# Service Troubleshooting Checklist

**Device group:** Ultrasonic  
**Products:** LST300/LST400  
**Document:**

<table>
<thead>
<tr>
<th>GENERAL INFORMATION</th>
<th>UltraSonic LST Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
<td></td>
</tr>
<tr>
<td>Contact email address</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

**Task Profile**
- Describe the symptoms here
- Commissioning
- Configuration
- TroubleShooting

<table>
<thead>
<tr>
<th>DEVICE &amp; PROCESS INFORMATION</th>
<th>Communication</th>
<th>HART</th>
<th>Modbus</th>
<th>PA</th>
<th>FF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>LST300</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial Number</td>
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</tr>
<tr>
<td>Part Number</td>
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<tr>
<td>Site TAG/Description</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Measurement Medium</td>
<td>Liquid</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process Humidity</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Process Temperature</td>
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</tbody>
</table>
Health & Safety

Complete induction, permit to work or any other site requirements  
☐ Yes  ☐ No  
Check history for background information prior to starting to work  
☐ Yes  ☐ No

Mounting Comments:

LIQUID LEVEL  
☐ Yes  ☐ No

SOLID LEVEL  
☐ Yes  ☐ No

INCORRECT  
☐ Yes  ☐ No

CORRECT  
☐ Yes  ☐ No

INCORRECT  
☐ Yes  ☐ No

CORRECT  
☐ Yes  ☐ No

Check sensor face if parallel to liquid/Solid surface  
☐ Yes  ☐ No

Check mounting location within the measurable distance.  
☐ Yes  ☐ No

Check Grounding of ABB device if floated (Very Important)  
☐ Yes  ☐ No
The recommend rate is 1 (Standpipe Inner Diameter) : 2 (Standpipe Height), not over 1:3 (45° chamfer needed)
Preferred material is plastic
The base must have a 45° chamfer
No welding inside the pipe
Always increase the blanking 150mm past the end of the stand pipe

Sketch or photo of the installation (Please High light out, In case there is kind of high-power facility around the LST device)
Working Record:

1. Problem Behavior; Background of issue:

2. The Processing information:

Measurement Medium:

**Liquid: Y / N** whether the measurement target has below situation:
- Flowing □
- waving □
- Foam □
- Others □

**Solid: Y / N** whether the measurement target has below situation:
- Powders □
- Smoke □
- Others □
3. The Wiring checking: (the proper Transmeter Grounding is necessary for Ultrasonic products)

LST400 Terminal connections

DIP Switch (SW1 & SW2)

- DIP SW1:
  - AC Power Source (220VAC/110VAC) : SW1 CH1/2 OFF;
  - DC Power Source (24VDC) : SW1 CH1/2 ON;

- DIP SW2:
  - Active Current Output Mode: SW2 CH 1/2 ON, CH3 OFF;
  - Passive Current Output Mode: SW2 CH 1/2 OFF, CH3 ON;
LST300 Terminal connections

### PHYSICAL DEVICE TEST (IN CASE NEEDED)

<table>
<thead>
<tr>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the appearance of Sensor &amp; Transmert (flaw, tuber and etc)</td>
<td>☐</td>
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<tr>
<td>Check the surface of sensor (Drops, Sticky Dirt, etc)</td>
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<tr>
<td>Check LCD connector is connected firmly to Mainboard (LST300 is LCD to CB board)</td>
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<tr>
<td>Check the connection of sensor cable is OK (Available for LST400)</td>
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<tr>
<td>Check the flex cable connection of CB and FE (Fixed and connector damaged on CB?) (Available for LST300)</td>
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</tbody>
</table>
Basic Configuration Checking:

Check the basic configuration, verify it suitable the real situation PV depends on measurement mode, which can be level, distance or volume.

<table>
<thead>
<tr>
<th>PV value [unit]</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>PV value [%]</td>
<td></td>
</tr>
<tr>
<td>Blank Distance [unit]</td>
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<tr>
<td>Span Distance [Unit]</td>
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<tr>
<td>Empty Distance [Unit]</td>
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</table>
### 4. Alarm Checking

Check if HMI can display normally, if yes, please collect the information below, if not, please skip over the following steps. The information below can be got via HMI.

1. Press 🎮 to switch to the information level.

2. Press 🎮 or 🎮 to select the “Diagnostics” submenu.

3. Press 🎮 to confirm your selection.

The first line indicates where the error has occurred. The second line shows the unique error number. The next lines show a brief description of the error and its remedy information.

<table>
<thead>
<tr>
<th>Current Alarm Code</th>
<th>Alarm Description</th>
<th>Σt</th>
<th>tn</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
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<tr>
<td>2.</td>
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<td>3.</td>
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5. Onsite test

Bring the transducer or device from tank, then put the sensor face to a firm wall which known the distance, then check the instant distance value which displayed on LCD if it meet to the known distance. Then change to another distance, look the result.

Test Result:

The level/Distance value on LCD follow the distance changing

Y ☐ N ☐

Y : The Sensor/Transmeter function is OK. Need to check the parameters eg: Blanking, Threshold, etc(Check Waveform).

N : The Sensor/Transmeter probably get hardware issue, go setup the swap test to address the fault parts.

6. Waveform Checking

LST400: Please click the ENT button 2 times, then you will see the Waveform

LST300 (TTG version): Submenu Diagnostic—Waveform
Take the photos of Waveforms, and attach as bellows:
Additional Notes

Please note that taking pictures, sketches and videos is very helpful for future services! Always attach them to this document.

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