



CURTIS

Instrumentation



# Solid State Digital Hour Meters & Counters:

## 700 Series



# 700 Series

## Solid State Digital Hour Meters & Counters



The Curtis 700 Series are highly reliable solid state hour meters and counters that offer an unprecedented combination of patented technology, performance, reliability and value.

**MODEL 700:** 2-Wire Hour Meter, displays only when powered. Available in AC/DC.

**MODEL 701:** 3-Wire Hour Meter, has a provision or continuous display. Available in AC/DC and DC-only.

**MODEL 703:** Pulse Counter. Available in AC/DC and DC-only.

A wide variety of industrial and commercial applications, including scheduled maintenance, warranty and leasing – for medical equipment, transport and industrial vehicles and other industrial equipment.

### FEATURES

- ▶ All-8's LCD function test: each digit displays an eight for one second after power-up.
- ▶ Attractive 6-digit LCD 5mm or 7mm high digits (7mm with optional backlighting) are much easier to read than electromechanical meters, which have only 3mm high digits.
- ▶ Silent operation – no moving parts. Eliminates annoying gear and motor noise.
- ▶ Exceptional reliability due to nonvolatile memory (EEPROM) which retains data for 25+ years.
- ▶ Wide voltage ranges, for example, one unit can be powered from 75 to 270 VAC anywhere between 48 and 440 Hz – ideal for distribution and worldwide markets without having to stock multiple model types.
- ▶ Electrical reset (optional).
- ▶ Available in ten case styles – all fit in standard hour meter/counter cutouts.
- ▶ Multiple mountings available – Metal U-bracket, "U" clamp/stud (D, Q, R and S cases), flange mount with hardware (F, T, J cases), or mounting clip (L, Y, Z, cases).
- ▶ Backlit units allow external illumination control, i.e., on/off or dimmer (12VDC only).
- ▶ Flashing hourglass icon indicates when the hour meter is accumulating time.
- ▶ Memory will arm only when power has been applied for five seconds (with no loss of time or counts).
- ▶ Low power consumption.
- ▶ UL and CE\* recognized.



*\*This product is excluded from CE EMC testing and, if CE marking is required, must only be sold to OEMs completing machine level EMC testing for CE certification.*

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### SPECIFICATIONS

| Case Style | Bezel Shape | Lens Material | Case Material | IP Rating Front/Rear | Termination                  | UL5/CE | Suggested Panel Cutout mm |
|------------|-------------|---------------|---------------|----------------------|------------------------------|--------|---------------------------|
| D          | Rectangular | Acrylic       | ABS           | 65/50                | 3/16" Spade                  | Yes    | 45.0 x 22.2               |
| F/T        | Hexagonal   | Acrylic       | ABS           | 65/65                | Spade <sup>7</sup>           | Yes    | 36.8 x 24.1               |
| J          | Hexagonal   | Acrylic       | ABS           | 65/65 <sup>1</sup>   | Packard (4 pin) <sup>3</sup> | Yes    | 36.8 x 24.1               |
| L          | Rectangular | Polycarbonate | Polycarbonate | 65/40                | Molex <sup>4</sup>           | Yes    | 36.8 x 24.1               |
| Q          | Round       | Polycarbonate | Polycarbonate | 65/50 <sup>6</sup>   | 1/4" Spade                   | Yes    | ø52 (ø2-1/16)             |
| R (5mm)    | Round       | Glass         | Polycarbonate | 65/50                | 3/16" Spade                  | Yes    | ø52 (ø2-1/16)             |
| R (7mm)    | Round       | Polycarbonate | Polycarbonate | 52/50                | 1/4" Spade                   | Yes    | ø52 (ø2-1/16)             |
| S          | Square      | ABS           | ABS           | 2.35                 | 1/4" Spade                   | Yes    | 45.0 x 45.0               |
| Y          | Rectangular | Acrylic       | ABS           | 65/65 <sup>1</sup>   | Packard (4 pin) <sup>3</sup> | Yes    | 36.8 x 24.1               |
| Z          | Rectangular | Acrylic       | ABS           | 65/65                | 1/4" Spade                   | Yes    | 36.8 x 24.1               |

