
OsiSense XG

Radio frequency identification

Catalogue



Simply easy!™



Fully open RFID

With **OsiSense XG**, make the most of its openness. You have freedom of choice for tags and automatic adaptation to the network protocols.
There are many advantages:

> **Freedom of choice**

100% compatible

> **Simplicity and speed**

30% savings in installation and setting-up time

> **Tested and approved**

100% RoHS and UL, CE, FCC certified

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Freedom of choice

Select from the **OsiSense XG**, range of industrial tags or from the ISO standard tags (non locked) available on the market.

> Worldwide compatibility

With 13.56 MHz standards (ISO 18000-3, ISO 15693, ISO 14443).



**100%
compatible**

for simplifying selection

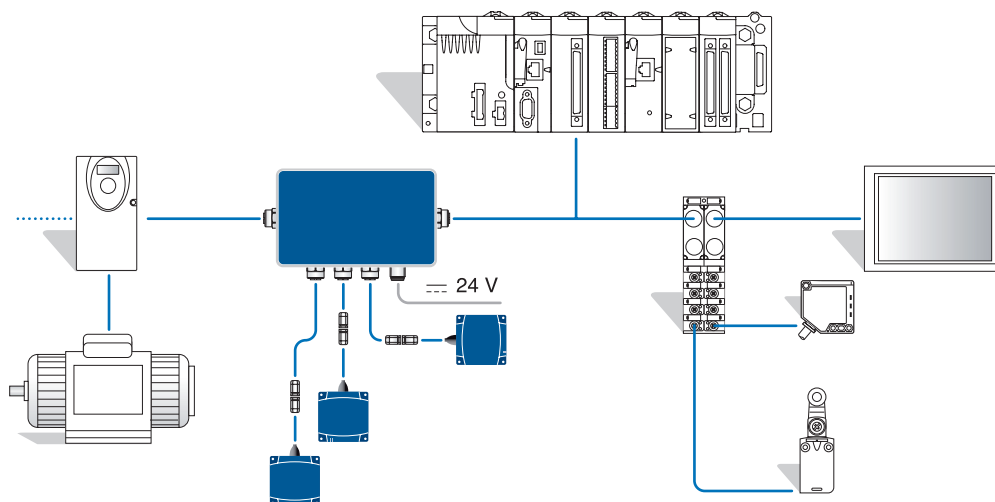
> Automatic integration in your architecture

The **OsiSense XG** RFID system simplifies access to the tag data.

No specific programming required, automatic adaptation to the protocol and speed of the network used (EtherNet/IP, Modbus TCP/IP, Modbus RTU, Uni-Telway, PROFIBUS-DP).

**100%
compatible**

for inclusion in architectures

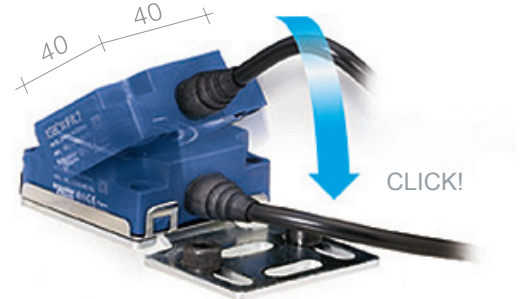


Simplicity and speed

With **OsiSense XG**, forget complex connections and configurations, you have the RFID system that is really easy to install.

> Easy to install

The smart antenna self-adapts to the environment and is easily installed even in the most confined spaces due to its compactness (40 x 40 x 15 mm), fixing accessories and quick cabling.



> Quick to connect and set-up

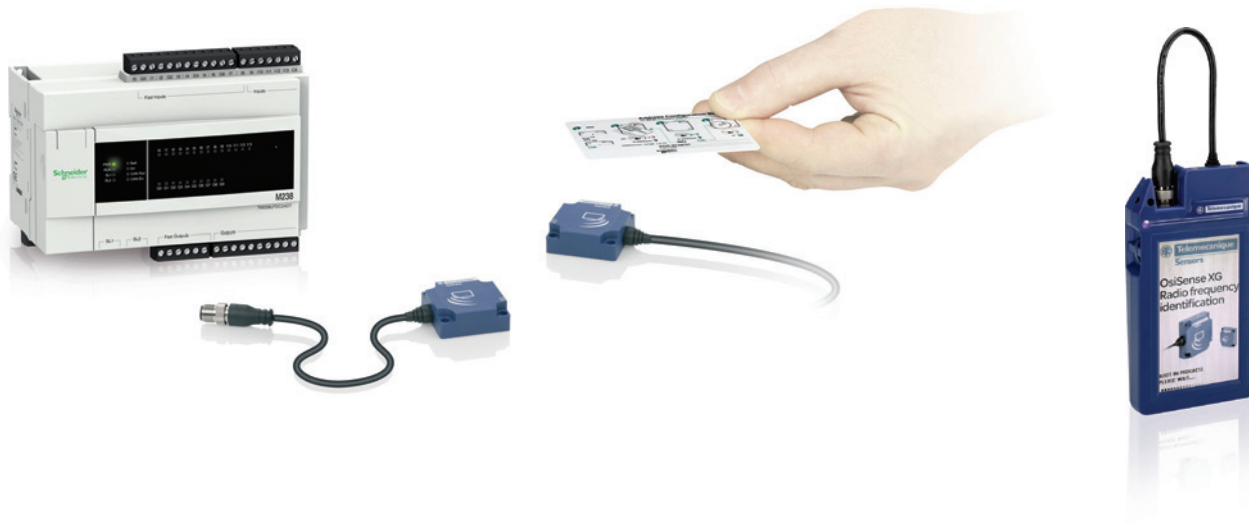
- Connect the smart antenna to the PLC and it's fully operational! Everything is integrated in the product (antenna, RFID controller, protocol).

- Simple presentation of the configuration badge sets the network address of the smart antenna.

+30%

savings in installation and setting-up time

- Use the hand held terminal (XGST2422) for direct access to data in the tags.



Tested and approved

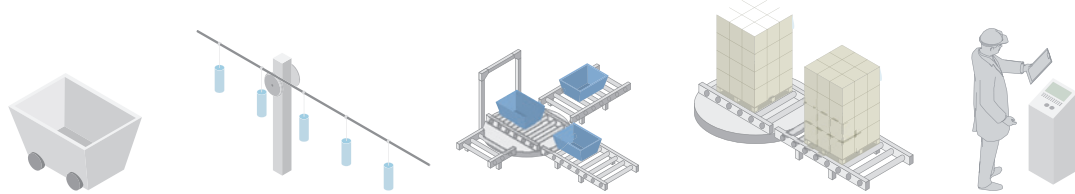
Perfectly suited to your constraints and requirements, **OsiSense XG** is an offer that has been comprehensively tested both in the laboratory and in the field to ensure its reliability. Reduced consumption (< 60 mA per smart antenna) and materials used for the **OsiSense XG** range make our products environmentally friendly.

**100 %
RoHs**

Telemecanique Sensors commits itself to reducing the environmental impact of its products

Selection guide

Material handling



Reading system	Trolley	Narrow conveyor or overhead line	Medium width conveyor	Wide conveyor	Operator
1 XGCS4901201					
2 XGCS8901201 and XGCS850C201					
3 XGCS4901201 + XGFEC540					
4 XGCS4901201 + XGFEC2525					
5 XGST2422					
RFID tags					
6 XGHB123345					
7 XGHB211345					
8 XGHB221346					
9 XGHB320345					
10 XGHB520246					
11 XGHB90E340					
12 XGHB444345					
13 XGHB445345					
14 XGHB320246					
15 XGHB440245					
16 XGHB440845					
17 XGHB443245					



- 1 XGCS4901201
- 2 XGCS8901201 and XGCS850C201
- 3 XGCS4901201 + XGFEC540
- 4 XGCS4901201 + XGFEC2525

5 XGST2422



Compact smart antenna



Electronic tags



RFID handheld terminal



Network connecting box

Presentation

RFID (Radio Frequency Identification) is a term generally used for radio frequency identification systems. These frequencies range between 50 kHz and 2.5 GHz. The most widely used is 13.56 MHz.

The OsiSense XG identification system makes it possible to perform object traceability, identification (tracking) and access control functions.

The information is stored in a memory that can be accessed using a simple radio frequency link. This memory is in the form of an electronic tag, which contains an antenna and an integrated circuit. The tag contains the information associated with the object to which it is fixed. When a tag enters the field generated by the reader/smart antenna, it detects the signal and exchanges the data (read or write) between its memory and the reader/smart antenna.

The applications are numerous:

- Logistics: Goods Out, Goods In, transit, etc.
- Tracking and sorting of baggage
- Traceability in the food processing industry
- Flexible assembly lines in the automotive sector
- Automatic toll booths
- Access control, etc.

The OsiSense XG RFID system is also suitable for use in difficult environments (humidity, temperature, mechanical shock, vibration, dust, etc.).

OsiSense XG RFID system

The OsiSense XG identification system is open to the majority of ISO 18000-3, ISO 15693 and ISO 14443 electronic tags.

The OsiSense XG system integrates Modbus RTU, Uni-Telway, Modbus TCP/IP, PROFIBUS-DP and EtherNet/IP protocols.

The OsiSense XG RFID offer comprises:

- 4 models of 13.56 MHz compact smart antenna (read/write)
- 12 models of 13.56 MHz electronic tag
- 1 RFID handheld terminal
- 3 models of network connection box
- 2 models of field expander (accessories enabling modification of the shape of the dialogue zone between the tag and compact smart antenna)
- Connection and mounting accessories

Setup

OsiSense XG compact smart antennas are simple to set up:

- ☐ Integrated RFID and network functions
- ☐ No programming
- ☐ Automatic detection of the RFID electronic tags (read or write)
- ☐ Automatic setting of the communication parameters (speed, format, parity, protocol, etc.)
- ☐ Network address configuration (1 to 15) using the RFID card provided with the smart antenna or via the embedded web server for the EtherNet smart antenna
- ☐ Read/write compatibility with the majority of 13.56 MHz tags on the market
- ☐ Low sensitivity to metal environments

Installation

The OsiSense XG smart antennas are compact and robust. They can easily be integrated into flexible manufacturing production lines:

- quick connection using M12 connector
- clip-on mounting

An extensive range of connecting cables and adaptor boxes enables OsiSense XG smart antennas to be easily connected to communication networks.



Compact smart antenna, flat form 40



Compact smart antennas, flat form 80

Description

OsiSense XG 13.56 MHz compact smart antennas

XGCS smart antennas enable reading and writing of 13.56 MHz RFID tags that are compatible with standards ISO 15693 and ISO 14443 A and B.

Four models of OsiSense XG compact smart antenna are available:

- Compact smart antenna, flat form 40, **XGCS4901201**:
 - Dimensions (mm): 40 x 40 x 15
 - Nominal sensing distance: 10 to 70 mm depending on the associated tag
- Compact smart antenna, flat form 80, **XGCS8901201**:
 - Dimensions (mm): 80 x 80 x 26
 - Nominal sensing distance: 20 to 100 mm depending on the associated tag
- Compact smart antenna, flat form 80, **XGCS850C201**:
 - Dimensions (mm): 80 x 93 x 40
 - Nominal sensing distance: 20 to 100 mm depending on the associated tag
- **XGW4F111** wand antenna with flexible head for location of tags located in confined spaces, with the XGST2020 handheld terminal.

■ Functions integrated in compact smart antennas:

OsiSense XG compact smart antennas integrate functions which simplify communication between tags, smart antennas and controllers (automation platform, PC, etc.).

These embedded functions are activated by standard requests to read/write words, sent by the PLC:

- **Firmware version**: Polling of the smart antenna to discover its version.
- **Reset**: The smart antenna is reinitialized and assumes its factory default configuration (network address at 1, transmission speed at 19,200 bauds, parameters deleted).
- **Init**: The smart antenna is reinitialized and operates as it would after being switched back on (address unchanged, transmission speed unchanged, parameters deleted).
- **Sleep mode**: Transmission of the smart antenna's electromagnetic field is only activated upon receipt of a read or write instruction. This mode reduces the smart antenna's power consumption and prevents interference when the smart antennas are close to each other.
- **Auto Read/Write**: This mode enables the smart antenna to execute up to 10 read or write instructions in a tag automatically as soon as it enters the dialogue zone (up to 87 write words and up to 109 read words).

