

PSD *PC-Programmable
Loop Display*





HelpMap

Navigation System

The PSD Intelligent PC Configuration Software is equipped with our new HelpMap Navigation System. This searchable, comprehensive help system includes all the tables and illustrations you will need to easily setup your unit—from startup to hookup. Reference the HelpMap if you are looking for more detailed information than is provided in this manual. Simply install and run the PC Configuration Software, then click on the questionmark button in the upper right corner of the PC Configuration Program.

Table of Contents

Introduction	1
The PSD	1
Model and Serial Numbers	1
Specifications	1
Ordering Information	2
Everything You Need is Included	2
Dimensions	3-4
Configuring the PSD	4
Installing the Configuration Software	4
Using the PC Program	5
Installing the PSD	6
Necessary Equipment Table	6
Programming the PSD	7
Recommended Ground Wiring Practices	8
CE Conformity	8
Operation	8
Maintenance	8
Customer Support	8
Troubleshooting the PC Software	9
Appendix A: Intrinsic Safety	10

Introduction

This is the users' manual for the PSD, Moore Industries' PC-Programmable Loop Display. It contains all of the information needed to configure, install, operate, and maintain the PSD. In many cases, more detailed information than is found in this manual is provided through the HelpMap portion of the configuration software. (Run the Configuration Software then press the questionmark button on the upper-right side of the screen). If you would like additional assistance, call one of our STAR centers.

The following guidelines are used in this manual:

WARNING - Hazardous procedure or condition that could injure the operator.

Caution - Hazardous procedure or condition that could damage or destroy the unit.

Note - Information that is helpful for a procedure, condition, or operation of the unit.

The PSD

The PSD is a 2-wire (loop-powered), PC-programmable loop display. Typically paired with one of our extensive line of durable housing and enclosure options, its size, accuracy, and low voltage drop make it the ideal solution for displaying measurements in remote or otherwise difficult-to-access locations or nearly overburdened loops.

Model and Serial Numbers

Moore Industries uses a system of model and serial numbers to keep track of all of the information on every unit it sells and services. If a problem occurs with a PSD, check for a tag affixed to the unit listing these numbers. Supply the Customer Support representative with this information when calling.

Specifications

<p>Performance</p> <p>Input Accuracy: ±0.012% of input scale</p> <p>Overall Accuracy: The overall accuracy of the unit is the input accuracy. (±0.012% of input scale) It includes the combined effects of linearity, hysteresis, repeatability, and adjustment resolution. It does not include ambient temperature effect.</p> <p>Stability: Error is in % of maximum span</p> <table border="1" data-bbox="334 1444 589 1579"> <tr> <td>Stability</td> <td colspan="3">Input to Output</td> </tr> <tr> <td rowspan="2">mA</td> <td>1yr</td> <td>3yrs</td> <td>5yrs</td> </tr> <tr> <td>0.08</td> <td>0.14</td> <td>0.18</td> </tr> </table> <p>Resolution: 0.0028% of input scale</p> <p>Over-Current Protection: 100mA maximum</p> <p>Input Overrange: 24mA</p> <p>Digital Input Filter: User-programmable; 50 or 60 Hz</p>	Stability	Input to Output			mA	1yr	3yrs	5yrs	0.08	0.14	0.18	<p>Performance (Continued)</p> <p>Excitation Current: ≥3.8mA Burden: <2.3VLP</p> <p>Display</p> <p>Type: LCD; Top Row, 10mm (0.4 inch) high black digits on a reflective background; Bottom Row, 6mm (0.23 inch) high black digits on a reflective background</p> <p>Display Update Rate: 100msec</p> <p>Format: Top row is five alphanumeric characters plus sign and decimal point; Bottom row is five alphanumeric characters</p> <p>Range: -99999 to 99999</p> <p>Minimum Display Span: 1.00</p> <p>Ambient Conditions</p> <p>Operating Range: -25°C to 85°C (-13°F to 185°F)</p> <p>Storage Range: -45°C to 85°C (-49°F to 185°F)</p>	<p>Ambient Conditions (Continued)</p> <p>Relative Humidity: 0-95%, non-condensing</p> <p>Ambient Temperature Effect: ±0.015% of span per °C change, maximum</p> <p>RFI/EMI Immunity: 20 V/m when tested according to SAMA 33.1 abc with 0.5% of span or less error; 20 V/m @ 80-1000MHz, 1KHz AM, when tested according to IEC1000-4-3-1995</p> <p>Common Mode Rejection: 100dB @ 60Hz</p> <p>Normal Mode Rejection: 30dB @ 60Hz</p> <p>Weight</p> <p>BH housing: 1.37 kg (3 lbs, 1.1 oz)</p> <p>D2LC housing: 640g (1 lb, 6.3 oz)</p> <p>HP-style housing: 150g (5.3 oz)</p>
Stability	Input to Output												
mA	1yr	3yrs	5yrs										
	0.08	0.14	0.18										

Specifications subject to change without notice.

