Contents

8 - Radio frequency identification 13.56 MHz OsiSense XG

OsiSense XG
Radio frequency identification
13.56 MHz

Applications		**Numerous and varying applications in the industrial, logistic and building sectors: flexible production workshops, traceability, access control, etc.**			
Compact stations, 13.56 MHz		**Flat form 40**	**Flat form 80**		
					
Dimensions, W x H x D (mm)		40 x 40 x 15	80 x 80 x 26		
Protocols		Modbus RTU and Uni-Telway			
Nominal sensing distance depending on associated tag (mm)		18 to 70	20 to 100		
Station type		**XGC S4901201**	**XGC S8901201**		
Page		8/12			

Electronic tags *(1)*		**Flat form 40**	**ISO badge** *(2)*	**Disc**	**Flat form 26**	**Cylindrical**
						
Dimensions, W x H x D (mm)		40 x 40 x 15	54 x 85.5 x 0.8	Ø 30 x 3	26 x 26 x 13	M18 x 1 x 12
Type of memory		EEPROM				
Memory capacity (bytes)		3 408	13 632	256	112	256	256
Nominal sensing distance (mm)	**With station XGC S49●**	33	30	70	48	40	18
	With station XGC S89●	48	40	100	65	55	20
Time (ms)	**Read**	9.25 + 0.375 x n *(3)*	16.25 + 0.375 x n *(3)*	12 + 0.825 x n *(3)*			
	Write	13 + 0.8 x n *(3)*	20 + 0.8 x n *(3)*	20 + 11.8 x n *(3)*	12 + 5.6 x n *(3)*	20 + 11.8 x n *(3)*	19 + 4.1 x n *(3)*
Tag type		**XGH B444345**	**XGH B445345**	**XGH B90E340**	**XGH B320345**	**XGH B221346**	**XGH B211345**
Page		8/12					

(1) Other versions (high temperature, adhesive, flexible tags, etc.): please consult your Customer Care Centre.
(2) Customised versions on request.
(3) n = number of 16-bit words.

Connection boxes	Ethernet box	Tap-off box	PROFIBUS box
			
Protocols	Modbus TCP/IP	Modbus and Uni-Telway	PROFIBUS-DP
Associated compact stations	XGC S49● and XGC S89●		
Supply voltage	⎓ 24 V		
Connection box type	**XGS Z33ETH**	**TCS AMT31FP**	**XGS Z33PDP**
Page	8/12		

Field expanders	Conveying type	Universal type
		
Dimensions, W x H x D (mm)	400 x 23 x 50	250 x 250 x 10
Dialogue area, W x H (mm)	380 x 45	230 x 230
Associated compact stations	XGC S4901201	
Nominal sensing distance depending on associated tag (mm)	30 to 90	26 to 150
Field expander type	**XGF EC540**	**XGF EC2525**
Page	8/13	

Portable terminal	For 13.56 MHz RFID diagnostics
	
Function	Read/Write operations on electronic tags and diagnostics on compact stations
Operating system	Microsoft® Windows CE.NET Professional® version 4.2
Terminal type	**XGS TP401**
Page	8/13

OsiSense XG accessories	Cables, adaptors, fixing plates, etc.
Pages	8/13 to 8/15

OsiSense XG
Radio frequency identification 13.56 MHz

Compact station, flat form 40

Compact station, flat form 80

Operating principle

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 RFID identification system enables object traceability, identification (tracking) functions to be performed and access control.
The information is stored in an accessible memory 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 passes through the field generated by the reader/station, it detects the signal and exchanges the data (read or write) between its memory and the reader/station.
The applications are numerous:
- Logistics: dispatch, receipt, transit, etc.
- Tracking and sorting of baggage
- Automatic tolls
- Access control, etc.

The OsiSense XG RFID system is also suited to 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 and PROFIBUS-DP protocols.
The OsiSense XG RFID offer comprises:
- 2 models of 13.56 MHz compact stations (read/write)
- 6 models of 13.56 MHz electronic tags
- 1 portable RFID diagnostics 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 station)
- connection and mounting accessories.

Setting-up

OsiSense XG compact stations 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 station
- Read/write compatibility with the majority of 13.56 MHz tags on the market
- Low sensitivity to metal environments.

Installation

The OsiSense XG stations are compact and robust. They can easily be integrated in flexible manufacturing production lines:
- quick connection using M12 connector
- clip-on mounting.

An extensive range of connecting cables and adaptor boxes enable the OsiSense XG stations to be easily connected to the communication networks.

Description

OsiSense XG 13.56 MHz compact stations *(1)*

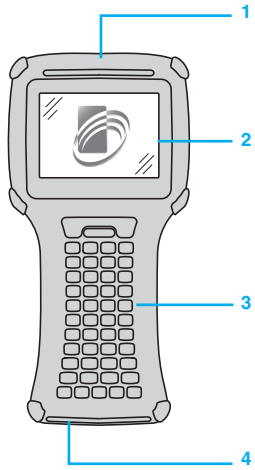
Stations XGC S enable the reading and writing of 13.56 MHz RFID tags that comply to standards ISO 15693 and ISO 14443 A and B.
2 models of OsiSense XG compact stations are available:
- Flat form 40 compact station: Station XGC S490●●●●:
- Dimensions (mm): 40 x 40 x 15
- Nominal sensing distance: 18 to 70 mm depending on associated tag
- Flat form 80 compact station: Station XGC S890●●●●:
- Dimensions (mm): 80 x 80 x 26
- Nominal sensing distance: 20 to 100 mm depending on associated tag.

(1) For station and tag selection according to passing speeds, see page 8/19.

Characteristics: page 8/10 | References: page 8/12 | Dimensions: page 8/16 | Connections: page 8/18 | Curves, installation: pages 8/19 to 8/21

OsiSense XG
Radio frequency identification
13.56 MHz

Electronic tags



Portable diagnostics terminal

Field expanders

OsiSense XG 13.56 MHz compact stations *(continued)*

■ **Functions integrated in compact stations** *(from version 3.9, available 2nd quarter 2009).*

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

□ **Firmware version:** interrogation of the station for knowing its version.

□ **Reset:** the station is reinitialised and assumes its factory default configuration (network address at 1, transmission speed at 19200 Bauds, parameters deleted).

□ **Init:** the station is reinitialised and operates as if reconnected to the supply (address unchanged, transmission speed unchanged, parameters deleted).

□ **Sleep mode:** the transmission of the electromagnetic field of the station is only activated on its receipt of a read or write instruction. This mode reduces the consumption of the station and enables the suppression of interference when the stations are close to each other.

□ **Auto Read/Write:** This mode enables the station to automatically execute up to 10 read or write instructions (up to 128 write words and up to 126 read words) in a tag as soon as it enters the dialogue zone.

OsiSense XG RFID electronic tags *(1)*

■ **Electronic tags XGH B offer the following advantages:**

□ fast access to the data,

□ wide range of memory capacities,

□ access security to the contents,

□ operation without battery,

□ positioning flexibility

□ and 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 station.

Portable 13.56 MHz RFID diagnostics terminal

The portable terminal **XGS TP401** is designed for use in industrial applications. Its rugged structure combined with its numerous functions make it suitable for applications in arduous environments. It operates on Microsoft® Windows CE.NET Professional® version 4.2. The 13.56 MHz RFID function and OsiSense XG software installed on the portable terminal enable maintenance operations to be performed on the electronic tags and compact stations.

Transfer of data to a PC is made via an RS 232 communication port.

The portable terminal **XGS TP401** comprises a:

1 CF (Compact Flash) format expansion connector

2 Colour touchscreen

3 Keypad (45 keys)

4 RS 232 port

The following accessories are included with the terminal:

- a PC connecting cable,
- OsiSense XG software (installed),
- a battery, a universal battery charger, 3 styluses, a protective cover,
- a user guide.

Field expander

Field expanders are accessories designed to operate with the OsiSense XG stations. They enable the shape of the dialogue field of stations XGCS4901201 to be adapted to conveying/handling applications. The concept is a connection free induction link between the station and the field expander. 2 standard models are available:

■ The conveyor model **XGF EC540** 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 associated tag.

■ The universal model **XGF EC2525** increases the detection area and distance 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 associated tag.

■ Read/write compatibility with the majority of 13.56 MHz/ISO 15693 tags on the market.

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

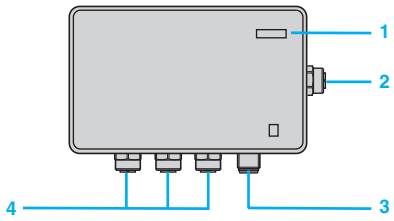
(1) For station and tag selection according to passing speeds, see page 8/19.

8

OsiSense XG
Radio frequency identification 13.56 MHz

OsiSense connection boxes

Three types of quick connection boxes are available:
- Ethernet box **XGS Z33ETH** for Ethernet Modbus TCP/IP network.
- Tap-off box **TCS AMT31FP** for Modbus and Uni-Telway communication bus.
- PROFIBUS box **XGS Z33PDP** for PROFIBUS-DP network.

