

Manual

IDM161-M-1D-J1-BT-N-N0

IDM261-M-2D-J1-BT-N-N0

Bluetooth handheld scanner for use in explosion-hazardous areas Zone 1/21



The latest version of the General Terms of Supply for Products and Services in the Electronics Industry set out by the German Electrical and Electronic Manufacturers' Association (ZVEI) and the "Extended Reservation of Proprietorship" supplementary clause apply to this document.

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1. Important Notes About The Instruction Manual

1.1.Safety Information

This document contains symbols to identify warning messages and information messages.

Warning messages

You always find warning messages whenever hazards could result from your actions. It is essential that you observe these warning messages to ensure your personal safety and to prevent property damage.

Warning messages are shown in descending order according to the risk level, as follows:



DANGER!

This symbol warns you of an immediate and present danger.

If you do not observe this warning message, there is a risk of personal injury and even death.



WARNING!

This symbol warns you of a potential fault or hazard.

If you do not observe this warning message, there is a risk of personal injury or severe property damage.



CAUTION!

This symbol warns you of a potential fault.

Failure to observe this warning message may result in the product or any systems and plants connected to it malfunctioning or suffering a complete failure.

Information messages



Note

This symbol draws your attention to important information.



Example

This symbol indicates an example.



Tip

This symbol indicates a tip is provided.



Action

This symbol highlights an action. You are prompted to perform an action or sequence of actions.

1.2. Notes About The Manual

Please read the manual carefully before initial commissioning.

The instruction manual contains important information on the function and safety regulations. If you do not observe this information, the intended use in explosion-hazardous areas cannot be guaranteed.

Observe the information given in this manual during commissioning and use of the product.

There is no responsibility for actuality. Pepperl+Fuchs GmbH reserves the right to make changes to this document.

Prior to use, make sure that you have the latest version of the user manual. Check the homepage www.pepperl-fuchs.com or contact your contact person at Pepperl+Fuchs for clarification.

The figures in this manual are for illustration purposes only, and may differ from the actual design in its appearance.



DANGER!

Do not make any changes to the device that are not intended or been approved by Pepperl+Fuchs.

Improper handling of the handheld scanner can void the type approval to operate in explosion-hazardous areas.

Non-compliance excludes warranty claims.



Note

Information regarding programming from the SICK AG manual (www.SICK.com) is required for the full commissioning of the handheld scanner.

1.3.General Warning Messages



WARNING!

-
- Only operate the devices when assembled.
 - Do not clean the device in explosion-hazardous areas. Do not wipe it dry.
 - Switch off the device immediately if you believe that the device can no longer be operated safely after damaging effects or abnormalities in general (ingress of water, fluids, exposure to temperatures outside the specified range etc.).
 - Note general statutory regulations or directives on occupational safety, accident prevention regulations and environmental protection laws, e.g., Ordinance on Industrial Safety and Health (BetrSichV).
 - Do not open the device.
 - You may not make any changes to the device. You may not exchange or replace any components. Explosion protection is no longer guaranteed for non-specified components.
 - Ensure safe handling during use through adequate stability and freedom of movement.
 - Immediately remove the device from the explosion-hazardous area in the event of damage to the housing.
 - IEC 60079-19 and IEC 60079-17 stipulate that you as the operator of electrical plants in explosion-hazardous areas are obligated to appoint an electrician to check that these plants are in perfect condition.
 - Do not insert any objects into the housing or other openings of the handheld scanner. Openings on the device must not be obstructed, blocked, or covered.
 - Dispose of the device and the associated components correctly, as required by law, by an approved company.
-



Note

- Note the relevant deployment and operational regulations for electrical plants (e.g., Directive 99/92/EC, Directive 2014/34/EU or the applicable national regulations, IEC 60 079-14, and the series DIN VDE 0100).
 - As the operator, perform maintenance and repair work for the device properly in explosion-hazardous areas.
-



WARNING!

Devices equipped with lasers comply with the standards US 21 CFR 1040.10 and EN 60825-1. The classification of the laser device is specified on a plate attached to the device. Class 1 laser devices are not considered to be hazardous under the intended use.

Nevertheless, do not look directly into the light source.

The following statement is required by American and international laws:

The use of control elements, adjustments, or the use of procedures that do not follow the instruction described here, may lead to hazardous radiation exposure.

Class 2 laser devices work with a visible low-voltage LED. As with any bright light source, such as the sun, the operator should not look directly into the light beam. A class 2 laser is considered harmless for short-term exposure.

Maintenance

No ongoing maintenance is required when the mounting instructions, the ambient conditions and proper operation are observed.

Inspection

The operator must appoint an electrician to check an electrically powered device in explosion-hazardous areas, to ensure it is in correct condition (IEC 60079-19 and IEC 60079-17).

Repairs

Repairs may only be performed by the manufacturer or persons commissioned and trained for this purpose.



WARNING!

The device is factory-sealed. It may be opened only by trained and qualified personnel at the factory.

Software installation





Instructions relating to software installation on the PC can be found in the SICK AG manual.

Commissioning

Before you put the device into operation, check whether all the necessary components are available.

