

ABB Measurement & Analytics

# Service Troubleshooting Checklist

Device group: Ultrasonic

Products: LST300/LST400

Document:

<b>GENERAL INFORMATION</b>	UltraSonic LST Products
Company	
Contact email address	
Date	
Task Profile	Describe the symptoms here Commissioning <input type="checkbox"/> Configuration <input type="checkbox"/> TroubleShooting <input type="checkbox"/>

<b>DEVICE &amp; PROCESS INFORMATION</b>	Communication    HART <input type="checkbox"/> Modbus <input type="checkbox"/> PA <input type="checkbox"/> FF <input type="checkbox"/>		
Product	LST300 <input type="checkbox"/>		LST400 <input type="checkbox"/>
Serial Number			
Part Number			
Site TAG/Description			
Measurement Medium	Liquid <input type="checkbox"/>	Solid <input type="checkbox"/>	
Process Humidity			
Process Temperature			

### Health & Safety

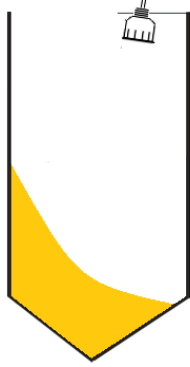
Complete induction, permit to work or any other site requirements	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check history for background information prior to starting to work	<input type="checkbox"/> Yes	<input type="checkbox"/> No

### Mounting Comments:

**LIQUID LEVEL**



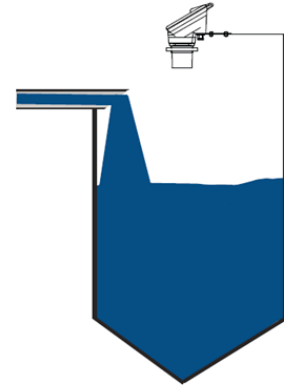
**SOLID LEVEL**



**INCORRECT**



**CORRECT**



**INCORRECT**



**CORRECT**



Check sensor face if parallel to liquid/Solid surface	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check mounting location within the measurable distance.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check Grounding of ABB device if floated (Very Important)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

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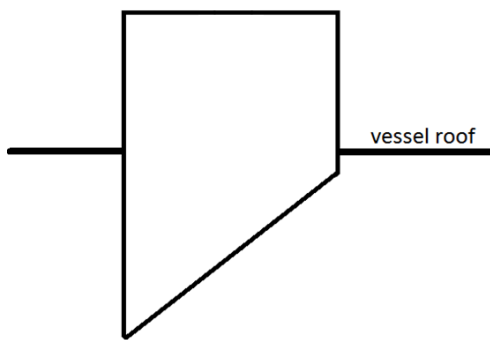
The recommend rate is 1 ( Standpipe Inner Diameter ) :2 ( Standpipe Height ) ,not over 1:3(45° chamfer needed)

