



Description

The Redington Model 33 line of LCD counters provides a large display, 7mm high figures, in an eight digit counter. The counters are available in a variety of mountings: 2-hole rectangular, 3-hole round, flush-round and flush-rectangular. Voltage operating ranges are 10-277 VDC AND 20-277VAC. All models are totally sealed from moisture and dirt and conform to NEMA 4 & 4X specifications when mounted with the optional gasket. Their rugged construction makes them ideal replacements for current electromechanical counters. Units have polarized LCD for high visibility in sunlight.

Features

- AC or DC voltage input in the same unit
- Totally sealed from moisture and dirt
- Always on display
- Compact depth
- Clip retainer mount or screws (supplied)

Options

- Custom logos and bezels
- Terminations
- Remote reset - dry contact with 6" wire leads
- Gaskets
  - 5003-002S gasket for 2-hole mount
  - 5003-003S gasket for flush-rectangular mount
  - 5003-004S gasket for flush-round mount
  - 5003-005S gasket for 3-hole round mount

Specifications

**Display:** LCD with large 0.28" [7mm] high figures, black on light background

**Records & Displays:** 8 digit (99999999)

**Inputs:** 10 to 277VDC AND 20-277VAC  
 Vih\* 20VAC or 10VDC minimum  
 Vil\* 3VAC or 3VDC maximum

**Speed:** 25 counts per second

**Battery Life:** 7+ years

**Shock:** 44 to 55g's, SAE J1378

**Vibration:** 20 g @ 10 to 80 Hz, SAE J1378

**Humidity:** 95% SAE J1378

**Operating Temperature:** -40°F to +185°F [-40°C to +85°C]

**Sealing:** Totally sealed, panel gaskets-NEMA 4 & 4X

**Agency Approvals:** CE compliant  
 UL/cUL recognized (file# ELIY2.E36690)

**Termination:** 0.250" [6.4mm] spades

**Reset:** Optional - dry contact with 6" wire leads

**Case Material:** Polymer (black)

**Weight:** 1oz [28g]

\* Vih is the input high voltage. This is specified as the minimum input voltage that the Model 33 will recognize as a high level.  
 Vil is the input low voltage. This is specified as the maximum input voltage that the Model 33 will recognize as a low level.

Note: When interfacing the Model 33 with a Solid State Relay or AC Sensor, the leakage current needs to be considered. Contact the factory or see the application note at [www.redingtoncounters.com](http://www.redingtoncounters.com) for further information.

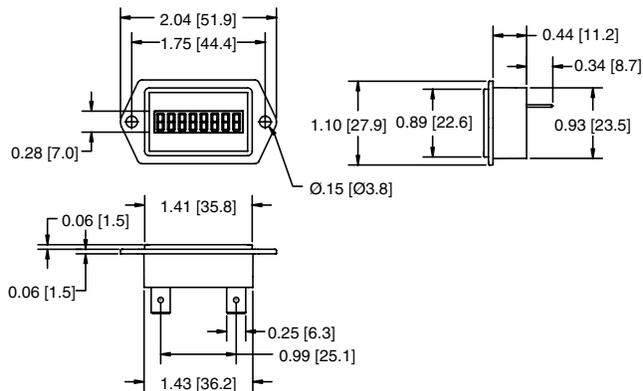
Models	Description	Models	Description
3301-0000	2-Hole Rect., 10-277 VDC AND 20-277VAC	3301-0010	2-Hole Rect., 10-277 VDC AND 20-277VAC, remote reset
3301-1000	3-Hole Round, 10-277 VDC AND 20-277VAC	3301-1010	3-Hole Round, 10-277 VDC AND 20-277VAC, remote reset
3301-2000	Flush-Rect., 10-277 VDC AND 20-277VAC	3301-2010	Flush-Rect., 10-277 VDC AND 20-277VAC, remote reset
3301-3000	Flush-Round, 10-277 VDC AND 20-277VAC	3301-3010	Flush-Round, 10-277 VDC AND 20-277VAC, remote reset

\* All Items are normally in factory stock.



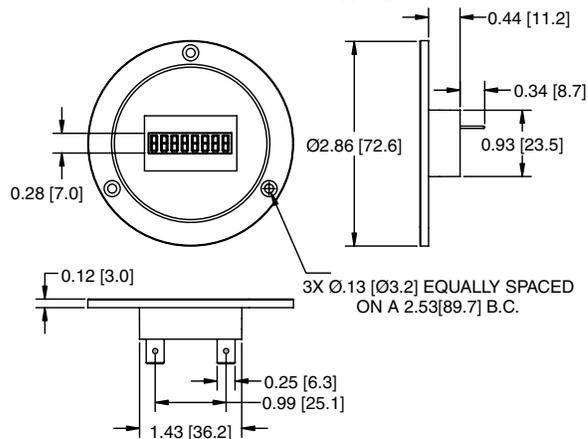
Dimensions

2-Hole



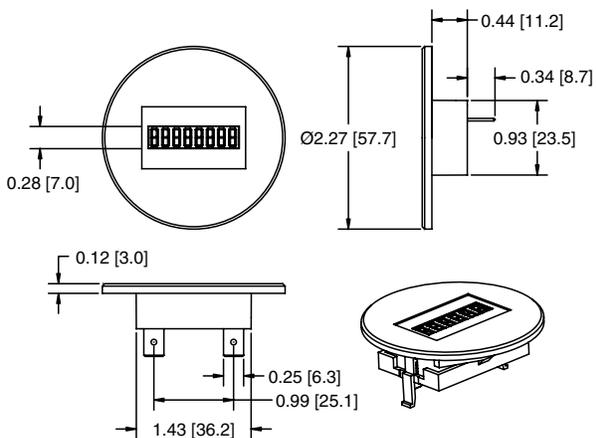
In-front panel cutout: 1.45 X 0.95 [24.0 x 37.0]  
Behind panel cutout: 1.42 X 0.90 [22.9 x 36.1]

3-Hole Round



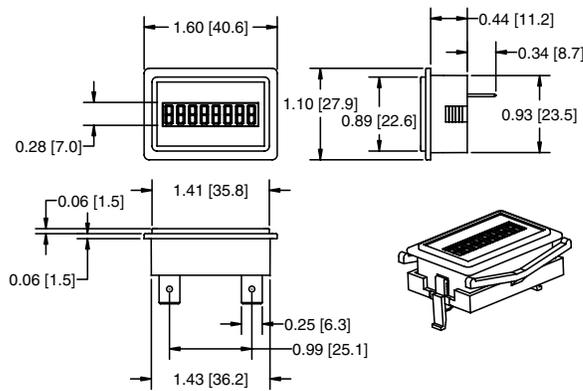
Panel cutout: 1.45 X 0.95 [24.0 x 37.0]

Flush-Round



Panel cutout: 1.45 X 0.95 [24.0 x 37.0]  
Maximum panel thickness: 0.15 [3.8]

Flush-Rectangular



Panel cutout: 1.45 X 0.95 [24.0 x 37.0]  
Maximum panel thickness: 0.15 [3.8]

Applications

Medical Devices



Control Panels



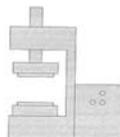
Secondary Equipment



Test Equipment



Production Equipment



Office Equipment





Description

The Redington Model 33 line of LCD hour meters provides a large display, 7mm high figures, in the industry size housings. The hour meters are available in a variety of mountings: 2-hole rectangular, 3-hole round, flush-round and flush-rectangular. Voltage operating ranges are 10-277 VDC AND 20-277VAC 50/60Hz. All models are totally sealed from moisture and dirt and conform to NEMA 4 & 4X specifications when mounted with the optional gasket. Their rugged construction makes them ideal replacements for current hour meters. Units have polarized LCD for high visibility in sunlight.

Features

- AC or DC voltage input in the same unit
- Totally sealed from moisture and dirt
- Run indicator-blinking decimal point
- Always on display
- Compact depth
- AC Voltage input is not frequency sensitive
- Clip retainer mount or screws (supplied)

Options

- Custom logos and bezels
- Terminations
- Remote reset - dry contact with 6" wire leads
- Gaskets
  - 5003-002S gasket for 2-hole mount
  - 5003-003S gasket for flush-rectangular mount
  - 5003-004S gasket for flush-round mount
  - 5003-005S gasket for 3-hole round mount

Specifications

**Display:** LCD with large 0.28" [7mm] high figures, black on light background

**Run Indicator:** Blinking decimal point

**Quartz Accuracy:** 0.02% over entire voltage & temperature range

**Records & Displays:** 6 digit (99999.9)

**Inputs:** 10 to 277VDC AND 20-277VAC-50/60Hz  
 Vih\* 20VAC or 10VDC minimum  
 Vil\* 3VAC or 3VDC maximum

**Battery Life:** 7+ years

**Shock:** 44 to 55g's, SAE J1378

**Vibration:** 20 g @ 10 to 80 Hz, SAE J1378

**Humidity:** 95% SAE J1378

**Operating Temperature:** -40°F to +185°F [-40°C to +85°C]

**Sealing:** Totally sealed, panel gaskets-NEMA 4 & 4X CE compliant

**Agency Approvals:** UL/cUL recognized (file# ELIY2.E36690)  
 0.250" [6.4mm] spades  
 Optional - dry contact with 6" wire leads  
 Polymer (black)

**Termination:** 1oz [28g]

**Reset:** Alternator load dump: 150V

**Case Material:** EMI(Electromagnetic Interference): +400V @ 500Hz inductive switching and reverse polarity

**Weight:**

**Protection Against:**

\* Vih is the input high voltage. This is specified as the minimum input voltage that the Model 33 will recognize as a high level.  
 Vil is the input low voltage. This is specified as the maximum input voltage that the Model 33 will recognize as a low level.

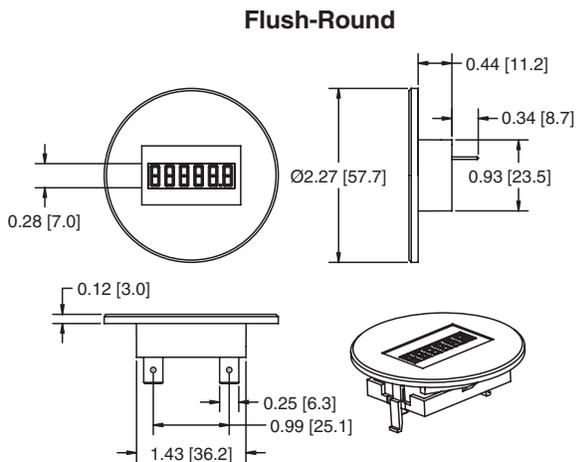
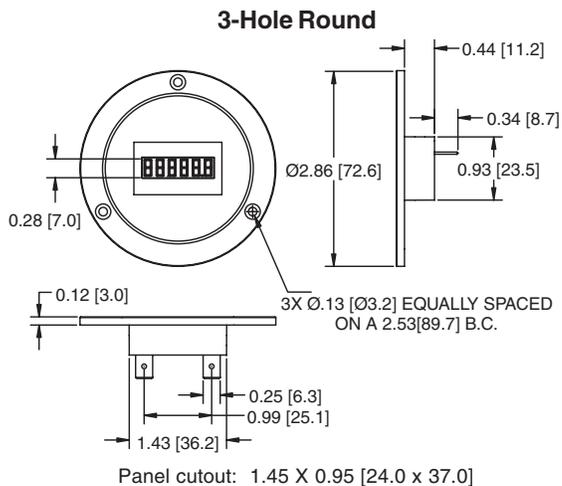
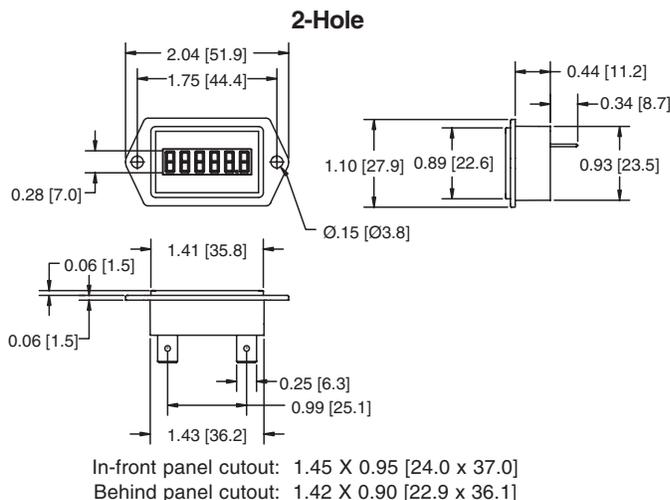
Note: When interfacing the Model 33 with a Solid State Relay or AC Sensor, the leakage current needs to be considered. Contact the factory or see the application note at [www.redingtoncounters.com](http://www.redingtoncounters.com) for further information.

Models	Description	Models	Description
3311-0000	2-Hole Rect., 10-277 VDC AND 20-277VAC	3311-0010	2-Hole Rect., 10-277 VDC AND 20-277VAC, remote reset
3311-1000	3-Hole Round, 10-277 VDC AND 20-277VAC	3311-1010	3-Hole Round, 10-277 VDC AND 20-277VAC, remote reset
3311-2000	Flush Rect., 10-277 VDC AND 20-277VAC	3311-2010	Flush Rect., 10-277 VDC AND 20-277VAC, remote reset
3311-3000	Flush-Round, 10-277 VDC AND 20-277VAC	3311-3010	Flush-Round, 10-277 VDC AND 20-277VAC, remote reset

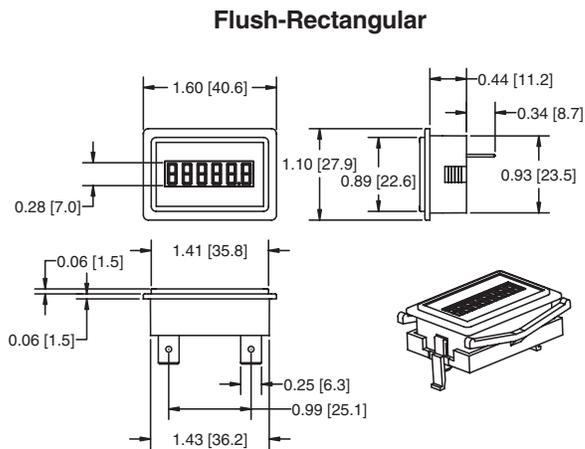
All parts are normally in factory stock.



Dimensions



Panel cutout: 1.45 X 0.95 [24.0 x 37.0]  
Maximum panel thickness: 0.15 [3.8]



Panel cutout: 1.45 X 0.95 [24.0 x 37.0]  
Maximum panel thickness: 0.15 [3.8]

Applications

Agricultural Equipment



Medical Devices



Pressure Washers



Sweepers



Construction Equipment



Marine Applications



Generators



Office Equipment



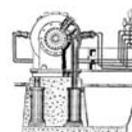
Test Equipment



Boom Lifts



Compressors



Utility Vehicles





Description

The Redington Model 51 line of 5 figure LCD meters provides a large display in the industry size package. A choice of mountings, Round, 2 Hole Dual, Mini Rectangular or Surface Mount. A custom microprocessor, capable of being programmed to create an almost infinite matrix of models is ideally suited for OEM applications. Available in 3 inputs, DC, AC or Inductive. Maintenance Meters are offered with a "Redi-Alert" to alert users when service is due. Not only does the display flash to get attention, but it displays specific maintenance service needs to be done. Units have Polarized LCD for high visibility in sunlight. Servicing equipment on time is critical to efficient operation and long equipment life. That is why you should consider Redington's "Redi-Alert" meters. Redi-Alert offers two independent alarms (both fully programmable) to alert users when service is due. Alarms are fully automatic; coming on and shutting off at times determined by the OEM.

Features

- Totally sealed from moisture and dirt
- Fits in existing panel openings
- "Redi-Alert" for preventive maintenance
- Icons for specific maintenance needs
- Tachometer/Hour Meter versions
- Automatic rollover
- Hour glass symbol appears & flashes on/off to indicate running time
- Various voltage inputs
- Short depth
- Always on display

Options

- Various voltage inputs
- Alarm outputs: audible or visual (external voltage required)
- Custom logos & bezels
- Terminations: stud, wire, screw, or blade
- Alternator and filtered versions
- Key Kancel (alarm reset via external key or wand)

Specifications

<b>Display:</b>	Large 0.20" [5mm] LCD, black on light background	<b>Protection Against:</b>	Transient voltage, inductive switching, reverse polarity, frequency variations
<b>Records &amp; Displays:</b>	5 digits (9999.9)	<b>Alternator Load Dump:</b>	150 V
<b>Resolution:</b>	0.1 hours	<b>Shock:</b>	SAE J1378 55g
<b>Quartz Accuracy:</b>	0.02% over entire voltage & temp. range	<b>Vibration:</b>	SAE J1378 20g
<b>Inputs:</b>	8-32 VDC, 32-277 VAC-50/60HZ	<b>Humidity:</b>	SAE J1378 95% RH
<b>Operating Temperature:</b>	-40°F to +160°F [-40°C to +71°C]	<b>Termination:</b>	Panel mount standard terminals, 0.250 male blade (s), surface mount- wire lead
<b>Battery Life:</b>	15 years	<b>Case Material:</b>	ABS, black, 100% epoxy filled
<b>Current Consumption:</b>	1 mA (for multi-range voltages 1 mA applies to lower voltage)	<b>Weight:</b>	1 oz. [28g]
<b>Approvals:</b>	AC-UL/cUL Recognized, CE Compliant		

Models Description

<b>DC Models</b>	
<b>5120-1000</b>	Panel Mount, Round, 8-32 VDC, Hours & 1/10's
<b>5120-1100</b>	Panel Mount, Mini, 8-32 VDC, Hours & 1/10's
<b>5120-1200</b>	Panel Mount, 2 Hole, 8-32 VDC, Hours & 1/10's
<b>AC Models</b>	
<b>5120-2000</b>	Panel Mount, Round, 32-277VAC, 50/60 Hz, Hours & 1/10's
<b>5120-2100</b>	Panel Mount, Mini, 32-277 VAC, 50/60 Hz, Hours & 1/10's
<b>5120-2200</b>	Panel Mount, 2 Hole, 32-277 VAC, 50/60 Hz, Hours & 1/10's

Models Description

<b>Inductive Models</b>	
<b>5120-0000</b>	Panel Mount, Round, Inductive, Hours
<b>5120-0100</b>	Panel Mount, Mini, Inductive, Hours
<b>5120-0200</b>	Panel Mount, 2 Hole, Inductive, Hours
<b>5140-0000</b>	Panel Mount, Round, Inductive, Hours & 1:1Tach
<b>5140-0100</b>	Panel Mount, Mini, Inductive, Hours & 1:1Tach.
<b>5140-0200</b>	Panel Mount, 2 Hole, Inductive, Hours & 1:1Tach.
<b>5120-0310</b>	Surface Mount, Inductive, Hours
<b>5140-0311</b>	Surface Mount, Inductive, Hours w/1:1Tach. Change oil Alert @ 25hr./2 hr. flash Lube Alert @ 25hr./2 hr. flash
<b>5140-0312</b>	Surface Mount, Inductive, Hours w/1:1Tach. Change oil Alert @ 100hr./4 hr. flash Lube Alert @ 25 1hr./2 hr. flash

\* Items in bold are normally in factory stock.



Alarm Specifications



Alarms programmable for your applications

ALARM # 1

Programmable for a "first time" (break in service) or a normal recurring service interval.

ALARM # 2

Same as alarm # 1, but without the "first time" interval.

ALARM/FLASH DURATION

OEM's specify the service interval and flash duration for each alarm. Flash duration is the amount of time in hours that the specified icon flashes before and after the service interval.

ALARM RESET

The standard alarm alert is fully automatic with no operator interface necessary. The alarm simply flashes the specified icon for the duration called out by the OEM. Controlled reset options are available for a higher level of security. Contact factory for additional information.

MAINTENANCE METER ALARM SPECIFICATIONS

ALARM #1

1st time service interval range (2 to 99 hrs. occurs only once)

Normal service interval range: 2 to 999 hrs. (Recurring)

Flash duration: 1 to 99 hrs. (Time flashing before & after service interval)

Available icons: CHG OIL, LUBE, CHG MUFF, SVC-AIR FILTER, SVC-Lower left/right side of display

ALARM # 2

Normal service interval range: 2 to 999 hrs. (Recurring)

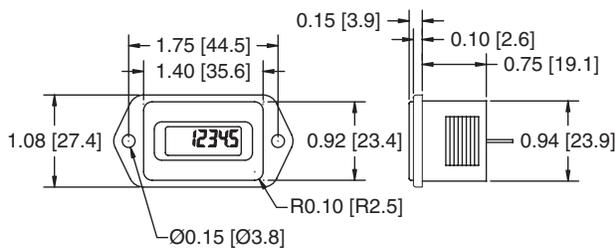
Flash duration: 1 to 99 hrs. (Time flashing before & after service interval)

Available icons: CHG OIL, LUBE, CHG MUFF, SVC-AIR FILTER, SVC-Lower left/right side of display

Alarms flash specified icon 4 seconds then flash hour 4 seconds throughout alarm duration.

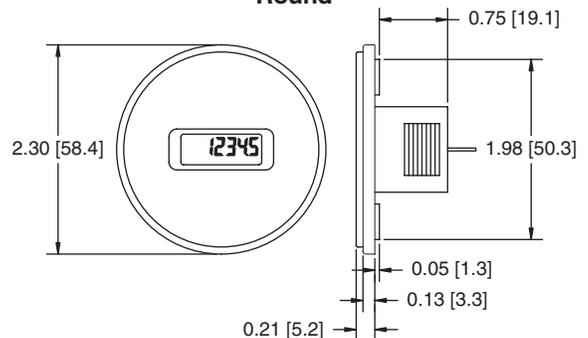
Dimensions

2 Hole Dual Mount



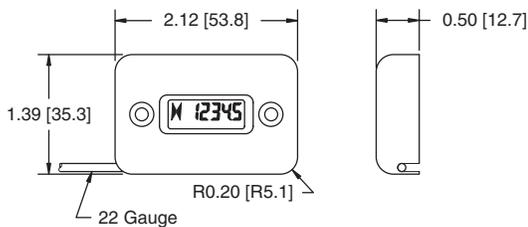
Above panel cutout 1.46 x 0.95 [37.1 x 24.1] opening
Behind panel cutout 1.41 x 0.93 [35.8 x 23.6] opening

Round



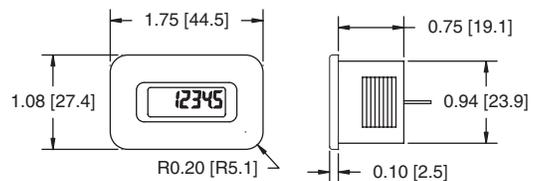
Spring clip retainer, Fast installation
Panel cutout 2.0 [50.8] diameter

Surface Mount



Mounting holes are 1 1/2" [38.1] spacing
Hole Diameter is 1/8" [3.2]

Mini Rectangular



Compact Bezel Design, Spring clip retainer, Fast installation, Panel cutout 1.46 x 0.95 [37.1 x 24.1] opening.

Applications

Construction Equipment



Medical Devices



Generators

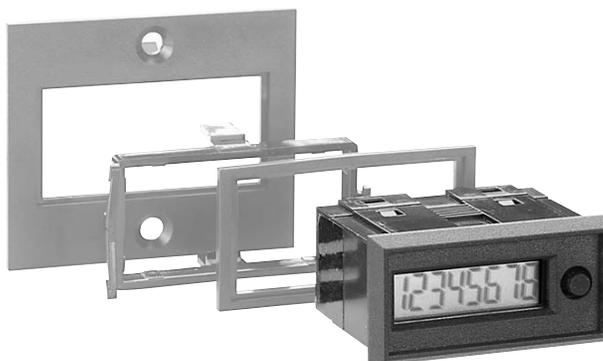


Marine Applications



Garden Tractors





**Description**

The Model 52 LCD 8-digit Miniature Electronic Counter offers a low cost general purpose miniature totalizer with a 10 year internal lithium battery. It is an economical replacement for electromechanical counters and is available for bi-directional or quadrature inputs. Front panel reset button can be enabled or disabled by a wiring connection or external contact closure. Easy snap in mount fits 0.94" x 1.89" [24 x 48mm] DIN panel cutout (0.98" x 1.97" [25 x 50mm] with adaptor).