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### SPECIFICATIONS

|   |   |
|---|---|
| Display                                   | 6 digit LCD, 5 or 7mm high, 6 o'clock viewing angle   |
| Range & Resolution                        | Hour meters: 99,999.9 hours<br>Counters: $\pm 1$ count  |
| Accuracy                                  | 0.1%<br>Counters: $\pm 1$ count   |
| Humidity                                  | 95%, non-condensing at 38°C   |
| Operating Temperature                     | -40°C to +85°C (-40°F to +185°F)  |
| Storage Temperature                       | -50°C to +85°C (-58°F to +185°F)  |
| Mechanical Shock                          | SAE J 1378, 55g   |
| Mechanical Vibration                      | SAE J 1378, 20g   |
| Operating Frequency<br>(AC powered units) | 48 to 440 Hz  |
| Memory                                    | Main power must be applied for 5 seconds to arm memory (with no loss of time/counts). EEPROM, data retained for 25+ years without power |
| Current Consumption<br>(Power Terminals)  | 0.5mA max. @ 5VDC (0512D models)<br>0.8mA max. @ 12VDC (1248D models)<br>1.0mA max. @ 120VAC<br>2.0mA max. @ 230VAC                     |
| Input Signal (DC-only)                    | Counters (703 only): 500 Hz. max., 50% duty cycle<br>(1ms low, min., between consecutive highs)   |
| Input Signal (AC/DC)                      | Hour meters (701 only): Power must be applied for 0.5s, min., to accumulate time  |
| Reset                                     | 50ms min. at operating voltage. Main power must be applied for a minimum of 250ms prior to reset signal                                 |

### EMC

#### Emissions

Designed to meet: EN 61000-6-4

Radiated Emissions: EN55011:2007, EN55022:2006

Conducted Emissions: EN55011:2007, EN55022:2006

#### Immunity

Designed to meet: EN 61000-6-2

ESD: EN 61000-4-2:1995

#### Radiated Immunity

EN 61000-4-3:2006

Transients: EN 61000-4-4:2004

Surge: EN 61000-4-5:2005

Conducted: EN 61000-4-6:2007

Voltage Interruptions: EN 61000-4-11:2004

#### Regulatory Approvals

UL: UL recognition to UL 583

CE: The product complies with the requirements of the RoHS directive 2015/863/EU (RoHS 3). This product is excluded from CE EMC testing and, if CE marking is required, must only be sold to OEMs completing machine level EMC testing for CE certification.

### NOTES:

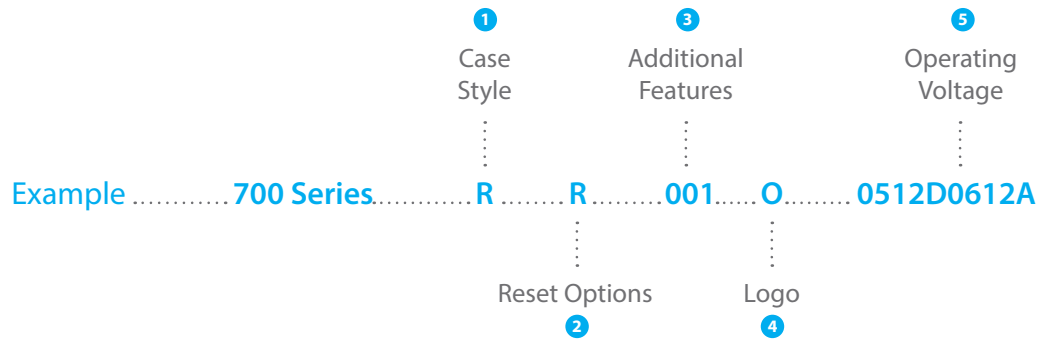
1. Mating connector must be installed.
2. Equivalent to Delphi-Packard connector P/N 12162000 2-pin.
3. Equivalent to Delphi-Packard connector P/N 15336035 4-pin.
4. Equivalent to Molex connector P/N 43045-0412.
5. UL files AU1841 and E45175.
6. R(5mm) and Q housings also available in a 65/65 version (see model encodement).
7. F= 1/4", T= 3/16"

