



Network Certification

Policies and Instructions
Rev 2.01

Table of Contents

Preface	About this Document	
	How to Use This Document	P-1
	Important User Information.....	P-1
	Related Documents	P-1
	Document History.....	P-2
	Document Conventions	P-3
	Terminology & Abbreviations.....	P-3
Chapter 1	General Information	
	HMS Conformance Test Policy	1-1
	<i>General Information</i>	1-1
	<i>Scope of HMS Certification Tests</i>	1-1
	Certified Product vs. Certified Network Interface.....	1-2
	Network Identity Settings	1-2
	Membership and Network Logo.....	1-2
Chapter 2	Networks and Organisations	
	General Information	2-1
	AS-Interface	2-2
	CANopen.....	2-2
	CC-Link.....	2-3
	ControlNet	2-4
	DeviceNet.....	2-5
	EtherNet/IP.....	2-6
	FIPIO	2-7
	Interbus	2-8
	LonWorks	2-9
	Modbus Plus.....	2-9
	PROFIBUS.....	2-10
	PROFINET.....	2-11
	REMOTE IO.....	2-11

Preface

About this Document

How to Use This Document

This document is intended to provide a good understanding of the concepts and requirements associated with network certification procedures, and how they relate to embedded Anybus products.

The reader of this document is expected to be familiar with Anybus networking technology, and industrial communication systems in general.

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

Important User Information

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.

Related Documents

Document	Author
Anybus-S Drive Profile Design Guide	HMS
-	-

Chapter 1

General Information

HMS Conformance Test Policy

General Information

Certification for network compliance is an important approval for industrial communication equipment, ensuring quality and interoperability. HMS's range of embedded Anybus communication products are used all over the world by leading manufacturers of industrial automation products. To ensure that customers always can rely on HMS technology, our policy is to certify all our embedded products for network compliance. Certification tests are normally carried out by the network organisation, in-house through the aid of tools supplied by the network organisation, or with help from certain reference customers.

Declarations of network compliance can be downloaded from the HMS web site (www.anybus.com). In case a particular certificate is unavailable, this means that the certification is pending due to re-design or for other reasons that may affect certification. In such case, contact HMS for further information.

Scope of HMS Certification Tests

All tests are based on a typical usage scenario, and ensures network compliance under the condition that the interface is running using typical (default) operational settings.

It is important to recognise that the tests are made as to verify proper operation of our network implementation and to ensure that end products utilising it can be certified - not necessarily to enable customers to avoid certification altogether.

The inherent flexibility of the Anybus concept allows the behaviour of the interface to be altered in ways which cannot possibly be catered for by the HMS certification tests. Operating the interface in ways which deviate from typical (default) operational settings invalidates HMS certification tests, and consequently a full re-certification of the end product is required. In some cases this is inevitable, e.g. when the network organisation requires that all vendors use unique network identity settings.

In case of questions, contact HMS and/or your nearest conformance test centre.

Certified Product vs. Certified Network Interface

The Anybus concept may in certain cases allow the behaviour the network interface to be altered in ways which are not in line with network conformance requirements. For example, certain members of the Anybus-CompactCom platform allows large parts of the network communication to be routed into the firmware of the host application, in which case the actual software implementation in the host application determines whether or not the network interface can be certified. In such case, certification of the end product must be made to ensure that the implementation hasn't affected network compliance. Generally, implementations of this kind require in-depth knowledge in the operating fundamentals of the network in question. To find out whether or not a certain type of implementation can be certified, contact HMS and/or your nearest conformance test centre.

Some network organisations may allow the combination of an uncertified product with a certified network interface. Although this may in some cases make it possible to sell the end product without having to perform network certification tests, this approach is generally not endorsed by HMS.

In case of questions, contact HMS and/or your nearest conformance test centre.

