Operation Manual

nLink+ AS IP & EC Transmitter

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Scope of application:
This manual is valid for all nlink+ transmitter systems with firmware version V01.00 or higher.

1. General

The nLink+ Transmitter has been designed for fixed mounting, either directly at or near the measuring location (IP version) or in the electrical cabinet (EC version=electrical cabinet).
All nSens probes are compatible, either directly on the housing (IP version) or by the 3wire nSens cable or the nSens extension cable.

Configuration possible with the built in USB connection by Windows PC.

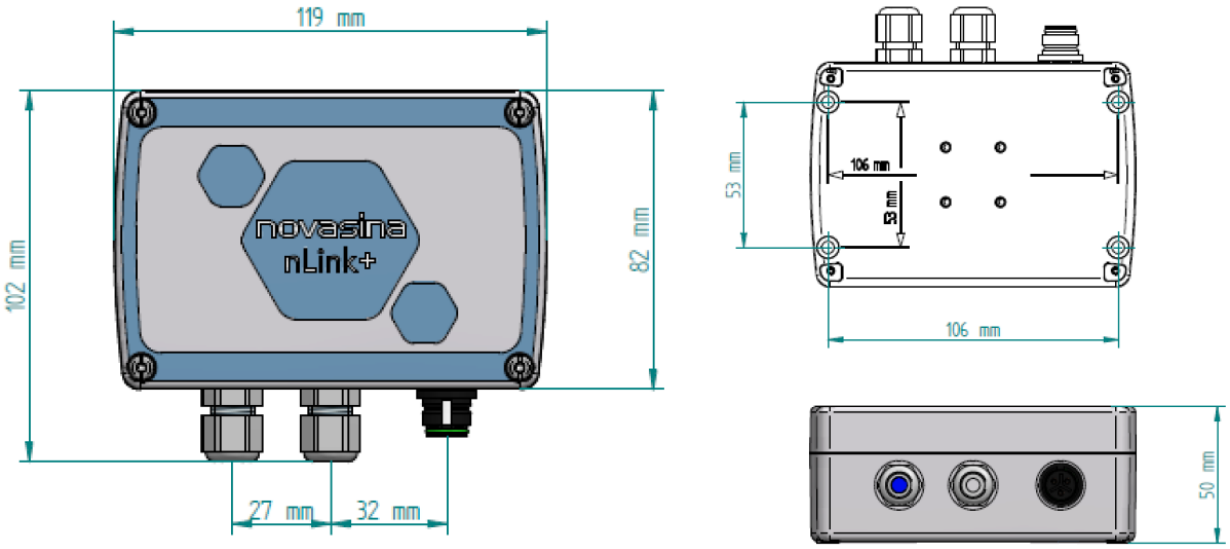
2. Safety

This instrument has left the factory in a faultless condition. No inappropriate modifications are allowed under the terms or the warranty. Please consider all notices and warning signs on the instrument and in this operating manual.
Please also note:

- This instrument has been developed only for the measurement of clean air within the defined specifications, operate the instrument only for this purpose. In case of other applications, outside of these specified uses, the supplier accepts no responsibility for any damage caused.
- The installation work shall be only done by skilled personnel (electrician).
- The instrument may only be operated under the specified operating conditions.
- Any faults that may occur and cause damage to material and people, additional safety precautions should be implemented. In case of any faults, the defined operating conditions have to be observed (e.g. limit switch etc.).
- The instrument is not adequate for the installation in rooms with explosion hazard.
- The installation has to be effected in accordance with the local electrical installation regulations as well as this operating manual.
- The instrument contains ESD-sensitive parts. Please follow the indicated safety measures.
- Use only original Novasina accessories and spare parts.
- Without any written approval by Novasina no adaptations and modifications shall be undertaken on the instrument.

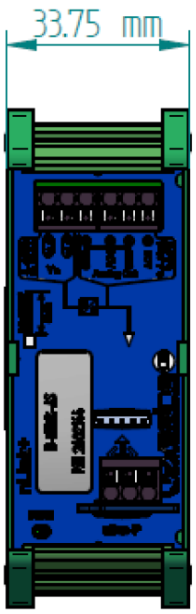
3. Product Description

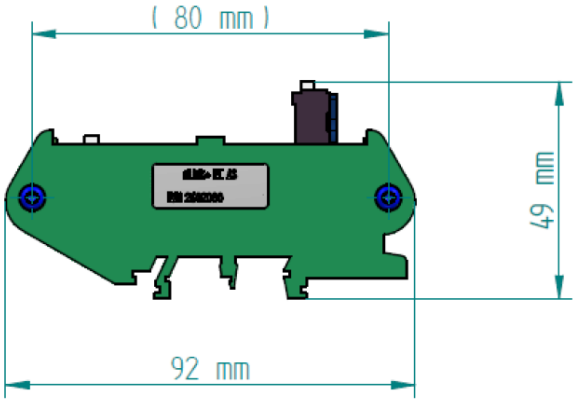
3.1. Technical Data nLink+ IP AS



Name **Art-No.**	**nLink+ IP AS** **2602078**
Power supply	24V DC, Permissible voltage range: 5 to 39V
Power consumption	<0.5W
Display	none, values on PC
Analogue outputs (2 outputs)	2 scalable analogue outputs, current 0/4..20mA or voltage 0/2..10V Accuracy <0.05% of span Linearity <0.05% of span Temperature effect 0.005% of span / °C Load (I): min. 0 Ω / max. 500 Ω or (Uin-2V)/Imax Load resistance (U): min. 10 kΩ / max. ∞ Ω
Status LED	LED for power On, LED for nSens connected
Housing material	ABS
Protection class	IP67
Soldering material	lead free (RoHS compliant)
Working temp.	0 to 50°C
Storage temperature	-10 to 60°C (non-condensing)
CE-/EMC	Safety: IEC 61010-1:2020 EMC: IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011

