novasina

OPERATING INSTRUCTIONS

nLink+ RL Transmitter (Relay output)



Novasina AG
Neuheimstrasse 12
8853 Lachen SZ
Switzerland

Tel: +41-55-642 67 67
Mail: climate@novasina.ch
Web: novasina.com

Version 01

Contents

1. Introduction 3
1.1 Scope of application 3
1.2 General 3
1.3 Safety instructions 3
2. Product description 4
2.1 Technical data nLink+ IP RL 4
2.1.1 Dimensions & Schematics 5
2.2 Technical data nLink+ DI RL 6
2.2.1 Dimensions & Schematics 7
2.3 Technical data nLink+ EC RL 8
2.3.1 Dimensions & Schematics 9
2.4 Technical data nLink+ IP RL DP (differential pressure sensor) 10
2.4.1 Dimensions & Schematics 11
2.5 Technical data nLink+ DI RL DP (differential pressure sensor) 12
2.5.1 Dimensions & Schematics 13
2.6 Technical data nLink+ EC RL DP (differential pressure sensor) 14
2.6.1 Dimensions & Schematics 15
2.7 Wiring diagram 15
2.8 Electrical installation 16
2.9 Tube connections 16
3. Initial operation 17
3.1 Display functions 17
4. Windows PC software installation 18
5. Configuration with nSoft-ACT-T 19
5.1 Startup 19
5.2 Main screen 20
5.3 Configuration procedure 21
5.4 New configuration 21
5.5 Configuration relay outputs 22
5.6 Channel configuration 23
5.7 Manual values 24
5.8 Sensor calibration 25
5.9 Update required 26
6. Calibration / Verification of measuring values 27
6.1 Sensor cables and configuration set 27
6.2 Accessories nSens HT 28

1. Introduction

1.1 Scope of application

This manual applies to all nLink+ transmitter systems with firmware version V01.00 or higher.

1.2 General

The nLink+ Transmitter has been designed for fixed mounting, either directly at or near the measuring location (IP/DI version) or in the electrical cabinet (EC version = electrical cabinet).
All nSens probes are compatible, either directly on the housing (IP/DI version) or by the 3-wire nSens cable or the nSens extension cable.
Configuration is possible via the built-in USB-C connection using a Windows PC.



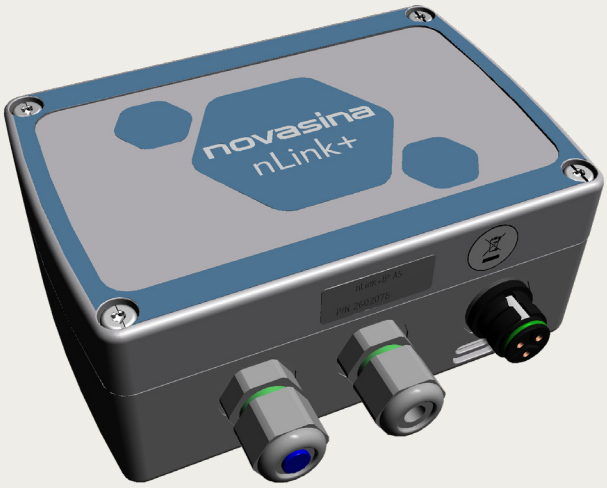
1.3 Safety instructions

This instrument has left the factory in a faultless condition. Unauthorised modifications are not permitted under the terms of 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.
- Installation must only be carried out by qualified personnel (electricians).
- The instrument may only be operated under the specified operating conditions.
- Additional safety precautions should be implemented to prevent faults that could result in property damage or personal injury. In case of any faults, the defined operating conditions have to be observed (e.g. limit switch etc.).
- The instrument is not suitable for installation in potentially explosive atmospheres.
- Installation must be carried out in accordance with local electrical installation regulations and this operating manual.
- The instrument contains ESD-sensitive parts. Please follow the indicated safety measures.
- Use only original Novasina accessories and spare parts.
- No modifications may be made to the instrument without prior written approval from Novasina.