Communication

RS485 serial port

■ **XGCS4901201** and **XGCS8901201** smart antennas, equipped with an RS485 serial port, support Modbus RTU and Unitelway protocols, enabling up to 123 words to be exchanged per read or write request.

■ The communication parameters and protocol are detected automatically.

The smart antennas require no configuration.

■ Up to 15 smart antennas can be connected on the same network. All connections are made via M12 connectors, using a complete range of cables, T-connectors and network adaptors.

Ethernet

■ The **XGCS850C201** Ethernet smart antenna is equipped with two M12 connectors, enabling up to 32 smart antennas to be daisy-chained. Looping of the ring network is supported.

■ The protocols supported are Modbus/TCP and EtherNet/IP.

They permit up to 123 words to be exchanged per transaction.

■ The supported I/O scanning and assembly services enable permanent access to the smart antenna status and synchronization as the tags pass in front of the smart antenna.

■ An embedded Web server enables access to the network address parameter settings, network diagnostics information and smart antenna status and activates the embedded RFID functions. A page displaying the smart antenna internal tables is also available.



Electronic tags



Handheld terminal



Field expanders

Description (continued)

OsiSense XG RFID electronic tags

■ XGHB electronic tags with EEPROM or FeRAM type memory ⁽¹⁾ offer the following advantages:

- Fast access to data
- Wide range of memory capacities
- Secure access to contents
- Batteryless operation
- Positioning flexibility
- Protection suited to the environmental conditions

The nominal transmission distance is 18 to 100 mm, depending on the tag model and associated compact smart antenna.

RFID handheld terminal

The **XGST2020** RFID terminal, with firmware and external drive, is a powerful tool for easy and efficient operations on RFID tags.

The removable wand antenna communicates with a wide range of ISO 14443 and ISO 15693 electronic tags. It also has a wide dialogue range of up to 70 mm.

The integrated battery provides the terminal with excellent autonomy (at least one full day of intensive use).

Field expanders

Field expanders are accessories designed to operate with OsiSense XG smart antennas. They enable the shape of the dialogue field of the **XGCS4901201** smart antenna to be adapted to conveying/handling applications.

The concept is a connection-free induction link between the smart antenna and the field expander. Two standard models are available:

- The **XGFEC540** conveyor model detects ISO 15693 tags on a narrow belt covering the width of the conveyor (mounted between two rollers of the conveyor).
 - Dimensions (mm): 400 x 23 x 50
 - Nominal sensing distance: 30 to 90 mm depending on the associated tag

- The **XGFEC2525** universal model increases the area and distance for detection of ISO 15693 tags, which also enables higher passing speeds of the tags.
 - Dimensions: 250 x 250 x 10
 - Nominal sensing distance: 26 to 150 mm depending on the associated tag

- Read/write compatibility with the majority of 13.56 MHz ISO15693 tags on the market.

(Caution: these accessories are not compatible with ISO 14443 tags).

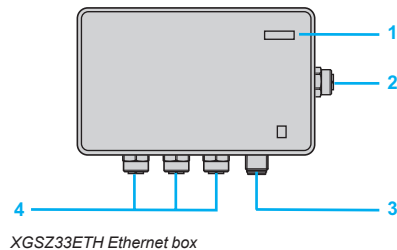
⁽¹⁾ **EEPROM** (Electrically-Erasable Programmable Read-Only Memory)

FeRAM (Ferroelectric Read-Only Memory): non-volatile RAM

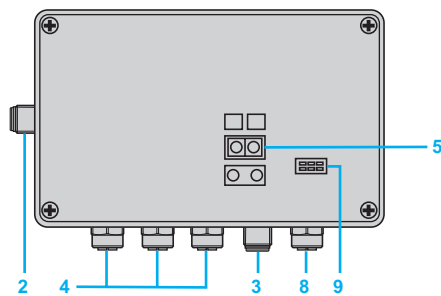
OsiSense XG

Radio frequency identification

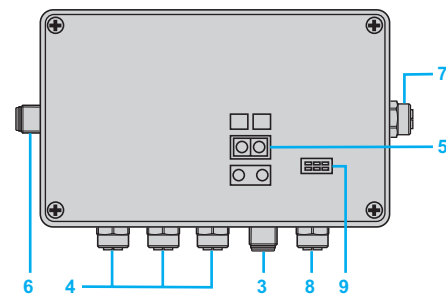
13.56 MHz



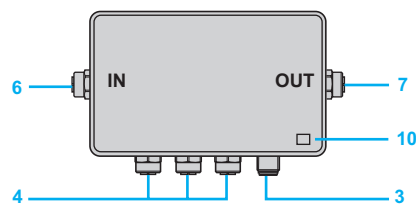
XGSZ33ETH Ethernet box



XGSZ33EIP EtherNet/IP box



XGSZ33PDP PROFIBUS-DP box



TCSAMT31FP tap-off box

- 1 Power on and Ethernet indicator LEDs
- 2 One M12 type Ethernet socket, D-coded
- 3 One M12 type power supply socket, male 4-pin
- 4 Three M12 type female sockets, A-coded, for connecting XGCS smart antennas
- 5 Network address configuration
- 6 One M12 type male network input socket
- 7 One M12 type female network output socket
- 8 One M12 type female configuration port
- 9 Network and connection box status LEDs
- 10 One green LED: power on

Description (continued)

OsiSense XG connection boxes

Four types of quick connection boxes are available:

- **XGSZ33ETH** Ethernet box for Ethernet Modbus TCP/IP network
- **XGSZ33EIP** box for network
- PROFIBUS-DP **XGSZ33PDP** box for PROFIBUS-DP network
- **TCSAMT31FP** tap-off box for Modbus and Uni-Telway communication bus

XGSZ33ETH Modbus TCP/IP box

The **XGSZ33ETH** Osisense box enables connection of XGCS smart antennas to the Ethernet network (Modbus TCP/IP protocol).

It enables an automation platform or PC to access the XGCS smart antenna functions:

- ☐ Reading/writing tags
- ☐ Control and command
- ☐ Monitoring
- ☐ Diagnostics

The **XGSZ33ETH** box is fitted with M12 connectors. It is used to connect the power supply, the Ethernet network and 1 to 3 XGCS smart antennas (up to 8 smart antennas, by daisy-chaining).

XGSZ33EIP EtherNet/IP box

The **XGSZ33EIP** Osisense box enables connection of XGCS smart antennas to the network.

It enables an automation platform or PC to access the XGCS smart antenna functions:

- ☐ Reading/writing tags
- ☐ Control and command
- ☐ Monitoring
- ☐ Diagnostics

The **XGSZ33EIP** box is fitted with M12 connectors. It is used to connect the power supply, the network and 1 to 3 XGCS smart antennas (up to 15 smart antennas, by daisy-chaining).

XGSZ33PDP PROFIBUS-DP box

The **XGSZ33PDP** Osisense box enables connection of XGCS smart antennas to the PROFIBUS-DP network.

It enables an automation platform or PC to access the XGCS smart antenna functions:

- ☐ Reading/writing tags
- ☐ Control and command
- ☐ Monitoring
- ☐ Diagnostics

The **XGSZ33PDP** box is fitted with M12 connectors. It is used to connect the power supply, the network and 1 to 3 XGCS smart antennas (up to 15 smart antennas, by daisy-chaining).

TCSAMT31FP tap-off box

The **TCSAMT31FP** Osisense tap-off box enables XGCS smart antennas to be connected to Modbus and Uni-Telway communication buses.

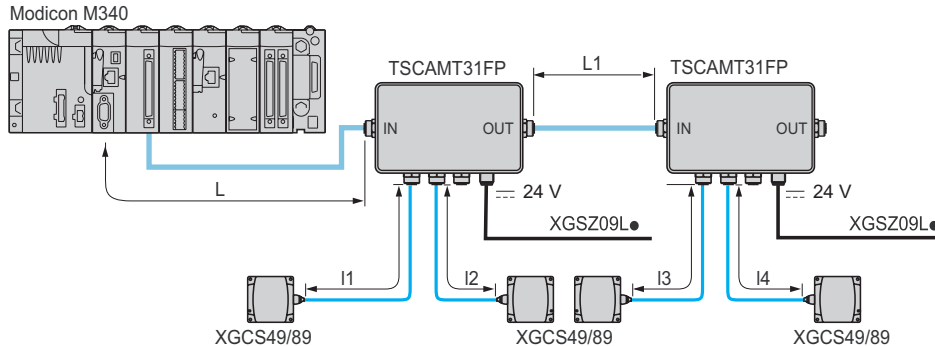
The **TCSAMT31FP** box is fitted with M12 connectors.

It is used to connect the power supply, the communication bus (Modbus) and 1 to 3 XGCS smart antennas (up to 15 smart antennas, by daisy-chaining).

It consists of a sealed metal enclosure.

Description (continued)

Mounting example for a Modbus network

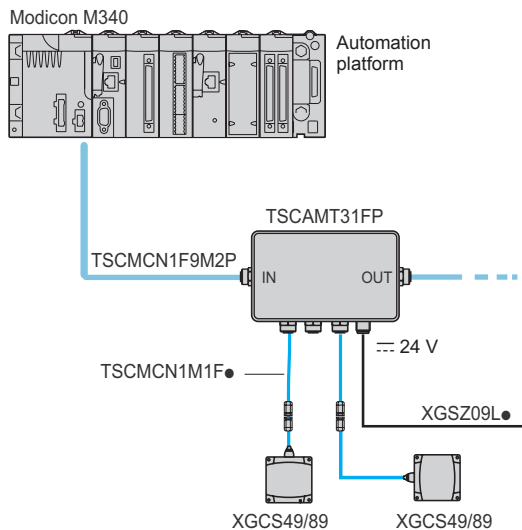


Maximum length of bus
The maximum length of the bus ($L + L1 + I4$) depends on the speed of the network:
- 9600 bauds: 1000 m
- 19,200 bauds: 500 m

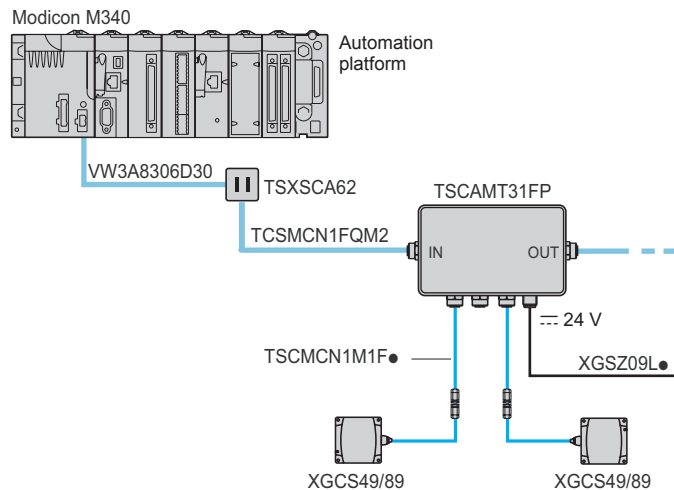
Maximum length of tap-offs:
I1, I2 and I3: 10 m

Examples of connection to a Schneider Electric automation platform

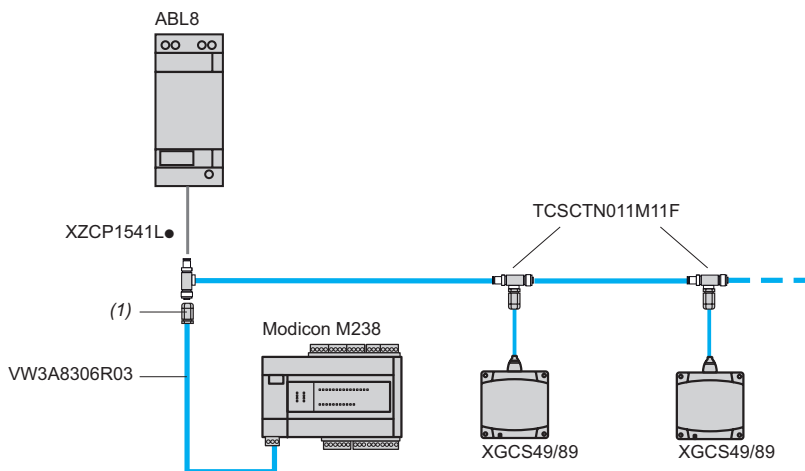
Direct connection



Connection via a TSXSACA62



Daisy-chain connection



(1) **XZCC12MDB50R** M12 male connector, to be ordered separately (see page 23).