**Features**

- Contact closure/open collector low speed count input with integral de-bounce circuitry (5200-0000)
- Quad signal compatible using 5211-0000 plug-in adaptor. This permits add/subtract counting in synchronization with forward/reverse motion without count loss or gaining additional counts. (5210-0000).
- Front panel meets NEMA4/IP65 specification for indoor use.
- Counting up to 10kHz.
- 7mm black characters, on a light background, LCD display.

**Options**

- Optional triggering from any voltage between 5 and 240VAC or VDC using the 5202-0000 adaptor and the Model 5200-0000.
- Choice of mounting available, front panel with supplied bezel or rear mounting clip.

**Specifications**

<b>Power:</b>	Internal lithium battery. Nominal life 10 years	<b>Low Speed Count Input:</b>	(Model 5200-0000) (PIN4) contact closure/open collector with integral de-bounce circuitry. 30Hz maximum, negative edge triggered, 0.7V threshold, 15 mS minimum closure time
<b>Display:</b>	8 digit black LCD, 0.3" [7.6mm] characters with leading zero blanking	<b>High Speed Count Input:</b>	(Model 5210-0000) (PIN 5) electronic input 10kHz maximum, negative edge triggered, 0.7 threshold 50µS minimum pulse length, TTL/CMOS compatible +14°F to +140°F [-10°C to +60°C]
<b>Manual Reset Enable:</b>	(PIN 2) link to COMMON (PIN 1) to enable front panel reset button	<b>Operating Temperature:</b>	-4°F to +140°F [-20°C to +60°C]
<b>Count Range:</b>	99,999,999 display rollover to zero, leading zeros suppressed	<b>Storage Temperature:</b>	-4°F to +140°F [-20°C to +60°C]
<b>External Reset:</b>	(PIN 3) contact closure/open collector, negative edge triggered. 0.7 threshold. 15mS minimum closure time	<b>Environmental Protection:</b>	Front panel is NEMA4/IP65 using gasket supplied.
<b>Direction Input:</b>	(Model 5210-0000) (PIN 4) connection or electronic input TTL/CMOS compatible. Add= no connection or > 2.4 volts (logic 1) ; subtract = connect to COMMON or, 0.7V (logic 0) direction input must precede count input by 5µS (minimum) for valid operation.	<b>Mounting:</b>	Either with clip mount or two front screws with bezel supplied.
		<b>Approvals:</b>	UL Recognized, CE Compliant
		<b>Weight:</b>	2 oz. [57g]

<b>Models</b>	<b>Description</b>	<b>Models</b>	<b>Description</b>
<b>5200-0000</b>	Counter/Unidirectional, count up	<b>5202-0000</b>	High voltage pulse adaptor (for use with 5200-0000 only)
<b>5210-0000</b>	Counter/Bidirectional, (Add/Subtract)	<b>5211-0000</b>	Quadrature adaptor (for use with 5210-0000 only)
<b>5201-0000</b>	Terminal block adaptor		

\* Items in bold are normally in factory stock.



Accessory Descriptions

5201-0000 SCREW TERMINAL ADAPTOR

The 5201-0000 adaptor provides screw terminal connections for conductors up to 0.098in² [2.5mm²]. The adaptor snaps on to the rear of the counter. The terminals are protected to the touch and are easily accessible.

5202-0000 HIGH VOLTAGE ADAPTOR

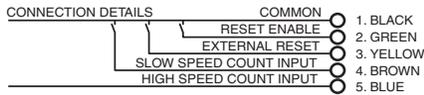
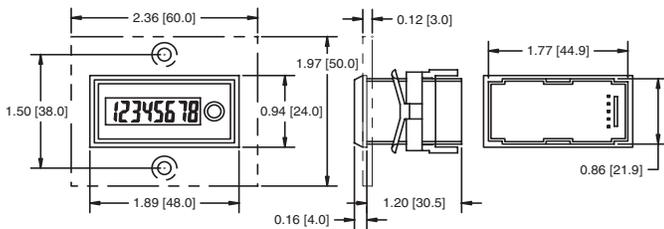
This is a plug in adaptor for use with the 5200-0000. This input adaptor module permits the use of high voltage input pulses from 5-240VAC or VDC. Opto-isolation provides input to output isolation of 5000V. The adaptor plugs into the rear of the counter by integral clips. Connection is by screw terminal for conductors up to 0.098in² [2.5mm²].

5211-0000 QUAD ADAPTOR

This is a plug-in adaptor for the (5210-0000) add/subtract counter. It converts the signal from a quadrature output sensor such as a shaft encoder into count and direction signals. The adaptor retains direct access to the external reset on the 5210-0000. Connection by screw terminals for conductors up to 0.098in² [2.5mm²].

Dimensions

Model 5200-0000



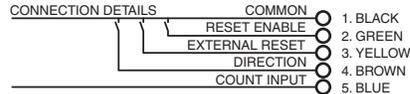
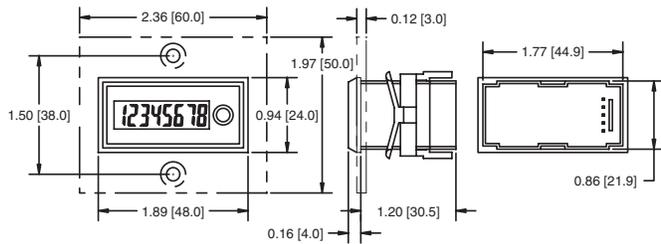
Panel Cutout

1.87" x 0.87" [47.5 x 22.1] +0.02 - 0.0, 1.97" X 0.98" [50.0 x 24.9] with panel adaptor.)

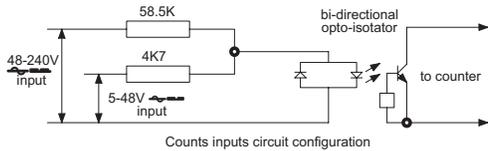
Maximum Panel Thickness

0.3" [7.5mm]

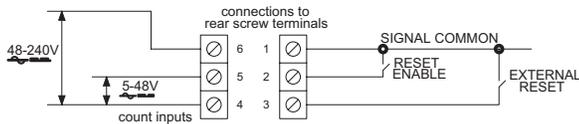
Model 5210-0000



High Voltage Adaptor



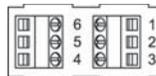
Counts inputs circuit configuration



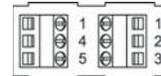
High Voltage Adaptor



Quadrature

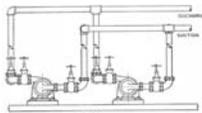


Terminal Block

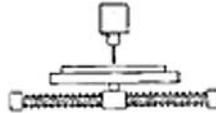


Applications

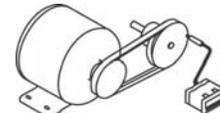
Flow Meter



Positioning



Rotation





Description

The Model 53 Electronic Totalizer with 7 or 8 LCD digits is ideal as a replacement for electromechanical totalizers or where external power is not available. Powered by an internal lithium battery these products are highly reliable and provide the user with a choice of several options; with or without reset and multiple count ranges for optimized performance. The case is available in either tan or black.

Features

- Lithium battery
- Choice of non-reset or remote reset
- Switch (no-voltage), 3-30VDC, 20-250VAC/VDC

Options

- Case color
- Mounting adapter plates
- 8 digits
- 5003-001S - gasket
- Low AC voltage (4-30 VAC)

Specifications

**Figures:** 7 or 8 LCD figures, 0.32" [8mm] high  
**Reset:** Remote, manual, and non-reset  
**Speed:**  
**7 Digit:** 0-40 counts/second [min. 12.5ms - on, 12.5ms - off]  
 0-150 counts/second [min. 3.3ms - on, 3.3ms - off]  
**8 Digit:** 0-35 count/second [min. 14.3ms - on, 14.3ms - off]  
**Inputs:** Switch (no-voltage), 3-30VDC, 20-250VAC/VDC  
 Vih 20VAC/3VDC minimum  
 Vil 3VAC/1VDC maximum  
**Power:** Self-powered (internal lithium battery)  
**Mounting:** Panel with clip  
**Terminations:** Terminal block, or connector with 8" [200mm] wire leads  
**Battery Life:** ~20years

**Weight** 2 oz. [57g]  
**Temperature:**  
**Operating:** -4°F to +140°F [-20°C to +60°C]  
**Storage:** -40°F to +165°F [-40°C to +75°C]  
**Humidity:** 0 to 95% RH, non-condensing  
**Vibration**  
**Operating:** 10 to 55Hz, 0.01" [0.25mm] double amplitude  
**Non-Operating:** 10 to 55Hz, 0.03" [0.75mm] double amplitude  
**Shock**  
**Operating:** 10G  
**Non-Operating:** 30G  
**Dielectric:** 1000VAC 50/60Hz for 1 minute  
**Accuracy:** 100% [Provided Signal Meets Stated Parameters]  
**Approvals:** UL Recognized, CSA Certified, CE Compliant

Note: When interfacing the Model 53 with a Solid State Relay or AC Sensor, the leakage current needs to be considered. Contact the factory or see the application note at [www.redingtoncounters.com](http://www.redingtoncounters.com) for further information.

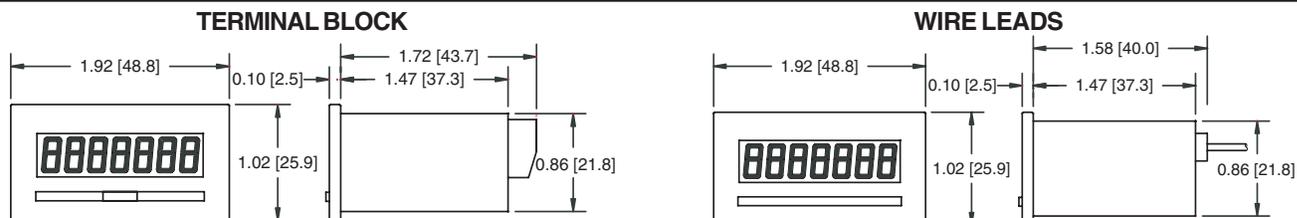
Models

Models	Reset			Input			Speed/cps		Terminations		Color	
	remote	none	manual	switch	3-30VDC	20-250VAC/VDC	40/150	40	term. block	8" wire leads	Tan	Black
<b>5300-0000</b>	X			X			X		X		X	
5300-0001	X			X			X		X			X
<b>5300-0100</b>	X		X	X			X		X		X	
5300-0101	X		X	X			X		X			X
<b>5300-1000</b>	X				X		X		X		X	
5300-1001	X				X		X		X			X
<b>5300-1100</b>	X		X		X		X		X		X	
5300-1010	X				X		X			X	X	
5300-1011	X				X		X			X		X
<b>5300-2000</b>	X					X		X	X		X	
5300-2001	X					X		X	X			X
<b>5300-2100</b>	X		X			X		X	X		X	
5300-2200		X				X		X	X		X	
5300-2201		X				X		X	X			X

\* Items in bold are normally in factory stock.

All part numbers shown are for 7 digit models. Please contact the factory for information on 8 digit models.

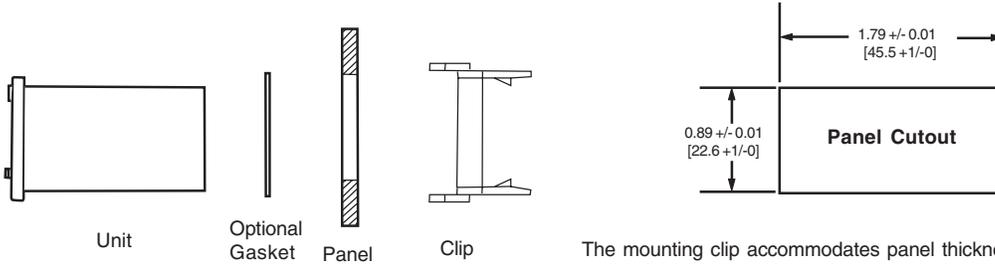
Dimensions





Operating Instructions

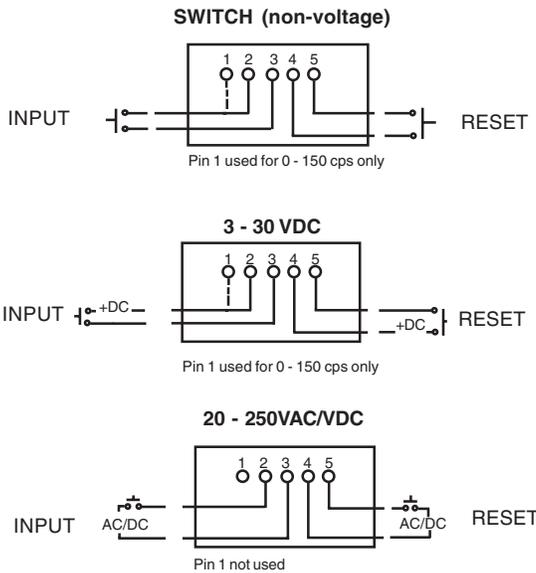
MOUNTING:



The mounting clip accommodates panel thicknesses up to 1/4" [6.4mm].

Panel adapter plates are available in flush and 2 hole mount to fit various panel cutouts. Consult the factory for availability.

WIRING:



Color code for the 8" [203mm] lead wires (24AWG) are:

- 1 - Yellow
- 2 - Blue
- 3 - Black
- 4 - Violet
- 5 - Gray

Terminal block will accept wire sizes from 14 to 24AWG.

3 - 30VDC units are protected for transient voltages up to 50 volts with pulse widths of up to 1 second at a 1% duty cycle (including reverse polarity).

The operating AC frequency range is 40 to 400Hertz.

NOTES:

INPUT / RESET PARAMETERS

To insure proper performance from totalizers the following minimum input durations are required:

0 to 35 cps totalizer	Minimum	14.3 ms "on"	14.3 ms "off"	The count is activated on the falling edge.
0 to 40 cps totalizer	Minimum	12.5 ms "on"	12.5 ms "off"	The count is activated on the falling edge.
0 to 150 cps totalizer	Minimum	3.3 ms "on"	3.3 ms "off"	The count is activated on the rising edge.

All resettable totalizers can be reset by a pulse with a minimum duration of 6 milliseconds.

DUAL RANGE TOTALIZER PROTECTION FEATURE:

Dual range totalizers have a built-in range protection feature. This feature will protect the totalizer from receiving a false signal from the unused input line. Once a totalizer has received an input from pin #1 or pin #2, it will only accept inputs from that pin until the unit has been reset. For example, if a totalizer is run in the low speed range and it is determined that a high speed range is preferred, simply switch the input from pin #2 to pin #1 and reset the totalizer to de-activate this range protection feature. Conversely, if a totalizer is run in high speed range and it is determined that a low speed range is preferred, simply switch the input from pin #1 to pin #2 and reset the totalizer.

SPECIAL WIRING OPTION

There is an internal connection between pin 3 and pin 5, a single wire can be used by connecting it to either pin 3 or pin 5. This option **does not** apply for units with input of 20 - 250VAC/VDC or manual reset enable.

OPTIONAL INPUTS:

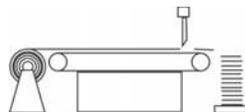
Optional control circuitry (such as transistors) may be used as inputs provided that such circuitry provides the required parameters of the model used.

Applications

Number of Parts



Shear



Packaging Line





Description

The Model 53 Tachometers are self-powered by an internal lithium battery. They provide a low cost solution to accurately measure speed or production rates for a number of manufacturing and process applications. A wide selection of inputs, dry contact closure, 3-30VDC or 20-250VAC/VDC, make the Model 53 adaptable to most applications. When used with the appropriate sensor, the unit can display units per minute, length per minute or revolutions per minute. The maximum input rate is 10,000 counts per minute.

Features

- Lithium battery
- Choice of non-reset or remote reset
- Switch (no-voltage), 3-30VDC, 20-250VAC/VDC

Options

- Termination
- Case color
- Private labeling
- Mounting adapter plates
- 5003-001S - gasket

Specifications

**Figures:** 4 LCD figures, 0.32" [8mm] high  
**Reset:** Remote, manual, or non-reset  
**Speed:** 10,000 counts/minute  
**Inputs:** Switch (no-voltage), 3-30VDC, 20-250VAC/VDC  
**Power:** Self-powered (internal lithium battery)  
**Mounting:** Panel  
**Terminations:** Terminal block, or connector -w/ 8" [200mm] wire leads  
**Battery Life:** ~20years  
**Temperature:**  
**Operating:** -4°F to +140°F [-20°C to +60°C]  
**Storage:** -40°F to +165°F [-40°C to +75°C]

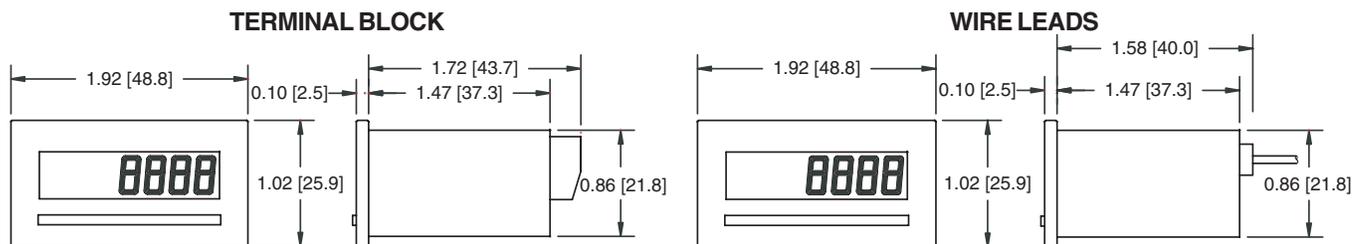
**Humidity:** 0 to 95% RH, non-condensing  
**Vibration:**  
**Operating:** 10 to 55Hz, 0.01" [0.25mm] double amplitude  
**Non-Operating:** 10 to 55Hz, 0.03" [0.75mm] double amplitude  
**Shock:**  
**Operating:** 10G  
**Non-Operating:** 30G  
**Dielectric:** 1000VAC 50/60Hz for 1 minute  
**Accuracy:** Typically within 1% above 700Hz  
**Weight:** 2 oz. [57g]  
**Approvals:** UL Recognized, CSA Certified, CE Compliant

Models

Models	Reset			Input			Speed/RPM		Terminations		Color	
	remote	none	manual	switch	3-30VDC	20-250VAC/VDC	10,000	2500	term. block	8" wire leads	Tan	Black
5330-0000	X			X			X		X		X	
5330-0001	X			X			X		X			X
5330-1000	X				X		X		X		X	
5330-1001	X				X		X		X			X
5330-2000	X					X		X	X		X	
5330-2001	X					X		X	X			X
5330-2200		X				X		X	X		X	
5330-2201		X				X		X	X			X

\* All part numbers shown are for 7 digit models. Please contact the factory for information on 8 digit models.

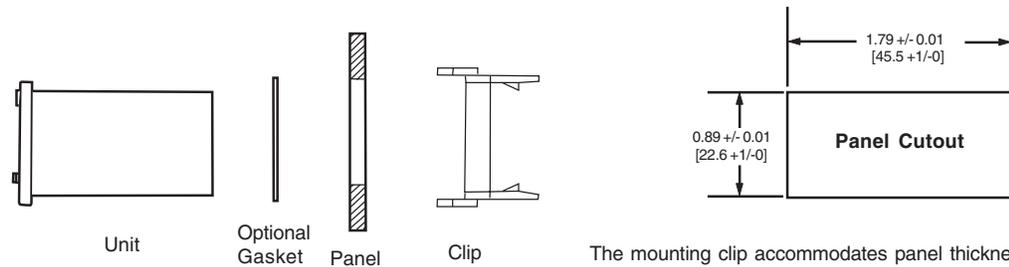
Dimensions





Operating Instructions

MOUNTING:

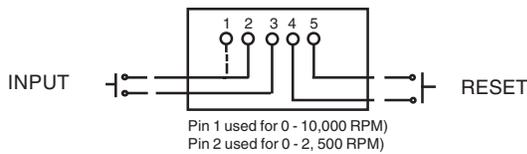


The mounting clip accommodates panel thicknesses up to 1/4" [6.4mm].

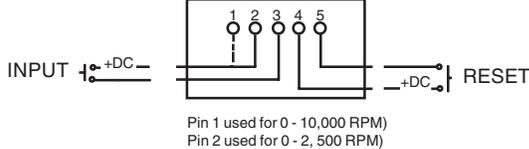
Panel adapter plates are available in flush and 2 hole mount to fit various panel cutouts. Consult the factory for availability.

WIRING:

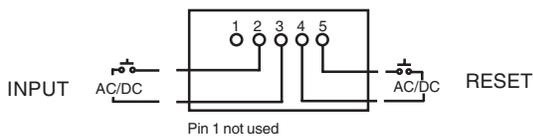
SWITCH (non-voltage)



3 - 30 VDC



20 - 250VAC/VDC



Color code for the 8" [203mm] lead wires (24AWG) are:

- 1 - Yellow
- 2 - Blue
- 3 - Black
- 4 - Violet
- 5 - Gray

Terminal block will accept wire sizes from 14 to 24AWG.

3 - 30VDC units are protected for transient voltages up to 50 volts with pulse widths of up to 1 second at a 1% duty cycle (including reverse polarity).

The operating AC frequency range is 40 to 400Hertz.

NOTES:

All resettable hour meters can be reset by a pulse with a minimum duration of 6 milliseconds.

SPECIAL WIRING OPTION

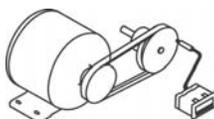
There is an internal connection between pin 3 and pin 5, a single wire can be used by connecting it to either pin 3 or pin 5. This option **does not** apply for units with input of 20 - 250VAC/VDC or manual reset enable.

OPTIONAL INPUTS:

Optional control circuitry (such as transistors) may be used as inputs provided that such circuitry provides the required parameters of the model used.

Applications

Motor/pulley Speed





**Description**

The Model 53 Hour Meter with 7 LCD digits, 999999.9, and internal lithium battery, is ideal for applications requiring time accumulation for maintenance scheduling, warranty monitoring, lease time or fee computation. Applications include test equipment, panel builders, mobile equipment and medical devices. A choice of time ranges, in hours, minutes or seconds provides the user with a wide choice of recording increments.

**Features**

- Lithium battery
- Choice of manual reset, remote reset or non-reset
- Switch (no-voltage), 3-30VDC, 20-250VAC/VDC

**Options**

- Termination
- Case color
- Private labeling
- Mounting adapter plates
- 5003-001S - gasket
- Low AC voltage (4-30 VAC)

**Specifications**

**Figures:** 7 LCD figures, 0.32" [8mm] high  
**Reset:** Remote, manual, and non-reset  
**Inputs:** Switch (no-voltage), 3-30VDC, 20-250VAC/VDC (50/60Hz)  
 Vih\* 20VAC/3VDC minimum  
 Vil\* 3VAC/1VDC maximum  
**Power:** Self-powered (internal lithium battery)  
**Mounting:** Panel with clip  
**Terminations:** Terminal block, or connector - 8" [200mm] wire leads  
**Weight:** 2 oz. [57g]  
**Battery Life:** ~20years  
**Accuracy:** Quartz accuracy (better than 0.01%)  
**Approvals:** UL Recognized, CSA Certified, CE Compliant

**Temperature**  
**Operating:** -4°F to +140°F [-20°C to +60°C]  
**Storage:** -40°F to +165°F [-40°C to +75°C]  
**Humidity:** 0 to 95% RH, non-condensing  
**Vibration**  
**Operating:** 10 to 55Hz, 0.01" [0.25mm] double amplitude  
**Non-Operating:** 10 to 55Hz, 0.03" [0.75mm] double amplitude  
**Shock**  
**Operating:** 10G  
**Non-Operating:** 30G  
**Dielectric:** 1000VAC 50/60Hz for 1 minute

Note: When interfacing the Model 53 with a Solid State Relay or AC Sensor, the leakage current need to be considered. Contact the factory or see the application note at [www.redingtoncounters.com](http://www.redingtoncounters.com) for further information.

