LM SERIES

Issue 6

Microcontroller Unit (MCU) LCD Hour Meters/Counters

DESCRIPTION

Honeywell's MCU (microcontroller unit) LCD (liquid crystal display) Hour Meters and Counters, LM Series, are sealed digital instruments designed to monitor and record elapsed running time, normally displayed in hours and tenths of hours. These devices are used to log running time of equipment or counts of equipment use for potential use in transportation applications to assure proper maintenance of expensive machines or systems, as well as warranty claims and rental-use tracking. This maintenance typically involves replacing, changing, or checking parts, belts, filters, oil, and lubrication of heavy duty equipment, or running condition of engines, motors, and blowers, to name a few.

These devices can feature up to a 40-year memory data retention (without power) to provide customers with a long data retention capability within their desired application. The large 7 mm display eases readability and offers backlight options and a running indicator. Sealing to IP67 (front)/IP66 (rear) designed to provide enhanced durability. The hour meter also features a long reset time to offer customers the protection against malfunction of reset.

The LM Series offers customization options including the customer's logo, Honeywell logo, or a black face, as well as numerous customizable bezel options.

VALUE TO CUSTOMERS
- Manufactured for harsh, rugged environments
- Great for tracking rental product use
- Up to 40 years of data retention without power

DIFFERENTIATION
- Easy to read – The large 7 mm display on LM Series hour meters/counters eases readability and offers options of backlight and running indicators.
- Reliable and durable – The LM Series' IP67 (front)/IP66 (back) environmental sealing creates a rugged package design well suited for harsh environments.
- Customizable – LM Series hour meters/counters can be customized with the customer's logo, as well as numerous customizable bezel options.

POTENTIAL APPLICATIONS

Monitors and records elapsed running time in
- Agricultural vehicles
- Blowers
- Engines
- Heavy-duty construction vehicles
- Heavy-duty trucks
- Material-handling equipment
- Mowers

FEATURES
- Backlighting and large display ease readability
- IP67 (front) and IP66 (rear) rating provides enhanced durability
- Longer reset time can minimize the possibility of a reset malfunction
- Multiple bezel options allow for different aesthetic looks and accommodates various space requirements
- Optional bending terminal blades allow for use where space is at a premium

PORTFOLIO

Honeywell offers a wide range of hour meters. These include multiple power, display, shape and data options. In addition, Honeywell offers, analog or LCD displays, ac/dc, ac, or dc. Shock and vibration resistance also available.

To view the entire product portfolio, click here.

Honeywell

MICROCONTROLLER UNIT (MCU) LCD HOUR METERS/COUNTERS, **LM SERIES**

TABLE 1. PERFORMANCE SPECIFICATIONS	
Characteristic	**Measure**
Digital range hours	0 to 99,999.9 hours; 0 to 999,999 with auto turn over
Digital range count	0 to 999,999 counts with auto turn over
Digital height	7 mm
Backlight color	Blue (default); other options available
View angle	12 o'clock
Running indicator	Yes
Accuracy	±200 ppm/hour
Operating voltage range	9 Vdc to 64 Vdc
Sealing	IP67 (front); IP66 (rear)
Shock	55 g per SAE J1378
Vibration	20 g per SAE J1378
Humidity	95 % non-condensing at 38 °C
Operating temperature	-40 °C to 85 °C [-40 °F to 185 °F]
Storage temperature	-50 °C to 90 °C [-58 °F to 190 °F]
Transient immunity	Load dump – yes Inductive – yes EMI – yes Reverse polarity – yes
Power consumption	0.8 mA @ 12 Vdc
Panel mounting	Snap-in
Case sealing technique – front	Ultrasonic weld
Case sealing technique – rear	Sealant on terminals
Start time	<1 s; if including all "8" check, then >1 s
Material – case	Makroblend®
Material – lens	Lexan®
Case depth	1.35 in (including terminals)
Termination	1/4 in blades; 3/16 in blades