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## Solid State Digital Hour Meters & Counters



### MODEL NUMBER ENCODING



### 700 SERIES

#### 1 CASE STYLES

#### 2 RESET OPTIONS

#### 3 ADDITIONAL FEATURES

#### 4 LOGO

|     |                                       |                |   |                |                         |                  |   |                |             |     |  |
|-----|---------------------------------------|----------------|---|----------------|-------------------------|------------------|---|----------------|-------------|-----|--|
| 700 | (2-wire hour meter, AC/DC only)       | D              | R | R              | Electrically resettable | 001              | 5mm, non-backlit display (Standard)     | O              | Curtis Logo |     |  |
|     |                                       | F/T            | S |                |                         |                  |   |                |             | 091 | Epoxy filled unit (moisture resistant, Q, R (5mm), cases only) |
| 701 | (3-wire hour meter, AC/DC or DC-only) | J              | Y | N <sup>1</sup> | Non-resettable          | 601 <sup>3</sup> | 7mm, backlit display (R or S case only) | N <sup>2</sup> | No Logo     |     |  |
|     |                                       | L              | Z |                |                         |                  |   |                |             | 701 | 7mm, non-backlit display (R or S case only)                    |
| 703 | (3-wire counter, AC/DC or DC-only)    | Q <sup>1</sup> |   |                |                         |                  |   |                |             |     |  |

### 5 OPERATING VOLTAGE

|               |   |
|---------------|---|
| 0512D         | 5–12VDC nom., 4.75–15VDC abs.                                   |
| 1248D         | 12–48VDC nom., 9–60VDC abs.                                     |
| 48150D        | 48–150VDC nom., 36–185VDC abs.                                  |
| 0512D0612A    | 5–12VDC nom., 4.75–15VDC abs., 6–12VAC nom., 5–15VAC abs.       |
| 1248D2060A    | 12–48VDC nom., 9–60VDC abs., 20–60VAC nom., 15–75VAC abs.       |
| 48150D100230A | 48–150VDC nom., 36–185VDC abs., 100–230VAC nom., 75–270VAC abs. |

#### NOTES:

- Only models offered:  
700LN001N1248D2060A,  
700LN001N48150D100230A  
and 701LN001N1248D
- Custom logos are available.
- Backlight available on 7mm R or S cases only.

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## Solid State Digital Hour Meters & Counters



### WIRING GUIDE

| Case Style                    | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 |
|-------------------------------|-------|-------|-------|-------|-------|-------|
| D, F, T, J, Q, R (5mm), Y & Z | V+    | V-    | I     | R     | N/A   | N/A   |
| L                             | V+    | V-    | I     | N/A   | N/A   | N/A   |
| R (7mm), S                    | V+    | V-    | R     | I     | L     | N/A   |

V+: Operating voltage

V-: Common (ground)

I: Enable (Optional, use operating voltage to power this pin to record elapsed time (701) or increment count (703).

R: Reset (Optional, supply with operating voltage when unit is to be reset to 0.)

L: Lighting control (Optional, 9–15VDC absolute only, regardless of operating voltage.)

