Instruction Manual for the NivuCont S Transmitter

starting with Software Revision No. P071

Revised Instruction Manual

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NIVUS GmbH • Im Taele 2 • 75031 Eppingen, Germany • www.nivus.com
Phone: +49 7262 9191-0 • Fax: +49 7262 9191-999 • info@nivus.com

NIVUS AG
Burgstrasse 28
8750 Glarus, Switzerland
Phone +41 55 6452066
Fax +41 55 6452014
swiss@nivus.com
www.nivus.de

NIVUS Austria
Mühlbergstraße 33B
3382 Loosdorf, Austria
Phone +43 2754 5676321
Fax +43 2754 5676320
austria@nivus.com
www.nivus.de

NIVUS Sp. z o.o.
ul. Hutnicza 3 / B-18
81-212 Gdynia, Poland
Phone +48 58 7602015
Fax +48 58 7602014
biuro@nivus.pl
www.nivus.pl

NIVUS France
12 rue Principale
67870 Bischoffsheim, France
Phone +33 388 999284
info@nivus.fr
www.nivus.fr

NIVUS Ltd., United Kingdom
Furzen Hill Farm
Coventry Road, Cubbington
Royal Leamington Spa
CV32 7UJ, Warwickshire
Phone +44 8445 332883
nivusUK@nivus.com
www.nivus.com

NIVUS Middle East (FZE)
Building Q 1-1 ap. 055
P.O. Box: 9217
Sharjah Airport International
Free Zone
Phone +971 6 5578224
Fax +971 6 5578225
middle-east@nivus.com
www.nivus.com

NIVUS Korea Co. Ltd.
#2301 M-Dong Technopark IT Center,
32 Songdogwahak-ro, Yeonsu-gu,
INCHEON, Korea 21984
Phone +82 32 2098588
Fax +82 32 2098590
jhkwon@nivuskorea.com
www.nivuskorea.com

NIVUS Vietnam
238/78 Phan Trung Street,
Tan Tien Ward, Bin Hoa City,
Dong Nai Province, Vietnam
Phone +84 94 2623979
jhkwon@nivuskorea.com
www.nivus.com

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Translation

If the device is sold to a country in the European Economic Area this instruction manual must be translated into the language of the country in which the device is to be used.
Should the translated text be unclear, the original instruction manual (German) must be consulted or a member company of the NIVUS group must be contacted for clarification.

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Revision History

Rev.	Modifications	Responsible Editor	Date
04	Changes in layout and certificates; div. chapters updated, other chapters added; document adapted to German-language operating instructions	MoG	08.11.2021
03	Revision was skipped	--	---
00-02	See changes on the release sheet	--	---

Table of Contents

General

1 About this Manual

Important

READ CAREFULLY BEFORE USE.

KEEP IN A SAFE PLACE FOR LATER REFERENCE.

This instruction manual is for the NivuCont S transmitter and serves its intended use. This instruction manual is oriented exclusively to qualified expert personnel.

Read this instruction manual carefully and completely prior to installation or connection since it contains relevant information on this product. Observe the notes and particularly follow the warning notes and safety instructions.

If you should have problems to understand information contained within this instruction manual either contact a member company of the NIVUS group or one of the distributors for further support. The member companies of the NIVUS group cannot be held responsible for damage to persons or material due to incorrectly understood information in this instruction.

1.1 Applicable Documentation

For the installation and operation of the complete system extra instruction manuals or technical descriptions may be required apart from this manual.

- Instruction manual(s) for pressure and level probes: NivuBar Plus II, NivuBar G II, NivuBar H III, HydroBar G II, UniBar E II, AquaBar

These manuals are provided with the auxiliary units or sensors and/or are available as download on the NIVUS homepage.

1.2 Signs and Definitions used

Representation	Meaning	Remarks
➲	(Action) Step	Execute action steps. Should action steps be numbered observe the specified order of the steps.
⇨	Cross-reference	Refers to further or more detailed information.
>TEXT<	Parameter or menu	Indicates a parameter or a menu that is to be selected or is described.
	Refers to a documentation	Refers to an accompanying documentation.

Tab. 1 Structural elements within the manual

1.3 Abbreviations used

1.3.1 Colour code for wires and single conductors

The abbreviations of colours for wire and single conductor labelling follow the international colour code according IEC 60757.

BK	Black	BN	Brown	RD	Red
OG	Orange	YE	Yellow	GN	Green
BU	Blue	VT	Violet	GY	Grey
WH	White	PK	Pink	TQ	Turquois
GNYE	Green/Yellow	GD	Gold	SR	Silver

Safety Instructions

2 Used Symbols and Signal Words

2.1 Information on the Valuation of Accident Levels

The general warning symbol indicates the risk of personal injuries or death. In the text section the general warning symbol is used in combination with the signal words described below.

DANGER ***Warning in high degree of risk***

*Indicates a high-risk, **imminently** hazardous situation which will result in death or serious injury if not avoided.*

WARNING ***Warning in medium degree of risk and personal injury***

*Indicates a **possible** danger with medium risk which may result in a life-threatening situation or (severe) bodily injury if not avoided.*

CAUTION ***Warning in personal injury or property damage***

Indicates a possible danger with moderate risk which may result in minor or moderate personal injury or property damage if not avoided.

WARNING ***Danger by electric voltage***

*Indicates a medium-risk, **imminently** hazardous situation caused by electric shock which will result in death or (serious) injury if not avoided.*

Important Note

Contains information that needs to be highlighted.

Indicates a potentially harmful situation that may damage the product or something in its environment if not avoided.

Note

Contains tips or information.

2.2 Warning Notices on the Device (optional)

General Warning Notice

This symbol refers the operator or user to content in this manual.
Consideration of the information contained herein is necessary to maintain the protection provided by the unit for installation and in operation.

Protective earth connection

This symbol refers to the protective conductor terminal of the device.
Depending on the type of installation, the unit may only be operated with a suitable protective earth connection in accordance with applicable laws and regulations.

3 Special safety and Precautionary Measures

When working with the NIVUS equipment, the following safety and precautionary measures must be observed and followed generally and at all times. These warnings and notes are not repeated for each description within the document.

WARNING ***Germ Contamination***

Due to the frequent use of the sensors in the waste water sector, parts can be contaminated with dangerous germs. Therefore, appropriate precautions must be taken when coming into contact with cables and sensors.

Wear protective clothing.

WARNING ***Observe Occupational Safety Regulations!***

Before and during mounting works, compliance with all work safety regulations must always be ensured.

Disregarding may lead to personal injury.

WARNING ***Do not disable Safety Devices!***

It is strictly forbidden to disable the safety devices or to change their mode of operation.

Disregarding may result in personal injury or damage to the system.

WARNING ***Disconnect the System from Mains Power***

Disconnect the system from the mains power before starting maintenance, cleaning and/or repair work (only by qualified personnel).

Disregarding may lead to electric shock.

Commissioning only by qualified Personnel

The entire measuring system may only be installed and commissioned by qualified personnel.

4 Warranty

The device was functionally tested prior to shipping. When used for the intended purpose (see Chap. "6 Intended Use") and in compliance with the instruction manual, the applicable documents (see Chap. "1.1 Applicable Documentation") and the safety information and instructions contained therein, no functional restrictions are to be expected and flawless operation should be possible.

⇨ Please also refer to the following chapter "5 Disclaimer".

Limitation of Warranty

In case of disregarding the safety notes and instructions in this document, the companies of the NIVUS-Group reserve the right to limit the warranty.

5 Disclaimer

The companies of the NIVUS-Group assume no liability

- for consequential damages resulting from a change in this document. The companies of the NIVUS-Group reserve the right to change the contents of the document including this disclaimer without prior notice.
- for personal injury or damage to property resulting from **failure to comply** with the **applicable regulations**. For connection, commissioning and operation of the devices, all information and higher-level legal regulations of the country (in Germany e.g. the VDE regulations), such as valid Ex regulations as well as the safety and accident prevention regulations applicable to the respective individual case shall be observed.
- for personal injury or damage to property resulting from **improper handling**. For safety and warranty reasons, all work on the equipment that goes beyond the installation and connection measures may only be carried out by NIVUS personnel or by persons or companies authorised by NIVUS.
- for personal injury or damage to property resulting from the operation of the equipment in a **technically faulty** condition.
- for personal injury or damage to property resulting from **improper use**.
- for personal injury or damage to property resulting from failure to observe the **safety instructions** in this instruction manual.
- for missing or incorrect readings due to **improper installation** and for any consequential damage resulting therefrom.

6 Intended Use

Note

The device is intended exclusively for the purpose mentioned below. Any other use beyond this, any conversion or modification of the instrument without written agreement with the companies of the NIVUS-Group is considered improper use.

The companies of the NIVUS-Group are not liable for any damage resulting from this.

