

July 2021

## Description

Moore Industries' universal PSD PC-Programmable Loop Display features a large integral display that shows real-time process status in mA, percent, or any designated 5-character Engineering units (EGU).

**Superior Accuracy**—The loop-powered PSD reads any 4-20mA signal and displays the information with phenomenal accuracy of  $\pm 0.012\%$  of input scale. And because it requires less than 2.3 Volts, it won't burden most loops.

**Simple and Versatile PC Setup Program**—Using the PC software, the PSD can either be custom scaled to display in a percent or scaled directly into engineering units for indicating process measurements such as pressure, temperature, level, or flow. Span, zero, input range, display range, and filtering frequency can also be easily programmed. Our software will even capture the input range limits of the loop to provide you with the most accurate display available.

**Custom 128-Point Linearization Curves** – You can plot a custom linearization curve to compensate for non-linear input signals and save them in the PSD's memory.

**Easy Calibration**—A single button on the front of the unit allows you to easily calibrate your loop by displaying the loop current in mA with three-decimal-place accuracy.

*Figure 1. The PSD is available complete in our BH housing; an explosion-proof enclosure that protects your display in even the harshest field environments.*



### Certifications



*Installing easily on the loop, the PSD is protected to NEMA 4X and IP66 standards by our rugged D-BOX enclosure. Explosion-proof enclosures are also available.*

## Features

- **Easy-to-read, customizable display.** The PSD's independently configured display features two rows of large characters that can be clearly read in the field and set to display any EGU.
- **360°, flexible mounting.** When placed into one of our rugged enclosures, the PSD can be mounted at any angle in nearly any environment.
- **Low voltage drop.** Loop-powered by less than 2.3 Volts, the PSD can even be installed on burdened loops.
- **Custom and square root curves.** Select a square root or linear curve from the library, or create your own. Use our software to input a table in one EGU and have the PC program convert it into a different EGU for display.
- **RFI/EMI immunity.** The PSD is resistant to the harmful, unpredictable effects of radio frequency and electromagnetic interference.
- **Configure with a HART Handheld.** The -HHT HART Handheld Terminals option enables any HART handheld communicator to clip on for configuration and monitoring of a HART instrument connected to the PSD.

# PSD

PC-Programmable  
Loop Display

## Specifications

<p><b>Display</b> <b>Type:</b> LCD; Top Row, 10mm (0.4 in) high black digits on a reflective background; Bottom Row, 6mm (0.23 in) high black digits on a reflective background <b>Format:</b> Top row is five alphanumeric characters plus sign and decimal point; Bottom row is five alphanumeric characters <b>Range:</b> -99999 to 99999 <b>Display Update Rate:</b> 100msec <b>Minimum Display Span:</b> 1.00</p>	<p><b>Performance (Continued)</b></p> <table border="1" data-bbox="711 310 959 415"> <tr> <td>Stability</td> <td colspan="3">Input to Output</td> </tr> <tr> <td>Year(s)</td> <td>1</td> <td>3</td> <td>5</td> </tr> <tr> <td>mA</td> <td>0.08</td> <td>0.14</td> <td>0.18</td> </tr> </table> <p><b>Resolution:</b> 0.0028% of input scale <b>Over-Current Protection:</b> 100mA, maximum <b>Display Input Overrange:</b> 24mA <b>Digital Input Filter:</b> User-programmable; 50 or 60Hz <b>Minimum Operating Current:</b> ≥3.8mA <b>Burden:</b> &lt;2.3V (&lt;5.1V when -LMD Loop Maintenance Zener Diode option is installed and PSD is removed from the loop; &lt;8.3V when -HHT option is installed and the PSD is connected to a single HART field device)</p> <p><b>Ambient Conditions</b> <b>Operating Range:</b> -25°C to 85°C (-13°F to 185°F)</p>	Stability	Input to Output			Year(s)	1	3	5	mA	0.08	0.14	0.18	<p><b>Ambient Conditions (Continued)</b> <b>Storage Range:</b> -45°C to 85°C (-49°F to 185°F) <b>Relative Humidity:</b> 0-95%, non-condensing <b>Ambient Temperature Effect:</b> ±0.015% of span per °C change, maximum <b>RFI/EMI Immunity:</b> 20V/m when tested according to SAMA 33.1 abc with 0.5% of span or less error. 20V/m@ 80-1000MHz, 1kHz AM, when tested according to IEC1000-4-3-1995 <b>Common Mode Rejection:</b> 100dB@60Hz <b>Normal Mode Rejection:</b> 30dB@60Hz</p> <p><b>Weight</b> <b>BH housing:</b> 1.37kg (3 lbs, 1.1 oz) <b>D-BOX housing:</b> 640g (1 lb, 6.3 oz) <b>HP-style housing:</b> 150g (5.3 oz) <b>SB Housing:</b> 2.6kg (7 lbs)</p>
Stability	Input to Output													
Year(s)	1	3	5											
mA	0.08	0.14	0.18											
<p><b>Performance</b> <b>Accuracy:</b> ±0.012% of input scale. This includes the combined effects of linearity, hysteresis, repeatability, and adjustment resolution. It does not include ambient temperature effect. <b>Stability:</b> Error is in % of maximum span:</p>														

