Course Catalogue

Working with JCOM Automation Inc., we're proud to offer hands-on training courses designed for real-world learning. We provide in-depth training on PROFIBUS, PROFINET, EtherNet/IP, Modbus, HART, and EMC.

Our training courses are available on-site, online, and in Peterborough, ON. Our PROFIBUS and PROFINET courses are accredited by PI International ensuring the highest quality training experience.

Click on the course title below to learn more.

Have questions or want to chat about your training needs? Reach out—we're happy to help!

PROFIBUS

- **Certified PROFIBUS Installer**
- **Certified PROFIBUS Troubleshooting & Maintenance**
- **Certified PROFIBUS Network Engineer**
- **System Design Course**

PROFINET

- **Certified PROFINET Installer**
- **Certified PROFINET Troubleshooting & Maintenance**
- **Certified PROFINET Network Engineer (CPNE) with PA module (CPNE-PA) and PROFINET installer (CPNI)**

EtherNet/IP

- **EtherNet/IP PROFINET Installer**
- **EtherNet/IP Troubleshooting & Maintenance**
- **EtherNet/IP Advance Module**

HART

- **HART, SIMATIC PDM, PACTware Maintenance**

Modbus and Others

- **Modbus Troubleshooting & Maintenance**
- **EMC Awareness for Industrial Automation**

About the Instructor

- **Meet James Powell, P.Eng.**

To register email: admin@streamlinepm.com

Streamline Process Management Inc.
#7, 4351 – 104 Ave SE Calgary, AB T2C 5C6
T 403-225-1986 www.streamlinepm.com

Certified PROFIBUS Installer

PROFIBUS networks rely on specialized wiring and cabling techniques for reliability and performance. In this course, you'll gain the knowledge and skills to run communication cables, wire connectors, test connections, and set up basic equipment. You'll also learn how to reduce EMC interference for a more stable network. With real-world examples and hands-on training, this course ensures a practical, engaging learning experience.

The course ends with both a written and practical test.

Course Content	– Introduction to PROFIBUS – Physical layers – Cabling techniques – Grounding and shielding – Cable making and testing – Setting addresses
Hands-on Exercises	– Setting addresses – Cable making and testing
Course Duration	Course is one day. This course is 7.5 hours of instruction.
Professional Development hours	Certificate of attendance for 7.5 verifiable hours
Successful Students	Attendees who pass the certification test will also receive a certificate from PI as a certified PROFIBUS Installer.
Target Audience	Electricians and technologies who are installing the network

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Certified PROFIBUS Troubleshooting & Maintenance

Struggling with your PROFIBUS network? This training is for you!

Gain the skills to quickly find and troubleshoot issues, ensuring your PROFIBUS installations run smoothly. By the end of the course, you'll be able to maintain networks, isolate and analyze problems, and implement effective solutions.

You'll learn key PROFIBUS DP and PA concepts, explore network components and cabling, and get hands-on experience with cutting-edge troubleshooting tools and permanent network monitors.

This course also meets all the requirements of the Certified PROFIBUS Installers course.
The course ends with a written and practical test.

Course Content

- PROFIBUS DP
- PROFIBUS PA
- RS 485 and MBP
- Cabling techniques
- Grounding and shielding
- DP/PA segment couplers, repeaters, and OLMs
- Fault-finding strategies
- Measurement tools

Additional Modules for On-site Courses:

- Working with the Molex SST PROFIBUS master card
- Troubleshooting 12 Meg. networks
- PROFIBUS DP condensed version
- Special Amazon version

Hands-on Exercises

- What a good network looks like
- Common errors on DP
- Common errors on PA
- Wiring and testing a connector
- Wiring an EMC clamp
- Permanent monitoring
- Setting up a PROFIBUS master and slave
- Diagnostic message
- Common troubleshooting methods

