

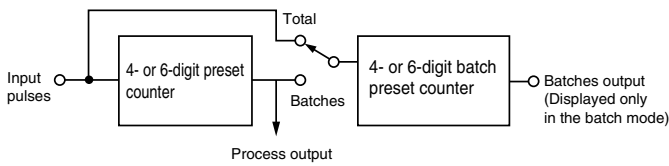
# KCN-B

## Preset Counters for Addition and Subtraction with Batch and Total Options

Maximum counting speed: 30cps or 1kcps  
(selected by keys)

In addition to individual counts, these counters provide batch option to allow a set of counts to be added and displayed. Countup values can be preset for both individual counts and batches.

They serve also as total counters that accumulate different counts.



### Merits

**● Small body and easy to read display**

With its body of only 48 mm by 48 mm, the counter provides full screen display of either four-digit or six-digit numbers with the height of 13 mm or 10 mm.

**● Backlit LCD integrated in all models**

Displayed values are backlit to facilitate reading in darkness.

**● Easy operation**

Countup values can be set or modified independently from initial settings. Changes can be made easily and quickly on site.

**● Addition, subtraction or both operations are available.**

**● EEPROM to eliminate cell replacement**

The counter integrates an EEPROM to eliminate the use of cells. The memory can store all counts, preset values and mode settings.

**● Water proofed front panel**

The keypad on the front panel is completely coated (IP64) to insulate dust and water.

KCV

KCN-A

KCN-S/W

KCN-B

KCN-T

KCY

KCX

KCX-RN

KCH-B

KCM

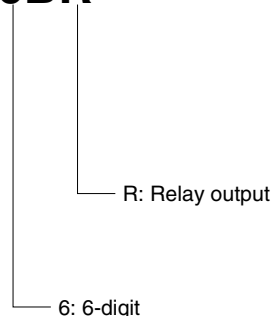
## List of Models

Single preset, nine modes including One Shot and Hold mode, prescaling and decimal point display

Source voltage	Output type	Sensor source	6-digit
AC100~240V	Relay output	DC24V 60mA	<b>KCN-6BR</b>

## Model number system

**KCN-6BR**



## General Specifications

Item		Specification
Source voltage	AC	AC90~264V
Power consumption	AC	Approx. 5VA
Sensor power	AC	DC 24V (20~28V) 60mA (Max. 10% p-p ripple)
Memory backup at power failure		EEPROM (Up to 100,000 writes)
Ambient temperature		-10~+50°C
Storage temperature		-25~+70°C(with no freezing)
Ambient/Storage humidity		35~85%RH (with no dewing)
Withstand voltage		AC 2kV for one minute (AC: For each of AC input, 0V and relay output interconnections, DC: between 0V and relay output)
Insulation resistance		20MΩ or more at DC 500V
Vibration resistance		Durable for one hour along three axes at 10 to 55Hz with 0.5 mm amplitude No error for one hour along three axes at 10 to 55Hz with 0.35 mm amplitude
Shock resistance		Durable for 11ms along three axes at 490m/s <sup>2</sup> (50G) No error for 11ms along three axes at 98m/s <sup>2</sup> (10G)
Noise resistance*		±1.5 kV between power terminals (square wave pulse with 1 μs width and 1ns rise time)
Coating		IP64 for the keypad on the front panel against dust and splash.
Installation		Flush mounting
Connection		Terminal block
Mass (weight)		Approx. 150 g

\*Noise tests also include static discharge test and NEMA compliance tests.

## Performance Specifications

Item	Specification	
Model	Addition and subtraction counter with batch option / Addition and subtraction counter with total option	
Setting	One step for both normal mode and batch option	
Number of digits	6 digits	
Setting range	6 digits: -99999~+999999	
Counting speed	30cps or 1kcps (selected by keys)	
Pulse input	Separate, Concurrent or two-phase (selected by keys)	
Input logic	Positive (voltage) or negative (no voltage) (selected by keys)	
External reset input	Minimum pulse width: 5ms	
Auto reset	Responded within 0.5ms	
Manual reset	Responded within 0.1s	
Power reset	Power shutdown: 1s or more / Reset duration: 1s or less (until restart)	
Output	Relay contact (1a)	
Output mode	Nine modes including One Shot and Hold (selected by keys)	
One Shot mode	Output duration in One Shot mode: 10~9990 ms (selected by keys in 10ms increments)	
I/O response	Maximum counting speed	Relay output
	30cps	Max. 40ms
	1kcps	Max. 11ms
Decimal point display	Any location (selected by keys) / Available only in normal mode and total mode with separate settings.	
Prescaling	6 digits: 0.001~99.999 (Available only in normal mode and total mode in the same range.)	
Count block	Not available	

