GENERAL
A Model 3801 Signal Isolation Module accepts a 1 to 5V dc input signal and provides an isolated output current of 4 to 20 mA dc. Up to ten of these modules can be mounted in a Model Series 380 enclosure resulting in substantial space savings as well as providing the flexibility of interconnection with other modules.

The signal isolator provides electrical isolation between input and output signals and is recommended in process current loops where dc common mode problems exist. It permits the input circuit to operate up to 100V dc from ground with the output grounded or the input and output circuits interconnected.

The Isolator Module is designed to accept voltage inputs. Process current inputs are handled with the use of precision resistors that are placed across the cage input terminals. This permits the removal of the module without breaking the input current loop.

SPECIFICATIONS
Input:
1-5V dc, 5 Meg Ohm min. input impedance

Isolation:
Electrical isolation between the input, output and power circuits for dc common mode voltages up to 100V. This permits operation of the input circuit up to 100V dc from ground with the output grounded or permits interconnection of the input and output circuits.

Output:
4-20 mA into 0-1000 Ohms. Output load current is a true function of the input current despite large changes in load resistance.

Current Limiting:
The output current will limit at approximately 15% of full scale when input is overdriven.

Accuracy:
Standard conditions: ±0.1% typical, ±0.15% limit 0-50°C (32-122°F). ±0.1% typical ±0.3% Ambient Change limit.

Standard test conditions: 1-5V dc input, 4-20 mA output, room temperature 25°C, 500 Ohm resistive load, 100 Ohm resistive source, 24V and 15V dc supply.

Trim Adjustment:
Approximately ±5% for both zero and span.

INSTALLATION
Using the Card Cage Enclosure Instructions as a reference (Service Instructions, SD3801), set the keys as follows:

Left Key: H (horizontal)
Right Key: V (vertical)

If the Isolator Module is factory calibrated, insert the module into the proper slot in the card enclosure and make the electrical connections shown in the connection diagram. If it is not factory calibrated, refer to the CALIBRATION section of this instruction. The Isolator Module accepts 1-5V dc input signals, if current input signals are to be used, refer to the Card Cage Enclosure Instruction, SD3801, for details on input signal conditioning resistors.

CALIBRATION

1. Connect the isolator as shown in the connection diagram.
2. Your input source must be adjustable over the entire input range of your unit, and set to an accuracy of 0.1% or better. Load the isolator with 1000 Ohms. The output current must be measured to 0.1% accuracy or better for proper results.
3. Set the input to 1V and adjust the 15 turn pot marked ZERO to give minimum output of 4 mA.
4. Set the input to 5V and adjust the 15 turn pot marked SPAN to give maximum output of 20 mA.
5. Repeat steps 3 and 4 until readings converge. Instrument is now calibrated.

MAINTENANCE
These instruments are solid state and require no maintenance on a regular basis, except for annual cleaning, blowing out dirt, and verifying calibration. If your isolator is not operating properly, we suggest removing it and giving it a full bench check-out. We find most problems are in the field wiring or other circuits, not in the transmitter. If the problem is traced to the unit itself, conventional electronic troubleshooting methods suffice.
Terminal strip on Series 380 rack enclosures.

1 2 3 4 5 6 7 8 9

+ INPUT Note 1
- NC
NC 4-20mA
NC
NC
NC
NC

OUTPUT
Load (1000 ohms max.)

NOTE 1: 1-5V dc signals are standard inputs. For process current inputs refer to Service Instruction, SD3801 for proper input conditioning resistors.

Figure 1 Connection Diagram
Reference 4500-555A

Figure 3 Schematic, Signal Isolation Module, Earlier Models
PC BOARD 1015-117

3.5" (96.5mm)

6.0" (152.4mm)

OSCIllATOR BALANCE DO NOT ADJUST

SPAN ADJUST

ZERD ADJUST

Reference 4500-055D

Figure 4 Assembly Drawing, Signal Isolation Module, Later Models

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Figure 5  Schematic, Signal Isolation Module, Later Models