

Maximum operating speed 20kHz

Used in industrial machinery, end-measuring devices, and the like, this electronic counter is exclusively for display. It is used to display items like movement distances for tables, the length of an item being tested, and thickness.

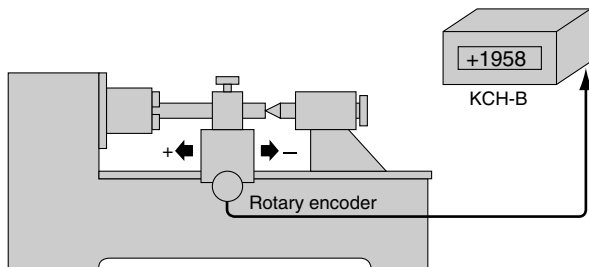
Merits

- Displays dual + and - zone values.
- It comes equipped to write offset values. When measuring object length, height, or the like, values for start points with which you can set threshold at any value (+ values only).
- Input format is for both 90° phase differential input and addition/subtraction input.
- A built in DC power supply is provided for proximity sensor and encoder.
- Applicable for either wall-mounting or panel-cut-mounting.

Application examples

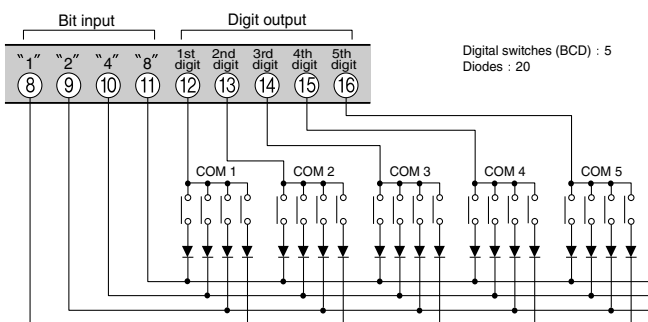
Positional display for the cutting block of a lathe

Movement of the cutting block is retrieved as pulses from a rotary encoder connected to the motor. These pulses are used for counting/display with the counter for addition and subtraction display and indicate the position of the cutting block.



This counter can also be used in other machines like milling machines and drill presses for display of the table position, display of cutting width for shearing machines, and to display length and thickness for digital micrometers, digital end-measuring devices, and thickness-measuring devices.

Wiring (5-digit) with external digital



switches to write settings

KCH-B6RN



| External Relay Configuration Diagram to write settings | | | | | |
|--|---------------------|---|---|---|---|
| Numerically set position | Relay Configuration | | | | |
| | C | 1 | 2 | 4 | 8 |
| 0 | | | | | |
| 1 | | ● | | | |
| 2 | | | ● | | |
| 3 | | ● | ● | | |
| 4 | | | | ● | |
| 5 | | ● | | ● | |
| 6 | | | ● | ● | |
| 7 | | ● | ● | ● | |
| 8 | | | | | ● |
| 9 | | ● | | | ● |