2. Technical Data

2.1. Explosion Protection

-  II 2G Ex ib IIB T4
-  II 2G Ex ib IIB T4 Gb
-  II 2D Ex ib IIIC T135°C
-  II 2D Ex ib IIIC T135°C Db

Test certificate

IBExU18ATEX1050

IECEX IBE 18.0009

Manufacturer

Pepperl+Fuchs GmbH
Lilienthalstraße 200
68307 Mannheim, Germany

info@de.pepperl-fuchs.com



2.2. Technical Data for Bluetooth Scanner

	IDM161-M-1D-J1-BT-N-N0	IDM161-M-1D-J1-BT-P-N0	IDM261-M-2D-J1-BT-N-N0
Description	Linear imager		2-D imager
Barcode	One-dimensional 1-D (barcode)	One-dimensional 1-D (Barcode and stacked code incl. PDF417)	One-dimensional 1-D & 2-D (Barcode and stacked code incl. PDF417)
Barcode types	Code 39, Code 39 Trioptic, Code 32, Code 93, Code 11, Codabar, Code 128, GS1-128 / EAN 128, UPC / EAN / JAN (with addition), MSI/Plessey, UK/Plessey, IATA, Interleaved 2 of 5, Standard and Industrial 2 of 5, Matrix 2 of 5, Telepen, GS1 DataBar, Australian Post, China Post, German Post, US Planet, US Postnet, British Post, Intelligent Mail, Japan Post, Korean Post, Dutch KIX Post		
Stacked codes	-	PDF417, MicroPDF417, Code 49, Code 16K, Composite, Codablock F	
2-D code types	-		Data Matrix, QR code, MicroQR-Code, Aztec, MaxiCode
Light source	LED, visible red light (630 nm)		

	IDM161-M-1D-J1-BT-N-N0	IDM161-M-1D-J1-BT-P-N0	IDM261-M-2D-J1-BT-N-N0
Scan frequency	500 Hz		60 Hz
Reading distance	20 mm ... 850 mm		30 mm ... 160 mm
Code resolution	Approx. ≥ 0.076 mm		Approx. ≥ 0.13 mm
Immunity to extraneous light	100,000 lx		
Electrical data			
Current consumption	330 mA (Standby 80/130 mA; Peak 500 mA)		
Battery	Lithium ion battery 3.6 V; 1500 mAh		
Battery power	Up to 60,000 scans at full battery charge		
Feedback			
Visual	2 x LED (operating state/read confirmation)		
Acoustic	Buzzer (can be switched off)		
Ambient conditions			
Shock resistance	50 drop tests on concrete from a height of 2 m		
Operating temperature	-20 °C to +50 °C		
Storage temperature	-30 °C to +70 °C		-40 °C to +70 °C
Relative humidity	95 % non-condensing		
Mechanical data			
Degree of protection	IP65		
Dimensions [W x H x D]	104 mm x 176 mm x 76 mm		
Weight	Approx. 260 g		

2.3.Use

The handheld scanner is a piece of handheld apparatus.

It enables portable recording and direct data transfer of barcodes and 2-D codes in explosion-hazardous areas. The device is specifically modified for use in explosion-hazardous areas of zone 1 and zone 21.

3. SYSTEM STRUCTURE

3.1.Overview

The Bluetooth handheld scanners and their accessories are presented in the following overview. Charging the handheld scanner batteries can take place within the hazardous area using the zone 1/21 certified base station/charging cradle and the associated power module. Furthermore, the scanner can be charged in the safe area using a base station/charging cradle.

