

Maximum counting speed: 2-digit: 10Hz or 1kHz
4-digit: 10Hz or 5kHz

With the DIN standard of only 48 mm by 48 mm, these counters integrate advanced functions. Operation modes include addition, addition and subtraction with or without manual reset, and totalling.

Merits

- **DIN 48 × 48 small body for minimum space requirement**
- **Easy setting**

Countup values can be easily set and confirmed any time. Changes can be made also when the power is OFF.



- **Quick response**
- **No voltage relay contact (1a) or open collector output**
Relay output: AV250V 2A 1a relay contact
- Open collector: DC24V 30 mA (NPN output)

- **Built-in 24V sensor source**

Each counter incorporates a DC24V 15 mA source available for a proximity switch or other external device.

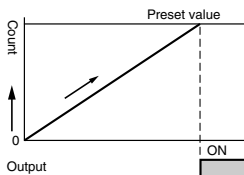


- **Memory backup at power failure**

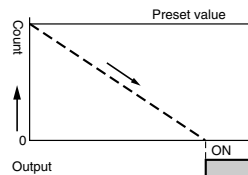
A large volume capacitor is also integrated to assure memory backup of 100 hours or 4 days. It supports maximum security with minimum maintenance.

- **The counter can be either flush mounting or wall surface mounting.**

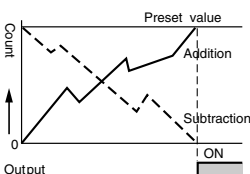
- **Addition**



- **Subtraction**



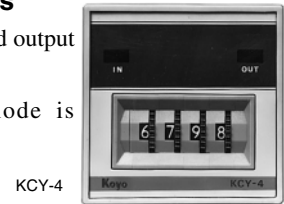
- **Addition and subtraction**



The front panel is completely coated to insulate dust and water. This cover also serves to prevent wrong operation.

■ KYC-2/4 Addition Counters

- 2- or 4-digit display with input and output indicators.
- One Shot output or Hold mode is available.



■ KYC-2D/4D Addition and Subtraction Counters

- 2- or 4-digit count display
- Addition, Subtraction or concurrent mode is available.
- Two-phase or separate pulse input for concurrent operation.
- Allows concurrent inputs of addition and subtraction.
- One Shot output option and Hold option are available.



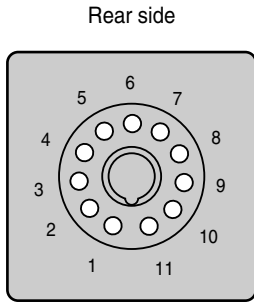
Specifications

Model number	Addition	KCY-2-G/H	KCY-4-G/H
	Addition and Subtraction	KCY-2D-G/H	KCY-4D-G/H
Number of digits	—	2-digit	4-digit
Count input	Counting speed	10cps or 1kcps	10cps or 5kcps
	Input resistance	4.7kΩ with pullup to 24V in negative mode	
	Input voltage	"L"0~6V, "H"16~30V	
External reset input	Response time	On delay: 5ms Off delay: 5ms	On delay: 3ms Off delay: 3ms
	Input resistance	4.7kΩ with pullup to 24V in negative mode	
	Input voltage	"L"0~6V, "H"16~30V	
Auto reset	Response time	Max. 1ms	Max. 0.2ms
Output	NPN open collector	NPN output: DC 24V 30mA Withstand voltage: 35V Residual voltage: Max. 1.5V	
	Relay output	1a contact: AC 250V 2A Electrical durability 200,000 contacts Mechanical durability 50,000,000 contacts	
Output response time	open collector	10cps: Approx. 30ms 1kcps: Approx. 200 μs	10cps: Approx. 30ms 5kcps: Approx. 100 μs
	Relay output	10cps: Approx. 40ms 1kcps: Approx. 10ms	10cps: Approx. 40ms 5kcps: Approx. 10ms
Power-on reset*1	Shutdown time*1	Min. 500ms	
	Reset time*2	Min. 500ms	
Sensor power	DC+24V 15mA		
Withstand voltage	AC 2kV for one minute for each of AC input, 0V and relay output interconnections		
Vibration resistance	(Complies with JIS C0911) Durable for one hour along three axes at 10 to 55Hz with 0.5mm amplitude No error for one hour along three axes 10 to 55Hz with 0.35mm amplitude		
Noise resistance	1kV (square wave pulse with 1 μs width)		
Source voltage	KCY-□-G: AC 85~115V KCY-□-H: AC 180~240V		
Power consumption	With count display: Approx. 6VA Without count display: Approx. 5VA		
Ambient temperature	-10~+50° C		
Storage temperature	-25~+70° C (with no freezing)		
Ambient/Storage humidity	35~85%RH (with no dewing)		
Weight	Approx. 200g		
Accessory	Mounting bracket, protective cover		

*1 Time required for the internal circuit to detect power failure

*2 Time required for the counter to restart after its power is turned on.

