RFID OsiSense® XG

PROFIBUS Splitter Box
User Guide

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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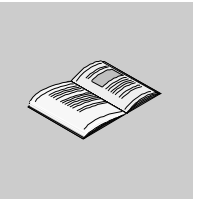
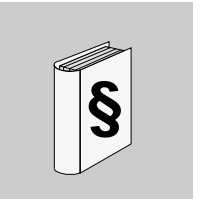


Safety Information



Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

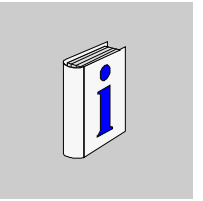
NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book



At a Glance

Document Scope

This document describes the installation and use of the OsiSense® XG PROFIBUS Splitter Box.

The OsiSense® XG PROFIBUS Splitter Box enables OsiSense® XG compact RFID stations to be connected on PROFIBUS-DP network in distributed automation systems using pre-assembled cables.

This splitter box is used to connect three XGCS compact stations on a PROFIBUS-DP network (up to 15 stations could be connected with T-connectors).

As a server on the network, the splitter box can receive and respond to data messages.

This data exchange allows your network accessing some OsiSense® XG station functions, such as:

- Reading/writing tags,
- Control and command,
- Monitoring,
- Diagnostics.

Validity Note

Related Documents

Title of Documentation	Reference Number
User Guide: OsiSense® XG Compact Stations	1655669 01

You can download these technical publications and other technical information from our website at www.tesensors.com.

User Comments

We welcome your comments about this document. You can reach us by e-mail at customer-support@tesensors.com.

Presentation

1

Introduction

This chapter presents the OsiSense® XG PROFIBUS Splitter Box and the associated range of accessories.

What Is in This Chapter?

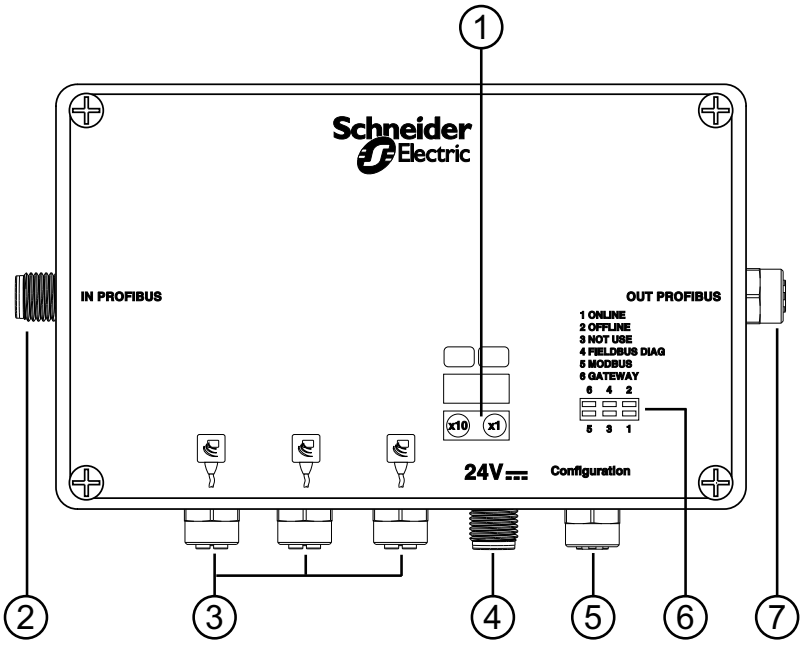
This chapter contains the following topics:

Overview

Introduction

This section gives a detailed technical description of the OsiSense® XG PROFIBUS Splitter Box.

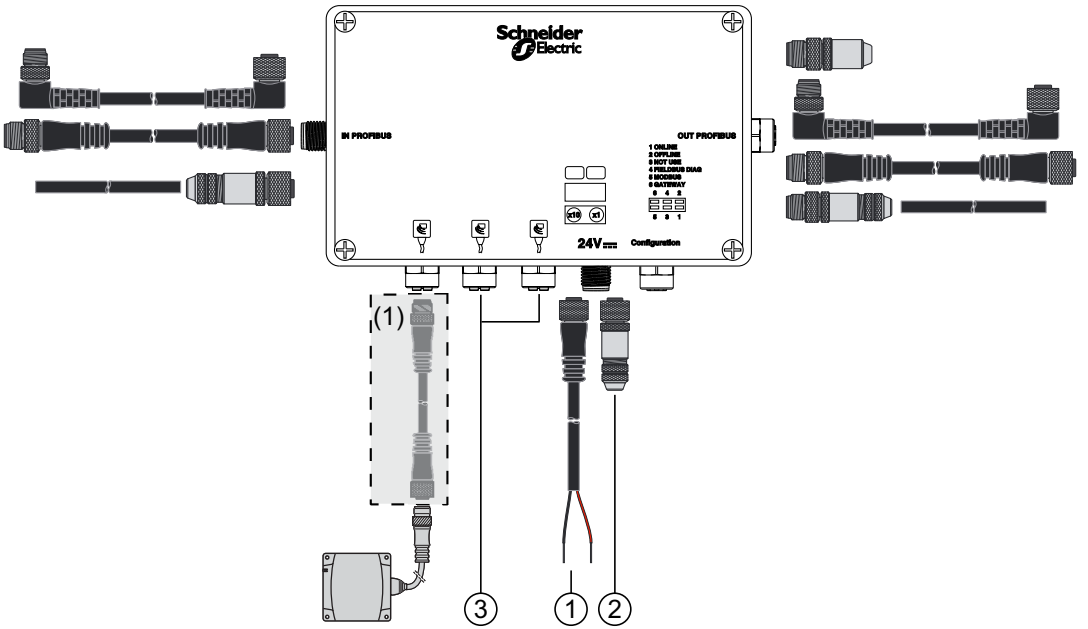
Description



N°	Description
1	2 Rotary switches for addressing setup
2	Input PROFIBUS connector (M12 5-pins male, B-coding)
3	3 OsiSense® XG compact station connector (M12 5-pins female, A-coding)
4	Power supply connector (M12 4-pins male, A-coding)
5	Configuration port (M12 female, A-coding) (for Schneider Electric use only)
6	Signaling LEDs for the PROFIBUS fieldbus, Modbus fieldbus and splitter box status
7	Output PROFIBUS connector (M12 5-pins female, B-coding)

Overview of the Accessories Range

Connection Accessories



(1) Refer to OsiSense® XG compact stations user guide for compact stations accessories.

