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- Ease of Fieldbus Implementation
- Value of Global Seminars
- Updated Engineering Guide
- Advances in Fieldbus Diagnostics
- Host Registration Update
- First Registered Device Couplers

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President’s Letter

FOUNDATION™ Technology: The Right Solution at the Right Time

Thank you for reading the current issue of Fieldbus Report, the official journal of the Fieldbus Foundation. As always, the goal of this publication is to keep members of the industrial automation community up to date on the latest developments in FOUNDATION™ fieldbus worldwide.

As of this writing, FOUNDATION technology is being employed in many new installations throughout the process industries, including Greenfield construction and, increasingly, modernization projects. Industrial organizations of all sizes are benefitting from a technology that helps them see their process in high definition, manage information effectively to make the best decisions about their operations, and optimize their overall plant performance — all while protecting valuable investments.

In today’s uncertain business environment, companies that can adapt, innovate and utilize global resources will generate significant growth and success. For this reason, I believe FOUNDATION for Remote Operations Management (ROM) is the right solution at the right time.

FOUNDATION for ROM establishes an integrated engineering platform (open, standards-based and vendor-neutral) to replace complex, proprietary and highly customized remote monitoring applications. It offers an open path for integration of multiple wireless and wired networks, from conventional remote I/O to ISA 100.11a and WirelessHART®, and enables direct access to device information and diagnostics.

With this innovative solution, automation end users can seamlessly combine assets on all of their plant networks within FOUNDATION technology to manage device data and information in a unified infrastructure specifically built for the requirements of remote applications — from oil & gas fields to water treatment facilities, offshore platforms, and even OEM skid-mounted equipment.

FOUNDATION for ROM will be put to the test by a number of leading process industry companies during the coming year. Firms such as Reliance Industries, Petrobras and Saudi Aramco, among others, will conduct field demonstrations to show how FOUNDATION for ROM enables real-time remote operations management, including the implementation of effective predictive and preventive maintenance strategies.

The Fieldbus Foundation is equally committed to continuous technology improvement and enhancing the user experience for companies implementing FOUNDATION fieldbus. That is why we are supporting efforts to arrive at a standard set of work processes and best practices for intelligent device management. The ISA108 initiative will provide an effective blueprint for optimizing the significant economic lifecycle benefits already associated with intelligent devices.

Finally, we are pleased to announce that additional fieldbus training facilities are completing the rigorous certification process required under our FOUNDATION Certified Training Program (FCTP). This program establishes uniform standards for fieldbus educational curricula around the globe, and defines acceptable levels of learning for students of the technology.

In summary, there’s never been a better time to adopt FOUNDATION fieldbus and start realizing its bottom-line benefits for your company.

All the best,

Richard J. Timoney
President & CEO
Fieldbus Foundation
MTL Redundant Fieldbus Barriers... maximum protection for your critical loops

Fieldbus Barriers are widely adopted in FOUNDATION™ fieldbus networks to connect to intrinsically safe instruments in Zone 1 hazardous areas. The new Redundant Fieldbus Barrier from MTL ensures that your critical fieldbus loops are protected against hardware failure, maximizing plant up-time and avoiding lost production.

So you can now get the benefits of heavily loaded segments and long trunk cable lengths with the security of physical layer redundancy and immediate fault notification.

- Unique, patented redundant configuration for super-high system availability
- Complete enclosure systems for up to 6 intrinsically safe spur connections
- Failure alarm direct to host control system via integrated fieldbus device
- Supports full feature set of class-leading 9370-FB Series
- Live-pluggable system components, without 'gas free' constraints
- Optional, integrated surge protection for trunk and spurs

The FieldPlus™ range of products deliver an unrivalled source for system specifiers and all parties involved in the design, installation and commissioning of fieldbus networks.

www.fieldplus.info   enquiry@mtl-inst.com

Two months ago, we had a process redesign.
Last month? The I/O schedule changed...again.
Today, skids showed up and didn’t match spec.
And yet, our start-up isn’t changing.

