

MD Series (Electronic Predetermining Counter)

INSTRUCTION MANUAL

- **2 or 4 DIGITS**
- **LARGE LED DISPLAY - 14.22 x 8.13 mm**
- **SMALL SIZE - FITS DIN 72 x 72mm**



■ SPECIFICATIONS

Specs	Models	MD-144	MD-144M	MD-122	MD-122M	MD-104	MD-102
Display		Red LED (14.22 x 8.13 mm)					
Number of Digits		4	4	2	2		
Number of Preset Digits			1,000 Hours		1,000 Hours		
Preset Levels		1	1	1	1	1	1
Power Supply		Convertible - 115 VAC, 230 VAC $\pm 10\%$ 50/60 Hz					
Operating Modes		Instantaneous Reset Type : Selectable / Overrun Type : Selectable					
Input		Direct Current : 4.5 to 27 VDC Proximity - Sensor : 12 VDC 30 mA maximum Switch Signal : Relay, Microswitch					
Count Speed		Pulse Input : 1,000 cps / Switch input : 20 cps					
Pulse Width		Pulse Input : 0.5 msec. minimum / Switch input : 25 msec minimum					
Pulse Interval		Pulse Input : 0.5 msec. minimum / Switch input : 25 msec minimum					
Switch Output		1C, 230 VAC, 4 A COS $\phi = 1$					
Pulse Output		Transistor Rated (45VDC, 100 mA maximum)					
Output Time		200 msec. or 1 sec. - Instantaneous Reset Type. Indefinite-Overrun Type.					
Reset		Automatic Reset : Instantaneous Reset Type (Display will be reset in 0.3 msec. and output relay will be reset in 200 msec. or 1 sec.) Remote Reset : 100 msec. minimum Power Reset : 1 sec. minimum (Not available with model having memory.)					
Change of Preset Value During Operation		Possible					
Power Consumption		4 VA					
Input Impedance		5 K Ω					
Preset Lamp		Lighted while output relay is actuated					
Power Lamp		Lighted while power is ON, not lighted while input signal is being received					
Operating Temperature		-10°C - +50°C (Memory Type: 0°C - +40°C)					
Operating Humidity		45 to 85% RH					
Hi - Pot Test		1500 VAC for one minute					
Dielectric Test		20 M Ω minimum (500V megger)					
Material		Case - ABS resin					
Net Weight		560 grams					

■ FEATURES

- Line Seiki predetermining counters-highly reliable and extremely versatile.
- Large , high-brightness LED's.
- Protected against accidental Tripping of output relay.
- Fits DIN panel opening.
- Built-in power supply module.
- Switch or pulse input and output.
- Two operating modes, instantaneous reset or overrun.
- Memory circuit stores count data during power failures.
- Dustproof thumbwheel switches.

■ CONNECTIONS

See diagram for location of terminals

1. Power Supply

- 115 VAC - Terminal ⑬ and ⑭
- 230 VAC - Terminal ⑮ and ⑯

2. Input

a) Pulse

Positive, regulated 4.5 VDC to 27 VDC - Terminal ④
 Negative - Terminal ③

b) Proximity Sensor (12VDC)

Positive 12 VDC - Terminal ②
 Negative - Terminal ③
 Output - Terminal ④

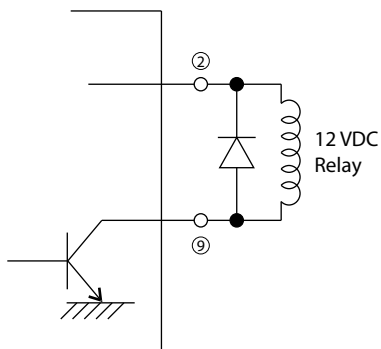
c) Switch

Terminal ① and ②

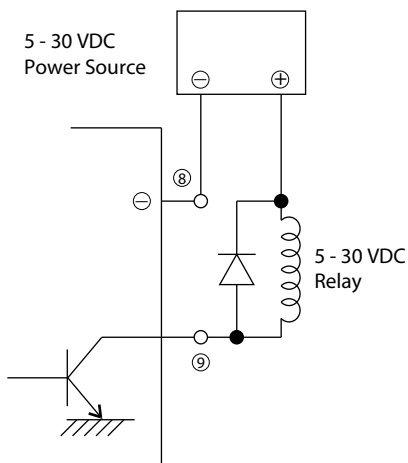
3. Output

- a) Pulse (45 VDC at 100mA maximum) - Terminal ⑨
- b) Switch (230 VAC , 4A ; resistive load)
 - N. C. (closed during count) - Terminal ⑭
 - N. O. (closed at present number) - Terminal ⑬
 - COMMON - Terminal ⑫

BUILT - IN POWER SUPPLY



EXTERNAL POWER SUPPLY



4. Remote Reset

Terminal ⑤ and ⑥

(Counter can be reset by conventional switch, relay or microswitch.)

