



## LOAD PINS LOAD PIN WORKSHEET

Fax or email to **SENTRAN Applications Engineering Group: (909) 605-6305 or mail@sentranllc.com**

CONTACT: \_\_\_\_\_ PHONE: \_\_\_\_\_  
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### Δ Notice! To whom it may concern:

SENTRAN specializes in non-standard, application-specific measurement solutions, particularly in the Load Pin product segment, where “standard” solutions are often not adequate to meet customer requirements. SENTRAN Load Pins are generally a Dual Shear design, Center-Loaded and End-Supported.

The Load Pins are instrumented internally utilizing unique, proprietary techniques for precise positioning of strain gauges along the Load Pin neutral axis to create a Full Wheatstone Bridge configuration. To ensure proper orientation of the Load Pin when installed, an Anti-rotation or Keeper device is typically incorporated.

Thank you for the opportunity to be of service. SENTRAN has developed this worksheet as a means for gathering information necessary to make the best product solution recommendation for your load pin application. To that end, please provide complete, accurate information in the following questionnaire for all considerations influencing your application. Once completed, fax or e-mail the document to the attention of:

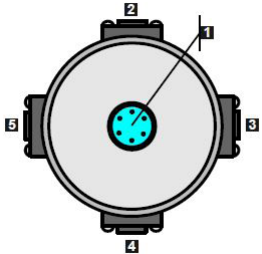
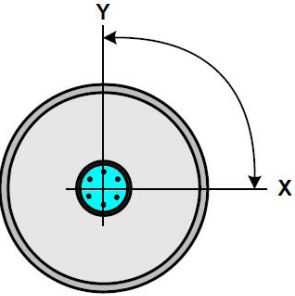
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### LOADING INFORMATION

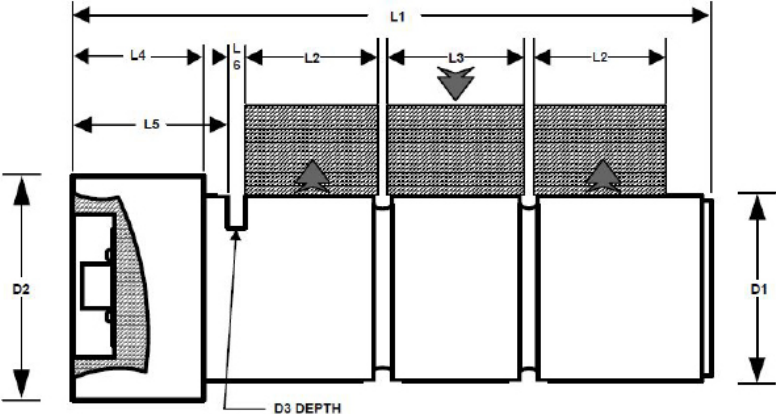
Please indicate total number of pins required for the following specification:

1.	What is the SYSTEM ACCURACY requirement?	lbs <input type="checkbox"/> kg <input type="checkbox"/> tonnes <input type="checkbox"/> N <input type="checkbox"/> Other _____
2.	What is the DEAD WEIGHT (DW) load anticipated?	lbs <input type="checkbox"/> kg <input type="checkbox"/> tonnes <input type="checkbox"/> N <input type="checkbox"/> Other _____
3.	What is the LIVE LOAD (LL) product weight?	lbs <input type="checkbox"/> kg <input type="checkbox"/> tonnes <input type="checkbox"/> N <input type="checkbox"/> Other _____
4.	What is the LOAD PIN APPLICATION?	Clevis <input type="checkbox"/> Sheave <input type="checkbox"/> Pulley <input type="checkbox"/> Shackle <input type="checkbox"/>

