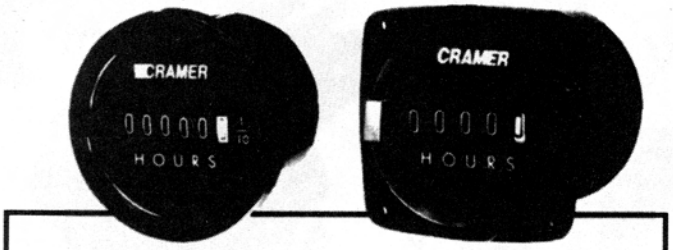
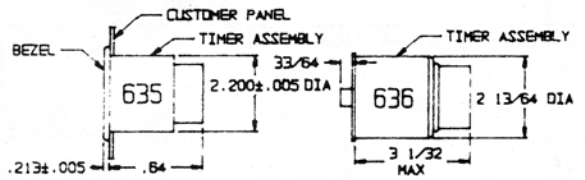
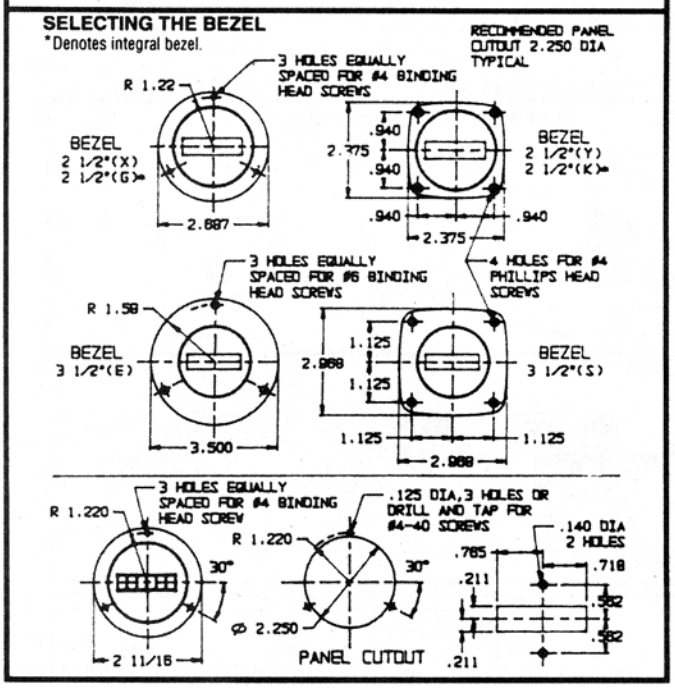
Designed to show amount of time used from the moment the meter is started.



Series 635
(Non-resettable)

Series 636
(Resettable)



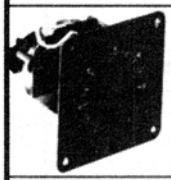
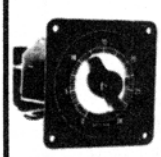
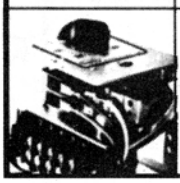


PERFORMANCE DATA

Time registration : 635—99999.9 min or hrs/636—9999.9 sec, min or hrs.
Motor Ratings : 24, 120, 240VAC / 50 or 60 Hz.
Power Consumption : 2.7 watts (electrical connections 6 inch leads)
Ambient temperature : -20°C to +55°C
UL Listed and CSA Approved.

For controlling length of procedures or delaying the start of a procedure.

Cramer Interval Timers are designed specifically to time the period during which a load is energized. All series available with either manual or automatic reset.

	**Series 241** Time Ranges: 6 sec to 120 hours. Load Switch: 15 Amp — 125V 10 Amp — 250V	Controls a wide range of electrically operated equipment, such as copying machines, mixers, ovens, tumbling and plating machines and insulation testing machines. Available from stock for immediate shipment.
	**Series 271** Time Ranges: 60 sec to 72 hours. Load Switch: 15A 115V Resistive or 115V 1/3 HP	Primarily for built-in applications. Available with or without standard dial and pointer-knob. In two-pole units, second cam is factory set to operate immediately prior to the first.
	**Series N30** Time Ranges: 6 sec to 3 days. Load Switch: 1 or 2, SPDT-10A	An inexpensive manual-set unit engineered for easy panel mount. Smooth internal friction for ease of setting regardless of time range. Dust cove optional for flange-mounted units.
	**Series D10J-K** Time Ranges: 15 sec to 3 days. Load Switch: 1 or 2, SPDT-10A	Relay Timer for use either as a delay function or interval function where remote actuation is required. Usually triggered by independent action rather than operator.
	**Series 472** Time Ranges: .4-6 sec to 96 min. - 24 hours. Load Switch: 1 or 2, SPDT-10A	Designed for interval or delay timing with 3 switches, motor and clutch wired to 8-place terminal block. Permits momentary or sustained contact control.

GZ Series DC VOLTAGE

CE

GZ 41

- Bezel: 2.12"x 1.25" (54 x 32mm)
- Capacity:99.999.9 hours
- Digits: 6 – 0.125 high numerals
  Hours:white on black
  Tenths: red on white
- Voltage:10-80VDC
- Power Consumption:
  .03W @ 12VDC
  .70W @ 48VDC
- Temperature:–22° to 150°F
  (–30° to 65°C)
  Special Model Temp:–40° to 185°F
  (–40° to 85°C)
- Vibration Resistance:10 to 75Hz @ 1-8g's
- Termination:1/4" spade terminals
- Protected From:reverse polarity, inductive switch
- Weight: 2oz

GZ 40A

- SAE Bezel: 2.31" dia.(59mm)
- Capacity:99.999.9 hours
- Digits:6 – 0.125 high numerals
  Hours:white on black
  Tenths: red on white
- Voltage:4-40VDC and 10-80VDC
- Power Consumption:
  .03W @ 12VDC
  .70W @ 48VDC
- Temperature:–22° to 150°F
  (–30° to 65°C)
  Special Model Temp:–40° to 185°F
  (–40° to 85°C)
- Vibration Resistance:10 to 75Hz @ 1-8g's
- Termination: 1/4"spade terminals
- Protected From:reverse polarity, inductive switch
- Weight: 2oz

GZ 40B

- 3-Hole Bezel: 2.80" dia.(72mm)
- Totally sealed case
- Capacity:99.999.9 hours
- Digits:6 – 0.125 high numerals
  Hours:white on black
  Tenths: red on white
- Voltage:4-40VDC and 10-80VDC
- Power Consumption:
  .03W @ 12VDC
  .70W @ 48VDC
- Temperature: –22° to 150°F
  (–30° to 65°C)
  Special Model Temp: –40° to 185°F
  (–40° to 85°C)
- Vibration Resistance:10 to 75Hz @ 1-8g's
- Termination:1/4"spade terminals
- Protected From:reverse polarity, inductive switch
- Weight: 2oz

GZ 52

- Bezel: 2.28" round (58mm)
- Capacity:99.999.9 hours
- Digits:6 – 0.125 high numerals
  Hours:white on black
  Tenths: yellow on black
- Voltage:10-240VDC
- Temperature: –40° to 160°F
  (–40° to 72°C)
- Termination: Combination 1/4" spade and screw terminals
- Weight:3oz

RZ Series

The Hour Meter Without Electrical Connection

The RZ hour meter records the running time of machines, vehicles, etc.which vibrate during operation.

The automatic mechanism in this meter converts vibrations into energy which drives the hour meter and minute sweep hand.It is so sensitive, it is capable of operating from the slight vibration of a moving car.

LEGEND RZ52/RZ60

RZ52 = Model reference
D = Rubber mounting assembly
h = Horizontal installation
v = Vertical installation
RZ60 = With adapter ring for 60mm diameter cut-out

ORDERING EXAMPLE:

RZ 52h
Vibratory hour meter for horizontal installation

Bezel: 2.28"round (58mm)

UWZ Series

AC VOLTAGE

For within panels or indoor mounting–non-resetable

All models are light grey color with white numerals on black background. Tenths and hundreths numerals are yellow. An orange dial adjacent to the hundreths digit provides running indication.

UL FILE:E86119

CSA FILE:LR44080

UWZ 48

Surface Mount

- Bezel:1.89" x 1.89" (48 x 48mm)
- Capacity:99,999.99 hours
- Mounting: Surface
- Digits:7 – 0.16" high numerals
- Voltage: 24, 120, 240, 50 or 60Hz
- Power Consumption:1VA
- Temperature:–40° to 160°F (–40° to 72°C)
- Termination:Screw Lugs
- Weight:2.5oz.

Surface mounted type. The UWZ 48 unit with plug-in base where terminal protection is not necessary. The socket base is easy to install and connect. The meter is simply plugged into the base and secured by one screw.

Ord. Info.: UWZ 48 – voltage/freq.

UWZ 48A

Enclosed Surface Mount

- Bezel:1.89" x 1.89" (48 x 48mm)
- Capacity: 99,999.99 hours
- Mounting:Surface
- Digits:7 – 0.16" high numerals
- Voltage:24, 120, 240, 50 or 60Hz
- Power Consumption: 1VA
- Temperature:–40° to 160°F (–40° to 72°C)
- Termination:Screw Lugs
- Weight: 2.5oz.

Wall mounted type. Used in conjunction with a terminal cover for added safety, the UWZ 48A is surface mounted. Installation merely requires fixing the base to wall or panel with two screws, wiring the base, and plugging in the meter with the terminal cover.

Ord. Info.: UWZ 48A – voltage/freq.

UWZ 48E

Flush Mount

- Bezel:1.89" x 1.89" (48 x 48mm)
- Capacity:99,999.99 hours
- Mounting:Flush
- Digits:7 – 0.16"high numerals
- Voltage:24, 120, 240, 50 or 60Hz
- Power Consumption:1VA
- Temperature:–40° to 160°F (–40° to 72°C)
- Termination: Combination 1/4"spade and screw clamp
- Weight:2.1oz.

