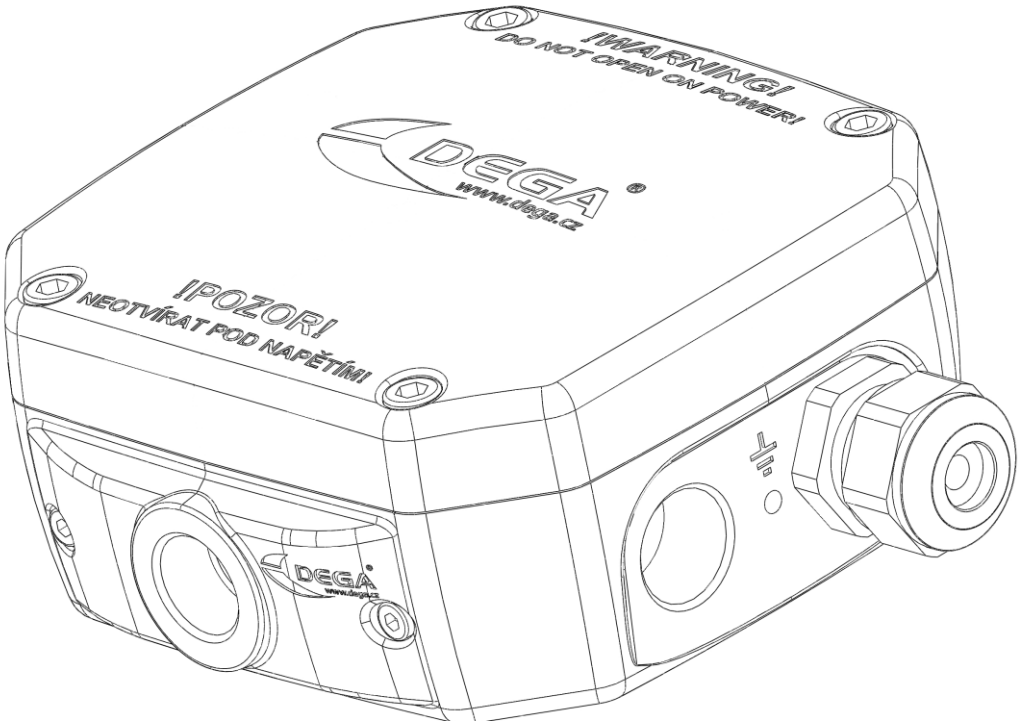
INSTRUCTION MANUAL

Gas Detection Transmitter

DEGA NS II



DEGA CZ s.r.o. reserves the right to alter the specifications of the hardware and software described in this manual at any time and without prior notice

DEGA CZ s.r.o. bears no liability for any damage resulting from use of this device

Content

For your safety

Beware of static electricity

Electronic components are sensitive to static electricity. Do not touch them directly - they may get damaged.

The device is intended to be installed by a trained person

The product is designed for installation only by a certified technician. The manufacturer is not liable for damages resulting from incorrect or improper handling.

In case of malfunction, immediately unplug from the power supply

If you notice an unusual smell or smoke emitting from the product, unplug it from the power supply, battery backup and all other attachments. Continued operation could result in injury or property damage.

Do not open the transmitter and do not replace the sensors in the transmitter in a potentially explosive atmosphere

Opening the cover, manipulating electronics, connecting the wiring in the sensor and replacing the sensor in a potentially explosive atmosphere can cause an explosion. If service is necessary, first unplug the device from the power supply, make certain there is no explosive atmosphere present and only then the transmitter may be disassembled and the sensors replaced (certified partner or manufacturer).

Do not disassemble the product and ensure against the contact of its internal components with water

Contact with internal components of the product may cause an electric shock. In case of any malfunction entrust the servicing of the product exclusively to a certified service centre. Contact of internal components with water can create a short circuit in the product and consequent damage of the product, damage to property or personal injury.

Use appropriate cable types

To ensure compliance with the parameters of the product, use only the recommended cables described in this manual to connect the product to other devices or power.

Use suitable screws

The screws used for fixing the lid of the fixed shutter must have a strength class of at least A4-80.

Use only verified values of structural joints

The verified values of the maximum width and minimum length of the structural joints of this conclusion are different from the corresponding minimum or maximum values given in the technical standard. The manufacturer must be contacted for information on joint dimensions.

Dispose of used products and transmitter sensors with respect to the environment

Transmitter sensors contain hazardous substances. Dispose of them in accordance with the current legislation on environmental protection.

Use the transmitter only with the appropriate certified DEGA products

The device is certified as functionally and technically qualified only with original "DEGA" accessories. In case of using the device with any other products, the manufacturer is not liable for any damages that may occur.

Undertake regular functional checks and calibrations of the transmitter

Perform regular "CALIBRATION" (setting the detection limits, checking the responsiveness of the sensor, checking the functionality of the transmitter) and "OPERATIONAL AND FUNCTIONAL CHECKS" of the entire detection system (sensor excitation with subsequent control of optical and audible alarms, triggering fans, shutdown technology, etc.). Perform calibration and operational and functional checks only at certified service centers with a valid certificate of competence or the manufacturer.

