SEIKOM ELECTRONIC

Operating instructions **NLSW®2a**

24 V AC/DC, 230 V AC

Version 1

+49 2058 916 900 0• info@seikom-electronic.com• www.seikom-electronic.com

Contents

Contents **3**

1. SAFETY INSTRUCTIONS **4**

2. GENERAL INFORMATION **4**

2.1 Proper use 4

2.2 Operating principle 4

3. TECHNICAL DATA **5**

4. INSTALLATION AND COMMISSIONING **6**

4.1 Installation conditions 6

4.2 Electrical connections 7

4.3 Setting the switching point 7

4.4 Instructions for commissioning 7

5. MAINTENANCE INSTRUCTIONS **8**

6. TROUBLESHOOTING **8**

7. EU DECLARATION OF CONFORMITY **10**

1. SAFETY INSTRUCTIONS

Read the product description before operating the unit. Make sure that the product is fully suitable for your application.

Improper or unintended use can lead to malfunctions of the unit or undesirable effects on your application. For this reason, assembly, electrical connection, commissioning, operation and maintenance of the unit may only be carried out by trained personnel.

2. GENERAL INFORMATION

The calorimetric flow monitors of the NLSW®2a series are an economical alternative to conventional pressure transmitters. Installation is quick and easy via a flange mounting (for duct installation) or via a threaded connection. The switching point can be selected via the integrated potentiometer. When there is flow, the switching output is activated (yellow LED on the unit lights up).

2.1 Proper use

The flow monitors of the NLSW®2a series are intended for monitoring gaseous media within the specified technical data. The sensor line is monitored for short circuit and wire breakage. The main areas of application are heating, ventilation and air conditioning in the field of building automation.

2.2 Operating principle

Flow monitors of the NLSW®2a series operate according to the calorimetric principle. The relay of a unit switches when the flow velocity reaches a preselected threshold value. The calorimetric measuring principle is based on a heated, temperature-sensitive resistor. The flow in the medium extracts heat from the precision resistor, the temperature of the resistor changes and thus its resistance value. This change is evaluated by the device. However, since not only the flow velocity of the medium has an influence on the amount of heat dissipated, but also its temperature, a correlation between flow and temperature must be established. This is achieved by a second, temperature-dependent precision resistor in addition to the first. The second precision resistor (temperature compensation) is not heated and only serves to measure the temperature.

Flow rate ≥ threshold value	Relay output activated	Yellow LED lights up
Flow < Threshold	Relay output not activated	Yellow LED goes out

+49 2058 916 900 0• info@seikom-electronic.com• www.seikom-electronic.com

3. TECHNICAL DATA

Type	**NLSW®2a**	
Item no.	66224	56558
Operating voltage	24 V AC/DC	230 V AC
Voltage tolerance	± 5%	
Overvoltage category	II	
Signal display voltage	Green LED	
Power consumption max.	3 VA W	4.5 VA W
Ambient temperature unit	-20 ... 50°C	
Signal output flow	Relay, 1 changeover contact	
Switching function for flow	Relay energises	
Relay output	250 V AC, 8 A, 2 kVA	
Minimum switching capacity	10 mA, 5 V DC	
Signal display for flow	Yellow LED	
Start-up delay (Z option)	Optionally available with evaluation unit NLSW®2aZ (approx. 1 min.)	
Start-up delay display	-	
Media temperature range	-20 ... 80°C	
Switching point adjustment	Adjustable via potentiometer	
Measuring range	0.5 ... 30.0 m/s	
Probe (sold separately F2, F3, F4.x, F9)	Fixed mounted	
Electrical connection	10 terminals, 2.5 mm^2	
Protection class housing	IP40	
Protection class terminals	IP20	
Pollution class	2	
Housing	Standard enclosure N45	
Housing dimensions (L x W x H)	120 mm x 45 mm x 73 mm	
Mark of conformity	Type tested by TÜV Nord according to DIN EN 61010-1:2011-07	

4. INSTALLATION AND COMMISSIONING

Installation and commissioning must be carried out by authorised and qualified personnel.

