KCM-50/51 Series

Features

Consolidated Counter (Maintenance Counter)

- The KCM-50 series consolidates nine counters into one unit and the KCM-51 series consolidates eight counters (timers) into one unit.
- These counters notify the maintenance period of several tools, as needed for tool replacement with machining centers and NC machine tools.
- Tool management: Replacement prediction / warning
- Whetstone for polishing: Maintenance prediction
- Quantity management: Total counter / Preset counter
- Time management: Integrating timer

■Features

KCM-50 Series

The counter features 9 counting inputs, a preset function and independent prediction output (count up output), and outputs when either one of the counters reaches the equipment stop set value.

☐Open collector output:	KCM-50	(Japanese surface sheet)
	KCM-50-1	(English surface sheet)
☐Voltage output:	KCM-50P	(Japanese surface sheet)
	KCM-50P-1	(English surface sheet)

- **Nine 5-digit preset counters (timers) are consolidated into one unit.**
- **Battery-less**
  The set value / discrete value are memorized by a maintenance-free EEPROM.
- **Individual prediction (preset) outputs for 9 circuits**
- **Indications of the previous prediction (green) - prediction (orange) - facility stop (red) are distinguished by color.**
  A previous prediction display function that notifies that the value is close to the prediction set value is built-in.
- **Equipment stop output**
  An over-value is set for the prediction set value of each counter, and when any one of the counters reaches the over-value, the equipment stop is output (red display).
- **9 preset counters can be used as a total counter**
  Each counter can independently preset value s(prediction setting) and individually count the inputs and outputs against the preset value (orange display).
- **Oilproof front operation panel**
- **Miniature (DIN 72 x 72 mm)**
  The overall depth is 82 mm, so the control panel is thin.

KCM-51 Series

The counter features 8 counting inputs, a preset function and independent prediction output (count up output), and outputs when either one of the counters (Timers) reaches the equipment stop set value.

☐Open collector output:	KCM-51	(Japanese surface sheet)
	KCM-51-1	(English surface sheet)

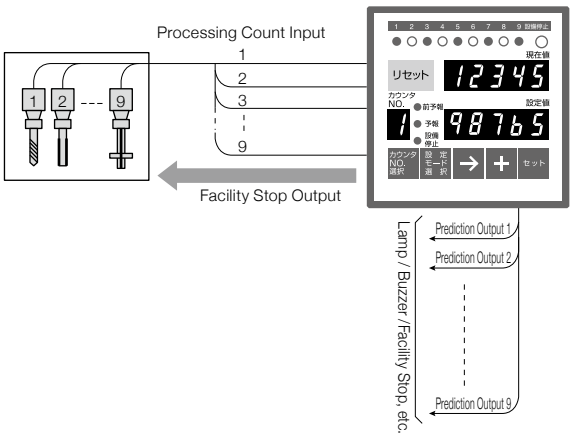
- **Eight 5-digit preset counters (timers) are consolidated into one unit.**
- **Battery-less**
  The set value / discrete value are memorized by a maintenance-free EEPROM.
- **Individual prediction (preset) outputs for 8 circuits**
- **Each counter (timer) displays a different color when the set value is reached.**
  Setting 1 (green) - Setting 2 (orange) - Setting 3 (red)
- **OR output**
  When any one of the counters (timers) reaches the value of setting 1 or setting 3, the output is produced.
- **8 preset counters can be used as a total counter or a integrating timer.**
  The counter / timer functions can be mixed in use.
- **Any counter / timer can be reset by external signal.**
- **Oilproof front operation panel**
- **Miniature (DIN 72 x 72 mm)**
  The overall depth is 82 mm, so the control panel is thin.