Element	Type of cable/connectors	Application	Cable length (m)	Reference
1	Pre-wired M12 4-pin female connector, A-coding	Power supply connection	2	XGS Z09L2
			5	XGS Z09L5
			10	XGS Z09L10
2	Supply connector, screw terminals, M12 straight, A-coding		-	XZC C12FDM40B
3	Protective cap	-	-	ASI67FACC1

Installation

2

Introduction

This chapter provides all required information for installing an OsiSense® XG PROFIBUS Splitter Box.

What Is in This Chapter?

This chapter contains the following topics:

Installing the Splitter Box

Description

The OsiSense® XG PROFIBUS Splitter Box can be mounted directly onto a wall or a machine. Four threaded mounting holes have been provided for this purpose inside the splitter box.

⚠ WARNING

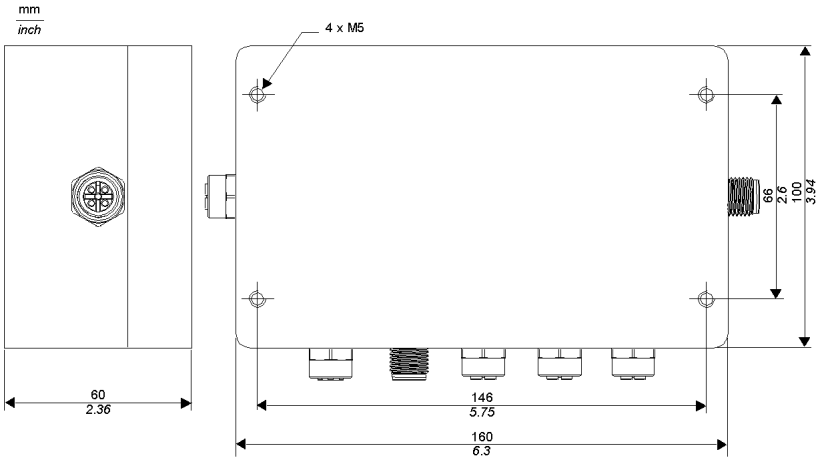
LOSS OF ENCLOSURE PROTECTION

To achieve enclosure protection level of IP65:

- Properly fit all connectors with cables or sealing plugs and tighten.
- Install cover onto the splitter box and tighten screws to 0.5-3.0 Nm (4.4-26.5 lb-in).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Dimensions



EMC Compatibility

Product Compliance

CE

This product complies with the European directive 89/336/CEE on "electromagnetic compatibility".

The products described in this manual meet all the electromagnetic compatibility (EMC) conditions and are compliant with the applicable standards. To maintain electromagnetic compatibility in each particular end use application, the system designer must utilize EMC compliant and certified components and follow manufacturers instructions, work practices and applicable codes and standards related to EMC compliant installations.

The product described in this manual contains highly complex semiconductors that can be damaged or destroyed by electrostatic discharge (ESD). Care must be taken to avoid product damage from ESD. For example, the use of this product within the vicinity of devices rated as class A or B according to IEC 61000-4-4, may result in damage to this device. The effects of ESD damage, including the possibility of unintended equipment operation, may not be immediately detectable.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Where there is a risk of electromagnetic interference, the system designer must implement the protective measures:

- Do not expose electronic circuits to sources of Electrostatic Discharge.
- Avoid touching internal circuits with skin, clothing, or tools.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Cable Routing

Make sure that the following basic wiring rules are followed:

- Keep the data wire and the power cables apart from one another, in so far as is possible.
- Make sure there is a space of at least 10 cm *(3.94 in)* between the data wires and the power cables.
- The data wires and power cables must only cross at a right angle to one another.
- It is advisable to route the data wires and power cables through separate shielded ducts.
- When laying the cables, the noise voltage from other devices or wires must be considered. This particularly applies to frequency converters, motors and other devices or cables generating high frequency disturbances. High frequency sources and the cables described in this manual must be as far apart from each other as possible.
- The power supply must come from a Protected Extra Low voltage (PELV) power unit.
- The 0V of the PELV power unit must be connected to the earth.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- The cabling routing rules listed above must be followed.
- Cable routing is important for proper Electromagnetic Compatibility (EMC).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Splitter Box Characteristics and Wiring

3

Introduction

This chapter provides an overall description of the characteristics and wiring of the OsiSense® XG PROFIBUS Splitter Box.

What Is in This Chapter?

This chapter contains the following topics:

Characteristics

Environment Characteristics

Characteristic		Description
Operating temperature		0...+55° C *(-32...+131° F)*
Storage temperature		-25...+85° C *(-13...+185° F)*
Relative humidity		30...95% non condensing
Degree of protection		IP65
Vibration resistance conforming to EN 60068.2.6		2 mm from 5 to 29.5 Hz / 7 gn from 29.5 to 150 Hz
Shock resistance conforming to	EN 60068.2.27	30 g/11 ms
	EN 50102	Degree IK04
Dimensions (except connectors)		160 x 100x 60 mm *(6.3 x 3.94 x 2.36 in)*
Weight		871 g *(30.72 oz)*
Electromagnetic interference conforming to	IEC61000	Level 3
	EN 55022	Class B

NOTICE

RADIO INTERFERENCE

- This Class B product may cause radio interference.
- Implement reduction techniques in applications where radio interference is objectionable.

Failure to follow these instructions can result in equipment damage.