KCH-B

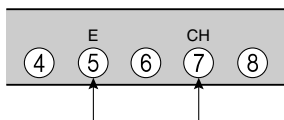
Specifications

| Model number | KCH-B4RN | | KCH-B6RN |
|-----------------------------------|--|---|---|
| Number of digits | 4-digit | | 6-digit |
| Counting input | Maximum operational speed | 20kHz | |
| | Input resistance | 6k Ω +6~+16V | |
| | Input format | Addition/subtraction signal or dual-phase (90°) signal | |
| | Input pulse amplitude | "1" $\geq 25 \mu s$ "0" $\geq 25 \mu s$ | |
| Writing-directed input | Responsiveness | Ondelay duration: less than 0.2 ms* Offdelay duration: less than 0.2 ms | |
| | Input resistance | 6k Ω +6~+16V | |
| Setting input | Digit output | Written (last 4 digits) as writing-directed input | Written (last 5 digits) as writing-directed input for digital switch connection |
| | Bit input | for digital switch connection | |
| External reset | Responsiveness | Ondelay duration: less than 5 ms Offdelay duration: less than 1 ms | |
| | Input resistance | 6k Ω +6~+16V | |
| Power source reset | Duration of power source interruption | Must be less than 0.2 s | |
| | Reset duration | Less than 0.2 s (the duration of count inoperability while power is supplied) | |
| Sensor power source | DC +12 V 100 mA below 3% (ripple/effective values) | | |
| Withstand voltage | AC1500 V 1 minute between ground and power source terminals | | |
| Vibration resistance | Conforms to JIS C 0911 Durability: displacement amplitude 0.5 mm 10-55 Hz along three axes No malfunction: displacement amplitude 0.35 mm 10-55 Hz along three axes | | |
| Insulation resistance | DC500 V more than 20 M Ω between ground and power source terminals | | |
| Source voltage | AC100V(90~132V) 50/60 Hz approx. 12 VA AC200/220V(180~264V) | | |
| Lifetime | No output circuit, so not specified in particular | | |
| Ambient temperature | -10~+50°C | | |
| Storage temperature | -20~+70°C (with no freezing) | | |
| Ambient humidity/storage humidity | 35~85%RH (with no dewing) | | |
| Weight | Approx. 1 kg | | |
| Accessories | Metal fittings for installation, card edge connector | | |

* With writing directions, send a signal of more than 1 ms to write-directed terminals.

Operations

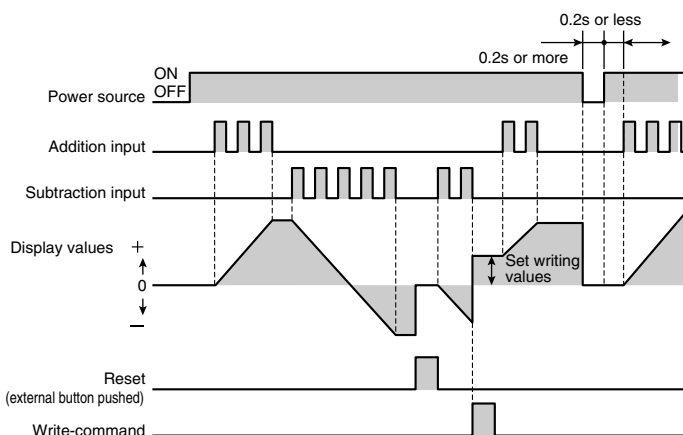
Connection of terminals ⑤ (E) and ⑦ (CH) is for addition and subtraction input; when not connected, the counter is ready for 90° phase differential input.



For addition and subtraction input, terminal 2 (INA) is for addition input and terminal 3 (INB) is for subtraction input. For 90° phase differential input, a signal input in terminal 3 (INB) that proceeded a 90° phase via terminal 2 (INA) is added. When this order is reversed, the signal is subtracted.

When an addition input signal and subtraction input signal are added at the same time, a miscount occurs, so have a time difference of at least 50 μs for timing of the rising edge of the addition input signal and subtraction input signal.

- It starts counting in 0.2s or more after power up.
- Applying a voltage +6 to +16V onto write-command terminal ④ will display the value that is set with the external setting device.
- When resetting the display, push the reset button, apply voltage of a voltage +6 to +16 V to terminal 6 or interrupt the power supply for at least 0.2 s.
- The POSITION display lamp lights up when sending a 1 input signal to the write command input terminal. In addition, it goes out when the counter is reset.



Operations Chart

* The chart is for when the input format is dual signal input for addition/subtraction.