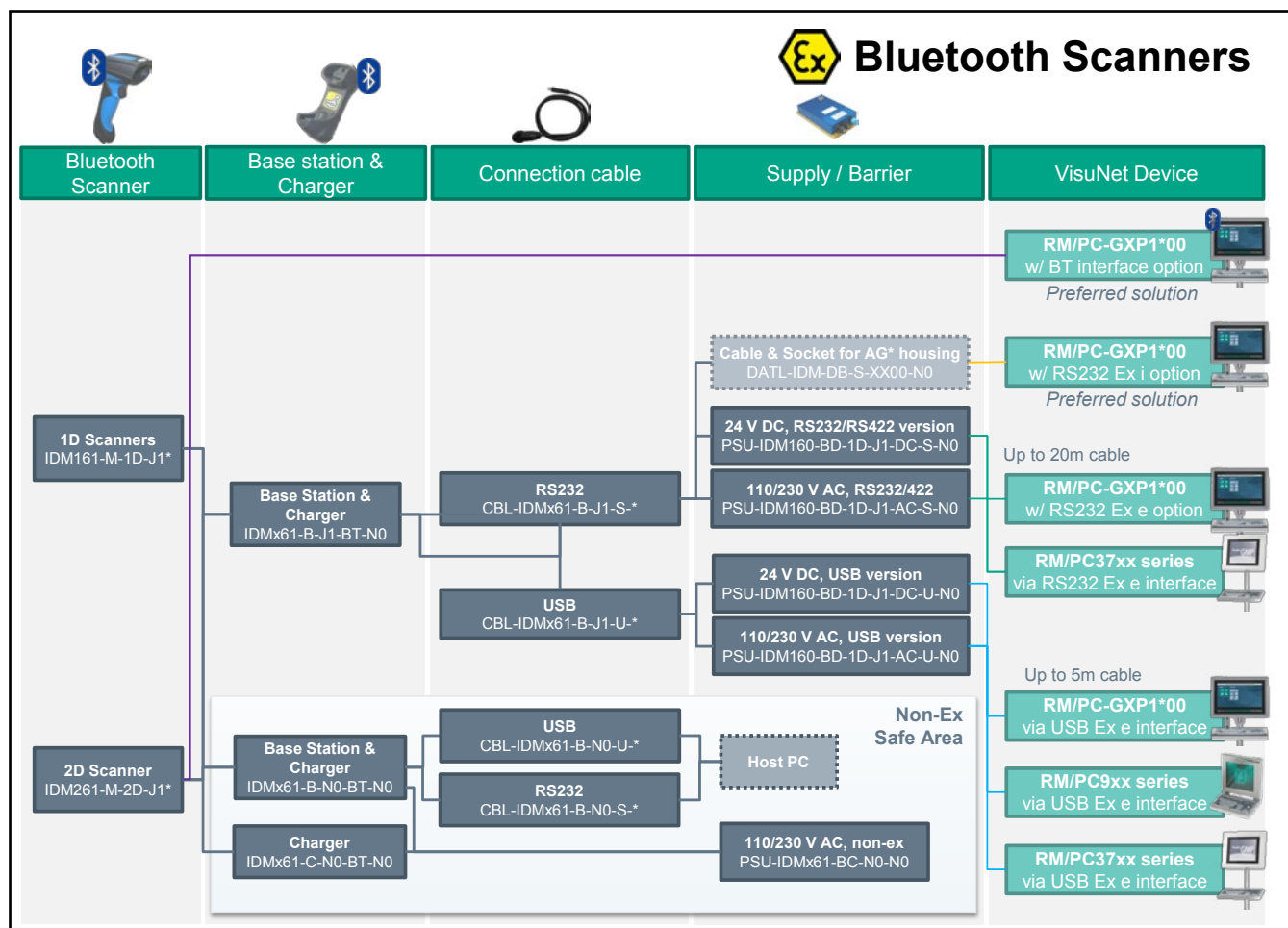


Figure 1. Handheld scanner and accessories

In the following two chapters, the typical usage cases are described in more detail.

3.2. System Structure 1

Overview of the complete system structure 1: Bluetooth handheld scanners IDM161-M1D-J1-BT-N-N0, IDM261-M-2D-J1-BT-N-N0, and base station connected to intrinsically safe RS232 Ex i interface VisuNet GXP.

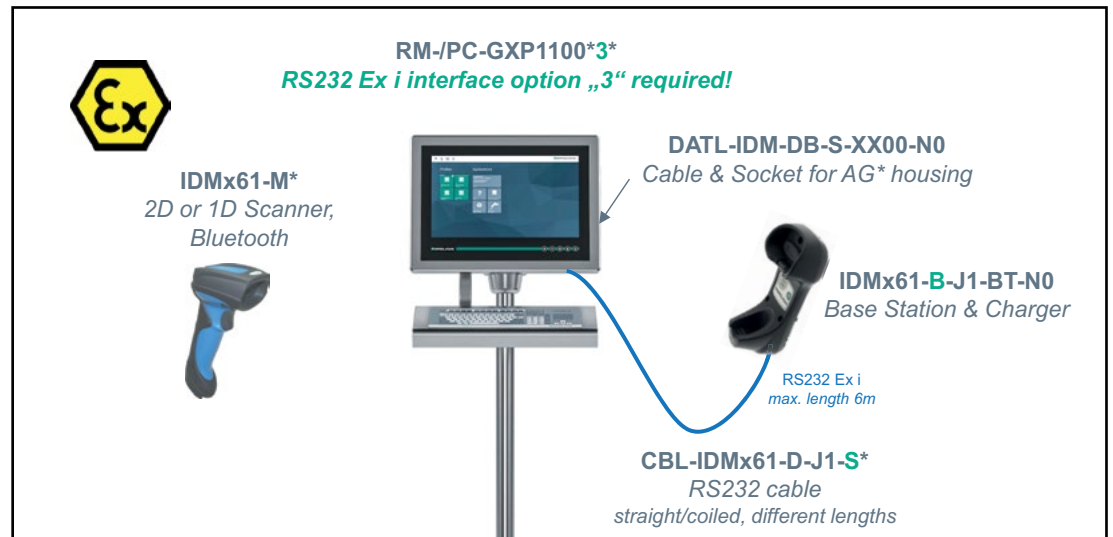


Figure 2. System structure 1—base station connected to RS232 Ex i interface GXP

Description:

The Bluetooth handheld scanner has been designed with the battery for explosion-hazardous areas. For proper operation in explosion-hazardous areas, a IDM_x61-B-J1-BT-N0 base station, a CBL-IDM_x61-B-J1* cordset, the DACL-IDM-DB-S-XX00-N0 connection cable, and the RS232 Ex i interface option of the VisuNet GXP are required.

