

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

# Koyo Electronics (Wuxi) Co.,LTD.

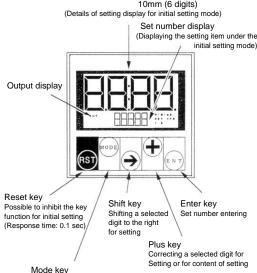
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KEW-M8372B-E

#### Panel functions

Count number display (zero suppression) Character heights: 13mm (4 digits) 10mm (6 digits)



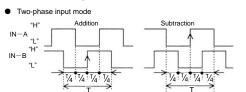
For display setting. It is possible to switch modes

for operation or for initial setting when the mode key is depressed with the plus key.

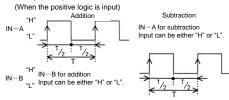
# Specifications

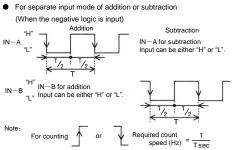
| Item                 | Specifications  |  |  |
|----------------------|---|--|--|
| Feature              | Addition/Subtraction counter and timer (4 digits)                               |  |  |
| Setting              | Single preset(dual preset only for one-shot timer operation)                    |  |  |
| Digit number         | 4 and 6 digits (2 models)   |  |  |
| Count input          | Count speed: 30/1k/2k/5kHz switching type                                       |  |  |
|                      | (Refer to "count timing"for phase   |  |  |
|                      | difference and duty.) Input impedance:15kΩ (positive logic)                     |  |  |
|                      |   |  |  |
|                      | 3.3kΩ (negative logic)  |  |  |
| 2: :: :              | Input voltage: 0~3V (L), 7~30V (H)  |  |  |
| Start input          | Input response: 15ms(on-delay only for timer)                                   |  |  |
| (For timer function) | 15ms(off-delay)   |  |  |
| External             | Input response:5ms(on-delay) 5ms(off-delay)                                     |  |  |
| Resetting            | Input impedance:15kΩ (positive logic)   |  |  |
|                      | 3.3kΩ (negative logic)  |  |  |
| Manual na attian     | Input voltage: 0~3V (L), 7~30V (H)  |  |  |
| Manual resetting     | Input response: 0.1 sec   |  |  |
| Automatic resetting  | 500µ s (2.5ms for 5kHz count speed) Shutdown time: 1 sec                        |  |  |
| Power source         |   |  |  |
| resetting<br>Output  | Reset time: 1 sec   |  |  |
| Output               | Transistor NPN open collector output 24V,100mA output: Withstanding voltage 35V |  |  |
|                      | Residual voltage Less than 2V   |  |  |
|                      | Residual Voltage Less triair 2V   |  |  |
|                      | Contact Normally open contact 220VAC,2A   |  |  |
|                      | output: (resistive load)  |  |  |
| Output               | Counter output One shot/retention   |  |  |
| operation            | operation   |  |  |
|                      | Timer output On-delay/off-delay/  |  |  |
|                      | Operation 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         | 20~28VDC, 15mA (accessible only for AC-type models)                             |  |  |
| for sensor           |   |  |  |
| Weight               | About 220g (AC type) About 110g (DC type)                                       |  |  |

## Count timing

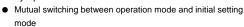


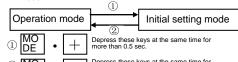
For separate input mode of addition or subtraction





■ Key operation

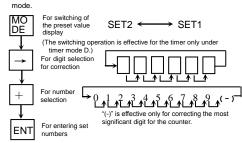




② MO Depress these keys at the same time for more than 0.5 sec.
The operation mode will be recovered automatically if the basic setting mode is maintained for one DE

Correction of preset value

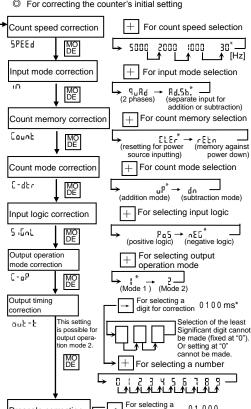
The correction of preset values must be processed under the operation

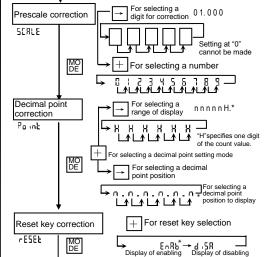


For correcting initial settings

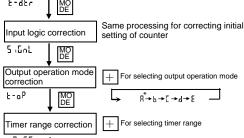
The correction of initial settings must be made on the initial setting

O For correcting the counter's initial setting





O Correction of timer initial setting(effective only when terminals (5) and (6) are shorted.) Same processing for correcting initial setting of counter Count mode correction 12-61-6



rRnGE MO DE Reset key correction

Same processing for correcting initial setting of counter

rESEŁ

## Note:

 Be sure to depress ENI key for writting after correcting each setting.If this process is neglected,the corrected content will be void.