Certification according to standards

Certification according to the regulations CSN EN 60079-29-1 and ČSN EN 50271 applies only to NSM-CL II.

Special condition

The device must be installed in such a way that the sensor part is facing downwards.

Special condition

The product must be used in an environment with a degree of pollution of at most 2 as defined in IEC 60664-1.

Special condition

The overvoltage protection must be set to a level not exceeding 140 % of the peak supply voltage on the device's power terminals.

Warning: The transmitter automatically checks it's calibration period - the period of validity of it's calibration. After 12 months since the last calibration (max. calibration period) the transmitter will transmit this fact to the host system. The transmitter must be calibrated immediately at a certified service center with a valid certificate of competence or the manufacturer. See section "Monitoring the calibration periods".

Technical data and information

Supply voltage:	24 V nominal, operational range 8-30 V
Cable connections via 4-20 mA:	shielded cable 3 x 1 mm (max. 1200 m) shielded cable 3 x 1,5 mm (max. 2400 m)
Cable connections via RS485:	shielded cable 4 x 0,8 mm (max. 400 m) - see section “Installation of wiring for RS485“
Cable diameter range:	0,08 - 2,5 mm^2 – , shielded wire 0,25 - 1,5 mm^2 – shielded wire with cable cavity

Output:	4 - 20 mA, RS485 - protocol DEGA, or MODBUS
ATEX certificate:	FTZÚ 15 ATEX 0041X
IECEx cetificate:	IECEx FTZU 20.0022X

Labeling according to ATEX:			
	NSx-EL II	II 3G Ex ec IIC T5 Gc	Tamb: -20°C- +60°C
	NSx-CL II	II 3G Ex db ec IIC T5 Gc	Tamb: -20°C- +60°C
	NSx-IL II	II 3G Ex db ec IIC T4 Gc	Tamb: -20°C- +40°C
	NSx-PID II	II 3G Ex ic ec nC IIC T4 Gc	Tamb: 0°C- +40°C

II – equipment group – non mining **3 G** – zone 2 (atmosphere with the danger of explosion)
Ex db ec – protection type - flameproof enclosure "d", secured "ec", intrinsically safe "ic", encapsulated “nC”
IIC – gas group **T4/T5** – temperature class **Gc** – protection type EPL **Tamb** – ambient temperature

Dimensions without cable glands:	140 x 140 x 70 mm (WxHxD)
Weight:	0,7 kg
Capacity of the internal memory of history:	34 days at 60 s recording interval
Interval record storage memory:	60 s (adjustable range 1-255 s)
Dead band	5 % of range

Consumption/input at 24 V (output RS485)

DEGA NSx-EL II	25 mA/0,6 W
DEGA NSx-CL II	70 mA/1,7 W
DEGA NSx-IL II	50 mA/1,2 W
DEGA NSx-SL II	70 mA/1,7 W
DEGA NSx-PID II	70 mA/1,7 W

Warm-Up time

DEGA NSx-EL II	some sensors max. 72 hours
DEGA NSx-CL II	max. 30 s
DEGA NSx-IL II	max. 15 s
DEGA NSx-SL II	max. 15 s
DEGA NSx-PID II	max. 15 s

Consumption/input at 24 V (output 4-20 mA)

DEGA NSx-EL II	45 mA/1,1 W
DEGA NSx-CL II	90 mA/2,2 W
DEGA NSx-IL II	70 mA/1,7 W
DEGA NSx-SL II	90 mA/2,2 W
DEGA NSx-PID II	90 mA/2,2 W

Time to stabilize (>5 day without power)

DEGA NSx-EL II	some sensors max. 72 hours
DEGA NSx-CL II	max. 1 h
DEGA NSx-IL II	max. 30 min
DEGA NSx-SL II	max. 5 h
DEGA NSx-PID II	max. 30 min

Response time (T90)

DEGA NSx-EL II	max. 180 s - based on sensor type
DEGA NSx-CL II	max. 15 s
DEGA NSx-IL II	max. 15 s
DEGA NSx-SL II	max. 30 s
DEGA NSx-PID II	max. 60 s

Sensor lifetime in a clean environment

DEGA NSx-EL II	2 years
DEGA NSx-CL II	2 years
DEGA NSx-IL II	5+ years
DEGA NSx-SL II	2 years
DEGA NSx-PID II	5000 hours

Operational and storage conditions

Ambient temperature:	-20 °C to +60 °C (electrochemical, semiconductor and catalytic sensors), -20 °C to +40 °C (infrared sensors) and 0 °C to + 40 °C (PID sensors)
Relative humidity:	0-95 % RH
Air pressure:	80-120 kPa
Flow of ambient air:	max. 2 m/s - flow directly to the sensor in not allowed
Protection level with a cover:	IP 54, with a DEGA WATER CAP IP 66 cover
Location:	BE3N2 - explosive atmospheres - zone 2

Terminology

The marking system for sensors DEGA NSx-yL II:

Gas sensor DEGA NSx-yL II

- Series of detectors in potentially explosive atmospheres
- Type of detected gas
- Sensor type with linear output
- Second generation product with new DEGA design

DEGA NSx-EL II with an electrochemical sensor

They operate on the principle of change of electrical parameters on the electrodes stored in electrolyte, due to oxidation/reduction reactions of the detected gas on it's surface. These sensors have good selectivity and the ability to detect very low concentrations of toxic gases.