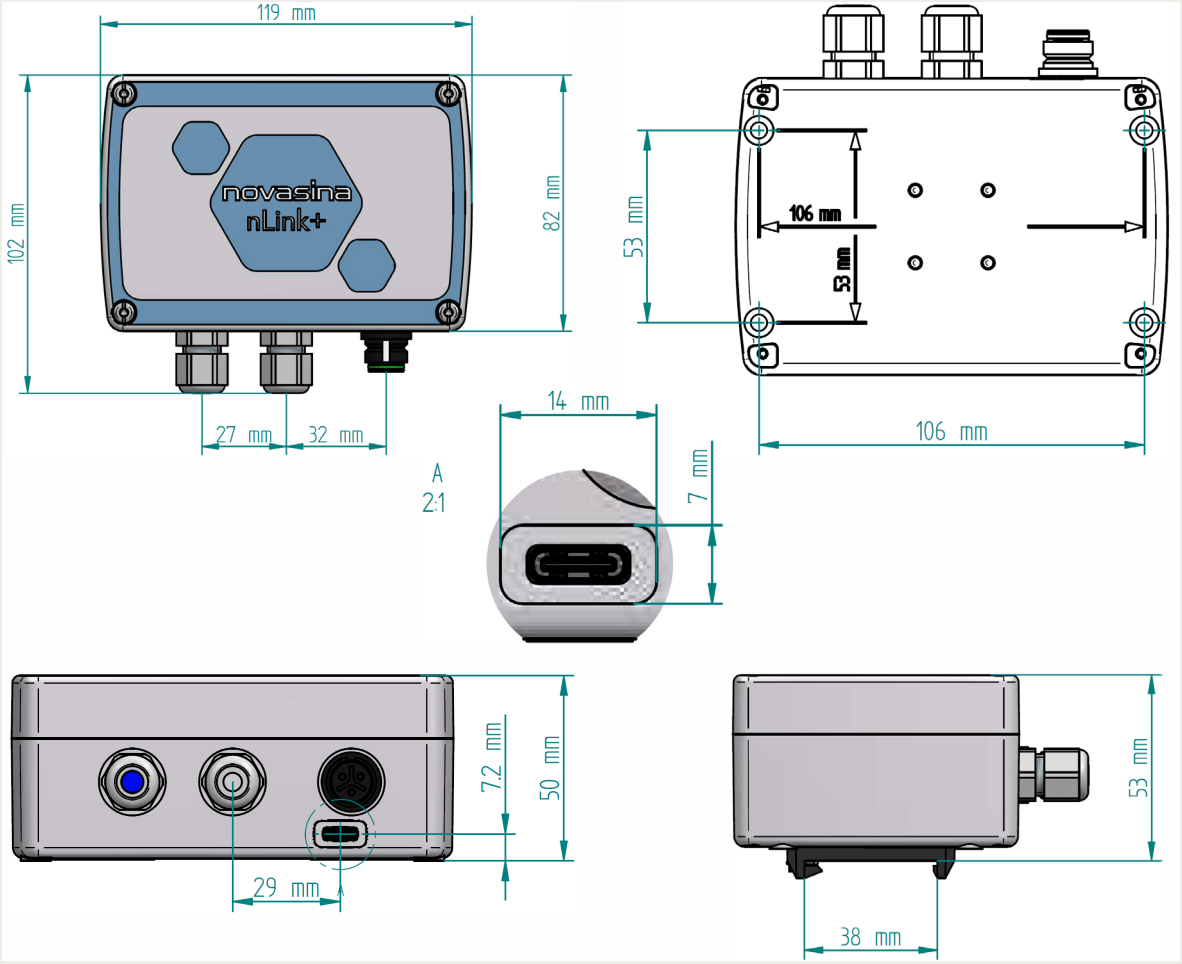
2. Product description

2.1 Technical data nLink+ IP RL

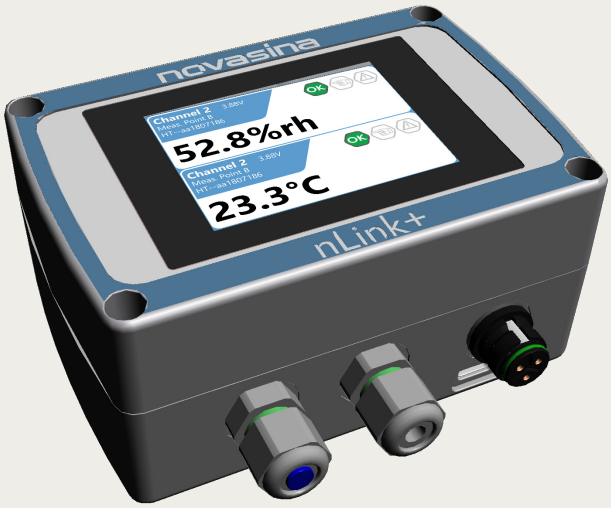


Description	nLink+ IP RL
Item number	2602274
Power supply	Rated voltage: 24 V AC / DC; Permissible voltage range: 5 to 48 V DC / 24 V AC
Power consumption	<0.5 W
Output	2 configurable relay outputs Relay performance: Max. power consumption 60 W Max. voltage 50 V Max. current 5 A
Housing material	PC/ABS
Protection class	IP65
Soldering material	lead-free (RoHS compliant)
Working temp.	0 to 50 °C
Storage temp.	-10 to 60 °C (non-condensing)
Compatibility	Compatible with all nSens-HT V2.14 and later or nSens-dp
CE/EMC	Safety: EN 61010-1:2020 EMC: IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011, EN IEC 61000-6-3:2021 IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61326-1:2012, EN 61326-1:2013 IEC 61326-1:2020, EN 61326-1:2021

2.1.1 Dimensions & Schematics

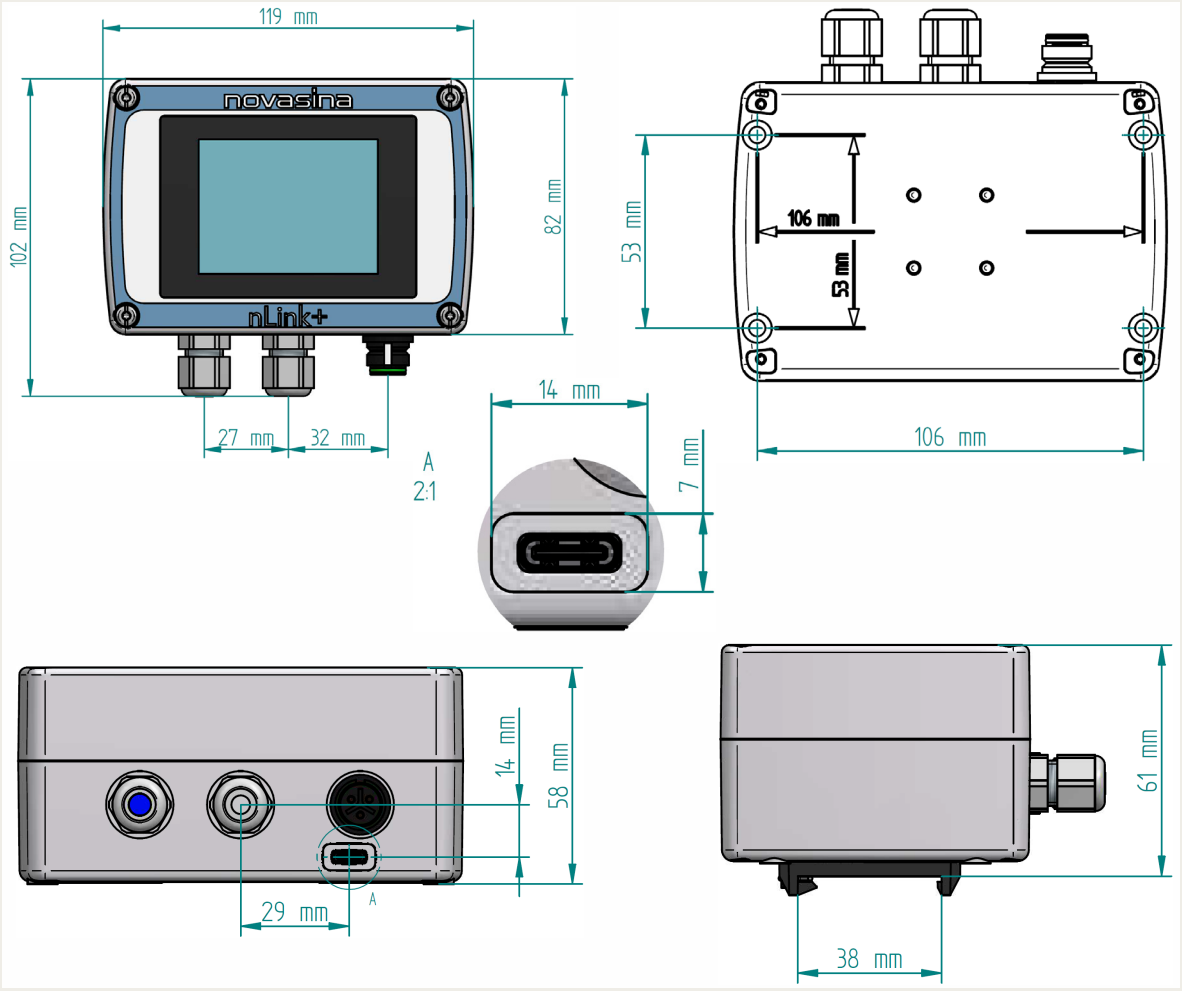


2.2 Technical data nLink+ DI RL

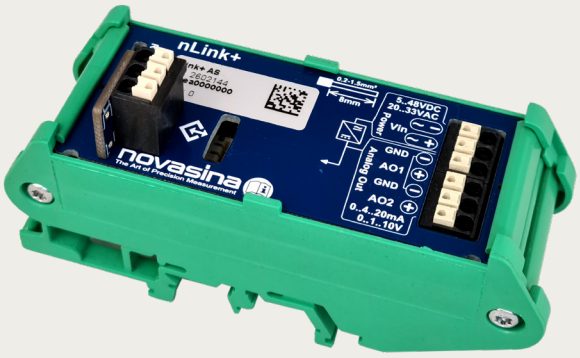


Description	nLink+ DI RL
Item number	TBD
Power supply	Rated voltage: 24 V AC / DC; Permissible voltage range: 5 to 48 V DC / 24 V AC
Power consumption	<0.5 W
Display	2.8-inch LCD touchscreen
Output	2 configurable relay outputs Relay performance: Max. power consumption 60 W Max. voltage 50 V Max. current 5 A
Housing material	PC/ABS
Protection class	IP54
Soldering material	lead-free (RoHS compliant)
Working temp.	0 to 50 °C
Storage temp.	-10 to 60 °C (non-condensing)
Compatibility	Compatible with all nSens-HT V2.14 and later or nSens-dp
CE/EMC	Safety: EN 61010-1:2020 EMC: IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011, EN IEC 61000-6-3:2021 IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61326-1:2012, EN 61326-1:2013 IEC 61326-1:2020, EN 61326-1:2021