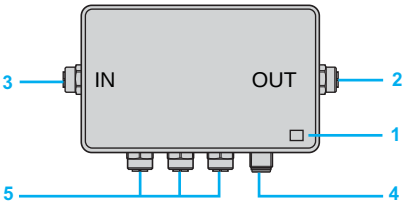


Ethernet box XGS Z33ETH

Ethernet box XGS Z33ETH

The OsiSense Ethernet box **XGS Z33ETH** enables connection of stations XGC S to the Ethernet network (Modbus TCP/IP protocol).
It enables, from a PLC or PC, access to the functions of stations XGC S:
- reading/writing of tags,
- control and checking,
- monitoring,
- diagnostics.

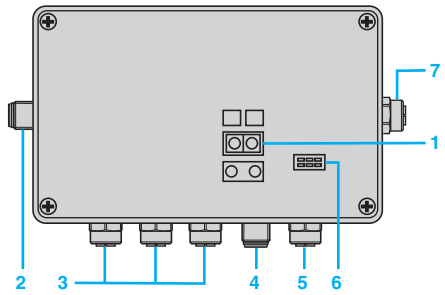
The Ethernet box **XGS Z33ETH** is fitted with M12 connectors. It is used to connect the supply, the Ethernet network and 1 to 3 stations XGC S.
It comprises a sealed metal enclosure fitted with:
1. Power on and Ethernet signalling LEDs
2. One Ethernet M12 type, D coding, socket
3. One power supply M12 type 4-pin male socket
4. 3 x M12 type female, A coding, sockets for connecting 1 to 3 stations XGC S.



Tap-off box TCS AMT31FP

Tap-off box TCS AMT31FP

The OsiSense tap-off box **TCS AMT31FP** enables stations XGC S to be connected to Modbus or Uni-Telway communication bus.
The tap-off box **TCS AMT31FP** is fitted with M12 connectors. It is used to connect the supply, the communication bus (Modbus) and 1 to 3 stations XGC S.
It comprises a sealed metal enclosure fitted with:
1. One green LED indicator: power on
2. One network output M12 type 5-pin female, A coding, socket
3. One network input M12 type 5-pin male, A coding, socket
4. One power supply M12 type 4-pin male, A coding, socket
5. 3 x M12 type female, A coding, sockets for connecting 1 to 3 compact stations XGC S.



Ethernet box XGS Z33ETH

PROFIBUS box XGS Z33PDP

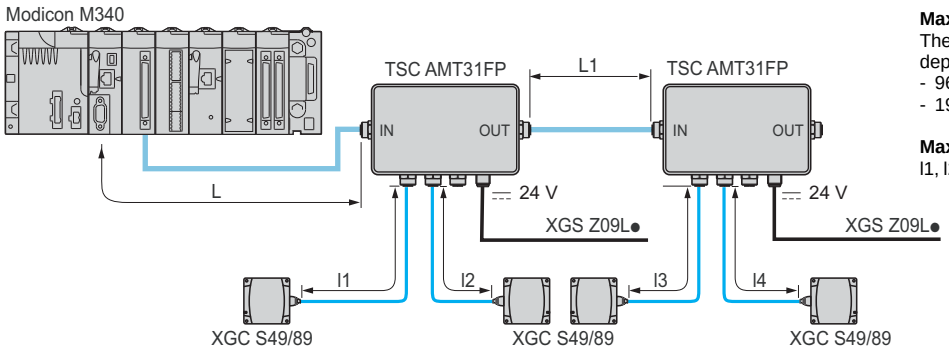
The OsiSense PROFIBUS box **XGS Z33PDP** enables connection of stations XGC S to the PROFIBUS-DP network.
It enables, from a PLC or PC, access to the functions of stations XGC S:
- reading/writing of tags,
- control and checking,
- monitoring,
- diagnostics.

The PROFIBUS box **XGS Z33PDP** is fitted with M12 connectors. It is used to connect the supply, the PROFIBUS-DP network and 1 to 3 stations XGC S.
It comprises a sealed metal enclosure fitted with:
1. 2 coding wheels for configuration of the network address
2. One PROFIBUS network input M12 type 5-pin male, B coding, socket
3. 3 x M12 type female, A coding, sockets for connecting 1 to 3 stations XGC S
4. One power supply M12 type 4-pin male, A coding, socket
5. One configuration port (M12 type female, A coding)
6. PROFIBUS network, MODBUS network and connection box status signalling LEDs
7. One PROFIBUS network output M12 type 5-pin female, B coding, socket.

8

Characteristics: page 8/10 | References: page 8/12 | Dimensions: page 8/16 | Connections: page 8/18 | Curves, installation: pages 8/19 to 8/21

Mounting example for Modbus network

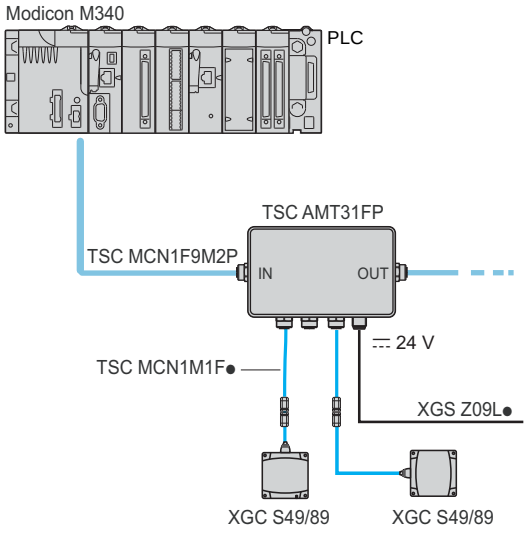


Maximum length of bus
The maximum length of the bus (L + L1 + l4) depends on the speed of the network:
- 9600 bauds: 1000 m,
- 19 200 bauds: 500 m.

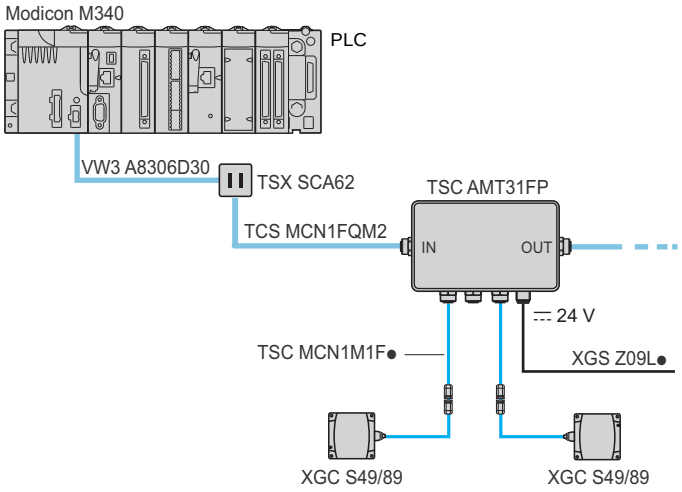
Maximum length of tap-offs:
l1, l2 and l3: 10 m.

Example of connection to a Schneider Electric PLC

Direct connection



Connection via a TSX SCA62



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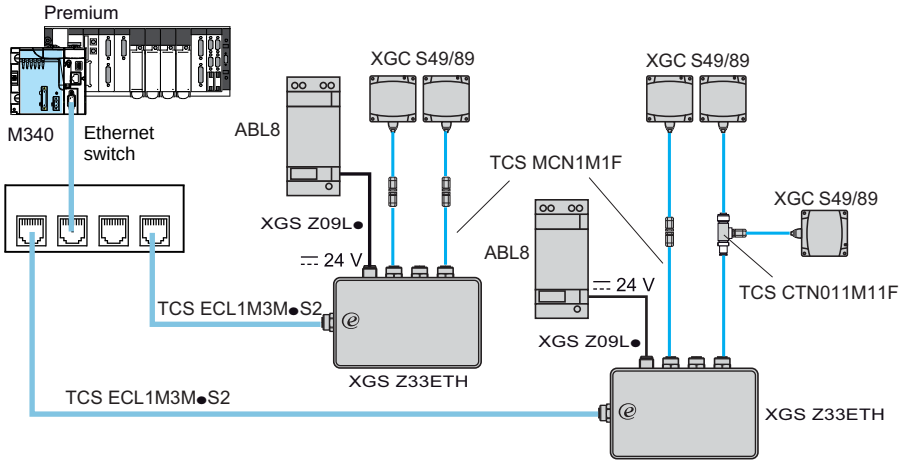
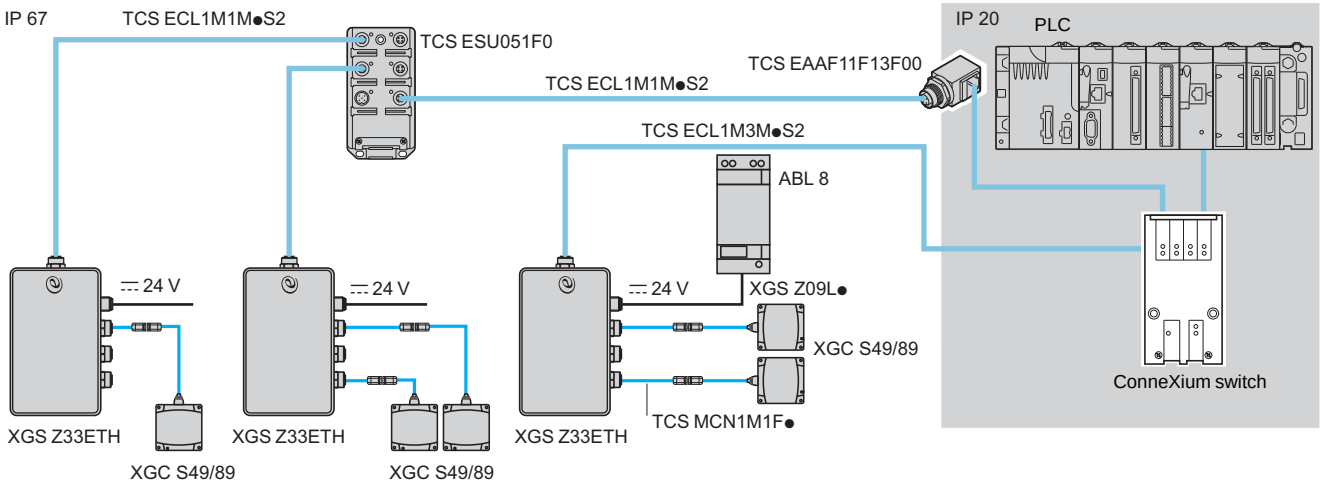
Connection example on Ethernet Modbus TCP/IP network