Data is transferred this structure directly via the base station, which transfers the data to the GXP via the intrinsically safe Ex i RS232 interface. Furthermore, communication in this structure can be realized via the Bluetooth interface option of the VisuNet GXP.

The IDM_x61-B-J1-BT-N0 base station can be used in both cases as a charging cradle to charge the scanner in explosion-hazardous areas.

3.4. System Structure 3

Overview of the complete system structure 3: Bluetooth handheld scanner and charging cradle in non-explosion-hazardous areas



Figure 4. System structure 3—scanner with a base station in the safe area/Bluetooth option VisuNet GXP

Description:

The Bluetooth handheld scanners can be used alone in explosion-hazardous areas; the base station and charging cradle can be installed in the safe area.

Depending on the application, communication with a Bluetooth-enabled operator workstation (e.g., VisuNet GXP) can be realized (option 1). In this case, it is possible to use the IDMx61-C-N0-BT-N0 charging cradle in the safe area to charge the scanner.

Instead of just the charging cradle, the non-explosion hazardous area base station IDMx61-B-N0-BT-N0 can be used (option 2). This can be connected directly to a power supply and a computer can be connected in the non-explosion hazardous area using a RS232 or USB cable.

4. Commissioning

4.1. Preparing Bluetooth Handheld Scanners



DANGER!

The battery must not be changed or inserted in explosion-hazardous areas. Improper handling can void the type approval.



Preparation of Bluetooth handheld scanners

1. The battery compartment is located on the underside of the Bluetooth handheld scanner. Loosen the screw with a suitable tool to remove the cover. After loosening the screw, some force is required to remove the cover



Figure 5. Removing the battery compartment lid

2. The battery is required to commission the Bluetooth handheld scanner. The protective cap must be removed before inserting the battery into the handheld scanner.



Figure 6. Removing the protective battery cap



DANGER!

The designated battery may only be used!

3. The battery is inserted into the compartment on the handheld scanner. The end of the pull tab must be seen protruding out of the opening of the handheld scanner. If the battery is inserted correctly and connected to the contacts, there is an audible and visual signal. The opening must be completely sealed again. Before commissioning, check whether the screw cap has been properly sealed.



Figure 7. Inserting the battery and closing the protective cap



Using the base station in explosion-hazardous areas—system structure 1

1. The cordset from the base station to the power module is plugged into the opening at the bottom of the base station is plugged in. An audible click can be heard when the cable is fully inserted. It must be verified that the cable is firmly anchored.

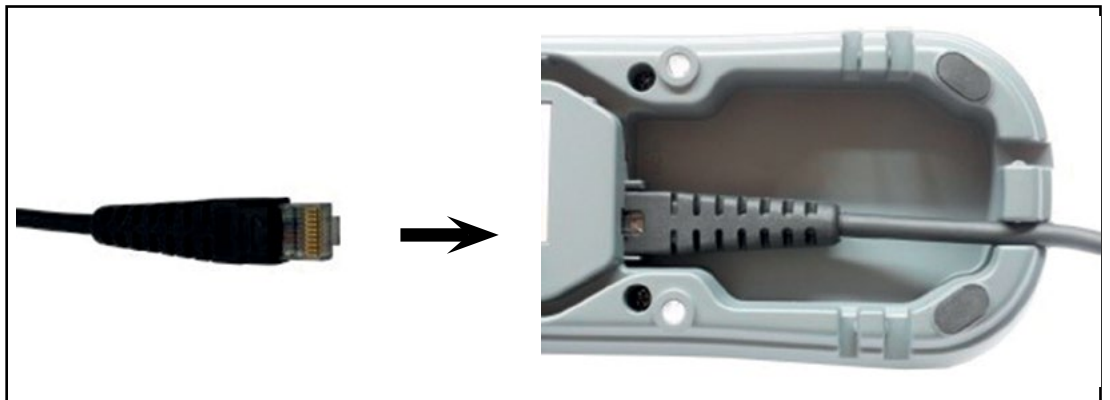


Figure 8. Connecting the RJ45 cable to the base station

2. The plug of the cordset is connected to the power module plug coupling. Ensure that the connection is fully secured to the screw cap after plugging together.



Figure 9. Connecting the plug coupling to the power module basic connection line

3. The handheld scanner is placed in the charger. The underside of the handle is used first to ensure that the charging contacts are properly connected. The LED light on the scanner head indicates successful charging.



Figure 10. Inserting the scanner into the base station



Using the base station in non-explosion hazardous areas - system structure 2

1. With a non-explosion-protected base station, charging in non-explosion hazardous areas can be performed using the PSU-IDMx61-BC-N0-N0 power supply. The cable is plugged into the opening for this at the bottom of the base station. For a base station for explosion-hazardous areas, this connection is sealed at the factory.



Figure 11. Connecting the power supply for the non-explosion-hazardous base station

2. To connect in the non-explosion-protected area, the cable to connect to the power supply and to the PC is inserted into the opening for this at the bottom of the base station. An audible click can be heard when the cable is fully inserted. It must be verified that the cable is firmly anchored.



Figure 12. Connecting the RJ45 cable to the base station

3. The handheld scanner is placed in the charger. The underside of the handle is used first to ensure that the charging contacts are properly connected. The LED light on the scanner head indicates successful charging.



