



**SENTRAN**

## Tension and Compression Load Cell

# PM3Series

**The PM3 Series is a low profile high performance load cell constructed of heat treated stainless steel. The PM3 is designed to accurately measure tension and compression forces in capacities ranging from 0-5,000 LB to 0-50,000 LB.**



The PM3 Series is a low profile high performance load cell constructed of heat treated stainless steel. The PM3 is designed to accurately measure tension and compression forces in capacities ranging from 0-5,000 LB to 0-50,000 LB. The diaphragm sensing design, coupled with an enhanced strain gage arrangement, produces excellent performance in a very low profile package. The inherent low deflection of the PM3 Series yields a high dynamic response and superior output resolution for a wide range of applications. This load cell is Harsh Environment Sealed (IP67-Limited Immersion) by virtue of proprietary multi-redundant barriers uniquely integrated to protect all internal components. A M12 connector is standard. A mating connector with 16.5 FT integral polyurethane cable is included. The attributes of the PM3 make it ideal for measurements in the laboratory, structural testing, materials testing, and for general force measurements where a low profile precision load cell solution is required.

### APPLICATIONS

- Tension and Compression Measurements
- Laboratory Test and Measurement
- Materials Testing Machines
- Dynamic Measurements
- Structural Analysis
- Actuator Control
- Fatigue rated to 10<sup>7</sup> cycle

### FEATURES

- 5K LB to 50K LB Capacities
- 0.10% Accuracy Class
- 2 mV/V Full Scale Output
- M12 Connector with 16.5 FT PUR Cable
- Low Profile Size
- IP67 Environmental Sealing
- Stainless Steel Construction
- Enhanced Diaphragm Design
- Universal - Tension and Compression



For more information call **1-888-545-8988**

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# PM3 Series Specifications

Innovative Measurement Solutions



## PERFORMANCE

Rated Capacities <sup>(1)</sup> (LB)	5K, 7.5K, 10K, 15K, 20K, 30K, 50K
Rated Output (FSO)	2 mV/V
Output Tolerance	Nominal
Combined Error Band	≤ 0.10 % FSO
Non-Linearity	≤ 0.10 % FSO
Hysteresis	≤ 0.10 % FSO
Non-Repeatability	≤ 0.03 % FSO
Zero Balance	≤ 3.0 % FSO
Creep (30 Minutes)	≤ 0.05 % of Load

## MECHANICAL

Load Cell Material	17-4ph Stainless Steel
Load Cell Finish	Natural Bright
Safe Overload	Compression: 150% FSO
	Tension: 150%
	Side Load: 10% FSO
Ultimate Overload	Compression: 300% FSO
	Tension: 300%
	Side Load: 20% FSO
Deflection	See Dimensions Page
Weight	See Dimensions Page
Mounting Bolt Torque	See Dimensions Page

## ELECTRICAL

Input Impedance	750 OHMS NOM
Output Impedance	700 OHMS NOM
Insulation Resistance	>5000 Megohms
Excitation Voltage	10 V AC/DC (15 V maximum)
Cable Color Code	+ Excitation (blue, pin 3)
	- Excitation (black, pin 4)
	+ Signal (white, pin 2)
	- Signal (brown, pin 1)
Cable Type	4-conductor, 22 AWG, PVC Jacket,
	M12 Axial Female Connector,
	Diameter: 0.232"
Cable Length	See Dimensions Page
Cable Termination	Finished Conductors

## ENVIRONMENTAL

Temperature, Operating	-50 to +175 °F (-45 to +79°C)
Temperature, Compensated	14 to +104 °F (-10 to +40°C)
Temperature, Storage	-50 to +175 °F (-45 to +79°C)
Temperature Effects	Zero < 0.005% FSO/°F
	< 0.009% FSO/°C
Temperature Effects	Output < 0.0010% of Rdg./°F
	< 0.0018% Rdg./°C
Sealing (Multi-Redundant)	IP67; Multi-redundant; Limited Immersion Tolerance