## Ordering Information

Unit	Input	Output	Power	Options	Housings
PSD PC-Programmable Loop Display	4-20MA Loop Input	PRG Program- mable with supplied configu- ration soft- ware to display a percent or any other EGU of up to 5 characters in length.	2.3VLP Loop Powered (<2.3VLP with backlight OFF <4.3VLP with backlight ON)	<p><b>-LMD</b> Loop Maintenance Zener Diode provided at input terminals allowing the PSD to be removed from the loop without interrupting loop continuity (Burden: increases from &lt;2.3 to &lt;5.1V when PSD is removed from the loop)</p> <p><b>-ISC:</b> CSA Approved Intrinsically-Safe &amp; Non-Incendive</p> <p><b>-ISE:</b> ATEX Approved Intrinsically-Safe</p> <p><b>-ISF:</b> FM Approved Intrinsically-Safe &amp; Non-Incendive</p> <p><b>-HHT:</b> HART Handheld Terminals</p> <p><b>-VTD:</b> Standard Factory Calibration with NIST Test Data Report</p>	<p><b>BH2NG*</b> (*) or (‡) Aluminum 2-Hub, Explosion-Proof enclosure with two, ½-inch NPT entry ports and a glass cover</p> <p><b>BH2TG*</b> (*) or (‡) Aluminum 2-Hub, Explosion-Proof enclosure with two, ¾-inch NPT entry ports and a glass cover</p> <p><b>BH2MG*</b> (*) or (‡) Aluminum 2-Hub, Explosion-Proof enclosure with two, M20 x 1.5 entry ports and a glass cover</p> <p><b>BH3NG*</b> (*) or (‡) Aluminum 3-Hub, Explosion-Proof enclosure with three, ½-inch NPT entry ports and a glass cover</p> <p><b>BH3TG*</b> (*) or (‡) Aluminum 3-Hub, Explosion-Proof enclosure with two, ¾-inch NPT side-entry ports, one ½-inch NPT bottom-entry port, and a glass cover</p> <p><b>BH3MG*</b> (*) or (‡) Aluminum 3-Hub, Explosion-Proof enclosure with two, M20 x 1.5 side-entry ports, one ½-inch bottom-entry port, and a glass cover</p> <p><b>D1LC</b> 1-Hub, Low base, Clear cover, NEMA 4X (IP66) enclosure</p> <p><b>D2LC</b> 2-Hub, Low base, Clear cover, NEMA 4X (IP66) enclosure</p> <p><b>HP</b> Hockey-puck housing and spring clips</p> <p><b>DN</b> Snap-in mounting for HP case on TS-32 DIN rail</p> <p><b>FL</b> Mounting flanges on HP suitable for relay track or screw mounting</p> <p><b>FLD</b> Mounting flanges on HP suitable for 3½" relay track or screw mounting</p> <p><b>SB2NG*</b> (*) or (‡) 316 Stainless Steel 2-Hub, Explosion-Proof enclosure with two, ½-inch NPT entry ports and a glass cover</p> <p><b>SB2MG*</b> (*) or (‡) 316 Stainless Steel 2-Hub, Explosion-Proof enclosure with two, M20 x 1.5 entry ports and a glass cover</p> <p>* Either <b>A</b> or <b>E</b> suffix (comes supplied with 2" pipe mount hardware) <b>A</b> suffix indicates ANZEx/TestSafe (Ex d) Flameproof approvals (i.e. BH2MGA) <b>E</b> suffix indicates ATEX (Ex d and tb) Flameproof approvals (i.e. BH2MGE) ‡ <b>P</b> suffix indicates enclosure comes equipped with base plate and U-bolts for mounting on a 2-inch pipe (i.e. BH2NGP) See BH, SB and D-BOX Datasheets for additional information.</p>

To order, specify: Unit / Input / Output / Power / Options [Housing]

Model Number Example: PSD / 4-20MA / PRG / 2.3VLP / -LMD [BH2NG]

## Certifications

### PSD-HP



**FM Approvals (FM Global Group):**  
**Intrinsically-Safe**  
 Class I, II, III Division 1, Groups A thru G  
**Non-Incendive**  
 Class I, Division 2, Groups A, B, C & D  
**Temperature Class T4 @ 85°C Ambient**