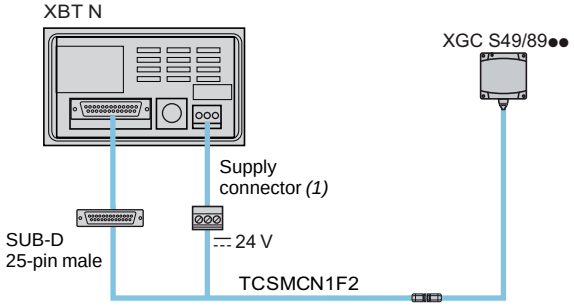


The number of stations connected to each box can be increased by using the M12 “T” connector (ref. TCSCTN011M11F).
To maintain high performance operation it is recommended that a maximum of 8 compact stations are connected (the Ethernet box has 8 communication ports that can be simultaneously open on TCP/IP. In cases where the I/O scanning function is used (which requires an additional communication port), do not connect more than 7 stations.
The total length of the station side network for stations XGC S49/89 is limited to 160 m.

Mixed IP 20 and IP 67 connection example on Ethernet Modbus TCP/IP network



Connection example to a Magelis terminal



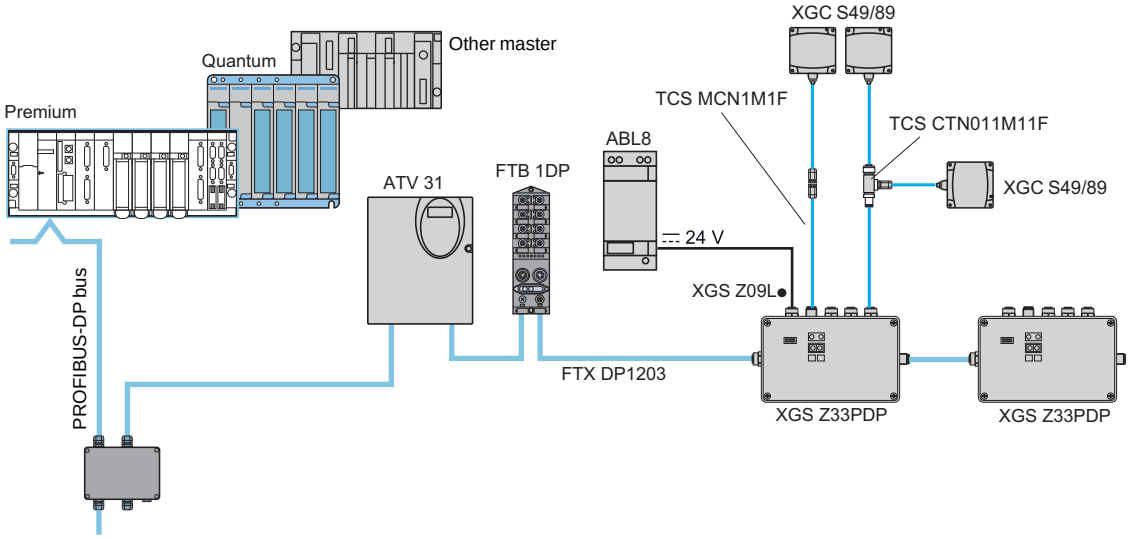
Cable TCS MCN1F2 connections

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

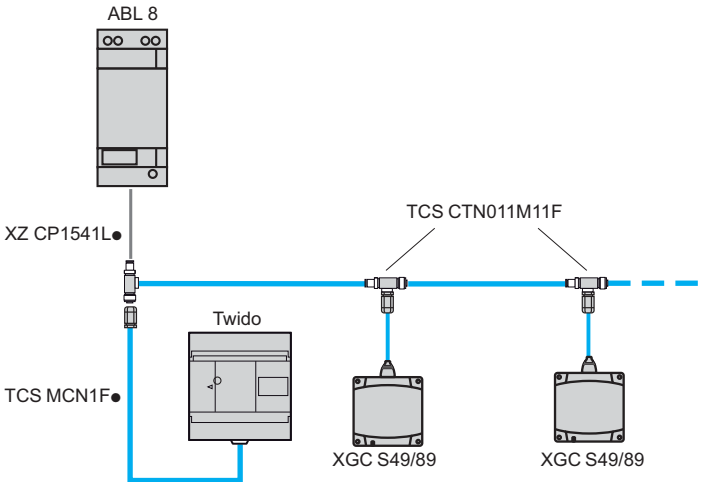
1) Magelis terminal supply connector (included with the Magelis terminal).

OsiSense XG
Radio frequency identification
13.56 MHz

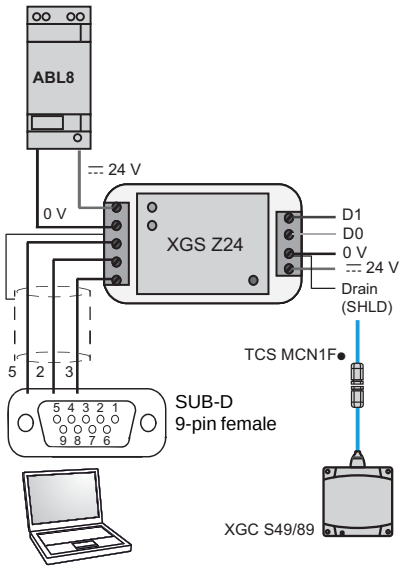
Architecture example in a PROFIBUS network



Connection example on Twido



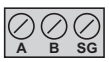
Connection example to a PC



Power supply cable connections

XZC P1541L●				Power supply ABL8
Scheme	**Contact**	**Signal**	**Wire colour**	**Terminal**
	1	NC	Brown	–
	2	24 V	White	24 V
	3	0 VGND	Blue	0 V GND
	4	NC	Black	–

Cable TCS MCN1F● connections

TCS MCN1F●				Twido	
Scheme	**Contact**	**Signal**	**Wire colour**	**Terminal**	**Scheme**
	1	Drain (SHLD)	–	–	
	2	24 V	Red	–	
	3	0 VGND	Black	SG	
	4	0 VGND	White	B	
	5	D1	Blue	A	

The compact stations can be directly connected to the Modbus port of a PLC. Up to 15 compact stations 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

Characteristics of OsiSense XG compact stations

Station type			XGC S4901201	XGC S8901201
Certifications			UL, FCC part 15c	
Conformity to standards			CE, 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 67	
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 IK 02	
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: 40 x 40 x 15	Flat form: 80 x 80 x 26
RFID frequency		**MHz**	13.56	
Type of associated tag			ISO 15693 and ISO 14443 standard tags. Automatic detection of the type of tag	
Compatible RFID microchip examples			Texas (Tag-it HFI); Philips (SL2, SL1, Ultralight, Std 1K/2K, Desfire; STM (CRIX4K); INSIDE (micropass)	
Nominal sensing distance	Depending on associated tag	**mm**	18 to 70	20 to 100
Nominal supply voltage		**V**	⎓ 24 PELV (Protective Extra Low Voltage)	
Supply voltage limits (including ripple)		**V**	⎓ 19.2…29	
Consumption		**mA**	< 60	
Serial links	Type		RS 485	
	Protocol		Modbus RTU or Uni-Telway	
	Speed	**Bauds**	9600…115 200 (automatic detection)	
Display			1 dual colour LED for the communication network: Modbus/Uni-Telway 1 dual colour LED for the RFID communication (Presence of tag / Station/tag dialogue)	
Connections			M12, 5-pin male, shielded connector. Only for connection to the communication network and the supply.	
Tightening torque	Screws	**Nm**	< 1	< 3

