

# MDR SERIES

## BIDIRECTIONAL PRESET COUNTER with BCD OUTPUT

- DIN 72X144 SIZE
- BRIGHT LARGE LED DISPLAY (4 or 6 DIGITS)
- 1 or 2 PRESET LEVELS
- BCD OUTPUT
- EASY PRESETTING BY THUMBWHEEL SWITCH
- WITH MEMORY



MDR-244MB



MDR-166MB

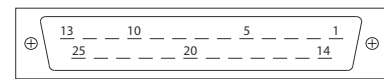
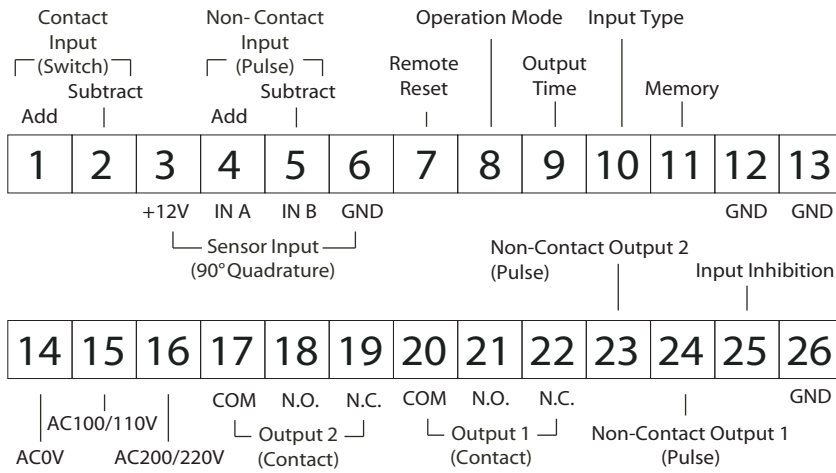
### MODEL SELECTION

| Models      | Digits | Preset Level | Preset Digits | Preset Range | Memory | Option        | Weight |
|-------------|--------|--------------|---------------|--------------|--------|---------------|--------|
| MDR - 144MB | 4      | 1            | 4             | 1 - 9999     | ○      | BCD<br>OUTPUT | 950 g  |
| MDR - 166MB | 6      |              | 6             | 1 - 999999   |        |               |        |
| MDR - 244MB | 4      | 2            | 4             | 1 - 9999     |        |               |        |
| MDR - 266MB | 6      |              | 6             | 1 - 999999   |        |               | 1050 g |

### SPECIFICATIONS

| Models                  | MDR - 144MB   | MDR - 166MB | MDR - 244MB | MDR - 266MB |
|-------------------------|---|-------------|-------------|-------------|
| Display                 | Red LED, 14.22 x 8.13mm (Zero Suppress)   |             |             |             |
| Input Method / Signal   | Contact Input : Relay, Microswitch<br>Non-Contact Input : L: 0 - 1V ; H: +4.5 - 27V   |             |             |             |
| Count Mode              | 90° Quadrature (directional) / Add/Subtract   |             |             |             |
| Count Speed             | Contact Input : 20 Hz max. / Non-Contact Input : 5000 Hz max.   |             |             |             |
| Pulse Width             | Contact Input : 25 msec min. / Non-Contact Input : 100 μsec min.  |             |             |             |
| Make (Duty)             | 1:1   |             |             |             |
| Output Type             | Contact output : Relay Type 1C (AC230V, 2.5A max. load) * for each output<br>Non-contact output : NPN open collector (DC45V, 100mA maximum) |             |             |             |
| Output Display          | Turns ON during output time   |             |             |             |
| Output Time             | One-shot mode : 0.1 - 3sec (adjustable)<br>Overrun mode : Infinite  |             |             |             |
| Reset                   | Remote reset (100msec min.)<br>Auto reset : One-shot reset (Output relay : 0.1 - 3sec reset)  |             |             |             |
| Memory                  | E <sup>2</sup> PROM (10 yrs. retention, 10,000 times)   |             |             |             |
| Power Source for Sensor | DC12V 100mA maximum   |             |             |             |
| Input Impedance         | 5kΩ   |             |             |             |
| Power Source            | AC100/110V or AC200/220V ±10%, 50/60 Hz   |             |             |             |
| Power Consumption       | Approximately 5.5VA   |             |             |             |
| Operating Temperature   | 0 - 40°C (Non-freezing)   |             |             |             |
| Operating Humidity      | 45 - 85%RH (Non-condensing)   |             |             |             |
| Hi-pot Test             | AC1500V (1 minute)  |             |             |             |
| Dielectric Test         | 20MΩ min. (DC500V megger)   |             |             |             |
| Connection              | M3 Terminal Screw / BCD Output Terminal: D-SUB25 Pin Connector  |             |             |             |