## I/O Specifications

Count input	Input speed	30cps / 1kcps		
	Input resistance	Positive: 15kΩ Negative: 3.3kΩ (1.8kΩ for DC models)		
	Input voltage	L: 0~3V H: 7~30V		
External reset input (normal and batch)	Input response	On delay: Max. 5ms Off delay: Max. 5ms		
	Input resistance	Positive: 15kΩ Negative: 3.3kΩ (1.8kΩ for DC models)		
	Input voltage	L: 0~3V H: 7~30V		
Relay output	Capacity	AC220V 2A (resistance load)	AC220V 0.5A (cos φ=0.4)	DC30V 0.5A (L/R=7ms)
	Durability	Min. 100,000 contacts	Min. 200,000 contacts	Min. 200,000 contacts

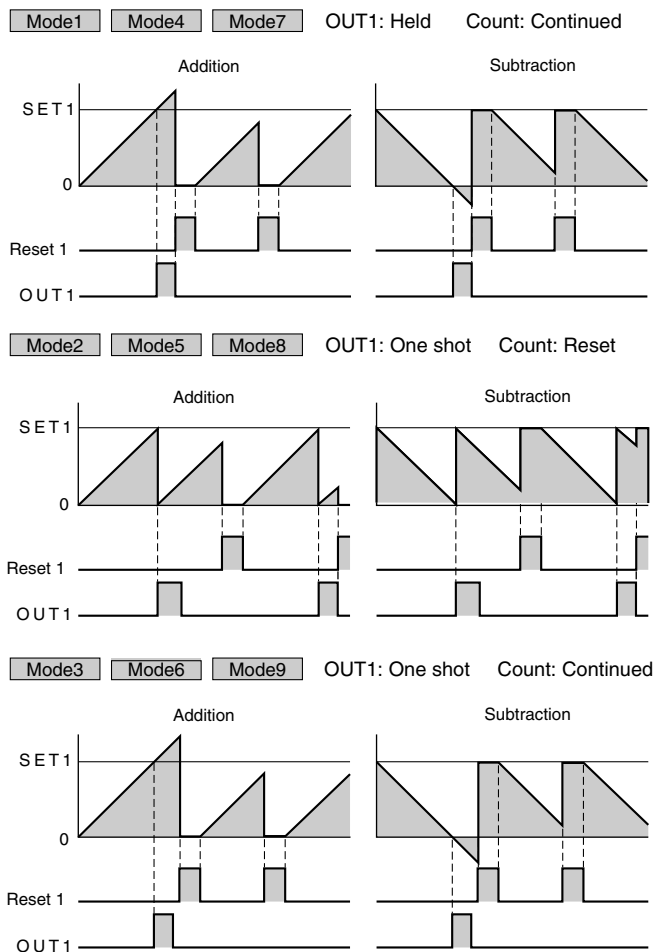
## Output modes (Batch counter)

Mode No	OUT1 individual count		OUT2 batch count	
	Count	Signal output	Count	Signal output
1	Continued	Held	Continued	Held
2	Reset	One shot 10~9990ms		
3	Continued		Held	Reset
4	Reset			
5	Reset	One shot 10~9990ms	Continued	One shot 10~9990ms
6	Continued			
7	Reset	One shot 10~9990ms	Continued	One shot 10~9990ms
8	Continued			
9	Reset	Continued	Continued	One shot 10~9990ms

