◊ pozyx ®

Accurate Positioning

Enterprise Anchor V2.2

USER MANUAL

v1.10, 2023-08-16

Contents

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1   Foreword

Please read this manual carefully before using the product. Do also read and follow instructions from "operator" or "licensee" applicable to the specific installation.

For best possible performance, continuous satisfactory safe operation, read and understand these instructions thoroughly before operating your equipment.

2   Disclaimer

The information, instruction, and parts listed are applicable and current on the date when issued. Pozyx reserves the right to make changes without prior notice.

3   Note to Operator

It is the operator's responsibility to see that any person involved with the use or operation of this equipment follows all safety and operational instructions. Under no circumstances should this equipment be used if the equipment is faulty or the operator does not completely understand the operation of the equipment.

4   Safety

All Pozyx equipment should be used with the greatest care and in accordance with all local safety regulations. It is prohibited to modify, open up, replace or exchange parts, change factory settings or perform any other action on Pozyx equipment that deviates from the way it was delivered. Doing so may present a hazard and will void any warranties.

Under no circumstances can Pozyx be held liable in any way shape or form for any defects, damages, injuries, direct or indirect, that are the result of handling, using, installing or any other use of the equipment and failure to observe all necessary safety guidelines.

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5   About this Manual

5.1   Audience

This manual is intended for users of the Enterprise Anchor V2.2 in conjunction with the Pozyx Enterprise System. Any other use outside of the system is deemed incompliant and will void any warranties of the anchor, tag, system, or any Pozyx hardware.

5.2   Copyright

All rights reserved. No part of this document may be reproduced or transmitted in any way or shape be it, electronic, mechanical, photocopying, recording, or otherwise, without the express prior written permission of the publisher.

For information on getting permission for reprints and excerpts, contact POZYX NV. The content and illustrations are subject to change without prior notice.

5.3   Revision History

Release Date	Revision	Remarks
2022-01-25	1.0	*Initial release*
2022-02-25	1.1	*Update of regulatory information*
2022-03-01	1.2	*Update of the ISED regulatory information*
2022-03-04	1.3	*Update of the FCC regulatory information*
2022-03-22	1.4c	*Removed the FCC, ISED and CE regulatory information* *Added UWB CH3 for Chinese market*
2022-03-23	1.5c	*Added SRRC Regulatory information*
2022-05-12	1.6	*Merge English/Chinese version* *Update technical specifications*
2022-06-30	1.7	*Update CMIIT ID* *Update technical specifications*
2023-02-23	1.8	*Correction typo's* *Update pictures of mounting brackets*
2023-06-20	1.9	*Added UWB CH3 for the CE, UKCA and FCC markets.*
2023-08-16	1.10	*Added additional FCC regulatory information.* *Update overview*

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6   Overview

The Enterprise Anchor **captures, preprocesses, and sends location data from tags** to the Positioning system. It has been designed for optimal Ultra-Wideband performance and comes with robust casing options (IP20 or IP66/67), making it ideal for industrial environments. Mounting the Anchor is straightforward with the help of one of three mounting brackets.

The anchor works within the **Pozyx Enterprise system** and requires an infrastructure of tags, anchors, switches, and a Positioning Server to accurately and correctly translate tag positions in a stream of real-time coordinates.
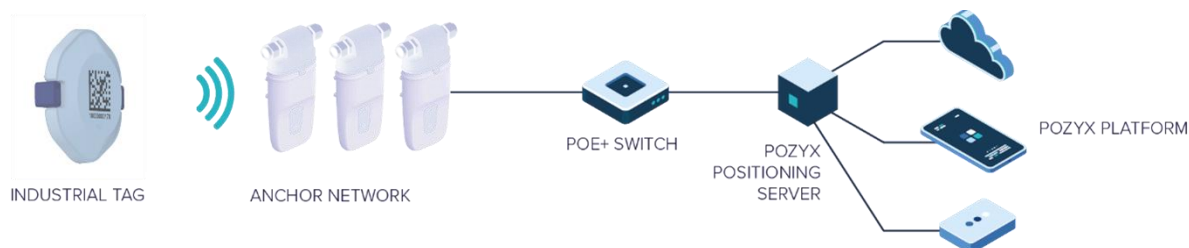

Figure 1 Pozyx Enterprise System Architecture

The Pozyx RTLS architecture comprises three main parts:

- A **network of anchors and tags**. This network consists of two types of devices: tags and anchors. The tag is a *mobile* device used to track the positions of an asset or person in real time. An anchor is a signal capturing device on a *fixed*, well-known position.
- A **Positioning Server**. This device connects to the anchors via Ethernet. It gathers all the data received from the anchors and transforms it into a position. By connecting to the Positioning Server, users can receive the real-time positioning data.
- The Pozyx **web application**. The web application is a visual interface to configure and manage the Pozyx RTLS system. It can be run locally from the Positioning Server itself or from the Pozyx cloud.

Optionally a fourth part can be added:
- The Pozyx **Platform**. The Pozyx platform is a software solution that leverages location data to provide real-time visibility and insights into tracked assets. It enhances the capabilities of the Pozyx RTLS system by offering advanced analytics, reporting, and integration options."

7   General Technical Specifications

Parameter	Information
Supported UWB channels	Channel 5, Channel 2 and 3 (for FCC and licensed customers in Europe)
Bluetooth	Bluetooth Low Energy V5.1 ready
Sensors	Acceleration, Air Pressure, Supply Voltage, Temperature
Power supply	POE/POE+, 3.5W typ, 4.5W max
Certifications	CE, FCC, ISED, SRRC, UKCA
Operating conditions	-25 °C to +55 °C
Storage conditions	-30 °C to +70 °C

|	Standard version	Industrial version
Dimensions	158 x 98 x 53 mm	229 x 98 x 59 mm
Weight	170 g	270 g
Ingress protection	IP20	IP66/67

8   Installing the Anchor

8.1   Mounting Anchors

Mounting brackets allow users to install the Enterprise Anchor V2.2 to a ceiling, wall or corner. Three types of mounting brackets are available to mount an Enterprise Anchor V2.2:

- Ceiling bracket (90-020-0004)

- Wall bracket (90-020-0005)
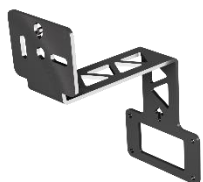
- Corner bracket (90-020-0006)

The Anchor is mounted with **4 M4 screws** on the mounting bracket.

