

# Technical Description

## Ex-Separator Module pXT0 – Transit Time



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### **Important Note**

*This instruction manual may exclusively - even in parts - be copied or translated in any other way with the express written consent of NIVUS GmbH.*

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### **Translation**

If the device is sold to a country in the European Economic Area (EEA) 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 the NIVUS GmbH contacted for clarification.

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## Document modifications

Rev.	Modifications	Editor in charge	Date
00	First version based on the German document	MoG	09.07.2021

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## General

### 1 About this manual



---

**Important Note**

*READ CAREFULLY BEFORE USE.*

*KEEP IN A SAFE PLACE FOR LATER REFERENCE.*

---

This manual is for the intended use (see chap. “6 Use in accordance with the requirements”) of the Ex-Separator Module pXT0 – Transit Time and is required for the installation. This manual is oriented exclusively to qualified expert personnel.

Read this manual carefully and completely prior to start works 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 manual either contact the NIVUS GmbH or one of the distributors for further support. The legally associated companies and subsidiaries of NIVUS group cannot be held responsible for damage to persons or material due to incorrectly understood information in this manual.

Detailed information on how to operate the complete system can be found in the accompanying instruction manuals of the concerning NIVUS Transmitters, Sensors etc.



---

**Name/Term**

*The Ex-Separator Module pXT0 – Transit Time in this manual is hereinafter called pXT0.*

---




### 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 for the applicable flow measurement transmitter NivuFlow 600
- Technical Description Transit Time Sensors
- Installation Instructions Transit Time Sensors

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

Image	Meaning	Remark
	(Action) Step	Action to be performed by you. Note the numbering of action steps. Observe the order of the working steps.
	Cross-reference	Refers to further or detailed information.
>Text<	Parameter or Menu	Indicates a parameter or a menu that is selected or described.
	Reference to document	Refers to an accompanying documentation.

**Table 1** Structural elements within the manual

### 1.3 Colour code for wires and single conductors

The abbreviations of colours, wire and components 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	Turquoise
GNYE	Green/Yellow	GD	Gold	SR	Silver



## Safety Instructions

### 2 Used symbols and Signal words

#### 2.1 Valuation of the accident level



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

---

#### **DANGER**

##### ***Warnings in high degree of risk***



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

---

#### **WARNING**

##### ***Warnings in medium degree of risk***



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

---

#### **CAUTION**

##### ***Warnings in low-risk or property damages***



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

---

#### **WARNING**

##### ***Danger by electric voltage***



*Indicates a hazard with a high risk of electric shock which may result in a life-threatening situation or (severe) bodily injury if it is not avoided.*

---



### **Important Note**

*Contains information that should be highlighted.  
Indicates a potentially damaging situation which can result in a damage of the product or an object in its environment.*

---



### **Note**

*Contains information and facts.*

---

## **2.2 Warning notices on the product (option)**



### **General warning label**

*This symbol is for operators to refer to this manual.  
Observing the information contained therein is required in order to maintain protection measures provided by the instrument during installation procedures and operation.*



### **Protective conductor**

*This symbol refers to the protective conductor of the unit.  
Depending on the mode of installation the instrument shall be operated solely connected to an appropriate protective conductor according to applicable laws and regulations.*

## **3 Safeguards and Precautions**

**Working with NIVUS instruments requires to observe and to follow the safety measures and precautions below generally and at any time. These notes and warnings will not be repeated for each description within the document.**

### **WARNING**



### **Germ contamination**

*Please note that due to the operation in the waste water field the measurement system and cables may be loaded with dangerous disease germs. Respective precautionary measures must be taken to avoid damage to one's health.*

*Wear protective clothing.*

---

**WARNING****Observe occupational safety regulations**

*Before starting and while processing installation work, observing the work safety regulations need to be checked.*

*Disregarding may lead in personal injury.*

---

**WARNING****Do not disable safety devices**

*It is strictly prohibited to disable the safety devices or to change the way they work.*

*Disregarding may lead in personal injury.*

---

**WARNING****Check danger through explosive gases**

*Prior to beginning mounting, installation and maintenance make sure to observe any regulations on safety at work as well as to check the potential risk due to explosive gases. Use a gas warn-er to check.*

*When working in the channel system make sure to avoid electro-static charge:*

- Avoid unnecessary movements to minimise the risk of static energy accumulating.*
- Discharge any possible static electricity from your body before you begin to install sensors.*

*Disregarding may lead to personal injury or damage your equip-ment.*

---

**Putting into operation by trained experts only**

*The entire measurement system shall be installed and put into operation by trained expert personnel only.*

---

## 4 Warranty

The device has been functionally tested before delivery. If it is used as intended (see chap. “6 Use in accordance with the requirements”) and the operating instructions, the applicable documents (see chap. “1.1 Applicable documentation”) and the safety notes and instructions contained therein, are observed, no functional restrictions are to be expected and perfect operation should be possible.



Please also note in this regard the next chap. "5 Liability Disclaimer".



---

### **Limitation of warranty**

*In the event of non-compliance with the safety instructions and instructions in this document, the companies of the NIVUS group of companies reserve the right to limit the warranty.*

---

## **5 Liability Disclaimer**

**The legally associated companies and subsidiaries of NIVUS group assume no liability**

- for damages owing to a **change** of this document. The legally associated companies and subsidiaries of the NIVUS group reserve the right to change the contents of this document and this disclaimer at any time and without any notice.
- for damages to persons or objects resulting from **failure to comply** with applicable **regulations**. For connection, commissioning and operation of the sensors all available information and higher local legal regulations (in Germany e.g. VDE regulations) such as applicable Ex regulations as well as safety requirements and regulations in order to avoid accidents shall be adhered to.
- for damages to persons or objects resulting from **improper use**. For safety and warranty reasons, all internal work on the instruments beyond from that involved in normal installation and connection, must be carried out only by qualified NIVUS personnel or persons or companies authorised by NIVUS.
- for damages to persons or objects resulting from the use of instruments in technically **imperfect** condition.
- for damages to persons or objects resulting from the use of instruments **not in accordance with the requirements**.
- for damages to persons or objects resulting from failure to comply with **safety information** contained within this instruction manual.
- for missing or incorrect measurement values or resulting consequential damages due to **improper installation**.

## 6 Use in accordance with the requirements

---



### **Note**

*The Ex-Separator Module pXT0 is exclusively intended to be used for purposes as described below. Modifying or using the instruments for any other purposes without the written consent of the legally associated companies and/or subsidiaries of NIVUS group will not be considered as use in accordance with the requirements.*

*The legally associated companies and subsidiaries of NIVUS group cannot be held responsible for any damage resulting from improper use.*

*The user alone bears any risk.*

---

The pXT0 is for the connection of NIVUS sensors (specified in chap. “19 Application area and Function”) which are installed inside Ex Zone 1 (but the pXT0 need to be installed in the Non-Ex area).

The pXT0 is designed and manufactured in accordance with the current state of the art and with the recognised safety rules and regulations applicable at the time this document is issued. Danger to persons or material damage cannot be completely ruled out, however.

The maximum permissible limit values as specified in chap. “17 Specifications” shall be necessarily observed. Any case varying from these conditions which is not approved by NIVUS GmbH in written form is left at the owner’s risk.