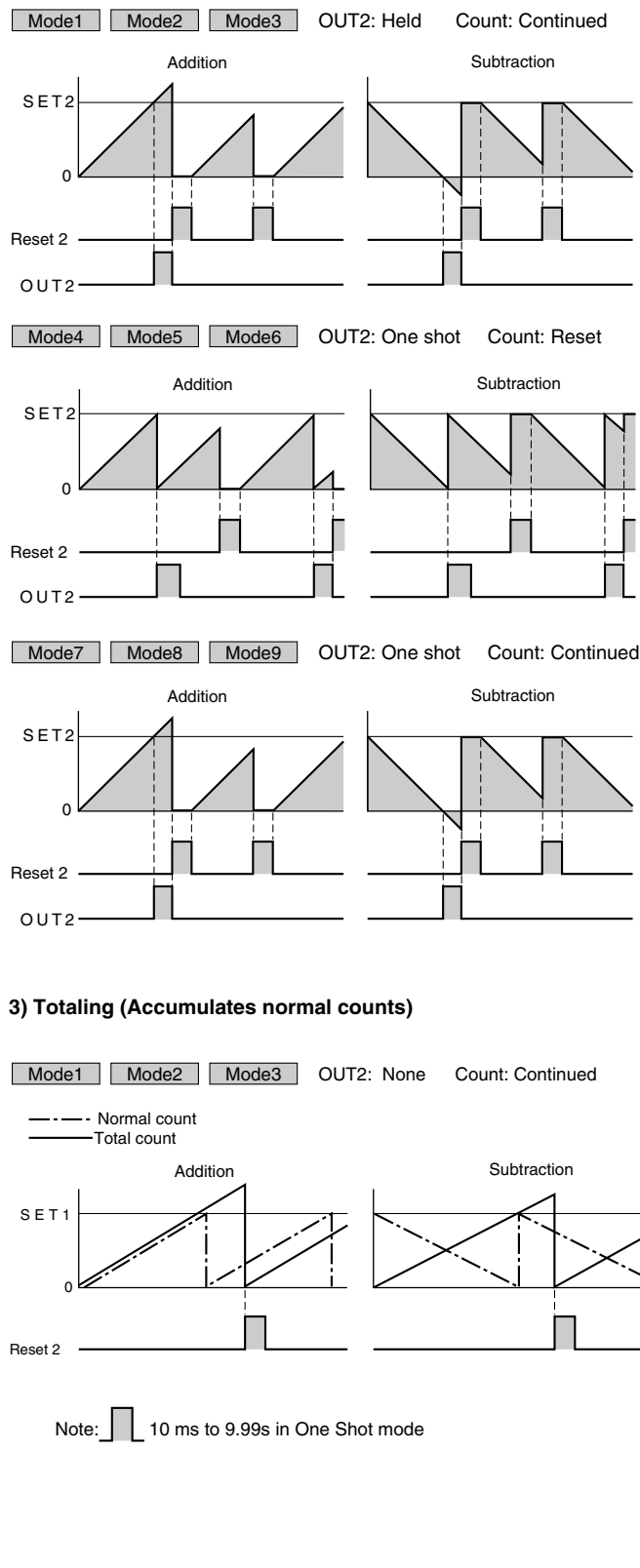
\*Only Modes 1 to 3 of OUT1 are available for the Total counter.

