SENTRAN

# DUAL SHEAR LOAD PIN
# SPECIFICATION WORKSHEET

**Fax or e-mail to SENTRAN Applications Engineering Group: 1(909) 605-6305 or mail@sentranllc.com**

CONTACT:_____ PHONE:_____

COMPANY:_____ FAX:_____

ADDRESS:_____ EMAIL:_____

_____ CITY:_____ STATE:_____ ZIP:_____

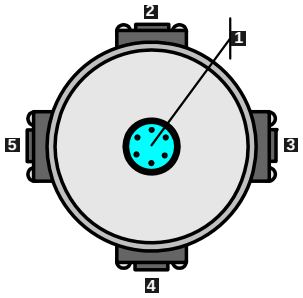
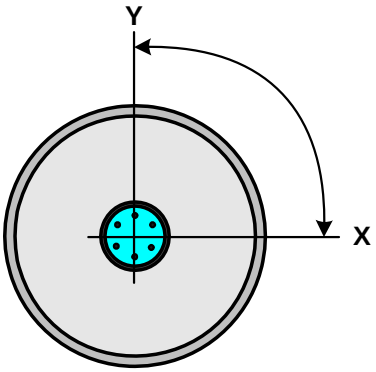
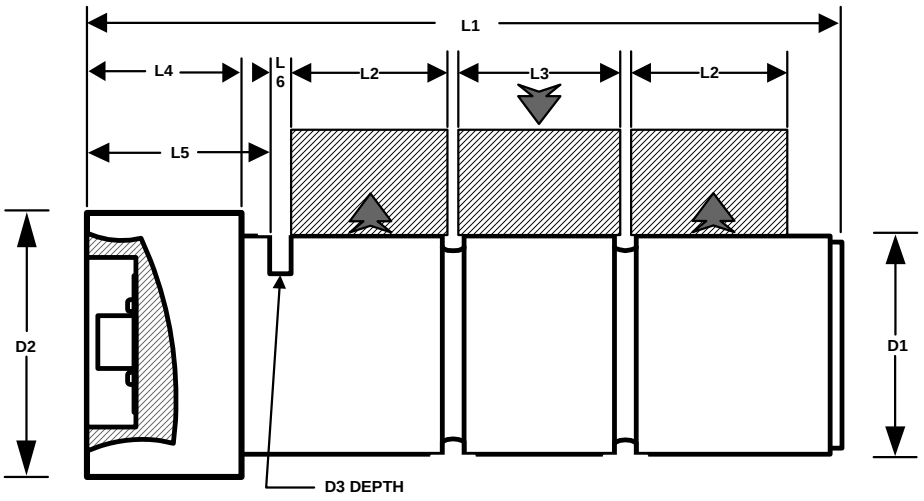
SENTRAN specializes in non-standard, application-specific measurement solutions, particularly in the Load Pin product segment, where "standard" solutions are often not adequate to meet customer requirements.

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.

| **LOADING INFORMATION** | | Please indicate total number of pins required for the following specification: ☐ |
|---|---|---|
| 1. | What is the SYSTEM ACCURACY requirement? | _____ lbs ☐ kg ☐ tonnes ☐ N ☐ Other ☐ _____ |
| 2. | What is the DEAD WEIGHT (DW) load anticipated? | _____ lbs ☐ kg ☐ tonnes ☐ N ☐ Other ☐ _____ |
| 3. | What is the LIVE LOAD (LL) product weight? | _____ lbs ☐ kg ☐ tonnes ☐ N ☐ Other ☐ _____ |
| 4. | What is the LOAD PIN APPLICATION? | Clevis ☐ Sheave ☐ Pulley ☐ Shackle ☐ |
| 5. | What is the TYPE OF LOADING? | Static ☐ Dynamic ☐ Impact ☐ Fatigue ☐ |
| 6. | What is the MAXIMUM LOAD REQUIREMENT? | _____ lbs ☐ kg ☐ tonnes ☐ N ☐ Other ☐ _____ |
| 7. | What is the LOADING CONFIGURATION? (Reference Item 13) | • Single Axis (Constant Wrap Angle) ☐<br>• Bi-Axial (Variable Wrap Angle – Two @ 90°) ☐ |
| **ENVIRONMENTAL CONSIDERATIONS** | | |
| 8. | What will the Load Pin AMBIENT CONDITIONS be? | Indoor ☐ Outdoor ☐ Submerged* ☐ Marine* ☐ IP Rating? _____<br>*Provide specific details on a separate sheet. |
| 9. | What is the TEMPERATURE RANGE (Specify F or C)? | Compensated: _____° to _____°<br>Operating: _____° to _____°<br>Storage: _____° to _____°<br>High temperature versions to 200° C are available. |
| 10. | Is DUAL BRIDGE a requirement? | ☐ No ☐ Yes |

| | | |
|---|---|---|
| 11. | Is there a HAZARDOUS ENVIRONMENT? classification? | ☐ No ☐ Yes (If "yes", Indicate Class/Division/Group below)<br>Class I/II/III; Division 1 or 2; Group A, B, C, D, E, F & G |