2.2.1 Dimensions & Schematics

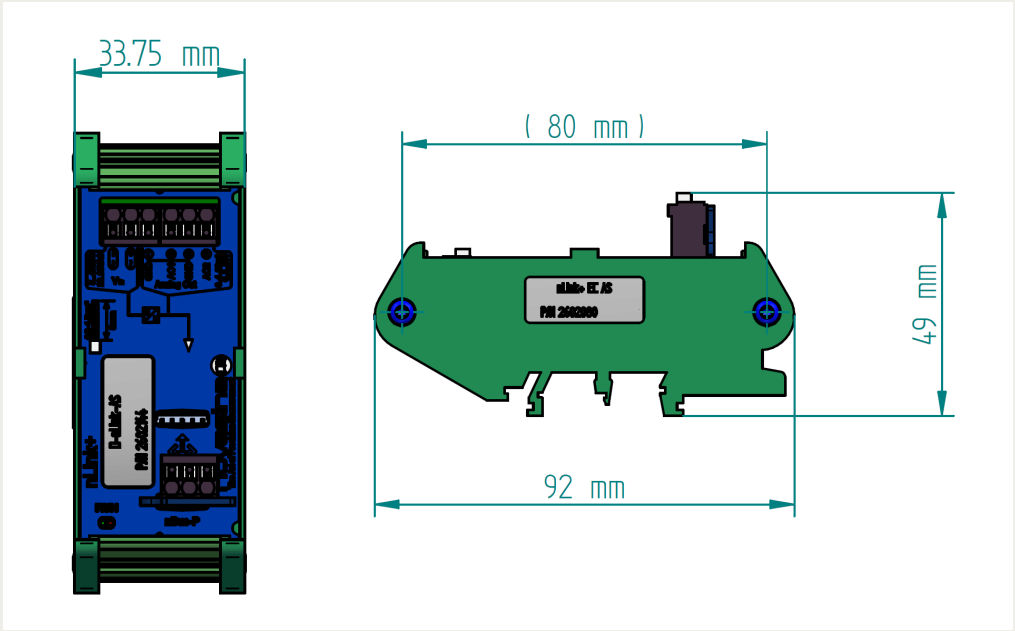


2.3 Technical data nLink+ EC RL

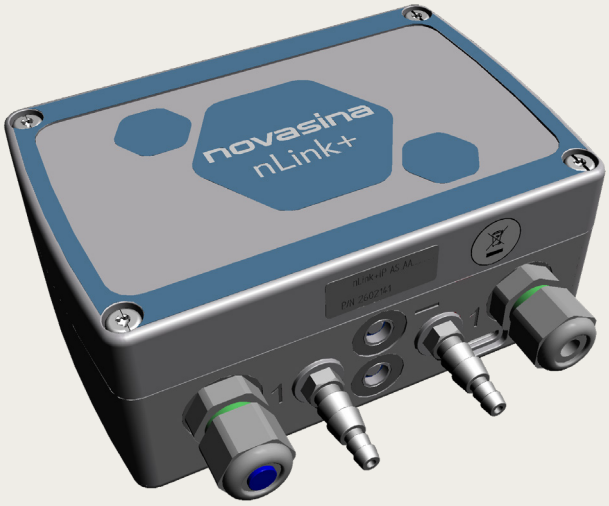


Description	nLink+ EC RL
Item number	2602281
Power supply	Rated voltage: 24 V AC / DC; Permissible voltage range: 5 to 48 V DC / 24 V AC
Power consumption	<0.5 W
Status LED	LED for power On, LED for nSens connected
Output	2 configurable relay outputs Relay performance: Max. power consumption 60 W Max. voltage 50 V Max. current 5 A
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 temp.	-10 to 60 °C (non-condensing)
Compatibility	Compatible with all nSens-HT V2.14 and later or nSens-dp
CE/EMC	Safety: EN 61010-1:2020 EMC: IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011, EN IEC 61000-6-3:2021 IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61326-1:2012, EN 61326-1:2013 IEC 61326-1:2020, EN 61326-1:2021

2.3.1 Dimensions & Schematics

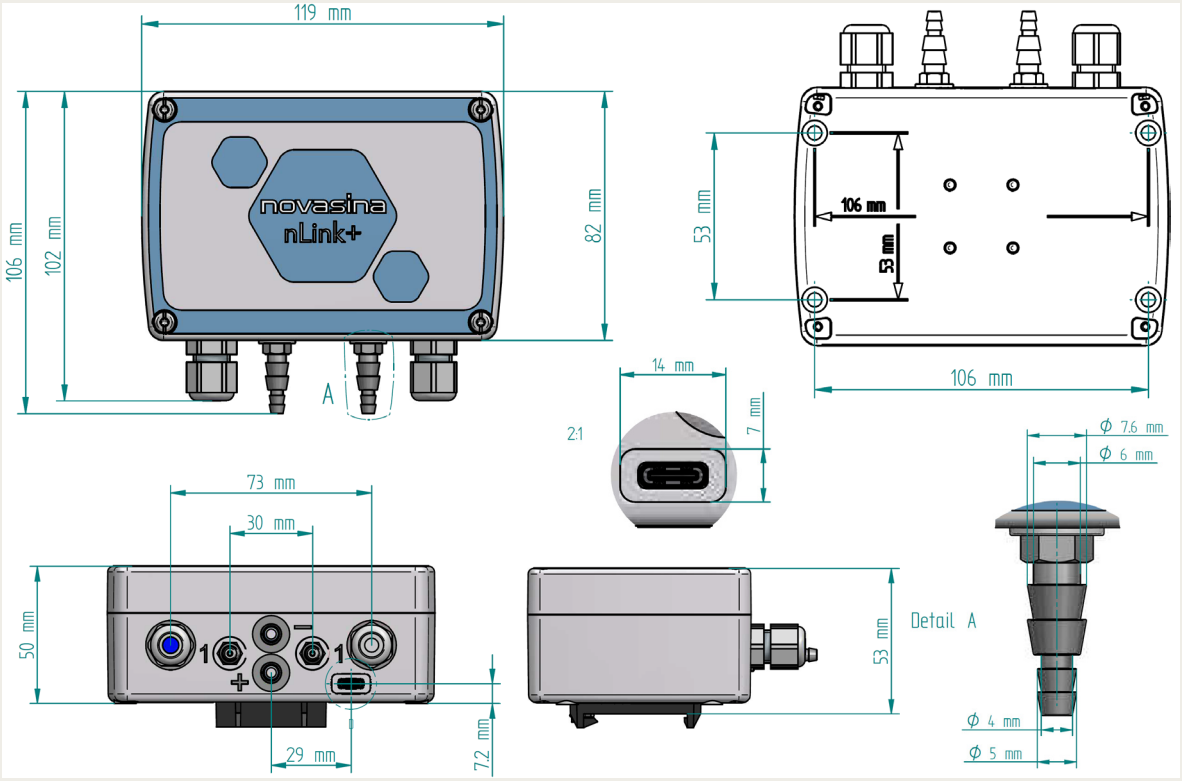


2.4 Technical data nLink+ IP RL DP (differential pressure sensor)

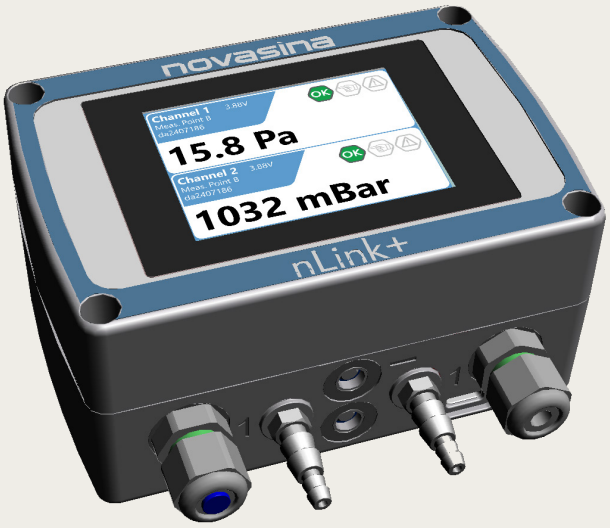


nLink+ IP RL	A / AA	B / BB	C / CC
Item number	2602275 / 2602280	2602276 / TBD	TBD / TBD
Measurement range	-25 to +25 Pa	-250 to +250 Pa	-5000 to +5000 Pa
Accuracy at 20 °C	±0.15 Pa	Range ±50 Pa: ±0.20 Pa Range ±100 Pa: ±0.25 Pa Range ±250 Pa: ±0.50 Pa	±1.0 % F.S.
Temperature effect	Max. ±0.10 Pa	Max. ±0.10 Pa	Max. ±0.20 Pa
Max. permissible overpressure	2 bar (burst pressure 4 bar)		0.1 bar (burst pressure 0.3 bar)
Flow rate	<200 µl/min		None
Max. resolution	0.1 Pa		
Long-term stability	±0.05 % FSS (typ.)		
Ambient pressure: range	700 – 1260 hPa		
Ambient pressure: accuracy	±0.5 hPa		
Power supply	Rated voltage: 24 V AC / DC; Permissible voltage range: 5 to 48 V DC / 24 V AC		
Power consumption	<0.5 W		
Output	2 configurable relay outputs Relay performance: Max. power consumption 60 W Max. voltage 50 V Max. current 5 A		
Housing material	PC/ABS		
Protection class	IP64		
Soldering material	lead-free (RoHS compliant)		
Working temp.	0 to 50 °C		
Storage temp.	-10 to 60 °C (non-condensing)		
CE/EMC	Safety: EN 61010-1:2020 EMC: IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011, EN IEC 61000-6-3:2021 IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61326-1:2012, EN 61326-1:2013 IEC 61326-1:2020, EN 61326-1:2021		