Electrical Characteristics

Characteristic	Description
Power supply voltage	24 VDC PELV (limits 21.6...26.4 V)
Power consumption (Splitter Box only)	< 2.5 W
Connector	M12 4-pin male, A-coding

PROFIBUS Fieldbus Characteristics

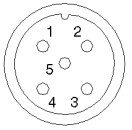
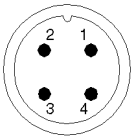
Characteristic	Description
Topology	Linear bus with terminators
Transmission mode	Half Duplex
Transmission rate	9.6 / 19.2 / 93.75 / 187.5 / 500 / 1500 / 3000 / 6000 / 12000 Kbits/s - Automatic detection
Transmission media	Twisted pair line (RS 485)
Connector	M12 5-pin, B-coding
Cyclic Transmitted Data (in words)	- Input: 5 for control + ≤ 43 for user's data - Output: 7 for control + ≤ 41 for user's data
Acyclic transmitted data	Not supported

RFID Station Communication Characteristics

Characteristic	Description
Transmission rate	38400 Bits/s
Time-out	3 s (after 3 automatic retries)
Quantity of RFiD stations	3 (direct connection) to 15 (chained with M12 tees)
Total length of the RFiD connections	160 m max *(525 ft)*
Connector	M12 5-pin female, A-coding

Connectors description

Pin Assignment

Connector	Pin	Color	Assignment
Stations connector (M12 5-pin female, A-coding)  	1	-	Earth
	2	-	24 VDC
	3	-	0 VDC
	4	-	D0
	5	-	D1
Power supply connector (M12 4-pin male, A-coding)  Power supply cable XGS Z09L•• 	1	Red	24 VDC
	2	-	NC
	3	Black	0 VDC
	4	-	NC

NOTE: The M12 configuration connector is only for Schneider Electric internal use.

PROFIBUS Network Interface

4

Introduction

This chapter provides theoretical background on PROFIBUS fieldbus operation.

What Is in This Chapter?

This chapter contains the following sections:

4.1 Wiring to the PROFIBUS Fieldbus

Introduction

The following section describes the element required for wiring the splitter box to the PROFIBUS fieldbus.

What Is in This Section?

This section contains the following topics:

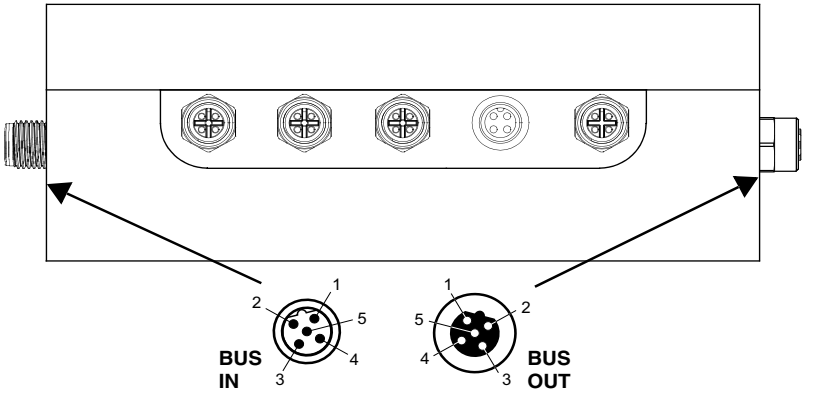
Fieldbus Connection

Description

The splitter box can either be in the middle of the chain connection or at line end. The fieldbus is connected via 5-pin M12 connectors (B-coding).

Pin Assignment

The following diagram shows a front view of the bus connectors (B-coding)

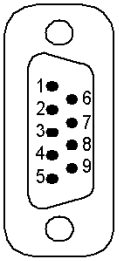
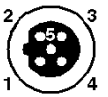


Pin	Signal	Description
1	VP	Line terminator polarization voltage
2	A - RxD/TxD-N	Receive/transmit data - negative (green)
3	DGND	Discrete earth
4	B - RxD/TxD-P	Receive/transmit data - positive (red)
5	Shielding	Shielding or earthing
Connector housing	Shielding	Shielding or earthing

NOTE: It is preferable to connect the shielding to the connector housing. If this is not possible, the connection can also be made using pin 5. These two possibilities can also be combined.

Correspondance between SUB-D 9-pin Connectors and M12 5-pin Connectors

The following table shows the correspondence between pins on 9-pin SUB-D connectors and on 5-pin M12 connectors:

9-pin SUB-D connector	SUB-D pin	Signal	Meaning	M12 pin	5-pin M12 connector
	**1**	**Shielding**	**Shielding/earthing**	5	
	2	M24	24 V output earth	-	
	3	**B-RxD/TxD-P ***	**Receive/transmit data - positive (red)**	4	
	4	CNTR-P	Control signal for repeaters - positive (direction control): not used	-	
	5	**DGND ***	**Discrete earth**	3	
	6	**VP ***	**Line terminator polarization voltage**	1	
	7	P24	Output voltage, 24 V	-	
	8	**A-RxD/TxD-N ***	**Receive/transmit data - negative (green)**	2	
	9	CNTR-N	Control signal for repeaters - negative (direction control): not used	-	

NOTE: (*) Signals in bold and with an asterisk are mandatory and must be provided. Other signals are optional.

Operating Mode

Follow the steps below:

Step	Action
1	Connect the chaining cable to the BUS IN connector.
2	If the unit is at the end of the line, connect a line terminator (FTX DPTL12) to the BUS OUT connector. Otherwise, connect a connection cable to the BUS OUT connector.

Address Configuration / Transmission Speed

Method

Follow the steps described below:

Step	Action
1	Switch off the Splitter Box.
2	Unscrew the four screws on the cover and remove it.
3	Set the splitter box address using the rotary switches.
4	Screw the cover back on (0,5...3 Nm *(4.4...26.5 lb-in))*.