The operator alone bears the risk.

The transmitter type NivuCont S is designed for continuous level measurement with 2/3-wire sensors. It is able to process the input signal of 4...20 mA and supply it with a defined voltage.

The transmitter is designed and produced according to the current state of the art and the recognised safety rules at the time of publication of this document. Nevertheless, risks of personal injury or damage to property cannot be completely ruled out.

The permissible maximum limit values in Chapter "18 Specifications" must be observed. All cases of use deviating from these limit values, which have not been approved by NIVUS GmbH in writing, are excluded from the liability of the NIVUS-Group.

7 Ex Protection

The Ex version of the NivuCont S is designed to supply intrinsically safe sensors in areas with explosive atmospheres of zones 0 and 1.

DANGER ***The transmitter must be installed outside the Ex zone!***

Transmitter Approval

⇨ See Chap. "18 Specifications".

For installation, maintenance and cleaning of the device, it is essential to observe the relevant ordinances and regulations dealing with explosion protection (VDE 0160, VDE 0165 or EN 60079-14) as well as the accident prevention regulations.

The design was carried out using the standards EN IEC 60079-0:2018, EN 60079-11:2012, EN 61010-1:2010 und EN 61326-1:2013.

Validity of the Ex Approval

The Ex approval is only valid in conjunction with the corresponding marking on the nameplate of transmitter and the sensors.

Declarations of Conformity and Test Certificates

For installation and commissioning, the EU declarations of conformity and test certificates of the approving body must be strictly observed.

Ex Approval for Sensors

The Ex approvals of the sensors are included with the instruction manual(s) for pressure and level probes: NivuBar Plus II, NivuBar G II, NivuBar H III, HydroBar G II, UniBar E II, AquaBar II.

8 Duties of the Operator

Important Note

In the EEA (European Economic Area), the national transposition of the Framework Directive (89/391/EEC) as well as the associated individual directives and, in particular, the Directive (2009/104/EC) concerning the minimum safety and health requirements for the use of work equipment by workers at work, as amended, must be observed and complied with.

In Germany, the Ordinance on Industrial Safety and Health must be complied with.

Obtain the local operating licence and observe the associated conditions. In addition, you must comply with environmental protection requirements and local legal requirements for the following:

- Safety of personnel (accident prevention regulations)
- Safety of work equipment (protective equipment and maintenance)
- Product Disposal (Waste Management Act)
- Materials Disposal (Waste Management Act)
- Cleaning (Cleaning Agents and Disposal)

Connections
As the operator, before activating the device, make sure that the local regulations (e.g. for the electrical connection) have been observed during installation and commissioning.

Keep the Instruction Manual for future Reference
Keep the instruction manual in a safe place and ensure that it is always available and can be consulted by the user of the product.

Hand over the Instruction Manual
When selling the transmitter, this instruction manual must be handed over with it. The manual is part of the standard delivery.

9 Requirements for the Personnel

Installation, commissioning and maintenance may only be carried out by personnel who fulfil the following conditions:

- Qualified personnel with appropriate training
- Authorisation by plant operator

Qualified Personnel

in the sense of these instructions or the warnings on the product itself are persons who are familiar with the installation, assembly, commissioning and operation of the product and who have the qualifications appropriate to their job, such as

- *training and instruction or authorisation to switch circuits and devices/systems on and off, to earth and to label them in accordance with the standards of safety technology.*

- *Training or instruction in accordance with safety technology standards in maintenance and use of appropriate safety equipment.*
- *First Aid Training*

Delivery, Storage and Transport

10 Scope of Delivery

The standard delivery of the NivuCont S comprises:

- NivuCont S Transmitter
- Instruction manual (with EU Declaration of Conformity) including all information required for the operation of the NivuCont S

Check additional accessories according to the order against the delivery note.

11 Inspection upon Receipt

Check the delivery for completeness and apparent intactness immediately after receipt. Report any transport damage immediately to the delivering carrier. Also send a written report to NIVUS GmbH in Eppingen.
Incomplete deliveries must be addressed in writing within two weeks to your responsible representative or directly to the head office in Eppingen.

Observe the two-week deadline

Complaints received later will not be recognised.

12 Storage

Observe the minimum and maximum values for external conditions such as temperature and humidity according to Chapter "18 Specifications".
Protect the instrument from corrosive or organic solvent vapours, radioactive radiation and strong electromagnetic radiation.

13 Transport

Protect the NivuCont S from strong impacts, blows, shocks or vibrations by using appropriate safety measures such as straps or similar.
Otherwise, the same conditions apply with regard to external influences as for storage (see Chap. "12 Storage").

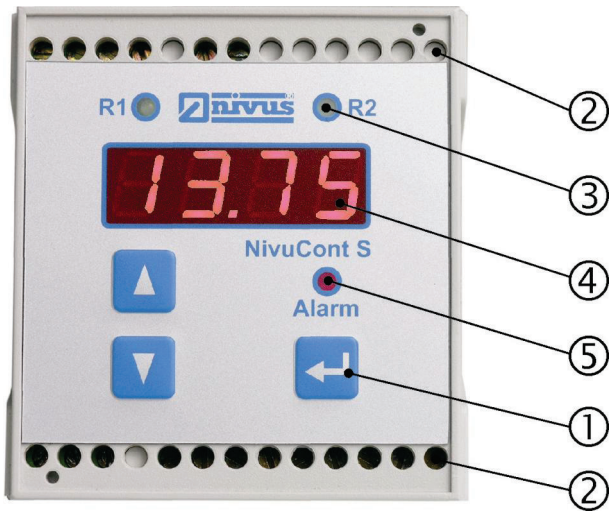
14 Return

In the event of a return, send the unit to NIVUS GmbH in Eppingen carriage paid and in the original packaging.

Items that have not been sufficiently franked will not be accepted!

Product Description

15 Overview



1 Control Keypad

2 Terminal Clamps

3 Display Relays R1 + R2

4 Display

5 Display Alarm Relay

Fig. 15-1 Overview

16 Connectable Probes

1 NivuBar Plus II

2 NivuBar G II

3 NivuBar H III

4 HydroBar G II

5 AquaBar II

6 AquaBar BS

7 UniBar E II (with display)

8 UniBar E II

Fig. 16-1 Connectable probes

17 Device ID/Nameplates

The information in this instruction manual only applies to the device type indicated on the title page. The nameplate is attached to the enclosure and contains the following information:

- Name and address NIVUS GmbH
- CE label
- Marking of the series and type with article number and serial number
- Year of manufacture: the first four digits of the serial number refer to the year of manufacture and the week number (2134…..)
- Ex Protection Label
- Ambient conditions in operation

It is important for all queries and spare parts orders that the article number and serial number of the respective device are specified correctly. This is the only way to ensure proper and fast processing.

Fig. 17-1 Nameplate for Ex device

Check nameplates

Check by means of the nameplates whether the supplied device corresponds with your order.

18 Specifications

Supply Voltage	230 V AC, 50 to 60 Hz or 24 V DC, 5 % residual ripple
Power Consumption	max. 4 VA
Enclosure	• Material: Noryl • Weight: AC Version: approx. 400 g, IP40 enclosure, IP20 terminals DC Version: approx. 250 g, IP40 enclosure, IP20 terminals
Ex Approval (optional)	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC
Supplementary Ex-specific Technical Data	See EU Type Examination Certificate IBExU05ATEX1098X at the end of the document
Operation/Ambient Temperature	-20 °C to +60 °C / with Ex -20 °C to +40 °C
Storage Temperature	-20 °C to +60 °C
Max. Humidity	90 %, non-condensing
Display	4-character 7-segment LED display red, character height 10 mm
Operation	3 keys, menu-guided parameter structure
Inputs	1x 4-20 mA input, for 2/3-wire sensors with power supply 24 V DC (max. 35 mA)
Outputs	• 1x 0/4-20 mA, load 400 Ohm, accuracy greater than 0.3 % • 2x relays SPDT, loadable up to 250V AC / 5 A (cos φ 0.9) • 1x Alarm contact for sensor monitoring (cable break or short circuit of the sensor)

Tab. 2 Specifications NivuCont S

Sensors

The structure and description of the connectable sensors as well as their technical data can be found in the corresponding instructions or technical descriptions.

⇨ See Chap. "1.1 Applicable Documentation".

19 Equipment/Device Versions

The transmitters differ in the power supply and the enclosure shape. The device version can be identified by the article number, which is clearly visible on a weatherproof sticker on the transmitter enclosure.
The table below provides an overview on the different versions.

