Connection troubleshooting
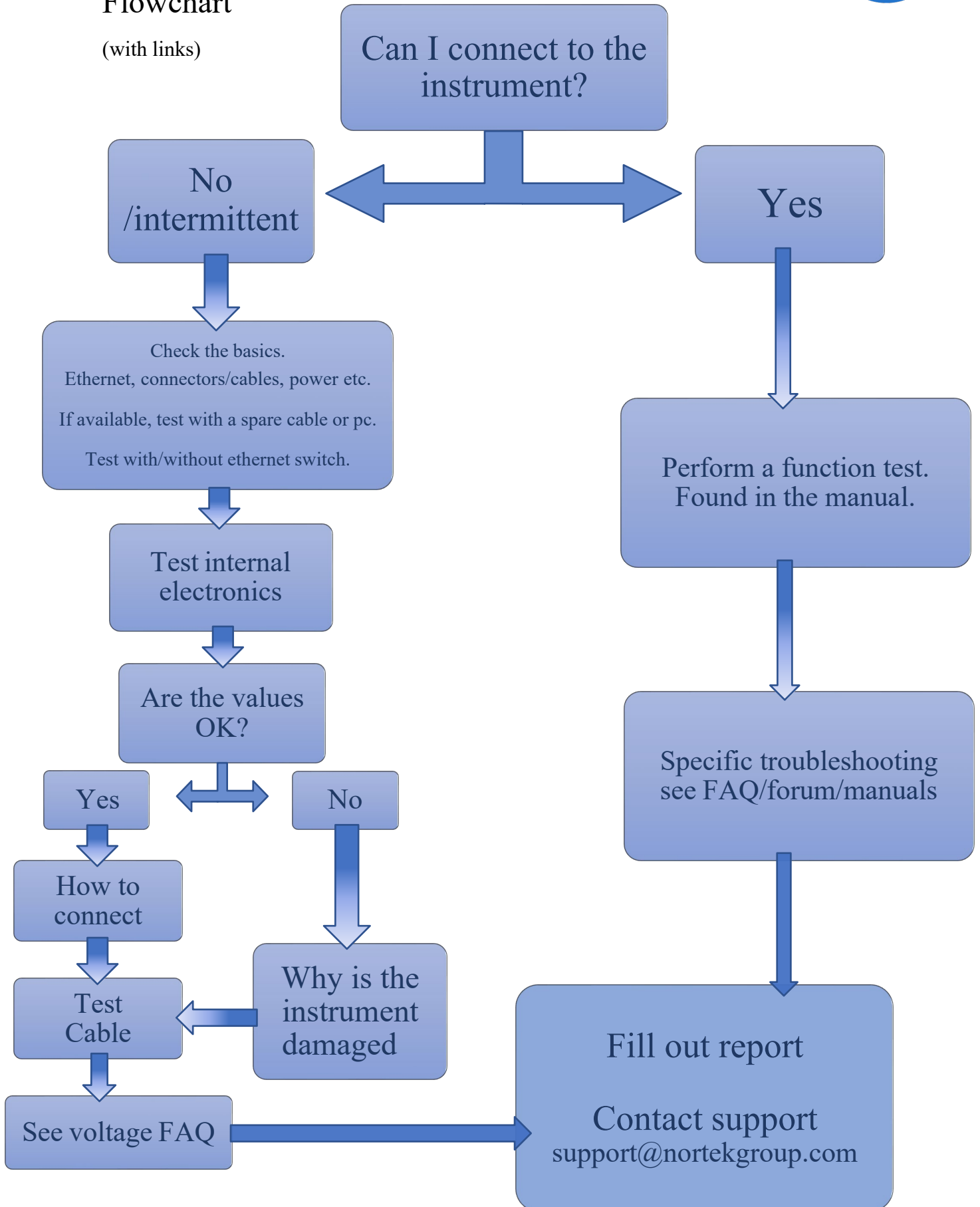
Content

Flowchart

(with links)

NORTEK

Can I connect to the instrument?

No /intermittent

Yes

Check the basics.
Ethernet, connectors/cables, power etc.

If available, test with a spare cable or pc.

Test with/without ethernet switch.

Perform a function test.
Found in the manual.

Test internal electronics

Are the values OK?

Yes

No

Specific troubleshooting
see FAQ/forum/manuals

How to connect

Why is the instrument damaged

Test Cable

See voltage FAQ

Fill out report

Contact support
support@nortekgroup.com

Before getting started

This guide will show you some common and simple ways of testing the connection to your instrument.

It is meant to serve as a starting point for basic troubleshooting when you are experiencing connection difficulties. Together with the instrument manual.

> **These tests will not cover all potential issues and there is no guarantee that passing these tests means everything is working as intended, but these are some very common causes.**

We recommend reading the Operations manual as a good starting point for troubleshooting but also for specific troubleshooting and how to's. The manual can be found here.

