



Industrial Data Xchange

The Industrial Data Communications Experts



PROFIBUS Brochure

2023

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Industrial Data Xchange



Competence Centre

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About PROFIBUS

Adaptable and reliable
communication for
industrial automation



The Flexible Solution for Adaptable Automation Systems

Process Field Bus (PROFIBUS) is an internationally standardised fieldbus communication system designed specifically for industrial automation. With its robustness, versatility, and extensive features, PROFIBUS has become a preferred choice for connecting devices and systems in various industrial environments.

PROFIBUS offers a reliable means of communication between field devices, such as sensors, actuators, controllers, and other automation components, allowing them to exchange data seamlessly. It facilitates efficient control, monitoring, and management of industrial processes, contributing to enhanced productivity, improved quality, and reduced downtime.

As a standardised protocol, introduced in 1989, PROFIBUS ensures interoperability and compatibility among devices from different manufacturers, enabling the seamless integration of automation systems. This compatibility eliminates vendor-specific limitations, providing greater flexibility and freedom of choice when selecting components for an industrial network.

Despite the increasing adoption of Industrial Ethernet-based systems, such as PROFINET, PROFIBUS remains a dependable and well-established technology for customers. It will continue to be supported for years ahead.



Interoperability



Permanent Monitoring



Increased Efficiency



Advanced Diagnostics

PROFIBUS Benefits

- High-speed data transmission
- Seamless integration with existing systems
- Flexibility and scalability
- Supports legacy field devices
- Cost-effective maintenance
- Reduced wiring costs
- Industry-proven reliability
- Increased availability and performance
- Easy to install
- Compatible with multiple communication protocols

PROFIBUS Benefits

Seamless communication
and efficiency for
industrial systems



Streamlining Industrial Processes for Increased Productivity

Enhanced Efficiency, Flexibility and Adaptability

Through real-time data exchange, PROFIBUS enables precise control, significantly reducing delays and optimising system efficiency which leads to improved productivity, minimised cycle times, and increased throughput in manufacturing and process control environments.

With its focus on enhanced efficiency, flexibility, and adaptability, PROFIBUS continues to be the preferred choice for industrial automation, delivering optimised performance and maximising operational capabilities.

Operational Uptime and Cost Optimisation

PROFIBUS minimises installation and maintenance expenses, by reducing the need for extensive wiring, contributing to sustainable cost optimisation.

Additionally, PROFIBUS enables precise diagnostics and predictive maintenance, effectively reducing downtime and maximising operational uptime, further minimising costs associated with system failures.

Seamless Integration

PROFIBUS enables seamless integration of devices and systems, offering a standardised communication platform that ensures interoperability among devices from different manufacturers. This enables businesses to leverage a wide range of compatible devices, expanding their options for customisation.

Accurate and Timely Data

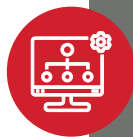
This accuracy and timeliness enable precise control, monitoring, and coordination of industrial processes, improving product quality, reducing waste, and enhancing overall system performance.

Advanced Diagnostics

Real-time monitoring and diagnostics help identify communication faults, device malfunctions, or anomalies within the network. This facilitates prompt troubleshooting and reduces the mean time to repair.

Future-Proofed Technology

Businesses that future-proof their automation systems can remain confident in the technology's longevity and industrial standards. Its continued development ensure ongoing support and availability of compatible devices.



PROFIBUS DP & PROFIBUS PA

The trusted choice for integration, scalability and compatibility



PROFIBUS DP AND PROFIBUS PA

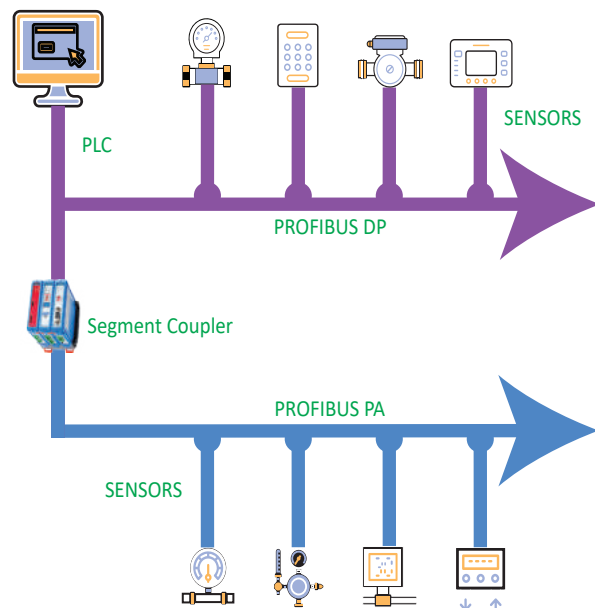
PROFIBUS offers two main variants, i.e. PROFIBUS DP (Decentralised Periphery) and PROFIBUS PA (Process Automation). Both variants share a physical layer and basic protocol features but differ in their application focus and technical specifications. PROFIBUS DP is typically present where PROFIBUS PA exists as the primary high-speed communication backbone, but in many installations, only PROFIBUS DP will be found.