NCS0	NivuCont S			
	Power Supply			
	230AC	230 V AC; 50/60 Hz		
	024DC	24 V DC stabilised		
		Enclosure		
		FT	Panel mount IP40 (front); IP20 (terminals) – only available in Ex version	
		HS	DIN rail mounting IP40 (enclosure); IP20 (terminals)	
			ATEX Approval	
			0	None
			E	Zone 0/1
NCS0				

Tab. 3 Product structure NivuCont S

Function Description

20 Functional Principle

The NivuCont S is a multifunctional process transmitter for supplying a 2/3-wire sensor and processing a current transmitter signal. Various switching functions, such as limit value, in-band, out-of-band and pump exchange are possible.

Installation and Connection

21 Installation

21.1 General

For electric installation the legal requirements of the according country must be followed (in Germany: e.g. VDE 0100).

For installation, maintenance and cleaning of the device, it is essential to observe the relevant ordinances and regulations dealing with explosion protection (VDE 0160, VDE 0165 or EN 60079-14) as well as the accident prevention regulations.
The design was carried out using the standards EN IEC 60079-0:2018, EN 60079-11:2012, EN 61010-1:2010 und EN 61326-1:2013.

WARNING ***Danger by electric voltage***

The power supply of the NivuCont S must be separately protected with a 6 A slow-blow fuse and must be designed independently of other system parts or measurements (can be separately switched off, e.g. by means of circuit breakers with characteristic >B<).

Before feeding the rated voltage the installation of transmitters and sensors must be completed. Verify whether the installation is correct. Observe that the installation shall be carried out only by qualified expert personnel. Further statutory standards, regulations and technical rulings are to be observed.

All external circuits, cables and lines connected to the device must have an insulation resistance of at least 250 kOhm. If the voltage exceeds 42 V DC, an insulation resistance of at least 500 kOhm is required.
The cross-section of the mains cables must be at least 0.75 mm² and comply with IEC 227 or IEC 245. The protection class of the devices can be found in Chap. "18 Specifications".
The maximum permissible switching voltage at the relay contacts must not exceed 250 V.
Especially in terms of explosion protection, it must be checked whether the power supply of the devices must be integrated into the EMERGENCY STOP concept of the plant.

21.2 Transmitter Mounting and Connection

21.2.1 General

The place for mounting the transmitter must be selected according to certain criteria.
Make sure to avoid:

- Direct sunlight (use weatherproof cover if necessary)
- Objects that radiate strong heat (max. ambient temperature: +40 °C)
- Objects with a strong electromagnetic field (frequency converters or similar)
- Corrosive chemicals or gases
- Mechanical shocks
- Vibrations
- Radioactive radiation
- Direct installation at footpaths or travel ways

21.2.2 Enclosure dimensions

The transmitter is available in two different enclosure versions:

- DIN rail mounting (wall mount) or
- Panel mount

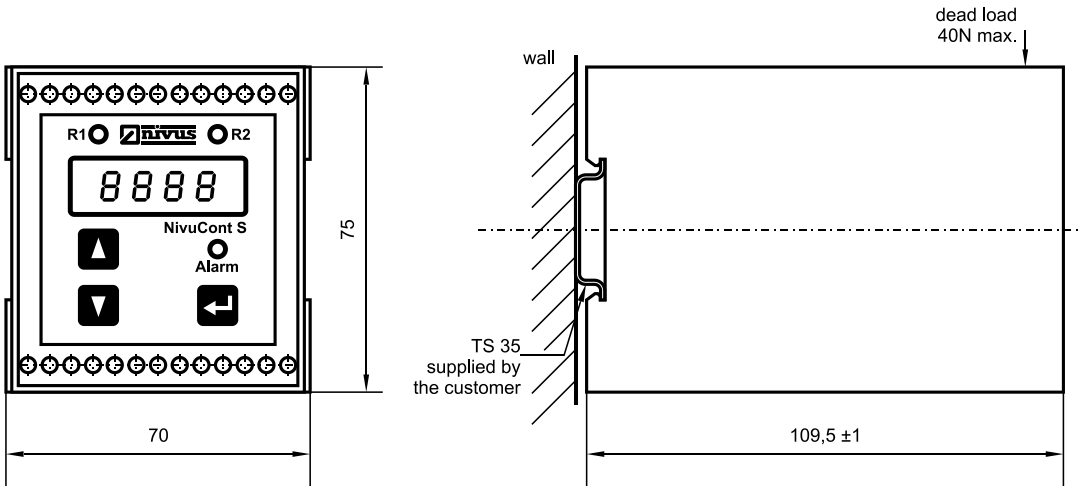


Fig. 21-1 DIN rail enclosure

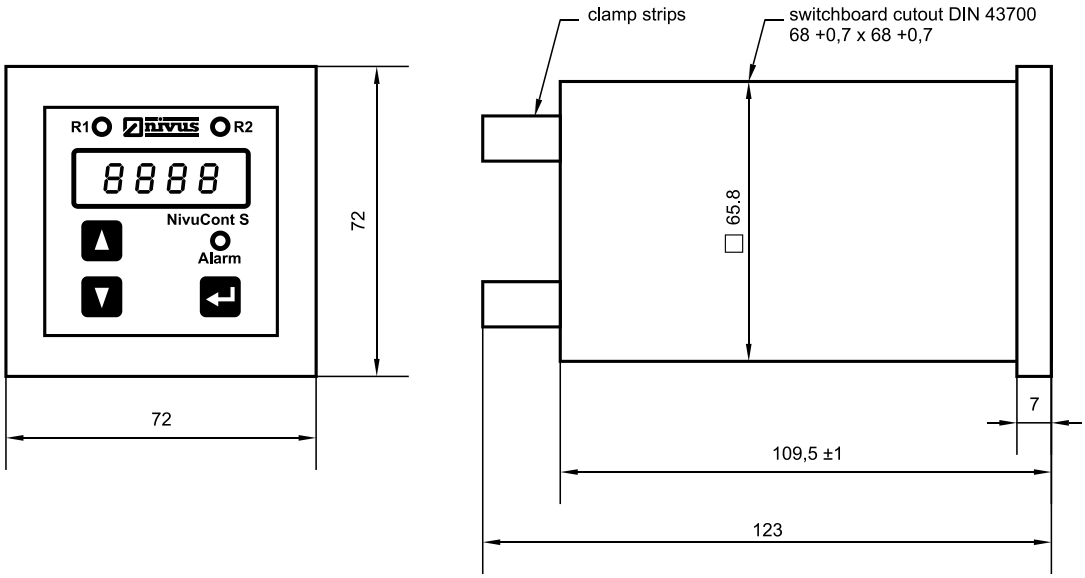


Fig. 21-2 Panel mount enclosure

21.2.3 Transmitter Mounting

General

Please note during installation work that electronic components can be destroyed by electrostatic discharges. Therefore, care must be taken during installation to avoid impermissibly high electrostatic charges by taking suitable grounding measures.

The following points must be observed when **selecting the mounting place**:

- The mounting surface must be vibration-free.
- The ambient temperature must be within the permitted range (see Chap. "18 Specifications").
- A minimum distance (approx. 100 m) must be maintained from high-voltage lines or frequency converters.

Panel Mount Enclosure Mounting:

With the panel mount enclosure, fastening is done via the four clamping connections integrated on the side of the enclosure. Make sure that the anchoring is correct.

DIN Rail Enclosure Mounting:
Mounting is done by fixing a DIN rail of at least 70 mm length and snapping on the housing.

21.2.4 Transmitter Connection

General
The transmitter NivuCont S is delivered in two different types:

- DIN Rail Mounting
- Panel Mount

Both types have the same terminal designations.
The different enclosure shape (DIN rail or front panel) has no effect on the terminal designations, only the spatial position of the connection terminals is not identical for the individual enclosure shapes.

Observe the device configuration for the electrical connection.
One copper wire or one stranded copper wire with max. 2.5 mm² cross-section can be connected per terminal.
The connection is made by means of screw terminals. For connection you need a slotted screwdriver with a blade width of 2.5 mm.
These terminal connections are usually open when delivered. Nevertheless, this condition must be checked before connecting the signal and power cables.

Important Note

Before initial connection, apply slight pressure to the screw of the clamp connection using the screwdriver so that it opens securely and a correct clamp connection is ensured.

DANGER

Maintain Distance

During installation, the distance of 50 mm between intrinsically safe and non-intrinsically safe connections must be observed; this can be achieved by using a separating wall or insulation and fixing the individual wires (e.g. heat shrink tubing).