Ordering Information

Unit	Input	Output	Power	Options	Housings
PSD PC- Programmable Loop Display	4-20MA Loop Input	PRG Programmable with supplied configuration software to display a percent or any other EGU of up to 5 char- acters in length.	2.3VLP Loop Powered	none	BH2NG 2-Hub, Explosion-Proof enclosure with two, ½-inch entry ports and a glass cover BH2TG 2-Hub, Explosion-Proof enclosure with two, ¾-inch entry ports and a glass cover BH2MG 2-Hub, Explosion-Proof enclosure with two, M20 x 1.5 entry ports and a glass cover BH3NG 3-Hub, Explosion-Proof enclosure with three, ½-inch entry ports and a glass cover BH3TG 3-Hub, Explosion-Proof enclosure with two, ¾-inch side-entry ports, one ½-inch bottom-entry port, and a glass cover BH3MG 3-Hub, Explosion-Proof enclosure with two, M20 x 1.5 side-entry ports, one ½-inch bottom-entry port, and a glass cover D1LC 1-Hub, low base, clear cover, NEMA 4X (IP66) enclosure D2LC 2-Hub, low base, clear cover, NEMA 4X (IP66) enclosure HP Hockey-puck housing and spring clips DN Snap-in mounting for HP case on TS-32 DIN rail FL Mounting flanges on HP suitable for relay track or screw mounting FLD Mounting flanges on HP suitable for 3½" relay track or screw mounting <small>P suffix indicates enclosure comes equipped with base plate and U-bolts for mounting on a 2-inch pipe (i.e. BH2NGP)</small>

To order, specify: Unit / Input / Output / Power [Housing]
Model Number Example: PSD / 4-20MA / PRG / 2.3VLP [BH2NG]

Everything You Need is Included...

Each PSD order comes with one copy of our Configuration Software on 3½-inch floppy disks (Windows® '95, '98, and NT compatible).

To order additional copies, specify Moore Industries' part number **178-75120-01**.

A PSD Configuration Cable is also included with each order. To order additional or replacement cables, specify Moore Industries' part number **803-040-26D**, or for a special cable equipped with its own, self-powered input-to-output isolation circuit, specify **803-039-26D**.

Additional accessories are available as follows:

Part Number 178-75120-01	Intelligent PC Configuration Software (One copy comes free with each order)
Part Number 803-039-26D	Isolated PSD Configuration Cable
Part Number 803-040-26D	Non-Isolated PSD Configuration Cable (One copy comes free with each order)