Figure 13. Inserting the scanner into the base station

4.2. Pinout of Power Module with RS232

Supplying the base station according to system structure 2 via connector - plug/coupling.

The terminal assignment is located under the unscrewable opening on the front of the power module.



DANGER!

Do not open the housing in the explosion-hazardous area

Before the device is put into operation in explosion-hazardous areas, it must be ensured that the housing is completely closed again and screwed on properly.

Changes to the pinout may only be carried out by trained and qualified personnel.

Connection of the base station to the power module RS232 via connector - plug/coupling

The terminal assignment is located under the unscrewable opening on the front of the power module.

- ① **Ex e** terminal compartment to connect the power supply and the data line
- ② **Ex i** terminal compartment to connect the consumers (base station/scanner)

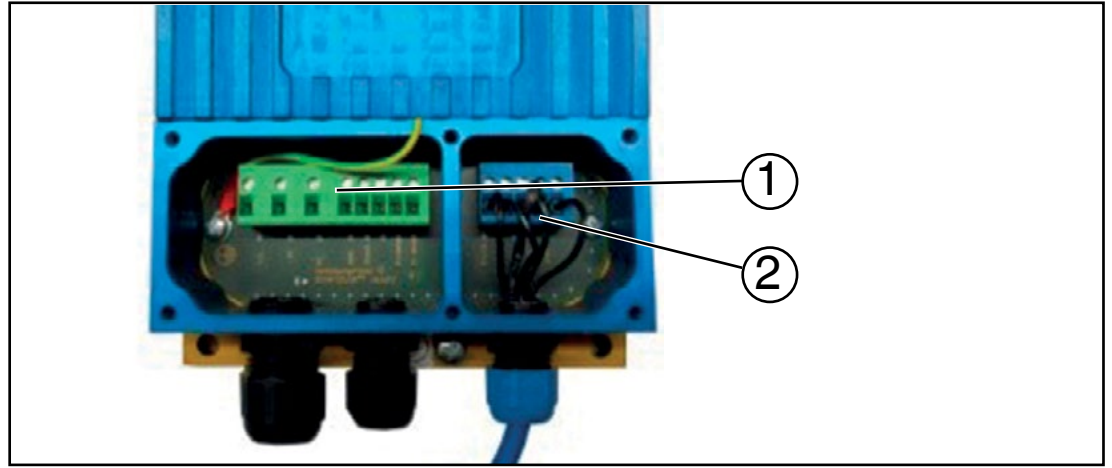


Figure 14. Power module terminal compartment

Base connection line RS232

The blue base connection cable is delivered pre-assembled with the power module PSU-IDM*. The cable consists of a M12 connector plug and a 3-core cable. The individual cores are numbered (printed on the core insulation) and must be connected as follows to the intrinsically safe terminals of the power module.

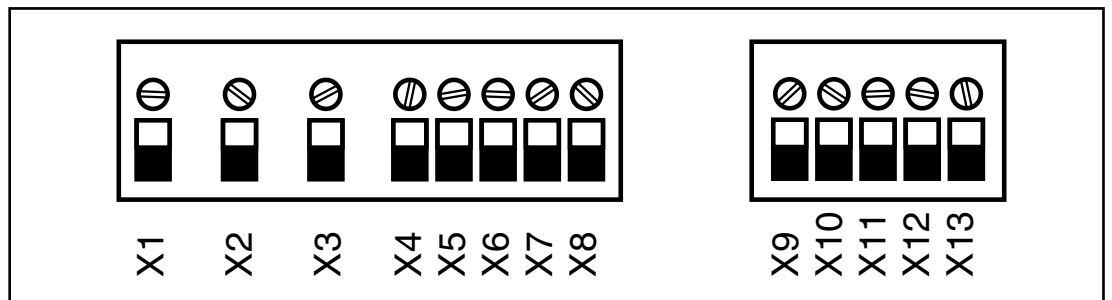


Figure 15. Terminal blocks in the terminal compartment

Connection of RS232 connection cable to power module

Assignment of pre-assembled connection coupling		Power module terminal compartment	
Pin	Core designation	Designation	Number
3	3	RxD	X9
		GND	X10
		PE	X11
2	2	GND	X12
1	1	+UB	X13

Direct connection of the base station without a plug/coupling to the power module with RS232 interface

The base station can be connected directly to the power module without using the blue connection cable.

The assignment of the serial base station cable is outlined in the following table.