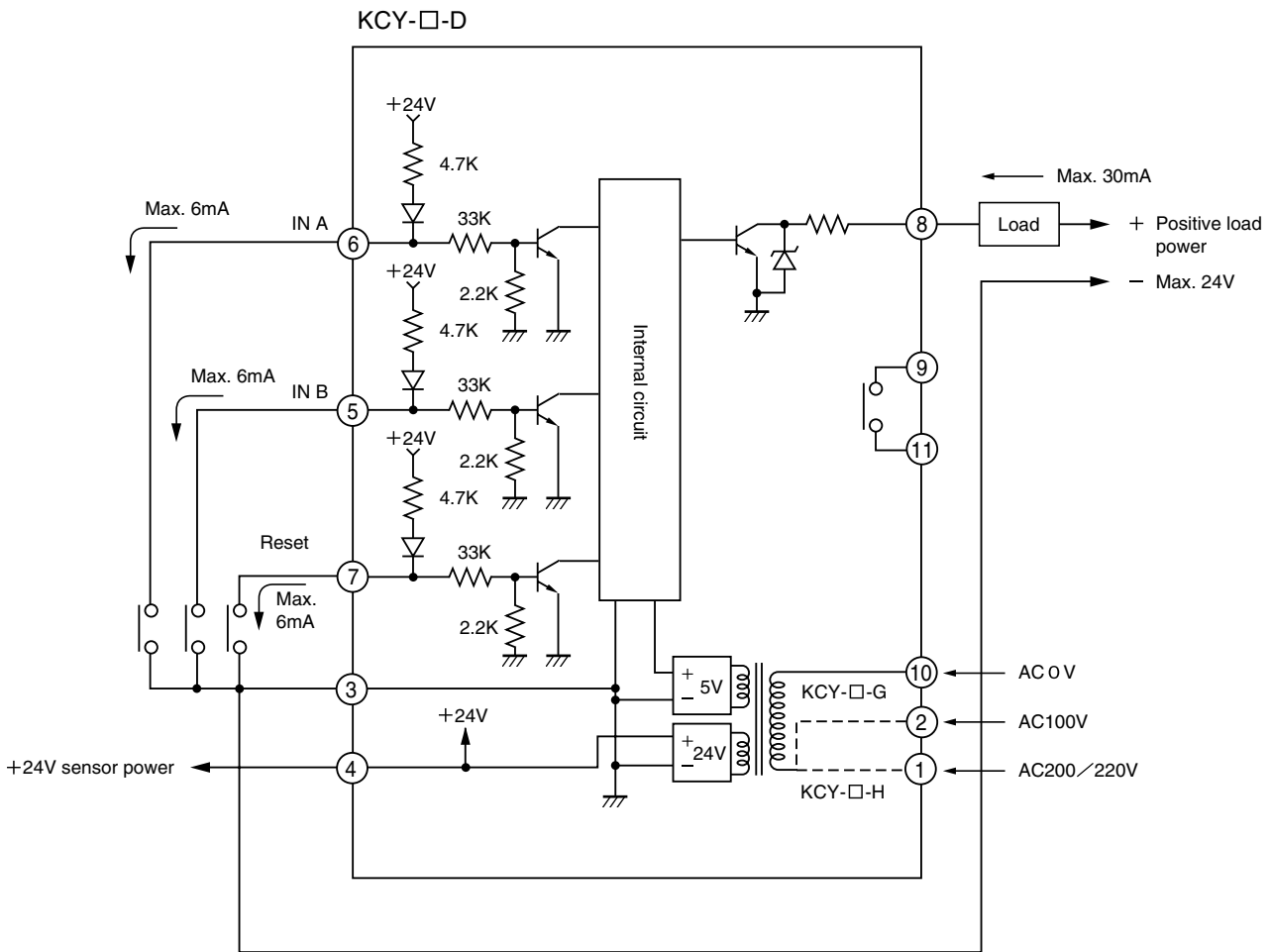
Terminal Assignment



Terminal number	Function
1	AC 200/220V power source (free on KCY-□-G)
2	AC 110V power source (free on KCY-□-H)
3	Common negative input/output
4	DC +24V 15mA sensor power
5	Count input IN B (Subtraction) (free on KCY-□)
6	Count input IN A (Addition) (free on KCY-□)
7	Reset
8	Open collector output (free on KCY-4T)
9	Relay contact output (free on KCY-4T)
10	Power source AC 0V
11	Relay contact output (free on KCY-4T)

Note: Terminals 1,2,5,8,9 and 11 may be left unused. Do not use them as relay terminals.

I/O Circuits



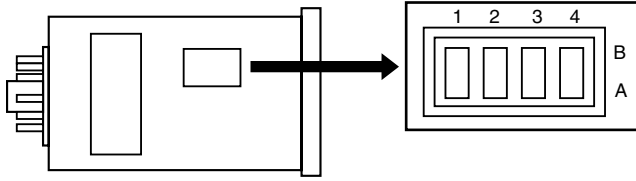
Note: Terminal 5 is unused and Terminal 6 is "IN" on the KCY-2/KCY-4 addition counters.

Operating procedures

Mode selection

To select the counter modes, use the four switches (or two switches on the addition counters) located on the left side of the counter.

