

All
you need for
CAN



IXXAT®

All you need for CAN

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

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HMS

*offers “All you need for CAN”
with the IXXAT product series*



Pioneering CAN technology

For almost 30 years, HMS – with the brands IXXAT, Anybus and eWON – has been a reliable provider of data communications solutions in the field of industrial automation and automotive technology.

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 IXXAT 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, we are involved in all important committees of CiA and play a leading role in the 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 build on a long-term availability of our products and provide continuous product support over the entire product life cycle.

With innovative solutions together into 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. To this end we continually invest a considerable amount of our resources in the research and development of new technologies and products – e.g. the implementation of the new CAN FD standard into our products.

You can rely on

- ✓ Long-term availability
- ✓ 100 % product testing
- ✓ Fast delivery from stock
- ✓ High quality standard
- ✓ Competent & fast support



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

Network infrastructure

- Cost savings through easier wiring and implementation of star/tree structures
- Coupling of different network standards and devices, including wireless
- Increase of the system reliability and protection against overvoltage

Connect devices to CAN and Industrial Ethernet

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

Troubleshooting and analysis

- Test and configuration of your devices and systems during development and commissioning
- Mobile or PC-based troubleshooting for CAN networks



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.

“As a longtime CAN expert, we are a reliable partner when it comes to CAN technology and CAN products.”

*Christian Schlegel,
Managing Director of the
HMS Technology Center
Ravensburg*



PC Interfaces

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

The IXXAT PC/CAN interfaces enable PC applications to access CAN networks with a unique variety of different PC interface standards. You can select the PC/CAN interface that suits your application, performance requirements or required unit costs.

Highlights

- ✓ Common driver interface for easy exchange of the PC interface type without any changes to your application
- ✓ Support of all standard PC interfaces
- ✓ Powerful driver packages
- ✓ High data throughput combined with low latency
- ✓ High quality standards

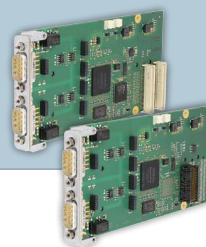
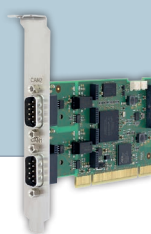
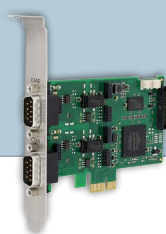
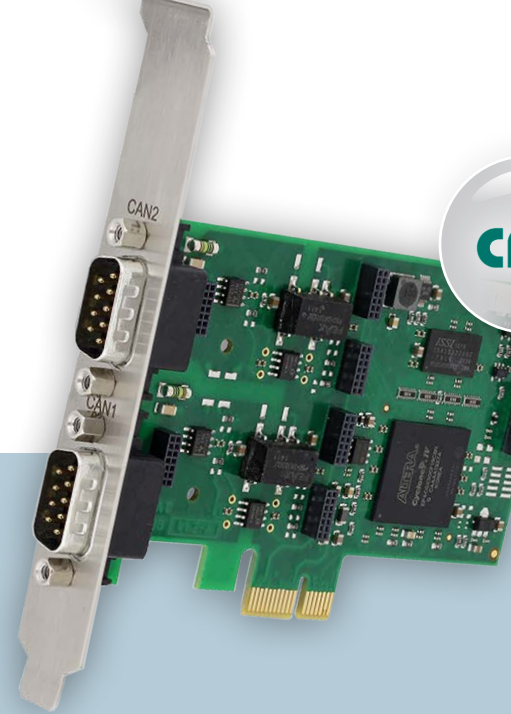
Various variants and interfaces

IXXAT CAN interfaces are – depending on the variant – modularly designed and can be equipped with up to four CAN high-speed channels. They can also be used for automotive with CAN low-speed and LIN channels. For fast networks, the CAN interfaces are also available with up to two CAN FD channels.

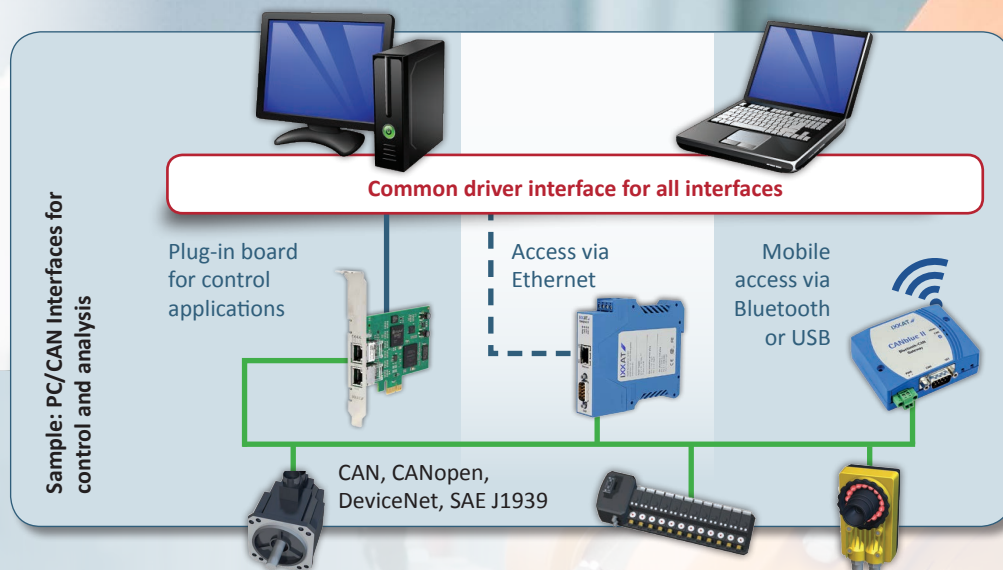
The PC interfaces are available in low-cost passive or active variants with powerful on-board controllers. Active

PC interfaces allow usage within applications with high demands on data pre-processing, such as high-precision time stamps 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 our extensive tool chain – consisting of analysis and configuration tools – as well as configuration software from a wide variety of equipment manufacturers.