DEGA NSx-CL II with a catalytic sensor (Pelistor)

They operate on the principle of catalytic combustion - gas concentration is measured based on the amount of heat released in a controlled combustion reaction. The reaction is supported by a suitable temperature and the presence of a catalyst. These sensors can be used to detect a broad range of flammable gases. The sensors are characterized by fast response, a long lifetime and high stability. A minimum of 10 % of Oxygen in the air is required for their proper function.

DEGA NSx-IL II with an infrared sensor (NDIR)

Top quality scanning method. They operate on the principle of infrared spectroscopy. The sensors have excellent selectivity in organic matter, do not require any oxygen in the atmosphere and are resistant to catalyst poisons (sulfur and silicon compounds) which cause a change of sensitivity in catalytic sensors. The sensors are characterized by high stability and a long lifetime.

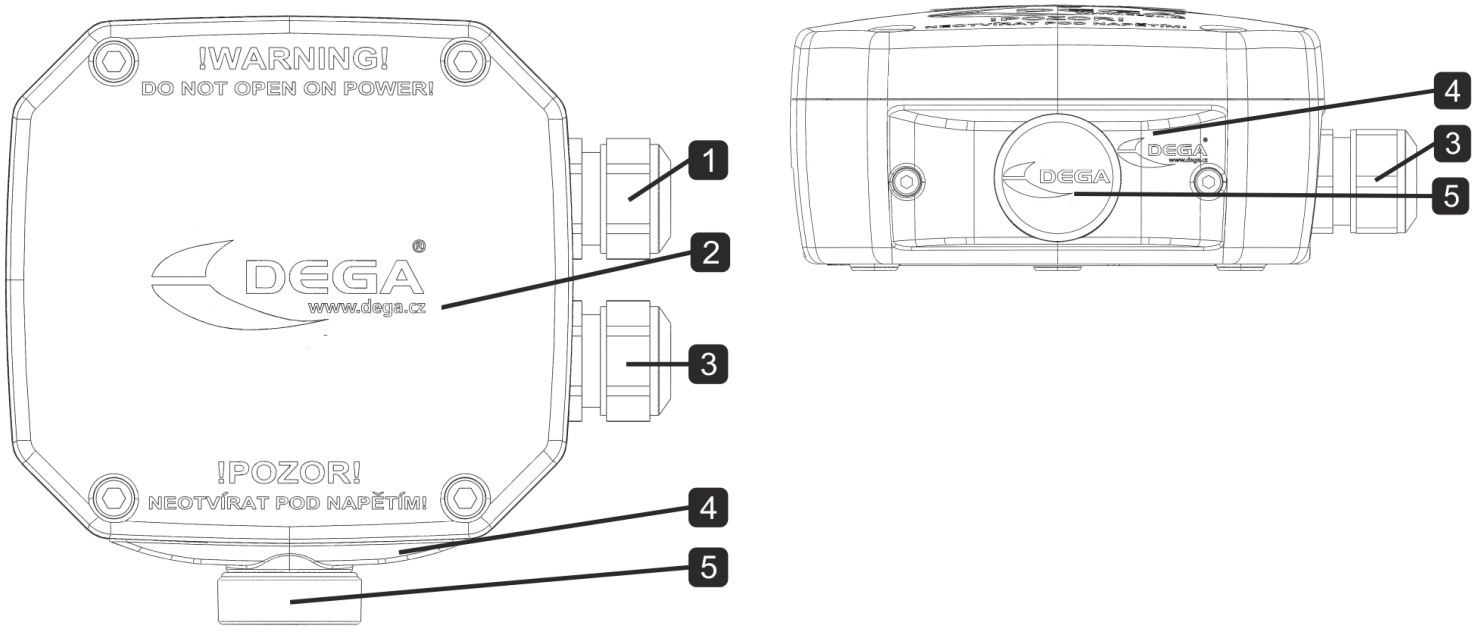
DEGA NSx-SL II with a semiconductor sensor

They operate on the principle of changes in electrical conductivity of semiconductors by changing the concentration of the detected gas. Their advatage is a long lifetime in a clean environment and a wide range of different types of gases and vapors. Their disadvatage is their low selectivity - the sensor largly responds to other gases for which it is not calibrated.