Figure 1. PSD Explosion-Proof BH Enclosure Dimensions

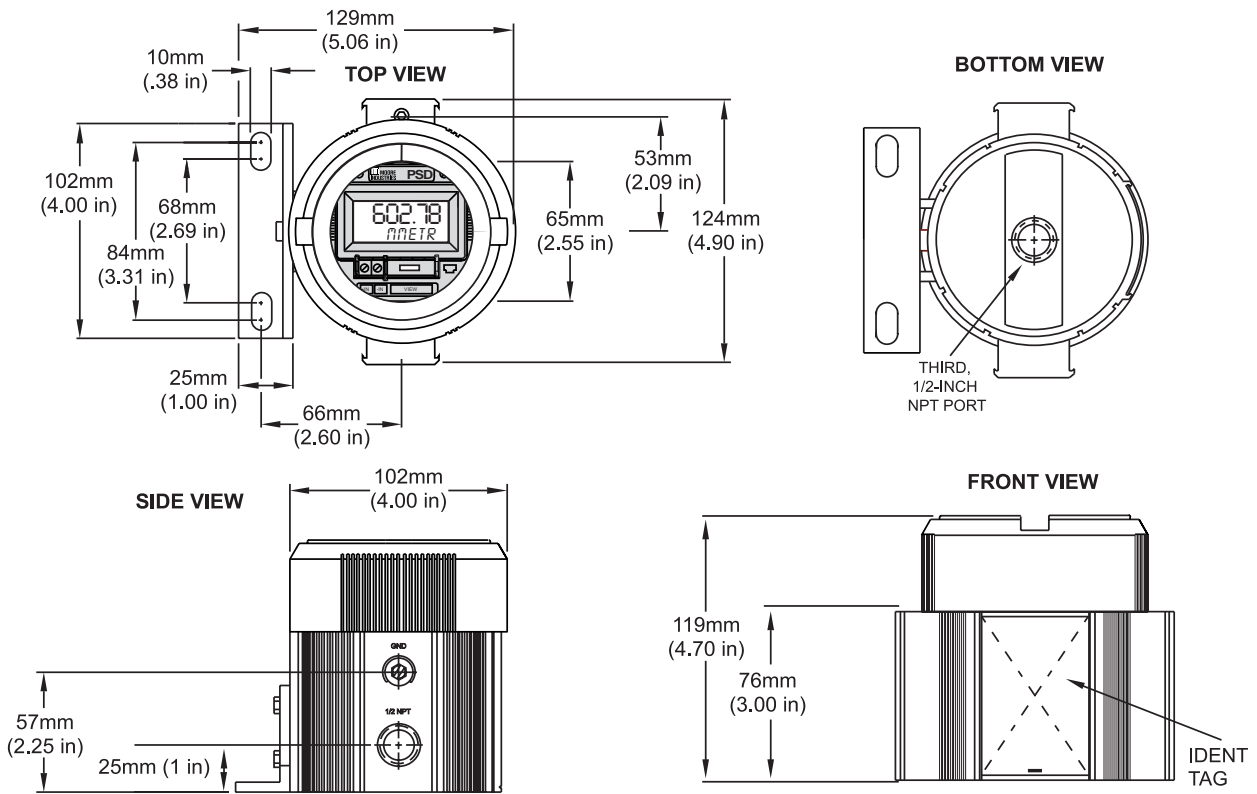
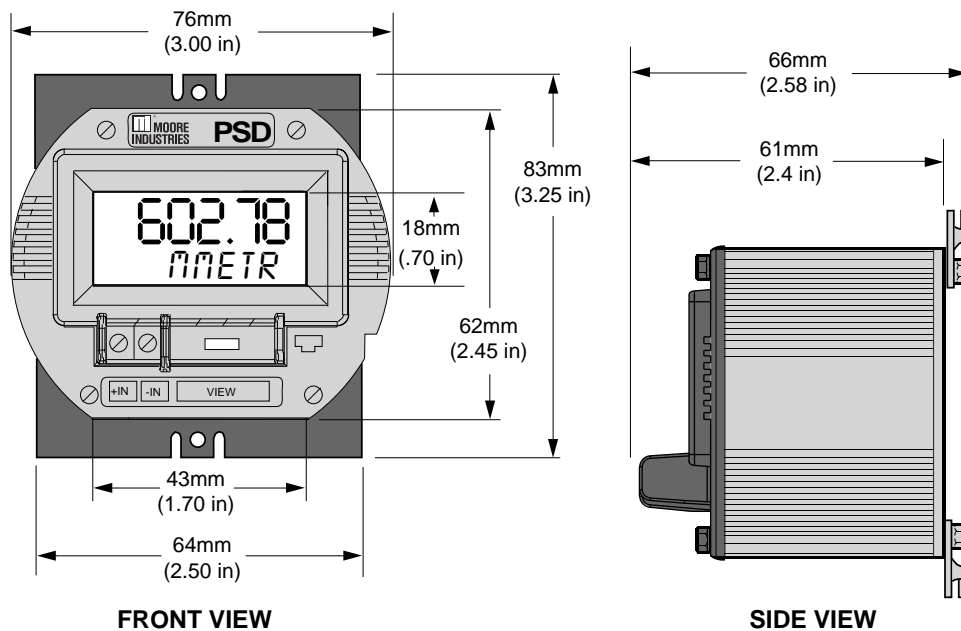
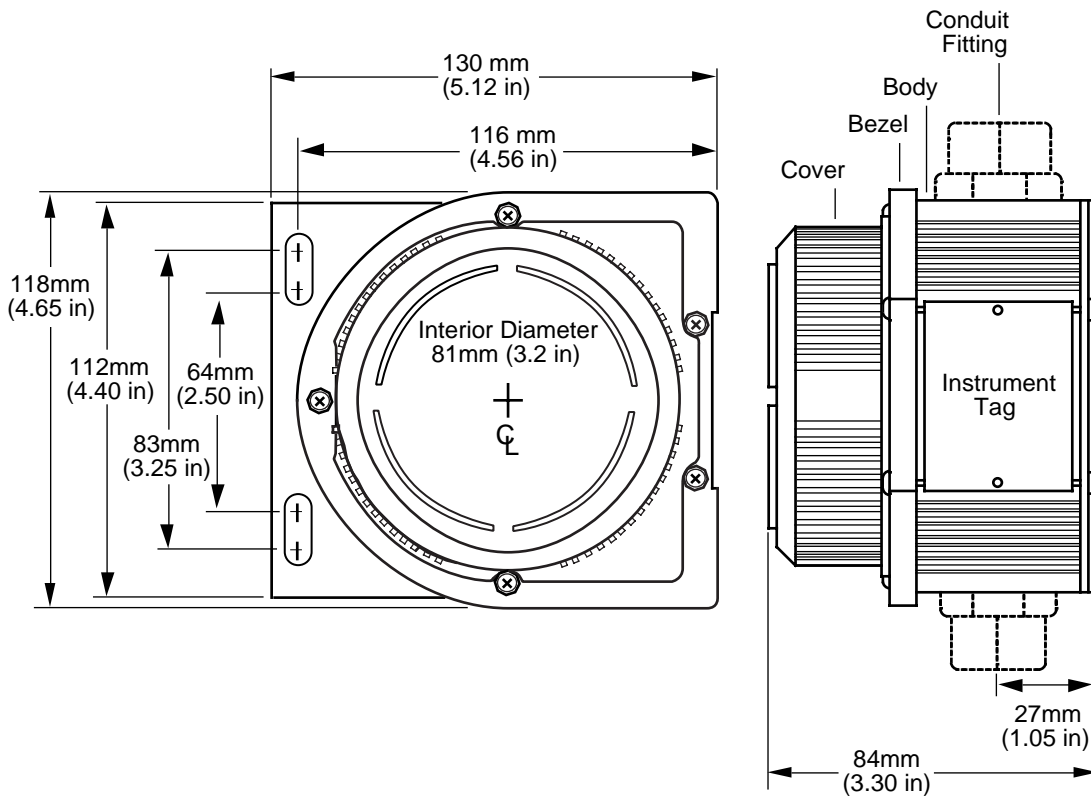


Figure 2. PSD Hockey-Puck Dimensions



PSD

Figure 3. Field-Mount, NEMA 4X/IP66 D-BOX Enclosure Dimensions



Configuring the PSD

One of the benefits of the PSD is that it has no internal or external controls to adjust or settings to change. All operating parameters are set using Moore Industries' Intelligent PC Configuration software.

Once these software settings are made, they are "downloaded" to the display in the form of a Configuration File and stored in the nonvolatile unit's memory. You can choose to save a backup copy of the file on your PC hard drive or diskette. The transmitter communicates with the PC through a cable connection to the PC's serial (COM) port.

Installing the Configuration Software

Refer to Table 1 for the equipment needed.

1. Insert the diskette labeled "PSD Installation Disk One" into the floppy drive of the PC.
2. In Windows® '95/'98/NT, go to the "Start" menu, and access "Settings", then "Control Panel", and finally "Add/Remove Programs".
3. Click "Install" and follow the instructions on the screen.

Two Utility Disks are also provided with your PC program. These are for users of Windows '95 with Internet Explorer 3.0x, or Windows NT. Do NOT install these if you are using Windows '98 or have Internet Explorer 4.0 or higher installed.

Once the Configuration Program is installed on the PC, the PSD can be connected to the loop or to equipment to simulate and calibrate input. The user can then view and/or change the display's parameters.