Flush mounted with bracket. The UWZ 48E unit fits into a 1.79 x 1.79in.(45.5 x 45.5mm) cut-out. The thickness of the panel for flush mounting can be up to 0.35in.(9mm). The unit is secured in position by a plastic slip-on retaining bracket. Also fits square or round openings for 72mm meters with optional 72mm bezel.

Ord. Info.: UWZ 48E – voltage/freq.

UWZ 48V

DIN Rail Mount

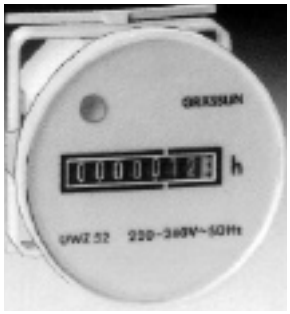
- Bezel:1.89" x 1.89" (48 x 48mm)
- Capacity:99,999.99 hours
- Mounting:DIN Rail
- Digits:7 – 0.16"high numerals
- Voltage:24, 120, 240, 50 or 60Hz
- Power Consumption:1VA
- Temperature:–40° to 160°F (–40° to 72°C)
- Termination:Combination 1/4"spade and screw clamp
- Weight:2.5oz.

DIN rail mounting. A special snap-on socket base enables the unit to be quickly and simply fitted on DIN rail.

Ord.Info.: UWZ 48V – voltage/freq.

UWZ 52E

Flush Mount



- Bezel:2.28" round (58mm)
- Capacity:99,999.99 hours
- Mounting:Flush
- Digits:7 – 0.16"high numerals
- Voltage:24, 120, 240, 50 or 60Hz
- Power Consumption:1VA
- Temperature:–40° to 160°F (–40° to 72°C)
- Termination:Combination 1/4" spade and screw clamp
- Weight: 2.1oz.

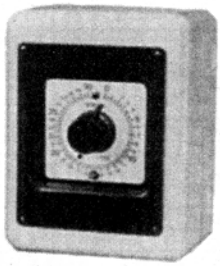
Flush mounted with bracket. The UWZ 52E with round face is fastened with a plastic slip-on retaining bracket. For larger cutouts up to a 60mm diameter, a slip-on 65mm ø bezel is available.

Ord.Info.: UWZ 52E – voltage/freq.

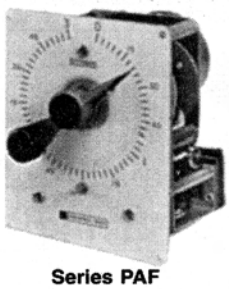
Toll Free 1-800-526-5376 • 201-337-1000 • Fax 201-337-1862

AUTOMATIC RESET INTERVAL TIMERS

SERIES PAB/PAF INTERVAL TIMERS



Series PAB



Series PAF

Dependable timers with positive time cycle adjustments. Energized by momentary contact to close a load circuit for pre-set interval, with automatic reset at end of time cycle. Heavy-duty synchronous motors operate on 120 VAC, 60 Hz. Hard wired, internal holding circuit allows the use of a momentary start button and emergency switch (if desired). Single pole. Double throw load switch. PAB model is in housing for surface mounting; PAF model is for panel mounting. Both are designed for high repetitive accuracy, fast reset and heavy usage. Applications include oven controls and automatic machinery. On PAB models, two ½″ knockouts provide access to terminal strip. Wt., 6 lbs. PAB units are CSA Certified.

Reset Time: 0.5 seconds max. at full setting
Accuracy: ±0.25% (with motor running continuously)
Wiring: Screw type terminal block
Load Switch Contacts: Isolated SPDT switch rated at 15A at 120V with non-inductive load

Mfr. No.	Mfr. No.*	Max. Time Cycle	Dial Calibration
PAB-1S	PAF-1S	1 second	1/60 second
PAB-3S	PAF-3S	3 seconds	1/20 second
PAB-6S	PAF-6S	6 seconds	1/10 second
PAB-15S	PAF-15S	15 seconds	1/4 second
PAB-30S	PAF-30S	30 seconds	1/2 second
PAB-60S	PAF-60S	60 seconds	1 second
PAB-3M	PAF-3M	3 minutes	3 seconds
PAB-5M	PAF-5M	5 minutes	5 seconds
PAB-15M	PAF-15M	15 minutes	15 seconds
PAB-30M	PAF-30M	30 minutes	30 seconds
PAB-60M	PAF-60M	60 minutes	60 seconds
PAB-3H	PAF-3H	3 hours	3 minutes

* Nonstock item.

SERIES P REMOTE STARTING TIMERS

Series P

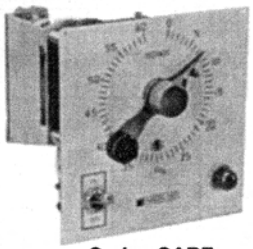
Dependable timers with positive time cycle adjustments. Energized by momentary contact to close a load circuit for pre-set interval, with automatic reset at end of time cycle. Heavy-duty synchronous motors operate on 120 VAC, 60 Hz. Multi-purpose timers with line cord, built-in start button, and two receptacles for load and remote control circuits. Size, 5″ × 5″ × 3 9/16″. Shipping Weight, 3 lbs. CSA Certified.

Rest Time: 0.5 seconds max. at full setting
Accuracy: ±0.25% of full scale (with motor running continuously)
Load Switch Contacts: Isolated SPDT switched rated 15A at 120V with non-inductive load.
Wiring: Standard 3-wire plugs and receptacles
Voltage: 120 VAC at 60 Hz.

Mfr. No.	Max. Time Cycle	Dial Calibration
P-6S	6 seconds	1/10 second
P-4R	15 seconds	1/4 second
P-2R	30 seconds	1/2 second
P-1M	60 seconds	1 second
P-3M	3 minutes	3 seconds
P-5M	5 minutes	5 seconds

SERIES SAR/SARF SIGNALLING INTERVAL TIMERS

Series SAR



Series SARF

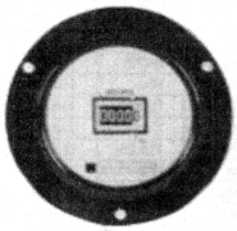
Dependable timers with positive time cycle adjustments. Energized by momentary contact to close a load circuit for pre-set interval, with automatic reset at end of time cycle. Heavy-duty synchronous motors operate on 120 VAC, 60 Hz. For applications requiring high/repeat accuracy with an audible signal at the end of timing. Useful for plating systems, tumbling equipment and for fast food cooking equipment. SAR model is housed in a sturdy metal case for surface mounting and portability; SARF model is designed for panel mounting. Wt., 3 lbs.

Reset Time: 0.5 seconds max. at full setting
Accuracy: ±5% of full scale
Wiring: SAR — standard 3-wire power plug and load receptacles
SARF—screw type terminal
Load Switch Contacts: 120 VAC at 60 Hz SPDT rated at 10A non-inductive

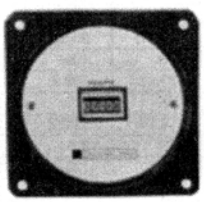
Mfr. No.	Mfr. No.*	Max. Time Cycle	Dial Calibration
SAR-1M	SARF-1M	1 minute	1 second
SAR-5M	SARF-5M	5 minutes	5 seconds
SAR-15M	SARF-15M	15 minutes	15 seconds
SAR-30M	SARF-30M	30 minutes	30 seconds
SAR-1H	SARF-1H	1 hour	1 minute
SAR-3H	SARF-3H	3 hours	3 minutes

* Nonstock item.

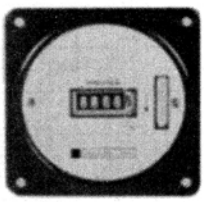
ELAPSED TIME METERS



C-2



C-25



C-5

For exact record of machine hours on AC appliances and industrial machines. Synchronous heavy duty self-lubricating motors connected by gears to five-digit counters. Choice of six styles with non-reset or reset mechanism, enclosed or in open mounting. For 115 VAC, 60 Hz. **Series C-2** is enclosed non-reset type in 3½″ Bakelite meter case; mounts in 2⅞″ dia. hole. **Series C-25** is same as C-2, but in square case; mounts in 2⅞″ dia. hole; flange 3¼″ sq. **Series C-5** is same as C-25. CSA Certified.

Mfr. Prefix	Description
C-2	Non-reset panel-mount
C-25	Non-reset square case
C-5	Reset type square case

To order, add suffix from table below to indicate range and calibration.
Note: C2, C2A, C2D, C25, C25A and C5 are standard models.

RANGE SUFFIXES

Suffix	Range	Calibration
None	10,000 hours	1/10 hour
A	100,000 hours	1 hour
D	10,000 minutes	1/10 minute
F	100,000 minutes	1 minute
G	10,000 seconds	1/10 second
H	100,000 seconds	1 second

A2

DESCRIPTION

The Curtis Model 300 Series consists of a range of easy to use, single and dual preset counters and timers with exceptionally powerful functionality and performance.

WARRANTY
One year from date of delivery.

Applications

A wide variety of manufacturing and processing machinery, especially coil winding, cut-to-length, parts batching, packaging and metering, for both the OEM and after-market user.

Features

- User friendly, easy to program, install and read - for maximum productivity.
- Can be configured and programmed for most customized applications - for full function versatility and user benefit.
- Designed for long-life, reliable performance in rugged manufacturing applications and conditions, featuring: interference immunity, IP65 front face protection and CE conformity.
- Reliable, non-volatile memory (CMOS EEPROM) retains data for a minimum of 10 years and eliminates the need for a battery.
- Bargraph scale allows the operator to monitor and determine status (in percentage) at a glance - for maximum productivity.
- Relay or Open Collector output(s) - assure flexibility in application.
- Reset/Preset Function allows manual, electrical or automatic operation.
- Standard 48 x 48 mm DIN package is internationally compatible.
- 24 VDC output allows the 300 Series unit to power a sensor, which eliminates the need for a separate sensor power supply.
- Low power consumption.
- Electronic lock on some models protects the programmed settings and/or data.

Model List

MODEL 301:
Single preset counter with two inputs (one add, one subtract) and one output. Programmable features: preset value.

