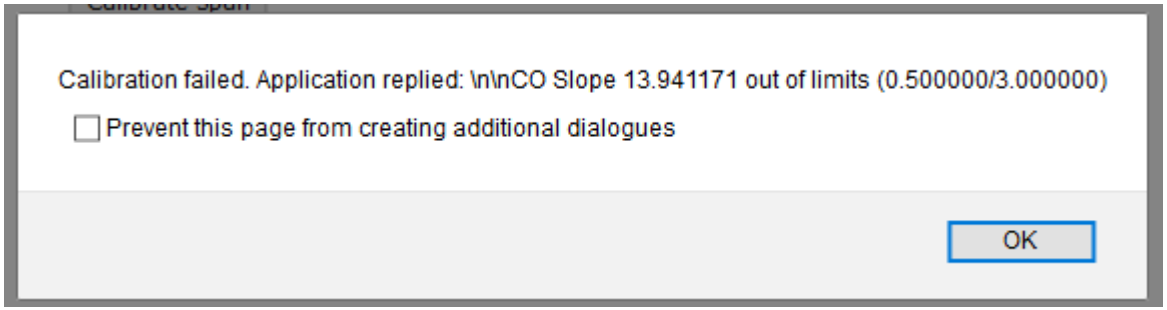
Airpointer® troubleshooting

Main common problems

- Calibration fails!
- Span check fails!
- No user interface when connecting locally!
- No user interface when connecting remotely!
- Values showing -9999!
- Wrong flows!
- Detector‘s signals unstable or out of range:
  - O_3
  - CO
  - SO_2
  - NOx

Calibration fails!



Feature to avoid miscalibrating:

Offset traget value ~0
Limit values of offset: -50 → +50

Slope target value ~1
Limit values: 0,5 → 3

Calibration fails!

Q:

- Does the problem come from the module, the airpointer housing, or the calibrator?

A:

- Test the calibrator on a calibrated analyzer
- Test the module in the Recordum test bench
- Test feeding the cal gas directly to the module inlet

Problem in the module:

- Suspect a leak
- Run a span check
- Maintenance needed?

Problem in the housing:

- Proper bypass used?

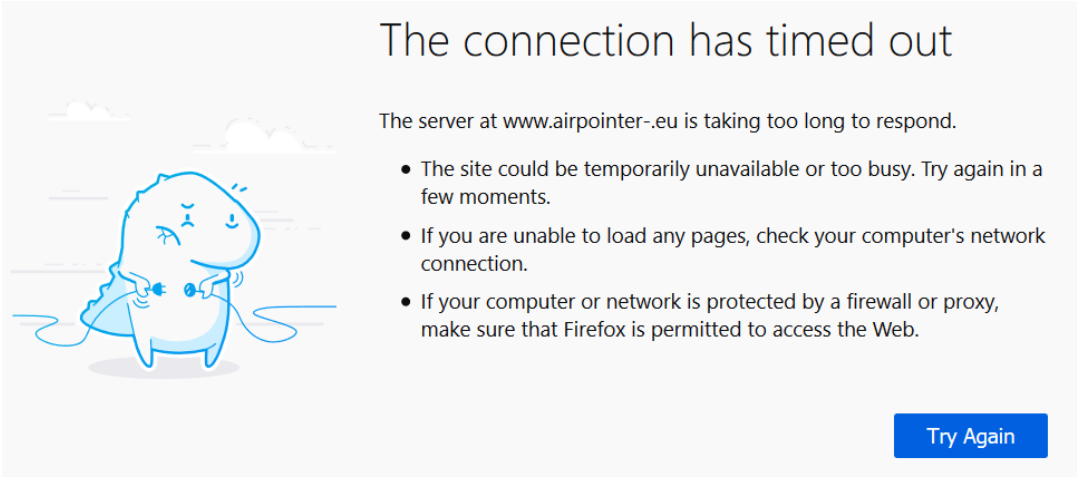
Problem in the calibrator:

- Proper tubing used?
- Proper flow used?

Span check fails!

