

Network Interface Appendix

Anybus[®] -CompactCom Passive RS-485/422

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About This Manual

How To Use This Manual

This document is intended to provide a good understanding of the functionality offered by the Anybus-CompactCom Passive RS-485/422 communication module. The document only describes the specific features of the Anybus-CompactCom Passive RS-485/422, i.e. for general information regarding the Anybus-CompactCom platform, consult the Anybus-CompactCom Hardware- and Software Design Guides.

The reader of this document is expected to be familiar with higher level software design, and communication systems in general.

For more information, documentation etc., please visit the HMS website, 'www.anybus.com'.

Important: This is a preliminary document; information may be missing or incorrect.

Important User Information

Anybus-CompactCom and the technology used in Anybus-CompactCom is protected by patent, pending patents, copyright and trademark laws under the United States of America and international law.

The data and illustrations found in this document are not binding. We, HMS Industrial Networks AB, reserve the right to modify our products in line with our policy of continuous product development. The information in this document is subject to change without notice and should not be considered as a commitment by HMS Industrial Networks AB. HMS Industrial Networks AB assumes no responsibility for any errors that may appear in this document.

There are many applications of this product. Those responsible for the use of this device must ensure that all the necessary steps have been taken to verify that the application meets all performance and safety requirements including any applicable laws, regulations, codes, and standards.

Anybus® is a registered trademark of HMS Industrial Networks AB. All other trademarks are the property of their respective holders.

The examples and illustrations in this document are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular implementation, HMS cannot assume responsibility or liability for actual use based on these examples and illustrations.

Related Documents

Document	web
Anybus-CompactCom Hardware Design Guide	www.anybus.com

Document History

Summary of Recent Changes (1.00 - 1.01)

Change	Page(s)
Updated front page information	-
Updated sales and support information	4
Corrected pin description table	5
Added information on galvanic isolation	6
Updated template	-

Revision List

Revision	Date	Author(s)	Chapter(s)	Description
1.00	2005-09-28	PeP	-	First official version
1.01	2011-11-08	KeL	All	Misc. updates

Conventions & Terminology

The following conventions are used throughout this manual:

- Numbered lists provide sequential steps
- Bulleted lists provide information, not procedural steps
- The terms ‘Anybus’ or ‘module’ is used when referring to the Anybus-CompactCom module.
- The terms ‘host’ or ‘host application’ is used when referring to the hardware and software that hosts the Anybus-CompactCom module.
- Hexadecimal values are written in the format NNNNh, where NNNN is the hexadecimal value.

Sales and Support

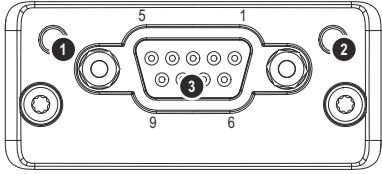
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About the Anybus-CompactCom RS-485/422

General

The Anybus-CompactCom Passive RS-485/422 is a physical layer converter which converts the serial host interface signals in the Anybus-CompactCom interface to RS-485 or RS-422.

Front View

#	Item	
1	(not used)	
2	Power LED	
2	RS-485/422 Connector	

Power LED

State	Indication
Off	No power
Green	Device powered

RS-485/422 Connector (9-pin D-sub, female)

The 'Mode Select' signal is used to select between RS-485 and RS-422 operation. Note that different signals will be activated depending on the state of this signal, see pinout below.

Pin	RS-422 Mode	RS-485 Mode	Comment
1	Term Pwr	Term Pwr	+5V Termination power (isolated)
2	-	-	-
3	-	-	-
4	Mode Select	Mode Select	NC: RS-485 mode, GND: RS-422 mode
5	GND	GND	Isolated signal ground
6	RxD (inverted) ^a	-	Receive data lines (RS-422 mode)
7	RxD ^a	-	Not used (RS-485 mode)
8	TxD (inverted)	RxD/TxD (inverted)	Transmit data lines (RS-422 mode)
9	TxD	RxD/TxD	Bidirectional data lines (RS-485 mode)
Housing	Shield	Shield	Cable shield

a. Internally terminated (100Ω).