MODEL 302:
Dual preset counter with two inputs which are programmable for add/add, add/subtract, subtract/subtract or three quadrature modes and two outputs. Programmable features: count speed, prescale value, counting edge, decimal point, reset/preset function, output signal duration, preset values.

MODEL 303:
Dual preset counter and batch counter with two inputs which are programmable for add/add, add/subtract and subtract/subtract counting and two outputs. Programmable features: count speed, decimal point, output signal duration, reset/preset function, preset values.

MODEL 304:
Single preset counter and single preset batch counter with two inputs which are programmable for add/add, add/subtract and subtract/subtract counting and two outputs. Programmable features: count speed, decimal point, output signal duration, reset function, preset values.

MODEL 305:
Two independent, single preset totalizing counters and two outputs. Programmable features: count speed, decimal point, output signal duration, reset function, preset values.

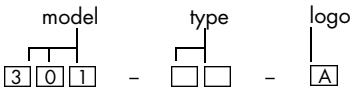
MODEL 306:
Single preset teach-in counter and batch counter with two inputs (one add, one subtract) and one output.Via a front-panel button, the user "teaches" the device the preset value by pressing the button when the limit is reached.

MODEL 321:
Up/down preset hour meter with two programmable preset values, one control output and optical warning signal to indicate when second preset value is reached.

MODEL 322:
Dual hour meter with two programmable preset values and two control outputs. Programmable features: output signal duration, reset/preset function and preset values.

Model Encodement

Type Selection (order marking)

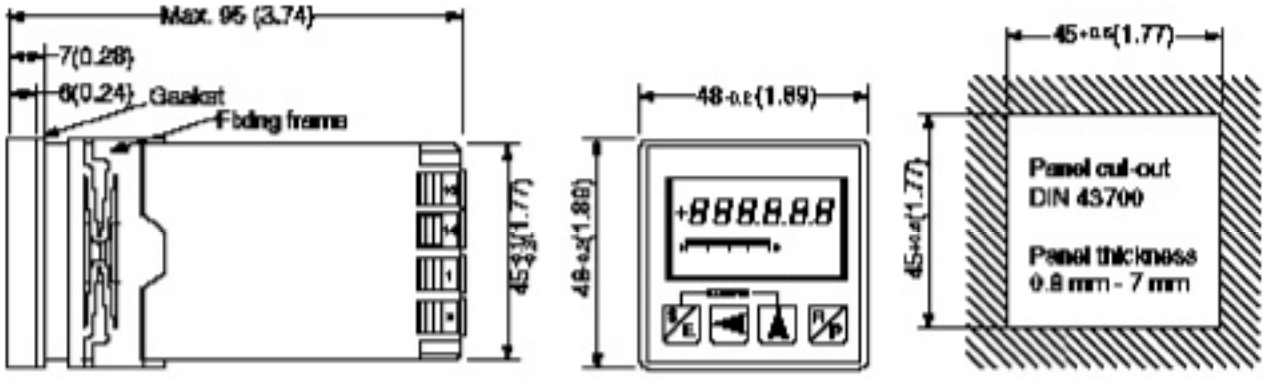


TYPE	POWER SUPPLY	INPUT VOLTAGE	OUTPUT TYPE	SENSOR POWER SUPPLY	COUNT FREQUENCY MODELS 301/306	COUNT FREQUENCY MODELS 302,3,4,5
01	230 VAC	AC	Relay	None	15Hz/15Hz	15 Hz
02	230 VAC	DC	Relay	24 VDC Unregulated	50Hz/1 kHz	Configurable
03	230 VAC	DC	Transistor	24 VDC Unregulated	50Hz/1 kHz	Configurable
04	120 VAC	AC	Relay	None	15Hz/15Hz	15 Hz
05	120 VAC	DC	Relay	24 VDC Unregulated	50Hz/1 kHz	Configurable
06	120 VAC	DC	Transistor	24 VDC Unregulated	50Hz/1 kHz	Configurable
07	24 VAC	AC	Relay	None	15Hz/15Hz	15 Hz
08	24 VAC	DC	Relay	24 VDC Regulated	50Hz/1 kHz	Configurable
09	24 VAC	DC	Transistor	24 VDC Regulated	50Hz/1 kHz	Configurable
10	24 VDC	AC	Relay	None	15Hz/15Hz	15 Hz
11	24 VDC	DC	Relay	None	50Hz/1 kHz	Configurable
12	24 VDC	DC	Transistor	None	50Hz/1 kHz	Configurable

Specifications

POWER SUPPLY	24 VDC = 22 to 29 VDC 24 VAC = 22 to 29 VAC 120 VAC = 100 to 132 VAC 230 VAC = 207 to 253 VAC
POWER CONSUMPTION	1.5 W @ 24 VDC 2 VA @ 24 VAC 4 VA @ 120 VAC 4 VA @ 230 VAC
INPUT/RESET VOLTAGE (DC)	$V_{IL} \leq 3$ VDC, $V_{IH} \geq 10$ VDC, 60 VDC max.
INPUT/RESET VOLTAGE (AC)	Same as power supply
OUTPUT VOLTAGE (RELAY)	30 VDC, 250 VAC max.
OUTPUT CURRENT (RELAY)	3 A max.
OUTPUT POWER (RELAY)	100 W, 750 VA max.
OUTPUT FORM (RELAY)	Models 301, 321 - Form C Models 302,3,4,5,6,22 - Form A
OUTPUT VOLTAGE (TRANSISTOR)	45 VDC max.
OUTPUT CURRENT (TRANSISTOR)	100 mA max.
SENSOR OUTPUT VOLTAGE	24 VDC ± 5% (24VAC Model) 24 VDC Unregulated (120, 230 VAC Models)
SENSOR OUTPUT CURRENT	50 mA max.
EMC EMISSION **IMMUNITY**	EN55011, Group 1, Class B EN50082-2
OPERATING TEMPERATURE RANGE	-10˚C to +50˚C
STORAGE TEMPERATURE RANGE	-20˚C to +70˚C
WEIGHT	200 g

300 Series Dimensions: mm (inches)



Front View Model 302

220 SERIES HOUR METERS AND COUNTERS

DESCRIPTION

Hour Meters and Counters in 36 x 72 mm DIN housings offering unprecedented performance, reliability and value. The use of a Curtis custom chip provides the functionality and flexibility of a microprocessor at a fraction of the cost.

WARRANTY

One year replacement warranty.

Application

A wide variety of industrial and commercial applications including packaging, process and medical equipment.

Features

- 8-digit Liquid Crystal Display with 10mm high digits and optional backlighting provides an attractive and easy to read display.
- 36 x 72 mm DIN housing with spring clip mounting provides a universal and simple installation.
- All models are available with an electrical reset or a manual (front panel push button) and electrical reset.
- Model 220 counter offers selectability of: mode of operation, counting frequency, decimal point and prescaling. This provides the user with design and application flexibility.
- Model 221 hour meter combines a selectable display format (hours, minutes or seconds) with an 8-digit display which provides high resolution as well as range.
- Units operate silently and have no moving parts, which eliminates the gear and motor noise of electro-mechanical meters and counters.
- These devices offer exceptional reliability because they are based on a field-proven Curtis design utilizing three technologies: a Curtis custom semiconductor which contains non-volatile memory (EEPROM), chip-on-board and surface mount.

Specifications

- Temperature Range
  (Operate & Storage): -30˚C to +65˚C
- Vibration: FC10/500-0, 35/50-30/3 (IEC 68-2-6)
- EMC – Emission: EN55011 Group 1, Class B
  – Immunity: EN50082-2
- Environmental Protection: IP65 (IEC 529)
- Termination: Screw terminals
  (2 wires max, 1.5 mm^2 ea.)

Model Encodement

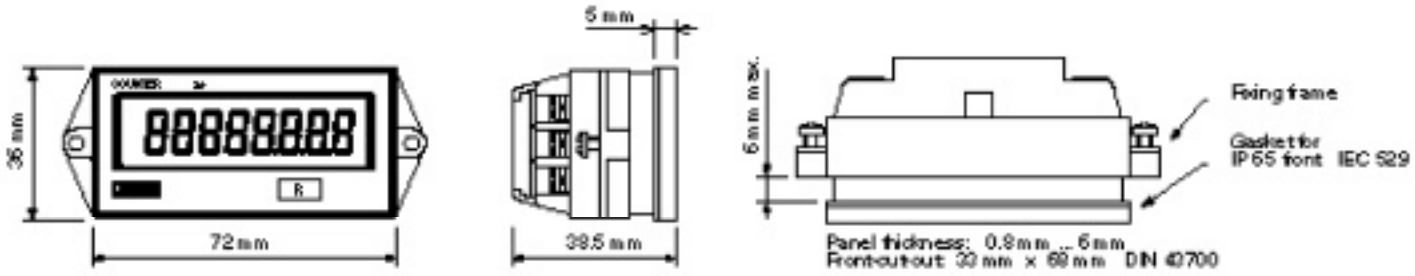
220 - E 1 - 1 5 1/001 - A

Reset	Voltage/Backlighting	Input Mode	Input Frequency	Decimal Point	Prescaler	Logo
E = Electrical	1 = 12 VDC - 60 VDC, Non-Backlit	1 = Input A: Add	2 = 10 Hz (AC Only)	0 = None	001 = Prescale 1:1	A = Curtis
M = Manual &	2 = 12 VAC - 60 VAC, Non-Backlit	Input B: Add	3 = 30 Hz (AC Only)	1 = 0.0	002 = Prescale 1:2	
Electrical	3 = 80 VAC - 230 VAC, Non-Backlit	2 = Input A: Add	5 = 500 Hz (DC Only)	2 = 0.00		
	4 = 24 VDC - 60 VDC, Backlit	Input B: Subtract		3 = 0.000		
	5 = 24 VAC - 60 VAC, Backlit				255 = Prescale 1:255	
	6 = 120 VAC, Backlit					
	7 = 230 VAC, Backlit					