**LOAD PIN CONFIGURATION AND LAYOUT**

| | | |
|---|---|---|
| 12. | Is there a preferred CABLE/CONNECTOR LOCATION?<br>☐ 1 (Standard - Axial Location)<br>☐ 2 ☐ 3 ☐ 4 ☐ 5 |  |
| 13. | What is the DIRECTION OF LOAD?<br>1) Load angle in degrees: _____°.<br>2) Clevis Pins Only: Indicate load direction and keeper slot location (For variable load direction, indicate range of load angle.).<br>3) Sheave Pins Only: Indicate wrap angle and keeper slot location (For variable wrap angle, indicate range of load angle.). |  |
| 14. | Please specify all PIN DIMENSIONS:<br>L1<br>L2<br>L3<br>L4<br>L5<br>L6<br>D1<br>D2<br>D3<br>*L4 & D2 Only when shoulder is required. |  |
| 15. | Will an integral grease fitting(s) be required to lubricate the load pin interface? | ☐ No ☐ Yes |

| PERFORMANCE CONSIDERATIONS | | |
|---|---|---|
| 15. | Load Pin OUTPUT? | _____ mV/V ☐ (Reference Typical Specifications on next page.)<br>4-20 mA ☐ 0-10 VDC ☐ Other ☐ _____ |
| 16. | What CABLE LENGTH is required? | _____ Feet ☐ Meters ☐ |
| 17. | Is a CONNECTOR required? | Straight Mating Half ☐ 90° Mating Half ☐ |

| INSTRUMENTATION REQUIREMENTS | | |
|---|---|---|
| 18. | Is CONTROL INSTRUMENTATION required? | Display/Keypad? ☐ No Display ☐ None ☐ |
| 19. | Is an ANALOG COMMUNICATIONS INTERFACE needed? | Voltage? ☐ (0-5 or 0-10 VDC) Current? ☐ (0-20 or 4-20 mA) |
| 20. | Is a SERIAL COMMUNICATIONS INTERFACE needed? | RS232 ☐ RS485 ☐ Other ☐ (Indicate type): _____ |
| 21. | What is the preferred MOUNTING CONFIGURATION? | Wall Mount ☐ Panel Mount ☐ Din Rail ☐ Panel Mount ☐ |
| 22. | Is SETPOINT CONTROL a requirement? | No ☐ Yes ☐<br>Please detail setpoint control logic (separate sheet). |
| 23. | What are the SUPPLY POWER requirements? | 115VAC ☐ 230VAC ☐ 50HZ ☐ 60HZ ☐<br>12VDC ☐ 24VDC ☐ Other _____ |
| 24. | What Instrumentation NEMA RATING is required? | ☐ 12/13 ☐ 4 ☐ 4X ☐ Other _____ |
| 25. | Is a REMOTE DISPLAY required? | No ☐ Yes ☐<br>LED ☐ LCD ☐ Flip Digit ☐<br>Digit Size Required? 1-1/2″ ☐ 4″ ☐ 5″ ☐ 6″ ☐ 7″ ☐<br>Distance from control system? ____<br>RF Data Communications Link? No ☐ Yes ☐ |
| 26. | Please provide any available APPLICATION INFORMATION, including drawings, sketches, photos and specifications. | |

Notes:

# TYPICAL LOAD PIN SPECIFICATIONS

## PERFORMANCE:

| | |
|---|---|
| Rated capacities [1] (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 |

[1] ("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)<br>- Excitation (black)<br>+ Output (green)<br>- Output (white)<br>+ Remote Sense Option (Blue)<br>- Remote Sense Option (Brown)<br>Shield (bare) |
| Cable type | 4-conductor; 22 AWG; tin-copper, braided shield; polyurethane jacket |
| Cable termination | Finished conductors |

## MECHANICAL:

| | |
|---|---|
| Material: | Alloy tool steel (LA1)<br>Stainless Steel (LA3) |
| Finish: | Electroless nickel (LA1)<br>Electro-polished (LA3) |
| Safe overload | Compression/Tension: 200% FSO<br>Side load: 100% FSO |
| Ultimate overload<br>Side load: 200% FSO | Compression/Tension: 500% 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<br>< 0.0036% FSO/°C<br>Output < 0.0020% of Rdg./°F<br>< 0.0036% Rdg./°C |
| Sealing | IP67, Multi-redundant; IP66/68, Hermetic (option) |