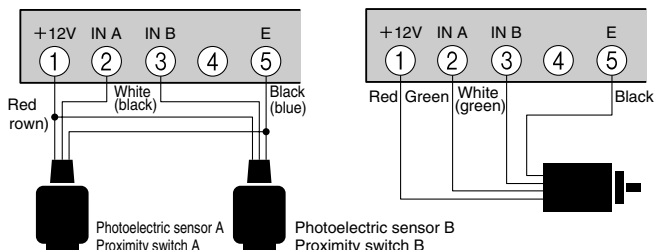
Wiring example

■ Sending signals to count input terminals

Photoelectric sensor

Proximity switch

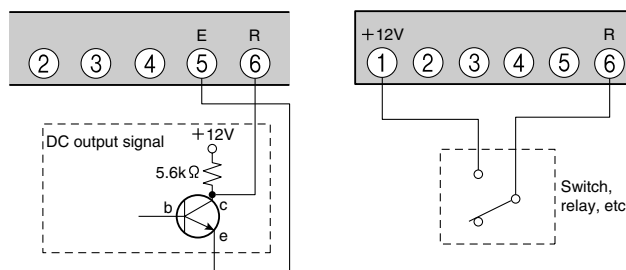
Rotary encoder



■ Sending signals to reset input terminals

DC signal (general)

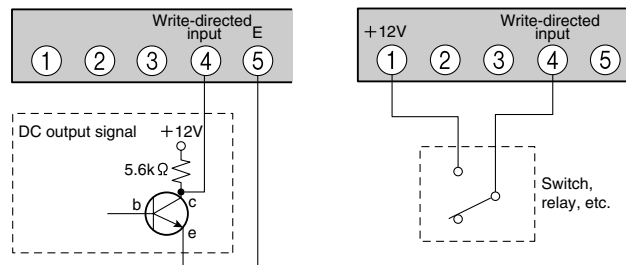
Relay signal



■ Sending signals to write-command input terminals

DC signal (general)