221 - E 1 - 1 - A

Reset	Voltage/Backlighting	Display Format	Logo
E = Electrical	1 = 12 VDC - 60 VDC, Non-Backlit	1 = 0.00 Hours	A = Curtis
M = Manual &	2 = 12 VAC - 60 VAC, Non-Backlit	2 = Minutes	
Electrical	3 = 80 VAC - 230 VAC, Non-Backlit	3 = Seconds	
	4 = 24 VDC - 60 VDC, Backlit		
	5 = 24 VAC - 60 VAC, Backlit		
	6 = 120 VAC, Backlit		
	7 = 230 VAC, Backlit		

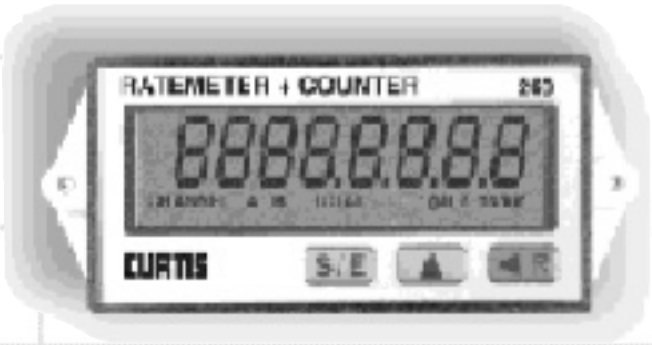
220 Dimensions: mm



Terminals

1.	Common
2.	V+
3.	Not Used
4.	Input A(Model 220) Enable (Model 221)
5.	Input B
6.	Reset

260 SERIES HOUR METERS, COUNTERS AND RATEMETERS



DESCRIPTION

The Curtis 260 Series are dual function instruments which combine hour meters, counters and ratemeters in a 36 x 72 mm DIN housing. The 260 Series devices can be easily configured by the user using the front panel programming keys.

WARRANTY

One year replacement warranty.

Application

Any industrial and commercial equipment which requires the measurement of time, speed, flow, frequency or quantity. Typical applications include: packaging, textile, bottling, printing, coil winding, machine tool and other in-plant equipment.

Features

- 8-digit, backlit Liquid Crystal Display with 10mm high digits and distinct unit icon line provides an attractive and easy to read display.
- 36 x 72 mm DIN housing with spring clip mounting provides a universal and simple installation.
- A versatile power supply input design allows the use of the internal lithium battery or an external 24 VDC supply. When external power is supplied, no current is drawn from the battery.
- Units are easy to program through three front panel keys. Programming can be enabled or disabled by a dedicated input terminal. (See Model Description for programming parameter.)
- Model 260 offers the unique Auto Range System (ARS). ARS minimizes display fluctuations by automatically selecting the accuracy, rounding off the value and setting the decimal point - no calculations required.
- Front panel meets IP65 and a panel sealing gasket is supplied as standard equipment.
- High speed frequency rating of totalizer and ratemeter - 10 kHz max. - allows the use of high speed sensors/transducers.

Specifications

- Temperature Range
  (Operate & Storage): -10˚C to +50˚C
- Vibration: FC10/500-0, 35/50-30/3 (IEC 68-2-6)
- EMC – Emission: EN55011 Group 1, Class B
  – Immunity: EN50082-2
- Environmental Protection: IP65 (IEC 529)
- Termination: Screw terminals
  (2 wires max, 1.5 mm^2 ea.)

Model Description

MODEL 260:
Combination ratemeter and totalizer with single input. The ratemeter has a resolution of 0.0 and the totalizer is programmable to 4 decimal places. Each channel is separately scalable.

MODEL 261:
Universal counter with two inputs, each scalable from 0.0001 to 99.9999. Six modes of operation - Add, Subtract, Add/Subtract and 3 quadrature modes. Decimal point programmable to 4 places.

MODEL 262:
Combination totalizer and hour meter with separate inputs. Totalizer is scalable with a programmable decimal point to 4 places. Hour meter has a programmable resolution of 0.00 hours; hours: minutes; or, hours: minutes: seconds.

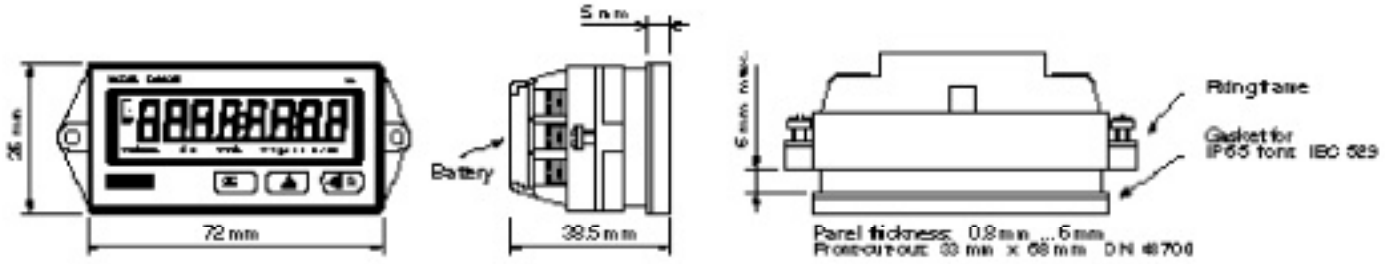
MODEL 263:
Combination ratemeter and hour meter with separate input. The ratemeter is scalable with a resolution of 0.0. Hour meter has a programmable resolution of 0.00 hours; hours: minutes; or, hours: minutes: seconds.

MODEL 265:
Position indicator with programmable offset and scaling for absolute or limited value measurement. Programmable for single, dual or quad evaluation counting modes.

Model Encodement

260	-	**A**
Model		**Logo**
260 = Ratemeter with integrated Totalizer		A = Curtis
261 = Universal Counter		
262 = Totalizer with integrated hour meter		
263 = Ratemeter with integrated hour meter		
265 = Position Indicator		

260 Dimensions: mm



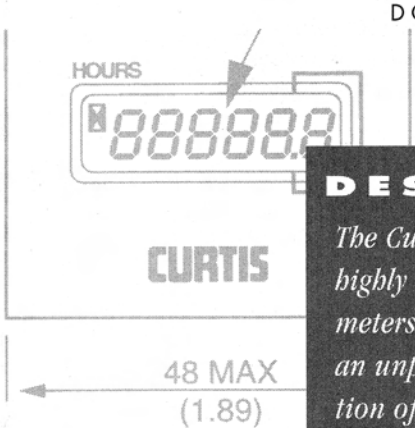
Terminals

1.	Reset
2.	Backlighting Input - 24 VDC
3.	Common
4.	Input A
5.	Input B / Enable Input (Hour meters)
6.	Programming Enable Input

700 SERIES SOLID STATE HOUR METERS & COUNTERS

D Case Counter Face

E Case Counter Face with Manual Reset



DESCRIPTION

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 for continuous display. Available in AC/DC and DC-only.

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

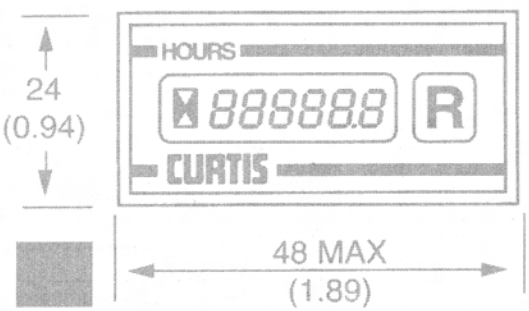
WARRANTY
Five-year replacement warranty.

Applications

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.

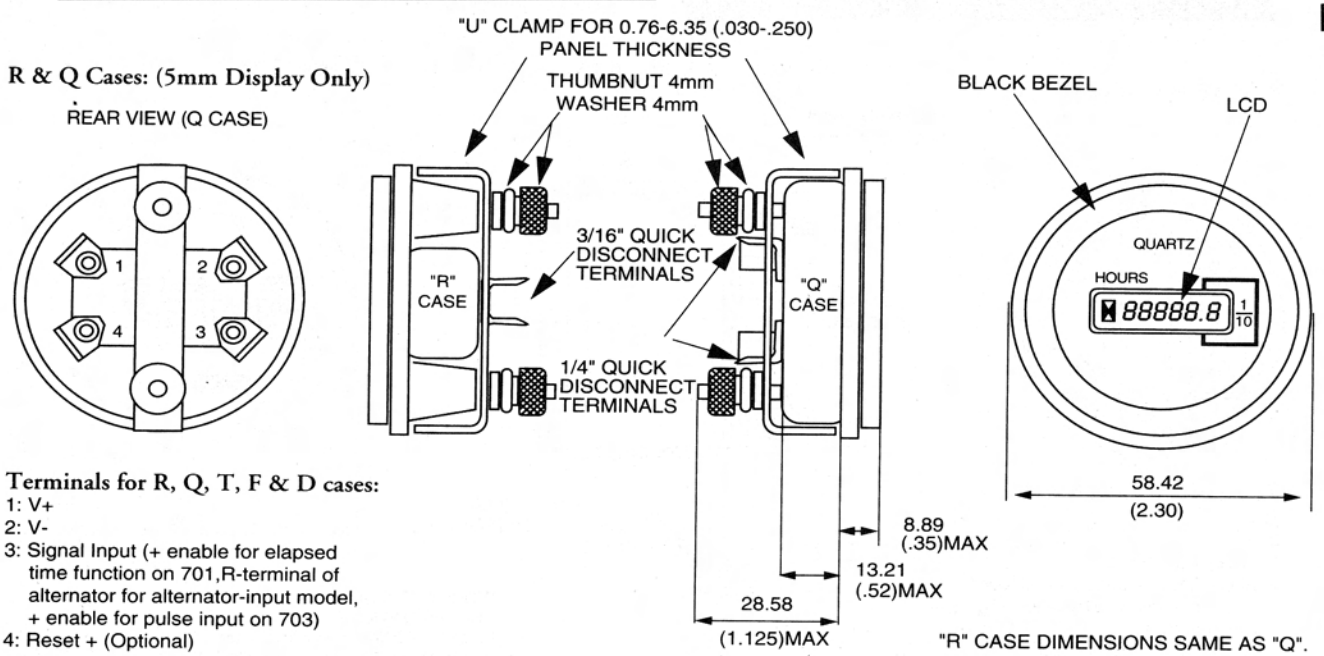
Features

- Five-year replacement warranty.
- Attractive 6-digit LCD 5mm or 7mm digits (7mm with optional backlighting) are much more readable than electro-mechanical meters with 3mm high digits.
- Smallest behind-panel depth of any panel-mount hour meter or counter available.
- Silent operation – no moving parts. Eliminates annoying gear and motor noise.
- Exceptional reliability due to nonvolatile memory (EEPROM) which can retain data for 25+ years.
- Wide voltage ranges, for example, one unit can be powered from 75 to 270 VAC at 50 and 60Hz (48 to 440Hz) – ideal for distribution and worldwide markets without having to stock multiple model types.
- Manual and/or electrical reset (optional).