IT’S IMPOSSIBLE

Next time, design flexibility and adaptability into your project right from the start. Now, instead of a design freeze, you can make your I/O and marshalling decisions when you need to, right through construction and commissioning, with Emerson’s new I/O on Demand technology. So not only are last-second changes not a problem, there’s no need to build in the extra slack time that pushes out your project’s start-up. Less engineering, fewer change orders. Shorter project cycles. With Emerson’s I/O on Demand technology, it’s possible. EmersonProcess.com/IODonDemand

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AG-181 SYSTEM ENGINEERING GUIDELINES AVAILABLE

The Fieldbus Foundation offers our AG-181 FOUNDATION Fieldbus System Engineering Guidelines to help end users get on the “Fast Track to Fieldbus.” This comprehensive document describes how FOUNDATION fieldbus devices are specified, installed, configured, commissioned, and maintained.

To download the AG-181, please visit: www.fieldbus.org/About/FoundationTech/Resources

Fieldbus Report
Your Global Source for FOUNDATION™ Technology News
Fall 2012
The Fieldbus Foundation’s FOUNDATION™ for Remote Operations Management (ROM) initiative extends the capabilities of FOUNDATION technology to countless wired and wireless devices installed in some of the world’s harshest and most remote locations. This solution provides a unified digital infrastructure for asset management in applications ranging from tank farms and terminals to pipelines, offshore platforms, and even original equipment manufacturer (OEM) skids.

FOUNDATION™ for ROM Demos Planned Worldwide

End users to evaluate unified digital infrastructure for remote operations

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Learn More About This Technology
Plans are underway for a series of field demonstrations showcasing the Foundation for ROM development. Major end users agreeing to host the demonstrations include Reliance Industries (India), Petrobras (Brazil), and Saudi Aramco (Saudi Arabia). Additional sites in Japan and Europe are expected to join the program.

The field demos will offer a look at the full functionality of Foundation for ROM, including wireless device integration, remote I/O integration, and wireless backhaul capabilities.

Petrobras is particularly interested in ROM technology, which is a good fit for the ambitious projects it is undertaking in the upstream and downstream hydrocarbon industry. The company has a record-setting $224 billion capital spending plan through 2015, with most of the investments targeted at the upstream sector on the highly publicized Pre-Salt area of the Santos Basin.

Miguel Borges, who is employed at Petrobras’ Research and Development Center in Rio de Janeiro, believes Foundation for ROM can be an enabling technology for remote applications on the company’s offshore platforms. “The Fieldbus Foundation’s ROM solution is attractive to us, since we want to gain access to diagnostic information from devices installed at our remote sites,” he said. “Petrobras is committed to investing in this type of technology, and is seeking the most effective solutions available in the marketplace.”

According to Borges, Petrobras will install a Foundation for ROM demonstration unit at its R&D center and conduct a series of tests on a distillation process pilot plant. The project will be conducted during a period from December 2012 to February 2013. Managers from various areas within Petrobras will view the demonstration, which is intended to evaluate the use of fieldbus-based ROM devices with wireless protocols for remote applications.

“This demonstration is the first step to show the capabilities of Foundation for ROM before it is specified for commercial projects,” said Borges.

Origins of the project

In the oil & gas, petrochemicals, power distribution, and water/wastewater industries, among others, operating companies have multiple production facilities geographically spread out over vast distances. Optimal overall production and productivity is hard enough to achieve on a single asset level, but interdependencies between remote processes and facilities complicate things even further.

Due to their unique nature, however, many of today’s remote operations management solutions are highly customized and not easily configurable. In addition, some organizations maintain an “if it isn’t broke, don’t fix it” approach to asset management.

In 2007, the Fieldbus Foundation initiated a project that would extend the functionality and infrastructure of FOUNDATION fieldbus to remote applications through remote I/O and wired HART. This effort was later expanded to include a wireless backhaul network capability and integration of leading industrial wireless networks such as ISA 100.11a and WirelessHART. The technology provides an interface to these wireless technologies and uses Electronic Device Description Language (EDDL) and function blocks to ensure interoperability with Foundation for ROM devices.

Foundation for ROM will allow industrial organizations to implement predictive and preventive maintenance strategies for their remote assets that previously were unable to support them. Whether operating on a wired or wireless network, users will be able to pull device data into the Foundation fieldbus infrastructure, which can provide a single source of data management, diagnostics, alarms and alerts, data quality control, control-in-the-field capability, and object-oriented block structure. In this manner, Foundation for ROM helps address various challenges in upstream oil and gas applications.