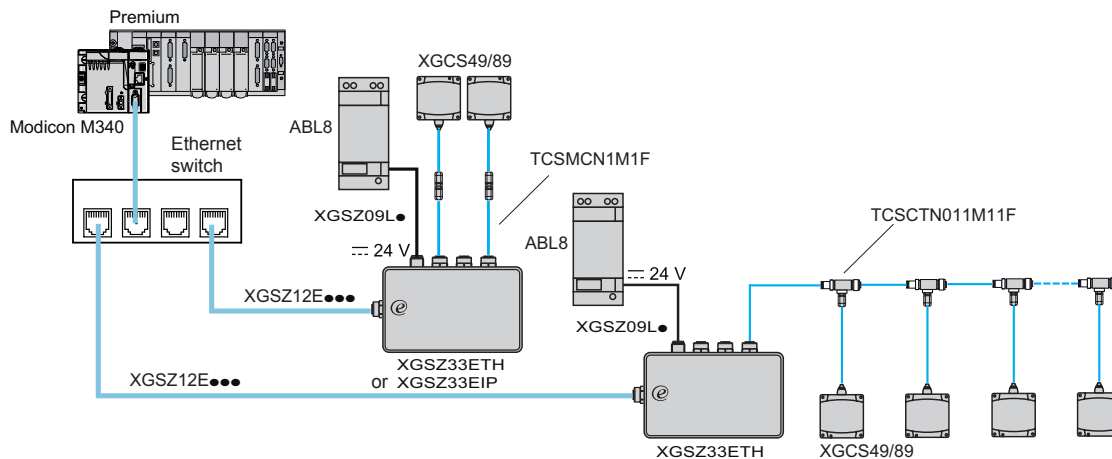
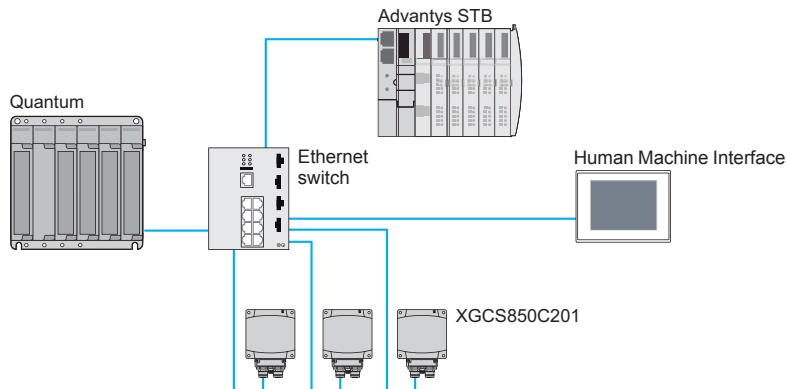
Compact smart antennas can be connected directly to the Modbus port of an automation platform. Up to 15 compact smart antennas can be linked to the RS 485 port using "T" connectors (in cases where the length of the network exceeds 100 m, fit a line terminator, reference TM7ACTLA).

This cabling system is specific to OsiSense XG (powered network).
No other Modbus slave equipment must be connected to it.

Description (continued)

Mounting examples for an Ethernet network

Star topology

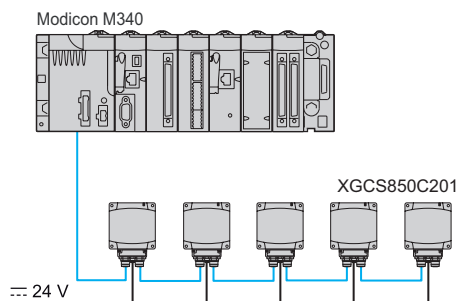


The number of smart antennas connected to each box can be increased by using M12 “T” connectors (ref. TCSCTN011M11F).

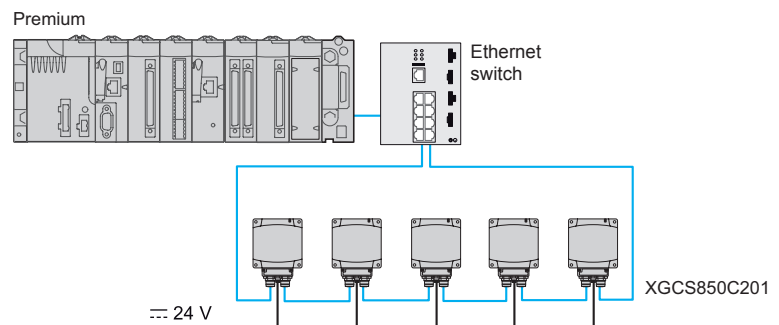
Note concerning use of the XGSZ33ETH box on Modbus/TCP: to maintain high-performance operation it is recommended that a maximum of 8 compact smart antennas are connected (the Ethernet box has 8 communication ports that can be open simultaneously on TCP/IP). In cases where the I/O scanning function is used (which requires an additional communication port), do not connect more than 7 smart antennas.

The total length of the smart antenna-side network for XGCS49/89 smart antennas is limited to 160 m.

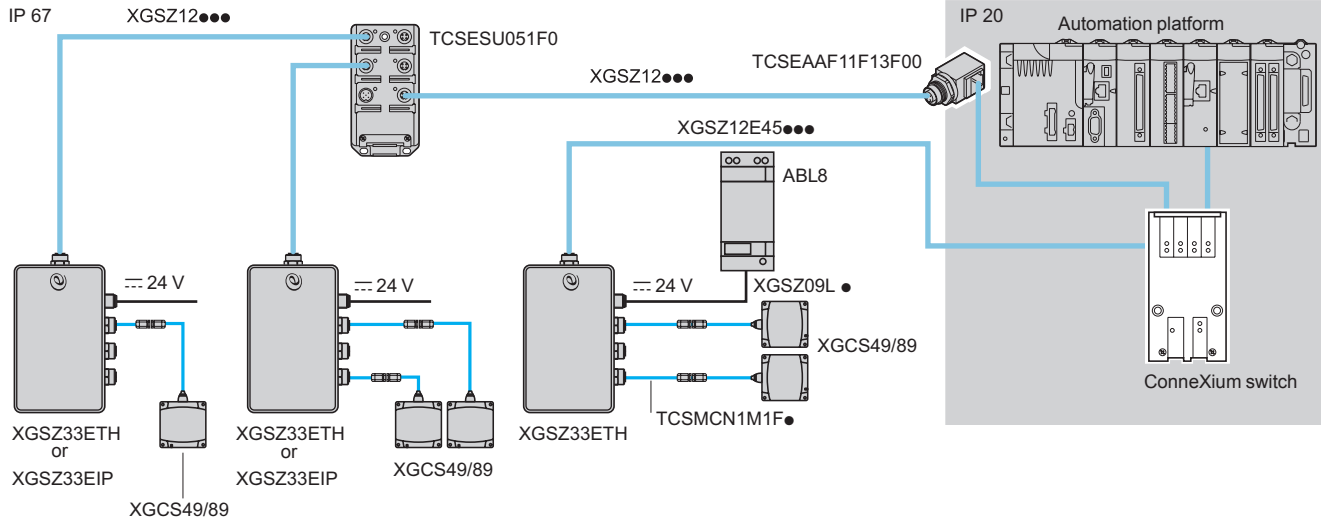
Daisy-chain topology



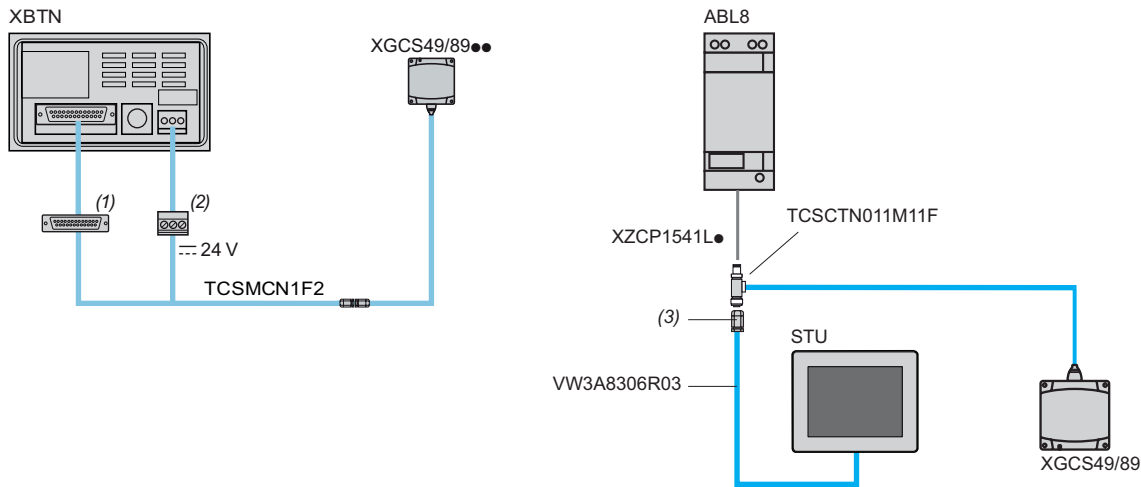
Ring topology



Example of mixed IP 20 and IP 67 connection on Ethernet network



Examples of connection to a Magelis terminal



(1) 25-pin male SUB-D connector.

(2) Magelis terminal power supply connector (supplied with the Magelis terminal).

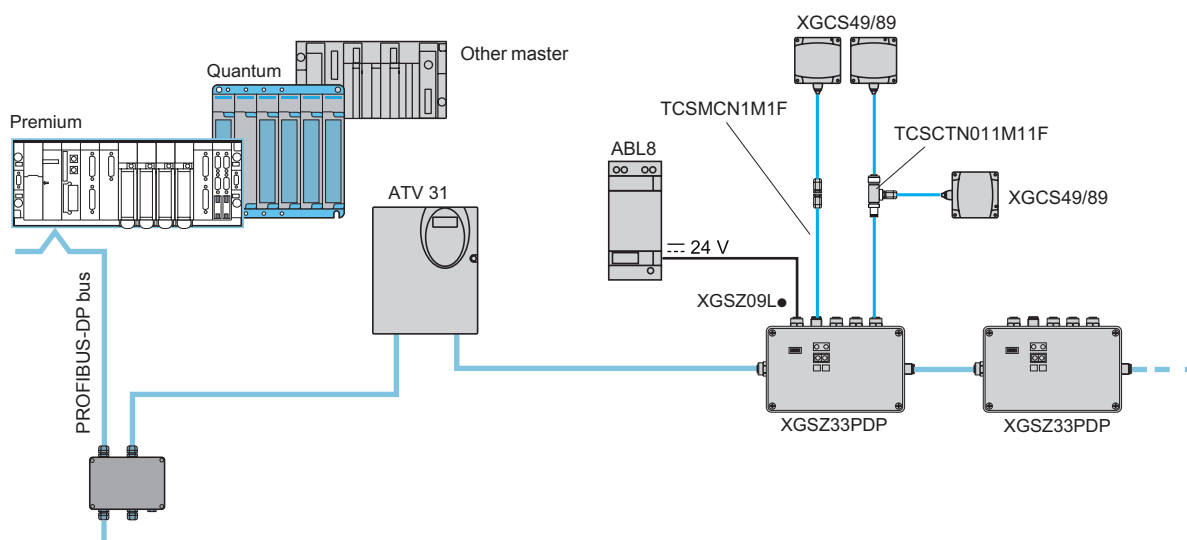
(3) XZCC12MDB50R M12 male connector, to be ordered separately (see page 23).