DEGA NSx-PL II PID with photoinitiator sensor (PID)

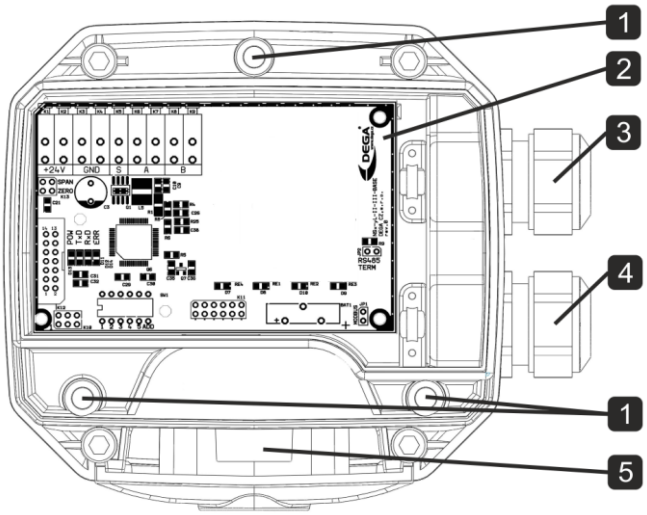
Sensitive scanning method to detect a wide range of VOC - volatile organic compounds. The sensor non-selectively detects all VOCs in the air already at concentrations in ppm.

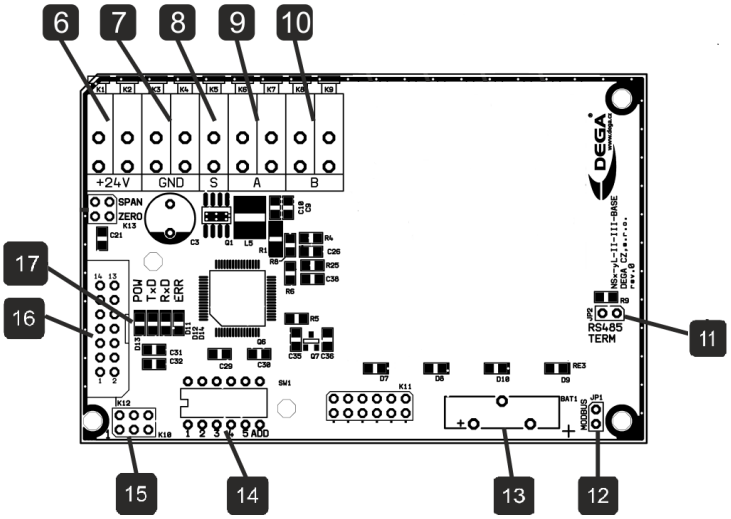
Product description



1	Ex „e“ cable gland	**2**	Body of the transmitter	**3**	Optional Ex „e“ cable gland	**4**	Body of the removable sensor

5	Cover against splashing water (optional accessories)





1	Mounting holes	2	PCB electronics	3	Ex „e“ cable gland	4	Optional Ex „e“ cable gland
5	Body of the removable sensor	6	Power supply terminal block +24 VDC	7	Power supply terminal block GND	8	Signal terminal block 4-20 mA
9	Terminal block RS485 A	10	Terminal block RS485 B	11	Jumper connector of the terminal resistor RS485	12	Jumper connector of the communication protocol (DEGA/MODBUS)
13	Battery CR2032	14	DIP switch for the RS485 address	15	Programming connector	16	LCD display connector
17	Status LED						

Assembly and disassembly of the transmitter

Before assembling, read the valid installation standards EN 60079-29-2 (Selection, installation, use and maintenance of detectors for combustible gases and oxygen) and EN 45544-4 (Guidelines for the selection, installation, use and maintenance of detectors of toxic substances).
In explosive environments the electrical installation must be performed according to DIN EN 60079.14 (Electrical installation in hazardous areas).
Secure that the sensor is reachable by air. The transmitter must be in a free area with no obstacles in its way (furniture etc.)
Ensure that the input of the sensor cannot be polluted by layers of dust or other contamination.
To preserve the IP protection, the sensors must be mounted with the sensor down.

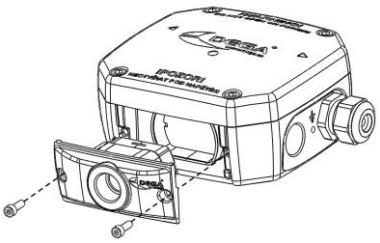
1. *Assembly of the transmitter*

The transmitter consists of four parts - the body of the transmitter, the removable sensor and Ex „e“ cable glands.

Transmitter assembly procedure is as follows:

a) Disassemble the transmitter with the four 5 mm hexagon socket screws
b) Mount the transmitter on a flat surface with four 6 mm fasteners in height above the floor with the gas entrance facing downwards, as specified by the detected substance.
c) Pull the cable through the cable gland and, if necessary, secure it with a cable bridle.
d) Connect the wiring to the terminal block of the sensor according to the chapters "Connecting the transmitter to the controllers". When using the second ex . „e“ cable gland, drill a hole with a diameter of max 16 mm. Only certified Ex "e" cable glands with the M20x1,5 thread are allowed. **While drilling make sure to not damage the transmitter electronics.**
e) Assemble the transmitter with the four 5 mm hexagon sockets screws.

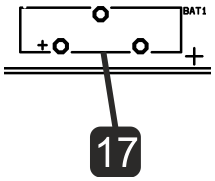
2. *Replacement of the sensor module*



This activity must not be performed when the sensor is energized.