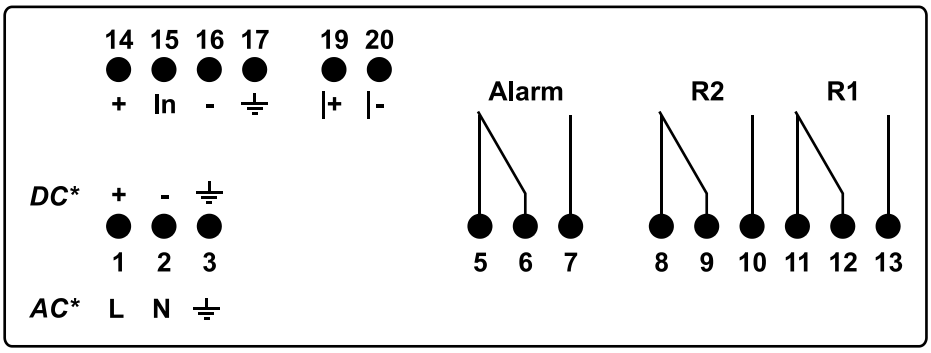
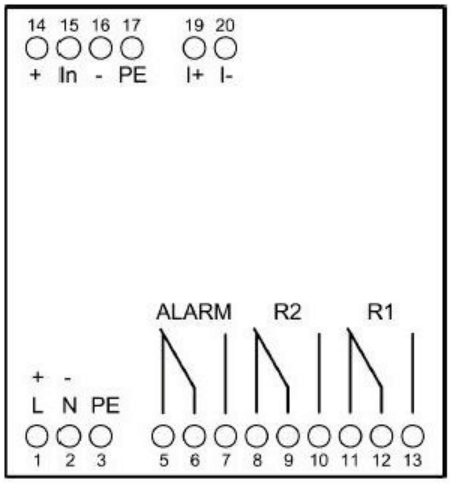
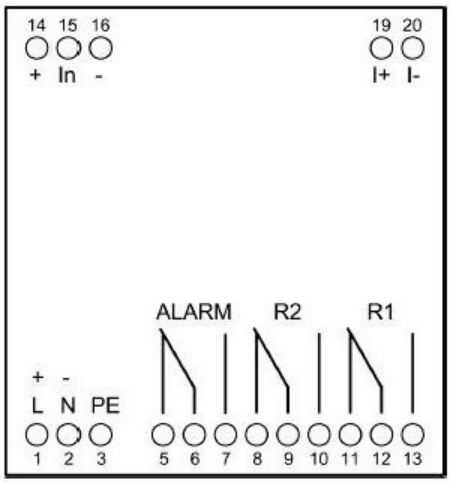


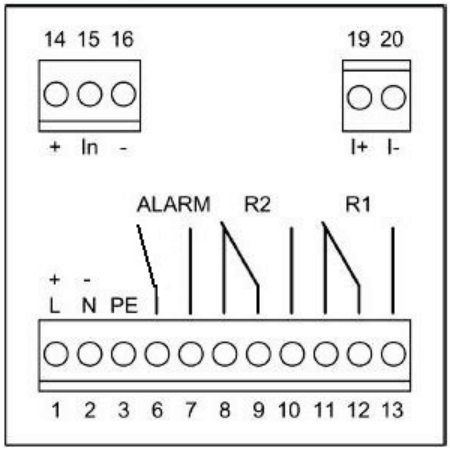
Fig. 21-3 Wiring diagram NivuCont S

DIN rail enclosure without Ex version

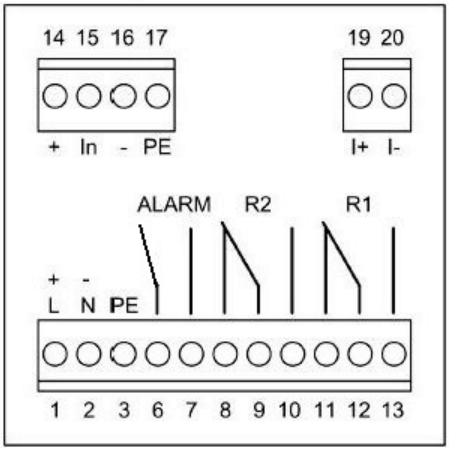


DIN rail enclosure with Ex version





Panel mount enclosure without Ex version



Panel mount enclosure with Ex version

Fig. 21-4 Terminal clamps

WARNING ***Check Power Supply***

** Fig. 21-3) Before connecting the NivuCont S, check the required supply power (sticker with article number)*

Before connecting the sensors, make sure that the input wiring is correct.

21.3 Wiring Examples

The power supply of the transmitter has not been drawn in principle, but is mandatory.

The examples listed are only a selection of the combinations of different sensors with the NivuCont S.
For comprehensive advice on any problems regarding measurement systems that may arise, please contact your NIVUS representative or the NIVUS GmbH hotline in Eppingen.

Example 1:
NivuCont S with analogue output and supply of a 2-wire sensor; with error message relay.

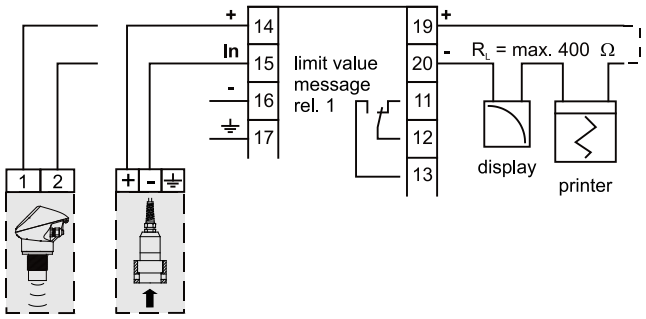


Fig. 21-5 Connection example NCS with 2-wire sensor

Example 2:
NivuCont S as a transmitter when the current signal of a transducer is connected or for simulation of an external sensor with current output at the NivuCont S transmitter.

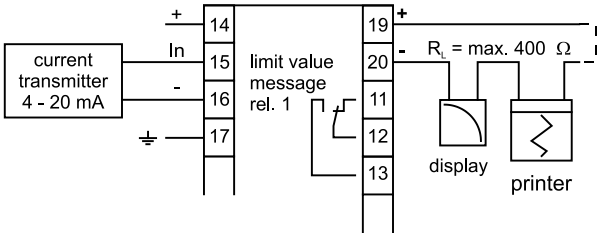


Fig. 21-6 Connection example NCS with supplied mA signal via transducer

Important Note

To avoid disturbance due to electrical interference, sensor cables must not be laid close to (or parallel to) motor supply lines and power lines.

22 Overvoltage Protection Measures

For effective protection of the NivuCont S transmitter, it is necessary to protect the power supply and mA input and output by means of overvoltage protection devices.

NIVUS recommend:

- **DataPro 2x1 24 V/24 V** for potential-free (galvanically isolated) data lines; leakage current of 25,000 A as well as automatic self-monitoring by fail-safe diodes, which interrupt the current signal and trigger an error message of the NivuCont S in the event of a malfunction.
- **EnerPro 220 Tr** for 230 V voltage supply of the NivuCont S. Leakage current of 20,000 A and high load capacity (up to 16 A) for safe and permanent protection of several devices simultaneously.

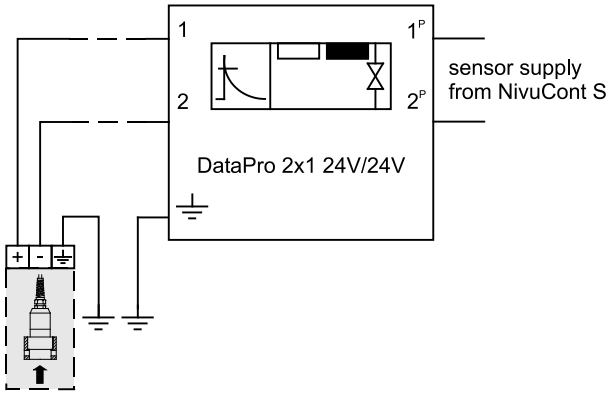


Fig. 22-1 Overvoltage protection of analogue inputs

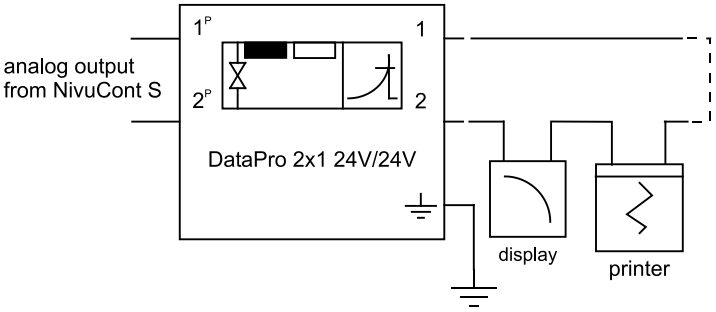


Fig. 22-2 Overvoltage protection of analogue outputs

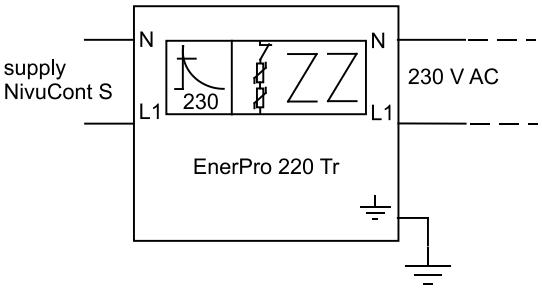


Fig. 22-3 Overvoltage protection of operating voltage supply

Important Note

Please ensure that the DataPro is connected on the correct side (p-side towards the transmitter) and that the cable feed is correct and straight.