NOTE: This equipment may only be operated indoors. Operation outdoors is in violation of 47 U.S.C. 301 and could subject the operator to serious legal penalties.

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8.2　Connecting Cables

Enterprise Anchors can be connected through Ethernet. Each Enterprise Anchor has 2 RJ45 100Base-T ports. They can be used to link up anchors in sequence which reduces the total amount of wiring required. This is called call this Daisy Chaining of Anchors.
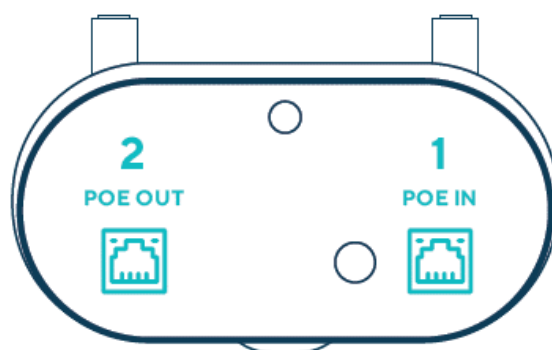

Figure 2 Enterprise Anchor PoE ports

- The port labeled "**1**"should be connected to the Positioning Server. This can implemented either by a direct connection to one of the Anchor ports on the Positioning Server or by a connection through an Ethernet switch for large setups.
- The port labeled "**2**"can be used to connect anchors in a daisy-chain.

To create a chain of anchors connect the port "2" (OUT in the figure below) of an anchor to the port "1" (IN in the figure below) of the next anchor in the chain.

Pozyx recommends using Ethernet cables that:

- Are Pure Copper (Cu). Do not use Copper Clad Aluminum (CCA).
- Are Shielded Foil Twisted Pair (S/FTP)
- Are Cat5e (or better)
- Are AWG24 (or better). Both AWG24/1 and AWG24/7 are suited.

Warning: It is advised not to use crossover Ethernet cables: all Ethernet cables should use the T568B wiring specified in the TIA/EIA-568 standard.

Warning: For system stability it is advised to connect only anchors (and network switches solely used to aggregate anchors) to the ports labeled "Anchor network" on the Positioning Server.

8.3 Powering the Anchor

There are two options to power an Enterprise Anchor:

- Using **Power-Over-Ethernet (PoE/PoE+)**. This option requires that an Ethernet switch with PoE capability is placed between the Positioning Server and the first anchor in a daisy-chain. Each anchor will provide power on the outgoing Ethernet cable for the next anchor in the chain. The Ethernet cable that provides power to an anchor must be connected to the port labeled "1".
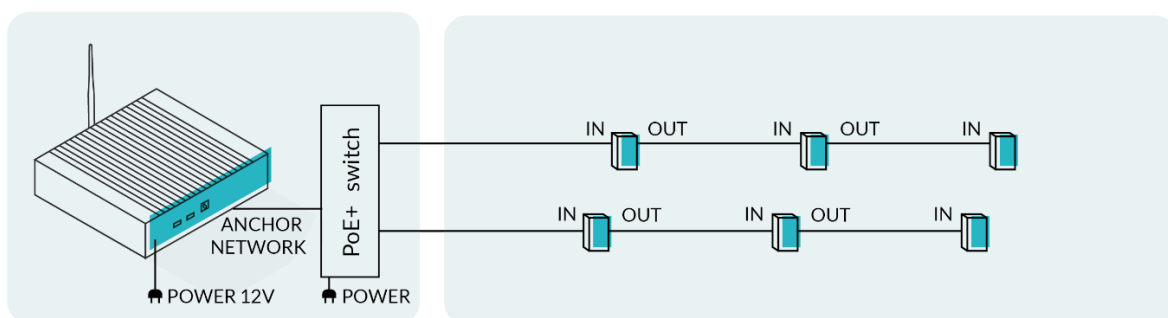
Remark: In general, **4-5 anchors** (depending on the installation cabling and taking the environmental conditions into consideration) is the maximum for a chain when powered through a PoE+ Switch, more could cause networking issues. Be sure to use shielded Ethernet cables to eliminate cross talk.

- **Local power DC jack**: This option uses an external AC/DC convertor to power the first anchor in a daisy-chain.
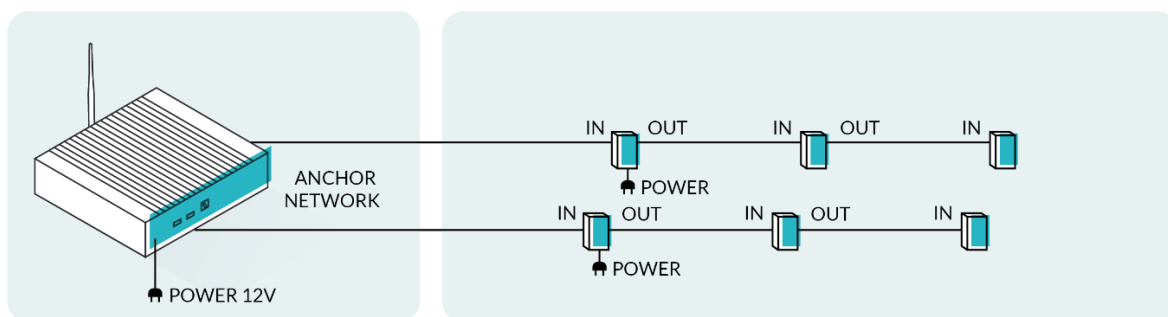
Warning: It is not allowed to power an Enterprise Anchor through the Ethernet Port 2.

