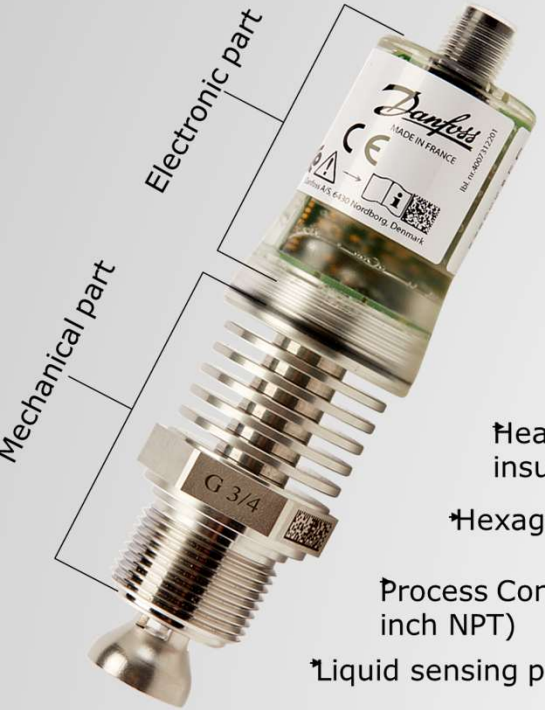
ENGINEERING
TOMORROW

LLS- 4000 Installation & Trouble Shooting

03-03-2022

Table of contents

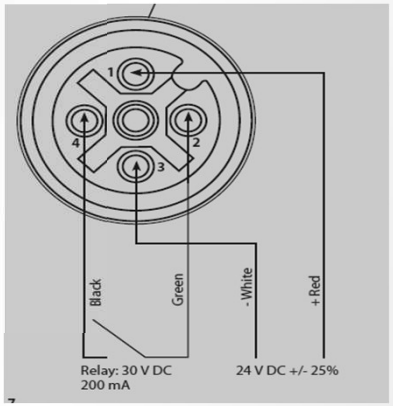
General Arrangements & Electrical Details of LLS 4000

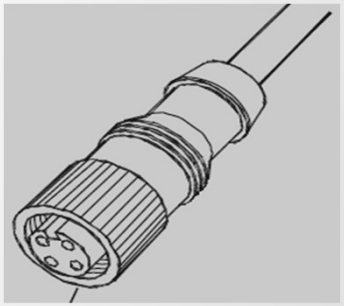


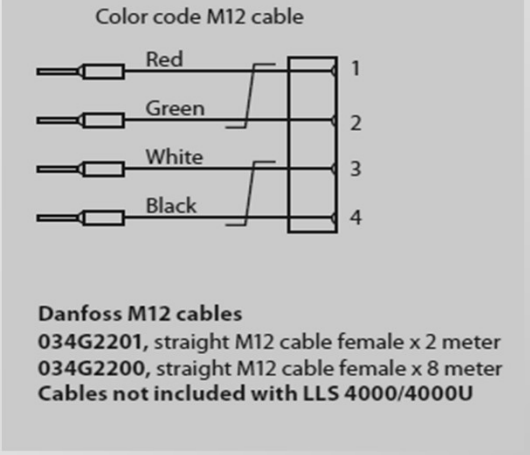
- M12 Female Electrical Connector

Supply	24 V DC +/-25%, 80 mA Standard power supply of type: SELV (**S**eparated **E**xtra **L**ow Voltage) with current limit of max. 8A.
Relay (Solid state)	Max 30 V DC, 200 mA. Same power supply as to supply can be used. Observe: In applications with request for SIL2, another separate SELV power supply may be needed.
	Max. cycles: 1.000.000 Maximum response time: 2 seconds

- Heat sink (Do not cover with insulation)
- Hexagon 32 mm
- Process Connection G3/4 inch or ¾ inch NPT)
- Liquid sensing part



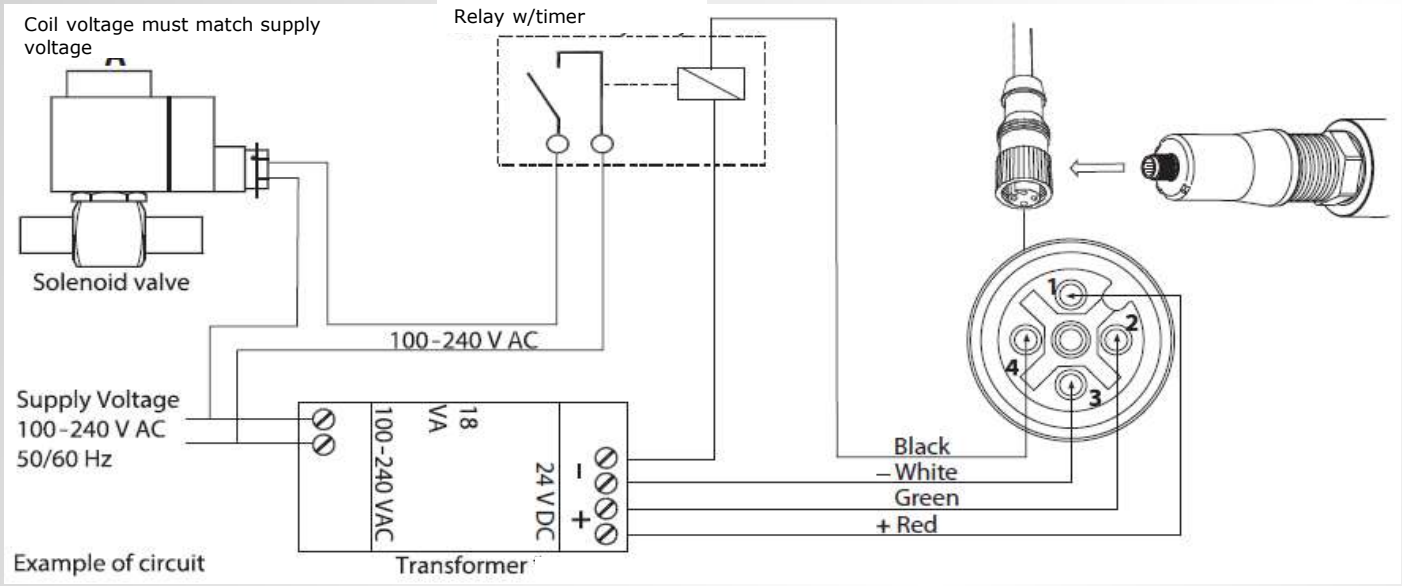




Danfoss M12 cables
034G2201, straight M12 cable female x 2 meter
034G2200, straight M12 cable female x 8 meter
Cables not included with LLS 4000/4000U