Relay signal

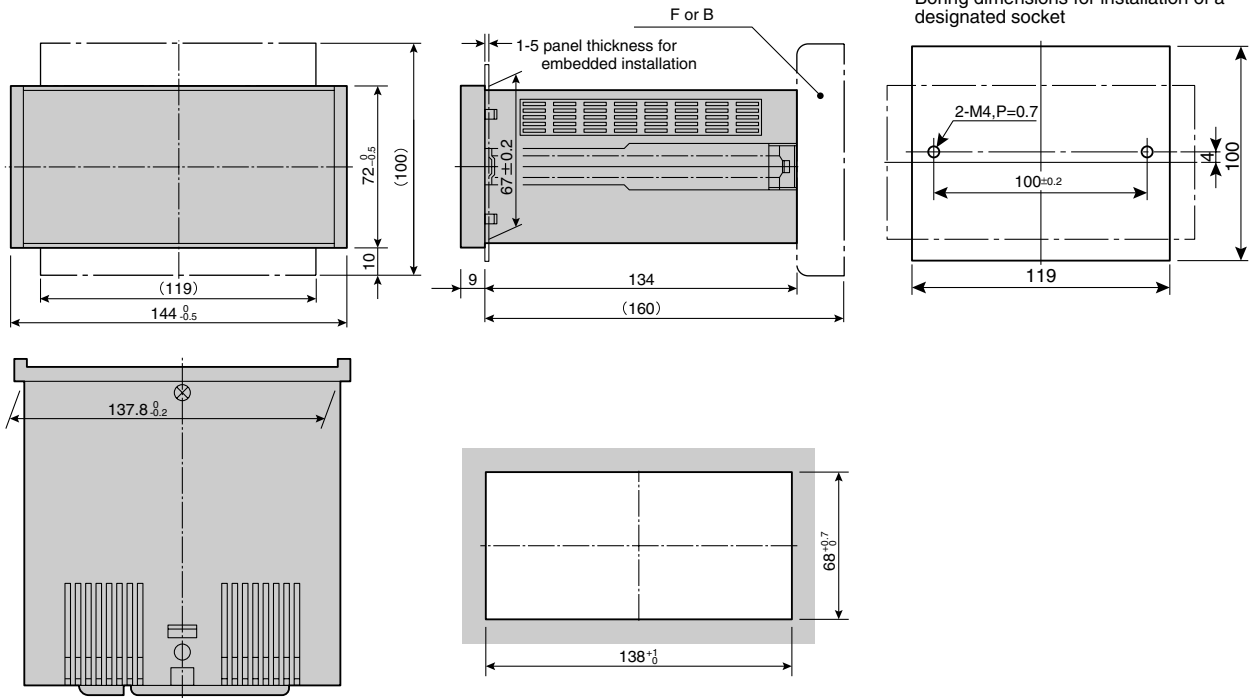


Terminal arrangement

| Terminal number | Connection | Terminal number | Connection |
|-----------------|----------------------------|-----------------|---------------------------|
| ① | +12V (sensor power source) | ⑫ | 1st digit |
| ② | IN A | ⑬ | 2nd digit |
| ③ | IN B | ⑭ | 3rd digit |
| ④ | Write command | ⑮ | 4th digit |
| ⑤ | E (ground) | ⑯ | 5th digit |
| ⑥ | R (Reset) | ⑰ | Not connected |
| ⑦ | Ch (switching) | ⑱ | AC 200/220 V power source |
| ⑧ | "1" | ⑲ | Not connected |
| ⑨ | "2" | ⑳ | AC 100 V power source |
| ⑩ | "4" | ㉑ | Not connected |
| ⑪ | "8" | ㉒ | AC 0 V power source |

External Dimensions

(in mm)

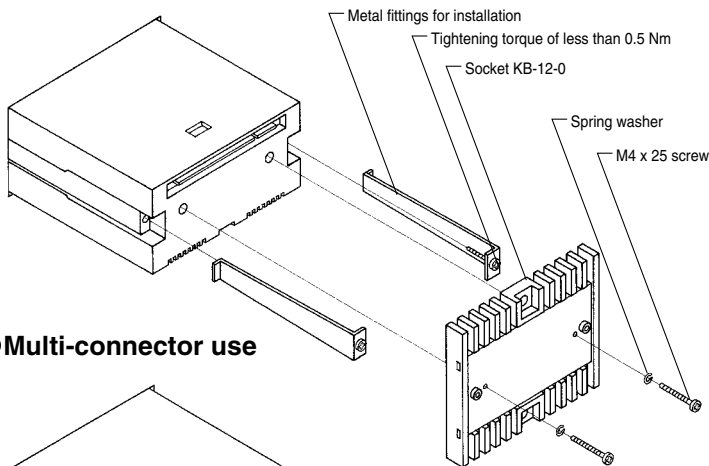


● Wall-mounting using a designated socket (F) Boring dimensions for installation
Boring dimensions for installation of a designated socket