MICROCONTROLLER UNIT (MCU) LCD HOUR METERS/COUNTERS, LM SERIES

PRODUCT NOMENCLATURE

LM	–	H	H	F	A	S	–	H	XX

Type

LM Series MCU (Micro-controller Unit) LCD Hour Meter

Function Type

H	Hour meter
C	Counter

Shape and Bezel

H	**Shape:** Diamond **Bezel:** Black
S	**Shape:** Standard
B	**Shape:** Round **Bezel:** Black
W	**Shape:** Round **Bezel:** White
D	**Shape:** Diamond **Bezel:** None
C	**Shape:** Rectangle

Connector Definition

F	**+:** Positive **–:** Negative **B:** Backlight (blue) **E:** Enable
4	**+:** Positive **–:** Negative **R:** Reset **E:** Enable
3	**+:** Positive **–:** Negative **E:** Enable
2	**+:** Positive **–:** Negative

NOTE: If in the future, the customer has a specific backlight color requirement, Honeywell can customize to meet the customer's needs.

Terminal Type

A	1/4 in blade
C	3/16 in blade

Voltage Range

S	9 Vdc to 64 Vdc

Logo Type

H	Honeywell
N	No logo
T	Hours indicator
1	Customer's logo #1
2	Customer's logo #2

NOTE: Codes "1" to "9" and "A" to "Z" (except "H", "N", and "T") are defined for customers' different logo/type requirements.

Modification Code

Multiple packaging and component options are recommended. **Type 11:** bulk packing with wires and fasteners **Type 21:** Box per product packing with wires and fasteners Please refer to Honeywell modification code, or contact your Honeywell sales representative, or an authorized Honeywell Distributor.
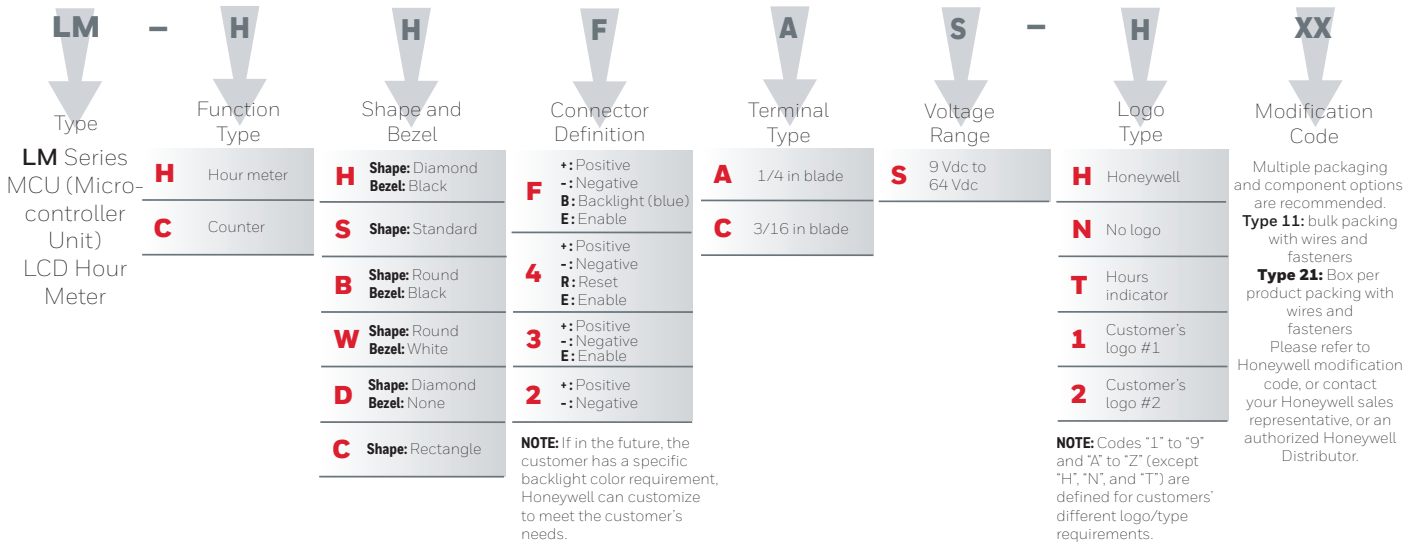
TABLE 2. MODIFICATION CODES