## Output mode diagrams

### 1) Normal counting (Only Modes 1 to 3 for Total counter)



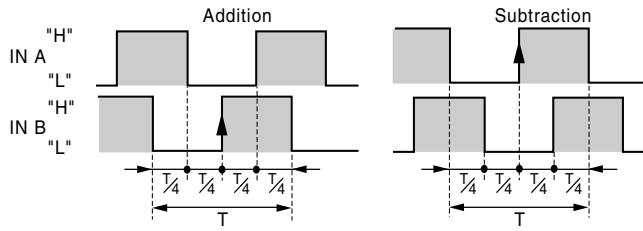
### 2) Batch counting



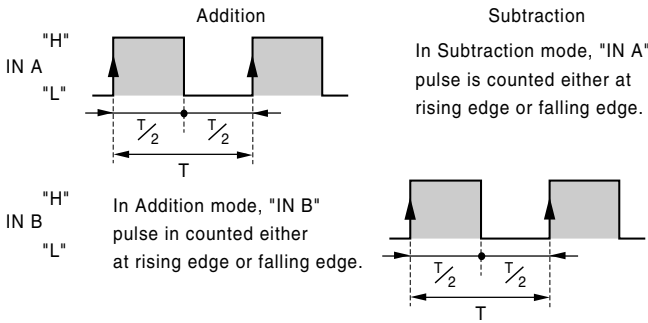
# KCN-B

## Counting timing

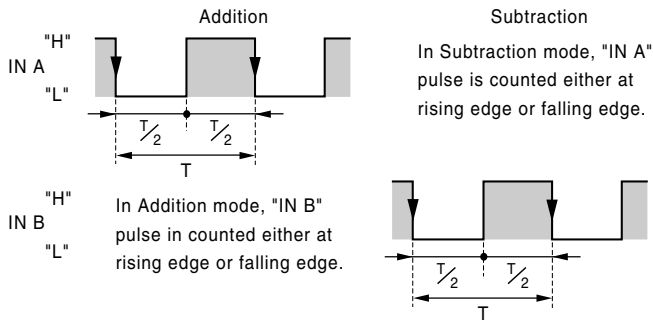
### Two-Phase pulse input



### Separate positive (voltage) input



### Separate negative (no voltage) input

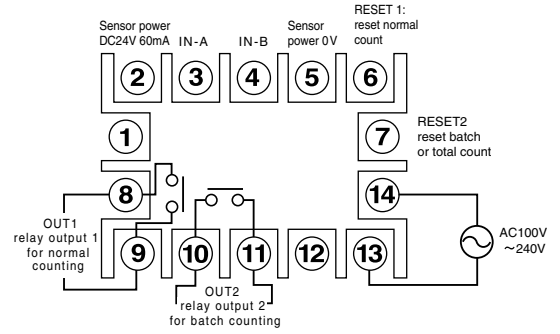


Note: The counter can be set so as to count pulse either at rising edge or falling edge.

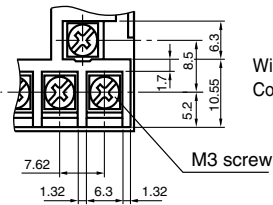
$$\text{Required speed (cps)} = \frac{1}{T \text{ sec}}$$

## Wiring Diagrams

### KCN-6BR



### Dimensions of Terminal Block



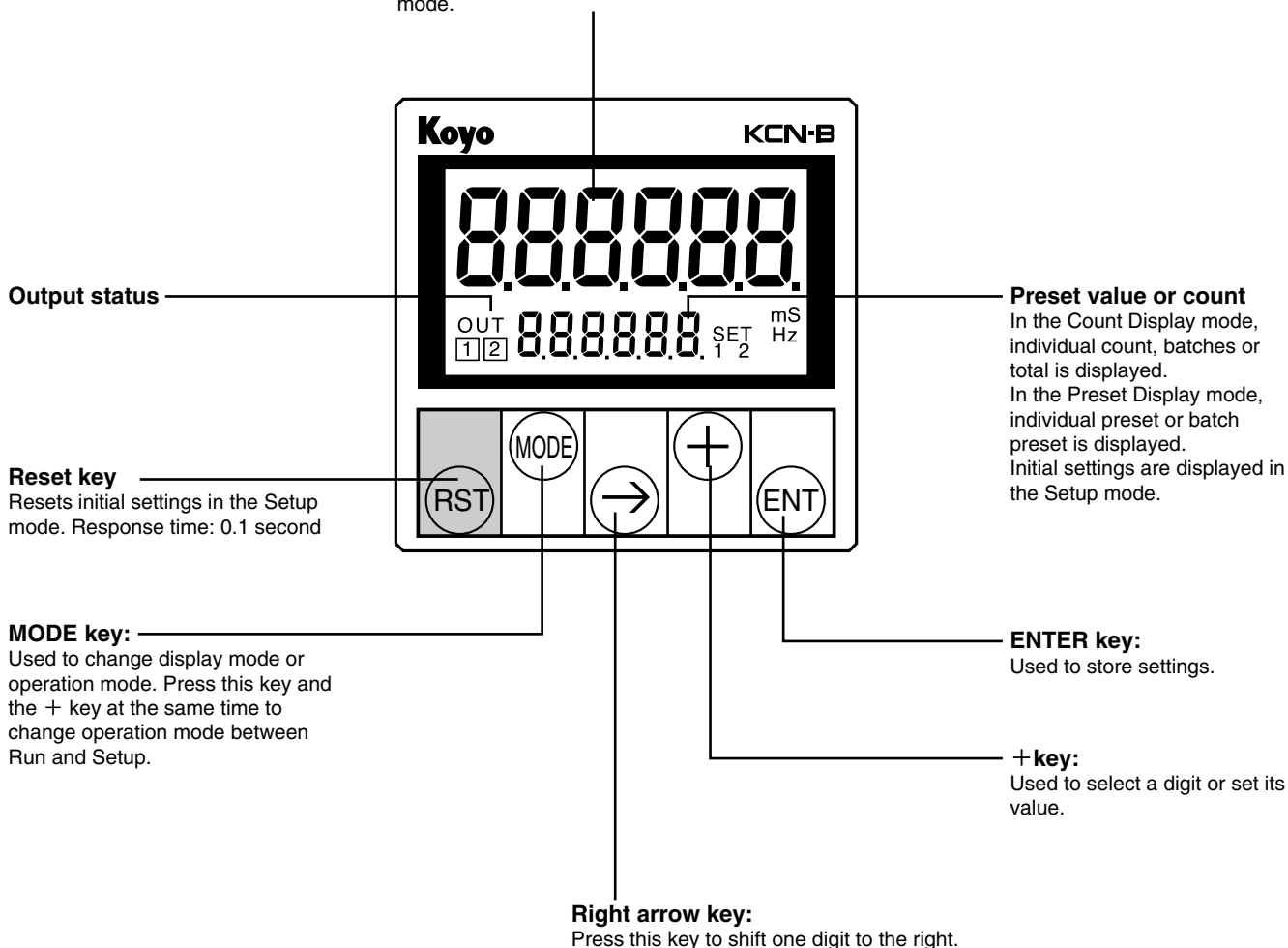
Wire section: 0.25 to 1.65 mm<sup>2</sup>  
Conforming crimped contact: 1.25-3