Electrical Connections

LLS 4000 for on/off control function



Pre Installation Check List

Pre checking with water

LLS 4000 can be prechecked before field installation. When connected to a 24V DC power supply, GREEN LED will be ON . Next if the sensor is dipped in to a glass of water, both GREEN & YELLOW will be ON .

- Green LED – Voltage OK
- Yellow LED – Liquid detected
- Red LED – Fault state
- Green LED flashing – connecting to Smartphone

VID-20211229-WA0015 (2).mp4

Note :
Clean the sensor with dry cloth after testing in water is completed before installation

Configuring LLS 4000

- The LLS 4000 can be configured from NC to NO and vice versa as per the procedure mentioned coming slides.
- During commissioning it is possible to carry out a Relay Switch test

Fitment check of LLS with weld connector

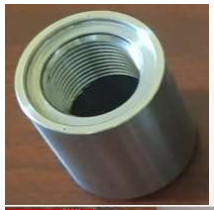
Fix the LLS 4000 in the weld connector to check if the fitment is ok before the connector is welded to the stand pipe.

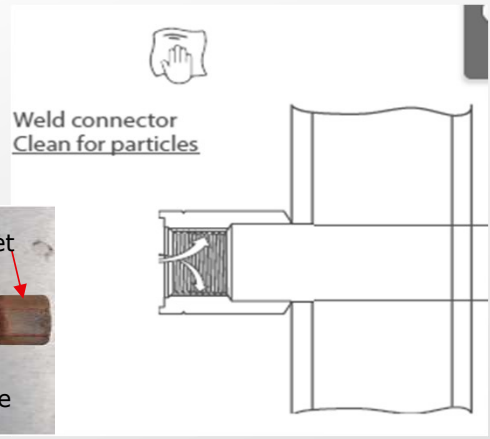
Installation Check List

Weld connector

Use Danfoss standard weld connector 084H6012 along with LLS 3/4" G thread, code 084H6001 to allow free flow of liquid around the sensor tip (to avoid gas pockets)

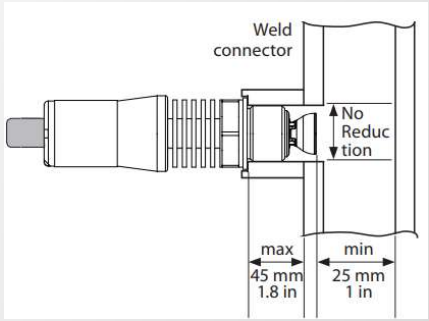
- The weld connector to welded to the face of the stand pipe as shown.
- Avoid internal extensions into the stand pipe.
- Avoid external extensions to the weld connector.

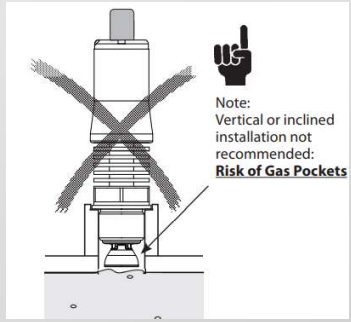




Stand pipe

- Minimum stand pipe dia shall be 25 mm (50 mm in case with AKS 4100 sensor installed) without gas pockets and free flow liquid / vapour equalizing lines of min 25 mm dia.
- Inclined or Vertical installation of LLS not recommended.





Installation Check List

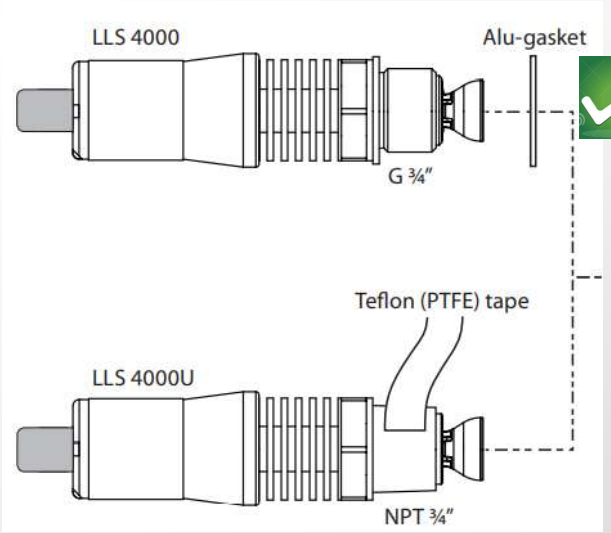
Cleaning / Installation of LLS

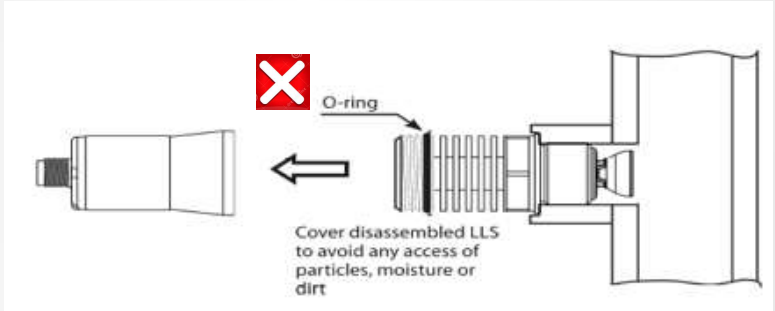
- Clean the Internal threads of weld connector using a clean cloth before fitting LLS 4000.
- Use AL gasket before fitting LLS G thread model. Do not use additional heavy Teflon taping over G thread to avoid damage.
- Do not Insulate the Heat sink.
- Use right torque levels 10 N-M + 45 Deg C turn to tighten LLS 4000 using Hexnut on the LLS.
- Do not remove electronic top part from LLS 4000 during installation to avoid moisture / dirt into electronics resulting in faulty signals.
- Keep right Hand tightness between