### 7 Ex Protection

The connection of pXT0 to the NIVUS sensors is designed for use in areas with explosive atmospheres (Ex Zone 1).

The pXT0 needs to be installed in non-Ex areas. The pXT0 is equipped with intrinsically safe circuits to connect NIVUS sensors for use in Ex Zone 1.

Necessarily observe the following conditions and safety warnings/hints.

#### Approval pXT0

 See chap. "17 Specifications".

---

#### CAUTION



#### **Damages invalidate the Ex protection**

*Damage might invalidate the Ex protection.  
The pXT0 then is not allowed to be used any longer.*

*Protect the pXT0 from shocks, drops or other damage.*

---



#### **Important Note**

*Install the pXT0 outside of the Ex zone inside the cabinet!*

---



#### **Validity of Ex Approval**

*The Ex approval is only valid in connection with the respective indication on the device nameplate on the pXT0 enclosure.*

*The Ex version of Separator Module pXT0 is, regarding the assessment of intrinsically safe electrically systems according to EN 60079-25, matched to the NIVUS sensors of the Mini family (TÜV 12 ATEX 087812).*

*The required specifications for Ex version sensors can be taken from the respective EU Type examination certificate.*

---



#### **Declaration of Conformity and Test certificates**

*For installation and commissioning observe the EU Declaration of Conformity and the Test certificates of the respective authorities.*

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## 8 User's Responsibilities

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### **Important Note**

*In the EEA (European Economic Area) national implementation of the framework directive 89/391/EEC and corresponding individual directives, 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, are to be observed and adhered to.*

*In Germany e.g. the Industrial Safety Ordinance must be observed.*

---

Make sure to have a local operating permit available and observe the associated conditions. In addition to this you must observe environmental requirements and local laws on the following points:

- Personnel safety (accident prevention regulations)
- Safety of work materials and tools (safety equipment and maintenance)
- Disposal of products (laws on wastes)
- Disposal of materials (laws on wastes)
- Cleaning (cleansing agents and disposal)

### **Connections**

Operators shall make sure prior to operating the pXT0 that during installation and initial start-up the local regulations (such as regulations for electrical connection) are observed.

### **Keep the manual**

Keep this manual in a safe place and make sure it is available for the users of this product at any time.

### **Provide the manual**

In case of selling the instrument this instruction manual shall be provided to the purchaser since it is a part of the standard delivery.

### 9 Personnel requirements

Installation, commissioning and maintenance shall be executed only by personnel meeting the demands as follows:

- Expert personnel with relevant training and appropriate qualification
- Personnel authorised by the plant operator



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#### **Qualified personnel**

*within the context of this documentation or the safety notes on the product itself are persons who are sufficiently familiar with installation, mounting, starting up and operation of the product and who have the relevant qualifications for their work; for example:*

- I. Training, instruction or authorisation to activate/deactivate, isolate, ground, and mark electric circuits and devices/systems according to the safety engineering standards.*
  - II. Education and instruction according to the standards of safety engineering regarding the maintenance and use of adequate safety equipment.*
  - III. First aid training*
-



## Delivery, Storage and Transport

### 10 Delivery

The standard delivery of the pXT0 contains:

- Ex-Separator Module pXT0 – Transit Time (according to shipping documents)
- Technical Description (incl. Certificate of Conformity) containing any relevant information on how to connect, start-up and operate the pXT0

Check extra accessories depending on your order and by using the delivery note.

### 11 Reception Inspection

Check the packaging for visible damage immediately after receipt. Any possible damage in transit shall be instantly reported to the carrier. Furthermore a written report shall be sent to NIVUS GmbH in Eppingen.

Incomplete deliveries shall be reported in writing either to your local representative or directly to the NIVUS head office in Eppingen within two weeks.



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***Observe the Time limit***

*Any complaints received later cannot be accepted.*

---

### 12 Storage

The permissible maximum values regarding ambient conditions such as temperature and humidity according to chapter “17 Specifications” shall be necessarily observed.

Protect the pXT0 from corrosive or organic solvent vapours, radioactive radiation as well as strong electromagnetic radiation.

### 13 Transport

Protect the pXT0 from shock and impact loads and vibrations.

The transportation must be carried out in the original packaging.

Otherwise with regard to environmental influences the same conditions apply as to the storage (see chap. “12 Storage”).

### 14 Return

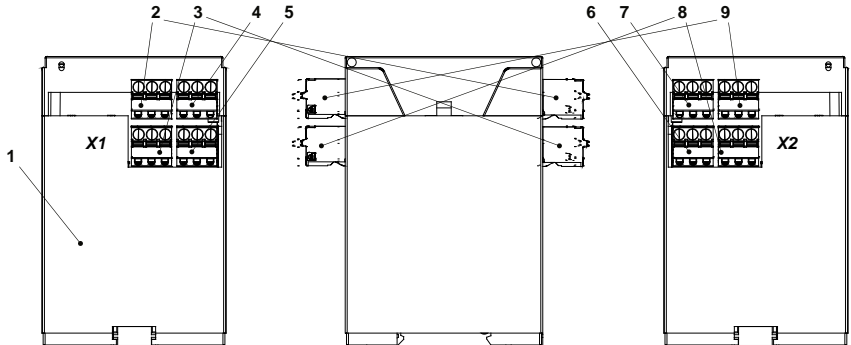
In case of a required reshipment return the unit at customer cost to NIVUS GmbH in Eppingen using the original packaging.

Insufficiently franked shipments will not be accepted!

## Product Specification

### 15 Overview and Use

#### 15.1 Overview



- 1 Device enclosure
- 2 Connection to the transmitter NivuFlow (Transit Time sensor 2)
- 3 Connection to the transmitter NivuFlow (Transit Time sensor 4)
- 4 Connection to the transmitter NivuFlow (Transit Time sensor 1)
- 5 Connection to the transmitter NivuFlow (Transit Time sensor 3)
- 6 Connection Transit Time sensor 3
- 7 Connection Transit Time sensor 1
- 8 Connection Transit Time sensor 4
- 9 Connection Transit Time sensor 2

**Fig. 15-1 Overview of the Ex-Separator Module pXT0 – Transit Time**

## 15.2 Enclosure Dimensions

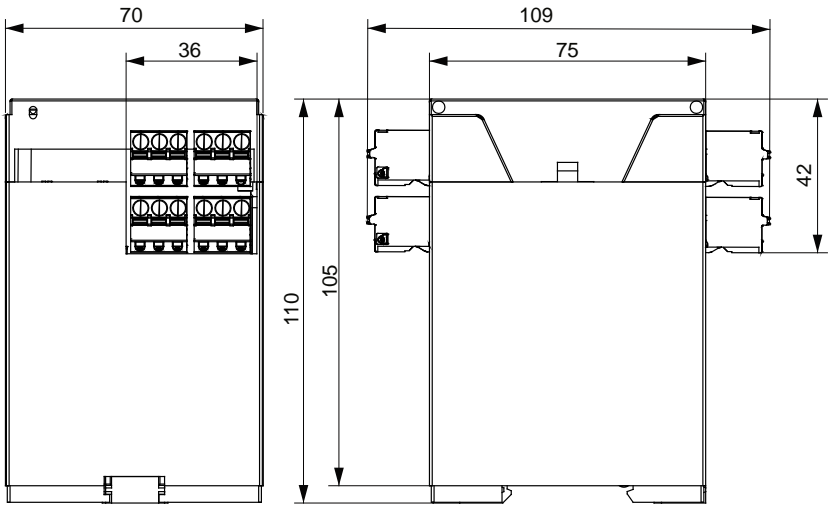


Fig. 15-2 Dimensions of DIN rail enclosure

### 16 Device Identification

The information contained within this manual is valid only for the type of device specified on the title page.