## Front Panel Layout and Description

### ■ Front panel

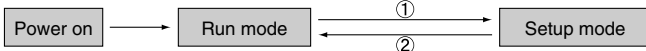
#### Count (zero-suppressed)

Normal count, batches or total is displayed as selected in the Run mode.  
 Character height: 10mm for 6-digit  
 Initial settings are displayed in the Setup mode.



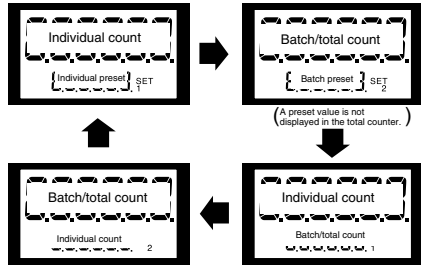
## Operating procedures

### Switching between Setup mode and Run mode



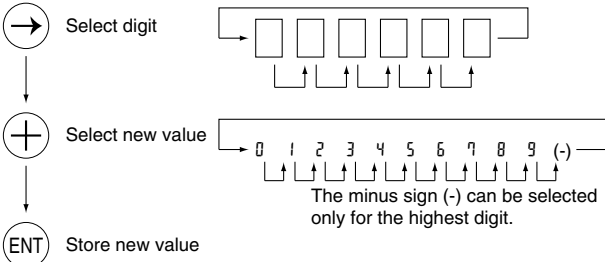
- Press the **(MODE)** key and the **(+)** key at the same time for at least 0.5 second.
- Press the **(MODE)** key and the **(+)** key at the same time for at least 0.5 second, or leave the system in the Setup mode for one minute.