In case of need to replace the sensor module with a new piece, unscrew and remove the cover. On the sensor module, unscrew a pair of 3 mm hexagon socket screws and remove the sensor module using a tool to prise it from the inside. Carefully insert a new module – the pins must not be bent. Secure with a pair of screws and slide the cover on the device, then secure it.

3. *Replacement of the battery*



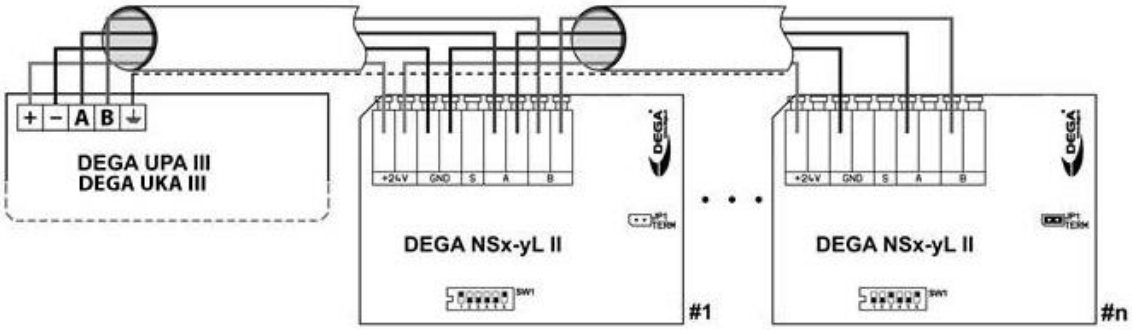
Panasonic	BR2032

The battery lifetime in the sensor is approximately 5 years. After this time some functions of the detector may not work properly. Remove the battery from the holder and replace it with one of the recommended types. Replacing the battery in a transmitter, which is not connected to the power, will erase the internal clock.

4. *Connecting the transmitter via current loop to the controller DEGA UPA II/DEGA UPA III*

Connect one transmitter to each channel of the controller as shown in the picture below.

5. *Connecting the sensor via RS485 to the controller DEGA UKA III/DEGA UPA III*



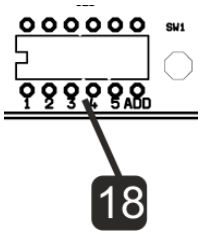
6. *Installation of wiring for RS485 and power supply*

Wiring must be installed using bus topology and in compliance with the RS485 policy.
Note: Connection of transmitters with control panel only by DEGA protocol, not MODBUS protocol.

It is possible to connect up to max. 16 transmitters on each controller input (BUS 0, BUS 1), depending on their electrical distance from the controller.
The maximum number of connected transmitters per controller channel is 16 (may be less depending on the configuration of the controller), while the total length of the controller (electrical distance between the controller and the last transmitter) should not exceed 400 meters.
Selecting the appropriate type of cable depends on the fire report and the protocol for determining external influences.

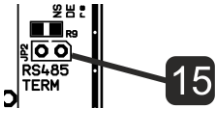
MODBUS – detailed instructions for MODBUS, see separate document „Modbus communication for the DEGA NS II (LCD) NS III (LCD) gas transmitter".

7. Setting the RS485 address of the transmitter



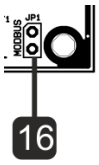
Each transmitter must have a unique address within the entire bus, otherwise there will be communication collisions and malfunctions.
The transmitter address can either be set internally using the DegaConfig program or using the DIP switch on the PCB.
If the position 6 (labeled ADD) is in the ON position, then the address is set according to the setting of pins 1-5. Otherwise the address set in DegaConfig is accepted.
The address can be set from in the range of 1-31 using binary values. A table with DIP switch settings for the individual addresses is provided in Attachment 1.

8. Termination resistor



According to the RS485 specifications, the last device on the bus must end with the termination resistor 120 R. Plug a jumper on the JP2 connector of the last device on the bus to include the 120 R terminating resistor. <u>In the default configuration, the jumper connector is not plugged.</u>

9. Communication protocol switch DEGA/MODBUS



Plugging a jumper in the JP1 connector will switch from the DEGA communication protocol to the MODBUS communication protocol.

Transmitter functions

The detector's motherboard is equipped by status LEDs, which help in detecting problems during the installation.
LED „POW“ shines at correct power
LED „TxD“ flashes when transmitting a packet via RS485
LED „RxD“ flashes when a packet is correctly received via RS485
LED „ERR“ shines/flashes in case of malfunction or substandard situations

1. Turning on the transmitter

After turning on the power the LED "POW" starts shining and the LED "ERR" starts flashing, indicating a forming sequence of the sensor and automatic testing procedures, which can take up to 180 s depending on the sensor used. The output of the current loop is 1 mA. During this sequence, testing of internal electronics and stabilization of the sensor in order to eliminate false alarms after turning on take place. After the completion of the formation, a 4 mA current begins to flow on the output of the current loop and the transmitter starts working according to its settings.

2. Gas detection

The transmitter continuously measures the detected gas concentration in the atmosphere and converts its current value into a 4-20 mA signal or transmits its value to the evaluation unit via DEGA/MODBUS protocol.