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Training Equipment	– S7-1200 PLC with PROFIBUS Master – PROCENTEC IO Simulator – Helmholz TB20 IO rack – COMBRICK DP to PA gateway – P+F Digital valve controller – Siemens TH400 Temperature transmitter – SST Ethernet/IP to PROFIBUS gateway – PBQ One and ProfiTrace bus monitor – PROFIBUS INspektor – HP-25 PROFIBUS Cable tester
Course Duration	This course is two days. Each day includes 7.5 hours of instruction.
Professional Development hours	Certificate of attendance for 15 verifiable hours
Successful Students	Attendees of the in-person version of the course who pass the certification test will also receive a certificate from PI as a certified PROFIBUS Installer.
Target Audience	Maintenance people and Engineers

Certified PROFIBUS Network Engineer and Installer

Take your expertise to the next level with our in-depth certification course. You'll learn how to design, install, commission, and troubleshoot both PROFIBUS DP and PA networks, diving into practical installation challenges, protocol analysis, and bus parameter details.

This course includes everything from our Troubleshooting & Maintenance course—plus much more. Many students start with troubleshooting and return later for this advanced training, while others choose to jump straight into this course to fast-track their expertise.

Meeting and exceeding PI's certification requirements, this course concludes with a written and practical exam. Successful students earn both Certified PROFIBUS Installer and Certified PROFIBUS Network Engineer certifications from PROFIBUS and PROFINET International.

Course Content

- Introduction to PROFIBUS
- Overview of PROFIBUS Components
  - Basic definitions
  - Different physical layers
- PROFIBUS Design
  - Basics of DP/PA design
- PROFIBUS Advanced design
  - What else to consider
  - Proxy, gateways, and repeaters
- Installation best practice
  - How to approach the installation
  - Grounding and wiring
  - Installation best practice
- Setting up a PROFIBUS Master
  - Setting up master
  - Difference between masters
- Setting up a PA device
  - Profile standard
  - Overview of configuration software
- PROFIBUS Theory
  - OSI 7-layer model
  - Startup cycle
  - Command structure
  - Bus parameters
- Applying the theory
- PROFIBUS Device Diagnostics
  - Diagnostics via cyclic/acyclic

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	– Recommended procedures – Troubleshooting common problems
Hands-on Exercises	– Wiring and testing a connector – Wiring an EMC clamp – Network design – Setting up a master – Setting up an instrument – What a good network looks like – What common errors look like on DP – What common errors look like on PA – Startup sequence – Permanent monitoring – Device Diagnostics – Networks at 12 Meg – Network audit – Troubleshooting
Training Equipment	– S7-1200 PLC with PROFIBUS Master – PROCENTEC IO Simulator – Helmholz TB20 IO rack – COMBRICK DP to PA gateway – P+F Digital valve controller – Siemens TH400 Temperature transmitter – SST Ethernet/IP to PROFIBUS gateway – PBQ One and ProfiTrace bus monitor – PROFIBUS INspektor – HP-25 PROFIBUS Cable tester
Prerequisites	There are no prerequisites. It is recommended that the student has been introduced to PROFIBUS before.
Professional Development hours	Certificate of attendance for 37.5 verifiable hours
Successful Students	Attendees of the in-person version of the course who pass the certification test will also receive a certificate from PI as a Certified PROFIBUS Network Engineer and a Certified PROFIBUS Installer.
Target Audience	Maintenance people and Engineers

System Design Course

Robust and reliable networks all begin with great system design. Learn system design techniques following a top-down approach. This course will enable you to design a system that is reliable, maintainable, expandible, and minimizes the impact of control system or network failures. The course will also cover the use of network monitoring devices for fast fault and failure notification.

Case studies and examples from manufacturing, process plants, water treatment plants, material handling, and automated sorting, storage and retrieval systems are used in this course to provide you with real-world application experience.

The course ends with a written theory test. Successful students will be certified by PROFIBUS and PROFINET International as a Certified PROFIBUS System Designer.