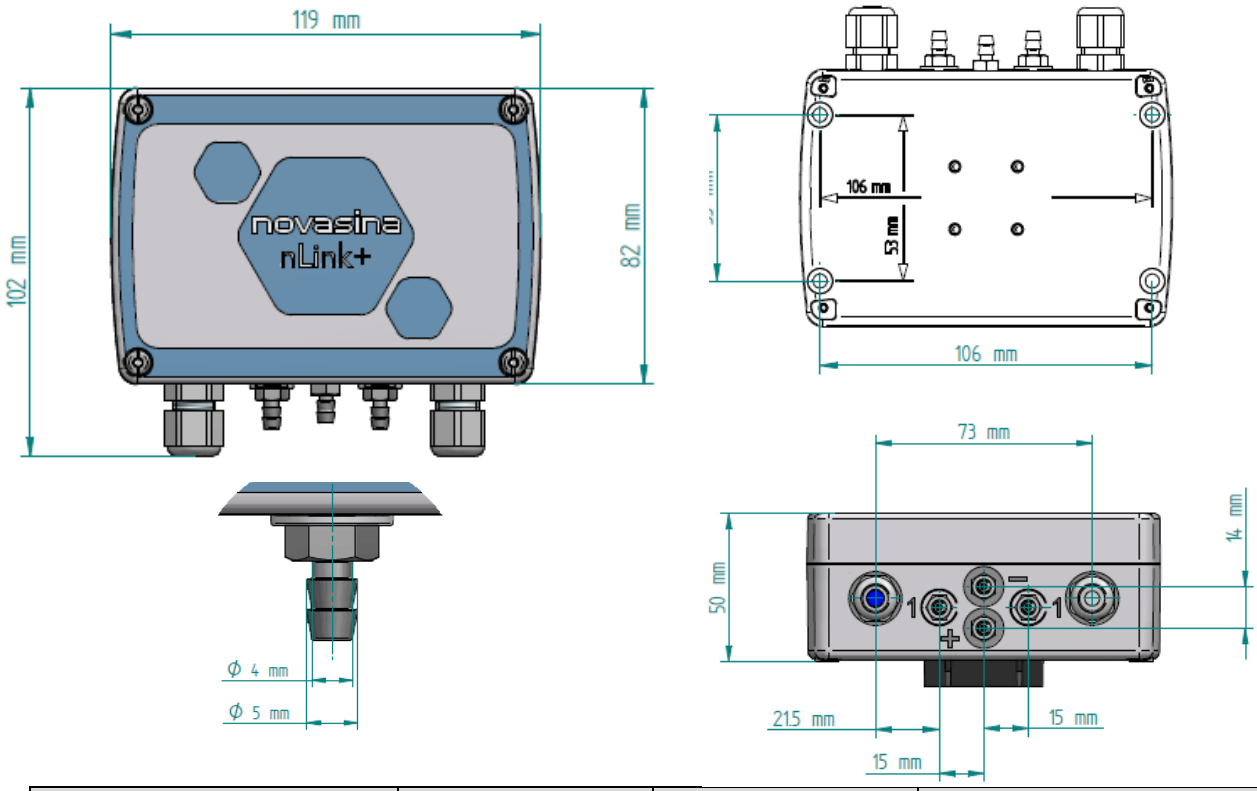
3.2. Technical Data nLink+ EC AS





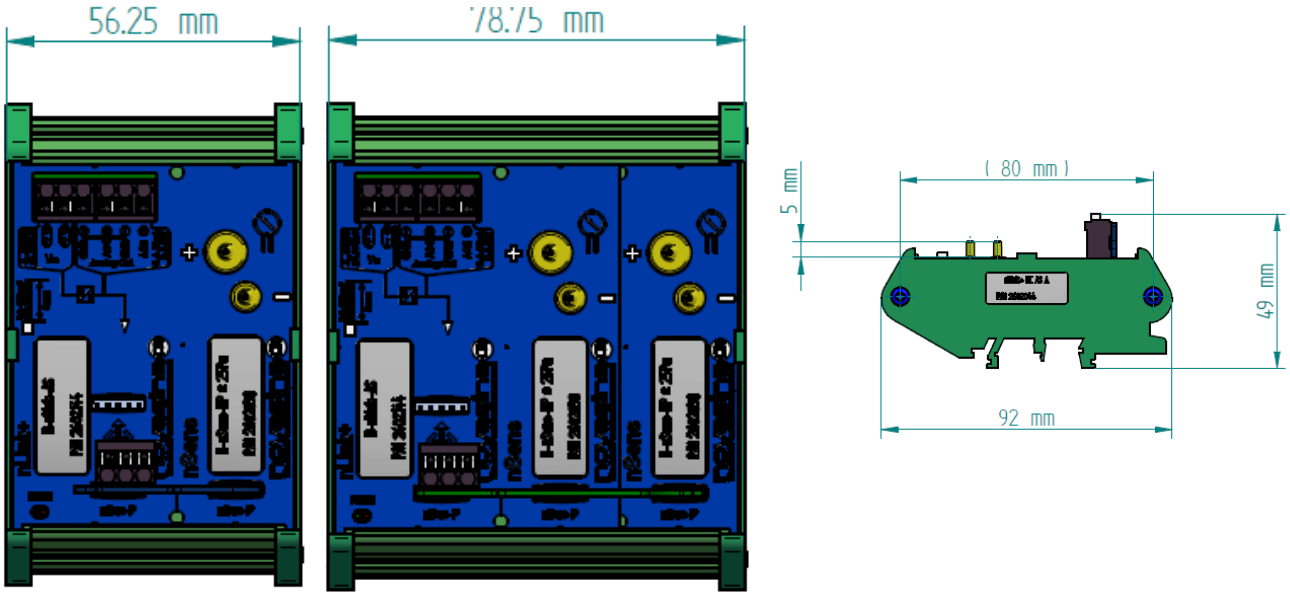
Name **Art.-No.**	**nLink+ EC AS** **2602080**
Power supply	24V DC, Permissible voltage range: 5 to 39V
Power consumption	<0.5W
Display	none, values on PC
Analogue outputs (2 outputs) 2* 0/4 - 20mA or 2* 0/2 - 10V	2 scalable analogue outputs current 0/4..20mA or voltage 0/2..10V Accuracy <0.05% of span Linearity <0.05% of span Temperature effect 0.005% of span / °C Load (I): min. 0 Ω / max. 500 Ω or (Uin-2V)/Imax Load resistance (U): min. 10 kΩ / max. ∞ Ω
Status LED	LED for power On, LED for nSens connected
Housing material	PA6.6 (UL94V0), mounting rail holder
Protection class	none, installation in protected cabinet required
Soldering material	lead free (RoHS compliant)
Working temp.	0 to 50°C
Storage temperature	-10 to 60°C (non-condensing)
CE-/EMC	Safety: IEC 61010-1:2020 EMC: IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011

3.3. Technical Data nLink+ IP dp



nLink+ IP Art.-No.	AS A / AS AA 2602079 / 2602141	AS B / AS BB 2602172 / 2602173	AS C / AS CC 2602174 / 2602175
Measurement Range	-25 to +25 Pascal	-250 to +250 Pascal	-5000 to +5000 Pascal
Accuracy at 20°C	Typical +/- 0.15%	Typical +/- 0.25%	Typical +/- 1 %
Temperature effect	Max. +/- 0.10Pa	Max. +/- 0.10Pa	Max. +/- 0.20Pa
Max. permissible overpressure	2 bar (burst pressure 4 bar)		0.1 bar (burst pressure 0.3 bar)
Response time T63	<1s typ.		
Max. Resolution	0.1 Pa		
Long term stability	+/-0.05% FSS (typ)		
Flow rate	<200ul/min		None
Ambient pressure dependency	Compensated with built in abs pressure sensor		
Ambient pressure: Range	700 – 1260 hPa / mBar		
Ambient pressure: Accuracy	+/- 0.5 hPa		
General Specification			
Power supply	24V DC, Permissible voltage range: 5 to 39V		
Power consumption	<0.5W		
Display	None, values on PC		