Technical Specifications							
Product	CAN-IB100 /PCIe	CAN-IB200 /PCIe	CAN-IB300 /PCI	CAN-IB400 /PCI	CAN-IB600 /PCIe	CAN-IB120/ PCIe Mini	CAN-IB 410/PMC CAN-IB 210/XMC
PC interface	PCI express		PCI		PCI express	PCIe Mini Card	PMC / XMC
Microcontroller	-		-	32 Bit	32 Bit	-	32 Bit
Fieldbus interfaces	1-4 x CAN	1-4 x CAN 1-4 x LIN optional	1-4 x CAN	1-4 x CAN 1-4 x LIN optional	1-2 x CAN	1 / 2 x CAN	1-4 x CAN 1-2 x LIN optional
CAN interface	CAN 2.0 A/B		CAN 2.0 A/B		CAN FD and CAN 2.0 A/B	CAN 2.0 A/B	CAN 2.0 A/B
CAN bus interface	ISO 11898-2; optional switchable to ISO 11898-3		ISO 11898-2; optional switchable to ISO 11898-3		ISO 11898-2	ISO 11898-2	ISO 11898-2 / 11898-3 switchable
CAN connection	Sub D9 plug according to CiA 303-1		Sub D9 plug according to CiA 303-1		Sub D9 plug according to CiA 303-1	Connection cable with open ends	Sub D9 plug according to CiA 303-1
Galv. isolation	optional		optional		1 kV, 1 sec.	optional	1 kV, 1 sec.



Powerful driver packages with common application interface

Despite the variety of different PC/CAN interfaces, all 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 the PC/CAN interfaces type is very easy and can be made without changes to your application. Thus, you are already well prepared for future technologies.

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.

VCI application interface:

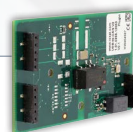
- C-API ■ .NET-API ■ JAVA-API
- LabView-API
- DasyLab (contains drivers)
- LabWindows

Linux, SocketCAN, INtime, RTX, QNX and VxWorks

For use of CAN interfaces under Linux and in real-time environments, HMS provides the universal "Embedded Communication Interface" driver (ECI) free of charge together with an interface. The application interface is designed as a "ANSI-C" interface and contains all necessary functions.

CANopen and SAE J1939 APIs

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



CAN-IB130 /PCIe 104	CAN-IB230 /PCIe 104	USB-to-CAN V2 compact	USB-to-CAN V2 professional	USB-to-CAN V2 embedded	USB-to-CAN V2 plugin	CAN@net II /VCI	CANblue II
PCI Express		USB	USB	USB	USB	Ethernet	Bluetooth (V2.1)
-	32 Bit	32 Bit	32 Bit	32 Bit	32 Bit	32 Bit	32 Bit
1 / 2 x CAN	2 / 4 x CAN 1 x LIN	1 x CAN	2 x CAN 1 x LIN (Automotive)	1 x CAN	1 / 2 x CAN 1 x LIN optional	1 x CAN	1 x CAN
CAN 2.0 A/B		CAN 2.0 A/B	CAN 2.0 A/B	CAN 2.0 A/B	CAN 2.0 A/B	CAN 2.0 A/B	CAN 2.0 A/B
ISO 11898-2	ISO 11898-2 1 x ISO 11898-3 (opt.)	ISO 11898-2	2 x ISO 11898-2 1 x ISO 11898-3 (Automotive)	ISO 11898-2	ISO 11898-2 1 x ISO 11898-3 (opt.)	ISO 11898-2	ISO 11898-2
Angled socket board 2x5		Sub-D9 or RJ45 plug	2 x RJ45 with RJ45/ Sub-D9 adapter	Sub-D9	Connection cable with open ends	Sub D9 plug acc. to CiA 303-1	Sub D9 plug acc. to CiA 303-1
1 kV, 1 sec.		optional	optional	1 kV, 1 sec.	optional	1 kV, 1 sec.	1 kV, 1 sec.

CAN Infrastructure

Repeaters, Bridges and Gateways for CAN



Highlights

- ✓ Cost savings due 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...
- ✓ DIN rail bus backbone bus

CAN Repeaters

In terms of robustness, temperature range and safety, IXXAT repeaters are specially designed for use in an industrial environment. The reliability of a system can be significantly increased while typically saving costs due to simpler wiring.

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 seg-

ments can be electrically decoupled using a galvanically isolated repeater.

