

## Fieldbus systems

Fieldbus systems are networks which are used by the automation devices in a production plant to communicate with a central controller. They can be described as the nerve system of modern automation technology.

## PROFIBUS

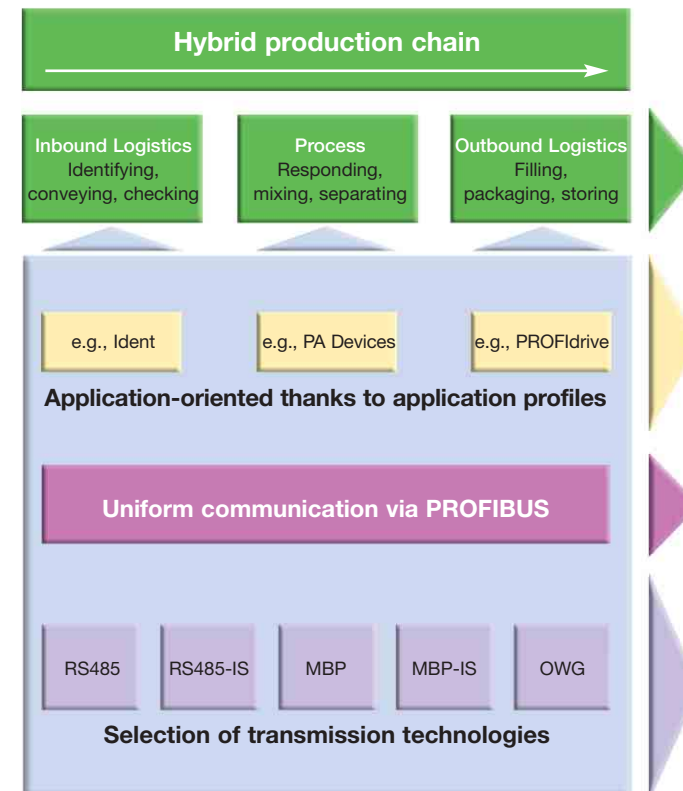
The modular design of this bus system, which is the most successful in the world, makes it the only one suitable for unrestricted use in all areas of automation technology.

## PROFIBUS in process automation

An extremely successful concept:

PROFIBUS is better equipped than any other fieldbus to meet the requirements of the process industry with its production environments that are generally made up of discrete and continuous processes.

With its system-wide uniform communication and application-specific profiles, PROFIBUS provides a consistent response to all tasks within a plant, from inbound logistics through process automation to outbound logistics.



## PROFIBUS, the flexible solution for process automation

PROFIBUS automates all tasks in a process control system with a single integrated bus.

In more complex process devices, **application profiles** ensure the unification of typical device functionalities, e.g., „PA Devices“ for process devices „PROFIdrive“ for drives „Ident“ for barcode readers, etc.

**Communication** between all PROFIBUS devices takes place uniformly via the PROFIBUS DP communication protocol.

All devices equipped with a PROFIBUS interface can be used, while several **transmission technologies** are available for selection. Of these, the following are preferred:

- RS485/RS485-IS for DP devices
- MBP/MBP-IS for PA devices with power supply via the bus cable and intrinsically-safe operation.

## PROFIBUS PA



Highly beneficial in terms of...

### ...Cost reduction

- Seamless communication of discrete IO and process instrumentation using a single fieldbus
- The use of a single protocol reduces the training, documentation and maintenance needs

- No multi-wire trunk cables, terminal blocks and isolating barriers required thanks to direct installation in potentially explosive areas

### ...Adding value without adding costs

- I&M (Identification & Maintenance) functions for unique device identification and access to online information on the Internet
- Measured-value status according to VDI/VDE 2650 and NAMUR NE 107
- FISCO-compliant devices for intrinsically-safe systems without system certification
- Extensive diagnostic information for sustained high system availability

### ...Investment security

- Interoperability and interchangeability of devices: 20 million nodes – 2,500 different devices – more than 300 manufacturers
- This means worldwide presence and unrivalled levels of field testing
- Seamless integration of 4-20 mA and HART device technology
- High flexibility for expansion and replacement of existing installations
- International acceptance thanks to IEC- and ISO-compliant technologies

For more information, please visit:

[www.profibus.com](http://www.profibus.com)  
[www.profinet.com](http://www.profinet.com)

PROFIBUS Nutzerorganisation e.V.  
PROFIBUS & PROFINET International Support Center  
Haid-und-Neu-Straße 7, 76131 Karlsruhe/Germany  
Phone +49 721 96 58 590, Fax +49 721 96 58 589  
info@profibus.com



© copyright by PNO 03/07 – all rights reserved – PNO-4.232

The seamless solution for your process



PROFIBUS  
for PROCESS AUTOMATION



Open Solutions for the World of Automation





## The solution from PROFIBUS for process automation...

### Rising to the challenge

Reliability, cooperation and high performance are the key to overcoming major challenges.

This is also true in process automation. Only an integrated robust bus system with perfectly matched components, a uniform communication protocol and uniform engineering will provide plant operators with the competitive edge which is so vital to them. PROFIBUS for process automation provides the solution.

### Broad application

PROFIBUS PA is the PROFIBUS solution for process automation. In addition to all the technology components required for operating process devices on PROFIBUS, it also has all the features you need to integrate devices into digital control systems as well as plant engineering.

PROFIBUS is proving its worth on a daily basis in all sectors of process technology:

- Chemicals, pharmaceuticals, cosmetics
- Paper, pulp
- Food and beverages
- Energy, water, wastewater
- Oil and gas, refineries
- Cement, metals

### PROFIBUS in safety-related applications

In safety-related applications too, PROFIBUS is the technology of choice:

Devices with the **PROFIsafe** application profile can operate on the same bus with the same communication protocol – fully integrated and without a separate safety system.