Modifica-tion Code	Product Shape	Box/Meter Wrap/Marking	Hour Meter Terminal Wires	Fastenings	Product Qty Per Carton(s)	Instruc-tion Sheet Qty
11	Diamond, Standard, Rectangle	Bulk pack, no box marking	1 wire per terminal	Included	96 pieces per carton	1
12				No fastenings included		
13			No wires included	Included		
14				No fastenings included		
21	Diamond, Standard, Rectangle, Round	Box per product, box marked with part number	1 wire per terminal	Included	24 pieces per carton	24
22				No fastenings included		
23			No wires included	Included		
24				No fastenings included		
31	Round	Bulk pack, no box marking	1 wire per terminal	Included	48 pieces per carton	1
32				No fastenings included		
33			No wires included	Included		
34				No fastenings included		

MICROCONTROLLER UNIT (MCU) LCD HOUR METERS/COUNTERS, **LM SERIES**

LM SERIES ORDER GUIDE

	Catalog Listing	Function	Shape	Bezel	Connectors	Terminal Type	Logo
	LM-CS3CS-N11	Counter	Standard	–	3	3/16 in blade	None
	LM-CS3CS-N13	Counter	Standard	–	3	3/16 in blade	None
	LM-CS3CS-N21	Counter	Standard	–	3	3/16 in blade	None
	LM-CS3CS-N22	Counter	Standard	–	3	3/16 in blade	None
	LM-CS3CS-N23	Counter	Standard	–	3	3/16 in blade	None
	LM-CS4AS-N11	Counter	Standard	–	4 (reset)	1/4 in blade	None
	LM-HB2AS-H31	Hour Meter	Round	Black	2	1/4 in blade	Honeywell
	LM-HB3AS-H31	Hour Meter	Round	Black	3	1/4 in blade	Honeywell
	LM-HB4AS-H31	Hour Meter	Round	Black	4 (reset)	1/4 in blade	Honeywell
	LM-HC3CS-H11	Hour Meter	Rectangle	–	3	3/16 in blade	Honeywell
	LM-HC3CS-H21	Hour Meter	Rectangle	–	3	3/16 in blade	Honeywell
	LM-HC3CS-H22	Hour Meter	Rectangle	–	3	3/16 in blade	Honeywell
	LM-HD2AS-H11	Hour Meter	Diamond	None	2	1/4 in blade	Honeywell
	LM-HD2AS-N11	Hour Meter	Diamond	None	2	1/4 in blade	None
	LM-HD2AS-N21	Hour Meter	Diamond	None	2	1/4 in blade	None
	LM-HD2AS-N22	Hour Meter	Diamond	None	2	1/4 in blade	None
	LM-HD3AS-H11	Hour Meter	Diamond	None	3	1/4 in blade	Honeywell
	LM-HD3AS-H13	Hour Meter	Diamond	None	3	1/4 in blade	Honeywell
	LM-HD3AS-N11	Hour Meter	Diamond	None	3	1/4 in blade	None
	LM-HD4AS-H11	Hour Meter	Diamond	None	4 (reset)	1/4 in blade	Honeywell
	LM-HD4AS-N11	Hour Meter	Diamond	None	4 (reset)	1/4 in blade	None
	LM-HH2AS-H11	Hour Meter	Diamond	Black	2	1/4 in blade	Honeywell
	LM-HH2AS-H21	Hour Meter	Diamond	Black	2	1/4 in blade	Honeywell
	LM-HH2AS-H22	Hour Meter	Diamond	Black	2	1/4 in blade	Honeywell
	LM-HH2AS-N11	Hour Meter	Diamond	Black	3	1/4 in blade	None
	LM-HH3AS-H11	Hour Meter	Diamond	Black	3	1/4 in blade	Honeywell
	LM-HH3AS-H21	Hour Meter	Diamond	Black	3	1/4 in blade	Honeywell
	LM-HH3AS-H22	Hour Meter	Diamond	Black	3	1/4 in blade	Honeywell
	LM-HH3AS-N11	Hour Meter	Diamond	Black	3	1/4 in blade	None
	LM-HH4AS-H11	Hour Meter	Diamond	Black	4 (reset)	1/4 in blade	Honeywell
	LM-HH4AS-H21	Hour Meter	Diamond	Black	4 (reset)	1/4 in blade	Honeywell
	LM-HH4AS-H22	Hour Meter	Diamond	Black	4 (reset)	1/4 in blade	Honeywell
	LM-HH4AS-N11	Hour Meter	Diamond	Black	4 (reset)	1/4 in blade	None
	LM-HHFAS-H11	Hour Meter	Diamond	Black	4 (backlight)	1/4 in blade	Honeywell
	LM-HHFAS-H21	Hour Meter	Diamond	Black	4 (backlight)	1/4 in blade	Honeywell
	LM-HHFAS-H22	Hour Meter	Diamond	Black	4 (backlight)	1/4 in blade	Honeywell