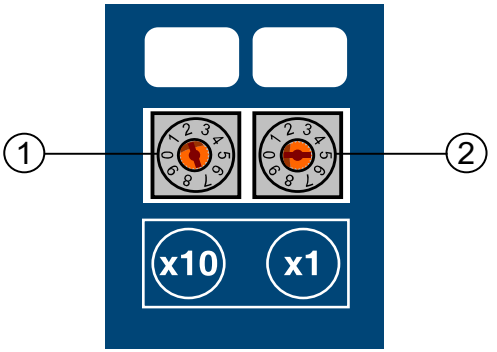
⚠ WARNING

EQUIPMENT DAMAGE

- Turn off power supplying the Splitter Box before opening the cover.
- Do not touch electrical circuit components contained in the Splitter Box.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Rotary Switches



Element	Function
1	Node-ID x 10 rotary switch
2	Node-ID x 1 rotary switch

Assignment of the Address on the Network

The addresses can be configured from 0 to 99. However the following addresses are reserved:

- 0 to 1: for the DP masters,
- 2 to 99: for the slaves.

When assigning the addresses, each slave and/or master must be assigned to a specific and unique address. A configured address is acknowledged at boot-up. It cannot be modified if the cover is not removed.

NOTE: The default factory setting is the address 2.

NOTE: Any change to the Splitter Box address shall be taken into account only once it is powered on again.

Automatic Transmission Speed

At power up, the Splitter Box is in listening mode in order to adapt its transmission speed to the one used on the network. As soon as it is detected by the master, it receives its configuration and settings data. Once the configuration is over, it is operational and ready to exchange data.

Transmission Speed and Cable Length

Each transmission speed has a corresponding cable length.

The following data is indicated without a repeater and with a maximum of 32 slaves on the segment.

Transmission speed in Kbits/s	**Maximum cable length in m** *(ft)*
≤ 93.75	1200 *(3937)*
187.5	1000 *(3280.83)*
500	400 *(1312)*
1500	200 *(656)*
≥ 3000	100 *(328)*

End of Line Termination

Description

Each PROFIBUS segment start and end must have a line termination.

The splitter box has no active line termination. You must use an end of line termination on the OUT PROFIBUS connector if you place the splitter box at one of the ends of a bus segment.

Reference

Reference	Designation
FTX DPTL12	Line termination

4.2 General Principles

About the PROFIBUS Network

PROFIBUS and PROFIBUS-DP

- PROFIBUS is an open and independent communication standard adapted to industrial applications.
- PROFIBUS-DP (Process Fieldbus Decentralized Peripheral) is the PROFIBUS version optimized for high speed data transmission within a decentralized I/O architecture.

Role

- PROFIBUS enables devices from different manufacturers to communicate without needing a specific interface.
- PROFIBUS-DP is particularly adapted to applications for which the response time is a critical factor.

Master/Slave Communication

Compatibility between the physical equipment installed and the configuration expected by the application is controlled during master and slave communication establishment. The master sends the slave configuration and settings data as soon as it recognizes the equipment installed. The slave provides diagnostic information to the master about its operating state.

The physical link is a type A shielded twisted pair.

The data exchange between the Master (the processing unit) and the Slaves (decentralized devices) is carried out on a cyclical basis: the master sends the output data to the slaves, which respond with their input data.

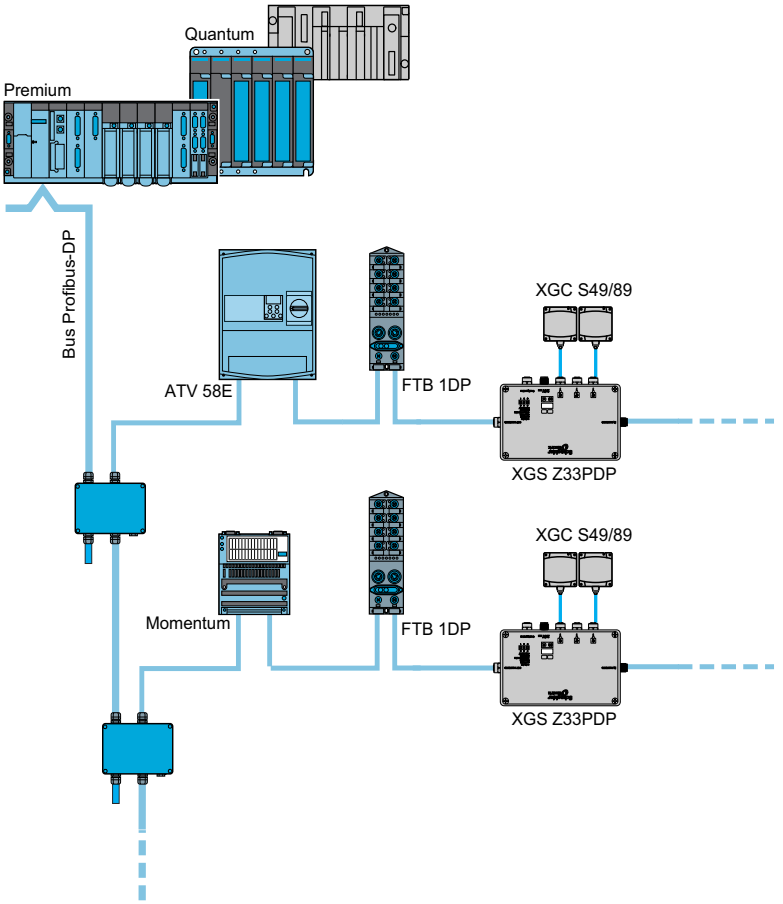
Slaves and Repeaters

32 slaves in total can be connected to a bus segment. To increase the number of slaves, repeaters must be added to create new bus segments.

Repeaters are also used to physically isolated bus segments. In total, the number of slaves must not be greater than 126.

There must be a line terminator on the bus at the ends of each new segment.

Operating Diagram



PROFIBUS Standards

Openness and independence are defined by following international standards IEC 61158 and IEC 61784. The PROFIBUS standard is detailed in standard EN 50170.

4.3 Behavior

Behavior patterns of the OsiSense® XG PROFIBUS Splitter Box

Behavior at Boot-up

At power up, the Splitter Box is in listening mode in order to adapt its transmission speed to the one used on the network. As soon as it is detected by the master, it receives its configuration and settings data. Once the configuration is complete, it is operational and ready to exchange data.