Characteristics of electronic tags

Tag type			XGH B444345	XGH B445345	XGH B90E340	XGH B320345	XGH B221346	XGH B211345
Ambient air temperature	For operation	**°C**	- 25…+ 70		- 25…+ 50	- 25…+ 70		
	For storage	**°C**	- 40…+ 85		- 40…+ 55	- 40…+ 85		
Degree of protection			IP 68		IP 65		IP 68	
Standard supported			ISO 14443		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 IK 02					
Dimensions		**mm**	40 x 40 x 15	40 x 40 x 15	54 x 85.5 x 1	Ø 30 x 3	26 x 26 x 13	M18 x 1 x 12
Housing material			PBT	PBT	PVC	PC	PBT	PBT
Fixing method			Screw or clip	Screw or clip	–	Screw	Screw or clip	Screw in
Memory capacity		**bytes**	3 408	13 632	256	112	256	
Type of memory			EEPROM					
Type of operation			Read/Write					
Type of associated station			XGC S●●●●●●●					
Nominal sensing distance (Read/Write)	With station XGC S49	**mm**	33	30	70	48	40	18
	With station XGC S89	**mm**	48	40	100	65	55	20
	With station XGC S49011201 + field expander XGF EC540		–	–	90	42	–	–
	With station XGC S49011201 + field expander XGF EC2525		–	–	150	80	42	–
Number of read cycles			Unlimited					
Number of write cycles	Guaranteed minimum		100 000 per data bit throughout the temperature range					
	At 30 °C		2.5 million (typical value)					
Read time		**ms**	9.25 + 0.375 x n *(1)*	16.25 + 0.375 x n *(1)*	12 + 0.825 x n *(1)*			
Write time		**ms**	13 + 0.8 x n *(1)*	20 + 0.8 x n *(1)*	20 + 11.8 x n *(1)*	12 + 5.6 x n *(1)*	20 + 11.8 x n *(1)*	19 + 4.1 x n *(1)*
Data retention time			10 years					
Mounting on metal support			Yes *(2)*		No		Yes *(2)*	No

(1) n = number of 16-bit words.
(2) Installation precautions: see page 8/21.

Presentation, description: page 8/4 | References: page 8/12 | Dimensions: page 8/16 | Connections: page 8/18 | Curves, installation: pages 8/19 to 8/21

Characteristics of connection boxes

Connection box type			Tap-off box TCS AMT31FP	Ethernet box XGS Z33ETH	PROFIBUS box XGS Z33PDP
Certifications			UL		
Conformity to standards			CE		
Ambient air temperature	For operation	**°C**	- 25…+ 55	0...+ 70	0...+ 55
	For storage	**°C**	- 40…+ 85	- 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
Station connection			M12 5-pin female, A coding, connector		
Electromagnetic interference	Conforming to IEC 61000		Level 3		
	Conforming to EN 55022		Class B		
LED display			Power on (green)	- Ethernet network activity (RUN, green) - Collision detection (COL, red) - Diagnostics (STS, yellow) - Fault (Err, red) - Power on (green)	- PROFIBUS 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	–
	Basic Web server		–	IP configuration address	–
	Basic communication service		–	Modbus messaging (reading/writing of words: 1 to 123 words per request)	Reading/writing of words (1 to 49 per request) via the PROFIBUS-DP periodic exchanges service. PROFIBUS-DP V2 aperiodic exchanges not supported
Connection	Physical interface		–	10 BASE-T/100BASE-TX	–
	Transfer rate		–	10/100 Mbps	9.6 to 12000 Kbauds - automatic detection of speed
	Medium		–	Ethernet cable with M12 connection, reference TCS ECL1M1●S2 (Schneider Electric ConneXium range)	RS 485 twisted pair

Characteristics of portable 13.56 MHz RFID diagnostics terminal

Conformity to standards			CE, FCC class A, Part 15225
Ambient air temperature	For operation	**°C**	0 ... + 50
	For storage	**°C**	- 25... + 55
Relative humidity		**RH**	5...95% without condensation
Degree of protection			IP 65
Supply voltage			Battery: 7.2 V NiMH type rechargeable (included with terminal) External: ⎓ 11-18 V
Operating time			4 hours continuous operation (tag dialogue)
Operating system			Microsoft Windows CE.NET Professional® version 4.2
Processor			Intel technology Xscale PXA255 CPU, 400 MHz
Memory	RAM		SDRAM 64 Mb (16 Mb reserved for operating system)
	Storage		Internal compact Flash: 512 Mb standard + Slot for compact Flash card (Memory, Wi-Fi, Ethernet, Bluetooth, ...)
Display	Screen		Colour touchscreen: 72 mm x 54 mm, QVGA TFT
	Resolution		320 x 240 pixels
Keypad			45 booted keys
Signalling			5 LEDs + 1 charging LED

Presentation, description: page 8/4 | References: page 8/12 | Dimensions: page 8/16 | Connections: page 8/18 | Curves, installation: pages 8/19 to 8/21

OsiSense XG
Radio frequency identification
13.56 MHz

105909

XGC S4901201

105914

XGH B90E340

105910

XGH B44●345

105911

XGH B221346

105912

XGH B211345

105913

XGH B320345

105915

TCS AMT31FP

Compact stations, 13.56 MHz

Description	Protocols	Dimensions mm	Reference	Weight kg
Compact station Flat form 40 *(1)* M12 male connector on flying lead	Modbus RTU and Uni-Telway	40 x 40 x 15	**XGC S4901201**	0.057
Compact station Flat form 80 *(1)* M12 male connector on flying lead	Modbus RTU and Uni-Telway	80 x 80 x 26	**XGC S8901201**	0.257

Electronic tags *(2)*

Tag type	Nominal sensing dist. according to station		Dimensions mm	Sold in lots of	Unit reference	Weight kg
	XGC S49●	XGC S89●				
Flat form 40 3 408 bytes	33 mm	48 mm	40 x 40 x 15	–	**XGH B444345**	0.031
Flat form 40 13 632 bytes	30 mm	40 mm	40 x 40 x 15	–	**XGH B445345**	0.031
ISO badge *(3)* 256 bytes	70 mm	100 mm	54 x 85.5 x 1	10	**XGH B90E340**	0.005
Disc 112 bytes	48 mm	65 mm	Ø 30 x 3	5	**XGH B320345**	0.005
Flat form 26 256 bytes	40 mm	55 mm	26 x 26 x 13	1	**XGH B221346**	0.025
Cylindrical 256 bytes	18 mm	20 mm	M18 x 1 x 12	5	**XGH B211345**	0.020

Connection boxes

Description	For use with	Supply voltage	Reference	Weight kg
Ethernet box 3-channel Integrated Ethernet port (10/100 Mbps) Modbus TCP/IP protocol Class A10	Compact stations XGC S49● and XGC S89●	⎓ 24 V	**XGS Z33ETH**	1.060
Tap-off box 3-channel Modbus and Uni-Telway	Compact stations XGC S49● and XGC S89●	⎓ 24 V	**TCS AMT31FP**	1.060
PROFIBUS box 3-channel PROFIBUS-DP protocol *(4)*	Compact stations XGC S49● and XGC S89●	⎓ 24 V	**XGS Z33PDP**	1.060

(1) Configuration badge XGS ZCNF01 included with station - installation guide to be ordered separately (reference DIA4ED3051001).

(2) Other versions (high temperature, adhesive, flexible tags, etc.): please consult our customer care centre.

(3) Customised versions on request.

(4) GSD configuration file (SE100BBB.gsd) and installation guide to be downloaded from: www.Schneider-Electric.com (Products and services/Automation and control/Detection/RFID).

8

Presentation, description: page 8/4 | Characteristics: page 8/10 | Dimensions: page 8/16 | Connections: page 8/18 | Curves, installation: pages 8/19 to 8/21

OsiSense XG
Radio frequency identification
13.56 MHz

XGF EC2525

XGF EC540

Field expanders

Description	Nominal sensing distance	For use with	Reference	Weight kg
Conveying type field expander Dimensions (mm) 400 x 23 x 50 *(1)*	30... 90 mm depending on tag used (only ISO 15693)	Station XGC S4901201 Tags XGH B90E340 XGH B320345 XGH B221346	**XGF EC540**	0,640
Universal type field expander Dimensions (mm) 250 x 250 x 10 *(1)*	26... 150 mm depending on tag used (only ISO 15693)	Station XGC S4901201 Tags XGH B90E340 XGH B320345	**XGF EC2525**	0,565

105918

XGS TP401

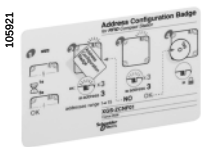
105920

XGS TP41BA

OsiSense XG terminal and accessories

Description	Application	Reference	Weight kg
Portable 13.56 MHz RFID diagnostics terminal *(2)*	Read/write operations on electronic tags and diagnostics on compact stations Operating system: Microsoft Windows CE.NET Professional® version 4.2	**XGS TP401**	0.943
Battery pack charger	Portable terminal	**XGS TP41CH**	0.675
Battery, 7.2 V NiMH	Portable terminal	**XGS TP41BA**	0.168
Compact Flash memory expansion	Portable terminal Capacity = 128 Mb	**XBT ZGM128**	0.050

105921



XGS ZCNF01

Configuration badge (replacement)

Description	Application	Reference	Weight kg
Badge	Configuration of station addresses	**XGS ZCNF01**	0.005

OsiSense XG documentation

Description	Reference	Weight kg
OsiSense XG compact stations guide	**DIA4ED3051001**	0.130

(1) For other dimensions, please consult our customer care centre.

