Koyo

Single preset addition/subtraction counter

KCN-4S/6S

OPERATIONS MANUAL

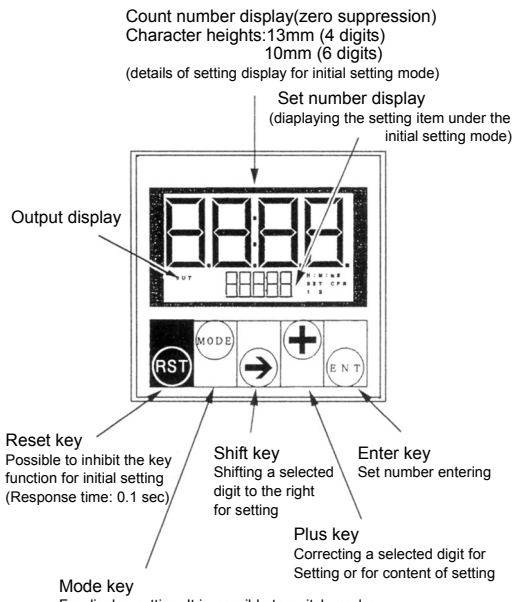
Thank you for choosing Koyo's single preset addition/subtraction counter for your control needs. Please read through this manual before using your new counter.

Koyo Electronics(Wuxi)Co.,LTD.

Addr: No.118 Lixi Road Wuxi,Jiangsu,P.R.China
Pc:214072 Tel: (0510)85167888
Fax: (0510)85161393

KEW-M8372A-E

■ Panel functions

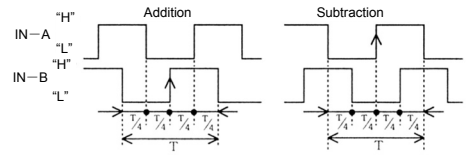


■ Specifications

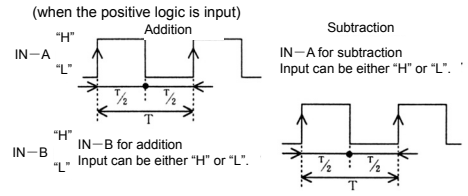
Item	Specifications
Feature	Addition/Subtraction counter and timer (4 digits)
Setting	Single preset(dual preset only for one-shot timer operation)
Digit number	4 and 6 digits (2 models)
Count input	Count speed: 30/1k/2k/5kcps switching type (Refer to "count timing"for phase difference and duty.) Input impedance:15kΩ(positive logic) 3.3kΩ(negative logic) Input voltage: 0~3V (L), 7~30V (H)
Start input (For timer function)	Input response: 15ms(on-delay only for timer) 15ms(off-delay)
External Resetting	Input response:5ms(on-delay) 5ms(off-delay) Input impedance:15kΩ(positive logic) 3.3kΩ(negative logic) Input voltage: 0~3V (L), 7~30V (H)
Manual resetting	Input response: 0.1 sec
Automatic resetting	500μs (2.5ms for 5kcps count speed)
Power source resetting	Shutdown time: 1 sec Reset time: 1 sec
Output	Transistor output: NPN open collector output 24V,100mA Withstanding voltage 35V Residual voltage Less than 2V Contact output: Normally open contact 220VAC,2A (resistive load)
Output operation	Counter output operation: One shot/retention Timer output Operation: On-delay/off-delay/ one shot/flicker/integration
One-shot time	10ms~9990ms
Prescale	0.001~9.999 (4 digits) 0.001~99.999 (6 digits)
Decimal point	Free setting at any point
Power source	AC type: 85~115/180~240VAC Power consumption 5VA DC type: 20~28VDC,Power consumption 2W
Power source for sensor	20~28VDC, 15mA (accessible only for AC-type models)
Weight	About 220g (AC type) About 110g (DC type)

■ Count timing

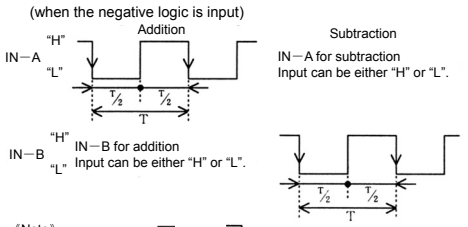
● Two-phase input mode



● For separate input mode of addition or subtraction
(when the positive logic is input)