Analogue outputs 2* 0/4 - 20mA or 2* 0/2 - 10V	2 scalable analogue outputs, current 0/4..20mA or voltage 0/2..10V Accuracy <0.05% of span Linearity <0.05% of span Temperature effect 0.005% of span / °C Load (I): min. 0 Ω / max. 500 Ω or (Uin-2V)/Imax Load resistance (U): min. 10 kΩ / max. ∞ Ω		
Status LED	LED for power On, LED for nSens connected		
Housing material	ABS		
Protection class	IP67		
Soldering material	lead free (RoHS compliant)		
Working temp.	0 to 50°C		
CE-/EMC	Safety: IEC 61010-1:2020 EMC: IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011		

3.4. Technical Data nLink+ EC dp



nLink+ EC Art.-No.	AS A / AS AA 2602044 / 2602134	AS B / AS BB 2602203 / 2602204	AS C / AS CC 2602205 / 2602206
Measurement Range	-25 to +25 Pascal	-250 to +250 Pascal	-5000 to +5000 Pascal
Accuracy at 20°C	Typical +/- 0.1%	Typical +/- 0.25%	Typical +/- 1%
Temperature effect	Max. +/- 0.10Pa	Max. +/- 0.10Pa	Max. +/- 0.20Pa
Max. permissible overpressure	2 bar (burst pressure 4 bar)		0.1 bar (burst pressure 0.3 bar)
Response time T63	<1s typ.		
Max. Resolution	0.1 Pa		
Long term stability	+/-0.05% FSS (typ)		
Flow rate	<200ul/min		None
Ambient pressure dependency	Compensated with built in abs pressure sensor		
Ambient pressure: Range	700 – 1260 hPa / mBar		
Ambient pressure: Accuracy	+/- 0.5 hPa		
General Specification			
Power supply	24V DC, Permissible voltage range: 5 to 39V		
Power consumption	<0.5W		
Display	None, values on PC		
Analogue outputs 2* 0/4 - 20mA or 2* 0/2 - 10V	2 scalable analogue outputs, current 0/4..20mA or voltage 0/2..10V Accuracy <0.05% of span Linearity <0.05% of span Temperature effect 0.005% of span / °C Load (I): min. 0 Ω / max. 500 Ω or (Uin-2V)/Imax Load resistance (U): min. 10 kΩ / max. ∞ Ω		
Status LED	LED for power On, LED for nSens connected		
Housing material	PA6.6 (UL94V0), mounting rail holder		
Protection class	none, installation in protected cabinet required		
Soldering material	lead free (RoHS compliant)		
Working temp.	0 to 50°C		
CE-/EMC	Safety: IEC 61010-1:2020 EMC: IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011		