Compact smart antennas can be connected directly to the Modbus port of an automation platform. Up to 15 compact smart antennas can be linked to the RS 485 port using "T" connectors (in cases where the length of the network exceeds 100 m, fit a line terminator, reference TM7ACTLA).

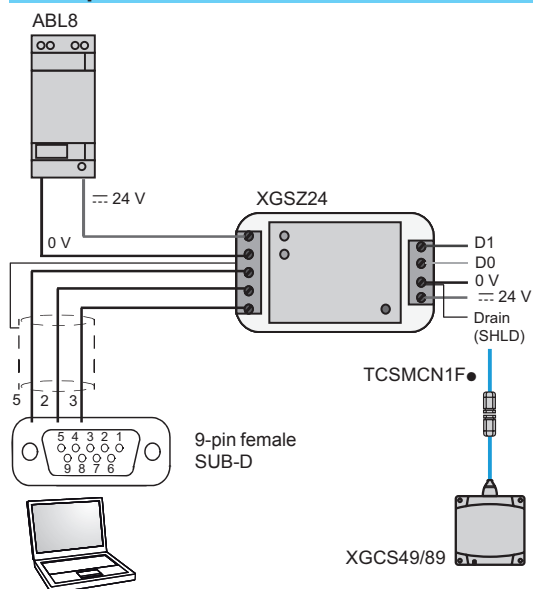
This cabling system is specific to OsiSense XG (powered network).

No other Modbus slave equipment must be connected to it.

Example of architecture in a PROFIBUS-DP network



Example of connection to a PC



Compact smart antennas can be connected directly to the Modbus port of an automation platform. Up to 15 compact smart antennas can be linked to the RS 485 port using "T" connectors (in cases where the length of the network exceeds 100 m, fit a line terminator, reference TM7ACTLA).

This cabling system is specific to OsiSense XG (powered network).
No other Modbus slave equipment must be connected to it.

OsiSense XG

Radio frequency identification

13.56 MHz

Handheld terminal



Handheld terminal



Main screen



Tag Tools

XGST2020 handheld terminal

Functions

Three types of functions are embedded in the terminal:

- Direct operations on RFID tags
- Mapping (screens predefined by the operator)
- Configuration

Direct processing of RFID tags

■ **Read/Write words.** Groups containing up to 15 words can be read/written from a given start address. Dates can be displayed in different formats: Decimal/Signed decimal/Binary/Decimal IP/Hexadecimal/ASCII.

■ **Tag copy** from one tag to another. The whole tag memory or part of it can be copied.

■ **Tag initialization.** The whole tag memory or a defined part of it can be written with a value chosen by the operator.

■ **Tag presence.** Cyclic test for presence of the tag in front of the smart antenna connected to the terminal. An indicator light and a bargraph provide information regarding the test results.

■ **Tag identification.** The RFID protocol, unique ID and user memory size of a tag, in front of the smart antenna, are detected by a scanner activated by the handheld terminal and displayed on screen.

Mapping

A mapping is a list of variables, stored permanently in the terminal memory for quick and simple access by the operators.

Each mapping variable is associated with a name and displayed in a format selected from numerous possibilities, in read only or read/write mode.

Creation, modification and backup tools are embedded in the handheld terminal software.

Up to 256 mappings can be stored in the memory (each being identifiable by a number and a name).

Each mapping can contain up to 256 variables. Each variable is defined by its position within the tag memory, its size and its type (word or byte) and its display format on screen.

The formats supported by the handheld terminal are:

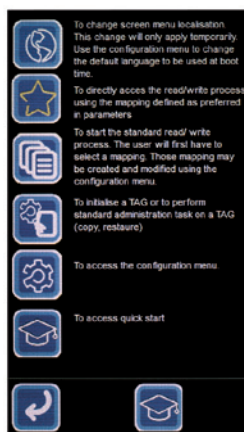
- Decimal (1 word): 0 to 65535
- Decimal (1 byte): 0 to 255
- Signed decimal (1 byte): -128 to +127
- Decimal IP (2 words): 0.0.0.0 to 255.255.255.255
- Hexadecimal (4 bytes): 0000 to FFFF
- Boolean bit (one bit): ☐ ☒
- Binary (1 byte): 00000000 to 11111111
- List (1 byte): 0 to 15. A string, associated with each byte value, is displayed on screen in place of the byte value
- ASCII string: 1 to 21 characters
- Hexadecimal string: 2 to 30 hexadecimal characters (1 to 15 bytes)
- Date (8 bytes): YYYY/MM/DD
- Time (2 bytes): HH:MM

The data displayed on a mapping can be stored in the terminal memory or written to an RFID tag.

A backup of each mapping or all mappings can be stored on a USB memory stick inserted in the USB socket of the handheld terminal.



Mapping management



Online help

YGST2020 handheld terminal (continued)

Functions (continued)

Configuration

■ Updating the terminal

This function is password-protected and provides access to:

- ☐ Updating the smart antenna linked to the handheld terminal.
- ☐ Changing the boot screen picture by uploading a file from a USB memory stick.
- ☐ Restoring the handheld terminal to factory settings.
- ☐ Changing the password.

■ Terminal parameters

This function is used to modify:

- ☐ Screen localization
- ☐ Shutdown delay
- ☐ Preferred mapping number
- ☐ Ethernet port gateway and IP addresses
- ☐ Backlighting level

■ Mapping management

This function is used to access the following elements:

- ☐ Backup and restoration of all user maps from and to the USB memory stick.
- ☐ Export and import a user mapping from and to the USB memory stick.
- ☐ Creation, modification, copying and deletion of mappings. Each mapping is password-protected.

Online help

Contextual online help is permanently accessible for users.

Furthermore, a tutorial on mapping creation can be accessed via the main screen.

Battery management

The handheld terminal is powered by a high-capacity lithium battery.

- The battery charge status is displayed on the menu screen.
- ☐ A blue LED flashes when the battery needs recharging.
- ☐ An orange LED flashes while the battery is charging.

Accessories

Handheld terminal accessories

The handheld terminal is supplied in a plastic case **YGST2422**, with the following accessories:

- An **YGST2CH** USB charger with international plugs. It can be used in conjunction with the **YGST2SU** docking cradle for easy connection to the handheld terminal.
- An **YGST2BA** high-capacity lithium battery.
- An **YGSK1** 2 GB USB flash memory stick for transferring data between the handheld terminals or to and from the PC. This USB memory stick also contains all the technical documents on the OsiSense XG RFID range: catalogues, training courses and examples.
- A stylus for the touch screen.
- A wrist strap for safe handling of the terminal.
- An Allen key.

Compact smart antenna to be ordered separately (see page 20).

Smart antennas

Two versions of compact smart antenna are available:

- **YGCS4901201** compact smart antenna for mounting on the back of the handheld terminal.
- **YGW4F111** wand antenna with flexible head for remote operations on tags located in confined places (under pallets, etc.).

Docking cradle

The **YGST2SU** docking cradle is recommended for easier battery charging. It can be wall or desk-mounted.

The docking cradle is powered by the wall charger (reference **YGST2CH**).



YGST2422



YGW4F111

Characteristics of electronic tags

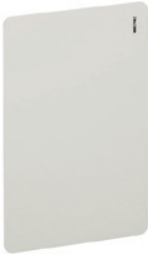
Tag type			XGHB123345	XGHB211345	XGHB221346	XGHB320345
						
Ambient air temperature	For operation	°C	- 25...+ 70	- 25...+ 70	- 25...+ 70	- 25...+ 70
	For storage	°C	- 40...+ 85	- 40...+ 85	- 40...+ 85	- 40...+ 85
Degree of protection			IP 68	IP 68	IP 68	IP 65
Standard supported			ISO 15693	ISO 15693	ISO 15693	ISO 15693
Vibration resistance	Conforming to EN 60068.2.6		2 mm from 5 to 29.5 Hz/7 gn from 29.5 to 150 Hz			
Shock resistance	Conforming to EN 60068.2.27		30 gn/11 ms			
	As defined by EN 50102		Degree IK02			
Dimensions		mm	Ø 12 x 8	M18 x 1 x 12	26 x 26 x 13	Ø 30 x 3
Housing material			PBT	PBT	PBT	PC
Fixing method			Glued	Screw	Screw or clip	Screw
Memory capacity		bytes	304	256	256	112
Type of memory			EEPROM			
Type of operation			Read/Write			
Nominal sensing distance (Read/Write)	With XGCS4901201 smart antenna	mm	18	18	40	48
	With XGCS8901201 or XGCS850C201 smart antenna	mm	20	20	55	65
	With XGCS4901201 smart antenna + XGFEC540 field expander	mm	–	–	–	42
	With XGCS4901201 smart antenna + XGFEC2525 field expander	mm	–	–	42	80
Number of read cycles			Unlimited			
Number of write cycles	Guaranteed minimum (per data bit, throughout the temperature range)		100,000			
	At 30°C		2.5 million typical value			
Read time		ms	$12 + 0.825 \times n \text{ (1)}$	$12 + 0.825 \times n \text{ (1)}$	$12 + 0.825 \times n \text{ (1)}$	$12 + 0.825 \times n \text{ (1)}$
Write time		ms	$20 + 11.8 \times n \text{ (1)}$	$19 + 4.1 \times n \text{ (1)}$	$20 + 11.8 \times n \text{ (1)}$	$12 + 5.6 \times n \text{ (1)}$
Max. speed XGCS49●●	Read a serial number	m/sec	1.8	1.8	2.8	3.1
	Read a word (2)	m/sec	0.6	0.6	0.8	1.4
	Read or write 10 words (2)	m/sec	0.2	0.2	0.3	0.7
Max. speed XGCS89●● and XGCS850C201	Read a serial number	m/sec	3	3.2	4.2	5.8
	Read a word (2)	m/sec	0.9	1.1	2.6	2.7
	Read or write 10 words (2)	m/sec	0.4	0.6	0.5	0.9
Data retention time			10 years			
Mounting on metal support			No	No	Yes (3)	No

(1) n = number of 16-bit words.

(2) With use of the Auto read/write function.

(3) Installation precautions: see page 29.

(4) + 140°C for 10 minutes maximum, without transmission.

