

# PM-50

Red Lion Automation Series



## ▲ Digital Input Graphical Panel Meters

THE PM-50 METERS ARE DESIGNED TO INCREASE OPERATOR PRODUCTIVITY, EXPOSE CRITICAL PLANT FLOOR DATA, AND AID IN PROJECT SCHEDULING AND PROCESS IMPROVEMENTS. EASILY RELATABLE INTUITIVE GRAPHICAL DISPLAY. SECONDARY DISPLAYS PROVIDE EVEN MORE DATA. THE METERS FEATURE ON-BOARD Wi-Fi, RS-485/MODBUS, AND OPTIONAL ETHERNET OR RS-232.



### GRAPHICAL DISPLAY

- ▲ Full color touchscreen
- ▲ Intuitive screens
- ▲ Multiple displays

### SIMPLE PROGRAMMING

- ▲ Start-up Wizard
- ▲ Programming App
- ▲ Web server

### ALARM NOTIFICATION

- ▲ Display color change
- ▲ Push messaging
- ▲ Focuses attention

### DATA ACCESS

- ▲ Wi-Fi
- ▲ Modbus/RS485
- ▲ Ethernet & RS232

### MODULAR CONSTRUCTION

- ▲ Plug-in play modules
- ▲ Upgradeable firmware
- ▲ Outputs, power & comms

### EASY FIELD REPLACEMENT

- ▲ Use existing wiring
- ▲ 4.3" - 1/8 DIN products
- ▲ 3.5" - 1/16 DIN products

### SMART DEVICE CAPABILITIES

- ▲ Functionality
- ▲ Programming
- ▲ Connectivity

# PM-50 Ordering Guide and Specifications

## Ordering Guide

### MAIN UNIT

| PART NUMBER      | DESCRIPTION                              |
|------------------|--|
| PM500D0400800F00 | 4.3" Digital Input Graphical Panel Meter |
| PM500D0301600F00 | 3.5" Digital Input Graphical Panel Meter |

### ACCESSORIES

| PART NUMBER      | DESCRIPTION   |
|------------------|---|
| PMM000CM23200000 | RS232 Serial Communications Module                                    |
| PMM000CMEN000000 | Ethernet Communications Module  |
| PMM000IOAN000000 | Analog Output Module  |
| PMM000IORL200000 | Dual Setpoint Relay Output Module                                     |
| PMM000IORL400000 | Quad Setpoint Relay Output Module                                     |
| PMM000PWACP00000 | AC to DC Power Module   |
| PMA000MK00800000 | Conversion Panel 92 mm x 75 mm to 1/8 DIN                             |
| PMA000MK01600000 | Conversion Panel 68 mm x 68 mm to 1/16 DIN                            |
| PMA000SP00800000 | 4.3" Protective Screen Overlay  |
| PMA000SP01600000 | 3.5" Protective Screen Overlay  |
| SD032G00         | MicroSD Card  |
| PMA000CP00800000 | Replacement Rear Cover/Bus Board with Spacer Module (4.3" model only) |
| PMA000MKLP00000  | Replacement Module Lock Pins  |

## Meter Specifications

### POWER REQUIREMENTS

| MODEL                         | 4.3-INCH  | 3.5-INCH  |
|-------------------------------|-----------|-----------|
| Input Voltage (Volts)         | 10-30 VDC | 10-30 VDC |
| Max Power PM-50 only          | 4.6 W     | 4.6 W     |
| Max Power PM-50, with modules | 12 W      | 12 W      |

Host Isolation: 500 Vrms for 1 min. to all inputs and outputs.

### DISPLAY

4.3" or 3.5" Color TFT display with resistive analog touch screen

| SIZE                | 4.3-INCH              | 3.5-INCH              |
|---------------------|-----------------------|-----------------------|
| Type                | TFT                   | TFT                   |
| Colors              | 262,144               | 262,144               |
| Pixels              | 480 X 272             | 320 X 240             |
| Brightness          | 420 cd/m <sup>2</sup> | 540 cd/m <sup>2</sup> |
| LED Backlight Life* | 30,000 HR TYP.        | 30,000 HR TYP.        |

\* Lifetime at room temperature (25°C)

### SENSOR POWER

+24 VDC, ±5% @ 50 mA max.