KCM-50/51 Series
Features

■Application

KCM-50 Series

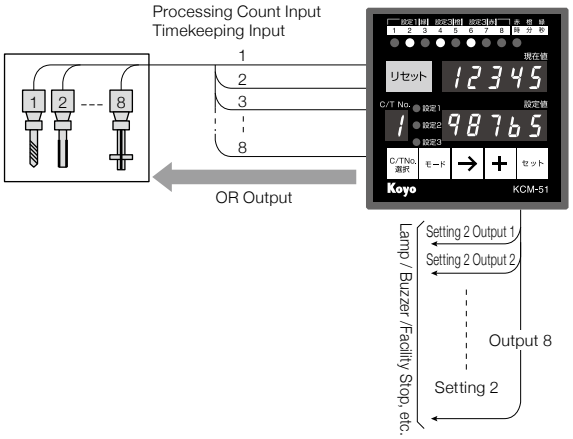
Tool Maintenance of Multiple Spindle Machine Tools



Note 1) Counters 2 to 9 perform similar operation.
2) The equipment stop output and the equipment stop display turn on when any one of the counters, 1 to 9, reaches the equipment stop set value.

KCM-51 Series

Tool Maintenance of Multiple Spindle Machine Tools

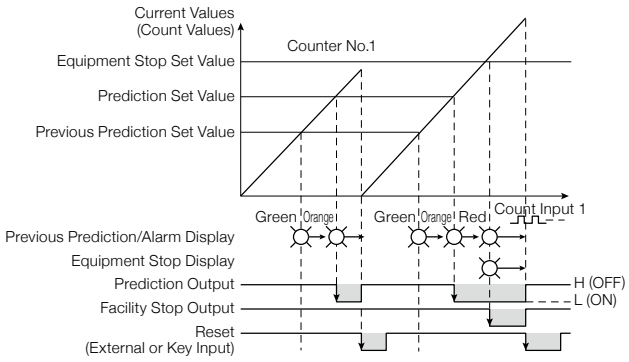


Note 1) Counters / Timers 2 to 8 perform similar operation.
2) The OR output turns on when any one of the counters (timers), 1 to 8, reaches the value of setting 1 (setting 3).

■Basic Operation

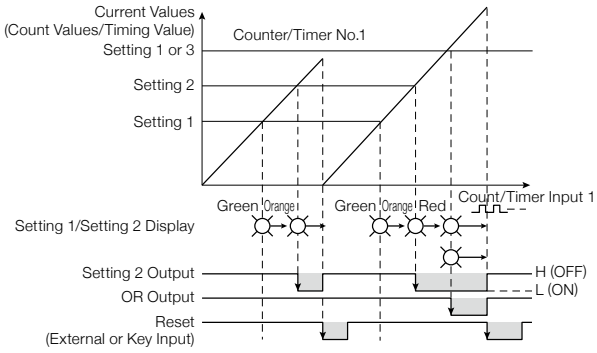
KCM-50 Series

Time Chart



KCM-51 Series

Time Chart



KCM-50/51 Series

Each Part Name and Function

■Panel Explanation

KCM-50 Series

①Reset key

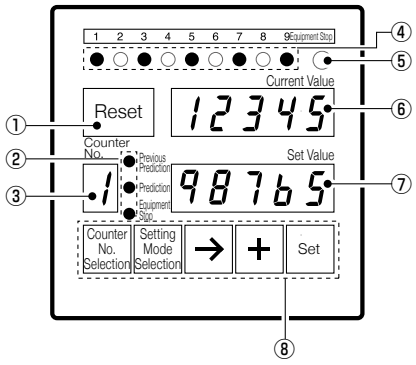
- Resets the displayed current value.
- When several counters are counting up and the reset operation is performed, the counter display switches to the next counter.

②Mode display

- Either previous prediction, prediction, or equipment stop is displayed in the setting mode. When all the lights are turned off, the device is the operation run mode.

③Counter No. display

- Displays the selected counter No.
- Every time the counter counts up (prediction set value), the counter No. switches to the No. of the counter that overflowed.



⑧Setting key

[Counter No. selection key]

- Switches the display between the current value and the set value of the counter.
- Counters that are not used in the run mode are not displayed.
- If pressed and held for 1 second or longer, the counter No. automatically changes.

[Setting mode selection key]

- Switches between the run mode and the setting mode.
  If there is no key entry for 1 minute or longer, the mode automatically switches to the run mode.

[→Key (Digit selection key)**]**

- Selects the digit for inputting the set value.
- The selected digit flickers.
- If pressed and held for 1 second or longer, the digit automatically changes.

[+ Key (Numeric value changing key)**]**

- Changes the numeric value of the digit selected by the → key.
- If pressed and held for 1 second or longer, the digit automatically changes.

