

OsiSense XG Radio frequency identification

Catalogue





Les Classiques de Sarpol

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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



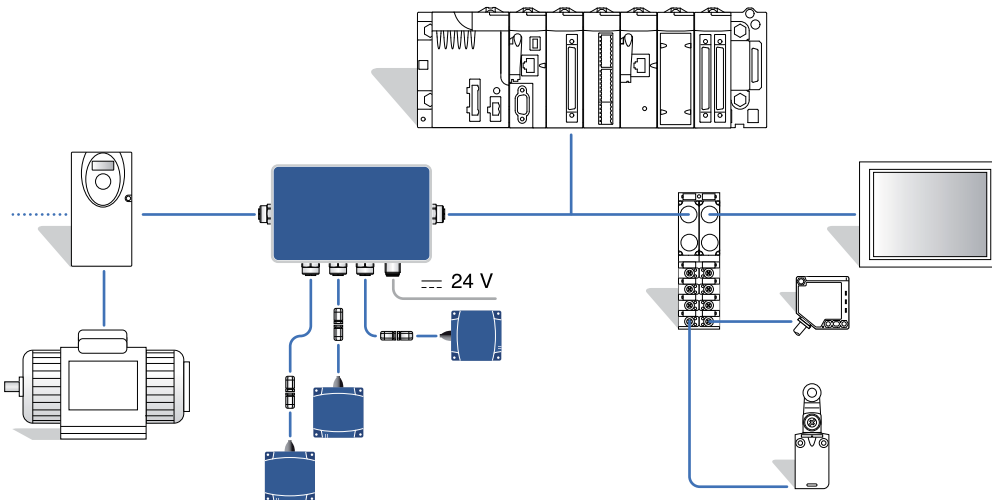
> Automatic integration in your architecture

100% compatible

for inclusion in architectures

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).



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 station 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 station 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 station.

+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 station) and materials used for the **OsiSense XG** range make our products environmentally friendly.

**100 %
RoHs**

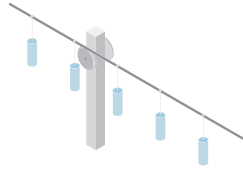
Telemecanique Sensors commits itself to reducing the environmental impact of its products

Selection guide

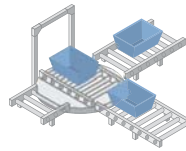
Material handling



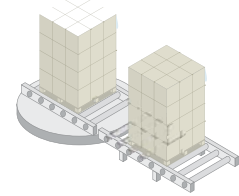
Trolley



Narrow conveyor or overhead line



Medium width conveyor



Wide conveyor



Operator

Reading system

- 1 XGCS4901201
- 2 XGCS8901201
- 3 XGCS4901201 + XGFEC540
- 4 XGCS4901201 + XGFEC2525
- 5 XGST2422

RFID tags

- 6 XGHB123345
- 7 XGHB211345
- 8 XGHB221346
- 9 XGHB320345
- 10 XGHB90E340
- 11 XGHB444345
- 12 XGHB445345
- 13 XGHB320246
- 14 XGHB440245
- 15 XGHB440845
- 16 XGHB443245

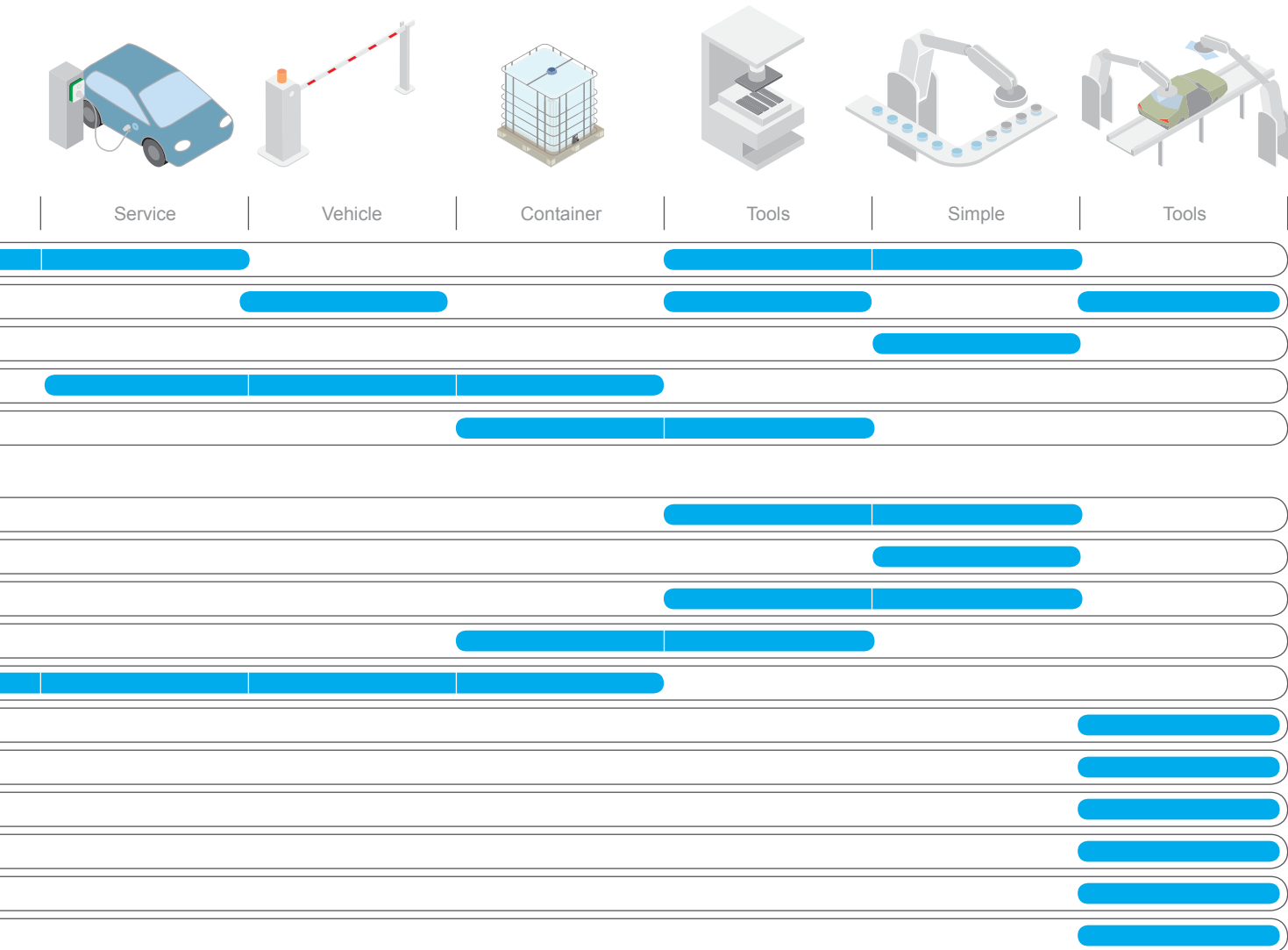
	Trolley	Narrow conveyor or overhead line	Medium width conveyor	Wide conveyor	Operator
1 XGCS4901201		[Blue bar]			[Blue bar]
2 XGCS8901201		[Blue bar]		[Blue bar]	
3 XGCS4901201 + XGFEC540			[Blue bar]		
4 XGCS4901201 + XGFEC2525	[Blue bar]			[Blue bar]	
5 XGST2422					
6 XGHB123345		[Blue bar]			
7 XGHB211345		[Blue bar]			
8 XGHB221346		[Blue bar]			
9 XGHB320345		[Blue bar]		[Blue bar]	
10 XGHB90E340	[Blue bar]		[Blue bar]	[Blue bar]	[Blue bar]
11 XGHB444345					
12 XGHB445345					
13 XGHB320246					
14 XGHB440245					
15 XGHB440845					
16 XGHB443245					



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

5 XGST2422

Access control | **Traceability** | **Flexible assembly**



Overall size of dialogue zone

Length x width (mm)	Distance (mm)										
39 x 35	18	18	40	48	70	33	30	45	45	25	25
79 x 75	20	20	55	65	100	48	40	65	65	39	39
390 x 45	-	-	-	42	90	-	-	50	50	-	-
240 x 240	-	-	42	80	150	-	-	40	40	-	-
Memory capacity (bytes)	1024	256	256	112	256	3408	13632	2000	2000	8192	32768



OsiSense XG

Radio frequency identification 13.56 MHz

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: Dispatch, receipt, transit, etc.
- Tracking and sorting of baggage
- Traceability in the food processing industry
- Flexible assembly lines in the automotive sector
- Automatic tolls
- 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

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

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

The OsiSense XG RFID offer comprises:

- 3 models of 13.56 MHz compact smart antennas (read/write)
- 11 models of 13.56 MHz electronic tags
- 1 handheld RFID terminal
- 3 models of network connection boxes
- 2 models of field expanders (accessories enabling modification of the shape of the dialogue zone between the tag and compact smart antenna)
- Connection and mounting accessories

Setting-up

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.)
- Configuration of the network address (1 to 15) using badge included with the 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.