3.5. Electrical Installation

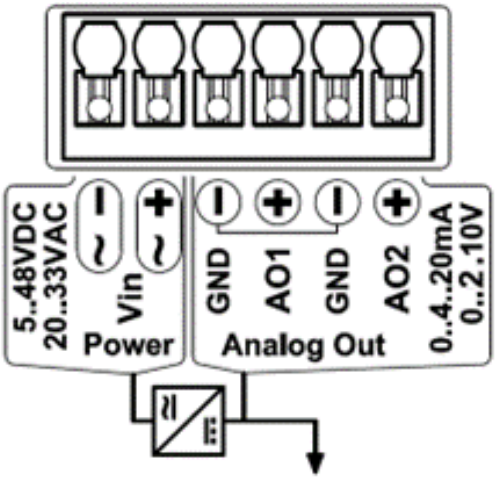
	Wire specification
Clamping range	0.13 - 1.5mm² (Push-in Spring clip)
Wires:	w. plastic collar ferrule DIN 46228/4: 0,25 - 0.75 mm² w. wire end ferrule DIN 46228/1: 0,25 - 1.50 mm² Solid, min. H05(07) V-U 0.2 - 1.50 mm² Wire connection cross section AWG28 - 14

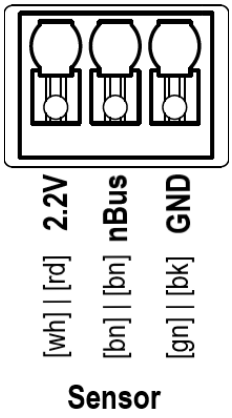
Remark: Cable specifications depend on the installation and have to be defined by the designer or installer. Heavy machinery and other instrumentation should not share the same power supply wiring. Use noise filters and surge protectors if required.

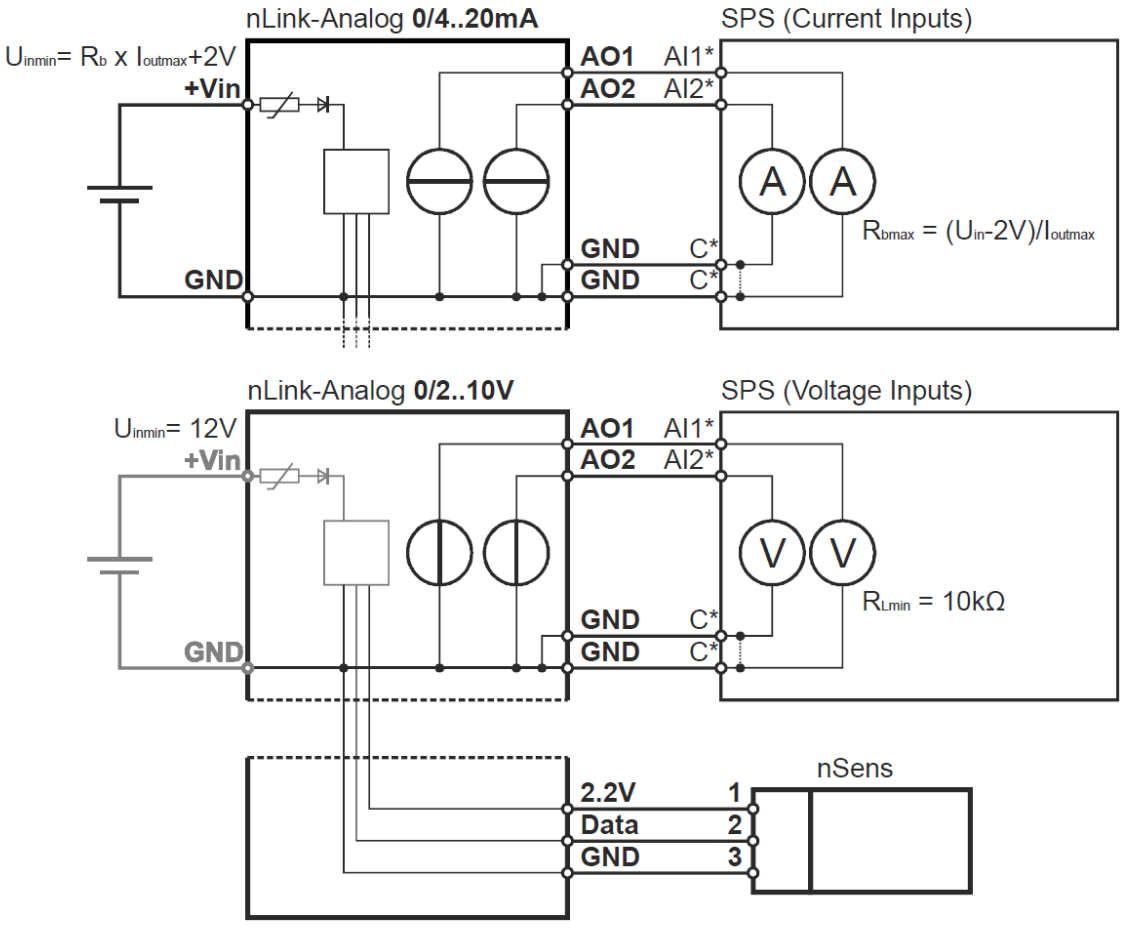
For EMC protection it is recommended to take the following measures:

• Wires emitting interference must be separated from measurement and analysis units
• Parallel guidance of measurement cables and electrical power cables must be avoided, use different channels with separation (see European Standard EN50170 for detailed information)

3.6. Wiring Diagram







Remark: If more than 1 probe is connected, the single wires can be fixed in parallel in the same screw terminal.