- Check the offset with zero air
- Check the span value with an external cylinder/calibrator
- Check the flows
- Check for leaks
- Check that the CO cylinder is not empty / the membrane of the permeation tube is not punctered
- Check the temperature of the permeation oven

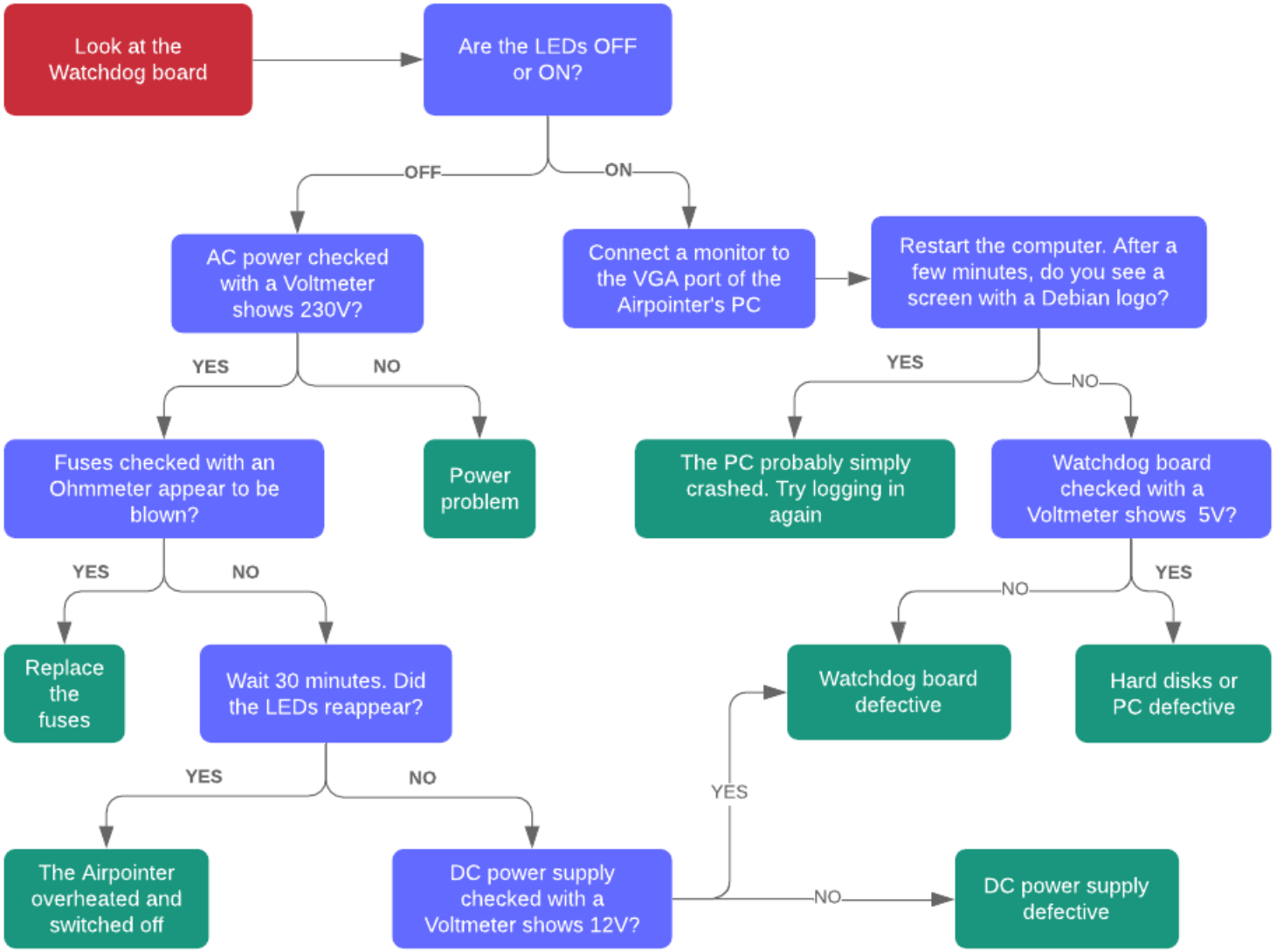
No user interface when connecting locally!



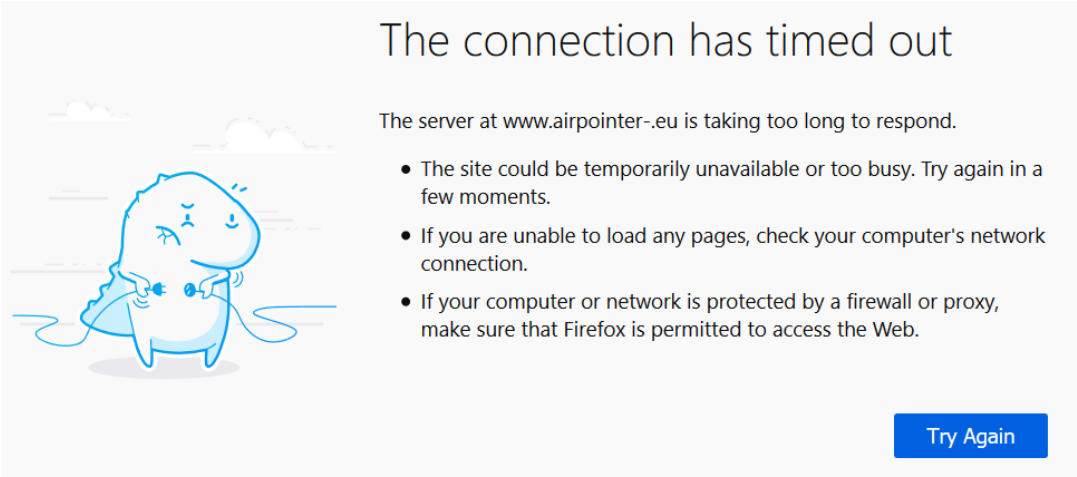
Check-list:

- Right IP? 172.17.2.140
- Right cable? Ethernet crossed cable
- Right connector? User port

No user interface when connecting locally!



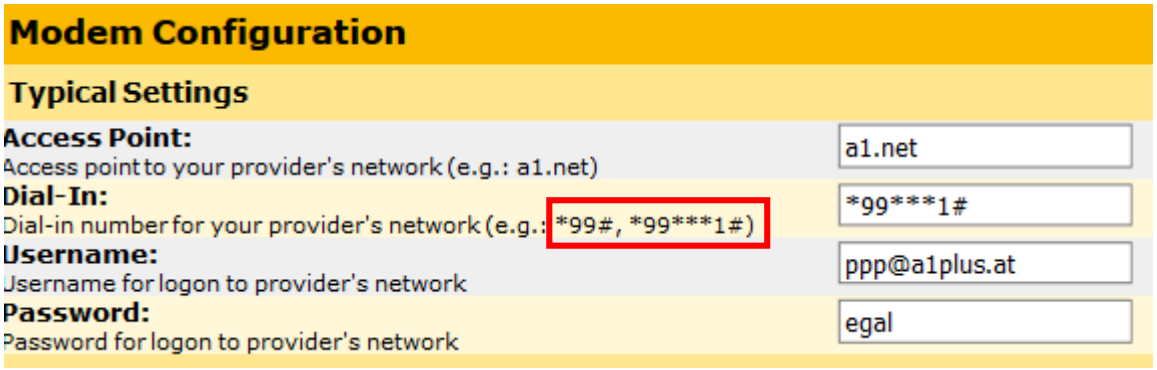
No user interface when connecting remotely!

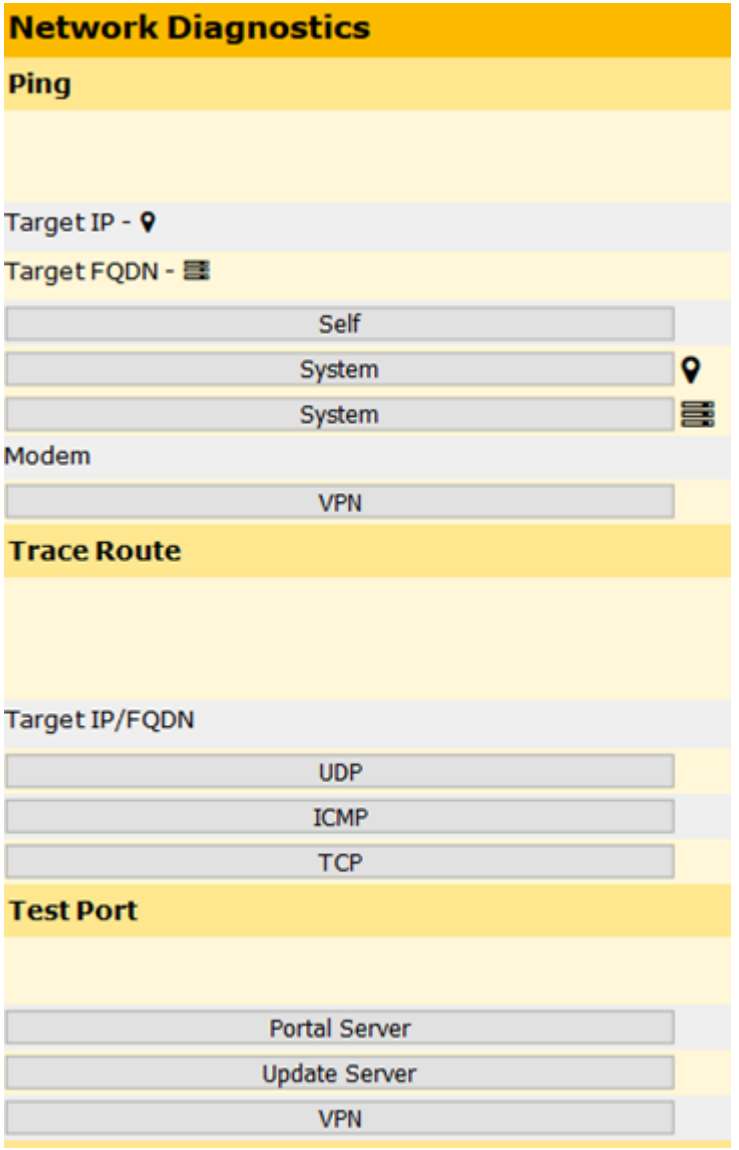


Check-list:

- Right IP?
- SIM card properly inserted, with enough data and PIN not required?
- SIM card works in a mobile phone? 3G-4G available?