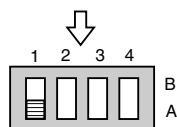
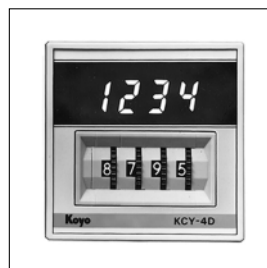
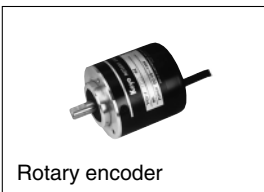
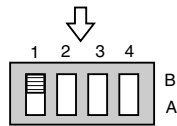
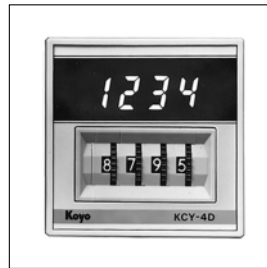
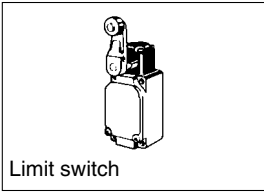
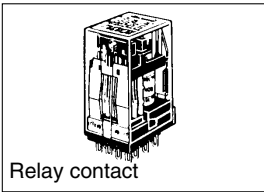
Note: The available dip switches are **Switches 1 and 2 on the addition counters, and Switches 1,3 and 4 on the total counters.**



Switch	Mode selected	at position A	at position B
1	Counting speed	1kcps or 5kcps	10cps
2	Signal output	One shot	Hold
3	Pulse count	Two-phase	Separate
4	Operation	Addition	Subtraction

■ Switch 1: Counting speed

This switch is used to set or change the maximum counting speed. Turn the switch to Position A to select 1k cps for 2-digit counters, or 5k cps for 4-digit counters. Move it to Position B to select 10 cps for 2-digit and 4-digit counters. Position B is used for contact output, and Position A for no contact output.

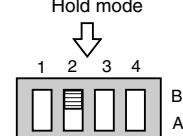
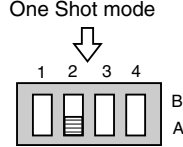
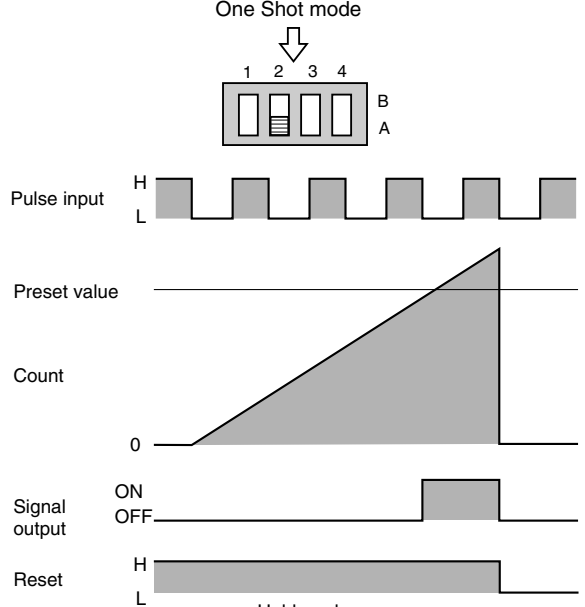
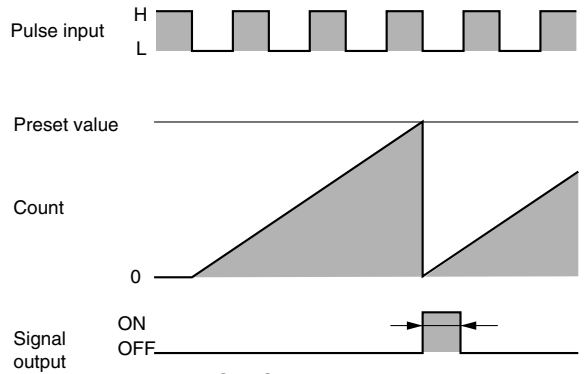


■ Switch 2: Signal output

Use this switch to switch the output mode between One Shot and Hold. In the One Shot mode, the counter generates a signal upon countup, and turns it off after 100 ms. The count is reset upon countup.

In the Hold mode, the counter generates a signal upon countup. Both the signal output and the count are retained until reset.

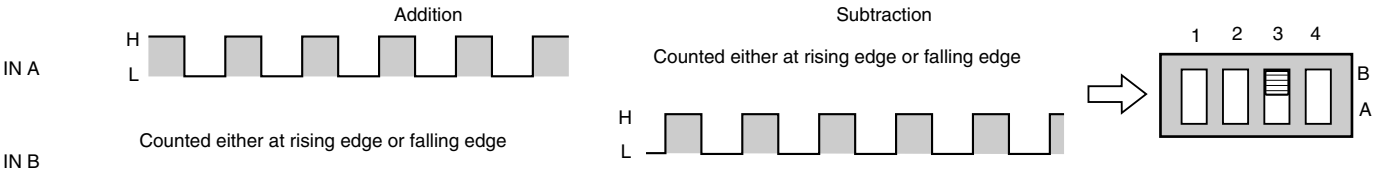
*** The following charts compare the two modes of the addition counter.**



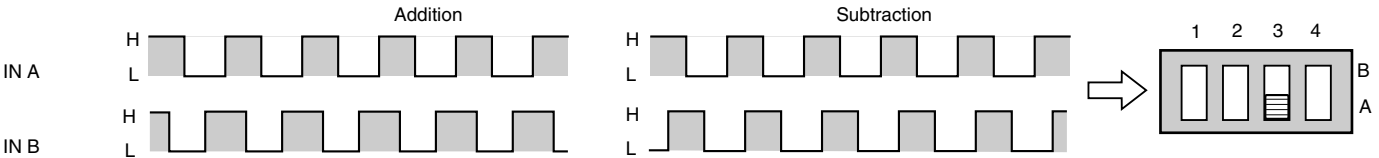
Switch 3: Pulse count (Unavailable on KCY-2 and KCY-4 counters)

This switch changes the pulse count mode between Two-Phase (90°dephased) or Separate.