Course Content

- General system design requirements
- The control system life cycle, consideration of maintenance, health checking and fault-finding features. Characteristics of communication and transmission technologies. Environmental considerations and choice of appropriate devices, cables, and connectors
- PROFIBUS network layout and design
- PROFIBUS network architectures and their relative advantages in terms of performance, maintenance and reliability. Integrating operation, supervision and engineering information into the control system
- PROFIBUS profiles
- How profiles can simplify system design, maintenance and give vendor independence. Use of profile GSD files and DTMs.
- Hazardous areas
- Essential requirements for hazardous areas and available design options. Design of Intrinsically safe RS485 and MBP segments.
- High availability systems and redundancy
- Basics of component and system reliability and application of basic reliability modeling techniques. Overview and evaluation of practical solutions for high availability PROFIBUS systems, limitations, and essential needs
- Fiber optic, infra-red and wireless transmission

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	- Basics of fiber optic transmission. Connector and cable types. Design and application of various topologies, solutions for redundant fiber optic systems. Basics and design considerations for infra-red and wireless communication - Safety-related systems - Essential requirements and design options for safety-related systems - Control system and network timing - Control system sampling and timing considerations. DP and PA cycle time and jitter estimation. The effect of gateways and couplers - Basic characteristics and applications of isochronous cycle timing - Modern solutions for network monitoring - Documentation and drawing standards
Hands-on Exercises	- This course does not include a hands-on aspect, although there will be several exercises and design assignments.
Course Duration	Course is Four consecutive days. Each day is 7.5 hours of instruction.
Prerequisites	There are no prerequisites. It is highly recommended that the student has been introduced to PROFIBUS before, preferably with a certified Installers course or a two-day PROFIBUS Troubleshooting and Maintenance course.
Professional Development hours	Certificate of attendance for 30 verifiable hours.
Successful Students	PROFIBUS Certification upon successful completion of the examination.
Target Audience	Engineer and Designers

Certified PROFINET Installer

PROFINET networks rely on specialized wiring and cabling techniques for reliability and performance. In this course, you'll gain the knowledge and skills to run communication cables, wire connectors, test connections, and set up basic equipment. You'll also learn how to reduce EMC interference for a more stable network. With real-world examples and hands-on training, this course ensures a practical, engaging learning experience.

The course ends with both a written and practical test.

Course Content	– Introduction to PROFINET – Physical layers – Cabling techniques – Grounding and shielding – Cable making and testing – Setting PROFINET name
Hands-on Exercises	– Setting PROFINET name – Cable making and testing – Wiring an EMC clamp
Course Duration	Course is one day. This course is 7.5 hours of instruction.
Professional Development hours	Certificate of attendance for 7.5 verifiable hours
Successful Students	Attendees who pass the certification test will also receive a certificate from PI as a certified PROFINET Installer.
Target Audience	Electricians and technologies who are installing the network

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Certified PROFINET Troubleshooting & Maintenance

Struggling with your PROFINET network? This training is for you!

Learn how to quickly identify, isolate, and resolve network issues with confidence. By the end of the course, you'll have the skills to maintain, analyze, and troubleshoot PROFINET installations effectively.

Get hands-on experience with the latest PROFINET troubleshooting tools, including Wireshark, PRONETA, and the PROFINET INspektor permanent network monitor. Through practical exercises and real-world scenarios, you'll gain the expertise needed to keep your network running smoothly.

Course Content

- Introduction to PROFINET
- Physical layers
- Cabling techniques
- Grounding and shielding
- Cable making and testing
- Setting PROFINET name

Hands-on Exercises

- Wiring and testing a cable
- Wiring an EMC clamp
- Monitoring lab
- Commissioning wizard and measuring netload
- Setting up a switch
- Configuring a PROFINET network
- Diagnostics lab
- Using Wireshark and other troubleshooting tools

Training Equipment

- IO-Controller is Codesys software running on a Raspberry PI. This is using IEC 61131-3 standard programming which makes it perfect for teaching general concepts without getting confused with proprietary software
- IO-Devices include Helmholz TB-20 IO rack, Wago IO rack, Helmholz 8 port managed switch, Turk TBEN IO brick, P+F APL 8 port switch, E&H APL Temperature Transmitter, E&H PA Temperature Transmitter, Thorsis isNet HART proxy with E&H HART temperature transmitter
- Permanent monitoring system is the PROFINET INspektor by Indu-Sol.
- IO-Supervisor/Monitor is PRONETA by Siemens
- Protocol Analyzer is Wireshark
- Ethernet cable tester
- Bit-destroyer by Indu-Sol
- Packet sender

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Course Duration	Course is two days. This course is 15 hours of instruction.
Professional Development hours	Certificate of attendance for 15 verifiable hours
Successful Students	Attendees who pass the certification test will also receive a certificate from PI as a certified PROFINET Installer.
Target Audience	Maintenance people and Engineers

Certified PROFINET Network Engineer (CPNE) with PA module (CPNE-PA) and PROFINET installer (CPNI)

Ever wondered:

How do I design a PROFINET network?
How does it work?
How do I install and configure it?
How do I troubleshoot issues?
How is it used in process automation?
What is APL?
If these questions sound familiar, this course is for you!