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5.	What is the TYPE OF LOADING?	Static <input type="checkbox"/> Dynamic <input type="checkbox"/> Impact <input type="checkbox"/> Fatigue <input type="checkbox"/>
6.	What is the MAXIMUM LOAD REQUIREMENT?	lbs <input type="checkbox"/> kg <input type="checkbox"/> tonnes <input type="checkbox"/> N <input type="checkbox"/> Other _____
7.	What is the LOADING CONFIGURATION? (Reference Item 13)	<ul style="list-style-type: none"> <li>• Single Axis (Constant Wrap Angle) <input type="checkbox"/></li> <li>• Bi-Axial (Variable Wrap Angle – Two @ 90°) <input type="checkbox"/></li> </ul>
<b>ENVIRONMENTAL CONSIDERATIONS</b>		
8.	What will the Load Pin AMBIENT CONDITIONS be?	Indoor <input type="checkbox"/> Outdoor <input type="checkbox"/> Submerged* <input type="checkbox"/> Marine* <input type="checkbox"/> IP Rating? _____ <small>*Provide specific details on a separate sheet.</small>
9.	What is the TEMPERATURE RANGE (Specify F or C)?	Compensated: _____° to _____° Operating: _____° to _____° Storage: _____° to _____° <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-left: 20px;">           High temperature versions to 200° C are available.         </div>
10.	Is DUAL BRIDGE a requirement?	No <input type="checkbox"/> Yes <input type="checkbox"/>
11.	Is there a HAZARDOUS ENVIRONMENT? classification?	No <input type="checkbox"/> Yes <input type="checkbox"/> (If "yes", Indicate Class/Division/Group below) Class I/II/III; Division 1 or 2; Group A, B, C, D, E, F & G
12.	Is there a preferred CABLE/CONNECTOR LOCATION?  1 <input type="checkbox"/> (Standard - Axial Location)  2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/>	
13.	What is the DIRECTION OF LOAD? 1) Load angle in degrees: _____°.  2) <u>Clevis Pins Only</u> : Indicate load direction and keeper slot location (For variable load direction, indicate range of load angle.).  3) <u>Sheave Pins Only</u> : Indicate wrap angle and keeper slot location (For variable wrap angle, indicate range of load angle.).	

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14.	<p>Please specify all PIN DIMENSIONS:</p> <table border="1" data-bbox="261 422 586 821"> <tr><td>L1</td><td></td></tr> <tr><td>L2</td><td></td></tr> <tr><td>L3</td><td></td></tr> <tr><td>L4</td><td></td></tr> <tr><td>L5</td><td></td></tr> <tr><td>L6</td><td></td></tr> <tr><td>D1</td><td></td></tr> <tr><td>D2</td><td></td></tr> <tr><td>D3</td><td></td></tr> </table> <p>*L4 &amp; D2 Only when shoulder is required.</p>	L1		L2		L3		L4		L5		L6		D1		D2		D3		
L1																				
L2																				
L3																				
L4																				
L5																				
L6																				
D1																				
D2																				
D3																				
15.	<p>Will an integral grease fitting(s) be required to lubricate the load pin interface?</p>	<p>No <input type="checkbox"/> Yes <input type="checkbox"/></p>																		
16.	<p>Load Pin OUTPUT?</p>	<p>_____ mV/V <input type="checkbox"/> (Reference Typical Specifications on next page.)          4-20 mA <input type="checkbox"/> 0-10 VDC <input type="checkbox"/> Other</p>																		
17.	<p>What CABLE LENGTH is required?</p>	<p>_____ Feet</p>																		
18.	<p>Is a CONNECTOR required?</p>	<p><input type="checkbox"/> Straight Mating Half <input type="checkbox"/> 90° Mating Half</p>																		
19.	<p>Is CONTROL INSTRUMENTATION required?</p>	<p>Display/Keyboard? <input type="checkbox"/> No Display <input type="checkbox"/> None <input type="checkbox"/></p>																		
20.	<p>Is an ANALOG COMMUNICATIONS INTERFACE needed?</p>	<p>Voltage? <input type="checkbox"/> (0-5 or 0-10 VDC) Current? <input type="checkbox"/> (0-20 or 4-20 mA)</p>																		
21.	<p>Is a SERIAL COMMUNICATIONS INTERFACE needed?</p>	<p>RS232 <input type="checkbox"/> RS485 <input type="checkbox"/> Other <input type="checkbox"/> Indicate type: _____</p>																		
22.	<p>What is the preferred MOUNTING CONFIGURATION?</p>	<p>Wall Mount <input type="checkbox"/> Panel Mount <input type="checkbox"/> Din Rail <input type="checkbox"/> Panel Mount <input type="checkbox"/></p>																		
23.	<p>Is SETPOINT CONTROL a requirement?</p>	<p>No <input type="checkbox"/> Yes <input type="checkbox"/>          Please detail setpoint control logic (separate sheet).</p>																		
24.	<p>What are the SUPPLY POWER requirements?</p>	<p>115 VAC <input type="checkbox"/> 230 VAC <input type="checkbox"/> 50 HZ <input type="checkbox"/> 60 HZ <input type="checkbox"/>          12 VDC <input type="checkbox"/> 24 VDC <input type="checkbox"/> Other _____</p>																		
25.	<p>What Instrumentation NEMA RATING is required?</p>	<p>12/13 <input type="checkbox"/> 4 <input type="checkbox"/> 4X <input type="checkbox"/> Other _____</p>																		