### COUNTER DISPLAYS

9 digits available

Display Range: -99,999,999 to 999,999,999

Over Range Display: Overrange

Under Range Display: Underrange

Display Designators: Cnt-A, Cnt-B, Cnt-C

Maximum Count Rates: 50% duty cycle

If Setpoints Disabled: 35 KHz for all modes except Quadrature x4 (32 KHz)

If Setpoint(S) Enabled: 20 KHz for any mode except Quadrature x1 (19 KHz), Quadrature x2 (17 KHz) and Quadrature x4 (10 KHz)

### RATE DISPLAYS

6-digit

Maximum Frequency: 50 KHz

Minimum Frequency: 0.001 Hz

Display Update Time: 0.1 to 999.9 seconds

Accuracy: ±0.01%

### SIGNAL INPUTS (INPUT A AND INPUT B)

Software configurable input types including switch contacts, TTL outputs, magnetic pickups and all standard RLC sensors. Inputs are configurable for current sinking or current sourcing outputs with input filtering for low frequency signals or switch contact debounce. Not isolated from the sensor input common.

Logic: Input trigger levels  $V_{IL} = 1.2 \text{ V max.}$ ;  $V_{IH} = 3.75 \text{ V min.}$

Sink: Adds internal 7.8 KΩ pull-up resistor to +5 VDC, 0.7 mA max

Source: Adds internal 3.9 KΩ pull-down resistor, 7.3 mA max. at 28 VDC,  $V_{MAX} = 30 \text{ VDC}$

Magnetic Pickup:

$V_{IN\_PK} = 200 \text{ mV}$ ;  $V_{IN\_HSYS} = 100 \text{ mV}$ ; Must also have SRC selection turned on through software

$V_{MAX} = \pm 40 V_{PEAK}$  or 28 Vrms

Dual Count Modes:

When any dual count mode is used, then User Inputs 1 and/ or 2 will accept the second signal of each signal pair. The user inputs do not have the Logic/Mag, HI/LO Freq, and Sink/ Source software selections. The user inputs are inherently a logic input with no low frequency filtering implemented in software. The user input may only be selected for sink/source by the User Input Active parameter.

# PM-50 Specifications Cont. and Module Specifications

## USER INPUTS

Two programmable user inputs

## MEMORY

Nonvolatile memory retains all programmable parameters and display values.

Memory Card: microSD slot accepts up to 32 GB capacity cards in FAT16/FAT32 format.

## RS485 SERIAL PORT

Uses Modbus protocol (RTU and ASCII)

Baud Rate: Up to 115,200

Data Format: 7/8 bit; odd, even, or no parity; 1 or 2 stop bits

Isolation: 500 Vrms to sensor, user power and digital inputs. Not isolated to solid state outputs

## Wi-Fi CAPABILITIES

Wi-Fi: Power output up to 20.5 dBm

Frequency:

| TECHNOLOGY | CHANNELS | FREQUENCIES   |
|------------|----------|---------------|
| Wi-Fi      | 1-13     | 2412-2484 MHz |

Note: Channel/frequency limitation is enforced based on configured country/region code.

Wi-Fi Compliance: TCP/IP; 802.11 b/g/n

## ON-BOARD DUAL SSR OUTPUTS

Both outputs must be used either in SINKING or in SOURCING mode together.

Sinking Mode:

Type: Switched DC, N-channel open drain MOSFET

Max Sink Current: 100 mA

$V_{DS}$  ON: 0.3 V @ 100 mA

$V_{DS}$  MAX: 30 VDC

Offstate Leakage Current: 0.5 mA max

Sourcing Mode:

Type: Switched DC, P-channel open source MOSFET

Max Source Current: 100 mA

$V_{DS}$  ON: 0.3 V @ 100 mA

$V_{DS}$  MAX: 30 VDC

Offstate Leakage Current: 0.5 mA max

## ENVIRONMENTAL

Operating Temperature Range: -10 to 55 °C

Storage Temperature Range: -20 to 60 °C

Operating and Storage Humidity: 0 to 85% max. RH non-condensing

Vibration to IEC 68-2-6: Operational 5-500 Hz, 2 g

Shock to IEC 68-2-27: Operational 20 g (10 g relay)

Altitude: Up to 2000 meters

Installation Category II, Pollution Degree 2 as defined in IEC/EN 60664-1.

## CERTIFICATIONS & COMPLIANCES

CE Approved

EN 61326-1 Immunity to Industrial Locations

Emission CISPR 11 Class A

IEC/EN 61010-1

RoHS Compliant

FCC ID#: 2AC7Z-ESP32WROOM32U

UL Hazardous: File # E317425

Type 4X Indoor/IP65 Enclosure rating (Face only) for all models

IP20 Enclosure rating (Rear of unit)

## CONNECTIONS

High compression spring-clamp terminal block

## CONSTRUCTION

This unit is rated NEMA 4X/IP65 for indoor use only. IP20 Touch safe. One piece bezel/case. Flame resistant. Panel gasket, module locks, and mounting panel latch included.