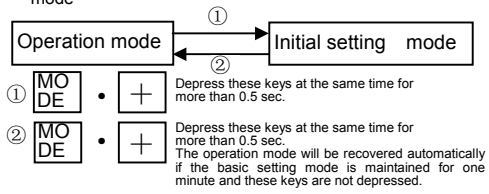
● For separate input mode of addition or subtraction
(when the negative logic is input)



《Note》 For counting ↑ or ↓ Required count speed (cps) = $\frac{1}{T\,\text{sec}}$

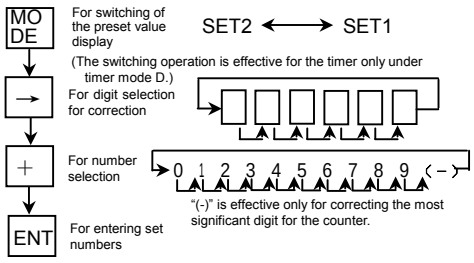
■ Key operation

● Mutual switching between operation mode and initial setting mode



● Correction of preset value

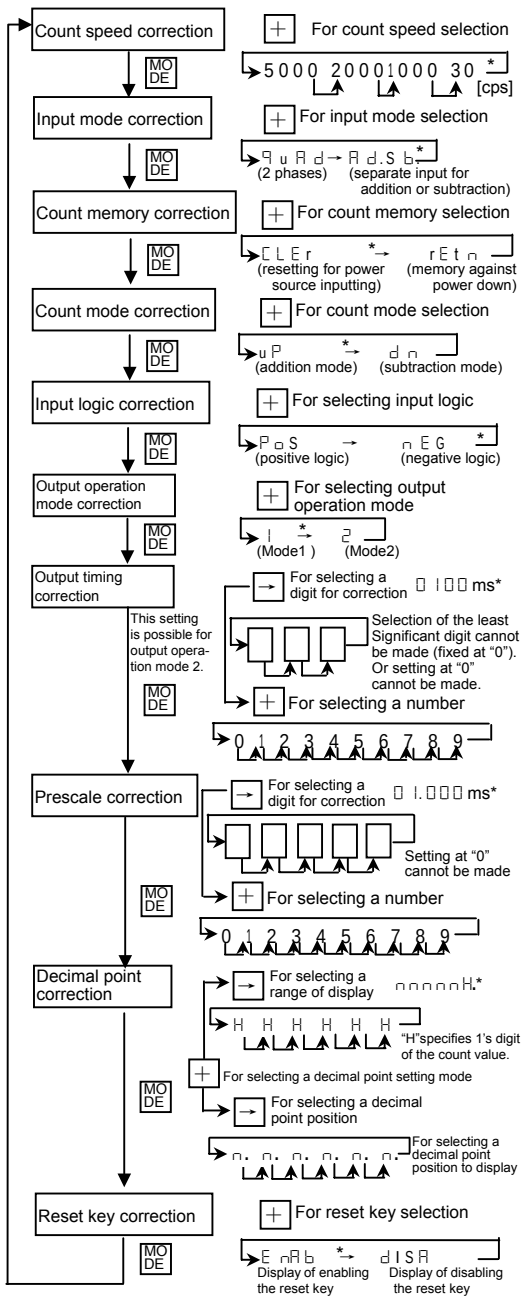
The correction of preset values must be processed under the operation mode.



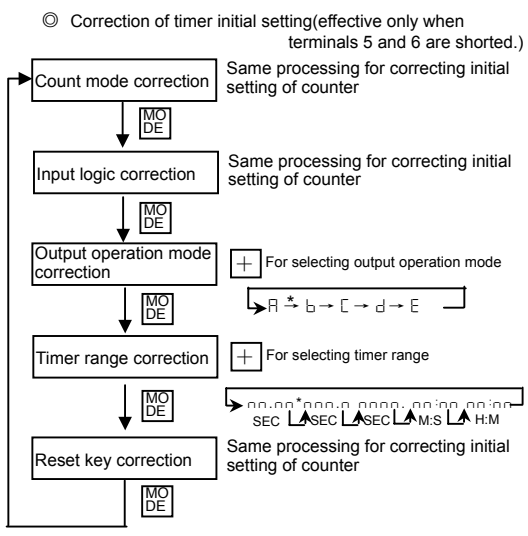
● For correcting initial settings

The correction of initial settings must be made on the initial setting mode screen.