Network Identity Settings

Deviations from typical operational settings require the use of custom network identity settings (i.e. "Vendor ID") and, when applicable, a custom configuration file (i.e. "GSD"- or "EDS"-file). Furthermore, some network organisations require the use of custom identity settings even if using the standard operating settings. In either case, HMS recommends customisation of network identity, since this significantly improves identification and troubleshooting procedures when setting up the network communication.

In case of questions, contact HMS and/or your nearest conformance test centre.

Membership and Network Logo

Generally, membership in the network organisation is a prerequisite in order to be able to certify the end product. This also applies to the network name and logo, for which the use in some cases even requires a complete certification of the end product.

As stated previously, HMS range of embedded network interface products are certified for network compliance. This can, in some cases, be used as a reference for the end product, both as a statement of network conformance (when used with standard operational settings) and for the use of network logos. It must however be clearly stated in the product documentation that this applies to the network interface and not to the complete product.

Networks and Organisations

General Information

Certifying a device for network compliance involves contacting the network organisation to obtain information about a recommended test facility. The device must then be shipped to this facility, which then verifies that the device conforms to the network specification.

In some cases, the complexity and cost of such procedures are reduced due to the pre-certification of the Anybus network interface, but this differs depending on the network type and what policies and regulations that apply to that particular facility.

See also...

- 2-2 “AS-Interface”
- 2-2 “CANopen”
- 2-3 “CC-Link”
- 2-4 “ControlNet”
- 2-5 “DeviceNet”
- 2-6 “EtherNet/IP”
- 2-7 “FIPIO”
- 2-8 “Interbus”
- 2-9 “LonWorks”
- 2-9 “Modbus Plus”
- 2-10 “PROFIBUS”
- 2-11 “PROFINET”
- 2-11 “REMOTE IO”

AS-Interface

Products which claim AS-Interface compliance must pass conformance tests at a certified test facility. HMS embedded products for AS-Interface are successfully tested for pre-compliance and found to comply with AS-Interface specifications. Test reports etc. are available and registered at the AS-International Association.

The use of certified AS-Interface networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state AS-Interface compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility.

Contact information:

- <http://www.as-interface.net/Certification/>

CANopen

Products which claim CANopen compliance must pass conformance tests at a certified test facility. HMS embedded products for CANopen are successfully tested for pre-compliance and found to comply with CANopen specifications. Test reports etc. are available and registered at CAN In Automation (CiA).

The use of certified CANopen networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state CANopen compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility. Due to the vast customisation possibilities found in Anybus concept, the use of such technology alone does in itself not constitute a discount on the certification fee.

According to CANopen conformance policies, each CANopen node is required to have a unique CAN ID, which can be ordered from CAN in Automation (CiA) via their official website.

Contact information:

- <http://www.can-cia.org/>

CC-Link

Products which claim CC-Link compliance must pass conformance tests at a certified test facility. HMS embedded products for CC-Link are successfully tested for pre-compliance and found to comply with CC-Link specifications.

The use of certified CC-Link networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state CC-Link compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility.

Contact information:

- <http://www.cc-link.org/>
- <http://www.clpa-europe.com/conformance/conformance.php>.

ControlNet

Products which claim ControlNet compliance must pass conformance tests at a certified test facility. HMS embedded products for ControlNet are successfully tested for pre-compliance and found to comply with ControlNet specifications. Test reports etc. are available and registered at ControlNet International.

The use of certified ControlNet networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state ControlNet compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility. Due to the vast customisation possibilities found in Anybus concept, the use of such technology alone does in itself not constitute a discount of the certification fee. However, using certified Anybus technology usually means that the test procedure is very easy and predictable.

According to ControlNet conformance policies, each ControlNet vendor is required to have a unique Vendor ID, which can be ordered from the ControlNet Organisation via their official website.

Price indication:

Product	Anybus type	Normal price (member)	Price (non member)
Modular slave	Anybus-S	2000 USD	4000 USD

Remark: Price indication from ControlNet organisation in Germany (January 2008).