"\*"specifies a setting mode for shipment.

O Be sure to depress RST key for resetting the count value

whenever the basic setting is corrected. O Decimal point setting example can be made as follows. If 1.200 for prescale value and nnn.nHn for decimal point setting are set up, the count value display will be shown as below for each pulse.  $0.012 \rightarrow 0.024 \rightarrow 0.036 \rightarrow 0.048 \rightarrow 0.060.$ 

■ Installation of protection cover

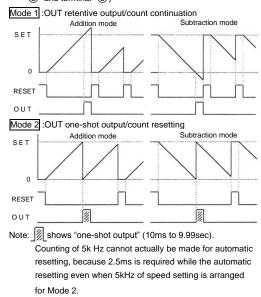
Puropse:Use this protection cover when necessary for protecting the counter from the erroneous operation of the programming unit.



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



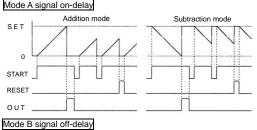
(For counter function by opening the circuit between terminal (5) and terminal (6) Subtraction mode



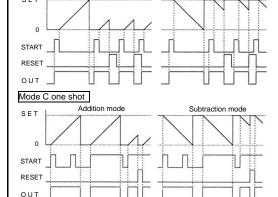
■ Timer output operation mode

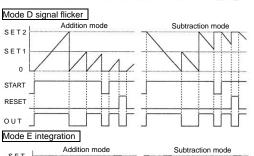
■ Counter output operation mode

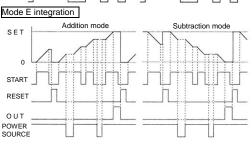
(For timer function by shorting terminal ⑤) and terminal ⑥)



Subtraction mode







The 0V terminal ③ 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.

or 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 (5) 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.

sing this model under the following condition

(1) Where the ambient temperature exceeds a range of -10°C to 50°C.
(2) When the ambient humidity exceeds 85% RH or when dew condensation will result from a sudden change in temperature. 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

(3) The terminal from it use should not be used for other units or purposes.
 Be sure to separate this model from the control circuit for dielectric strength and

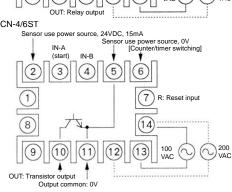
For setting push the protection cover lightly by the finger to the direction as pointed by the arrow sign as shown in the drawing.

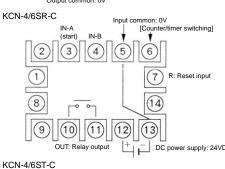
Note:
Be careful to move the protection cover.
Because it may become difficult to read the
display for scratches made on the display
window and the protection cover.
1) Remove all dust kept on the cut surface
of the upper part of the protection cover
(c), and surface of display window and
protection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

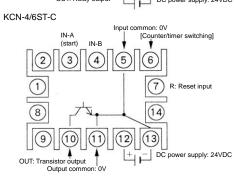
insulation resistance tests

■ Terminal connection

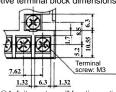
KCN-4/6SR IN-A (start) IN-B 3 4 5 (6) (8) 12 3







Descriptive terminal block dimensions



O4-digit counters will function as timers when terminal ⑤ (0V) is connected with terminal ⑥ (C/T).

OThe function enclosed in brackets is available only for 4-digit display counters.

applicable only for the timer operation

0.25~1.65mm

| ■ Table of errors |               |   |  |
|-------------------|---------------|---|--|
| Display           |               | Description**                                 |  |
| Count number      | Preset number | Description                                   |  |
| FFFFFF            | Preset number | Counter overflow                              |  |
| - FFFFF           | Preset number | Counter underflow                             |  |
| Err               |               | Preset value memory data error                |  |
|                   | PSEt          | Errors for exceeding a range of internal      |  |
|                   | PSEt2         | counting when the preset value is divided by  |  |
|                   | PSEt1         | the prescale value with classification of "1" |  |
|                   |               | or "2"  |  |
|                   | SPEED         | Count speed memory data error                 |  |
|                   | $C{o}P$       | 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.

■ External appearance and dimensions/Unit: mm

1.Installation by

two side-mounting brackets

OThe 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

OThe 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.

2.Installation by top and bottom