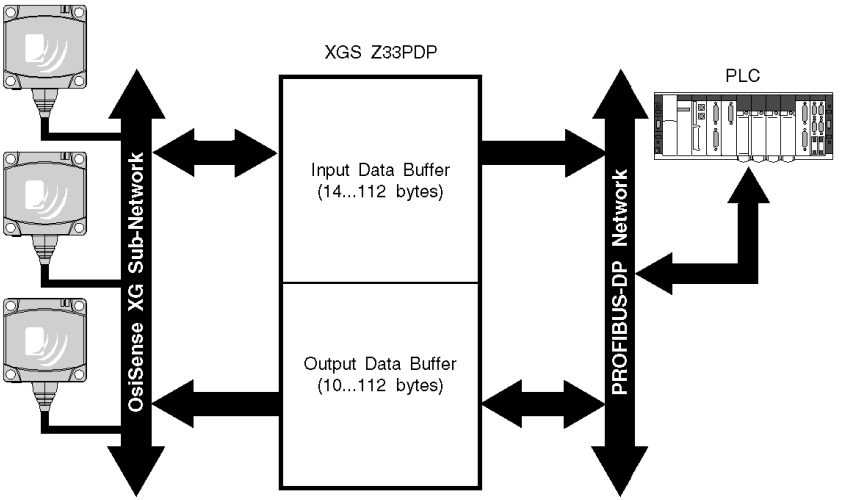
Data Access to OsiSense® XG Stations

5

Data Exchanges

Presentation

The diagram below illustrates the data exchanges:



Two memory buffers are integrated in the Splitter Box XGS Z33PDP:

- Output Data Buffer for:
  - commands addressed to OsiSense® XG stations,
  - written from PROFIBUS network.
- Input Data Buffer:
  - results of commands addressed to OsiSense® XG stations,
  - status of the commands addressed to the OsiSense® XG stations.

Data Buffer Structure

The following table describes the Output Data Buffer structure of the Splitter Box XGS Z33PDP:

Register (16 Bits)	Description	
1st	NA	
2nd	Bit 0 = Read command trigger bit	
3rd	Bit 0 = Write command trigger bit	
4th	RFID station slave address (1 to 15)	
5th	Start address of the Read/Write command	
6th	Quantity of registers to Read/Write (1 to 49)	
7th	Quantity of bytes to Read/Write (2 x qty of registers)	
8th	Data 1	Used only for write command
9th	Data 2	
10th	Data 3	
...	...	
...	Data n	

NOTE: Communication errors can result if the maximum number of words is exceeded.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

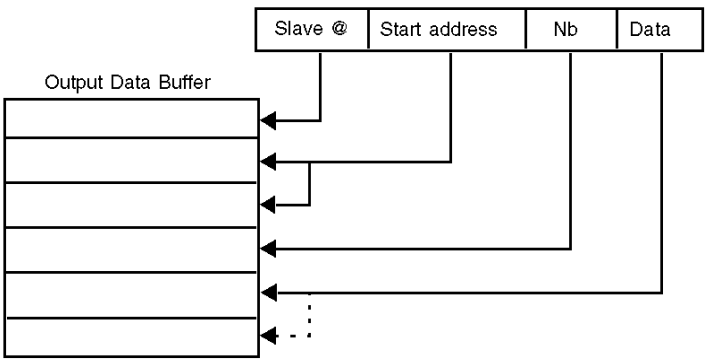
- Do not exceed the maximum number of words to read or write.
- Communication errors can result if the maximum number of words is exceeded.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The following table describes the Input Data Buffer structure of the Splitter Box XGS Z33PDP:

Register (16 Bits)	Description		
	MSB	LSB	
1st	Status bit (bit C): 1= ok 0= missing RFiD station *(see page 50)*		
2nd	NA	Counter of Read commands	
3rd	NA	Counter of Write commands	
4th	Total Data bytes received (Read command only)	Address of the RFID station	
5th	Command codes (03h for read - 10h for write) and error status bit (bit 15) Bit 15 = 1: negative answer from the RFID station and validation of the error code in the LSB	Error code (valid only when the error status bit is = 1) For error codes, refer to OsiSense® XG Compact Stations user guide, p 58.	
6th	Data 1		Used only for read command
7th	Data 2		
8th	Data 3		
...	...		
...	Data n		

Data Access Procedure

Step	Action
1	From the PLC, send the data contents to the Output Data Buffer: 

Step	Action
2	Toggle the Command trigger bit (2nd register of the Output Data Buffer for read - 3rd register of the Output Data Buffer for write). The command is sent to the OsiSense® XG station.
3	Test the Counter of Read or Write commands (2nd or 3rd register of the Input Data Buffer), when the OsiSense® XG station has answered to the command, the splitter box increments this register.
4	The answer can be read by the PLC. **Note:** The error status bit of the 5th register of the Input Data buffer (bit 15) must be tested to know if the command was successful or if an error has been detected (see Diagnostic *(see page 50)*).

Write Command Example

This example describes a write command of two words from address 5 to the OsiSense® XG station at @ 3.

The table below illustrates the data to sent to the Output Data Buffer:

Register	Description	Value
4	Slave address	0003h
5	Start address	0005h
6	Quantity of registers	0002h
7	Quantity of bytes	0004h
8	Data 1	0123h
9	Data 2	4567h

The table below illustrates the station answer in the Input Data Buffer (after a toggle of the bit 0 of the write trigger register (3rd register of the Output Data Buffer) and a detection of a change in the counter of Write commands (3rd register of the Input Data Buffer):

Register	Description	Value
3	Counter of write commands (5th writing command in this example)	05h
4	Address of the station (Total Data bytes received is not applicable)	xx03h (only the LSB is valid for a write command)

Read Command Example

This example describes a read command of two words from address 5 to the OsiSense® XG station at @ 3.