The down conductor (earth) must be necessarily routed in the direction of the unprotected side. The cross-section of the grounding cable must be at least 6 mm²!

Commissioning

23 General

23.1 Notes to the User

Before connecting and putting the NivuCont S into operation, it is essential to observe the following instructions for use!
This instruction manual contains all information required for parameterisation and use of the transmitter. It is intended for qualified expert personnel. Appropriate knowledge in the areas of measurement systems, automation technology, control engineering, information technology and wastewater hydraulics are preconditions for putting the transmitter into operation (see also Chap. "9 Requirements for the Personnel").
If you have any questions regarding installation, connection or parameter setting, please contact our hotline at:

- +49 7262 9191-955

23.2 General Principles

Commissioning of the measurement system shall not be carried out before installation has been finished and verified. Prior to commissioning, thoroughly read the information in this instruction manual to prevent incorrect or faulty or parameterisation. Familiarise yourself with the operation of the NivuCont S via the keypad and display with the help of the instruction manual before you start with the parameterisation.
After connecting transmitter and sensors (according to Chap. "21.2.4 Transmitter Connection") the parameterisation follows. To do this, in most cases it is sufficient to enter:

- Brief description of the measurement place
- Sensors used
- What should be output/shown on the display?
- Output to analogue output or relay output (1-2)

The user interface of the NivuCont S is easy to understand. You can quickly make the basic settings yourself.
In case of extensive programming tasks or lack of qualified personnel, programming should be carried out by NIVUS GmbH. Our commissioning service / customer service will be happy to help you with this.

- +49 7262 9191-922

23.3 Display and Control Elements

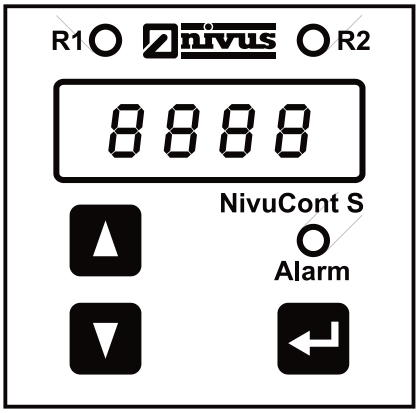


Fig. 23-1 View display and control elements

- Navigate upwards, in the parameter menu as well as in the respective submenu.
- Increase value
- Navigate downwards, in the parameter menu as well as in the respective submenu.
- Decrease value
- Enter key
- Accepting and saving values.

The entire operation is parameter-guided, supported by the parameter number shown in the display. The 3 operating keys are used to select the individual parameters and the submenus (see Fig. 23-1).

Setting Parameters

24 Brief Description of the individual Parameter Menus

There are 8 parameter menus to choose from, which can be selected individually.
The corresponding submenus are shown below.

P000	=	Parameter Release (password)
P05x	=	Display
P1xx	=	Analogue Input
P5xx	=	Relay
P6xx	=	Analogue Output
P7xx	=	Simulation
P8xx	=	Device Parameter
P9xx	=	Calibration

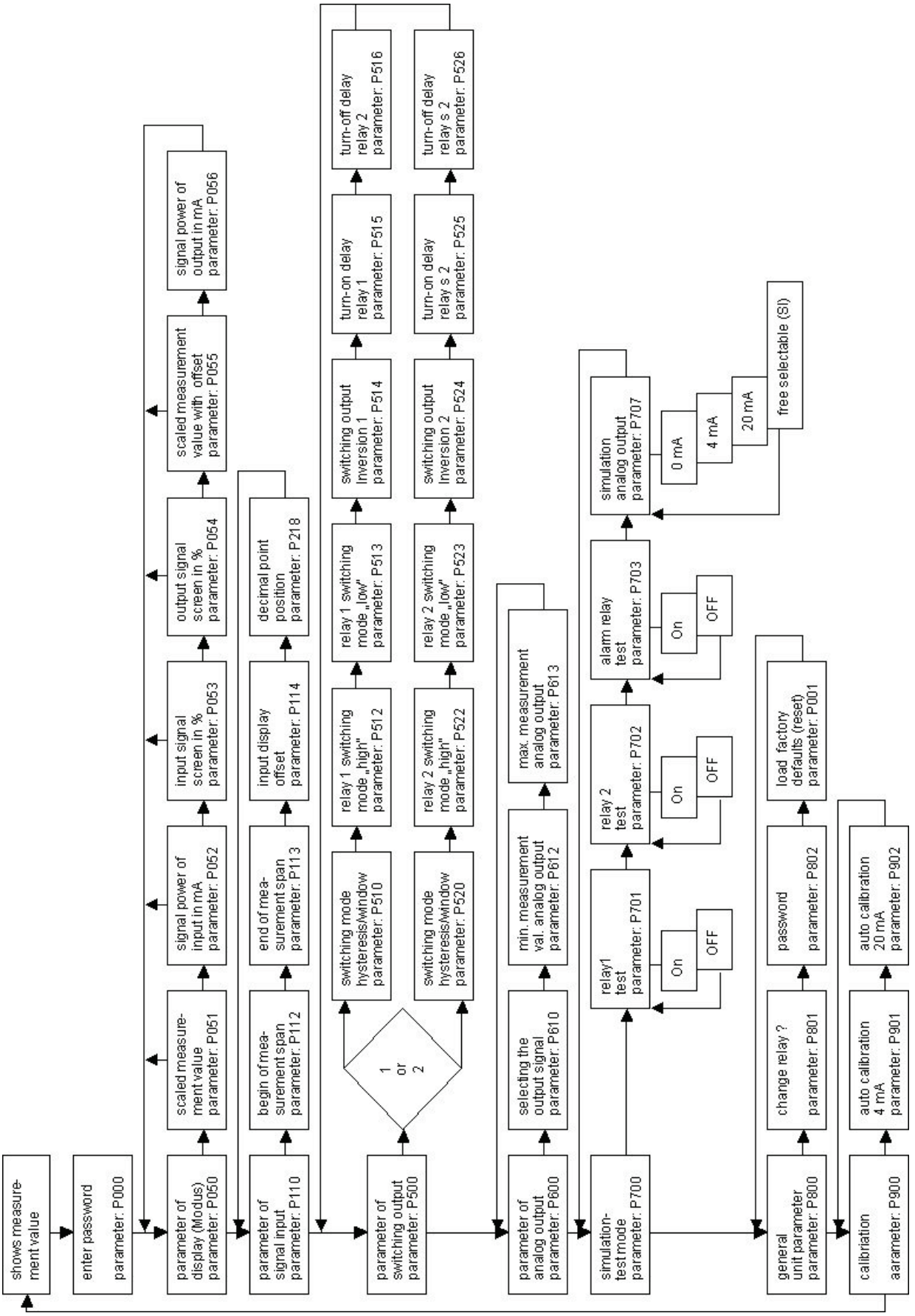


Fig. 24-1 Parameter structure of the NivuCont S

25 Description of the NivuCont S Parameters

25.1 Parameter Level P050 - Display

Parameters P051 to P056 are used to select the display mode. Within the parameter level, you can navigate forwards or backwards with the two arrow keys. Pressing the Enter key activates the corresponding function.

Display scaled Reading Parameter P051:

Outputs the scaled measured value on the display.

The value displayed can range from 0.000 to 9999. After selecting P051, confirm by pressing the Enter key to activate this display mode.

Display Input in mA Parameter P052:

Outputs the input signal in mA on the display. In this operating mode, the device works more or less like an mA meter in which the sensor current is displayed. After selecting P052, confirm by pressing the Enter key to activate this display mode.

Display Input in % Parameter P053:

Outputs the input signal as percentage on the display.

The value ranges between 0...100 % and is directly related to the sensor signal which ranges between 4...20 mA. After selecting P053, confirm by pressing the Enter key to activate this display mode.

Display Output in % Parameter P054:

Outputs the output signal as percentage on the display. The value ranges between 0...100 % and is directly related to the analogue output of the transmitter, which ranges between 0/4...20 mA (depending on the value selected in parameter P610). After selecting P053, confirm by pressing the Enter key to activate this display mode.

Display Reading with Offset Parameter P055:

Outputs the scaled measured value on the display, however, with the offset added in parameter P114.

The value displayed can range from 0.000 to 9999. The display offset is specified using the menu P114. After selecting P055, confirm by pressing the Enter key to activate this display mode.