PROFIBUS DP (Decentralised Periphery)

PROFIBUS DP is designed for communication between decentralised peripherals and a central controller, such as a Programmable Logic Controller (PLC) or Distributed Control System (DCS). It provides high-speed data exchange and is used in factory automation and manufacturing applications.

PROFIBUS PA (Process Automation)

PROFIBUS PA is tailored for process automation applications in industries such as oil and gas, chemical, and pharmaceutical. It is optimised for communication with field devices in hazardous environments, where intrinsic safety is crucial.



International Standardisation

IEC 61158

This standard defines the electrical characteristics, signalling, transmission media, and connectors for PROFIBUS. It ensures compatibility and interoperability between PROFIBUS devices from different manufacturers, enabling seamless communication in industrial automation systems.

IEC 61784

This standard provides a framework for implementing communication protocols that ensure the reliable transmission of safety-related data. It focuses on aspects such as fault tolerance, diagnostics, and error handling to achieve a high level of safety and integrity in communication networks used in industrial safety applications.



Overview of IDX

Data Connectivity and Integration: Seamlessly Linking Your Networks

Data Connectivity and Integration: Seamlessly Linking Your Networks

Industrial Data Xchange (IDX) stands out for its expertise in delivering industrial ICT solutions, uniquely tailored for a wide range of industries including agriculture, automotive manufacturing, energy, food and beverage, general manufacturing, mining and metals, oil and gas, paper and pulp, as well as petrochemical and supply chain logistics industries.

Our expertise lies in establishing, maintaining, and leveraging plant data for business benefit. We offer comprehensive PROFIBUS solutions, services, training, and products to support industries in unlocking the full potential of this communication protocol.

IDX enables businesses in various sectors to transform their raw plant data into actionable insights. We understand the importance of minimising downtime and maximising productivity in industrial settings. Through our innovative solutions, we work alongside you to streamline processes, enhance efficiency, and reduce costly downtime. By harnessing the power of data, we empower your plant and employees to operate at its full potential, ensuring that every moment counts and every resource is utilised effectively.

Whether you need PROFIBUS components, expert network design guidance, or thorough training for your team, IDX provides a holistic approach to PROFIBUS integration and optimisation, ensuring your plant remains competitive and efficient.



IDX PROFIBUS Offerings

Solutions

- PROFIBUS permanent monitoring
- Data analytics and visualisation

Services

- PROFIBUS audits
- PROFIBUS call outs
- PROFIBUS network design
- PROFIBUS network segmentation

Training

- Certified PROFIBUS Installer
- Certified PROFIBUS Engineer
- Certified PROFIBUS PA Engineer
- Certified PROFIBUS System Designer

Products

- Permanent monitoring devices
- Diagnostic tools
- Network segmentation hubs
- Gateways



PROFIBUS Products

Permanent Monitoring

ComBricks

The Anybus ComBricks is the first PROFIBUS-based automation system that unites repeaters and permanent monitoring in a web browser. ComBricks offers the convenience of remote monitoring for PROFIBUS installations across the globe, providing alerts for any current or potential faults that may occur.



SNAP

SNAP Analysis is a self-learning tool that interprets PROFIBUS diagnostic data gathered by ComBricks and suggests the most likely cause of any fault, a true time-saver and a great enabler of preventative maintenance. The analysis is written using simple language and images, removing the need to interpret complicated oscilloscope images and messages.



Atlas2 Plus

The Anybus Atlas2 Plus is designed for the permanent monitoring of industrial networks with single or mixed architecture. This tool can detect faulty installed devices, cable and firmware issues, and misconfigurations. It can also recognise patterns in diagnostic data and learn from them, which helps to carry out preventive maintenance.



Diagnostic Tools

HP-25 Cable Tester

The Hi-Port HP-25 Cable Tester is a compact handheld device that checks for connection faults experienced with PROFIBUS DP wiring between pairs of 9-pin D-sub PROFIBUS plugs and over daisy-chained PROFIBUS cables. This tool determines and reports on open lines, short circuits between cores, shorts between screen and cores, and crossed connections.