MICROCONTROLLER UNIT (MCU) LCD HOUR METERS/COUNTERS, LM SERIES

LM SERIES ORDER GUIDE

	Catalog Listing	Function	Shape	Bezel	Connectors	Terminal Type	Logo
	LM-HS2AS-H11	Hour Meter	Standard	–	2	1/4 in blade	Honeywell
	LM-HS2AS-H21	Hour Meter	Standard	–	2	1/4 in blade	Honeywell
	LM-HS2AS-N21	Hour Meter	Standard	–	2	1/4 in blade	None
	LM-HS2AS-N22	Hour Meter	Standard	–	2	1/4 in blade	None
	LM-HS2AS-T11	Hour Meter	Standard	–	2	1/4 in blade	Hours indicator
	LM-HS3AS-H11	Hour Meter	Standard	–	3	1/4 in blade	Honeywell
	LM-HS3AS-H21	Hour Meter	Standard	–	3	1/4 in blade	Honeywell
	LM-HS3CS-N11	Hour Meter	Standard	–	3	3/16 in blade	None
	LM-HS4AS-H11	Hour Meter	Standard	–	4 (reset)	1/4 in blade	Honeywell
	LM-HSFAS-H11	Hour Meter	Standard	–	4 (backlight)	1/4 in blade	Honeywell
	LM-HW2AS-H31	Hour Meter	Round	Chrome	2	1/4 in blade	Honeywell
	LM-HW3AS-H31	Hour Meter	Round	Chrome	3	1/4 in blade	Honeywell
	LM-HW4AS-H31	Hour Meter	Round	Chrome	4 (reset)	1/4 in blade	Honeywell

DIMENSIONAL DRAWINGS

Figure 1. Diamond-Shaped Hour Meter Dimensions

LENS: BACKGROUND BLACK
WITH WHITE LETTERING

2.13 in
1.75 in
0.957 in
LOGO
1.25 in
Honeywell
HOURS 1/10
(0.33 in) (0.89 in)
2X Ø 0.15 in
(1.41 in)

1.35 in
0.79 in
0.75 in
0.14 in
0.22 in ±0.02 in
10°
0.08 in
BENDING TERMINAL (OPTIONAL, CUSTOMER DEFINE)
CASE
TERMINAL