700 Series Dimensions: mm (inches)

R & Q Cases: (5mm Display Only)



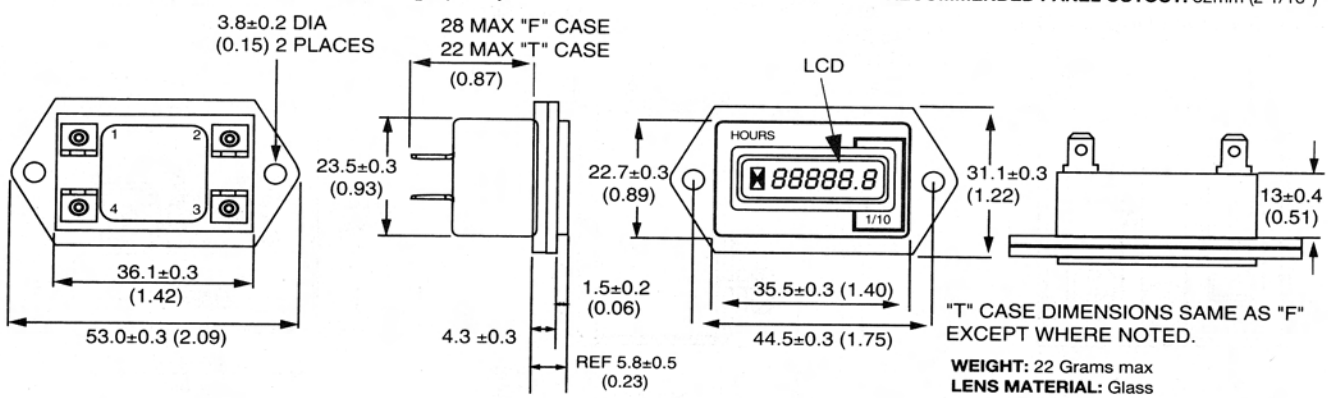
Terminals for R, Q, T, F & D cases:

1: V+
2: V-
3: Signal Input (+ enable for elapsed time function on 701,R-terminal of alternator for alternator-input model, + enable for pulse input on 703)
4: Reset + (Optional)

"R" CASE DIMENSIONS SAME AS "Q".

WEIGHT: 55 Grams max
LENS MATERIAL: Glass
CASE MATERIAL: Lexan 940, Black
BEZEL MATERIAL: Aluminum, Black Anodized
RECOMMENDED PANEL CUTOUT: 52mm (2 1/16")

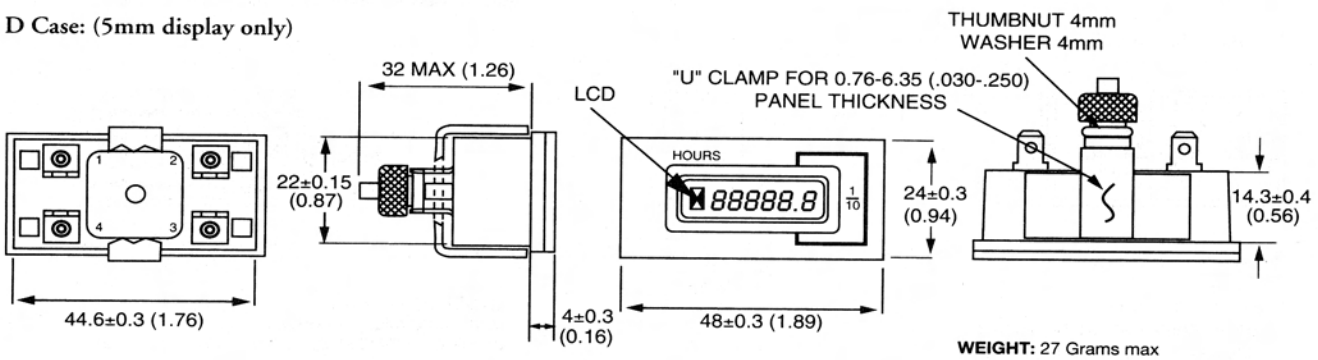
T & F Cases: (T case shown - 5mm display only)



"T" CASE DIMENSIONS SAME AS "F" EXCEPT WHERE NOTED.

WEIGHT: 22 Grams max
LENS MATERIAL: Glass
CASE MATERIAL: ABS KJW, Black
RECOMMENDED PANEL CUTOUT:
36.8mm x 24.1mm±0.25 (1.45" x 0.95"±0.1")

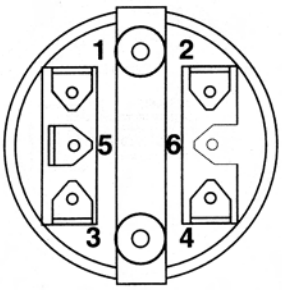
D Case: (5mm display only)

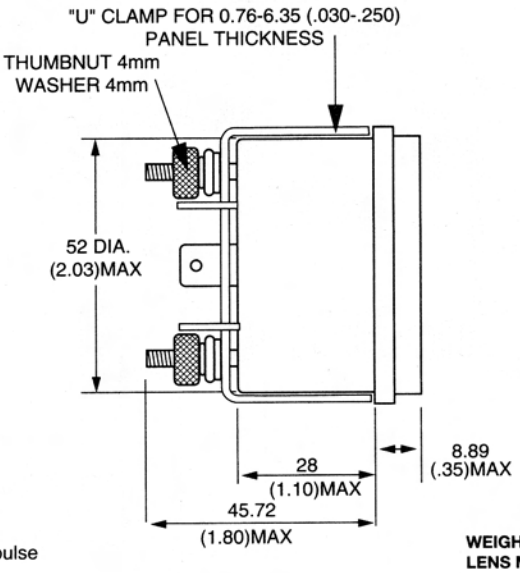


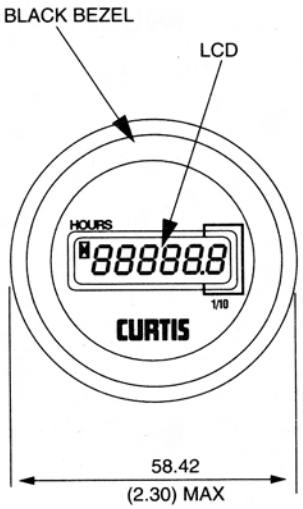
WEIGHT: 27 Grams max
LENS MATERIAL: Glass
CASE MATERIAL: ABS KJW, Black
RECOMMENDED PANEL CUTOUT:
45.3mm x 22.3mm±0.1 (1.78" x 0.88"±0.05)

700 Series Dimensions: mm (inches) cont.

R Case (7mm Display Only):



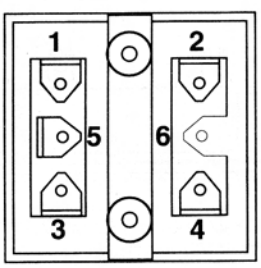


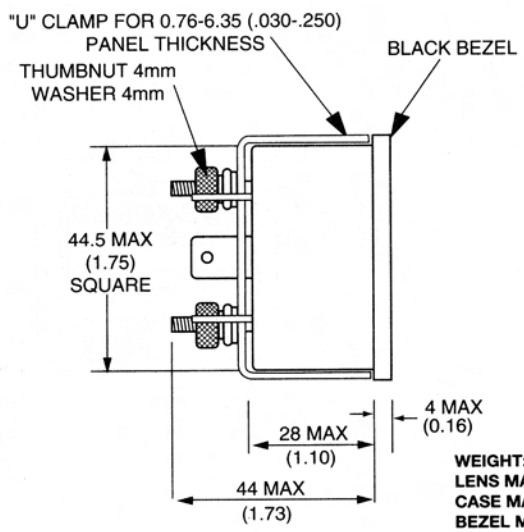


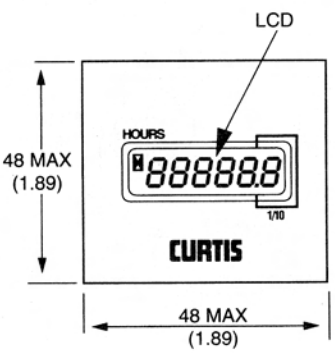
Terminals for 7mm R & S cases:
1: V+
2: V-
3: Reset + (optional)
4: Signal Input (+ enable for elapsed time function on 701,+ enable for pulse input on 703)
5: Backlighting - **12VDC Only**
6: No connection

WEIGHT: 75 Grams max
LENS MATERIAL: Glass
CASE MATERIAL: Lexan 940, Black
BEZEL MATERIAL: Aluminum, Black Anodized
RECOMMENDED PANEL CUTOUT: 52mm (2 1/16") dia.