(2) OsiSense XG software (installed), universal battery charger, PC connecting cable, 3 styluses, protective cover, battery and user guide included with terminal.

8

OsiSense XG
Radio frequency identification
13.56 MHz

105925

TCS MCN1FQM2

105927

TCS MCN1F9M2P

535803

TCS ESU051F0

535625

TCS EAAF11F13F00

106410

ABL8 MEM24003

Modbus network connection accessories

Description	Application	Length m	Reference	Weight kg
Modbus shielded connecting cable, black, IP 67 M12 connectors, male/female, A coding *(1)*	RS 485 connection between a compact station and a tap-off box TCS AMT31FP or between 2 tap-off boxes	1	**TCS MCN1M1F1**	0.080
		2	**TCS MCN1M1F2**	0.115
		5	**TCS MCN1M1F5**	0.270
		10	**TCS MCN1M1F10**	0.520
Modbus shielded pre-wired M12 connector, IP 67, female/bare wires, A coding *(1)*	Connection between tap-off box TCS AMT31FP and Modbus/Uni-Telway network (TSX SCA50)	2	**TCS MCN1F2**	0.115
		5	**TCS MCN1F5**	0.270
		10	**TCS MCN1F10**	0.520
Modbus shielded connecting cable, black, M12/SUB-D15, A coding	Connection between tap-off box TCS AMT31FP and Modbus/Uni-Telway network (TSX SCA62)	2	**TCS MCN1FQM2**	0.270
Modbus shielded connecting cable, black, M12/Mini-DIN 8-way, A coding	Modbus connection between tap-off box TCS AMT31FP and a PLC (Twido...)	2	**TCS MCN1F9M2P**	0.350
Modbus SL serial link cable (Shielded dual twisted pair RS 485 main cables)	Modbus SL serial link	100	**TSX CSA100**	5.680
		200	**TSX CSA200**	10.920
		500	**TSX CSA500**	30.000

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	**TCS ECL 1M3M 1S2**	–
		3	**TCS ECL 1M3M 3S2**	–
		10	**TCS ECL 1M3M 10S2**	–
		25	**TCS ECL 1M3M 25S2**	–
		40	**TCS ECL 1M3M 40S2**	–
	2 x IP 67 M12 4-pin connectors	1	**TCS ECL 1M1M 1S2**	–
		3	**TCS ECL 1M1M 3S2**	–
		10	**TCS ECL 1M1M 10S2**	–
		25	**TCS ECL 1M1M 25S2**	–
		40	**TCS ECL 1M1M 40S2**	–
M12 Ethernet switch IP 67, ConneXium *(2)*	–	–	**TCS ESU051F0**	0.210
M12 female/RJ45 adaptor	Ethernet connection	–	**TCS EAAF11F13F00**	–

"Do It Yourself" Ethernet copper cable and connectors

The "Do It Yourself" ConneXium offer enables Ethernet copper connecting cables, to the required length, to be prepared on site. They are intended for connection to the Ethernet 10/100 Mbps network. The maximum length of the connecting cables made in this manner is 80 m.
Their quick assembly is carried out using a knife and ordinary wire cutters (no special tools required).

Description	Characteristics	Length m	Reference	Weight kg
Ethernet copper cable 2 x 24 AWG shielded dual twisted pairs	Conforms to applicable standards and approvals	300	**TCS ECN 300R2**	–
RJ45 connector	Conforms to EIA/TIA-568-D	–	**TCS EK3 MDS**	–
M12 connector	Conforms to IEC 60176-2-101	–	**TCS EK1 MDRS**	–

Power supplies

Description	Output voltage	Nominal power	Nominal current	Reference	Weight
	⎓ V	W	A		kg
Regulated power supply 100/240 V	24	7	0.3	**ABL8 MEM24003**	0.180
		30	1.2	**ABL8 MEM24012**	0.520

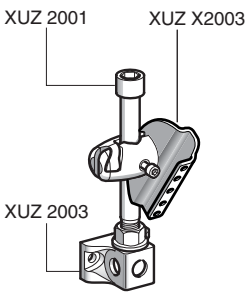
(1) Holder for identification legend included with product.
(2) Other ConneXium connection accessories: please refer to http://Schneider-Electric.com.

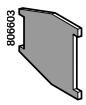
Presentation, description: page 8/4 | Characteristics: page 8/10 | Dimensions: page 8/16 | Connections: page 8/18 | Curves, installation: pages 8/19 to 8/21

OsiSense XG
Radio frequency identification 13.56 MHz

TCS CTN011M11F

XGS Z3P





XGS Z05

PROFIBUS-DP connection accessories

Description	Composition	Type	Length m	Reference	Weight kg
Connecting cable for connection between PROFIBUS box XGS Z33DP and PROFIBUS-DP network	Fitted with 2 x M12 5-pin connectors	Straight	0.3	**FTX DP1203**	0.040
			0.6	**FTX DP1206**	0.070
			1	**FTX DP1210**	0.100
			2	**FTX DP1220**	0.160
			3	**FTX DP1230**	0.220
			5	**FTX DP1250**	0.430
		Elbowed	0.3	**FTX DP3203**	0.040
			0.6	**FTX DP3206**	0.070
			1	**FTX DP3210**	0.100
			2	**FTX DP3220**	0.160
			3	**FTX DP3230**	0.220
			5	**FTX DP3250**	0.430
M12 connector, 5-pin male, B coding			–	**FTX DP12M5**	0.050
M12 connector, 5-pin female, B coding			–	**FTX DP12F5**	0.050
Network terminator, M12 connector			–	**FTX DPTL12**	0.010
Cable without end fittings			100	**TSX PBSCA100**	–
			400	**TSX PBSCA400**	

Other connection accessories

Description	Application	Length m	Reference	Weight kg
Pre-wired M12 4-pin female supply connector, A coding *(1)*	⎓ 24 V supply to connection boxes XGS Z33ETH and TCS AMT31FP	2	**XGS Z09L2**	0.115
		5	**XGS Z09L5**	0.270
		10	**XGS Z09L10**	0.520
M12 5-pin female, A coding, connector	–	–	**FTX CN12F5**	0.050
M12, 5-pin male, A coding, connector	–	–	**FTX CN12M5**	0.050
Network "T" connector, M12, 1 male/2 female 5-pin, A coding	RS 485 network	–	**TCS CTN011M11F**	0.035
Supply connector, screw terminals, M12 straight, A coding	–	–	**XZC C12FDM40B**	0.020
Protective cap (Sold in lots of 10)	M12 female connector	–	**FTX CM12B**	0.100
Network terminator, M12 male, 120 Ω	–	–	**FTX CNTL12**	0.010
Line adaptor, RS 232C/RS 485, without modem signals Supply: ⎓ 18…30 V - Consumption: 20 mA Maximum transmission speed: 19 200 bauds Mounting on 35 mm ⎍ rail			**XGS Z24**	–

(1) Holder for identification legend included with product.

Mounting accessories

Description	For use with	Reference	Weight kg
"Clip-on" 90° mounting bracket	Flat form 40 station: XGC S4901201 Flat form 40 tags: XGH B44●345	**XSZ BC90**	0.060
	Tags XGH B221346	**XSZ BE90**	0.060
"Clip-on" mounting plate	Flat form 40 station: XGC S4901201 Flat form 40 station: XGH B44●345	**XSZ BC00**	0.025
	Tags XGH B221346	**XSZ BE00**	0.025
Mounting plate	Connection boxes TCS AMT31FP and XGS Z33ETH	**XGS Z3P**	0.195
3D fixing kit *(2)*	Field expander XGF EC2525		
Support for M12 rod		**XUZ 2003**	0.220
M12 rod		**XUZ 2001**	0.050
Ball-joint mounted fixing bracket		**XUZ X2003**	0.220

(2) To obtain a 3D fixing kit, order: rod support **XUZ 2003**, *M12 rod* **XUZ 2001**, *ball-joint mounted fixing bracket* **XUZ X2003**.