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 differ-

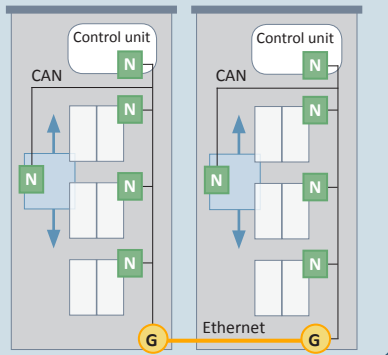


Technical Specifications					
Product	CAN-CR200	CAN-CR210/FO	CAN-CR220	CAN-Repeater	FO-Repeater
Description	Stackable ISO 11898-2 CAN repeater	Stackable ISO 11898-2 to fiber optic converter	ISO 11898-2 with 4 kV galvanic isolation	ISO 11898-2 CAN rep. with low-speed option	ISO 11898-2 to fiber optic converter
CAN bus interface	2 x ISO 11898-2; DIN rail bus	1 x ISO 11898-2; DIN rail bus	2 x ISO 11898-2	2 x ISO 11898-2; optional ISO 11898-2 to ISO 11898-3	1 x ISO 11898-2
CAN connectors	SUB D9	SUB D9	SUB D9	Screw-terminals	Screw-terminals
Integrated CAN bus termination	Switchable			Switchable via soldering jumpers	
Galvanic isolation	CAN 1 / CAN 2 1 kV, 1 sec.	CAN1 - PWR 1 kV CAN 2: Fiber-Optic	CAN 1 / CAN 2 / PWR 4 kV, 1 sec.	CAN 1 / CAN 2 1 kV, 1 sec.	CAN 1 1 kV, 1 sec.
LWL connection	-	F-SMA or ST (fiber optic 50/125 µm duplex)	-	-	ST (fiber optic 50/125 µm duplex)
Baudrate	All baudrates. (Please note that transmission delay limits usage in networks above 888kpbs).				
Transmission delay	approx. 200 ns (equal to 40 meter bus length)	approx. 300 ns (equal to 60 meter bus length)	approx. 200 ns (equal to 40 meter bus length)	approx. 200 ns (equal to 40 meter bus length)	approx. 300 ns (equal to 60 meter bus length)

Application example: Elevator system

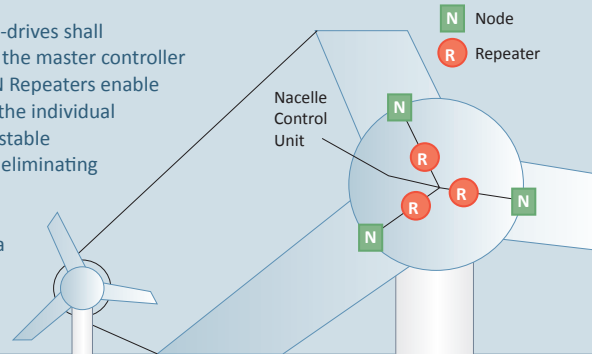
For realization of an intelligent load management the CAN networks of two elevator systems are linked via Ethernet using the IXXAT CAN@net NT 200 gateway.

N Node
G Gateway



Application example: Wind turbine

Three pitch control-drives shall communicate with the master controller via CAN. IXXAT CAN Repeaters enable star connection of the individual blades and enable stable communication by eliminating EMI effects and rebuild signals for transmission via sliprings.



ent technologies, such as Bluetooth, Ethernet or PROFINET.

CAN bridges can link CAN networks of different bit rates or protocols with each other. They are based on the store-(modify)-forward 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. A bridge can, therefore, provide simple gateway functions.

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. An adaptation to customer specific requirements can be made by using the Application Development Kit for the CANbridge.

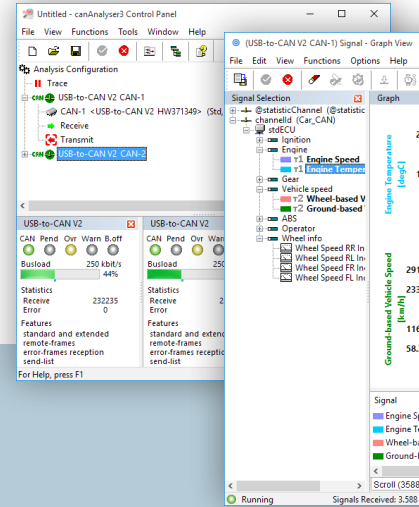
As an extension to the CAN bridges, CAN gateways allow access to CAN networks via other communication systems. In each case, the protocols of the connected bus systems are mapped to the other communication model.



Technical Specifications				
Product	CANbridge	IXXAT CME/PN	CAN@net NT 200	CANblue II
Description	Configurable CAN/CAN bridge	PROFINET-CANopen gateway	CAN/Ethernet Gateway and Bridge	CAN/Bluetooth Gateway, Bridge and PC Interface
Application field	Extension of the network dimension and network segmentation	Connection of CANopen devices and networks to PROFINET	CAN connection via Ethernet for Linux or emb. applications as well as CAN-Ethernet-CAN bridge	Wireless CAN connection of Windows, Linux or emb. applications
Functionality	- Message filtering - Identifier conversion - Baudrate conversion	- Bidirectional transmission - IO-Device (PROFINET) - CANopen-NMT-Master	-	- Message filtering
Fieldbus interfaces	2 x CAN	1 x CAN	2 x CAN	1 x CAN
CAN bus interface	2 x ISO 11898-2	ISO 11898-2	2 x ISO 11898-2	ISO 11898-2
CAN connection	DIN rail version via screw terminals; Alu version via Sub D9 plug according to CiA303-1	Screw terminals	Screw terminals	Sub D9 plug according to CiA 303-1
Further interfaces	RS232 for the device configuration	PROFINET: 2x100 MBit/s ETH via RJ45 (2 port switch)	10/100 MBit/s, Twisted-Pair, RJ45 socket	Bluetooth specification V2.1, Class 1 / +17 dBm
Galvanic isolation	optional	yes	yes	yes

CAN Analyzing and Diagnostic

canAnalyser and diagnostic tools



canAnalyser and Modules

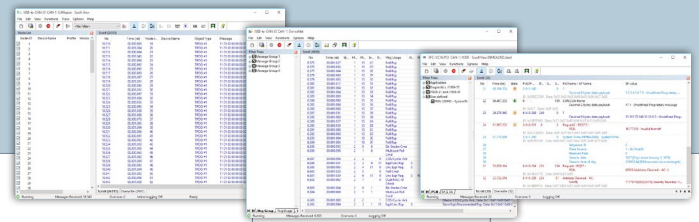
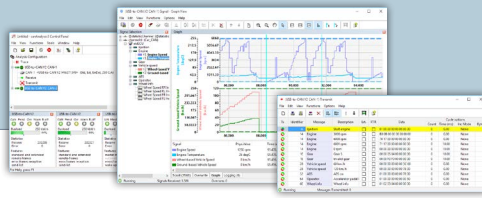
The canAnalyser is a powerful, versatile tool for development, testing and maintenance of Controller Area Network systems. The software package is based on a modular concept and employs special features that offer exceptional openness and extensibility.