NC: No connection



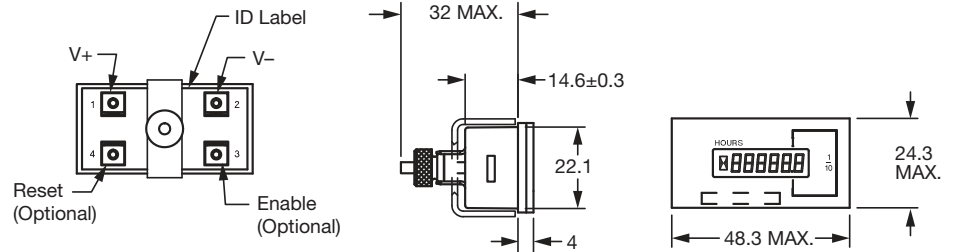
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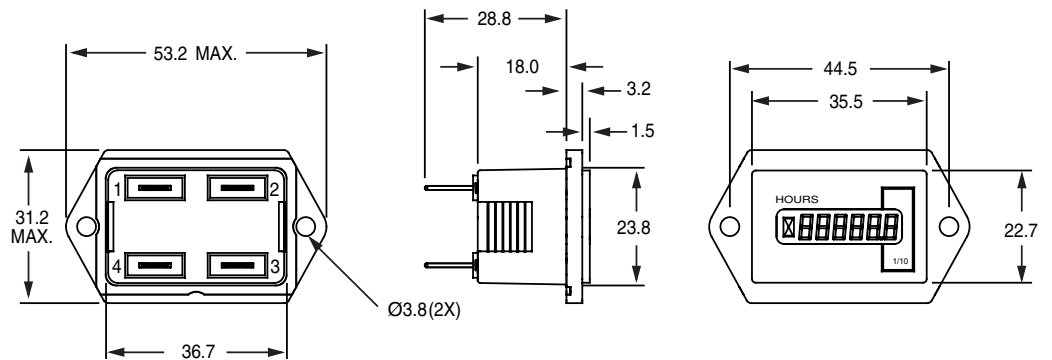


