Anybus® BY HMS NETWORKS

Anybus® X-gateway™

PROFIBUS Slave Interface

NETWORK GUIDE

SCM-1202-103 1.0 en-US ENGLISH

HMS Connecting Devices™

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1 Preface

1.1 About This Document

This document describes how to configure and use the Anybus X-gateway PROFIBUS Slave Interface.

For additional documentation and software downloads, FAQs, troubleshooting guides and technical support, please visit www.anybus.com/support.

1.2 Document history

Version	Date	Description
1.0	2018-08-17	New document replacing HMSI-27-250

1.3 Document Conventions

Ordered lists are used for instructions that must be carried out in sequence:

1. First do this
2. Then do this

Unordered (bulleted) lists are used for:

- Itemized information
- Instructions that can be carried out in any order

...and for action-result type instructions:

► This action...

→ leads to this result

Bold typeface indicates interactive parts such as connectors and switches on the hardware, or menus and buttons in a graphical user interface.

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Monospaced text is used to indicate program code and other
kinds of data input/output such as configuration scripts.
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This is a cross-reference within this document: *Document Conventions, p. 4*

This is an external link (URL): www.hms-networks.com

This is additional information which may facilitate installation and/or operation.

This instruction must be followed to avoid a risk of reduced functionality and/or damage to the equipment, or to avoid a network security risk.

Caution
This instruction must be followed to avoid a risk of personal injury.

WARNING
This instruction must be followed to avoid a risk of death or serious injury.

1.4 Document-specific Conventions

The following conventions are used specifically in this document:

- Hexadecimal values are written as NNNNh (the suffix h indicates hexadecimal notation).
- 16 and 32 bit values are stored in Motorola (big endian) format unless otherwise stated.

2 Description

2.1 Overview

The Anybus X-gateway PROFIBUS Slave Interface has complete slave functionality according to the DP-V1 expansions of EN 50170, supporting standard DP functionality as well as acyclic Class 1 and Class 2 services.

The interface exchanges data via two memory buffers:

Input Buffer	Contains data coming from the other network.
Output Buffer	Contains data going to the other network.

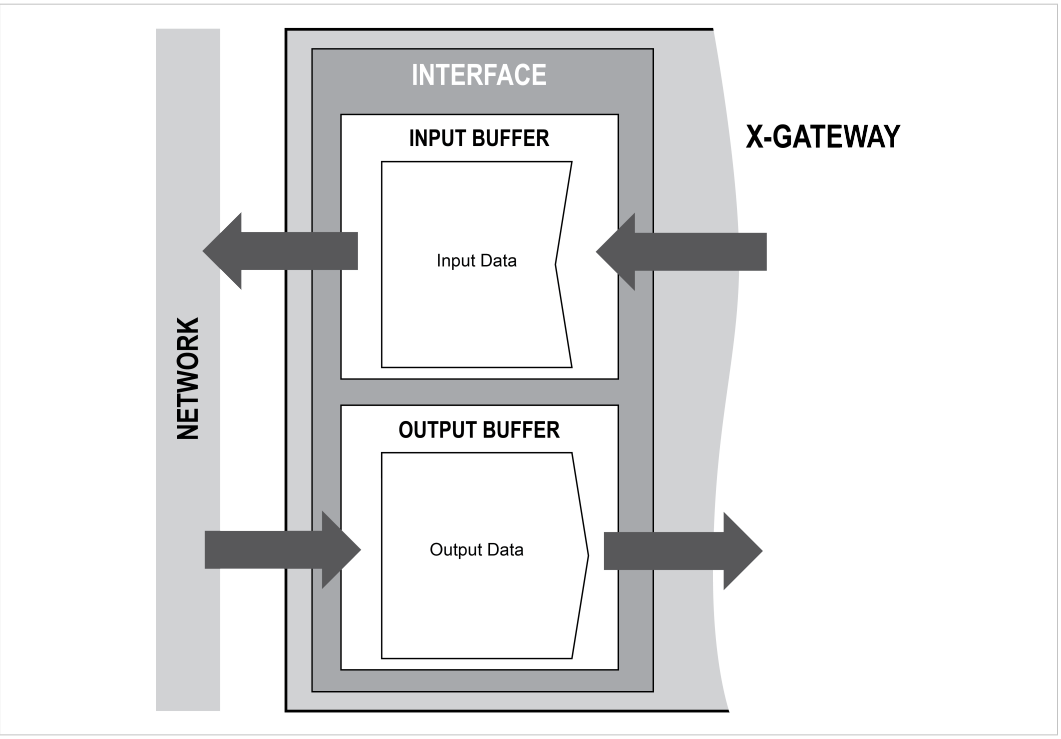

Fig. 1 Data flow

Data from the X-gateway can consist of cyclical (DP) and acyclical (DP-V1) I/O data. The interface can exchange up to 244 bytes of I/O data in each direction, although the total data size (input + output) cannot exceed 344 bytes. The actual byte sizes of input and output data and the amount of cyclical versus acyclical I/O data are set up in Anybus Configuration Manager to match the application.

