CAN solutions

PC interfaces
Repeaters, bridges and gateways
Analysis and diagnosis tools
PLC expansions and more...
Content

2-3 About HMS
4-5 Application areas and industries

Ixxat CAN Products
6-7 CAN PC interfaces
8-11 CAN infrastructure
12-14 CAN analysis and diagnosis
15 CANopen extension for SIMATIC PLC systems
16-17 APIs and protocol software

Anybus CAN-related Products
18-19 Anybus X-gateways
20-21 Anybus Communicator

22 Accessories

All you need for CAN

You can rely on
- Long-term availability
- 100% product testing
- Fast delivery from stock
- High quality standard
- Competent & fast support
Pioneering CAN technology

For almost 30 years, HMS has been a leading and reliable provider of solutions for industrial communication under the brands Ixxxat, Anybus and Ewon.

With the availability of the first CAN chip in 1988, engineers from HMS implemented CAN-based system solutions and developed analysis tools, interfaces, infrastructure components and CAN-based higher protocols. Under the Ixxxat brand, cutting-edge system concepts and system solutions have been implemented in numerous customer-specific development projects for renowned national and international companies.

As a founding member of CAN-in-Automation, HMS is involved in all important committees of CiA and play a leading role in the continuous development of the CANopen standard.

Reliability and Quality

For many years, quality has been the foundation of our work and an incentive for continual development. To ensure the high quality of our products and services, we have a quality management system according to ISO 9001 since 1996.

As a reliable partner, we design our products for long-term availability and provide continuous product support over the entire product life cycle.

Partnerships and innovation for the future

With innovative, powerful and cost effective products as well as with high quality standards for our services and products, we want to establish long term partnerships with our customers. Therefore, we continually invest a considerable amount of our resources into research and development of new technologies and products such as implementing the new CAN FD standard into our products. Already today, HMS offers a comprehensive portfolio of CAN FD products, from PC interfaces to topology components and analysis tools.
Ixxat solutions for industrial automation
– used in a variety of applications and industries...

**Machine control**
- Easy connection of PCs to CAN-based Networks for control applications
- CANopen and CAN extension for SIMATIC® PLCs

**Connect devices to CAN and Industrial Ethernet**
- Protocol converters for connecting serial or CAN-based devices to various fieldbus and industrial Ethernet networks
- Interconnect CAN with CAN FD
- Protocol software, the highly flexible way for implementing CANopen or SAE J1939

**Network infrastructure**
- Cost savings through easier wiring and implementation of star/tree structures
- Coupling of different network standards and devices, including wireless
- Easy and risk-free transition to CAN-FD using bridges and gateways
- Increase of the system reliability and protection against overvoltage

**Troubleshooting and analysis**
- Test and configuration of your devices and systems during development and commissioning
- Mobile or PC-based troubleshooting for CAN networks
As a longtime CAN expert, we are a reliable partner when it comes to CAN technology as well as CAN and CAN FD products.

Christian Schlegel, Managing Director of the HMS Technology Center Ravensburg

Maintenance and service

- Mobile network analysis for service technicians and commissioning
- Wireless system access for easy diagnostics and configuration
- Autarkic long-term monitoring of networks

Customized solutions

If you have specific requirements and need a customized solution, we are at your side with consulting and development services – in all phases of your project. From the first specification to production and maintenance.

Your “look and feel”? We adapt our standard products to meet your requirements and provide complete OEM solutions. From simple brand labeling up to hardware and software customization.
Ixxat PC/CAN interfaces enable applications to access CAN networks with a unique variety of different PC interface standards. Just select the interface that suits your application, performance requirements or required cost.

### Various versions and interfaces

Ixxat CAN interfaces are modularly designed and can be equipped with up to four CAN high-speed channels. They can also be used within automotive applications with CAN low-speed and LIN channels. For fast networks, the CAN interfaces are also available with up to two CAN FD channels. The PC interfaces are available in low-cost passive or active versions with powerful on-board controllers. Active PC interfaces can be used in applications with high demands on data pre-processing, such as high-precision time stamping or active filtering of messages to be sent or received directly on the interface.

In addition to custom applications, the CAN interfaces are also basis for the extensive Ixxat tool chain, which consists of analysis and configuration tools, as well as configuration software from a wide variety of equipment manufacturers.