[Set key]

- Enters the set value in memory in the setting mode. When the set value is entered, the set value display flickers three times, indicating the input.

④Count-up display (Green→Orange→Red)

- Green: Shows that the value reached the previous prediction set value.
- Orange: Shows that the value reached the prediction set value.
- Red: Shows that the value reached the equipment stop set value.

⑤Equipment stop display (Red)

- Shows that one of the counters reached the equipment stop set value.

⑥Current value display

- Displays the current value of the counter by counter No. Zeros of high-order digits are out in the run mode.

⑦Set value display

- Displays the set value of the counter (prediction, previous prediction, and equipment stop) by counter No. Zeros of high-order digits are out in the run mode.

KCM-50/51 Series

Each Part Name and Function

■Panel Explanation

KCM-51 Series

①Reset key

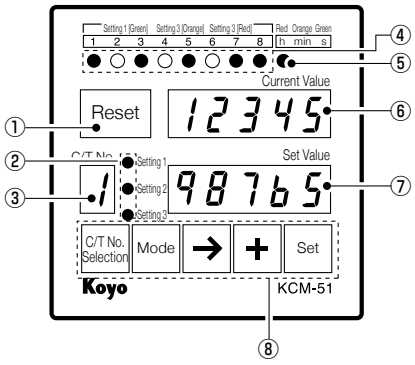
- Resets the displayed current value.
- When several counters are counting up and the reset operation is performed, the counter display switches to the next counter.

②Mode display

- Either setting 1, setting 2, or setting 3 is displayed in the setting mode. When all the lights are turned off, the device is the operation run mode.

③C/T No. display

- Displays the selected counter / timer No.
- Every time the counter / timer counts up (setting 2), the counter / timer No. switches to the No. of the counter that overflowed.



⑧Setting key

[C/T No. selection key]

- Switches the display between the current value and the set value of the counter.
- Counters/timers that are not used in the run mode are not displayed.
- If pressed and held for 1 second or longer, the counter No. automatically changes.

[Mode key]

- Switches between the run mode and the setting mode.
- If there is no key entry for 1 minute or longer, the mode automatically switches to the run mode.

[→Key (Digit selection key)]

- Selects the digit for inputting the set value.
- The selected digit flickers.
- If pressed and held for 1 second or longer, the digit automatically changes.

[+ Key (Numeric value changing key)]

- Changes the numeric value of the digit selected by the → key.
- If pressed and held for 1 second or longer, the digit automatically changes.

[Set key]

- Enters the set value in memory in the setting mode. When the set value is entered, the set value display flickers three times, indicating the input.

④Count-up display (Green→Orange→Red)

- Green···Shows that the value reached the Setting 1.
- Orange···Shows that the value reached the Setting 2.
- Red···Shows that the value reached the Setting 3.

⑤Timing unit display

- Displays the timing unit by color during timer operation.
- Green: The time unit is in seconds.
- Orange: The time unit is in minutes.
- Red: The time unit is in hours.

⑥Current value display

- Displays the current value of the counter/timer by C/T No. Zeros of high-order digits are out in the run mode.

⑦Set value display

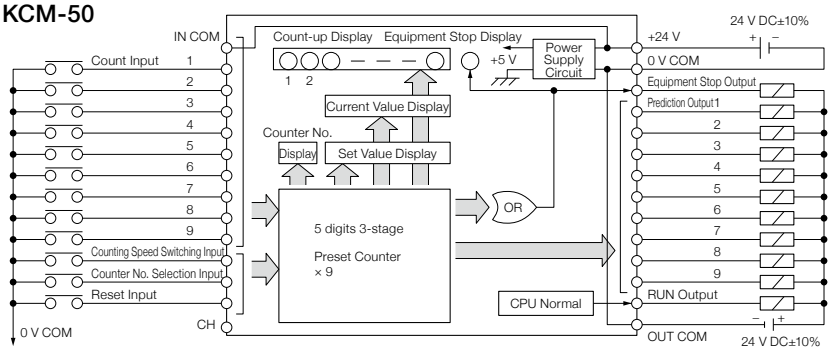
- Displays the set value of the counter/timer (Setting 1, setting 2, and setting 3) by C/T No. Zeros of high-order digits are out in the run mode.