0.18 in
+
R/B E

TERMINALS TO ACCEPT GM TERMINAL 2962447 AND GM CONNECTOR 2962448 OR EQUIVALENT.
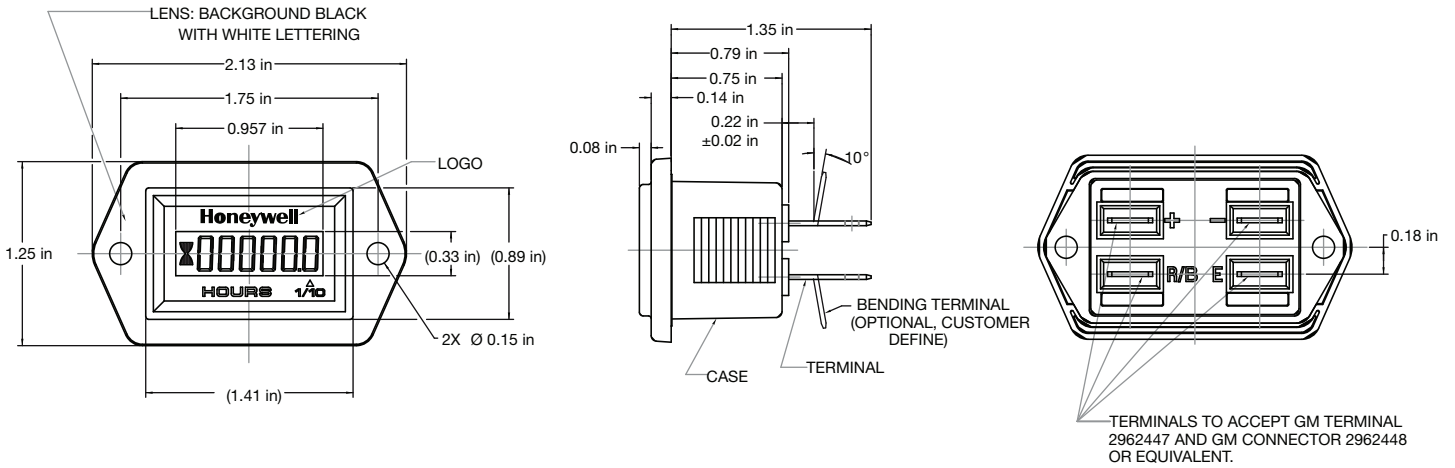
Figure 2. Standard-Shaped Hour Meter Dimensions

1.60 in
(0.957 in)
1.08 in
Honeywell
HOURS 1/10
(0.330 in)

1.79 in
0.79 in
0.75 in
0.22 in ±0.02 in
10°
0.10 in
BENDING TERMINAL (OPTIONAL, CUSTOMER DEFINE)

1.44 in max.
0.88 in
(0.44 in)
(0.18 in)
0.94 in max.
+
R/B E
0.36 in

TERMINALS TO ACCEPT GM TERMINAL 2962447 AND GM CONNECTOR 2962448 OR EQUIVALENT.
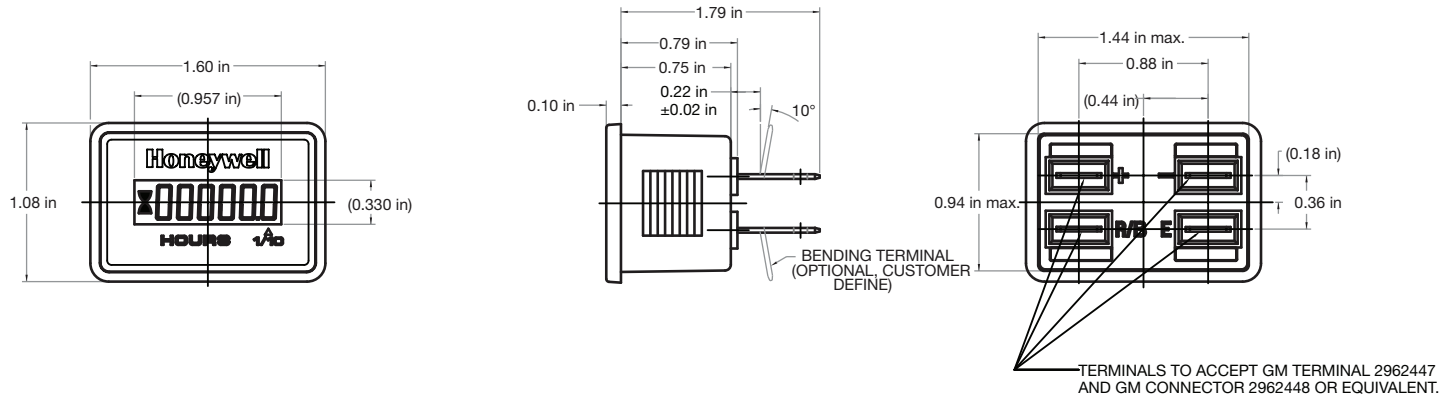
Figure 3. Round-Shaped Hour Meter Dimensions