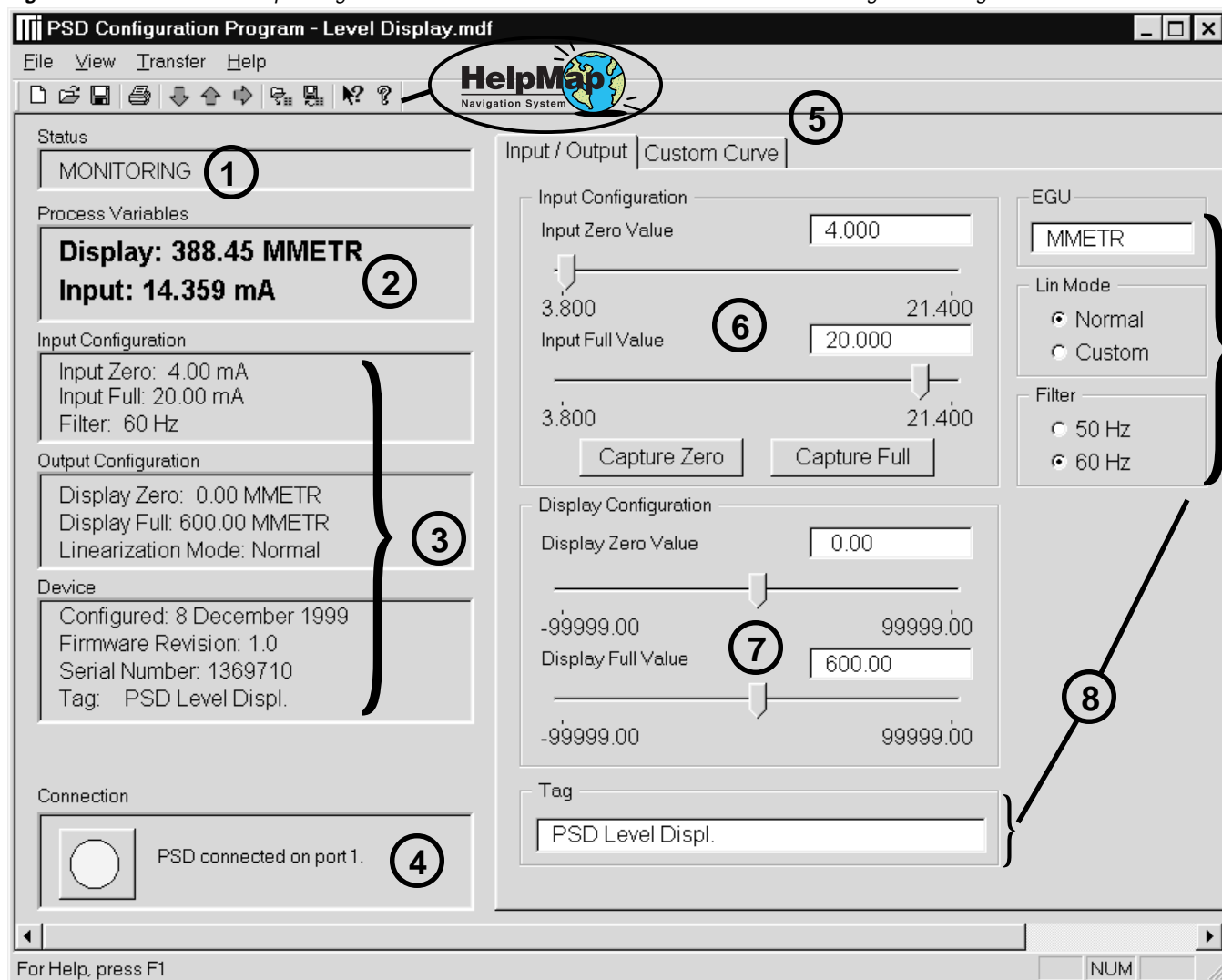
No PSD Required

It is not necessary to connect the display to a PC while creating configuration files using the Configuration Software. The Configuration Program can be run without connecting a transmitter, and **most** operating parameters can be set without benefit of an attached PSD.

This makes it easy to create a set of operating parameters, save them to disk, and download them to one or more transmitters at a later time.

The PSD **must** be connected to the PC in order to: capture input, assign a tag, receive (via download) a configuration file, and save the configuration file from the transmitter's memory.

Figure 4. Most of the PSD Operating Parameters can be set from the Main Screen of the Configuration Program.



Using the PC Program

The PSD PC Configuration Software is used to program all of the PSD's parameters. For detailed information on how to use our configuration software, access our HelpMap Navigation System. The PC Software is made up of these sections:

1. **Status**—This portion of the screen displays the activity of the connected unit. It will show you if the unit is *Idle*, *Uploading*, *Downloading*, or *Monitoring*.
2. **Process Variables**—This displays two variables: the loop signal in mA and the loop signal after the PSD has converted it to the designated EGU.
3. **Input Configuration, Output Configuration, and Device**—These three sections display the settings of the connected PSD.
4. **Connection**—Check this section to track the status of the PC's connection with the PSD.

5. **Input/Output & Custom Curve Tabs**—Displays all the information to program the PSD with either a standard, linear curve (Input/Output), or with a custom linearization curve (Custom Curve).

6. **Input Configuration**—Displays the input settings proposed for the transmitter. The two different capture buttons permit you to capture the input span.

7. **Display Configuration**—Shows the display settings proposed for the PSD.

8. **Tag, EGU, Lin. Mode, and Filter**—This set of radio buttons and edit boxes allow you to input different values proposed for transmission to the PSD.

HelpMap Navigation System—For detailed information on any PSD-related topic, access the HelpMap Navigation System by clicking on the questionmark button.

PSD

Installing the PSD

Installing the PSD in your loop involves mounting and making electrical connections. It is recommended that the PSD be installed in the loop before it is configured so that you can use the input capture feature to capture the exact full and zero values of the loop. See Figure 5 for a hookup diagram, and Table 1 for a list of necessary equipment.