This in-depth, hands-on training covers everything you need to design, install, commission, and troubleshoot PROFINET networks. You'll explore practical installation challenges, dive deep into protocol and packet-level details, and gain a thorough understanding of bus parameters. You'll also learn how to reduce EMC interference and work with the latest troubleshooting tools, including **Wireshark** and the **PROFINET INspektor** permanent network monitor.

This course builds on our Troubleshooting & Maintenance course but goes even further. Many students start with troubleshooting before advancing to this expert-level course, while others jump straight in to accelerate their learning.

Meeting all the requirements for the **Certified PROFINET Network Engineer** certification, this course also includes the **Certified PROFINET Engineer Network Process Automation module** and the **Certified PROFINET Installer** certification.

Course Content

- Introduction to Industrial Ethernet
- OSI 7-layer model
- Ethernet Protocols
- Hub, switches, routers and firewalls
- Redundancy
- Network design
- Security
- Physical layer and installation
- Device model and Profiles
- Setting up a PROFINET project
- APL
- Device integration via FDI
- Hazardous areas

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	– OPC UA – IO-Link – PROFINET Theory – Acyclic communications – Diagnostic model – Fault finding strategies – Measurement tools (Wireshark)
Hands-on Exercises	– Monitoring – Configuring a PROFINET network – Wiring and testing cable – Wiring an EMC clamp – Wireshark – Design verification – Commissioning wizard and measuring Netload – Start-up cycle revisited – OPC UA – Acyclic communications and Wireshark – Configuring a PROFINET PA network – SIMATIC PDM – Diagnostics – Troubleshooting
Training Equipment	– IO-Controller is Codesys software running on a Raspberry PI. This is using IEC 61131-3 standard programming which makes it perfect for teaching general concepts without getting confused with proprietary software – IO-Devices include Helmholz TB-20 IO rack, Wago IO rack, Indu-Sol 9 port managed switch, Turk TBEN IO brick, P+F APL 8 port switch, E&H APL Temperature Transmitter, E&H PA Temperature Transmitter, Thorsis isNet HART proxy with E&H HART temperature transmitter – Permanent monitoring system is the PROFINET INspektor by Indu-Sol – IO-Supervisor/Monitor is PRONETA by Siemens – Protocol Analyzer is Wireshark – Ethernet cable tester – Bit-destroyer by Indu-Sol – Packet sender

Demo Equipment	– Dual IO-Controller (Codesys software running on a Raspberry PI) – Indu-sol PROmash B8 switch for MPR ring – Turck TBEN IO-Link master
Course Duration	Course is five consecutive days. Each day is 7.5 hours of instruction.
Professional Development hours	Certificate of attendance for 37.5 verifiable hours
Successful Students	Certificates as a Certified PROFINET Engineer (CPNE), Certified PROFINET Engineer Process Automation Module (CPNE-PA) and Certified PROFINET Installer (CPNI). The certificates are given only if the student passes the in-class written and practical test.
Target Audience	Maintenance people and Engineers

EtherNet/IP Installer

EtherNet/IP networks rely on specialized wiring and cabling techniques for reliability and performance. In this course, you'll gain the knowledge and skills to run communication cables, wire connectors, test connections, and set up basic equipment. You'll also learn how to reduce EMC interference for a more stable network. With real-world examples and hands-on training, this course ensures a practical, engaging learning experience.