Ø 2.00 in
LOGO
Honeywell
HOURS 1/10
Ø 2.27 in
BEZEL
DIAL
CASE

CUP RETAINER & HEX NUT & LOCKWASHER
1.33 in
0.98 in
0.73 in
0.12 in
0.30 in

LABEL PRINTING: PART NO, VOLTAGE, DATE CODE, UL RECOGNIZED SYMBOL WITH (FILE NO) XXXXXX & CE SYMBOL, MAX POWER, PRODUCING AREA SHOULD BE PRINTED ON LABEL.

1.44 in max.
(0.18 in)
Ø 2.41 in
0.94 in max.
+
R/B E
(0.44 in)
0.88 in

TERMINALS TO ACCEPT GM TERMINAL 2962447 AND GM CONNECTOR 2962448 OR EQUIVALENT.
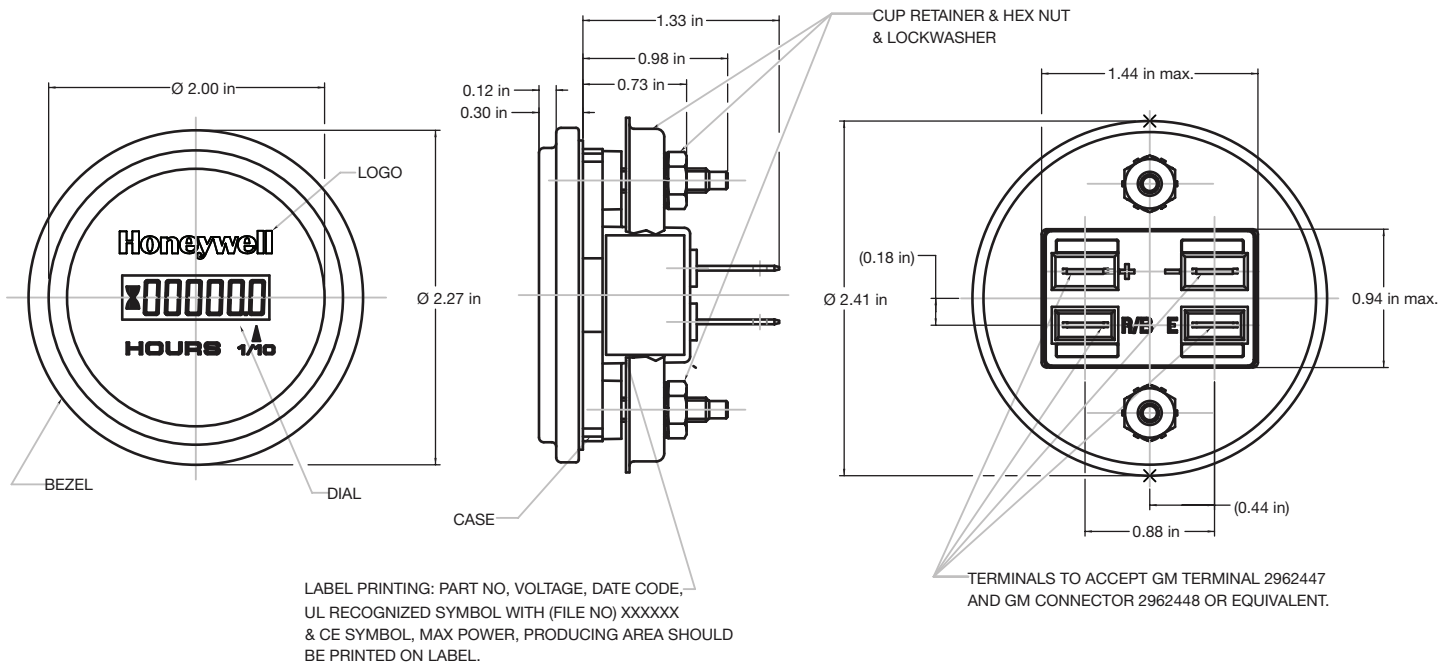
MICROCONTROLLER UNIT (MCU) LCD HOUR METERS/COUNTERS, LM SERIES