# PM3 Typical System Configuration

## SENSING LOAD CELL(S)



## SIGNAL CONDITIONING

Amplifier/Transmitter  
JF Series



Amplifier/ Transmitter  
JA Series



Digital Indicator  
250 Series



Digital Indicator  
250SS Series



Digital Indicator/Controller  
KD3 Series

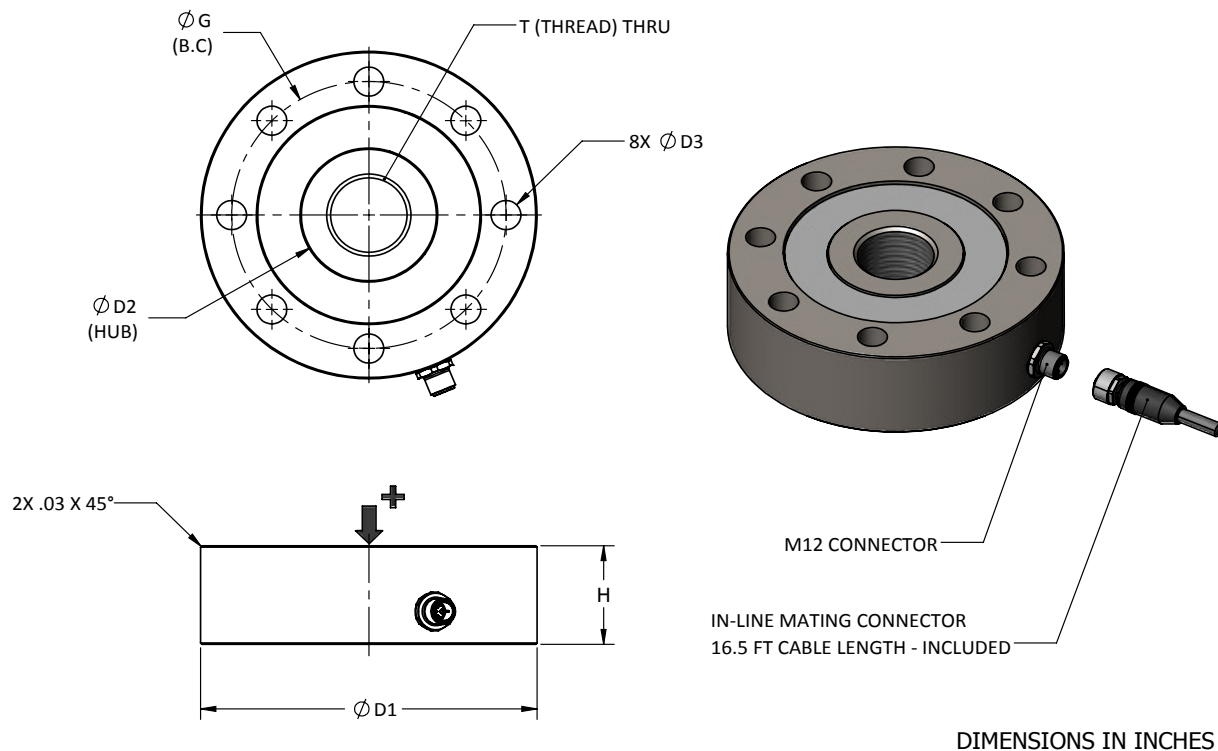


Digital Indicator/Controller  
KD4 Series



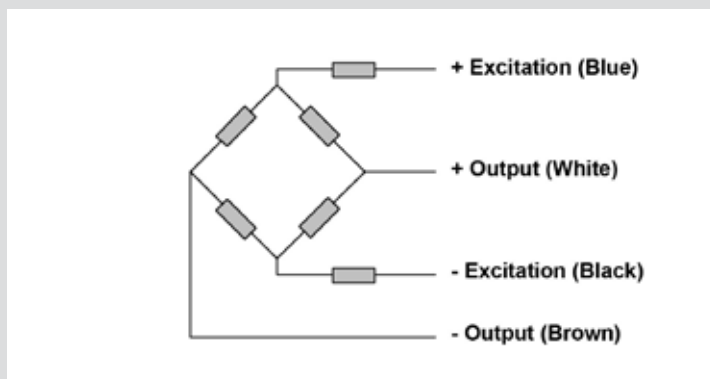
## OUTPUT OPTIONS

0-5 VDC  
0-10VDC  
±5 VDC  
±10 VDC  
4-20 mA  
0-20 mA  
RS-232  
RS-422  
RS-485  
20 mA Serial Loop  
Ethernet  
Profibus DP  
DeviceNet  
CANOpen  
ControlNet  
Modbus RTU  
Wireless

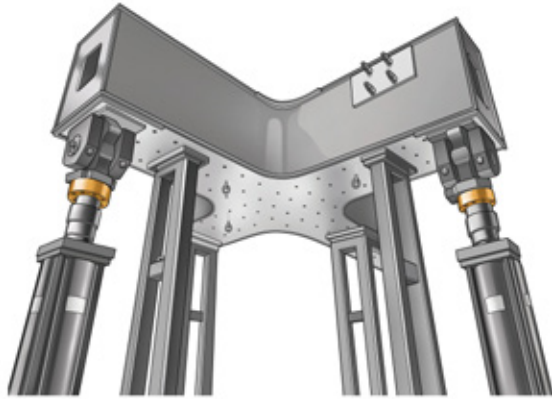


Capacity (LB)	D1	D2	D3	H	G	T (Thread)	Recommended Bolt Torque	Deflect	Weight
5K, 7.5K, 10K, 15K	4.98	1.80	0.41	1.50	4.000	1-14 UNS-2B	31 FT-LB	0.002	6.0 LB
20K, 30K, 50K	5.98	2.40	0.53	1.80	4.875	1 1/2-12 UNF-2B	100 FT-LB	0.003	10.0 LB