Preferred material is plastic

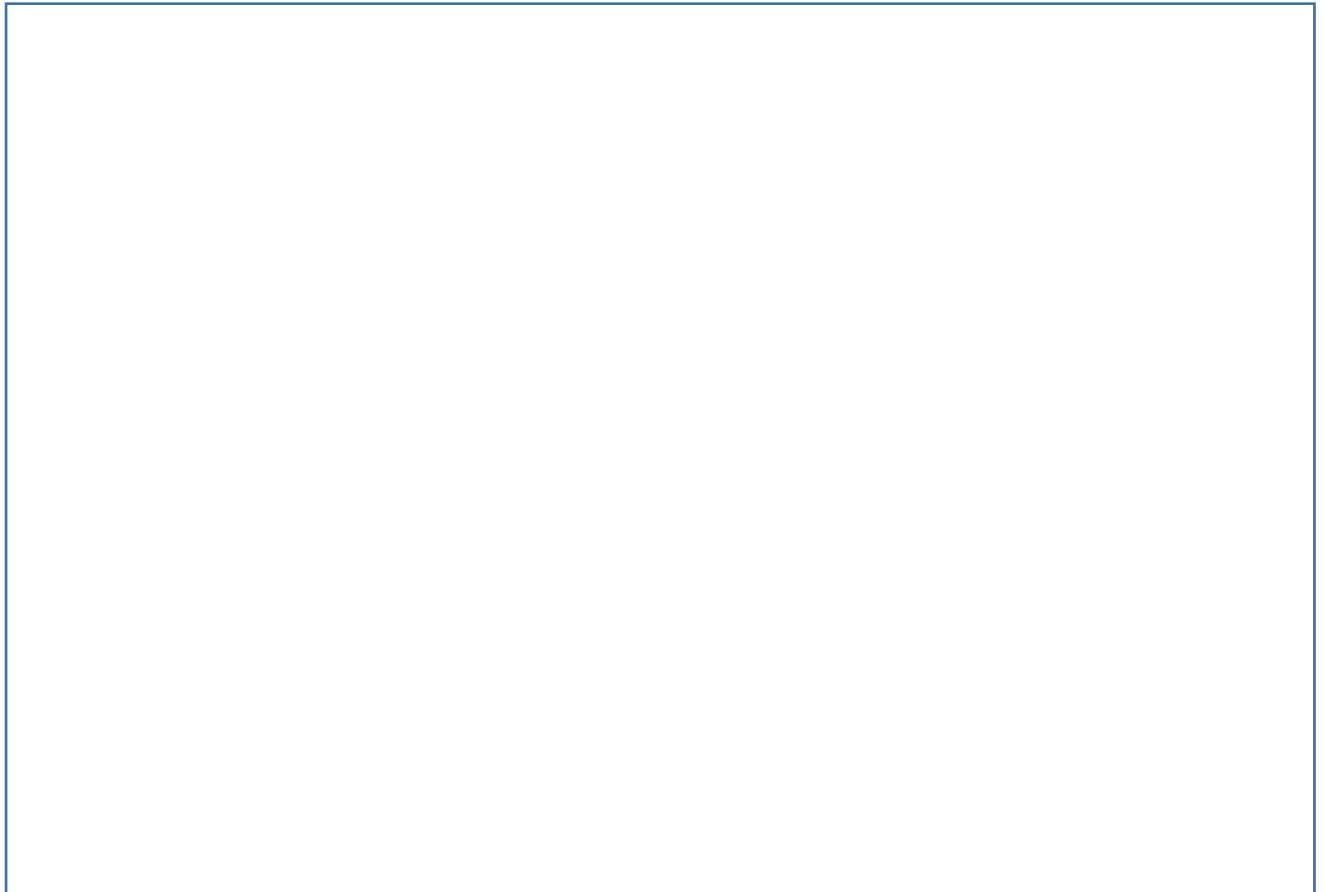
The base must have a 45° chamfer

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)**



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## Working Record:

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### 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:

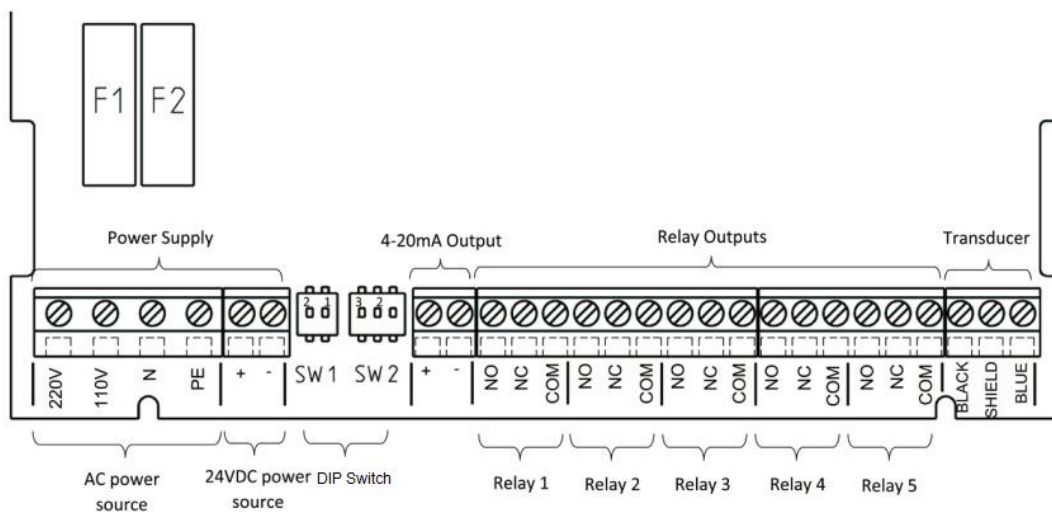
Powders                       Smoke

Others

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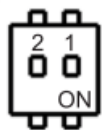
### 3. The Wiring checking: (the proper Transmeter Grounding is necessary for Ultrasonic products)

#### LST400 Terminal connections



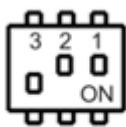
#### DIP Switch (SW1 & SW2)