Ethernet and network troubleshoot can be difficult, as anyone who has every owned a computer will probably know. Usually it is something simple, but it might still be difficult to track down. IT security is also different from company to company and can play a major role.

If the instrument is powered correctly, it lights up as supposed to, and you know the cables and setup is working then it is very likely a basic ethernet/network issue.

Again, it might be difficult to know where to look, and in some cases with strict IT security on a work computer or server, it might be worth to ask the IT support for help.

For specific ethernet/network troubleshooting see the operations manual:

- Chapter 3 explains how to connect to the instrument via ethernet
- Chapter 7 explains some common troubleshooting issues

Additionally there are some specific FAQ's for ethernet troubleshooting available.

Testing cable

Testing the ethernet cable and RJ45 connector can be tricky, attaching a needle or similar to the multimeter pin can make it easier to reach the RJ45 connector pins. Be careful to not damage the RJ45 connector by using force.

For a guide on how to test a cable, please see the following FAQ.
This guide is based on midlife cables, but the principles are the same and you should always confirm that:

- Main power is sent through the correct pins (1-2)
- There is no short circuit anywhere resulting in broken protective circuits.
- The right voltage is being applied to the instrument. (24V for ethernet)

Signature cable diagrams can be found in the Appendix.

Internal electronics

Disconnect any cables.

If, however, no basic troubleshooting seems to solve the connection issue, then is might be a good idea to measure the resistance of the instrument to see that the internal electronics are working as intended.

The following values (approximately) should be measured between the following pins at the instrument connector.
Note that these values can change depending on a lot of factors, but they often give you a clear indication if something is wrong. Also make sure your reading is good and consistent (can be tricky to measure small pins properly).

Serial

Pins:	Ω:
1-2:	>1M
1-3:	180k
1-4:	180k
1-5:	80k
1-6:	80k
3-4:	350k
5-6:	150k

Ethernet

Pins:	Ω:
1-2:	>1M
1-3:	OL
1-4:	OL
1-5:	OL
1-6:	OL
3-4:	1,5
5-6:	1,5

OL = Open Loop = or very high resistance (can depend on your multimeter)

You can also perform this test via a cable connected, but you need to be 100% sure that the cable is working.

For online setups it might be difficult to retrieve the instrument, so testing
via the cable is easier, unfortunately this is also where we often see damaged cables.

Testing via a cable can defeat the purpose of eliminating the working elements to track down the issue.
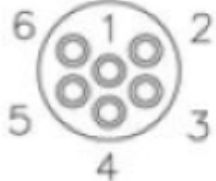
Appendix

CABLE pinout (instrument side of cable)
Pinout on the instrument is mirrored to be 1-1, 2-2..
Full schematics can be found in the respective Operations Manuals

Signature 6 pin ethernet cable termination:

Connector on the instrument side	Pin number	Function	
MCIL6M with MCDLS-F (red)	1	Gnd	
	2	Pwr+	
	3	Rx-	
Male face view:	4	Rx+	
	5	Tx-	
	6	Tx+	

Signature 8 pin serial cable termination:

Connector on the instrument side	Pin number	Function	
MCIL8M with MCDLS-F (red)	1	Gnd	
	2	Pwr+	
	3	RS232 Tx / RS422 Tx-	
	4	RS422 Tx+	
	5	RS232 Rx / RS422 Rx+	
	6	RS422 Rx-	
	7	Sync A	
	8	Sync B	

DVL 8 pin ethernet cable termination:

Connector on instrument side of cable	Pin number	Function
MCIL8F with MCDLS-F (red sleeve)	1	Gnd
	2	Pwr +
	3	Rx -
	4	Rx +
	5	Tx -
	6	Tx +
	7	Trigger
	8	NC

DVL 8 pin serial cable termination:

Connector on instrument side of cable	Pin number	Function
MCIL8F with MCDLS-F (red sleeve)	1	Gnd
	2	Pwr +
	3	RS232 Tx
	4	
	5	RS232 Rx
	6	
	7	Trigger
	8	NC

Troubleshooting report

Company:	
Contact person:	

Instrument type:	
S/N:	

Short description of the initial trouble:

If no connection is established with the instrument, fill out the following pages with results from the tests:

Test results:

Resistance test, instrument:

Serial

Pins:	Ω:
1-2:	
1-3:	
1-4:	
1-5:	
1-6:	
3-4:	
5-6:	

Ethernet

Pins:	Ω:
1-2:	
1-3:	
1-4:	
1-5:	
1-6:	
3-4:	
5-6:	

Cable test:

Continuity result:	
☐ OK	☐ Damage
Short circuits:	
☐ Yes	☐ No
If "yes", what pins?:	

Loopback test:

Part:	Working:	
Converter:	☐ Yes	☐ No
+ cable:	☐ Yes	☐ No
+ endbell:	☐ Yes	☐ No
+ harness:	☐ Yes	☐ No

Additional information:
Please attach any relevant pictures. Original equipment? Modifications? Online/not online? Deployment site. Etc. Etc.