The connection to the main supply (L, N) must be made via a protected disconnector with standard fuses. Basically, the general VDE regulations must be observed (VDE 0100, VDE 0113, VDE 0160). If the potential-free contact is connected to a protective extra-low voltage, the connecting cables up to the terminal must be sufficiently insulated, otherwise the double insulation to the mains voltage side may be impaired. The current carrying capacity of the potential-free contact is limited to 8 A.

The NLSW®2a evaluation unit is designed for mounting on a profile rail (DIN EN 50022-35). If the unit is exposed to greater vibrations, mount it on vibration metal for convenience. The built-in unit according to IP20 (corresponds to VBG4) must be mounted in a housing or in the control cabinet.

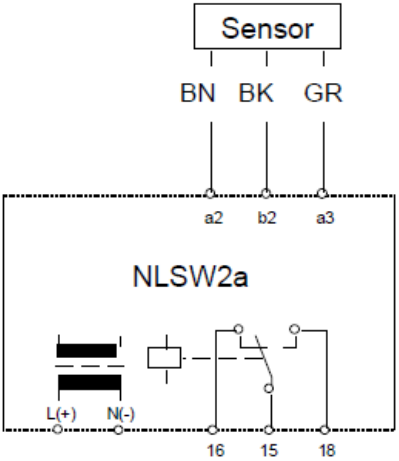
4.1 Installation conditions

To avoid malfunctions, please observe the following points:

- The tip of the sensor should be as close as possible to the centre of the duct. The through hole in the shaft of the sensor must be completely inside the duct.
- There is a small notch in the metal at the end of the sensor. This mark is intended as a mounting aid and should be placed in the direction from which the flow is coming.
- For vertical pipes, the direction of flow should be upwards in order to avoid influences from thermally rising air.
- The sensor requires at least 5 x D (inner pipe diameter) of the free inlet and 3 x D of the outlet for optimal measurement to avoid false measurements due to turbulence.
- Screw in the associated sensor (available separately) only via the hexagon of the sensor housing.
- If there are deposits or air pockets in horizontal pipes, install the sensor sideways. The sensor is independent of the installation position.
- If the sensor line is laid in a duct together with other current-carrying lines (e.g. motors or solenoid valves), we recommend shielding the sensor line (apply shield).
- Connect the sensor to the unit according to the connection diagram. Reversing the connections will lead to malfunctions and possible damage.
- To avoid malfunctions, the sensor cable must be extended with a cross-section of at least 1.5 mm^2. The maximum cable length should not exceed 50m.

+49 2058 916 900 0• info@seikom-electronic.com• www.seikom-electronic.com

4.2 Electrical connections



Colour code: BN=brown BK=black GR=grey

4.3 Setting the switching point

The relationship between flow velocity and resistance change is not linear. In the lower range (small flows) the change in resistance is very large. In the upper range, the change in resistance becomes smaller and smaller for the same flow changes. When setting the switching point, it should therefore be taken into account which change is to be monitored, as different settings entail certain disadvantages. The following requirements should be observed:

Low flow change in the high flow velocity range: The switching point must be selected very close to the measured value of the normal flow, as the change in measured value with flow change is very small. Since the temperature compensation has a certain delay compared to the actual temperature change, such a switching point setting is only possible in applications with slow temperature changes.

Small flow change in the low flow velocity range: The switching point can be selected with a larger distance to the measured value of the normal flow, as the change in measured value is large with flow change. A change in temperature does not affect the switching behaviour.

Large flow change: Here a 'yes/no statement' is usually desired (e.g. fan running or fan stopped). Therefore, such a large safety distance can be selected that neither temperature changes nor turbulences have an influence on the switching behaviour.

The switching points are set on the evaluation unit of the flow monitor.