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.

Three models of OsiSense XG compact smart antennas are available:

- Flat form 40 compact smart antenna, **XGCS4901201**:
 - Dimensions (mm): 40 x 40 x 15
 - Nominal sensing distance: 18 to 70 mm depending on the associated tag
- Flat form 80 compact smart antenna, **XGCS8901201**:
 - Dimensions (mm): 80 x 80 x 26
 - 20 to 100 mm depending on the associated tag.
- Wand compact smart antenna version **XGW4F111** with adjustable head to locate tags in confined places



Compact smart antenna, flat form 40



Compact smart antenna, flat form 80



Electronic tags



Handheld terminal



Field expanders

OsiSense XG 13.56 MHz compact smart antennas (continued)**■ Functions integrated in compact smart antennas:**

OsiSense XG compact smart antennas integrate functions that simplify communication between the tags, smart antennas and controller (PLC, PC, etc.). These built-in functions are activated by standard requests for read/write of words, sent by the PLC:

- **Firmware version:** Polling of the smart antenna to know its version
- **Reset:** The smart antenna is reinitialised and assumes its factory default configuration (network address at 1, transmission speed at 19200 Bauds, parameters deleted)
- **Init:** The smart antenna is reinitialised 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 on receipt of a read or write instruction. This mode reduces the smart antenna's power consumption and enables the suppression of interference when the smart antennas are close to each other
- **Auto Read/Write:** This mode enables the smart antenna to automatically execute up to 10 read or write instructions in a tag as soon as it enters the dialogue zone (up to 128 write words and up to 126 read words)

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 model of the tag and associated compact smart antenna.

RFID handheld terminal

The **XGST2020** RFID terminal with embedded software and an external reader, is a powerful toolbox for easy and efficient operations on RFID tags. The removable external smart 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 autonomy (at least one full day for 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 smart antennas XGCS4901201 to be adapted to conveying/handling applications. The concept is a connection-free induction link between the smart antenna and the field expander. 2 standard models are available:

- The conveyor model **XGFEC540** assures detection of ISO 15693 tags on a narrow strip 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 universal model **XGFEC2525** 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.

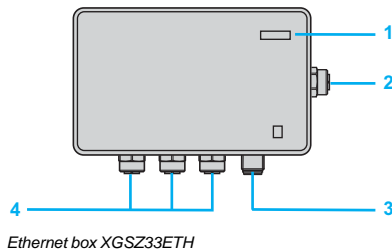
(Caution: These accessories are not compatible with ISO 14443 tags)

(1) **EEPROM:** Electrically-Erasable Programmable Read-Only Memory
FeRAM (Ferroelectric Read-Only Memory): Non-volatile RAM.

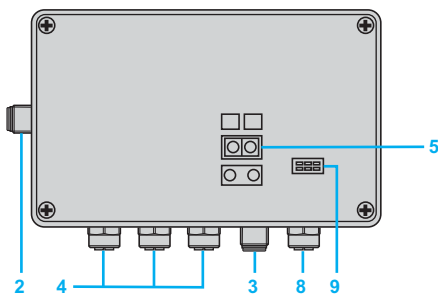
OsiSense XG

Radio frequency identification

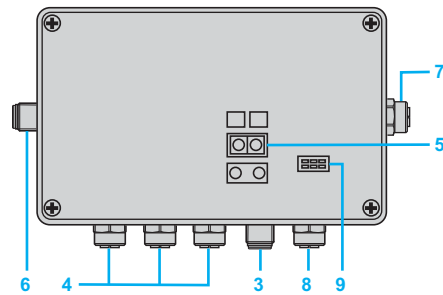
13.56 MHz



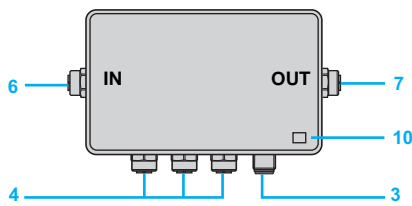
Ethernet box XGSZ33ETH



EtherNet/IP box XGSZ33EIP



PROFIBUS DP box: XGSZ33PDP



Connection box TCSAMT31FP

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

Description (continued)

OsiSense connection boxes

Four types of quick connection boxes are available:

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

Ethernet box XGSZ33ETH

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

It allows a PLC or PC to access the functions of the XGCS smart antennas:

- Reading/writing of 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).

EtherNet/IP box XGSZ33EIP

The OsiSense EtherNet/IP box **XGSZ33EIP** enables connection of XGCS smart antennas to the EtherNet/IP network.

It allows a PLC or PC to access the functions of the XGCS smart antennas:

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

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

PROFIBUS DP box XGSZ33PDP

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

It allows a PLC or PC to access the functions of the XGCS smart antennas:

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

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

Tap-off box TCSAMT31FP

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

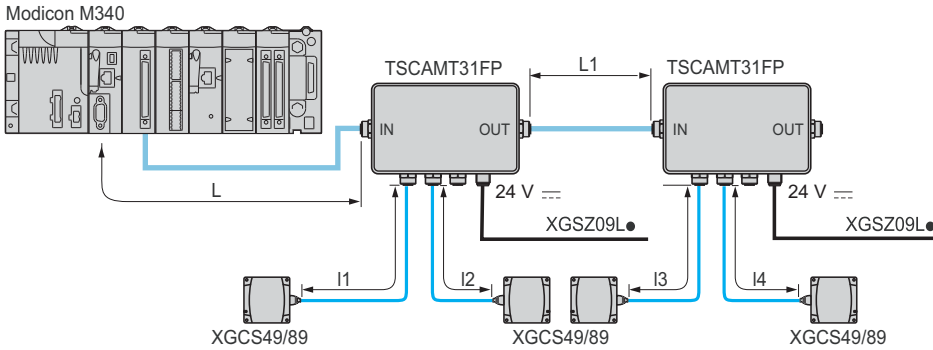
The **TCSAMT31FP** box is fitted with M12 connectors.

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 dust and damp-proof metal enclosure.

Description (continued)

Mounting example for a Modbus network

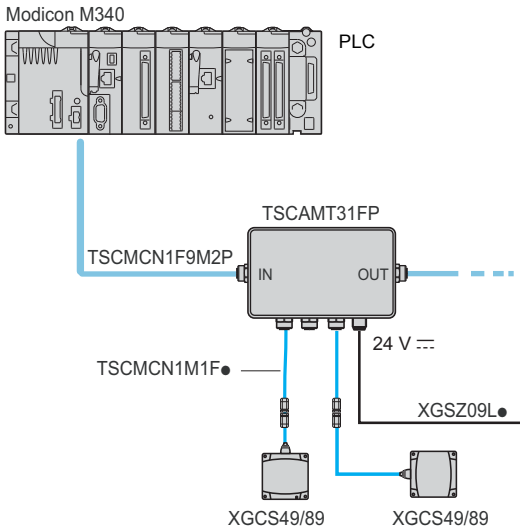


Maximum length of bus
The maximum length of the bus ($L + L1 + I4$) depends on the speed of the network:
- 9600 bauds: 1000 m
- 19,200 bauds: 500 m

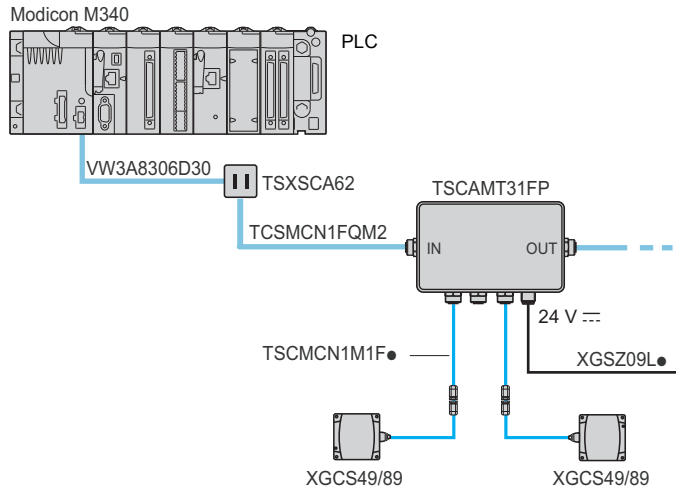
Maximum length of tap-offs:
I1, I2 and I3: 10 m