Contact information:

- <http://www.controlnet.org/>

DeviceNet

Products which claim DeviceNet compliance must pass conformance tests at a certified test facility. HMS embedded products for DeviceNet are successfully tested for pre-compliance and found to comply with DeviceNet specifications. Test reports etc. are available and registered at the Open DeviceNet Vendor Association (ODVA).

The use of certified DeviceNet networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state DeviceNet compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility. Due to the vast customisation possibilities found in Anybus concept, the use of such technology alone does in itself not constitute a discount of the certification fee. However, using certified Anybus technology usually means that the test procedure is very easy and predictable.

According to DeviceNet conformance policies, each DeviceNet vendor is required to have a unique Vendor ID, which can be ordered from ODVA via their official website.

Price indication:

Product	Anybus type	Normal price (member)	Price (non member)
Modular slave	Anybus-S, Anybus-IC, Anybus-CC	2500 USD	5000 USD
Master	Anybus-M	2500 USD	5000 USD

Remark: Price indication from ODVA in USA (January 2008).

Contact information:

- <http://www.odva.org>

EtherNet/IP

Products which claim EtherNet/IP compliance must pass conformance tests at a certified test facility. HMS embedded products for EtherNet/IP are successfully tested for pre-compliance and found to comply with EtherNet/IP specifications. Test reports etc. are available and registered at the Open DeviceNet Vendor Association (ODVA).

The use of certified EtherNet/IP networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state EtherNet/IP compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility. Due to the vast customisation possibilities found in Anybus concept, the use of such technology alone does in itself not constitute a discount of the certification fee.

According to EtherNet/IP conformance policies, each EtherNet/IP vendor is required to have a unique Vendor ID, which can be ordered from ODVA via their official website.

Price indication

Product	Anybus type	Normal price (member)	Price (non member)
Modular slave	Anybus-S, Anybus-IC	2500 USD	5000 USD

Remark: Price indication from ODVA in USA (January 2008).

Contact information:

- <http://www.odva.org>

FIPIO

Products which claim FIPIO compliance must pass conformance tests at a certified test facility. HMS embedded products for FIPIO are successfully tested for pre-compliance and found to comply with FIPIO specifications.

The use of certified FIPIO networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state FIPIO compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility.

Please contact the test laboratory to find out if a re-test is necessary for your product.

Contact information:

Schneider Automation
245 rte des lucioles
06903 Sophia Antipolis cedex
+33 4 92 38 22 73

Contact person: Gerald Spilmont
Email: gerald.spilmont@modicon.com

Interbus

Products which claim Interbus compliance must pass conformance tests at a certified test facility. After successful tests the test report are sent to the Interbus Club for final approval and registration.

Since year 2003 it is no longer possible to certify embedded Interbus products. The effect is that even though all Interbus interfaces from HMS are tested and found to comply with the Interbus specification, they cannot on their own be regarded as certified. To be able to state Interbus compliance, the further product will have to pass further tests at a certified Interbus test facility.

Price indication:

Product	Anybus type	Normal price
Modular slave (without PCP communications)	Anybus-S	2550 EUR (basic test)
Modular slave (with PCP communications)	Anybus-S	3450 EUR

Remark: Price indication from Interbus Club in Germany (January 2008).

Note 1: Depending on what functionality the node will support, the prices can differ. Please contact the test laboratory for price information.

Note 2: The Interbus Club will charge an extra fee for the certificate document, normally the price is around 170 EUR (members) and 560 EUR (non members).

Note 3: The Interbus specification have been updated regarding the LED order on the module, after the Anybus-S modules where developed. The specification shows that the LED shall be placed in special order and structured meaning. Our module have been approved because of our concept was developed before the new specification. But, depending on how the Anybus module is placed in the end application, it can affect a product certification.

Please contact HMS for more information.

Contact information:

- <http://www.interbusclub.com>

LonWorks

Products which claim LonWorks compliance must pass conformance tests at a certified test facility.