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26.	Is a REMOTE DISPLAY required?	No <input type="checkbox"/> Yes <input type="checkbox"/> LED <input type="checkbox"/> LCD <input type="checkbox"/> Flip Digit <input type="checkbox"/> Digit Size Required? 1-1/2" <input type="checkbox"/> 4" <input type="checkbox"/> 5" <input type="checkbox"/> 6" <input type="checkbox"/> 7" <input type="checkbox"/> Distance from control system? _____ RF Data Communications Link? No <input type="checkbox"/> Yes <input type="checkbox"/>
27.	Please provide any available APPLICATION INFORMATION, including drawings, sketches, photos and specifications.	

**NOTES:**

**TYPICAL LOAD PIN SPECIFICATIONS****PERFORMANCE:**

Rated capacities <sup>(1)</sup> (lbs.):	2K to 500K+
Rated output (FSO):	0.5, 1, 2 mV/V (nominal)
Combined error:	≤ 0.50 % FSO
Non-linearity:	≤ 0.30 % FSO
Hysteresis:	≤ 0.20 % FSO
Non-repeatability:	≤ 0.10 % FSO
Side Load Rejection Ratio:	≤ 500:1
Creep (30 minutes):	≤ 0.05% of load
Zero balance:	≤ 2.0 % FSO
Zero return (30 minutes):	Better than 0.05 % FSO

<sup>(1)</sup> ("K" = thousand)**ELECTRICAL:**

Input impedance (ohms):	380 – 800 (nominal)
Output impedance (ohms):	350 – 700 (nominal)
Insulation resistance (ohms):	>1,000 M @ 50VDC
Excitation Voltage (AC/DC):	10 V (15 V maximum)
Cable Color code:	+ Excitation (red) - Excitation (black) + Output (green) - Output (white) + Remote Sense Option (Blue) - Remote Sense Option (Brown)
	Shield (bare)
Cable type:	4-conductor; 22 AWG; tin-copper, braided shield; polyurethane jacket
Cable termination:	Finished conductors

**MECHANICAL:**

Material:	Alloy tool steel (LA1) Stainless Steel (LA3)
Finish:	Electroless nickel (LA1) Electro-polished (LA3)
Safe overload:	Compression/Tension: 200% FSO Side load: 100% FSO
Ultimate overload:	Compression/Tension: 500% FSO
Side load:	200% FSO

**ENVIRONMENTAL:**

Temperature, operating:	0 to +175 °F (-18 to +79°C)
Temperature, compensated:	40 to +150 °F (4 to +65°C)
Temperature effects:	Zero < 0.0020% FSO/°F < 0.0036% FSO/°C Output < 0.0020% of Rdg./°F < 0.0036% Rdg./°C
Sealing:	IP67, Multi-redundant; IP66/68, Hermetic (option)