The nameplate is fixed on the enclosure and contains the following:

- Name and address of NIVUS GmbH
- CE label
- Information on type and series incl. article and serial number
- Year of manufacture: the first four digits of the serial number represent the year and the week of manufacture (2123.....)
- Ex protection label
- Environmental operating conditions

In case of enquiries and ordering replacement parts it is important to specify article number as well as the serial number of the respective device. This ensures correct and quick processing.



Fig. 16-1 Nameplate Ex-Separator Module pXT0 – Transit Time




#### Check nameplates

Check the delivered instrument for accordance with your order by identifying the nameplate.



The declaration of conformity and the EU-Type Examination Certificate are located at the end of the manual.

## 17 Specifications

<b>Protection degree</b>	IP20, for installation in areas up to maximum pollution degree 2
<b>Ex approval (option) / other approvals (option)</b>	ATEX: TÜV 20 ATEX 278994 IECEX: TUN 20.0018  II (2)G [Ex ib Gb] IIB
<b>Operating temperature</b>	-20...+50 °C
<b>Storage temperature</b>	-20...+85 °C
<b>max. humidity</b>	95 %, non-condensing

**Table 2 Specifications**

## 18 Configurations / Device Typen

The pXT0 is currently available in one configuration.

The article number is located on the nameplate at the side of the enclosure.

<b>Device type</b>	<b>Sensors</b>
pXT0620	2x 2 Transit Time sensors (pairs)

**Table 3 Product structure Ex Separation Module pXT0**

## Functional Description

### 19 Application area and Function

The pXT0 separates the Ex area Zone 1 (sensors) and non-Ex areas (Separation module, transmitter and/or extension module NFE).

The pXT0 is conceived for correct Ex-technical separation of the following sensors.

**NIVUS velocity sensors:**

- NIS-
- NIS0
- NIC-

The pXT0 intrinsically safe divides these velocity sensors from the Ex area. It ensures reliable data transmission between the sensor pairs and the NivuFlow 600 transmitter and/or the extension module NFE.

The pXT0 draws its required power from the transmitter.

## Installation and Connection

### 20 General Installation Instructions

- Observe appropriate installation.
- Follow applicable legal or operational guidelines.

Inappropriate use may result in injuries and/or damage on instruments.

#### 20.1 Hints to avoid electrostatic discharge (ESD)

---

##### CAUTION



##### *ESD Risks*

*Maintenance procedures which do not require power supply of the instrument shall not be executed before the unit has been disconnected from mains power in order to minimise danger and ESD risks.*

*Disconnect the pXT0 from the transmitter (mains power)!*

---

The sensitive electronic components inside the unit may get damaged by static electricity. NIVUS recommend the following steps to prevent the device from getting damaged due to electrostatic discharge.

- Discharge static electricity from your body before touching the instrument's electronic components.
- Avoid unnecessary movements to reduce the risk of building up static electricity.

#### 20.2 Installation Place

The pXT0 with DIN rail fastening is conceived for installation in switching cabinets.

- Observe adequate ventilation at the installation place e.g. by using a fan or a heat exchanger.

#### 20.3 Installation Guidelines

For safe installation the measures below must be taken:

- Do not subject the pXT0 to excessive vibration or shock.
- Do not install the pXT0 close to footpaths or travel ways.
- Observe the tolerable ambient air temperature.

Strictly avoid when installing the device:

- corrosive chemicals or gases
- radioactive radiation

## 21 Fastening the pXT0

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### Notes

*Mounting materials and tools are **not** parts of the standard delivery.*

---

- For fastening use a DIN rail type TS35 according to DIN EN 60715 with a minimum length of 70 mm.
- Fasten the rail horizontally in the intended enclosure/switching cabinet by using at least two screws.
- Hook the pXT0 into the DIN rail from above and then is snapped into place diagonally downwards by exerting slight pressure from the front.

## 22 Electrical Installation

---

### WARNING



### **Disconnect the unit from the transmitter / mains power**

*All work on electrical connections may only be carried out with the supply voltage turned off.*

*Observe electrical data specified on the nameplate.*

---



### Note

*Observe the national installation instructions.*

---

- For electric installation the regulations in the respective countries must be referred to (in Germany e.g. VDE 0100).
- For installation in wet environments or in areas featuring the risk of flooding it may be necessary to install extra protective measures such as a residual current device (RCD) if required.
- Check if the power supply of the units must be integrated into the facility's emergency shutdown conception.
- Transmitters and sensors shall be installed completely before feeding the supply voltage.
- Make sure that the installation is correct.



- The installation shall be carried out by qualified personnel only.
- Legal standards, provisions and technical regulations need to be observed.

## 22.1 Connection Cable

Exclusively the **connection cables** *ZUB0 TT KABEL XX* are to be used. They are available in lengths of 5, 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 m and they are always in a set of two pieces (pairs).

### Between sensor and transmitter

Use the following NIVUS cable type for the **complete distance** between NIVUS sensors and transmitter NivuFlow:

- Connection cable *ZUB0 TT KABEL xx*,  
Max. allowed total length  $L_{Total}$  100 m or 50 m (depending of the sensors used)

### Between sensor and pXT0

Maximum allowed cable length between the sensors and pXT0 using the NIVUS connection cables *ZUB0 TT KABEL xx*

- Between NIS- or NIS0 sensors and pXT0:  
20 m max. (shortest cable available is 5 m)
- Between NIC- sensors and pXT0:  
20 m max. (shortest cable available is 5 m)
- If overvoltage protection elements *BSL0 SPT* are used the mentioned maximum cable lengths apply incl. the interconnected overvoltage protection elements.

### Between pXT0 and transmitter or pXT0 and extension module NFE

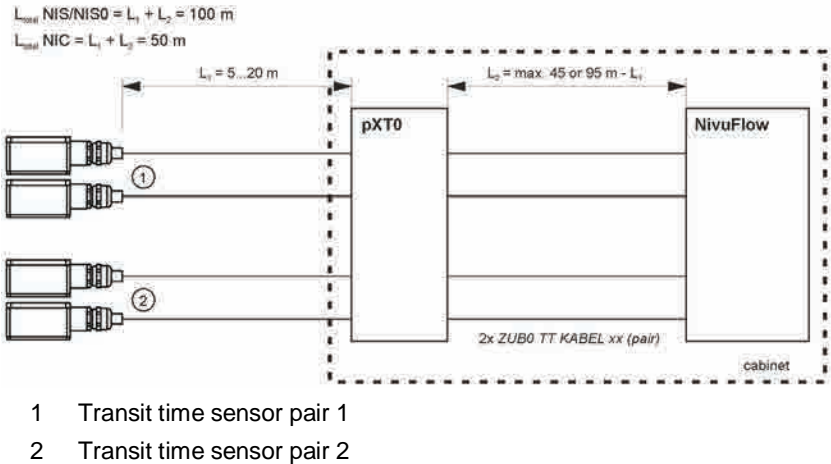
Maximum allowed cable lengths of the NIVUS connection cables *ZUB0 TT KABEL xx* between pXT0 and transmitter or between pXT0 and extension module NFE are independent of the mounting place (cabinet or field enclosure):

- With NIS- or NIS0 sensors:  
95 m maximum, given: 100 m (max. total length  $L_{Total}$ ) minus the used cable length (5 m min. / 20 m max. / see above) between sensors and pXT0
- With NIC- sensors:  
45 m maximum, given: 50 m (max. total length  $L_{Total}$ ) minus the used cable length (5 m min. / 20 m max. / see above) between sensors and pXT0
- If overvoltage protection elements are used the mentioned maximum cable lengths apply incl. the interconnected overvoltage protection elements.