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



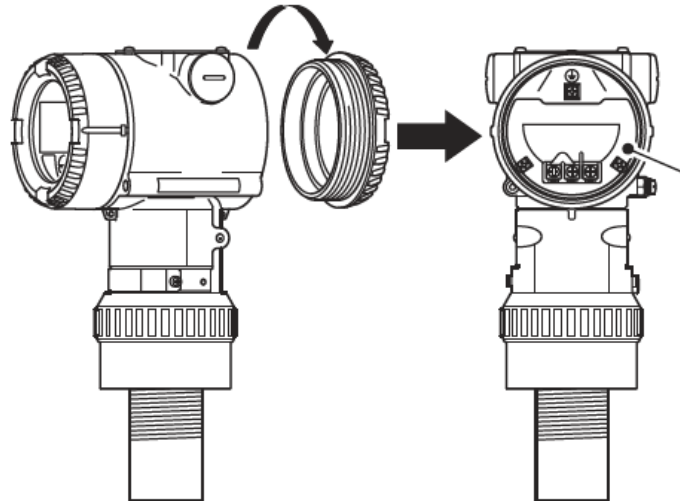
SW 1

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

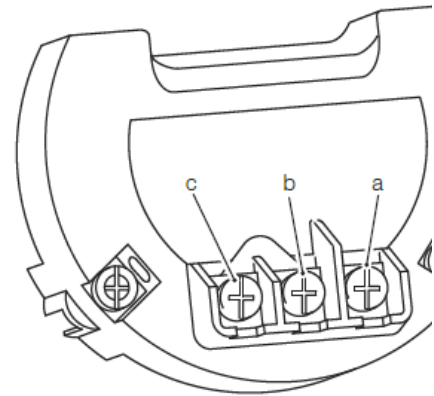


SW 2

### LST300 Terminal connections



Cable connection area

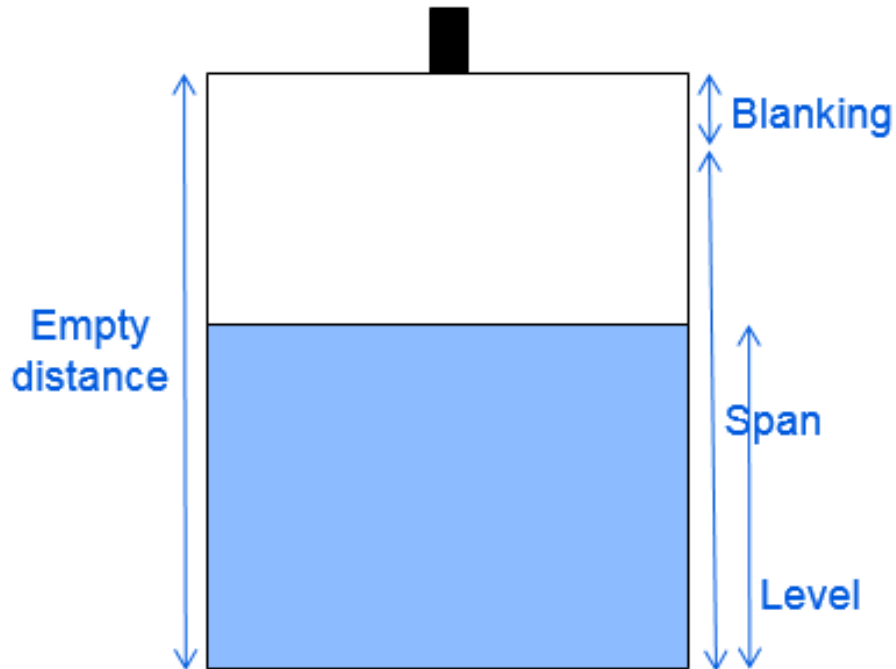


#### Termination introduction

- a Positive polarity of power supply (+)
- b Negative polarity of power supply (-)
- c External meter

<b>PHYSICAL DEVICE TEST (IN CASE NEEDED)</b>		
Check the appearance of Sensor & Transmeter(flaws, tubes and etc)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check the surface of sensor(Drops, Sticky Dirt, etc)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check LCD connector is connected firmly to Mainboard(LST300 is LCD to CB board)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check the connection of sensor cable is OK (Available for LST400)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check the flex cable connection of CB and FE (Fixed and connector damaged on CB?) (Available for LST300)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

**Basic Configuration Checking:**




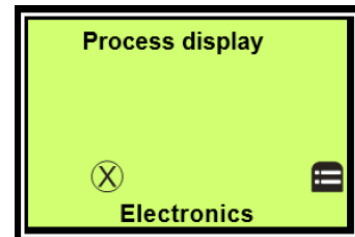
**CHECK THE BASIC CONFIGURATION, VERIFY IT SUITABLE THE REAL SITUATION  
PV DEPENDS ON MEASUREMENT MODE, WHICH CAN BE LEVEL, DISTANCE OR VOLUME.**


PV value [unit]	
PV value [%]	
Blanking Distance [unit]	
Span Distance [Unit]	
Empty Distance [Unit]	


#### 4. Alarm Checking

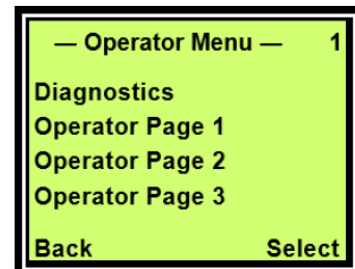
Check if HMI can display normally, if yes, please collect the information below, if not, please skip over the following steps. The information below can be got via HMI.