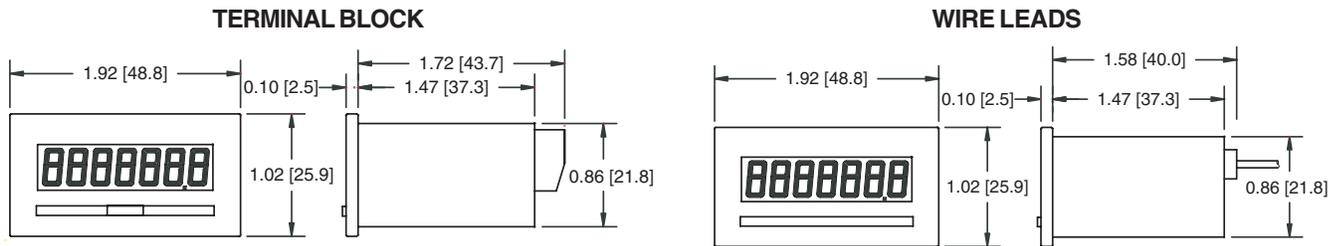
**Models**

Part#	Function			Reset			Input			Terminations		Color	
	hours	min.	sec.	remote	none	manual	switch	3-30VDC	20-250VAC/VDC	term. block	8" wire leads	tan	black
<b>5320-0000</b>	X			X			X			X		X	
5320-0001	X			X			X			X			X
5321-0000		X		X			X			X		X	
5321-0001		X		X			X			X			X
5322-0000			X	X			X			X		X	
5322-0001			X	X			X			X			X
<b>5320-0100</b>	X			X		X	X			X		X	
5320-0101	X			X		X	X			X			X
<b>5320-1000</b>	X			X				X		X		X	
5320-1001	X			X				X		X			X
5320-1010	X			X				X			X	X	
5320-1011	X			X				X			X		X
<b>5320-1100</b>	X			X		X		X		X		X	
<b>5320-2000</b>	X			X					X	X		X	
5320-2001	X			X					X	X			X
5320-2200	X				X				X	X		X	
5320-2201	X				X				X	X			X
<b>5320-2100</b>	X			X		X			X	X		X	

\* Items in bold are normally in factory stock.

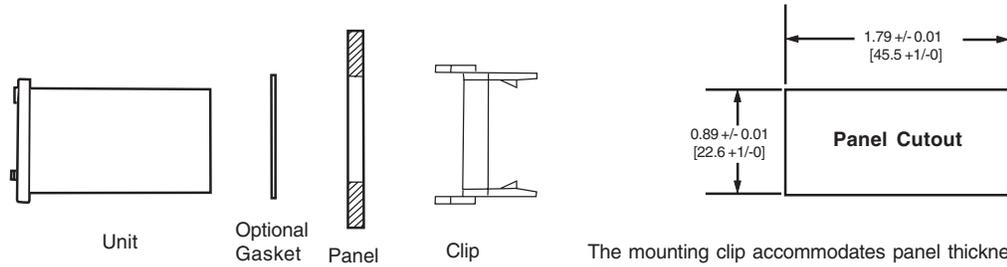


Dimensions



Operating Instructions

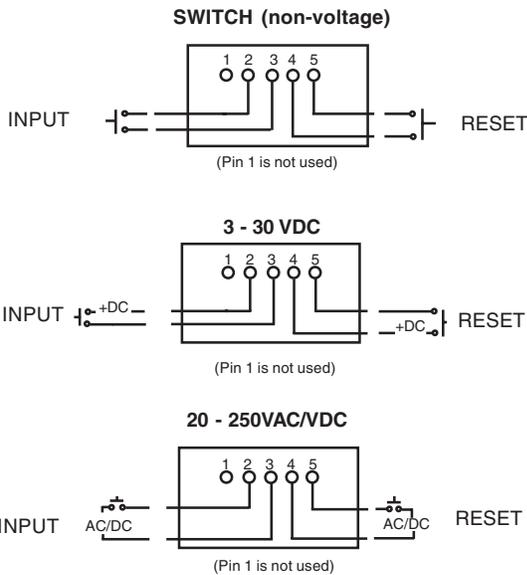
MOUNTING:



The mounting clip accommodates panel thicknesses up to 1/4" [6.4mm].

Panel adapter plates are available in flush and 2 hole mount to fit various panel cutouts. Consult the factory for availability.

WIRING:



Color code for the 8" [203mm] lead wires (24AWG) are:

- 1 - Yellow
- 2 - Blue
- 3 - Black
- 4 - Violet
- 5 - Gray

Terminal block will accept wire sizes from 14 to 24AWG.

3 - 30VDC units are protected for transient voltages up to 50 volts with pulse widths of up to 1 second at a 1% duty cycle (including reverse polarity).

The operating AC frequency range is 40 to 400Hz.

NOTES:

All resettable hour meters can be reset by a pulse with a minimum duration of 6 milliseconds.

SPECIAL WIRING OPTION

There is an internal connection between pin 3 and pin 5, a single wire can be used by connecting it to either pin 3 or pin 5. This option **does not** apply for units with input of 20 - 250VAC/VDC or manual reset enable.

OPTIONAL INPUTS:

Optional control circuitry (such as transistors) may be used as inputs provided that such circuitry provides the required parameters of the model used.

Applications

Medical Equipment



Test Equipment



Office Equipment





Description

The Model 55 LCD hour meters and counters offer a flexible choice for basic hour meter or counter function. Three variations of cases make the Model 55 flexible for your installation requirements. Because all information is saved in an internal EEPROM memory, no battery is required. A broad range of AC or DC input voltages make the Model 55 a versatile product for most applications. Two operating versions of the hour meter and three operating versions of the counter are offered. These include hour meters that display hours to resolutions of 1/100th or 1/10th of an hours and counters that operate with maximum input rates of 30 Hz or 200 Hz for DC inputs and 10 Hz for AC inputs. The Model 55 includes models with reset options that include remote reset, manual and remote reset, and non-reset. A model designed to mount to a printed circuit board is available upon request.

Features

- Manual, remote or non-reset
- EEPROM for memory (no battery)
- AC or DC input voltages
- 3 housing configurations
- 1/10th or 1/100th hours indication
- IP 65 front panel, without reset button
- Display hours or counts
- Choice of count frequency

Options

- 1/10th or 1/100th hour indication, or counts
- Reset type
- Case configuration
- Termination
- Count speed

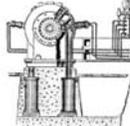
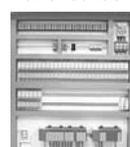
Specifications

<b>Figures:</b>	7 LCD figures, 0.28" [7mm] high	<b>Operating Temp:</b>	-22 °F to +158 °F [-30°C to +70°C]
<b>Quartz Accuracy:</b>	0.01%	<b>Humidity:</b>	0 to 95% RH, non-condensing
<b>Reset:</b>	Manual and remote, non-reset and remote only	<b>Protection:</b>	Without reset button-IP 65, gasket supplied, With reset button-IP54
<b>Input Voltage:</b>	12/24 VDC ±25%	<b>EMC:</b>	EN 55011, EN 50082-2
	115-240 VAC ±10% 50/60 Hz	<b>Vibration:</b>	1 g (10-500 Hz) IEC 68-2-34
<b>Special Voltage:</b>	24 VAC/DC ±10%, 24-48 VDC ±25%	<b>Shock:</b>	30 g (18 msec.) IEC 68-2-27
<b>Current:</b>	12-24 VDC & 24-48 VDC/2-4 mA		25 g (6 msec.) IEC 68-2-29
	24 VAC/DC/2 mA	<b>Max Count Speed:</b>	30, 200 Hz DC or (10 Hz AC or AC/DC)
	115-240 VAC/7- 15 mA	<b>Memory:</b>	EEPROM (no battery)
<b>Mounting:</b>	Retaining clip	<b>Case Material:</b>	Black, ABS plastic with glass lens on round model only
<b>Terminations:</b>	1/4" spade or screw terminals	<b>Weight:</b>	2 oz. [57g]
<b>Approvals:</b>	UL Recognized, CE Compliant		

Models Description

For Details on Models and Descriptions, see the Ordering Information section.

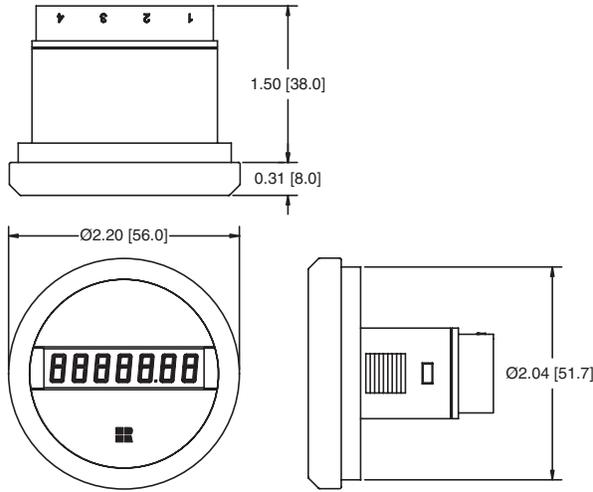
Applications

<p>Test equipment</p> 	<p>Compressors</p> 	<p>Piece count</p> 
<p>Packaging machinery</p> 	<p>Panel builders</p> 	<p>Medical devices</p> 



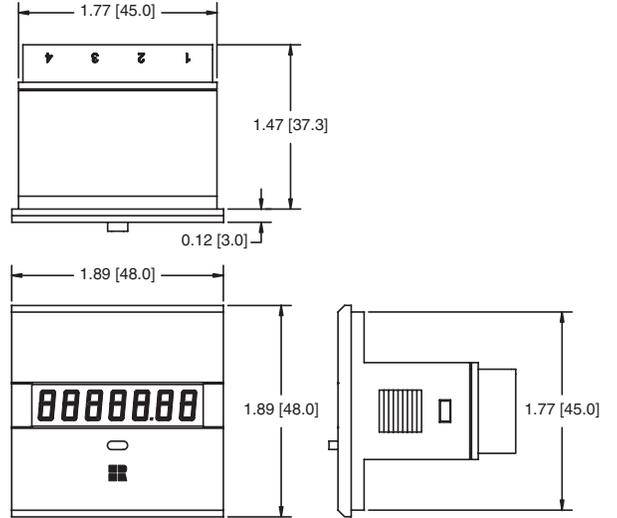
Dimensions

Round



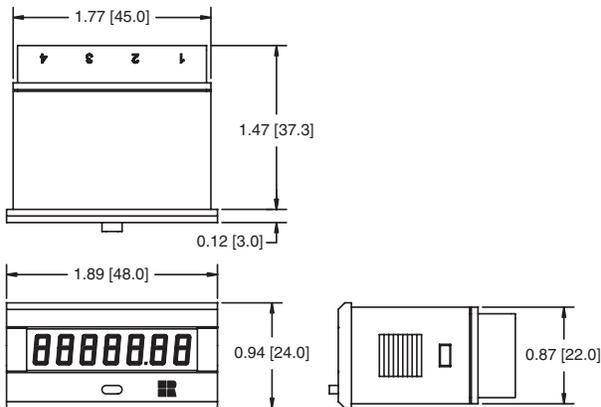
PANEL CUT OUT: Ø2.055 [52.2]

Square



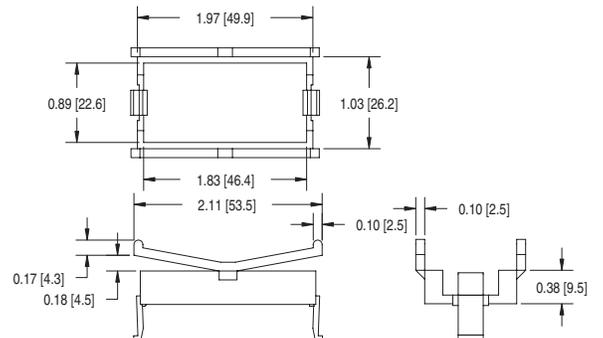
PANEL CUT OUT: 1.78 [45.2] SQUARE

Rectangular



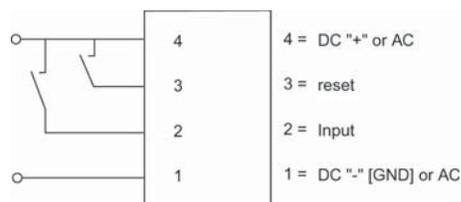
PANEL CUT OUT: .876 [22.2] X 1.772 [45]

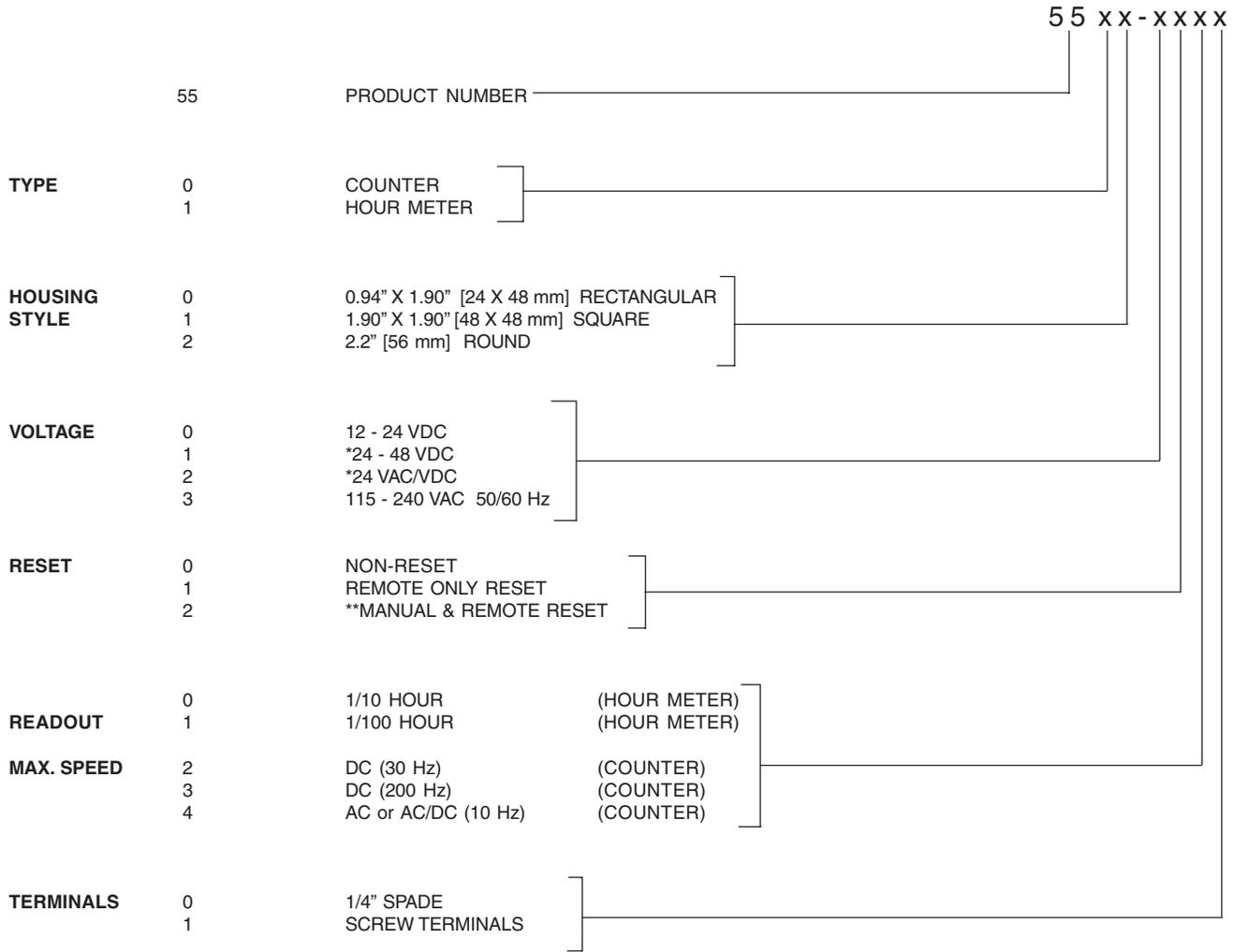
Mounting Clip



Maximum Panel Thickness for all units: 0.15" [6.4mm]

Wiring Diagram





\* Special voltage - consult factory  
 \*\* Manual reset not available on round case style.

Note: The counter display is updated on the trailing edge of the input signal.



**Description**

The Redington Model 56 family of LCD indicators offers a variety of options to fulfill your count/hour meter requirements. This indicator can display hours, counts or both with a single-line shared display. You decide which value should be displayed permanently and which one will be in the background. The background indication will appear for approximately 10 seconds every time you apply power to the meter.

The Model 56 family offers you many features that are set at the factory at your request. These features include, input voltages, maximum count speeds or minimum hour meter indication times, connector terminations, reset configurations, a Redi-Alert Service Interval feature, prewarn, and input scaling.

The Model 56 family can be ordered to accommodate any of a number of AC or DC input voltages and reset configurations. The counter can be ordered for maximum input count speeds of 10 Hz for AC or AC/DC voltages and 30 Hz or 200 Hz for DC voltages. The hour meter can be ordered to display time intervals of 1/100<sup>th</sup> or 1/10<sup>th</sup> of hours. When using a counter and an hour meter in combination, the counter will count the number of input pulses while the hour meter will record the total duration of the input pulses.

The Redi-Alert Service Interval feature notifies operators of service requirements when service intervals are a function of the number of events or time. If a Redi-Alert Service Interval is specified, the display will show the count (or time) remaining until the service interval is reached. The Redi-Alert Service Interval feature can be considered to be a down-counter (or down-timer) since the count (or time) that is displayed shows what remains until service is required. When the Redi-Alert Service Interval gets to zero, the indicator will flash the display. If the Redi-Alert Service Interval is not reset, the indicator will continue to operate, and the display will show negative counts (or time) indicating how far the system has gone past the service interval. If the prewarn feature is included, the display will begin flashing when the prewarn count (or time) is reached. When the Service Interval is in the background, it will come to the foreground when it reaches the service interval or the prewarn. Resetting the indicator resets the Service Interval to its specified setting and returns the Service Interval to the background.

You can configure your Model 56 meter using the Ordering Information sheet.

**Features**

- Display hours or hours and counts
- "Redi-Alert" for service hours or counts
- Manual, remote or non-reset
- EEPROM for memory (no battery)
- Divider/multiplier on inputs
- AC or DC input voltage
- 3 housing configurations
- Choice of 1/100<sup>th</sup> or 1/10<sup>th</sup> hours (specify)

**Options**

- Input scaling
- Input frequency
- Reset type
- Indication of time/count
- Wide selection of input voltage
- Service "Redi-Alert"

**Specifications**

<p><b>Display:</b> 7 digit, 0.28 [7mm], LCD, 1 display</p> <p><b>Quartz Accuracy:</b> 0.01%</p> <p><b>Input Voltage:</b> 12/24 VDC/ ±25% 115-240 VAC 50/60 Hz/±10%</p> <p><b>Special Voltages:</b> 24-48 VDC/±25% 24 VAC 50/60 Hz/VDC/±10%</p> <p><b>Current Consumption:</b> 12-24 VDC &amp; 24-48 VDC/2-4 mA 24 VAC/VDC/2 mA 115-240 VAC/7-15 mA</p> <p><b>Protection:</b> Without reset button-IP 65, gasket supplied, with reset button-IP54</p> <p><b>EMC:</b> EN 55011, EN 50082-2</p> <p><b>Vibration:</b> 1 g (10-500) IEC 68-2-34</p> <p><b>Shock:</b> 30 g (18 msec.) IEC 68-2-27 25 g (6 msec.) IEC 68-2-29</p> <p><b>Max. Count Speed:</b> 30, 200Hz DC or (10 Hz AC or AC/DC) (specify)</p>	<p><b>Memory:</b> EEPROM (no battery)</p> <p><b>Approvals:</b> UL Recognized, CE Compliant</p> <p><b>Mounting:</b> Retaining clip</p> <p><b>Electrical Connection:</b> 1/4" [6.4mm] spade or screw terminals</p> <p><b>Case Material:</b> Black, ABS plastic with glass lens on round model only</p> <p><b>Reset:</b> Manual and remote, non-reset and remote only No manual reset for round model</p> <p><b>Operating Temperature:</b> -22°F to +158°F [-30°C to +70°C]</p> <p><b>Weight:</b> 2 oz [57g]</p> <p><b>Service Alert:</b> Factory set - one "Redi-Alert", 4 digits</p> <p><b>Input Scaling:</b> Factory set, 4 digits</p> <p><b>Prewarn Signal:</b> Factory set, 4 digits</p>
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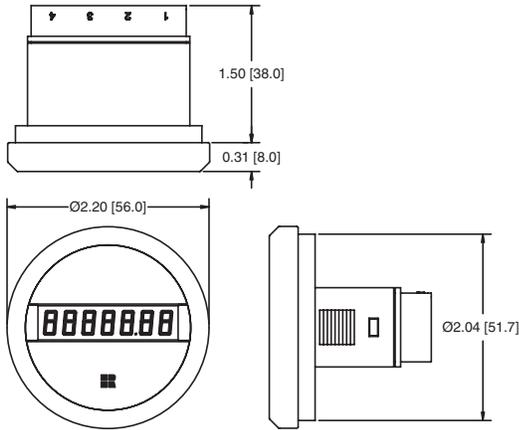


Models Description

For Details on Models and Descriptions, see the Ordering Information section.

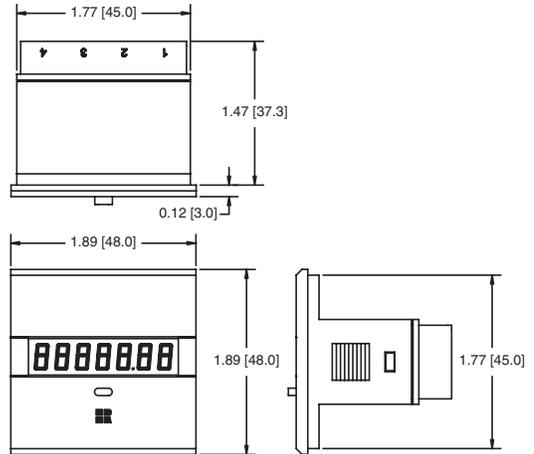
Dimensions

Round



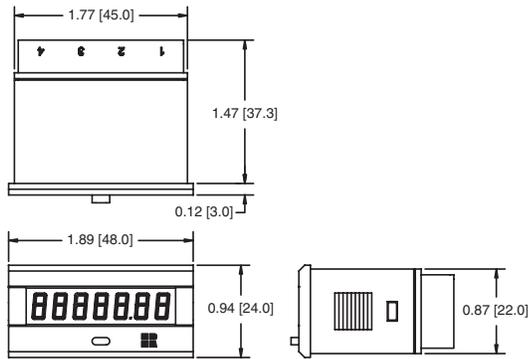
PANEL CUT OUT: Ø2.055 [52.2]

Square



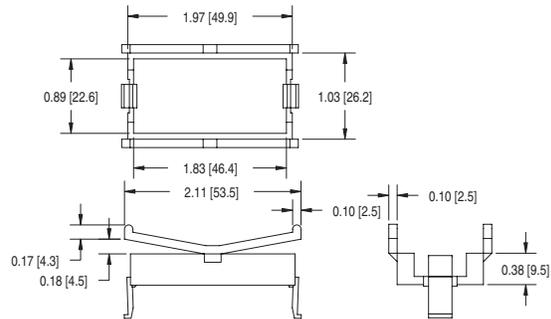
PANEL CUT OUT: 1.78 [45.2] SQUARE

Rectangular



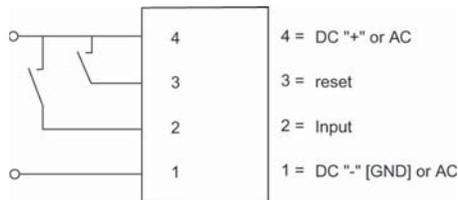
PANEL CUT OUT: .876 [22.2] X 1.772 [45]

Mounting Clip



Maximum Panel Thickness for all units: 0.15" [6.4mm]

Wiring Diagram

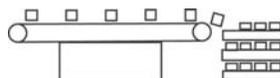


Applications

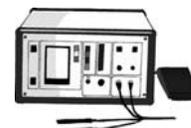
Test Equipment



Packaging Machinery



Medical Devices





Ordering Information

FUNCTION	HOUSING DIMENSIONS			NOTES
	1 X 2 INCH	2 X 2 INCH	ROUND 2.2 INCH	
HM WITH HM (bg)*	5600	5601	5602	Only HM is resettable
C WITH C (bg)*	5610	5611	5612	Only C is resettable
HM WITH C (bg)*	5620	5621	5622	Both are resettable
C WITH HM (bg)*	5630	5631	5632	Both are resettable
HM WITH SHM (bg)*	5640	5641	5642	Only SHM (bg) is resettable
C WITH SC (bg)*	5650	5651	5652	Only SC (bg) is resettable
SHM WITH HM (bg)*	5660	5661	5662	Only SHM is resettable
SC WITH C (bg)*	5670	5671	5672	Only SC is resettable

\*HM= Hour Meter \*C= Counter \*bg= Background \*SHM= Service Hour Meter \*SC= Service Counter

Note: The counter display is updated on the trailing edge of the input signal

Model 56  
Specification Sheet

Company: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Address: \_\_\_\_\_ Fax: \_\_\_\_\_  
 \_\_\_\_\_ Email: \_\_\_\_\_  
 Contact: \_\_\_\_\_ Date: \_\_\_\_\_

Model No. \_\_\_\_\_ (4 digits) *SELECTED FROM ABOVE TABLE* .