Mercury MKII

The Anybus Mercury MKII serves as a powerful tool for monitoring and analysing PROFIBUS networks. With this device, users can troubleshoot network issues and implement proactive measures to improve network performance in various industrial applications. This tool helps to identify and resolve potential faults to keep networks healthy and efficient.



ProfiTrace

ProfiTrace is a powerful mobile analyser for the maintenance and troubleshooting of PROFIBUS networks. Typical failures such as noise, reflections, voltage drops, termination problems, double addresses, wire breaks and configuration faults can be easily identified. The results can be exported to detailed reports.



Troubleshooting Kits

The Profibus Troubleshooting Kits is a comprehensive tool designed for commissioning, maintenance and troubleshooting in PROFIBUS networks. The ProfiCore Ultra and all necessary supporting products are included to help users quickly pinpoint and resolve network problems, ensuring optimal performance and minimising downtime.



PROFIBUS Products

Network Segmentation

ProfiHub and ProfiSwitch

The ProfiHubs and ProfiSwitches are multichannel PROFIBUS DP network components to create star/tree networks and long multi-device spur lines. These devices are equipped with galvanically isolated transparent repeaters that prevent short circuits and other bus problems. The ProfiSwitch offers the capability to customise the baud rate on each channel.



Repeaters and Terminators

The robust PROFIBUS B1 repeater is ideal for creating reliable PROFIBUS DP networks in demanding IP 66 environments where persistent dust and water are constantly present. The PROFIBUS T1 Terminator provides active termination for PROFIBUS segments which are based on RS 485. This component enables the user to switch off or remove the last devices on a segment without disturbing the bus communication.



Cables and Connectors

PROFIBUS Cables

Constructed with top-quality materials and adhering to industry standards, these PROFIBUS cables provide excellent noise immunity, ensuring stable and uninterrupted communication. The PROFIBUS PA cable ensures reliable data transmission in hazardous environments, while the PROFIBUS RS485 cable (solid core and stranded core) offers versatility.



PROFIBUS Connectors

Streamline industrial connectivity with PROFIBUS connectors, the key to efficient and reliable communication. The 90-degree connector is perfect for tight spaces, reducing cable strain. The 45-degree connector offers versatility in routing, especially in confined areas. The 180-degree connector assures clean cable management and optimal signal transmission.



PROFIBUS Products

Gateways

.NET Gateways

The Anybus .NET Gateways are versatile protocol converters designed to facilitate excellent communication between industrial devices and the Microsoft .NET framework. By acting as a bridge between industrial automation and software development, real-time data between industrial equipment and .NET-based IT applications can be exchanged.

Linking Device Gateways

Achieve seamless integration by connecting PROFIBUS devices to Rockwell ControlLogix® and CompactLogix® controllers. The Anybus Linking Device Gateways ensure swift and transparent transfer of extensive cyclic Input/Output (I/O) data between both networks while also supporting acyclic data, relieving the Logix PLC from additional calculations.

Programmable Logic Controller (PLC) to (PLC) Gateways

The Anybus PLC to PLC Gateways effortlessly enables proficient connectivity and data exchange between multiple PLCs. With the Anybus PLC to PLC Gateways, industrial automation systems can achieve interoperability and integration, allowing for enhanced collaboration and elevated system performance.

Serial or CAN-based Gateways

As stand-alone protocol converters, the Anybus Serial or CAN-based Gateways integrate serial or CAN-based RS-232/422/485 equipment with PROFIBUS control systems without requiring any modifications to the device itself. Simply connect and configure the settings, and the device is all set.

X-gateways Industrial Internet of Things (IIoT)

The Anybus X-gateways IIoT enable connectivity between a PROFIBUS Master/Slave device and a wide range of fieldbus or industrial Ethernet networks. With this gateway, connections can be established, without costly hardware or software modifications, resulting in minimised expenses and optimal performance.