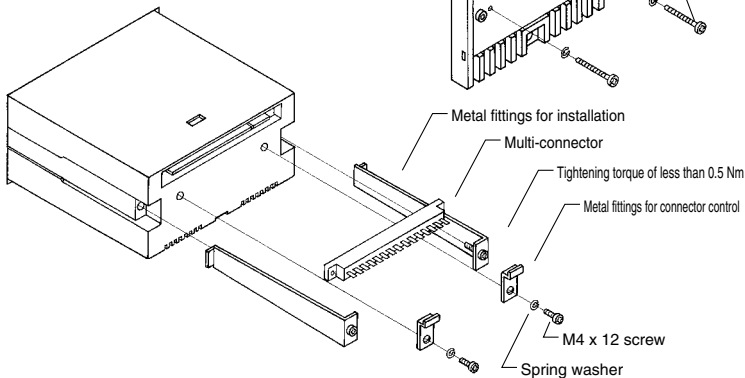
Installation Diagram

Embedded installation

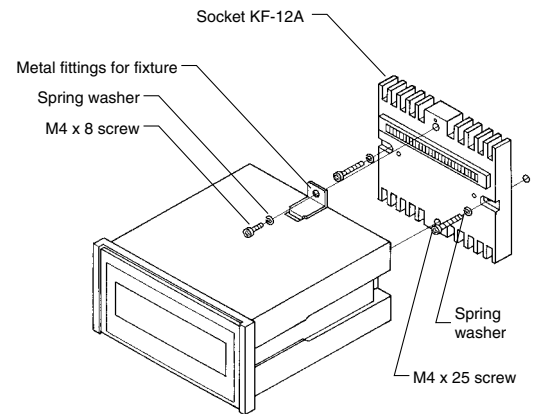
● Exclusive socket (B) use



● Multi-connector use



Wall-mounting installation

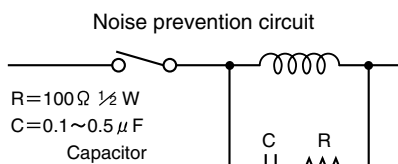


Notes:

- 1 It is recommended to use Chuo Musen 120- $\frac{20}{22}$ -B-102 multi-connector with key for the DIN standard size (72 × 144mm) counter.
- 2 Designate our multi-connector metal fittings when ordering separately.
- 3 When ordering the multi-connector connector metal fittings and screws as one set, designate the kit model number.

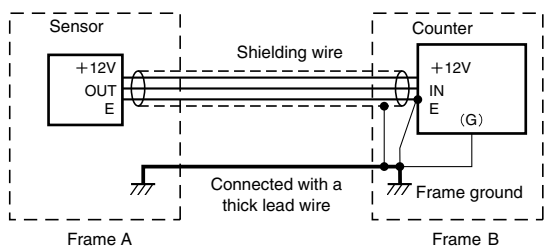
Important

- When a voltage of more than +2 V is applied to the reset terminal, counting cannot be performed.
- Momentarily applying voltage to the reset terminal during counting or interrupting the power supply may lead to the resetting of count values.
- When the setting value is 0 and a setting device is operated while the counter is operating, output is produced so avoid operating a setting device during operation whenever possible.
- Changes in settings should be performed with power off or with external resetting.
- When using the counter near a solenoid valve, clutch, brake, or the like, a capacitor (0.1-0.5 μ F condenser) aligned with the driving coil, resistance (100 Ω 1/2 W), and a surge absorption element in a series circuit should be connected to prevent noise.

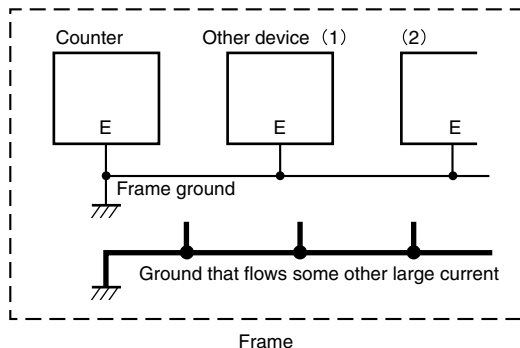


- The power source transformer has antistatic shielding to prevent noise, so the G terminal (ground) that is at the drawing opening for the shielding wire should be connected to the control panel (housing).
- When using the counter in locations with substantial noise, using shielding wire and avoid wiring the counter's commercial power source and input/output wiring other than relay output together with heavy electrical wiring in order to avoid malfunctions. The shield casing of shielding wires should be connected to the counter's E terminal (ground) and the housing with other terminals open.

In addition, a heavy lead wire (better than 0.5 mm²) should be used for connection to the frame when the sensor and counter are installed separately in the frames.



- When the counter's ground and ground wires for other devices are used in common, the ground wire should be as thick and short as possible and connected to the housing in at least one location. The counter's ground wire and other ground lines flowing other large currents should be differentiated.



- When sending a relay signal for a magnetic relay to a relay input terminal, a resistor (470 Ω 1/2 W) should be provided. Malfunctions due to poor contact can be prevented and the degree of reliability will increase further.