4. Initial Operation

Before initial operation the power supply wiring and analogue output configuration should be checked (see wiring diagram).

Important remark: The power supply fuse protection has to be verified according to the local regulation. Voltages over 39VDC/27.6VAC result in a severe damage of the device!

4.1. Windows PC Software Installation

The software «nSoft-ACT-T» is a requirement for the configuration (signal outputs, sensor parameters etc). The software must be installed on a Windows PC with administrator rights and following minimum requirements:

Supported operating systems:

- Windows XP with SP3 or higher (32+64bit)
- Administrator-rights

Hardware:

- CPU: mind. 1 GHz
- USB- connection
- min. 512 MB free memory
- min. 4 GB free hardware memory
- Software Adobe Acrobat Reader

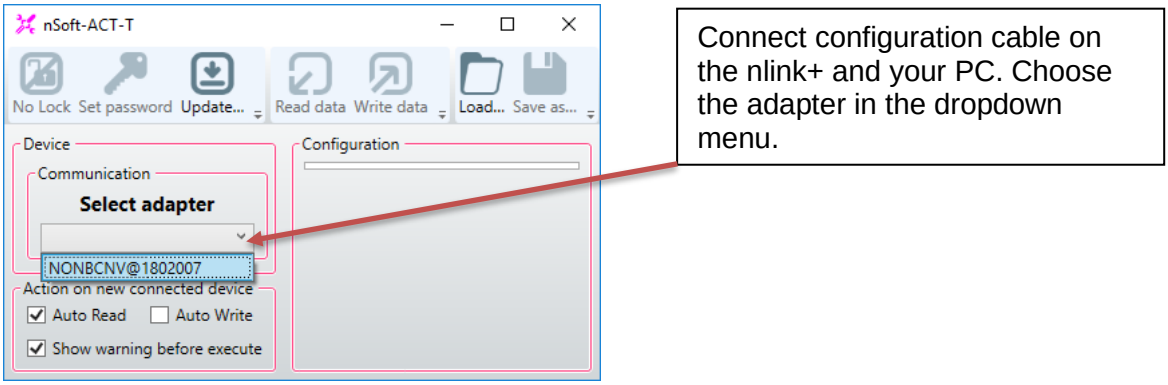
The software can be obtained on the website www.novasina.ch or send an email to sales@novasina.ch.
Software is license free (Freeware), the special USB configuration cable with adapter is necessary (see accessories)

5. Configuration with nSoft-ACT-T

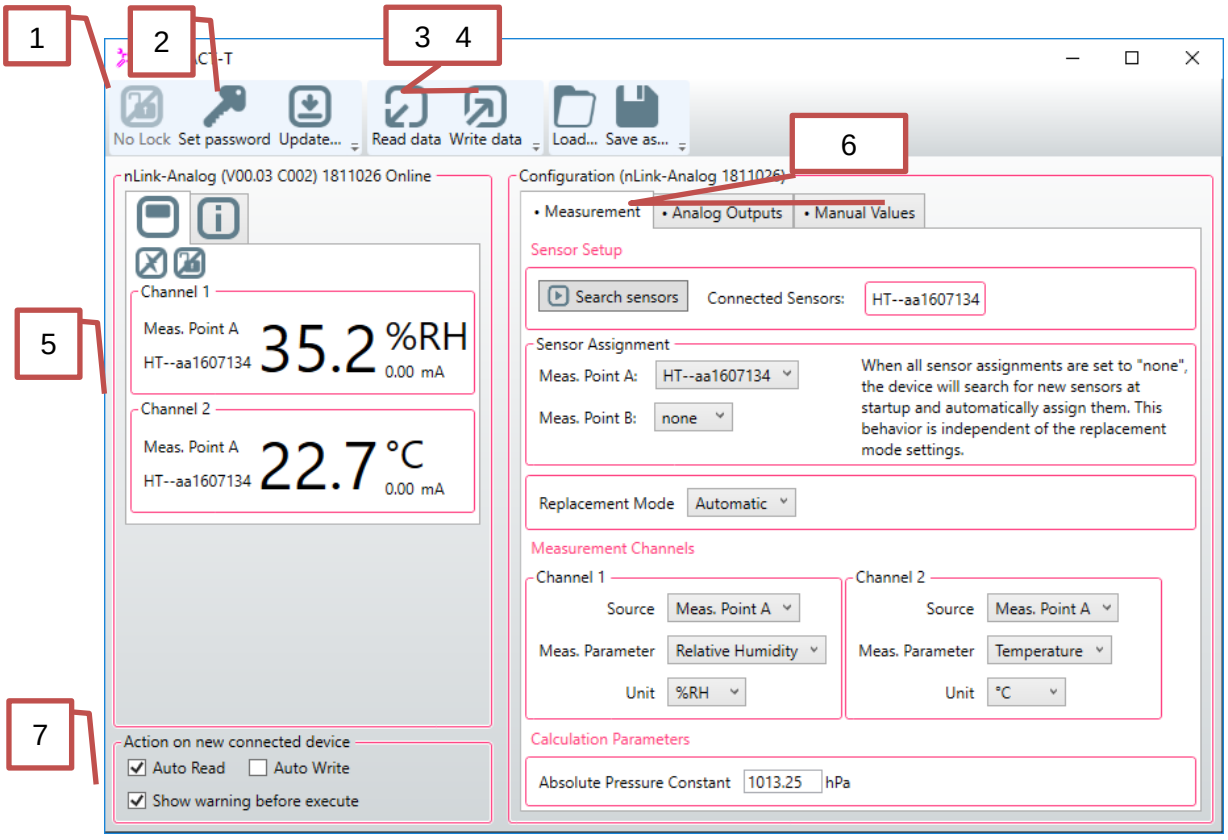
Connect the USB cable on the PC and the nlink+.
Open the software by clicking on the Icon after installation.