The table below illustrates the data to sent to the Output Data Buffer:

Register	Description	Value
4	Slave address	0003h
5	Start address	0005h
6	Quantity of registers	0002h
7	Quantity of bytes	0004h

The table below illustrates the station answer in the Input Data Buffer (after a toggle of the bit 0 of the read trigger register (2nd register of the Output Data Buffer) and a detection of a change in the counter of Read commands (2nd register of the Input Data Buffer):

Register	Description	Value
2	Counter of Read commands (5th reading command in this example)	05h
3	Counter of Write commands	xxxxh
4	Total Data bytes received and address of the RFID station	0403h
5	Command code and error code	0300h
6	Data 1	0123h
7	Data 2	4567h

Software Installation

6

Installation with PL7 Pro/Unity/SyCon

Pre-requisites

Below is a description of how to install an OsiSense® XG PROFIBUS Splitter Box slave with a Premium PLC associated to the TSX PBY100 communication coupling device, using the PL7 Pro or Unity software workshop.

The pre-requisites for installation are as follows:

- The GSD file (SE100BBB.GSD) have been imported in SyCon
- The PL7 or Unity and SyCon software have been installed.

The latest version of the GSD file is available on the http://www.schneider-electric.com website.

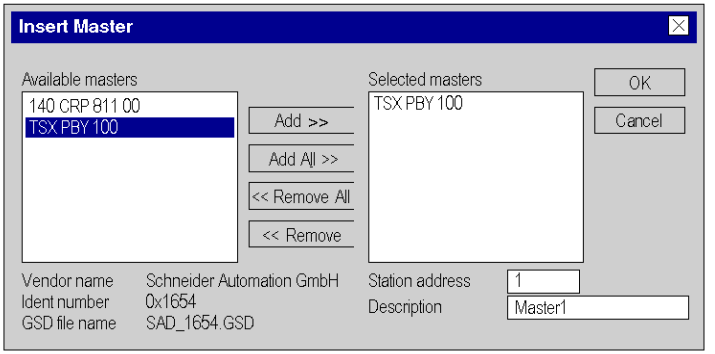
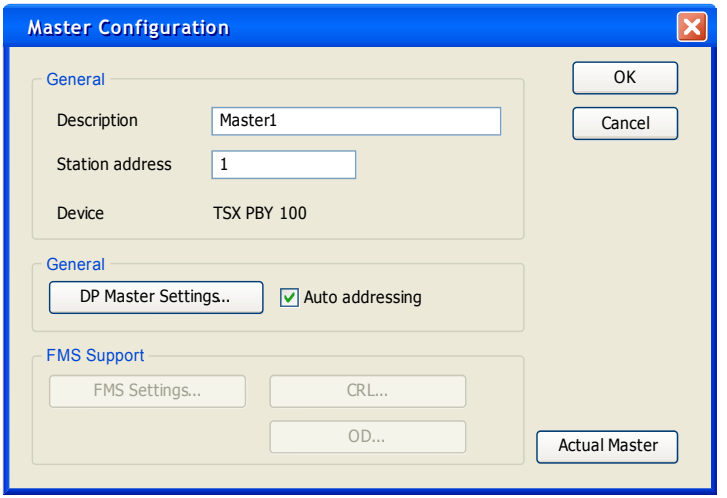
See documentation for the master used if system is installed in a different environment.

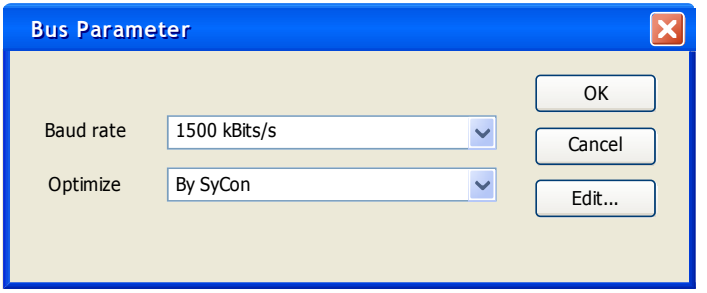
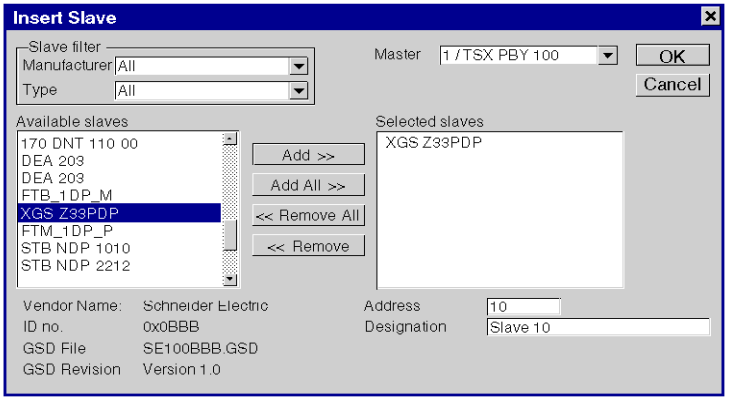
First Phase: Installation Using the SyCon Tool

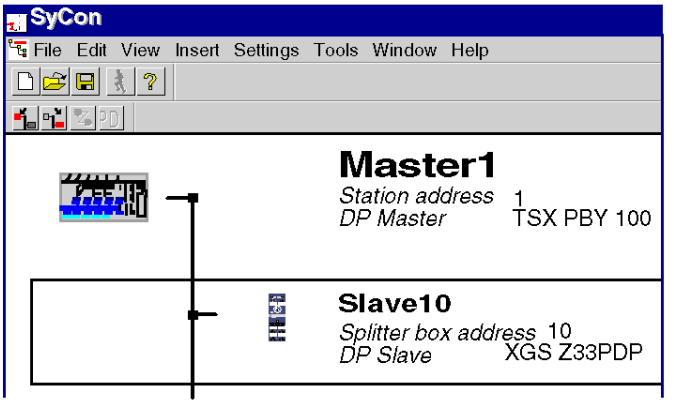
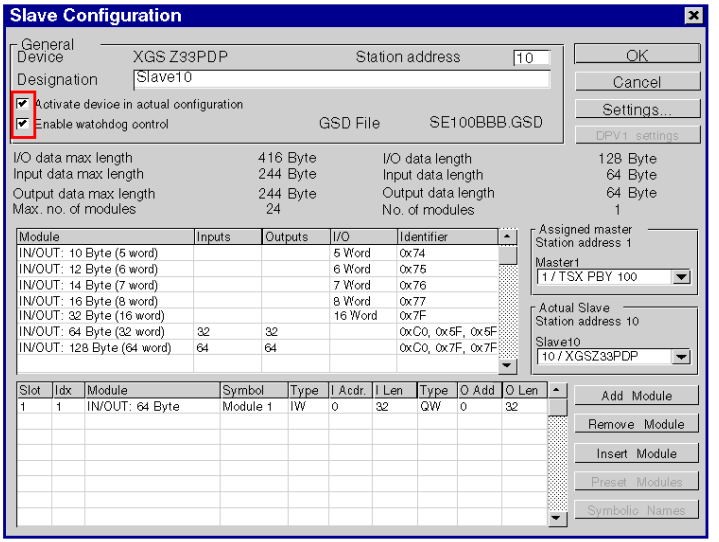
The first phase is performed using "SyCon", the PROFIBUS network configuration tool. This tool is used to define the bus architecture and its communication settings, as well as to configure and set the slaves using their corresponding GSD files.