Input Voltage: (check only 1)

- 12-24 VDC
- 115-240 VAC 50/60 Hz
- Special voltages available, consult factory.

Indication of time for Hour Meter: (check only 1)

- 1/100<sup>th</sup>
- 1/10<sup>th</sup>

Max. counting frequency for Counter: (check only 1)

- 30 Hz (DC)
- 200 Hz (DC)
- 10 Hz @ (AC) or (AC/DC)

Termination : (check only 1)

- 1/4" spade
- screw terminals

Reset Types: (check only 1)

- non-reset
- remote reset
- remote and manual reset (No manual reset for 2.2 " Round Model)

Service Interval: (optional)

- "Redi-Alert" : \_\_\_\_\_ (4 digits max)
- Prewarn : \_\_\_\_\_ (4 digits max)

Input scaling: (optional - check only 1)

- Divider: \_\_\_\_\_ (4 digits max)
- Multiplier: \_\_\_\_\_ (4 digits max)



Description

The Redington Model 57 family of LCD indicators offers a variety of options to fulfill your count/hour meter requirements. This indicator can display hours, counts or both with a single-line shared display. This model is available with an LED indication for service and relay or transistor output. You decide which value should be displayed permanently and which one will be in the background. The background indication will appear for approximately 10 seconds every time you apply power to the meter.

When using a counter and an hour meter in combination, the counter will count the number of input pulses while the hour meter will record the total duration of the input pulses.

The Redi-Alert Service Interval feature notifies operators of service requirements when service intervals are a function of the number of events or time. If a Redi-Alert Service Interval is specified, the display will show the count (or time) remaining until the service interval is reached. The Redi-Alert Service Interval feature can be considered to be a down-counter (or down-timer) since the count (or time) that is displayed shows what remains until service is required. When the Redi-Alert Service Interval gets to zero, the indicator will flash the display. If the Redi-Alert Service Interval is not reset, the indicator will continue to operate, and the display will show negative counts (or time) indicating how far the system has gone past the service interval. If the prewarn feature is included, the display will begin flashing when the prewarn count (or time) is reached. When the Service Interval is in the background, it will come to the foreground when it reaches the service interval or the prewarn. Resetting the indicator resets the Service Interval to its specified setting and returns the Service Interval to the background.

The LED indicator and output will come on once the Redi-Alert is reached and stay on until reset.

The Model 57 family also offers the option of an additional display for those applications that require dual indications.

Features

- Choice of single or dual displays
- Display counts/hours or both
- Factory programmed service alert
- Divide/multiply on inputs (factory set)
- With or without reset
- Output signal: none, relay or transistor
- Service indicator available
- DC input voltages
- IP 65 sealed front panel
- EEPROM for memory (no battery)

Options

- Input scaling
- Count speed
- Reset type
- Indication of time/count
- Type of output
- One or two displays
- LED indication for service
- Maintenance Redi-Alert output

Specifications

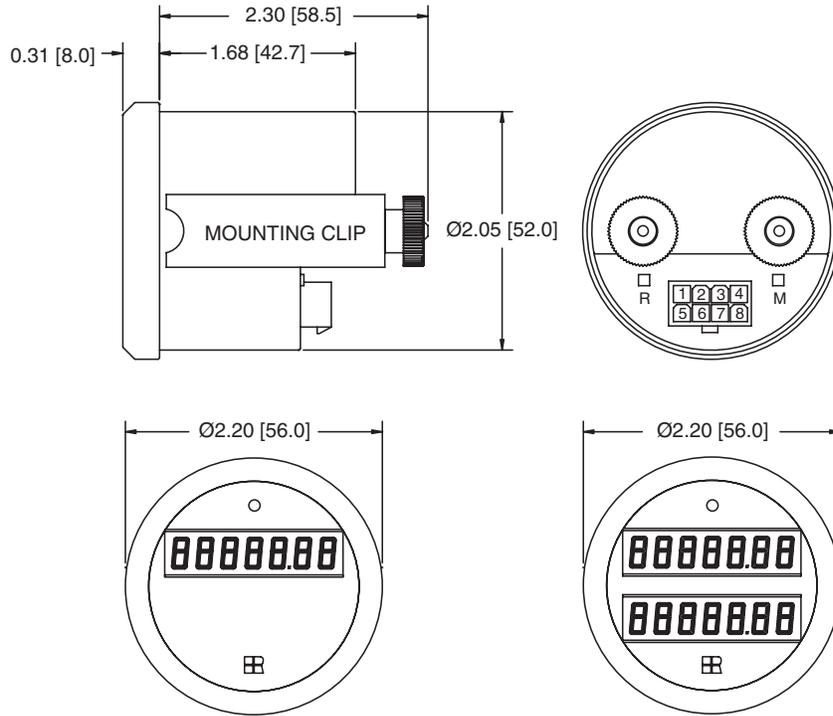
<b>Display:</b>	Large 7 digit, 0.28 [7mm], LCD 1 or 2 displays	<b>Protection:</b>	IP 65 front panel/gasket supplied
<b>Quartz Accuracy:</b>	0.01% over entire voltage & temp. range	<b>EMC:</b>	EN 55011, EN 50082-2
<b>Input Voltage:</b>	12-24 VDC/ ±25% 24 VDC/ ±25% - with relay output	<b>Vibration:</b>	1g (10...500 Hz) IEC 68-2-34 30 g(18 msec.) IEC 68-2-27
<b>Special Voltages:</b>	24-48 VDC/ ±25% 12,36,48 VDC/ ±25%-with relay output	<b>Shock:</b>	25 g(6 msec) IEC 68-2-29
<b>Current Consumption:</b>	12-24 VDC/<10 mA, 24-48 VDC/<10 mA (12 V/< 35 mA, 24 V/< 25 mA, 36 V/<25 mA, 48 V/< 20 mA) with relay	<b>Max Count Speed:</b>	30 or 200 Hz (specify)
<b>Relay Contact:</b>	1 dry contact / breaking capacity 12 V/2 A, 24 V/2 A, 36 V/1.5 A, 48 V/1 A	<b>Memory:</b>	EEPROM (no battery)
<b>Transistor Output:</b>	V <sub>OH</sub> 4.5 VDC, minimum through 30 KW V <sub>OL</sub> 0.4 VDC, maximum through 20 KW I <sub>SINK</sub> 1.0 mA, maximum	<b>Mounting:</b>	Metal clamp
<b>Operating Temperature :</b>	-22 °F to +158 °F [-30 °C to +70 °C]	<b>Electrical Connection:</b>	8 pole compact plug with lock
<b>Approvals:</b>	CE Compliant	<b>Case Material:</b>	Black, ABS plastic w/glass lens
		<b>Reset:</b>	Manual & remote (manual button on the rear of housing), non-reset, remote
		<b>Service Alert:</b>	Factory set - one Redi-Alert, 4 digits
		<b>Prewarn Signal:</b>	Factory set, 4 digits
		<b>Input Scaling:</b>	Factory set, 4 digits
		<b>Weight:</b>	3.5 oz [99g]



**Models Description**

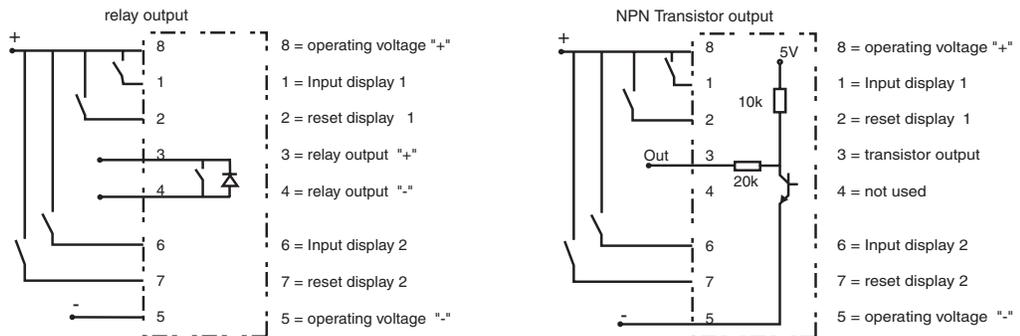
For Details on Models and Descriptions, see the Ordering Information section.

**Dimensions**



Maximum Panel Thickness: 0.20" [5.1mm]  
Panel Cutout: 2.06" [52.2mm]

**Wiring Diagram**



**Applications**

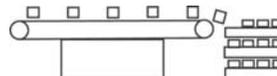
Panel Builders



Medical Devices



Packaging Machinery



Test Equipment





Ordering Information

Model No.	Voltage	Function	Reset	Notes
5700	12 - 24 VDC	HM*	HM	without output or LED
5701	12 - 24 VDC	C*	C	without output or LED
5702	12 - 24 VDC	HM with HM (bg)*	HM	without output or LED
5703	12 - 24 VDC	C with C (bg)*	C	without output or LED
5704	12 - 24 VDC	HM with C (bg)*	BOTH	without output or LED
5705	12 - 24 VDC	C with HM (bg)*	BOTH	without output or LED
5706	24 VDC	HM with SHM (bg)*	SHM	with relay output and LED
5707	12 - 24 VDC	HM with SHM (bg)*	SHM	with transistor output and LED
5708	24 VDC	C with SC (bg)*	SC	with relay output and LED
5709	12 - 24 VDC	C with SC (bg)*	SC	with transistor output and LED
5710	24 VDC	SHM with HM (bg)*	SHM	with relay output and LED
5711	12 - 24 VDC	SHM with HM (bg)*	SHM	with transistor output and LED
5712	24 VDC	SC with C (bg)*	SC	with relay output and LED
5713	12 - 24 VDC	SC with C (bg)*	SC	with transistor output and LED

\*HM= Hour Meter \*C= Counter \*bg= Background \*SHM= Service Hour Meter \*SC= Service Counter

Model 57 Specification Sheet

Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Contact: \_\_\_\_\_

Phone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Date: \_\_\_\_\_

Model No. \_\_\_\_\_ (4 digits) SELECTED FROM ABOVE TABLE

Display 1

Display 2 (Optional)

Yes

No

Indication of time for Hour Meter: (check only 1)

- 1/100<sup>th</sup>
- 1/10<sup>th</sup>

Indication of time for Hour Meter: (check only 1)

- 1/100<sup>th</sup>
- 1/10<sup>th</sup>

Max. counting frequency for Counter: (check only 1)

- 30 Hz
- 200 Hz

Max. counting frequency for Counter: (check only 1)

- 30 Hz
- 200 Hz

Reset types: (check only 1)

- non-reset
- remote reset
- remote & manual (manual reset on rear of housing)

Reset types: (check only 1)

- non-reset
- remote reset
- remote & manual (manual reset on rear of housing)

Service interval (optional)

- "Redi-Alert": \_\_\_\_\_ ( 4 digits max)
- Prewarn: \_\_\_\_\_ (4 digits max.)

Input scaling: (optional - check only 1)

- Divider \_\_\_\_\_ ( 4 digits max)
- Multiplier \_\_\_\_\_ ( 4 digits max)

Input scaling (optional - check only 1)

- Divider \_\_\_\_\_ ( 4 digits max)
- Multiplier \_\_\_\_\_ ( 4 digits max)



### Description

The Redington Model 59 line of LCD modules can easily be integrated into your equipment or machinery. These functions are also available in cased versions, ask for more information, or see Model 55, 56 & 57.

#### Single Indicator:

Can be used to display hours or count.

#### Twin Indicator:

These models can supply two indications in one display. You can decide which function should be indicated permanently and which one in the background. The background function displays for approximately 10 seconds every time you power-up the display. When using a counter and an hour meter in combination, the counter will count the number of input pulses while the hour meter will record the total duration of the input pulses. Presettable "prewarn" signals can also be programmed into the modules. If you specify a prewarn the display will flash when it reaches its specified value. A wide range of reset functions are also available to provide you with the exact configuration for your application. Model 57 is available with an output function to "alert" when service or preventive maintenance should occur.

#### Redi-Alert:

The Redington Model 59 LCD Maintenance Meter modules can easily be integrated into your equipment or machinery. This module can display hours, counts or both with a single-line, shared display. You can decide which function should be indicated permanently and which one is in the background. The background function, value, appears for approximately 10 seconds every time you power-up the display. When using a hour meter and counter in combination, the counter will count the number of input pulses while the hour meter will record the total duration of the input pulses. A wide range of reset functions are available to provide you with the exact configuration for your application.

The Redi-Alert Service Interval feature notifies operators of service requirements when service intervals are a function of the number of events or time. If a Redi-Alert Service Interval is specified, the display will show the count (or time) remaining until the service interval is reached. The Redi-Alert Service Interval feature can be considered to be a down-counter (or down-timer) since the count (or time) that is displayed shows what remains until service is required. When the Redi-Alert Service Interval gets to zero, the indicator will flash the display. If the Redi-Alert Service Interval is not reset, the indicator will continue to operate, and the display will show negative counts (or time) indicating how far the system has gone past the service interval. If the prewarn feature is included, the display will begin flashing when the prewarn count (or time) is reached. When the Service Interval is in the background, it will come to the foreground when it reaches the service interval or the prewarn. Resetting the indicator resets the Service Interval to its specified setting and returns the Service Interval to the background. The LED indicator and output will come on once the Redi-Alert is reached and stay on until reset.

### Features

- Display time/count or both
- "Redi-Alert" function for service
- Choice of non-reset or remote reset
- EEPROM for memory (no battery)
- Divider/multiplier
- 30 or 200 Hz, max input frequency
- 1/10<sup>th</sup> or 1/100<sup>th</sup> hour indication
- 12 to 24 VDC power range

### Options

- Input scaling
- Input frequency
- Remote reset
- Service "Redi-Alert"
- Display functions

### Specifications

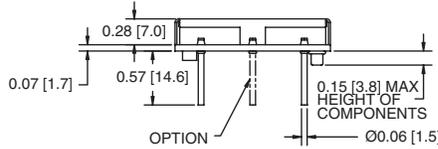
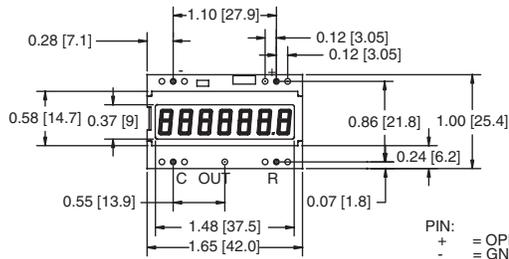
<b>Display:</b>	7 digit, 0.28 [7mm], LCD	<b>Electrical Connection:</b>	Pins for soldering
<b>Quartz Accuracy:</b>	0.01%	<b>Reset:</b>	Non-reset, remote
<b>Input Voltage:</b>	12-24 VDC/ ±25%	<b>Protection:</b>	
<b>Current Consumption:</b>	2-4 mA	<b>EMC:</b>	EN 55011, EN 50082-2
<b>Transistor Output:</b>	$V_{OH}$ 4.5 VDC, minimum through 30 KW	<b>Vibration:</b>	1 g (10 to 500 Hz) IEC 68-2-34
	$V_{OL}$ 0.4 VDC, maximum through 20 KW	<b>Shock:</b>	30 g (18 msec.) IEC 68-2-27
	$I_{SINK}$ 1.0 mA, maximum		25 g (6 msec.) IEC 68-2-29
<b>Operating Temperature:</b>	-22°F/+158°F [-30°C to +70°C]	<b>Weight:</b>	0.5 oz [14g]
<b>Max Count Speed:</b>	30 or 200 Hz	<b>Service Alert:</b>	1 "Redi-Alert", 4 digits, factory set
<b>Memory:</b>	EEPROM (no battery)	<b>Input Scaling:</b>	Factory set, 4 digits
<b>Approvals:</b>	UL/cUL Recognized	<b>Prewarn Signal:</b>	Factory set, 4 digits
<b>Mounting:</b>	Electrical connection pins for soldering		

### Models Description

For Details on Models and Descriptions, see the Ordering Information section.

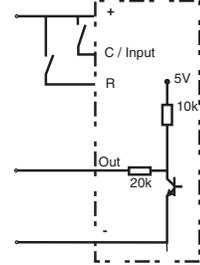


Dimensions



PIN:
+ = OPERATING VOLTAGE
- = GND
C = COUNT
OUT = SERVICE COUNTER OUTPUT (OPTION)
ALTERNATIVE POSITIONS OF THE CONNECTION PINS ARE OPTIONALLY POSSIBLE.

Wiring Diagram
NPN Transistor Output



Applications

Test Equipment



Panel Builders



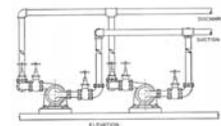
Medical Devices



Office Equipment



Flow Meters



Ordering Information

Table with 4 columns: Model#, Function, Output Signal, Notes. Lists various meter models and their features.

\*HM=HOUR METER \*C= COUNTER \*bg=BACKGROUND \*SC= SERVICE COUNTER \*SHM= SERVICE HOUR METER

Model 59
Specification Sheet

Company:
Address:
Contact:

Phone:
Fax:
Email:
Date:

Model No. (4 digits) SELECTED FROM ABOVE TABLE .

Input voltage: (check only 1)

12-24 VDC Special voltages available, consult factory.

Indication of time for Hour Meter: (check only 1)

1/100th 1/10th

Max. counting frequency for Counter: (check only 1)

30 Hz (DC) 200 Hz DC

Reset type: (check only 1)

non-reset remote reset

Service interval: (optional)

"Redi-Alert" : (4 digits max) Prewarn : (4 digits max)

Input scaling: (optional - check only 1)

Divider: (4 digits max) Multiplier: (4 digits max)



**Description**

The Model 83 Timer is available in single or dual preset models. The 83 Timer features a 7 segment, 2 lines by 6-digit backlit LCD display. The main display line is red and shows the timer value. The smaller secondary display line is green and can be used to view the preset values or output time values.

The 83 Timer can be configured for a variety of different operating modes to meet most timing application requirements. Twelve timing ranges are available from thousands of a second to hours and minutes. Decimal points are used to separate the time units (hours, minutes, seconds). Timing can be cumulative or can reset and start upon each power cycle. "on delay" or "off delay", "single shot", "repetitive auto cycling" modes are all supported.

The 83 Timer can also be configured to continue or stop timing upon reaching preset. The display can be programmed to stop at the preset value (reset to zero mode) or zero (reset to preset mode), or automatically reset to zero or preset and hold. Once stopped, the timer can be restarted by manually resetting it, or it can be programmed to restart when power is reapplied. The 83 Timer has a run/stop input, 3 programmable user inputs, and a programmable front panel function key. The run/stop and user inputs can be configured as sinking (active low) or sourcing (active high) inputs via a single plug jumper. The user inputs and the front panel function key can be configured to provide a variety of functions.

Four front panel push-buttons are used for ease of programming the operating modes and data values, changing the viewed display, and performing user programmable functions, e.g. reset, etc. The 83 Timer can be configured for one of two numeric data entry methods digit or automatic scrolling.

Digital - The digital entry allows for the selection and incrementing of digits individually.

Automatic scrolling - This method allows for the progressive change of one through all digits positions by pressing and holding the **up** or **down** button.

The dual preset models are available with solid-state or relay outputs. The single preset model has a solid-state and relay output in parallel. All solid-state outputs are available in a choice of NPN current sinking or PNP current sourcing, open-collector transistor outputs. All relay output boards are field replaceable.

RS485 communications - optional serial communication capability allows for interrogation and modification of the preset, and timer values.

Construction- The unit is made of lightweight, high impact plastic with a textured front panel and a clear display window. The front panel meets NEMA4X/IP65 specifications when properly installed. Multiple units can be stacked horizontally or vertically. SMT, extensive testing, plus high immunity to noise interference make the 83 Timer extremely reliable in industrial environments.

**Features**

**Options**

- Displays values to (999999)
- 12 timing ranges
- Field replaceable relay output boards
- Solid state and relay output models
- NEMA4X/IP65 sealed bezel
- Status indicators for outputs
- Security via programmable operator access privileges and protected values menu
- Programmable user inputs and front panel function key
- Horizontal or vertical stacking of multiple units
- 85 to 250VAC or 18 to 36VDC/24 VAC power units
- RS485 communications option
- Choice of numeric data entry modes

- Output type
- Serial communications
- Voltage input
- Display color
- Number of presets



**Specifications**

**Display:** 2 line by 6 digits LCD display, negative image transmissive with RED (top line) and GREEN (bottom line) backlighting. Positive image reflective display units are non-stock available.

**Main:** 0.3" (7.6mm) high digits  
**Secondary:** 0.2" (5mm) high digits

**Annunciators:**  
**Value:** PRS, 1, and 2  
**Output:** 01 and 02

**POWER REQUIREMENTS:**

**AC Versions**

**AC Power:** 85 to 250 VAC, 50/60Hz, 9VA max.  
**DC power:** 11 to 14 VDC @ 159 mA max. (Non PNP output models)

*Note: Models with PNP current sourcing outputs must be powered from AC*

**DC Versions**

**DC Power:** 18 to 36 VDC: 5.5 W max.  
**AC Power:** 24 VAC +/- 10%: 50/60 Hz: 7VA max.

*Note: The 10% tolerance range on AC input voltage must be strictly adhered to > DO NOT EXCEED 26.4 VAC*

**PEAK (START-UP CURRENT)**

**AC or DC Power:** 500mA peak start-up current for 10 msec. max.

**DC OUT/ VSCR IN-terminal 10**

For units that do not have PNP current sourcing outputs, this terminal provides a DC output for sensor power (+ 12 VDC +/-15%). The maximum sensor current is 100mA. For units with PNP current sourcing outputs this terminal serves a dual purpose depending on the application PNP output voltage level and current requirements.

1. The terminal may be used as a +12 VDC output for sensor power. In this case, the PNP output voltage level will be +12 VDC (+/-15%). A maximum of 100 mA is available for the combination of sensor and PNP output sourcing current.
2. If a higher PNP output voltage level or additional output sourcing current is needed, an external DC supply may be connected between the "DC OUT" ( V SRC IN) and "COMM." terminals. This supply will determine the PNP output voltage level, and must be in the same range of +13 to +30 VDC.  
 An external DC supply can also provide the additional output sourcing current required in applications where two or more PNP outputs are "ON" simultaneously. However, the maximum current range of 100mA per individual output must not be exceeded, regardless of external supply capacity.