Warning: Make sure that you use the correct ports to connect the incoming and outgoing Ethernet cables to the Enterprise Anchor.

8.4   Anchor Headers

Two types of headers are available for the Enterprise Anchor:

- The header 90-010-0101 provides **IP66 and IP67 ingress protection** to the Enterprise Anchor. The Ethernet cables enter the header sideways.

- The header 90-011-0001 can optionally be used to guide the external cables. The ingress protection level of this solution is **IP20**. The header allows users to route the cabling upwards from or to the backside of the Enterprise Anchor.

8.4.1 Mounting the IP66/67 header

1. Place the RJ45 connector on the Ethernet cable according to the T568B convention when using an Ethernet cable without pre-confectioned connectors.

Warning: Make sure that the RJ45 connectors are suited for the deployed Ethernet cable.

2. Place the tightening nut over the Ethernet cable.

3. Place the grommets over the Ethernet cable.

4. Pull the Ethernet cable thru the cable glands.

5. Plug the Ethernet connectors into the correct RJ45 jack. Route the Ethernet cables in a crossed way inside the header as illustrated below.
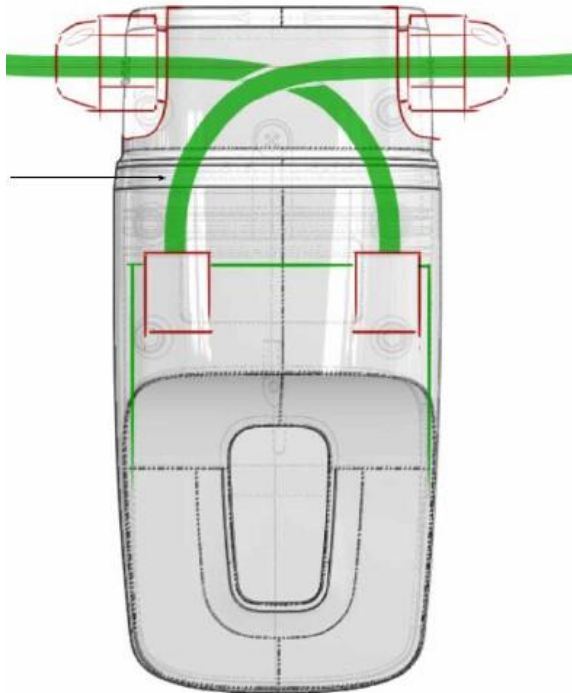
Figure 3 Anchor Ethernet cable connection

6. Apply the provided lubricant on the O-rings of the IP66/67 header.

Warning: Use only lubricants based on silicone or PTFE.

7. Push the IP66/67 header onto the Enterprise Anchor base module, until the clips snap on the base module.

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8. Push the grommets in the cable glands.

9. Screw the tightening nut onto the cable glands until fixed. The maximum torque is 6.0 Nm.

If the header needs to be unmounted, follow the above steps in reverse order.

Warning: To provide IP66/67 protection, the diameter of the Ethernet cables must be tailored to the grommets provided with the header. The standard cable diameter should be 7 mm ±10%. Contact Pozyx for other options.

Warning: Make sure that the blind grommet, that is provided with the IP66/67 header, is placed in the right side cable gland if the anchor is the last in an anchor daisy-chain.

8.4.2   Mounting the IP20 header

To mount the IP20 header follow the steps below:

1. Place the RJ45 connector on the Ethernet cable according to the T568B convention when using an Ethernet cable without pre-confectioned connectors.

Warning: Make sure that the RJ45 connectors are suited for the deployed Ethernet cable.

2. Pull the Ethernet cables and the DC power cable (if used) through the appropriate holes in the header. Make sure that the cables will not cross after mounting the header on the Enterprise Anchor base module.

3. Plug the Ethernet connectors into the correct RJ45 jack. When used, also plug the DC plug into the DC Jack of the Enterprise Anchor

4. Push the header onto the Enterprise Anchor base module.

5. Push the cable into the top or rear exit holes in the header.

6. Re-adjust the header if it moved during Step 5.

8.5   Best Practices for Anchor Placement

For the most accurate positioning the following generic guidelines apply:

- The anchors should have **line-of-sight** to each other.
- An anchor should be placed each 10 m (1 anchor/100 m²). However, this can vary depending on the environment. In some occasions it can be more or fewer, but we recommend a maximum anchor separation of 20 m.

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- A tag should be **surrounded by anchors in all directions**. This can be achieved by placing an anchor in each corner of the room in which tags are to be positioned.

8.5.1 Specific guidelines for 2D positioning:

- **Place the anchors high and in line-of-sight of the user.**
  Placing the anchor high (on the ceiling or on the walls) increases the chance of receiving a good signal because there are fewer obstructions. Obstructions generally have a negative influence on the accuracy of the range measurements which has a direct effect on the positioning accuracy.
- **Spread the anchors around the user. Don't place them on a straight line.**
  • For range-based systems, single range measurements will only give information in a single direction. This direction is exactly the direction from the user to the anchor. Because of this, it is best to spread the anchors such that they cover all directions. If the anchors are all on a straight line, the positioning error will be very large: A small change in radius (for example due to noise), will result in a very large change in the position of the intersection(s). In other words, the error on the range measurements is amplified! This is the same principle as in GPS, where it is called the geometric dilution of precision (GDOP).
- **Make sure each anchor sees at least two, but preferably more neighboring anchors** at a distance of not more than 15 to 20 meters, or even less in environments with many obstacles. It's very important that the clocks of the anchor are accurately synchronized with each other, and this happens through UWB. It's therefor important that not only the tags have line-of-sight to the anchors, but also that the anchors have a line-of-sight with each other.
- **Place anchors vertically, with the connectors at the top.** This keeps the antenna at the bottom
- **Materials like metal, water and wires should stay away from the anchors**, especially the antenna: Within a few centimeters from the antenna, there should be no metal at all, not even small screws.
- **It is recommended to have a separation of 20 cm between the anchor and walls**. Our mounting equipment can be used to achieve this.