5. Output Time

0.2 second - no connection to negative of supply

1.0 second - negative of supply - Terminal ⑩

Indefinite - negative of supply - Terminal ⑪

6. Operating Mode

Instantaneous Reset Type : no connection required.

Overrun Type : Terminal ⑪ , connect to negative of supply.

7. Memory

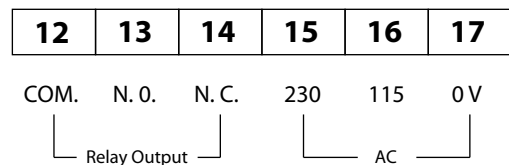
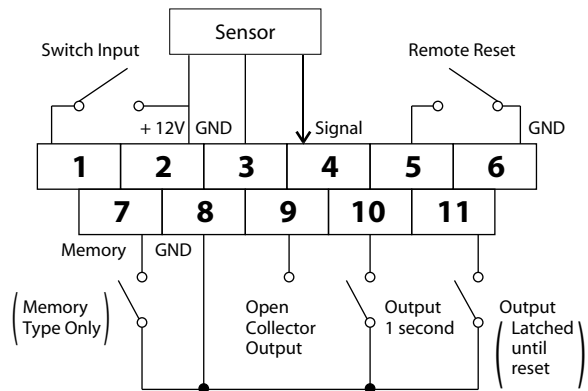
Connect Terminal ⑦ to Terminal ③ on MD-144M or MD-122M

NOTE : Disconnect wiring to prevent battery discharge when the counter is out of service for more than 1,000 hours. Battery is charged whenever power is being supplied. The LED display is extinguished while MD-144M or MD-122M is used on power failure, and the counter will not operate even if input signal or reset signal is received.
 (input signals do not consume battery energy.)

8. CAUTION

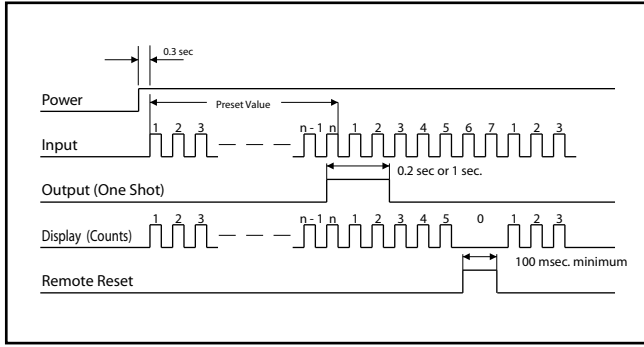
Switch input and proximity-sensor input cannot be used at the same time.
 Do not apply voltage to switch input terminals or remote-reset terminals.