1. Press  to switch to the information level.

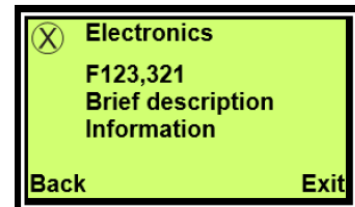


2. Press  or  to select the "Diagnostics" submenu.

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.



ERROR AND ALARM INFORMATION			
Current Alarm Code	Alarm Description	$\Sigma t$	$t_n$
1.			
2.			
3.			
...			



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History Alarm code(Submenu Alarm)	$n$	$\Sigma t$	$t_n$
1.			
2.			
3.			
...			

## 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 swop test to address the fault parts.

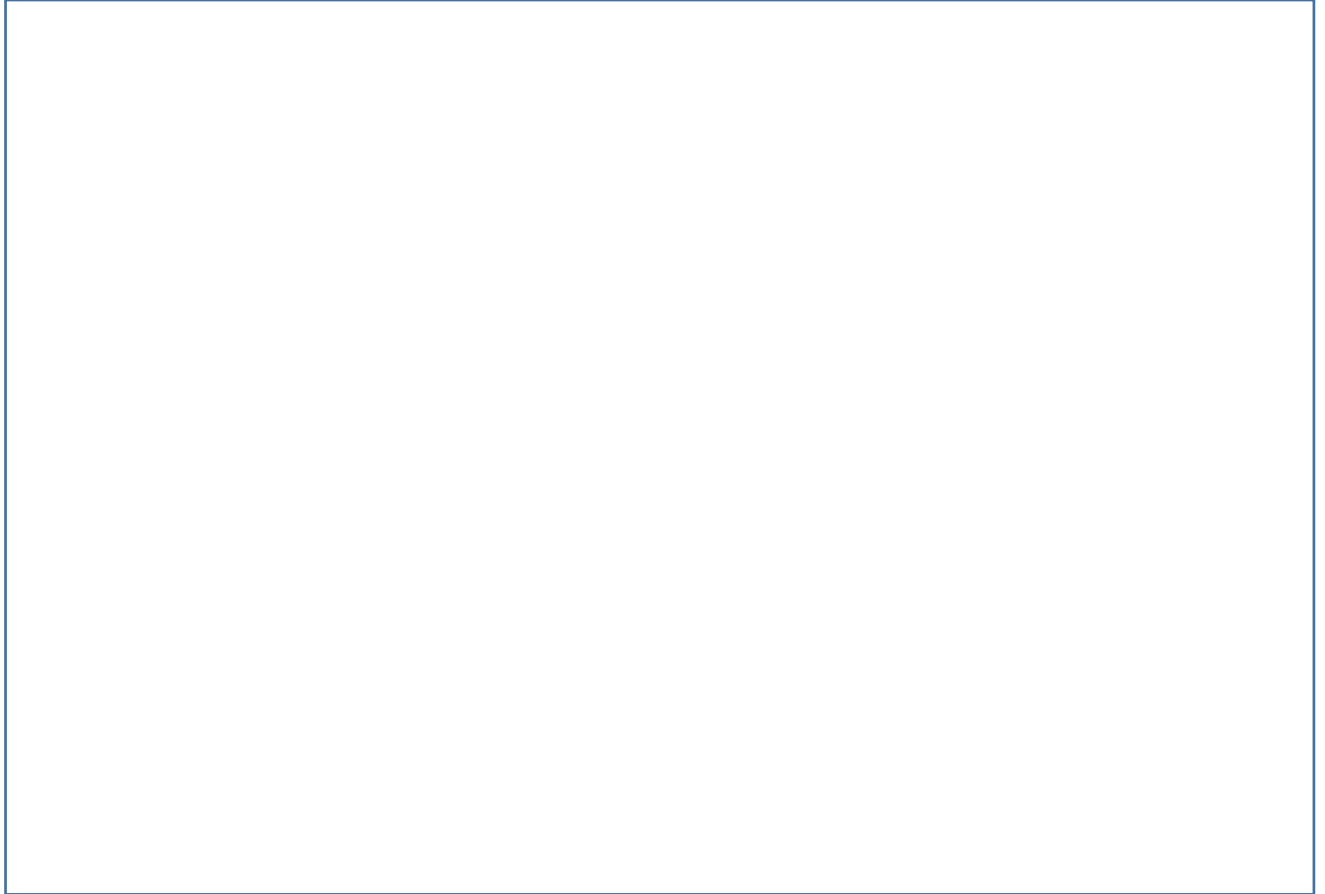
## 6. Waveform Checking

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:



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## **Additional Notes**

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

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