### PC Interfaces

for CAN, CAN FD, CANopen, DeviceNet and SAE J1939

### Highlights

- Common driver interface for easy exchange of the PC interface type without any changes to your application
- Supports all standard PC interfaces
- Powerful driver packages
- High data throughput combined with low latency
- High quality standards
- Free drivers for a variety of operating systems

### Table

<table>
<thead>
<tr>
<th>Product</th>
<th>CAN-IB200/PCIe</th>
<th>CAN-IB600/PCIe</th>
<th>CAN-IB400/PCIe</th>
<th>CAN-IB120/PCIe Mini</th>
<th>CAN-IB520/PCIe Mini</th>
<th>CAN-IB 410/PMC</th>
<th>CAN-IB 810/PMC</th>
<th>CAN-IB 200/420 CANblue II</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC interface</td>
<td>PCI express</td>
<td>PCI</td>
<td>PCIe</td>
<td>PCIe Mini Card</td>
<td>PCIe Mini Card</td>
<td>PMC / XMC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microcontroller</td>
<td>32 Bit</td>
<td>32 Bit</td>
<td>32 Bit</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>32 Bit</td>
<td></td>
</tr>
<tr>
<td>Fieldbus</td>
<td>1-4 x CAN</td>
<td>1-2 x CAN / CAN FD</td>
<td>1-4 x CAN</td>
<td>1-2 x CAN / LIN opt.</td>
<td>1 x CAN / CAN FD</td>
<td>2 x CAN</td>
<td>1 x CAN / CAN FD</td>
<td>2 x CAN / CAN FD</td>
</tr>
<tr>
<td>interfaces</td>
<td>1-4 x CAN / CAN FD</td>
<td>1-4 x CAN / LIN opt.</td>
<td>ISO 11898-2;</td>
<td>ISO 11898-3;</td>
<td>ISO 11898-3;</td>
<td>ISO 11898-2;</td>
<td>ISO 11898-2;</td>
<td>ISO 11898-3;</td>
</tr>
<tr>
<td>CAN bus</td>
<td>ISO 11898-2;</td>
<td>ISO 11898-2;</td>
<td>ISO 11898-2;</td>
<td>ISO 11898-3;</td>
<td>ISO 11898-3;</td>
<td>ISO 11898-2;</td>
<td>ISO 11898-2;</td>
<td>ISO 11898-3;</td>
</tr>
<tr>
<td>interface</td>
<td>opt. switchable to ISO 11898-3</td>
<td>opt. switchable to ISO 11898-3</td>
<td>opt. switchable to ISO 11898-3</td>
<td>opt. switchable to ISO 11898-3</td>
<td>opt. switchable to ISO 11898-3</td>
<td>opt. switchable to ISO 11898-3</td>
<td>opt. switchable to ISO 11898-3</td>
<td>opt. switchable to ISO 11898-3</td>
</tr>
<tr>
<td>CAN connection</td>
<td>Sub D9 plug (CiA 303-1)</td>
<td>Sub D9 plug (CiA 303-1)</td>
<td>Cable with open ends</td>
<td>Sub D9 plug according to CiA 303-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Galv. isolation</td>
<td>optional</td>
<td>1 kV, 1 sec.</td>
<td>1 kV, 1 sec.</td>
<td>optional</td>
<td>1 kV, 1 sec.</td>
<td>1 kV, 1 sec.</td>
<td>1 kV, 1 sec.</td>
<td></td>
</tr>
</tbody>
</table>
Driver packages with common application interface

All the different PC/CAN interfaces can be operated with the hardware-independent drivers for Windows (VCI) and real-time operating systems (ECI) by using a uniform programming interface.

Switching between PC/CAN interfaces is very easy and can be done without changes to the application. Thanks to this, users can benefit from future technologies very quickly.

Linux, SocketCAN, INtime, RTX, QNX and VxWorks

For use of CAN interfaces with Linux and in real-time environments, HMS provides the universal “Embedded Communication Interface” driver (ECI) free of charge. The application interface is designed as a “ANSI-C” interface and contains all necessary functions. In addition, a SocketCAN driver enables the use with standard Linux CAN tools.

CANopen & SAE J1939 APIs

For use of CAN interfaces under CANopen and J1939, HMS offers driver APIs that provide all protocol-specific functions.

Windows

The “Virtual Communication Interface” (VCI) is designed as a system server and allows simultaneous access by several applications to one or more CAN controllers of one or more PC interfaces. Moving all important functions to the kernel optimizes the real-time capability of the VCI driver substantially. For simple testing purposes and start-up, the free canAnalyzer Mini is included.

VCI application interface:
- C API
- C++ API
- .NET API
- JAVA API
- LabView API
- LabWindows
- 3rd-party software

www.ixxat.com/can-interfaces
CAN Infrastructure

Bridges, Gateways and Repeaters for CAN and CAN FD

**Highlights**

- Cost savings thanks to simple wiring
- Allows larger system expansion
- Filter and conversion functionality
- Increased system reliability
- Line protection by galvanic isolation
- Bridging of large distances and easy system access using Bluetooth, Ethernet and more
- DIN rail backbone bus

**CAN Bridges and Gateways**

The use of bridges and gateways opens up a large number of configuration possibilities. For example, CAN systems can be implemented over a larger area, devices without CAN interfaces can be connected to CAN systems or CAN systems can be coupled using different technologies, such as Bluetooth or Ethernet.