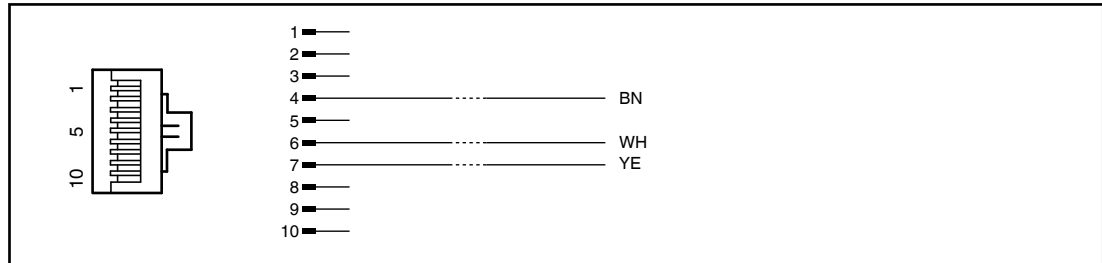


Figure 14. RJ45 plug—connection layout

Base station cordset

Cordset assignment		Power module terminal compartment	
RJ45 pinout	Strand color	Designation	Assignment
6	White	TxD	X9
			X10
			X11
4	Brown	GND	X12
7	Yellow	+UB	X13

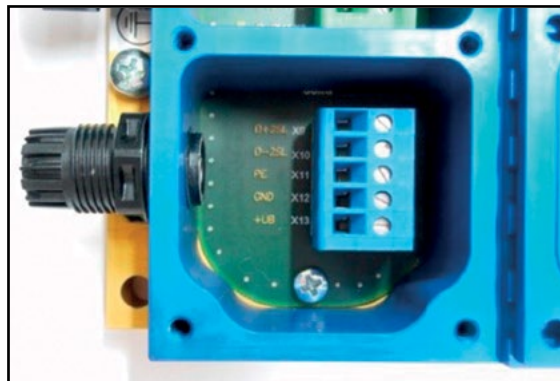


Figure 16. Intrinsically safe terminal compartment of the power module after removing the connector connection cores



Note

Information relating to programming from the SICK AG manual (www.SICK.com) is required for the complete commissioning of the handheld scanner.

4.3. Pinout of power module with USB

Supplying the base station according to system structure 2 via connector - plug/coupling.

The terminal assignment is located under the unscrewable opening on the front of the power module.



DANGER!

Do not open the housing in the explosion-hazardous area

Before the device is put into operation in explosion-hazardous areas, it must be ensured that the housing is completely closed again and screwed on properly.

Changes to the pinout may only be carried out by trained and qualified personnel.

Connection of base station to the power module USB via connector - plug/coupling

The terminal assignment is located under the unscrewable opening on the front of the power module.

- ① **Ex e** terminal compartment to connect the power supply and the data line
- ② **Ex i** terminal compartment to connect the consumers (base station/scanner)

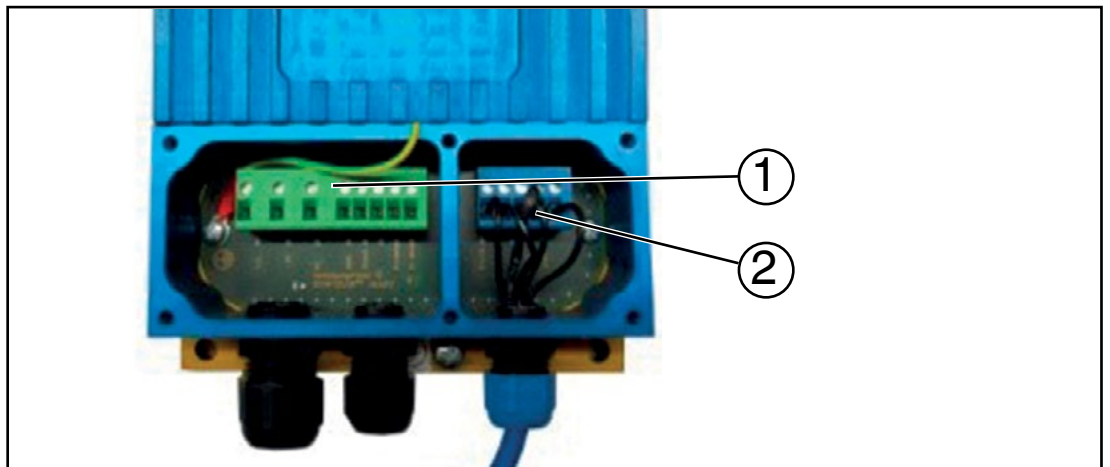


Figure 17. Power module terminal compartment

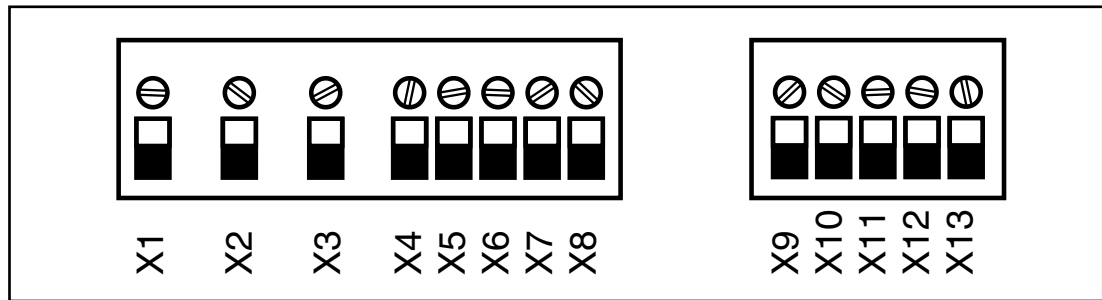


Figure 18. Terminal blocks in the terminal compartment

The blue base connection cable is delivered pre-assembled with the power module PSU-IDM*. The cable consists of a M12 connector plug and a 4-core cable. The individual cores are numbered (printed on the core insulation) and must be connected as follows to the intrinsically safe terminals of the power module.