8.5.2 Specific guidelines for 3D positioning:

- **Keep to the guidelines from above but place anchors at different heights:**
  The accuracy of the z coordinate will highly depend on the spread in heights of your anchors. Ideally, it is advised to place your anchors in the shape of a cube around your positioning zone as shown below. Try to maximize the distance between the lower and higher anchors.

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- **Twist the base surface of your cube 45 degrees as compared to the top surface:**
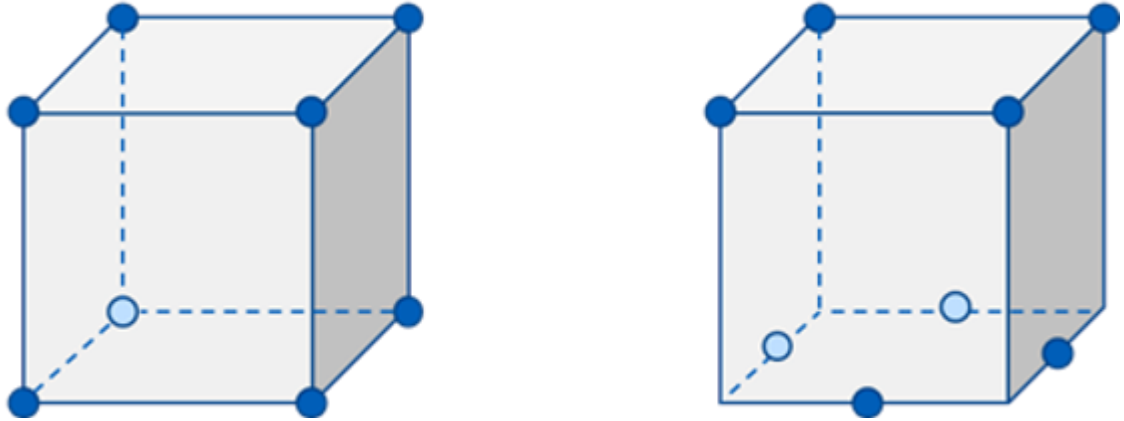
Twisting the base surface will reduce the 3D convex hull of the anchors (e.g. the bottom corners of the cube are outside of the convex hull), but it will generally give you a higher chance of line-of-sight between a tag and the anchors. E.g. when your body is blocking 1 corner of the room it will just block line-of-sight with 1 anchor instead of 2. Furthermore its better for the tag to be surrounded by anchors from as much directions as possible.

- **Place the bottom anchors upside down as this will point the antenna upwards (= towards the tags).**

Always check https://docs.pozyx.io/enterprise/choosing-the-anchors-locations for the latest guidelines.

8.6 Anchor Activation

8.6.1 UWB functionality
The general description of the Anchor setup and configuration and as part of a positioning system can be found at https://docs.pozyx.io/enterprise/installing-the-anchors.

8.6.2 Bluetooth functionality
The use of the BLE functionality is not supported yet.

9 Troubleshooting

The Enterprise Anchor has a LED with 3 color options with the following state indications:

Parameter	Information
LED off	Anchor powered off or general malfunction
Solid blue	Startup or Maintenance mode
Solid red	No Ethernet link
Blinking orange	Link on Ethernet interface established
Solid orange	IP address obtained
Blinking Green	Anchor operational, no UWB activity present
Solid Green	Anchor operational, UWB activity present
Blinking red	General malfunction
Blinking blue	Pozyx reserved mode

10 Ordering information

Part Number	Description
10-002-0022	Enterprise Anchor V2.2
90-010-0101	IP66/67 header for the Enterprise Anchor
90-011-0001	IP20 header for the Enterprise Anchor
90-020-0004	Ceiling bracket (screws & washers included)
90-020-0005	Wall bracket (screws & washers included)
90-020-0006	Corner bracket (screws & washers included)

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11 Disposal

When the product reaches end of life, dispose it properly in accordance with local laws and regulations.

Disposal of the packaging material
(EU directive 94/62/EC on packaging and packaging waste)
This marking indicates that the product's packaging material can be recycled.

Disposal of this product

(EU directive 2012/19/EU on Waste Electrical & Electronic Equipment)
This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. AC/DC convertors) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.
Household users should contact either the supplier where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.
Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

Please contact the local municipal office for information on the nearest recycling station.

12 Regulatory information

12.1 FCC Compliance Statement

This device complies with Part 15 of the FCC Rules:
Operation is subject to the following conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes and Modifications not expressly approved by Pozyx NV can void your authority to operate this equipment under Federal Communications Commission rules.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. This

equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radiocommunications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

      - Reorient or relocate the receiving antenna.
      - Increase the separation between the equipment and receiver.
      - Connect the equipment into an outlet on a circuit different from that to which the
        receiver is connected.
      - Consult the dealer or an experienced radio/TV technician for help.

This device is in compliance with part 15.517 of the FCC Rules. This equipment may only be operated indoors. Operation outdoors violates 47 U.S.C. 301 and could subject the operator to serious legal penalties.

Radiation Exposure Statement
The device complies with the requirements set forth in CFR 47 Sections 2.1091 for an uncontrolled environment. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

12.2 ISED Compliance Statement

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Radiation Exposure Statement
The device has been found to be compliant to the requirements set forth in Industry Canada RSS-102 for an uncontrolled environment. The antenna(s) used for this transmitter must be

installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

12.3   CE Compliance Statement

The manufacturer, Pozyx NV, Vrijdagmarkt 10/201, 9000 Gent, Belgium declares that the product:
  • 10-002-0022: Pozyx Anchor V2.2 with BLE

is conform to the following Directives:
  • 2014/53/EU (Radio Equipment Directive)
  • 2011/65/EU (ROHS), amended by 2017/2102/EU and 2015/863/EU

See the CE Declaration of Conformity for full details on the applied standards.