PROFIBUS Solutions

Leverage your plant data for maximum benefit

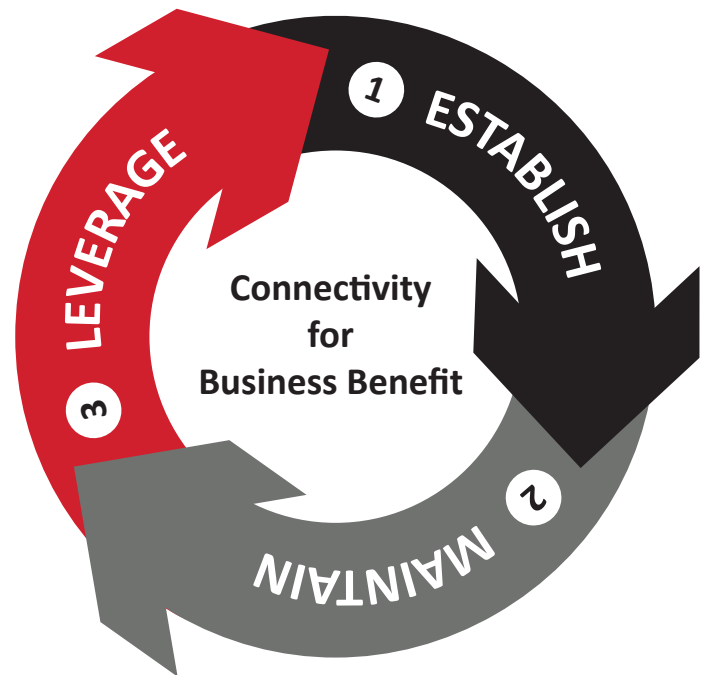


Asset Optimisation and Systems Control

As a leading provider of specialised industrial ICT solutions, IDX ensures the backbone of your network infrastructure is secure, high-performing, and robust. We develop, implement and optimise critical infrastructure within your plant and through cloud-based remote system access.

With extensive experience, we design end-to-end solutions, enabling businesses to eliminate waste, reduce cycle time, lower costs, improve production quality, and enhance visibility across the industrial supply chain.

We developed a 3-step process to help you turn data analysis from a reactive exercise into a proactive one.



1. Establish

We specialise in PROFIBUS setups, where we identify vulnerabilities in the network, ensure uninterrupted supply, and prepare your plant for the Industrial Internet of Things era.

At IDX, we possess deep expertise in understanding the various data technologies, integrating diverse systems, facilitating connections, and providing tailored solutions to meet your specific requirements.

2. Maintain

Once your connection is established, we assist in maintaining it effectively by offering a long-term monitoring solution.

IDX ensures the continuous operation of your plant through the implementation of data logging and visualisation tools, remote monitoring solutions and system design strategies, and by providing real-time digital views of your plant assets.

3. Leverage

Now is the moment to unleash the full potential by ensuring safety, streamlining processes, and maximising throughput. Data analytics drive continuous improvement and measurement.

IDX is ready to assist you in leveraging your end-user experiences through our expertise in custom configuration services, convenient simulation options, and advanced inventory planning.

PROFIBUS Services

Reliable and scalable
communication for
optimal performance



Delivering Resilient and Secure Networks

As your trusted partner for high-performance industrial networks, we help you grasp innovations, uncover potential threats, and anticipate the need for action. Whether it's digitalisation, planning, or maintenance, count on us for support and assistance every step of the way.

Audits

Conducting a thorough PROFIBUS network audit offers invaluable insights into identifying problem areas within your system, serving as a highly effective preventive measure against breakdowns and costly downtime that can significantly impact industries daily.

Call outs

With specialisation in resolving complex breakdowns across a wide range of plants and industries, our engineers have the precise knowledge and tools necessary to address and repair issues directly at your site.

Diagnostics and Troubleshooting

The complexity involved in diagnosing and troubleshooting issues within PROFIBUS networks is well understood by our team, as we possess the expertise to identify and resolve network faults, address communication issues, and optimise network performance.

ICT Consultation

Through our partnership, we invest time in understanding your company with a focus on protecting your assets and ensuring uninterrupted operations. We conduct a comprehensive assessment of your PROFIBUS network and offer recommendations that drive productivity.

Network Design and Installation

With an emphasis on meeting your unique needs, our team specialises in designing and installing customised PROFIBUS networks, encompassing network topology design, cable selection, device integration and network configuration.

Configuration and Commissioning

Our comprehensive services encompass all the crucial tasks required to configure and commission PROFIBUS networks, ensuring seamless operation from communication parameter setup to device address configuration and I/O data mapping.

Device Integration

When it comes to integrating new devices or upgrading existing ones within a PROFIBUS network, our team holds the expertise to seamlessly integrate field devices, PLCs, and other essential equipment, ensuring optimal performance and functionality.

Migration and Upgrades

Whether you require migration from older versions of PROFIBUS to newer ones or seek assistance in transitioning from PROFIBUS to alternative protocols like PROFINET, we cover the entire spectrum, encompassing thorough network assessment and seamless implementation.

Network Segmentation

By conducting meticulous analysis, we pinpoint areas where network congestion can be minimised. Through careful planning, we optimise performance by strategically dividing your network into logical segments, focusing on enhancing system stability.