◎ For correcting the counter's initial setting



◎ Correction of timer initial setting(effective only when terminals 5 and 6 are shorted.)



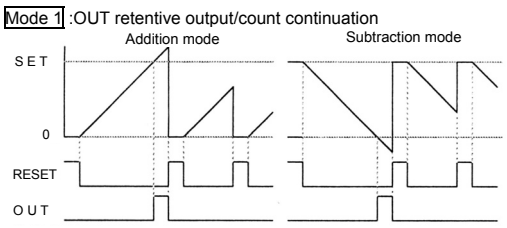
《Note》

○ Be sure to depress ENT key for writting after correcting each setting.If this process is neglected,the corrected content will be void.
○ "＊"specifies a setting mode for shipment.
○ Be sure to depress RST key for resetting the count value whenever the basic setting is corrected.
○ Decimal point setting example can be made as follows.
If 1.200 for prescale value and 0000.0Hn for decimal point setting are set up,the count value display will be shown as below for each pulse.
0.012→0.024→0.036→0.048→0.060…

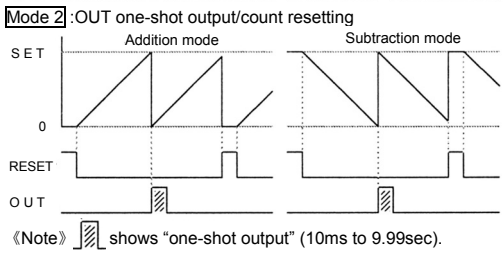
■ Counter output operation mode

(for counter function by opening the circuit between terminal 5 and terminal 6)

Mode 1 :OUT retentive output/count continuation



Mode 2 :OUT one-shot output/count resetting

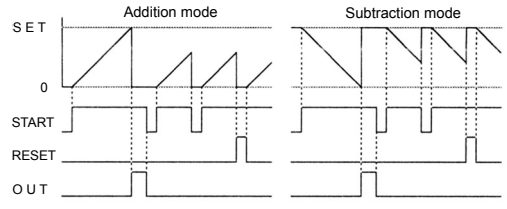


《Note》 shows "one-shot output" (10ms to 9.99sec).
Counting of 5kcps cannot actually be made for automatic resetting,because 2.5ms is required while the automatic resetting even when 5kcps of speed setting is arranged for Mode 2.

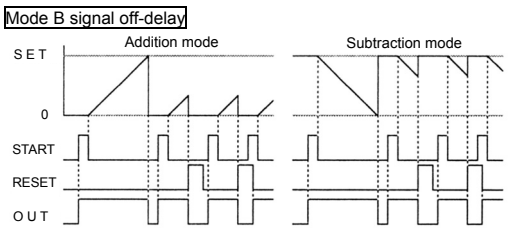
■ Timer output operation mode

(for timer function by shorting terminal 5 and terminal 6)