The nlink+ does not require additional power supply. The USB connector is sufficient for configuration and sensor connection.
Analog signals / outputs are only active with the additional power supply.

Startup



Main Screen



1: Activate password protection, requires a password set (2)
2: Set Password: the password is stored directly on the transmitter.
3: Read Data: Read configuration from the nlink+
4: Write Data: Store the configuration on the nlink+

5: Details from the nlink+, such as serial numbers, measured values in real time etc.

6: Configuration-Register:

- Measurement: Search connected sensors, choose channels and parameters
- Analog Outputs: Configuration for analog outputs, low/high range etc
- Manual Values: Set manual values for simulation and look control.

7: Action on new device.

- Auto Read (default): Transmitter configuration is automatically transferred to the software and displayed. Prepared configuration in the software is overwritten.
- Auto Write: The configuration prepared on the software is automatically written to the nlink+: Ideal to quickly configure multiple nlink+ with the same settings.
- Show warning before execute (active by default): If active a warning message will appear before read or write. Deactivate if necessary.

Configuration procedure:

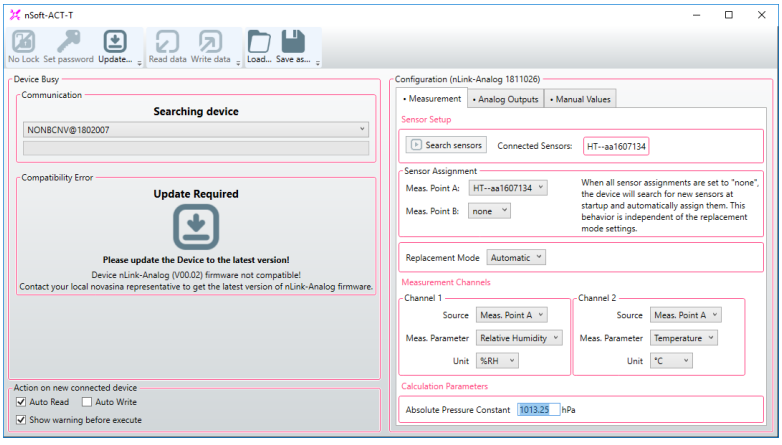
- Choose the adapter if the software does not automatically recognize

- Configure sensor (search sensor), measuring point and channels (6)
- Configure analog output settings (6, register analog out)
- After configuration activate «Write Data» (4) to store the settings on the transmitter.

Update required

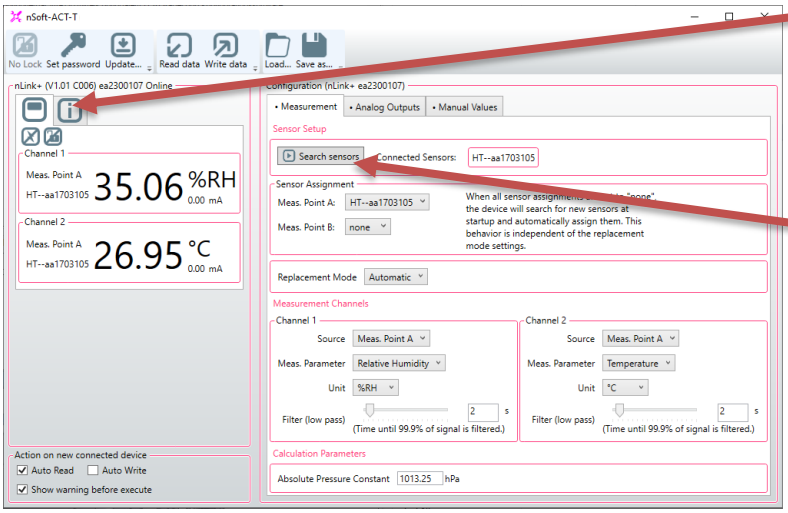
If a firmware version on the nlink+ is not compatible with the installed nSoft-ACT-T this message «Update required» is shown.

Contact your local support for the newest firmware file and update instructions.



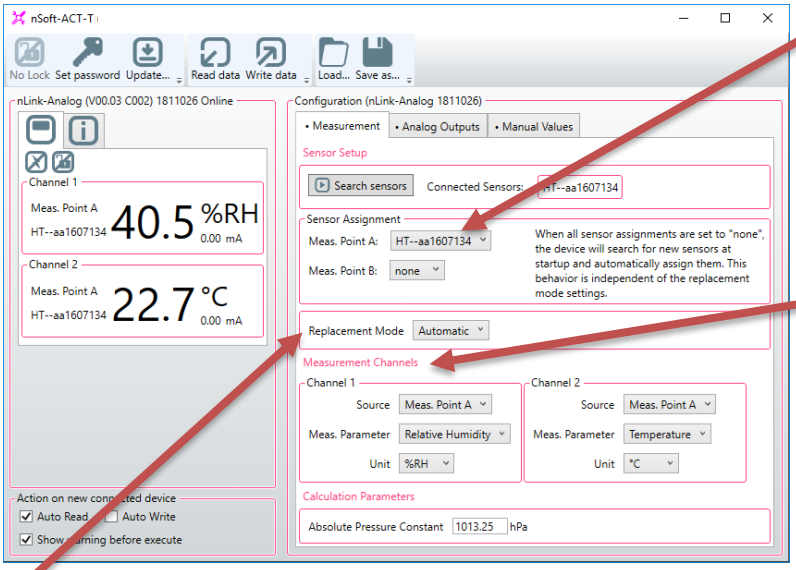
New configuration

Connect your nLink+ with the configuration cable to your PC. Connect the nSens as well.



