

Solution: Anybus Communicator
Common Ethernet

Country: Germany

Company: Bosch Rexroth



Benefits:

- Expanded market: Connects serial devices to EtherCAT, EtherNet/IP, Modbus TCP or PROFINET controllers
- Easy to use: Intuitive interface simplifies configuration processes
- Flexibility: Use the same unit to connect different networks. Just update the firmware.



"Now we really can address more or less the whole market. We can cover everything; we haven't found a robot with a communication interface that is not supported by this Anybus converter yet."

David Lehmann
System Architect at Bosch Rexroth

Automating the impossible in any factory, in any country.

Explore how Bosch Rexroth combined the Anybus Communicator with their Smart Flex Effector to bring industrial automation's most versatile compensation module to the world.

Bosch Rexroth, the automation branch of the Bosch group, has over 32,000 employees worldwide and specializes in advanced drive and control technologies. At their Customer and Innovation Center in Ulm, Germany, they develop innovative solutions for the future of automation, such as the Smart Flex Effector, a compensation module aiming to revolutionize the industry.

Smart Flex Effector – Automate the impossible

David Lehmann, System Architect at Bosch Rexroth, explains what a compensation module is and what makes the Smart Flex Effector unique:

"When you think about a robot in the factory, you usually think of a six-axis robot assembling parts or building a car, or something like that. The robots have some kind of tool at the tip, like a gripper. The compensation module is the part that goes between the robot arm and the gripper. The Smart Flex Effector stands out due to its ability to provide compliance (flexibility in response to forces) in six degrees of freedom (movement in three-dimensional space).

We can measure the deflection (change in position) of the tool with high precision with an integrated sensor system. This allows us to perform complex tasks, such as precise assembly operations, that usually only humans can do. Our slogan, 'Automate the impossible', sums it up nicely. Our goal with this product is to enable robots to perform new tasks that they are traditionally not good at, thereby increasing efficiency and productivity."

Connectivity challenges

To enable the robots to perform these new tasks, the Smart Flex Effector needs to exchange position measurement data with the robot controllers, including information about the deflection of the tool and control signals for the module's locked and unlocked states.

However, connecting the Smart Flex Effector to robot controllers was challenging, as David explains. "Our product was available, but we had difficulties installing it at our customer's sites. When we talked to our customers, the feedback was often the same: 'You have this serial interface, but I don't want to spend two weeks or more trying to connect it with my robot controller. I do not have the time or the resources to do that.'"

Simplifying connectivity with Anybus protocol converters

To solve these connectivity challenges, Bosch Rexroth turned to HMS Networks who provided the Anybus Communicator Common Ethernet, a ready-made protocol converter capable of connecting serial devices to EtherCAT, EtherNet/IP, Modbus TCP or PROFINET controllers.

A key benefit of the Anybus Communicator Common Ethernet was that the same unit can connect to all the major Ethernet protocols, as David describes "This Anybus protocol converter was the ideal solution for us because we can reconfigure it with a firmware update and with just one unit, we are able to provide the connection to the different protocols."

The Anybus Communicator's intuitive user interface also won some new fans. "The interface is really nice. Before selling it to our customers, we tested it for ourselves in our lab where application engineers completed feasibility studies, for example. They all said that it was easy and straightforward to complete the required configurations via the web interface, which was important to us as we have customers that are not experts in automation and robotics."

The fact that the Anybus Communicator could be installed via a web browser was a further plus point. "Both we at Bosch and our customers prefer not to install third-party configuration software. It adds security risks and complexity – just getting the required admin rights often delays installations."



Smart Flex Effector + Anybus Communicator = The complete solution

The Smart Flex Effector and Anybus Communicator have worked so well together that Bosch Rexroth includes the Anybus Communicator as part of a complete solution. "We decided to create an order number for the Anybus converter, so that customers could buy it directly from us. So, we sell both devices together as a complete solution."

Expanded market

With the addition of the Anybus Communicator, Bosch Rexroth can easily connect to all the major Industrial Ethernet protocols, and as a result have significantly expanded its market.

"Now we really can address more or less the whole market", David concludes. "We can cover everything; we haven't found a robot with a communication interface that is not supported by this Anybus converter yet."



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