Figure 4. Rectangle-Shaped Hour Meter Dimensions
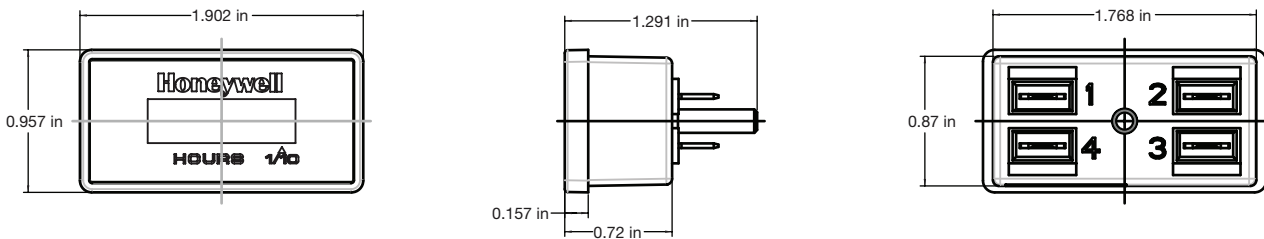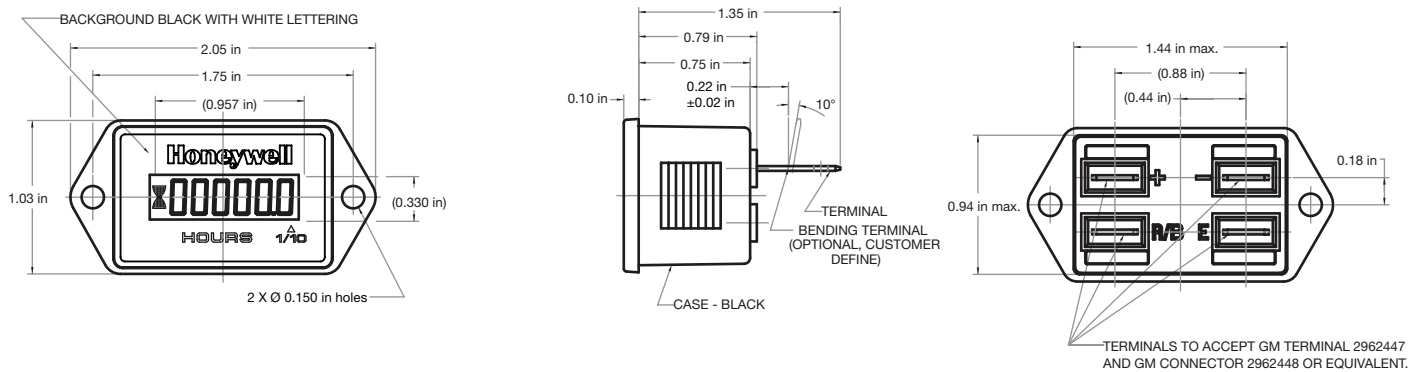

**Figure 5. Diamond-Shaped (No Bezel) Hour Meter Dimensions**

🛑 **CAUTION**

Be cautious when working around and connecting to the LM Series' terminals, especially those other than the positive terminal (+) as there is no eletrical protection on the negative (–), reset, enable, and/or backlight terminals.