Base connection cable USB

Pinout of connector plug	
Pin	Designation
3	D+
2	D-
4	GND
1	+UB

Connection of USB connection cable to power module

Pre-assembled connection coupling		Terminal compartment	
Pin	Core	Designation	Number
3	3	D+	X9
2	4	D-	X10
		PE	X11
4	2	GND	X12
1	1	+UB	X13

Direct connection of the base station without plug/coupling to the power module with USB interface

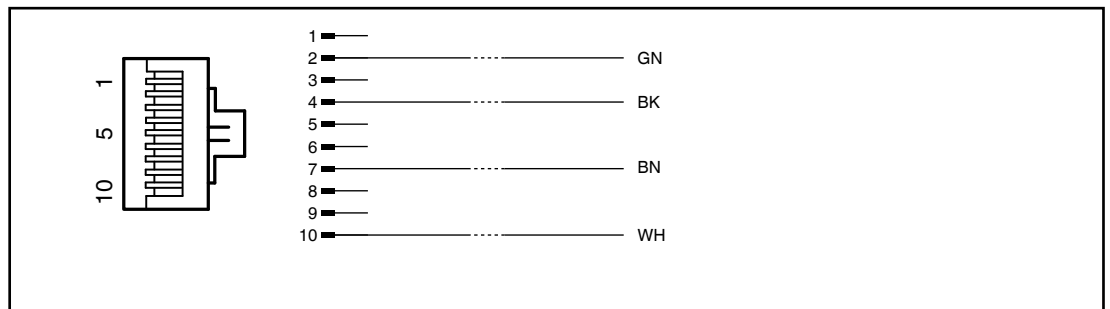


Figure 19. RJ45 plug - connection layout

Base station cordset

Cordset assignment		Power module terminal compartment	
RJ45 pinout	Strand color	Designation	Assignment
2	Green	D+2SL	X9
10	White	D-2SL	X10
			X11
4	Black	GND	X12
7	Brown	+UB	X13

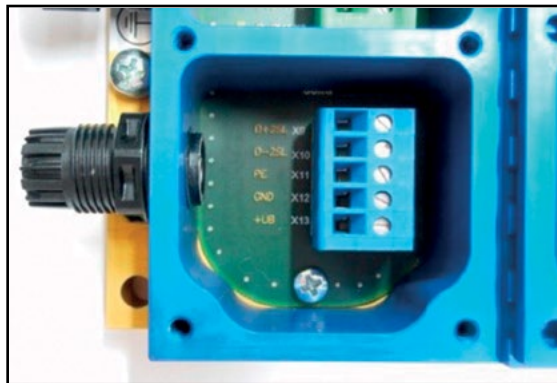


Figure 20. Intrinsically safe terminal compartment of the power module after removing the connector connection cores



Note

Information relating to programming from the SICK AG manual (www.SICK.com) is required for the complete commissioning of the handheld scanner.

5. Accessories

Designation	Description
Wired handheld barcode scanner	
IDM160-D-1D-J1-SU-N-N0	Wired handheld scanner for 1-D codes ATEX & IECEx Zone 1/21
IDM160-D-1D-J1-SU-P-N0	Wired handheld scanner for 1-D codes ATEX & IECEx Zone 1/21 Supports PDF417 barcode
IDM260-D-2D-J1-S1-N-N0	Wired handheld scanner for 2-D codes ATEX & IECEx Zone 1/21
Wireless handheld barcode scanner	
IDM161-M-1D-J1-BT-N-N0	Bluetooth handheld scanner for 1-D codes ATEX & IECEx Zone 1/21
IDM161-M-1D-J1-BT-P-N0	Bluetooth handheld scanner for 1-D codes ATEX & IECEx Zone 1/21 Supports PDF417 barcode
IDM261-M-2D-J1-BT-N-N0	Bluetooth handheld scanner for 2-D codes ATEX & IECEx Zone 1/21
Base station/charging cradle	
IDMx61-B-J1-BT-N0	Bluetooth base station/charging cradle ATEX & IECEx Zone 1/21 For IDMx61 Bluetooth handheld scanner
IDMx61-B-N0-BT-N0	Bluetooth base station/charging cradle No explosion protection For IDMx61 Bluetooth handheld scanner
IDMx61-C-N0-BT-N0	Charging cradle No explosion protection For IDMx61 Bluetooth handheld scanner
Power module	
PSU-IDM160-BD-1D-J1-DC-S-N0	Power module for wired 1-D handheld scanner & Bluetooth base station ATEX & IECEx Zone 1/21 RS232 connection, 24 VDC For IDM160-D-1D-J1* and IDMx61-B-J1*
PSU-IDM160-BD-1D-J1-DC-U-N0	Power module for wired 1-D handheld scanner & Bluetooth base station ATEX & IECEx Zone 1/21 USB connection, 24 VDC For IDM160-D-1D-J1* and IDMx61-B-J1*
PSU-IDM160-BD-1D-J1-AC-S-N0	Power module for wired 1-D handheld scanner & Bluetooth base station ATEX & IECEx Zone 1/21 RS232 connection, 230 VAC For IDM160-D-1D-J1* and IDMx61-B-J1*
PSU-IDM160-BD-1D-J1-AC-U-N0	Power module for wired 1-D handheld scanner & Bluetooth base station ATEX & IECEx Zone 1/21 USB connection, 230 VAC For IDM160-D-1D-J1* and IDMx61-B-J1*