Display Output in mA Parameter P056:

Outputs the output signal in mA on the display. In this operating mode, the device works more or less like an mA meter in which the analogue output of the transmitter is displayed.

The user can thus check whether the signal circuit is working correctly and downstream evaluation devices display the same value. After selecting P055, confirm by pressing the Enter key to activate this display mode.

25.2 Parameter Level P110 - Analogue Input

The subordinate parameters define the measurement span for the analogue input of the transmitter at 4 mA and 20 mA.

End of Measurement Range Parameter P112: The measurement value for the analogue input of the transmitter at 4 mA must be entered here. As a rule, this is the value 0, which would mean 0 metres at 4 mA for a pressure probe with a measuring range of 0 to 6 metres water column. Use the arrow keys to set the numerical value and confirm with the Enter key.

End of Measurement Range Parameter P113: The measurement value for the analogue input of the transmitter at 20 mA must be entered here. As a rule, this is the max. measurement range, which in our example of a pressure probe from 0 to 6 metres water column would be to enter the value of 6.

Use the arrow keys to set the numerical value and confirm with the Enter key.

Display Offset Parameter P114: This parameter is used in conjunction with parameter P055. The value set here is used as the display offset and added to the measurement value determined. Use the arrow keys to set the numerical value and confirm with the Enter key.

Decimal Point Parameter P218: The position of the decimal point is set here. Use the two arrow keys to move the decimal point and confirm with the Enter key.

25.3 Parameter Level P500 - Relays

The subordinate parameters of this level are responsible for setting the limit values and the switching behaviour of both relays. Since the same parameters are provided for both relays, the description is given for two menus at the same time. As with the other parameters, this parameter level is called up by pressing the Enter key once. Then it is necessary to select the relay for which the parameters are to be set.
This selection is made by selecting the number 1 or 2 using the arrow keys and confirming by pressing the Enter key.

Relay Switching Mode Parameter P510/P520: The switching logic of the relays is defined in this parameter. It is possible to select between the so-called hysteresis mode (limit level) and the window mode (in-band/out-of-band).

The selection is made as usual using the arrow keys - If HYON appears, the hysteresis mode (limit level) is selected. If COMP appears, the window mode (in-band/out-of-band) is selected. The selection made must be confirmed by pressing the Enter key.

Relay high Switching Point Parameter P512/P522: This parameter defines the "upper" switching value of the respective relay. The mode of operation of this parameter is illustrated by the programming example (Chap. "Parameterisation Example"). In hysteresis mode (limit level), for example, this value is used to set the switch-on point. In window mode (in-band/out-of-band), for example, the upper switching point of the in-band is set with this value. This value is set using the two arrow keys and must be confirmed after selection by pressing the Enter key.

Relay low Switching Point Parameter P513/P523:
This parameter defines the "lower" switching value of the respective relay. The mode of operation of this parameter is illustrated by the programming example (Chap. "Parameterisation Example"). In hysteresis mode (limit level), for example, this value is used to set the switchback point. In window mode (in-band/out-of-band), for example, the lower switching point of the in-band is set with this value. This value is set using the two arrow keys and must be confirmed after selection by pressing the Enter key.

Relay Inversion Parameter P514/P524:
This parameter makes it possible to invert the relay position. As a result, the "upper" and "lower" switching points are exchanged in the case of hysteresis (limit level). In window mode (in-band/out-of-band), the switching behaviour is changed from in-band to out-of-band.
Please note, however, that this specification only applies when the auxiliary power is active, as the relay must be supplied with auxiliary power depending on the parameterisation. The relay inversion is set using the arrow keys. If "St" is shown in the display, the relays are not inverted. The inversion is indicated by "In". To accept the setting, press the Enter key.

Relay Switch-On Delay Parameter P515/P525:
In this parameter, a switch-on delay time in the range of 0 to 100 seconds can be set for the selected relay. The setting is made using the arrow keys and confirmed by pressing the Enter key.

Relay Switch-Off Delay Parameter P516/P526:
In this parameter, a switch-off delay time in the range of 0 to 100 seconds can be set for the selected relay. The setting is made using the arrow keys and confirmed by pressing the Enter key.

25.4 Parameter Level P600 - Analogue Output

The settings for the analogue signal output are made via the subordinate parameters.

Output Signal Parameter P610:
The output signal range is defined in this parameter. It is possible to choose between the following settings:
4-20 mA, 0-20 mA, 0-4 mA and 20-0 mA.
The selection is made using the arrow keys and must be confirmed by pressing the Enter key once.

Analogue Output Min. Parameter P612:
In this parameter, the minimum measurement value that should correspond to the analogue output signal is entered, for example 0 metres. If this measured value is reached on the sensor side, the output is 4 mA, for example, if the signal range 4-20 mA was selected in parameter P610.

Analogue Output Max. Parameter P613:
In this parameter, the max. measured value that should correspond to the analogue output signal is entered, for example P112 and P113 a pressure sensor from 0 to 6 metres, so in parameter P613, for example, 5 metres can be entered. If this measured value is reached on the sensor side, the output is 20 mA, for example, if the signal range 4-20 mA was selected in parameter P610.

25.5 Parameter Level P700 - Test/Simulation

All test and simulation menus are grouped together in parameter level 700. The simulation options include manual relay control and simulation of an analogue output signal.

Test/Simulation Relay Parameter P701-P703:

The states of the relays can be simulated via these three parameters, whereby parameter P701 is responsible for relay 1, parameter P702 for relay 2 and parameter P703 for the alarm relay. The arrow keys can be used to simulate the states "energised" (ON) and "de-energised" (OFF). The relay changes its state immediately after the selection has been made with the arrow keys. Pressing the Enter key exits the respective simulation menu.

Test/Simulation mA-Output Parameter P707:

The signal value of the analogue output can be simulated via this parameter. The fixed values 0 mA, 4 mA, 20 mA and flexible can be specified. To set a flexible signal value, use the arrow keys to switch to the display "SI", which means output value simulation. Then press the Enter key and the value "12.00" mA appears as the simulation value. Now you can set the desired signal value using the arrow key, which is generated at the signal output after pressing the Enter key.
Abort this simulation by leaving this parameter.

25.6 Parameter Level P800 - Device Parameters

The parameter level P800 includes general device parameters

Relay Exchange Parameter P801:

This parameter can be used to swap the relays used at a set limit value. The background of this function is the exchange of pumps in order to get an even load (utilisation) of the pumps.

When the next switch-on point is reached, both pumps are activated. This function can be set to "On" or "Off". If the value falls below the lower switching point, the pumps are swapped.

Password Parameter P802:

This parameter defines the password (secret code) of the device. Set the code number using the arrow keys and confirm with the Enter key. To activate the password, use the P000 menu.

Default setting password: (5)

Reset Parameter P001:

The basic device settings (factory configuration) can be loaded via this parameter. To use this function, you must know the password (secret code). If this function is selected, the device waits for the secret code to be entered. This function is only executed after correct input.

Default setting password: (5)

25.7 Parameter Level P900 - Calibration

The parameter level P900 is for the self-calibration of the analogue input to the lower and upper sensor signal (4/20 mA).
One-point and two-point calibration are possible.

Min.-Calibration Parameter P901: This parameter adjusts the zero point (4 mA) of the transmitter input to the applied sensor signal. The device password is required to start the calibration.
For this, the min. output signal, which is output at the min. measurement span of the sensor, must be present at the transmitter input.

Max.-Calibration Parameter P902: This parameter is used to adjust the measurement range end value (20 mA) of the transmitter input to the applied sensor signal. The device password is required to start the calibration.
For this, the max. output signal, which is output at the max. measurement span of the sensor, must be present at the transmitter input.

Error Description

26 Overview of possible Errors with Reasons and Troubleshooting

Error	Possible Reason	Troubleshooting
Err	Interruption of the cable to the sensor on AI1. Defect in the sensor mechanics and thus interruption. Sensor defective -> current on AI1 lower than 3.3 mA.	Check the cable for damage. Replace cable or probe if necessary.
Err	Sensor electronics defective, delivered current too high. Short circuit in cable or junction box caused by moisture or defective terminal connections Current at AI1 greater than 22 mA.	Check the cable for damage. Replace cable or probe if necessary.
Large fluctuations in measurement values	Cable damaged; Contact problems due to cable extension, junction box or similar; Moisture in the cable; Probes defective.	Check all contacts and connections. Replace filter at the end of the cable. Check junction box for the ingress of moisture.

Tab. 4 Errors overview

Parameterisation Examplee

27 Level

Given:
NivuCont S, max. tank level 7 m
Medium: water, probe 4-20 mA, measurement range 10 m

Required:
Display of the measured value, recorder at the analogue output NivuCont S 4-20 mA, full scale recorder 20 mA at 7 m. The NivuCont S should display the max. filling height of the tank of 7 m.