12.4   UKCA Compliance Statement

The manufacturer, Pozyx NV, Vrijdagmarkt 10/201, 9000 Gent, Belgium declares that the product:
  • 10-002-0022: Pozyx Anchor V2.2 with BLE

complies with the requirements of the following regulations:
  • Radio Equipment Regulations 2017 (S.I. 2017/1206)
  • The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012/3032)

See the UKCA Declaration of Conformity for full details on the applied standards.

12.5   SRRC Compliance statement
Manufacturer: Pozyx

Product number: 100020022

CMIIT ID: 2022DJ8645

The use of ultra-wideband (UWB) equipment on aircraft is prohibited.

The use of ultra-wideband (UWB) radio transmitting equipment is prohibited within 1 km around the radio astronomy station site listed in the footnote "CHN12" of the "Regulations on Radio Frequency Allocation of the People's Republic of China".

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When the ultra-wideband (UWB) radio transmitting equipment is used, it shall not cause radio interference to the stations of other radio services, and shall not propose interference protection requirements to the stations of other radio services.

Name and content of hazardous substances in the product:

Part number						
	Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs
100020022	O	O	O	O	O	O

This form is prepared according to the provisions of SJ/T 11364
O : Indicates that the content of this hazardous substance in all homogeneous materials of this part is below the limit requirement specified in GB/T 26572.
X : Indicates that the content of the hazardous substance in a homogeneous material of the part exceeds the limit requirement specified in GB/T 26572.

目录

1 前言

在使用本产品之前，请仔细阅读本手册。此外，请阅读并遵循适用于具体安装的"操作员"或"被许可人"说明。

为了获得最佳性能，实现令人满意的连续安全操作，在操作设备之前，请通读并理解这些说明。

2 免责声明

本手册中列出的信息、说明和部件在发布之日适用且为最新。Pozyx 保留修改权利，如有变更，恕不另行通知。

3 操作员须知

操作员有责任确保参与使用或操作本设备的所有人员都遵守所有安全和操作说明。如果设备存在故障或操作员不完全了解设备的操作，在任何情况下都不得使用本设备。

4 安全

所有 Pozyx 设备都应根据所有当地安全法规格外小心使用。禁止改装、打开、更换或调换部件，禁止更改出厂设置或对 Pozyx 设备执行其交付用途以外的其他操作。否则可能会造成危险，使保修失效。

在任何情况下，Pozyx 均不对由于搬运、使用、安装或以其他方式使用设备以及未能遵守所有必要安全措施而导致的直接或间接缺陷、损坏、人身伤害负责。

5 关于本手册

5.1 读者

本手册适用于锚机与 Pozyx 企业系统结合使用的用户。系统之外的所有其他用途均被视为不合规，这会使锚机、追踪器、系统或所有 Pozyx 硬件的保修失效。

5.2 版权

版权所有。未经出版商事先明确书面许可，不得以电子方式、机械方式、影印、录制或其他方式对本文档的任何部分进行复制和传播。

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5.3 修订历史记录

发行日期	修订	备注
2022-01-25	1.0	*初次发行*
2022-02-25	1.1	*法规信息的更新*
2022-03-01	1.2	*ISED 法规信息的更新*
2022-03-04	1.3	*FCC 法规信息的更新*
2022-03-22	1.4c	*删除了 FCC、ISED 和 CE 法规信息* *为中国市场增加了 UWB CH3*
2022-03-23	1.5c	*增加了 SRRC 法规信息*
2022-05-12	1.6	*合并英文/中文版本* *更新技术规格*
2022-06-30	1.7	*更新 CMIIT ID*

6 概述

Pozyx 锚机用于**捕获、预处理位置数据，并将其从追踪器发送**到网关。它专为实现最佳超宽带性能而设计，配备坚固的外壳选装件（IP20 或 IP66-67），是工业环境的理想选择。借助三个安装支架，安装锚机非常简单。

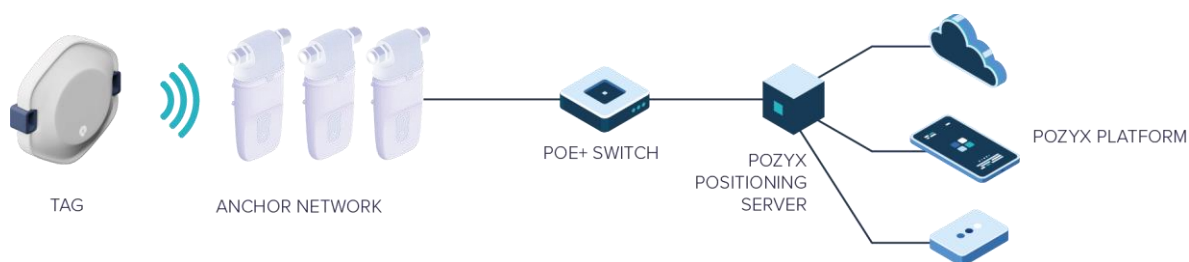锚机在 **Pozyx 企业系统**内工作，需要通过追踪器、锚机、开关和网关等基础设施精准转换实时坐标数据流中的位置。

图 4 Pozyx 企业系统架构

Pozyx 架构包括三个主要部分：

- **锚机和追踪器网络**。该网络由两种类型的设备组成：追踪器和锚机。追踪器是一种*移动* 设备，用于实时跟踪物品或人员的位置。锚机是针对众所周知的固定位置的信号捕获设备。
- **本地网关**。该设备是定位服务器，通过以太网连接到锚机。它收集从锚机接收到的所有数据并将其转换为位置。通过连接网关，用户可以接收到实时定位数据。
- **Pozyx 网络应用程序**。Web 应用程序是配置和管理 Pozyx 系统的可视化界面。可以从网关本身或 Pozyx 云本地运行。