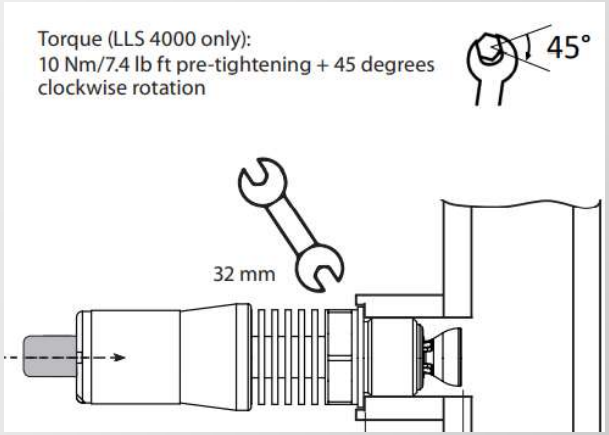
Mechanical and electronic top part

(Max 5 Nm). Do not keep loose neither

Over tighten it.







Installation Check List

Electrical cable

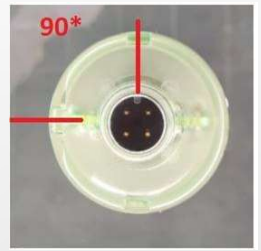
- Electrical cable to be installed immediately on to the LLS to avoid corrosive damage on the terminal pins.
- Only standard straight M 12 connector cable to be used along with LLS. ANG connector cables not recommended.

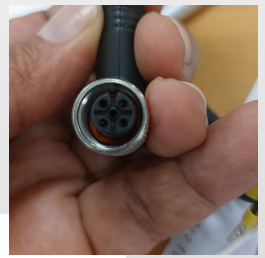
High risk of mechanical damages by using ANG connector cables

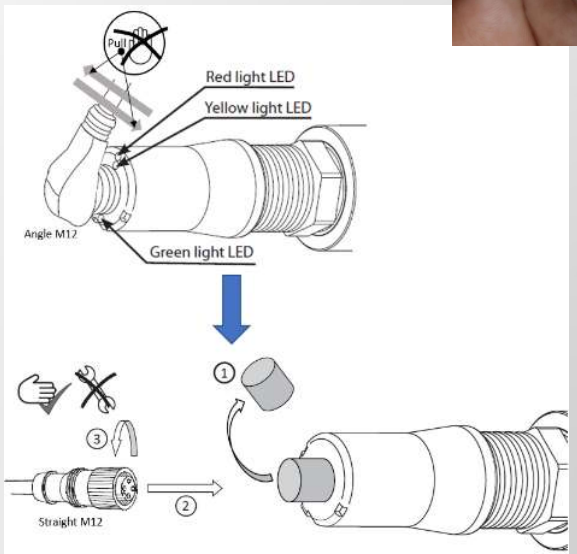
- Match the pins of electronic part with the M12 electrical cable and only Hand tightness to be used to fix M12 cable on to the LLS.

Caution- Use of tools/ extensive force-may damage LLS

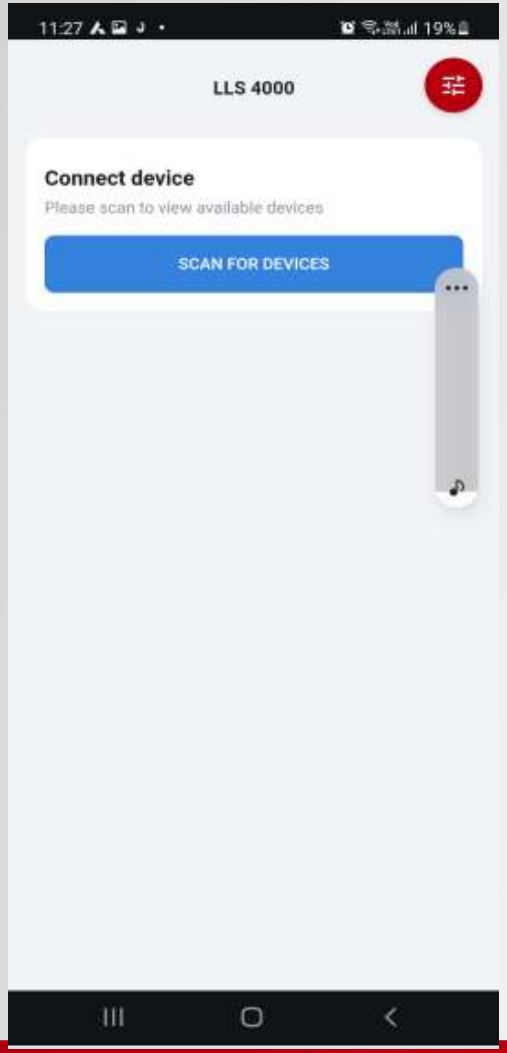
- Electrical Cable to be fastened with wire approx. 100 mm from LLS without any tension / Sag on the cable. Downward U loop recommended to avoid condensate / moisture entry to the connection pins.