The canAnalyser offers functions covering many areas of application, such as: transmission of individual messages and signals or transmission of sequences, reception and interpretation of messages and signals and display of statistical data.

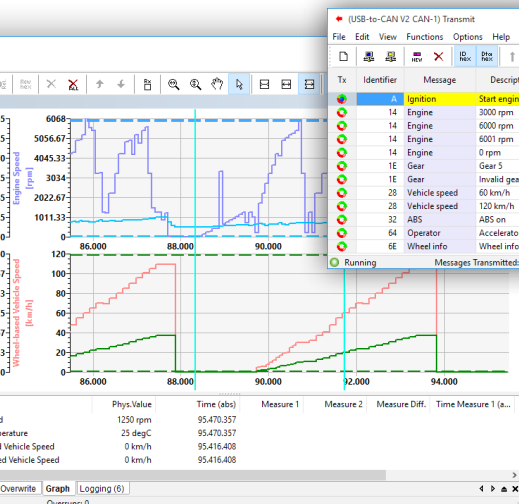
The signals are managed within a database and can be loaded using special import filters. Import filters are available for the CANdb, FIBEX, DIM and LDF format. CANdb and DIM databases can be created by using the included editor tool. Statistical values like bus load or

error frames can be evaluated together with the signals from a database. New, script-based statistics functions also permit quick, easy adaptation to your specific application needs.

Additional functions are provided by optional modules, such as the protocol specific display of messages in CANo-



Product	canAnalyser lite	canAnalyser 3	CANopen Module	DeviceNet Module	SAE J1939 Module
Description	PC based analyzing tool for CAN systems	PC based analyzing tool for CAN systems	CANopen extension for canAnalyser /-lite	DeviceNet extension for canAnalyser /-lite	SAE J1939 extension for canAnalyser /-lite
Included functions/modules	Reception, Transmission, Trace, Replay and Sequencer module for CAN, CAN-FD and LIN messages Signal reception module CANdb, FIBEX, DIM, LDF import	In addition to the lite version: Signal/Graphic and Transmit Module for Signals	Interpretation and display of CAN messages in accordance with the CANopen standard (CiA 301, ...) CAN FD USDO interpretation	Interpretation and display of CAN messages in accordance with the DeviceNet standard	Interpretation and display of CAN messages in accordance with the SAE J1939 standard
Features	Online monitoring of bus traffic Transmission of singleshots, cyclic messages and sequences Creation of command controlled message sequences Recording of messages with configurable trigger conditions Graphical presentation of message content on the time line Detection/presentation of the bus load Open programming interface Scripting host	In addition to the lite version: Multi-line and multi-board operation Multiple module instances	Message display in scroll or overwrite mode EDS, DCF, XDD file import Export to CSV and clipboard Change highlighting and receive statistics Filtering by node number and message type Interpretation of all relevant protocols and PDO content File recording	Display in scroll mode Configuration of explicit and fragmented connections Evaluation and monitoring of the fragmentation protocol with message wise or fragment presentation Filtering by Message Group, Message ID, MAC ID and message type File recording	Message display in scroll or overwrite mode Interpretation of application, diagnosis and connection management messages Change highlighting and reception counter Filtering by Parameter Group Number destination and source address File recording
Operating system	XP / Vista / Windows 7 (32/64 bit) / Windows 8 (32/64 bit) / Windows 10 (32/64 bit)				



Diagnostic tools

By using IXXAT diagnostic tools, CAN systems can be analyzed and evaluated upon installation and during operation. The tools allow recording of the transmitted data and errors as well as detection of signal, transmission and wiring errors.

Based on the analysis results, errors can be quickly and easily eliminated or an existing system can be optimized to achieve higher reliability. In addition, newly created systems can be subjected to a thorough test.

pen, 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.



Product	CANcheck	CANTouch	CAN-Bus-Tester (CBT)	CANobserver
Description	Hand-held installation tester for CAN systems for commissioning, troubleshooting and maintenance	Hand-held tool for the CAN bus physics and protocol analysis	Powerful tool for the CAN bus physics and protocol analysis	Diagnostic tool for the long-term error monitoring of CAN bus systems
Features	Test of wiring, terminators, cable length, impedance Signal level and bus load Determination of transmitted IDs and display of reception frequency Display of error frames per time unit Autom. baudrate detection CANopen mode: Message display according to the node number Storage of measurement results and transm. via USB	<u>Measurements designed as apps:</u> Bus status (Bus traffic load) Bus errors (Active/passive frame err.) Bus voltages Common mode voltage CAN Levels (absolute / differential) Bus wiring (Short-circuits, loop resistances, cable length,...) Node measurement (Quality level, edge steepness, oscilloscope disp.) Protocol monitor	Analysis of the signal quality (levels, slopes, faults) Integrated oscilloscope Powerful trigger functions Monitoring of bus status, bus load, error messages Wiring test Integrated CAN monitor for transmission and reception Automatic baudrate detection Creation of inspection reports	<u>Physical monitoring:</u> - Signal quality (0..100 %) - Signal-to-noise level - Signal edges <u>Logical monitoring:</u> - Active/Passive error, overload frames, acknowledge errors E-mail reports (device and status information, error messages) Maintenance without PC, continuous recording up to 10 years
Display	LCD display with backlight	Color display with touch screen	-	LEDs for status / errors
CAN interface	1 x CAN (ISO 11898-2)	1 x CAN (ISO 11898-2)	1 x CAN (ISO 11898-2)	1 x CAN (ISO11898-2)
Further interfaces	USB 2.0 for PC based control and message download; BNC trigger output for the oscilloscope	USB 2.0 for measurement data transfer (USB Mass Storage Device)	USB 2.0 for PC connection; BNC trigger output for the oscilloscope	10/100 MBit Ethernet, RJ-45 LAN; Free programmable error output lines (max. 30 V DC)
Protocols	CAN, CANopen	CAN, CANopen, DeviceNet, SAE J1939		
Power supply	4 x 1.5 V AA battery or USB	Integr. lithium-ion battery o. external	9-36 V DC; Power supply incl.	9-36 V DC
Operation and configuration	Via keyboard or terminal program	Via touch screen	Via software tool for Win XP/ Server2003/Vista u. Win7	Via web-interface; Control room connection via SNMP