7 一般技术规格

有关详细的技术规格，请查阅 **Pozyx 锚机数据表**。

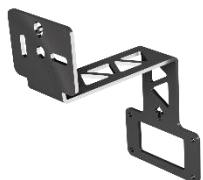| 参数	信息	
支持的超宽带信道	信道 5、信道 2（面向欧洲的 FCC 和授权客户）	
蓝牙	蓝牙低功耗 V5.1	
传感器	加速度、压力、电源电压、温度	
电源	POE/POE+或 DC：6 至 53 V，最大功率 4.5 W	
认证	CE, FCC, ISED, SRRC, UKCA	
运行条件	-25 °C 至+55 °C	
储存条件	-40 °C 至+70 °C	
	标准版	工业版
外形尺寸	158 x 98 x 53 mm	229 x 98 x 59 mm
重量	170 g	270 g
IP 入口保护	IP20	IP66/67

8 安装锚机

8.1 安装锚机

安装支架允许用户将 Pozyx 锚机安全装置安装到墙壁或天花板上。用于安装锚机的安装支架有三种类型：

- 天花板安装支架 (90-020-0004)

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- 壁挂式安装支架 (90-020-0005)

- 角括号 (90-020-0006)

锚机通过 **4 颗 M4 螺钉**安装在安装支架上。

8.2　连接电缆

Pozyx 锚机可通过以太网连接。每个锚机都有 2 个 RJ45 100Base-T 端口。这些端口可用于按照顺序连接锚机，从而减少所需的布线总量。我们称之为锚机的菊花链接。
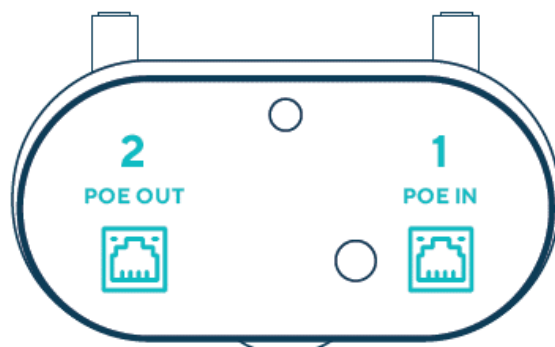

图 5 Pozyx 锚机 PoE 端口

- 标有"**1**"的端口应连接到定位网关。这可通过直接连接到网关上的锚机端口之一或通过以太网交换机的连接实现，用于大型设置。
- 标有"**2**"的端口可用于连接菊花链接中的锚机。

要创建锚机链，请将一个锚机的端口"2"（下图中的 OUT）连接到锚机链中下一个锚机的端口"1"（下图中的 IN）。

Pozyx 建议使用以下以太网电缆：

- 纯铜 (Cu)。不得使用铜包铝 (CCA)
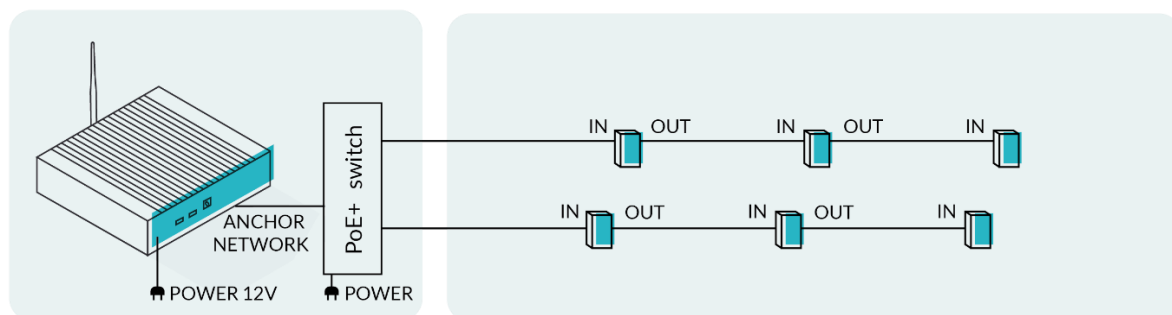- 屏蔽箔双绞线 (S/FTP)
- Cat5e（或更好）
- AWG24（或更好）。AWG24/1 和 AWG24/7 都适用。

警告：建议不要使用交叉以太网电缆：所有以太网电缆都应使用 TIA/EIA-568 标准规定的 T568B 接线。

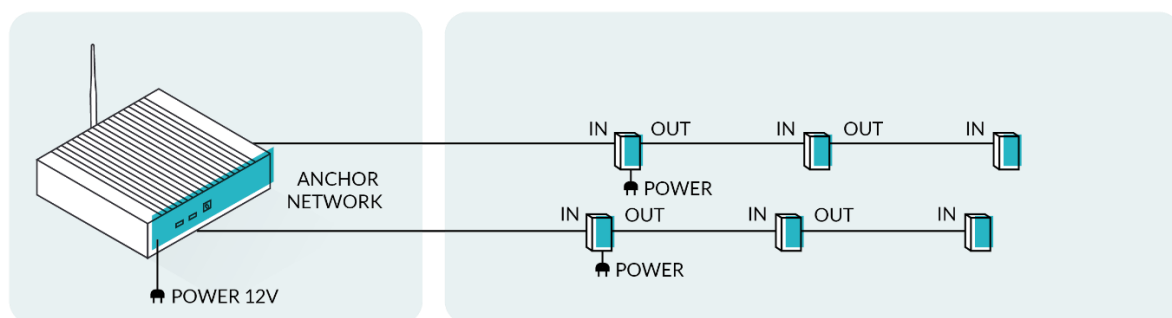警告：为了系统稳定性，建议仅将锚机（以及仅用于聚合锚机的网络交换机）连接到网关上标有"锚机网络"的端口。

8.3 锚机供电

锚机供电选项有两种：

- 采用通过**以太网供电 (PoE/PoE+)** 选项。此选项要求在网关和菊花链中的第一个锚机之间放置一个具有 PoE 功能的以太网交换机。每个锚机都会通过输出以太网电缆向菊花链中接下来的锚机供电。为锚机供电的以太网电缆必须连接到标有"1"的端口。