2.4.1 Dimensions & Schematics

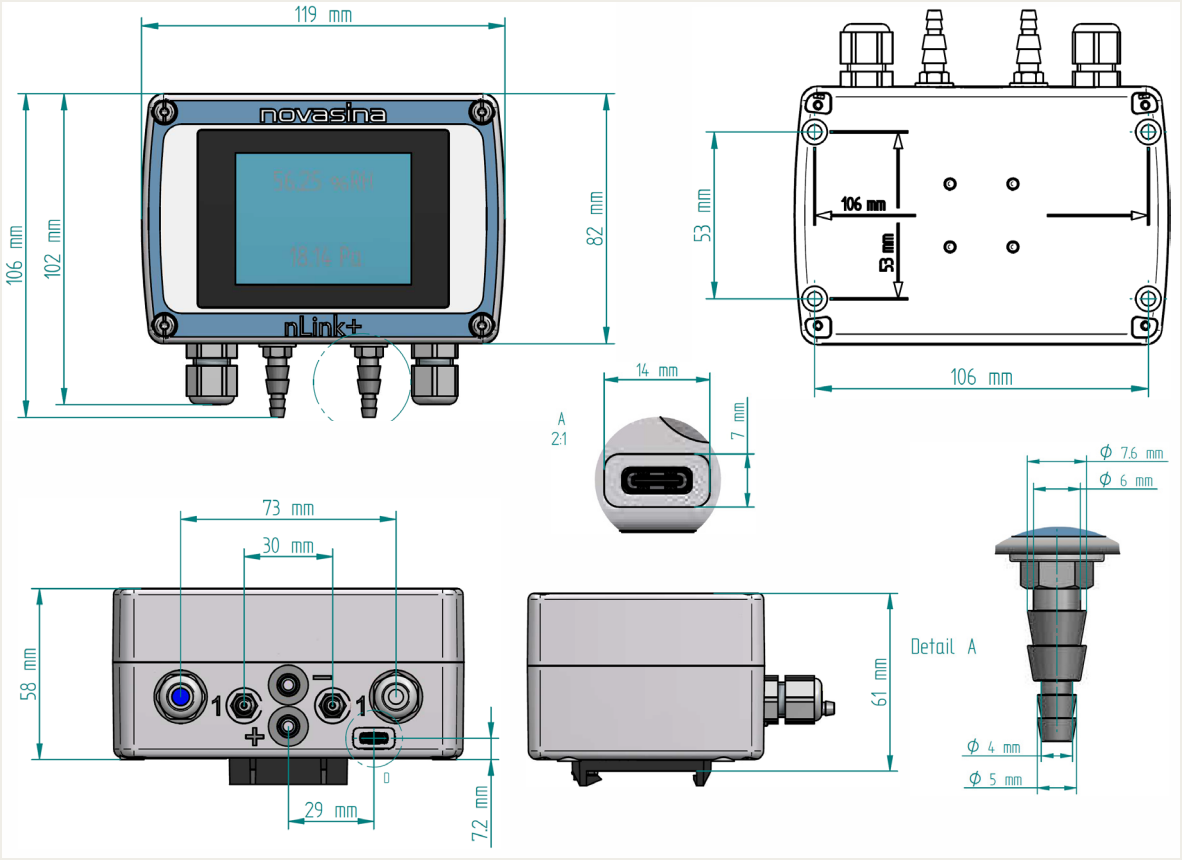


2.5 Technical data nLink+ DI RL DP (differential pressure sensor)

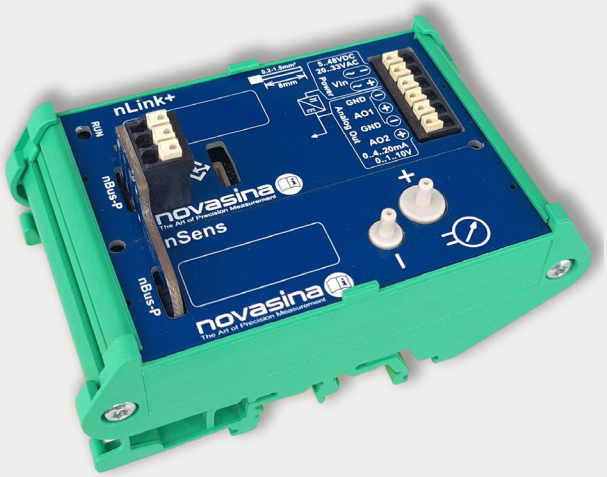


nLink+ DI RL	A / AA	B / BB	C / CC
Item number	2602277 / TBD	2602278 / TBD	2602778 / TBD
Measurement range	-25 to +25 Pa	-250 to +250 Pa	-5000 to +5000 Pa
Accuracy at 20 °C	±0.15 Pa	Range ±50 Pa: ±0.20 Pa Range ±100 Pa: ±0.25 Pa Range ±250 Pa: ±0.50 Pa	±1.0 % F.S.
Temperature effect	Max. ±0.10 Pa	Max. ±0.10 Pa	Max. ±0.20 Pa
Max. permissible overpressure	2 bar (burst pressure 4 bar)		0.1 bar (burst pressure 0.3 bar)
Flow rate	<200 µl/min		None
Max. resolution	0.1 Pa		
Long-term stability	±0.05 % FSS (typ.)		
Ambient pressure: range	700 – 1260 hPa		
Ambient pressure: accuracy	±0.5 hPa		
Power supply	Rated voltage: 24 V AC / DC; Permissible voltage range: 5 to 48 V DC / 24 V AC		
Power consumption	<0.5 W		
Display	2.8-inch LCD touchscreen		
Output	2 configurable relay outputs Relay performance: Max. power consumption 60 W Max. voltage 50 V Max. current 5 A		
Housing material	PC/ABS		
Protection class	IP54		
Soldering material	lead-free (RoHS compliant)		
Working temp.	0 to 50 °C		
Storage temp.	-10 to 60 °C (non-condensing)		
CE/EMC	Safety: EN 61010-1:2020 EMC: IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011, EN IEC 61000-6-3:2021 IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61326-1:2012, EN 61326-1:2013 IEC 61326-1:2020, EN 61326-1:2021		