S Case (7mm Display Only):

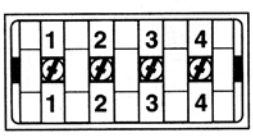


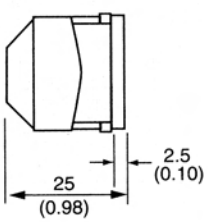


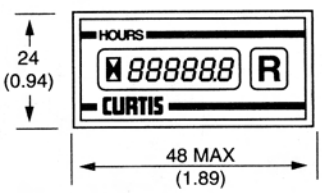


WEIGHT: 75 Grams max
LENS MATERIAL: Glass
CASE MATERIAL: Cycolac ABS, Black
BEZEL MATERIAL: Cycolac ABS, Black
RECOMMENDED PANEL CUTOUT: 45x45mm DIN

E Case (701, 703DC only):







Terminals for E case:
1: V+
2: Reset + (optional)
3: Signal Input (+ enable for elapsed time function on 701, + enable for pulse input on 703)
4: V-

WEIGHT: 33 Grams max
CASE MATERIAL: Poly-Amide (Nylon)
RECOMMENDED PANEL CUTOUT: 45x22.2mm DIN (DIN 43700)
PANEL THICKNESS: 0.8mm - 7.0mm

700 Series Specifications

	700, 701	703
DISPLAY	6-digit LCD, 5 or 7mm high	6-digit LCD, 5 or 7mm high
RANGE & RESOLUTION	99,999.9 hours	999,999 counts
ACCURACY	+/– 0.1%	+/–1 count
OPERATING TEMPERATURE RANGE	–40˚C to +85˚C –30˚C to +65˚C (E Case)	–40˚C to +85˚C –30˚C to +65˚C (E Case)
STORAGE TEMPERATURE RANGE	–50˚C to +90˚C –30˚C to +65˚C (E Case)	–50˚C to +90˚C –30˚C to +65˚C (E Case)
MECHANICAL SHOCK	SAE J 1378 55g	SAE J 1378 55g
VIBRATION	SAE J 1378 20g	SAE J 1378 20g
HUMIDITY (NONCONDENSING @ 38˚C)	95% RH	95% RH
CURRENT CONSUMPTION (POWER TERMINALS)	0.5 mA max @ 5VDC 0.9 mA max @ 12VDC (1248D Model) 1.0 mA max RMS @ 120VAC 2.0 mA max RMS @ 230VAC	0.5 mA max @ 5VDC 0.9 mA max @ 12VDC (1248D Model) 1.0 mA max RMS @ 120VAC 2.0 mA max RMS @ 230VAC
TIMING (POWER)	5 seconds to arm memory (No loss of time)	5 seconds to arm memory (No loss of counts)
INPUT SIGNAL TIMING (AC/DC)	Input must be applied for a minimum of 1/2 second to accumulate. (Model 701 only)	Input must be applied for a minimum of 1/2 second to accumulate.
INPUT SIGNAL TIMING (DC-ONLY)	Input must be high for a minimum of one msec and low for a minimum of one msec. (Model 701 only)	Input must be high for a minimum of one msec and low for a minimum of one msec.
TERMINATION	3/16" or 1/4" blade terminals (R,Q,T,F,D cases) Screw terminals (E case - 701 only)	3/16" or 1/4" blade terminals (R,Q,T,F,D cases) Screw terminals (E case)

Model Encodement

700 FUNCTION	R STYLE	N RESET	0010 OEM CODE	1248D2060A VOLTAGE
700 = 2-Wire Hour Meter 701 = 3-Wire Hour Meter 703 = Pulse Counter	R,Q = Round (see dimensions) S = Square, 1/4" terminals T = Rectangular, 3/16" terminals F = Rectangular, 1/4" terminals D = DIN, 3/16" terminals E = European DIN, screw terminals (701,703DC only)	N= No Reset R = Electrical Reset M= Manual & Electrical (E case only)	*	0512D0612A = 4.5 to 15VDC and 5 to 15VAC 1248D2060A = 9 to 60VDC and 15 to 75VAC 48150D100230A = 36 to 185VDC and 75 to 270VAC 0512D = 4.5 to 15VDC 1248D = 9 to 60VDC 48150D = 36 to 185VDC

NOTE: Model 700 is available in AC/DC only. Models 701 and 703 are available in AC/DC as well as DC-only. For AC/DC rated units, the frequency response of the input is 1 Hz (500 msec logical "1" minimum and 500 msec logical "0" minimum). The input for the DC-only models has a frequency response of 500 Hz (one msec logical "1" minimum and one msec logical "0" minimum).

*001 = 5mm non-backlit
*601= 7mm backlit
*701= 7mm non-backlit

Example: 701DR0010 1248D is a 3-wire hour meter in a DIN housing.
This model is resettable with a 5mm, non-backlit LCD and operates from 9 to 60 VDC.
Note: 5mm displays available in R,Q,T,F and D housings.
7mm displays available in R and S housings.

Also Available

Custom logos, panel mount bracket and gaskets. Consult factory for product option information.

Toll Free 1-800-526-5376 • 201-337-1000 • Fax 201-337-1862

Specifications

	MODEL 754	MODEL 756
DISPLAY	6-Digit LCD, 7mm high (Backlighting Optional)	Dual 6-Digit LCD, 5mm high
DISPLAY RANGE & RESOLUTION	99,999.9 hours 999,999 counts	99,999.9 hours
ACCURACY	± 0.1 %, ± 1 count	± 0.1 %
OPERATING TEMP. RANGE	-40°C to +85°C (12-48VDC Models) -40°C to +65°C (72-80VDC and all AC)	-40°C to +85°C
STORAGE TEMP. RANGE	-50°C to +90°C	-50°C to +90°C
MECHANICAL SHOCK	SAE J1378 55g	SAE J1378 55g
VIBRATION	SAE J1378 20g	SAE J1378 20g
TERMINATION	1/4" blade terminals	1/4" blade terminals
OUTPUT VOLTAGE HIGH (Prior to "Service Due", after reset)	4.0 ≤ VOH ≤ 6.0 VDC	4.0 ≤ VOH ≤ 6.0 VDC
OUTPUT VOLTAGE LOW (At "Service Due", prior to reset)	0.2VDC MAX.	0.2VDC MAX.
OUTPUT HIGH SOURCE IMPEDANCE	12 KΩ	12 KΩ
OUTPUT LOW (SINK) CURRENT		
VOL=0.2V	0.05 mA MIN.	0.05 mA MIN.
VOL=1.5V	0.40 mA MIN.	0.40 mA MIN.

Model Encodement

754R	**01**	**0**	**–**	**010/020**	**–**	**501**	**O**
|	|	|		|		|	|
Case Style	Function	Voltage		Service Due/Service Overdue		Seq. Code	Logo
R= Round	00= Hour Meter w/o Enable	0= 9-15VDC		See Below		501= Backlit	O= Curtis
S= Square	01= Hour Meter w/Enable	1= 18-30VDC				001= Non Backlit	
	03= Pulse Counter	2= 27-45VDC					
		3= 36-60VDC					
		4= 54-100VDC					
		5= 90-150VAC					
		6= 200-265VAC					

756R00	**0**	**–**	**010/020**	**–**	**001**	**O**
	|		|		|	|
	Voltage		Service Due/Service Overdue		Seq. Code	Logo
	0= 9-30VDC		See Table Below			O= Curtis
	1= 18-60VDC					
	2= 54-100VDC					
	3= 90-150VAC					
	4= 200-265VAC					

Service Due/Overdue Format, Ranges and Resolutions

FORMAT = XXz/YYz

XX and YY can be any number from 01 to 99 and z equals the number of trailing zeros.
Example: 091/111 = Service due at 90 hours/service overdue at 110 hours

HOURS (MODELS 754 & 756)

Programmable from 1 to 9,900 Hours

1 Hour increments from 1 to 99 Hours
10 Hour increments from 10 to 990 Hours
100 Hour increments from 1000 to 9,900 Hours

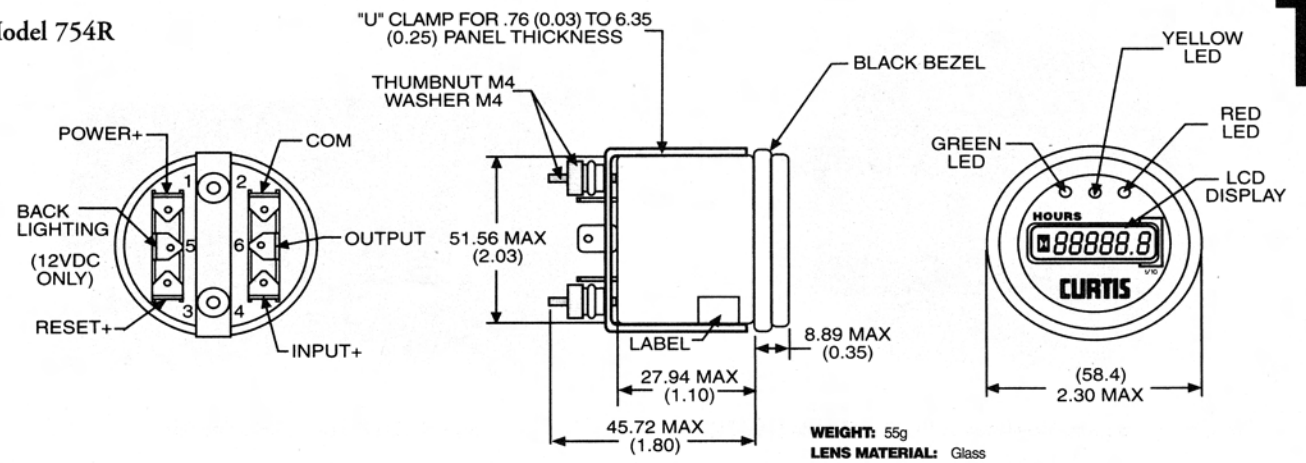
COUNTERS (MODEL 754 ONLY)