备注：一般情况下，**4-5 个锚机**（根据安装设置和环境并考虑具体情况），这是通过 PoE+ 交换机供电时链中锚机的最大数量，更多会导致联网问题。请务必使用屏蔽以太网电缆消除串扰。

- **本地 DC 插孔**：此选项使用外部交流/直流转换器为菊花链中的第一个锚机供电。

警告：不允许通过以太网端口 2 为锚机供电。

警告：确保使用正确的端口连接锚机上的输入和输出以太网电缆。

8.4 锚机机头

锚机机头有两种类型：

- 机头 90-010-0101 为锚机提供 **IP66 和 IP67 防护等级**。以太网电缆从侧面进入机头。

- 机头 90-011-0001 可选择用于引导外部电缆。该解决方案的防护等级为 **IP20**。机头允许用户将电缆从锚机背面向上布线或向锚机背面布线。

8.4.1 安装 IP66/67 机头

1. 使用没有预制连接器的以太网电缆时，根据 T568B 惯例将 RJ45 连接器放置在以太网电缆上。

警告：确保 RJ45 连接器适合布置的以太网电缆。

2. 将拧紧螺母放在以太网电缆上方。

3. 将护套放在以太网电缆上方。

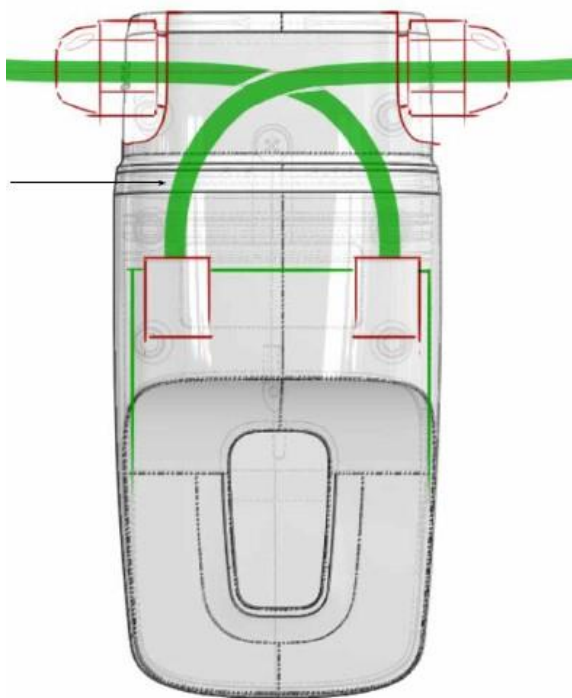4. 将以太网电缆穿过电缆密封套。

5. 将以太网连接器插入正确的 RJ45 插孔。如下图所示，在盖板内以交叉方式布置以太网电缆。

图6 锚机以太网电缆连接

6. 在 IP66/67 机头的 O 形环上涂抹提供的润滑剂。

警告：仅使用硅基或 PTFE 基润滑剂。

7. 将 IP66/67 机头推到锚机基本模块上，直到卡夹卡在基本模块上。

8. 推入电缆密封套中的护套。

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9. 将拧紧螺母拧到电缆密封套上，直至固定为止。最大扭矩为 6.0 Nm。

如果需要拆下机头，请按照相反的顺序执行上述步骤。

警告：为了提供 IP66/67 防护等级，以太网电缆的直径必须根据机头随附的护套进行定制。标准电缆直径应为 7 mm ±10%。请联系 Pozyx 了解其他选装件。

警告：如果该锚机是锚机菊花链中的最后一个，请确保将 IP66/67 机头随附的护套放置在右侧电缆密封套中。

8.4.2 安装 IP20 机头

要安装 IP20 机头，请按照以下步骤操作：

1. 使用没有预制连接器的以太网电缆时，根据 T568B 惯例将 RJ45 连接器放置在以太网电缆上。

警告：确保 RJ45 连接器适合布置的以太网电缆。

2. 将以太网电缆和直流电源电缆（如果使用）穿过机头中的相应孔。在锚机基本模块上安装机头后，确保电缆不会交叉。

3. 将以太网连接器插入正确的 RJ45 插孔。使用时，还应将直流插头插入锚机的直流插孔

4. 将机头推到锚机基本模块上。

5. 将电缆推入机头顶部或后部出口孔。

6. 如果机头在第 5 步中移动，请重新调整机头。

8.5 锚机放置的最佳惯例

为了获得最为精准的定位，以下通用指南适用：

- 锚机应出现在其它的锚机**视线**以内。
- 每 10 m 放置一个锚机（1 个锚/100 m²）。但是，这可以根据环境的不同而变化。在某些情况下，距离可能更大或更小，但我们建议最大锚机间距不超过 20 m。
- 追踪器应**被锚机围绕**（所有方向）。在需要放置追踪器的房间的每个角落，都放置一个锚机，即可做到这一点。

8.5.1　2D 定位的具体指南：

- **将锚机放置在用户视线的高处。**
  将锚机放在高处（在天花板上或墙壁上）会增加接收信号良好的机会，因为障碍物较少。障碍物通常对距离测量的准确性有负面影响，这对定位准确性有直接影响。
- **在用户周围分散放置锚机。请勿将锚机沿一条直线放置。**
  对于基于距离的系统，单个距离测量只会提供单个方向的信息。这个方向正是从用户到锚机的方向。因此，最好将锚机分散放置，使其覆盖所有方向。如果锚机都在一条直线上，定位误差会（可能）非常大：半径的微小变化（例如由于噪声），会导致交叉点位置的变化非常大。
- **确保每个锚机在不超过 15 至 20 米的距离内至少有两个相邻锚机，但最好有更多的锚机**，在障碍物很多的环境中这个距离甚至更短
- **垂直放置锚点，连接器位于顶部。这将天线保持在底部**
- **金属、水、电线等材料应远离锚机，尤其是远离天线**：在距离天线几厘米的范围内不得有金属，甚至连小螺丝也不能有。
- **建议在锚机和墙壁之间留出 20 厘米的距离。**可使用额外的安装设备实现这一点。