No user interface when connecting remotely!





airpointer®

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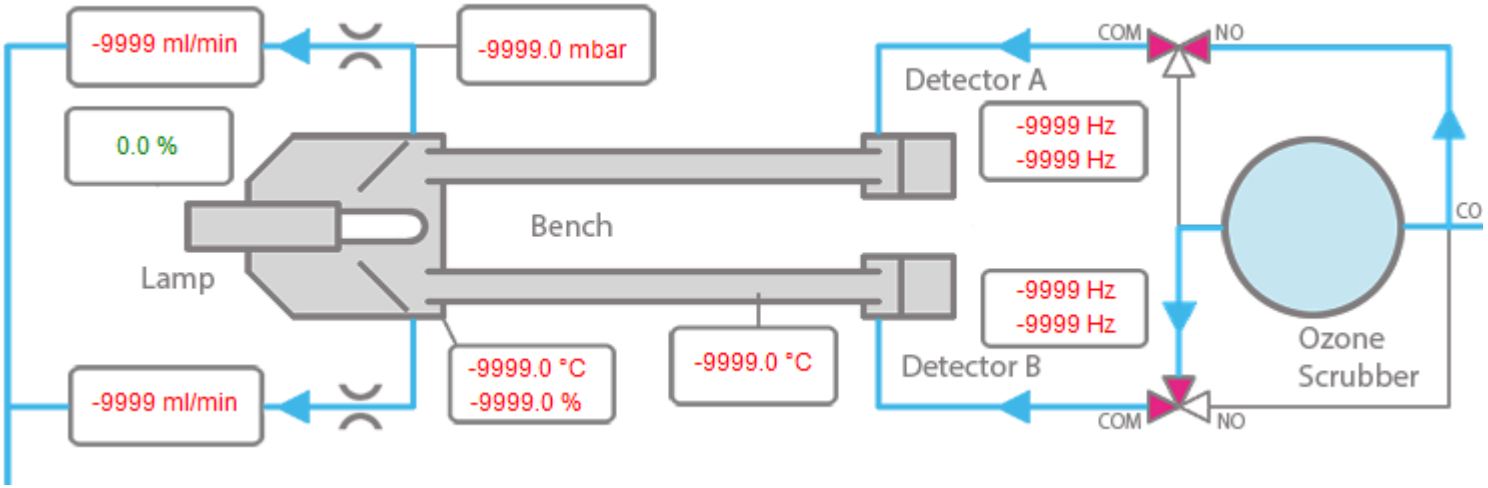
Environmental Monitoring Solutions

Many parameters in a module showing -9999!