CAN bridges can link CAN networks of different bit rates or protocols with each other as well as CAN and CAN FD devices and systems. Bridges are based on the store-(modify)-forward method.

<table>
<thead>
<tr>
<th>Product</th>
<th>CANbridge NT 200/420</th>
<th>CAN@net NT 200/420</th>
<th>CANblue II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Configurable CAN / CAN-FD bridge</td>
<td>CAN-/CAN-FD to Ethernet Gateway and Bridge</td>
<td>CAN/Bluetooth Gateway, Bridge and PC Interface</td>
</tr>
<tr>
<td><strong>Application field</strong></td>
<td>Extension of the network dimension, segmentation and linking of CAN and CAN FD</td>
<td>Expansion of networks via bridge and Ethernet as well as connection to Ethernet systems and devices</td>
<td>Enables wireless CAN connections, e.g. as replacement for abrasive rings</td>
</tr>
<tr>
<td><strong>Functionality</strong></td>
<td>- NEW: Action Rules, Message filtering, Identifier conversion, Baudrate conversion, Mapping/Multiplexing</td>
<td>- NEW: Action Rules &amp; MQTT, Message filtering, Identifier conversion, Baudrate conversion, Mapping/Multiplexing</td>
<td>- Message filtering</td>
</tr>
<tr>
<td><strong>Fieldbus interfaces</strong></td>
<td>up to 4 x CAN or 2 x CAN and 2 x CAN-FD</td>
<td>up to 4 x CAN or 2 x CAN and 2 x CAN-FD</td>
<td>1 x CAN</td>
</tr>
<tr>
<td><strong>CAN bus interface</strong></td>
<td>4 x ISO 11898-2</td>
<td>4 x ISO 11898-2</td>
<td>ISO 11898-2</td>
</tr>
<tr>
<td><strong>CAN connection</strong></td>
<td>Screw terminals</td>
<td>Screw terminals</td>
<td>Sub D9 plug (CiA 303-1)</td>
</tr>
<tr>
<td><strong>Further interfaces</strong></td>
<td>USB for the device configuration</td>
<td>10/100 MBit/s, Twisted-Pair, RJ45; USB for configuration</td>
<td>Bluetooth specification V2.1, Class 1 / +17 dBm</td>
</tr>
<tr>
<td><strong>Galvanic isolation</strong></td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
principle where CAN messages are received by a sub-network and then transmitted to the other sub-network. Translation and filter rules can also be used, allowing a protocol adaptation to be carried out between the sub-networks. This includes segmentation of a CAN FD message into several CAN messages and vice versa.

CAN bridges are good for creating hierarchical networks by transferring only the information to the connected sub-networks via bridges which are relevant to the sub-network. The bridge function can also be executed with the aid of other transmission systems. For example, the CAN-Ethernet-CAN bridge is set-up by two CAN-Ethernet gateways which enable connection to remote CAN networks.

With the CAN@net NT 420 this bridge can be extended to a mesh with four devices connecting up to 16 CAN / CAN FD networks.

As an extension to the CAN bridges, CAN gateways allow access to CAN networks via other communication systems. In each case, the protocols of the connected bus systems are mapped to the other communication model.

Application example:
Cloud connection of the CAN@net NT via MQTT

- Easy configuration of actions without programming
- Triggers for received messages or device/bus status
- Event notifications (alarm, maintenance, device or network status)
- Transmission of selected CAN or CAN FD message content

www.ixxat.com/bridges
CAN Repeaters

CAN Repeaters are used to establish a physical coupling of two or more segments of a CAN bus system. They can be used to implement tree or star topologies as well as for long drop lines. Systems connected by Repeaters are independent electrical segments that can be optimally terminated in terms of signals. In addition, network segments can be electrically decoupled using a galvanically isolated repeater.

Ixxat CAN Repeaters are specially designed for use in an industrial environment, meeting the highest demands in terms of robustness, temperature range and safety. Users can benefit from significantly improved system reliability along with cost-savings thanks to simpler wiring.