Operation

General

The Anybus-CompactCom Passive RS-485/422 converts the serial bitstream of the serial host interface to RS-485/RS-422 and vice versa. It only acts on the physical layer, i.e. no processing is performed on the serial data itself.

Note that special care has to be taken when communicating using RS-485, since this is a half-duplex system.

The interface of the module is galvanically isolated.

Implementation Details

Supported Baud Rates

The module supports any baud rate up to 10Mbit¹. No configuration is necessary since the module acts only on the physical layer.

DE (Data Enable) Behavior

In RS-485 mode, this signal is used to enable transmission on the RS-485 network (In RS-422 mode, this signal has no function).

/CA (Communication Active) Behavior

This signal normally indicates whether the network (In this case the RS-485 or RS-422) is able to exchange data or not.

Since no such functionality exist in the RS-485/422 specification, this signal is internally tied low in the module.

Reset Behavior, RS-422 mode

During reset, the TxD (RS-422) lines are held high to ensure that no erroneous data is sent accidentally through the interface.

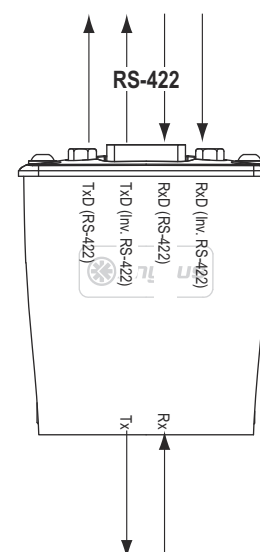
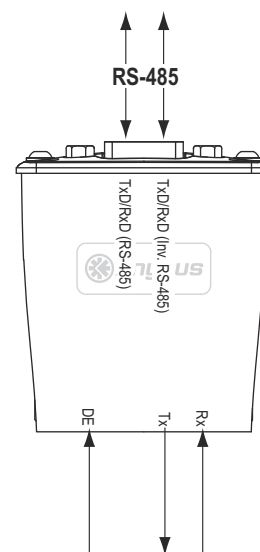
Reset Behavior, RS-485 mode

During reset, the RS-485 outputs are passive to ensure that no erroneous data is sent accidentally through the interface.

Identification Code

As stated in the Anybus-CompactCom Hardware Design Guide, a subset of the parallel host interface signals provides a mechanism for detecting the network type of passive Anybus-CompactCom modules. The identification code for the Anybus-CompactCom Passive RS-485/422 is 02h.

For more information, consult the general Anybus-CompactCom Hardware Design Guide.



1. If compatibility with other Anybus-CompactCom products is desired, it is recommended not to use baud rates beyond 115.2kbps.

Technical Specification

Protective Earth (PE) Requirements

In order to ensure proper EMC behaviour, the module must be properly connected to protective earth via the PE pad / PE mechanism described in the general Anybus-CompactCom Hardware Design Guide.

HMS Industrial Networks does not guarantee proper EMC behaviour unless these PE requirements are fulfilled.

Power Supply

Supply Voltage

The module requires a regulated 3.3V power source as specified in the general Anybus-CompactCom Hardware Design Guide.

Power Consumption

The Anybus-CompactCom Passive RS-485/422 is designed to fulfil the requirements of a Class A module. For more information about the power consumption classification used on the Anybus-CompactCom platform, consult the general Anybus-CompactCom Hardware Design Guide.

The current hardware design consumes up to 170mA¹.

Note: It is strongly advised to design the power supply in the host application based on the power consumption classifications described in the general Anybus-CompactCom Hardware Design Guide, and not on the exact power requirements of a single product.

Environmental Specification

Consult the Anybus-CompactCom Hardware Design Guide for further information.

EMC Compliance

Consult the Anybus-CompactCom Hardware Design Guide for further information.

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1. Note that in line with HMS policy of continuous product development, we reserve the right to change the exact power requirements of this product without prior notification. Note however that in any case, the Anybus-CompactCom Passive RS-485/422 will remain as a Class A module.