Description
Moore Industries’ SDY PC-Programmable Signal Isolator/Converter with Display combines smart digital technology with a large display to deliver an accurate signal that is easily monitored in the field.

The highly versatile SDY accepts a wide range of current or voltage inputs, then outputs the signal as an isolated, proportional, 4-20mA current. A flexible analog/digital hybrid, this 2-wire (loop-powered) transmitter programs in seconds to handle a wide range of signal interface applications:

• **Monitor Signals** using its large, accurate display.
• **Isolate Signals** to stop erratic process measurements caused by ground loops.
• **Convert Signals** so field instruments can interface directly with an indicator, recorder, DCS, PLC or PC-based SCADA system.
• **Divert Signals** so the output from one transmitter can be sent to two separate locations.
• **Protect Equipment and Signals** by eliminating common electrical paths.
• **Boost Signals** so that more instruments can be added to an overburdened loop.
• **Solve “Bucking Power Supplies”** by stopping the conflict caused when a 4-wire transmitter and a DCS both power the same process loop.

**Figure 1.** Program the versatile SDY to accept any one of a wide range of inputs and convert the input into the EGU of your choice.

Available in explosion-proof enclosures and a variety of other configurations, the SDY installs easily in even the most rugged environments.

Features

- **Wide range of signal input choices.** There’s no need to specify and stock fixed-range instruments as spares. The SDY handles the majority of current/voltage interface applications you are likely to encounter.
- **Custom linearization curves.** Easily create your own custom linearization curve tables to accurately convert any non-linear input signals to their linear representations.
- **Easy-to-read, customizable display.** The SDY’s display features two rows of large characters that can be set to display any EGU.
- **Input/output opto isolation.** The SDY delivers superior protection against the harmful effects of ground loops and other plant “noise”.
- **RFI/EMI protection.** The SDY is resistant to the harmful, unpredictable effects of radio frequency and electromagnetic interference.
- **Enhanced configuration software.** From a single screen, you can set all the application-specific parameters.
## Specifications

| Performance | Input Accuracy: Current Input: 3μA (0.006% of full span 50mA) Voltage Input: 0.6mV (0.006% of full span 10V) | Output Accuracy: 4.8μA (0.03% of 4-20mA span) Overall Accuracy: Overall accuracy of the unit is the combined input and output accuracy. It includes the combined effects of linearity, hysteresis, repeatability and adjustment resolution. It does not include ambient temperature effect. Stability: Input to output stability (% of span): 1 year: 0.09%; 3 years: 0.15%; 5 years: 0.20% Minimum Input Span: Current, 1.0mA; Voltage, 250mV Isolation: 500Vac/1000Vdc input to output to case Measurement Cycle: Updates 8 times per second Response Time: 256msec typical for the output to change from 10% to 90% for an input step change of 0% to 100% Step Response: 500msec typical from the time an input is applied until the output reaches 90% of its final value |
| Performance (continued) | Input Impedance: Voltage, 1Mohms; Current, 20 ohms Load Effect: Negligible within specified load limits Ripple: 10mVpp, maximum (measured across 250 ohm resistor) Power Supply Effect: 0.002% of span per 1V change Over-Voltage Protection: 48V, maximum on output; 48V reverse polarity protection on output Maximum Input Overrange: Current: 100mA maximum continuous; Voltage on Current Input: ±1.5Vdc peak; Voltage: ±8Vdc Load Capability: Supply Voltage – 10V = Ohms Output Current Limiting: User-programmable, 3.8 or 21.4mA for input under/over range; 24mA, maximum (hardware limit) |
| Minimum Display Span: 1.00 Ambient Conditions: Operating Range: Transmitter: -40°C to +85°C (-40°F to +185°F) Display: -25°C to +85°C (-13°F to +185°F) Storage Range: -40°C to +85°C (-40°F to +185°F) Effect of Ambient Temperature on Accuracy: ±0.015% of span/°C Relative Humidity: 0-95%, non-condensing RFI/EMI Immunity: 20V/m@ 80-1000MHz, 1K AM @ 80% when tested according to IEC 61326 Common Mode Rejection: 100dB, minimum.@50/60Hz Normal Mode Rejection: 60dB, typical.@1Vp-p, 50/60Hz Weight: HP Housing: 178g (6.3 oz) BH Housing: 1.5kg (3.3 lbs) D-BOX Housing: 688g (1 lb, 8.3 oz) |

## Rugged Enclosures Available
We carry a complete line of durable enclosures to protect and complement our high-quality isolators. Choose from our explosion-proof BH housing or our NEMA 4X and IP66 certified D-BOX housing.