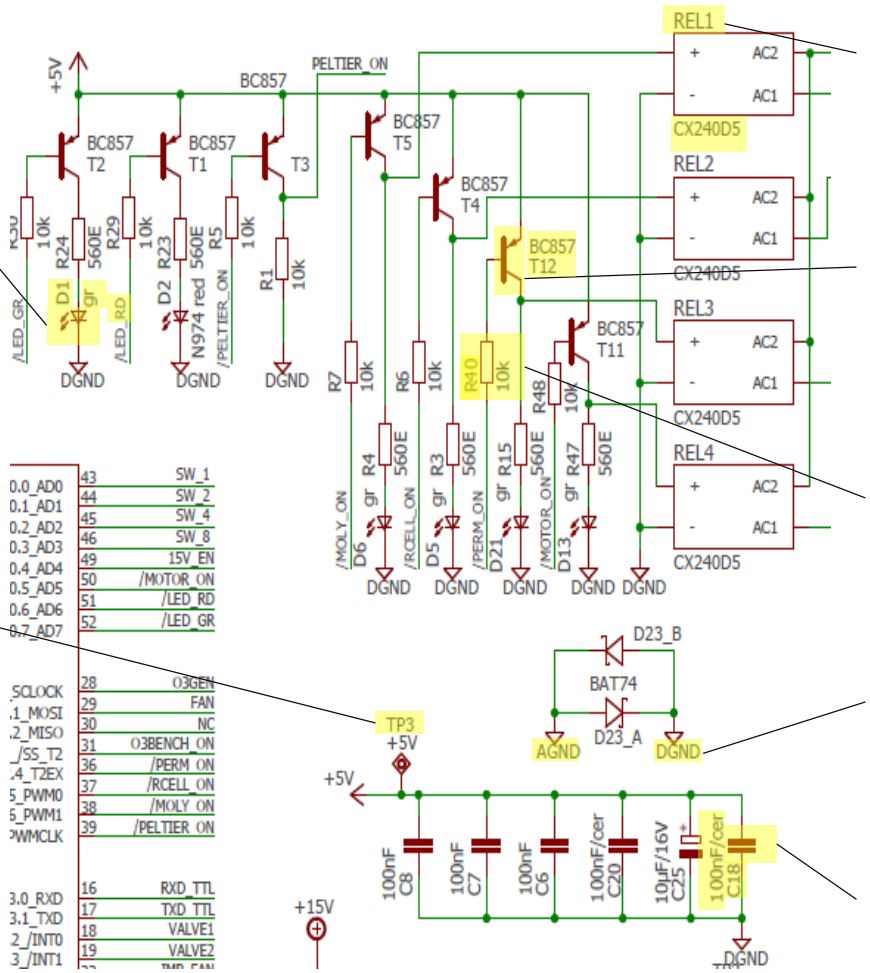
-9999 is the code for missing value

→ Often due to communication problem between PCBs (Valve Heater or Sensor Interface boards)

How to read the electrical diagram of a board

Symbol of LED
D stands for diode, gr for green, rd for red

TP stands for test point



REL stands for relay
CX240D5 is the type of relay

Symbol of transistor
T stands for transistor, BC857 is the type of transistor

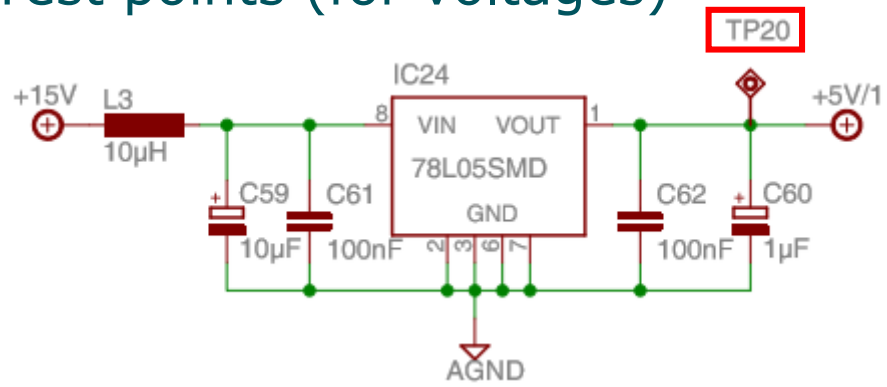
Symbol of resistance
R stands for resistance, 10k for 10kiloOhm