Programmable from 1000 to 990,000 Counts

1000 Count increments from 1000 to 99,000 Counts
10,000 Count increments from 100,000 to 990,000 Counts

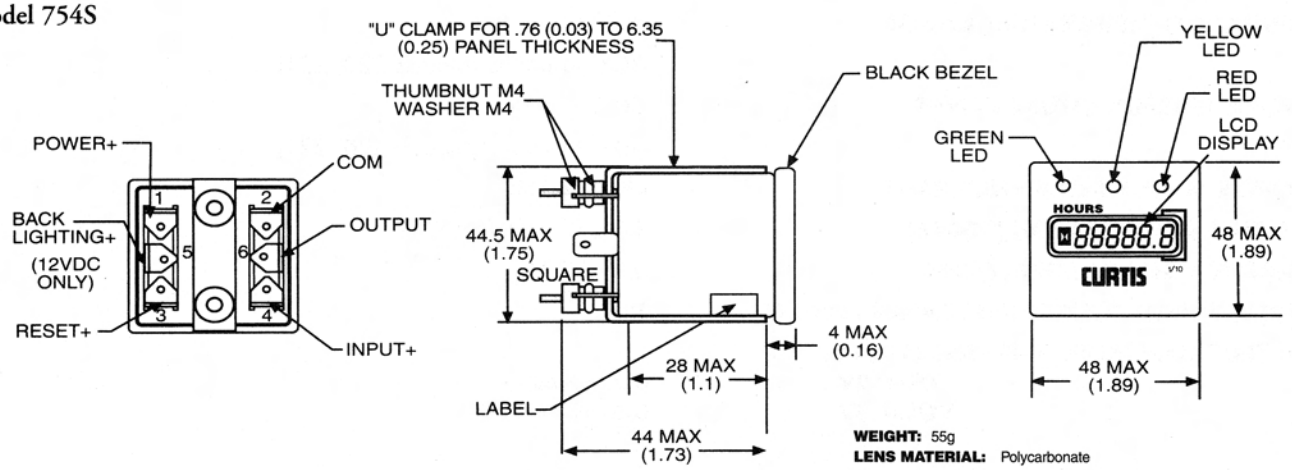
Models 754 and 756 Dimensions: mm (inches)

Model 754R



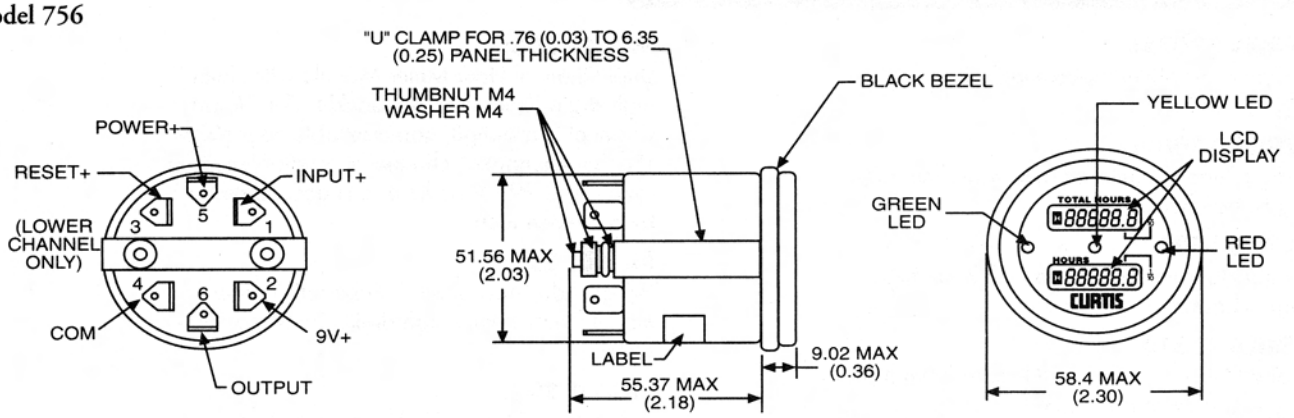
WEIGHT: 55g
LENS MATERIAL: Glass
CASE MATERIAL: Lexan 940, Black
RECOMMENDED PANEL CUTOUT: 52mm (2 1/16)

Model 754S



WEIGHT: 55g
LENS MATERIAL: Polycarbonate
CASE MATERIAL: Cycolac ABS, Black
RECOMMENDED PANEL CUTOUT: 45x45mm
(1.77x1.77)

Model 756



WEIGHT: 66g
LENS MATERIAL: Glass
CASE MATERIAL: Lexan 940, Black
RECOMMENDED PANEL CUTOUT: 52mm (2 1/16)

Specifications subject to change without notice

7mm, 6-digit, Backlit, Maintenance Monitor Module (18016)

Model 220 8-digit Counter Module

Specifications

OPERATING TEMPERATURE RANGE	-40˚C to +85˚C
	-30˚C to +65˚C (Models 220, 221)
STORAGE TEMPERATURE RANGE	-50˚C to +90˚C
	-30˚C to +65˚C (Models 220, 221)
POWER SUPPLY FREQUENCY RANGE	48 to 440 Hz
OUTPUT VOLTAGE HIGH (18016)	4.0 ≤ Voh ≤ 6.0 VDC
OUTPUT VOLTAGE LOW (18016)	0.2 VDC Max.
OUTPUT HIGH SOURCE IMPEDANCE (18016)	12 KΩ
OUTPUT LOW (SINK) CURRENT (18016)	
VOL=0.2V	0.05 mA MIN.
VOL=1.5V	0.40 mA MIN.

Model Description

SERIES 17075:
6-digit Hour Meter module with 5mm high digits, non-backlit.

SERIES 17082:
6-digit Pulse Counter module with 5mm high digits, non-backlit.

SERIES 17314:
6-digit Hour Meter module with 7mm high digits, backlit or non-backlit.

SERIES 17316:
6-digit Pulse Counter module with 7mm high digits, backlit or non-backlit.

SERIES 18016:
6-digit Maintenance Monitor module with 7mm digits, backlit or non-backlit. Available as an hour meter or pulse counter.

MODEL 708:
Dual Channel Hour Meter Module with 5mm high digits, backlit or non-backlit. The "Total" Channel is a 6-digit, non-resettable hour meter. The "maintenance" channel is resettable with a range of 3,999.9 hours and is accompanied by a wrench icon.

MODEL 220:
8-digit Add/Add or Add/Subtract Counter module with 10mm high digits, backlit or non-backlit.

MODEL 221:
8-digit Hour Meter with 10mm high digits, backlit or non-backlit. Can be specified with 0.00 Hours, Minutes or Seconds resolution.

Product Selection Guide

	17075	17082	17314	17316	18016	Model 708	Model 220	Model 221
Function	Hour Meter	Pulse Counter	Hour Meter	Pulse Counter	Maintenance Monitor	Dual Channel Hour Meter	Add/Add or Add/Sub Cntr	Hour Meter
# of Digits	6	6	6	6	6	6 (total channel) 4.4 (maintenance channel)	8	8
Digit Height (mm)	5	5	7	7	7	5	10	10
Resolution	0.1 Hours	1 Count	0.1 Hours	1 Count	0.1 Hours or 1 Count	0.1 Hours	1 Count 0.0 Counts 0.00 Counts 0.000 Counts	0.00 Hours 1 Minute 1 Second
Backlight Option	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Count Frequency	N/A	2 Hz (AC) 500 Hz (DC)	N/A	2 Hz (AC) 500 Hz (DC)	2 Hz (AC) 500 Hz (DC)	N/A	10 Hz (AC) 30 Hz (AC) 500 Hz (DC)	N/A

Service Due/Overdue Format, Ranges and Resolutions (Maintenance Monitors Only)

FORMAT = XXz/YYz XX and YY can be any number from 01 to 99 and z equals the number of trailing zeros.
example: 091/111 = service due at 90 hours/service overdue at 110 hours

HOURS Programmable from 1 to 9,900 Hours

Range A: (1 Hour increments from 1 to 99 Hours)
(10 Hour increments from 10 to 990 Hours)

Range B: (10 Hour increments from 10 to 990 Hours)
(100 Hour increments from 1000 to 9,900 Hours)
Note: Ranges A & B cannot be combined

COUNTERS Programmable from 1000 to 990,000 Counts

(1000 Count increments from 1000 to 99,000 Counts)
(10,000 Count increments from 100,000 to 990,000 Counts)

Notes

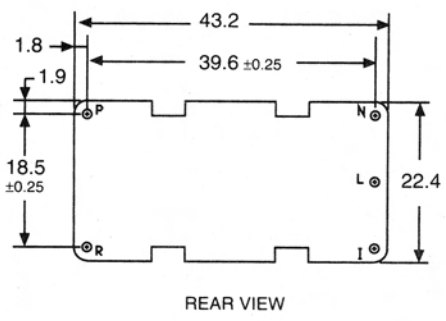
1. All modules are supplied with critical components exposed. If the module will be used in an environment other than specified, the user must package the module to provide adequate protection.
2. For proper mechanical support, all module pins should be soldered to the PC board.
3. Module face should be 10mm minimum (17075 & 17082) or 20mm (17314, 17316, 17371, 18016, Model 220 & Model 221) away from a PC board when flow soldered.