Separate mode



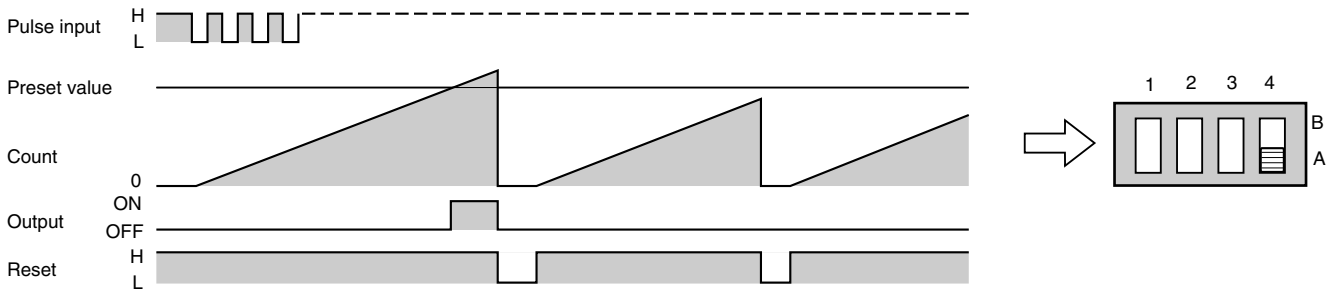
Two-Phase mode



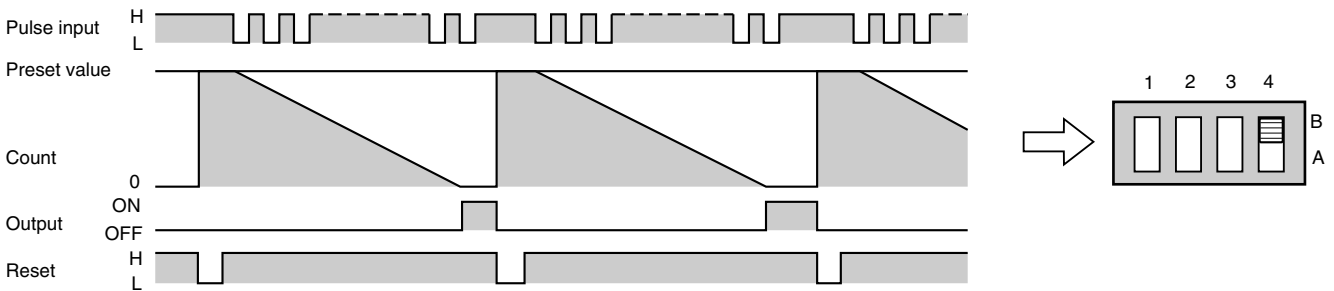
Switch 4: Operation (Unavailable on KCY-2, KCY-4 and KCY-4T counters)

This switch changes the operation mode between Addition and Subtraction.

Addition mode



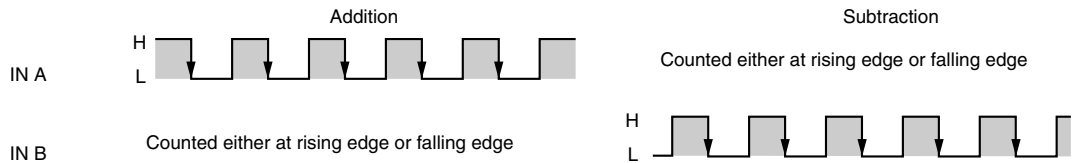
Subtraction mode



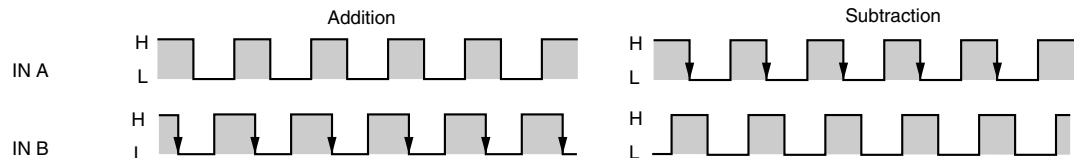
Counting timing

KCY-□ D Addition and Subtraction Counters

Separate mode



Two-Phase mode



On the KCY□ Series counters, the only option is the Pulse input A in the Separate mode shown above.