Nlink+ is recognized. Register «i» displays additional information about the transmitter.

Click on «Search Sensor» Connected nSens probe will be recognized and displayed with the serial number.

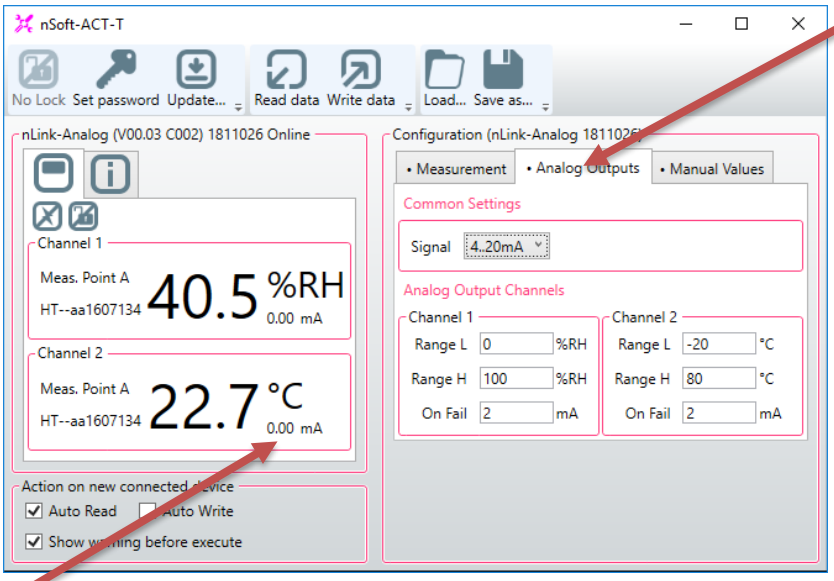


The identified nSens must now be assigned to measuring points. If one nSens is connected it is automatically assigned to measuring point A.

« Measurement Channel» 1 and 2 correspond to analog out 1 and 2. Choose parameter and unit (depending on the type of nSens).

« Replacement Mode»:
Automatic (default): If the nSens is replaced the nLink+ recognizes the different serial number and replace the removed nSens with the new nSens to the same measuring point. Configuration remains.
Manual: A different nSens has to be configured with this software again.

Configuration analog outputs



Register «Analog Outputs». Assign Signals (Loop mA oder V) and Range (Range low / Range high) according the specification from the automation system.

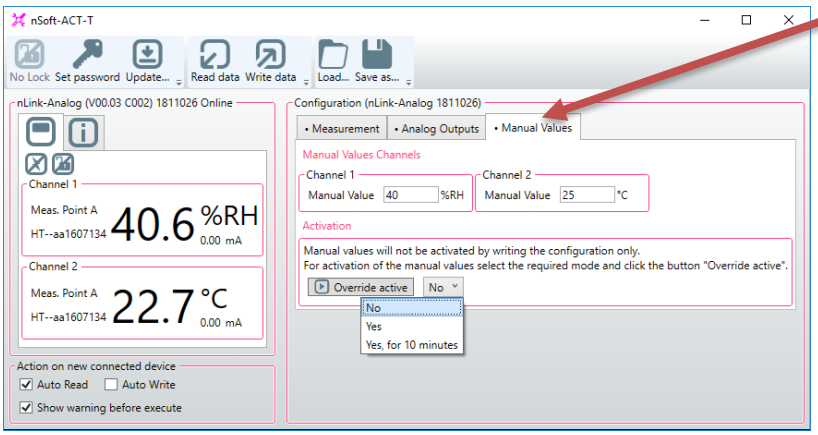
On Fail: In case an error is detected (e.g. nSens disconnected) this output is active. If power supply is interrupted signal output is zero.

Store configuration with Write Data:

Actual analog value on the output for each channel. Only active with additional power supply.

The configuration remains as long as no other nlink+ is connected and Read Data is activated. Choose “Auto Write” and connect another transmitter. The prepared settings will now be stored on the transmitter automatically.

« Manual Values»



Program fixed values for Simulation and loop checks. Choose Override mode and “Write Data” for activation.
As long as manual values are active the sensor values are not displayed.

Beware: Deactivate override after completing the checks to receive real time data from the nSens again.

6. Calibration / verification of measuring values

For humidity calibration and verification Novasina humidity standards are recommended. These humidity generators are easy to use and reusable multiple times.
For the verification of the whole measurement range Novasina offers a set with 5 SAL-SC including carrying case and probe adapter rings. For an optimal calibration and/or verification the room temperature should be between 15...30°C and should not vary more than +/-0,2°C. In order to allow the standards to generate an accurate and stable air humidity the SAL-SC must be well sealed around the probe.
For this purpose an adapter with O-ring can be used, which is put inside the SAL-SC hole and then put over the probe. The standards should be adapted to the climatic ambient conditions approx. 1 hour before they are used.
If handled properly the SAL-SC generate very stable and accurate relative humidity and can be used as an alternative to humidity generators.