PLC Extensions

CANopen® interfaces 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.

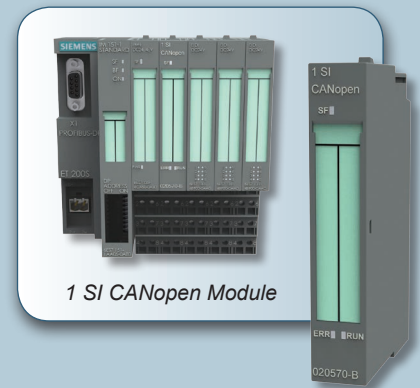
Highlights

- ✓ Easy integration of CAN or CANopen-based devices with Siemens equipment
- ✓ Enabling interaction between PROFIBUS or PROFINET controllers – such as the S7-1200 or ET200S device series – with CAN/CANopen fieldbus devices (gateways)
- ✓ Supports implementation of any custom CAN based fieldbus protocol due to CAN 2.0A mode
- ✓ Fully integrated into the hardware catalog of TIA Portal or STEP 7
- ✓ PLC function blocks available for easy integration in to TIA Portal, respectively STEP 7

The 1 SI CANopen for the SIMATIC ET200®S modular I/O system and the CM CANopen module for the SIMATIC S7-1200® basic controller implement the HMS CANopen master technology in a compact format fully integrated with the SIMATIC hardware.

They enable you to directly extend SIMATIC automation solutions with CAN or CANopen based equipment making more expensive and space demanding PROFIBUS or PROFINET to CANopen gateways unnecessary.

Both modules are supported by optimized and highly intuitive CANopen configuration tools that enable users to quickly generate all required configuration data for the CANopen network. Due to the support for operation in transparent CAN 2.0A mode, system integrators have the possibility to implement any custom CAN based fieldbus protocol.



Product	1 SI CANopen for SIMATIC ET200S	CM CANopen for SIMATIC S7-1200
Supported CANopen Features		
Implemented CiA specifications	CiA 301 version 4.2 CiA 302 version 4.1, parts 1-3	CiA 301 version 4.2 CiA 302 version 4.1, parts 1-4
Process Data Objects (PDO)	128 RPDO, 128 TPDO	64 RPDO, 64 TPDO
TPDO transmission types and protocols	Acyclic synchronous, cyclic synchronous, event-driven PDO write protocol	Acyclic synchronous, cyclic synchronous, event-driven PDO write protocol
Service Data Objects (SDO)	SDO functionality, normal (segmented) and expedited upload & download protocols	SDO functionality, normal (segmented) and expedited upload & download protocols
Device monitoring	Heartbeat producer/consumer	Heartbeat producer/consumer
CAN bit rate	20 kbit/s – 1 Mbit/s	20 kbit/s – 1 Mbit/s
CANopen Master Specific Features		
Network Management (NMT)	Master functionality with NMT node control and NMT error control	Master functionality with NMT node control and NMT error control Support for NMT startup process according to CiA 302
Node guarding (NMT error control)	Master and slave	Master and slave
Service Data Objects (SDO)	Client and server	Client and server
CANopen Slave Specific Features		
Network Man. (NMT) state machine	yes	yes
Node guarding (NMT error control)	Slave	Slave
Synchronization	Consumer	Consumer
Service Data Objects (SDO)	Server	Server
Automatic bit rate detection	yes	no

IO Modules

Easy connection of analog/digital IO signals to CAN and CANopen

With the CANio 250 and CANio 500, HMS offers two modules enabling quick and easy connection of analog and digital input and output signals to CAN and CANopen networks – whether in experimental setups, test benches or vehicles.



Highlights

- ✓ Support for digital and analog IOs on one platform
- ✓ Universal use due to robust design and wide power supply range
- ✓ Easy configuration and versatile configuration options
- ✓ Adaptation to specific requirements via CANio ADK
- ✓ Plug-in version available for direct integration into customer hardware

Easy configuration

The individual configuration of the CANio 250/500 for different applications can be done either by loading configuration data via a CANopen master or by sending configuration messages in a pure CAN network or offline via the free CANio configuration tool.




Development Kit (ADK)

The CANio ADK for the CANio 250/500 enables creation of custom device applications with your customer-specific functionality. The CANio ADK contains all required drivers and is delivered as a binary library together with a comprehensive C-source demo application. As development platform an evaluation kit of the CANio 250/500 is included in the scope of supply.

Universal use

An important feature of the IXXAT IO modules are the inputs and outputs for digital and analog signals on one device, which can be flexibly configured. The devices are delivered in a rugged aluminum housing with a wide voltage and temperature range (6-32 V, resp. -40 °C to +70 °C) allowing for easy integration into existing applications in the industrial and automotive area.

A special focus of the CANio 250/500 is the device operability within CANopen and also standard CAN systems. For this reason, the CANio 250/500 was designed as a self-starting CANopen slave, with all important parameters stored as default values on the device.