See also *Configuration, p. 9* and *Data Exchange Examples, p. 10*.

3 Installation

3.1 Connectors and Switches

> ! This product contains parts that can be damaged by electrostatic discharge (ESD). Use ESD prevention measures to avoid damage.

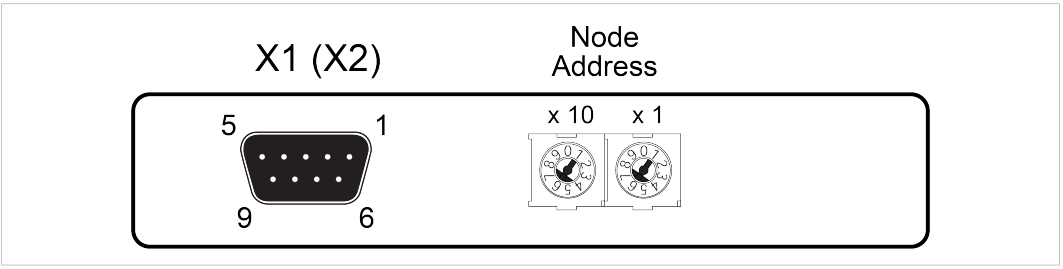

Fig. 2 PROFIBUS slave adapter interface

PROFIBUS Connector (9-pin D-sub)

The connector is labeled **X1** if the interface is top-mounted and **X2** if the interface is bottom-mounted in the X-gateway.

Pin	Signal	Description
1	-	(reserved)
2	-	(reserved)
3	Line B	Positive RS-485 RxD/TxD
4	RTS	Request To Send
5	GND BUS	Isolated signal ground (RS-485)
6	+5V BUS	+5 V (RS-485)
7	-	(reserved)
8	Line A	Negative RS-485 RxD/TxD
9	-	(reserved)
Housing	Shield	Connected to PE

If the node is the last on a bus segment, use a PROFIBUS connector with built-in terminating resistors.

Node Address Switches

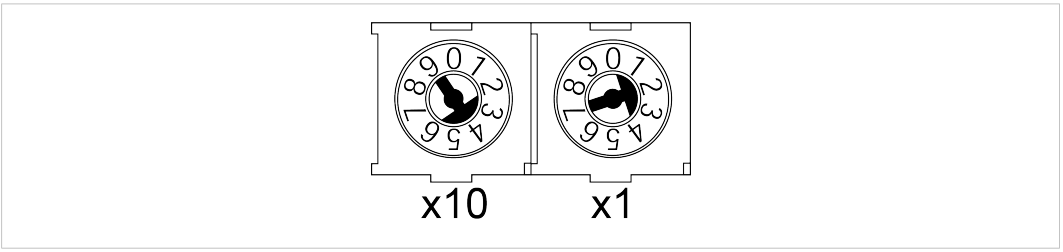

Fig. 3 Node address switches

The PROFIBUS node address is set with two rotary switches in combination.

In this example the station number is set to 42 (4 x 10 + 2 x 1).

3.2 LED Indicators

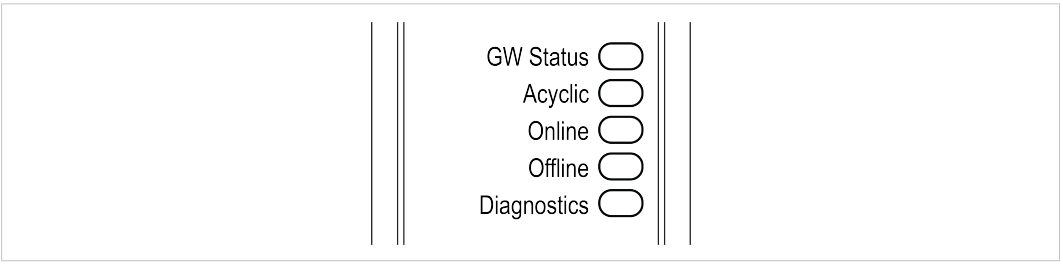

Fig. 4 PROFIBUS slave interface LED indicators

The GW Status LED indicates the status of the X-gateway. The other LEDs indicate network communication and interface status.