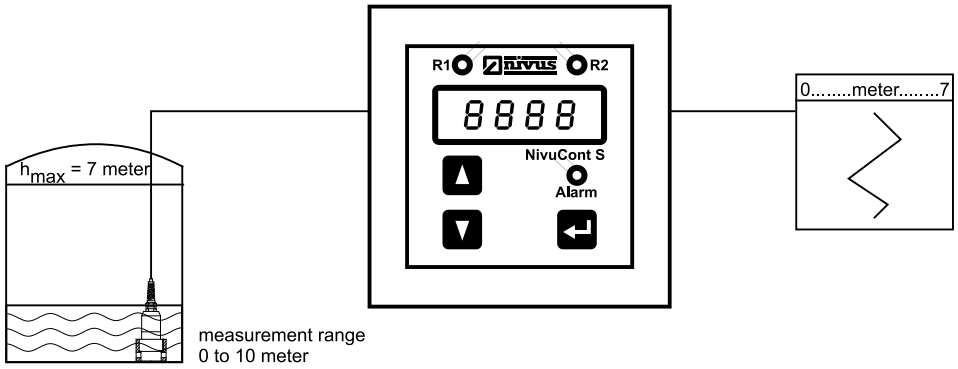


Fig. 27-1 Level

Parameter Example:

In P050 Display select P051.

P112	=	0	Start of Measurement Range
P113	=	10	End of Measurement Range
P114	=	0	Display Offset
P218	=	2	Decimal Places
P610	=	4-20	Output Signal in mA
P612	=	0	min. Output Value
P613	=	7	max. Output Value

28 Limit Level

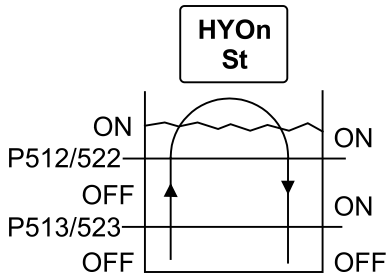
Given:
NivuCont S, max. tank level 7 m
Medium: water, probe 4-20 mA, measurement range 10 m

Required:
Recorder at the analogue output NivuCont S 4-20 mA, full scale recorder 20 mA at 7 m. The NivuCont S should display the max. filling height of the tank of 7 m. Relay 1 is to function as a limit value switch (On = 6 m; Off = 5 m).
If one wanted to set the switching point (On = 5 m; Off = 6 m), P514 must be set to "In".

WARNING ***Select value in P512/522 correctly***

Note that the value in P512/522 must always be greater than the value in P513/523.

To change the switching point, use the inversion in P514/524.



Switch-on point greater than switch-off point — Switch-on point smaller than switch-off point

Fig. 28-1 Limit value functions

Parameter Example:

In P050 Display select P051.

P112	=	0	Start of Measurement Range
P113	=	10	End of Measurement Range
P114	=	0	Display Offset
P218	=	2	Decimal Places

P500 go to 1 (Rel. 1).

P510	=	HYOn	
P512	=	6	
P513	=	5	
P514	=	St	
P610	=	4-20	Output Signal in mA
P612	=	0	min. Output Value
P613	=	7	max. Output Value

29 In-Band / Out-Of-Band

Given:
NivuCont S, max. tank level 7 m
Medium: water, probe 4-20 mA, measurement range 10 m

Required:
Recorder at the analogue output NivuCont S 4-20 mA, full scale recorder 20 mA at 7 m. The NivuCont S should display the max. filling height of the tank of 7 m. Relay 1 is to function as an out-of-band switch and relay 2 as an in-band switch (band between 3 m and 4 m) (if used as out-of-band, parameter P514 must be set to "In").

WARNING ***Select value in P512/522 correctly***

Note that the value in P512/522 must always be greater than the value in P513/523.

To change the switching point, use the inversion in P514/524.

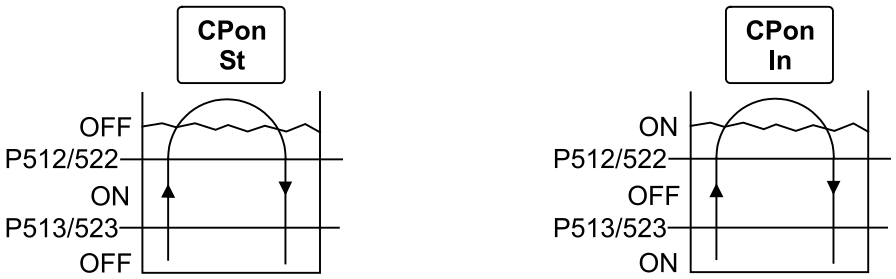


Fig. 29-1 In-band/out-of-band functions

Parameter Example:

In P050 Display select P051.

P112	=	0	Start of Measurement Range
P113	=	10	End of Measurement Range
P114	=	0	Display Offset
P218	=	2	Decimal Places

P500 go to 1 (Rel. 1).

P510	=	COMP	
P512	=	4	
P513	=	3	
P514	=	In	
P520	=	COMP	
P522	=	4	
P523	=	3	
P524	=	St	
P610	=	4-20	Output Signal in mA

P612	=	0	min. Output Value
P613	=	7	max. Output Value

30 Pump Exchange

Given:
NivuCont S, max. tank level 7 m
Medium: water, probe 4-20 mA, measurement range 10 m

Required:
Recorder at the analogue output NivuCont S 4-20 mA, full scale recorder 20 mA at 7 m. The NivuCont S should display the max. filling height of the tank of 7 m. Relay 1 is to operate as a limit value switch (On = 5 m; Off = 6 m), and have a 10 second switch-on delay; alternating with Relay 2 (On = 4.5 m; Off = 6 m).

WARNING ***Select value in P512/522 correctly***

Note that the value in P512/522 must always be greater than the value in P513/523.

To change the switching point, use the inversion in P514/524.

Parameter Example:

In P050 Display select P051.

P112	=	0	Start of Measurement Range
P113	=	10	End of Measurement Range
P114	=	0	Display Offset
P218	=	2	Decimal Places

P500 go to 1 (Rel. 1).

P510	=	HYOn	Limit Value
P512	=	6	Switching point "top"
P513	=	5	Switching point "bottom"
P514	=	In	Inversion of relay switching points
P515	=	10	Switch-on delay in seconds
P520	=	HYOn	Limit Value
P522	=	6	Switching point "top"
P523	=	4.5	Switching point "bottom"
P524	=	In	Inversion of relay switching points
P525	=	10	Switch-on delay in seconds
P610	=	4-20	Output Signal in mA
P612	=	0	min. Output Value
P613	=	7	max. Output Value
P801	=	On	Relay Exchange

Maintenance and Cleaning

WARNING ***Disconnect the System from Mains Power***

Disconnect the system from the mains power before starting maintenance, cleaning and/or repair work (only by qualified personnel).

Disregarding may lead to electric shock.

WARNING ***Germ Contamination***

Due to the frequent use of the sensors in the waste water sector, parts can be contaminated with dangerous germs. Therefore, appropriate precautions must be taken when coming into contact with cables and sensors.

Wear protective clothing.

31 Maintenance

31.1 Maintenance Interval

The Type NivuCont S transmitter is virtually calibration-, maintenance- and wear-free by design.
Nevertheless, NIVUS recommend an **annual check** of the entire measuring system by the NIVUS customer service.
Depending on the area of application of the measuring system, the maintenance interval may vary. The scope of maintenance and its intervals depend on the following factors:

- Measurement principle of the sensors
- Material wear
- Measurement medium and channel hydraulics
- General regulations for the operator of the measurement system
- Ambient Conditions

In addition to the annual maintenance, NIVUS recommend a complete maintenance of the measuring system by the NIVUS customer service after **ten years at the latest**.
Generally the verification of data loggers/sensors is a basic measure in order to improve operational reliability and to increase the lifetime.

Contact the NIVUS customer service to make an appointment (see Chap. "31.3 Customer Service Information").

31.2 Special Maintenance

In various regions, it may be necessary or required for special metrological applications to have regular maintenance with comparative measurements carried out in order to comply with official requirements, verification obligations etc. If required, NIVUS will take over all necessary regular inspections, hydraulic and metrological assessments, calibrations, troubleshooting and repairs within the framework of a maintenance contract to be concluded. This work is carried out on the basis of DIN 19559, including documentary evidence of the remaining residual error, as well as in accordance with the self-monitoring ordinance of the relevant federal states. In other countries, please inform yourself about the regulations applicable there.