6.1. Sensor cables and Configuration set

nSens cable with end sleeves	**nSens cable extensions**	**Configuration cable: nlink-USB&CA3**
Connects nSens with nlink+	Extension cable between any connector and nSens.	Configuration cable for nLink+ to Android or Windows PC. Software available for download
		
260 1080 nSens-cable 5m **260 1079 nSens-cable 10m** **260 1078 nSens-cable 30m** **260 1225 nSens-cable 60m** **260 1226 nSens-cable 100m**	**260 1201 nSens Extension 2m** **260 1136 nSens Extension 5m** **260 1986 nSens Extension 10m** **260 1987 nSens Extension 30m**	**260 1818 nlink-USB-CA3 (complete set)** Single items: **260 1755 CA-3 adapter** **260 1075 nlink USB cable**

7. Accessories nSens HT

Art. No. 1110885 - SAL-SC 11
Art. No. 1110855 - SAL-SC 33
Art. No. 1110857 - SAL-SC 53
Art. No. 2600219 - SAL-SC 58
Art. No. 1110859 - SAL-SC 75
Art. No. 2518965 - SAL-SC 84
Art. No. 1110896 - SAL-SC 90
Art. No. 2518966 - SAL-SC 97

Sensor-Checks SAL-SC
(humidity standards)

Reusable humidity standards based on saturated salt solutions in plastic cylinders with moisture permeable membranes. Each salt is delivered in a well-sealed box. Sensor Checks SC are obtainable for the following values (at 25°C):

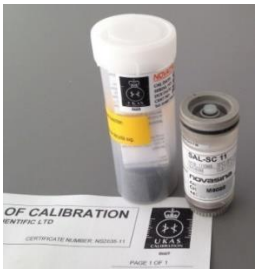
11.3 % rh	75.3 % rh
32.8 % rh	84.3 % rh
52.9 % rh	90.1 % rh
57.6 % rh	97.3 % rh

Important: please consult the operation manual of your instrument to see which points can be calibrated. Other SAL-SC can be used for verification.

Humidity values in the temperature range 15°.... 30°C:
11.3 ..... 11.3% rh / 15....30°C
33.3 ..... 32.4% rh / 15....30°C
55.9 ..... 51.4% rh / 15....30°C
60.7 ..... 56.0% rh / 15....30°C
75.6 ..... 75.1% rh / 15....30°C
85.9 ..... 83.6% rh / 15....30°C
90.9 ..... 89.9% rh / 15....30°C
97.9 ..... 97.0% rh / 15....30°C

The precision corresponds to the Greenspan Report 1977 typically +/- 0.3 % rh

Weight : 90 g



Art. No.1111044 - SAL-SC 11C
Art. No.1111037 - SAL-SC 33C
Art. No.1111040 - SAL-SC 53C
Art. No.1111035 - SAL-SC 75C
Art. No.2601272 - SAL-SC 84C
Art. No.1111032 - SAL-SC 90C
Art. No.2601275 - SAL-SC 97C

Sensor-Checks SAL-SC with European certificate

Reusable humidity standards based on saturated salt solutions in plastic cylinders with moisture permeable membranes. Each salt is delivered in a well-sealed box. Sensor Checks SAL-SC are obtainable for the following values (at 25°C):

11.3 % rh
32.8 % rh
52.9 % rh
75.3 % rh
84.3 % rh
90.1 % rh
97.3 % rh

Internationally accredited laboratory

All Novasina humidity standards can also be supplied with an internationally recognised certificate from an accredited European laboratory (UKAS England).

Weight : 90 g

Art. No. 1117847
SAL-SC Sensor Check Set
Art. No. 1117841
Empty case for SAL-SC

Set with 5 Humidity Generators SAL-SC

Reusable humidity standards SAL-SC in a case delivered incl. the needed adapters for Novasina probes and factory calibration certificates.
Case set contains:
- SAL-SC 11
- SAL-SC 33
- SAL-SC 53
- SAL-SC 75
- SAL-SC 90
- Factory calibration certificates of SAL-SC
- 1 adapters for Novasina probes

Humidity values in the temperature range 15°... 30°C:
11.3 ..... 11.3% rh / 15....30°C
33.3 ..... 32.4% rh / 15....30°C
55.9 ..... 51.4% rh / 15....30°C
75.6 ..... 75.1% rh / 15....30°C
90.9 ..... 89.9% rh / 15....30°C

The precision corresponds to the Greenspan Report 1977 typically +/- 0.3 % rh

Weight : 900 g

Art. No. 2601143 Adapter SAL-SC for nSens probes

Adapter SAL-SC for nSens probes

Plastic adapter for humidity standards. Used for diameter reduction and radial sealing around the nSens probe with diameter 13mm.

With integrated green coloured rubber sealing ring

Dimension : Out.diameter 30 mm
Inner diam.13 mm

Weight : 5 g

Material : Thermoplastic resin

Art. No. 1111302 Styrofoam box

Thermal insulation styrofoam box

A styrofoam box providing optimal insulation and temperature stabilisation of a SAL-SC check during the calibration procedure. Consisting of two half-covers for simple temporary mounting.

Dimension : 100 x 65 x 50 mm

Weight : 10 g

Material : thermal insulating styrofoam PPE

Technical information and other information subject to change without notice