PROFIBUS Training

Master PROFIBUS networks with hands-on training



Enabling Productivity through Active Learning

Established in 2001, the IDX Academy develops and teaches accredited courses, which combine both the theoretical and practical skills required, to efficiently manage any industrial network.

IDX's technical training solutions can help simplify the process so that you cost-effectively achieve operational excellence.

Certified PROFIBUS Installer

This course provides an overview of the PROFIBUS network operation and its characteristics, covering the theoretical, practical and troubleshooting elements of PROFIBUS DP and PA installation.

Certified PROFIBUS Engineer

An intensive hands-on course that is aimed at providing a detailed view of the PROFIBUS network operation and what goes into implementing and maintaining well-structured and reliable PROFIBUS networks.

Certified PROFIBUS PA Engineer

Become a fully competent PA Engineer with an in-depth understanding of the technology, and what is required for designing, implementing and maintaining an efficient PROFIBUS PA network.

Certified PROFIBUS & PROFINET System Designer

A top-down approach to designing modern PROFIBUS automation and control systems that can be maintained and which minimise the impact of control systems and network failures that will occur during the lifetime of a plant.



Certification

Upon completing a theoretical and practical examination, you will receive an internationally accredited certificate.



CPD Points

Expand your ICT skills and knowledge by enrolling in our selected Fieldbus Courses. Earn valuable CPD points while enhancing your experience in the field.

PROFIBUS International Competence Centre

Established in 1989, PROFIBUS and PROFINET International (PI) is the largest global automation community. PI manages and develops PROFIBUS and PROFINET standards to uphold professional regulations and optimise efficiency.

In 2004, the IDX Academy received its certification from PI becoming the first and only Certified PROFIBUS International Competence Centre (PICC) in Africa.

With the emergence of PROFINET, the IDX Academy extended its portfolio and became a Certified PROFINET International Competence Centre (PICC) in 2011.

The IDX Academy is Africa's first, and the only, PICC with the scale and portfolio to deliver comprehensive, integrated, and industry-leading industrial training solutions.

PROFIBUS Resources

Upskill yourself with
our comprehensive
resources



Empowering Industrial Connectivity and Efficiency

Enhance your skills and expertise with our resources meticulously crafted by our team of expert engineers, dedicated to providing you with the highest quality and most reliable information available.

By leveraging their expertise, we aim to empower you with the tools and knowledge necessary to succeed in implementing and optimising PROFIBUS networks.

Explore these free resources today and unlock the full potential of PROFIBUS technology.

Articles

Stay informed with our articles, covering a wide range of PROFIBUS-related topics and offering perspectives to keep ahead in the evolving automation landscape.

Case Studies

Discover real-world success stories through our compelling case studies, showcasing how businesses like yours have leveraged PROFIBUS to achieve remarkable results.

Guides and White Papers

Access essential knowledge and insights with our comprehensive guides and white papers, enabling you to optimise PROFIBUS networks for maximum efficiency.

Learning Benefits

- Identify and troubleshoot problems faster
- Improve cost of ownership
- Become more efficient at handling tasks
- Increase efficiencies in processes
- Pass on new skills to the team
- Build leadership ability
- Uniformity of work processes
- Boost productivity

Technical Specifications

Simplify PROFIBUS network operations with our technical specifications, offering seamless guidelines and standards.

Technical Tips Videos

Boost your PROFIBUS skills by watching our practical technical tips videos, featuring expert advice to confidently troubleshoot your network.

Training Videos

Level up your PROFIBUS expertise by watching our training videos equipping you with essential skills for network implementation and management.



Read now: www.idx.co.za/resources

Watch now: www.youtube.com/industrialdataexchange

Contact Details

We would love to hear from you so feel free to connect with us



Connectivity for Business Benefit

IDX goes beyond being a mere ICT solutions provider; we are your strategic partner on the journey towards a more efficient, connected, and data-driven industrial future.

In today's ever-evolving industrial landscape, we recognise that data is the cornerstone of success. Our mission is to equip businesses with the essential tools, knowledge, and infrastructure required to harness the potential of data, driving unprecedented growth and efficiency.

Our offerings are crafted to scale with your business, ensuring your competitiveness in a swiftly changing environment. Prioritising reliability and continuous uptime is grounded in our understanding of the substantial costs associated with industrial downtime.

We firmly advocate that data-driven decision-making serves as the linchpin for unlocking heightened levels of efficiency, sustainability and profitability. With a wealth of experience in industrial ICT solutions, we have a proven track record of delivering quantifiable results and catalysing innovation across various industries.

Let us assist you in establishing, maintaining, and leveraging connectivity within your infrastructure, allowing your workforce to maximise the potential of your assets!



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