DGND stands for digital ground, AGND stands for analogic ground

Symbol of capacitor
C stands for capacitor, nF for nanoFarad

Troubleshooting of the boards

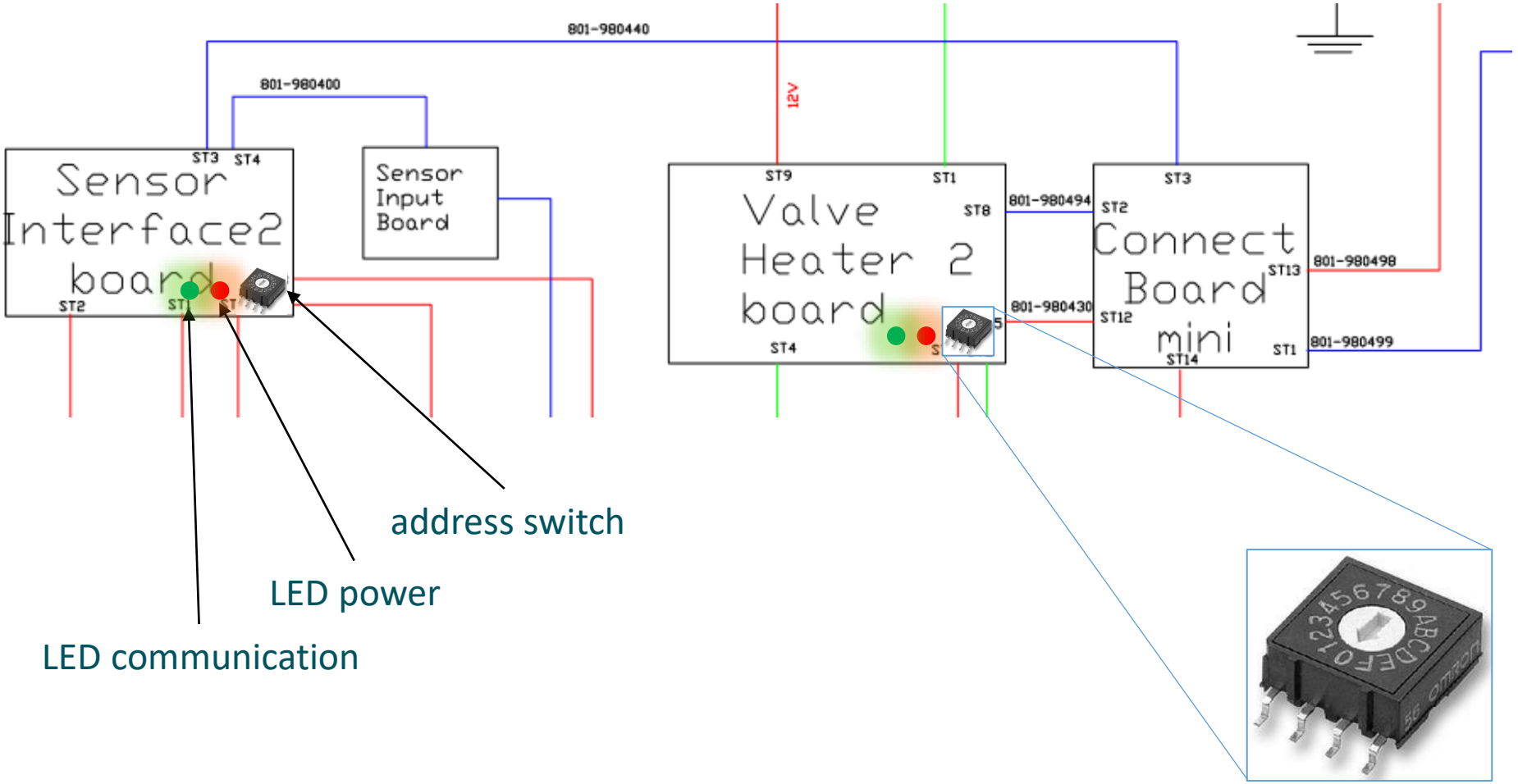
- Test points (for voltages)



- Address switch

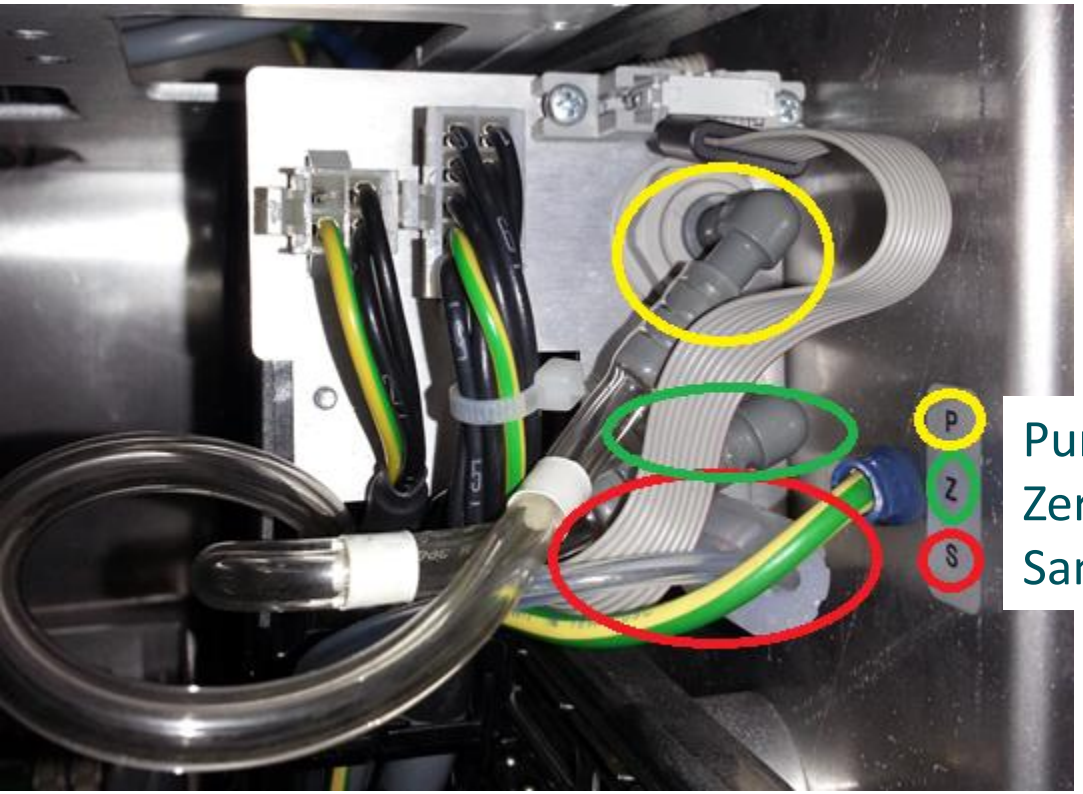
- LEDs

Troubleshooting of the boards



Wrong flows!