Example of connection to a Schneider Electric PLC

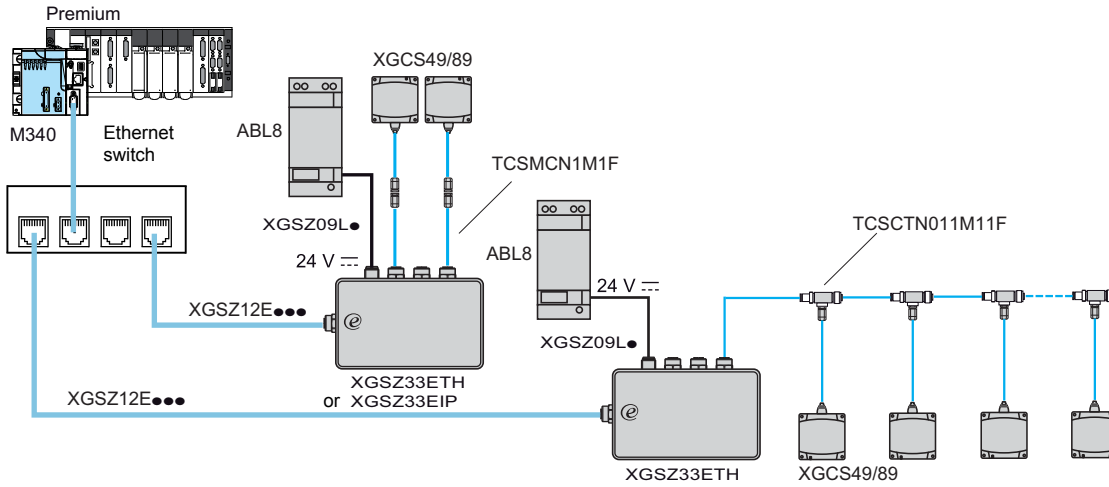
Direct connection



Connection via a TSXSACA62

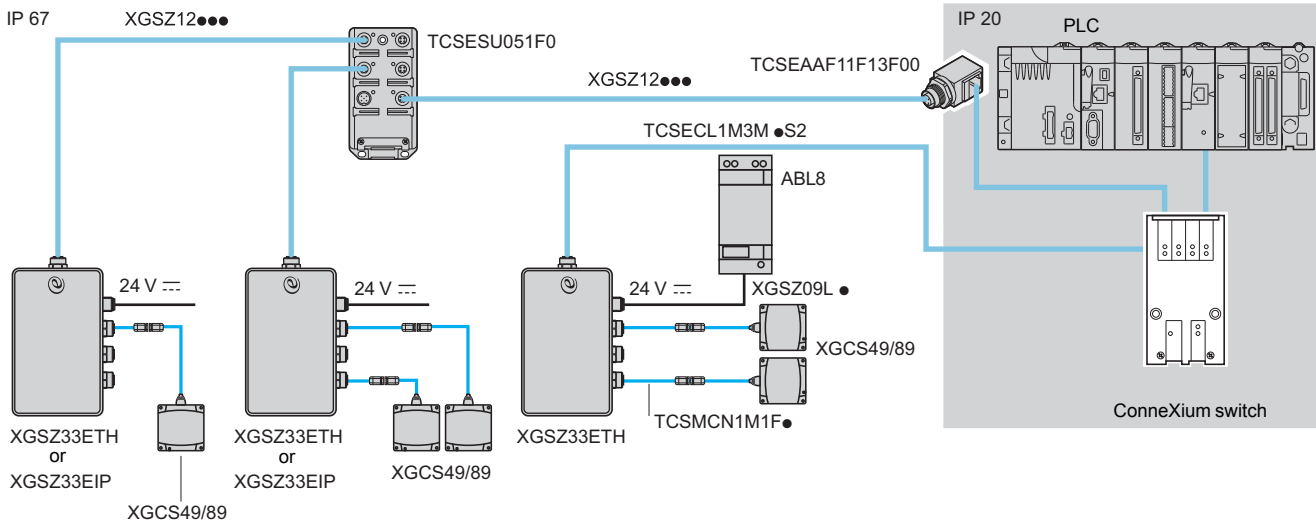


Example of connection on Ethernet network

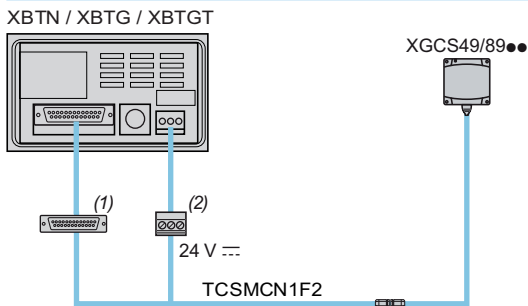


The number of smart antennas connected to each box can be increased by using M12 “T”connectors (ref. TCSCCTN011M11F).
Note on use of box XGSZ33ETH on Modbus/TCP: To maintain high performance operation it is recommended that a maximum of 8 compact smart antennas are connected (the Ethernet box has 8 communication 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 smart antennas XGCS49/89 is limited to 160 m.

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



Example of connection to a Magelis terminal

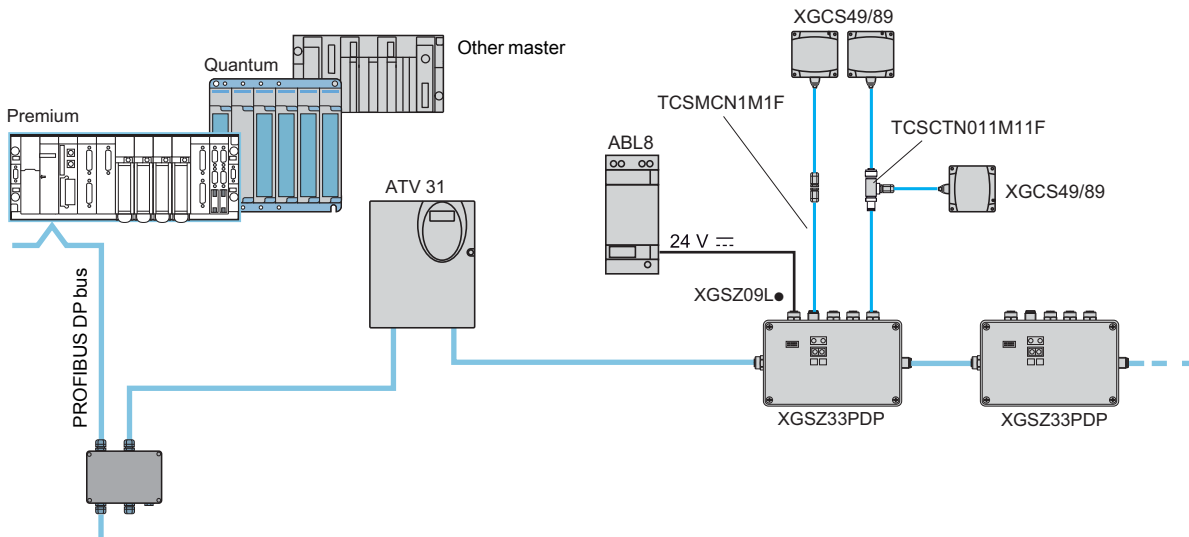


Cable TCSCMCN1F2 connections

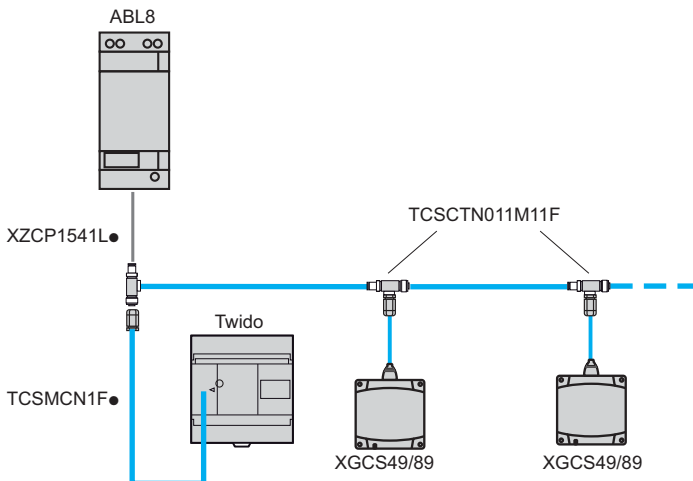
Scheme	Contact	Signal	Wire colour
	1	Drain (Modbus-SHLD)	–
	2	24 V --	Red
	3	0 V/Modbus-GND	Black
	4	D0	White
	5	D1	Blue

(1) SUB-D25-pin, male connector.
 (2) Magelis terminal power supply connector (included with the Magelis terminal).