2.5.1 Dimensions & Schematics

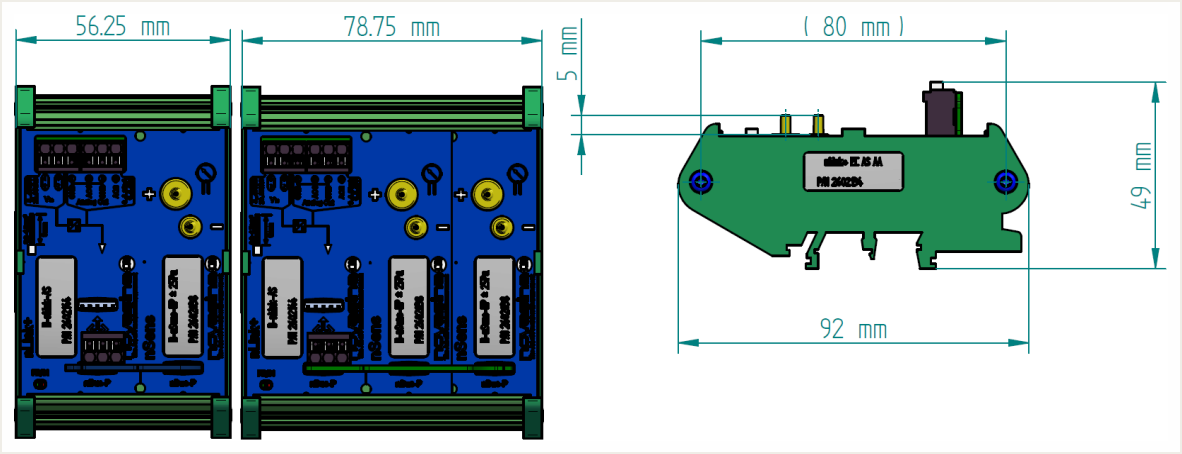


2.6 Technical data nLink+ EC RL DP (differential pressure sensor)

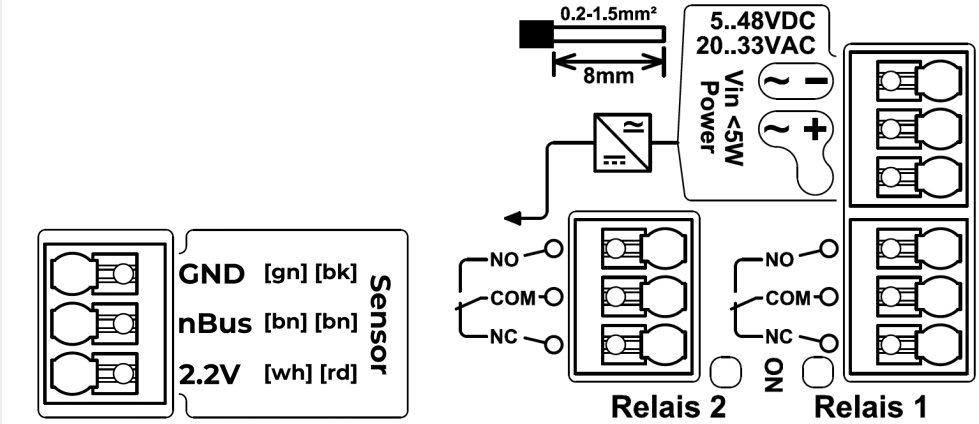


nLink+ EC RL	A / AA	B / BB	C / CC
Item number	2602595 / TBD	TBD / TBD	TBD / TBD
Measurement range	-25 to +25 Pa	-250 to +250 Pa	-5000 to +5000 Pa
Accuracy at 20 °C	±0.15 Pa	Range ±50 Pa: ±0.20 Pa Range ±100 Pa: ±0.25 Pa Range ±250 Pa: ±0.50 Pa	±1.0 % F.S.
Temperature effect	Max. ±0.10 Pa	Max. ±0.10 Pa	Max. ±0.20 Pa
Max. permissible overpressure	2 bar (burst pressure 4 bar)		0.1 bar (burst pressure 0.3 bar)
Flow rate	<200 µl/min		None
Max. resolution	0.1 Pa		
Long-term stability	±0.05 % FSS (typ.)		
Ambient pressure: range	700 – 1260 hPa		
Ambient pressure: accuracy	±0.5 hPa		
Power supply	Rated voltage: 24 V AC / DC; Permissible voltage range: 5 to 48 V DC / 24 V AC		
Power consumption	<0.5 W		
Status LED	LED for power On, LED for nSens connected		
Output	2 configurable relay outputs Relay performance: Max. power consumption 60 W Max. voltage 50 V Max. current 5 A		
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 temp.	-10 to 60 °C (non-condensing)		
CE/EMC	Safety: EN 61010-1:2020 EMC: IEC 61000-6-3:2020, EN 61000-6-3:2007+A1:2011, EN IEC 61000-6-3:2021 IEC 61000-6-2:2016, EN 61000-6-2:2019 IEC 61326-1:2012, EN 61326-1:2013 IEC 61326-1:2020, EN 61326-1:2021		

2.6.1 Dimensions & Schematics



2.7 Wiring diagram



2.8 Electrical installation

Clamping range	0.13-1.5 mm² (Push-in Spring clip)	
Wires	w. plastic collar ferrule DIN 46228/4: w. wire end ferrule DIN 46228/1: Solid, min. H05(07) V-U Wire connection cross section AWG 28-14	0,25-0.75 mm² 0,25-1.50 mm² 0.2-1.50 mm²

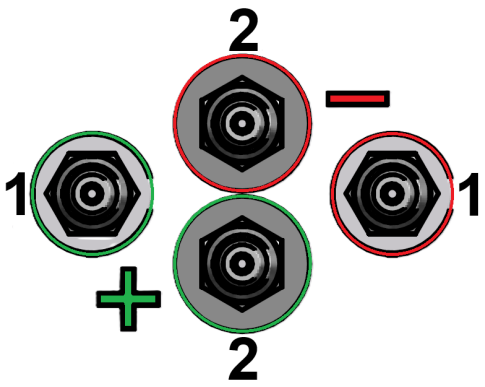
Remark:
Cable specifications depend on the installation and have to be defined by the designer or installer. Heavy machinery and other instrumentation should not share the same power supply wiring. Use noise filters and surge protectors if required.

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

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

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

2.9 Tube connections



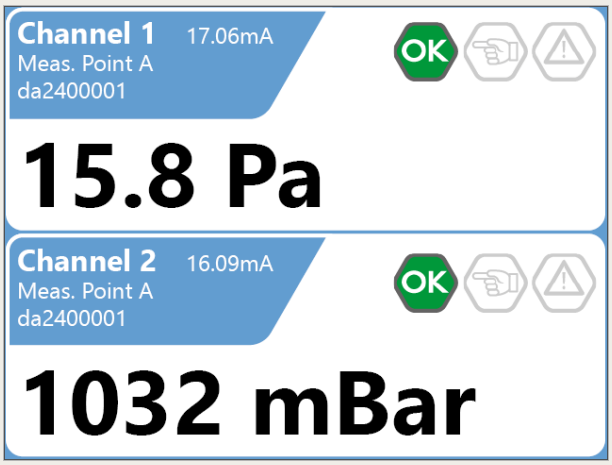
To obtain a positive reading, connect the higher pressure to the positive (+) inlet.
The tube connections for Sensor 1 and Sensor 2 must be connected as shown in the illustration.

3. Initial operation

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

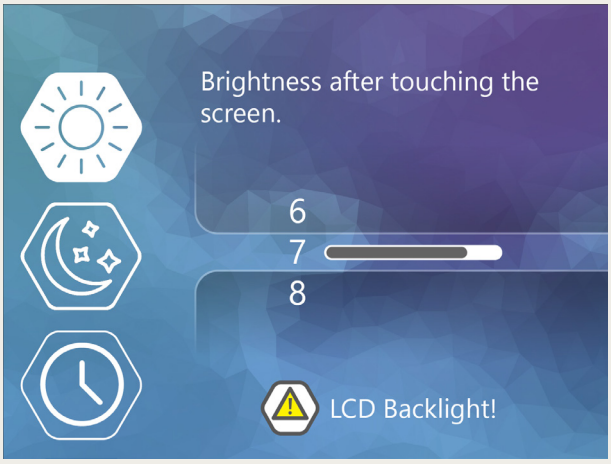
Important remark:
The power supply fuse protection must be verified according to the local regulation. Voltages over 48 V DC / 24 V AC may cause severe damage to the device!

3.1 Display functions



Status indicator	Operating status
OK	OK
	Measurement values manually overridden
	No communication with the sensor

To access the menu, tap on the display. Only the display backlight settings can be adjusted in this menu. Other configuration settings cannot be changed.



Button	Description
	The brightness, which appears by tapping the display, can be set from 1 to 9.
	The brightness after automatic dimming can be set to a value between 1 and 9.
	Time until automatic dimming

Important remark:
The lifetime of the display depends on the set brightness and time.
The higher the brightness and the longer the time is set, the shorter the lifetime of the display!

4. 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 must meet the following minimum requirements:

Supported operating systems:
- Windows XP with SP3 or higher (32-bit and 64-bit)
- Administrator rights

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

The software can be obtained on the website www.novasina.ch/climate-universe or by sending an email to climate@novasina.ch.
The software is license-free (Freeware). A commercially available USB-C cable can be used for configuration.