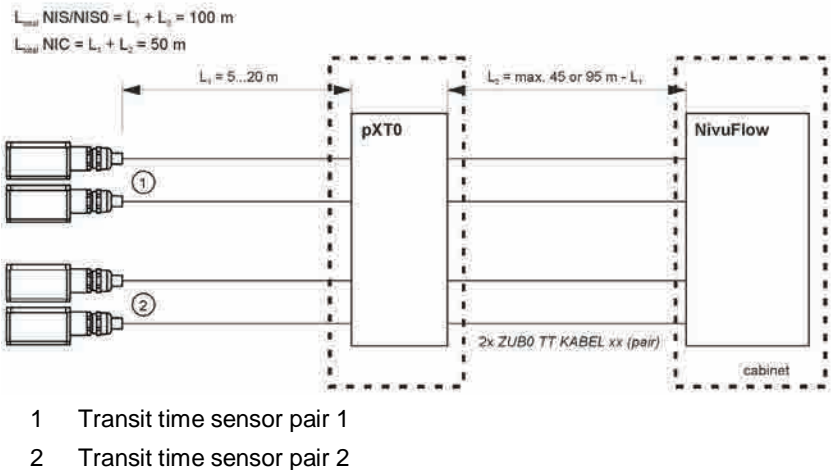


### Note

Do not connect more than one wire per cage clamp terminal on pXT0 and NivuFlow 600.

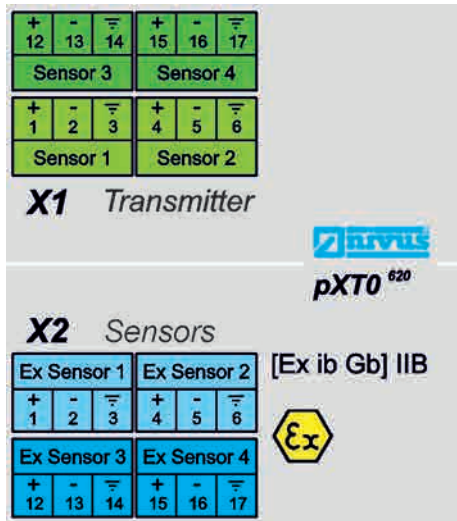


**Fig. 22-1 Connection transit time sensor pairs – pXT0 inside cabinet**



**Fig. 22-2 Connection transit time sensor pairs – pXT0 – NivuFlow**

## 22.2 Wiring Diagram



### Terminal block X1 (green)

1	+ Sensor 1	Sensor cable 1	4	+ Sensor 2	Sensor cable 2
2	- Sensor 1		5	- Sensor 2	
3	Shield		6	Shield	
12	+ Sensor 3	Sensor cable 3	15	+ Sensor 4	Sensor cable 4
13	- Sensor 3		16	- Sensor 4	
14	Shield		17	Shield	

### Terminal block X2 (blue)

1	+ Ex Sensor 1	Transit time	4	+ Ex Sensor 2	Transit time
2	- Ex Sensor 1	sensor 1	5	- Ex Sensor 2	sensor 2
3	Shield		6	Shield	
12	+ Ex Sensor 3	Transit time	15	+ Ex Sensor 4	Transit time
13	- Ex Sensor 3	sensor 3	16	- Ex Sensor 4	sensor 4
14	Shield		17	Shield	

**Fig. 22-3 Terminal wiring diagram for pXT0620**

The "Terminal block X1" is designed for connection to a NIVUS transmitter. How to connect the sensors is described in the "Terminal block X2" section.



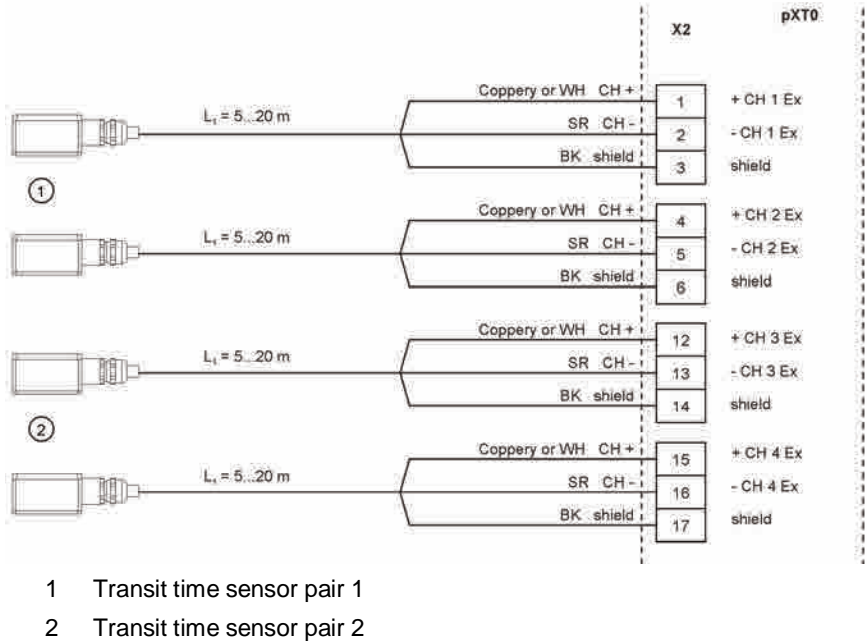
### Note

For electrical connection observe the device configuration. One copper wire with a maximum cross section of 2.5 mm<sup>2</sup> can be connected per clamp.

Connection is made by using spring plug terminal clamps.

## 22.3 Sensor Connection to Ex-Separator pXT0

The sensor cable is connected to the pXT0 in the “Terminal block X2” section.



**Fig. 22-4 Connection to transit time sensor pairs to pXT0620**

## 22.4 Connection to pXT0 to NivuFlow Transmitters

To identify the transmitter type, see the unit's nameplate.

To connect cables observe the notes in chap. "22.1 Connection Cable" as well as as Fig. 22-1 and Fig. 22-2.