8.5.2　3D 定位的具体指南：

- **遵守上述的指南，但将锚机放置在不同的高度：**
  Z 坐标的准确性很大程度上取决于锚机高度的分布。理想情况下，建议将您的锚机放置在您的定位区周围，如下所示。尝试使低位和高位锚机之间的距离最大。
- **与顶面相比，将立方体的底面旋转 45 度：**
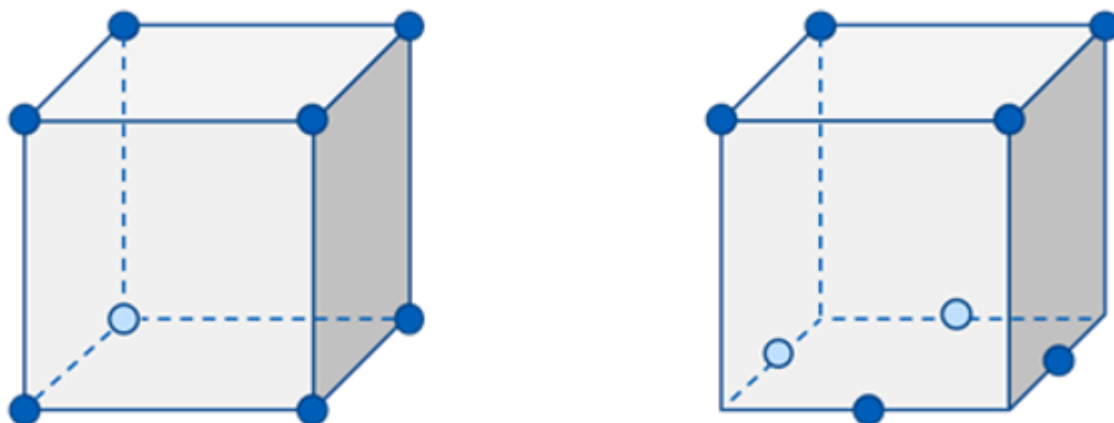
扭曲基面会减少锚点的 3D 凸包（例如，立方体的底角在凸包之外），但它通常会给标签和锚点之间的视线提供更高的机会 . 例如。 当您的身体挡住房间的 1 个角落时，它只会用 1 个锚点而不是 2 个锚点阻挡视线。此外，标签最好从尽可能多的方向被锚点包围。
- **将底部锚倒置放置，因为这会将天线指向上方（= 朝向标签）。**

请始终查看 https://docs.pozyx.io/enterprise/choosing-the-anchors-locations 了解最新指南。

8.6 锚机激活

8.6.1 超宽带功能
可在 https://docs.pozyx.io/enterprise/installing-the-anchors 处找到。
处找到锚机设置和配置以及作为定位系统一部分的一般说明。

8.6.2 蓝牙功能
尚不支持使用 BLE 功能。

9 故障排除

锚机具有一个 3 色 LED 指示灯，可指示以下状态：

参数	信息
LED 灯熄灭	锚机断电或一般故障
蓝光常亮	启动或维护模式
红光常亮	无以太网链路
橙光闪烁	以太网接口上的链接已建立
橙光常亮	IP 地址已获取
绿光闪烁	锚机运行，不存在超宽带活动
绿光常亮	锚机运行，存在超宽带活动
红光闪烁	一般故障
蓝光闪烁	Pozyx 后备模式

10 常问问题

Part Number	Description
10-002-0022	企业主播 V2.2
90-010-0101	企业主播 的 IP66/67 防护罩
90-011-0001	企业主播 的 IP20 防护罩
90-020-0004	天花板安装支架（包括螺丝和垫圈）
90-020-0005	壁挂式安装支架（包括螺丝和垫圈）
90-020-0006	角括号（包括螺丝和垫圈）

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11 处置

当产品使用寿命结束时，请根据当地法律法规妥善处置。

包装材料的处置

（欧盟关于包装和包装废弃物的指令 94/62/EC）
该标志表示产品的包装材料可以回收利用。

本产品的处置

（欧盟关于废弃电气和电子设备的指令 2012/19/EU）
该标志出现在产品、附件或说明书上，表示产品及其电子附件（例如交流/直流转换器）在使用寿命结束时不得与其他生活垃圾一起处置。为了防止不受控制的废物处置可能对环境或人类健康造成危害，请将这些物品与其他类型的废物分开，认真负责回收，促进材料资源的可持续再利用。
家庭用户应联系本产品的供应商或当地政府办公室，详细了解可以将这些物品送到何处以及如何进行环保回收。
商业用户应联系供应商，核实采购合同的条款和条件。本产品及其电子附件不得与其他商业废物混合处置。

有关最近的回收站的信息，请联系当地市政办公室。

12 法规信息

12.1 中国无线电发射设备声明

制造商： Pozyx

产品编号： 100020022

CMIIT ID: 2022DJ8645

禁止在航空器上使用超宽带（UWB）设备。
在《中华人民共和国无线电频率划分规定》的脚注"CHN12"中列出的射电天文台址周围 1 公里范围内禁止使用超宽带（UWB）无线电发射设备。
超宽带（UWB）无线电发射设备使用时，不得对其它无线电业务的电台产生无线电干扰，也不得向其它无线电业务的电台提出干扰保护要求。

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产品中有害物质的名称及含量

部件名称						
	铅 (Pb)	镉 (Cd)	汞 (Hg)	六价铬 Cr(VI)	多溴联苯 (PBBs)	多溴二苯醚 (PBDEs）
100020022	O	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制

O：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

X：表示该有害物质在该部件某一均质材料中的含量超出 GB/T 26572 规定的限量要求。