Significance to the industry

Foundation for ROM is important because it is the first successful integration of ISA 100.11a, WirelessHART, wired HART, and wired H1 protocols into a single standard environment without sacrificing the diagnostic capabilities of existing wireless devices. Instead, these capabilities are mapped into the Foundation block structure to provide a standard environment for data management and quality, eliminating techniques which are highly customized and much more costly to maintain throughout the plant lifecycle.

As part of this solution, Foundation for ROM provides a way to bring large concentrations of discrete and analog field I/O back to the control room using High Speed Ethernet (HSE) communication. This is key to improved integration of critical functional areas, including machinery health monitoring, safety interlocks, fire & gas detection systems, and video surveillance.

The Foundation for ROM specification can be embedded in an array of products, including remote terminal units (RTUs), controllers, and remote I/O modules. Once the specification is embedded in a device, its role expands to reflect the combination of traditional functionality found in wireless gateways, process controllers, and RTUs. These devices provide the protocol translation capabilities of a gateway, but go beyond this by representing the device as a transducer block in the Foundation fieldbus infrastructure, delivering
Yokogawa has been involved in the Foundation for ROM project from the beginning, supporting a technology that can integrate wireless and other field devices into the Foundation infrastructure. The company regards Foundation for ROM as a key concept for process automation, and is contributing to the development and validation of specifications for the ISA 100.11a gateway and wireless HSE backhaul.

The R. STAHL remote I/O system IS1 is one of the first prototype devices for Foundation for ROM and the only solution for hazardous areas. In addition to the system used at the Fieldbus Foundation General Assembly in Brazil and ACHEMA in Germany, a second demo system is being built for the JEMIMA fair in Japan. This system was designed to incorporate a third-party linking device and isolated device coupler for H1 devices.

As an active member of the Fieldbus Foundation, Softing hosted the three-day wireless I/O validation team meeting for Foundation for ROM in June. A leading position in the area of Foundation fieldbus and the successful introduction of wireless products for the process industries have allowed Softing to contribute valuable input for the development of HSE test cases for the ISA-100 wireless I/O specification FF-911.

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Leading Vendors Contribute to ROM

**PEPPERL+FUCHS**

Integrating all automation tasks into a single system creates transparency of all processes front to end. Inevitably, this will lead to better plant operation and better availability. Pepperl+Fuchs provides its expertise with infrastructure components and solutions for fieldbus, both Foundation H1 and wireless networks.

**STAHL**

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**Value of the technology**

Any technology is only as good as the value it provides. The key value of Foundation for ROM is the ability to serve as an enabler for real-time remote operations management. With Foundation for ROM, users can diagnose, either locally or remotely, the condition of their automation assets. While users deal with shrinking operations and maintenance personnel and assets being deployed in remote locations, remote operations management is quickly becoming a critical application.

In particular, Foundation for ROM:

- Improves the value proposition for plant asset management
- Optimizes data structures, data quality and EDDL
- Reduces the need for remote personnel
- Lowers engineering and operational costs
- Increases reliability and availability
- Improves process integrity

Unlike most other solutions for remote operations management, Foundation for ROM is highly configurable, reducing the need for customization, which can reduce overall implementation costs significantly. At the field device level, utilizing analog technology results in unnecessary work processes due to the lack of direct, bidirectional digital access to devices for commissioning and diagnostics. Even when digital devices are used, proprietary technology at the application and network levels often means that much of the data collected from intelligent devices may be difficult, if not impossible, to retrieve. Instrumentation engineering alone can account for 20% of a user’s automation project costs.

The diagnostics and function block capabilities available in the Foundation fieldbus environment have helped many users avoid unscheduled downtime. Utilizing the predictive diagnostics functionality included in Foundation for ROM technology, users can develop proactive and predictive maintenance strategies to help avoid unnecessary maintenance trips to the field.

Experience has shown that a comprehensive remote operations management solution enables industrial organizations to respond faster to market conditions, increase efficiency, reduce downtime, and achieve higher production availability. It also minimizes the costs and risks associated with remote site visits — enabling fewer core personnel to meet the operational requirements of numerous facilities from a single secure location.

Access to high-quality process and equipment health data helps to minimize downtime and increase production.