According to the transceiver output capacities, the division of a CAN system into several subsystems:

### Highlights
- Cost savings thanks to simple wiring
- Increased system reliability
- Line protection by galvanic isolation
- DIN rail backbone bus
- The first CAN repeater for CAN FD

### CAN Repeaters

<table>
<thead>
<tr>
<th>Product</th>
<th>CAN-CR100</th>
<th>CAN-CR110/FO</th>
<th>CAN-CR120/HV</th>
<th>CAN-CR200</th>
<th>CAN-CR210/FO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Repeater for CAN and CAN FD</td>
<td>FO Repeater for CAN and CAN FD</td>
<td>Repeater for CAN and CAN FD with 4 kV galvanic iso.</td>
<td>Stackable Repeater for CAN</td>
<td>Stackable FO Repeater for CAN</td>
</tr>
<tr>
<td><strong>CAN bus interface</strong></td>
<td>2 x ISO 11898-2</td>
<td>1 x ISO 11898-2</td>
<td>2 x ISO 11898-2</td>
<td>2 x ISO 11898-2; DIN rail bus</td>
<td>1 x ISO 11898-2; DIN rail bus</td>
</tr>
<tr>
<td><strong>CAN connectors</strong></td>
<td>Screw-terminals</td>
<td>Screw-terminals</td>
<td>Screw-terminals</td>
<td>SUB D9</td>
<td>SUB D9</td>
</tr>
<tr>
<td><strong>CAN bus termination</strong></td>
<td>with or without</td>
<td>with or without</td>
<td>with or without</td>
<td>Switchable via soldering jumpers</td>
<td>Switchable via soldering jumpers</td>
</tr>
<tr>
<td><strong>Galvanic isolation</strong></td>
<td>CAN1 / CAN2 1 kV, 1 sec.</td>
<td>CAN1 - PWR 1 kV CAN2: Fiber Optic</td>
<td>CAN 1 / CAN2 / PWR 4 kV, 1 sec.</td>
<td>CAN1 / CAN2 1 kV, 1 sec.</td>
<td>CAN1 - PWR 1 kV CAN2: Fiber Optic</td>
</tr>
<tr>
<td><strong>FO interface</strong></td>
<td>-</td>
<td>ST (fiber optic 50/125 μm duplex)</td>
<td>-</td>
<td>-</td>
<td>F-SMA or ST (fiber optic 50/125 μm duplex)</td>
</tr>
<tr>
<td><strong>Baudrate</strong></td>
<td>All baudrates (Please note that transmission delay limits usage in networks above 888 kbps)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
connected via CAN repeaters, increases the maximum number of bus nodes. Using repeaters does not influence the real-time behavior of a system because in terms of transmission behavior it corresponds to a network that consists only of lines.

Ixxat CAN FD repeaters make it possible to simplify the enhanced topology requirements when using CAN FD.

<table>
<thead>
<tr>
<th>CAN-CR220</th>
<th>CAN-CR300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeater for CAN with 4 kV galvanic iso.</td>
<td>Repeater for CAN and CAN FD</td>
</tr>
<tr>
<td>2 x ISO 11898-2</td>
<td>4 x ISO 11898-2</td>
</tr>
<tr>
<td>SUB D9</td>
<td>Screw-terminals</td>
</tr>
<tr>
<td>Switchable via soldering jumpers</td>
<td>with or without</td>
</tr>
<tr>
<td>CAN1 / CAN2 / PWR 4 kV, 1 sec.</td>
<td>CAN 1 / 2 / 3 / 4 1 kV, 1 sec.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conventional bus structure**
The distance between the two nodes furthest apart (1 & 6) is 220 meters

**Extended structure with drop line**
The distance between the two nodes furthest apart (1 & 4 or 4 & 6) is 150 meters
canAnalyser and Modules

The canAnalyser is a powerful tool for development, testing and maintenance of CAN systems. The software is based on a modular concept and employs special features that offer exceptional openness and extensibility.

The canAnalyser offers functions covering many areas of application, such as transmission of individual messages and signals, transmission of sequences, reception and interpretation of messages and signals and display of statistical data. The signals are managed within a database and can be loaded using special import filters. Import filters are available for the CANdb, FIBEX, DIM and LDF format. CANdb and DIM databases can be created by using the included editor.

<table>
<thead>
<tr>
<th>Product</th>
<th>canAnalyser 3 Mini*</th>
<th>canAnalyser 3 Lite</th>
<th>canAnalyser 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>PC based analyzing tool for CAN and LIN systems</td>
<td>Reception, Transmission, Trace, Replay, Sequencer module for CAN, CAN-FD and LIN messages</td>
<td>In addition to the lite version: Signal/Graphic and Transmit Module for Signals</td>
</tr>
<tr>
<td>Included functions/ modules</td>
<td>Reception and Transmission module for CAN, CAN-FD and LIN messages</td>
<td>Signal reception module CANdb, FIBEX, DIM, LDF import</td>
<td></td>
</tr>
<tr>
<td>Features</td>
<td>Online monitoring of bus traffic</td>
<td>Online monitoring of bus traffic</td>
<td>In addition to the lite version: Multi-line and multi-board operation</td>
</tr>
<tr>
<td></td>
<td>Transmission of singleshot, cyclic messages and sequences</td>
<td>Transmission of singleshot, cyclic messages and sequences</td>
<td>Multiple module instances</td>
</tr>
<tr>
<td></td>
<td>Creation of command controlled message sequences</td>
<td>Creation of command controlled message sequences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recording of messages with configurable trigger conditions</td>
<td>Recording of messages with configurable trigger conditions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graphical presentation of message content on the time line</td>
<td>Graphical presentation of message content on the time line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Detection/presentation of the bus load</td>
<td>Detection/presentation of the bus load</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open programming interface</td>
<td>Open programming interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scripting host</td>
<td>Scripting host</td>
<td></td>
</tr>
</tbody>
</table>