3. Malfunction

If a malfunction of electronics or the sensor is detected during operation, the transmitters starts transmitting via a 0,5 mA current loop. On the PCB this state is indicated by the orange LED "ERR".

4. Monitoring the calibration periods

The transmitter continuously checks the calibration validity of the connected sensor.
After 12 months since the last calibration (max. calibration interval) the LED "ERR" starts flashing. The connected sensor must be calibrated immediately. The transmitter will transmit the information about the ending calibration via current loop. The transmission will be as follows: 10 s of transmitting a 4-20 mA signal informing about the actual gas concentration followed by a 1 second interval of 2 mA current.

5. Reading the record of measured concentrations and alarms

The transmitter periodically stores the current detected concentration into its internal memory after 60 s. The internal memory retains data from the last 64260 measurements (cca. 34 days). In order to read this information, the program DegaConfig is required. See the DegaConfig program instruction manual.

Operation, maintenance, inspection and service of the transmitter

1. Usage limits

To maintain proper operation of the transmitter, it is necessary to respect the fact that step changes of humidity, condensation or rapid changes of pressure can cause incorrect indication of the measured value. Each sensing technology is suited for different methods of application, as described below. All sensors are characterized by a smaller or larger cross-sensitivity to other gases than those they are set for. Therefore we recommend that you have the air in the deployment area of the detection system analyzed before processing project documentation.

a) catalytic sensors: Trace amount of vapors of silicon compounds and sulfur compounds cause a permanent loss of sensitivity, which requires recalibration or replacement of the sensor. Long term crossing of the measuring range causes a decrease in sensitivity. In case of an atmosphere with oxygen content of less than 17 %, the measured value will be undervalued. In case of an atmosphere with oxygen content of more than 25 %, the measured value will be overvalued.

b) electrochemical sensors: Constant exposure to toxic gases or short-term exposure to gases, which greatly exceed the maximum range of the sensor, can damage the electrochemical sensor, which requires recalibration or replacement. High temperature along with low relative humidity have a negative effect on the sensor's lifetime. In case of an atmosphere with oxygen content of less than 1 % for longer than 1 hour, the measured value will be undervalued.

c) infrared sensors: Acids and alkali vapors may etch the optical system and distort the measurements. A check or a calibration may be necessary.

d) semiconductor sensors: Short-term exposure to gases or vapors of organic solvents, which greatly exceed the maximum range of the sensor, may damage the sensor and a recalibration or replacement may be required. In case of an atmoshpere having na oxygen content of less than 18 %, there will be an underestimation of the measured value.

e) photoionization sensors: the UV lamp or sensor must be replaced regularly, its clogging may cause loss of signal.

2. Operation

To maintain proper operation of the transmitter it is necessary to respect the fact that the presence of certain concentrations of gases or vapors, other than those for which the sensor is set, can cause an alarm set off, even if the concentration of the gas does not exceed the set level. Given the range of disturbing gases or vapors (diluents, exhaust gases, vapors of organic substances, disinfectants, etc.) a generally allowable concentration of interfering gases can not be determined. Data on cross-sensitivity to certain gases are included at the respective sensors. Therefore we recommend to that you have the air in the deployment area of the detection system analyzed before processing project documentation.

3. Operation/Maintenance

In case of contamination the surface can be cleaned with a slightly moistened cloth. The connected transmitters require performing of regular calibrations.

Recommended Default settings:

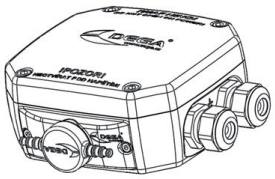
1 x every 6 months carry out a **„calibration“** - adjust the sensitivity of the sensor using calibration gas and check the functionality of the system. The exact interval depends on the purity of the environment, required accuracy and the occurrence of disturbing gases in the atmosphere.

The calibration interval can be changed by the DEGA Config software.

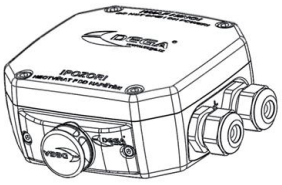
Perform calibration only at certified service centers with a valid certificate of competence or at the manufacturer.
For the Czech Republic only DEGA CZ s.r.o.

Accessories

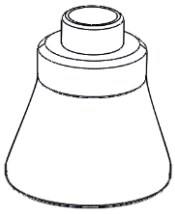
1. ***Calibration adapter/connection to the gas pump DEGA GAS INLET***