If it is not possible to hookup the PSD to the loop, you can also use a variable current source and an ammeter or multimeter to setup your unit before you install it on the loop. See Figure 6 for a hookup diagram, and Table 1 for a list of necessary equipment. The PC Configuration Software can program and save the settings for the PSD without having a PSD attached, but you do need to attach the PSD as shown below in order to download information.

NOTE:

It is essential that you use a "Revision D" configuration cable to connect your PSD to the PC. This cable will have a silver tag attached to it with "Revision D" in black letters. Earlier cable revisions may not work with the PSD.

Table 1. Assembling the necessary equipment.

Device	Specifications
Multimeter or Ammeter (optional)	Accurate to $\pm 0.025\%$ of span; e.g., Fluke Model 87
Variable Current Source	Capable of 4-20mA; accurate to $\pm 0.01\%$ of span
Personal Computer	80486-based (or faster) IBM PC, or 100% compatible; (Pentium recommended) 1.44MB floppy diskette drive 4Mb free RAM; 16Mb recommended 20Mb free disk space on hard drive 1 (one) serial port (COM 1, 2, 3, or 4)
PC Operating System	Microsoft Windows® '95, or '98 with Internet Explorer 4.0+ (For HelpMap) or Microsoft Windows® NT with Service Pack 4
Moore Industries PC Configuration Software	Version 1.0 or higher, successfully installed to the hard drive

Figure 5. Connecting the PSD to a 4-20mA Loop

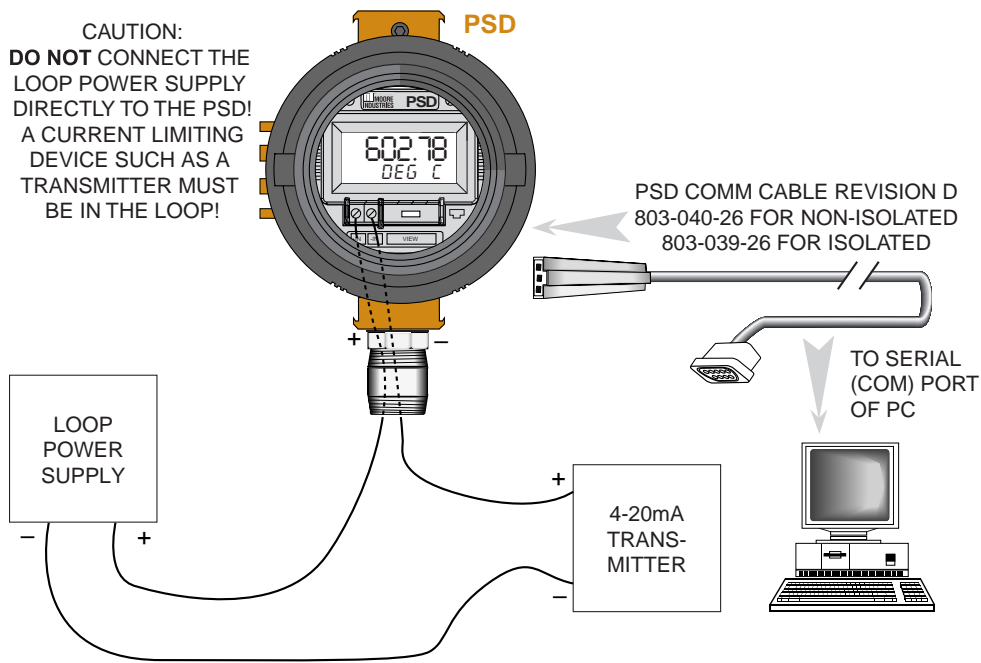
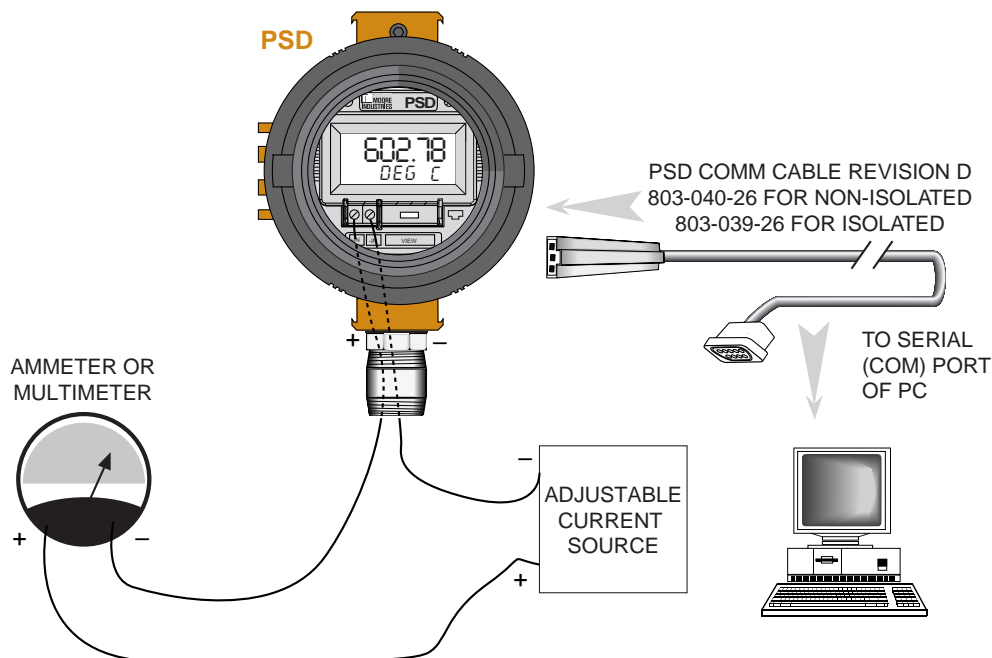


Figure 6. Connecting the PSD to configuration equipment




Programming the PSD

There are two sections for programming the PSD – “Input/Output,” and “Custom Curve”. The Input/Output tab allows you to program the PSD with a normal, linear curve; the “Custom Curve” allows you to program the PSD with a custom linearization curve.