KCN-A

KCN-A

KCN-S/W

KCN-B

KCN-T

KCY

KCX

KCX-RN

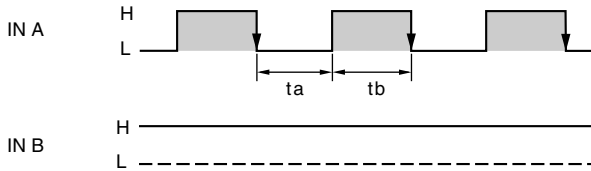
KCH-B

KCM

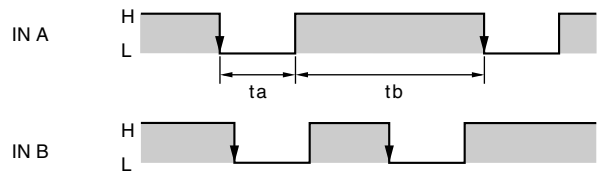
Pulse input requirements

■ KCY-□D, Addition and Subtraction Counters

Separate mode

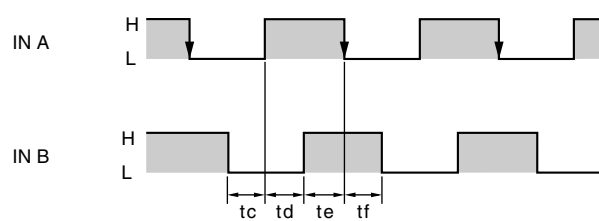


Repeated additions or subtractions



Both A and B can be counted at the same time if the pulse width and interval are equal to or longer than the specified time.

Two-Phase mode



ta, tb, tc, td, te and tf must be:
 50 μs or more for 4-digit counters
 250 μs or more for 2-digit counters

On the KCY-□ Series counters, the only option is the Pulse input A in the Separate mode shown above.

Reset input

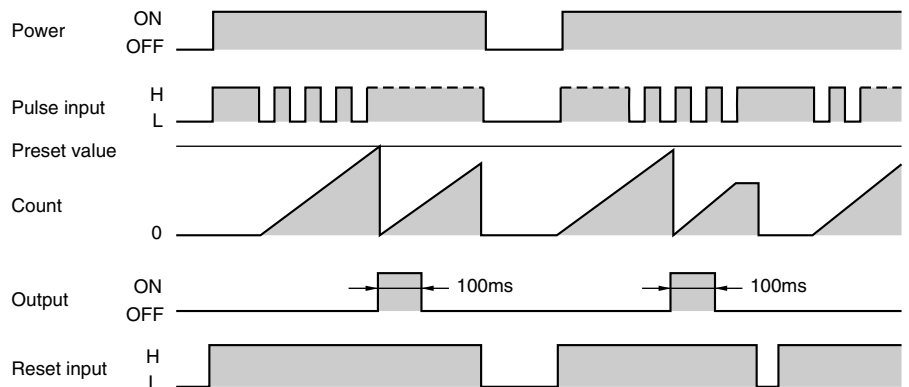
The reset signal input initializes the counter with negative input logic.

This signal input resets the addition count to zero or the subtraction count to the preset value, and turns off the output signal. After reset, the counter must be restarted to resume operation. On the KCY-4T counter, the count can be manually reset to zero.

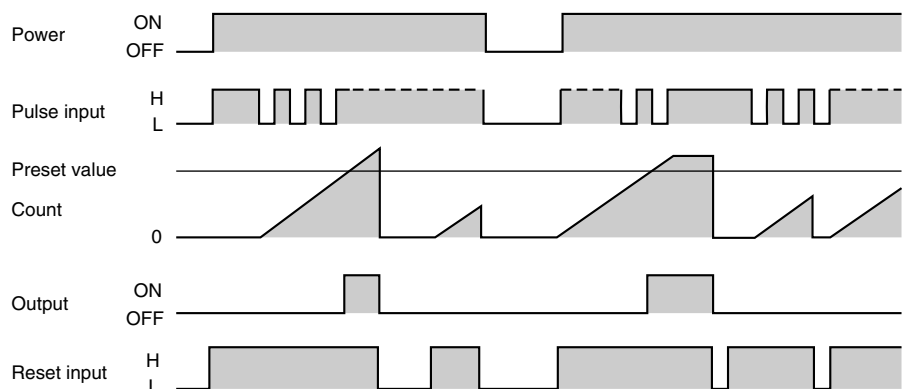
Signal output

■ KCY-□ Addition Counters

One Shot mode



Hold mode



KCV

KCN-A

KCN-S/W

KCN-B

KCN-T

KCY

KCX

KCX-RN

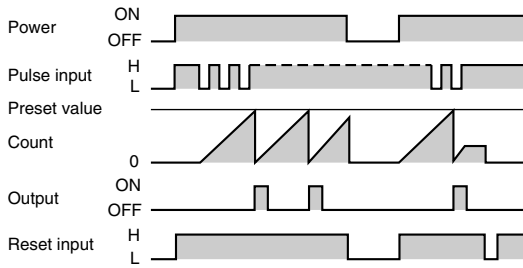
KCH-B

KCM

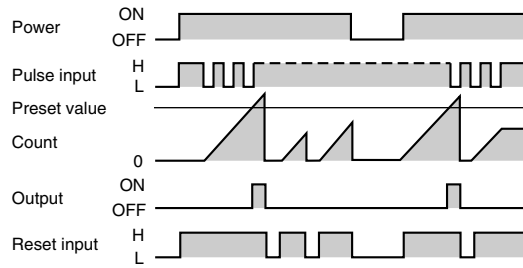
■ KCY-□ D, Addition and Subtraction Counters

