DME Application Note: Typical Cavity Pressure Control Overview:
rev1.1 11/20/2014 by FWS.

IPC controller: [https://na.dmecompany.com/Catalog/CatalogListing.aspx?CatalogId=DME&CatalogDetailId=1127](https://na.dmecompany.com/Catalog/CatalogListing.aspx?CatalogId=DME&CatalogDetailId=1127)
Bench Test Video: [http://www.youtube.com/embed/FKbnXbklpT8](http://www.youtube.com/embed/FKbnXbklpT8)
**Button Sensors – Used for Continuous Cavity Pressure Monitoring:**

https://na.dmecompany.com/Catalog/CatalogListing.aspx?Crawl=true&CatalogId=DME&CatalogDetailId=1128

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**Slide Sensors – Used in Prototype Molds or for temporary monitoring:**

https://na.dmecompany.com/Catalog/CatalogListing.aspx?CatalogId=DME&CatalogDetailId=1129
Typical System Setups Using the DME IPC – Customer MUST decide what THEY need.

Note: the 4 digit IPC meter display range is 0 to 1999, which is 0 PSI to 19,999 PSI, values In RED above exceed this and will not display above 1999 on the IPC. You want your useable Cavity Pressure range to be between the 15% of full scale and the 75% of full scale range for best performance. See above Cavity Pressure Range Chart Above. The 100% full Scale reading above basically means that your are fully loading the sensor used, for example a 500 Lb BS412C sensor at 100% full scale reading will have 500 lbf loaded on the sensor from the cavity pressure transferred over the cross section area of the ejector pin. The sensor can be easily permanently damaged if this range is exceeded.

Most Customers Injection Molding Cavity Pressures are in the 5,000 PSI to 20,000 PSI Cavity Pressure Range. IPC Switch Position “D” works for most applications.

In positions “D”, customer MUST use the following combinations for continuous Cavity Pressure Applications:

NOTE:

- the IPC for this min. reading will only show 391 on display and max. will only show 1955
- remember that the 4 digit IPC meter display range is 0 to 1999, which is 0 PSI to 19,999 PSI.

IPC0101, BSC10, for 5/16” diameter ejector pin use BS413Cxx button sensor
IPC0101, BSC10, for 5/32” diameter ejector pin use BS412Cxx button sensor
IPC0101, BSC10, for 5/64” diameter ejector pin use BS411Cxx button sensor

Some customers are trying to retrofit existing injection molds with sensors and may not be able to get a satisfactory setting for the ejector pins that are designed into the current mold. The IPC controller has limited selection capability and may not work at all. Customer can also find other technical notes on line to understand what these limitations are and consult with their process engineers for direction.

TECHNICAL LITERATURE FOR DME PRESSURE TRANSDUCERS - Revision 1.2
(has other ejector pin sizes and pressure charts – many of these ranges are NOT available with the DME IPC0101)

http://www.dme.net/sites/default/files/technical-guides/Pressure_Tutorial_1.pdf

A SHORT TUTORIAL ON CAVITY PRESSURE TRANSDUCER USAGE

http://www.dme.net/sites/default/files/technical-guides/Pressure_Tutorial_2.pdf
Typical Analog Output Signal Examples:

NOTE: It is the customer’s responsibility to understand the technical details of the product and their implementations. These notes are provided to help the customer understand some practical examples for consideration.

For bench testing your setup with NO applied Load to the sensor.
DME IPC0101 with 350 Ohm Bridge Strain Gauge DME Button Sensor with 2.0mV/V output sensitivity.

IPC0101 Product page has a video link here:  [http://www.youtube.com/embed/FKbnXbkIpT8](http://www.youtube.com/embed/FKbnXbkIpT8)

Follow Sensor Calibration Procedure to get 0 and 890 Calibration Points for your 350 Ohm Strain Gauge Bridge Sensor.

After Calibration of your sensor, this is a typical result that you should expect.

Note: Accuracy is NOT discussed here, but reading should be within +/-5% of these results.

<table>
<thead>
<tr>
<th>Ejector Pin Dia. Inches</th>
<th>Ejector Pin Dia. Inches</th>
<th>Ejector Pin Dia. Inches</th>
<th>Selector Switch Position</th>
<th>IPC Cavity Pressure Readout</th>
<th>Implied Cavity Pressure Readout</th>
<th>Analog Output Volts dc</th>
<th>0-5Vdc = 0-20,000PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16</td>
<td>1/32</td>
<td>A</td>
<td>1</td>
<td>over range</td>
<td>5.350 Vdc</td>
<td>440 Lbf</td>
<td>110 Lbf</td>
</tr>
<tr>
<td>3/16</td>
<td>3/32</td>
<td>3/64</td>
<td>B</td>
<td>1585 PSI</td>
<td>18,580 PSI</td>
<td>414 Vdc</td>
<td>110 Lbf</td>
</tr>
<tr>
<td>5/16</td>
<td>5/32</td>
<td>5/64</td>
<td>D</td>
<td>572 PSI</td>
<td>5,720 PSI</td>
<td>440 Vdc</td>
<td>110 Lbf</td>
</tr>
<tr>
<td>3/8</td>
<td>3/16</td>
<td>3/32</td>
<td>E</td>
<td>396 PSI</td>
<td>3,960 PSI</td>
<td>440 Vdc</td>
<td>110 Lbf</td>
</tr>
<tr>
<td>1/2</td>
<td>x</td>
<td>1/8</td>
<td>F</td>
<td>223 PSI</td>
<td>2,230 PSI</td>
<td>440 Vdc</td>
<td>110 Lbf</td>
</tr>
</tbody>
</table>

Note: Customer must match the actual Ejector Pin Size above with the Strain Gauge Sensor Max. Rating for proper readout.

* - Factory Default 0-5 Vdc Analog Output Range Only shown, customer must correct Analog output for other settings used.

** - Typical operating range for most typical injection molding cavity pressure sensing use. The larger your ejector pin diameter, the more reliable and repeatable your setup will typically run.

Example 1: Position D with the following:

Use these settings to measure Cavity Pressure Range 15% full scale 3,911 PSI to 75% full scale 19,557 PSI

Maximum Cavity Pressure
- 5/16” Dia. Ejector Pin with 2,000 Lbf Sensor (BS413C/SS406C) - best
- 5/32” Dia. Ejector Pin with 500 Lbf Sensor (BS412C/SS405C) - better
- 5/64” Dia. Ejector Pin with 125 Lbf Sensor (BS411C) – ok

Example 2: Position E with one of the following:

Use these settings to measure Cavity Pressure Range 15% full scale 2,716 PSI to 75% full scale 13,581 PSI

Maximum Cavity Pressure
- 3/8” Dia. Ejector Pin with 2,000 Lbf Sensor (BS413C/SS406C) - best
- 3/26” Dia. Ejector Pin with 500 Lbf Sensor (BS412C/SS405C) - better
- 3/32” Dia. Ejector Pin with 125 Lbf Sensor (BS411C) – ok

*** - Front Panel on the IPC does NOT have this information silkscreened on it, but this is the ejector pin sizes required for 125Lbf Strain Gauge Sensors.

Engineering Changes Made:
rev1.0 Original Application Note Released on 10/15/2014
rev1.1 added section page 4 of 4 on “Typical Analog Output Signal Examples” to rev1.0 on 11/21/2015