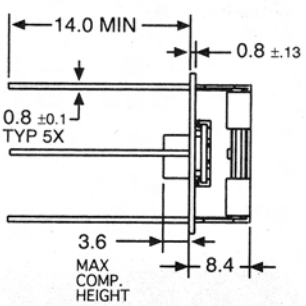
Pin Assignment

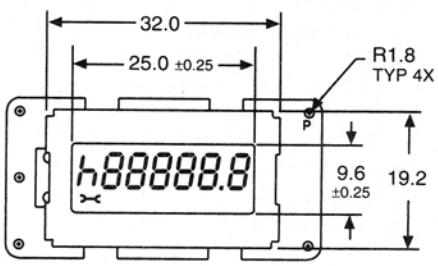
P: V+
N: V– (common)
I/IA: Signal Input (+enable for elapsed time or pulse input)
IB: Count Input B (Model 220 only)
R: Reset+ (optional)
L: Illumination Control (12VDC only)
O: Output (18016 only)

Module Dimensions: mm

Model 708







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Model Encodement

	Function	Voltage	Reset
17075 5mm, 6-digit Hour Meter	0 = AC/DC, w/o Enable 1 = DC-only w/Enable 2 = AC/DC w/Enable	4.5 to 15VDC, 5 to 15VAC 9 to 60VDC, 15 to 75 VAC 36 to 185VDC, 75 to 270 VAC	0 = No Reset 2 = Reset
17082 5mm, 6-digit Counter	1 = DC-only 2 = AC/DC	4.5 to 15VDC, 5 to 15VAC 9 to 60VDC, 15 to 75 VAC 36 to 185VDC, 75 to 270 VAC	0 = No Reset 2 = Reset
17314 7mm, 6-digit Hour Meter	0 = AC/DC, w/o Enable 1 = DC-only w/Enable 2 = AC/DC w/Enable	4.5 to 15VDC, 5 to 15VAC 9 to 60VDC, 15 to 75 VAC 36 to 185VDC, 75 to 270 VAC	0 = No Reset, No Backlighting 2 = Reset, No Backlighting 4 = Reset, Backlit 5 = No Reset, Backlit
17316 7mm, 6-digit Counter	1 = DC-only 2 = AC/DC	4.5 to 15VDC, 5 to 15VAC 9 to 60VDC, 15 to 75 VAC 36 to 185VDC, 75 to 270 VAC	0 = No Reset, No Backlighting 2 = Reset, No Backlighting 4 = Reset, Backlit 5 = No Reset, Backlit
18016 Maintenance Monitor 6-digit, 7mm	0 = Hour Meter w/o Enable, Non-Backlit 1 = Hour Meter w/Enable, Non-Backlit 3 = Counter, Non-Backlit 5 = Hour Meter w/o Enable, Backlit 6 = Hour Meter w/Enable, Backlit 8 = Counter, Backlit	0 = Range B 1 = Range A (Hour Meters Only)	0 = 9-15VDC 1 = 18-30VDC 2 = 27-45VDC 3 = 36-60VDC 4 = 54-100VDC 5 = 90-150VAC 6 = 200-265VAC

Model 708PR-0001 Model Encodement

MODEL 708PR-	**0001**
Dual Channel Hour Meter Module	Sequential code which identifies each unique version

220 and 221 Model Encodement

MODEL 220PR- 1 - 1 5 1 / 001

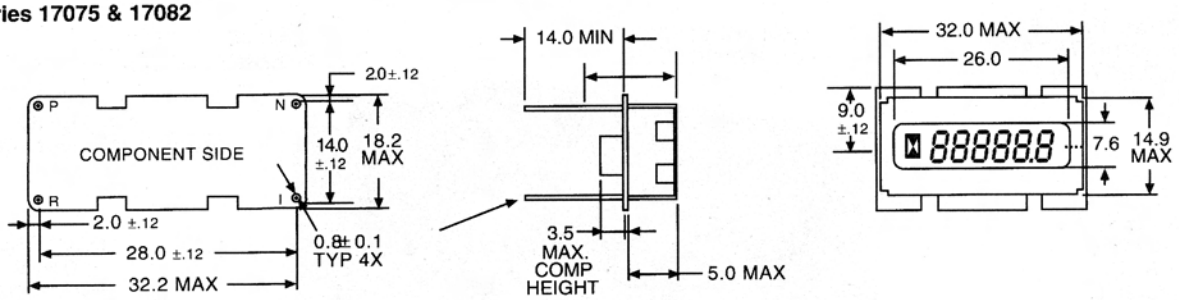
Voltage/Backlit	Input Mode	Counting Frequency	Decimal Point	Prescaler
1 = 12 VDC - 60 VDC, non-backlit 2 = 12 VAC - 60 VAC, non-backlit 3 = 80 VAC - 230 VAC, non-backlit 4 = 24 VDC - 60 VDC, backlit 5 = 24 VAC - 60 VAC, backlit 6 = 120 VAC, backlit 7 = 230 VAC, backlit	1 = Count Input A: Add Count Input B: Add 2 = Count Input A: Add Count Input B: Subtract	2 = 10 Hz (AC only) 3 = 30 Hz (DC only) 5 = 500 Hz (DC only)	0 = None 1 = 0.0 2 = 0.00 3 = 0.000	001 = Prescale 1:1 002 = Prescale 1:2 : : : : : : 255 = Prescale 1:255

MODEL 221PR- 1 - 1

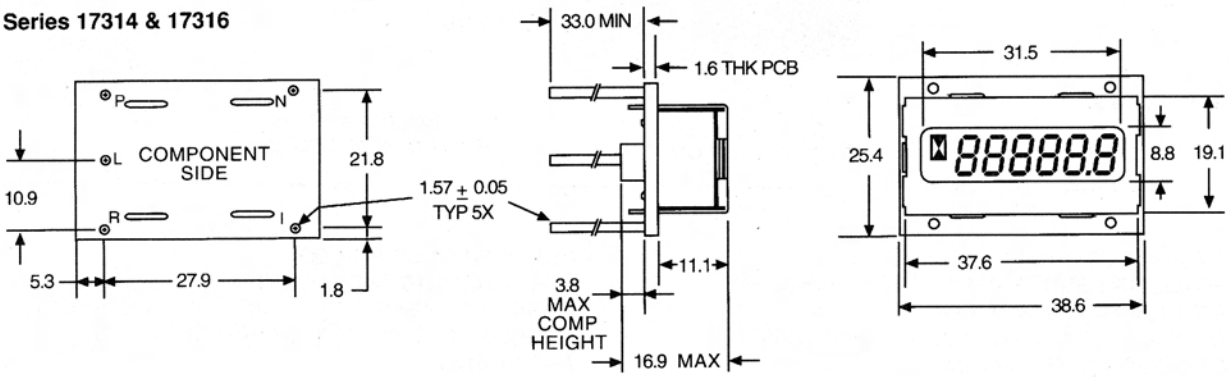
Voltage/Backlit	Display Format
1 = 12 VDC - 60 VDC, non-backlit 2 = 12 VAC - 60 VAC, non-backlit 3 = 80 VAC - 230 VAC, non-backlit 4 = 24 VDC - 60 VDC, backlit 5 = 24 VAC - 60 VAC, backlit 6 = 120 VAC, backlit 7 = 230 VAC, backlit	1 = 0.00 Hours 2 = Minutes 3 = Seconds

Module Dimensions: mm

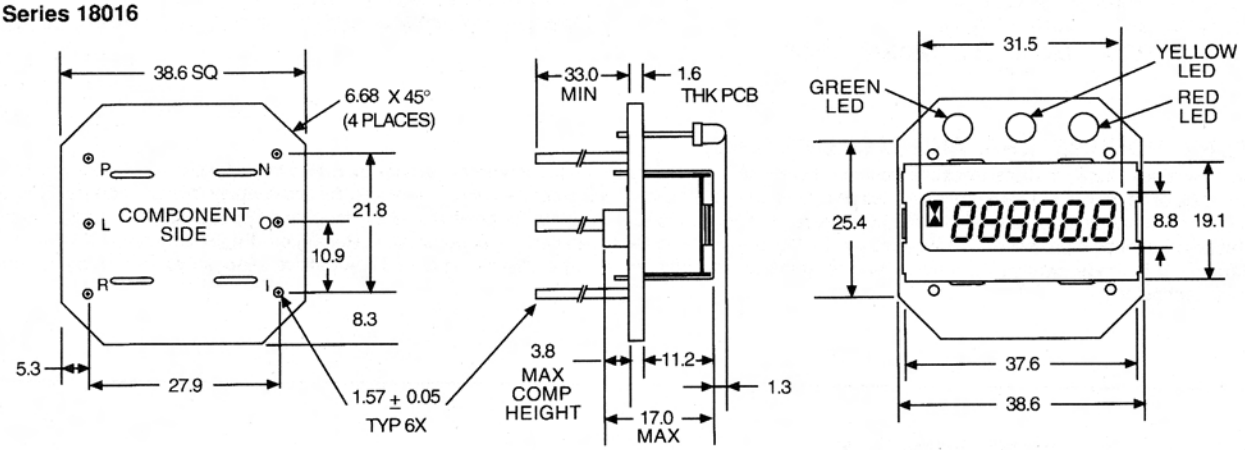
Series 17075 & 17082



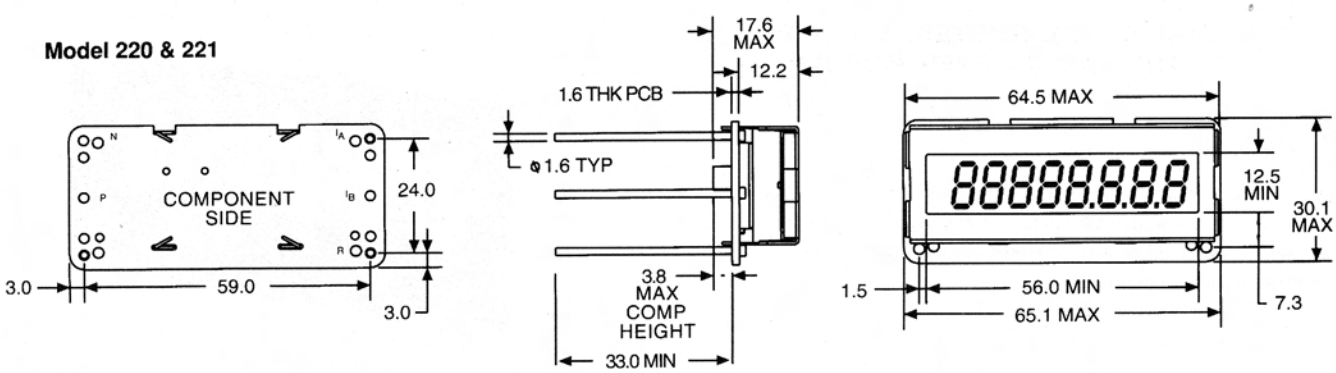
Series 17314 & 17316



Series 18016



Model 220 & 221



UNLESS OTHERWISE NOTED, ALL TOLERANCES ARE ± .25 mm

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