Programming the PSD with a Normal (linear) Curve

It is a simple process to program the PSD with a normal curve. Using the “Input/Output” tab, you will need to adjust six settings.

1. In the “Input Configuration” box, enter the Zero and Full Input values, or click the “Capture” button (this is the preferred method) and adjust the input.
2. Go to “Display Configuration” and input the range you would like displayed on the PSD’s screen.
3. Enter a name for the unit (to be read by the PC Program) in the “Tag” box.
4. Enter into the “EGU” box the engineering unit you would like displayed.
5. “Lin Mode” should be left at “Normal”.
6. Set the “Filter” to match the frequency of the filter for the AC power mains in your country.
7. Download the new settings to the instrument by attaching the instrument to the PC and clicking on the download  button.

Programming the PSD with a Custom Curve

There are a variety of ways to program the PSD with a custom curve. You can import a comma-delimited table that you have written in another program (for example, design the table in Microsoft® Excel and save it as .csv type). You can import a ready-made file that came with your configuration software (such as the square root table). Or, you can click on the “Custom Curve” tab then enter all the pertinent data as described below.

1. In the “Linearization Data” box, enter the number of linearization points. Then, in the “X data” column of the table, enter the value of the loop input in mA. In the “Y data” column of the table, enter the corresponding EGU value that you would like displayed. It may be useful to use the buttons in the “Commands” box to work with the cells.
2. Leave “Lin Mode” set to “Custom”.
3. Set the “Input Config.” to the span of the loop you will be reading.
4. Set the “Display Config.” to the span that you would like to have displayed. This allows you to reset the range of the display with one step instead of having to recalculate the entire custom curve table.
5. Download the new settings to the instrument by attaching the instrument to the PC and clicking on the download  button.

Recommended Ground Wiring Practices

Moore Industries recommends the following ground wiring practices:

- Any Moore Industries product in a metal case or housing should be grounded.
- The protective earth conductor must be connected to a system safety earth ground before making any other connections.
- All input signals to, and output signals from, Moore Industries' products should be wired using a shielded, twisted pair technique. Shields are to be connected to an earth or safety ground at the unit itself.
- The maximum length of unshielded input and/or output signal wiring should be two inches.

CE Conformity

Installation of any Moore Industries' products that carry the CE certification **must** adhere to the guidelines above in order to meet the requirements set forth in applicable EMC directives (EN55011, EN 50082-1, EN50082-2, etc.) Consult the factory for the most current information on products that have been CE certified.

Operation

Once installed and programmed, PSD displays begin to operate immediately. Depending upon environmental conditions, they can be expected to operate unattended for extended periods of time.

Maintenance

Moore Industries suggests a quick check for terminal tightness and general unit condition every 6-8 months. Always adhere to any site requirements for programmed maintenance.

Customer Support

Moore Industries is recognized as the industry leader in delivering top quality to its customers in products and services. We perform a battery of stringent quality assurance checks on every unit we ship. If any Moore Industries product fails to perform up to rated specifications, call us for help. Our highly skilled staff of trained technicians and engineers pride themselves on their ability to provide timely, accurate, and practical answers to your process instrumentation questions.

Factory phone numbers are listed on the back cover of this manual.

If problems involve a particular PSD, there are several pieces of information that can be gathered **before you call the factory** that will help our staff get the answers you need **in the shortest time possible**. For the fastest service, gather the complete model and serial number(s) of the problem unit(s) and the job number of the original sale.

Troubleshooting the PC Software

With the large variety of PC manufacturers that exist today, there is always the small chance that a particular PC will not automatically work with a particular piece of software.

We have gone out of our way to provide you with the most up-to-date fixes in case you have any compatibility problems with our PSD PC Configuration Software.

When I try to run the PC Configuration Software for the first time after installation, it gives me the error, "A device attached to the system is not functioning the MSVCP60.DLL file is linked to missing export MSVCRT.DLL: _lc_collate_cp."

What can I do?

This error occurs when another program has installed or is using a shared file that the PC Configuration Program needs to use. You can correct this error with a special installation.

To reinstall the software properly, insert the Installation Disk 1 of 3 into the drive, go to the START MENU and select RUN. Type in "A:Setup.exe /n" (where "A" is the name of your floppy disk drive). Hit OK and follow the instructions to complete the installation.

When I try to run the PC Configuration Software, my screen turns blue and it gives me the error, "An Exception 0E has occurred at 0028:C58A4E77..."

What can I do?

Some computers have network modems that confuse the PSD Configuration Software when it tries to search for an attached PSD. To eliminate the problem, you can tell the PC Configuration Program what communications port to search for a PSD.

To do this, open Windows Explorer and find the file named *PSD Configuration Program*. (It should be in the *C:\Windows\Start Menu\Programs\Moore Industries* folder). Right-click on it, and select *Properties*. Under the Shortcut tab, there is a target field. Add a "/p?", where "?" is the number of the communications port, to the end of the field called *Target*, inside the quotation marks. It should now look like "*C:\Program Files\Moore Industries\MII Configuration Program\MII Configuration Program.exe /p1*". Restart the software from the start menu and everything will work properly.

When I try to run the HelpMap software, an error occurs that says, "HHCtrl.ocx is old or needs to be updated." What can I do?


The solutions to this problem are simple. *If you are running Windows® '95/'98*, install both the utility disks that came with the PC Configuration Software. Each has a separate program that must be run by following the directions listed on the label.

If you are running Windows® NT, you need to have Service Pack 4 installed, then install just Software Utility Disk #2 of 2 by following the directions listed on it.

