Anybus®
BY HMS NETWORKS

Embedded solutions

Anybus CompactCom Chip
Anybus CompactCom Brick
Anybus CompactCom Module

HMS Connecting Devices™

Anybus Embedded

The number one choice for multi-network connectivity

As a manufacturer of industrial devices, you need to make sure that your products can communicate with the many fieldbuses and industrial Ethernet networks that exist on the automation market today, as well as emerging technologies used in Industrial IoT applications. But developing and maintaining connectivity for all these networks and standards is both time-consuming and resource-demanding.

By embedding an Anybus CompactCom into your device, you will be able to connect to all major industrial networks on the international market — and leverage on HMS expertise within industrial networking. With Anybus, your product will be pre-conformed with all network organizations and constantly up-to-date with the latest network specifications.

PRE-CONFORMED WITH ALL NETWORK ORGANIZATIONS

Real-time communication

Time-critical communication within industrial automation is in the DNA of all Anybus CompactCom products. They will give you high performance data exchange that can handle even the most demanding synchronized motion applications.

The pivotal core of CompactCom is the Anybus NP40 — HMS' own industrial network processor which ensures that the communication between your processor and the network is just as fast as if you had implemented network communication inside your processor.

IT/IoT connection

The "Smart Operations" of the future will not only require connectivity to different industrial networks, you will also need connectivity to cloud-based IoT software platforms such as SAP, Oracle, Microsoft Azure, ThingWorks etc. This will bring new opportunities to do on-the-fly analysis of real-time data, predictive maintenance or remote monitoring.

Anybus makes your product IIoT-ready, offering connectivity over IoT-related communication standards such as OPC UA and MQTT and IT functions such as integrated web pages, FTP, email and socket interface access.

Security

The Industrial Internet of Things means that more devices are getting connected. This puts higher demands on security and increases the need for proven and trusted solutions.

Anybus customers benefit from the most trusted solution on the market including built-in security features such as packet storm resistance, certificates, access control and more. The engineers at HMS are continuously working to maintain data security in the Anybus offering, always in close collaboration with customers.

Get ready for the future!

Did you know?

Most networks specifications are updated 1-2 times per year. With Anybus, you don't need to worry about this. You get free software updates whenever networks are revised.

BACnet · Bluetooth · CANopen · CC-Link IE Field · CC-Link · ControlNet · DeviceNet · EtherNet/IP · EtherCAT · Modbus · ETHERNET POWERLINK · PROFIBUS · PROFINET · sercos the automation bus · HI-SPEED USB CERTIFIED

Embedding Anybus CompactCom into your product

Integrate CompactCom - connect to all networks

Anybus CompactCom is ready-made to immediately get you connected to any industrial network and IoT applications. You implement one single software driver in your processor and prepare your PCB for CompactCom in chip, brick or module format. Now, your device is ready to communicate on all networks.

If you have chosen the CompactCom module format, you simply change to another Anybus module to get connected to another network. The Common Ethernet solution from HMS allows you to just download your network software of choice to a standardized Ethernet hardware.

Naturally, HMS experts are with you throughout the development project with expertise and know-how.