KCM-50/51 Series

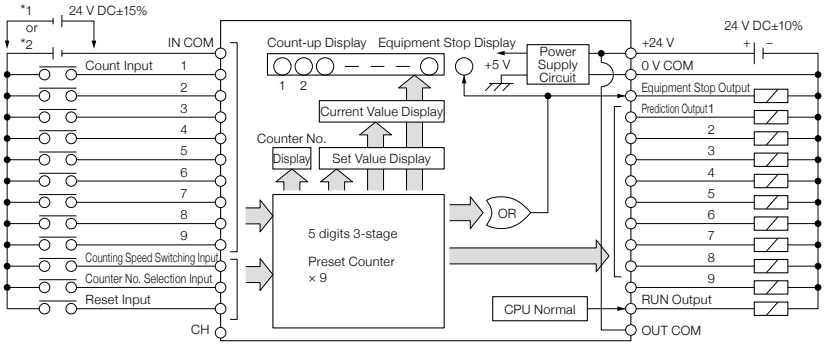
Connection

Block Diagram

KCM-50



KCM-50P



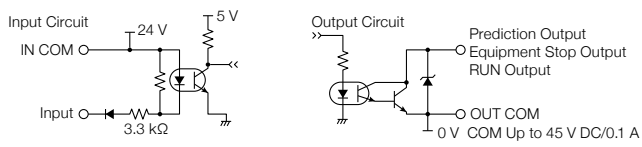
*1 Negative Logic Input
*2 Positive Logic Inpu

Function

Terminal Number	Input/Output	Description of Functions	Specifications	
5, 6, 7, 12, 13, 14, 19, 20, 21	Count input 1 to 9	The current value of the relevant counter is added (+1) regardless of the operation mode / setting mode. The current value changes by H→L and L→H (positive logic).	Counting speed 30/500 Hz	KCM-50 Input voltage ON: 0 to 3 V OFF: 16 V or higher Input resistance: 3.3 kΩ KCM-50P Input voltage (Negative logic) ON: 0 to 6 V OFF: Input is open (Positive logic) ON: 16 to 27.6 V OFF: 0 to 6 V Input resistance: 2.2 kΩ
18	Counting speed switching input	OFF: 30 Hz ON : 500 Hz	Switched by the ON edge of the power supply	
26	Counter No. selection input	Counter selection input ┌→1→2→3→4→5→6→7→8→9→┐ The counter No. changes by the counter selection input H→L and L→H (positive logic). In the operation mode, unused counters are not selected.	On delay: 30 ms Off delay: 30 ms	
25	Reset Input	The current value of the counter designated by the counter No. is reset. If the counter No. selection input and the input reset input are simultaneously input for approx. 5 seconds, all counters are reset.	On delay: 0.1 s Off delay: 0.1 s	
1, 2, 3, 8, 9, 10, 15, 16, 17	Prediction output 1 to 9	The prediction output is output if the individual output of counters Nos. 1 to 9 reaches the prediction set value.	Input/Output response time 30 ms (30 Hz) 10 ms (500 Hz)	
4	Equipment stop output	The equipment stop set value is output if one of the counters Nos. 1 to 9 reaches the equipment stop set value.		
11	RUN output	ON when the CPU normally operates / OFF when the CPU does not operate normally.	Response time ON: After the power is supplied 1.5 s or less OFF: After an abnormality is detected 10 ms or less	
—	Counter No. display	The counter No. selected with the counter No. selection key or by the external counter No. selection input is displayed. Every time the counter counts up, the counted counter No. switches to the counted up No. (ranked by priority). Priority: Equipment stop > Prediction > Previous prediction		

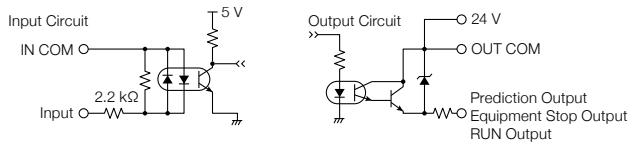
Circuit

KCM-50



Notes 1) IN COM and 24 V are connected inside the counter.
2) OUT COM and 0 V COM are connected inside the counter.