Appendix A: Intrinsic Safety

This page contains the installation diagram for the PSD carrying the intrinsically safe option. It also includes guidelines for setting up zener barriers necessary in these types of applications.

These diagrams must be used to augment the installation instructions earlier in this manual for units that are to operate in areas requiring intrinsically safe instrumentation.

DO NOT SCALE DRAWING	DRAWN: GUS H. ELIAS 11/99 CHECKED: W. HO 11/99 ENGINEER: GUS H. ELIAS 11/99 SCALE: NONE	CONTROL DRAWING	DRAWING NUMBER: 100-100-55 REVISED BY: INITIAL RELEASE DATE: G.E. 11/99 BY: CB	REVISION	REVISION: A APPROVAL: CB
TOLERANCES (UNLESS NOTED) DECIMALS = ± 0.005 FRACTIONS = ± 0.005 HOLES = ± 0.005 ANGLES = $\pm 30'$		NOTICE: RE PROPRIETARY INFORMATION: This drawing and the information contained herein are the proprietary property of Moore Industries International, Inc. (MI) and should not be reproduced or disclosed to any third party without the written consent of an authorized officer of MI.			
		PC Programmable Loop Display (The 'COM' Port & Switch May Not Be Used In Hazardous Classified Locations)			
CERTIFIED PRODUCT This is a controlled 'Related' or 'Schedule' drawing. No modifications are permitted without the notification and final approval of the Q.A. Certification Engineer (related dwgs.) or the Certifying Agency (scheduled dwgs.).		Entity (Power/Loop, +PS & -PS) Parameters: $V_{max} = 30VDC$ $I_{max} = 110mA$ $C_i = 0nF$ $L_i = 0\mu H$ $C_a > C_i + C_{cable}$ $L_a > L_i + L_{cable}$			
Non-Hazardous Area Unspecified Apparatus (1) --- Barrier or other Associated Apparatus (2) --- PC Programmable Loop Display (3)		Hazardous (Classified) Locations: Intrinsically Safe: Class I,II,III; Div. 1; Groups A-G. Non-Incendive: Class I, Div. 2, Groups A-D. Class II, Div. 2, Groups F & G and Class III, Div. 2.			
Notes: <ol style="list-style-type: none"> Apparatus which is unspecified except that it must not be supplied from, or contain under normal or abnormal conditions a source of potential with respect to earth in excess of 250 Volts R.M.S. The Barrier or other Associated Apparatus must be approved by the "specific" (FMRC/CSA/SAA/IEECS, etc.) certifying agency for I.S. connections in: "Class I-III, Division 1, Groups A-G" locations. The output voltage V_{oc} must be: $5.48 VDC < V_{oc} < 30 VDC$ and the output current I_{sc} must not exceed 110 mA. Also, it must be installed in accordance with the manufacturer's guidelines. <i>A Barrier is NOT required for Non-Incendive (Class 1, Div. 2) installations.</i> The combined Capacitance and Inductance of the inter-connecting cables and programmable isolated transmitters must not exceed the values indicated on the Associated Apparatus. Installation must be in accordance to 'ANSI-P12.6' [Installation of I.S. Systems for Hazardous (Classified) Locations] & the National Electric Code 'ANSI/NFPA 70'. 					

Appendix B: Square Roots & the Curve Generator

Moore Industries provides two options for customers who require a custom square root linearization table. You can either generate a custom curve table or import a pre-made one.

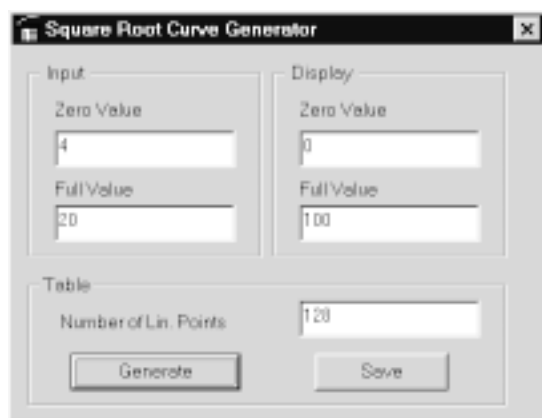
Option One: Generating a Custom Curve

The first option is to run the Table Generator and generate a custom table that can be easily saved and imported into the Universal PC Configuration Software.

To generate your own table, follow the instructions below.

1. From the START Menu, click on PROGRAMS, MOORE INDUSTRIES, then CURVE GENERATOR. The program that is shown below will appear.

Figure b1. The Square Root Curve Generator program will allow you to easily create any custom square root curve that you need.



2. Enter the values for the input and display into the appropriate boxes. Enter the number of linearization points that you would like generated into the NUMBER OF LIN. POINTS box.

3. Click on GENERATE to create the table, then enter the name you would like the table saved as.

4. Close the Curve Generator and open the Universal PC Configuration Software. Click on the FILE menu, then on IMPORT CUSTOM CURVE. Select the "view all files" on the OPEN dialog box, then find the file name that you just saved.

5. Verify all settings.

6. Use the download button to transmit the new file to the PSD and finish the process.

Option Two: Importing a Pre-made Curve

The second option is to use a pre-made custom curve table that will work the function. To import the file, follow the instructions below.

1. In the Universal PC Configuration Program, click on the FILE menu, then on IMPORT CUSTOM CURVE. Select the "view all files" on the OPEN dialog box, then find the file named "SquareRoot_0-100PCT.csv" (it will be in the "[C:\My Moore Industries Data\Custom Curves](#)" Directory) and click OPEN. The Universal PC Configuration Software will import the file.