## WIRING / REAR TERMINALS



BCD Output Terminals

| BCD Digits | "1" | "2" | "4" | "8" |
|------------|-----|-----|-----|-----|
| 1          | 1   | 2   | 3   | 4   |
| 2          | 5   | 6   | 7   | 8   |
| 3          | 9   | 10  | 11  | 12  |
| 4          | 14  | 15  | 16  | 17  |
| 5          | 18  | 19  | 20  | 21  |
| 6          | 22  | 23  | 24  | 25  |
| GND        | 13  |     |     |     |

**NOTE:**

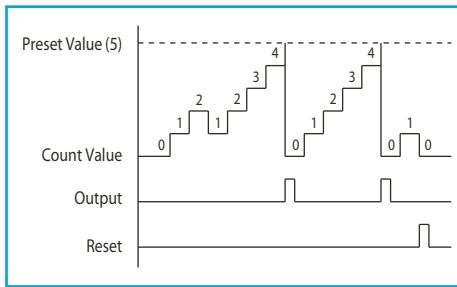
- ※ For 1 level preset models (MDR-144MB and MDR-166MB), refer to Output 2 in the diagram as the main output.
- ※ Both terminals 12 and 13 are GND. The terminal 13 can be used in replacement of terminal 12 as described in the connection diagrams below.

## CONNECTION

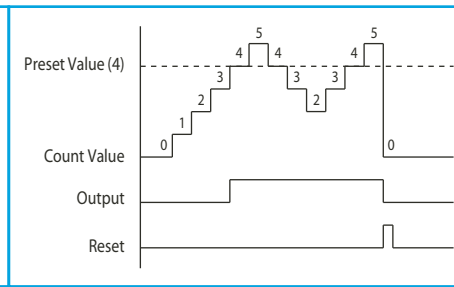
|                  |  |   |
|------------------|--|---|
| Power Supply     |  | Power supply can be selected between AC100/110V or AC200/220V. For AC100/110V, use terminals 14 and 15. For AC200/220V, use terminals 14 and 16.  |
| Input            | <p><b>Contact Input</b></p> <p><b>Non-Contact Input (Pulse)</b></p> <p><b>Non-Contact Input (Sensor)</b></p>   | <p>For Contact Input (Relay, Microswitch, etc.):<br/>For Add count : Use terminals 1 and 3.<br/>For Subtract count : Use terminals 2 and 3.</p> <p>For Non-Contact (Pulse) Input:<br/>For Add count : Use Terminal 4 for (+) signal and 6 for (-) signal.<br/>For Subtract count : Use Terminal 5 for (+) signal and 6 for (-) signal.</p> <p>For Non-Contact (Sensor) Input, connect the sensor's:<br/>DC12V Power Supply : Terminal 3<br/>Signal A (IN A) : Terminal 4<br/>Signal B (IN B) : Terminal 5<br/>GND : Terminal 6.</p> |
| Input Type       |  | The input type can be selected as follows:<br>For Add/Subtract Input : no connection between terminals 10 & 12.<br>For 90° Quadrature Input : connect terminals 10 and 12.  |
| Output           | <p><b>Contact Output</b></p> <p><b>Non-Contact Output (Open Collector)</b></p> <p>If internal power supply is used.</p> <p>If external power supply is used.</p> | <p>Use the internal Type 1C relay (AC230V 2.5A). For 1 Level Preset model, use OUT2 relay.</p>  |
| Remote Reset     |  | Resetting of the counter can be done remotely when terminals 6 and 7 are shorted with a Relay, Microswitch, etc.  |
| Memory           |  | To enable the memory feature, make sure to connect terminals 11 and 12.   |
| Output Mode      |  | Output mode can be selected as follows:<br>One-shot output mode : no connections between terminal 8 and 12.<br>Overrun output mode : connect terminals 8 and 12.  |
| Output Time      |  | Output Time can be selected as follows:<br>0.1~3sec. : no connections between terminals 9 and 12.<br>Infinite : connect terminals 9 and 12.   |
| Input Inhibition |  | Input signals can be inhibited by shorting terminals 25 and 26 with a Relay, Microswitch, etc.  |

## OPERATING MODE

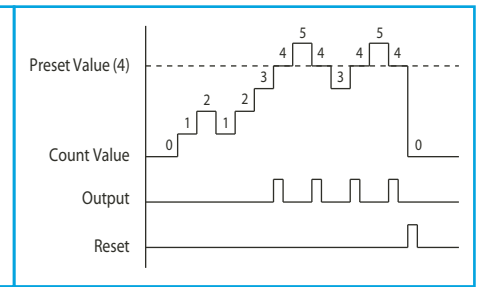
1 Level Preset, Auto-Reset



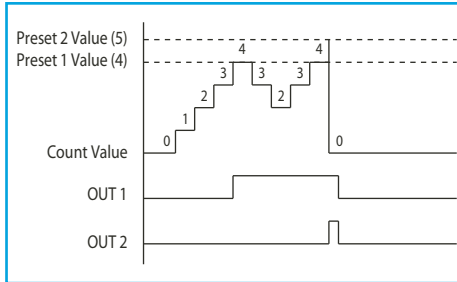
1 Level Preset, Overrun Output Mode



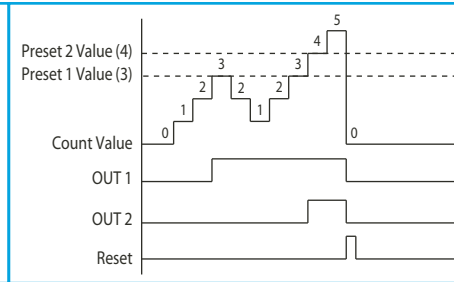
1 Level Preset, Overrun, One-shot output