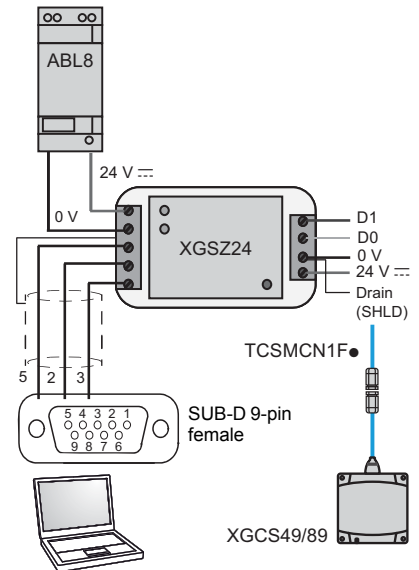
Example of architecture in a PROFIBUS DP network



Example of connection on Twido PLC



Example of connection to a PC



Power supply cable connections

XZCP1541L				Power supply ABL8
Scheme	Contact	Signal	Wire colour	Terminal block
	1	NC	Brown	–
	2	24 V ~	White	24 V ~
	3	0 V GND	Blue	0 V GND
	4	NC	Black	–

Cable TCSMCN1F connections

TCSMCN1F				Twido (with serial interface adaptor TWDNAC485T)	
Scheme	Contact	Signal	Wire colour	Terminal block	Scheme
	1	Drain (SHLD)	–	–	
	2	24 V ~	Red	–	
	3	0 V GND	Black	SG	
	4	D0 VGND	White	B	
	5	D1	Blue	A	

Compact smart antennas can be connected directly to the Modbus port of a PLC. 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 FTXCNTL12).

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

No other Modbus slave equipment can be connected to it.

OsiSense XG

Radio frequency identification

13.56 MHz
Handheld terminal



Handheld terminal



Main screen



Tag tools

Handheld terminal XGST2020

Functions

3 types of functions are embedded in the terminal:

- Direct operations on RFID tags
- Mapping (operator's predefined screens)
- Configuration

Direct operations on RFID tags

■ Read/Write words.

Groups of up to 15 words can be read/written from a given starting address. Dates can be shown in several different formats: Decimal/Decimal signed/Binary/Decimal IP/Hexadecimal/ASCII.

■ **Tag copy** from one tag to another tag. Full tag memory or a partial area can be copied.

■ **Tag initialisation.** Full tag memory or a defined area can be written with a value chosen by the operator.

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

■ **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 the screen.

Mappings

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

Each variable of a mapping is associated to a name and it can be shown in a format selected from numerous possibilities, both in read only or read/write mode. Creation, modification and backup tools are embedded in the software of the handheld terminal.

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

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

The formats supported by the handheld terminal are:

- Decimal (1 word): 0 to 65535
- Decimal (1 byte): 0 to 255
- Decimal signed (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 to each value of the byte appears on the screen instead of the value of the byte.
- ASCII string: 1 to 21 characters
- Hex string: 2 to 30 hex characters (1 to 15 bytes)
- Date (8 bytes): YYYY/MM/DD
- Time (2 bytes): HH:MM

Data shown on a mapping can be stored in the memory of the terminal or written in an RFID tag.

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

OsiSense XG

Radio frequency identification

13.56 MHz

Handheld terminal



Mapping management



Online help



XGW4F111



XGW4F111

Handheld terminal XGST2020 (continued)

Functions (continued)

Configuration

■ Updating the terminal

This function is password protected and gives access to:

- Updating the smart antenna connected to the handheld terminal
- Changing the boot screen picture by loading a file from a USB memory stick
- Restoring the handheld terminal to its factory settings
- Changing the password

■ Terminal parameters

This function allows the modification of:

- The screen localization
- The shutdown delay
- The preferred mapping number
- The IP and gateway addresses of the Ethernet port
- The back-lighting level

■ Mapping management

This function gives access to:

- Backup and restoration of all user mappings to and from a USB memory stick
- The export and import of one user mapping to and from a USB memory stick
- The creation, modification, copy and erasure of the mappings. Each mapping is password protected

Online help

Contextual online help is permanently accessible for the user.

In addition, a tutorial on the creation of a mapping is accessible from the main screen.

Battery management

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

- The status of the battery is shown on the menu screen
- A blue LED flashes when the battery needs recharging
- An orange LED flashes whilst the battery is being charged

Accessories

Accessories for the handheld terminal

The handheld terminal is delivered in a plastic case, with the following accessories:

- A USB charger **XGST2CH** with international plugs. It can be used in conjunction with cradle **XGST2SU** for easier connection to the handheld terminal
- A lithium-ion high capacity battery **XGST2BA**
- A 2 GB USB flash memory stick **XGSZK1**, for data transfer between handheld terminals or PC. This memory stick also contains all the technical documents on OsiSense XG RFID: Catalogues, training and examples
- A stylus for the touchscreen
- A wrist strap for safe handling of the terminal
- An Allen key

Antennas

Two versions of compact smart antennas are available:

- Compact antenna **XGSS4901201** for mounting on the back of the handheld terminal
- Wand antenna **XGW4F111** with flexible head for remote operations on tags located in confined places (under pallets, etc.)

Docking cradle

The docking cradle **XGST2SU** is recommended for easier charging of the battery. Wall mounting or desk locations are possible.

The docking cradle is powered by the wall charger (reference **XGST2CH**).

OsiSense XG

Radio frequency identification
13.56 MHz

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 60068.2.27		2 mm from 5 to 29.5 Hz / 7 gn from 29.5 to 150 Hz			
Shock resistance	Conforming to EN 60068.2.6		30 g / 11 ms			
	Conforming to 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 smart antenna XGCS4901201	mm	10	18	40	48
	With smart antenna XGCS8901201	mm	–	20	55	65
	With smart antenna XGCS4901201 + field expander XGFEC540	mm	–	–	–	42
	With smart antenna XGCS4901201 + field expander XGFEC2525	mm	–	–	42	80
Number of read cycles			Unlimited			
Number of write cycles	Guaranteed minimum (per data bit, throughout the temperature range)		100000			
	At 30°C		2.5 million typical value			
Read time		ms	12 + 0.825 x n (1)	12 + 0.825 x n (1)	12 + 0.825 x n (1)	12 + 0.825 x n (1)
Write time		ms	20 + 11.8 x n (1)	19 + 4.1 x n (1)	20 + 11.8 x n (1)	12 + 5.6 x n (1)
Maximum 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
Maximum speed XGCS89●●	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 27.



XGHB90E340	XGHB444345	XGHB445345	XGHB320246	XGHB440245	XGHB440845	XGHB443245
- 25...+ 50	- 25...+ 70	- 25...+ 70	- 25...+ 70	- 25...+ 70	- 25...+ 70	- 25...+ 70
- 40...+ 55	- 40...+ 85	- 40...+ 85	- 40...+ 85	- 40...+ 85	- 40...+ 85	- 40...+ 85
IP 65	IP 68	IP 68	IP 65	IP 68	IP 68	IP 68
ISO 15693	ISO 14443	ISO 14443	ISO 15693	ISO 15693	SO 14443	SO 14443
2 mm from 5 to 29.5 Hz / 7 gn from 29.5 to 150 Hz						
30 g / 11 ms			30 g / 11 ms			
Degree IK02			Degree IK02			
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	40 x 40 x 15
PVC	PBT	PBT	PC	PBT	PBT	PBT
-	Screw or clip	Screw or clip	Screw	Screw or clip	Screw or clip	Screw or clip
256	3408	13632	2000	2000	8192	32768
EEPROM			FeRAM			
Read/Write			Read/Write			
70	33	30	45	45	25	25
100	48	40	65	65	39	39
90	-	-	50	50	-	-
150	-	-	40	40	-	-
Unlimited			10 ¹⁰			
100000			10 ¹⁰			
2.5 million typical value			-			
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)	6 + 0.25 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)	6 + 0.25 x n (1)
5.3	3.1	2.6	2.1	2.1	2.3	2.3
1.6	1.4	1	1.5	1.5	1.8	1.8
0.6	1.2	0.9	0.6	0.6	1.7	1.7
7.1	4.8	4.2	3,5	3,5	3,8	3,8
4.0	2.7	2	2,5	2,5	3,0	3,0
0.8	1.8	1.5	1	1	2,6	2,6
10 years						
No	Yes (3)	Yes	No	Yes	Yes	Yes