Operating sys. | Windows 7 (32/64 bit) / Windows 8 (32/64 bit) / Windows 10 (32/64 bit) | Windows 7 (32/64 bit) / Windows 8 (32/64 bit) / Windows 10 (32/64 bit) | Windows 7 (32/64 bit) / Windows 8 (32/64 bit) / Windows 10 (32/64 bit) |

* For simple testing purposes and start-up the free canAnalyser Mini is installed with the VCI.
tool. Statistical values like bus load or error frames can be evaluated together with the signals from a database. Script-based statistics functions also permit quick, easy adaptation to your specific application needs.

Additional functions for the canAnalyser are provided by optional modules, such as protocol specific display of messages in CANopen, DeviceNet or J1939 based systems. Customer-specific functions can be easily integrated via an open .NET programming interface in the form of individual modules. The canAnalyser is based on the VCI driver and can be used with all Ixxat PC CAN interfaces.

<table>
<thead>
<tr>
<th>Product</th>
<th>CANopen Module</th>
<th>DeviceNet Module</th>
<th>SAE J1939 Module</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>CANopen extension for canAnalyser /-lite</td>
<td>DeviceNet extension for canAnalyser /-lite</td>
<td>SAE J1939 extension for canAnalyser /-lite</td>
</tr>
<tr>
<td><strong>Included functions/modules</strong></td>
<td>Message interpretation/display according to CANopen standard &amp; CAN FD USDO interpretation</td>
<td>Message interpretation/display according to DeviceNet standard</td>
<td>Message interpretation/display according to SAE J1939 standard</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td>Scroll or overwrite message display</td>
<td>Scroll mode message display</td>
<td>Scroll or overwrite message display</td>
</tr>
<tr>
<td></td>
<td>EDS, DCF, XDD file import</td>
<td>Configuration of explicit and fragmented connections</td>
<td>Interpretation of application, diagnosis and connection manag. messages</td>
</tr>
<tr>
<td></td>
<td>Export to CSV and clipboard</td>
<td>Evaluation and monitoring of the fragmentation protocol with message wise or fragment presentation</td>
<td>Change highlighting and reception counter</td>
</tr>
<tr>
<td></td>
<td>Change highlighting and receive statistics</td>
<td>Filtering by Message Group or ID, MAC ID and message type</td>
<td>Filtering by Parameter Group Number destination and source address</td>
</tr>
<tr>
<td></td>
<td>Filtering by node number and message type</td>
<td>File recording</td>
<td>File recording</td>
</tr>
<tr>
<td></td>
<td>Interpretation of all relevant protocols and PDO content</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>File recording</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data logger for CAN

Cost-effective logging solution for CAN and CAN FD networks.

The CAN data logger is based on the powerful FRC platform and can be easily configured with the free version of the ACT tool. The basic version has 4 CAN channels and allows recording to SD card or USB. Alternatively, the device is available with WLAN for configuration and download.

### Product CAN Data Logger

<table>
<thead>
<tr>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous recording of up to 8 CAN channels (4 x CAN FD)</td>
</tr>
<tr>
<td>Recording with a uniform time base</td>
</tr>
<tr>
<td>Easy configuration via drag &amp; drop of messages/signals or complete buses</td>
</tr>
<tr>
<td>Graphical trigger configuration with pre and post trigger (ring buffer)</td>
</tr>
<tr>
<td>Recording on SD card, USB stick or USB hard disk (CSV, MDF4 or binary)</td>
</tr>
<tr>
<td>Visualization via Web-socket with HTML5 capable devices (tablet/PC) using USB, LAN or WLAN</td>
</tr>
<tr>
<td>Easy upgrade from data logger to gateway</td>
</tr>
</tbody>
</table>
More powerful versions with 8 CAN channels, FlexRay, analog/digital IO are also available