**3. MEMORY:** Nonvolatile FRAM retains all program parameters and Timer values.

**4. SENSOR POWER:** +12 VDC (+/- 15%) @ 100mA max.

**5. INPUTS:** Run/Stop, Usr. In1, Usr. In2, and Usr. In3.  
 Configurable as current sinking (active low), or current sourcing (active high) inputs via a single plug jumper.

**Current Sinking: (active low) :**  
 $V_{IL} = 1.5 \text{ VDC max. } 22 \text{ K ohm pull-ups to } 5 \text{ VDC}$

**Current Sourcing: (active high):**  $V_{IH} = 3.5 \text{ min.}$   
 $V_{IN} \text{ max.} = 30 \text{ VDC; } 22\text{K ohm pull-down.}$

**Run/Stop Response Time :** 250 microseconds max.

**User Input Response Time:** 5 msec. max.

**6. TIME ACCURACY:** +/- 0.01%

**7. OUTPUTS:** ( Output type and quantity model dependent)

**Solid-State:**

**NPN Open Collector:**

$I_{SNK} = 100\text{mA max. @ } V_{OL} = 1.1 \text{ VDC max.};$   
 $V_{OH} = 30 \text{ VDC max.}$

**PNP Open Collector:**

$I_{SRC} = 100\text{mA max. ( See note) ; } V_{OH} = 12 \text{ VDC } +/-15\%$   
 ( using internal supply);  $V_{OH} = 13 \text{ to } 30 \text{ VDC ( using external supply).}$

*Note: The internal supply of the 83 Timer can provide a total of 100 mA for the combination of sensor current and PNP output sourcing current. The supply voltage is +12 VDC (+/-5 %), which will be the PNP output voltage level when using only the internal supply.*

*If additional PNP output sourcing current or a higher output voltage level is desired, an external DC supply may be connected between the " DC Out/In" and "Comm" terminals. This supply will determine the PNP output voltage level, and must be in range of +13 to 30 VDC.*

*An external supply can provide the additional output sourcing current required in applications where two or more outputs are "ON" simultaneously. However, the maximum rating of 100mA per individual output must not be exceeded, regardless of external supply capacity.*

**Relay:** Form A contact, rating = 5 A @ 250 VAC, 30 VDC (resistive load) 1/10 HP @ 120 VAC (inductive load).

**Relay Life Expectancy:**

100,000 cycles min. at max. load rating.

**Programmable Timed Output:**

User selectable output time resolutions.

**0.01 Second Resolution:** 0.01 to 99.99 sec., +/- 0.01% +10 msec max.

**0.1 Second Resolution:** 0.1 to 999.9 sec. +/- 0.01 % +100 msec max.

**8. RS485 SERIAL COMMUNICATIONS (Optional):**

Up to 32 units can be connected.

**Baud Rate:** Programmable from 1200 to 9600 baud.

**Address:** Programmable from 0 to 99

**Data Format:** 10 Bit Frame, 1 start bit , 7 or 8 data bits, 1 or no Parity bit, and 1 stop bit.

**Parity:** Programmable for Odd (7 data bits), Even ( 7 data bits) or None ( 8 data bits).

**9. CERTIFICATIONS AND COMPLIANCES:**

**UL Recognized Component, File # E195514**

Recognized to U.S. and Canadian requirements under the Component Recognition Program of Underwriters Laboratories, Inc.

**CE COMPLIANT :**

ELECTROMAGNETIC COMPATIBILITY

**Immunity to EN 50082-2**

electrostatic discharge	EN 61000-4-2
electromagnetic RF fields	EN 61000-4-3
fast transients	EN 61000-4-4
RF conducted interference	EN 61000-4-6
simulation of cordless phone	ENV50204

**Emissions to EN 50081-2**

RF interference	EN 55011	enclosure class A
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**10. ENVIRONMENTAL CONDITIONS:**

**Operating Temperature:** +32°F to +122°F [0°C to +50°C]

**Storage Temperature:** -40°F to +158°F [-40°C to +70°C]



**Operating and Storage Humidity:**

85% max. relative humidity ( non-condensing) from +32°F to +122°F [0°C to +50°C]

**Altitude:** Up to 6500 Feet

**13. WEIGHT:** 6.0 oz [170g]

**SINGLE PRESET MODELS**

The 8321 Timer offers a choice of twelve timing ranges with eighteen different operating modes. The unit has a solid-state output that operates in parallel with a relay output. The solid-state output is available as an NPN or PNP open collector transistor.

**DUAL PRESET MODELS**

The 8322 Timer offers a choice of twelve timing ranges with 44 operating modes. The unit is available with solid-state or relay outputs. The solid-state outputs are available as NPN or PNP open collector transistors.

**11. ELECTRICAL CONNECTIONS:**

Wire clamping screw terminals.

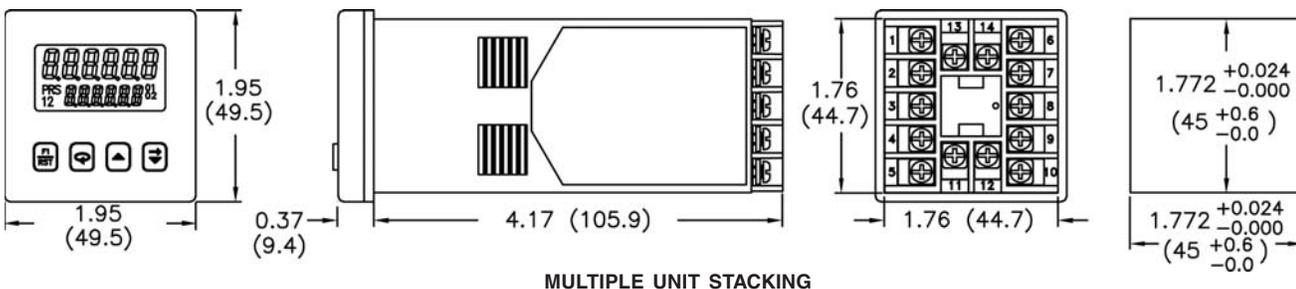
**12. CONSTRUCTION:** Black plastic case with collar style panel latch.

The panel latch can be installed for horizontal or vertical stacking. Black plastic textured bezel can be removed from the case without removing the case from the panel or disconnecting the wiring. Front panel meets NEMA4X/IP65 requirements for indoor use, when properly installed. Installation Category II, Pollution Degree 2.

**Models Description**

For Details on Models and Descriptions, see the Ordering Information section

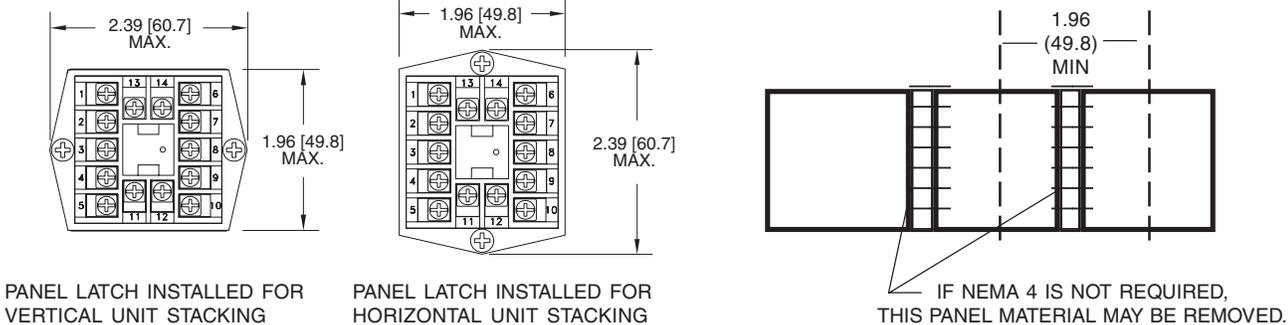
**Dimensions**



The Model 83 is designed for close spacing of multiple units. Units can be stacked either horizontally or vertically. For vertical stacking, install the panel latch with screws to the sides of the unit. For horizontal stacking, the panel latch screws should be at the top and bottom of the unit. The minimum spacing from center line to center line of the units is 1.96" (49.8 mm). This spacing is the same for vertical or horizontal stacking.

*Note: When stacking units, provide adequate panel ventilation to ensure that the maximum operating temperature range is not exceeded.*

**PANEL CUTOUT SPACING FOR MULTIPLE UNIT STACKING. HORIZONTAL ARRANGEMENT SHOWN.**



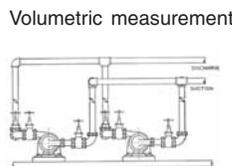
PANEL LATCH INSTALLED FOR VERTICAL UNIT STACKING

PANEL LATCH INSTALLED FOR HORIZONTAL UNIT STACKING

**Applications**



Mixing



Volumetric measurement



Batch Control



**Ordering Information**

MODEL NO.	DESCRIPTION	NPN O.C. OUTPUT(S)	* PNP O.C. OUTPUT(S)	RELAY OUTPUT(S)	RS485	PART NUMBERS FOR AVAILABLE SUPPLY VOLTAGES	
						18-36 VDC/24 VAC	85 TO 250 VAC
8321	1 Preset Timer Backlit LCD	Yes	No	Yes	No	8321-0110	<b>8321-1110</b>
8322	2 Preset Timer Backlit LCD	No	No	Yes	No	<b>8322-0010</b>	<b>8322-1010</b>
	2 Preset Timer Backlit LCD	No	No	Yes	Yes	<b>8322-0011</b>	<b>8322-1011</b>
	2 Preset Timer Backlit LCD	Yes	No	No	No	<b>8322-0100</b>	<b>8322-1100</b>
	2 Preset Timer Backlit LCD	Yes	No	No	Yes	8322-0101	<b>8322-1101</b>

\* PNP Outputs are non-stock items

\* Items in bold are normally in factory stock.

**RELAY OUTPUT BOARDS**

DESCRIPTION	NPN O.C.	* PNP O.C.	RELAY	PART NUMBER
Single Preset	Yes	No	Yes	1726-044S
Dual Preset	No	No	Yes	1726-045S
3 Preset	Yes	No	Yes	1726-046S

\* PNP Outputs are non-stock items



**Description**

The 83 Counter features a 7 segment, 2 lines by 6-digit backlit LCD display. The main display line is red and shows the count value or the batch/total value when preset 3 or output 3 is viewed in the secondary display. The smaller secondary display line is green and can be used to view the prescaler value, preset values, output count values or batch/total count values (batch model only).

The 83 Counter offers a choice of nine programmable counting modes for use in applications requiring bidirectional, anti-coincidence, and quadrature counting. The unit may be programmed to detect counts on both edges of the input signal resulting in a doubling of frequency. DIP switches are used for input configuration setup and to provide a program disable function.

Four front panel push buttons are used for ease of programming the operating modes and data values, to change the viewed display, and performing user programmable functions, e.g. reset, etc. The 83 Counter can be configured for one of two numeric data entry methods.

Digital - The digital entry allows for the selection and incrementing of digits individually.

Automatic Scrolling - This method allows for the progressive change of one through all digits positions by pressing and holding the **up** or **down** button.

Protection of data value and unit configuration - The program disable DIP switch, a user-programmable code value, and an external user input selected for program disable can be utilized to provide multilevel protection.

The standard with dual presets is available with solid-state and relay outputs. The batch counter has relay outputs for output 2 and the batch/total output 3, with output 1 available as solid-state. For all 83 Counters, the solid-state outputs are available in a choice of NPN current sinking or PNP current sourcing, open- collector transistor outputs. All relay output boards are field replaceable.

Prescaler output is available as a dual preset, with solid-state outputs. The prescaler output is useful for providing a lower frequency scaled pulse train to a PLC or another external totalizer. The prescaler output provides a programmable width for every count or every 10 counts registered on the display

RS485 communications - optional serial communication capability allows for interrogation and modification of the preset, count and prescaler values.

Construction - The unit is made of lightweight, high impact plastic with a textured front panel and a clear display window. The front panel meets NEMA4X/IP65 specifications when properly installed. Multiple units can be stacked horizontally or vertically. SMT, extensive testing, plus high immunity to noise interference make the 83 Counter extremely reliable in industrial environments.

**Features**

**Options**

- Quadrature sensing
- Bidirectional counting, up/down control
- Count values to (999999)
- Prescaler output model (dual preset only)
- Field replaceable relay output boards
- Solid State and relay output models
- NEMA4X/IP65 sealed bezel
- Status indicators for outputs
- Security via programmable operator access privileges and protected values menu
- Programmable user inputs and front panel function key
- Horizontal or vertical stacking of multiple units
- 85 to 250VAC or 18 to 36VDC/24 VAC power units
- RS485 communications option
- Choice of numeric data entry modes

- Output type
- Serial communications
- Voltage input
- Display color
- Number of presets



**Display:** 2 line by 6 digits LCD display, negative image transmissive with RED (top line) and GREEN (bottom line) backlighting. Positive image reflective display units are non-stock available.

**Main:** 0.3" (7.6mm) high digits

**Secondary:** 0.2" (5mm) high digits

**Annunciators:**

**Value:** PRS, 1,2 and 3

**Output:** 01, 02 and 03

**POWER REQUIREMENTS:**

**AC Versions**

**AC Power:** 85 to 250 VAC, 50/60Hz, 9VA max.

**DC Power:** 11 to 14 VDC @ 159 mA max.  
(Non PNP output models)

Note: Models with PNP current sourcing outputs must be powered from AC

**DC Versions**

**DC Power:** 18 to 36 VDC: 5.5 W max.

**AC Power:** 24 VAC +/- 10%: 50/60 Hz: 7VA max.

Note: The 10% tolerance range on AC input voltage must be strictly adhered to DO NOT EXCEED 26.4 VAC

**PEAK (START-UP CURRENT)**

**AC or DC Power:** 500mA peak start-up current for 10 msec. max.

**DC OUT/ VSCR IN-terminal 10**

For units that do not have PNP current sourcing outputs, this terminal provides a DC output for sensor power + 12 VDC (+/- 15%). The maximum sensor current is 100mA.

For units with PNP current sourcing outputs this terminal serves a dual purpose depending on the application PNP output voltage level and current requirements.

- The terminal may be used as a +12 VDC output for sensor power. In this case, the PNP output voltage level will be +12 VDC (+/-15%). A maximum of 100 mA is available for the combination of sensor and PNP output sourcing current.
- If a higher PNP output voltage level or additional output sourcing current is needed, an external DC supply may be connected between the "DC OUT ( V SRC IN)" and "COMM" terminals. This supply will determine the PNP output voltage level, and must be in the same range of +13 to +30 VDC.  
An external DC supply can also provide the additional output sourcing current required in applications where two or more PNP outputs are "ON" simultaneously. However, the maximum current range of 100mA per individual output must not be exceeded, regardless of external supply capacity.

**3. Memory:** Nonvolatile FRAM retains all program parameters and count values.

**4. SENSOR POWER:** + 12 VDC (+/- 15%) @ 100mA max.

**5. COUNT INPUTS A & B:** Accepts count pulses from a variety of sources, DIP switch selectable.

**Current Sourcing: (active high):**  $V_{in,max} = 3.9K$  ohm pull-down to 30 VDC.

**Current Sinking: (active low):** 7.8 K ohm pull-up to 12 VDC :  $I_{snk} = 1.8mA$  max.

**Debounce :** 50 Hz

**Lo Bias:**  $V_{IL} = 1.5$  VDC max.,  $V_{IH} = 3.75$  VDC min.

**Hi Bias:**  $V_{IL} = 5.5$  VDC max.,  $V_{IH} = 7.5$  VDC min.

**6. MAX. COUNT RATE:** Model dependent. All listed values are in Khz.  
Note: Max. count rates for X2 & X4 modes are given for 50% duty cycle signals and quad signals with 90° phase shift.

**Single Preset Model 8301**

Prescaler Value	C1-Usr C1-Ud	C2-usr C2-Ud	*Ad-sub Ad-Ad	QUAD		
				X1	X2	X4
0.00001-0.99999	8.4	4.1	9.4	5.4	4.5	2.1
1.00000	12.0	5.9	12.4	6.5	6.0	3.0
1.00001-2	6.6	3.2	6.8	4.3	3.3	1.6
2.00001-3	5.3	2.6	5.6	3.7	2.6	1.3
3.00001-4	4.3	2.1	4.6	3	2.2	1.1
4.00001-5	3.6	1.8	3.8	2.7	1.8	0.9
5.00001-6	3.1	1.5	3.4	2.4	1.6	0.8
6.00001-7	2.8	1.4	3.2	2.1	1.4	0.7
7.00001-8	2.6	1.3	2.8	1.9	1.3	0.6
8.00001-9	2.3	1.1	2.4	1.8	1.1	0.5
9.00001-9.99999	2.1	1.0	2.3	1.7	1.1	0.5

**Dual Preset Model 8302**

Prescaler Value	C1-Usr C1-Ud	C2-usr C2-Ud	*Ad-sub Ad-Ad	QUAD		
				X1	X2	X4
0.00001-0.99999	8.3	4.1	8.6	4.5	4.1	2.1
1.00000	11.5	5.7	11.5	6.0	5.8	3.0
1.00001-2	6.5	3.2	6.6	4.0	3.2	1.6
2.00001-3	5.0	2.4	5.2	3.4	2.5	1.3
3.00001-4	4.1	2.0	4.4	2.8	2.0	1.0
4.00001-5	3.4	1.7	3.8	2.5	1.7	0.8
5.00001-6	2.9	1.4	3.2	2.2	1.4	0.7
6.00001-7	2.7	1.3	2.8	2.0	1.3	0.6
7.00001-8	2.2	1.1	2.4	1.8	1.2	0.6
8.00001-9	2.2	0.9	2.3	1.6	1.1	0.5
9.00001-9.99999	1.9	0.9	2.0	1.5	0.9	0.4

**Batch Model 8303**

With Counter 2 configured as a Batch Counter ( $C2 A5n = bAtch$ )

Prescaler Value	C1-Usr C1-Ud	C2-usr C2-Ud	*Ad-sub Ad-Ad	QUAD		
				X1	X2	X4
0.00001-0.99999	8.3	4.1	8.4	3.7	3.6	2.2
1.00000	11.4	5.5	11.8	4.3	4.2	3.0
1.00001-2	6.5	3.2	6.6	3.2	3.0	1.6
2.00001-3	5.0	2.5	5.4	2.8	2.5	1.3
3.00001-4	4.1	2.0	4.2	2.4	2.0	1.0
4.00001-5	3.4	1.7	3.8	2.1	1.7	0.8
5.00001-6	2.9	1.4	3.2	1.9	1.5	0.7
6.00001-7	2.7	1.3	2.8	1.7	1.3	0.6
7.00001-8	2.4	1.1	2.6	1.6	1.2	0.6
8.00001-9	2.2	1.1	2.4	1.5	1.1	0.5
9.00001-9.99999	1.9	0.9	2.2	1.4	1.0	0.4

**Batch Model 8303**

With Counter 2 configured as a Total Counter ( $C2 A5n = totAL$ )

Prescaler Value	C1-Usr C1-Ud	C2-usr C2-Ud	*Ad-sub Ad-Ad	QUAD		
				X1	X2	X4
0.00001-0.99999	6.5	3.3	6.6	3.5	3.3	1.6
1.00000	8.5	3.6	8.6	4.0	4.0	2.1

**Prescaler Output Model 8304**

Prescaler Value	C1-Usr C1-Ud	C2-usr C2-Ud	*Ad-sub Ad-Ad	QUAD		
				X1	X2	X4
0.00001-0.99999	6.2	N/A	N/A	N/A	N/A	N/A
1.00000	8.0	N/A	N/A	N/A	N/A	N/A

\* Inputs A & B rates summed.



7. USER INPUTS: Configurable as current sinking (active low), or current sourcing (active high) inputs via a single plug jumper.

Current Sinking: (active low) : V<sub>IL</sub> = 1.5 VDC max. 22 K ohm pull-ups to 5 VDC

Current Sourcing: (active high): V<sub>IH</sub> = 3.5 min. V<sub>IN</sub> max. = 30 VDC; 22K ohm pull-down.

Response Time: 10 msec. max.

Inhibit Response Time: 250 microsec max.

8. OUTPUTS: (Output type and quantity model dependent)

Solid-State:

NPN Open Collector: I<sub>SNK</sub> = 100mA max. @ V<sub>OL</sub> = 1.1 VDC max. ; V<sub>OH</sub> = 30 VDC max.

PNP Open Collector: I<sub>SRC</sub> = 100mA max. ( See note) ; V<sub>OH</sub> = 12 VDC +/-15% ( using internal supply); V<sub>OH</sub> = 13 to 30 VDC ( using external supply).

Note: The internal supply of the 83 counter can provide a total of 100 mA for the combination of sensor current and PNP output sourcing current. The supply voltage is +12 VDC (+/-15 %), which will be the PNP output voltage level when using only the internal supply.

If additional PNP output sourcing current or a higher output voltage level is desired, an external DC supply may be connected between the "DC Out/In" and "Comm" terminals. This supply will determine the PNP output voltage level, and must be in range of +13 to 30 VDC.

An external supply can provide the additional output sourcing current required in applications where two or more outputs are "ON" simultaneously. However, the maximum rating of 100mA per individual output must not be exceeded, regardless of external supply capacity.

Relay: Form A contact, rating = 5 A @ 250 VAC, 30 VDC (resistive load) , 1/10 HP @ 120 VAC (inductive load).

Relay Life Expectancy: 100,000 cycles min. at max. load rating.

Programmable Timed Output: User selectable output time resolutions.

0.01 Second Resolution: 0.01 to 99.99 sec., +/-0.01% +20 msec max. (Prescalers less than 2)

0.1 Second Resolution: 0.1 to 999.9 sec. +/- 0.01 + 100 msec max. (Prescalers less than 2)

9. RS485 SERIAL COMMUNICATIONS (Optional): Up to 32 units can be connected.

Baud Rate: Programmable from 1200 to 9600 baud.

Address: Programmable from 0 to 99.

Data Format: 10 Bit Frame, 1 start bit , 7 or 8 data bits, 1 or no Parity bit, and 1 stop bit.

Parity: Programmable for Odd (7 data bits), Even ( 7 data bits) or None ( 8 data bits).

10. CERTIFICATIONS AND COMPLIANCES:

UL Recognized Component, File # E195514

Recognized to U.S. and Canadian requirements under the Component Recognition Program of Underwriters Laboratories, Inc.

CE Compliant:

ELECTROMAGNETIC COMPATIBILITY

Immunity to EN 50082-2

Table with 2 columns: Immunity type and EN standard number.

Emissions to EN 50081-2

Table with 2 columns: Emission type and EN standard number.

11. ENVIRONMENTAL CONDITIONS:

Operating Temperature: +32°F to +122°F [0°C TO +50°C]

Storage Temperature: -40°F to +158°F [-40°C to +70°C]

Operating and Storage Humidity: 85% max. relative humidity ( non-condensing) from +32°F to +122°F [0°C to +50°C]

Altitude : Up to 6500 Feet [1981 Meters]

12. ELECTRICAL CONNECTIONS: Wire clamping screw terminals.

13. CONSTRUCTION: Black plastic case with collar style panel latch.

The panel latch can be installed for horizontal or vertical stacking. Black plastic textured bezel can be removed from the case without removing the case from the panel or disconnecting the wiring. Front panel meets NEMA4X/IP65 requirements for indoor use, when properly installed. Installation Category II, Pollution Degree 2.

14. WEIGHT: 6.0 oz [170g]

SINGLE PRESET MODELS

The 8301 has a solid-state output that operates in parallel with a relay output. The solid-state output is available as an NPN or PNP open collector transistor.

DUAL PRESET MODELS

The 8302 has two outputs that are activated from presets 1 and 2. These outputs can be relay or solid-state outputs. The solid-state outputs are available as NPN or PNP open-collector transistors. Units with solid-state outputs can be ordered with an optional prescaler output.

