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/Counter 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, 8802-0000, or similar units can be programmed for Elapsed Time, Rate, Preset Count/Time, count Add/Sub, or Quadrature. The count inputs can be prescaled from -9.9999 to 99.9999. On the 8802 units, the prescale can be further multiplied by 10^{-3}. Rate can be displayed as the prescaled rate of the count per seconds (Hz) or per minute (rpm). On the 8802 units, the rate can be either prescaled count per hours (PPH) or per minute (rpm). The two independent control outputs are open-collector (NPN) outputs that can be controlled by either count inputs, time, rate, the analog input, or combinations of these 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/0 function. I/0 functions and 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

Display: 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)

Annunciators: A, B, R, 1, 2 ANLG, LOCK, HZ, RPM, HRS, SEC. 0.039" [1mm]

Programming: Programming is accomplished through the front panel switches or by serial data interface and dedicated PC software, supplied by Redington Counters, Inc.

Available Functions:
Totalizer
Directional Counting
Rate/Count
Three different quadrature resolutions
Add-Add
Add-Subtract
Dual Count
Elapsed Time
Analog Input
Predetermining

Predetermining Functions: 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.

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 1st 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). The 8802 and 8812 units have an option for prescaling the A & B counters from -9.9999 x 10^{-3} to 99.9999 x 10^{-3}

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. The 8802 and 8812 units can express rates in terms of scaled counts per minute (rP) or scaled counts per hour 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) 1/10th 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]
Altitude: Up to 6561Ft. (2000 Meters)
Operating & Storage Humidity: to 95% (non-condensing) from -4°F to +140°F [-20°C to +60°C]

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)

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
8802-0000	Base Unit, Red Trans., 10-30VDC, Expanded Prescale, PPH Rate	X				
8812-0000	Base Unit, Reflective, 10-30VDC, Expanded Prescale, PPH Rate		X			
8802-0100	Red Trans., 10-30VDC, Expanded Prescale, PPH Rate, Serial Comm	X				X
8812-0100	Reflective, 10-30VDC, Expanded Prescale, PPH Rate, Serial Comm		X			X
8802-0010	Red Trans., 10-30VDC, Analog Input, Expanded Prescale, PPH Rate	X		X		
8812-0010	Reflective, 10-30VDC, Analog Input, Expanded Prescale, PPH Rate		X	X		
8802-0110	Red Trans., 10-30VDC, Analog Input, Expanded Prescale, PPH Rate, Serial Comm	X		X		X
8812-0110	Reflective, 10-30VDC, Analog Input, Expanded Prescale, PPH Rate, Serial Comm		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

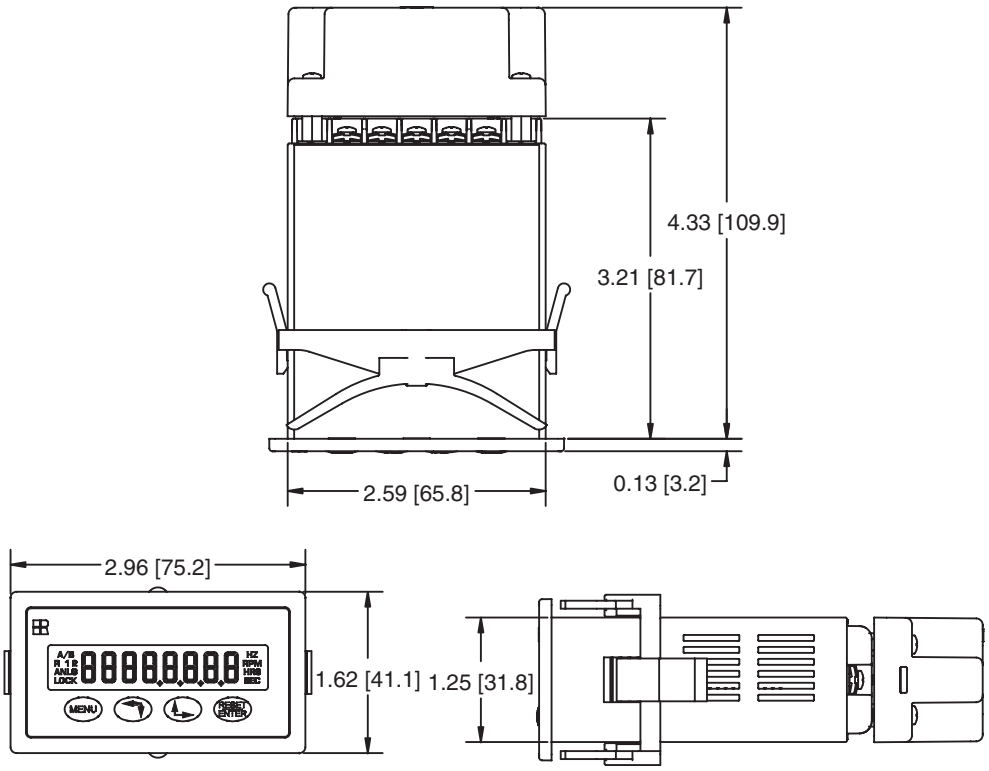
* All parts are normally in factory stock.

Models Description

For Models and Descriptions see the Ordering Information section

Dimensions

Model 88

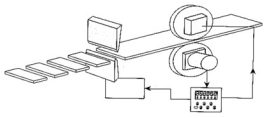


Panel Cutout 2.63” to 2.605” x 1.28” to 1.26” [66.8 to 66.2 x 32.5 to 32.0]
Max. thickness of panel 0.5” [12.7]

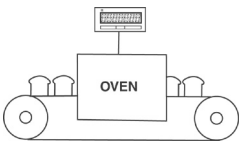
Applications

Batching

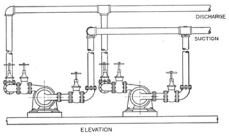
Cut-to-length



Elapsed time indicator



Flow and level control



Rate/Indication or control