1. Connection needed

2. Found Anybus: Start in-design

Host Processor

Data exchange

Anybus slot

3. Communication solved
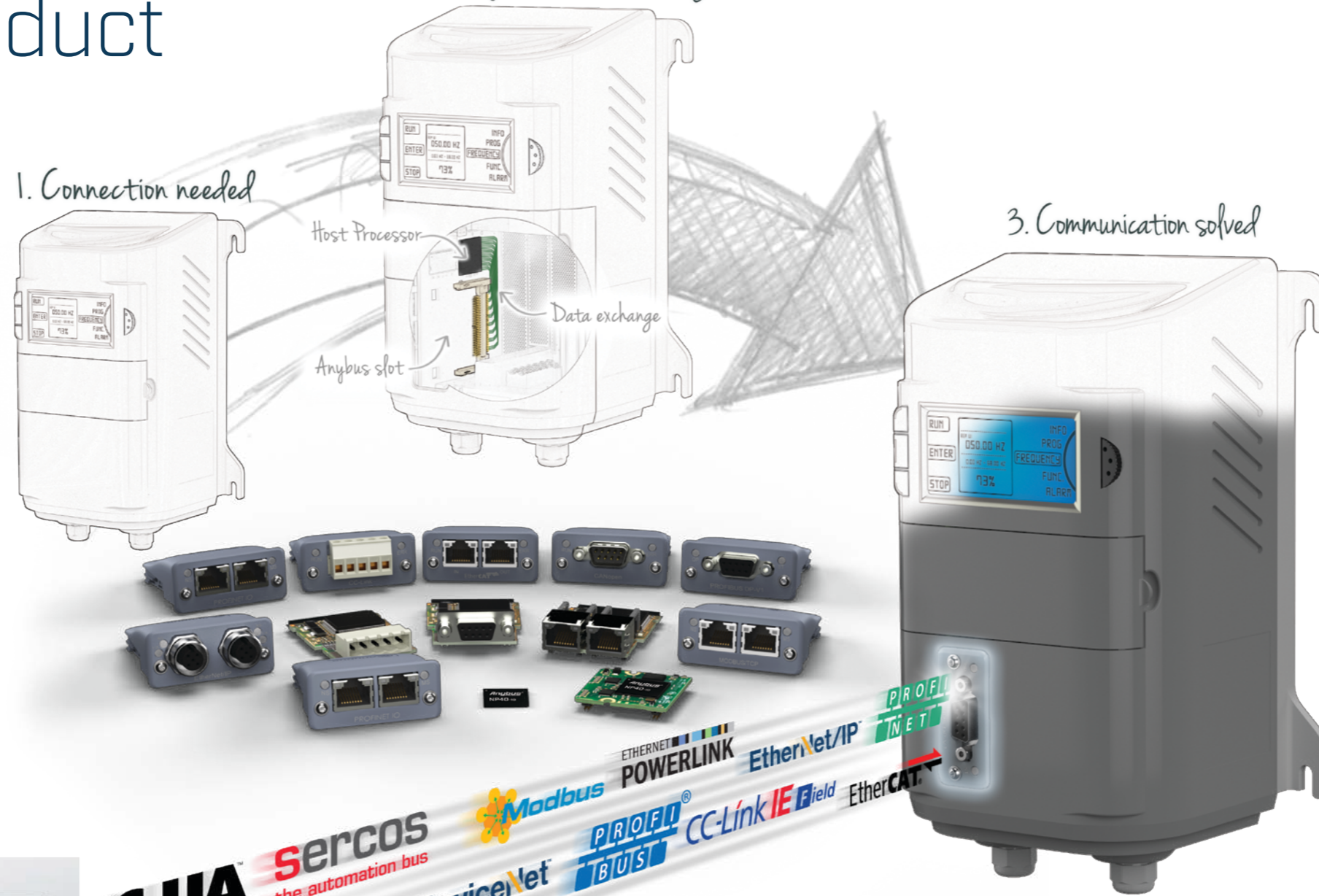
With CompactCom you get:

• Connectivity to all major fieldbuses and Industrial Ethernet networks and IoT standards, opening up new markets and revenue for your product.

• A faster ROI and shorter time to market.

• A future-proof solution. Avoid worrying about new networks, IIoT, network upgrades, maintenance and conformance issues. It's included!

• Support from HMS industrial communication experts all the way through your development project.

> Anybus users estimate that they lower development costs by 70 % compared to in-house development.

PC UA · sercos the automation bus · Modbus · POWERLINK · EtherNet/IP · PROFI NET · MQTT.ORG · CC-Link · DeviceNet · PROFI BUS · CC-Link IE Field · EtherCAT

Why Anybus?

By choosing Anybus, you make sure that you have the latest industrial network technology inside your product. Anybus CompactCom is built on HMS' own proven and secure network processors providing flexibility, optimal functionality and low power consumption.

Since CompactCom incorporates expertise gathered from thousands of device implementations, plus original technology from the network founders, you can rest assured that you get a fast and easy design project, and that there is proven technology inside your product.

Leif Malmberg, Product Manager,
Embedded Solutions, HMS

Which CompactCom suits you?

Anybus CompactCom consists of ready-made communication interfaces for fieldbus, industrial Ethernet and IoT connectivity. You can choose from three different form factors:

Chip
If you want a fully integrated Anybus CompactCom solution on a single chip.

Brick
If you want to add your choice of connectors to an all-inclusive brick interface.

Module
If you want complete and interchangeable communication modules and fast time-to-market.

Different CompactCom products are available for all the major industrial networks. You can also select your form factor and type of connector. Once the Anybus concept is implemented, it is easy to migrate between networks and form factors, without additional development efforts.

How we did it: Two stories - different requirements

Our choice: Anybus CompactCom Module
CG Drives uses Anybus CompactCom to enable their soft starters and drives to communicate on any industrial network. They have chosen a CompactCom Module solution to get easy and pluggable network access for their drives.

"When we get an order for a product that needs network compatibility, we simply order the Anybus CompactCom which corresponds to the customer's network, we plug it in and ship our product to the customer."
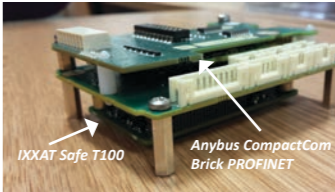
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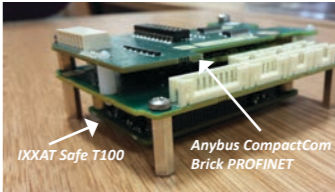
Our choice: Anybus CompactCom Brick (+ IXXAT Safe T100)
Fortress Interlocks manufactures safety interlock systems which are used to help prevent a machine from harming its operator or damaging itself. They chose the Anybus CompactCom Brick together with the IXXAT SafeT100 to handle communication with PROFINET and PROFISAFE.