Designation	Description
PSU-IDM260-D-2D-J1-DC-S-N0	Power module for wired 2-D handheld scanner ATEX & IECEx Zone 1/21 RS232 connection, 24 VDC For IDM260-D-2D-J1*
PSU-IDM260-D-2D-J1-AC-S-N0	Power module for wired 2-D handheld scanner ATEX & IECEx Zone 1/21 RS232 connection, 230 VAC For IDM260-D-2D-J1*
PSU-IDMx61-BC-N0-N0	Power supply for non-explosion-hazardous base station & charger no explosion protection For IDMx61-B-N0-BT-N0 and IDMx61-C-N0-BT-N0
Cordset for wired handheld scanner/power module	
CBL-IDMx60-D-J1-S-S18-N0	RS232 connection cable wired 1-D/2-D handheld scanner ATEX & IECEx Zone 1/21 1.8 m length, smooth For IDMx60-D-*
CBL-IDMx60-D-J1-S-C38-N0	RS232 connection cable wired 1-D/2-D handheld scanner ATEX & IECEx Zone 1/21 3.8 m length, spiral For IDMx60-D-*
CBL-IDM160-D-J1-U-S18-N0	USB connection cable wired 1-D handheld scanner ATEX & IECEx Zone 1/21 1.8 m length, smooth For IDM160-D-*
CBL-IDM160-D-J1-U-C38-N0	USB connection cable wired 1-D handheld scanner ATEX & IECEx Zone 1/21 3.8 m length, spiral For IDM160-D-*
Cordset for base station/power module	
CBL-IDMx61-B-N0-S-S18-N0	RS232 connection cable base station No explosion protection 1.8 m length, smooth For IDMx61-B-N0*
CBL-IDMx61-B-N0-S-C38-N0	RS232 connection cable base station No explosion protection 3.8 m length, spiral For IDMx61-B-N0*
CBL-IDMx61-B-N0-U-S18-N0	USB connection cable base station No explosion protection 1.8 m length, smooth For IDMx61-B-N0*
CBL-IDMx61-B-N0-U-C38-N0	USB connection cable base station No explosion protection 3.8 m length, spiral For IDMx61-B-N0*
CBL-IDMx61-B-J1-S-S18-N0	RS232 connection cable base station ATEX & IECEx Zone 1/21 1.8 m length, smooth For IDMx61-B-J1*

Designation	Description
CBL-IDMx61-B-J1-S-C38-N0	RS232 connection cable base station ATEX & IECEx Zone 1/21 3.8 m length, spiral For IDMx61-B-J1*
CBL-IDMx61-B-J1-U-S18-N0	USB connection cable base station ATEX & IECEx Zone 1/21 1.8 m length, smooth For IDMx61-B-J1*
CBL-IDMx61-B-J1-U-C38-N0	USB connection cable base station ATEX & IECEx Zone 1/21 3.8 m length, spiral For IDMx61-B-J1*
Accessories	
SCANNER-HOLDER-ID-Mx6x-TRIPOD	Tripod holder for IDMx6x handheld scanner
SCANNER-HOLDER-ID-Mx6x-DESKTOP	Desktop holder for IDMx6x handheld scanner
SCANNER-HOLDER-U1-AG1-N0	Stainless steel holder for IDMx6x handheld scanner, compatible with AG1 surrounding enclosure
SCANNER-HOLDER-U1-XX00-N0	Stainless steel holder for IDMx6x handheld scanner, compatible with AG-XX00 surrounding enclosure
HOLDER-BRACKET-XX00-IDMx61-B-N0	Stainless steel bracket for mounting the base station IDMx61-B-J1-BT-N0 to the AG-XX00 surrounding enclosure
BAT-IDMx61-M	Replacement battery li-ion For IDM161-M* and IDM261-M*
S-RN2/DB9-5-N0	RS232 cable with SUB-D9 plug (female) and open cable ends with wire end ferrules, 5 m length
S-RN2/DB9-20-N0	RS232 cable with SUB-D9 plug (female) and open cable ends with wire end ferrules, 20 m length
S-UN2/USB-5-N0	USB cable with USB Type A plug (male) and open cable ends with wire end ferrules, 5 m length
DATL-IDM-DB-S-XX00-N0	Cordset for wired 1-D handheld scanner IDM160-D-1D-J1-S*, 2-D handheld scanner IDM260-D-2D-J1-S* and the Bluetooth base station IDMx61-B-J1-BT-N0 to VisuNet GXP in the AG-XX00 housing Note: supports RS232 scanner/base station only!
DATL-A3-1.5-1	Supply line for 90 – 240 VAC supply 3 x 1.5 mm ² , diameter 8.1 mm Assembly 6 x 1.5 mm ² wire end ferrules

Your automation, our passion.

Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

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