31.3 Customer Service Information

For maintenance measures to be carried out by NIVUS, the recommended annual inspection of the entire measuring system or complete maintenance after ten years at the latest, contact our customer service:

NIVUS GmbH - Customer Centre
Phone +49 7262 9191-922
customercenter@nivus.com

32 Cleaning

If necessary, clean the transmitter enclosure with a dry lint-free cloth. In case of heavy soiling, we recommend the use of standard detergent.

33 Dismantling/Disposal

Improper disposal may be harmful to the environment.

➲ Dispose of device components and packaging materials in accordance with the applicable local environmental regulations for electrical products:

1. Disconnect the device from mains power, if connected.
2. Remove connected cables from the device.
3. If required, remove batteries and, if they are defective, dispose of them properly.

EU WEEE Directive

This symbol indicates that the requirements of Directive 2012/19/EU on waste electrical and electronic equipment must be observed when disposing of the device. NIVUS GmbH support and promote the recycling or environmentally sound, separate collection/disposal of waste electrical and electronic equipment to protect the environments and human health. Observe the local laws and regulations on disposal.
NIVUS GmbH is registered with the EAR, therefore public collection and return points in Germany can be used for disposal.

34 Installation of Spare Parts and Wearing Parts

We expressly draw your attention to the fact that spare parts and accessories which have not been supplied by us have also not been tested and approved by us. The installation and/or use of such products may therefore negatively alter or invalidate the design properties of your measurement system.
NIVUS are not liable for damage caused by the use of non-original parts and non-original accessories.

More accessories and spare parts can be found in the current NIVUS price list.

Emergency

In case of an emergency, press the EMERGENCY STOP button for the higher system.

Certificates and Approvals

DE / EN / FR

EU Konformitätserklärung

EU Declaration of Conformity

Déclaration de conformité UE

NIVUS GmbH
Im Täle 2
75031 Eppingen

Telefon: +49 07262 9191-0
Telefax: +49 07262 9191-999
E-Mail: info@nivus.com
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:
For the following product:
Le produit désigné ci-dessous:

Bezeichnung:	**Messumformer NivuCont S**
Description:	*Measurement transmitter*
Désignation:	*Convertisseur de mesure*
Typ / Type:	**NCS0…**

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:
we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:
nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:

- 2014/30/EU
- 2014/35/EU
- 2011/65/EU

Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug auf die nachfolgend genannten anderen technischen Spezifikationen:
The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:
L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:

- EN 61326-1:2013
- EN 61010-1:2010

Diese Erklärung wird verantwortlich für den Hersteller:
This declaration is submitted on behalf of the manufacturer:
Le fabricant assume la responsabilité de cette déclaration:

NIVUS GmbH
Im Taele 2
75031 Eppingen
Allemagne

abgegeben durch / *represented by / faite par:*
Marcus Fischer (Geschäftsführer / *Managing Director / Directeur général)*

Eppingen, den 23.08.2021

Gez. *Marcus Fischer*

Q:\Formulare\CE\CE_Template_ohne_Ex_01

DE / EN / FR

EU Konformitätserklärung

EU Declaration of Conformity

Déclaration de conformité UE

NIVUS GmbH
Im Täle 2
75031 Eppingen

Telefon: +49 07262 9191-0
Telefax: +49 07262 9191-999
E-Mail: info@nivus.com
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:

For the following product:

Le produit désigné ci-dessous:

Bezeichnung:	**"Ex" Messumformer NivuCont S**
Description:	*"Ex" measurement transmitter*
Désignation:	*"Ex" Convertisseur de mesure*
Typ / Type:	**NCS0xxxxxxxE…**

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:

nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:

- 2014/34/EU
- 2014/30/EU
- 2014/35/EU
- 2011/65/EU

Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug die nachfolgend genannten anderen technischen Spezifikationen:

The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:

L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:

- EN 61326-1.2013
- EN 61010-1:2010
- EN IEC 60079-0:2018
- EN 60079-11:2012

Ex-Kennzeichnung / *Ex-designation / Marquage Ex* : II (1)G [Ex ia Ga] IIC
II (1)D [Ex ia Da] IIIC

EU-Baumusterprüfbescheinigung / *EU-Type Examination Certificate / Attestation d'examen «UE» de type:*

IBExU05ATEX1098X Issue 1

Notifizierte Stelle (Kennnummer) / *Notified Body (Identif. No.) / Organisme notifié (№ d'identification)*

IBExU Institut für Sicherheitstechnik GmbH, 09599 Freiberg, Allemagne (0637)

Qualitätssicherung ATEX / *Quality assurance ATEX / Assurance qualité ATEX:*

TÜV Nord CERT GmbH, Am TÜV 1, 30519 Hannover, Allemagne (0044)

Diese Erklärung wird verantwortlich für den Hersteller:

This declaration is submitted on behalf of the manufacturer:

Le fabricant assume la responsabilité de cette déclaration:

NIVUS GmbH
Im Taele 2
75031 Eppingen
Allemagne

abgegeben durch / *represented by / faite par:*

Marcus Fischer (Geschäftsführer / *Managing Director / Directeur général)*

Eppingen, den 23.08.2021

Gez. *Marcus Fischer*

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IBExU Institut für Sicherheitstechnik GmbH
An-Institut der TU Bergakademie Freiberg

[1] **EU-TYPE EXAMINATION CERTIFICATE** - Translation

[2] Equipment or protective systems
intended for use in potentially explosive atmospheres, Directive 2014/34/EU

[3] EU-type examination certificate number **IBExU05ATEX1098 X** | Issue 1

[4] Product: **Process Transmitter**
Type: NivuCont S

[5] Manufacturer: NIVUS GmbH

[6] Address: Im Täle 2
75031 Eppingen
GERMANY

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH, Notified Body number 0637 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential test report IB-21-3-0079.

[9] Compliance with the essential health and safety requirements has been assured by compliance with:
EN IEC 60079-0:2018, EN 60079-11:2012

Except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This EU-type examination certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

Ex II (1)G [Ex ia Ga] IIC
Ex II (1)D [Ex ia Da] IIIC

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg, GERMANY

Tel: + 49 (0) 37 31 / 38 05 0
Fax: + 49 (0) 37 31 / 38 05 10

By order

Dipl.-Ing. Willamowski

- Seal -
(Notified Body number 0637)

Certificates without signature and seal are not valid. Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Freiberg, 2021-08-02

IBExU Institut für Sicherheitstechnik GmbH
An-Institut der TU Bergakademie Freiberg

[13] **Schedule**

[14] **Certificate number IBExU05ATEX1098 X** | Issue 1

[15] **Description of product**

The Process Transmitter type NivuCont S is an associated apparatus and is to install outside of hazardous areas. It serves to the galvanically isolated supply and the signal transmission for 2- respectively 3-line sensors in potentially explosive atmospheres, which requires Category 1 Apparatus. The electronic components are on a circuit board inside of an enclosure. The electrical connections are carried out with terminals in the front for the top-head rail version and on the backside of the built-in enclosure. The equipment is fitted out with LED-Display and foil keyboard.

Technical data

Ambient temperature range: -20 °C to +40 °C

Electrical data

Supply input (Terminals 1, 2 and 3)

Voltage	U_N	24 V DC res. 230 V AC
max. voltage	U_m	250 V
Nominal power	P_V	app. 4 VA

Current-loop output (Terminals 25 and 26)

Voltage	U_N	10 V DC
max. voltage (DC)	U_m	250 V

Relay output (Terminals 5 up to 13)

Switching voltage	U_N	250 V AC
Switching current	I	6 A
max. Voltage	U_m	250 V

Sensor circuit (Terminals 14, 15 and 16) type of protection Intrinsic Safety Ex ia IIC, IIB res. IIA

	U_o	25.2 V
	I_o	84.8 mA
	P_o	535 mW
Characteristic linear	R_i	297 Ω

Maximum values without lumped capacitance / inductance

Ex ia	IIC	IIB	IIA
C_o	107 nF	820 nF	2900 nF
L_o	5.7 mH	20 mH	42 mH

Variation compared to the previous issuesof this certificate:

The device complies with the current standards EN IEC 60079-0 and EN 60079-11.

[16] **Test report**

The test results are recorded in the confidential test report IB-21-3-0079 of 2021-07-30.
The test documents are part of the test report and they are listed there.

Summary of the test results
The Process Transmitter type NivuCont S fulfills the requirements of type of protection intrinsic safety 'ia' to associated apparatus of equipment group II, category 1G and 1D, explosion group IIC and IIIC.

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[17] **Specific conditions of use**

The minimum distance of 50 mm between intrinsically safe terminals and other terminals must be fulfilled by the assembly. It is reachable with use of a partition or insulations and fixations of wires (res. shrinkdown plastic tubing).

[18] **Essential health and safety requirements**

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report:
none

[19] **Drawings and Documents**

The documents are listed in the test report.

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg, GERMANY

By order

Dipl.-Ing. Willamowski

Freiberg, 2021-08-02