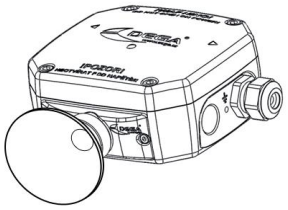


2. ***Cover against splashing water DEGA WATER CAP***

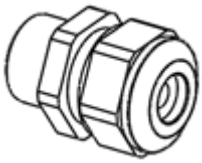


3. ***Funnel for gas collection DEGA COLLECT CAP***





4. ***Additional Ex „e“ cable gland DEGA CABLE GLAND for NS II***



M20x1,5

Gas specifications

Gas	Formula	CAS	Measuring range
Acetylene	C_2H_2	74-86-2	0-100 % LEL
Ammonia	NH_3	7664-41-7	0-100 ppm
Ammonia	NH_3	7664-41-7	0-1000 ppm
Ammonia	NH_3	7664-41-7	0-10000 ppm
Ammonia	NH_3	7664-41-7	0-500 ppm
Ammonia	NH_3	7664-41-7	0-5000 ppm
Ammonia	NH_3	7664-41-7	0-2000 ppm
Bromine	Br	7726-95-6	0-20 ppm
Bromine	Br	7726-95-6	0-200 ppm
Butane / Propan-Butane / LGP	C_4H_{10}	106-97-8	0-100 % LEL
Carbon dioxide	CO_2	124-38-9	0-5 % vol.
Carbon dioxide	CO_2	124-38-9	0-100 % vol.
Carbon monoxide	CO	630-08-0	0-1000 ppm
Carbon monoxide	CO	630-08-0	0-200 ppm
Carbon monoxide	CO	630-08-0	0-500 ppm
Carbon monoxide	CO	630-08-0	0-2000 ppm
Ethane	C_2H_6	74-84-0	0-100 % LEL
Ethanol	C_2H_5OH	64-17-5	0-100 % LEL
Ethylene	C_2H_4	74-85-1	0-10 ppm
Ethylene	C_2H_4	74-85-1	0-200 ppm
Ethylene	C_2H_4	74-85-1	0-1500 ppm
Ethylene	C_2H_4	74-85-1	0-100 % LEL
Ethylene oxide	C_2H_4O	75-21-8	0-10 ppm
Ethylene oxide	C_2H_4O	75-21-8	0-100 ppm
Ethylene oxide	C_2H_4O	75-21-8	0-1000 ppm
Ethylene oxide	C_2H_4O	75-21-8	0-500 ppm
Ethylene oxide	C_2H_4O	75-21-8	0-100 % LEL
Formaldehyde	CH_2O	50-00-0	0-10 ppm
Formaldehyde	CH_2O	50-00-0	0-50 ppm
Formaldehyde	CH_2O	50-00-0	0-1000 ppm
Hexane (Petrol)	C_6H_{14}	110-54-3	0-100 % LEL
Hydrogen	H_2	1333-74-0	0-100 % LEL
Hydrogen	H_2	1333-74-0	0-1000 ppm
Hydrogen	H_2	1333-74-0	0-4000 ppm
Hydrogen	H_2	1333-74-0	0-40000 ppm
Hydrogen bromide	HBr	10035-10-6	0-20 ppm
Hydrogen bromide	HBr	10035-10-6	0-200 ppm
Hydrogen cyanide	HCN	74-90-8	0-50 ppm
Hydrogen fluoride	HF	7664-39-3	0-10 ppm
Hydrogen chloride	HCl	7647-01-0	0-20 ppm
Hydrogen chloride	HCl	7647-01-0	0-200 ppm

Gas	Formula	CAS	Measuring range
Hydrogen peroxide	H_2O_2	7722-84-1	0-100 ppm
Hydrogen peroxide	H_2O_2	7722-84-1	0-500 ppm
Hydrogen sulfide	H_2S	7783-06-4	0-50 ppm
Hydrogen sulfide	H_2S	7783-06-4	0-500 ppm
Hydrogen sulfide	H_2S	7783-06-4	0-100 ppm
Hydrogen sulfide	H_2S	7783-06-4	0-2000 ppm
Chlorine	CL_2	7782-50-5	0-20 ppm
Chlorine	CL_2	7782-50-5	0-200 ppm
Chlorine dioxide	ClO_2	10049-04-4	0-50 ppm
Methane	CH_4	74-82-8	0-100 % LEL
Nitric oxide	NO	10102-43-9	0-25 ppm
Nitric oxide	NO	10102-43-9	0-250 ppm
Nitric oxide	NO	10102-43-9	0-1000 ppm
Nitrogen dioxide	NO_2	10102-44-0	0-20 ppm
Nitrogen dioxide	NO_2	10102-44-0	0-100 ppm
Nitrogen dioxide	NO_2	10102-44-0	0-500 ppm
Nitrous oxide	N_2O	10024-97-2	0-1 % vol.
Organic acids	RCOOH		0-100 ppm
Other flammable and combustible gases and vapors	HC		0-100 % LEL
Oxygen	O_2	17778-80-2	0-1 %
Oxygen	O_2	17778-80-2	0-30 %
Ozone	O_3	10028-15-6	0-5 ppm
Ozone	O_3	10028-15-6	0-100 ppm
Pentane	C_5H_{12}	109-66-0	0-100 % LEL
Phosphine	PH_3	7803-51-2	0-5 ppm
Phosphine	PH_3	7803-51-2	0-20 ppm
Phosphine	PH_3	7803-51-2	0-200 ppm
Phosphine	PH_3	7803-51-2	0-2000 ppm
Propylene	C_3H_6	115-07-1	0-100 % LEL
Refrigerant	R		0-2000 ppm
Refrigerant	HFO	754-12-1	0-2000 ppm
Silane	SiH_4	7803-62-5	0-1 ppm
Sulfur dioxide	SO_2	7446-09-5	0-20 ppm
Sulfur dioxide	SO_2	7446-09-5	0-200 ppm
Sulfur dioxide	SO_2	7446-09-5	0-2000 ppm
Sulfur dioxide	SO_2	7446-09-5	0-100 ppm
Sulfur dioxide	SO_2	7446-09-5	0-1000 ppm
Sulfur dioxide	SO_2	7446-09-5	0-10000 ppm
Volatile organic compounds	VOC		0-20 ppm (el. sensor)
Volatile organic compounds	VOC		0-3000 ppm - according to gas (PID sensor)