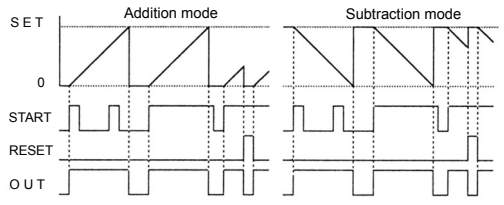
Mode A signal on-delay



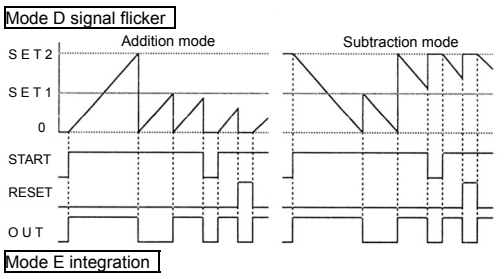
Mode B signal off-delay



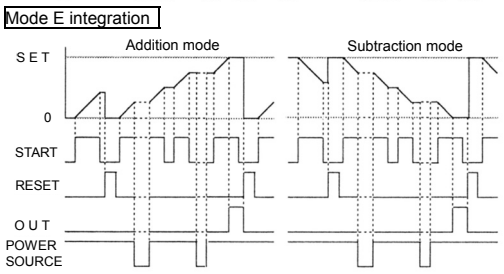
Mode C one shot



Mode D signal flicker



Mode E integration



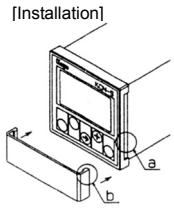
■ Caution

● The 0V terminal (13) for DC-type counters of power supply and the input common (0V) terminal (5) are connected in the counter.
● The power source voltage should be instantly applied for the rated voltage by the switch or relay instead of a gradual voltage increase.
● Use the counter with no voltage setting for input logic if the DC 2 wire type of proximity switch is included.
● Be sure to reset the count value by depressing a reset key whenever the initial setting is corrected.
● Turn on the power source after connecting the input (sensor use power source) common terminal (5) with the counter/timer switching terminal (6) if this model is used as a timer.
● If this model is used as a timer (4-digit display only),the preset error will be shown for changing the display from seconds (S) to minutes (M) and seconds (S) or to hours (H) and minutes (M), when the preset number of the second digit from the right is more than six. It is necessary to correct the preset in advance.
● Be sure to correct the initial setting and preset value when this model is going to be used as the counter after being used as the timer.
● The correction of the preset value in the middle of counting will be effective from the time when ENT key is depressed.
● Be sure to keep the initial setting and preset value in memory for maintenance.
● Avoid using this model under the following conditions:
(1) Where the ambient temperature exceeds a range of -10℃ to 50℃.
(2) When the ambient humidity exceeds 85% RH or when dew condensation will result from a sudden change in temperature.
(3) Where dust,iron powder,or corrosive gas is present.
(4) In direct sunlight.
(5) Where it will be subject to excessive vibration or shock.
● Observe the following conditions for wiring:
(1) The wiring should be separated from the power line.
(2) When this model is used in an area in which much noise is generated,try to separate the main unit and wiring as far as possible from the source of the noise,
(3) The terminal not in use should not be used for other units or purposes.
● Be sure to separate this model from the control circuit for dielectric strength and insulation resistance tests.

■ Installation of protection cover

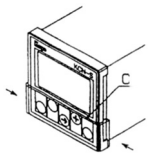
Purpose:Use this protection cover when necessary for protecting the counter from the erroneous operation of the programming unit.

[Installation]



Install the protection cover by completely pushing down the hook (b) into the groove(a) of the KCN counter box.

[Usage]



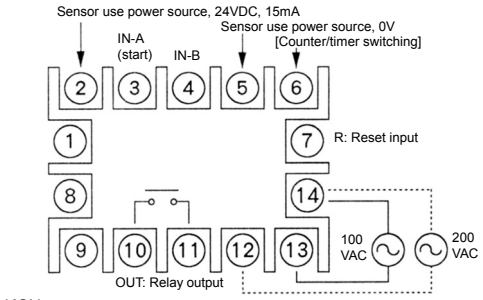
For setting push the protection cover lightly by the finger to the direction as pointed by the arrow sign as shown in the drawing.

《Note》

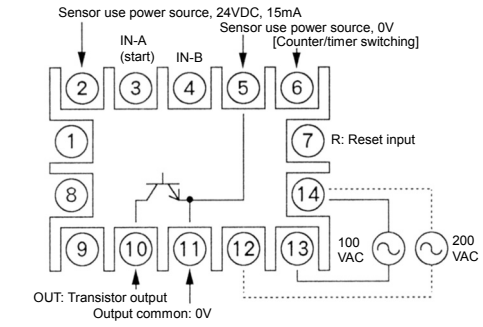
Be careful to move the protection cover. Because it may become difficult to read the display for scratches made on the display window and the protection cover.
1) Remove all dust kept on the cut surface of the upper part of the protection cover (c),and surface of display window and protection cover.
2) Do not push up or down the center of protection cover by pressing it.