**CSA Group (Canadian Standards Association):**  
**General/Ordinary Location**  
**Intrinsically-Safe**  
 Class I, Division 1, Groups A, B, C & D  
**Non-Incendive**  
 Class I, Division 2, Groups A, B, C & D  
**Temperature Code T5 @ 60°C Ambient**  
**Temperature Code T6 @ 40°C Ambient**



**ATEX Directive 2014/34/EU (LCIE):**  
**Intrinsically-Safe**  
 II 1G Ex ia IIC T4 Ta = 85°C  
**ATEX Directive 2014/34/EU (MII):**  
 Ⓢ Type "n"  
 II 3G Ex nA IIC T4 Ta = 85°C



**CE Conformant:**  
 EMC Directive 2014/30/EC – EN 61326

### PSD-HP in BH/SB2 Housing



**FM Approvals (FM Global Group):**  
**Explosion-Proof & Dust/Ignition-Proof**  
 Class I, Division 1, Groups A\*, B, C & D  
 Class II & III, Division 1, Groups E, F & G  
**Environmental Protection: NEMA 4X & IP66**  
 T6 @ 60°C Maximum Operating Ambient  
*\*For Group A applications, seal all conduits within 18"*



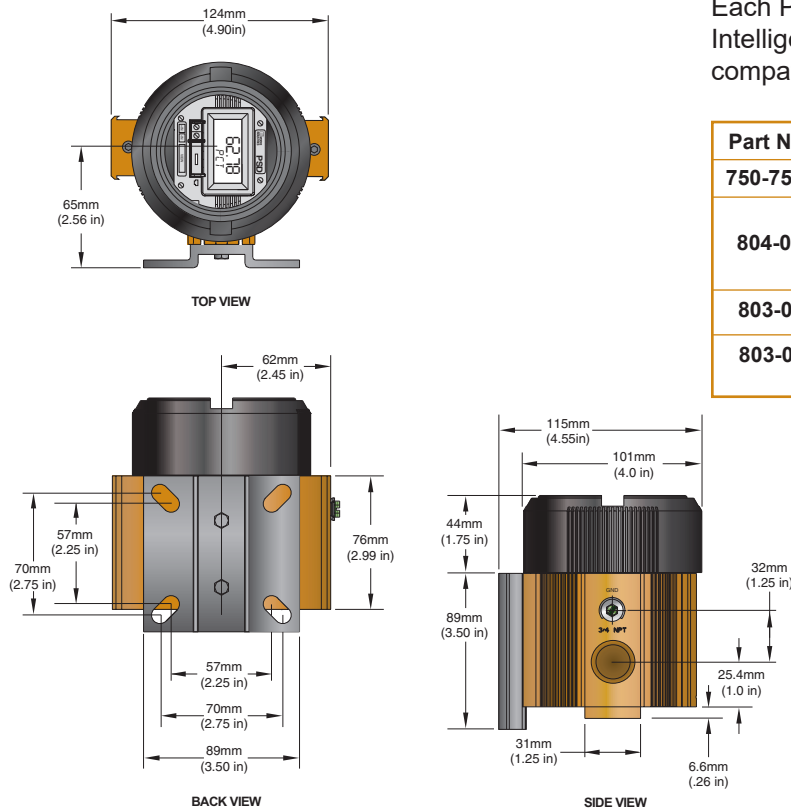
**CSA Group (Canadian Standards Association):**  
**Explosion-Proof**  
 Class I, Division 1, Groups A\*, B, C & D  
 Class II, III, Groups E, F & G  
 Type 4X, IP66  
 Ambient Temp. Range: -20°C to +60°C; T6  
*\*For U.S. Group A applications, seal all conduits within 18"*



**ATEX Directive 2014/34/EU (ISseP):**  
**Explosion/Flame-Proof**  
 Ⓢ II G Ex d IIC T6 Gb  
 Ⓢ II D Ex tb IIIC Db T85°C IP66

**ANZEx ANZEx (TestSafe):**  
**Explosion/Flame-Proof**  
 Ex d IIC T6 (Tamb 60°C)

Figure 2. Dimensions of the PSD in the BH explosion-proof enclosure.



## Accessories

Each PSD order comes with one copy of our Intelligent PC Configuration Software (Windows® compatible) To order additional software or cables:

Part Number	Part
750-75E05-01	Intelligent PC Configuration Software
804-030-26	Fuse Protected, Non-Isolated USB Communication Cable (required by ATEX for products installed in Intrinsically-Safe areas)
803-039-26	Isolated Configuration Cable (9-pin Serial Port)
803-040-26	Non-Isolated Configuration Cable (9-pin Serial Port)

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Figure 3. Dimensions of the PSD in the D-BOX enclosure.