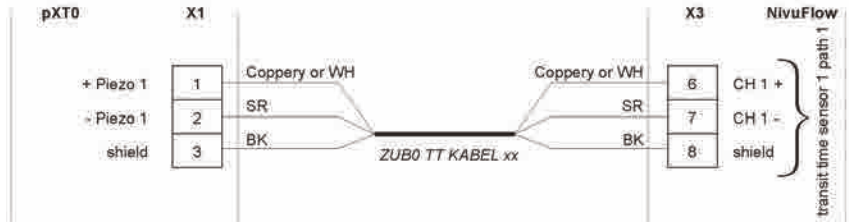


Fig. 22-5 Transit time sensor 1 path 1: pXT0 at NF600-T2

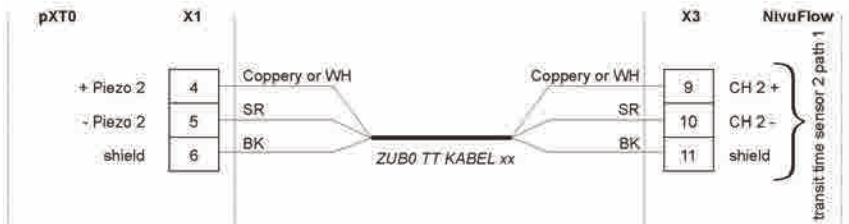


Fig. 22-6 Transit time sensor 2 path 1: pXT0 at NF600-T2

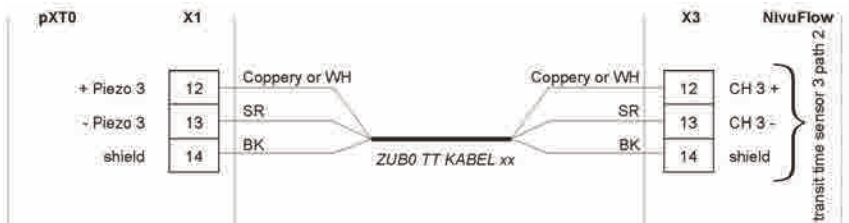
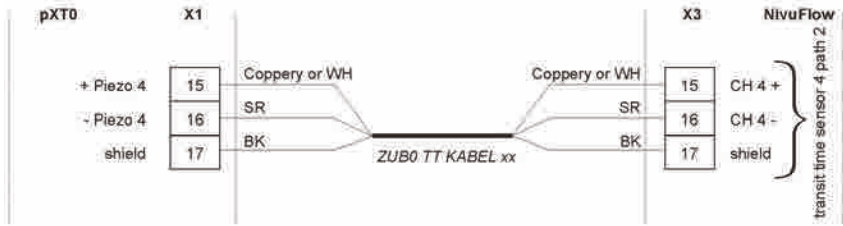


Fig. 22-7 Transit time sensor 3 path 2: pXT0 at NF600-T2



**Fig. 22-8 Transit time sensor 4 path 2: pXT0 at NF600-T2**

### 23 Overvoltage Protection Measures

To avoid damage in case of overvoltage events one overvoltage protection element *BSL0 SPT xx* per sensor can be installed between Ex-Separator module pXT0 and transmitter NivuFlow.

**To connect** the instruments use NIVUS connection cables *ZUB0 TT KABEL xx* (pair). The **maximum total cable length**  $L_{Total}$  must not be exceeded.

➡ See chap. “22.1 Connection Cable”.

The **Parameter Setting** with built-in overvoltage protection elements is described in the concerning Instruction Manual.

## Maintenance and Cleaning

---

### **WARNING**



#### ***Disconnect instrument from mains power***

*Disconnect the instrument from the transmitter (mains power) and safeguard the higher system against restart before you begin to execute maintenance, cleaning and/or repair works. Repair works shall be executed solely by expert personnel.*

*Disregarding may lead to electrical shocks.*

---

### **WARNING**



#### ***Check danger due to explosive gases***

*Make sure to observe all regulations regarding safety at work as well as danger due to explosive gases prior to beginning mounting, installation and maintenance works. Use a gas warner.*

*When working in channel systems make sure to avoid electrostatic charge:*

- Avoid unnecessary movements to minimise the risk of static energy accumulating.*
- Discharge any possible static electricity from your body before you begin the installation.*

*Disregarding may lead to personal injury or damage your facility.*

---

### **WARNING**



#### ***Germ contamination possible***

*Due to being frequently used in wastewater applications, some portions of the measurement system may be loaded with hazardous germs. This is why precautionary measures shall be taken while being in contact with cables and sensors.*

*Wear protective clothing.*

---

## 24 Maintenance

### 24.1 Maintenance Interval

The Ex-Separator Module pXT0 – Transit Time is conceived to be virtually free of calibration, maintenance and wear.

NIVUS, however, recommend having the entire measurement system inspected by the NIVUS customer service **once per year**.

Depending on the area of use the maintenance intervals may vary. Extent and intervals of maintenance depend on the following conditions:

- Measurement principle of sensors
- Material wear
- Measurement medium and hydraulic conditions
- General regulations for the operators of the measurement facility
- Ambient conditions

In addition to the annual inspection NIVUS recommend a complete maintenance of the measurement system by the NIVUS customer service **after ten years the latest**.

In general, the inspection of instruments/sensors is a basic measure which helps to increase operational safety as well as the lifetime.

### 24.2 Customer Service Information

For annual inspection of the entire measurement system or complete maintenance after ten years the latest contact our customer service:

**NIVUS GmbH – Customer Service**

Phone +49 7262 9191-922

[customercenter@nivus.com](mailto:customercenter@nivus.com)

## 25 Cleaning

### WARNING



---

***Disconnect instrument from mains power***

*Observe to disconnect the instrument from the transmitter (mains power).*

*Disregarding may induce the risk of electrical shocks.*

---

If required clean the enclosure with a dry antistatic cloth.  
Do not use any aggressive or abrasive cleansing agents.



## 26 Dismantling/Disposal

Improper disposal may be harmful to the environment.

- Always dispose equipment components according to applicable local regulations on environmental standards for electronic products:
  1. Disconnect the instrument from the transmitter (mains power).
  2. Remove connected cables on the front of the instrument using appropriate tools.
  3. Remove the Ex-Separator Module pXT0 from the DIN rail.



---

### **EU WEEE-Directive**

*This symbol indicates that the Directive 2012/19/EU on waste electrical and electronic equipment requirements shall be observed on the disposal of the equipment. NIVUS GmbH supports and promotes the recycling and environmentally friendly, separate collection/disposal of waste electrical and electronic equipment in order to protect the environment and human health. Observe the local disposal regulations and laws.*

*NIVUS GmbH is registered with the EAR, therefore public collection and return points in Germany can be used for disposal.*

---

## 27 Installation of Spare parts and Parts subject to wear and tear

We herewith particularly emphasise that replacement parts or accessories not supplied by NIVUS moreover are not certified and approved by NIVUS too. Installation and/or the use of such products hence may negatively influence predetermined constructional characteristics of the measurement system or even lead to instrument failures.

NIVUS cannot be held responsible for any damage resulting due to the use of non-original parts and non-original accessories.

## Emergency

In case of emergency press the emergency-off button of the main system.