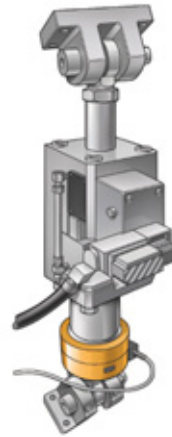
## PM3 Wiring Diagram



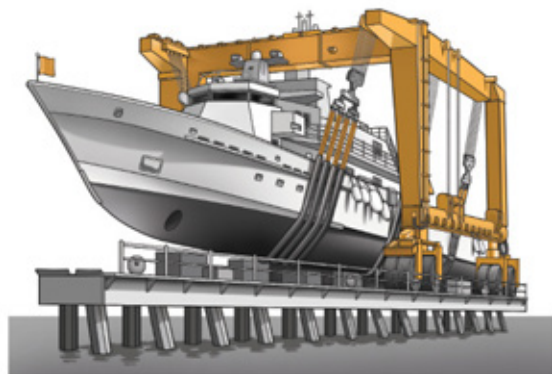
Structural Test Lab



Articulating Actuator Control



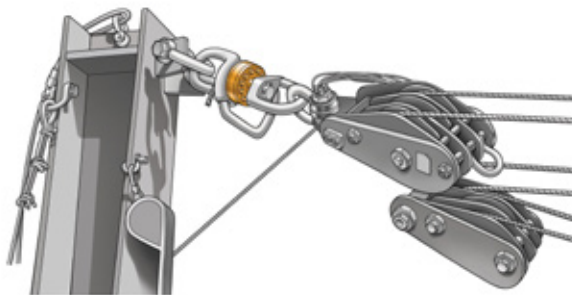
Vessel Lifting



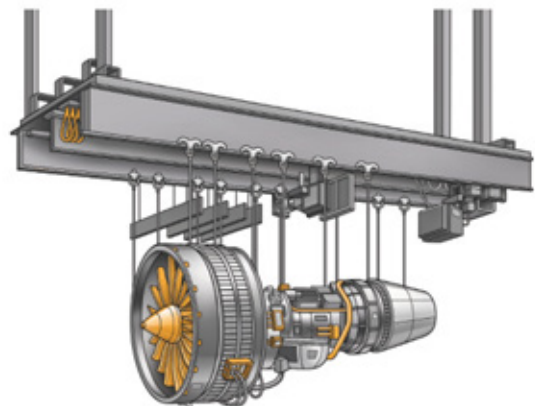
Environmental Test Load Stand



Cable Tension



Engine Hoist





- Series Weigh Modules
- Companion Loading Hardware
  - Eyebolts
  - Rod End Bearings
  - Load Buttons
- High Temperature Operation (to 400°F)
- In-Line Analog or Serial Transmitters
- Display/Control Instrumentation
- Junction/Summing Boxes
- Wireless Operation
- MS Connectors
- Shunt Calibration
- Use and Installation Guide
- Custom and OEM Solutions

## Commercial Information & Precautions

- Do not exceed specified Maximum Load Limits.
- The Safe Load Limit is the point to which normal loading will not cause the load cell to experience an excessive zero shift or a degradation in performance.
- Use reasonable care when applying load to any load cell. Load limits can be exceeded due to shock loading (i.e. dropping a load onto a load cell), off axis loading, side loading and similar loading conditions that are beyond design capabilities.
- The structural integrity of all load bearing components in any load cell system should be designed with safety redundant load paths. (Overload stops, overhead load arrestors, etc.)
- The surfaces to which the load cell(s) is attached and/or is reacting against must be of sufficient structural integrity to carry loads up to and exceeding the ultimate ratings of the load cell(s) being used, while also taking into account any companion hardware being used in conjunction with the load cell.
- To ensure optimum performance, all measuring system cabling should be run through dedicated conduit when available. Avoid proximity to electrical noise sources and use of “dirty” power sources.
- The load cell cable shield should be connected to a dedicated instrument ground point only.
- Force measurement and weighing applications have numerous application-specific considerations to be addressed both mechanically and electrically. Therefore, installation of all system components are the responsibility of the user and should always be approved by a qualified, professional engineer. Any information provided by Sentran, LLC is intended only as informational and does not constitute a formal recommendation for the use of any product for any application.
- Sentran offers application/installation/use guides on request for most standard products. Please contact your Sentran representative for assistance, or visit our technical library resource at [www.sentranllc.com](http://www.sentranllc.com).

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