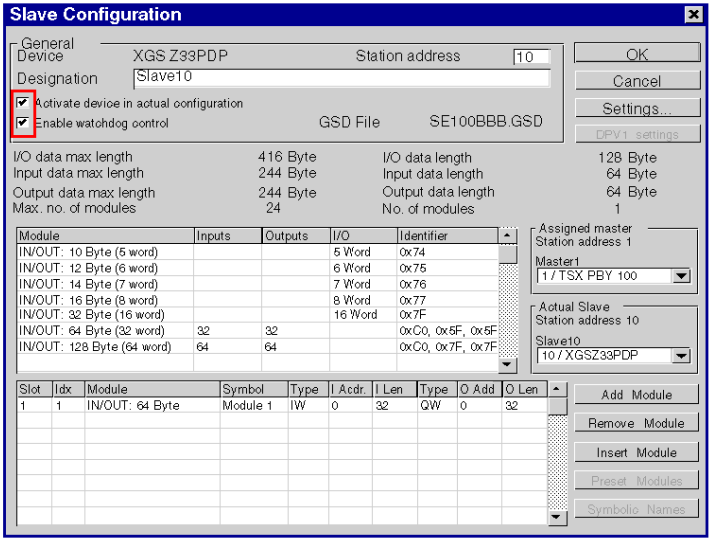
SyCon generates an ASCII file containing all the network management data required by the Schneider PROFIBUS master.

Perform the following steps to configure the Splitter Box:

Step	Action
1	In the menu **Insert** select **Master...**. Add the TSX PBY100 Master module. 
2	Access the master configuration menu by double-clicking the master icon or by selecting the **Master Configuration...** option in the **Settings** menu. Check that the **Auto addressing** check box is ticked. 

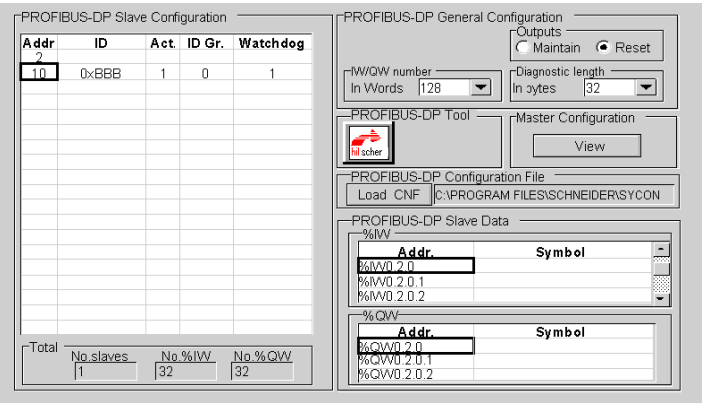
Step	Action
3	Configure the bus by clicking on the menu **Settings** -> **Bus Parameter...** 
4	In the menu **Insert** select **Slave...**. Configuration is carried out by selecting the Splitter Box to be installed. In the following illustration, the XGS Z33PDP Splitter Box can be selected from the "Available slaves" list, which corresponds to the SyCon software workshop product catalog library. 

Step	Action
5	Access the configuration menu by double-clicking the product icon (see illustration below) or by selecting the **Slave Configuration...** option in the **Settings** menu. 
6	Select one IN/OUT module in the list, then insert it into the second table by clicking on the **Add Module** button. Add more modules if necessary (Input data length = 14...112 bytes - Output data length = 10...112 bytes). Check that the check boxes **Activate device in actual configuration** and **Enable watchdog control** are ticked. 

Step	Action
7	The length of the input or output data is indicated in the columns: ● "I Len": Input length ● "O Len": Output length The length also depends on the data type ("Type" column): ● "IW": Input word ● "OW": Output word The address of the input or output data in the PLC memory is shown in the columns: ● "I Addr.": Input address ● "O Addr.": Output address **NOTE:** The start address of the input or output data can be modified by the user if the "auto addressing" function is deactivated in the SyCon software workshop. 
8	Save the configuration file (name.pb), **File** -> **Save As...**
9	Select the master by clicking on its icon. Export the ASCII configuration file (name.cnf), **File** -> **Export** -> **ASCII** **Note:** The export is possible only if the master is selected.

Second Phase: PL7 Pro/Unity

The second phase is performed by PL7 Pro or Unity. Once the ASCII file is selected, the master initializes the network devices and gives them the start-up command. Proceed as follows:

Step	Action
1	In the TSX PBY100 card configuration screen, select the ASCII configuration file (.cnf) generated by SyCon by clicking on the **Load CNF** button. The "PROFIBUS-DP slave configuration" area then shows all the configured slaves. In the following illustration, the master is at address 2 and the OsiSense® XG PROFIBUS Splitter Box is at address 10. By clicking a line corresponding to a slave, you can see the address and length of the modules declared using SyCon. The length of the PLC's diagnostic buffer is set to 32 bytes by default. However, it may be set to up to 244 bytes (maximum length) to prevent any overflow. 
2	Validate the config by clicking on **Validate** in the **Edit** menu.