			
Product	CANio 250	CANio 250 Plug-In	CANio 500
Protocol	CAN, CANopen	CAN, CANopen	CAN, CANopen
Galv. isolation	500 V DC	-	500 V DC
Digital inputs	Up to 16 x + clamp 15 (5 V CMOS comp.)	-	4 x + clamp 15 (between 0-34 V, threshold at 50 %)
Digital outputs	Up to 16 x, max. 30 mA, 5 V CMOS signal levels	-	4 x, max. 1 A, output voltage free selectable, up to 32 V
Analog inputs	-	-	4 x, 12 bit res. +/- 5 V, or 0-10 V, or +/- 100 mA
Analog outputs	-	-	4 x, 12 bit resolution +/- 5 V, or +/- 10 V, or 0-5 V, or 0-10 V, switchable via software
GPIOs	-	25 x, free configurable as analog input, digital in-/output or SPI, 3V3 CMOS	-
Plugs	CAN: D-SUB-9 I/O: D-SUB-9	Socket board with 2.54 mm contact spacing	CAN: D-SUB-9 I/O: D-SUB-HD15

Windows APIs and Protocol Software

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

Highlights

- ✓ Simple connection of the application program via Microsoft Windows DLL
- ✓ Support for all PC-interface standards
- ✓ Reliable operation in thousands of applications worldwide

Windows APIs

HMS offers APIs for CANopen and SAE J1939 enabling development PC-based applications under Windows.

Based on this APIs, you can quickly and easily realize control, service and test programs.

To access the fieldbus system IXXAT PC CAN interfaces can be used.

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.

On request, HMS provides a comprehensive service offer for your development project:

- 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 our protocol software packages and APIs we also offer configuration and analysis tools to support your development project:

- CANopen Device Manager
- COTI DLL for CANopen Conformance Test Tool
- SAE J1939 Designer
- EIPscan
- canAnalyser with CANopen, DeviceNet and SAE J1939 Module

CANopen




SAE J1939



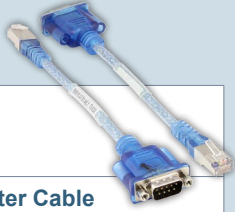
Product	CANopen Master API	CANopen Manager API	SAE J1939 API
Description	Windows API for the development of simple PC-based control and test programs	Windows API for the development of powerful CANopen PC-based control solutions	Windows API for the development of J1939 service and test applications
Standards	CiA 301, CiA 305	CiA 301, CiA 302	
Included functions	<ul style="list-style-type: none">- 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#, vb.net, Delphi and LabView- Multi-channel support	<ul style="list-style-type: none">- Complete CANopen master functionality including support of the standard bootup procedure- Support for CANopen slaves according to CiA 301 vers. 3/4- Automatic configuration of devices at system startup via configuration manager according to CiA 302-3- Local object dictionary with integrated management of network variables- Hot-swap support- Simple program integr. via Windows DLL & process image- All functions locally parameterized via the object dictionary	<ul style="list-style-type: none">- Supports all the 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

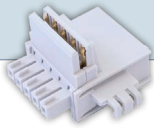


CAN Accessories




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.

			
Product	Sub-D9 Connector with CAN Termination	CAN Termination	CAN Termination
Plug/Sockets	Sub-D9 socket/plug	Sub-D9 plug	Sub-D9 socket
Termination	120 Ohm, between pin 2 and 7		
Further information	Pin connection 1-to-1	-	-

			
Product	CAN Cable	Y CAN Cable	CAN Adapter Cable
Plug/Sockets	Sub-D9 (1x socket / 1x plug)	Sub-D9 socket to Sub-D9 socket/plug	RJ45 plug to Sub-D9 plug
Dimensions	2.0 m	22 cm	20 cm
Further information	- Pin connection 1-to-1 - Shield	- Pin connection 1-to-1 - Shield	Set with two cables

			
Product	T Bus Connector	Glass Fiber Cable ST	Glass Fiber Cable F-SMA
Use case	For stackable CAN repeaters	For FO repeater	For FO repeater
Dimensions	-	2.0 m or 5 m	2.0 m or 5 m
Further information	For creating star/tree topologies in combination with the IXXAT CAN Repeater	- Duplex - With 2 plugs on each side - Wavelength 820 nm, Glas fiber 50/125 µm, Attenuation 3 dB/km	

			
Product	Antenna	Magnetic foot antenna	Screwable antenna foot
Use case	For IXXAT CANblue II	For IXXAT CANblue II	For IXXAT CANblue II
Plug/Sockets	RPSMA plug	RPSMA plug	RPSMA plug
Size / Cable length	- / 10 cm	1.5 m / -	2.0 m / -



Gateways

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

The Anybus X-gateway product family allows easy transfer of I/O data between CAN based networks and fieldbus or Industrial Ethernet networks covering almost every network combination.

Highlights

- ✓ Over 200 different network combinations
- Master/Slave and Slave/Slave variants available
- ✓ Fast I/O data exchange with an average transfer time of 10-15 ms
- Robust housing for stand-alone operation
- ✓ Simple configuration using the Anybus Configuration Manager – no programming required!

Anybus X-gateway

Anybus X-gateways enable the 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.