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### Product CANcheck

<table>
<thead>
<tr>
<th>Description</th>
<th>Hand-held installation tester for CAN systems for commissioning, troubleshooting and maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>Test of wiring, terminators, cable length, impedance</td>
</tr>
<tr>
<td></td>
<td>Signal level and bus load</td>
</tr>
<tr>
<td></td>
<td>Determination of transmitted IDs and display of reception frequency</td>
</tr>
<tr>
<td></td>
<td>Display of error frames per time unit</td>
</tr>
<tr>
<td></td>
<td>Automatic baudrate detection</td>
</tr>
<tr>
<td></td>
<td>CANopen mode: Message display according to the node number</td>
</tr>
<tr>
<td></td>
<td>Storage of results and USB transmission</td>
</tr>
<tr>
<td>Display</td>
<td>LCD display with backlight</td>
</tr>
<tr>
<td>CAN interface</td>
<td>1 x CAN (ISO 11898-2)</td>
</tr>
<tr>
<td>Additional interfaces</td>
<td>USB 2.0 for PC based control and message download; BNC trigger output for the oscilloscope</td>
</tr>
<tr>
<td>Protocols</td>
<td>CAN, CANopen</td>
</tr>
<tr>
<td>Power supply</td>
<td>4 x 1.5 V AA battery or USB</td>
</tr>
<tr>
<td>Operation</td>
<td>Via keyboard or terminal program</td>
</tr>
</tbody>
</table>

Diagnostic tool

By using Ixxat CANcheck, CAN systems can be analyzed and evaluated upon installation and during operation.

Based on the analysis results, errors can be quickly and easily eliminated. An existing system can be optimized to achieve higher reliability. In addition, newly created systems can be tested thoroughly.

www.ixxat.com/diagnosis
### Highlights

- Easy integration of CAN or CANopen-based devices with Siemens equipment
- Enables interaction between PROFIBUS/PROFINET controllers and CAN/CANopen fieldbus devices
- Supports implementation of any custom CAN based fieldbus protocol thanks to the CAN 2.0A mode
- Fully integrated into the hardware catalog of TIA Portal
- PLC function blocks available for easy integration in to TIA Portal

The CM CANopen module for the SIMATIC S7-1200® basic controller includes HMS CANopen master technology in a compact format fully integrated with the SIMATIC hardware form factor. The module enables SIMATIC automation solutions to be connected to CAN or CANopen based equipment making more expensive and space demanding PROFIBUS or PROFINET to CANopen gateways unnecessary.

The module is supported by an optimized and highly intuitive CANopen configuration tool that enables users to quickly generate all required configuration data for the CANopen network.

Thanks to the support for operation in transparent CAN 2.0A mode, system integrators have the possibility to implement any custom CAN based fieldbus protocol.

---

### CANopen® interface for SIMATIC® industrial automation systems

The CANopen modules by HMS enable system integrators to easily and inexpensively integrate CANopen field devices with SIMATIC industrial automation equipment.

<table>
<thead>
<tr>
<th>Product</th>
<th>CM CANopen for SIMATIC S7-1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supported CANopen Features</strong></td>
<td></td>
</tr>
<tr>
<td>Implemented CiA specifications</td>
<td>CiA 301 version 4.2</td>
</tr>
<tr>
<td></td>
<td>CiA 302 version 4.1, parts 1-4</td>
</tr>
<tr>
<td>Process Data Objects (PDO)</td>
<td>64 RPDO, 64 TPDO</td>
</tr>
<tr>
<td>TPDO transmission types and protocols</td>
<td>Acyclic synchronous, cyclic synchronous, event-driven PDO write protocol</td>
</tr>
<tr>
<td>Service Data Objects (SDO)</td>
<td>SDO func., normal (segmented) &amp; expedited upload &amp; download protocols</td>
</tr>
<tr>
<td>Device monitoring</td>
<td>Heartbeat producer/consumer</td>
</tr>
<tr>
<td>CAN bit rate</td>
<td>20 kbit/s – 1 Mbit/s</td>
</tr>
<tr>
<td><strong>CANopen Master Specific Features</strong></td>
<td></td>
</tr>
<tr>
<td>Network Management (NMT)</td>
<td>Master func. with NMT node control and NMT error control Support for NMT startup process (CiA 302)</td>
</tr>
<tr>
<td>Node guarding (NMT error control)</td>
<td>Master and slave</td>
</tr>
<tr>
<td>Service Data Objects (SDO)</td>
<td>Client and server</td>
</tr>
<tr>
<td><strong>CANopen Slave Specific Features</strong></td>
<td></td>
</tr>
<tr>
<td>Network Man. (NMT) state machine</td>
<td>yes</td>
</tr>
<tr>
<td>Node guarding (NMT error control)</td>
<td>Slave</td>
</tr>
<tr>
<td>Synchronization</td>
<td>Consumer</td>
</tr>
<tr>
<td>Service Data Objects (SDO)</td>
<td>Server</td>
</tr>
<tr>
<td>Automatic bit rate detection</td>
<td>no</td>
</tr>
</tbody>
</table>

www.ixxat.com/plc-extension
APIs and Protocol Software

for quick and easy implementation into your PC-based applications and automation devices

Windows/Linux APIs

HMS offers APIs for CANopen and SAE J1939 enabling development of PC-based applications. Based on these APIs, control, service and test programs can be quickly and easily realized. To access the fieldbus system Ixxat PC CAN interfaces can be used.