■ Terminal connection

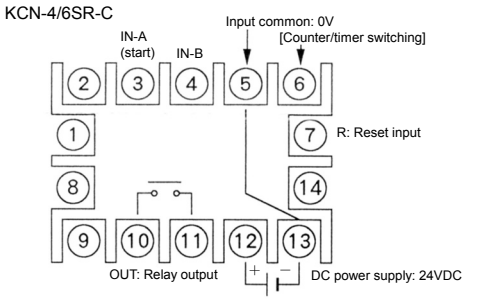
KCN-4/6SR



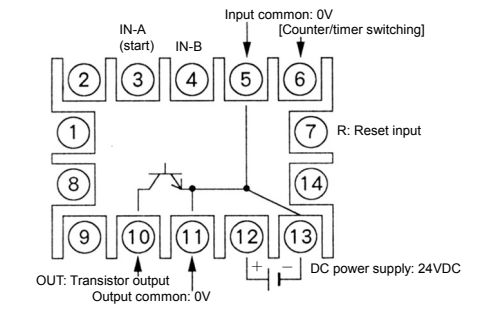
KCN-4/6ST



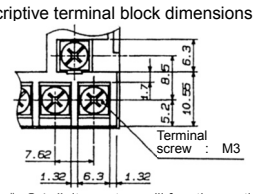
KCN-4/6SR-C



KCN-4/6ST-C



Descriptive terminal block dimensions



Applicable wires: 0.25~1.65mm²

《Note》 ○4-digit counters will function as timers when terminal (5) (0V) is connected with terminal (6) (C/T).
○The function enclosed in brackets is available only for 4-digit display counters.
The terminal name enclosed in parentheses is the name applicable only for the timer operation.

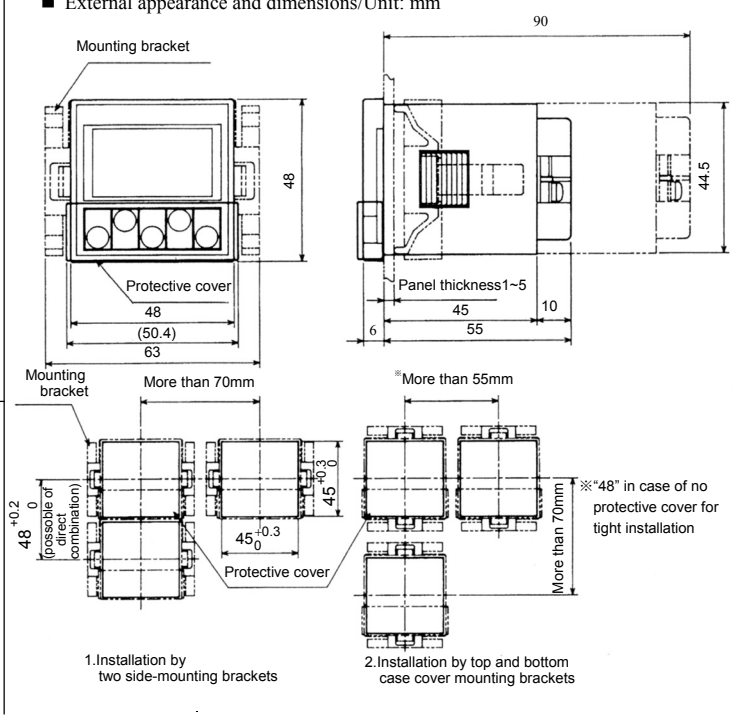
■ Table of errors

Display		Description※
Count number	Preset number	
FFFFFF	Preset number	Counter overflow
−FFFFF	Preset number	Counter underflow
Err	PSEt PSEt2 PSEt1	Preset value memory data error Errors for exceeding a range of internal counting when the preset value is divided by the prescale value with classification of "1" or "2"
	SPEEd	Count speed memory data error
	C−oP	Output operation mode memory data error
	out−t	Output time memory data error
	SCALE	Prescale memory data error
	Point	Decimal point memory data error
	t−oP	Timer output operation mode memory data error
	rAnGE	Timer range memory data error

※ The memory data error will be generated whenever the setting data change to the unrealistic data.

● How to release from the error condition
Depress RST key for counter overflow or underflow to reset the counter. Or release the error display when the count number returns to the number within a range of the display. Depress ENT key for other setting errors to delete the error display. The error will be released when the correct setting number is then input.

《Note》

○The counter is correctly counting numbers within a range of −2147483.648 to 2147483.647 in the counter,even when a counter overflow or underflow error is generated.
○The error will be checked when the power source is turned on.The counting or outputting operation will not be made except during an overflow or underflow of the counter.

■ External appearance and dimensions/Unit: mm