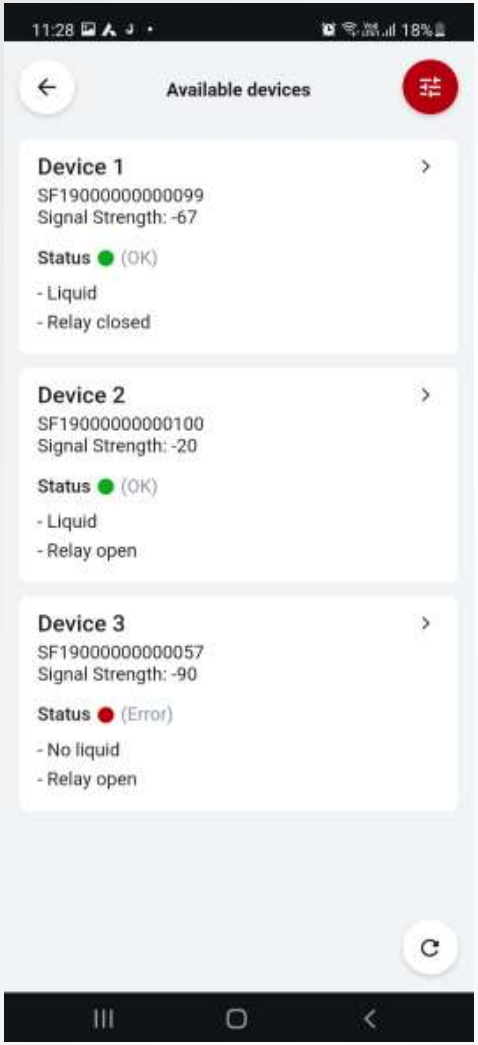


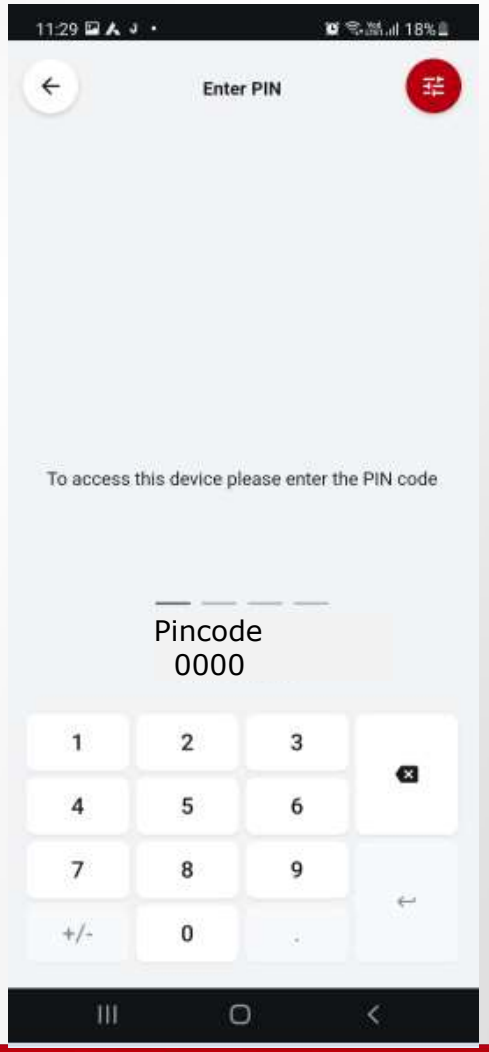


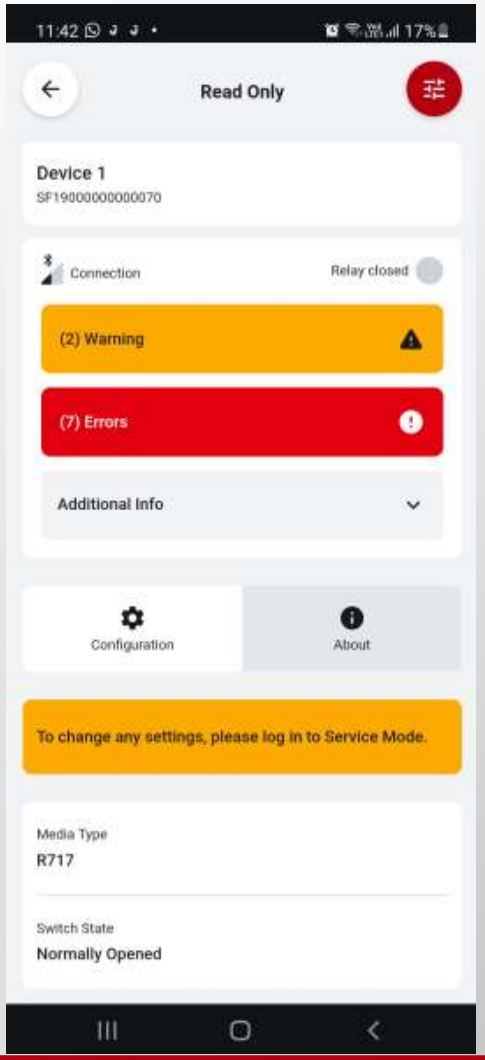


Configuration of LLS 4000

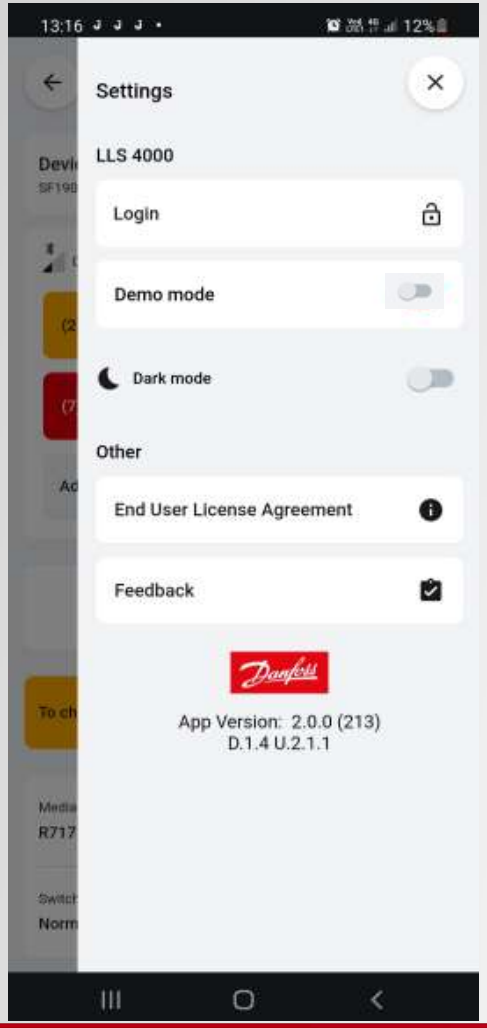


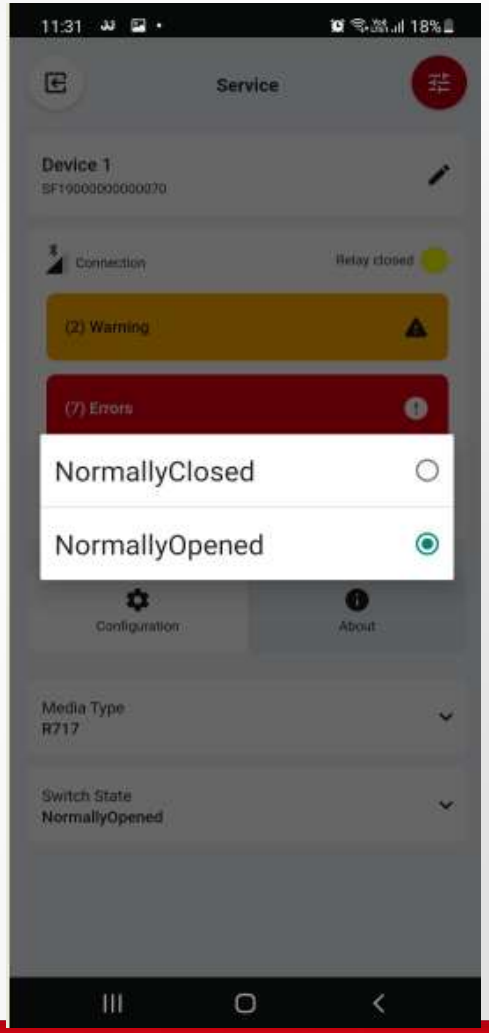


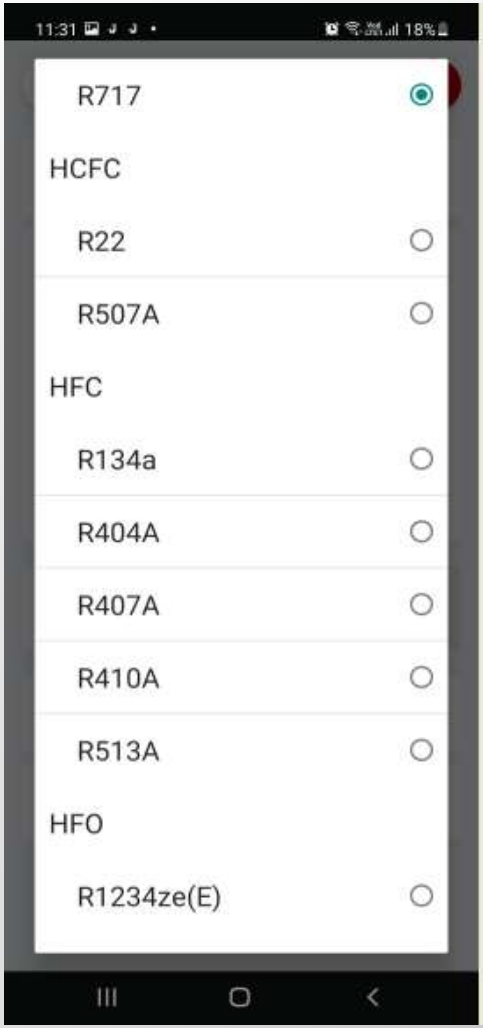




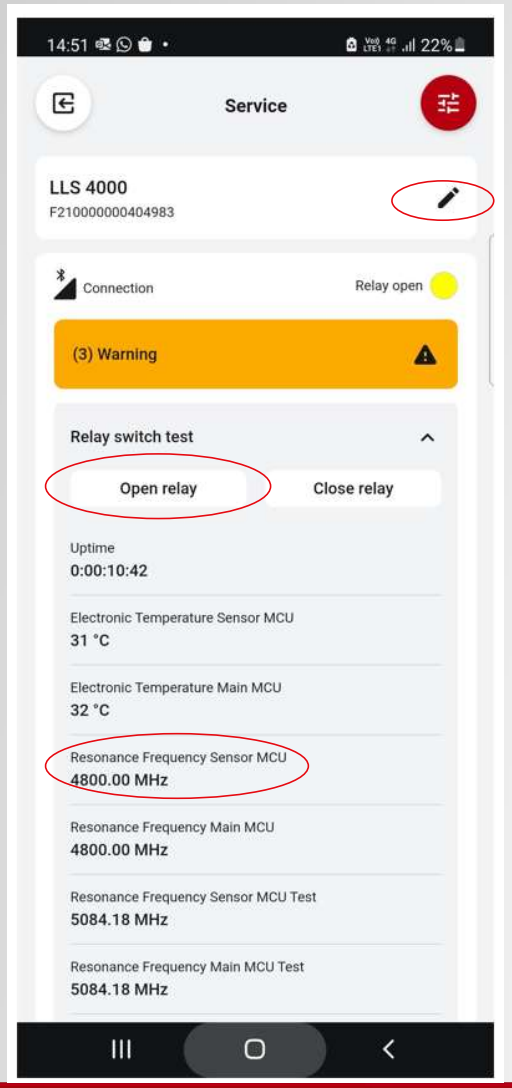
Configuration of LLS 4000

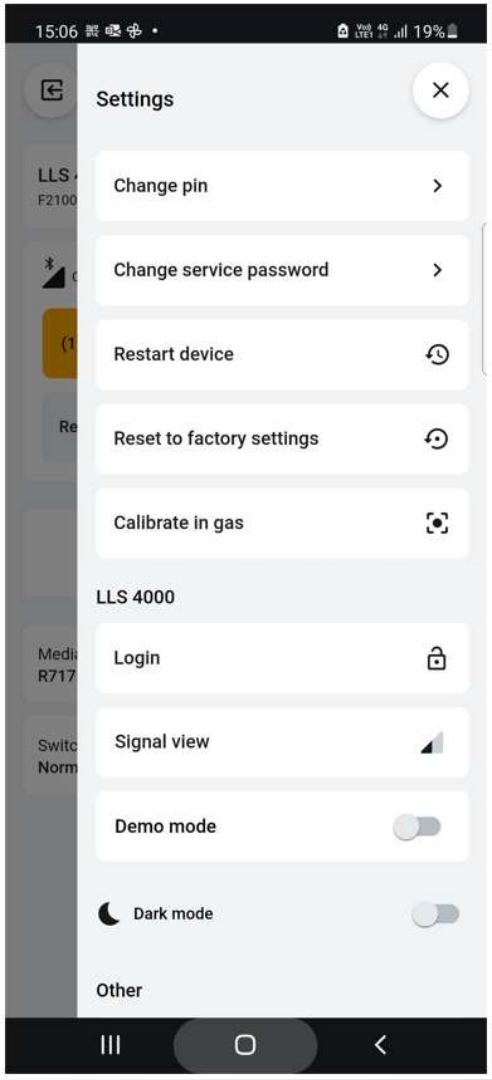


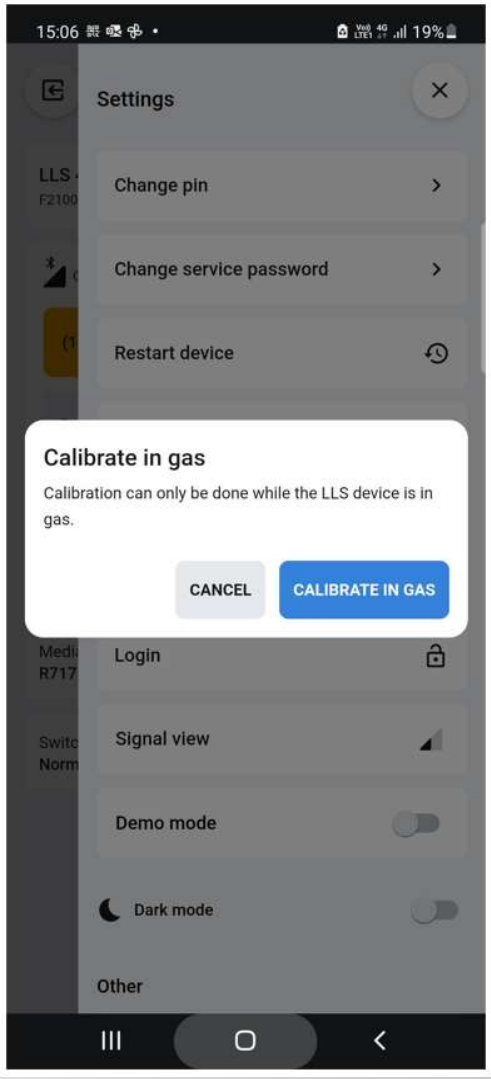




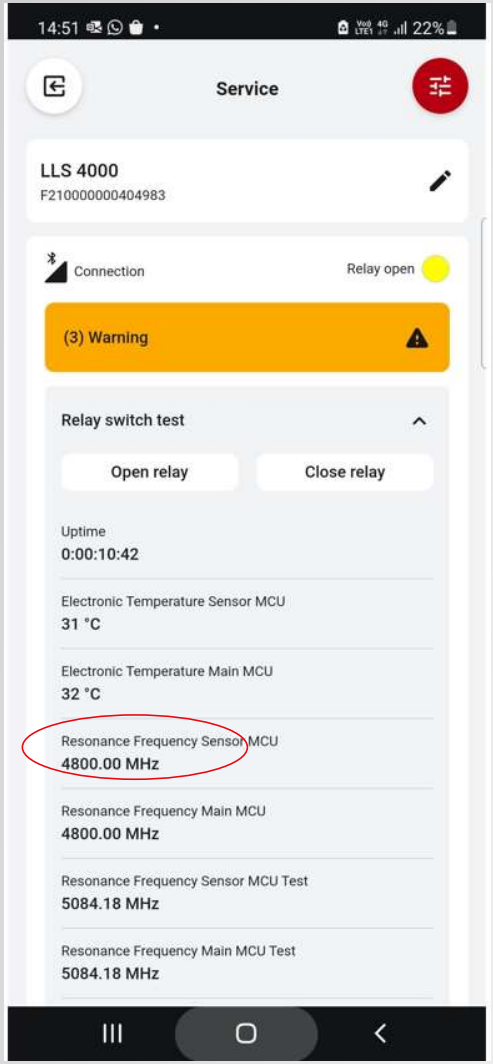