3 PRESET BATCH MODELS

The 8303 has a secondary counter that can be used for batch counting, or to keep a total count. This second counter can be programmed to operate in one of eight operating modes. Output 1 and 2 are assigned to the primary process counter (C1). Output 3 is assigned to the secondary Batch/Total counter (C2). The three preset batch unit can be ordered with solid-state or relay outputs. Units with solid-state outputs have a User Input 2 terminal available. The relay model has a relay output for Output 2 and Output 3 (Batch/Total). Output 1 is available only as solid-state.

PRESCALER OUTPUT MODELS

The 8304 is a dual preset counter with solid-state outputs. These models have an additional output configured as a prescaler output. Each time the least significant digit of the display increments, the Prescaler output provides a pulse. The width of this pulse is variable in that the output will turn off after a programmed number of count input pulses has occurred (1-9). The Prescaler output can also be programmed to activate when the 10's digit of the display increments, rather than the least significant digit.

Note: Prescaler Output Models are limited to two programmable count modes and prescaler values of 1.00000 or less. See Count Input Modes for available modes.

FRONT PANEL KEYPAD



- Performs user Programmed Function.



- Cycles through secondary displays.
- Enters Programming Mode or Protected Value Menu when pushed and held for 2 seconds.
- Scrolls through programming displays.
- Enters Data Values.



- Selects next available mode in programming mode.
- Increments digit in digit Entry mode.
- Increments value in Auto Scrolling entry mode.



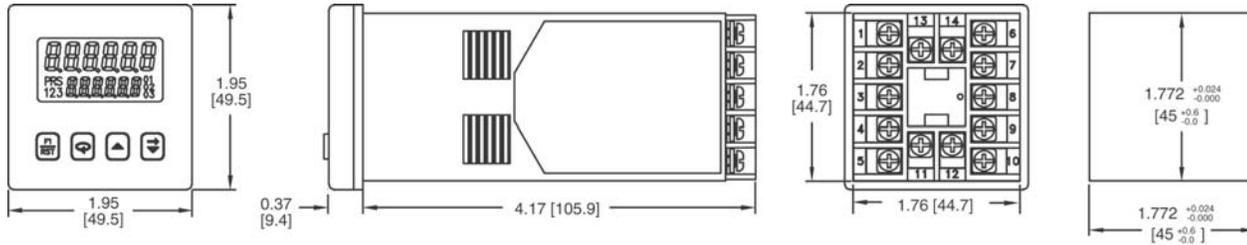
- Selects Digit to right when in Digit Entry mode.
- Decrements value in Auto Scrolling entry mode.



Models Description

For Details on Models and Descriptions, see the Ordering Information section

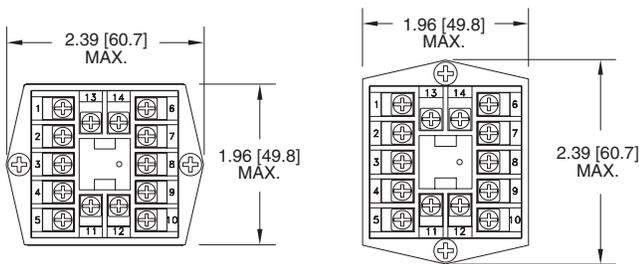
Dimensions



MULTIPLE UNIT STACKING

The Model 83 is designed for close spacing of multiple units. Units can be stacked either horizontally or vertically. For vertical stacking, install the panel latch with screws to the sides of the unit. For horizontal stacking, the panel latch screws should be at the top and bottom of the unit. The minimum spacing from center line to center line of the units is 1.96" (49.8 mm). This spacing is the same for vertical or horizontal stacking.

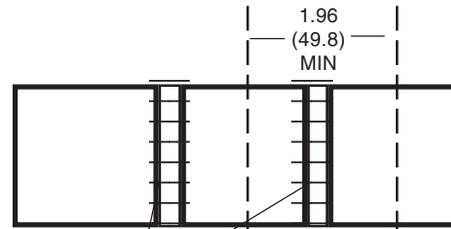
Note: When stacking units, provide adequate panel ventilation to ensure that the maximum operating temperature range is not exceeded.



PANEL LATCH INSTALLED FOR VERTICAL UNIT STACKING

PANEL LATCH INSTALLED FOR HORIZONTAL UNIT STACKING

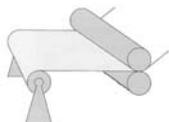
PANEL CUTOUT SPACING FOR MULTIPLE UNIT STACKING. HORIZONTAL ARRANGEMENT SHOWN.



IF NEMA 4 IS NOT REQUIRED, THIS PANEL MATERIAL MAY BE REMOVED.

Applications

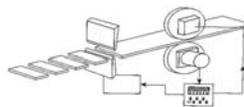
Convert-



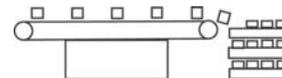
Batching



Cut-to-length



Packaging





**Ordering Information**

MODEL NO.	DESCRIPTION	NPN O.C. OUTPUT(S)	*PNP O.C. OUTPUT(S)	RELAY OUTPUT(S)	RS485	PART NUMBERS FOR AVAILABLE SUPPLY VOLTAGES	
						18-36 VDC/24 VAC	85 TO 250 VAC
8301	1 Preset Counter Backlit LCD	Yes	No	Yes	No	<b>8301-0110</b>	<b>8301-1110</b>
8302	2 Preset Counter Backlit LCD	Yes	No	No	No	<b>8302-0100</b>	8302-1100
	2 Preset Counter Backlit LCD	Yes	No	No	Yes	<b>8302-0101</b>	<b>8302-1101</b>
	2 Preset Counter Backlit LCD	No	No	Yes	No	<b>8302-0010</b>	<b>8302-1010</b>
	2 Preset Counter Backlit LCD	No	No	Yes	Yes	<b>8302-0011</b>	<b>8302-1011</b>
8304	2 Preset Counter w/Prescaler Output Backlit LCD	Yes	No	No	No	<b>8304-0100</b>	<b>8304-1100</b>
	2 Preset Counter w/Prescaler Output Backlit LCD	Yes	No	No	Yes	<b>8304-0101</b>	<b>8304-1101</b>
8303	3 Preset Batch Counter Backlit LCD	Yes(01)	No	Yes	No	<b>8303-0110</b>	<b>8303-1110</b>
	3 Preset Batch Counter Backlit LCD	Yes(01)	No	Yes	Yes	<b>8303-0111</b>	<b>8303-1111</b>
	3 Preset Batch Counter Backlit LCD	Yes	No	No	No	<b>8303-0100</b>	<b>8303-1100</b>
	3 Preset Batch Counter Backlit LCD	Yes	No	No	Yes	<b>8303-0101</b>	<b>8303-1101</b>

*Note: On batch Relay Models, Outputs 2 and 3 are relays, and Output 1 (01) is a solid-state output.*

\* PNP outputs are non-stock items

\* Items in bold are normally in factory stock.

**RELAY OUTPUT BOARDS**

DESCRIPTION	NPN O.C.	* PNP O.C.	RELAY	PART NUMBER
Single Preset	Yes	No	Yes	1726-044S
Dual Preset	No	No	Yes	1726-045S
Batch	Yes	No	Yes	1726-046S



**Description**

The Model 88 is a family of LCD Indicators/Controllers, with eight 7-segment digits that are 0.35" [9mm] in height. The standard display is a backlit LCD, providing red characters on a dark background. An optional reflective LCD with dark characters on a light background is available. Unit programming is accomplished using four front-panel switches, or programming can be done using the optional serial data interface and dedicated PC-based software (Redi-Ware), which is available from Redington free of charge. Upon power up, the Indicator/Controller performs internal diagnostics and flashes all segments of the display "ON" and "OFF" several times. The Indicator/Controller then configures itself per previous programming, loads the internal Counters and Timers with their values prior to power down, and begins normal operation.

The Model 88 Indicator/Controller is capable of receiving counts and/or analog inputs, processing those inputs in a number of different selectable ways, and then providing outputs in several formats. Base units, i.e.; #8800-0000, or similar units can be programmed for Elapsed Time, Rate, Preset Count/Time, count Add/Add, count Add/Sub., or count Quadrature. The two independent control outputs are open-collector (NPN) outputs that can be controlled by either count inputs, time, the analog input, or combinations of the analog input/time and count inputs. Based on two inputs, the indicator is capable of displaying two counts, a rate indicator and an elapsed time at the same time. The base unit provides the display, programming, and processing functions for the final configuration as well as the counter I/O function. I/O functions and factory installed modules are available that allow the user to configure complex functions into a small enclosure. Other models add analog input/output functions to the base unit, and serial communication functions, which supports RS232/RS422/RS485, providing the user with a broad selection of configurations.

Each Model 88 base unit is normally powered from a DC voltage of +10V to + 32 V. However, an AC power supply module # 200557-002S can be attached to the rear of the unit that converts +90VAC to +250VAC, to +12VDC, which can be used to power the Model 88 and an external sensor. Another module, 200557-001S, can be added that converts the discrete outputs of the Model 88 base unit to relay contacts.

**Features**

- Dual up counting
- Preset of time, rate or count
- Directional counting
- 1,2,4x quadrature
- Add/add counting
- Add/subtract counting
- Rate indication on count inputs
- Analog ranges: 0 to 10 VDC or 4 to 20 mA
- Prescaling of analog inputs and counts
- Elapsed timer function available for all modes of operation
- NEMA 4X/IP56 sealed panel
- UL, cUL Recognized, CE Compliant UL file # E19514

**Options**

- Relay Module 200557-001S  
2 form C, 5 amp relays
- Serial Comm. (RS232, RS422, RS485)
- Analog input/outputs
- Display color
- AC Power Module 200557-002S  
+90 VAC to +285 VAC, 50/60 Hz (unit is normally powered from +10 VDC to +32 VDC)

**Specifications**

<b>Display:</b>	LCD, 8 digits, 0.35" [9mm] negative image transmissive red or positive image reflective display. In the negative count mode the display will be 7 digits with a "-" sign. (Reflective display recommended in sunlight)	Three different quadrature resolutions Add-Add Add-Subtract Dual Count Elapsed Time Analog Input Predetermining
<b>Annunciators:</b>	A, B, R, 1, 2 ANLG, LOCK, HZ, RPM, HRS, SEC. 0.039" [1mm]	
<b>Programming:</b>	Programming is accomplished through the front panel switches or by serial data interface and dedicated PC software, supplied by Redington Counters, Inc.	<b>Predetermining Functions:</b> Preset units provide two discrete outputs which can be controlled as a function of count, rate, elapsed time, or analog input. Each control output can be set by any of the four functions and reset by the same or a different function. For example, control output 1 could be set when a specific count is reached and reset when an analog input level is reached.
<b>Available Functions:</b>	Totalizer Directional Counting Rate/Count	



**Predetermining Timer:**

**Programmable Ranges:**  
 Hours  
 Seconds  
 Hours, Minutes & Seconds

**Programmable Decimal Point:**

Counter A: 4 decimal point locations may be selected.  
 Counter B: 4 decimal point locations may be selected.  
 Rate Display: 4 decimal point locations may be selected.  
 Analog Input: 4 decimal point locations may be selected.  
 Time: 4 decimal point locations may be selected.

**Power Requirements:**

Base unit: +10VDC TO +32VDC @ 50mA max.  
 Relay Module: Model 200557-001S; +10VDC to +32VDC @ 50mA, max.  
 AC Power Supply: Model 200557-002S; +90VAC to +250 VAC 50/60 Hz @ 6 VA max.

**Memory:** Nonvolatile EEPROM retains all program parameters and values when power is removed. EEPROM provides 20 year data retention.

**Sensor Power:** +12VDC @ 100mA, minimum (200557-002S Module)

**Front Panel Lockout:**

Two front panel lockouts are available. In the programming mode, the operator is prohibited from entering new parameters. In the operating mode, the lockout disallows manual reset of any displayed inputs.

**Count/Timer Inputs (Input A & Input B):**

Software selectable: switch contact or voltage input  
 Software Selectable: filter: no filter or 160 Hz 1<sup>st</sup> order L.P.  
 Voltage Mode  $V_{IH}$ : 2.4VDC, min.  
 Voltage Mode  $V_{IL}$ : 0.8VDC, max. or open circuit  
 Switch Mode  $V_{IH}$ : 2.4 VDC, min. or open circuit  
 Switch Mode  $V_{IL}$ : 0.8VDC, max.  
 Maximum Input voltage: 32.0VDC  
 Minimum Input voltage: -0.8VDC

**Counter/Timer Operational Format:**

Input A is used for all count functions  
 Input B is used for timer enable and all dual Input counter functions (i.e. ADD/ADD, ADD-SUB, DIRECTIONAL COUNT, QUADRATURE, and DUAL COUNT).

**Input Scaling:** A & B Counters and analog input, (- 9.9999 to 99.9999)

**Quadrature Counting:**  
 Software selectable X1, 2, 4

**Analog Input:** 0 to 10VDC or 4 to 20 mA  
 Resolution: 4 digit

**Input Impedence:**  
 150K ohms, for 0 to 10VDC  
 100 ohms, for 4 to 20 mA

**Max. Count Rate:** 40 KHz for single counter mode.  
 20 KHz for dual count modes

**Rate Input Units:** The rate input can be expressed in terms of scaled counts per minute (rP) or scaled counts per second (HZ) of counter A.

**Rate Indicator Accuracy:**

±0.01%, References Time Base @T=25°C

**Minimum Input Frequency:**

1 pulse in 10 seconds

**Maxium Input**

**Frequency:** 40 K HZ

**Reset Functions:** (Automatic & manual)

**Reset-to-Zero:** Can be programmed so that the output activates when counter equals the preset value, counter returns to zero when reset.

**Reset-to-Preset:** Can be programmed so that the output activates when counter equals zero, Counter returns to Preset value when reset.

**Resets:** Automatic or manual.

**Outputs:** Base unit; Solid-state NPN: (2) Open collector:  $I_{SNK}=100mA$  @  $V_{OL}=1.1VDC$   $V_{OH}=40VDC$

**Relay Module:** Model 200557-001S; 2 form "C" relays rated @ 5 amps 250 VAC, 30VDC(resistive load) 1/10<sup>th</sup> HP @120VAC (inductive load)

**Relay Life Expectancy:**  
 100,000 cycles min. @ max. rated load.

**Programmable Timed Outputs:**  
 Both control outputs can be timed.

**Elapsed Timer Accuracy:** ± 0.01% @T=25°C

**Analog Output:** 0 TO 10VDC OR 4 TO 20mA  
**Accuracy:** 0.25% of full scale @ T = 25°C  
**Resolution:** 14 bits

**RS232/RS485/RS422 Serial Communications:** (Optional)  
**Baud Rate:** Selectable 2400, 4800, 9600, or 19.2K  
**Data Length/Parity/Stop Bits:** 8n1  
**RS485 Address:** Programmable from 0 to 99.  
**Transceiver Loading:** RS232/RS485/RS422- up to 16 loads

**Certifications & Compliances:**  
 UL, cUL- Recognized Component, file # E 195514  
 CE-Compliant to EN 61326: 1998 for industrial equipment

**Environmental Conditions:**  
**Operating Temperature:** -4°F to +140°F [-20°C to +60°C]  
**Storage Temperature:** -40°F to +185°F [-40°C to +85°C]  
**Operating & Storage Humidity:** to 95% (non-condensing) from -4°F to +140°F [-20°C to +60°C]  
**Altitude:** Up to 6561Ft. (2000 Meters)

**Electrical Connection:** Wire clamping screw terminals

**Construction:**  
 High impact black plastic case with "Clip" type mount. Front panel meets NEMA 4X/IP65 requirements for indoors use, when properly installed. Oversized front panel flange insures proper sealing of panel cutouts. Gaskets for front panel are provided.

**Panel Thickness:** 0.05" to 0.20" [1.3 to 5.1mm]

**Weight:** Less than 3 oz. (85g)

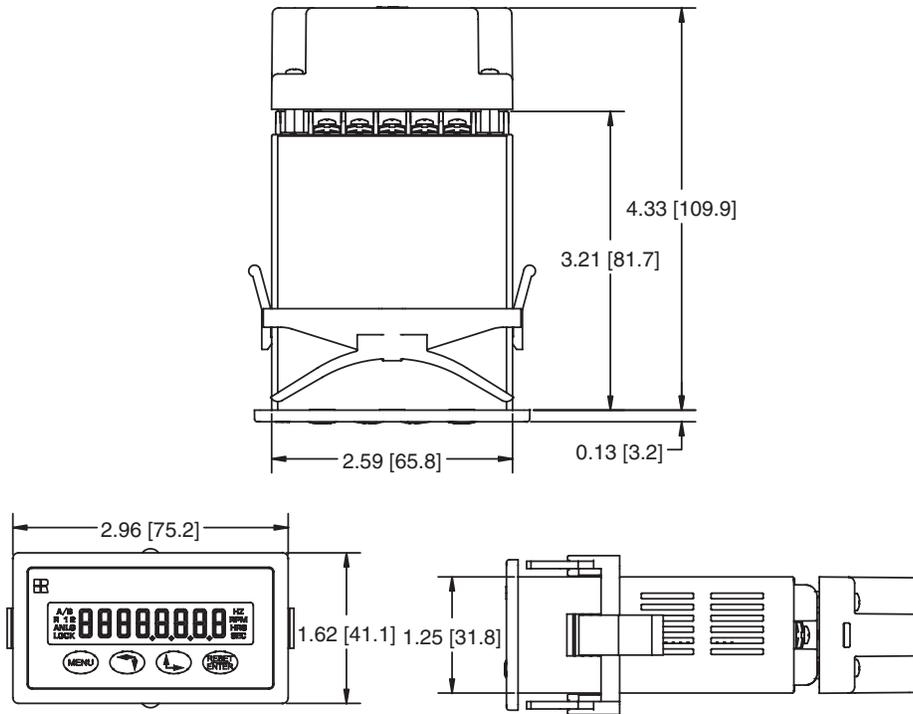


Models Description

For Models and Descriptions see the Ordering Information section

Dimensions

Model 88



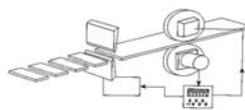
Panel Cutout 2.63" to 2.605" x 1.28" to 1.26" [66.8 to 66.2 x 32.5 to 32.0]  
Max. thickness of panel 0.5" [12.7]

Applications

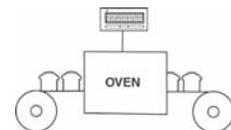
Batching



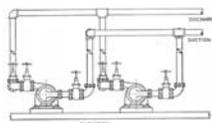
Cut-to-length



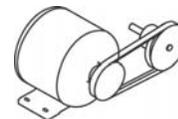
Elapsed time indicator



Flow and level control



Rate/Indication or control





Ordering Information

MODEL NUMBER	DESCRIPTION	DISPLAY RED TRANSMISSIVE	DISPLAY REFLECTIVE	ANALOG INPUT	ANALOG OUTPUT	RS-485 RS-232 RS 422
8800-0000	Base unit, Red Trans., 10-30VDC, Prescale	X				
8810-0000	Base unit, Reflective, 10-30VDC, Prescale		X			
8800-0100	Red Trans., 10-30VDC, Prescale, Serial Communications	X				X
8810-0100	Reflective, 10-30VDC, Prescale, Serial Communications		X			X
8800-0010	Red Trans., 10-30VDC, Analog input, Prescale	X		X		
8810-0010	Reflective, 10-30VDC, Analog input, Prescale		X	X		
8800-0001	Red Trans., 10-30VDC, Analog output, Prescale	X			X	
8810-0001	Reflective, 10-30VDC, Analog output, Prescale		X		X	
8800-0110	Red Trans., 10-30VDC, Analog input, Prescale, Serial Communications	X		X		X
8810-0110	Reflective, 10-30VDC, Analog input, Prescale, Serial Communications		X	X		X
8800-0101	Red Trans., 10-30VDC, Analog output, Prescale, Serial Communications	X			X	X
8810-0101	Reflective, 10-30VDC, Analog output, Prescale, Serial Communications		X		X	X
8800-0011	Red Trans.,, 10-30VDC, Analog I/O, Prescale	X		X	X	
8810-0011	Reflective, 10-30VDC, Analog I/O, Prescale		X	X	X	
8800-0111	Red Trans, 10-30VDC, Analog I/O, Prescale, Serial Communications	X		X	X	X
8810-0111	Reflective, 10-30VDC, Analog I/O, Prescale, Serial Communications		X	X	X	X

ACCESSORIES

200557-001S Relay module            2 form C relays  
200557-002S AC Voltage module,    +90VAC to +250VAC also outputs +12VDC for base unit & sensor

Note: Reflective display is recommended for applications that will be exposed to direct sunlight

\* All parts are normally in factory stock.



**Description**

A 6 figure, battery powered, push-button or key reset, electronic hour meter, available in base mount or panel mount configuration. No external power supply is required. Large 0.50" [12mm] LCD figures for fast, easy reading. Operates at 6-240 VAC or VDC. Long lasting internal lithium battery. Attractive styling and silent operation make these models equally well-suited for lab or office equipment applications.

**Features**

- No external power supply needed
- Long life lithium battery
- Large easy reading display
- Operates at 6 to 240 VAC or VDC

**Options**

- Non-reset
- Remote reset
- Minutes meter
- Seconds meter

**Specifications**

**Figures:** 6 LCD figures, 0.50" [12mm] high  
**Reset:** Push-button, or lock and key  
**Input:** 6-240VAC (50/60Hz) or 6-240VDC  
 Vih 6VAC/VDC minimum  
 Vil 2VAC/VDC maximum

**Terminations:** (2) #22 AWG 221°F [105° C] wire leads, 8" [203mm] long  
**Temp. Range:** -14°F to +122°F [-26°C to +50°C]  
**Power Source:** Internal lithium battery  
**Weight:** 18 oz. [510g]

**Mounting:** Base or panel

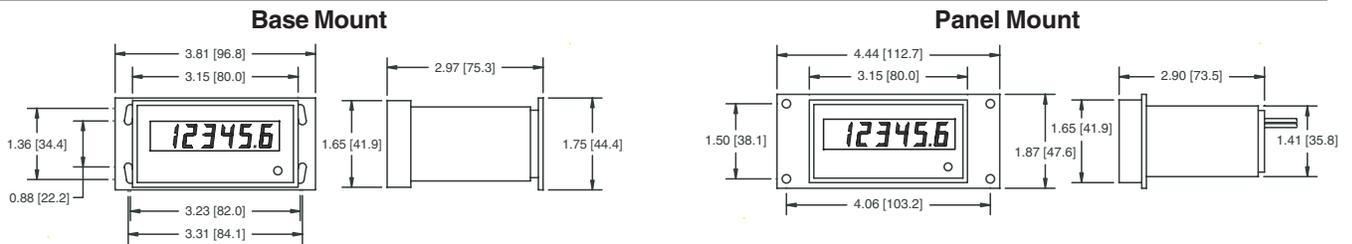
Note: When interfacing the Model 94 with a Solid State Relay or AC Sensor, the leakage current needs to be considered. Contact the factory or see the application note at [www.redingtoncounters.com](http://www.redingtoncounters.com) for further information.

**Models Description**

- 9425-001 6 figure, base mount, push-button reset
- 9425-003 6 figure, panel mount, push-button reset
- 9425-005 6 figure, panel mount, lock and key reset

\* Items are normally in factory stock.

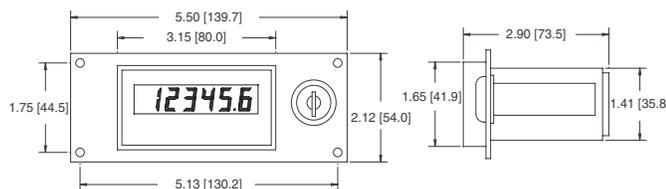
**Dimensions**



Mounting holes: 0.14" x 0.24" [3.6mm x 6.1mm] slots

Panel cutout: 3.0" x 1.75" [76.2mm x 44.5mm]  
Mounting holes: 0.17" [4.3mm] Dia.