LED	Indication	Meaning
GW Status	Off	No power
	Green	Gateway running
	Red	Communication error
	Red, flashing	Network interface error
Acyclic	Off	No acyclic traffic
	Green	Processing acyclic request
Online	Off	Not online
	Red	Major internal fault
	Green, flashing	Clear mode
	Green	Online
Offline	Off	Not offline or no power
	Red	Offline
Diagnostics	Off	No diagnostics present or no power
	Red, 1 Hz	Configuration error
	Red, 2 Hz	User parameter data error
	Red, 4 Hz	PROFIBUS ASIC error

3.3 Installation Overview

Prerequisites

The following items are required for installation:

- USB cable
- PROFIBUS cable
- GSD file for the PROFIBUS slave interface

The GSD file can be downloaded from www.anybus.com/support.

Basic installation steps

1. Set the PROFIBUS node address using the rotary switches.
2. Connect the PROFIBUS slave interface to the network.
3. Connect a computer to the USB connector.
4. Power on the gateway.
5. Install the GSD file in the PROFIBUS network configuration tool and configure the PROFIBUS master to exchange data with the slave interface.
6. Configure the data exchange options for the PROFIBUS slave interface and the other network interface in Anybus Configuration Manager.

4 Configuration

4.1 Anybus Configuration Manager

The data exchange between the interfaces in the Anybus X-gateway is configured using the Windows-based configuration tool *Anybus Configuration Manager*, which can be downloaded from www.anybus.com/support.

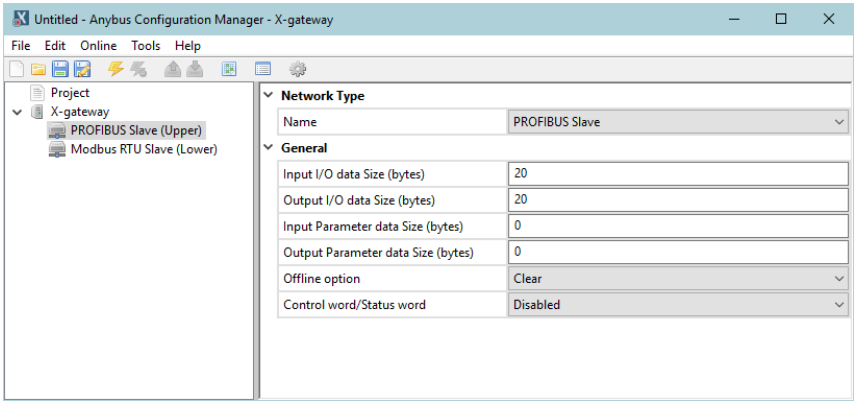

Fig. 5 Anybus Configuration Manager

Input I/O data Size (bytes)	The amount of input I/O data to exchange on the PROFIBUS network.
Output I/O data Size (bytes)	The amount of output I/O data to exchange on the PROFIBUS network
Input Parameter data Size (bytes)	The amount of input Parameter data to exchange on the PROFIBUS network.
Output Parameter data Size (bytes)	The amount of output Parameter data to exchange on the PROFIBUS network
Offline option	The action to perform if the network goes offline. The gateway can either freeze (keep the current value) or clear (set to zero) the data from the offline network.
Control word/Status word	Enables/disables representation of the Control/Status word.

4.2 Network Configuration

Each device in a PROFIBUS network is associated with a GSD (General Station Description) file. This file contains information about the device and is required by the PROFIBUS network configuration tool when adding the device to the network.

The GSD file for the Anybus X-gateway PROFIBUS Slave Interface as well as a free Windows-based PROFIBUS network configuration tool called *Anybus NetTool* are available for download at www.anybus.com/support, where you will also find additional documentation.

4.3 Data Exchange Examples

The direction of the data flow is described from the viewpoint of the interface.

Input Data is data coming from the X-gateway.