Configuration of LLS 4000

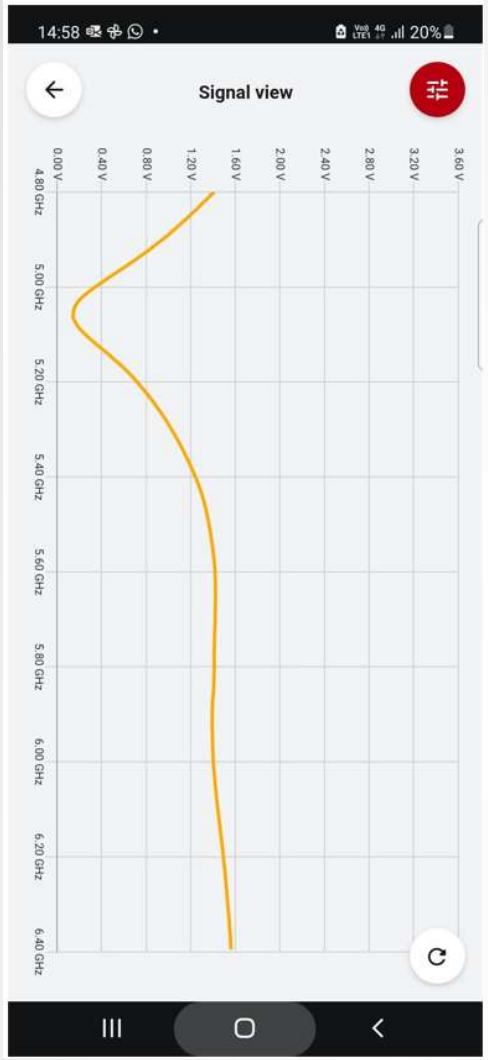


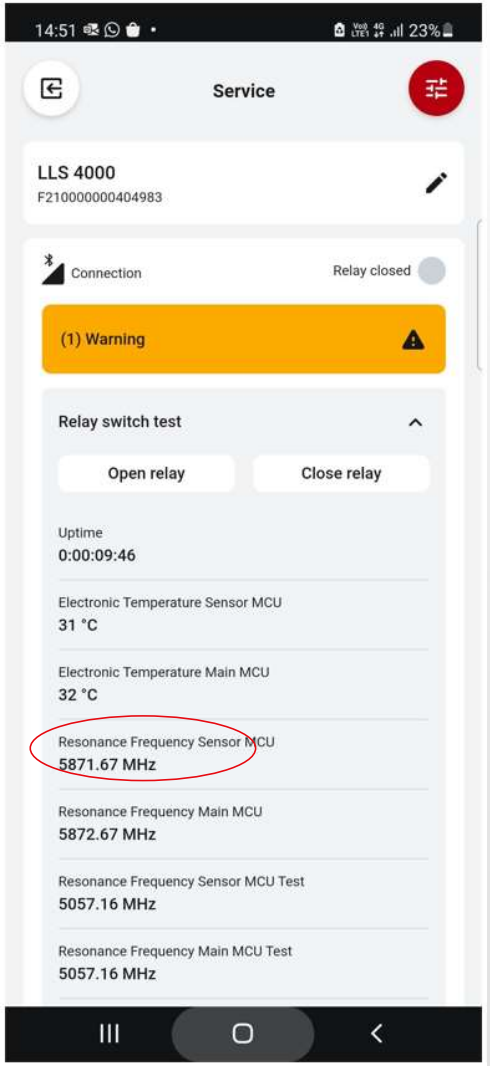


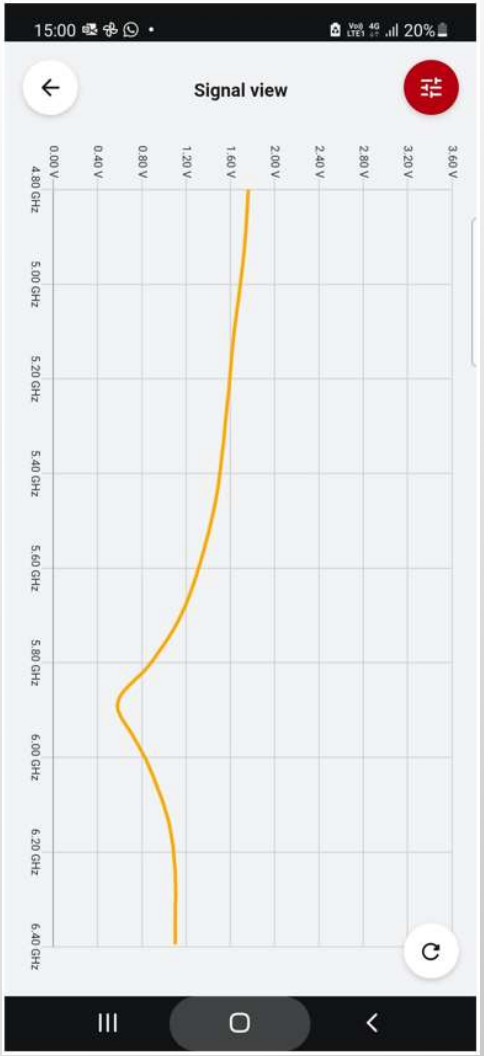


Configuration of LLS 4000









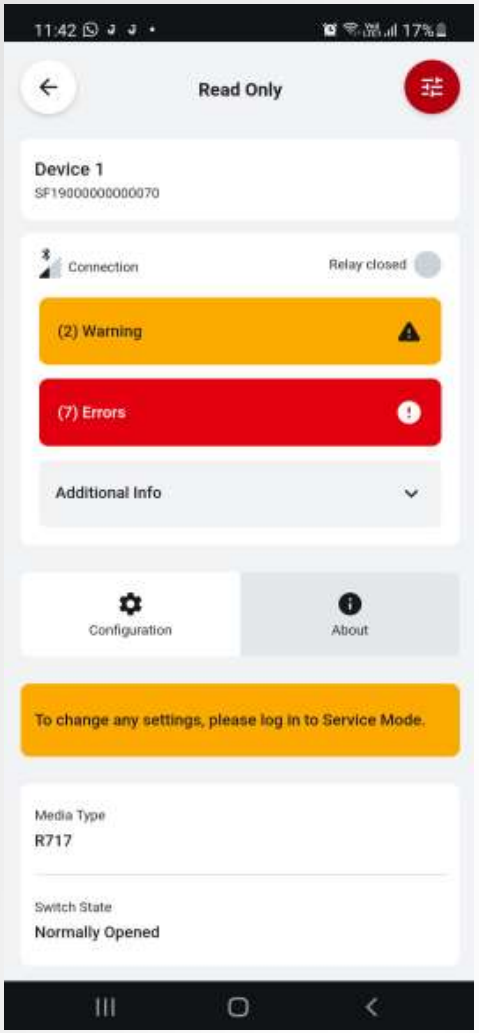
Common Failure reasons

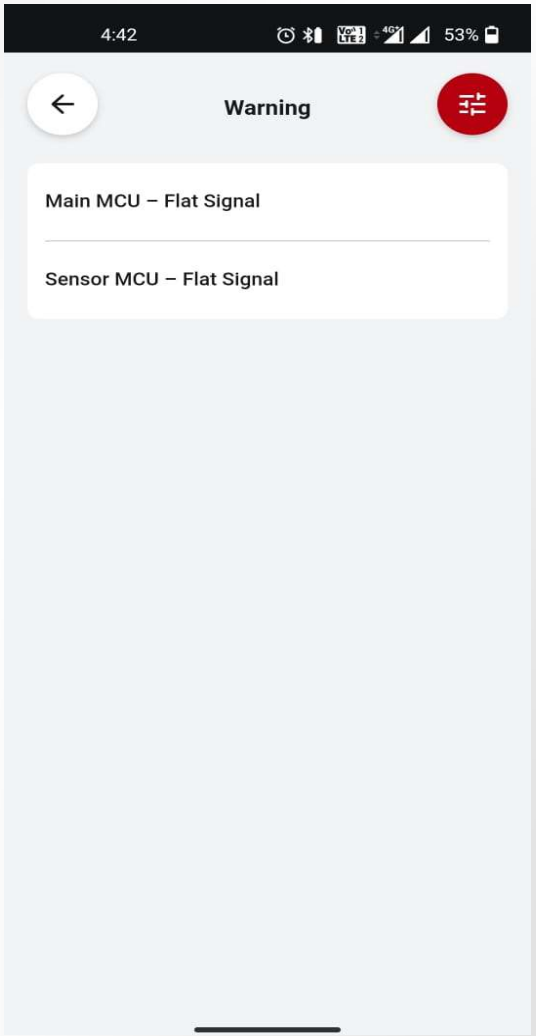
- No indication of supply voltage. No green LED is ON.
- No change in the contacts . As the ammonia level is reached no yellow LED is ON.
- Simultaneously both the green and yellow LED is ON continuously.