**Panel Mount/Lock & Key Reset**



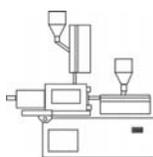
Panel cutout: 4.75" x 1.50" [76.2mm x 44.5mm]  
Mounting holes: 0.17" [4.3mm] Dia.

**Applications**

Office equipment



Production



Test labs



Control panels





Description

A 6 figure, battery powered, push-button or key reset, electronic counter, available in base mount or panel mount configuration. No external power supply is required. Large 0.50" [12mm] LCD figures for fast, easy reading. Operates at 6-240 VAC or VDC. Long lasting internal lithium battery. Attractive styling and silent operation make these models equally well-suited for lab or office equipment applications.

Features

- No external power supply needed
- Long life lithium battery
- Large easy reading display
- Operates at 6 to 240 VAC or VDC

Options

- Non-reset
- Remote reset

Specifications

<b>Figures:</b>	6 LCD figures, 0.50" [12mm] high	<b>Mounting:</b>	Base or panel
<b>Reset:</b>	Push-button, or lock and key	<b>Terminations:</b>	(2) #22 AWG 221°F [105° C] wire leads, 8" [203mm] long
<b>Speed:</b>	0-40 counts/second, (min. 12.5ms - on, 12.5ms - off)	<b>Temp. Range:</b>	-14°F to +122°F [-26°C to +50°C]
<b>Input:</b>	6-240VAC or VDC	<b>Power Source:</b>	Internal lithium battery
	Vih 6VAC/VDC minimum	<b>Weight:</b>	18 oz. [510g]
	Vil 2VAC/VDC maximum		

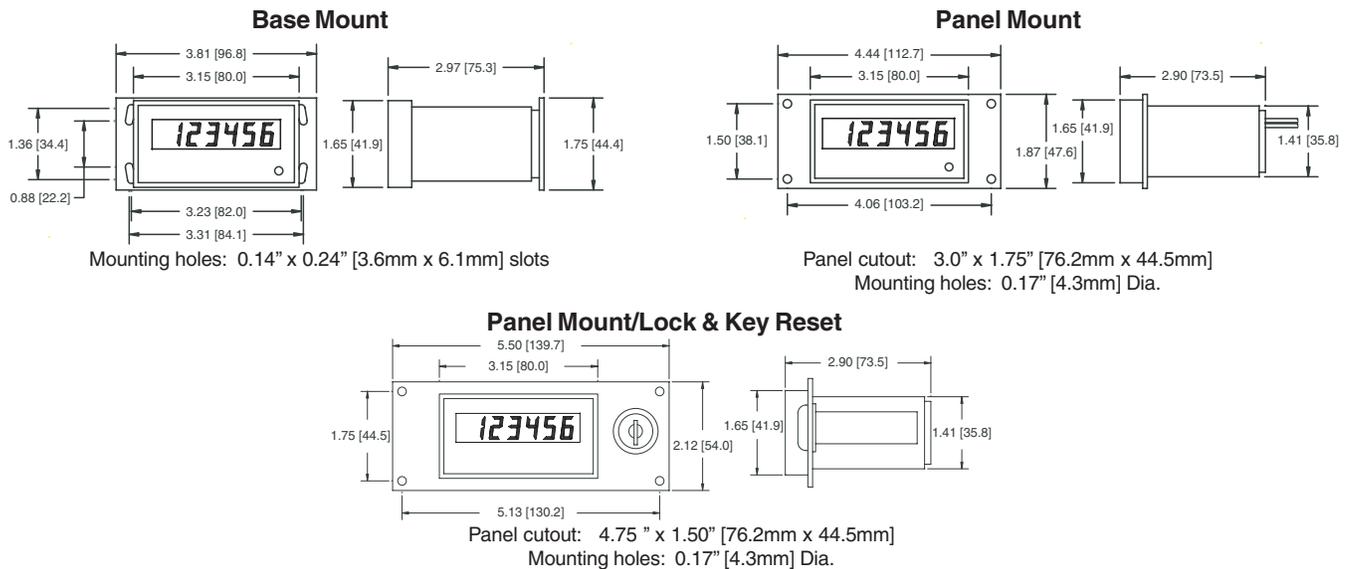
Note: When interfacing the Model 94 with a Solid State Relay or AC Sensor, the leakage current needs to be considered. Contact the factory or see the application note at [www.redingtoncounters.com](http://www.redingtoncounters.com) for further information.

Models Description

<b>9415-001</b>	6 figure, base mount, push-button reset
<b>9415-003</b>	6 figure, panel mount, push-button reset
<b>9415-005</b>	6 figure, panel mount, lock and key reset

\* Items in bold are normally in factory stock.

Dimensions

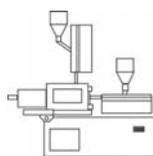


Applications

Office equipment



Production



Test labs



Control panels





Add Model



Add/Subtract Model

**Description**

The Redington Models E2 & E3 offer an electronic version of the popular Hand Tally counter and are available with a choice of Add only or Add/Subtract models. Counts are input using large positive action buttons. The Add model has a single count button and the Add/Subtract model has two separate count buttons. The "+" button (green) will add a count to the total and the "-" button (red) will subtract a count from the total. When activated, an audible "beeper" sounds every count to verify that a count has been registered. All electronic components provides a long life counter with no moving parts to wear out. The counter is manufactured from impact-resistant plastic, combining lightweight with outstanding durability.

**Features**

- Add or Add/Subtract models
- Beep at every count with the option of switching the sound off for silent operation
- Cannot accidentally reset or turn off; On/Off/Reset button must be held down for 3 seconds to reset
- Long life battery (replaceable) - typically 250 days without sound
- Large LCD display
- No mechanical parts to wear out
- Large rubber buttons for comfort of use
- Ergonomically designed for ease of use
- Carrying cord
- Light weight

**Specifications**

<b>Display:</b>	4 digit LCD 0.35" [9mm] high	<b>Operating Temperature:</b>	+32°F to +122°F [0°C to +50°C]
<b>Battery Operating Life:</b>	250 days (without sound)	<b>Weight:</b>	0.7 oz (20g)
<b>Reset:</b>	Push button	<b>Color:</b>	Black case with blue buttons (Add Only) or green and red buttons (Add/Subtract)

**Models Description**

<b>E2-1804</b>	Electronic Hand Tally (Add only)
<b>E3-1804</b>	Electronic Hand Tally (Add/Subtract)

**Dimensions**

2.4" L x 1.4" W x 0.6" D [60mm x 35mm x 15mm]

\* All Items are normally in factory stock.

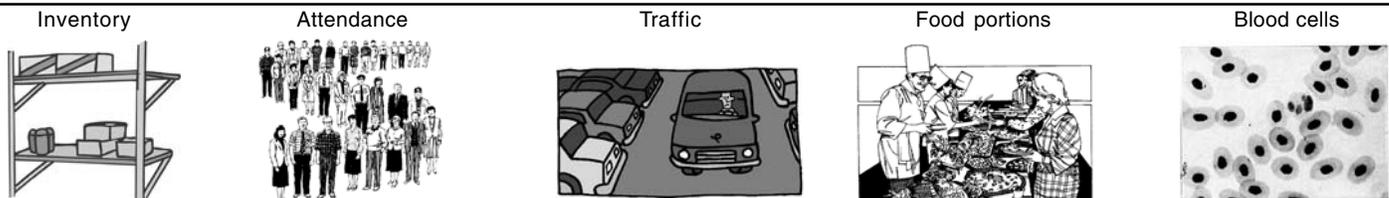
**Operating Instructions**

- Press On/Off/Reset button to power ON the unit
- Add model - Press count button to increment count
- Add/Subtract model - Press the "+" button to Add, Press the "-" button to Subtract
- To reset counter press the On/Off/Reset button for 3 seconds
- To switch the sound Off/On at any time, hold the count button down for 3 seconds
- To turn Off, press the On/Off/Reset for 3 seconds when counter display is at "0"

**Battery Replacement**

When the display gets dim, replace the battery. Use 1 type AG10 1.5 V or equivalent. Observe polarity (±) during replacement

**Applications**





**Description**

The Redington Model 9200-HTK hand tachometer kit combines low cost with convenience. Simple to use... push the measurement button to record the speed. The tachometer can be used for contact or non-contact measurement on rotating machinery or surface speed. The photoelectric probe is used with reflective tape to detect rotating objects. The accessory adaptor with pointed tip can be added for contact measurement or wheels can be used for surface speed measurement. For measuring in tight or confined spaces, an optional remote sensor is available.

**Features**

- Combination unit - photo and contact
- Wide speed range - 6.0 - 99,999.9 RPM, 0.1 resolution
- Sampling time of 1-10 seconds
- Automatic shutoff after 3 minutes
- Digital display with low battery alarm and reflective light input indicator
- Carrying case included

**Options**

- Remote sensor for measurement in hard to reach places

**Specifications**

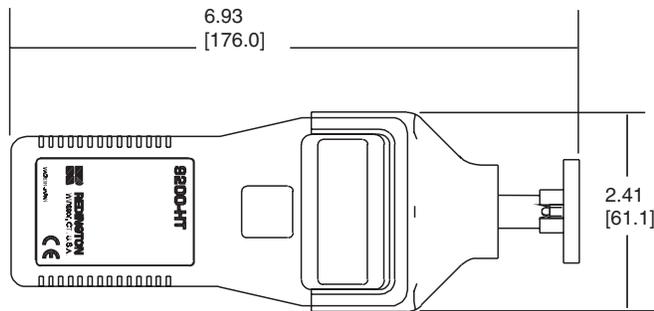
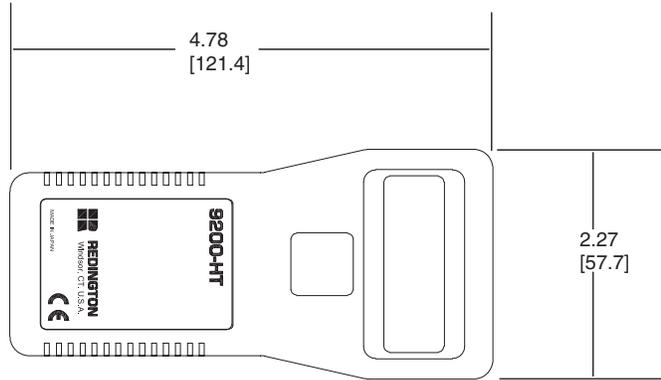
<b>Power Source:</b>	4 alkaline batteries (AAA, 1.5 V) continuous measurement 20 hours.	<b>Automatic Power Cutoff:</b>	After 3 minutes from last measurement.
<b>Accuracy:</b>	$\pm 0.01\% \pm 1$ digit RPM f/min. (others $\pm 0.05\%$ or $\pm 1$ digit including tolerance for conversion).	<b>Display:</b>	6 digit LCD
<b>Measurement Distance:</b>	2"-14" (50-300mm) with reflective tape.	<b>Approvals:</b>	CE Compliant, passed EMC tests EMI: EN50081-1 & EMS: EN50082-1
<b>Measurement Range:</b>	6.0 - 99,999.9 RPM	<b>Weight:</b>	7 oz [199g] (with in-line contact adaptor).
<b>Sampling Time:</b>	1.0-10.2 sec.	<b>Operating Temperature:</b>	+41°F to +104°F [+5°C to +40°C]

<b>Models</b>	<b>Description</b>	<b>Models</b>	<b>Description</b>
<b>9200-HTK</b>	Hand Tachometer Kit: includes, Hand Tach. (Photo), In-Contact adaptor, Rubber tips (3), Reflective Tape (10 sheets), Surface Speed wheels, 1 ea. (1/10 m/min., and 1/10 yd./min.), Carrying Case, Batteries (4 AAA size, 1.5 V, Instructions Manual).	<b>9200-HT</b>	Hand Held Tachometer
		<b>1887-021S</b>	Remote Probe
		<b>1895-004S</b>	Rubber Tips
		<b>1895-005S</b>	Surface Wheel (1/10 Meter)
		<b>1895-006S</b>	Surface Wheel (1/10 Yard)
		<b>200507-046S</b>	Reflective Tape (10 Sheets)

\* Items in bold are normally in factory stock.

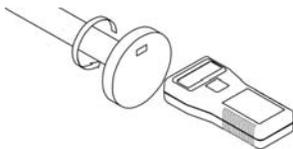


Dimensions

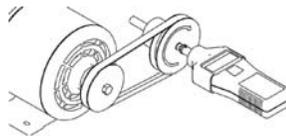


Applications

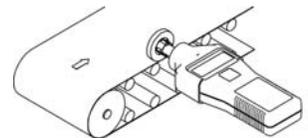
Speed of many rotating objects

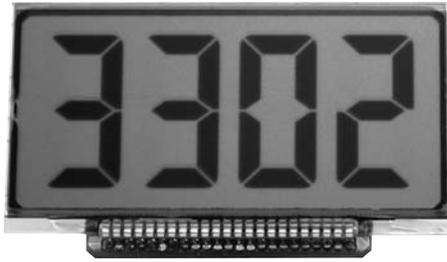


Check motor speeds

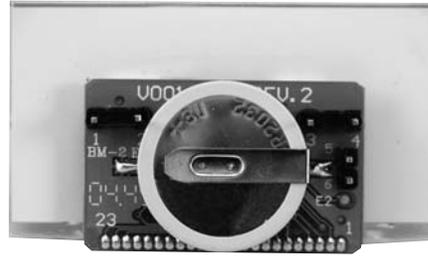


Conveyor line speed





Front



Back

**Description**

The Redington Model 3302-4322 LCD counter provides a very economical, large 4-digit display, 0.75" [19mm] with a PCB mount. The counter is designed to accept dry contact or other solid-state switch-mode inputs. It has remote reset capability that is compatible with dry contact or switch-mode inputs. The maximum pulse frequency is up to 30Hz. The counter is battery operated with a rated life of 5 years.

**Features**

- Large LCD display
- Always on display
- Contact closure input & remote reset
- PCB mount

**Options**

- Non-reset

**Specifications**

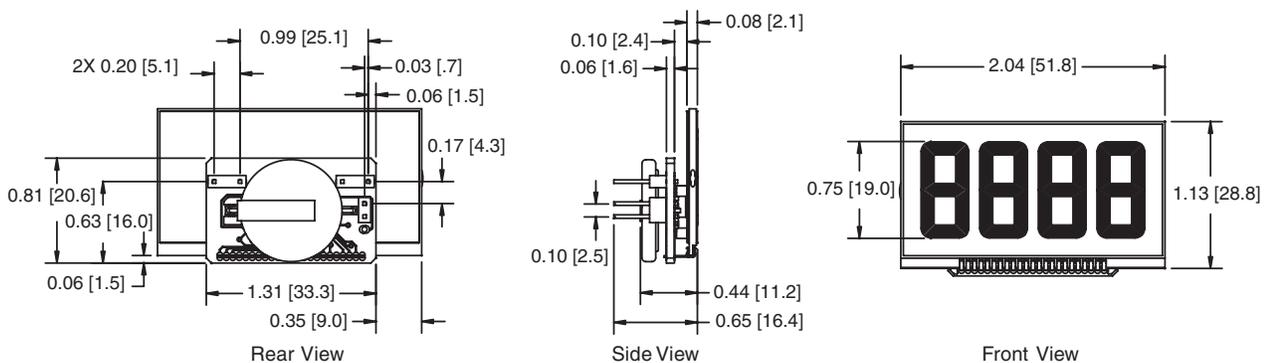
**Display:** Large 0.75" [19mm], LCD, black on light background  
**Displays:** 4 digit (9999)  
**Inputs:** Dry contact closure or solid-state switch-mode input  
**Remote Reset:** Dry contact closure or solid-state switch-mode input  
**Battery Life:** 5 years (with 50% input duty cycle)

**Temp. Range:** -40°F to 185°F [-40°C to 85°C]  
**Agency Approvals:** CE Compliant  
**Termination:** (6) 0.025 [0.64] square pins  
**Weight:** 0.5oz, [14g]

**Model Description**

Model	Description
3302-4322	4-digit, LCD, 0.75" [19] PCB mount, dry contact closure input and remote reset

**Dimensions**



**Applications**

Panel Builders

Test Equipment

Medical Devices

Events or People Counter

Office Equipment





**Description**

The Model 54 is a 7 or 8 digit LCD Totalizer with PCB mounting. Ideal for applications where PCB mounting, high reliability and long life are important. Units are 7 or 8 digits and come with their own lithium battery. Totalizers have two count speed ranges, 40cps or 150cps and are customer selectable.

**Features**

- Remote or non-reset
- Selectable count speeds
- High reliability
- PCB mounting
- Long life lithium battery
- Dry contact closure or voltage pulse input

**Options**

- Hour Meter
- Tachometer
- Without battery
- 8 digits

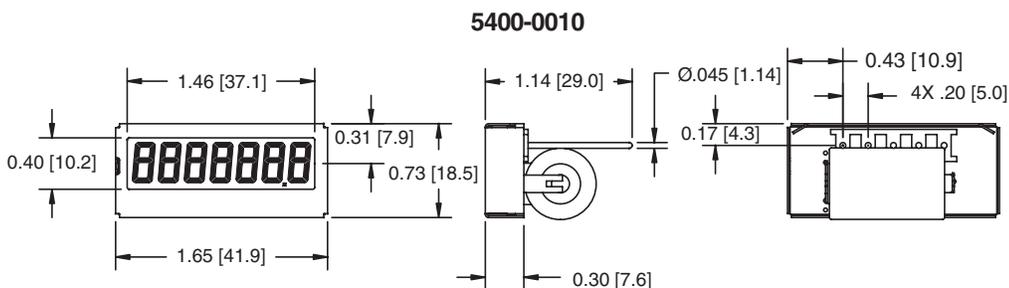
**Specifications**

<b>Figures:</b>	7 LCD , 0.315" (8mm)	<b>Power:</b>	Lithium battery (rated @ ~ 20 years)
<b>Reset:</b>	Remote and non-reset	<b>Mounting:</b>	PCB: 0.45" Dia. [11.4mm] Pins, 0 .2" [5.1mm] spacing:
<b>Speed: 7 Digit:</b>	0 - 40 counts/second (min. 12.5ms-on, 12.5ms-off)	<b>Temperature:</b>	
	0 - 150 counts/second (min.3.3,s-on, 3.3ms-off)	<b>Operating:</b>	-4°F to +140°F [-20°C to +60°C]
<b>8 Digit:</b>	0 - 35 counts/second (min. 14.3ms-on,14.3ms-off)	<b>Storage:</b>	-40°F to +165°F [-40°C to +75°C]
<b>Inputs:</b>	Switch (no-voltage), 3-30VDC, 20-250VAC/VDC	<b>Weight:</b>	2oz [57g]
	Vih 20VAC/3VDC minimum		
	Vil 3VAC/1VDC maximum		

Models	Description	Models	Description
5400-0010	40/150 cps, switch, remote reset, w/battery	5400-1010	40/150 cps, 3-30VDC, remote reset, w/battery

\* All part numbers shown are for 7 digit models. Please contact the factory for information on 8 digit models.

**Dimensions**

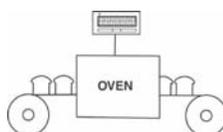


**Applications**

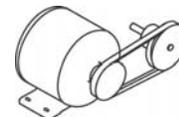
Number of Parts



Total Operating Time



Motor/Pulley Speed





**Description**

The Model 85 is a 3 1/2 digit, Modular Digital Panel Meter, where input and output modules can be selected to suit multiple applications. Input Modules are available to indicate Voltage, Amperage, Pressure, Temperature, Rate, Ohms and Frequency. User -friendly programming allows the user to program scaling and set points. The Model 85 includes peak/valley (min/max) and password protection as standard features. The housing is easy to mount and ensures a protection degree of IP 65. The Model 85 can be ordered with or without Program Lock.

**Features**

- Modular Panel Meter 3 1/2 digit
- Optional bright red or green display
- Multirange input modules reduce inventory
- Popular 1/8 DIN mounting
- Indicating or controlling current, voltage, resistance, temperature, tachometer or frequency
- Easily programmed
- Optional password protection of programming parameters
- Data hold
- Peak/valley (min/max) function
- Programmable hysteresis and time delay (up to 2 set points)
- IP 65 front cover

**Options**

- Display color
- Output type
- Input voltage
- Value to display or control
- Program lock

**Specifications**

**General Specifications**

<b>Display:</b>	7-segment LED, 0.55" [14mm] high, (2 LED's for indication of relay ON). Min./max. indication, -1999/1999
<b>Over range indication:</b>	EE (under range: -EE)
<b>Accuracy:</b>	See module specifications
<b>Temperature drift:</b>	See module specifications
<b>Scaling:</b>	
Electrical input range:	Program within whole range
Display range:	Program within whole range
Decimal point position:	Programmable
<b>Module Connection:</b>	Screw terminals
<b>Environment:</b>	
Degree of protection:	IP 65 (front)
Operating temperature:	+32°F to +122°F [0°C to +50°C]
<b>Humidity:</b>	R.H. <90% non-condensing
Storage temperature:	+14°F to +140°F [-10°C to 60°C]
<b>Humidity:</b>	R.H. <90% non-condensing
<b>Weight:</b>	Approx. 12.4 oz [352g]
<b>Housing:</b>	
Dimensions:	1.9" x 3.9" x 3.5" [48.3 x 99.1 x 88.9mm]
<b>Material:</b>	
Housing:	ABS/Polycarbonate blend
Front:	Polycarbonate
Color:	Black housing Red front with red display Gray front with green display
<b>Approvals:</b>	UL, cUL, CE Compliant

**Power Supply Specification**

<b>Power Supply AC:</b>	Over voltage cat.III (IEC 60664)
Rated operational voltage:	230 VAC ± 10% 115 VAC ± 10% 48 VAC ± 10% 24 VAC ± 10%
Frequency:	50/60 Hz ± 5 Hz
Voltage interruption:	≤ 20ms
Rated insulation voltage:	250 VAC basic rms
Rated impulse withstand voltage:	6kV (1.2/50 msec) IEC 60664-1
<b>Power Supply DC:</b>	
Rated operational voltage:	12 to 48 VDC ± 15%
Voltage interruption:	≤ 10 ms (voltage = 10 VDC)
Rated insulation voltage:	150 VDC basic
Rated impulse withstand voltage:	4.0 kV (1.2/50 msec) IEC 60664-1
<b>Rated Operational Power:</b>	< 7 VA
<b>ECM:</b>	Electromagnetic compatibility
Immunity:	Acc. to IEC 60801-4 Acc. to IEC 60801-5



**Input Specifications - Modules**

**Voltmeters DC (85KSVD/85KLVD)  
AC (85KSVA/85KLVA)**

Measuring Range	Jumper position	Range Code		Resolution	Input Impedance	Max. Overload
		AC	DC			
199.9 mV	1-4	7	1	0.1 mV	100 KW	50 V
1.999 V	2-5	8	2	1 mV	100 KW	230 V
19.99	2-5	9	3	10 mV	1 MW	690 V
199.9 V	3-6	10	4	0.1 V	1 MW	690 V
600V*	5-6	12	6	1 V	1 MW	690 V

\*Nominal voltage according to IEC 664-1. The measuring range includes 15% tolerance to 690 V.