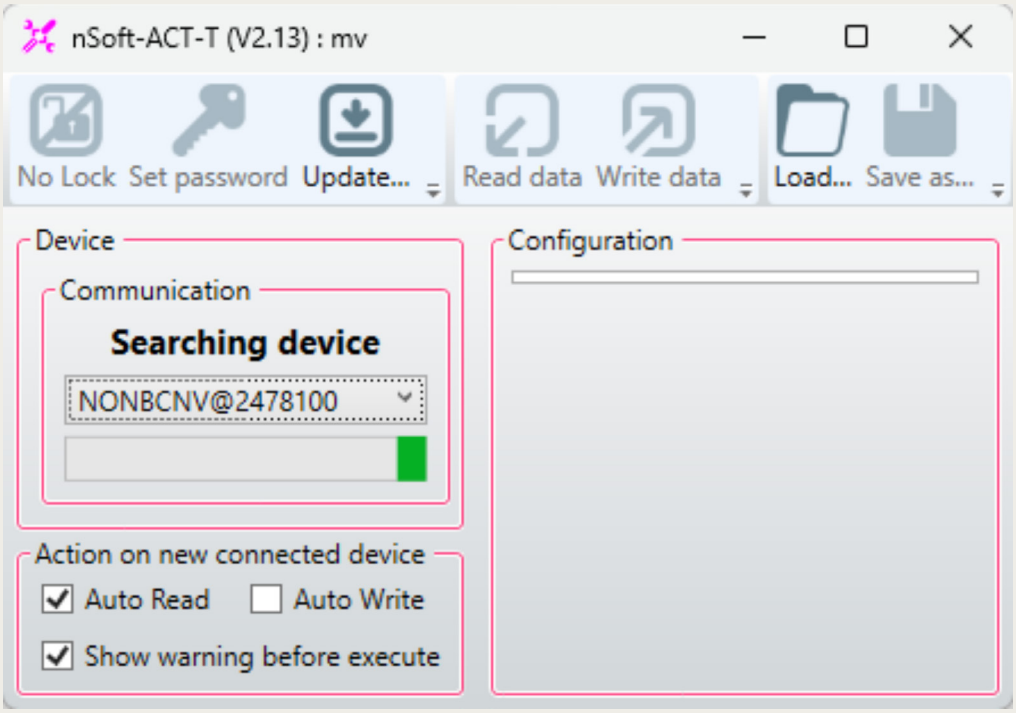
Important remark:
The USB-C interface is only available on the IP and DI versions. For EC versions, configuration must be carried out using the Novasina configuration cable (see section 6.1).

5. Configuration with nSoft-ACT-T

Connect the nLink+ to your PC using a USB-C cable.
After installation, open the software by clicking the icon.

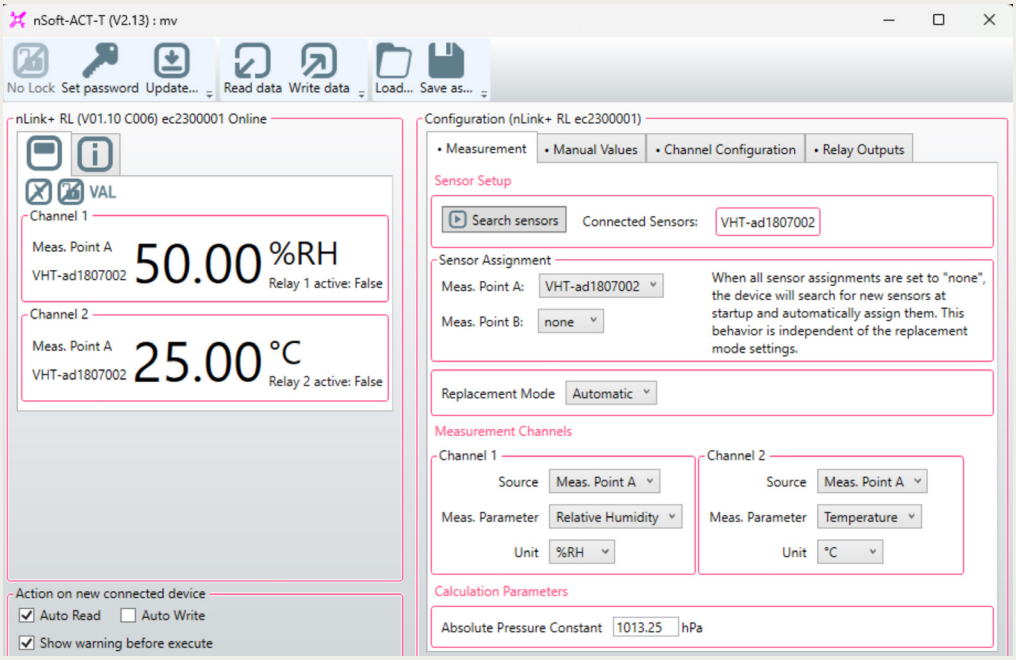
The nLink+ does not require additional power supply. The USB connector is sufficient for configuration and sensor connection. The relay outputs are only operational when an external power supply is connected.

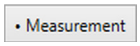
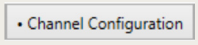
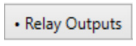
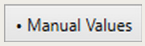
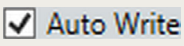
5.1 Startup



Button	Description
NONBCNV@2478100	Connect the nLink+ to your PC using a USB-C cable. Choose the adapter in the dropdown menu.

5.2 Main screen



Button	Description
	Enable or disable password protection
	Set Password: The password is stored directly on the transmitter.
	Read configuration from the nLink+ transmitter.
	Write Data: Store the configuration on the nLink+ transmitter.
	Load a configuration file from a directory on the computer.
	Save the current configuration to a directory on the computer.
	Search connected sensors, choose channels and parameters.
	Set relay functions for both channels.
	Configuration of relay outputs.
	Set manual values for simulation and loop checks.
	Transmitter configuration is automatically transferred to the software and displayed. Prepared configuration in the software is overwritten.
	The configuration prepared on the software is automatically written to the nLink+. This allows multiple nLink+ devices to be configured quickly with the same settings.

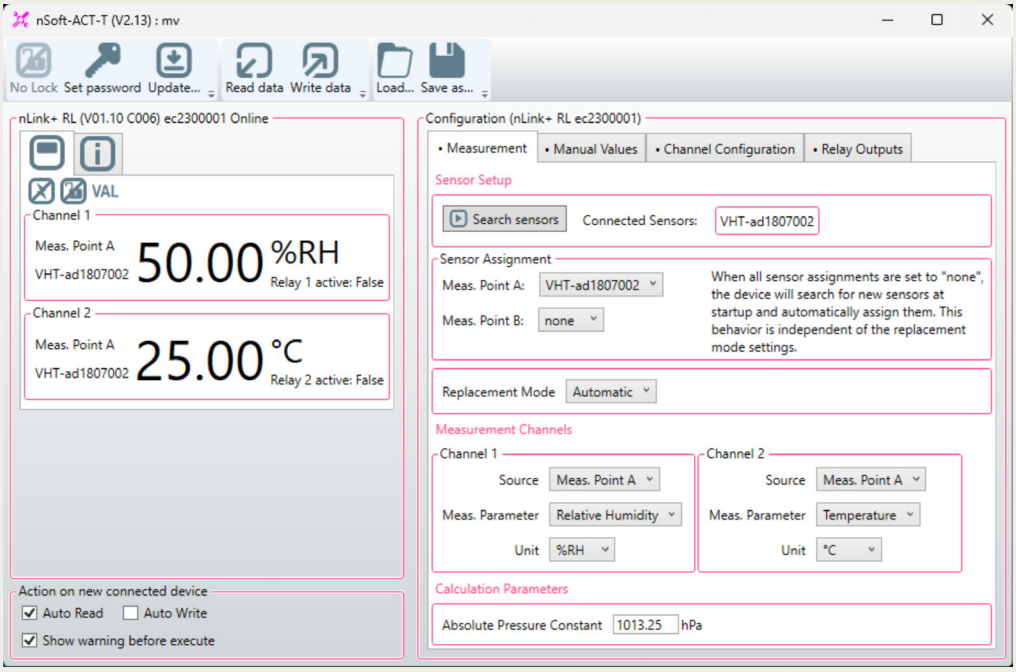
Button	Description
Show warning before execute	Show warning before execute: If enabled, a warning message will appear before reading or writing data. Deactivate if necessary.
	Display of real-time measurement values
	Details from the nLink+ and the sensor, such as serial number, firmware version, configuration date, etc.