## Accessories
Each SDY order comes with one copy of our Intelligent PC Configuration Software (Windows® compatible).

To order additional software or cables:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Part</th>
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<tbody>
<tr>
<td>750-75E05-01</td>
<td>Intelligent PC Configuration Software</td>
</tr>
<tr>
<td>803-039-26</td>
<td>Isolated Configuration Cable</td>
</tr>
<tr>
<td>803-040-26</td>
<td>Non-Isolated Configuration Cable</td>
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<tr>
<td>804-030-26</td>
<td>Fuse Protected USB Communication Cable (required by IECEx and ATEX for products installed in Intrinsically-Safe areas)</td>
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**Ordering Information**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Input</th>
<th>Output</th>
<th>Power</th>
<th>Options</th>
<th>Housings</th>
</tr>
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<tbody>
<tr>
<td>SDY</td>
<td>PRG</td>
<td>4-20MA</td>
<td>10-42DC</td>
<td>-IS</td>
<td>BH2NG</td>
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<tr>
<td></td>
<td>Programmable with supplied Configuration Software</td>
<td>User scaleable with supplied software</td>
<td>10-30DC for -IS option</td>
<td>Option (cFMus, ATEX and IECEx Intrinsically Safe approval)</td>
<td>2-Hub, explosion-proof enclosure with glass cover</td>
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<td>CURRENT (into 20 ohms) Any range from –2.5mA to 55mA including:</td>
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<td>10-50mA</td>
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<td>VOLTAGE (into 1Mohm) Any range from –0.5V to 11V including:</td>
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<td>10-50mA</td>
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</tbody>
</table>

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

Model Number Example: SDY / PRG / 4-20MA / 10-30DC / -IS [BH2NG]

**Specifications and information subject to change without notice.**

**Certifications**

SDY-HP

Factory Mutual Approvals:
- Intrinsically Safe
  - Class I, Division 1, Groups A, B, C & D
  - Class I, Zone 0, AEx ia IIC T4
- Non-Incendive
  - Class I, Division 2, Groups A, B, C & D
  - Class I, Zone 2, AEx nA IIC T4

ATEX Directive 94/9/EC (FM Approvals):
- Intrinsically Safe and Type “n”
  - II 1 G Ex ia IIC T4 Ga
  - II 3 G Ex nA IIC T4 Gc

IECEEx

IECEEx System (FM Approvals):
- Intrinsically Safe and Type “n”
  - Ex ia IIC T4 Ga
  - Ex nA IIC T4 Gc


Temperature Class T4, Tamb = -40°C to +85°C

SDY-HP in BH or SB2 Housing

Factory Mutual 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 94/9/EC (ISSeP):
- Explosion/Flame-Proof
  - II 2 G Ex d IIC T6 (Tamb 60°C)
  - II 2 D Ex d A21 IP66 T85°C

ANZEx (TestSafe):
- Explosion/Flame-Proof
  - Ex d IIC T6 (Tamb 60°C)
SDY
PC-Programmable
Signal Isolator/Converter with Display

Additional Features

Custom Linearization Curves
Program your SDY with up to 85 custom linearization points. The ability to plot a custom linearization curve is beneficial when non-linear input signals must be converted to linear output representations. Typical applications include monitoring a non-linear transducer, the level of odd-shaped tanks and flow meter linearization.

Monitor Signals
Let the SDY make checking the loop easy with its accurate current transmission and large display. And, with an update rate of eight times per second, you can be confident that the display precisely reflects the loop’s status.

Customized Display
The versatile SDY can be programmed to display the input, output or toggle between both. It will also display the engineering unit of your choice (up to five capital letters).

Long-Term Stability
With error rates as low as ±0.09% over a one year period, and ±0.20% for five years, you can schedule calibrations less frequently without sacrificing accuracy.

Powerful Isolation
Continuous isolation of 500Vac/1000Vdc input to output to case will prevent false signals due to ground loops and other noise.

Certified Field Enclosures Available
Order the SDY in our durable BH enclosure for explosion-proof protection at an affordable price. For applications in rugged environments where explosion-proof protection is not required, choose the NEMA 4X and IP66 certified D-BOX housing.