OsiSense XG

Radio frequency identification

13.56 MHz

Characteristics of OsiSense XG compact smart antennas				
Type of smart antenna		XGCS8901201	XGCS4901201	XGW4F111
Certifications		FCC part 15c, UL, CE		
Conformity to standards		EN 301489-1, EN 301489-3, ETS 300330-1 and ETS 300330-2		
Ambient air temperature	For operation	°C	- 25... + 70 (-13...158°F)	
	For storage	°C	- 40... + 85 (-40...158°F)	
Degree of protection	Conforming to IEC 60529	IP 65		
Vibration resistance	Conforming to EN 60068.2.27	2 mm from 5 to 29.5 Hz / 7 gn from 29.5 to 150 Hz		
Shock resistance	Conforming to EN 60068.2.6	30 g / 11 ms		
	Conforming to 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 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 standard tags. Automatic detection of the tag type		
Compatible RFID microchip examples		Fujitsu (MB89R118), INSIDE (micropass) NXP (I-Code SL2, SL1, Ultralight, Std 1K/4K, Desfire), STM (CRIX4K) 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	< 60	
Serial link	Type		RS 485	
	Protocol		Modbus RTU or Uni-Telway	Modbus RTU
	Speed	Bauds	9600...115 000 (automatic detection)	
Display			1 dual colour LED for the communication network: Modbus / Uni-Telway 1 dual colour LED for RFID communication: (Presence of tag / Smart antenna/tag dialogue)	
Connections			A single M12, 5-pin male, A coding shielded connector for connection to the communication network and power supply.	
Tightening Torque	Screws	Nm	< 3	< 1 -
Characteristics of handheld terminal XGST2020				
Certifications		CE		
Conformity to standards		IEC 61000-6-2, IEC61000-6-4		
Ambient air temperature	For operation	°C	0 ... + 45 (32...113°F)	
	For storage	°C	- 20... + 45 (-4...113°F)	
Materials	Housing	ABS		
Power supply	Internal	Battery, lithium-ion 3.7 V/4000 mAh. Full charge duration: 8 hours		
	Connector for charging	Mini USB		
Autonomy	Typical	> 8 hours (reading a tag each minute - brightness of the screen = 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 (touchscreen)		
	Drop test	Free fall on concrete ground: 1 metre		
Connection to RFID reader serial link	Connector	M12 female socket		
	Type	RS485		
	Protocol	Modbus RTU - Master		
	Speed	Bauds	115000	
External port		USB for memory stick (2 GB maximum)		
Operating system		Proprietary Operating System		
Display		Resistive OLED touchscreen: 480 x 272 pixels, 16 M colours		
Signalling		Dual colour (blue/orange) power status LED		
Characteristics of accessories				
Type of accessory		XGST2CH charger set	XGST2SU docking cradle for handheld terminal XGST2020	
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	Interchangeable international plugs	Connected to charger XGST2CH	
	Output	Mini USB cable, length 1 metre	Spring contacts	

OsiSense XG

Radio frequency identification 13.56 MHz

Characteristics of connection boxes				
Connection box type		Ethernet Modbus/TCP box XGSZ33ETH	EtherNet/IP box XGSZ33EIP	PROFIBUS DP box XGSZ33PDP
Certifications		UL	ODVA	PROFIBUS
Conformity to standards		CE		
Ambient air temperature	For operation	°C	0...+ 70	0...+ 55
	For storage	°C	- 40...+ 85	- 25...+ 85
Relative humidity		RH	30...95% without condensation	
Degree of protection		IP 65		
Supply voltage		V	24 PELV --- (limits 19.2 V...29 V). M12, 4-pin male, A coding, connector	24 PELV --- (limits 21.6 V...26.4 V). M12, 4-pin male, A coding, connector
Consumption (connection box only)		W	< 1	< 2.5
Smart antenna connection		M12, 5-pin female, A coding, connector. Total length of cables < 160 metres		
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 of words: 1 to 123 words per request)	Read/write of words (1 to 123 per request) via the periodic exchanges service.	Read/write of words (1 to 49 read per request) via the PROFIBUS DP periodic exchanges service. PROFIBUS DP V2 aperiodic exchanges not supported
Connection	Physical interface	10 BASE-T/100 BASE-TX		RS485
	Data rate	10/100 Mbps		9.6 to 12000 kbauds - automatic detection of speed
	Medium	Ethernet cable with M12, D coding connection, reference XGSZ12E●● (see page 20)		PROFIBUS cable with M12, B coding connection
Connection box type		Tap-off box TCSAMT31FP		
Certifications		UL		
Conformity to standards		CE		
Ambient air temperature	For operation	°C	- 25...+ 55	
	For storage	°C	- 40...+ 85	
Relative humidity		RH	30...95% without condensation	
Degree of protection		IP 65		
Supply voltage		V	24 PELV --- (limits 19.2 V...29 V). M12, 4-pin male, A coding connector	
Smart antenna connection		M12, 5-pin female, A coding, connector		
Electromagnetic interference	Conforming to IEC61000	Level 3		
	Conforming to EN55022	Class B		
LED display		Power on (green)		



TCSAMT31FP



XGFEC2525



XGFEC540



XGST2422



XGST2BA



XGST2CH

Connection boxes

Description	For use with	Supply voltage	Reference	Weight kg
Ethernet Modbus/TCP box	Compact smart antennas XGCS49● and XGCS89●	24 V $\overline{\text{---}}$	XGSZ33ETH	1.060
EtherNet/IP box (1)	Compact smart antennas XGCS49● and XGCS89●	24 V $\overline{\text{---}}$	XGSZ33EIP	1.060
PROFIBUS DP box (1)	Compact smart antennas XGCS49● and XGCS89●	24 V $\overline{\text{---}}$	XGSZ33PDP	1.060
Tap-off box, 3-channel Modbus and Uni-Telway	Compact smart antennas XGCS49● and XGCS89●	24 V $\overline{\text{---}}$	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 (only ISO 15693)	Smart antenna XGCS4901201 Tags XGHB90E340 XGHB320345 XGHB221346	XGFEC540	0.640
Universal type field expander Dimensions (mm) 250 x 250 x 10 (2)	26 ... 150 mm depending on tag used (only ISO 15693)	Smart antenna XGCS4901201 Tags XGHB90E340 XGHB320345	XGFEC2525	0.565

OsiSense XG handheld terminal

Description	Composition	Reference	Weight kg
Handheld terminal RFID set in a plastic case (3)	<ul style="list-style-type: none"> ■ 1 handheld terminal ■ 1 wrist strap ■ 1 lithium-ion battery ■ 1 charger battery pack ■ 1 stylus ■ 1 USB memory stick 	XGST2422	1.000

Note: RFID antenna to be ordered separately (see page 18).

Accessories

Description	Reference	Weight kg
Screen protection 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

Handheld terminal Terminal unit only (without battery, charger or RFID reader)	XGST2020	0.295
Lithium-ion 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 our Customer Care Centre.

(3) RFID reader to be ordered separately.

▲ Available 1st quarter 2013.

OsiSense XG

Radio frequency identification

13.56 MHz



Modbus network connection accessories

Description	Application	Length m	Reference	Weight kg
Modbus shielded connection cable, black IP 67 M12 connectors, male/female, A coding (1)	RS 485 connection	1	TCSMCN1M1F1	0.080
	between a compact smart antenna and a tap-off box	2	TCSMCN1M1F2	0.115
	or between 2 tap-off boxes	5	TCSMCN1M1F5	0.270
	TCSAMT31FP	10	TCSMCN1M1F10	0.520
Modbus shielded pre-wired M12 connector, IP 67, female/bare wires, A coding (1)	Connection between tap-off box TCSAMT31FP and a Modbus/Uni-Telway network (TSXSCA50)	2	TCSMCN1F2	0.115
		5	TCSMCN1F5	0.270
		10	TCSMCN1F10	0.520
Modbus shielded connecting cable, black, M12/SUBD-15, A coding	Connection between tap-off box TCSAMT31FP and a Modbus/Uni-Telway network (TSXSCA62)	2	TCSMCN1FQM2	0.270
Modbus shielded connecting cable, black, M12/Mini-DIN 8-pin, A coding	Modbus connection between tap-off box TCSAMT31FP and a PLC (Twido...)	2	TCSMCN1F9M2P	0.350
Modbus SL serial link (Shielded dual twisted pair RS 485 main cables)	Modbus SL Serial link	100	TSXCSA100	5.680
		200	TSXCSA200	10.920
		500	TSXCSA500	30.000
Network Tee, M12 1M/2F 5-pin, A coding	RS485 network	–	TCCTN011M11F	0.035

Ethernet connection accessories

Ethernet connection accessories for IP 67 switch

Description	End fittings	Length m	Reference	Weight kg
Copper connecting cables, straight	1 x IP 67 M12 4-pin connector and 1 x RJ45 connector	1	XGSZ12E4501	–
		3	XGSZ12E4503	–
		10	XGSZ12E4510	–
Copper connecting cables, elbowed	2 x IP 67 M12 4-pin connectors	1	XGSZ12E1201	–
		3	XGSZ12E1203	–
		10	XGSZ12E1210	–
		–	XGSZ12E1225	–
		–	XGSZ12E1225	–
Copper connecting cables, elbowed	1 x IP 67 M12 4-pin elbowed connector and 1 x RJ45 connector	3	XGSZ22E4503	–
		10	XGSZ22E4510	–
M12 Ethernet switch IP 67, ConneXium (2)	–	–	TCSEU051F0	0.210
M12 female/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	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
	V ~	W	A		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) Other ConneXium connection accessories:

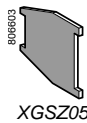
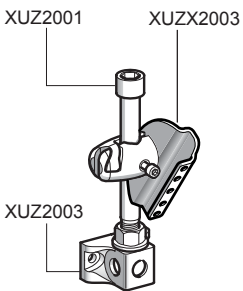
Please refer to the www.schneider-electric.com web site.