**Accuracy**

AC voltmeter 0.3% of reading ± 3 dgt  
DC voltmeter 0.2% of reading ± 2 dgt

**Temperature Drift**

AC voltmeter ± 150 ppm/°F ± 0.2 dgt/°F  
DC voltmeter ± 100 ppm/°F ± 0.05 dgt/°F

**Ammeters DC (85KSCD/85KLCD)  
AC (85KSCA/85LCA)  
AC/DC (85KSAD/85KLAD)**

Measuring Range	Jumper position	Range Code		Resolution	Max. Overload
		AC	DC		
199.9 mA	1-2	7	1	0.1 mA	20 mA
1999 mA	2-3	8	2	1 mA	100 mA
19.99 mA	4-5	9	3	10 mA	200 mA
199.9 mA	5-6	10	4	0.1 mA	500 mA
1999 mA	2-5	11	5	1 mA	4 A
5.00 A	2-5	12	6	10 mA	8 A
10 A DC	1-2(DC)		6	10 mA	10 A
10 A AC	2-3(AC)	12		10 mA	10 A

**Accuracy**

AC ammeter 0.3% of reading ± 3 dgt  
AC ammeter (10 A) 0.5% of reading ± 3 dgt  
DC ammeter 0.2% of reading ± 2 dgt  
DC ammeter (10 A) 0.5% of reading ± 2 dgt

**Temperature Drift**

AC ammeter ± 150 ppm/°F ± 0.5 dgt/°F  
AC ammeter (2A,5A) ± 200 ppm/°F ± 0.1 dgt/°F  
AC ammeter (10A) ± 200 ppm/°F ± 0.5 dgt/°F  
DC ammeter ± 100 ppm/°F ± 0.05 dgt/°F  
DC ammeter (2A,5A) ± 200 ppm/°F ± 0.5 dgt/°F  
DC ammeter (10A) ± 200 ppm/°F ± 0.5 dgt/°F

**Voltage Drop**

<200 mV (all ranges)

**Pressure Indicator**

The Model 85 can be used to indicate pressure by using the DC Amperage or DC Voltage input module. You can then program the unit to limit the range to 20mA or 20VDC and program the engineering units to display the corresponding pressure reading.

**Ohmmeter (85KSIR/85KLIR)**

Measuring Ranges	Jumper position	Range Code AC	Resolution
199.9 W	1-4	7	0.1 Ω
1999 W	2-5	8	1 Ω
19.99 kW	3-6	9	0.01 kΩ
199.9 kW	1-2	10	0.1 kΩ

**Accuracy**

0.2% of reading ± 2 dgt  
**Temperature Drift** ± 150 ppm/°F ± 0.1 dgt/°F

**Tachometers (85KSTK/85KLTK)**

Measuring	Jumper	Range	Resolution
199.9 RPM @ 30PPR*	J4, 1-2	7	0.1 RPM
199.9 RPM @ 60PPR*	J5, 1-2	8	0.1 RPM
199.9 RPM @ 100PPR*	J6, 1-2	9	0.1 RPM
1999 RPM @ 30PPR*	J4, 2-3	10	1 RPM
1999 RPM @ 60PPR*	J5, 2-3	11	1 RPM
1999 RPM @ 100PPR*	J6, 2-3	12	1 RPM

\* Pulses per revolution

**Input Selection**

Namur J1  
NPN, PNP, Contact J2

**Accuracy** 1% of reading ±5 dgt  
**Temperature Drift** ±200 ppm/°F

**Input Impedance**

Namur 1 kW  
NPN, PNP, Contact 5 kW

**Time Constant (tc)** 1 sec.

**Frequency Meters (85KSFQ/85KLFQ)**

Measuring Ranges	Jumper Position	Range Code	Resolution
199.9 Hz	J7	7	0.1 Hz
1999 Hz	J8	8	1 Hz

**Input Selection**

Namur J1, J4 and J6  
NPN, PNP, Contact J2 and J5  
600 VAC J3

**Accuracy** 1% of reading ±5 dgt  
**Temperature Drift** ±200 ppm/°F

**Input Impedance**

Namur 1 kW  
NPN, PNP, Contact 5kW  
600 VAC 600 kW

**Time Constant (tc)** 1 sec.



**Thermometers**

**Pt 100: RTD (85KSRT/85KLRT)**

Range	Resolution	Accuracy	Temperature Drift
-100.0 to 199.9 °C	0.1 °C	±0.2% of reading ± 2dgt	± 150 ppm/°C ± 0.05 dgt/°C
-148 to 199.9 °F	0.2 °F	±0.2% of reading ± 4 dgt	± 180 ppm/°F ± 0.10 dgt/°F
-148 to 392 °F	1 °F	±0.2% of reading ± 4 dgt	± 180 ppm/°F ± 0.10 dgt/°F

**Pt 100, 1562°F/850°C (85KSPT/85KLPT)**

Range	Resolution	Accuracy	Temperature Drift
-100.0 to 850 °C	1 °C	±0.2% of reading ± 3 dgt	± 150 ppm/°C ± 0.05 dgt/°C
-148 to 1562 °F	2 °F	±0.4% of reading ± 6 dgt	± 180 ppm/°F ± 0.10 dgt/°F

**Thermocouple type J (85KSJT/85KLJT)**

Range	Resolution	Accuracy	Temperature Drift
-100.0 to 760 °C	1 °C	±0.1% of reading ± 4 dgt	± 100 ppm/°C ± 0.05 dgt/°C
-148 to 1400 °F	1 °F	±0.1% of reading ± 8 dgt	± 180 ppm/°F ± 0.10 dgt/°F

**Thermocouple type K (85KSKT/85KLKT)**

Range	Resolution	Accuracy	Temperature Drift
-100.0 to 1250 °C	1 °C	±3% of reading ± 3 dgt	± 100 ppm/°C ± 0.05 dgt/°C
-100 to -50 °C	1 °C	±1% of reading +5/-1 dgt	± 100 ppm/°C ± 0.05 dgt/°C
-50.0 to 780 °C	1 °C	±0.1% of reading ± 3 dgt	± 100 ppm/°C ± 0.05 dgt/°C
780 to 1250 °C	1 °C	±0.25% of reading +1/-3 dgt	± 100 ppm/°C ± 0.05 dgt/°C
-148.0 to 1999 °F	2 °F	± 3% of reading ± 6 dgt	± 180 ppm/°F ± 0.10 dgt/°F
-148 to -58 °F	2 °F	±1% of reading +10/-2 dgt	± 180 ppm/°F ± 0.10 dgt/°F
-58.0 to 1436 °F	2 °F	±0.1% of reading ± 6 dgt	± 180 ppm/°F ± 0.10 dgt/°F
1436 to 1999 °F	2 °F	±0.25% of reading +2/-6 dgt	± 180 ppm/°F ± 0.10 dgt/°F

**Output Specifications - Modules**

**Relay Outout 1 or 2 Relays (85KSR1/85KSR2)**

**Power Supply** Supplied by main unit  
**Output** 1 or 2 SPDT relays  
**Rated Insulation Voltage** 250 V basic RMS  
**Contact Ratings (AgCdO)**  
 Resistive AC 1 5A, 250 VAC  
 DC 1 5A, 24 VDC  
 Small inductive AC 11 2A, 250 VAC  
 loads DC 11 3A, 24 VDC  
**Mechanical Life** ≥ 40 x 10<sup>6</sup> operations  
**Electrical Life** ≥ 10<sup>5</sup> operations (at max load)  
**Operating Frequency** max. 10Hz (50% duty cycle)  
**Dielectric Strength**  
 Dielectric voltage 2 kVAC (rms)  
 Rated impulse withstand voltage 4 kV (1.2/50ms)

**NPN Output 2 Transistor Outputs (85KSNP)**

**NPN Open Collector:** I<sub>SNK</sub> = 100mA max. @ V<sub>OL</sub> = 1.0 VDC max.  
 V<sub>OHI</sub> = 30 VDC max.  
 12VDC/±15%, 40 mA,  
 voltage output is provided

**Excitation Output (85KSDC)**

**Power Supply** Supplied by main unit  
**Output Voltage**  
 12 VDC: jumper position 3-6 tolerance ±20%  
 24 VDC: jumper position 1-4 tolerance ±20%  
**Output Current**  
 12 VDC ≤ 35 mA DC  
 24 VDC ≤ 20 mA DC  
**EMC** Electromagnetic compatibility  
 Immunity Acc. to IEC 60801-4  
 Acc. to IEC 60801-5

**Analog output (85KSAN)**

Measuring Range	Load Resistance	Accuracy
0 to 20 mA	≤ 500 Ω	±1% of reading ±0.1 mA
4 to 20 mA	≤ 500 Ω	±1% of reading ±0.1 mA
0 to 10 V	≤ 1,000 Ω	±1% of reading ±0.05 V

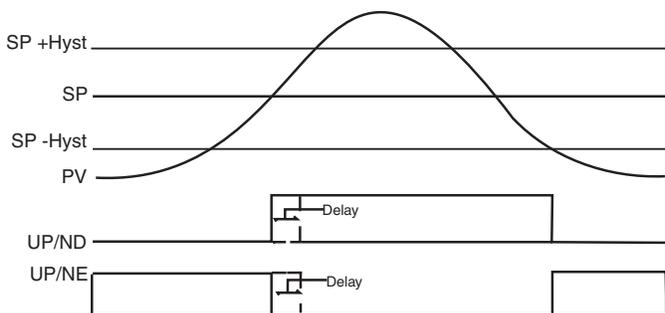
**Temperature Drift** ±200 ppm/°C  
**Short-Circuit Protection** yes  
**Analog Output Porportional to Input Signal.**  
 low input signal = low analog output  
 high input signal = high analog output  
**Time Constant** 1 sec.



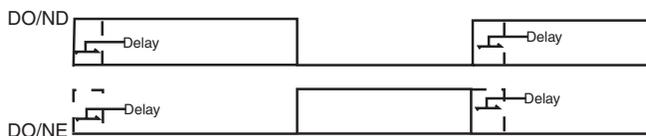
Operation Details

Operation Diagrams

Setpoint Operation

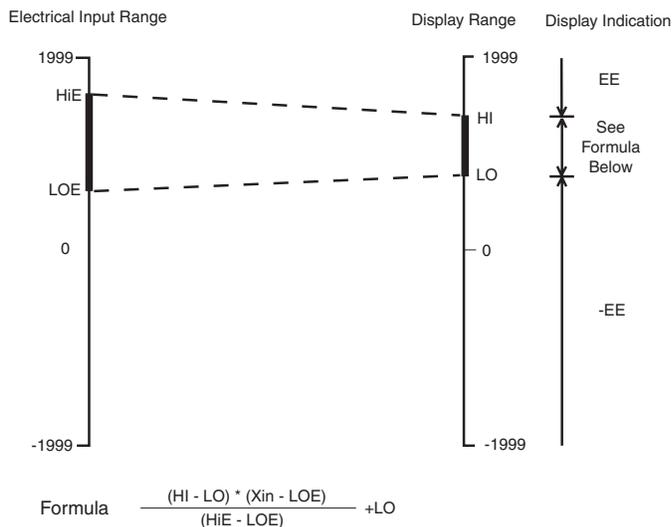


Output activates as input signal rises above setpoint (High Alarm)



Output activates as input signal drops below setpoint (Low Alarm)

Scaling Operation



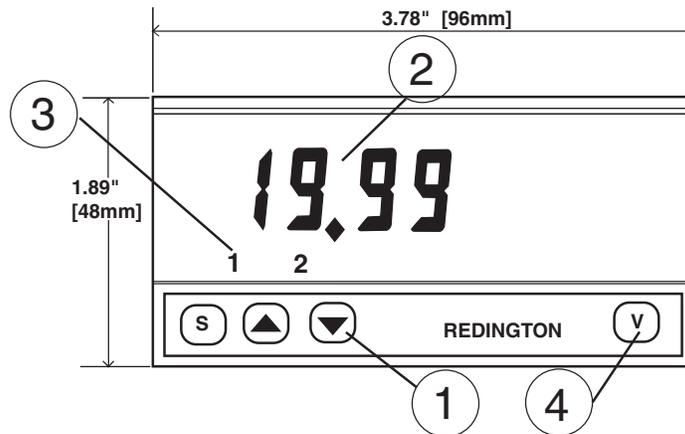
Mode of Operation

Depending upon the input modules used, it is possible to measure current, voltage, or resistance ...etc. The range is selected with a jumper on the input module and programming. Without an output module the Model 85 is an indicator - by inserting an output module the Model 85 is a controller.

The input range and the display range are fully programmable, and so are the setpoint(s) if a relay output module is inserted. A hold function is available for freezing a measured value. Passwords 0 to 99 are for overall programming with passwords 100 to 199 allow direct setpoint programming outside the password protection. See user manual for further details.

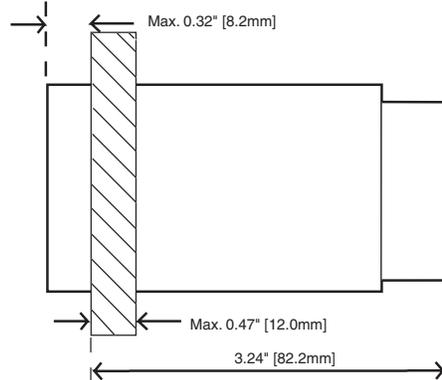
Overall Dimensions

Front View



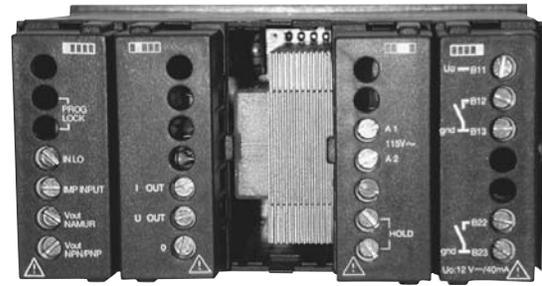
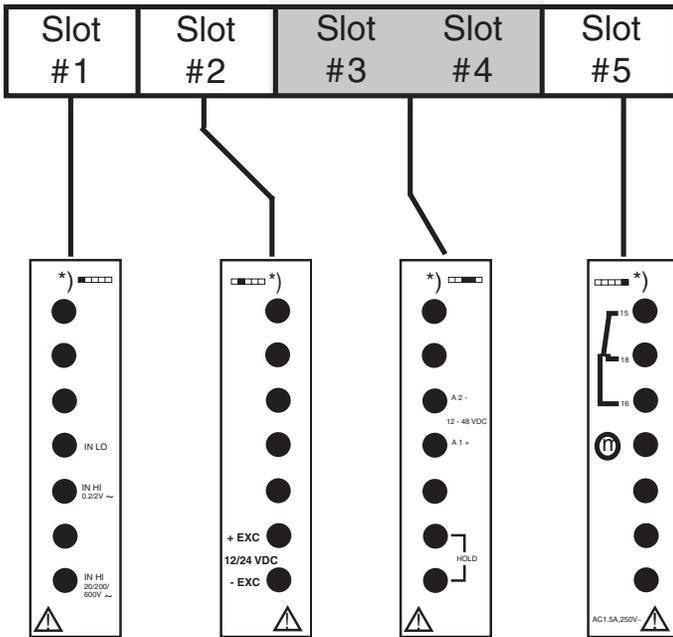
Panel Cutout 1.77" [45mm] X 3.62" [92mm]  
Cutouts can be up to .02" [0.5mm] larger

SideView





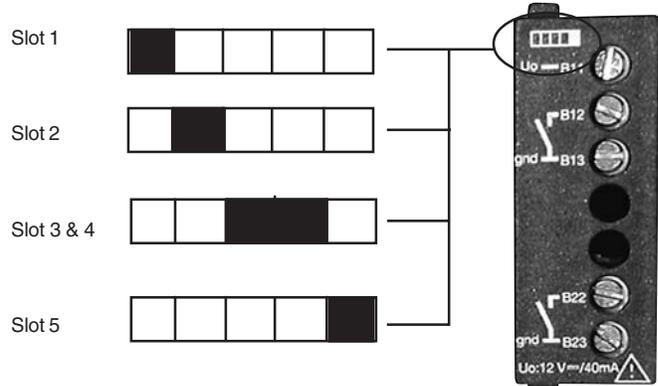
Rear view of main unit



Rear View Assembled Unit

Module Slot Identification:

Each module is clearly marked with a diagram showing which slot it should be inserted in.



Input Module:

- VAC
- VDC
- AAC
- ADC
- 10A AC/DC
- W
- PT 100
- J-type Thermocouple
- K-type Thermocouple
- Tachometer
- Frequency

Output Modules:

- 12 VDC Excitation
- 24 VDC Excitation
- or
- Analog output
- 0-20 mA
- 4 - 20 mA
- 0 - 10 VDC

Power Supply Modules:

- (Requires 2 slots)
- 24 VAC
- 48 VAC
- 115 VAC
- 230 VAC
- 12 - 48 VDC

Relay Output Modules:

- 1 SPDT(Form C), 5A
- 2 SPDT(Form C), 5A
- 2 NPN

Red or Green Display Unit



Input Module



Output Module



Mounting Adapter



Interchangeable Engineering Unit Labels

V	kV	A	mA	W	kW
kΩ	Hz	kHz	°C	°F	%
mbar	bar	psi	kg/cm <sup>2</sup>	mm H <sub>2</sub> O	mm Hg
m <sup>3</sup> /h	mm	cm	m	Kg	kA
MW	Ω	MΩ	l/min	Kg/min	m <sup>3</sup> /min
RPM	kvar	m/min	ppm	cos φ	

Power Supply Module



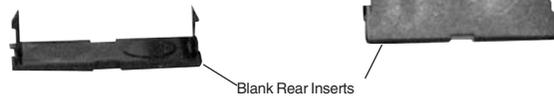
Relay/NPN Output Module



Gasket

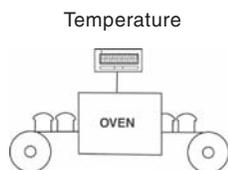


Blank Rear Inserts





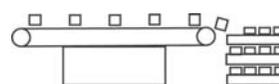
Applications



Volts/Amps/Ohms



Speed Control



Ordering Information

Component Selection - Part Number

To order assembled (built-up) panel meters, see following "Part Number Selection" section.

To order components, select modules from each of the categories below to construct an Indicator or Controller. For additional guidance, consult the flowchart on the right.

Main Unit

- Red Display (standard red)
- Red Display (high efficiency red)
- Green Display

Ordering Number

- 85KSRD
- 85KSHR
- 85KSHG

w/Program Lock

Component Selection Flowchart

To build an indicator, choose display color, power supply, and input module. For a controller, also choose an analog/excitation output and/or output module.

Power Supply Modules

- 12 to 48 VDC
- 24 VAC
- 48 VAC
- 115 VAC
- 230 VAC

- 85KSP1
- 85KSP2
- 85KSP3
- 85KSP4
- 85KSP5

Input Modules

- DC Voltage
- AC Voltage
- DC Amperage
- AC Amperage
- AC/DC Amperage (10A)
- Resistance (Ohms)
- PT 100 RTD (can be scaled to °F)
- PT 100 RTD (up to 1562°F/850°C)
- J-Type Thermocouple (can be scaled to °F)
- K-Type Thermocouple (can be scaled to °F)
- Tachometer
- Frequency

- 85KSVD
- 85KSVA
- 85KSCD
- 85KSCA
- 85KSAD
- 85KSIR
- 85KSRT
- 85KSPT
- 85KSJT
- 85KSKT
- 85KSTK
- 85KSFQ

- 85KLVD
- 85KLVA
- 85KLCD
- 85KLCA
- 85KLAD
- 85KLIR
- 85KLRT
- 85KLPT
- 85KLJT
- 85KLKT
- 85KLTK
- 85KLFQ

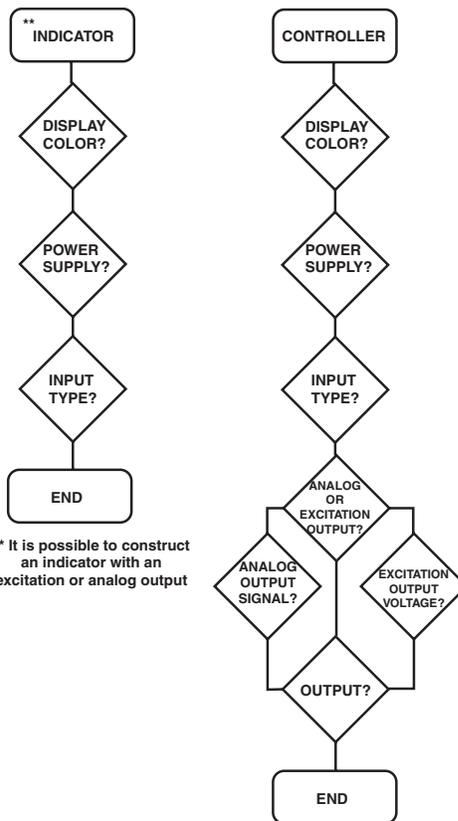
Output Modules (optional)

- 1 Relay
- 2 Relays
- 2 NPN Transistors
- \*12/24 VDC Excitation Output/for sensor supply
- \*Analog Output

- 85KSR1
- 85KSR2
- 85KSNP
- 85KSDC
- 85KSAN

\*Analog and excitation output modules occupy the same plug-in location, therefore only one selection is possible.

\*Items in bold are normally in factory stock.



\*\* It is possible to construct an indicator with an excitation or analog output



Part Number Selection - Assembled Unit(s)

Note: There is a 10 piece minimum of various assembled meters, not one specific part number.

Ordering Key

Model Number Model 85

Input Type and Range Code



DC Ammeters

Table with 2 columns: Model (CD1-CD7) and Range (-199.9 to +199.9 mA, etc.)

AC Ammeters

Table with 2 columns: Model (CA1-CA7) and Range (0 to 199.9 mA, etc.)

AC Voltmeters

Table with 2 columns: Model (VA1-VA5) and Range (0 to 199.9 mV, etc.)

\* Nominal voltage according to IEC60-664-1. The measuring range includes 15% tolerance equal to 690 V.

DC Voltmeters

Table with 2 columns: Model (VD1-VD5) and Range (-199.9 to +199.9 mV, etc.)

Ohmmeters

Table with 2 columns: Model (RO1-RO4) and Range (0 to 199.9 W, etc.)

Tachometer

Table with 2 columns: Model (TA1-TA6, TB1-TB6) and Range (8.0 to 199.9 RPM @ 30PPR, etc.)

Frequency Meters

Table with 2 columns: Model (FO1-FO2, FS1-FS2, F61-F62) and Range (5.0 to 199.9 Hz, etc.)

Thermometers

Table with 2 columns: Model (JC1, JF1, KC1, KF1, PC1-PC3, PF1-PF3) and Range (-100 to 760°C, etc.)

Power Supply

- 1) 12-48 VDC 2) 24 VAC 3) 48VAC 4) 115 VAC 5) 230 VAC

Relay Output

- N) None 1) One Relay 2) Two Relays 3) NPN

Output Modules

- N) None 1) 0-20mA 2) 4-20mA 3) 0-10 VDC 4) 12 VDC Excitation 5) 24 VDC Excitation

Display Color

- R) Red G) Green H) High Efficiency Red

Hardware Lock of Programming

- S) None L) Program Lock

Engineering Label

01 to 47 (see front panel description #4)



**Description**

A hand-held reset counter with a 4 digit LCD display and push-button actuator. Case is made of a high impact plastic and comes with a key chain for ease of use. All electronic construction provides a long life counter with no mechanical parts to wear out. The Tally is a handy way to count inventory, attendance, traffic, blood cells, or food portions.

**Features**

- LCD display
- Long life

**Specifications**

**Digits:** 4 LCD's 0.24" [6mm] high  
(maximum count 9999)

**Reset:** Push button

**Battery Operating Life:** 250 days (typical)

**Weight:** 0.7 oz [20g]

**Color:** Gray body with yellow buttons

**Models Description**

**E1-1804** Electronic Hand Tally

\* Item is normally in factory stock.

**Dimensions**

2.0"L x 1.7"W x 0.7"D [50.8mmL x 43.2mmW x 17.8mmD]

**Operating Instructions**

1. Press ON/RESET key to power ON the unit.
2. Press STEP key once, the LCD will display '1'
3. Press START key, the LCD will display '1'
4. Press COUNT key to continue the counting, the LCD will display from 1 to 2 to 3 to 4 etc.

Anytime you want to restart the count from '0', repeat the above steps.

*Note: If '0000' is displayed, you can press 1 ON/RESET to reset to '0'*



**Battery Replacement**

When the display gets dim or the counter works erratically, replace the button type battery. Use 1 X G13A or equivalent.

**Applications**