4.4 Commissioning instructions

The following procedure is recommended when commissioning and adjusting the unit:

- Install and connect the flow controller according to the installation instructions and conditions.
- Connect suitable sensor. (F2, F3, F4.x, F9 sold separately) Please note: Reversed sensor connections lead to malfunctions and possible damage.
- Set the "Sensitivity" potentiometer to minimum sensitivity (left stop).
- Connect the mains voltage. The green LED lights up. The unit is ready for operation within a few seconds.
- The yellow LED lights up briefly and goes out again (with variant Z, with maximum start-up delay, it lights up for approx. 60 seconds until the start-up delay expires).
- Switch on the flow generator.
- Slowly turn the "Sensitivity" potentiometer clockwise towards maximum until the yellow LED lights up and the signal output switches. To avoid faulty switching with small changes in the flow rate, turn the potentiometer slightly beyond the switching point. (For the Z variant, only make these adjustments once the yellow LED has gone out).
- To check the function of the flow controller, reduce or stop the flow.
- The yellow LED goes out (output relay on the unit has dropped out)
- Readjust the setting after 2-3 minutes if necessary.

The unit is now ready for operation.

5. MAINTENANCE INSTRUCTIONS

The current sensor should be serviced at regular intervals, i.e. when used in strongly the airflow sensor is cleaned with contaminated media. The following procedure is expedient:

- Dismantle flow sensor
- Carefully soak the flow monitor in lukewarm soapy water for approx. 10 minutes (depending on the contamination).
- Carefully rinse the flow monitor with lukewarm water.
- Install flow monitor
- Commission current monitoring and carry out a new adjustment with the evaluation electronics, if necessary.)

Do not clean the sensor tip with a screwdriver, wire brush or similar. There is a risk of damage.

6. TROUBLESHOOTING

The following instructions are intended as first aid in case your flow monitor is not working properly.

Problem	Possible cause	Solution
The unit does not work.	Missing or incorrect voltage supply.	Check supply voltage and connection.

+49 2058 916 900 0• info@seikom-electronic.com• www.seikom-electronic.com

The unit does not detect airflow.	The sensor is not installed properly. Flow is outside the measuring range	Check that the sensor has been installed so that its mark is in the direction of the airflow source and close to the centre of the duct. Adjust the diameter of the pipe to increase or decrease the flow.
The unit detects a flow even if there is no flow.	Flow is also present at standstill, e.g. through ventilation flaps, through air flowing in from outside.	Set the switching point of the sensor.
The unit reacts with a delay.	The sensor tip is dirty.	Carefully clean the sensor with water.
Unit switches in the event of a rapid increase in media temperature.	The temperature gradient is outside the technical specifications.	Turn the "Sensitivity" potentiometer a little further clockwise. Set the switching point in a hot media environment.

7. EU DECLARATION OF CONFORMITY

SEIKOM Electronic GmbH & Co. KG
Gold-Zack-Straße 7
40822 Mettmann
Telefon: +49 (0) 2058 916 90 00
E-Mail: info@seikom-electronic.com

EU-Konformitätserklärung

Die EU-Konformitätserklärung gilt für folgendes Gerät:

NLSW2a

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller. Wir bestätigen die Übereinstimmung mit den grundlegenden Anforderungen der europäischen Richtlinien:

2014/30/EU (EMV-Richtlinie)
2014/35/EU (Niederspannungsrichtlinie)
2011/65/EU (Beschränkung gefährlicher Stoffe)
2015/863/EU (Ergänzung RoHS 3)

Die folgenden Standards wurden angewendet:

DIN EN IEC 63000: 2019-05
DIN EN IEC 61000-6-2: 2019-11
DIN EN 61000-6-3: 2021-03

Wülfrath, den 28. März 2023

Philipp Hein
Geschäftsführer

+49 2058 916 900 0• info@seikom-electronic.com• www.seikom-electronic.com

Growing network of local distributors available online
www.seikom-electronic.com

Our product portfolio

Flow rate	Temperature	Print
Air quality and CO_2	Zener barriers	Universal transmitter

+49 2058 916 900 0
info@seikom-electronic.com
www.seikom-electronic.com
SEIKOM-Electronic GmbH & Co KG
Gold-Zack-Strasse 7
40822 Mettmann

SEIKOM ELECTRONIC