XGSZ24



XGSZ3P



XGSZ05

Connection accessories

Description	Application	Length m	Reference	Weight kg
Pre-wired M12 4-pin female supply connector, A coding (1)	24 V $\overline{\text{---}}$ supply to connection boxes XGSZ33ETH and TCSAMT31FP	2	XGSZ09L2	0.115
		5	XGSZ09L5	0.270
		10	XGSZ09L10	0.520
M12 5-pin female, A coding, – connector	–	–	XZCC12FDB50R	0.050
M12, 5-pin male, A coding connector	–	–	XZCC12MDB50R	0.050
Supply connector, screw terminals, M12 straight, A coding	–	–	XZCC12FDM40B	0.020
Protective cap (Sold in lots of 10)	M12 female connector	–	ASI67FACC1	0.013
Network terminator, M12 male, 120 Ω	–	–	FTXCNTL12	0.010
Line adaptor, RS 232C/RS 485, without modem signals Supply: 18...30 V $\overline{\text{---}}$ - Consumption: 20 mA Maximum transmission speed: 19 200 bauds Mounting on 35 mm $\overline{\text{---}}$ 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		
	Tags XGHB221346	XSZBE90	0.060
Clip-on mounting plate	Flat form 40 smart antenna: XGCS4901201	XSZBC00	0.025
	Flat form 40 tags: XGHB44●345		
	Tags XGHB221346	XSZBE00	0.025
Mounting plate	For connection boxes TCSAMT31FP and XGSZ33ETH	XGSZ3P	0.195
3D fixing system (2)	Field expander XGFEC2525		
Support for M12 rod		XUZ2003	0.220
M12 rod		XUZ2001	0.050
Ball-joint mounted fixing bracket		XUZ2003	0.220

Additional accessories

Description	Sold in lots of	Reference	Weight kg
Key for screwing in/unscrewing \varnothing 18 mm cyl. tag	5	XGSZ05	0.011
Identification legend for 23 x 4 mm connecting cables	200	XGSZ08MKW	0.056

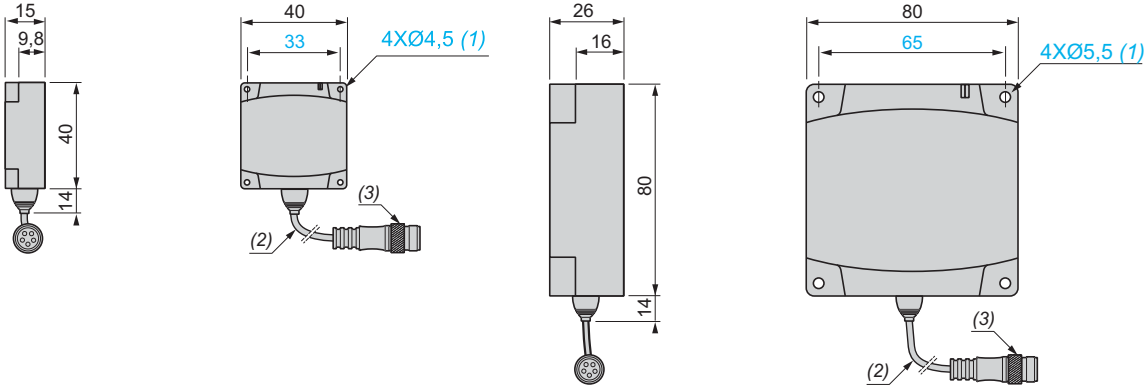
(1) Holder for identification legend included with product.

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

Compact smart antennas

XGCS4901201

XGCS8901201



(1) For CHC type screws.

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

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

Updatable code electronic tags

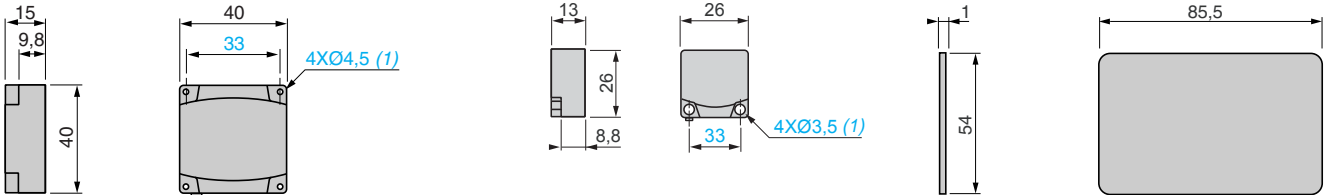
Square format tags

XGHB44●●

XGHB221346

Rectangular format tags

XGHB90E340



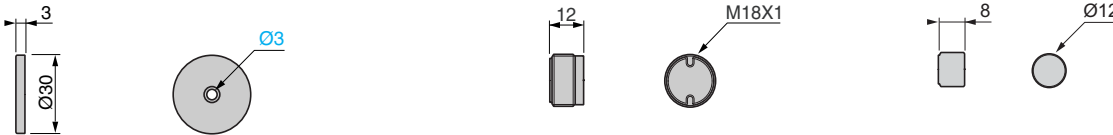
(1) For CHC type screws.

Cylindrical format tags

XGHB32●●

XGHB211345

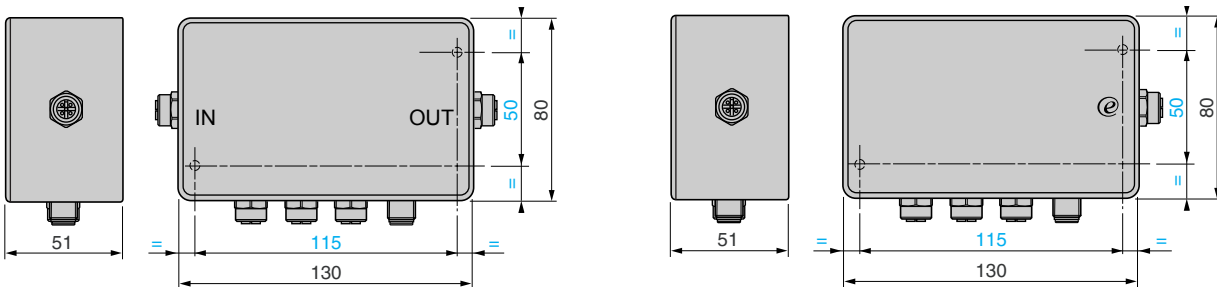
XGHB123345



Connection boxes (1)

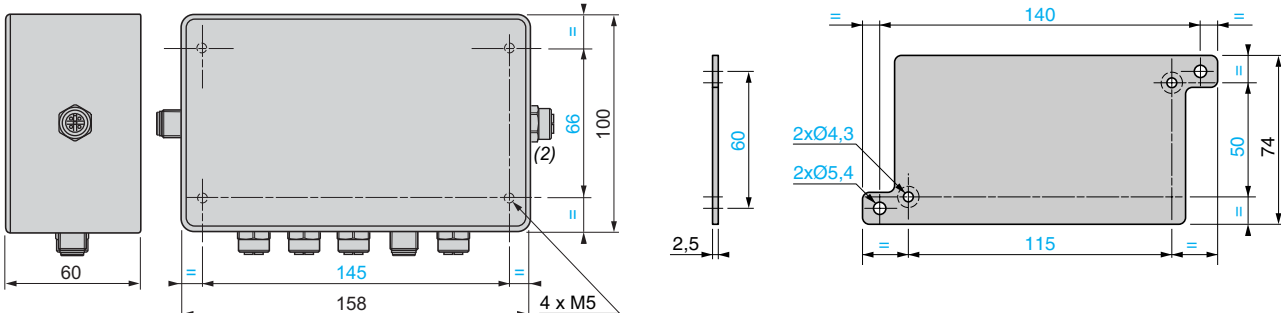
Connection box TCSAMT31FP

Box XGSZ33ETH (Ethernet)



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

Mounting plate XGSZ3P

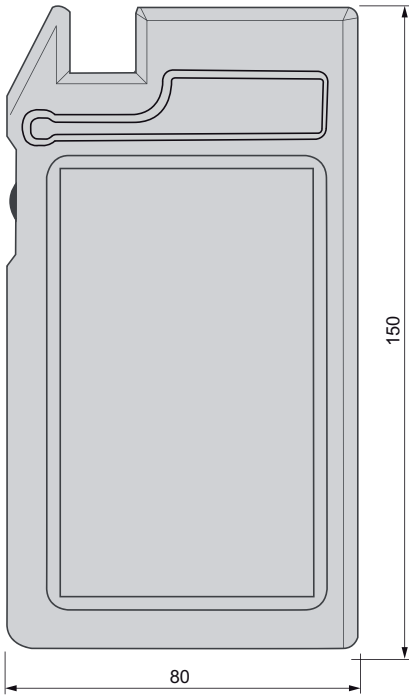


(1) Allow a 110 mm clearance zone for connecting the cables.