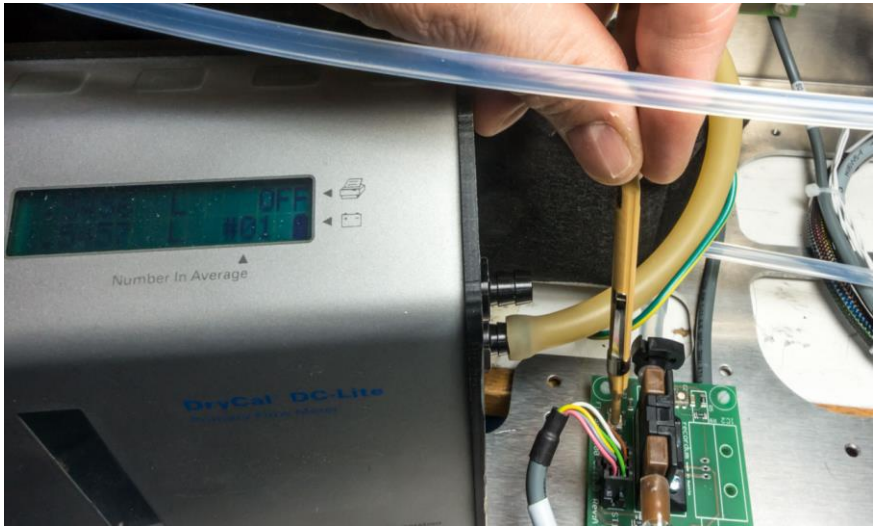
Either leaking or clogged tubings or defective flow sensor
→ Check the flows



Pump
Zero air
Sample

Wrong flows!

Miscalibrated/defective flow sensor:
→ Recalibrate it/replace it



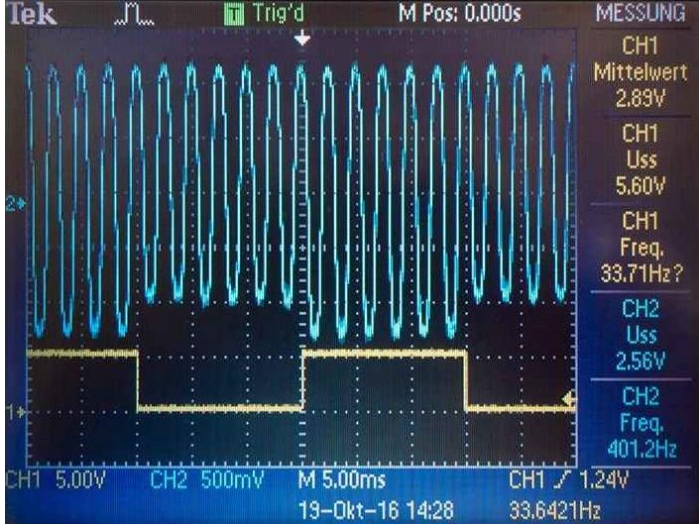
Leaking or clogged tubings
→ Clean the module, perform a leak check

Troubleshooting O_3

PhotoOutRef and PhotoOutMeas unstable

→ dirty tubings, unstable temperature, or not optimum control loops

Troubleshooting CO



COmeas and/or COref out of range

Is the IR source lit?

NO

YES

Is the resistance of the IR source close to 18 Ohm?

Check the signal with an oscilloscope. Do you see a signal like the one on the right?

YES

NO

Are the input AC and DC voltages to the CO module correct?

Replace the source

NO

No square signal on CH1

Clean the opto sensor

NO

All the signals on CH2 have the same height

Replace the GFC wheel

YES

NO

YES

Replace the CO control board

The problem lies in the Airpointer housing

Replace the CO control board. Problem solved?

YES

NO

The CO control board was faulty

The detector was faulty

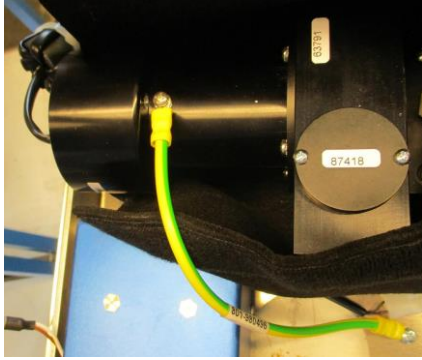
NO

Replace the detector. problem solved?