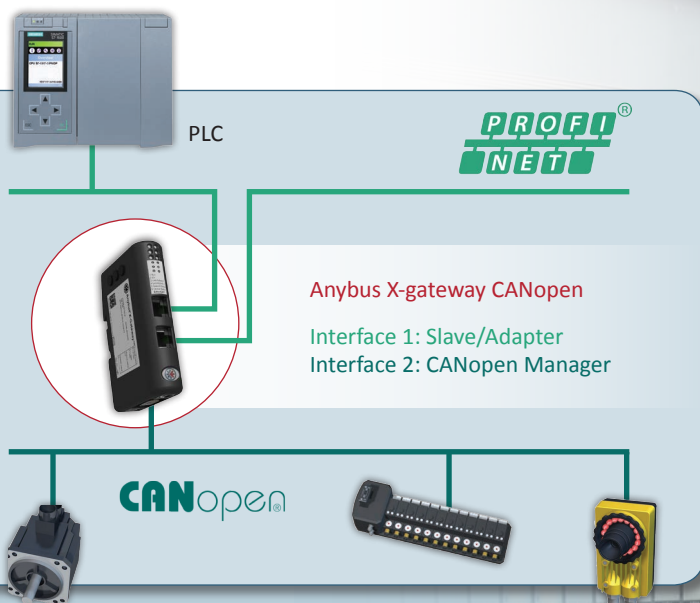
**Easy installation –
no programming required!**

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 and easily define the data mapping and the separation of cyclic I/O data and parameter data.

Application example:
Anybus X-gateway CANopen



Product	Anybus X-gateway																		
Description	Gateway for coupling any fieldbus and Industrial Ethernet network																		
Supported protocols	<p>Master/Slave and Slave/Slave combinations for:</p> <table border="0"> <tr> <td>- CANopen</td><td>- Interbus</td></tr> <tr> <td>- DeviceNet</td><td>- LonWorks</td></tr> <tr> <td>- SAE J1939</td><td>- Modbus Plus</td></tr> <tr> <td>- CC-Link</td><td>- Modbus RTU</td></tr> <tr> <td>- CC-Link IE Field</td><td>- Modbus-TCP</td></tr> <tr> <td>- ControlNet</td><td>- PROFIBUS</td></tr> <tr> <td>- EtherCAT</td><td>- PROFINET IO</td></tr> <tr> <td>- EtherNet/IP</td><td>- PROFINET IRT</td></tr> <tr> <td>- FIPIO</td><td>- PROFINET IRT FO</td></tr> </table>	- CANopen	- Interbus	- DeviceNet	- LonWorks	- SAE J1939	- Modbus Plus	- CC-Link	- Modbus RTU	- CC-Link IE Field	- Modbus-TCP	- ControlNet	- PROFIBUS	- EtherCAT	- PROFINET IO	- EtherNet/IP	- PROFINET IRT	- FIPIO	- PROFINET IRT FO
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For Master/Slave versions, the configuration of the Master side is carried out with an appropriate master configuration program.

Designed for harsh industrial environments

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



CANopen[®]

Anybus X-gateway CANopen

The CANopen gateways complement the family of the Anybus X-gateways by 10 more variants. They enable the coupling of CANopen networks with all major fieldbus and Ethernet networks.

The gateways work as CANopen master and transmit at this I/O data transparently between CANopen and the superimposed fieldbus or industrial Ethernet network.

Configuration

For easy configuration the “Anybus Configuration Manager CANopen” is part of the delivery scope – a Windows based configuration tool. In addition, the gateway can be configured via its CANopen master interface with any standard CANopen configuration tool.

Anybus X-gateway CANopen

Gateway for coupling of CANopen networks with other networks

CANopen Master to:

- CANopen Slave
- Profibus Slave
- DeviceNet Slave
- Modbus RTU Slave
- ControlNet Slave
- Profinet IO Device
- Profinet IRT Device
- EtherNet/IP Adapter
- EtherCAT Slave
- Modbus-TCP Slave



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 is coupled via the serial interface or CAN to your device and enables easy connection to CANopen, DeviceNet or other fieldbus and industrial Ethernet standards.

Anybus Communicator with serial interface

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, RFID readers and other devices.

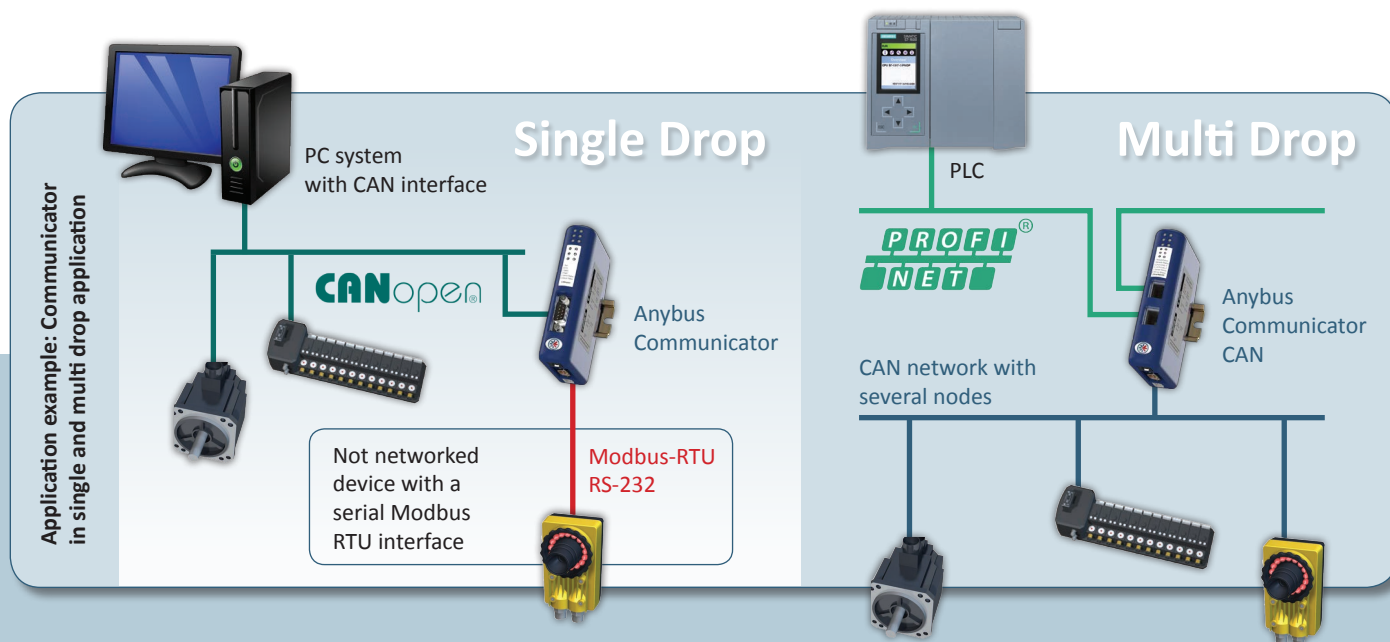
The Communicator is able to convert almost any standard or custom (proprietary) protocol. For this, no hardware or software changes are required at your device.