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

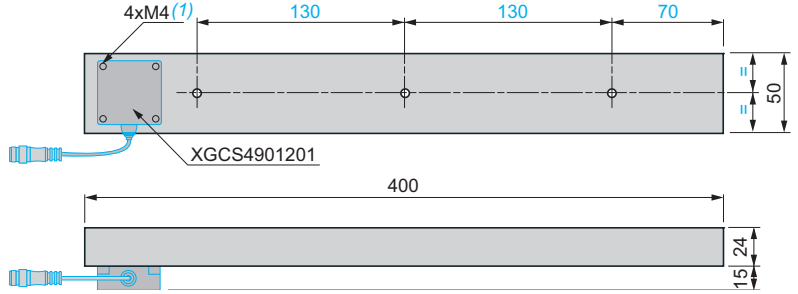
Handheld RFID terminal

XGST2020 (30 mm deep)



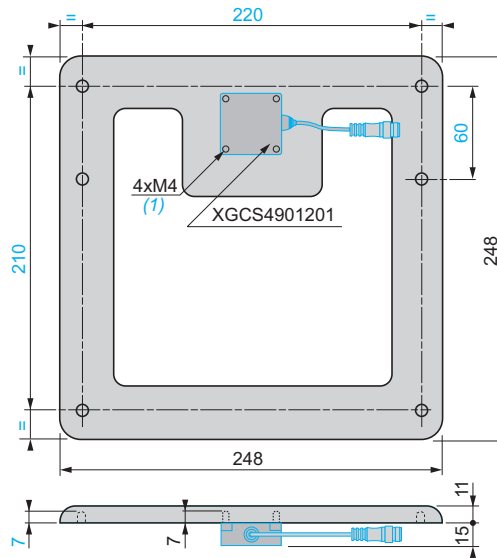
Field expanders

Conveying type XGFEC540



(1) 4 x M4 screws (included).

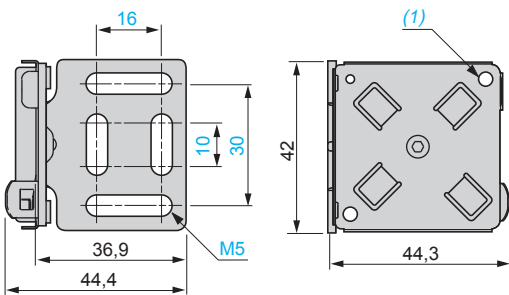
Universal type XGFEC2525



(1) 4 x M4 screws (included).

Mounting brackets

For smart antennas XGCS49●● and tags
XGHB44●●
XSZBC90

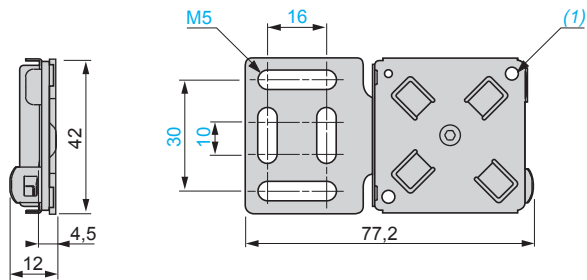


(1) 4 screws M4 x 14 (included).

Mounting plates

For smart antennas XGCS49●● and tags XGHB44●●

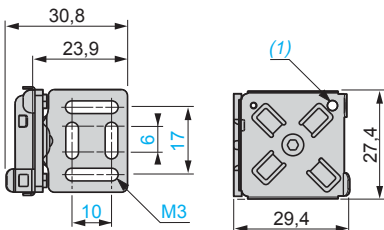
XSZBC00



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

For tags XGHB221346

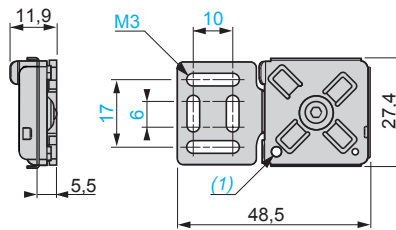
XSZBE90



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

For tags XGHB221346

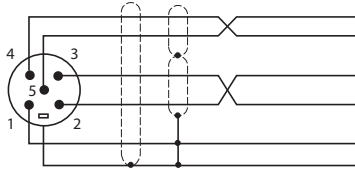
XSZBE00



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

Modbus connections

Smart antennas XGCS●901201



Pin no.

1
2
3
4
5

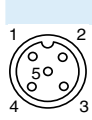
Connector casing

Modbus smart antenna signal

Drain (Modbus-SHLD)
+ 24 V
0 V/Modbus-GND
D0
D1
Shielding

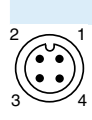
Connection box TCSAMT31FP

Socket to smart antenna cabling



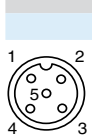
Pin no.	Signal
1	– Drain (Modbus-SHLD)
2	+ 24 V
3	0 V/Modbus-GND
4	D0
5	D1

Socket to power supply cabling



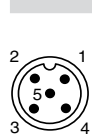
Pin no.	Signal
1	+ 24 V
2	+ 24 V
3	0 V
4	0 V

Socket to another connection box cabling



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

Socket to industrial PLC cabling



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

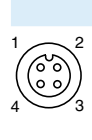
Cable connections

TCSMCN1F●



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

XGSZ09L




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

Ethernet and Modbus/TCP connection

Ethernet box XGSZ33ETH


Socket to smart antenna cabling

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



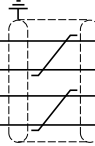
Socket to power supply cabling

Pin no.	Signal
1	+ 24 V $\overline{\text{---}}$
2	+ 24 V $\overline{\text{---}}$
3	0 V $\overline{\text{---}}$
4	0 V $\overline{\text{---}}$

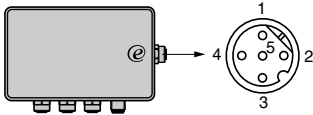


Cable TCSECL1M3M●●S2

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



Socket to Ethernet connection




EtherNet/IP connection

EtherNet/IP box: XGSZ33EIP


Socket to smart antenna cabling

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



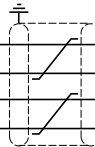
Socket to power supply cabling

Pin no.	Signal
1	+ 24 V $\overline{\text{---}}$
2	+ 24 V $\overline{\text{---}}$
3	0 V $\overline{\text{---}}$
4	0 V $\overline{\text{---}}$



Cable TCSECL1M3M●●S2

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




PROFIBUS DP connection

PROFIBUS DP box: XGSZ33PDP


Socket to smart antenna cabling

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



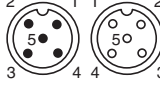
Socket to power supply cabling

Pin no.	Signal
1	+ 24 V $\overline{\text{---}}$
2	+ 24 V $\overline{\text{---}}$
3	0 V
4	0 V



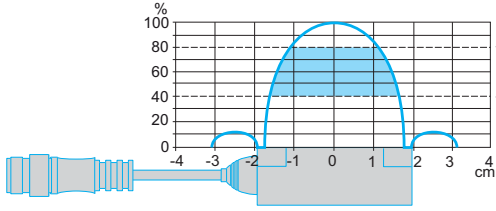
PROFIBUS DP network connections

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

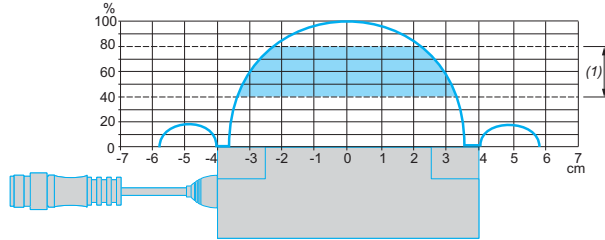


Dialogue zones of compact smart antennas

XGCS4901201



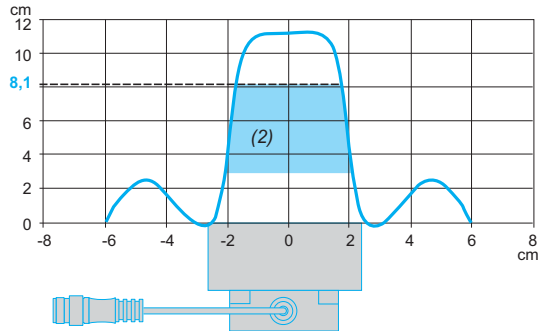
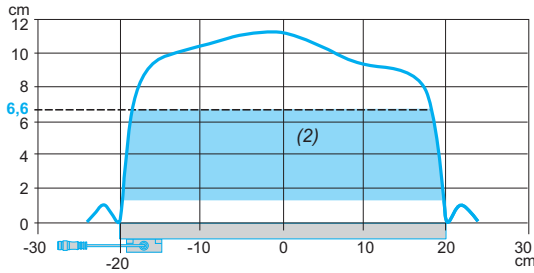
XGCS8901201