### Seamless expansion

Existing systems with 4-20 mA and HART technology can be integrated into PROFIBUS systems seamlessly using the „RIO for PA“ and „HART on PROFIBUS“ application profiles.

### Flexible diagnostics concept

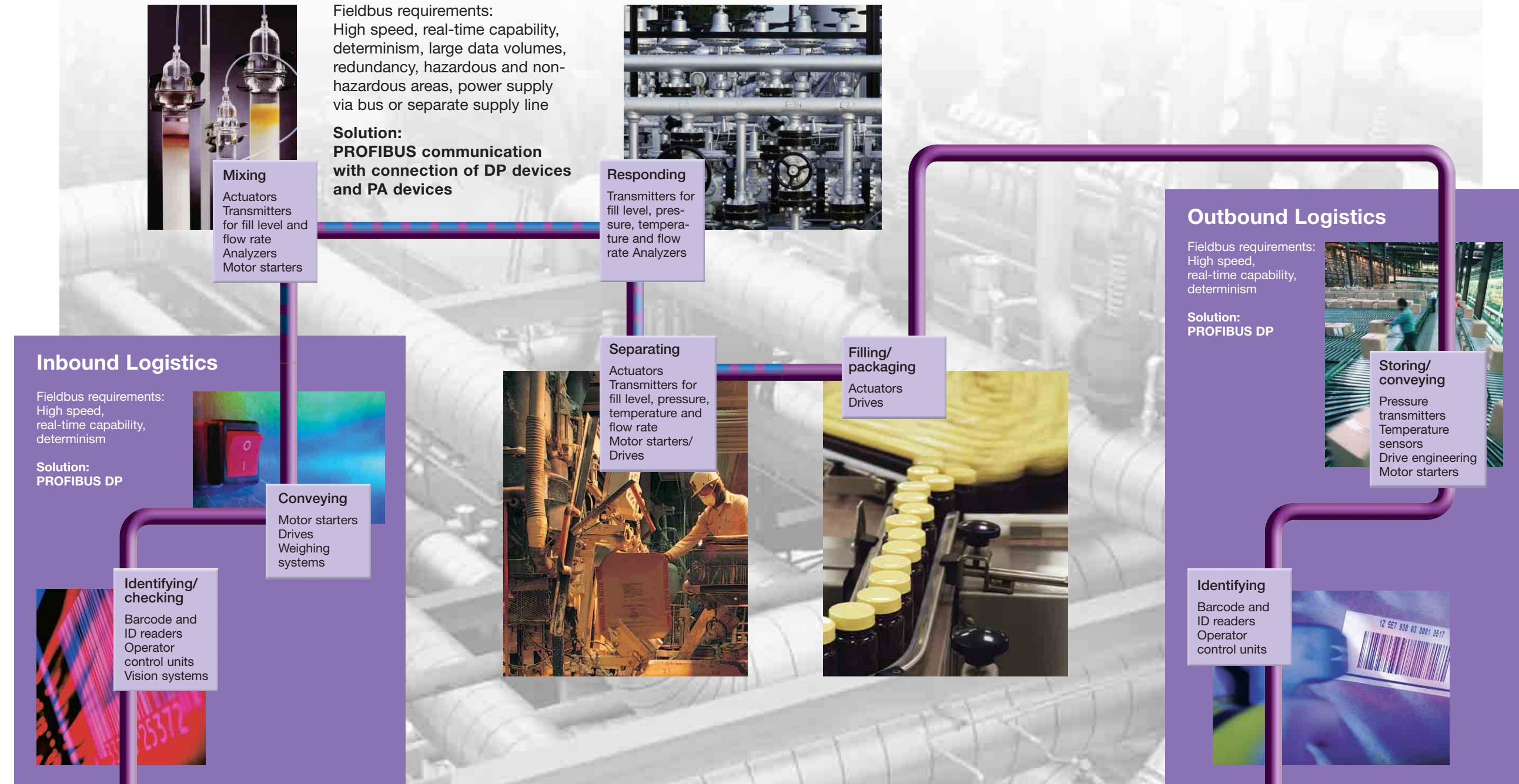
- Transmission of measured-value status together with process value
- Measured-value status compliant with the status signals of VDI/VDE 2650 or NAMUR NE107
- Parameterizable assignment of diagnostic events to status classes for adaptation to the application at hand
- More detailed information provided by means of additional configurable status values
- User-definable information content for process control and maintenance

### Redundancy

PROFIBUS supports a variety of redundancy solutions involving not only field devices (slaves) but also transmission paths (media) and digital control systems (master).

## ...from inbound logistics through primary and secondary processes

## ...to outbound logistics



### Interoperability

Thousands of applications are proving just how open PROFIBUS is. Automation components supplied by an infinite number of manufacturers can communicate and interoperate as they work together to solve an automation task.

Application- or sector-specific device features are standardized in **application profiles** like the one for PA devices. This optimizes device engineering while also minimizing effort. The application profile for PA devices describes:

- Cyclic communication for user data
- Acyclic communication for parameterization, diagnostics and maintenance
- Specifications for device diagnostics

### Validation

In the pharmaceuticals and food and beverage industries, the communication systems used in production plants have to be validated. PI has defined a guideline describing the PROFIBUS functions which can be of help in this context.

### Worldwide support

As well as being used all over the world, PROFIBUS technology undergoes continuous development and boasts comprehensive support. With 25 regional organizations and more than 35 competence centers plus several worldwide located test labs, PI (PROFIBUS & PROFINET International) ensures maximum quality for products and services as well as support for all applications.