Course Content	– Introduction to EtherNet/IP – Physical layers – Cabling techniques – Grounding and shielding – Cable making and testing – Setting IP addresses
Hands-on Exercises	– Setting IP addresses – Cable making and testing
Course Duration	Course is one day. This course is 7.5 hours of instruction.
Professional Development hours	Certificate of attendance for 7.5 verifiable hours
Successful Students	Attendees will receive a certificate of participation.
Target Audience	Electricians and technologies who are installing the network

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EtherNet/IP Troubleshooting & Maintenance

Learn the skills to quickly find, analyze, and isolate EtherNet/IP network problems. This course will provide you with the knowledge and skills you need to run the communication cables, wire the connectors, test the cables, and setup basic equipment. You will also learn how to minimize the impact of EMC on the network. Get hands-on experience with the latest EtherNet/IP troubleshooting tools including; Wireshark and the EtherNet/IP INspektor.

Course Content

- Introduction to Industrial Ethernet
- OSI 7-layer model
- CIP
- Objects, Attributes, Instances
- Ethernet Protocols
- Hub, switches, routers, and firewalls
- Basic Network design
- Physical layer and installation
- Setting up an Ethernet/IP project
- Diagnostic model
- Fault finding strategies
- Measurement tools

Hands-on Exercises

- Wiring and testing a cable
- Wiring an EMC clamp
- Setting up a switch
- Configuring an Ethernet/IP network (implicit messaging)
- Diagnostics lab
- Explicit messaging
- Startup cycle and Wireshark
- Commissioning Wizard
- Troubleshooting

Training Equipment

- IO-Scanner is Codesys software running on a Raspberry PI.
- IO-Adaptor include Helmholz TB-20 IO rack
- Permanent monitoring system is the EtherNet/IP INspektor by Indu-Sol
- Protocol Analyzer is Wireshark
- Ethernet cable tester

Demo Equipment

- CompactLogix L30ER
- Helmholz TB-20 IO rack

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Course Duration	Course is two days. This course is 16 hours of instruction.
Professional Development hours	Certificate of attendance for 16 verifiable hours
Successful Students	Attendees will receive a certificate of participation.
Target Audience	Maintenance people and Engineers

EtherNet/IP Advance Module

This module is a Deep Dive for Serious Industrial Network Professionals. Take your EtherNet/IP expertise to the next level with this advanced one-day module, designed as an addon to our two-day **EtherNet/IP Troubleshooting & Maintenance** course.

This module goes far beyond the fundamentals, giving you a deeper technical understanding of how the protocol works and how to design more reliable, scalable, and secure networks.

You'll explore industry proven architectures, modern design practices, and real-world implementation strategies used across high performance industrial systems.

Whether you're optimizing existing networks or designing new installations, this module provides the insights you need to work confidently at an expert level

Course Content

- Purdue Model, CPwE, Namur Open Architecture
- Topology
- VLAN Segregation
- Layer 3 Switching
- Layer 2 Redundancy
- Common Mistakes in design
- Object, Instances, attributes and Assemblies in detail
- Explicit messaging in detail
- Implicit messaging in detail
- Startup sequence
- Advanced Wireshark

Hands-on Exercises

- Design lab
- Explicit messaging in Codesys
- Wireshark
-

Training Equipment

- IO-Scanner is Codesys software running on a Raspberry PI.
- IO-Adaptor include Helmholz TB-20 IO rack
- Permanent monitoring system is the EtherNet/IP INspektor by Indu-Sol and IntraVue by Pronetiqs
- Protocol Analyzer is Wireshark
- Ethernet cable tester
- CompactLogix L30ER
- Helmholz TB-20 IO rack

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Demo Equipment	– CompactLogix L30ER – Helmholz TB-20 IO rack
Course Duration	Course is one day and is added to the troubleshooting and maintenance course. This course is 8 hours of instruction.
Professional Development hours	Certificate of attendance for 8 verifiable hours
Successful Students	Attendees will receive a certificate of participation.
Target Audience	Advanced Maintenance people and Engineers

HART, SIMATIC PDM, PACTware Maintenance

Develop the expertise to swiftly identify, analyze, and resolve HART communication issues. This course provides in-depth knowledge of cabling, shielding, and grounding for HART, WirelessHART, and HART-IP installations, along with a deep dive into protocol details to help you fully understand system operations.

You'll also master the use of SIMATIC PDM and PACTware, enabling you to confidently connect to and manage all your HART instruments with ease.