### Changing display mode in the Run mode



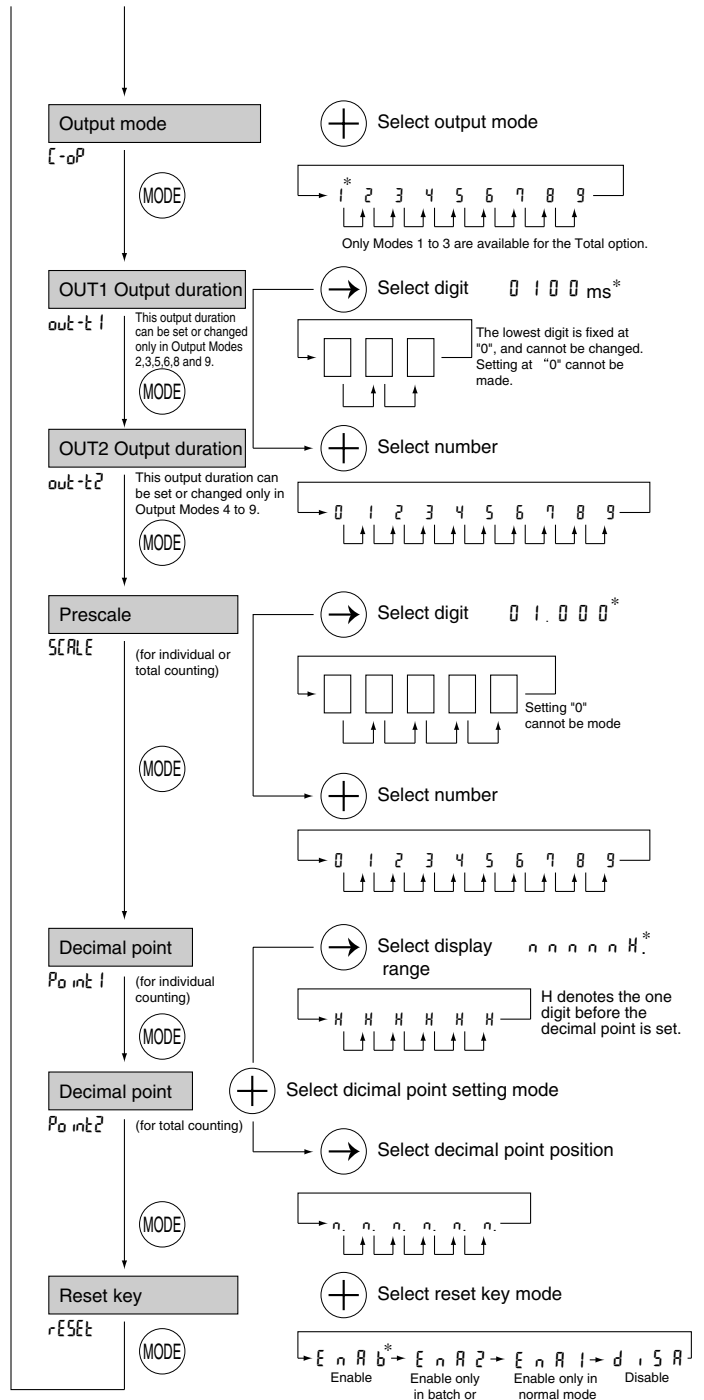
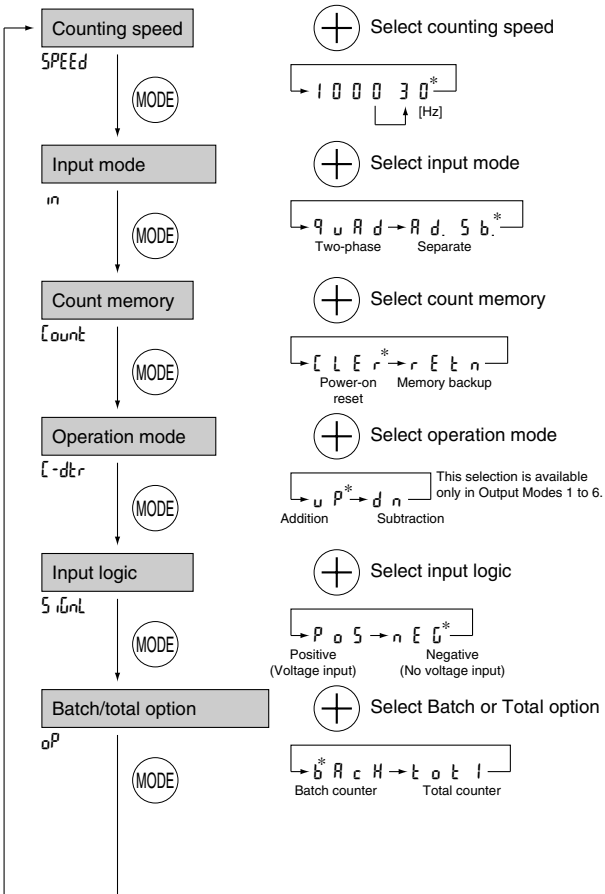
### Changing a preset value

Go to the Run mode screen, and change the value as follows:



### Initializing the counter

In the Setup mode, the counter can be initialized using the menu as follows:



### Notes:

- After you change a current setting, always press the **(ENT)** key to store the new value.
- \* indicates a value set at delivery.
- After you change an initial setting, always press the **(RST)** key to reset the count.
- The displayed count is determined by the prescale and the decimal point location. For example, if the prescale is set to 1.200 and the decimal point is set as nnn.nHn, each pulse input increments the count as follows:  
0.012 → 0.024 → 0.036 → 0.048 → 0.060...