Complementary accessories

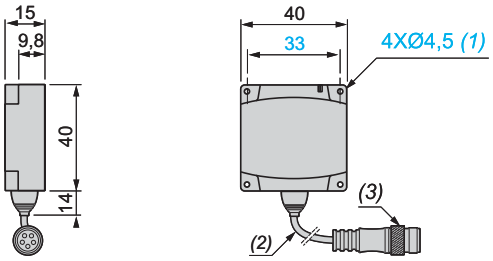
Description	Sold in lots of	Reference	Weight kg
Key for screwing in/unscrewing Ø 18 mm cyl. tag	5	**XGS Z05**	0.011
Identification legend for 23 x 4 mm connecting cables	200	**XGS Z08MKW**	0.056

Presentation, description: page 8/4 | Characteristics: page 8/10 | Dimensions: page 8/16 | Connections: page 8/18 | Curves, installation: pages 8/19 to 8/21

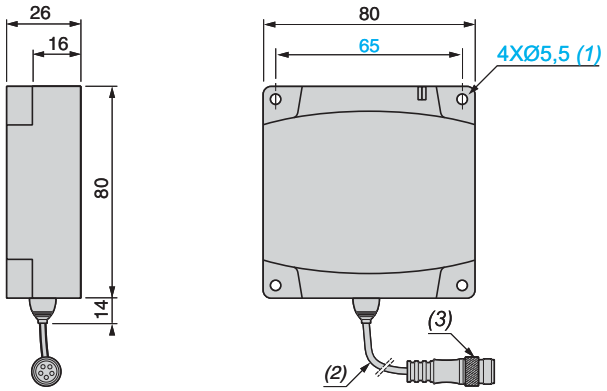
OsiSense XG
Radio frequency identification
13.56 MHz

Compact stations

XGC S4901201



XGC S8901201

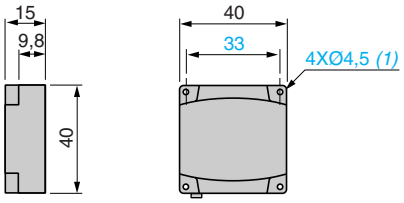


(1) For CHC type screws. *(2) Shielded cable (length: 20 cm).* *(3) M12 5-pin male, A coding, connector.*

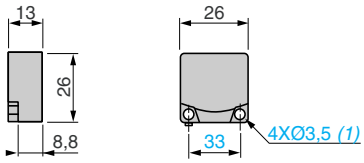
Read/write electronic tags

Square format tags

XGH B44●345



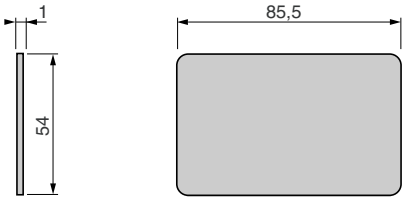
XGH B221346



(1) For CHC type screws.

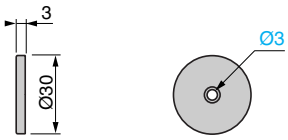
Rectangular format tags

XGH B90E340

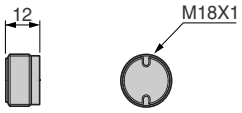


Cylindrical format tags

XGH B320345

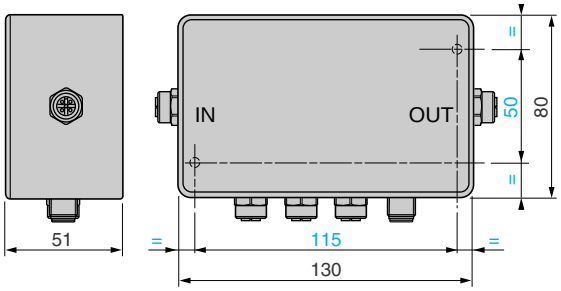


XGH B211345

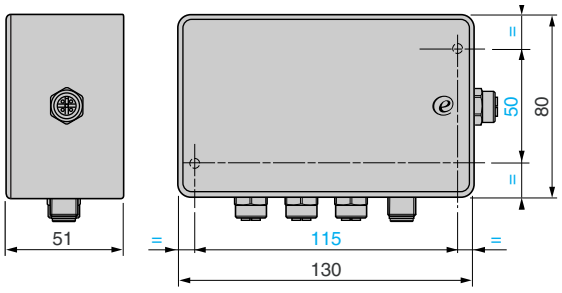


Connection boxes *(1)*

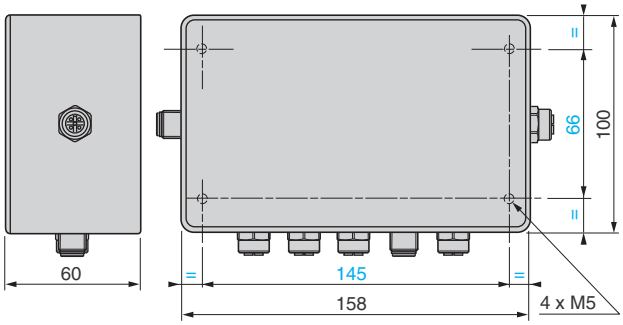
Tap-off box TCS AMT31FP



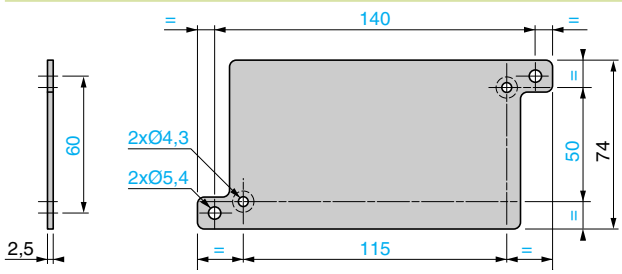
Ethernet box XGS Z33ETH



PROFIBUS box XGS Z33PDP



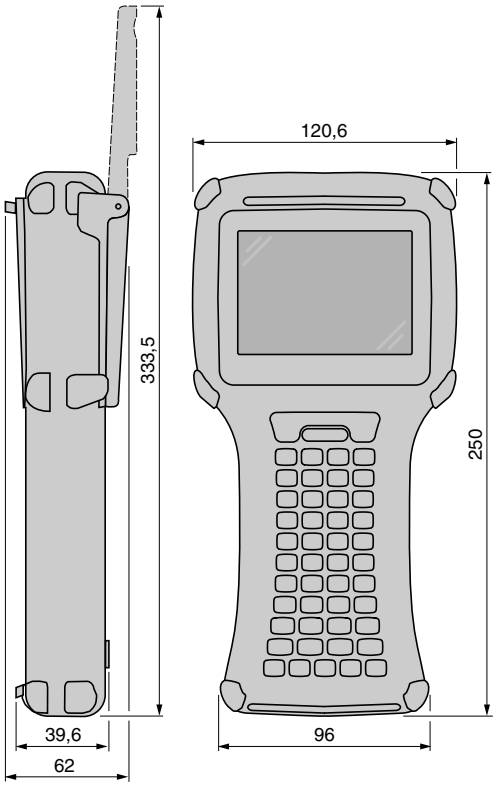
Mounting plate XGS Z3P



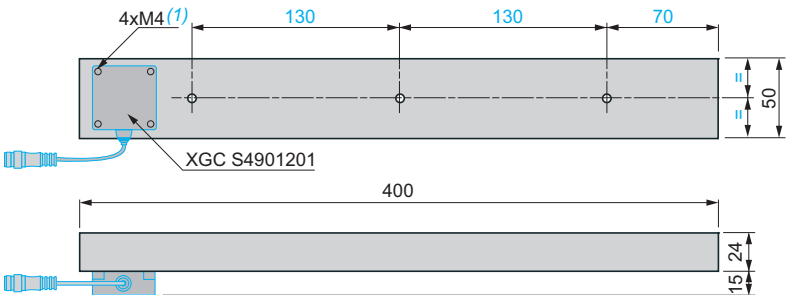
(1) Allow a 110 mm clearance zone for connecting the cables.

OsiSense XG
Radio frequency identification
13.56 MHz

Portable RFID diagnostics terminal
XGS TP401

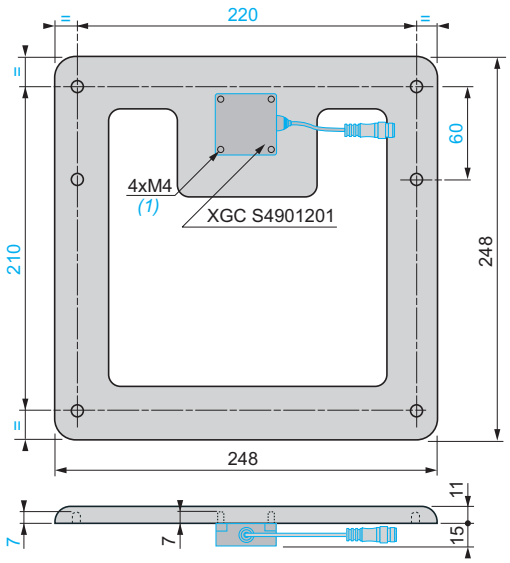


Field expanders
Conveying type XGS EC540



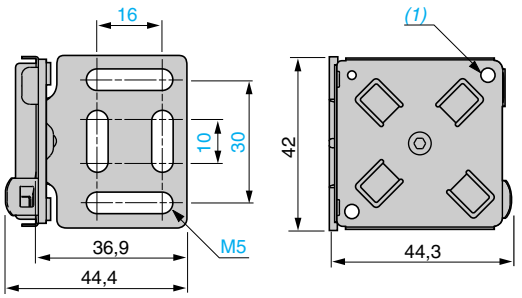
(1) Four M4 screws (included).