2. Verify all settings.

3. Use the download button to transmit the new file to the PSD and finish the process.

PSD

GUIDELINES AND CERTIFICATIONS

Low Voltage Directive

When installing any Moore Industries product, always follow all local regulations and standards for grounding, shielding, and safety. The following grounding and wiring practices must be followed in order for the unit(s) to meet the requirements set forth in the EMC directives EN50082-2 and EN55011.

Grounding

If the unit has a metal case it is to be grounded. (DIN rail mounted units should be mounted on a grounded rail).

Wiring

Twisted shielded wire should be used for all input and output signals. The shields are to be grounded at the units, to earth ground (safety ground). The un-shielded part of the in/output wires should be no longer than 2 inches.

CE Certification-related Guidelines

The following guidelines must be followed in order to comply with EN61010-1 (Low Voltage Directive). If these products are to be used in a non-CE environment, this directive may be disregarded.

WARNING:

If this unit is used in a manner not specified by Moore Industries, the protection provided by the equipment may be impaired.

Switches and Circuit Breakers

A switch or circuit breaker must be wired in series with the AC power conductors. The switch or circuit breaker used must be located within three meters of the unit.

WARNING:

Terminals on this unit may be connected to hazardous voltages. Before making ANY connections to this unit, ALL hazardous voltages must be de-energized.

The circuit breaker or switch will only remove power to the unit, hazardous voltages may still be connected to other terminals on the unit.

Installation Category

All of Moore Industries' terminals are rated CAT II, except those with the -RF option. These terminals are rated CAT I.

Equipment Ratings

The PSD does not generate hazardous voltages, rather, it accommodates a low-voltage current input.

Supply Wiring

All power connections should be made with the proper wire.

The end of each conductor should be stripped no more than 8mm. The end of the stripped wire should be tinned with solder, or inserted into a ferrule and crimped before being placed into a terminal block.

Conductors connected to screw-type connections should have a ring-lug or spade-lug crimped onto the wire end.



RETURN PROCEDURES

To return equipment to Moore Industries for repair, perform the following:

1. Notify the local Moore Industries' Sales Representative or a factory Customer Service Representative that you are returning equipment for repair. Furnish the Moore Industries' representative with the model and serial number(s) of the equipment to be returned.
2. In a cover letter or note, describe completely the following:
 - a. the symptoms that indicate the equipment needs repair
 - b. the environment in which the equipment has been operating (vibration, temperature, etc.)
 - c. approximate number of operating hours or approximate installation date (if known)
 - d. complete shipping information for return of the equipment after repair
 - e. the name and phone number of the person to contact if questions arise at the factory
3. Enclose the cover letter, packing list, copies of rejection or discrepancy reports (if available), and purchase order or purchase order number with the equipment.
4. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.
5. Ship the equipment to the Customer Service Department nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries' representative will contact the person designated in the cover letter if more information is needed.

In case of repair pursuant to Moore Industries' return policy, the defective equipment will be either replaced, or the purchase price refunded, at Moore Industries option. The equipment or its replacement will be returned to you in accordance with the shipping instructions furnished in your cover letter.

In other cases, the Moore Industries' representative will advise you of the repair cost and estimated return date, if requested in your letter. Repair in such instances must be authorized by a purchase order number before the equipment can be repaired and returned.

WARRANTY DISCLAIMER

THE COMPANY MAKES NO EXPRESS, IMPLIED OR STATUTORY WARRANTIES (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY GOODS OR SERVICES SOLD BY THE COMPANY. THE COMPANY DISCLAIMS ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR TRADE USAGE, AND ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY ACKNOWLEDGES THAT THERE ARE NO WARRANTIES IMPLIED BY CUSTOM OR USAGE IN THE TRADE OF THE BUYER AND OF THE COMPANY, AND THAT ANY PRIOR DEALINGS OF THE BUYER WITH THE COMPANY DO NOT IMPLY THAT THE COMPANY WARRANTS THE GOODS OR SERVICES IN ANY WAY.

ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY AGREES WITH THE COMPANY THAT THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY WARRANTY CONCERNING THE GOODS OR SERVICES SHALL BE FOR THE COMPANY, AT ITS OPTION, TO REPAIR OR REPLACE THE GOODS OR SERVICES OR REFUND THE PURCHASE PRICE. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES EVEN IF THE COMPANY FAILS IN ANY ATTEMPT TO REMEDY DEFECTS IN THE GOODS OR SERVICES, BUT IN SUCH CASE THE BUYER SHALL BE ENTITLED TO NO MORE THAN A REFUND OF ALL MONIES PAID TO THE COMPANY BY THE BUYER FOR PURCHASE OF THE GOODS OR SERVICES.

ANY CAUSE OF ACTION FOR BREACH OF ANY WARRANTY BY THE COMPANY SHALL BE BARRED UNLESS THE COMPANY RECEIVES FROM THE BUYER A WRITTEN NOTICE OF THE ALLEGED DEFECT OR BREACH WITHIN TEN DAYS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH, AND NO ACTION FOR THE BREACH OF ANY WARRANTY SHALL BE COMMENCED BY THE BUYER NO LATER THAN TWELVE MONTHS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH.

RETURN POLICY

For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.



The Interface Solution Experts • www.miinet.com

United States • info@miinet.com Tel: (818) 894-7111 • FAX: (818) 891-2816	Belgium • info@mooreind.be Tel: 03/448.10.18 • FAX: 03/440.17.97	China • sales@mooreind.com.cn Tel: 86-21-68406724 • FAX: 86-21-50623585
Australia • sales@mooreind.com.au Tel: (02) 8536-7200 • FAX: (02) 9525-7296	The Netherlands • sales@mooreind.demon.nl Tel: (0)344-617971 • FAX: (0)344-615920	United Kingdom • sales@mooreind.com Tel: 01293 514488 • FAX: 01293 536852