



PROFIdrive

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The drive profile for PROFIBUS and PROFINET



Open Solutions for the World of Automation



The standardized drive profile...



PROFIdrive: A stroke of genius

In rowing, power and synchronicity are the key to success. The same is true of today's solutions in the drive technology sector: isochronous communication between distributed drives and the processes running on them is a fundamental requirement. The PROFIdrive profile is making a significant contribution to meeting this requirement.

PROFIdrive at a glance

PROFIdrive is the application-based profile for drive technology and motion control, specified by PI (PROFIBUS & PROFINET International). It defines standards (syntax and meaning) for communication between drives and automation systems.

PROFIdrive is used to connect the distributed drives located on a machine or site to automation facilities via the PROFIBUS or PROFINET communication system. This makes extremely powerful drive solutions possible and facilitates the interoperability of drives and automation systems built by different manufacturers.

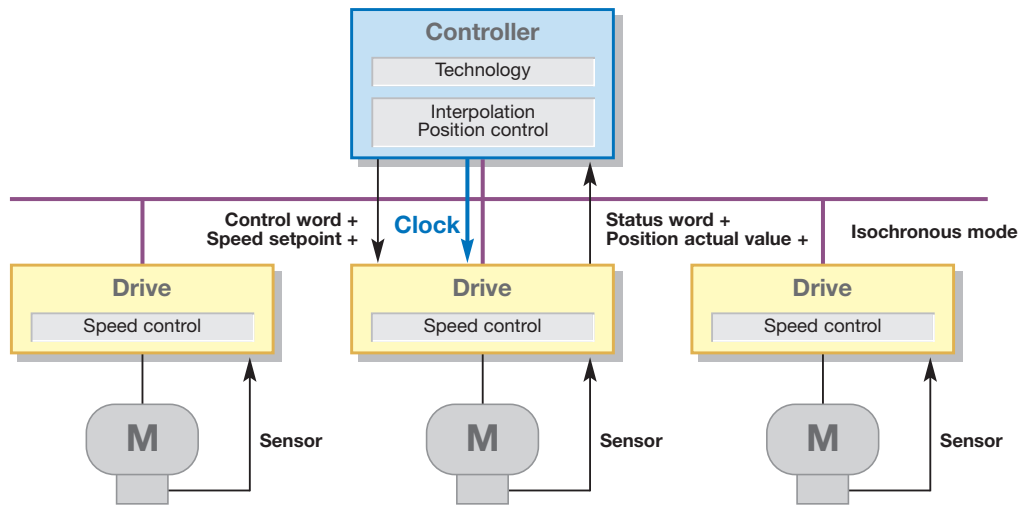


...for the entire drive technology spectrum...

The PROFIdrive solution for drive technology is basically based on the integration of motion and logic. Optimum distribution is achieved in terms of how application processes are assigned to drives (motion, e.g. motor current or speed control) and controller (logic, e.g. position control or path interpolation). The communication system is then tasked with the isochronous link between the distributed processes, using appropriate services such as clock synchronization or lateral communication data traffic.

Widespread acceptance

Numerous manufacturers on the market now feature drives in their product portfolios. The available devices range from simple V/f controllers to highly-dynamic servo drives, from miniature drives with power ratings of just a few watts to large drives with power ratings of several megawatts.



PROFIdrive is the basis for seamless interplay (interoperability) between all of these drives on a common automation system.

Versatile application classes

PROFIdrive can be used ideally for all manner of drive tasks thanks to its various application classes.

These classes range from

- standard drives with speed control or drive-based V/f control to
- standard drives with distributed technology functions or
- drive-based position control and beyond to
- central or distributed motion control including electronic shaft.



...for a whole variety of communication systems...

A key feature of PROFIdrive is strict separation between application and communication. Accordingly, the “PROFIdrive Base Model” only describes *those functions which are not dependent upon communication*. This ensures that PROFIdrive can be used both with PROFIBUS DP and with PROFINET IO – with its RT (Real Time) and IRT (Isochronous Real Time) transmission mechanisms – without any changes needing to be made. “Scalability” is therefore system-wide, from conventional fieldbus to Ethernet-based high-performance communication.

PROFIdrive

- PROFIdrive base model
- PROFIdrive parameter model
- PROFIdrive application model

PROFIBUS

PROFIdrive mapping on PROFIBUS DP

PROFINET

PROFIdrive mapping on PROFINET IO

In addition to cyclic open-loop and closed-loop control processes, all communication variants support acyclic access to parameters.