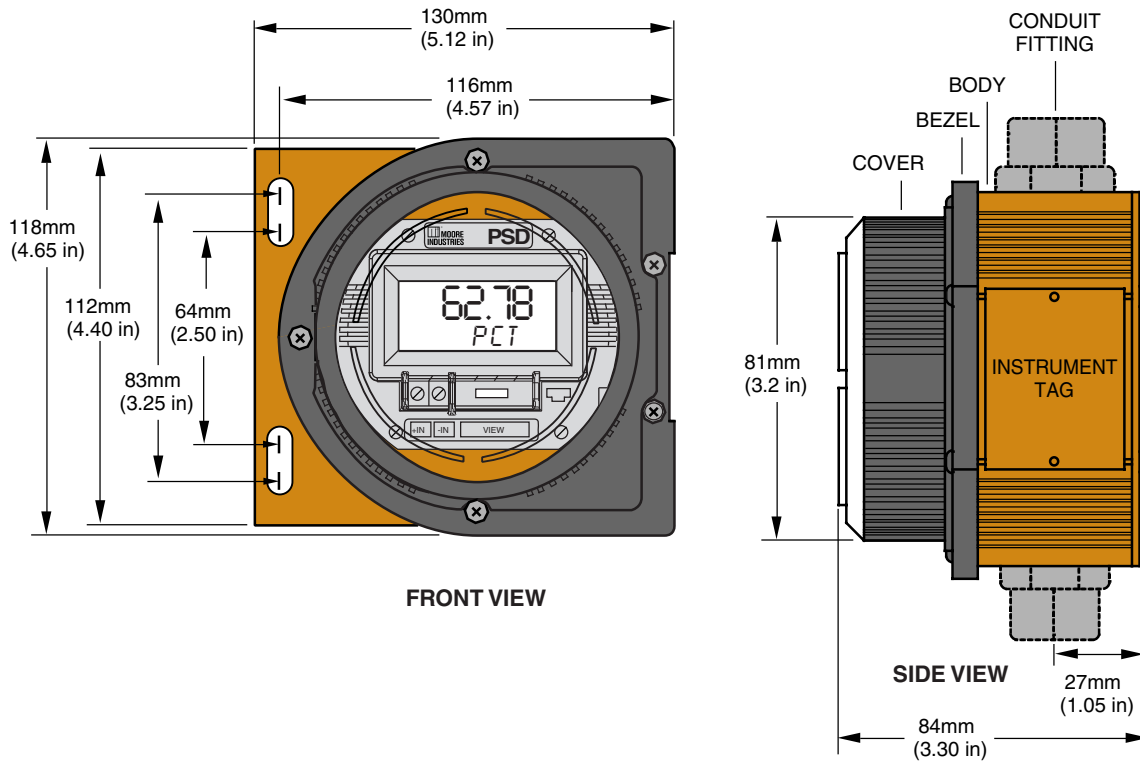
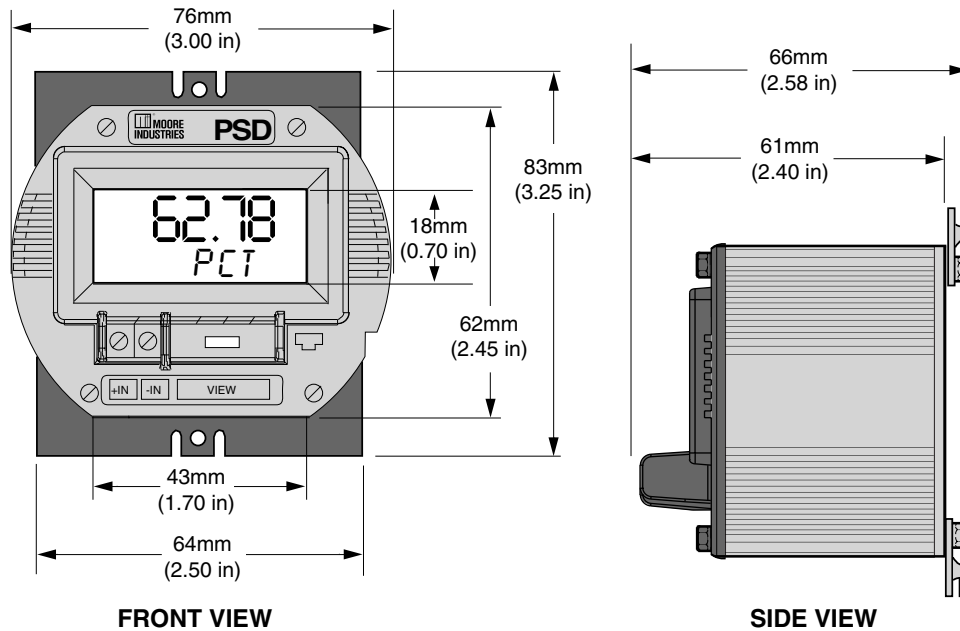


Figure 4. Dimensions of the PSD HP housing with mounting flanges.



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