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## Certificates and Approvals

DE / EN / FR

### EU Konformitätserklärung

*EU Declaration of Conformity*

*Déclaration de conformité UE*

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

<b>Bezeichnung:</b>	<b>Passives Ex-Trennmodul pXT0</b>
<i>Description:</i>	<i>Passive Ex Separation Interface pXT0</i>
<i>Désignation:</i>	<i>Module de séparation Ex passif type pXT0</i>
<b>Typ / Type:</b>	<b>pXT0-xxx</b>

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
- 2014/34/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 IEC 60079-0:2018
- EN 60079-11:2012

Ex-Kennzeichnung / *Ex-designation / Marquage Ex:*

Ⓧ II (2) G [Ex ib Gb] IIB

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

TÜV 20 ATEX 278994

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

TÜV Nord CERT GmbH, Am TÜV 1, 45307 Essen, Germany

(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**  
**Germany**

abgegeben durch / *represented by / faite par:*

**Ingrid Steppe** (Geschäftsführerin / *Managing Director / Directeur général*)

Eppingen, den 25.10.2022

Gez. *Ingrid Steppe*

# UK Declaration of Conformity

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

For the following product:

<b>Description:</b>	<b>"Ex" Passive Ex Separation Interface pXT0</b>
<b>Type:</b>	<b>pXT0-xxx</b>

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

- SI 2016 / 1091 The Electromagnetic Compatibility Regulations 2016
- SI 2016 / 1107 The Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016
- SI 2012 / 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

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

- BS EN 61326-1:2013
- BS EN IEC 60079-0:2018
- BS EN 60079-11:2012

Ex-designation:

 II (2) G [Ex ib Gb] IIB

EU-Type Examination Certificate:

TÜV 20 ATEX 278994

Notified Body (Identif. No.):

TÜV Nord CERT GmbH, Am TÜV 1, 45307 Essen, Germany

(0044)

This declaration is submitted on behalf of the manufacturer:

**NIVUS GmbH**  
**Im Täle 2**  
**75031 Eppingen**  
**Germany**

represented by:

**Ingrid Steppe** (Managing Director)

Eppingen, 25/10/2022

Signed by *Ingrid Steppe*

Translation  
**(1) EU-Type Examination Certificate**



- (2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 2014/34/EU**



(3) **Certificate Number** TÜV 20 ATEX 278994 **issue:** 00

(4) for the product: Ex-Separation Barrier type PXT0-xxx

(5) of the manufacturer: **NIVUS GmbH**

(6) **Address:** Im Täle 2  
75031 Eppingen  
Germany

Order number: 8003023605  
Date of issue: 2021-01-05

- (7) The design of this product and any acceptable variation thereto are specified in the schedule to this EU-Type Examination Certificate and the documents therein referred to.
- (8) The TÜV NORD CERT GmbH, Notified Body No. 0044, in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 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 ATEX Assessment Report No. 20 203 278994.
- (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 for 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 equipment. These are not covered by this certificate.
- (12) The marking of the product shall include the following:

 **II (2) G [Ex ib Gb] IIB**

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG, Ident. Nr. 0032

The deputy of the head of the notified body

  
Heinen

Hanover office, Am TÜV 1, 30519 Hannover, Tel. +49 511 998-61455, Fax +49 511 998-61590

This certificate may only be reproduced without any change, schedule included.  
 Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH



## (13) SCHEDULE

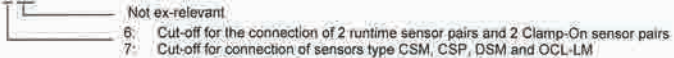
(14) EU-Type Examination Certificate No. TÜV 20 ATEX 278994 issue 00

### (15) Description of product:

The Ex-Separation Barrier type PXT0-xxx is an associated apparatus for the use outside the hazardous area and serves to decouple intrinsically safe circuits from non-intrinsically safe circuits.

#### Type code:

PXT0- x xx



#### Electrical data:

##### Ex-Separation Barrier type PXT0-6xx

Piezo 1 Connection to DSP card  
(Terminals X1.1; X1.2; X1.3)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 2 Connection to DSP card  
(Terminals X1.4; X1.5; X1.6)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 3 Connection to DSP card  
(Terminals X1.12; X1.13; X1.14)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 4 Connection to DSP card  
(Terminals X1.15; X1.16; X1.17)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 1 Ex-Sensor  
(Terminals X2.1; X2.2; X2.3)

In type of Protection Intrinsic Safety Ex ib IIB  
Only for connection to the associated sensors from the Mini sensor family (TÜV 12 ATEX 087812).  
Maximum excitation energy:  $E_s = 137.4 \mu\text{J}$

Piezo 2 Ex-Sensor  
(Terminals X2.4; X2.5; X2.6)

In type of Protection Intrinsic Safety Ex ib IIB  
Only for connection to the associated sensors from the Mini sensor family (TÜV 12 ATEX 087812).  
Maximum excitation energy:  $E_s = 137.4 \mu\text{J}$

Piezo 3 Ex-Sensor  
(Terminals X2.12; X2.13; X2.14)

In type of Protection Intrinsic Safety Ex ib IIB  
Only for connection to the associated sensors from the Mini sensor family (TÜV 12 ATEX 087812).  
Maximum excitation energy:  $E_s = 137.4 \mu\text{J}$

Piezo 4 Ex-Sensor  
(Terminals X2.15; X2.16; X2.17)

In type of Protection Intrinsic Safety Ex ib IIB  
Only for connection to the associated sensors from the Mini sensor family (TÜV 12 ATEX 087812).  
Maximum excitation energy:  $E_s = 137.4 \mu\text{J}$





Schedule to EU-Type Examination Certificate No. TÜV 20 ATEX 278994 issue 00

**Ex-Separation Barrier type PXT0-7xx**

Piezo 1 Connection to DSP card  
(Terminals X1.1; X1.2; X1.3)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$U_m = 253 \text{ V a.c.}$

Piezo 2 Connection to DSP card  
(Terminals X1.4; X1.5; X1.6)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$U_m = 253 \text{ V a.c.}$

Piezo 3 Connection to DSP card  
(Terminals X1.12; X1.13; X1.14)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$U_m = 253 \text{ V a.c.}$

Piezo 4 Connection to DSP card  
(Terminals X1.15; X1.16; X1.17)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$U_m = 253 \text{ V a.c.}$

CSM Connection to DSP card  
(+5V; RS485; 1-Wire)  
(Terminals X1.7; X1.8; X1.9; X1.10;  
X1.11)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$U_m = 253 \text{ V a.c.}$

DSM Connection to DSP card  
(+5V; 1-Wire)  
(Terminals X1.18; X1.19; X1.20)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$U_m = 253 \text{ V a.c.}$

Piezo 1 Ex-Sensor  
(Terminals X2.1; X2.2; X2.3)

In type of Protection Intrinsic Safety Ex (b) IIB  
Only for connection to the associated sensors from the Mini sensor family (TÜV 12 ATEX 087812).  
Maximum excitation energy:  $E_o = 137.4 \text{ } \mu\text{J}$

Piezo 2 Ex-Sensor  
(Terminals X2.4; X2.5; X2.6)

In type of Protection Intrinsic Safety Ex (b) IIB  
Only for connection to the associated sensors from the Mini sensor family (TÜV 12 ATEX 087812).  
Maximum excitation energy:  $E_o = 137.4 \text{ } \mu\text{J}$

Piezo 3 Ex-Sensor  
(Terminals X2.12; X2.13; X2.14)

In type of Protection Intrinsic Safety Ex (b) IIB  
Only for connection to the associated sensors from the Mini sensor family (TÜV 12 ATEX 087812).  
Maximum excitation energy:  $E_o = 137.4 \text{ } \mu\text{J}$