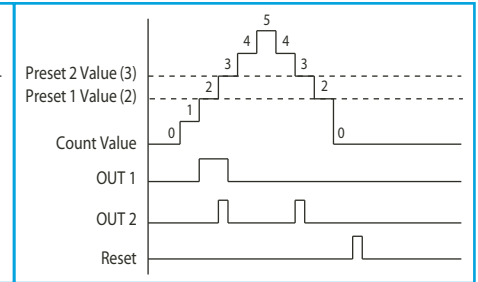
2 Level Preset, Auto-Reset



2 Level Preset, Overrun Output Mode



2 Level Preset, Overrun Output Mode

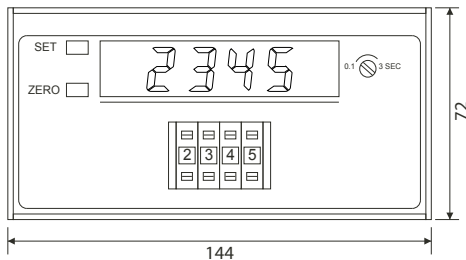


## CAUTION

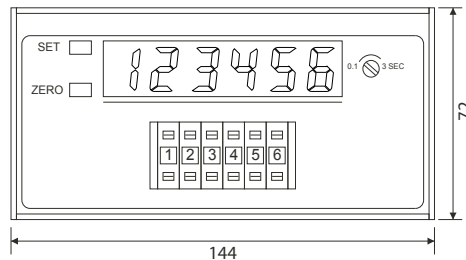
1. Do not feed a voltage signal into the Contact Input and Remote Reset terminals. This may cause damage to the internal circuit of the unit.
2. Contact and Non-contact input cannot be used simultaneously. Please choose only one method of input.
3. During power failure, LED display will go off. At this time, the counter cannot detect input or reset signals even if signals are received.
4. Make sure to short terminals 11 and 12 to enable the memory function. When the counter will be shut down for a long period of time, disconnect terminals 11 & 12 to prevent discharge of internal battery. The internal battery is charged when power is supplied to the counter.
5. Simultaneous input of signals for the Add input and Subtract input is not possible.
6. Use shielded leadwires for the Input terminal and Reset terminal. Also, make the lines from the power source as far as possible from the lines of the Input and Reset lines.

## DIMENSIONS

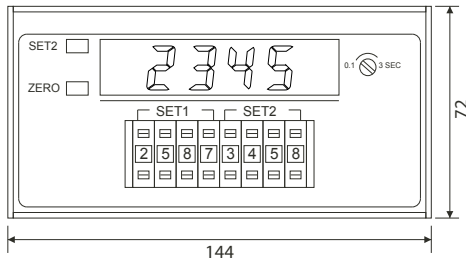
MDR-144MB



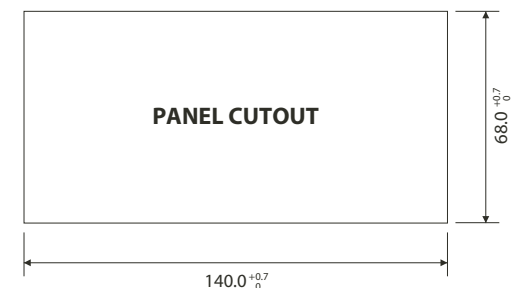
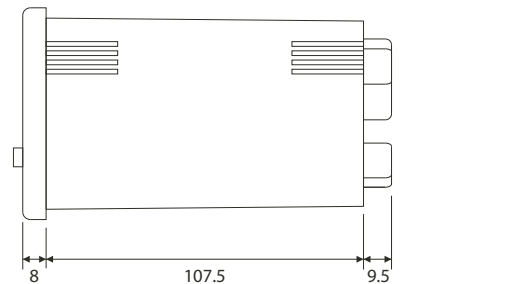
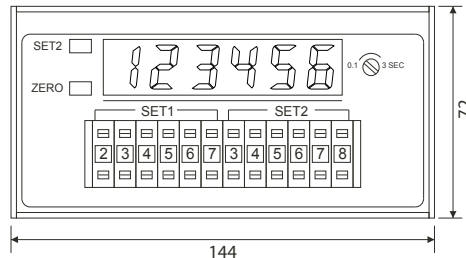
MDR-166MB



MDR-244MB



MDR-266MB



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