of digital switch Up(+) buttons in decimal point setting mode, decimal point will be moved to Up(+) direction.
  If pressing one of digital switch Down(−) buttons, decimal point will be moved to Down(−) direction.



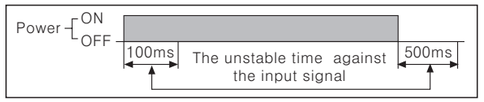
▣ Caution for using

1. DIP switch setting
   Please be sure to turn power OFF before changing Counter DIP switches setting. If DIP switches setting is changed in power OFF, Counter must be reset by manual reset or external reset after power ON.
2. Error

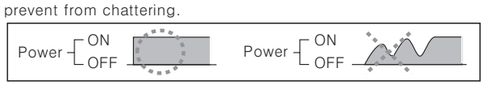
Error display	Error contents	Return method
Err0	Zero setting value status	Change setting value which is not zero

※Output is OFF when error is displayed.
※No Error display is appeared in indication type.

3. Power
   ①The 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.



   ②Please use the power within rating power and apply or cut power at once to prevent from chattering.



4. Input signal line
   ①Shorten the cable distance between the sensor and this product.
   ②Please shielded wire for input signal needed to be long.
   ③Please wire input signal line separated from power line.
5. When test dielectric voltage and insulation resistance of the control panel with this unit installed.
   ①Please isolate this unit from the circuit of control panel.
   ②Please make all terminals of this unit short-circuited.
6. Do not use this unit at below places.
   ①Place where there are severe vibration or impact.
   ②Place where strong alkalis or acids are used.
   ③Place where there are direct ray of the sun
   ④Place where strong magnetic field or electric noise are generated.
7. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Category Ⅱ.

※**It may cause malfunction if above instructions are not followed.**

▣ Main products

■ COUNTER
■ TIMER
■ TEMPERATURE CONTROLLER
■ PANEL METER
■ TACHO/LINE SPEED/PULSE METER
■ DISPLAY UNIT
■ PROXIMITY SENSOR
■ PHOTOELECTRIC SENSOR
■ FIBER OPTIC SENSOR
■ PRESSURE SENSOR
■ ROTARY ENCODER
■ SENSOR CONTROLLER
■ POWER CONTROLLER
■ STEPPING MOTOR & DRIVER & CONTROLLER
■ LASER MARKING SYSTEM (CO_2, Nd:YAG)

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