<table>
<thead>
<tr>
<th>Product</th>
<th>CANopen Master API</th>
<th>SAE J1939 API</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>For development of simple PC-based control and test programs</td>
<td>For development of J1939 service and test applications</td>
</tr>
<tr>
<td>Standards</td>
<td>CiA 301, CiA 305</td>
<td></td>
</tr>
<tr>
<td>Included functions</td>
<td>Transmission/reception of PDOs (synchronous and asynchronous) Client (Master/Slave) and server SDO with support for normal, expedited and block transfer mode NMT Node Control, NMT Error Control (Heartbeat, Node Guarding) SYNC, EMERGENCY and TIMESTAMP objects For C, C# (incl. .NET core), vb.net, Delphi and LabView Multi-channel support</td>
<td>Supports all features of the protocol software Automatic conversion of received messages into signals and vice versa Use of the J1939 designer data base for signal interpretation Supports multiple CAN channels and therefore also J1939 networks Available for Windows and Linux</td>
</tr>
</tbody>
</table>

Highlights

✓ Simple connection of the application program via Microsoft Windows DLL or Linux shared library
✓ Supports all PC-interface standards
✓ Reliable operation in thousands of applications worldwide
Protocol software

Besides APIs for PC-based applications HMS also provides protocol software packages for embedded devices. The software packages are offered for a large number of microcontroller platforms and compilers, but can also be easily adapted to specific target systems.

Available protocols:
- CANopen – Slave/Master/Manager
- CANopen FD
- SAE J1939
- EtherNet/IP – Adapter/Scanner
- FSoE
- CIP Safety

HMS provides a comprehensive service offer for your development project on request:
- Technical support by our experienced team.
- Detailed code introduction for your developers.
- Software adaptation, implementation and testing, as well as development of custom hardware.

Detailed information about the Ixxat protocol software packages can be found on the Ixxat webpage.

Tools

In addition to providing protocol software packages and APIs, configuration and analysis tools are also offered to support your development project:
- CANopen DeviceExplorer
- CANopen DeviceDesigner
- SAE J1939 DeviceDesigner
- EIPscan
- canAnalyser with CANopen, DeviceNet and SAE J1939 Module

www.ixxat.com/protocols
Network to Network Gateways

Anybus X-gateways interconnect industrial networks and PLC systems – more than 200 network combinations available!

Anybus X-gateways allow an easy transfer of I/O data between all major industrial networks. This means that CAN based networks can be connected to any fieldbus or Industrial Ethernet networks.

**Anybus X-gateway**

Anybus X-gateways enable transfer of cyclic I/O data between CAN-based networks – such as CANopen, DeviceNet or SAE J1939 – and any other network. It is also possible to transmit acyclic parameter data for certain networks.

The gateways are compatible and tested with all leading manufacturers of PLCs, e.g. Siemens, Allen Bradley, Schneider Electric, Mitsubishi, ABB, Omron, Hitachi, Beckhoff, Phoenix Contact, Bosch Rexroth and more.

Easy installation – no programming required!

All X-gateways are delivered with a configuration tool, so no programming skills are required for commissioning. With the “Anybus Configuration Manager X-gateway” you can set the I/O data sizes on each network side.
Designed for harsh industrial environments

The X-gateways are designed for use in harsh industrial environments. Mounted on DIN rail, they feature IP20 protection and require a 24 V DC power supply. X-gateways are intelligent stand-alone devices, which are operated without fans and are designed for industrial operating temperatures. No moving parts are used inside the gateways.

Anybus X-gateway CANopen

The X-gateway CANopen family enables coupling of CANopen networks with all major fieldbus and Ethernet networks. These gateways work as a CANopen Manager/Master and transparently transmit I/O data between CANopen and the connected fieldbus or Industrial Ethernet network.

Configuration

The easy-to-use Windows based configuration tool “Anybus Configuration Manager CANopen” is part of the delivery scope. In addition, the gateway can be configured via its CANopen master interface with any standard CANopen configuration tool.
Protocol Converter

Anybus Communicator connects your automation devices with fieldbuses and Industrial Ethernet

Highlights

- No hardware or software changes are required for the connected automation device
- Available for all major fieldbuses and Industrial Ethernet networks
- Compatible with all leading PLCs
- Simple configuration using the Anybus Configuration Manager – no programming required!