Protecting your investments: Secure foundation – Secure future

The primary aim in developing the PROFIdrive technology was and is investment security. This is evident in the fact that devices which are not the same revision version can operate on the same bus without any problems whatsoever in terms of compatibility. Accordingly, adding more recent device versions to existing systems is not a problem.

The standardization of PROFIdrive in IEC 61800-7 and recommendations by international organizations such as OMAC are ensuring worldwide acceptance that is sure to last into the future.



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...simple, flexible and reliable...

“Simplicity” cannot be taken for granted where a complex automation solution is concerned. However, PROFIdrive is making the simple re-use of interfaces and technology modules a reality. For example, existing documentation and knowledge obtained can be used again with very little additional effort.

Operation is also simple: thanks to the OPC-based profile server, users can easily access drives using the plug & play method they will be familiar with from Windows environments.

“Flexible and standardized” are not contradictory where PROFIdrive is concerned. In addition to standardized device interfaces, manufacturers and users want to see increased flexibility in respect of the application-specific features of devices. PROFIdrive is able to meet this requirement by means of parameter distribution:

- The parameters assigned to standard function modules and/or their “objects” are defined as “profile parameters” and as such are binding for all profile devices.
- All other parameters (on complex devices these can number more than 1000) are manufacturer-specific and arbitrary.

PROFIdrive is able to safeguard the interoperability and interchangeability of devices built by different manufacturers on one controller.

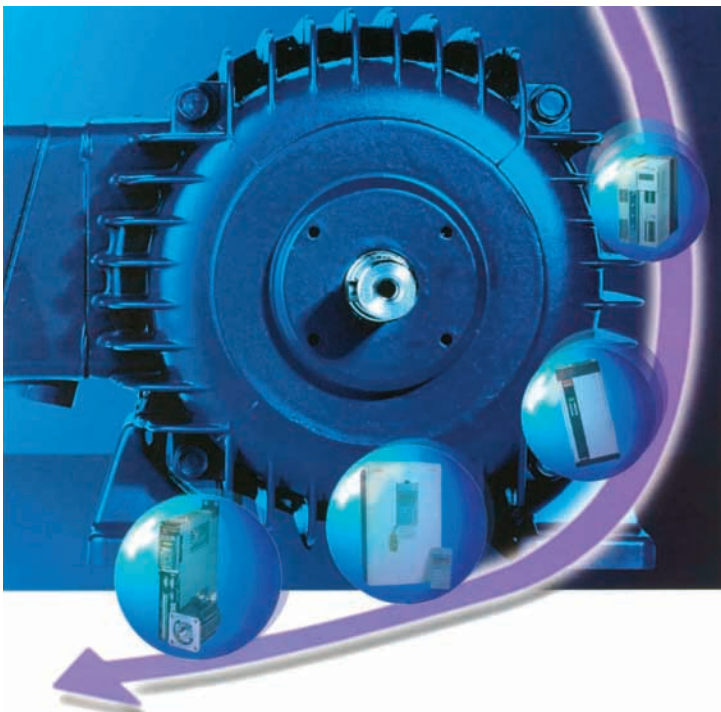
An excellent partnership: PROFIdrive and PROFIsafe

Drives with integrated safety technology are increasingly used on the market. The advantage of such devices is that external monitoring equipment is no longer required (thereby reducing wiring overheads and space requirements). In this respect, PROFIdrive and PROFIsafe are the perfect partnership. The use of the two profiles together creates a harmonized unit, which can be used to control both the safety function and standard drive functions via the same bus.

Even more secure thanks to independent certification

Each of the many devices, which differ significantly in terms of manufacturer and functional scope, is tested in one of the independent PI test labs before being certified by the PI as compliant with the profile.

This provides the user with additional security in respect of interoperability and interchangeability in practical applications.



PROFIdrive



Many and varied benefits for...

...device and system manufacturers

- Cost-effective thanks to only one communication technology for drives, control, I/O, and B&B

- Highly flexible thanks to integrated technology for the entire drive spectrum
- Functional security thanks to independent certification
- International acceptance thanks to IEC standardization and recommendation by end-user organizations such as OMAC
- Fit for the future on the basis of PROFIBUS and PROFINET

...integrators and end users

- Cost-effective thanks to a single bus technology, reduced training requirement and high impact
- Reduction in costs thanks to lower installation overheads and system-wide application programs
- Flexibility in terms of the adaptation of drive equipment to the task at hand
- User-friendly thanks to the interoperability and interchangeability of devices built by different manufacturers
- Investment security thanks to IEC standardization
- Fit for the future thanks to the position of PROFIBUS and PROFINET as market leaders

For more information, please visit:

www.profibus.com
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