Piezo 4 Ex-Sensor  
(Terminals X2.15; X2.16; X2.17)

In type of Protection Intrinsic Safety Ex (b) IIB  
Only for connection to the associated sensors from the Mini sensor family (TÜV 12 ATEX 087812).  
Maximum excitation energy:  $E_o = 137.4 \text{ } \mu\text{J}$



**Schedule to EU-Type Examination Certificate No. TÜV 20 ATEX 278994 issue 00**

+3V7 CSM  
(Terminals X2.7; X2.11)

In type of Protection Intrinsic Safety Ex ib IIB  
with following maximum values:

$U_o = 5\text{ V}$   
 $I_o = 112\text{ mA}$   
 $P_o = 140\text{ mW}$   
 Characteristic line: linear  
 Negligibly small  
 Negligibly small

Effective internal capacitance  $C_i$   
 Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_o$  and the external capacitance  $C_o$  have to be taken from the following table:

Ex ib IIB	$L_o$ [mH]	20	1	0.5	0.2	0.002
	$C_o$ [ $\mu$ F]	11	27	33	43	1000

RS485A and RS485B CSM  
(Terminals X2.8; X2.11 and X2.9; X2.11)

In type of Protection Intrinsic Safety Ex ib IIB  
With following maximum values je circuit:

$U_o = 5\text{ V}$   
 $I_o = 128.4\text{ mA}$   
 $P_o = 160.5\text{ mW}$   
 Characteristic line: linear  
 Negligibly small  
 Negligibly small

Effective internal capacitance  $C_i$   
 Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_o$  and the external capacitance  $C_o$  have to be taken from the following table:

Ex ib IIB	$L_o$ [mH]	10	5	0.5	0.2	0.002
	$C_o$ [ $\mu$ F]	14	17	32	43	1000

1-Wire Ex CSM  
(Terminals X2.10; X2.11)

In type of Protection Intrinsic Safety Ex ib IIB  
with following maximum values:

$U_o = 5\text{ V}$   
 $I_o = 64.2\text{ mA}$   
 $P_o = 80.3\text{ mW}$   
 Characteristic line: linear  
 Negligibly small  
 Negligibly small

Effective internal capacitance  $C_i$   
 Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_o$  and the external capacitance  $C_o$  have to be taken from the following table:

Ex ib IIB	$L_o$ [mH]	20	10	2	0.2	0.002
	$C_o$ [ $\mu$ F]	14	17	24	44	1000



Schedule to EU-Type Examination Certificate No. TÜV 20 ATEX 278994 issue 00

+3V7.DSM  
(Terminals X2.18; X2.20)

In type of Protection Intrinsic Safety Ex ib IIB  
with following maximum values:

$U_o = 5\text{ V}$   
 $I_o = 176.2\text{ mA}$   
 $P_o = 220.25\text{ mW}$   
 Characteristic line: linear  
 Negligibly small  
 Negligibly small

Effective internal capacitance  $C_i$   
 Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_o$  and the external capacitance  $C_o$  have to be taken from the following table:

Ex ib IIB	$L_o$ [mH]	10	5	2	0.2	0.002
	$C_o$ [ $\mu$ F]	11	15	21	43	1000

1-Wire Ex DSM  
(Terminals X2.19; X2.20)

In type of Protection Intrinsic Safety Ex ib IIB  
with following maximum values:

$U_o = 5\text{ V}$   
 $I_o = 176.2\text{ mA}$   
 $P_o = 220.25\text{ mW}$   
 Characteristic line: linear  
 Negligibly small  
 Negligibly small

Effective internal capacitance  $C_i$   
 Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_o$  and the external capacitance  $C_o$  have to be taken from the following table:

Ex ib IIB	$L_o$ [mH]	10	5	2	0.2	0.002
	$C_o$ [ $\mu$ F]	11	15	21	43	1000

**Thermal data:**

Permissible ambient temperature range  $-20\text{ °C} \leq T_a \leq +50\text{ °C}$



- (16) Drawings and documents are listed in the ATEX Assessment Report No. 20 203 278994
- (17) **Specific Conditions for Use**  
None
- (18) **Essential Health and Safety Requirements**  
No additional ones



Schedule to EU-Type Examination Certificate No. TÜV 20 ATEX 278994

issue 00

- End of Certificate -

		<b>IECEX Certificate of Conformity</b>	
<b>INTERNATIONAL ELECTROTECHNICAL COMMISSION</b> <b>IEC Certification System for Explosive Atmospheres</b> <small>for rules and details of the IECEX Scheme visit <a href="http://www.iecex.com">www.iecex.com</a></small>			
Certificate No.:	<b>IECEX TUN 20.0018</b>	Page 1 of 3	<a href="#">Certificate history:</a>
Status:	<b>Current</b>	Issue No: 0	
Date of Issue:	<b>2021-01-05</b>		
Applicant:	<b>NIVUS GmbH</b> Im Tale 2 75031 Eppingen Germany		
Equipment:	<b>Ex-Separation Barrier type PXTO-xxx</b>		
Optional accessory:			
Type of Protection:	<b>Intrinsic Safety "Ib"</b>		
Marking:	<b>[Ex Ib Gb] IIB</b>		
Approved for issue on behalf of the IECEX Certification Body:		<b>Thomas Heinen</b>	
Position:		<b>Deputy Head of IECEX Certification Body</b>	
Signature: (for printed version):			
Date:		<u>2021-01-05</u>	
<ul style="list-style-type: none"><li>1 This certificate and schedule may only be reproduced in full</li><li>2 This certificate is not transferable and remains the property of the issuing body</li><li>3 The Status and authenticity of this certificate may be verified by visiting <a href="http://www.iecex.com">www.iecex.com</a> or use of this QR Code</li></ul>			
Certificate issued by:			
<b>TÜV NORD CERT GmbH</b> Hanover Office Am TÜV 1, 30519 Hannover Germany			



## IECEx Certificate of Conformity

Certificate No.: **IECEx TUN 20.0018**

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Date of issue: **2021-01-05**

Issue No: 0

Manufacturer: **NIVUS GmbH  
Im Tale 2  
75031 Eppingen  
Germany**

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

### STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards :

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

### TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/TUN/ExTR20.0022/00

Quality Assessment Report:

DE/TUN/QAR13.0011/06



## IECEX Certificate of Conformity

Certificate No.: **IECEX TUN 20.0018**

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Date of issue: **2021-01-05**

Issue No: 0

### EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

#### Description:

The Ex-Separation Barrier type PXT0-xxx is an associated apparatus for the use outside the hazardous area and serves to decouple intrinsically safe circuits from non-intrinsically safe circuits.

#### Type code, electrical and thermal data:

Refers to the attachment to IECEx TUN 20.0018

#### SPECIFIC CONDITIONS OF USE: NO

#### Annex:

Attachment to IECEx TUN 20.0018 Issue 0.pdf

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 Germany



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**Product:**

**Description:**

The Ex-Separation Barrier type PXT0-xxx is an associated apparatus for the use outside the hazardous area and serves to decouple intrinsically safe circuits from non-intrinsically safe circuits.