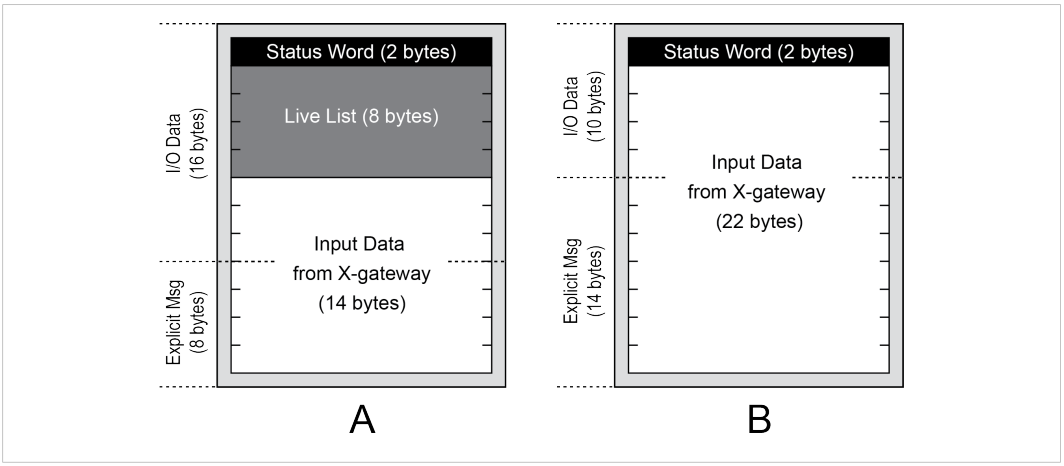

Fig. 6 Input Data examples

	Example A	Example B
Input I/O Data size	16 bytes	10 bytes
Input Explicit Message size	8 bytes	14 bytes
Status Word	Enabled	Enabled
Live List	Enabled	Disabled

Depending on the actual gateway configuration, parts of the I/O data produced by the interface may be used for status information such as Status Word and Live List. The Live List is only available on master-slave configurations. See also the Anybus X-gateway User Manual.

Output Data is data going to the X-gateway.

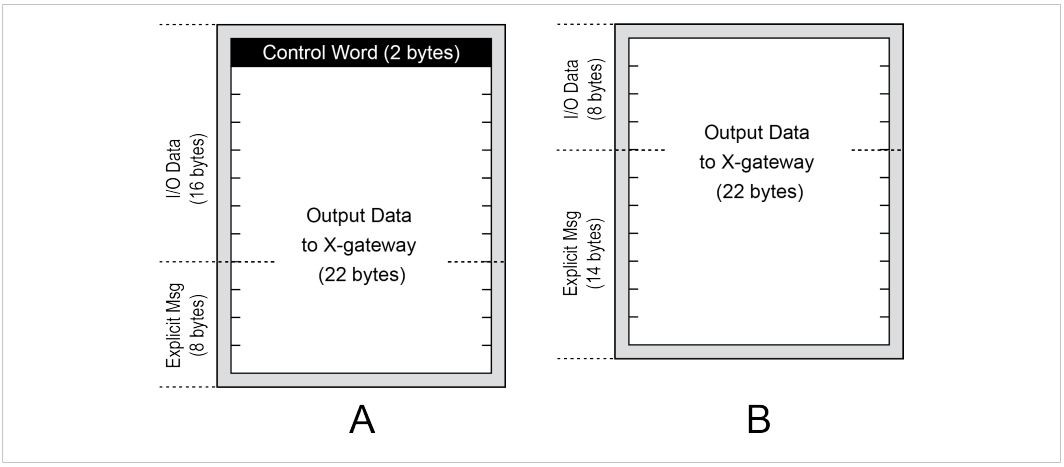

Fig. 7 Output Data examples

	Example A	Example B
Output I/O Data size	16 bytes	8 bytes
Output Explicit Message size	8 bytes	14 bytes
Control Word	Enabled	Disabled

Depending on the actual gateway configuration, the first 2 bytes of the I/O data consumed by the interface may be interpreted as control information (Control Word).

5 Technical Data

5.1 Technical Specifications

PROFIBUS functionality	• Complete PROFIBUS-DP/DPV1 Slave functionality according to extensions of EN 50170 • Supports Class 1 & Class 2 services • Acyclic User Parameter data / Diagnostics length - up to 237 bytes • Supports PROFIBUS features: Sync and Freeze and Watchdog
Maximum cyclic I/O data	244 bytes in each direction, 344 bytes total (input + output)
Supported baud rates	Automatic baudrate detection up to 12 Mbit/s
Configuration method	On-board switches and GSD file
PROFIBUS connector	1 x D-sub 9-pin female connector

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