Compatible with all leading PLCs

Anybus Communicator is also 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 etc.



Product	Anybus Communicator		Anybus Communicator CAN	
Description	Protocol converter for connection of devices with a serial interface to industrial networks		Protocol converter for connection of devices with CAN interface to industrial networks	
Supported protocols	- CANopen - DeviceNet - CC-Link - ControlNet - FIPIO - Interbus - Modbus-Plus - Modbus-RTU	- Profibus-DP - CC-Link IE Field - EtherCAT - EtherNet/IP - EtherNet/IP 2-port - Modbus-TCP - Modbus-TCP 2-port - Profinet IO	- CANopen - CC-Link - ControlNet - DeviceNet - Modbus-RTU - Profibus	- EtherCAT - EtherNet/IP - Modbus-TCP - Profinet IO - Profinet IRT



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.

Reusable configuration save time and money

Configurations for the Communicator can be saved and restored at any time.

So if you, for example, have to switch from Profibus to Profinet, you can easily create the new Profinet configuration based on the already existing Profibus configuration.



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

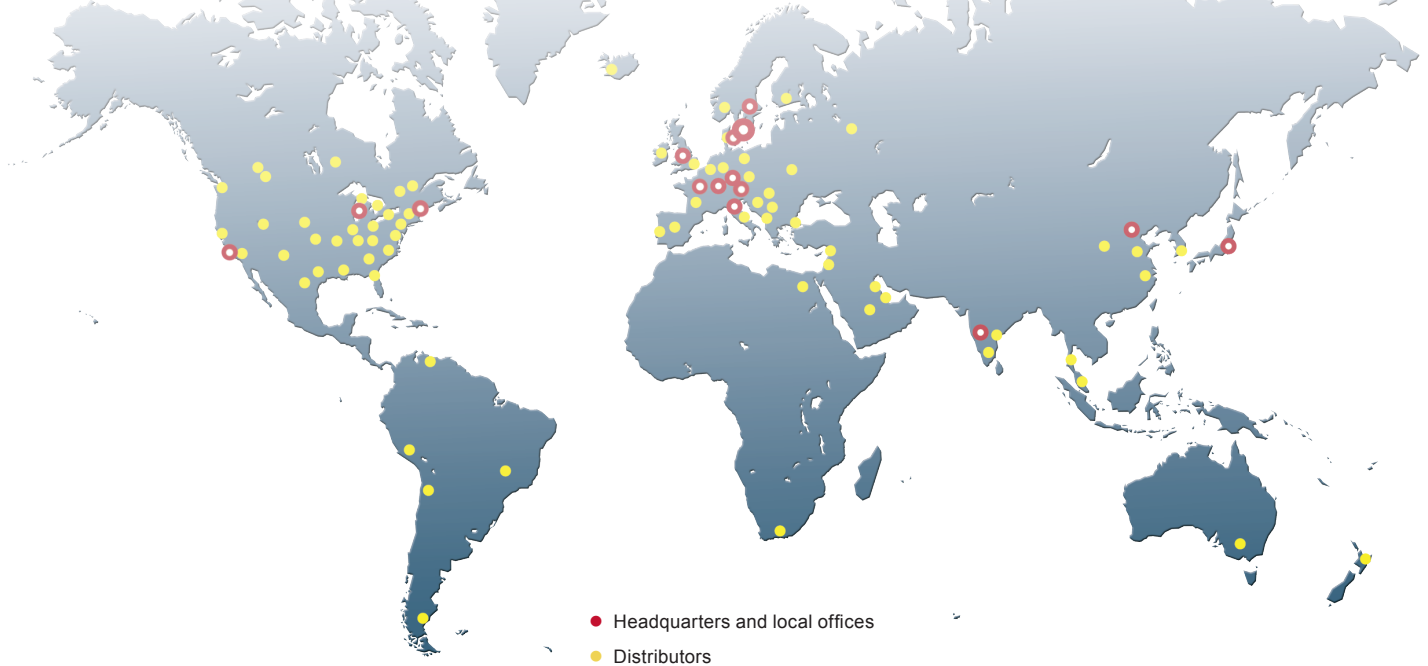
The CAN frames and their conversion to the respective fieldbus or Ethernet network can be configured by using the Anybus Configuration Manager, which is included in the scope of delivery.

HMS Industrial Networks



HMS Industrial Networks is the leading independent supplier of products for industrial communication. HMS develops and manufactures products under the brands: Anybus®, IXXAT® and eWON®. These products enable industrial devices to connect to different industrial networks and systems and also be monitored and controlled remotely.

Development and manufacturing take place at the headquarters in Halmstad, Sweden, in Nivelles, Belgium and in Ravensburg, Germany. Local sales and support are handled by branch offices in China, Switzerland, France, Germany, Italy, India, Japan, UK and USA, plus distributors in more than 50 countries. HMS employs over 450 people.



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