### DIMENSIONS mm

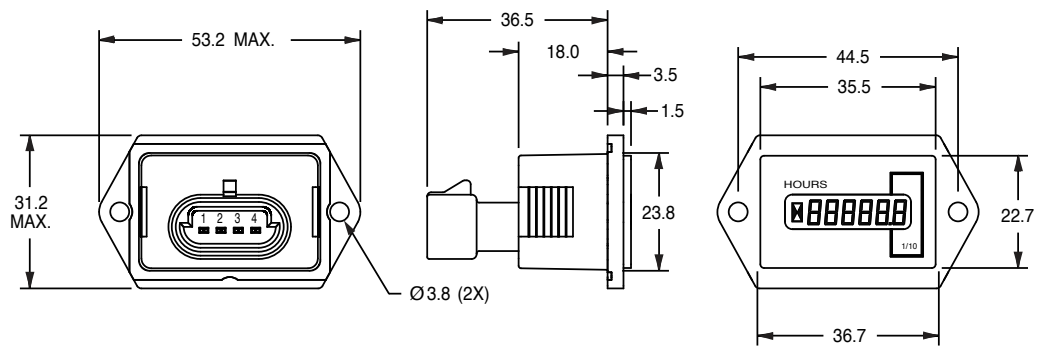
#### Case Style D



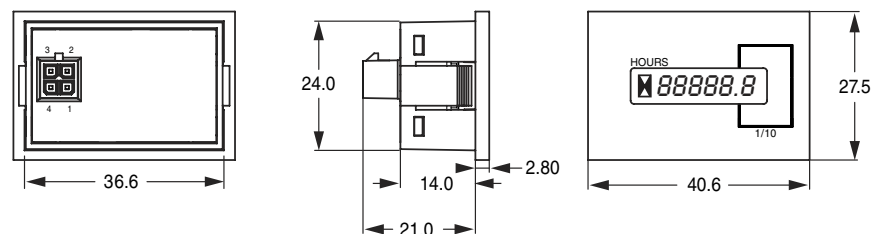
#### Case Style F/T



#### Case Style J



#### Case Style L



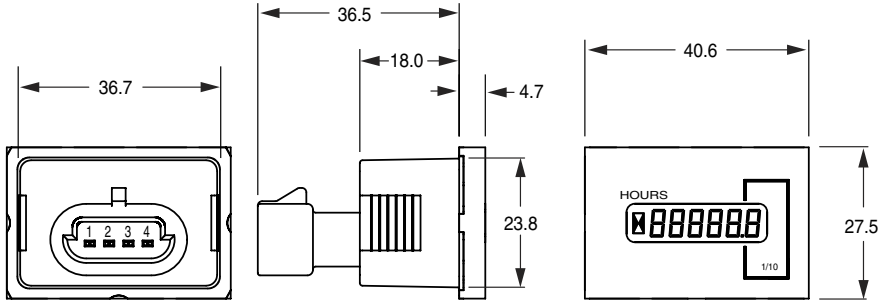
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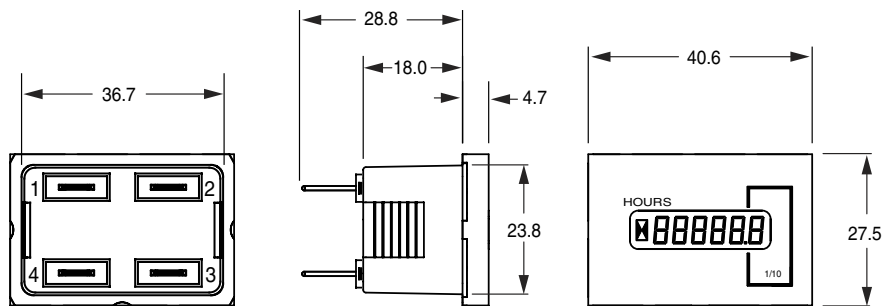


### DIMENSIONS mm continued

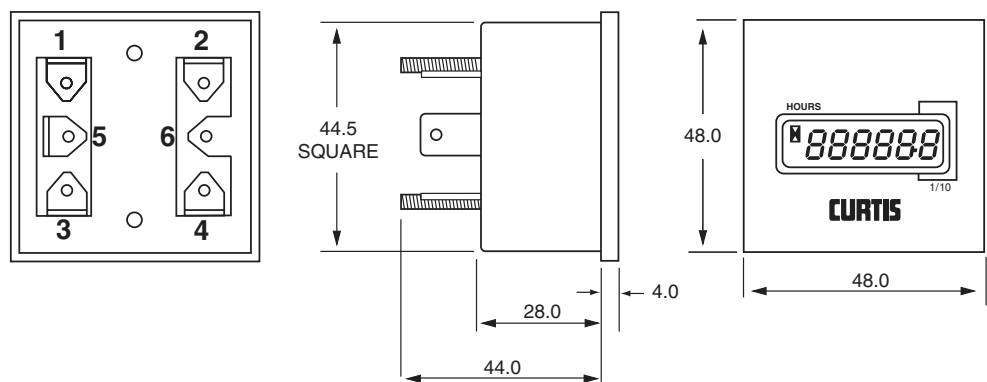
#### Case Style Y



#### Case Style Z



#### Case Style S





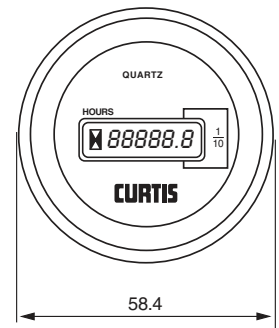
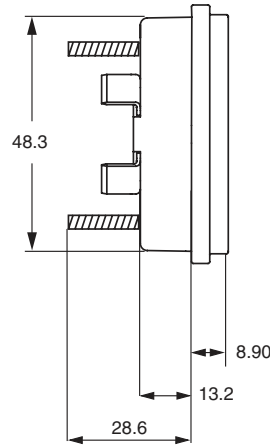
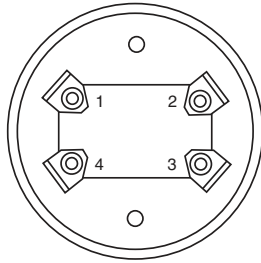
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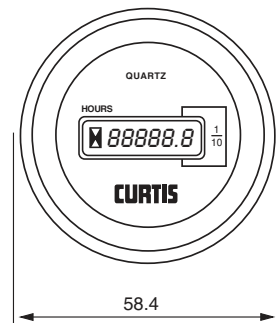
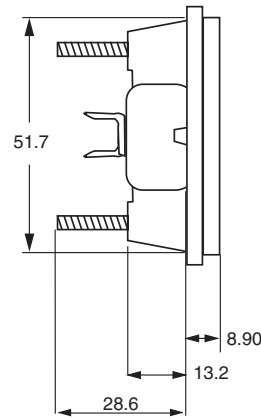
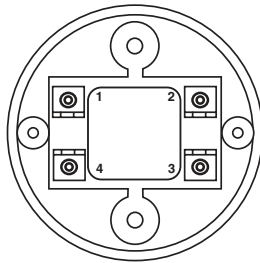