5.3 Configuration procedure

1. Select the connected adapter if it is not automatically recognised.
2. Configure sensor, measuring point and channels
3. Configure settings for relay outputs

After configuration, select “Write Data” to store the settings on the transmitter.

5.4 New configuration

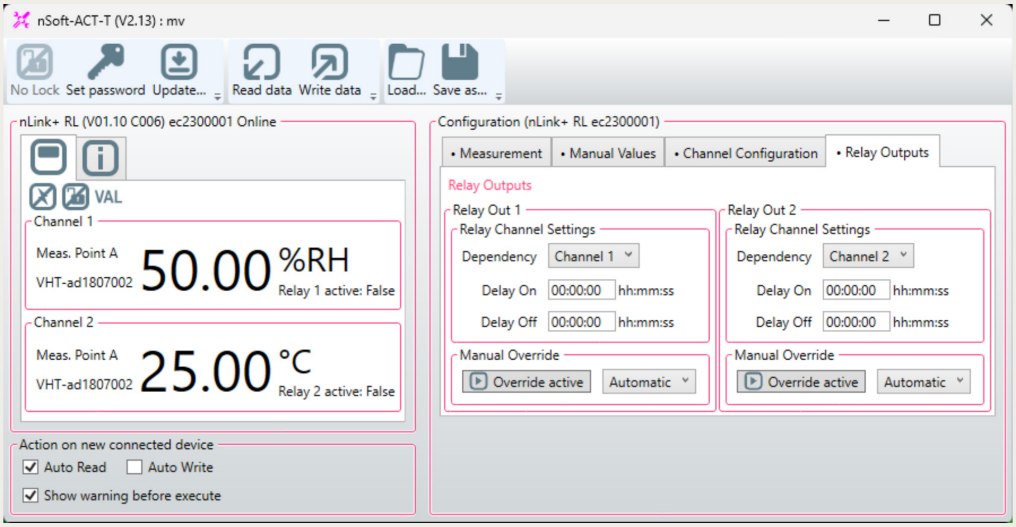


Button	Description
Search sensors	Click on “Search Sensor”. The connected nSens probe is detected and displayed along with its serial number.
VHT-ad1807002	The identified nSens must now be assigned to measuring points. When an nSens is connected, it is automatically assigned to measurement point A.
Automatic	**Replacement mode automatic:** When an nSens sensor is replaced, the nLink+ automatically detects the new sensor and assigns it to the same measurement point. The configuration remains unchanged. **Replacement mode manual:** A new nSens sensor must be reconfigured.

Button	Description
Meas. Point A	Select the measurement point to be displayed in the current channel.
Relative Humidity	Select the measurement parameter to be displayed in the current channel.
%RH	Select the unit of measurement to be displayed in the current channel.

Remark:
The text displayed below the unit of each real-time measurement indicates the current relay output status for the corresponding channel.
This function is active only when the power supply is connected.

5.5 Configuration relay outputs

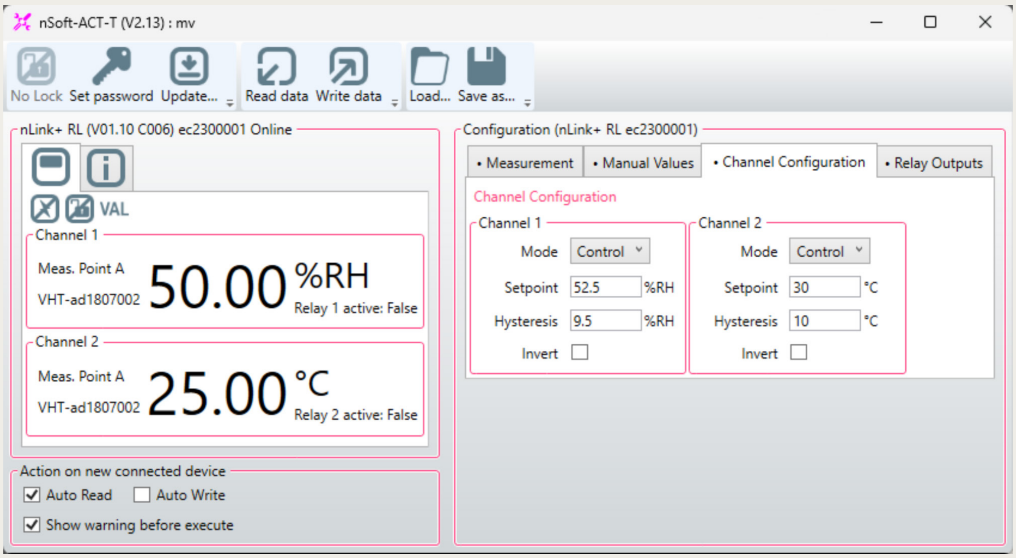


Button	Description
Channel 1	Select the criteria to be fulfilled by the relay output. The output is active if the conditions of the control channel are met.
Delay Off	Set the off-delay time for the relays.
Delay On	Set the on-delay time for the relays.
Automatic	Select the required manual override mode: • **Off:** switches the relay off until the next system restart. • **On:** switches the relay on until the next system restart. • **On 10 min:** switches the relay on for 10 minutes. Reset to normal operation then takes place automatically. • **Off 10 min:** switches the relay off for 10 minutes. Reset to normal operation then takes place automatically. • **Automatic:** deactivates the manual override before the 10 minutes have elapsed or without restarting the system. The appliance returns to normal operation.

Button	Description
Override active	Click “Override active” to apply the manual override to the device.
	Store configuration with “Write Data”.

Remark:
The configuration will remain active as long as no other nLink+ is connected and the “Read Data” button is not pressed. Enable “Auto Write” and then connect another transmitter. The preset settings will now be automatically transferred to the device

5.6 Channel configuration

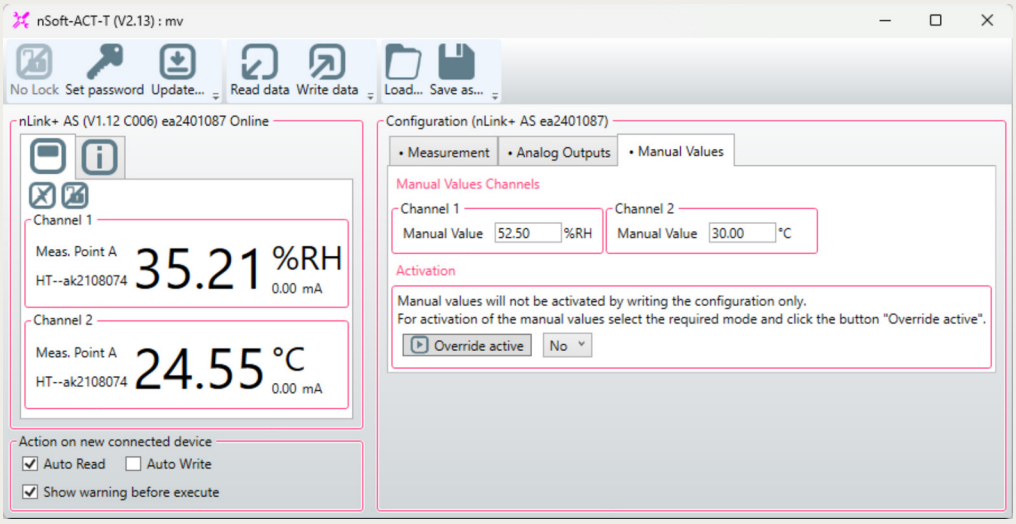


Button	Description
Control	Select the relay mode for each channel: Control or Range. The output is active if the conditions of the control channel are met.
	Store configuration with “Write Data”.