- Continuous varying out put voltage.
- Sudden loss of signal from the mechanical part.
- Overtightening of the electronic part with mechanical part with hand.
- Breaking of input connector pins on the electrical part.
- Over a period of time after commissioning no indication of supply voltage. No green LED is ON.

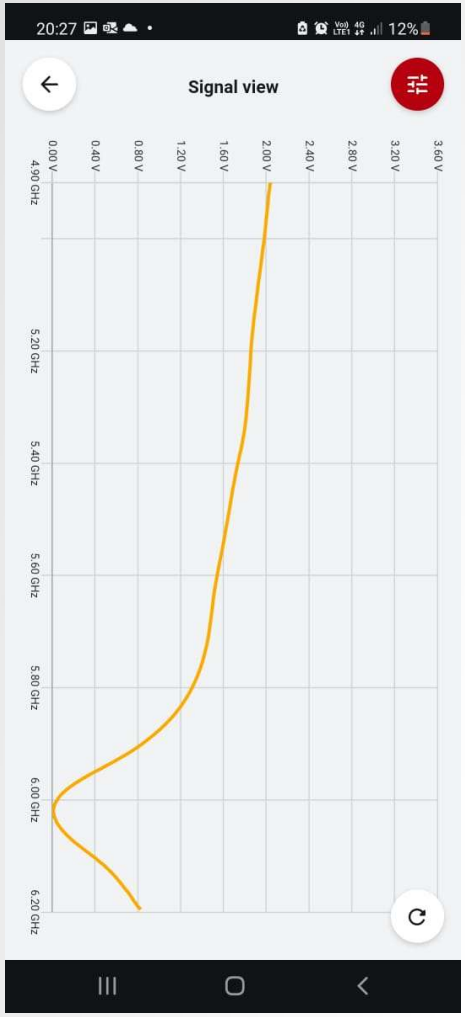
Standard Steps For Fault Analysis

- Check version of the supplied LLS - 4000. PV01/02
- Check the Input and output voltage of LLS 4000.
- Check for green LED light is ON of electronic part .
- Check for the connector pin damage.
- Check for yellow LED light is ON (at what condition) of electronic part.
- Check for simultaneously both Green and Yellow LED light ON continuously.(Failure)(at what condition)
- Check For the screens in LLS 4000 Application. Capture screens of “Relay switch test”, “ Signal view”, “ Warning” and “Errors”
- Swap to faulty electronic part with the working electronic part of another LLS -400 to reconfirm the faulty electronic part .
- Even after swapping simultaneously both Green and Yellow LED light ON continuously take a shut down remove the level sensor and clean the sensing part & the intermediate part between the mechanical part and electronic part with clean cloth.
- Reinstall the level sensor and recheck. If the problem persist replace the complete sensor.

Complaint Sample Snaps







ENGINEERING
TOMORROW