Addition

One Shot mode

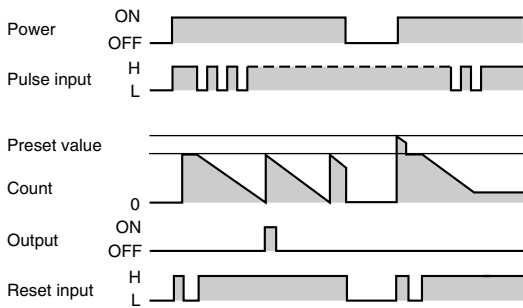


Hold mode

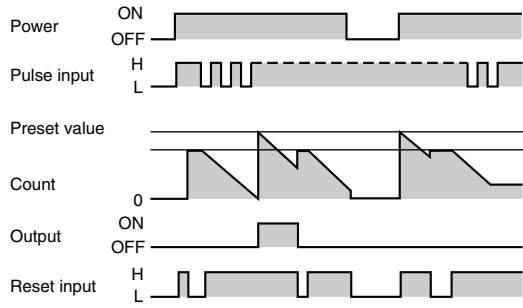


Subtraction

One Shot mode



Hold mode



KCN-A

KCN-A

KCN-S/W

KCN-B

KCN-T

KCY

KCX

KCX-RN

KCH-B

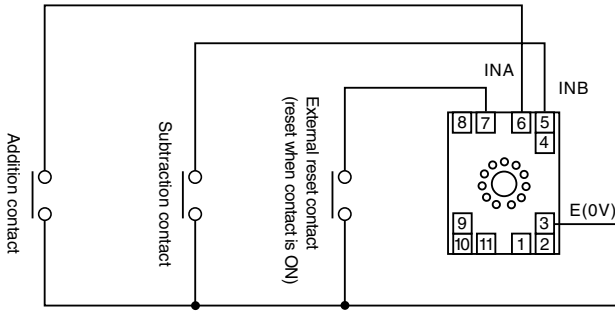
KCM

KCY

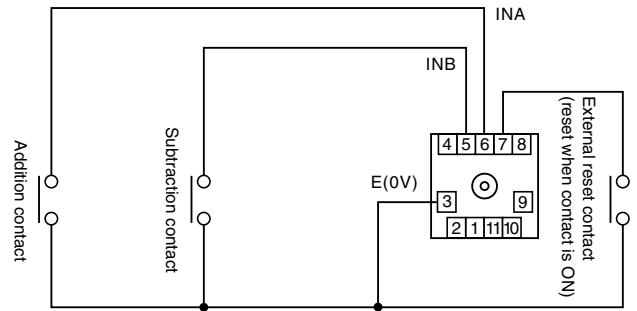
Connecting to input device

Relay input

Using KF-04 socket for wall surface mounting

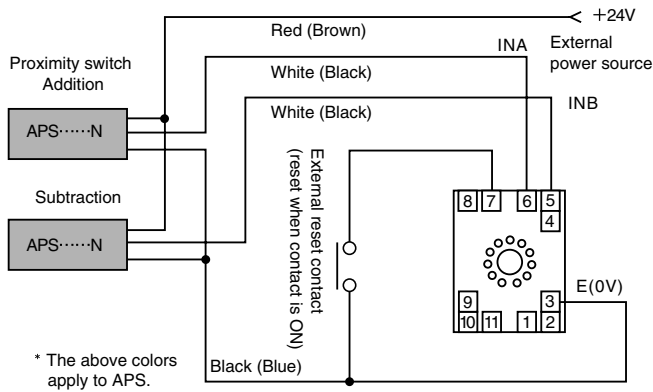


Using KB-04 socket for flush mounting

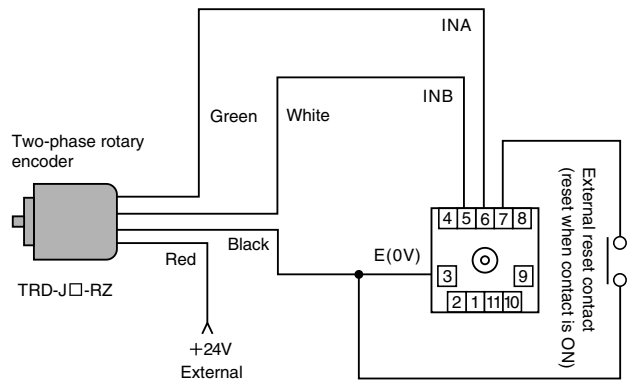
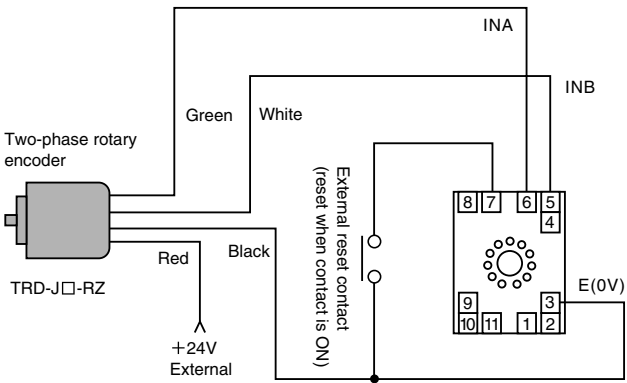
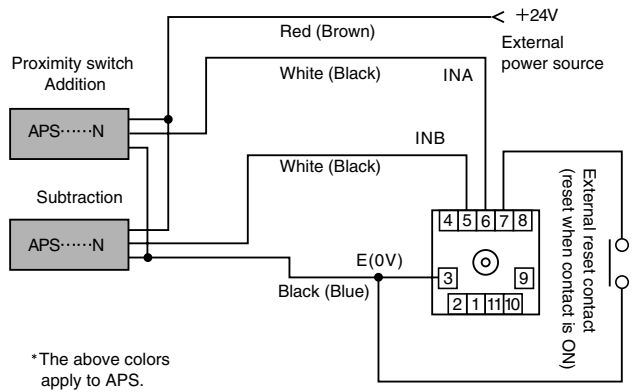