XGHB520246	XGHB90E340	XGHB444345	XGHB445345	XGHB320246	XGHB440245	XGHB440845 and XGHB443245
						
- 25...+ 85 (4)	- 25...+ 50	- 25...+ 70	- 25...+ 70	- 25...+ 70	- 25...+ 70	- 25...+ 70
- 40...+ 90	- 40...+ 55	- 40...+ 85	- 40...+ 85	- 40...+ 85	- 40...+ 85	- 40...+ 85
IP 68	IP 65	IP 68	IP 68	IP 65	IP 68	IP 68
ISO 15693	ISO 15693	ISO 14443	ISO 14443	ISO 15693	ISO 15693	ISO 14443
2 mm from 5 to 29.5 Hz/7 gn from 29.5 to 150 Hz				30 gn/11 ms		
30 gn/11 ms				Degree IK02		
Degree IK02				Degree IK02		
Ø 50 x 3	54 x 85.5 x 1	40 x 40 x 15	40 x 40 x 15	Ø 30 x 3	40 x 40 x 15	40 x 40 x 15
PPA	PVC	PBT	PBT	PC	PBT	PBT
Screw	–	Screw or clip	Screw or clip	Screw	Screw or clip	Screw or clip
112	256	3408	13,632	2000	2000	8192 (XGHB440845) 32,768 (XGHB443245)
EEPROM				FeRAM		
Read/Write				Read/Write		
70	70	33	30	45	45	25
100	100	48	40	65	65	39
70	90	–	–	50	50	–
150	150	–	–	40	40	–
Unlimited				10 ¹⁰		
100,000				10 ¹⁰		
2.5 million typical value				–		
12 + 0.825 x n (1)	12 + 0.825 x n (1)	9.25 + 0.375 x n (1)	16.25 + 0.38 x n (1)	7 + 2 x n (1)	7 + 2 x n (1)	6 + 0.25 x n (1)
12 + 5.6 x n (1)	20 + 11.8 x n (1)	13 + 0.8 x n (1)	20 + 0.8 x n (1)	7 + 2.4 x n (1)	7 + 2.4 x n (1)	6 + 0.25 x n (1)
5.3	5.3	3.1	2.6	2.1	2.1	2.3
1.6	1.6	1.4	1	1.5	1.5	1.8
0.6	0.6	1.2	0.9	0.6	0.6	1.7
7.1	7.1	4.8	4.2	3.5	3.5	3.8
4.0	4.0	2.7	2	2.5	2.5	3.0
0.8	0.8	1.8	1.5	1	1	2.6
10 years						
No	No	Yes (3)	Yes	No	Yes	Yes

Characteristics of OsiSense XG compact smart antennas

Smart antenna type			XGCS850C201	XGCS8901201	XGCS4901201	XGW4F111	
Certifications			UL, FCC part 15c CE				
Conforming to standards			EN 301489-1, EN 301489-3, ETS 300330-1 and ETS 300330-2				
Ambient air temperature	For operation	°C	- 25...+ 70				
	For storage	°C	- 40...+ 85				
Degree of protection	Conforming to IEC 60529		IP 65				
Vibration resistance	Conforming to EN 60068.2.6		2 mm from 5 to 29.5 Hz/7 gn from 29.5 to 150 Hz				
Shock resistance	Conforming to EN 60068.2.27		30 gn/11 ms				
	As defined by EN 50102		Degree IK02				
Resistance to interference	Conforming to IEC 61000		Resistance to electrostatic discharge, radiated electromagnetic fields, fast transients, electrical surges, conducted and induced interference and network frequency magnetic fields.				
Dimensions, W x H x D			mm	Flat form: 80 x 93 x 40	Flat form: 80 x 80 x 26	Flat form: 40 x 40 x 15	290 x 40 x 25
RFID frequency			MHz	13.56			
Nominal sensing distance			mm	20 to 100 depending on associated tags		10 to 70 depending on associated tags	
Type of associated tag				ISO 15693 and ISO 14443 standardized tags. Automatic detection of the tag type			
Examples of RFID compatible chips				Fujitsu (MB89R118), INSIDE (micropass) NXP (I-Code SL2, SL1, Ultralight, Std 1K/4K, Desfire), STM (CR1X4K) Texas (Tag-it HFI), µEM4135			
Nominal supply voltage			V	24 --- PELV (Protective Extra Low Voltage)			
Supply voltage limits (including ripple)			V	19.2...29 ---			
Consumption			mA	< 150		< 60	
Communication ports	Physical interface		10BASE-T/ 100BASE-TX		RS 485		
	Protocol		Modbus/TCP and EtherNet/IP		Modbus RTU and Uni-Telway		Modbus RTU
	Data rate		10/100 Mbps		9600...115,000 bauds (automatic detection)		
	Medium (see cable references on page 22)		Ethernet cable with M12 connector D-coded		Two shielded twisted pair cable with M12 connector, A-coded.		
Display	For network communication		4 two-tone LEDs (Ethernet)		1 two-tone LED (Modbus/Uni-Telway)		
	For RFID communication		2 two-tone LEDs		1 two-tone LED (Presence of tag/Smart antenna/tag dialogue)		
Connections				2 female M12 connectors, D-coded for Ethernet 1 male 4-pin M8 connector for power supply		A single male 5-pin shielded M12 connector for connection to the communication network and power supply.	
Tightening torque	Screw		< 3 Nm/2.21 lb-ft		< 3 Nm/2.21 lb-ft	< 1 Nm/0.74 lb-ft	–

Characteristics of the XGST2020 handheld terminal

Certifications			CE
Conforming to standards			IEC 61000-6-2, IEC 61000-6-4
Ambient air temperature	For operation	°C	0 ... + 45
	For storage	°C	- 20... + 45
Hardware	Casing		ABS
Power supply	Internal		3.7 V/4000 mAh lithium battery. Full charge duration: 8 hours
	Charging connector		Mini USB
Autonomy	Typical		> 8 hours (reading one tag per minute - screen brightness = standard)
	Minimum		> 3 hours (continuous reading)
Charging time	Maximum		< 8 hours (to fully charge a completely flat battery)
Degree of protection	Conforming to IEC 60529		IP 40
	Conforming to IEC 62262		IK02 (touch screen)
	Drop test		Free fall onto a concrete floor: 1 meter
RFID reader serial link connection	Connector		M12 female socket
	Type		RS485
	Protocol		Modbus RTU master
	Speed	Bauds	115,000
External port			USB for memory stick (2 GB maximum)
Operating system			Proprietary operating system
Display			OLED resistive touch screen 480 x 272 pixels, 16 M colours
Signalling			Two-tone (blue/orange) power supply and status LED

Characteristics of connection box

Connection box type			XGSZ33ETH Ethernet Modbus/TCP box	XGSZ33EIP EtherNet/IP box	XGSZ33PDP PROFIBUS-DP box
Certifications			UL	–	PROFIBUS
Conforming to standards			CE		
Ambient air temperature	For operation	°C	0...+70	0...+55	0...+55
	For storage	°C	-40...+85	-25...+85	-25...+85
Relative humidity			RH 30...95% non-condensing		
Degree of protection			IP 65		
Supply voltage			V 24 PELV --- (limits 19.2 V...29 V). Male 4-pin M12 connector, A-coded	24 PELV --- (limits 21.6 V...26.4 V). Male 4-pin M12 connector, A-coded	
Consumption (box only)			W < 1	< 2.5	< 2.5
Smart antenna connection			Female 5-pin M12 connector, A-coded Total cable length < 160 meters		
Electromagnetic interference	Conforming to IEC61000		Level 3		
	Conforming to EN55022		Class B		
Protocol			Modbus TCP/IP	EtherNet/IP	PROFIBUS-DP V1
LED display			- Ethernet network activity (RUN, green) - Collision detection (COL, red) - Diagnostics (STS, yellow) - Fault (Err, red) - Power on (green)	- Ethernet network activity (RUN, green) - Ethernet network activity (OFF, red) - Communication bus (Error, flashing red) - Modbus (RUN, green) - Gateway configuration (green)	- PROFIBUS-DP network activity (RUN, green) - PROFIBUS network activity (OFF, red) - Communication bus (Error, flashing red) - Modbus (RUN, green) - Gateway configuration (green)
Transparent Ready Services	Class		A10	–	–
	Standard Web server		IP configuration address	–	–
	Standard communication services		Modbus messaging (read/write words: 1 to 123 words per request)	Read/write words (1 to 123 read per request) via the periodic exchanges service.	Read/write words (1 to 49 read operations per request) via the PROFIBUS-DP periodic exchanges service. PROFIBUS-DP V2 aperiodic exchanges not supported.
Connection	Physical interface		10BASE-T/100BASE-TX		RS485
	Data rate		10/100 Mbps		9.6 to 12,000 kbauds - automatic detection of speed
	Medium		Ethernet cable with M12 connector, D-coded, reference XGSZ12E●● (see page 22)		PROFIBUS cable with M12 connector, B-coded

Connection box type			TCSAMT31FP tap-off box		
Certifications			UL		
Conforming to standards			CE		
Ambient air temperature	For operation	°C	-25...+55		
	For storage	°C	-40...+85		
Relative humidity			RH 30...95% non-condensing		
Degree of protection			IP 65		
Supply voltage			V 24 PELV --- (limits 19.2 V...29 V). M12 male connector, 4-pin, A-coded		
Smart antenna connection			M12 female connector, 5-pin, A-coded		
Electromagnetic interference	Conforming to IEC61000		Level 3		
	Conforming to EN55022		Class B		
LED display			Power supply (green)		

Characteristics of accessories

Type of accessory			XGST2CH charger pack	XGST2SU docking cradle for XGST2020 handheld terminal
Certifications			CE	–
Input voltage			100 - 240 V --- 50/60 Hz 0.3 A maximum	5 V --- 1 A maximum
Outputs			5 V --- 1 A maximum x 2 outputs	5 V --- 0.5 A maximum
Connections	Input		International interchangeable plugs	Connected to the XGST2CH charger
	Output		Mini-USB cable, 1 meter long	Spring-type contacts

OsiSense XG

Radio frequency identification
13.56 MHz

XGCS4901201



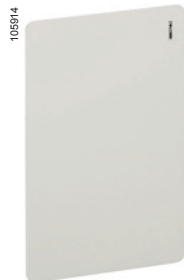
XGCS850C201



XGW4F111



XGHB44...45



XGHB90E340



XGHB221346



XGHB320345



XGHB211345

Compact smart antennas, 13.56 MHz

Description	Protocols	Dimensions mm	Reference	Weight kg
Ethernet compact smart antenna Form 80 2 x M12 connectors 1 x M8 connector	Modbus/TCP and EtherNet/IP	80 x 93 x 40	XGCS850C201	0.360
Compact smart antenna Flat form 80 (1) Male M12 connector on flying lead	Modbus RTU and Uni-Telway	80 x 80 x 26	XGCS8901201	0.257
Compact smart antenna Flat form 40 (1) Male M12 connector on flying lead	Modbus RTU and Uni-Telway	40 x 40 x 15	XGCS4901201	0.057
Wand antenna with flexible head and 1 meter cable Male M12 connector on flying lead	Modbus RTU	290 x 40 x 25	XGW4F111	0.228

Electronic tags (2)

Tag type	Nominal sensing distance according to smart antenna (mm)		Dimensions (mm)	Sold in lots of	Unit reference	Weight kg
XGCS49● XGCS89●						
Tag with EEPROM type memory						
Cylindrical 304 bytes	10	—	Ø 12 x 8	5	XGHB123345	0.008
Cylindrical 256 bytes	18	20	M18 x 1 x 12	5	XGHB211345	0.020
Flat form 26 256 bytes	40	55	26 x 26 x 13	1	XGHB221346	0.025
Disc 112 bytes	48	65	Ø 30 x 3	5	XGHB320345	0.005
Disc 112 bytes	70	100	Ø 50 x 3	5	XGHB520246	0.015
ISO tag (3) 256 bytes	70	100	54 x 85.5 x 1	10	XGHB90E340	0.005
Flat form 40 3408 bytes	33	48	40 x 40 x 15	1	XGHB444345	0.031
Flat form 40 13,632 bytes	30	40	40 x 40 x 15	1	XGHB445345	0.031
Tag with FeRAM type memory						
Disc 2000 bytes	45	65	Ø 30 x 3	5	XGHB320246	0.005
Flat form 40 2000 bytes	45	65	40 x 40 x 15	1	XGHB440245	0.031
Flat form 40 8192 bytes	25	39	40 x 40 x 15	1	XGHB440845	0.031
Flat form 40 32,768 bytes	25	39	40 x 40 x 15	1	XGHB443245	0.031

(1) Supplied with a **XGSZCNF01** configuration badge. Installation guide to be ordered separately (reference **DIA4ED3051001**).

(2) Other versions (high temperature, adhesive, flexible tags, etc.): please consult your Customer Care Centre.

(3) Customized versions on request.