Control:
The switching threshold can be set with “Setpoint”.
“Hysteresis” defines the distance between switch-on and switch-off and is centered via the “Setpoint”.
Example: “Setpoint” = 25 °C, “Hysteresis” = 1.0 °C. The upper switching threshold is therefore 25.5 °C, the lower threshold 24.5 °C.
“Invert”: With “No”, the output drops out if the switching threshold + ½ hysteresis is exceeded.
Example: Control of a heating system.
With “Yes”, the output is activated when the switching threshold + ½ hysteresis is exceeded.
Example: Control of a chiller.

Range:
“Threshold Low” and “Threshold High” define the limits of the permissible range.
“Hysteresis” defines the interval between setting and resetting the output. The output is set when the limit value is reached, but is only reset when the value has moved away from the switching threshold by at least “Hysteresis”.
“Invert”: With “No”, the output is deactivated when the value falls below “Threshold Low” or exceeds “Threshold High”. Ideal for alarms.
With “Yes”, the output is deactivated if the value is between “Threshold Low” and “Threshold High”.

5.7 Manual values



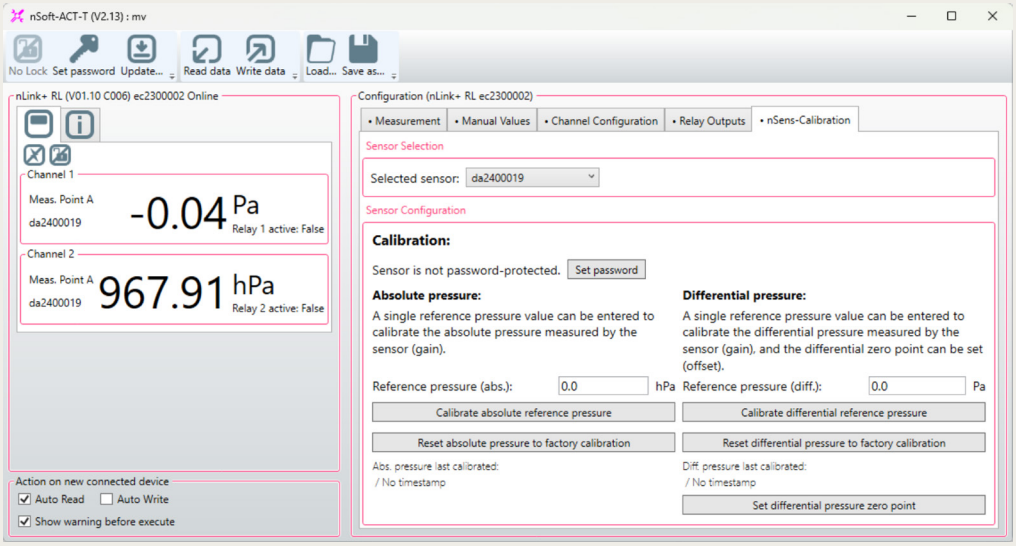
Button	Description
Manual Value	Set fixed values for the simulation and loop checks for each channel.
No	Select the override mode: • “Yes” permanently enabled • “No” permanently disabled • “Yes, for 10 minutes” temporarily enabled for 10 minutes
Override active	Click “Overwrite active” to save the manual values to the device.

Important remark:
As long as manual values are active, no sensor values will be displayed.

Deactivate override after completing the checks to receive real-time data from the sensor again.

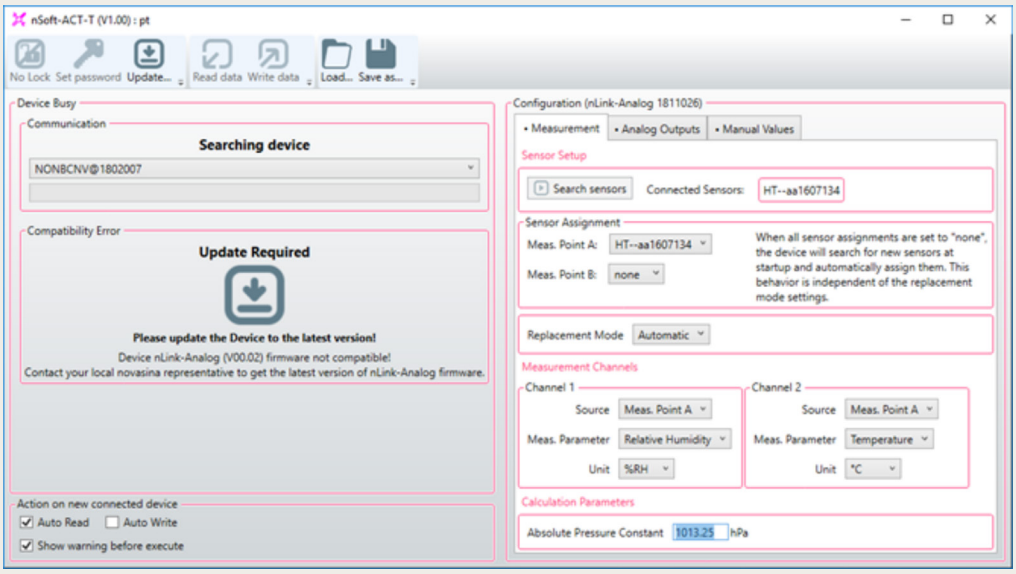
5.8 Sensor calibration

Important remark:
This tab is only visible when a pressure sensor is connected.



Button	Description
da2400019	Select the sensor to be calibrated.
Set password	The calibration can be password-protected.
Reference pressure (abs.): Reference pressure (diff.):	Set the reference value for the pressure to be calibrated (absolute or differential pressure).
Calibrate absolute reference pressure Calibrate differential reference pressure	Press “Calibrate absolute/differential reference pressure” to write the data to the sensor.
Set differential pressure zero point	Zero-point calibration for differential pressure sensors
Reset differential pressure to factory calibration Reset absolute pressure to factory calibration	Reset to factory calibration

5.9 Update required



If the firmware version of the nLink+ is not compatible with the installed nSoft-ACT-T, the “Update required” message is displayed.

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

6. Calibration / Verification of measuring values



For humidity calibration and verification, Novasina humidity standards are recommended. These humidity generators are easy to use and can be reused multiple times.

For verification across the entire 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. To allow the standards to generate accurate and stable 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
Connects nSens with nLink+	Extension cable between any connector and nSens.	nlink-USB & CA
		
2601080 nSens-cable 5 m 2601079 nSens-cable 10 m 2601078 nSens-cable 30 m 2601225 nSens-cable 60 m 2601226 nSens-cable 100 m	2601201 nSens Extension 2 m 2601136 nSens Extension 5 m 2601986 nSens Extension 10 m 2601987 nSens Extension 30 m	2601818 nlink-USB-CA3 (complete set)

6.2 Accessories nSens HT



Humidity generators SAL-SC
11/33/53/75/90/97

- Ready to use and reusable multiple times when stored correctly
- Shelf life 5 years (with correct storage)
- Moisture standards based on saturated salt solutions in plastic cylinders, with moisture-permeable membrane



SAL-SC 11 1110885	Sensor check 11 %RH
SAL-SC 33 1110855	Sensor check 33 %RH
SAL-SC 53 1110857	Sensor check 53 %RH
SAL-SC 75 1110859	Sensor check 75 %RH
SAL-SC 90 1110896	Sensor check 90 %RH
SAL-SC 97 2518966	Sensor check 97 %RH
SAL-SC Set 1117847	Case set with SAL-SC (11/33/53/75/90)

According to the Greenspan Report 1977, the reproducibility amounts to typically ±0.3 %RH.

Humidity values in the temperature range 15-30 °C:

- 11.3-11.3 %RH
- 33.3-32.4 %RH
- 55.9-51.4 %RH
- 75.6-75.1 %RH
- 90.9-89.9 %RH
- 97.9-97.0 %RH



Adapter SAL-SC for nSens probes
2601143

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



Thermal insulation box for SAL-SC
1111302

Polystyrene insulation box for temperature stabilization of SAL-SC check during adjustment. Box consisting of two halves, which are attached around the SAL-SC cylinder.

Technical information and other information subject to change without prior notice

Get in touch and learn more about your specific application and its possibilities!

climate@novasina.ch

novasina

since 1958