"Since the solution from HMS is modular, you can do things incrementally – you can start with implementing PROFINET and then add safety functionality and other networks later on. Also, make sure to use the support you get from HMS. For example, they have detailed safety manuals which are very useful."

Rob Johnson,
Fortress Interlocks

IXXAT Safe T100   Anybus CompactCom Brick PROFINET

BACnet | Bluetooth | CANopen | CC-Link | CC-Link IE Field | ControlNet | EtherCAT | EtherNet/IP | DeviceNet | Modbus | PROFINET | PROFIBUS | POWERLINK | SERCOS | USB

Functionality for the modern factory

Go wireless!
Anybus wireless products open up for new network infrastructures reducing cabling and enabling Bring Your Own Device (BYOD) solutions.

Bridge industrial data to IT systems and IoT
Enable your product to communicate with IT-systems and industrial IoT applications using communication standards such as OPC UA and MQTT.

Stay informed with email notifications
Anybus CompactCom has a built-in email function that can send notifications, for example when it is time for service or when a certain number of units have been produced.

View live data from your product in a web interface
Give service staff web-based access to the status of your product via Anybus CompactCom's built-in web server.
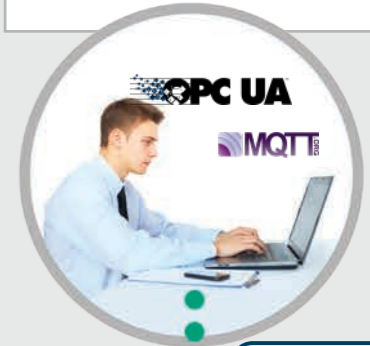
Download network of choice (Common Ethernet)
Download the firmware for a specific network before shipping or even upon arrival at the factory. Use the same hardware for PROFINET, EtherCAT, Modbus-TCP, POWERLINK and EtherNet/IP.

Support any customer demand, even for time-critical and synchronized motion applications
Profiles for drives or motion are supported by the CompactCom concept through a Profile Driver Package — a software stack which you implement into your device.

How it works: Profile data is not "translated" inside the Anybus CompactCom. Rather, it passes unchanged through the module's transparent channel and the conversion of profile-specific data is done in your drive with the help of the HMS' Profile Driver Package. This enables a very fast data transfer, focusing on the functions you really need.

Update remotely via FTP
Allow your service staff or customers to update the CompactCom or the host device using the built-in FTP functionality in CompactCom. Secure and easy.

**Make commissioning easy using legacy tools and protocols**
The socket interface of Anybus CompactCom, allows you and your customers, to keep older, well-functioning tools and software for easy commissioning. TCP/UDP protocols can be implemented using the CompactCom TCP/IP stack.

Connect to safety networks
The IXXAT Safe T100 is designed to work together with Anybus CompactCom to provide access to safety networks. The CompactCom handles the unsafe network communication while safe I/O signals pass through the CompactCom (using the black channel principle) to the IXXAT Safe T100.

IXXAT Safety products and stacks are available for PROFIsafe, CIP safety and FSoE.

HMS

IIoT ready Solution
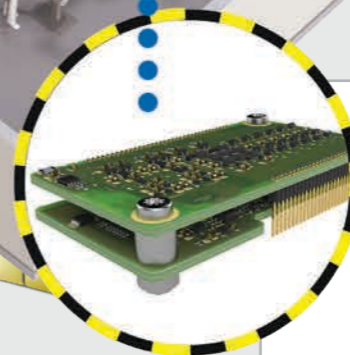
The short or long road to network connectivity?

As a device manufacturer, you need to choose between developing a network connectivity solution in-house or using a ready-made solution. When multi-network connectivity is needed, Anybus CompactCom will give you a much faster and hassle-free road to connectivity, giving you up to 70 % lower development costs.

Do-it-yourself road — Developing and assembling your own solution

The Anybus road — One solution for all networks

If you choose to develop a connectivity solution yourself, you have to cater for hardware, software, maintenance, production, upgrades etc. — for each network. You need to follow the evolution of each industrial network and continuously update your firmware to stay conform — a significant and difficult task.

Take the Anybus road once and you are done. You don't have to go back and redo all the work if you want connectivity to another network — you simply plug in another Anybus module (or even just download new software). HMS is with you as a co-driver all the way through your implementation project and during your product's life cycle, offering free maintenance to make sure that your product is conform to the latest network specifications.