KCM-50P

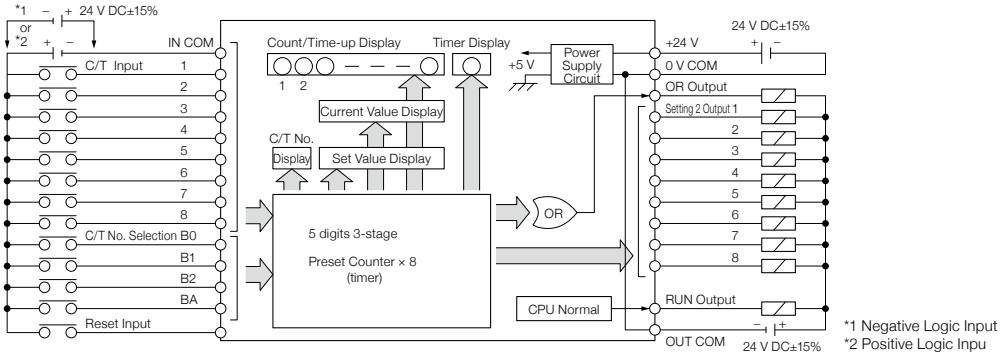


Note) IN COM and 24 V are connected inside the counter.

KCM-50/51 Series
Connection

Block Diagram

KCM-51



*1 Negative Logic Input
*2 Positive Logic Inpu

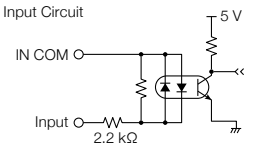
Function

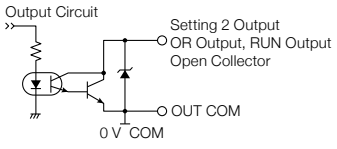
Terminal Number	Input/Output	Description of Functions	Specifications	
5, 6, 7, 12, 13, 14, 19, 20	C/T input 1 to 8	The counting (timing) of the relevant counter (timer) is performed regardless of the operation mode / setting mode. - When the KCM-50/51 is used as a counter: The current value changes when "OFF"→"ON".	Counting speed 30 Hz/500 Hz Minimum pulse width 16.6 ms/1 ms	Input voltage (Negative logic) ON: 0 to 6 V OFF: Input is open (Positive logic) ON: 16 to 27.6 V OFF: 0 to 6 V Input resistance: 2.2 kΩ
		- When the KCM-50/51 is used as a timer: The timing starts when "OFF"→"ON". The timing continues while "ON". The timing stops when "OFF"→"ON".	Timing range Hour 1 to 99,999 h Minute 1 to 99,999 m Second 1 to 99,999 s	
21, 26, 27	C/T No. selection input 1 to 3	The counter / timer you want to reset is designated by three inputs (B0, B1, and B2).		
18	All C/T No. selection input	When you want to designate all counters / timers at the time of a reset input, this input should be ON.		
25	Reset	The current value of the selected counter / timer No. becomes 0 (zero).	On delay: 30ms Off delay: 30ms	
1, 2, 3, 8, 9, 10, 15, 16	Setting 2 output 1 to 8	This is output if the individual output of counters / timers Nos. 1 to 8 reaches the setting 2 value.	Input/Output response time 30 ms (30 Hz timer) 10 ms (500 Hz)	
4	OR output	This is output if one of the counters / timers Nos. 1 to 8 reaches the setting 1 (setting 3) value.		
11	RUN output	ON when the CPU normally operates / OFF when the CPU does not operate normally.	Response time ON: After the power is supplied 1.5 s or less OFF: After an abnormality is detected 10 ms or less	
—	Counter / Timer No. display function	The counter No. selected with the counter / timer No. selection key or by the external C/T No. selection input is displayed.		