Universal type XGS EC2525



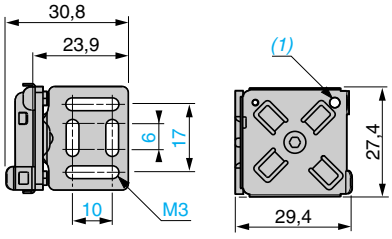
(1) Four M4 screws (included).

Mounting brackets
XSZ BC90



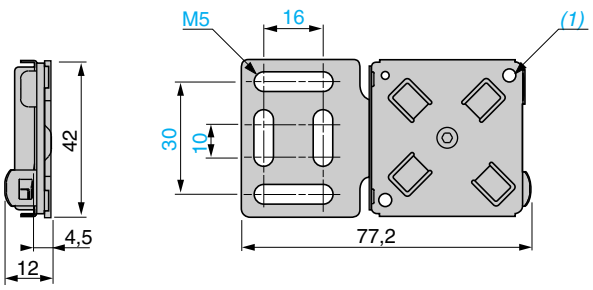
(1) Four M4 x 14 screws (included).

XSZ BE90



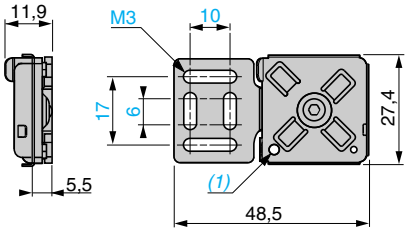
(1) Two M3 x 12 screws (included).

Mounting plates
XSZ BC00



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

XSZ BE00



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

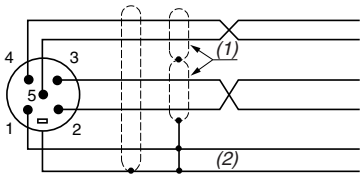
Presentation, description: page 8/4
Characteristics: page 8/10
References: page 8/12
Connections: page 8/16
Curves, installation: pages 8/19 to 8/21

8

OsiSense XG
Radio frequency identification
13.56 MHz

Modbus connections

Stations XGC S●901201



Pin n°	Station - Modbus signal
1	Drain (Modbus-SHLD)
2	⎓ + 24 V
3	0 V/Modbus-GND
4	D0
5	D1
Connector casing	Shielding

(1) Shielding per pair.
(2) General cable shielding.

Tap-off box TCS AMT31FP

Socket to station cabling

Pin n°	Signal
1 –	Drain (Modbus-SHLD)
2	⎓ + 24 V
3	0 V/Modbus-GND
4	D0
5	D1

Socket to power supply cabling

Pin n°	Signal
1	⎓ + 24 V
2	⎓ + 24 V
3	⎓ 0 V
4	⎓ 0 V

Socket to another connection box cabling

Pin n°	Signal
1	Drain (Modbus-SHLD)
2	–
3	0 V/Modbus-GND
4	D0
5	D1

Socket to industrial PLC cabling

Pin n°	Signal
1	Drain (Modbus-SHLD)
2	–
3	0 V/Modbus-GND
4	D0
5	D1

Cable connections

TCS MCN1F●

Pin n°	Signal
1 –	Drain (Modbus-SHLD)
2 Red	⎓ + 24 V
3 Black	0 V/Modbus-GND
4 White	D0
5 Blue	D1
Connector casing	Shielding

XGS Z09L

Pin n°	Signal
1 Red	⎓ + 24 V
2 NC	
3 Black	⎓ 0 V
4 NC	

Ethernet connection

Ethernet box XGS Z33ETH

Socket to station cabling

Pin n°	Signal
1 –	Earth
2	⎓ + 24 V
3	0 V
4	D0
5	D1

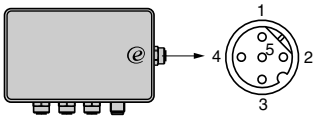
Socket to power supply cabling

Pin n°	Signal
1	⎓ + 24 V
2	⎓ + 24 V
3	⎓ 0 V
4	⎓ 0 V

Cable XGS Z09L connections

Pin n°	Signal
1 Red	⎓ + 24 V
2 NC	–
3 Black	⎓ 0 V
4 NC	–

Ethernet socket connection



Cable TCS ECL1M3M●●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 box XGS Z33PDP

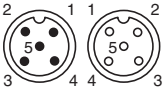
Socket to station cabling

Pin n°	Signal
1	Earth
2	⎓ + 24 V
3	0 V
4	D0
5	D1

Socket to power supply cabling

Pin n°	Signal
1	⎓ + 24 V
2	⎓ + 24 V
3	0 V
4	0 V

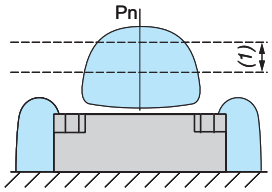
PROFIBUS-DP network connections



Input	Output	Pin n°	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

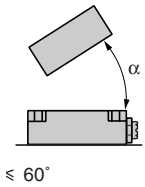
OsiSense XG
Radio frequency identification
13.56 MHz

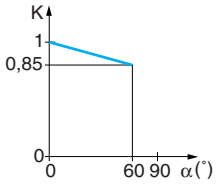
Detection zones of compact stations



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

Angular positioning between station and tag

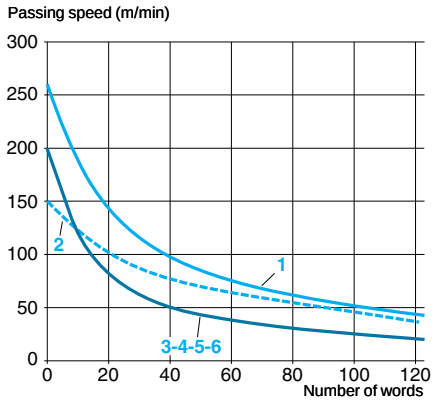




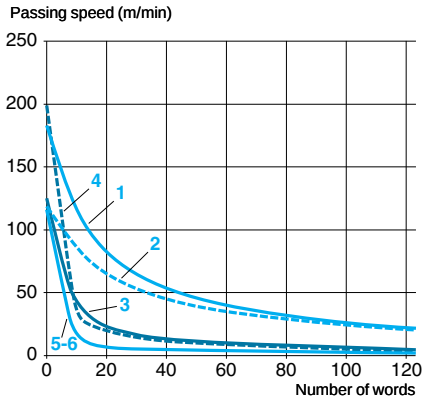
K = correction coefficient to be applied to the nominal sensing distance. Read distance = nominal sensing distance x K.

Station and tag selection according to passing speeds

Read time with station XGC S49●●●●●

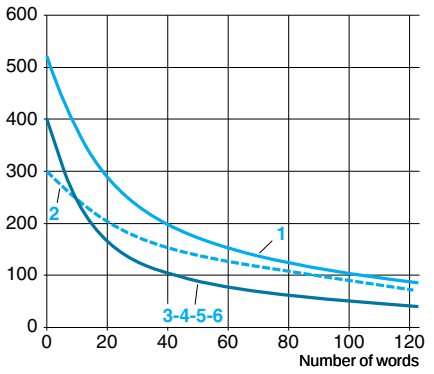


Write time with station XGC S49●●●●●

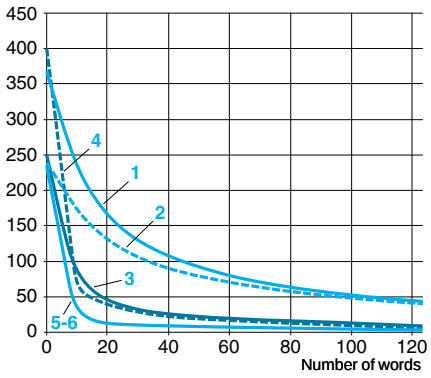


1 XGH B444345
2 XGH B445345
3 XGH B211345
4 XGH B320345
5 XGH B90E340
6 XGH B221346

Read time with station XGC S89●●●●●



Write time with station XGC S89●●●●

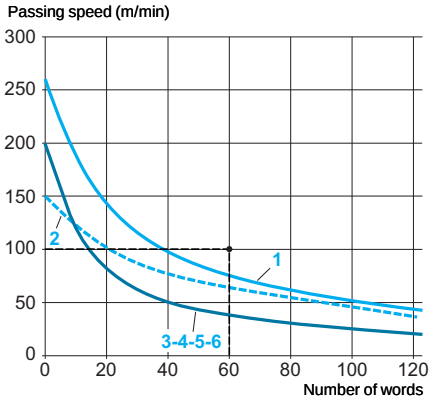


1 XGH B444345
2 XGH B445345
3 XGH B211345
4 XGH B320345
5 XGH B90E340
6 XGH B221346

Application example

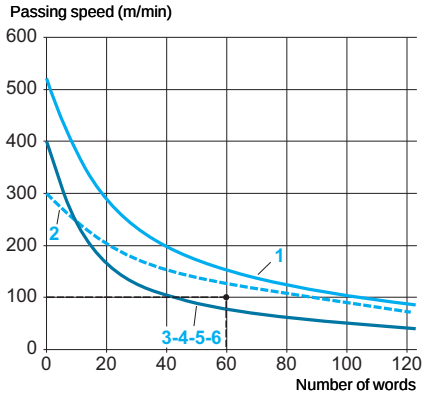
Read time with station XGC S49●●●●●

On an assembly line, the object passing speed is 100 m/min. The application requires that 60 words be read.