TCSAMT31FP



XGFEC2525



XGFEC540



XGST2422



XGST2BA



XGST2CH

Connection boxes

Description	For use with	Voltage	Reference	Weight kg
Modbus/TCP Ethernet box	Compact smart antennas XGCS49● and XGCS89●	24 V ~	XGSZ33ETH	1.060
EtherNet/IP box (1)	Compact smart antennas XGCS49● and XGCS89●	24 V ~	XGSZ33EIP	1.060
PROFIBUS-DP box (1)	Compact smart antennas XGCS49● and XGCS89●	24 V ~	XGSZ33PDP	1.060
Tap-off box, 3-channel Modbus and Uni-Telway	Compact smart antennas XGCS49● and XGCS89●	24 V ~	TCSAMT31FP	1.060

Field expanders

Description	Nominal sensing distance	For use with	Reference	Weight kg
Conveying type field expander Dimensions (mm) 400 x 23 x 50 (2)	30 ... 90 mm depending on tag used (ISO 15693 only)	XGCS4901201 smart antenna XGHB90E340 XGHB320345 XGHB520246 XGHB320246 XGHB440245 tags	XGFEC540	0.640
Universal type field expander Dimensions (mm) 250 x 250 x 10 (2)	26 ... 150 mm depending on tag used (ISO 15693 only)	XGCS4901201 smart antenna XGHB90E340 XGHB221346 XGHB320345 XGHB520246 XGHB320246 XGHB440245 tags	XGFEC2525	0.565

OsiSense XG handheld terminal

Description	Composition	Reference	Weight kg
RFID handheld terminal set in a plastic case	1 handheld terminal 1 wrist strap 1 lithium battery 1 battery charger pack 1 stylus 1 USB memory stick	XGST2422	1.000

Note: Compact smart antenna to be ordered separately (see page 20).

Accessories

Description	Reference	Weight kg
Screen protector sheets Sold in lots of 5	XGST2FP	0.005
Styluses Sold in lots of 3	XGST2ST	0.006
Docking cradle	XGST2SU	0.086

Spare parts

Description	Reference	Weight kg
Handheld terminal Terminal unit only (without battery, charger or RFID reader)	XGST2020	0.295
Lithium battery 3.7 V, 4000 mAh	XGST2BA	0.078
International charger pack	XGST2CH	0.160
USB memory stick 2 GB	XGSZK1	0.008

(1) Configuration file and installation guide to be downloaded from www.tesensors.com.

(2) For other dimensions please consult your Customer Care Centre.



TCSMCN1FQM2



TCSMCN1F9M2P



TCSCTN011M11F



TCSESU051F0



TCSEAAF11F13F00



ABL8MEM24003

Modbus network connection accessories

Description	Used for	Length m	Reference	Weight kg
Shielded cable: Modbus black IP 67 M12 connectors, male/female, A-coded (1)	RS 485 connection between a compact smart antenna and a tap-off box or between 2 TCSAMT31FP tap-off boxes	1	TCSMCN1M1F1	0.080
		2	TCSMCN1M1F2	0.115
		5	TCSMCN1M1F5	0.270
		10	TCSMCN1M1F10	0.520
Shielded pre-wired connector: Modbus IP 67 female M12 connectors/bare wires, A-coded (1)	Connection between a TCSAMT31FP tap-off box and a Modbus/Uni-Telway (TSXSCA50) network	2	TCSMCN1F2	0.115
		5	TCSMCN1F5	0.270
		10	TCSMCN1F10	0.520
Shielded cable: Modbus black M12/SUBD-15, A-coded	Connection between a TCSAMT31FP tap-off box and a Modbus/Uni-Telway (TSXSCA62) network	2	TCSMCN1FQM2	0.270
		2	TCSMCN1F9M2P	0.350
Modbus SL serial link (RS 485 double shielded twisted pair main cables)	Modbus SL Serial link	100	TSXCSA100	5.680
		200	TSXCSA200	10.920
		500	TSXCSA500	30.000
Network Tee, M12 1M/2F RS485 network A-coded, 5-pin		–	TCSCTN011M11F	0.035

Ethernet connection accessories

Description	End fittings	Length m	Reference	Weight kg
Copper connecting cables, straight	1 IP 67 4-pin M12 connector and 1 RJ45 connector	1	XGSZ12E4501	–
		3	XGSZ12E4503	–
		10	XGSZ12E4510	–
	2 IP 67 4-pin M12 connectors	1	XGSZ12E1201	–
		3	XGSZ12E1203	–
		10	XGSZ12E1210	–
Copper connecting cables, elbowed	1 IP 67 4-pin M12 elbowed connector and 1 RJ45 connector	25	XGSZ12E1225	–
		3	XGSZ22E4503	–
		10	XGSZ22E4510	–
Ethernet switch, M12 IP 67, ConneXium (2)	–	–	TCSESU051F0	0.210
Female M12/RJ45 adaptor	Ethernet connection	–	TCSEAAF11F13F00	–

“Do it Yourself” Ethernet copper cable and connectors

The “Do it Yourself” ConneXium range enables Ethernet copper connecting cables to be made up to the required length, on site. They are intended for connection to the Ethernet 110/100 Mbps network.

The maximum length of connecting cables made up in this way is 80 m.

They are quick to assemble using only a knife and ordinary wire cutters (no special tool is required).

Description	Characteristics	Length (m)	Reference	Weight kg
Ethernet copper cable 2 x 24 AWG shielded twisted pairs	Conforms to current standards and approvals	300	TCSECN300R2	–
RJ45 connector	Conforms to EIA/TIA-568-D	–	TCSEK3MDS	–
M12 connector	Conforms to IEC 60176-2-101	–	TCSEK1MDRS	–

Power supplies (Schneider Electric)

Description	Output voltage	Nominal power	Nominal current	Reference	Weight kg
Regulated power supply 100/240 V	24	7	0.3	ABL8MEM24003	0.180
		30	1.2	ABL8MEM24012	0.520

(1) Holder for identification legend included with product.

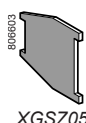
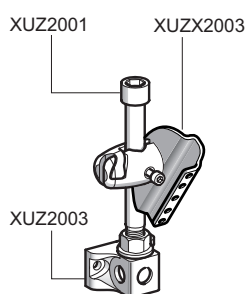
(2) For other ConneXium connection accessories:
visit www.schneider-electric.com.



XGSZ24



XGSZ3P



XGSZ05



XGSZCNF01

Connection accessories

Description	For use with	Length m	Reference	Weight kg
Pre-wired supply connector M8 female, 4-pin	XGCS850C201 compact smart antenna	2	XZCP0941L2	0.080
		5	XZCP0941L5	0.180
		10	XZCP0941L10	0.360
Pre-wired supply connector M12 female, A-coded, 4-pin (1)	24 V $\pm$ supply to connection boxes XGSZ33ETH and TCSAMT31FP	2	XGSZ09L2	0.115
		5	XGSZ09L5	0.270
		10	XGSZ09L10	0.520
M12 male connector, 5-pin, A-coded	—	—	XZCC12FDB50R	0.050
M12 female connector, 5-pin, A-coded	—	—	XZCC12MDB50R	0.050
Supply connector, M12 straight, A-coded, screw terminal	—	—	XZCC12FDM40B	0.020
Protective cap (Sold in lots of 10)	M12 female connector	—	ASI67FACC1	0.013
Network terminator, M12 male, 120 Ω	—	—	TM7ACTLA	0.010
Line adaptor RS 232C/RS 485 without modem signals Power supply: 18...30 V $\pm$ - Consumption: 20 mA Maximum transmission speed: 19,200 bauds Mounting on 35 mm τ rail	—	—	XGSZ24	—

Mounting accessories

Description	For use with	Reference	Weight kg
Clip-on 90° mounting bracket	Flat form 40 smart antenna: XGCS4901201	XSZBC90	0.060
	Flat form 40 tags: XGHB44●345		
	XGHB221346 tags	XSZBE90	0.060
Clip-on mounting plate	Flat form 40 smart antenna: XGCS4901201	XSZBC00	0.025
	Flat form 40 tags: XGHB44●345		
	XGHB221346 tags	XSZBE00	0.025
Mounting plate	TCSAMT31FP and XGSZ33ETH connection boxes	XGSZ3P	0.195
3D fixing system (2)	XGFEC2525 field expander		
Support for M12 rod		XUZ2003	0.220
M12 rod		XUZ2001	0.050
Ball-joint mounted fixing bracket		XUZ2003	0.220

Accessories and documentation

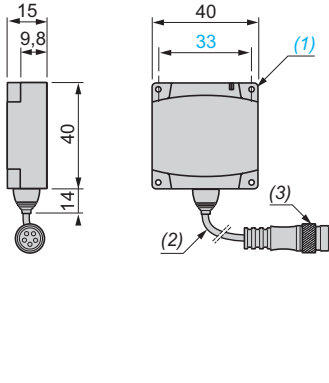
Description	Sold in lots of	Reference	Weight kg
Key for screwing in/unscrewing $\varnothing$ 18 mm XGHB211●● cylindrical tag	5	XGSZ05	0.011
Badge For smart antenna address configuration		XGSZCNF01	0.005
Identification legend for 23 x 4 mm connecting cables	200	XGSZ08MKW	0.056
OsiSense XG compact smart antenna guide		DIA4ED3051001	0.130

(1) Holder for identification legend included with product.

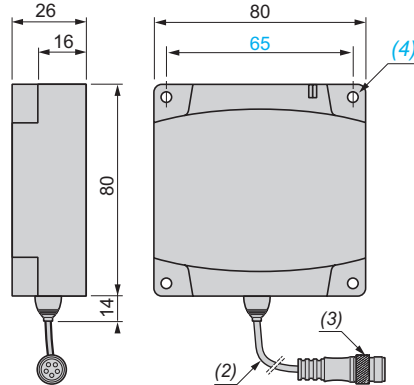
(2) To create a 3D fixing system, order: rod support XUZ2003, M12 rod XUZ2001 and ball-joint mounted fixing bracket XUZ2003.

Compact smart antennas

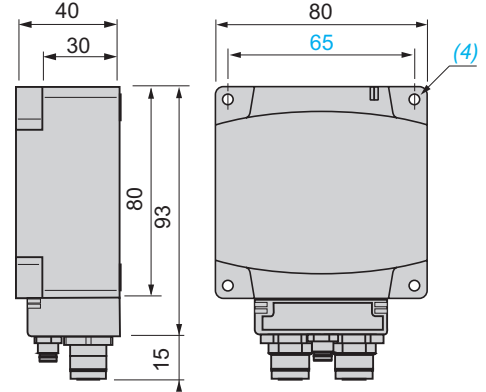
XGCS4901201



XGCS8901201



XGCS850C201



(1) 4 x Ø 4.5. For CHC type screws.

(2) Shielded cable (length: 20 cm).

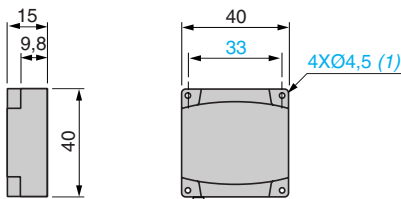
(3) A-coded, male 5-pin M12 connector.

(4) 4 x Ø 5.5. For CHC type screws.

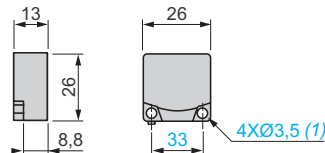
Updatable code electronic tags

Square format tags

XGHB44●●

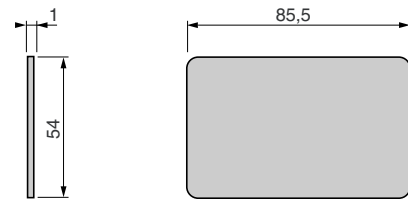


XGHB221346



Rectangular format tags

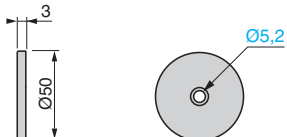
XGHB90E340



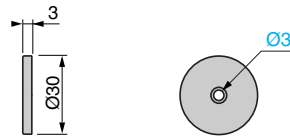
(1) For CHC type screws.