Under the hood

The Anybus NP40 network processor

HMS' own network processor, the Anybus NP40, is the core of the Anybus CompactCom communication solution. It works as a complement to your micro-processor, offloading it from communication tasks.

The NP40 is a flash-based, single chip network processor that includes a high-performance ARM® Cortex™-M3 and an FPGA fabric. The FPGA fabric is used to implement the various network interfaces while the ARM core runs the protocol and application stacks.

High performance
The Real-Time-Accelerator (RTA) in NP40 is a feature which offers direct data communication between the network and the host API, resulting in close to "zero data delay". Typically used in demanding applications on high-performing networks, the data bypasses the ARM processor enabling immediate data transfer – a unique feature for the NP40.

The flash-based technology also gives a very low power consumption and power dissipation, unbeaten in the industry.

Several independent surveys have rated Anybus technology as best-in-class.

Security:

Anybus products from HMS are proven and trusted in the industry since more than 25 years. A key, integral part of Anybus is security — always of the highest importance to HMS' engineers when designing industrial communication solutions.

The integrated stack is developed and tested to resist packet storms. For example, the EtherNet/IP stack is designed to meet Achilles storm test parameters while the PROFINET stack is designed to meet Netload test parameters.

Furthermore, all Anybus CompactCom 40 firmware files are validated with signed firmware certificates, ensuring that HMS is the originator. This prevents any tampering with firmware files and also prevents downloading a non-signed firmware.

Access control is another important security feature, giving selected users access to Ethernet features such as webservers, FTP, firmware updates, etc. In order to be 100% secure, access can be shut down completely.

HMS has also ascertained that there are no back doors or hidden functionality that may jeopardize security.
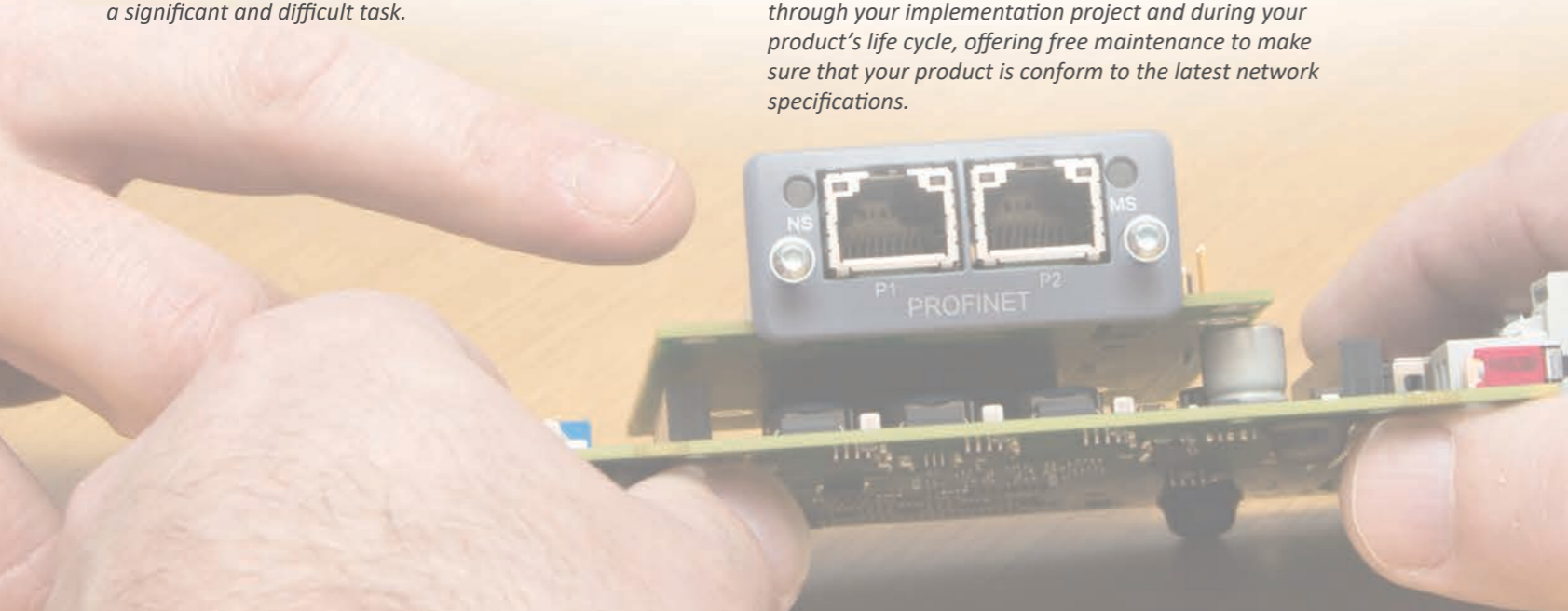
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