Write Command Example

This example describes a write command of two words from address 5 to the OsiSense® XG station at address 3.

The table below illustrates the data to send to the output data buffer:

Output Word (%QW)	Description		Value
	MSB	LSB	
0	NA		-
1	00	NA	-
2	NA	Write command trigger byte	-
3	00	Slave address	0003h
4	Start address		0005h
5	00	Quantity of registers	0002h
6	00	Byte count	0004h
7	Data to write 1		0123h
8	Data to write 2		4567h

NOTE: For a write command, 25 words maximum can be writen.

The table below illustrates the station answer in the input data buffer (after a toggle of the command trigger byte %QW.x.y.2 and a detection of a change in the counter byte %IW.x.y.0.1):

Input Word (%IW)	Description		Value
	MSB	LSB	
0	Status word		-
1	00	NA	-
2	00	Write command count	-
3	Total byte count	Slave address	0503h
4	Command code	NA	1000h

The table below illustrates the station answer in the input data buffer if the tag is missing :

Input Word (%IW)	Description		Value
	MSB	LSB	
0	Status word		-
1	00	NA	-

Input Word (%IW)	Description		Value
	MSB	LSB	
2	00	Write command count	-
3	Total byte count	Slave address	0503h
4	Command code	Error code	9004h

Read command example

This example describes a read command of two words from address 5 to the OsiSense® XG station at address 3.

The table below illustrates the data to send to the output data buffer:

Output Word (%QW)	Description		Value
	MSB	LSB	
0	Command word		-
1	00	Read command trigger byte	-
2	NA	NA	-
3	00	Slave address	0003h
4	Start address		0005h
5	00	Quantity of registers	0002h

NOTE: For a read command, 27 words maximum can be read.

The table below illustrates the station answer in the input data buffer (after a toggle of the command trigger byte %QW.x.y.1 and a detection of a change in the counter byte %IW.x.y.0.1):

Input Word (%IW)	Description		Value
	MSB	LSB	
0	Status word		-
1	00	Read command count	-
2	NA	NA	-
3	Total byte count	Slave address	0903h
4	Command code	Read data byte count	0304h
5	Read Data 1		0123h
6	Read Data 2		4567h

The table below illustrates the station answer in the input data buffer in case of addressing error (out of memory range):

Input Word (%IW)	Description		Value
	MSB	LSB	
0	Status word		-
1	00	Read command count	-
2	NA	NA	-
3	Total byte count	Slave address	0903h
4	Command code	Error code	8302h

Diagnostics

7

Introduction

Diagnostics information simplifies installation and accelerates error searching

This chapter provides the elements necessary for diagnostics by:

- LED display,
- Software.

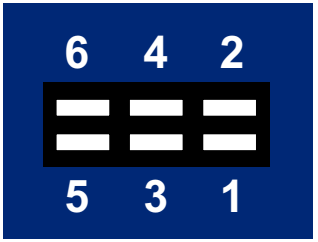
What Is in This Chapter?

This chapter contains the following topics:

Diagnostic LEDs

Description

6 LEDs allow you to diagnose the Splitter Box communication status:



No.	DEL	Status	Description
1	ONLINE	Off	PROFIBUS-DP bus: Splitter Box off-line
		Green	PROFIBUS-DP bus: Splitter Box on-line (exchanges are possible)
2	OFFLINE	Off	PROFIBUS-DP bus: Splitter Box on-line
		Red	PROFIBUS-DP bus: Splitter Box off-line (exchanges are impossible)
3	NOT USE	Off	-
4	FIELDBUS DIAG	Off	Initialization achieved
		Flashing red (1 or 2 Hz)	Configuration error (1)
		Flashing red (4 Hz)	Error when resetting the Splitter Box on PROFIBUS-DP (1)
5	MODBUS	Off	No power
		Flashing green	No Modbus communications
		Green	Modbus communications OK
		Red	• Loss of communications with at least one Modbus slave (2) • Exception code coming from a command or a transaction
6	GATEWAY	Off	No power
		Flashing (red/green)	Configuration absent / not valid (Use ABC-LUFP Config Tool to load a valid configuration)
		Green	Splitter Box currently being initialized and configured
		Flashing green	Splitter Box is in running order, configuration OK

(1) Specific errors indicated by the LED 4 FIELDBUS DIAG

- Flashing red LED (1 Hz): input and/or output data length is invalid.
  Check the overall length of the Splitter Box data, under ABC-LUFP Config Tool ("Monitor" option from the "Sub-Network" menu), then adjust exchanges with the Splitter Box accordingly, using the PROFIBUS-DP network configuration software (e.g.: SyCon).
- Flashing red LED (2 Hz): User parameter data length and/or content is invalid.
- Flashing red LED (4 Hz): Error when resetting the ASIC in charge of PROFIBUS-DP communications.

(2) The LED 5 MODBUS becomes red when one or more Modbus slaves fail to respond to the Splitter Box in the expected fashion. This can be caused by:

- Loss of communications (e.g. a broken or disconnected cable).
- Writing incorrect values to the outputs corresponding to the two aperiodic read/write services

NOTE: When LED 5 MODBUS is flashing red due to a simple loss of communications, the LED will revert to a green state when communications are restored. When LED (5) is flashing red due to the use of incorrect values with the aperiodic read/write services, then the only way to clear the error is to reuse these aperiodic services with correct values.

NOTE: If the LED 6 GATEWAY is flashing with a sequence beginning with one or more red flashes, cycle the Splitter Box power Off and then On again. If this does not stop the flashing note the order of the sequence and contact Schneider Electric support service.

Software Diagnostics

Status Bit Description

A Status Bit of the stations connected to the Splitter box is located at address 0000h of the Splitter Box input memory:

Bit	Description	Value
F	NA	-
E		
D		
C	Status Bit	- 1: in normal conditions - 0: if at least one RFID station is missing
B	NA	-
A		
9		
8		

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Always initialize the Splitter Box by cycling the Power Off then On before connecting a new station.
- Always stop communications from Profibus-DP network to the Splitter Box until full setup of the new station.

Failure to follow these instructions can result in death, serious injury, or equipment damage.