Course Content	– HART Physical layers – HART commands – EDD/DD and DTM's – PACTware and SIMATIC PDM – Serial HART – HART-IP – WirelessHART – Statuses – Network design and setup – Wiring – Troubleshooting
Hands-on Exercises	– PACTware and HART modem – Decoding HART commands – SIMATIC PDM and HART modem – Generic DTM and EDD and HCF library – HART Server with SIMATIC PDM
Training Equipment	– HART Modem (Thorsis Technologies) – HART protocol analyzer – PACTware – SIMATIC PDM – Siemens and Vega Instruments
Course Duration	Course is one day. This course is 8 hours of instruction.
Professional Development hours	Certificate of attendance for 8 verifiable hours
Successful Students	Attendees will receive a certificate of attendance.
Target Audience	Maintenance people and Engineers

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Modbus Troubleshooting & Maintenance

Master the ability to quickly identify, analyze, and resolve Modbus network issues. This course offers a deep understanding of the Modbus protocol while equipping you with the skills to wire connectors, test cables, and set up essential equipment.

You'll also gain hands-on experience with key troubleshooting tools for Modbus RTU and Modbus TCP, ensuring you're prepared to diagnose and resolve network problems with confidence.

Course Content	– Modbus serial physical layers – Modbus commands – Modbus monitors – Modbus TCP – Network design and setup – Wiring – Troubleshooting
Hands-on Exercises	– Modbus RTU communications via RS-485 – Modbus RTU monitoring – Modbus TCP communications – Working with Modbus data logger – Working with wireless Modbus modems – Modbus TCP monitoring via Wireshark
Course Duration	Course is one day. This course is 8 hours of instruction.
Professional Development Hours	Certificate of attendance for 8 verifiable hours
Successful Students	Attendees will receive a certificate of participation.
Target Audience	Maintenance people and Engineers

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EMC Awareness for Industrial Automation

The use of switching devices, such as variable speed drives, increases the risk of sporadic production outages caused by interference and signal pickup. This one-day course is designed to raise awareness of these challenges, explain the underlying theory, and provide practical guidance on designing and installing industrial automation systems to minimize Electro-Magnetic Compatibility (EMC) issues.

Tailored for professionals with a conventional low-frequency electrical background, this course is ideal for those involved in the design, installation, commissioning, and support of industrial automation systems.

Course Content	– Fundamentals – EMC and relevant standards – Low voltage distribution systems – Equipotential bonding techniques – EMC Testing equipment – Cable segregation and shielding – Panel considerations – Variable speed drives –
Demo Equipment	– Rigol Signal Generator – Rigol Oscilloscope – Rigol Spectrum Analyzer – Indu-sol MWMZ II Impedance clamp – Indu-sol LSMZ I Current clamp (basic) – Indu-sol ISMZ I Current clamp (advanced)
Course Duration	Course is one day. This course is 7.5 hours of instruction.
Professional Development hours	Certificate of attendance for 7.5 verifiable hours
Successful Students	Attendees will receive a certificate of participation.
Target Audience	Maintenance people and Engineers

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Meet James Powell, P.Eng.

JCOM's founder and principal engineer, James Powell, P.Eng., brings enthusiasm and extensive expertise in industrial networks, with in-depth experience in PROFIBUS, PROFINET, EtherNet/IP, Modbus, HART, and EMC as they apply to automation systems.

As a certified PROFIBUS DP, PA, and PROFINET Network Engineer and Trainer, he has over 30 years of experience in application design, research, and field service, making him a trusted authority in the field.

Student Success	We focus on smaller classes for a reason. Our goal with each student is to ensure maximum learning, and to return to their teams highly qualified.
Books & Articles	– Catching the Process Fieldbus (available as a free download) – HART Communications Protocol: A Practical Guide Published articles in ISA technical papers, Verfahrens Technik, Electo Industria, PROFIBUS newsletter, and Control Engineering.
PI Credentials	Certified training center for PROFIBUS PROFINET International for both PROFIBUS and PROFINET, guarantees high-quality training. JCOM Automation was the first competence centre in North America certified to teach the PA Module for PROFINET.