Description
The field configurable AP4380 isolator offers wide ranging input and output capability for scaling and transmitting analog DC signals. The AP4380-2000 will accept input voltage spans from 10mV up to 100 volts, as well as input current spans from 1mA to 100mA. The AP4380-2001 will accept input voltages up to 200V, as well as the same input current ranges. The input zero and span potentiometers enable 50% input zero and span adjustability. For example, the 0-10V input range can be elevated to 5-10V, compressed to 0-5V or set to 2.5 - 7.5V. The AP4380 offers four (4) popular output ranges: 0-5V, 0-10V, 0-1mA, 4-20mA. The 4-20mA compliance is a powerful 20VDC. Model AP4380 can be configured to accept bipolar input ranges and offers selectable normal or reverse acting operation.

Application
The Action Pak AP4380 field configurable isolator is useful in eliminating ground loops, converting signal levels and providing signal drive and redundancy. The wide ranging capability of the AP4380 provides quick universal spare part coverage.

Diagnostic LED
The AP4380 is equipped with a dual function LED signal monitor. The green, top-mounted LED indicates line power and input signal status. Active line power is indicated by an illuminated LED. If the input signal is 10% more than full scale range, the LED will flash at 8Hz. Below 0%, the flash rate is 4Hz.

Options
- Urethane coating of internal circuitry for protection from corrosive atmospheres.

Configuration
The factory presets the 4380-2000 input and output to 4-20mA, as shown in Figure 1. The 4380-2001 is preset to 0/200V input and 4/20mA output. The supply power is configured for 120 VAC operation. For other I/O ranges, remove the four base screws and case to access the I/O card.

Warning: Do not attempt to change any switch settings with power applied. Severe damage will result!

Input
1. Position input jumper “W1” for Current (I) or Voltage (V) input.
   ![Current Voltage Switch](ON OFF ON OFF)
2. Set position 5 of the Input Range Selector for Unipolar (e.g. 0 to 5V) or Bipolar (e.g. -5 to 5V) operation.
   ![Input Range Selector](ON OFF ON OFF)

Note: A bipolar range selection will double any input range from Table 1 (e.g. 10V span becomes a -10 to 10V bipolar span)

3. Set position 6 of the Input Range Selector for Normal or Reverse operation. Reverse acting produces a decreasing output with an increasing input.
   ![Input Range Selector](ON OFF ON OFF)

4. Using Table 1, configure positions 1 through 4 of the Input Range Selector for the desired maximum input. Round the desired maximum input value to the next highest range (e.g., 0-70V = 100V range).
Output

Warning: Do not configure the output ranges with the power on. Damage to unit may result.

1. Using Table 2, configure Output Selector for one of the four (4) standard outputs.

Power

1. Configure the AC jumpers for either 120 or 240 VAC operation. See Figure 2.

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Table 1: AP4380-2000/2001 Input Ranges

<table>
<thead>
<tr>
<th>Voltage*</th>
<th>Current*</th>
<th>Input Range Selector (SW1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20mV</td>
<td>2mA</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>50mV</td>
<td>5mA</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>100mV</td>
<td>10mA</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>200mV</td>
<td>20mA</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>500mV</td>
<td>50mA</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>1V</td>
<td>100mA</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>2V</td>
<td></td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>5V (-2000)</td>
<td>10V (-2001)</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>10V (-2000)</td>
<td>20V (-2001)</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>25V (-2000)</td>
<td>50V (-2001)</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>50V (-2000)</td>
<td>100V (-2001)</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>100V (-2000)</td>
<td>200V (-2001)</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

* Use jumper (W1) to configure voltage or current input. All unipolar ranges are zero based.

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Table 2: AP4380-2000 Output Ranges

<table>
<thead>
<tr>
<th>Range*</th>
<th>Output Range Selector (SW2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 10V</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>0 to 5V</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>0 to 1mA</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
<tr>
<td>4 to 20mA</td>
<td>ON 1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

* For bipolar voltage outputs (e.g. -10 to +10V) see model AP4382.