CONNECTIONS



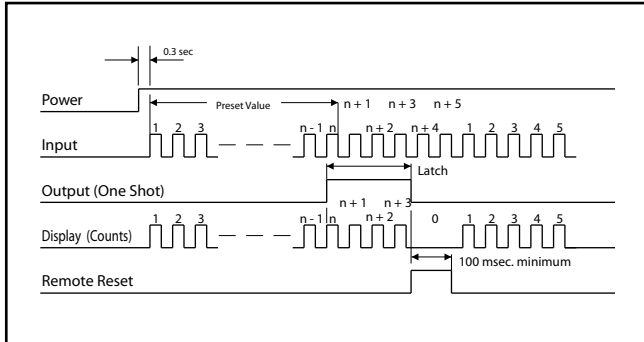
OPERATING MODE

INSTANTANEOUS RESET TYPE



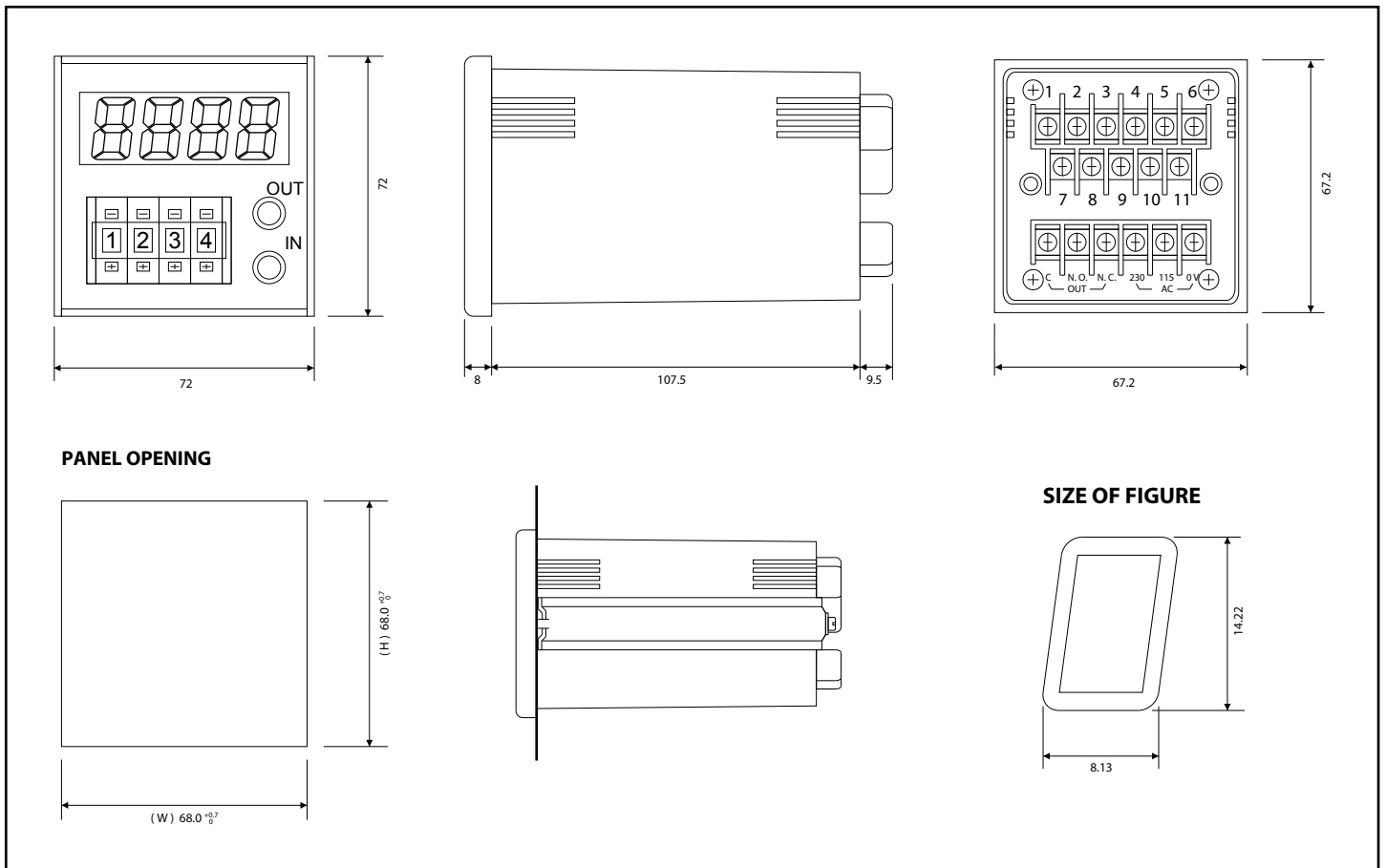
When the preset number is reached, output signal is provided by relay or open collector transistor. The preset number is instantaneously reset to zero and the counter immediately begins to accept input signals. This type is ideally suited for controls on continuous production. Output relay or open collector transistor is actuated at the preset number and it is automatically unlatched in 0.2 or 1 second.

OVERRUN TYPE



When the preset number is reached, output signal is provided by relay or open collector transistor. The counter will continue to add counts beyond the preset number until reset is made. This type is suitable to coil winding applications. Output will be latched until reset is made.

DIMENSIONS - MILLIMETERS



LINE SEIKI CO., LTD

37-7, CHUO-CHO, 2-CHOME
MEGURO-KU, TOKYO
JAPAN 152-0001
TEL: +83-3-3716-5151
FAX: +83-3-3710-4552
E-MAIL: webtrade@line.co.jp
URL: http://www.line-seiki.com

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