Cylindrical format tags

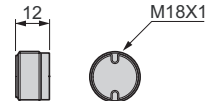
XGHB520246



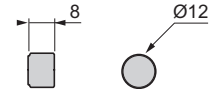
XGHB32●●



XGHB211345

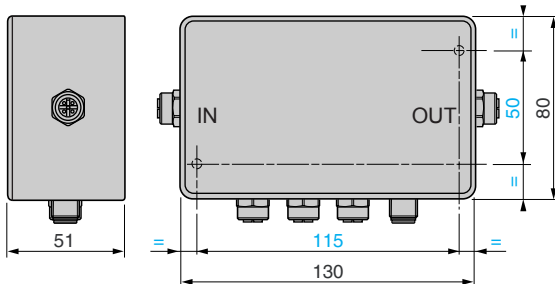


XGHB123345

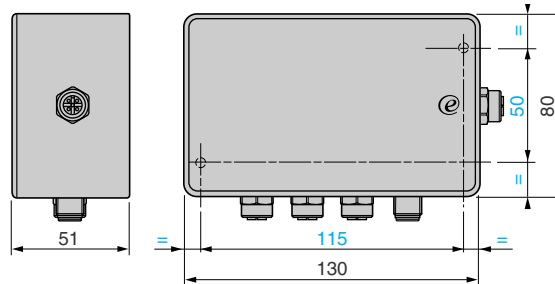


Connection boxes (1)

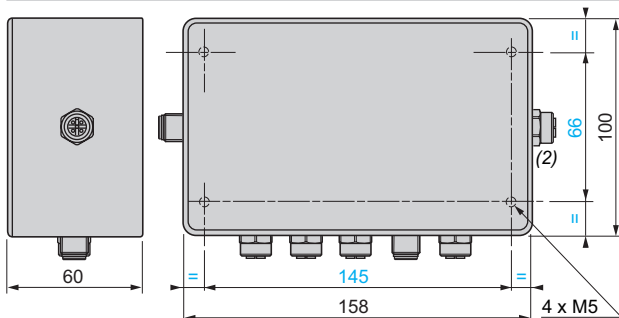
TCSAMT31FP tap-off box



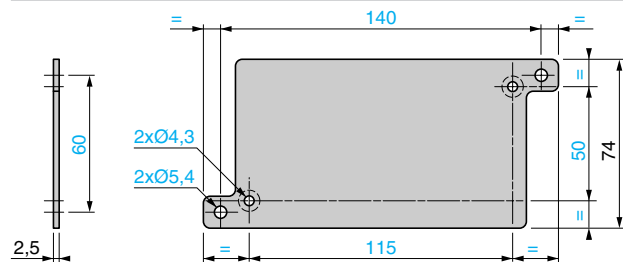
XGSZ33ETH box (Ethernet)



XGSZ33PDP (PROFIBUS DP) and XGSZ33EIP (EtherNet/IP) boxes



XGSZ3P mounting plate

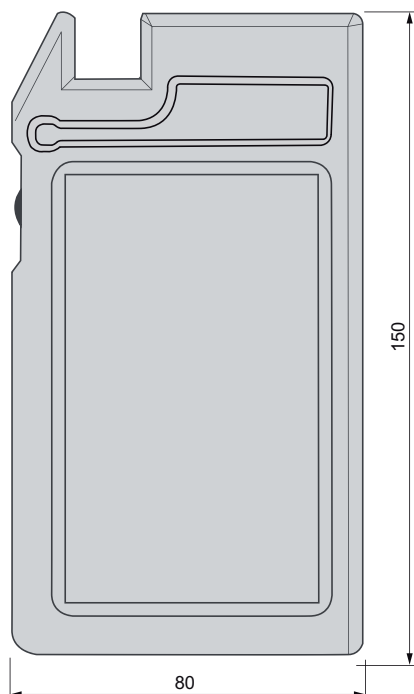


(1) Allow a 110 mm clearance zone for connecting the cables.

(2) This connector is only present on the PROFIBUS-DP box.

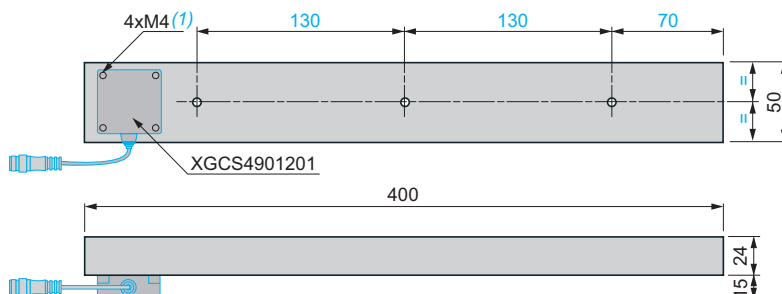
RFID handheld terminal

XGST2020 (30 mm deep)



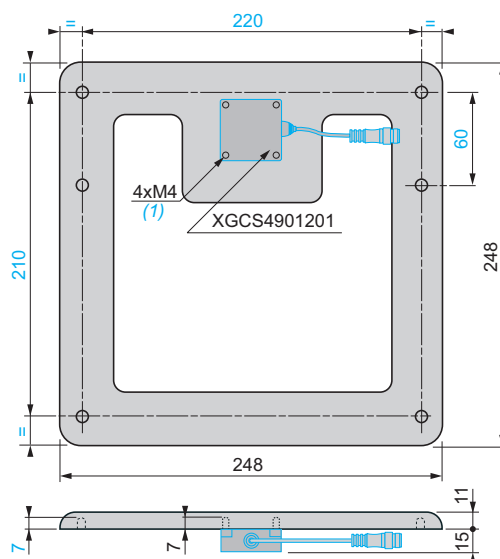
Field expanders

XGFEC540 conveying type



(1) 4 x M4 screws (included).

XGFEC2525 universal type

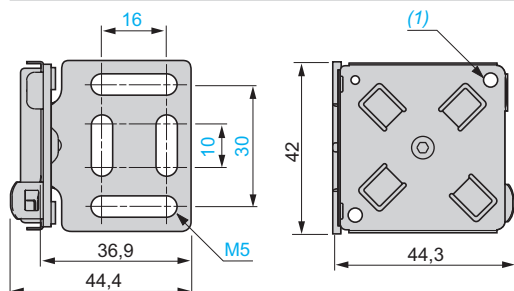


(1) 4 x M4 screws (included).

Mounting brackets

For XGCS49●● smart antennas and
XGHB44●● tags

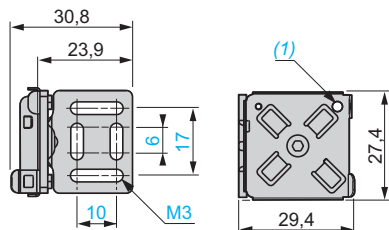
XSZBC90



(1) 4 screws M4 x 14 (included).

For XGHB221346 tags

XSZBE90

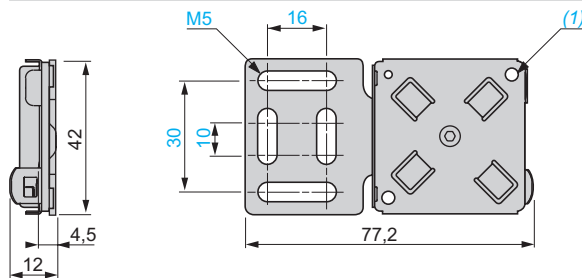


(1) 2 screws M3 x 12 (included).

Mounting plates

For XGCS49●● smart antennas and XGHB44●● tags

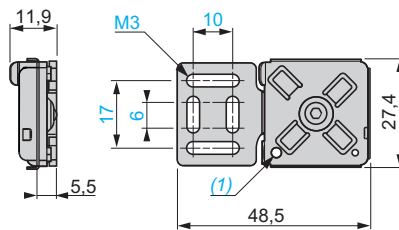
XSZBC00



(1) 4 screws M4 x 14 (included).

For XGHB221346 tags

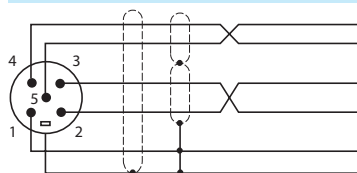
XSZBE00



(1) 2 screws M3 x 12 (included).

Modbus connections

XGCS●901201 smart antennas



Pin no.

1	
2	
3	
4	
5	
Connector casing	

Modbus smart antenna signal

1	Drain (Modbus-SHLD)
2	+ 24 V ---
3	0 V/Modbus-GND
4	D0
5	D1
	Shielding

TCSAMT31FP tap-off box

Socket to smart antenna cabling

Pin no.	Signal
1	1 – Drain (Modbus-SHLD)
2	2 – + 24 V ---
3	3 – 0 V/Modbus-GND
4	4 – D0
5	5 – D1

Socket to power supply cabling

Pin no.	Signal
1	1 – + 24 V ---
2	2 – + 24 V ---
3	3 – 0 V ---
4	4 – 0 V ---

Socket to another connection box cabling

Pin no.	Signal
1	1 – Drain (Modbus-SHLD)
2	2 – –
3	3 – 0 V/Modbus-GND
4	4 – D0
5	5 – D1

Socket to automation platform cabling

Pin no.	Signal
1	1 – Drain (Modbus-SHLD)
2	2 – –
3	3 – 0 V/Modbus-GND
4	4 – D0
5	5 – D1

Cable connections

TCSMCN1F● cables and pre-wired connectors

Pin no.	Signal
1	1 – Drain (Modbus-SHLD)
2	2 Red + 24 V ---
3	3 Black 0 V/Modbus-GND
4	4 White D0
5	5 Blue D1
	Connector casing Shielding

XGSZ09L●● pre-wired connectors

Pin no.	Signal
1	1 Red + 24 V ---
2	2 NC
3	3 Black 0 V ---
4	4 NC

PROFIBUS-DP connections

PROFIBUS-DP box: XGSZ33PDP

Socket to smart antenna cabling

Pin no.	Signal
1	1 – Earth
2	2 – + 24 V ---
3	3 – 0 V
4	4 – D0
5	5 – D1

Socket to power supply cabling

Pin no.	Signal
1	1 – + 24 V ---
2	2 – + 24 V ---
3	3 – 0 V
4	4 – 0 V

PROFIBUS-DP network connections

Input	Output	Pin no.	Signal	Description
1	1	1	VP	Line terminator polarization
2	2	2	RxD/TxD-N	Receive/transmit data (-) (red wire)
3	3	3	DGND	GND PROFIBUS
4	4	4	RxD/TxD-P	Receive/transmit data (+) (green wire)
5	5	5	Shielding	Shielding or earth
Connector casing	Connector casing		Shielding	Shielding or earth

Ethernet connections

XGSZ33ETH and XGSZ33EIP Ethernet boxes

Socket to smart antenna cabling	
Pin no.	Signal
1	Earth
2	+ 24 V $\overline{\text{---}}$
3	0 V $\overline{\text{---}}$
4	D0
5	D1



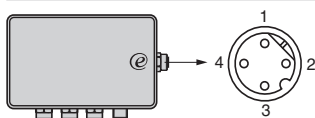
Socket to power supply cabling	
Pin no.	Signal
1	+ 24 V $\overline{\text{---}}$
2	+ 24 V $\overline{\text{---}}$
3	0 V $\overline{\text{---}}$
4	0 V $\overline{\text{---}}$



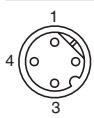
XGSZ09L●● pre-wired connectors	
Pin no.	Signal
1	Red + 24 V $\overline{\text{---}}$
2	NC
3	Black 0 V $\overline{\text{---}}$
4	NC



Socket to Ethernet connection

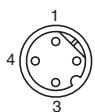
Socket to Ethernet cabling
(M12 connectors)

Pin no.	Signal
1	TD +
2	TD -
3	RD +
4	RD -

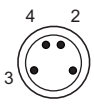


Ethernet compact smart antenna: XGCS850C201

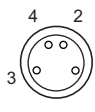
Socket to Ethernet cabling (M12 connectors)	
Pin no.	Signal
1	TD +
2	TD -
3	RD +
4	RD -



Socket to power supply cabling (M8 connector)	
Pin no.	Signal
1	+ 24 V $\overline{\text{---}}$
2	NC
3	0 V $\overline{\text{---}}$
4	NC



XZCP0941L●● pre-wired connectors (M8 connector)	
Pin no.	Signal
1	Brown + 24 V $\overline{\text{---}}$
2	White NC
3	Blue 0 V $\overline{\text{---}}$
4	Black NC