Station XGC S49 cannot be used; no OsiSense XG tag can be read under these conditions (Speed/Number of words).

Write time with station XGC S89●●●●●



1 XGH B444345
2 XGH B445345
3 XGH B211345
4 XGH B320345
5 XGH B90E340
6 XGH B221346

Station XGC S89 can be used; only tags XGH B444345 and XGH B445345 meet the requirements (Speed/Number of words).

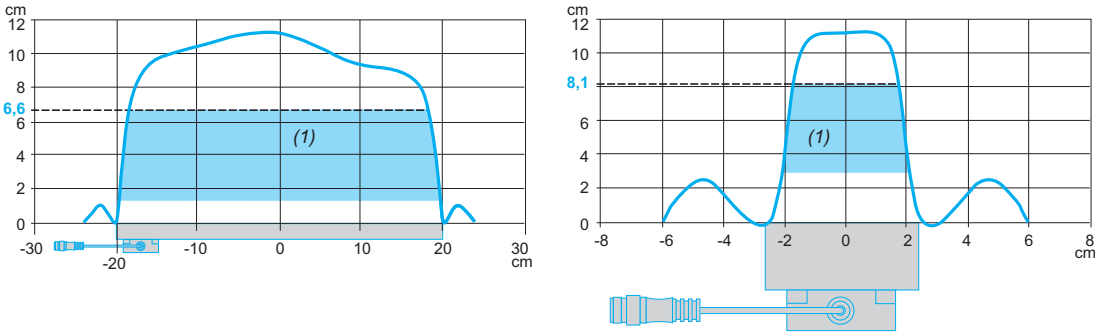
Presentation, description: page 8/4
Characteristics: page 8/10
References: page 8/12
Dimensions: page 8/16

OsiSense XG
Radio frequency identification
13.56 MHz

Dialogue zones for field expanders

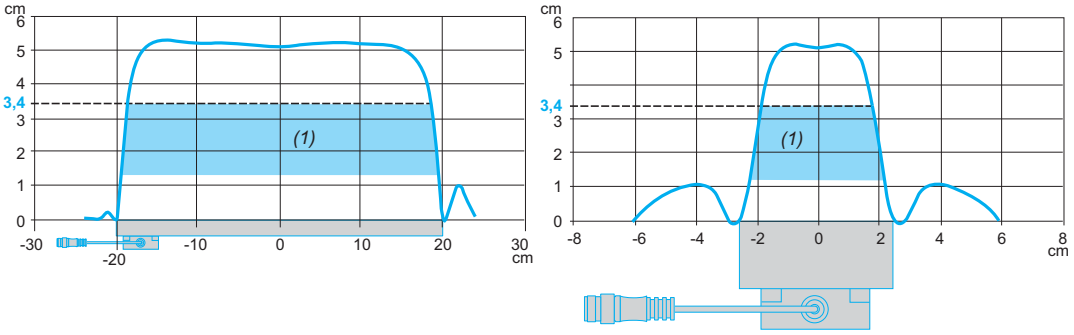
Field expander + electronic tag

XGF EC540 + XGH B90E340



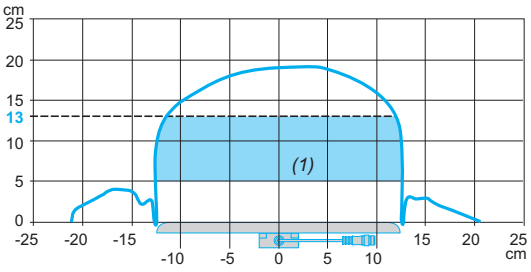
(1) *Recommended working zone.*

XGF EC540 + XGH B320345

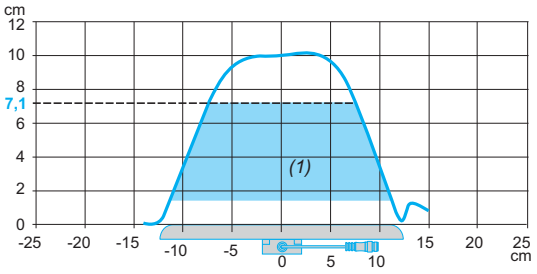


(1) *Recommended working zone.*

XGF EC2525 + XGH B90E340



XGF EC2525 + tag XGH B320345



(1) *Recommended working zone.*

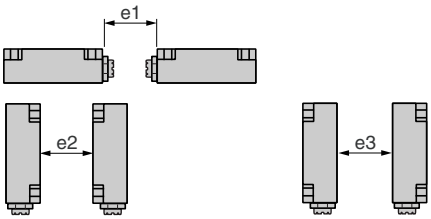
8

OsiSense XG
Radio frequency identification
13.56 MHz

Minimum mounting distances between system components

Distance between stations

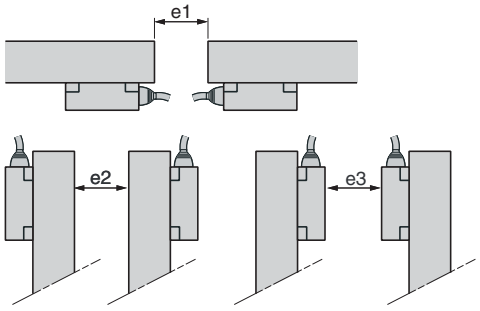
Minimum distance between 2 identical stations in relation to their positioning and type of tag used (mm)



Tag	C format XGC S4 stations			D format XGC S8 stations		
	e1	e2	e3	e1	e2	e3
XGH B90E340	310	550	120	430	750	280
XGH B221346	200	320	100	280	530	260
XGH B320345	140	360	110	310	540	240
XGH B211345	210	180	60	200	370	170
XGH B444345	90	190	30	310	400	160
XGH B445345	110	170	30	310	380	160

Distance between field expanders

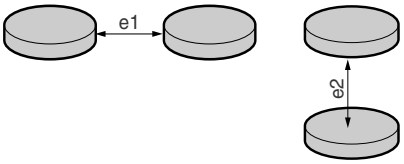
Minimum distance between 2 field expanders in relation to their positioning and type of tag used (mm)



Tag	Field expander XGF EC540			Field expander XGF EC2525		
	e1	e2	e3	e1	e2	e3
XGH B90E340	195	285	195	570	890	960
XGH B320345	420	540	450	720	1275	1200

Distance between tags

Minimum distance between 2 identical tags in relation to their positioning and type of station used (mm)

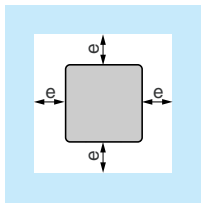


Tag	C format XGC S4 station		D format XGC S8 station	
	e1	e2	e1	e2
XGH B90E340	35	60	110	140
XGH B221346	50	10	120	50
XGH B320345	70	50	190	60
XGH B211345	40	10	120	20
XGH B444345	20	10	70	40
XGH B445345	10	10	60	10

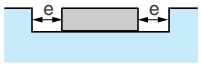
Minimum permissible mounting distances in a metal structure

Stations and tags

Stations XGC S49/S89 and Tags XGH B221346/B444345/B445345

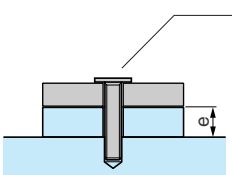


e ≥ 20 mm.



e ≥ 20 mm.

Tag XGH B320345



e ≥ 15 mm.

(1) Tightening torque ≤ 1 N.m.

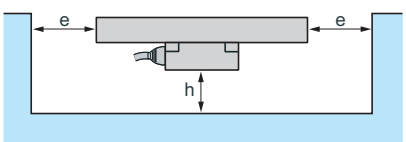
Tags XGH B90E340 and XGH B211345

No metal parts within 25 mm of the tag.

Tags	Nominal sensing distance (mm)		Reduced sensing distance with presence of metal (mm)	
	XGC S49	XGC S89	XGC S49	XGC S89
XGH B90E340	70	100	58	80
XGH B221346	40	55	30	33
XGH B320345	48	65	45	56
XGH B211345	18	20	16	15
XGH B444345	33	48	28	34
XGH B445345	30	40	24	28

Field expanders

	e (mm)	**h** (mm)
XGF EC540	15	30
XGF EC2525	0	75



Presentation, description: page 8/4
Characteristics: page 8/10
References: page 8/12
Dimensions: page 8/16
Connections: page 8/18