## WEIGHT

4.3: 11.5 oz (326 g)

3.5: 8.1 oz (229.6 g)

## WARRANTY

2 years on design and manufacturing defects.

Specifications are subject to change.

Visit [www.redlion.net](http://www.redlion.net) for more information.

## Module Specifications

Note: All modules are field installable

### RS232 MODULE

Removable terminal block

Hardware status LEDs

### ETHERNET MODULE

10/100 Ethernet module

Auto MDI/MDI-X

Modbus over TCP/IP

### ANALOG OUTPUT MODULE

Retransmitted analog output

0 (4) to 20 mA or 0 to 10 VDC,  $\pm 10$  VDC

Removable terminal block

### DUAL RELAY MODULE

Dual Form C 5 Amp relays

Up to 250 VAC or 30 VDC

Removable terminal block

### QUAD RELAY MODULE

Up to 250 VAC or 30 VDC

Removable terminal block

Quad Form A 2 Amp relays

### AC TO DC POWER MODULE

Input: 85 VAC to 240 VAC

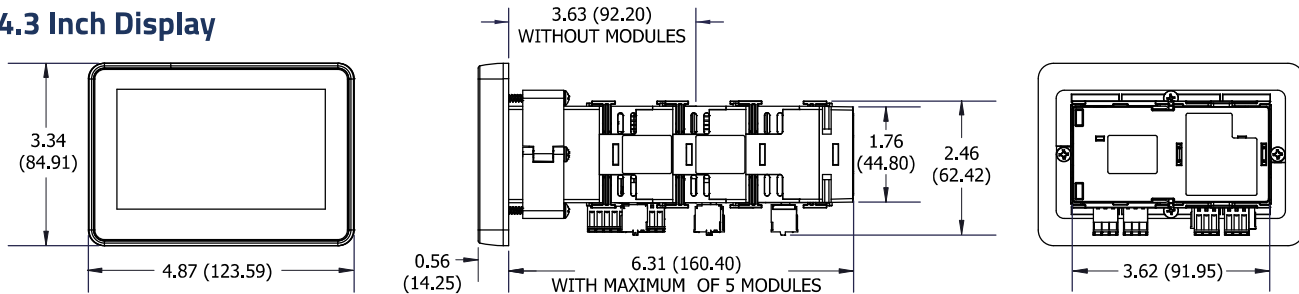
Supports 4.3" and 3.5" PM-50 meters

Removable terminal block

# PM-50 Meter and Module Dimensions

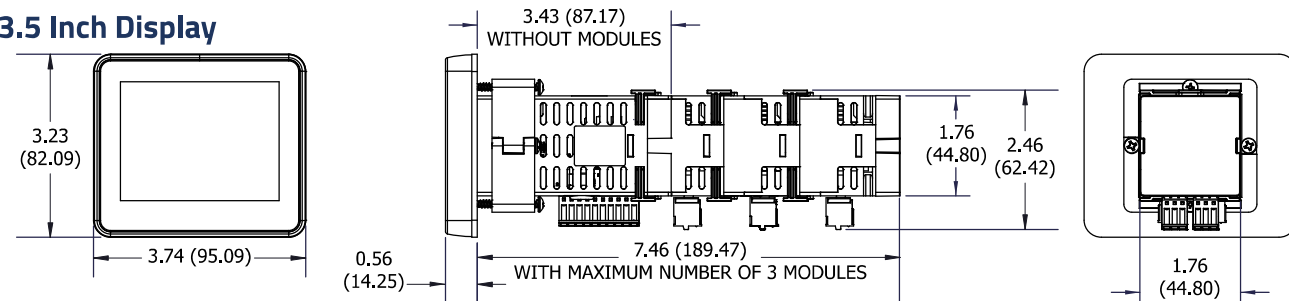
## Dimensions In inches (mm)

### 4.3 Inch Display



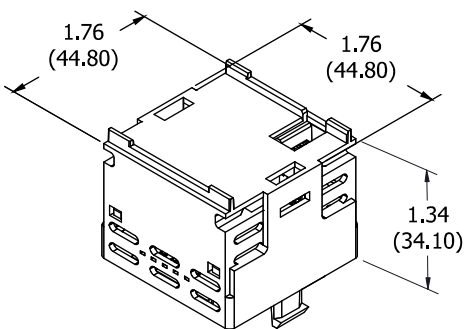
## Dimensions In inches (mm)

### 3.5 Inch Display



## Dimensions In inches (mm)

### Module



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Red Lion has been delivering innovative solutions to global markets since 1972 through communication, monitoring and control for industrial automation and networking - enabling companies worldwide to gain real-time data visibility that drives productivity. Red Lion is part of Spectris plc, the productivity enhancing instrumentation and controls company.

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