Ethernet cable connections

XGSZ12E45●● and XGSZ22E45●● cables

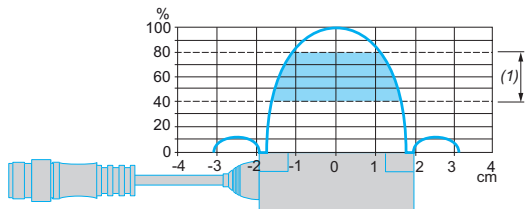
M12	Signal	Signal	RJ45
1	TD +	TD +	1
3	TD -	TD -	2
2	RD +	RD +	3
4	RD -	RD -	6

XGSZ12E12●● cables

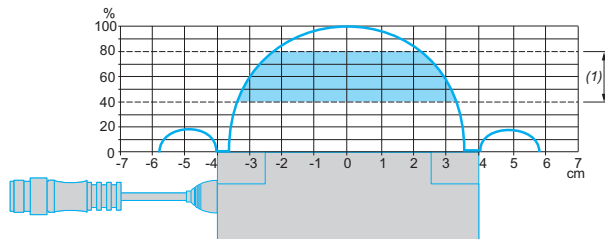
M12	Signal	Signal	M12
1	TD +	TD +	1
3	TD -	TD -	3
2	RD +	RD +	2
4	RD -	RD -	4

Dialogue zones of compact smart antennas

XGCS4901201



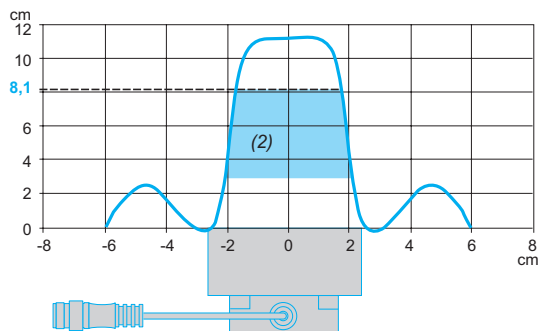
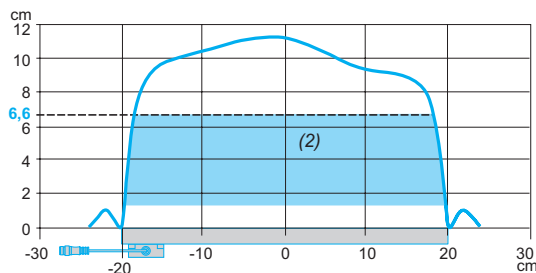
XGCS8901201 and XGCS850C201



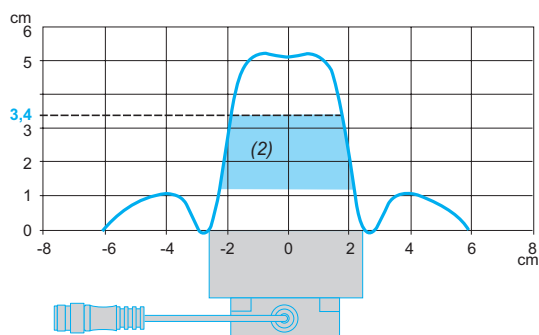
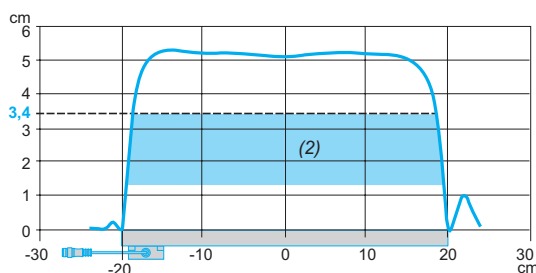
(1) Recommended movement zone: between 0.4 and 0.8 Pn.

Dialogue zones for field expanders

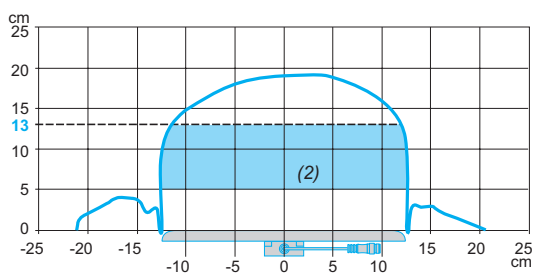
XGFEC540 + XGHB90E340 or XGHB520246 tag



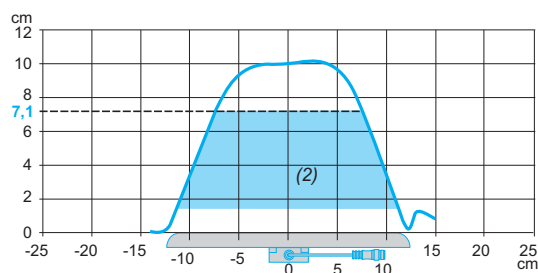
XGFEC540 + XGHB320345 tag



XGFEC2525 + XGHB90E340 or XGHB520246 tag

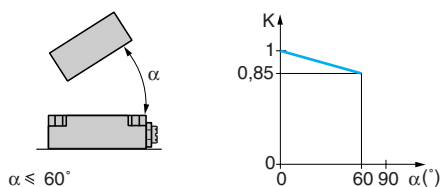


XGFEC2525 + XGHB320345 tag



(2) Recommended working zone.

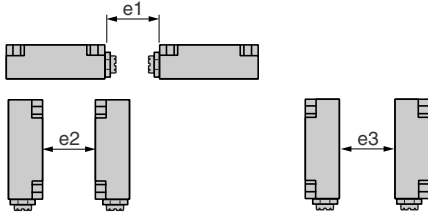
Angular positioning between smart antenna and tag

 $\alpha \leq 60^{\circ}$ K = correction coefficient to be applied to the nominal sensing distance. Read distance = nominal sensing distance $\times K$.

Minimum mounting distances between system components

Distance between smart antennas

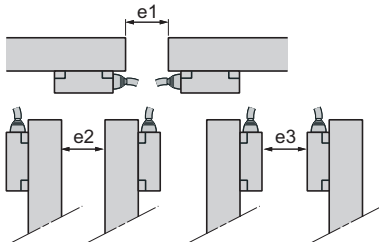
Minimum distance between 2 identical smart antennas according to their positioning and type of tag used (mm)



Tag	XGCS4901201 smart antenna (format 40)			XGCS8●● smart antennas (format 80)		
	e1	e2	e3	e1	e2	e3
XGHB90E340	310	550	120	430	750	280
XGHB520246						
XGHB221346	200	320	100	280	530	260
XGHB320●●●	140	360	110	310	540	240
XGHB211345	210	180	60	200	370	170
XGHB123345						
XGHB44●●●	90	190	30	310	400	160

Distance between field expanders

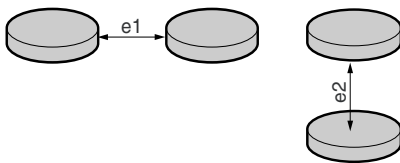
Minimum distance between 2 identical field expanders according to their positioning and type of tag used (mm)



Tag	XGFEC540 field expander			XGFEC2525 field expander		
	e1	e2	e3	e1	e2	e3
XGHB90E340	195	285	195	570	890	960
XGHB520246						
XGHB320345	420	540	450	720	1275	1200

Distance between tags

Minimum distance between 2 identical tags according to their positioning and type of smart antenna used (mm)



Tag	XGCS4901201 smart antenna (format 40)		XGCS8●● smart antennas (format 80)	
	e1	e2	e1	e2
XGHB90E340	35	60	110	140
XGHB520246				
XGHB221346	50	10	120	50
XGHB320345	70	50	190	60
XGHB211345	40	10	120	20
XGHB123345				
XGHB444345	20	10	70	40
XGHB445345	10	10	60	10
XGHB440845	30	10	60	10
XGHB443245				

Minimum permissible mounting distances in a metal structure

Smart antennas and tags

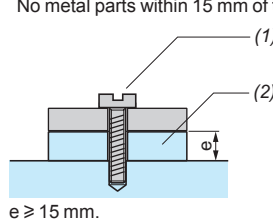
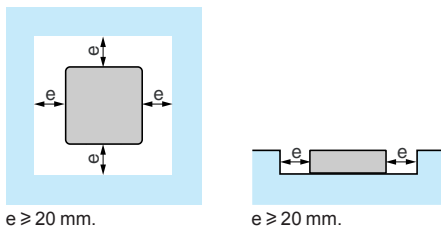
XGCS49/XGCS89/XGCS85 smart antennas and XGHB221346/XGHB44●● tags

XGHB32●● and XGHB52●● tag

XGHB90E340, XGHB211345, XGHB123345 tags

No metal parts within 15 mm of the tag.

No metal parts within 25 mm of the tag.



e ≥ 20 mm.

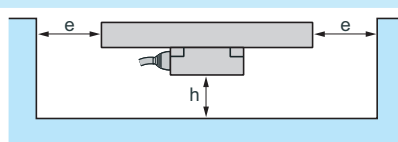
e ≥ 15 mm.

Tags	Nominal sensing distance Pn (mm)	
	XGCS49	XGCS89/S85
XGHB90E340	70	100
XGHB520246		
XGHB221346	40	55
XGHB320345	48	65
XGHB211345	18	20
XGHB123345		
XGHB444345	33	48
XGHB445345	30	40
XGHB440245	45	65
XGHB440845	25	39
XGHB443245		

Reduced sensing distance in the presence of metal (mm)	
XGCS49	XGCS89/S85
58	80
30	33
45	56
16	15
28	34
24	28
30	45
20	28

Field expanders

	e (mm)	h (mm)
XGFEC540	15	30
XGFEC2525	0	75



(1) Tightening torque ≤ 1 Nm/0.74 lb-ft.

(2) Insulation material.

A		
ABL8MEM24003	22	XGSZ09L10 23
ABL8MEM24012	22	XGSZ12E1201 22
ASI67FACC1	23	XGSZ12E1203 22
		XGSZ12E1210 22
		XGSZ12E1225 22
D		XGSZ12E4501 22
DIA4ED3051001	23	XGSZ12E4503 22
		XGSZ12E4510 22
T		XGSZ22E4503 22
TCSAMT31FP	21	XGSZ22E4510 22
TCSCNT011M11F	22	XGSZ24 23
TCSEAAF11F13F00	22	XGSZ33EIP 21
TCSECN300R2	22	XGSZ33ETH 21
TCSEK1MDRS	22	XGSZ33PDP 21
TCSEK3MDS	22	XGSZCNF01 23
TCSESU051F0	22	XGSZK1 21
TCSMCN1F2	22	XGW4F111 20
TCSMCN1F5	22	XSZBC00 23
TCSMCN1F9M2P	22	XSZBC90 23
TCSMCN1F10	22	XSZBE00 23
TCSMCN1FQM2	22	XSZBE90 23
TCSMCN1M1F1	22	XUZ2001 23
TCSMCN1M1F2	22	XUZ2003 23
TCSMCN1M1F5	22	XUZX2003 23
TCSMCN1M1F10	22	XZCC12FDB50R 23
TM7ACTLA	23	XZCC12FDM40B 23
TSXCSA100	22	XZCC12MDB50R 23
TSXCSA200	22	XZCP0941L2 23
TSXCSA500	22	XZCP0941L5 23
		XZCP0941L10 23
X		
XGCS850C201	20	
XGCS4901201	20	
XGCS8901201	20	
XGFEC540	21	
XGFEC2525	21	
XGHB90E340	20	
XGHB123345	20	
XGHB211345	20	
XGHB221346	20	
XGHB320246	20	
XGHB320345	20	
XGHB440245	20	
XGHB440845	20	
XGHB443245	20	
XGHB444345	20	
XGHB445345	20	
XGHB520246	20	
XGST2BA	21	
XGST2CH	21	
XGST2FP	21	
XGST2ST	21	
XGST2SU	21	
XGST2020	21	
XGST2422	21	
XGSZ3P	23	
XGSZ05	23	
XGSZ08MKW	23	
XGSZ09L2	23	
XGSZ09L5	23	

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