- Default setting: If the "mode" key and the "+" key are simultaneously pressed, the default setting mode starts to initialize the following data.
(1) Selection of the counter and timer, (2) Setting of the counting speed and timing unit, (3) Prohibition/Permit selection of the reset key, and (4) Selection of the set value concerning the OR output (Setting 1 or setting 3)

Circuit

KCM-51





Notes 1) Input Common 0 V: Positive Logic
24 V: Negative Logic

2) Output Common
KCM-51: 0 V and Internally Short-circuited

KCM-50/51 Series

General Specifications/Dimensions

General Specifications (Commonly Used in KCM-50/51 Series)

Items	Specifications
Supply Voltage	KCM-50 series: 24 V DC±10% (21.6 to 26.4 V) KCM-51 series: 24 V DC±15% (20.4 to 27.6 V)
Power Consumption	5 W
Use Ambient Temperature	-10 to +55°C
Storage Temperature	-20 to +70°C (No freezing)
Use / Storage Ambient Humidity	45 to 85% RH (No condensation)
Insulation Resistance	100 MΩ or higher 500 V DC (Between power supply terminal and input-output terminal)
Dielectric Voltage	500 V AC 50/60 Hz 1 min (Between live parts and externally-exposed non-charged metal part)
Noise Resistance	Between power supply terminals: ±1 kV (Pulse width 1 µs, start-up 1 ns) Between input terminals: ±500 V (Pulse width 1 µs, start-up 1 ns)
Vibration Resistance	Malfunction vibration: Displacement amplitude 0.5 mm 10 to 55 Hz, 3 axial directions Endurance vibration: Displacement amplitude 0.75 mm 10 to 55 Hz, 3 axial directions
Impact Resistance	98 m/s², 3 axial directions
Case Exterior	Munsell N-4 (dark gray) ABS material
Weight	350 g

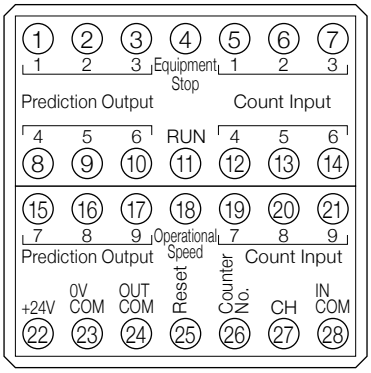
Price

Model Number	Price
KCM-50	Open
KCM-50-1	
KCM-50P	
KCM-50P-1	
KCM-51	Open
KCM-51-1	

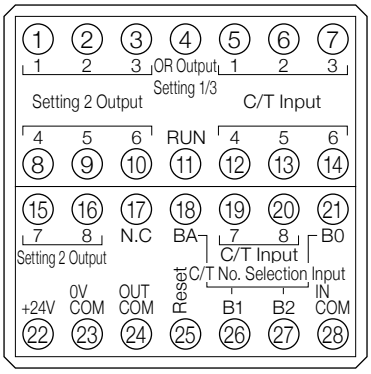
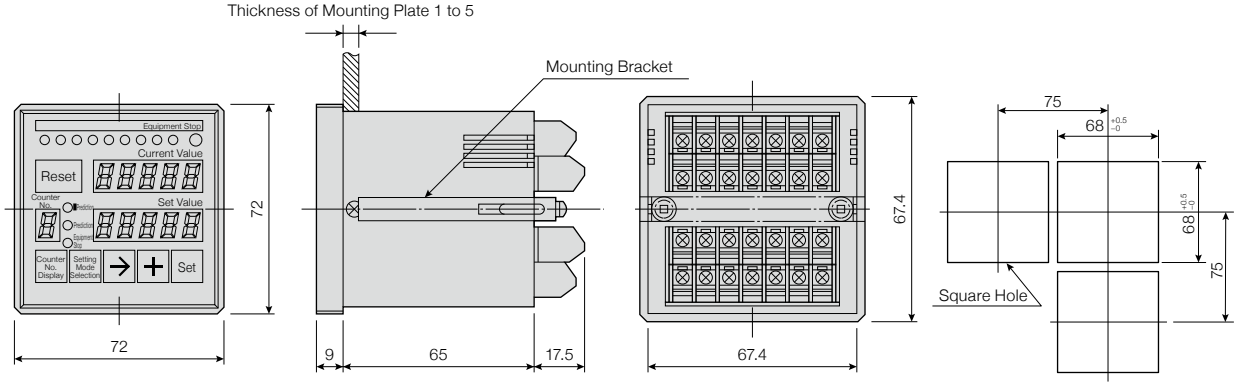
(Accessories) Mounting bracket

Terminal Assignment

KCM-50 Series



KCM-51 Series



Dimensions (Unit: mm)