Convert Signals
The SDY takes one process signal type (such as 1-5V) and converts it to a standard, isolated 4-20mA. This allows devices like transmitters and transducers to interface directly with an indicator, recorder, DCS, PLC, or PC-based SCADA system.

Solve “Bucking Power Supplies”
When two devices (such as a 4-wire transmitter and a DCS) are trying to source power to a loop, the result is a non-functioning loop. When neither of the devices can be eliminated, the solution is the SDY. It can operate with powered inputs from both sides, thus restoring normal operations to the loop.
Stop Ground Noise
A difference in potential between a grounded transmitter and a grounded receiving device on the same loop may result in unpredictable ground loop problems, which can lead to signal drift.

Use the SDY to break the galvanic path between a field transmitter and an indicator, recorder, DCS, PLC or PC-based SCADA system. This stops the harmful effects of ground loops, motor noise and other electrical interferences.

Boost Signals
If you need to add another instrument to an overloaded loop, use the SDY. It features a high drive capability of 600 ohms (with a 24V power supply) and an input impedance of just 20 ohms.

Divert and Protect Signals
Using the SDY, you can send the output from one transmitter to a second location, protect expensive monitoring/control equipment by eliminating common electrical paths, or create a buffer between devices to allow interruption of one system without impacting the other.
**One Window. One Minute. One Setup.**

Configuring the SDY is as simple as point-and-click. All you need is a PC running Windows®, our Configuration Software (one copy supplied free with each order), and a configuration cable. In minutes, you can begin configuring your transmitter’s:

- Input type and range (zero and full scale)
- Output range (4-20mA, zero and full scale)
- Noise rejection (50Hz or 60Hz)
- Direct or reverse output
- Over or under input range detection
- Custom instrument tag and serial number
- Custom input linearization
- Custom input trimming
- Fixed output with an easy loop test
- Damping time for erratic signal compensation (0-20 seconds)

**Custom Linearization Tables**—Unusual inputs are not a problem for the SDY. Not when it is so easy to build a custom 85-point linearization table with the Configuration Program’s straightforward interface.

**Output Damping**—If your sensor is prone to step increases and decreases, use the SDY to lessen the impact on your process. You can program a damping value from 0 to 20 seconds, averaging out sensor fluctuations over the time period setting, and lessening the impact of step changes.

**On-Screen Setup Confirmation**—Once programmed, the operating parameters you have selected are constantly displayed in the configuration window.

**Configuration Alerts**—Data fields on the configuration window provide alert messages (such as “Zero or Full Scale Outside of Conformance Range”) to let you know when you are making a nonstandard or ill-advised selection.

**Store and Print Files**—After you’ve created a configuration file, it can be downloaded to multiple SDYs, printed out as a hardcopy, or named and stored (on a PC hard drive or other media).

**Reverse Output**—Setting Zero Scale Input numerically above Full Scale Input will result in the transmitter’s output going up when the input goes down, and vice-versa. When you have chosen this operation, the “Output” portion of the configuration screen changes to read “Reverse Output”.

**Digital Output Trimming**—A sophisticated yet simple-to-implement software feature allows you to adjust the SDY’s output to compensate for inaccuracies in your readout equipment. The “Zero Scale Output” can be adjusted between 3.797 and 17.400mA. The “Full Scale Output” adjusts between 7.798 and 21.401mA.

**Context-Sensitive HELP System**—Just click on Help, then on the area on the Configuration Screen where you are encountering difficulty, and a concise explanation appears.
Figure 3. Dimensions of the SDY in a D-BOX Enclosure.

Figure 4. Dimensions of the SDY in a BH Enclosure.
**Figure 5. Dimensions of SDY Hockey-Puck with Flange Mount.**

![Diagram of SDY Hockey-Puck with Flange Mount](image.png)

**Table 1. Terminal Designations.**

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Input Terminals</th>
<th>Output Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Number</td>
<td>1  2  3  4</td>
<td>Left to Right</td>
</tr>
<tr>
<td>Current Inputs</td>
<td>+I  -I</td>
<td>+PS  -PS</td>
</tr>
<tr>
<td>Voltage Inputs</td>
<td>+V  -V</td>
<td>+PS  -PS</td>
</tr>
</tbody>
</table>