### DIMENSIONS mm continued

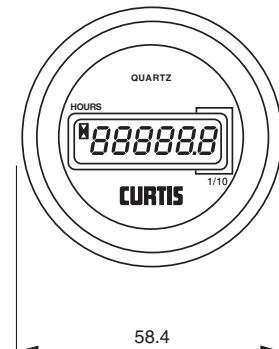
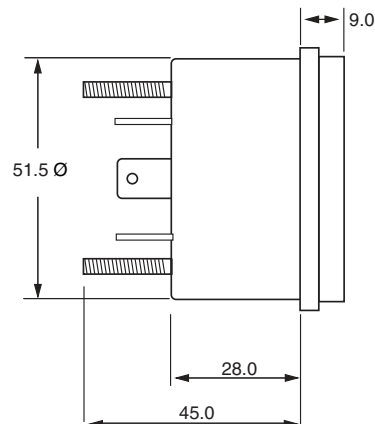
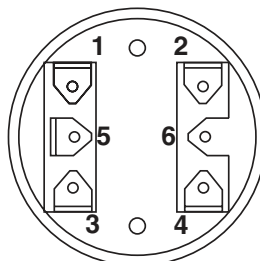
#### Case Style Q



#### Case Style R (5mm)



#### Case Style R (7mm)



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### 700 SERIES HARDWARE

| Case Style         | F,T    |      | G,J  |   | Q,R,S  |      | D      |      | Y      |      | Z      |      |
|--------------------|--------|------|------|---|--------|------|--------|------|--------|------|--------|------|
| Shipping Style     | Carton | Bulk | Bulk |   | Carton | Bulk | Carton | Bulk | Carton | Bulk | Carton | Bulk |
| Steel Slot Screws  | 2      | 2    | 2    | 2 |        |      |        |      |        |      |        |      |
| Steel Hex Nuts     |        | 2    |      | 2 |        | 2    |        | 1    |        |      |        |      |
| Plastic Thumb Nuts |        |      | 2    |   | 2      |      | 1      |      |        |      |        |      |
| Lock Washers       | 2      | 2    | 2    | 2 | 2      | 2    | 1      | 1    |        |      |        |      |
| Faston Terminals   | 4      |      |      |   | 4      |      |        |      |        |      | 4      |      |
| Plastic Bracket    |        |      |      |   |        |      |        |      | 1      | 1    | 1      | 1    |
| Metal U Bracket    |        |      |      |   | 1      | 1    |        |      |        |      |        |      |

Note: L case does not require mounting hardware.

### ACCESSORIES

| Curtis P/N | Description  |
|------------|--|
| 17607303   | Plastic mounting bracket for F, T, J, Y & Z models   |
| 12237003   | External Dash Mounting Bracket for 52mm round gauges |
| 13210001   | Meter Guard (1 box of 10 meter guards) R & Q models  |
| 13515801   | 3-Hole Mounting Kit, for Ø2.53" mounting holes       |
| 13515905   | 3-Hole Mounting Kit, for Ø2.44" mounting holes       |
| 15336002   | Gasket for F, T and J cases                          |
| 15336003   | Gasket for R (5mm) case                              |
| 15336005   | Gasket for Q and R (7mm) cases                       |

**WARRANTY** Two year limited warranty from time of delivery.

The Curtis Difference   
You feel it when you drive it



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Specifications subject to change without notice

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