## List of Error Codes

Error code		Description ※
Count display	Preset display	
F F F F F F	Preset value	Counter overflow
- F F F F F	Preset value	Counter underflow
E r r	P 5 E t 2 P 5 E t 1	Preset memory data error Preset value divided by prescale exceeds count range. The error code is followed by 1 or 2 to indicate SET1 or SET2 error.
	5 P E E d	Counting speed memory data error
	[ - o P	Output mode memory data error
	o u t - t 1	OUT1 output duration memory data error
	o u t - t 2	OUT2 output duration memory data error
	5 [ P L E	Prescale memory data error
	P o i n t 1	Decimal point memory data error (individual counting)
	P o i n t 2	Decimal point memory data error (total counting)

\*A memory data error occurs when the current settings do not produce a meaningful result.

## ■ Solving errors

For an overflow or underflow, press the (RST) key to reset the counter and clear the error code.

For any other errors, press the (ENT) key to clear the error code then correct the current settings.

### Notes:

- The counter continues counting even after an overflow or underflow has occurred. This is performed in the range of -2147483.648 to 2147483.647.
- The counter is automatically checked for errors when power is turned on. When an error occurs, counting and display are disabled except for overflow and underflow.

## Important

- For DC power source, the 0V terminal 13 and common input(0V) terminal 5 are short circuited.
- Using a relay, bring the power voltage quickly to the rated level.
- Always select negative (no voltage) input for DC 2-wire proximity switch.
- After changing initial settings, always press the (RST) key to reset the counter.
- During counting, and change to a preset value becomes effective when the (ENT) key is pressed.
- For maintenance purposes, keep records of the initial settings and preset values.
- A void using the counter in the environments where:
  - (1) Ambient temperature is above 50°C or below -10°C
  - (2) Ambient humidity exceeds 85%, or abrupt temperature changes may cause dewing.
  - (3) The operation may be affected by dust, metal chips, corrosive gases or other harmful objects.
  - (4) The machine is exposed to direct sunlight.
  - (5) You anticipate vibration or shock.
- Keep the following in mind when wiring:
  - (1) The wiring to the counter should be separated from power line.
  - (2) Keep the counter body and wiring away from noise sources.
  - (3) Never use a free terminal as a relay.
- Isolate the counter from the control circuit before testing insulation voltage and resistance.

KCN-A

KCN-A

KCN-S/W

KCN-B

KCN-T

KCY

KCX

KCX-RN

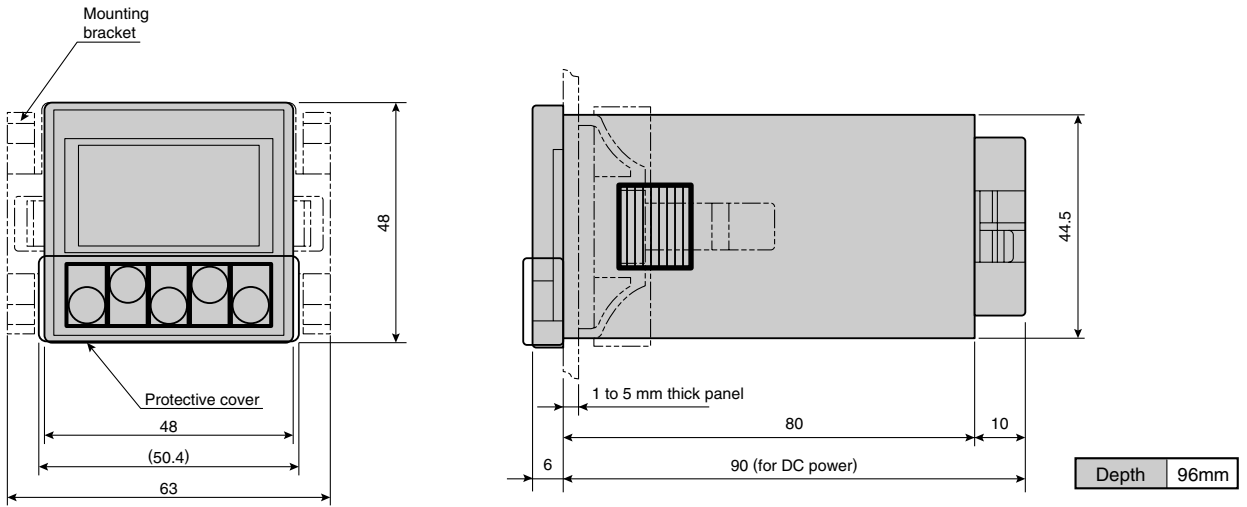
KCH-B

KCM

# KCN-B

## External Dimensions

(in mm)



### Boring dimensions for Installation

#### 1. Horizontally aligned handles

#### 2. Vertically aligned handles