For technical reasons, HMS embedded products for LonWorks are not pre-certified for network compliance. To be able to pass certification tests, the product must implement one of the profiles defined in the LonWorks specification. Due to the nature of the Anybus concept, the actual profile is defined by the application, which means that the network interface can only be tested for network compliance in its final implementation. HMS has however made extensive analysis and verification of the Anybus LonWorks implementation to ensure compliance with the LonWorks specification.

Contact information:

- <http://www.lonmark.org/certifications/>

Modbus Plus

Modbus Plus is a proprietary system from Modicon. All vendors using this technology must be approved under Modicon's ModConnect Partnership Program.

In the context of Anybus networking technology, this means that Modicon must approve the use of Anybus Modbus Plus interface cards. This is normally handled through a license agreement between the vendor of the end product and ModConnect. Apart from this, no further conformance tests are needed to be able to state Modbus Plus compliance for the end product.

Contact HMS for more information for further information about licensing Modbus Plus technology.

Contact information:

- tbd

PROFIBUS

Products which claim PROFIBUS compliance must pass conformance tests at a certified test facility. HMS embedded products for PROFIBUS are successfully tested for pre-compliance and found to comply with PROFIBUS specifications. Test reports etc. are available and registered at the PROFIBUS Organisation (PNO).

The use of certified PROFIBUS networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state PROFIBUS compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility. The use of certified Anybus technology limits the scope of these tests and thus may make the end product eligible for a discount of the certification fee.

Price indication:

Product	Anybus type	Normal price	Price using Anybus
Modular slave	Anybus-S,	2500 EUR	Approx. 1600 EUR
Modular slave	Anybus-IC, Anybus-CC	2500 EUR	-
Master	Anybus-M	4900 EUR	Approx. 4350 EUR

Remark: Price indication from Comdec in Germany (January 2008).

Contact information:

- <http://www.profibus.com/pb/support/>

PROFINET

Products which claim PROFINET compliance must pass conformance tests at a certified test facility. HMS embedded products for PROFINET are successfully tested for pre-compliance and found to comply with PROFINET specifications. Test reports etc. are available and registered at the PROFIBUS Organisation (PNO).

The use of certified PROFINET networking technology (e.g. Anybus) does not automatically make the end product certified. To be able to state PROFINET compliance for the end product, the final implementation will need to pass further certification tests at a certified test facility. Due to the vast customisation possibilities found in Anybus concept, the use of such technology alone does in itself not constitute a discount of the certification fee.

Contact information:

- <http://www.profibus.com/pb/support/>

REMOTE IO

REMOTE I/O is a proprietary system from Rockwell Automation. All vendors using this technology must be approved under Rockwell Automation's Third Party Program, which gives the vendor the right to use patented Rockwell technology and purchase the REMOTE I/O communication ASIC.

In the context of Anybus networking technology, this means that Rockwell Automation must approve the use of Anybus REMOTE I/O interface cards. This is normally handled through a license agreement between the vendor of the end product and Rockwell Automation. Apart from this, no further conformance tests are needed to be able to state REMOTE I/O compliance for the end product.

Contact HMS for more information for further information about licensing REMOTE I/O technology.

Contact information:

- tbd

Technical Support

The HMS website provides technical information to assist you in using our products. For technical support consult the online FAQ (www.anybus.com), or contact the nearest support centre:

HMS Sweden (Head Office)

E-mail: support@hms-networks.com
Phone: +46 (0) 35 - 17 29 20
Fax: +46 (0) 35 - 17 29 09
Online: www.anybus.com

HMS America

E-mail: us-support@hms-networks.com
Phone: +1-773-404-2271
Toll Free: 888-8-Anybus
Fax: +1-773-404-1797
Online: www.anybus.com

HMS Germany

E-mail: ge-support@hms-networks.com
Phone: +49-721-96472-0
Fax: +49-721-964-7210
Online: www.anybus.com

HMS Japan

E-mail: jp-support@hms-networks.com
Phone: +81-45-478-5340
Fax: +81-45-476-0315
Online: www.anybus.com