

7 Error diagnosis and troubleshooting

7.1 Self-test evaluation

The bulk of the errors that may occur will cause the self-test to fail.

The analysis of the possible causes is based on the information reported for the faulty self-test position (logged step-by-step).

Troubleshooting

Test steps 1.x:

- Check the CPU or the configuration memory for CRC errors.
- Check for I2C errors (I2C cable, plug-and-socket connections, etc.).

Test steps 2.x:

- Re-measure extra-low voltages.
- Check the ADCs on the power supply unit for defects.

Test steps 3.x:

- Check the U1 isolator on the power supply board for voltage errors.
- Check the control on the power supply unit for defects.

Test steps 4.x:

- Check the dissection instrument detection board for malfunctions.

Test steps 5.x:

- Check the US module for errors.

The measured values and error codes during a faulty self-test can be read using service mode 10.

This mode shows the possible causes of self-test errors which occur frequently, but not on a regular basis (e. g. measured value close to a limit).

No.	Test	Limits measured value	Comment / possible cause
1.1	Watchdog external	-	on power supply unit
1.2	Watchdog internal	-	CPU
1.3	CRC error	-	Configuration memory CPU

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No.	Test	Limits measured value	Comment / possible cause
1.4	RAM test	-	RAM on CPU
1.5	Address error I2C bus	Error code	Check I2C bus connections
2.1	Measurement +5 V channel 1	151, 167	ADC on power supply unit
2.2	Measurement +5 V channel 2	151, 167	
2.3	Measurement +15 V	163, 181	ADC on power supply unit
2.4	Charging voltage Siebelko power supply	106, 196	incorrect supply voltage
2.5	Measurement -15 V	139, 154	ADC on power supply unit
3.1	Set value U1 = 0 V	0, 2	Power supply unit
3.2	Set value U1 = 10 V	13, 17	Power supply unit
3.3	Set value U1 = 80 V	113, 126	Power supply unit
3.4	I (U = 80 V): supposed to be zero	0, 1	no leakage current
3.5	U1 = 80 V, isolator off	0, 10	Isolator on UNT01
3.6	Self-test USG4		Result under test 5.1
4.1	Test 1 instrument detection unit	10, 10	Malfunction instrument detection unit/ foot switch pressed when the device was switched on
4.2	Test 2 instrument detection unit	10, 10	Malfunction instrument detection unit
5.1	Test result USG4	Error code	Self-test USG4 failed