Anybus Communicator connects devices with serial or CAN based interfaces to CANopen, DeviceNet or any other fieldbus and industrial Ethernet network.

Anybus Communicator with serial interface

The serial version of Anybus Communicator supports device connection via RS-232, RS-422, RS-485 and Modbus RTU, enabling it to act as an external interface to industrial networks for a large number of serial devices – e.g. for drives, sensors, HMIs, barcode readers and RFID readers.

The Communicator is able to convert almost any standard or custom (proprietary) protocol. All protocol adaptations are done through configuration, no hardware or software changes are required for connected devices.

Compatible with all leading PLCs

Anybus Communicator is compatible and tested with PLC’s from all leading manufacturers, e.g. Siemens, Allen Bradley, Schneider Electric, Mitsubishi, ABB, Omron, Hitachi, Beckhoff, Phoenix Contact and Bosch Rexroth.

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Anybus Communicator</th>
<th>Anybus Communicator CAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol converter for connection of devices with a serial interface to industrial networks</td>
<td>Protocol converter for connection of devices with CAN interface to industrial networks</td>
<td></td>
</tr>
</tbody>
</table>

20
Easy installation - no programming required!

The configuration of the communicator is made with the free and easy-to-use Windows-based configuration software “Anybus Configuration Manager”. With the Anybus Configuration Manager almost every serial protocol can be configured, for example Master/Slave protocols such as Modbus or Consumer/Producer protocols such as CAN.

Reusable configuration save time and money

Communicator configurations can be saved and restored at any time. So if you, for example, have to switch from PROFIBUS to PROFINET, you can easily load an existing device configuration file done for e.g. PROFIBUS into a PROFINET Communicator.

Anybus Communicator CAN

The Anybus Communicator CAN operates on the same principle as the Anybus Communicator, the only difference is that the connection to your device is made by using CAN.

It also acts as a protocol converter and converts data between the coupled CAN device and the connected industrial network.

Supports CAN 2.0A and CAN 2.0B

The Anybus Communicator CAN is suitable for all devices that support CAN 2.0A or CAN 2.0B. The protocol converter converts almost any CAN-based Produce/Consume and Request/Response protocol.

Configuration

The CAN frames and their conversion to the respective fieldbus or Ethernet network can be configured by using the Anybus Configuration Manager, which is included in the scope of delivery.

www.anybus.com
CAN Accessories
Termination resistors, plugs, cables and antennas

As accessories for the CAN products, HMS offers termination resistors of various designs, plugs, cables for the connection of nodes, adapter cables as well as antennas for the Ixxat CANblue II. A complete overview can be found on the Ixxat webpage.

---

### CAN Accessories

**Termination resistors, plugs, cables and antennas**

<table>
<thead>
<tr>
<th>Product</th>
<th>CAN Cable</th>
<th>Y CAN Cable</th>
<th>Y CAN Cable</th>
<th>CAN Adapter Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plug/Sockets</td>
<td>Sub-D9 (1x socket / 1x plug)</td>
<td>Sub-D9 socket to Sub-D9 socket/plug</td>
<td>Sub-D9 socket to Sub-D9 socket/plug</td>
<td>RJ45 plug to Sub-D9 plug</td>
</tr>
<tr>
<td>Dimensions</td>
<td>2.0 m</td>
<td>22 cm</td>
<td>2 m</td>
<td>20 cm</td>
</tr>
<tr>
<td>Further information</td>
<td>- Pin connection 1-to-1 - Shield</td>
<td>- Pin connection 1-to-1 - Shield</td>
<td>- Pin connection 1-to-1 - Shield</td>
<td>Set with two cables</td>
</tr>
</tbody>
</table>

---

### T Bus Connector

**Glass Fiber Cable ST**
- For stackable CAN repeaters
- For FO repeater
- Dimensions: 2.0 m or 5 m
- Further information: For creating star/tree topologies in combination with the Ixxat CAN Repeaters

**Glass Fiber Cable F-SMA**
- Duplex
- With 2 plugs on each side
- Wavelength 820 nm, Glas fiber 50/125 µm, Attenuation 3 dB/km

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### Antennas

**Magnetic foot antenna**
- For Ixxat CANblue II
- Dimensions: - / 10 cm

**Screwable antenna foot**
- For Ixxat CANblue II
- Dimensions: 1.5 m / -

**Plug/Sockets**
- RPSMA plug
- Dimensions: 2.0 m / -

---

[www.ixxat.com/accessories](http://www.ixxat.com/accessories)
Work with HMS.
The number one choice for industrial communication and IIoT.

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