Add-on modules

Product code	Name	Product description
30200010	DEGA NS II RS485	Internal output RS485

Attachments

1. Chart for setting the transmitter address

address	1	2	3	4	5
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON

address	1	2	3	4	5
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON
32	OFF	OFF	OFF	OFF	ON

2. Signalization transmitted by the 4-20 mA current loop

Measurement: The measure concentration is directly proportional to 4-20 mA current output
Exceeding the range of measured concentrations: Current output ranges from 20 to 22 mA
End of valid calibration: Current output transmits the actual measured concentration for 9 s in a 4-20 mA range and for 1 s 2 mA current
Malfunction: Current output will be set to 0,5 mA
Maintenance (sensor preheating sequence): Current output will be set to 1 mA

3. Conversion between volumetric concentration and lower explosion limit of methane

$$\%DVM = \frac{\%obj}{4{,}4} * 100$$

%DMV – level of lower explosion limit concentration in %
%obj – volume sample of gas
4,4 – lower explosive limit of methane (4.4 % by volume)

4. Package content

1 x NS II body
1 x NS II sensor unit

General warranty terms and conditions

When following the instructions for installation, operation and maintenance, the manufacturer guarantees 24 months from the date of receipt for the product. Should the product purchased be put into operation by an entity other than the seller, the warranty period commences from the date that the product is put into operation, provided that the buyer ordered its commissioning within three weeks of its receipt. The customer expressly acknowledges that during the warranty period that extends beyond the length of the warranty period that is specified in the Commercial Code (the statutory warranty) s/he can neither require replacement of the product nor may s/he withdraw from the contract.

1. When claiming a product defect it is necessary to submit a proof of purchase of the item containing the following information: name and surname, name and business name of the seller, his identification number, in case of a legal person their name, identification number and registered office, in case of a physical person their name, surname, place of residence and warranty certificate, provided the buyer received one from the seller. The validity of the warranty shall not be affected by non-compliance with the obligations related to the issuance of the warranty card.
2. Claims concerning the product (for a warranty repair only complete devices are accepted) may be filed during the warranty period only with the seller from which it was purchased; subsequently the seller is required to forward the product to an authorized service centre or to the manufacturer.
3. A condition for the recognition of the rights under the warranty is the installation of the product having been undertaken by an authorized person in possession of a valid certificate from the manufacturer.
5. Claims regarding a product defect that can be dealt with reasonably quickly and without additional consequences will be resolved by remedying the defect (repair) or by replacement of the concerned product part, because in such a case replacing the entire product would contradict the standard norms (§ 616, paragraph 4 of the Commercial Code).
6. The buyer who exercises the right of warranty repair is not entitled to the return of the parts that have been replaced.
7. The warranty period can be extended for up to 48 months and its validity can be extended beyond the standard length on the basis of the conclusion of an individual warranty contract. Further information may be obtained through a specific business meeting.

This warranty is not applicable to:

- a transmitter that **has not been put into operation by the manufacturer or by a certified employee** in possession of a valid certificate issued by the manufacturer
- a product that did not have regularly performed calibrations and functional checks by the manufacturer or by a certified employee in possession of a valid certificate issued by the manufacturer
- damage caused by fire, water, static electricity, power surges in the electric supply or in the public network, accident, improper use of the product, wear and tear
- contamination of the product and its subsequent cleaning
- damage caused by **improper installation, any adjustment, modification** or improper manner of use inconsistent with the instruction manual, the technical standards or the applicable safety regulations in the Czech Republic
- damage to the product during transportation caused by improper handling or handling of the product in a manner contrary to the advice provided in the instruction manual
- DEGA products that have **been used in association with other than original DEGA products**, including consumables and accessories
- **calibration of sensors**, i.e. setting detection limits
- **wear or damage of the transmitter sensors, including the necessity of their replacement**
- wear parts and consumables (such as the key for removing the sensor, seals, etc.), which are detrimental to normal wear and tear during operation, together with wear and tear of the product and its parts caused by their normal use

For the complete version of the general business conditions and of the claims procedure go to www.dega.cz

Manufacturer: DEGA CZ s.r.o., Malešická 2850/22c, 130 00 Praha 3, Czech republic
VAT: CZ 279 029 43, Telephone +420 774 447 660 E-mail: info@dega.cz, Web: www.dega.cz

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