DC input

Using KF-04 socket for wall surface mounting



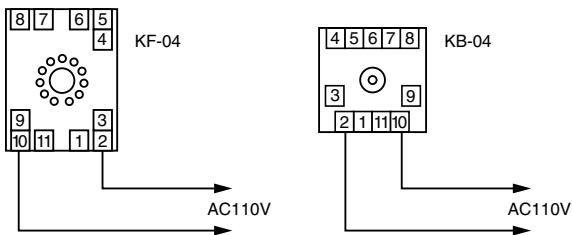
Using KB-04 socket for flush mounting



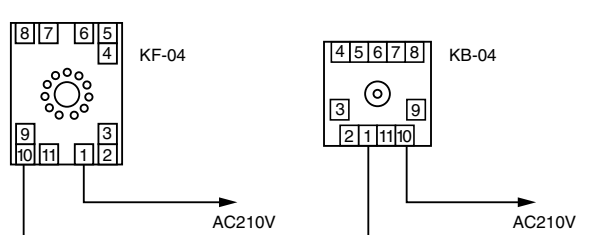
* Free terminals: 8,9 and 11 on Model KCY-4T, and 6 on Model KCY-2 and KCY-4

Connecting to power source

KCY-□-G at 110V only



KCY-□-H at 220V only



* Free terminals: 1 on Models □-G, and 2 on Models □-H.

KCV

KCN-A

KCN-S/W

KCN-B

KCN-T

KCY

KCX

KCX-RN

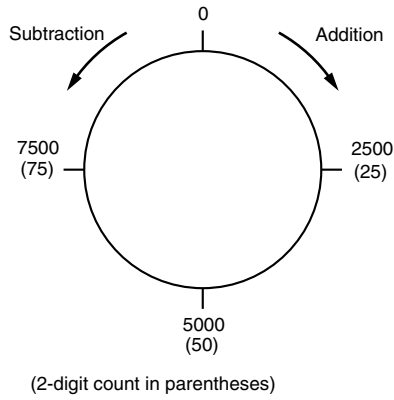
KCH-B

KCM

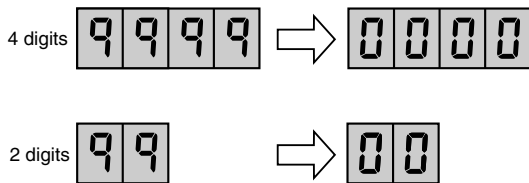
Useful Information

Count overrange

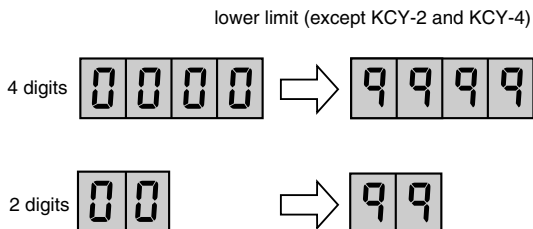
The KCY modes can count from 0 to 9999 for 4-digit output, and 0 to 99 in 2-digit output. In the One Shot mode, the count never exceeds these ranges. In the Hold mode, the count is not automatically reset upon countup. The counter continues to count input pulses in excess of the specified range. The signal output is held until reset.



In the Addition mode, the count changes as follows when it has reached the upper limit:



In the Subtraction mode, the count changes as follows when it has reached the lower limit (except KCY-2 and KCY-4):



Changing the preset value

During counting, a change to the preset value may cause the counter to generate a false signal. Before you make a change, always turn the power off, or reset the counter.