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Calibration

1. Connect the input to a calibrated DC voltage or current source and apply power. Wait 1 hour for thermal stability before monitoring the voltage/current output. Refer to PIN CONNECTIONS.

2. Set the calibrator to the desired minimum input and adjust the Zero, 20-turn, potentiometer for desired minimum output.

3. Set the calibrator to the desired maximum input and adjust the Span, 20-turn, potentiometer for desired maximum output.

4. Repeat steps 2 and 3 for best accuracy.
I/O Card Configuration

Warning: Do not configure I/O switch ranges with power on. Damage will result!

Warning: Applying voltage to the input with W1 in current (I) position will result in damage to the unit.

Top View Diagram

Warning: Do not change with power connected!

Mounting
All Action Paks feature plug-in installation. Model AP4380 uses an 8-pin base, either molded socket M008 or DIN socket MD08.

Dimensions
Dimensions are in millimeters (inches).
Specifications
Input:
  Voltage Input (field configurable)
    Full Scale Range:
    -2000: 10mV to 100V
    -2001: 10mV to 200V
  Impedance: >100K Ohms
  Overvoltage:
    Intermittent, 400Vrms
    Continuous, 264Vrms
  Current Input (field configurable)
    Full Scale Range: 1mA to 100mA
    Impedance: 20 Ohms, typical
    Overcurrent: 170mA RMS, max
    Overvoltage: 60VDC
  Common Mode (input to ground): 1500VDC, max
  Zero Turn-Up:
    50% of full scale range
  Span Turn-Down:
    50% of full scale range

Output:
  Voltage Output
    Output: 0-5V, 0-10V
    Drive: 10mA, max (1K Ohms min. @ 10V)
  Current Output
    Output: 0-1mA, 4-20mA
    Compliance:
    0-1mA: 10V, max. (10K Ohms, max)
    4-20mA: 20V, max. (1K Ohms, max)
  LED Indication (green):
    Input Range
    >110% input: 8Hz flash
    <0% input: 4Hz flash
  Accuracy (including linearity hysteresis):
    <20mV/2mA: ±0.35% of full scale, typical
    0.5%, max
    >20mV/2mA: ±0.1% of full scale, typical
    0.2%, max
  Response Time (10-90%):
    200 mSec., typical
  Stability (temp), typical:
    ±0.025% of full scale/°C, typical
    ±0.05%/°C, max.
  Common Mode Rejection:
    DC to 60Hz: 120dB
  Isolation:
    1500 VDC between input, output, & power
  ESD Susceptibility:
    Meets IEC 801-2, Level 2 (4KV)
  Humidity (non-condensing):
    Operating: 15 to 95% (45°C)
    Soak: 90% for 24 hours (45°C)
  Temperature Range:
    Operating: -15 to 60°C (5 to 140°F)
    Storage: -25 to 70°C (-13 to 158°F)
  Power:
    Consumption: 3W typical, 5W max
    Standard: selectable 120/240VAC, ±10%, 50-60Hz
    Optional: 9 to 30VDC, inverter isolated
  Weight:
    0.60lbs
  Agency Approvals:
    UL recognized per standard UL508.

Ordering Information
Specify:
1. Model: AP4380-2000 or AP4380-2001
2. Option: U, see text
3. Line Power, see specifications
4. Factory calibration (C620): Specify input range, output range and power.
   (All power supplies are transformer-isolated from internal circuitry.)

Accessories:
M801-0000 Retaining Spring
M008-A 8 pin Track Mount Socket
M004-0000 4 ft Long Channel Track
MD08-0000 8 pin DIN Mount Socket

Pin Connections
1 Power (Hot)
2 Not Internally Connected
3 Power (Neu)
4 Spare Termination
5 Input (+)
6 Input (-)
7 Output (+)
8 Output (-)

DC Power: PIN 1 = (+); PIN 3 = (-)

Factory Assistance
For additional information on calibration, operation and installation contact our Technical Services Group:
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