**Type code:**

PXT0- x xx



**Electrical data:**

**Ex-Separation Barrier type PXT0-6xx**

Piezo 1 Connection to DSP card  
 (Terminals X1.1; X1.2; X1.3)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 2 Connection to DSP card  
 (Terminals X1.4; X1.5; X1.6)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 3 Connection to DSP card  
 (Terminals X1.12; X1.13; X1.14)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 4 Connection to DSP card  
 (Terminals X1.15; X1.16; X1.17)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 1 Ex-Sensor  
 (Terminals X2.1; X2.2; X2.3)

In type of Protection Intrinsic Safety Ex Ib IIB  
 Only for connection to the associated sensors from the Mini sensor family (IECEx TUN 18.0023).  
 Maximum excitation energy:  $E_o = 137.4 \mu\text{J}$

Piezo 2 Ex-Sensor  
 (Terminals X2.4; X2.5; X2.6)

In type of Protection Intrinsic Safety Ex Ib IIB  
 Only for connection to the associated sensors from the Mini sensor family (IECEx TUN 18.0023).  
 Maximum excitation energy:  $E_o = 137.4 \mu\text{J}$

Piezo 3 Ex-Sensor  
 (Terminals X2.12; X2.13; X2.14)

In type of Protection Intrinsic Safety Ex Ib IIB  
 Only for connection to the associated sensors from the Mini sensor family (IECEx TUN 18.0023).  
 Maximum excitation energy:  $E_o = 137.4 \mu\text{J}$

Piezo 4 Ex-Sensor  
 (Terminals X2.15; X2.16; X2.17)

In type of Protection Intrinsic Safety Ex Ib IIB  
 Only for connection to the associated sensors from the Mini sensor family (IECEx TUN 18.0023).  
 Maximum excitation energy:  $E_o = 137.4 \mu\text{J}$



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**Ex-Separation Barrier type PXT0-7xx**

Piezo 1 Connection to DSP card  
(Terminals X1.1; X1.2; X1.3)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 2 Connection to DSP card  
(Terminals X1.4; X1.5; X1.6)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 3 Connection to DSP card  
(Terminals X1.12; X1.13; X1.14)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 4 Connection to DSP card  
(Terminals X1.15; X1.16; X1.17)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

CSM Connection to DSP card  
(+SV; RS485; 1-Wire)  
(Terminals X1.7; X1.8; X1.9; X1.10; X1.11)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

DSM Connection to DSP card  
(+SV; 1-Wire)  
(Terminals X1.18; X1.19; X1.20)

For connection to a non-intrinsically safe circuit with a safety maximum voltage:

$$U_m = 253 \text{ V a.c.}$$

Piezo 1 Ex-Sensor  
(Terminals X2.1; X2.2; X2.3)

In type of Protection Intrinsic Safety Ex ib IIB  
Only for connection to the associated sensors from the Mini sensor family (IECEX TUN 18.0023).  
Maximum excitation energy:  $E_o = 137.4 \mu\text{J}$

Piezo 2 Ex-Sensor  
(Terminals X2.4; X2.5; X2.6)

In type of Protection Intrinsic Safety Ex ib IIB  
Only for connection to the associated sensors from the Mini sensor family (IECEX TUN 18.0023).  
Maximum excitation energy:  $E_o = 137.4 \mu\text{J}$

Piezo 3 Ex-Sensor  
(Terminals X2.12; X2.13; X2.14)

In type of Protection Intrinsic Safety Ex ib IIB  
Only for connection to the associated sensors from the Mini sensor family (IECEX TUN 18.0023).  
Maximum excitation energy:  $E_o = 137.4 \mu\text{J}$

Piezo 4 Ex-Sensor  
(Terminals X2.15; X2.16; X2.17)

In type of Protection Intrinsic Safety Ex ib IIB  
Only for connection to the associated sensors from the Mini sensor family (IECEX TUN 18.0023).  
Maximum excitation energy:  $E_o = 137.4 \mu\text{J}$

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+3V7 CSM  
(Terminals X2.7; X2.11)

In type of Protection Intrinsic Safety Ex ib IIB  
with following maximum values:

$U_0 = 5 \text{ V}$   
 $I_0 = 112 \text{ mA}$   
 $P_0 = 140 \text{ mW}$   
Characteristic line: linear  
Negligibly small  
Negligibly small

Effective internal capacitance  $C_i$   
Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_e$  and the external capacitance  $C_e$  have to be taken from the following table:

Ex ib IIB	$L_e$ [mH]	20	1	0.5	0.2	0.002
	$C_e$ [ $\mu\text{F}$ ]	11	27	33	43	1000

RS485A and RS485B CSM  
(Terminals X2.8; X2.11 and X2.9; X2.11)

In type of Protection Intrinsic Safety Ex ib IIB  
With following maximum values je circuit:

$U_0 = 5 \text{ V}$   
 $I_0 = 128.4 \text{ mA}$   
 $P_0 = 160.5 \text{ mW}$   
Characteristic line: linear  
Negligibly small  
Negligibly small

Effective internal capacitance  $C_i$   
Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_e$  and the external capacitance  $C_e$  have to be taken from the following table:

Ex ib IIB	$L_e$ [mH]	10	1	0.5	0.2	0.002
	$C_e$ [ $\mu\text{F}$ ]	14	27	32	43	1000

1-Wire Ex CSM  
(Terminals X2.10; X2.11)

In type of Protection Intrinsic Safety Ex ib IIB  
with following maximum values:

$U_0 = 5 \text{ V}$   
 $I_0 = 64.2 \text{ mA}$   
 $P_0 = 80.3 \text{ mW}$   
Characteristic line: linear  
Negligibly small  
Negligibly small

Effective internal capacitance  $C_i$   
Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_e$  and the external capacitance  $C_e$  have to be taken from the following table:

Ex ib IIB	$L_e$ [mH]	20	10	1	0.2	0.002
	$C_e$ [ $\mu\text{F}$ ]	14	17	28	44	1000

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+3V7 DSM  
(Terminals X2.18; X2.20)

In type of Protection Intrinsic Safety Ex ib IIB  
with following maximum values:

$U_0 = 5\text{ V}$   
 $I_0 = 176.2\text{ mA}$   
 $P_0 = 220.25\text{ mW}$   
Characteristic line: linear  
Negligibly small  
Negligibly small

Effective internal capacitance  $C_i$   
Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_0$  and the external capacitance  $C_0$  have to be taken from the following table:

Ex ib IIB	$L_0$ [mH]	10	5	1	0.2	0.002
	$C_0$ [µF]	11	15	26	43	1000

1-Wire Ex DSM  
(Terminals X2.19; X2.20)

In type of Protection Intrinsic Safety Ex ib IIB  
with following maximum values:

$U_0 = 5\text{ V}$   
 $I_0 = 176.2\text{ mA}$   
 $P_0 = 220.25\text{ mW}$   
Characteristic line: linear  
Negligibly small  
Negligibly small

Effective internal capacitance  $C_i$   
Effective internal inductance  $L_i$

The maximum permissible values for the external inductance  $L_0$  and the external capacitance  $C_0$  have to be taken from the following table:

Ex ib IIB	$L_0$ [mH]	10	5	1	0.2	0.002
	$C_0$ [µF]	11	15	26	43	1000

**Thermal data:**

Permissible ambient temperature range:

$$-20^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$$

**Specific Conditions of Use:**

None