Presetting to zero

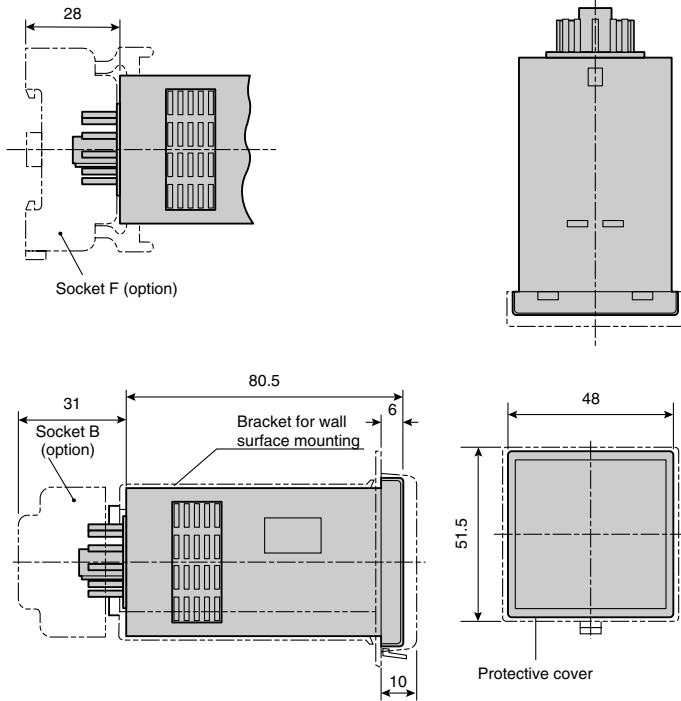
The counter may be preset to zero; "0000" on a 4-digit counter, or "00" on a 2-digit counter. In the Hold mode, the signal output is held upon countup. In the One Shot mode, however, the output signal "oscillates" and may affect subsequent processes.

Pulse input

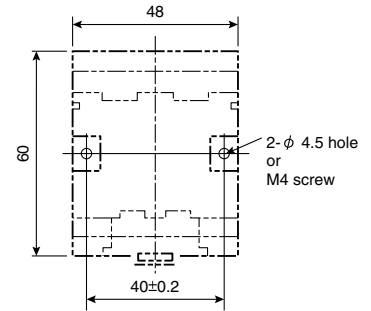
During fast counting, the counter may erroneously count noises of contact relays. To avoid this, use DC input instead of contact relays.

External Dimensions

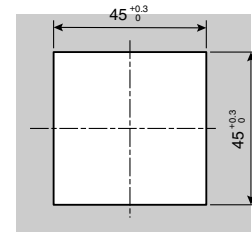
(in mm)



Bore dimensions for wall surface mounting (Socket F)



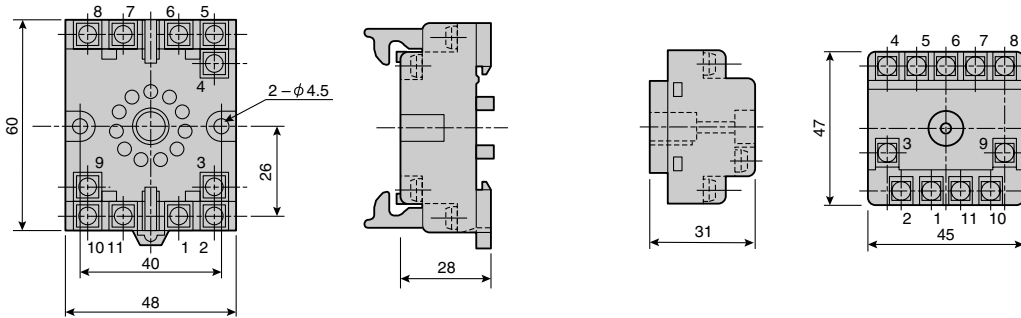
Bore dimensions for flush mounting



Specified sockets

For wall surface mounting: KF-04 (applicable to DIN rails)

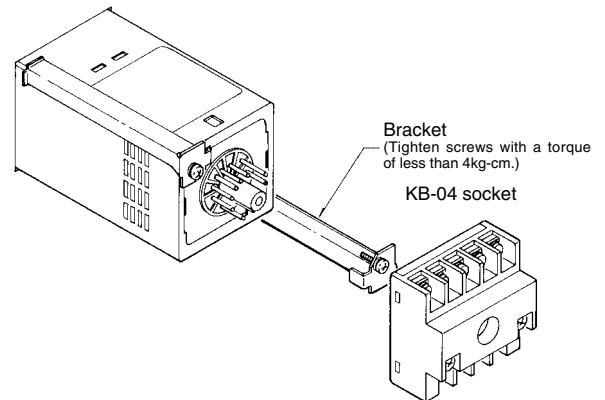
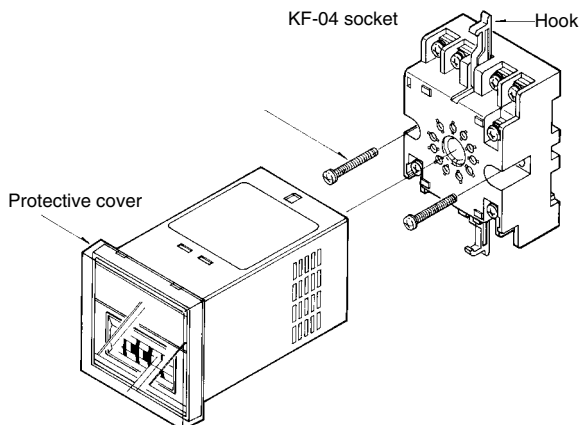
For flush mounting: KB-04



Installation procedures

Wall surface mounting using KF-04

Flush mounting using KB-04



When attaching the protective cover, you cannot make panel operation.