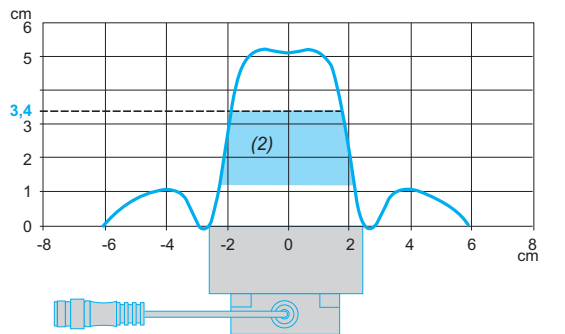
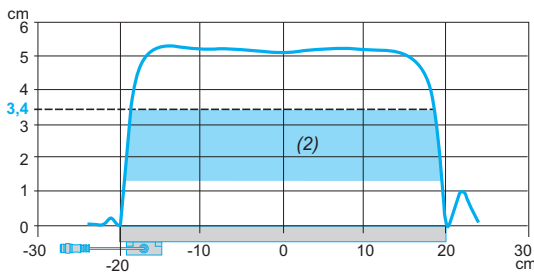
(1) Recommended crossing zone: between 0.4 and 0.8 Sn.

Dialogue zones for field expanders

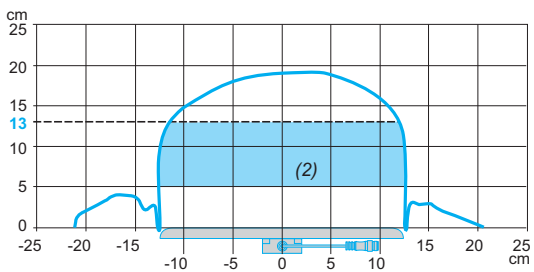
XGFEC540 + XGHB90E340



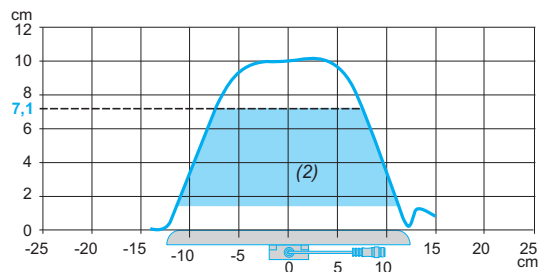
XGFEC540 + XGHB320345



XGFEC2525 + tag XGHB90E340

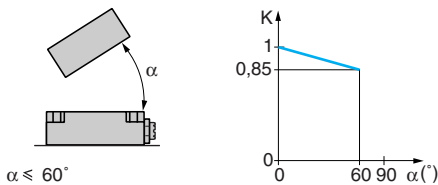


XGFEC2525 + tag XGHB320345



(2) Recommended working zone.

Angular positioning between smart antenna and tag

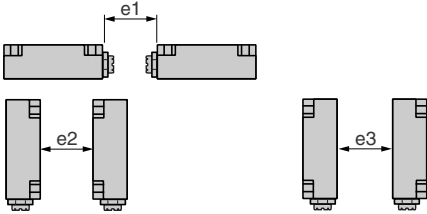


K = correction coefficient to be applied to the nominal sensing distance. Read distance = nominal sensing distance $\times K$

Minimum mounting distances between system components

Distance between smart antennas

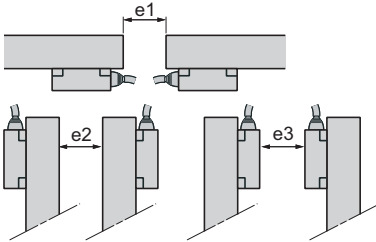
Minimum distance between 2 identical smart antennas according to their positioning and type of tag used (mm)



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

Distance between field expanders

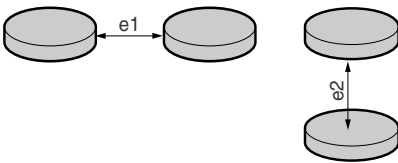
Minimum distance between 2 identical field expanders according to their positioning and type of tag used (mm)



Tag	Field expander XGFEC540			Field expander XGFEC2525		
	e1	e2	e3	e1	e2	e3
XGHB90E340	195	285	195	570	890	960
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	XGC 40 x 40 format		XGC 80 x 80 format	
	e1	e2	e1	e2
XGHB90E340	35	60	110	140
XGHB221346	50	10	120	50
XGHB320345	70	50	190	60
XGHB211345	40	10	120	20
XGHB444345	20	10	70	40
XGHB445345	10	10	60	10
XGHB440845	30	10	60	10
XGHB443245	30	10	60	10

Minimum permissible mounting distances in a metal structure

Smart antennas and tags

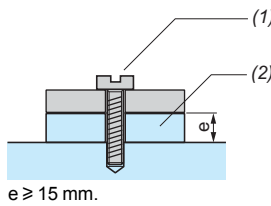
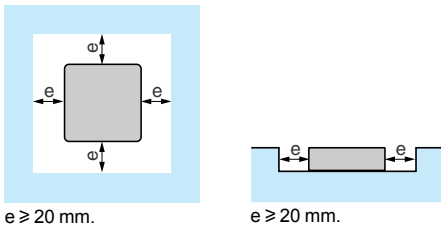
Smart antennas XGCS49/S89 and
Tags XGHB221346/ XGHB44●●

Tag XGHB32●●

Tags XGHB90E340, XGHB211345

No metal parts within 15 mm of the tag.

No metal parts within 25 mm of the tag.

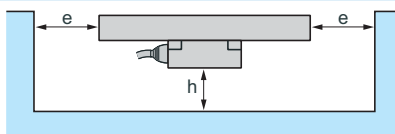


(1) Tightening torque $\leq 1 \text{ N.m}$.
(2) Insulating material.

Tags	Nominal sensing distance S_n (mm)		Reduced sensing distance with presence of metal (mm)	
	XGCS49	XGCS89	XGCS49	XGCS89
XGHB90E340	70	100	58	80
XGHB221346	40	55	30	33
XGHB320345	48	65	45	56
XGHB211345	18	20	16	15
XGHB444345	33	48	28	34
XGHB445345	30	40	24	28
XGHB440245	45	65	30	45
XGHB440845	25	39	20	28
XGHB443245	25	39	20	28

Field expanders

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



A		XGST2422	19
ABL8MEM24003	20	XGSZ3P	21
ABL8MEM24012	20	XGSZ05	18
ASI67FACC1	21	XGSZ05	21
		XGSZ08MKW	21
D		XGSZ09L2	21
DIA4ED3051001	18	XGSZ09L5	21
		XGSZ09L10	21
F		XGSZ12E1201	20
FTXCNTL12	21	XGSZ12E1203	20
		XGSZ12E1210	20
T		XGSZ12E1225	20
TCSAMT31FP	19	XGSZ12E4501	20
TC SCTN011M11F	20	XGSZ12E4503	20
TCSEAAF11F13F00	20	XGSZ12E4510	20
TCSECN300R2	20	XGSZ22E4503	20
TCSEK1MDRS	20	XGSZ22E4510	20
TCSEK3MDS	20	XGSZ24	21
TCSESU051F0	20	XGSZ33EIP	19
TCSMCN1F2	20	XGSZ33ETH	19
TCSMCN1F5	20	XGSZ33PDP	19
TCSMCN1F9M2P	20	XGSZCNF01	18
TCSMCN1F10	20	XGSZK1	19
TCSMCN1FQM2	20	XGW4F111	18
TCSMCN1M1F1	20	XSZBC00	21
TCSMCN1M1F2	20	XSZBC90	21
TCSMCN1M1F5	20	XSZBE00	21
TCSMCN1M1F10	20	XSZBE90	21
TSXCSA100	20	XUZ2001	21
TSXCSA200	20	XUZ2003	21
TSXCSA500	20	XUZ2003	21
		XUZ2003	21
X		XZCC12FDB50R	21
XGCS4901201	18	XZCC12FDM40B	21
XGCS8901201	18	XZCC12MDB50R	21
XGFEC540	19		
XGFEC2525	19		
XGHB90E340	18		
XGHB123345	18		
XGHB211345	18		
XGHB221346	18		
XGHB320246	18		
XGHB320345	18		
XGHB440245	18		
XGHB440845	18		
XGHB443245	18		
XGHB444345	18		
XGHB445345	18		
XGST2BA	19		
XGST2CH	19		
XGST2FP	19		
XGST2ST	19		
XGST2SU	19		
XGST2020	19		

Schneider Electric Industries SAS

Head Office
35, rue Joseph Monier
F-92500 Rueil-Malmaison
France

www.tesensors.com

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