Updated AOV & MOV Handbook Guides Available
TR-A100-54 & 57 – Customer Service Bulletin

- Valve Diagnostic Test Equipment Description
- Safety Related Status
- Accuracy
- Calibration Periodicity
- & Pin-Out Summary
TR-A100-54 & 57 CSB Updates

54 Rev 0
6/2014
QLII/+ QL3

57 Rev 0
1/2016
QL3-FS

54 Rev 2
6/2016
QLII/+ QL3-FS

57 Rev 1
1/2017
QL3-FS
- Related to Encoder Channels not being recognized
- Can occur after test when returning to the acquisition screen
- Key software files in the wrong location
- New Installer fixes the problem
- Contains instructions on how to determine status of your QL3-FS units
Customer Service Bulletin 2016-2, QL3-FS Calibration Interface
## CSB 2016-2 – QL3-FS Calibration Interface

<table>
<thead>
<tr>
<th>Specification</th>
<th>QL3-FS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Rates</td>
<td>10-50,000 S/s*</td>
</tr>
<tr>
<td>Analog Input Ranges</td>
<td>+/-10mV, 30 mV, 100mV, 300mV, 1V, 3V &amp; 10V</td>
</tr>
<tr>
<td>Analog Input Channel Uncertainty</td>
<td>1% of reading (10 to 100% range), 0.25% full scale (0-10% Range)</td>
</tr>
<tr>
<td>Digital Input Range (Ch 15, 16 “E” option)</td>
<td>24 bit</td>
</tr>
<tr>
<td>Digital Input Uncertainty</td>
<td>+/-2 counts</td>
</tr>
<tr>
<td>Output Channels</td>
<td>4-20, 10-50 mA</td>
</tr>
<tr>
<td>Output Channel Uncertainty</td>
<td>1% of reading</td>
</tr>
</tbody>
</table>

**Note:** +/-10% & +/- 90% Range
QL3-FS Channels 10mV or 1mV/V Range
Channels 1-16 Actual % Reading Error Results vs. Performance Specification Before Fix

- TTS Advertised Specification
- TTS Internal Specification
- Inspection Results - 12 Units at 10% and 90% of Range

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CSB 2016-2 – QL3-FS Calibration Interface
Ground Loops!
10mV Range (1mV/V) - 17 Units Cal'd at +/-10 & 90% of Range
Total of 68 Measurements

+/- 0.2% Reading Internal Specification

+/- 2 micro volts!
CSB 2016-2 – QL3-FS Calibration Interface

✓ TTS to perform modifications to all Calibration Interface boxes at no charge

✓ Also upgrade boxes to include new digital calibration function (15 & 16)

✓ TTS to assist with first QL3-FS “As Found” calibrations by providing zero offset procedure

✓ A small minority of units have AF’s with 1mV measurement >1%

➢ No impact with normally zeroed traces
Impact on +/-10V Range

10V Range - 17 Units Cal'd at +/-10 & 90% of Range
Total of 68 Measurements

- Data
Impact on +/-10V Range

10V Range - 17 Units Cal'd at +/-10 & 90% of Range
Total of 68 Measurements - Current Uncertainties

% Reading Error vs. V

- Data
- Current TLTS Spec
- Current Internal TLTS Spec

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QUG 2016 13
Impact on +/-10V Range

10V Range - 17 Units Cal'd at +/-10 & 90% of Range
Total of 68 Measurements - Proposed Uncertainties

+/- 0.25% Reading
Published Specification

+/- 0.15% Reading
Internal Specification
Impact on +/-10V Range

Impact of +/-10V Range Uncertainty Improving from 1% to 0.25% Reading
Example - 100 PSI Pressure Sensor

% Reading Error vs PSI or % FS

Existing 1% Uncertainty vs New 0.25% Uncertainty
Stem Positioner Encoder – Uncertainty Improvement

- Original Analog Version 0.25% FS 0.075 in for 30 in version
- Initial Digital Version 0.12% FS 0.037 in for 30 in version
- Now 0.04% FS 0.012 in for 30 in Version

The Stem Position Encoder (SPE) provides the valve tester with a convenient means to accurately measure valve stem position. This custom "driving pot" has a magnetic base and a variable orientation to allow the user to properly adapt to a variety of valve bodies and actuators including MSMVs, AOVs and MOVs. The SPE provides a calibrated signal for input to the QUICKLOOK Data Acquisition Systems.

The optional Rotary Shaft Adapter is a clamp-on split sheave used to provide a calibrated cable wrap diameter for conversion of rotary shaft motion to linear SPE cable motion. It includes the conversion factor for SPE output in degrees / volt.

<table>
<thead>
<tr>
<th>P/N</th>
<th>System</th>
<th>Travel Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>166564</td>
<td>QL3-FS</td>
<td>30 inch</td>
</tr>
<tr>
<td>166543</td>
<td>QL3-FS</td>
<td>50 inch</td>
</tr>
</tbody>
</table>

It is available for shaft diameters from 0.375 to 1.675 inches in three ranges.

Optional Rotary Shaft Adapter shown
In summary....

• Accurate and reliable test files are paramount.
• TLTS takes a conservative approach to published uncertainties.
• Will continue to look for your input on where to focus attention on possible improvements.