MICROCONTROLLER UNIT (MCU) LCD HOUR METERS/COUNTERS, LM SERIES

Figure 6. LM Series Mounting and Fasteners (if applicable)
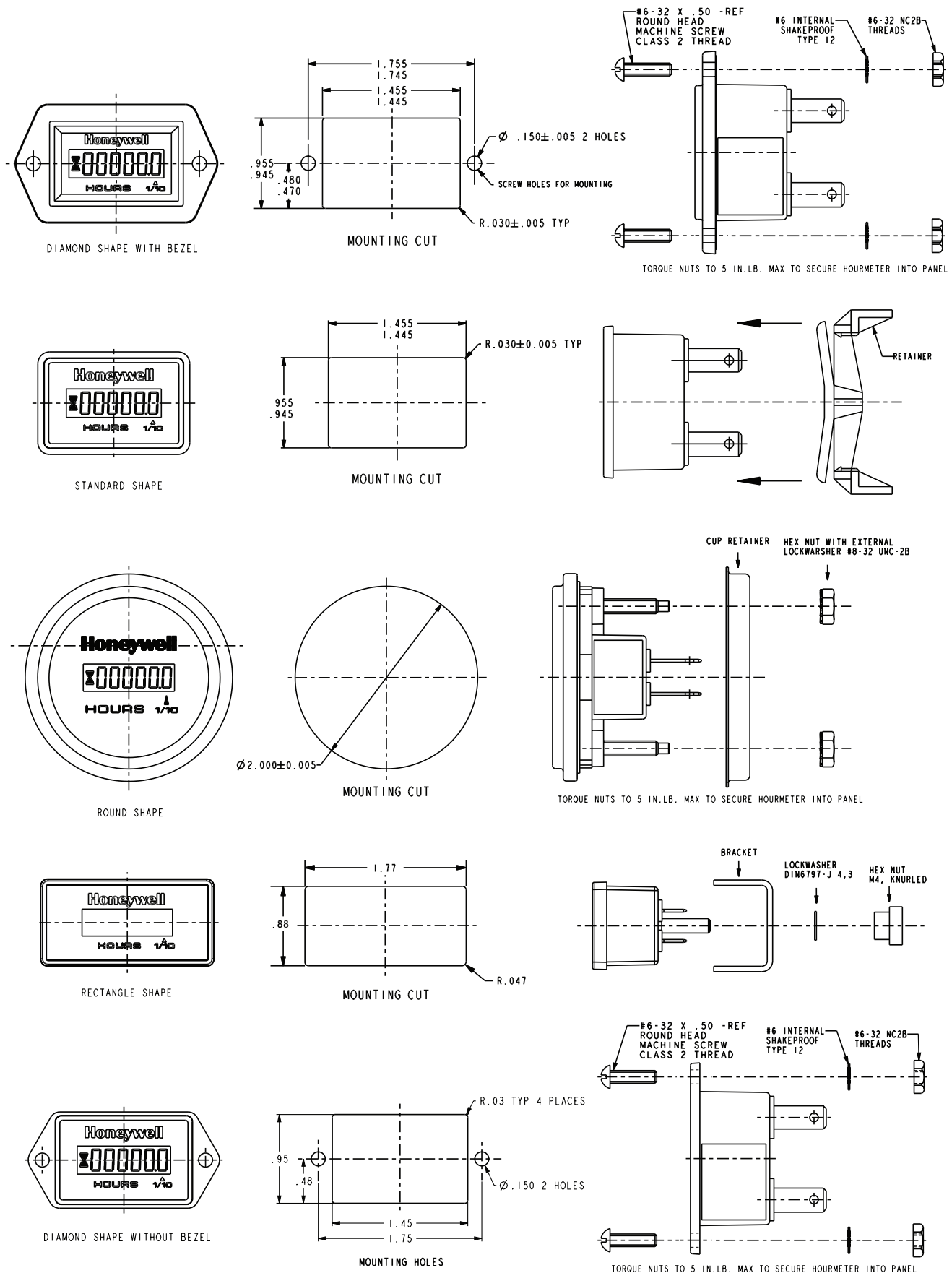
WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

⚠ **WARNING**
PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠ **WARNING**
MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

FOR MORE INFORMATION

Honeywell Advanced Sensing Technologies services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, visit sps.honeywell.com/ast or call:

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