YES

Replace the GFC wheel

Troubleshooting SO_2



RefDetSO2 out of range

Check ferrite, grounding, jumper settings, loose cables

Can you hear the lamp ticking?

YES

RefdetSO2 < 200 mV?

NO

YES

Replace the lamp and its socket. Problem solved?

NO

Replace the reference detector. Problem solved?

YES

NO

YES

Lamp and/or socket defective

Are the input AC and DC voltages to the SO2 module correct?

Boards defective

Reference detector defective

NO

YES

YES

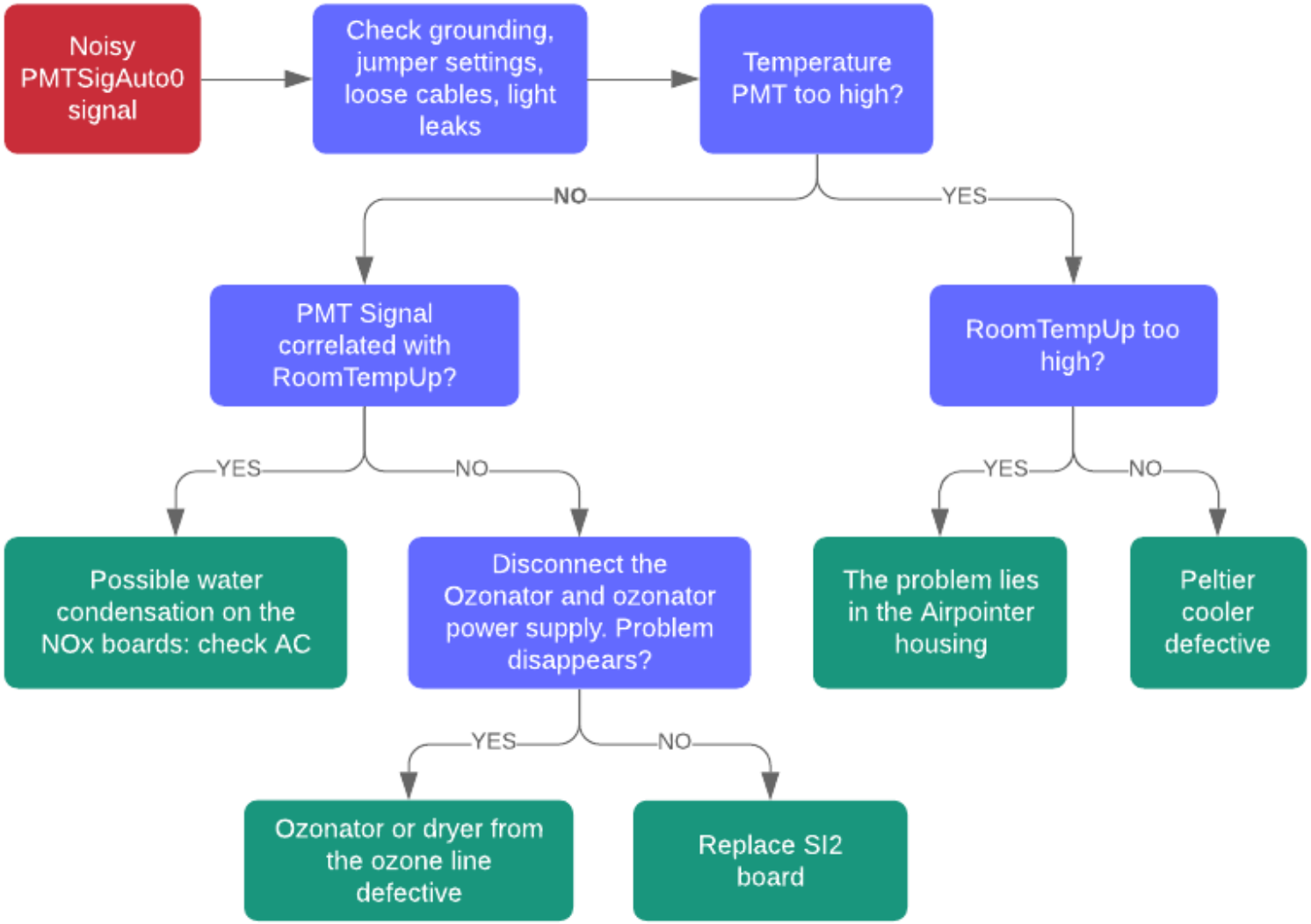
The problem lies in the Airpointer housing

Replace both SI2 and Flasher boards. Problem solved?

NO

Mirrors misaligned

Troubleshooting NOx



Thank you for your attention!