Watch the Introductory Video

Integrating all automation tasks into a single system creates transparency of all processes front to end. Inevitably, this will lead to better plant operation and better availability. Pepperl+Fuchs provides its expertise with infrastructure components and solutions for fieldbus, both Foundation H1 and wireless networks.

Access to high-quality process and equipment health data helps to minimize downtime and increase production.
In the past, some automation end users were reluctant to adopt FOUNDATION™ fieldbus due to perceptions about its complexity and cost of installation. System integrators and engineering firms also took a cautious approach to fieldbus, fearing a steep learning curve with the technology.

Today, the process control industry has come to realize that all-digital FOUNDATION fieldbus can actually reduce engineering effort and cost on both retrofit and new construction projects. Fieldbus implementation is easier than you think, and knowledge, tools and training are available to help eliminate rookie mistakes.
Do your homework first

FOUNDATION™ fieldbus offers many advantages to industrial operations, but requires awareness of differences from conventional process control technologies. Successful planning and execution of a fieldbus installation starts with an understanding of these unique differences and applying it to nearly all phases of the project lifecycle.

Most plant automation systems being implemented today still employ a significant amount of conventional signal technology, even if fieldbus is present. The planning and execution of a project utilizing fieldbus has many similarities to one based on conventional technology. However, there are differences for which the end user must plan accordingly.

Regardless of the size or scope of a FOUNDATION fieldbus installation, it’s important to do your homework at the start of the project. Specific aspects of the technology that require close attention include wiring topology, power distribution, and general wiring practices such as grounding and shielding. Other unique characteristics include function block residency, network bandwidth and scheduling, device address limitations, and overall system capacity. All of these areas have an impact on project implementation, most notably on scheduling itself.

In addition, communications requirements such as data transmission speed or data size and structure may differ from traditional approaches depending on location inside the plant and which level of the hierarchy is used. Environmental factors, including explosion risk, temperature variations, and electrical interference can also affect communications.

System integration aspects of FOUNDATION fieldbus dictate that some design activities are to be performed earlier and with greater detail in the project lifecycle. System, field device, and segment component testing processes are more advanced than for simple analog connections.

In the FOUNDATION fieldbus control architecture, field devices and segments become an integral part of the Distributed Control System (DCS). This requires an integrated configuration, data management, and system architecture approach to field network design. Users can no longer treat devices and process automation systems as separate islands of automation.

In addition, you can achieve more advanced functions with FOUNDATION fieldbus designs compared to traditional technologies. These advanced functions offer considerable opportunities for operating cost-savings and improved commissioning and start-up.

Use registered devices

It may seem obvious, but it is always preferable to use a host system or device that has gone through the Fieldbus Foundation’s rigorous testing and registration process. Testing and registration ensures that you can achieve the best return on your fieldbus investment.

The Fieldbus Foundation is one of the few automation industry organizations with a registration program requiring mandatory testing of critical elements of its technology. Its testing and registration effort encompasses FOUNDATION fieldbus host systems and field devices, as well as physical layer components such as power supplies, cables, and device couplers.

One of the founding principles of the Fieldbus Foundation is the support of interoperability — the ability to operate multiple devices from multiple manufacturers, in the same system, without loss of functionality. The organization’s testing and registration process is key to this interoperability. With FOUNDATION fieldbus, interoperability is made possible by the fact that devices and software must conform to the same standard.

Products bearing the FOUNDATION Product Registration symbol have undergone a series of common tests administered by the Fieldbus Foundation. End users can select the best device for a specific measurement or control task, regardless of the manufacturer, and they know that device will provide a consistent level of functionality and interoperability regardless of the host system or other devices used.

Devices tested under the latest Version 6.0 of the Fieldbus Foundation’s Interoperability Test Kit (ITK) will provide more advanced diagnostic functionality, including the NAMUR NE 107 recommendations for presenting diagnostic data. Plus, the latest iteration of the foundation’s host profile registration has made many previously optional requirements mandatory, such as support of enhanced function blocks and DD V5.1 Device-Level Access.

Don’t overlook the physical layer

Perhaps the most important consideration in a fieldbus installation is the wiring itself. Indeed, challenges with fieldbus implementation most often occur at the physical layer. The best possible wiring available should always be used. Multiple twisted pair wiring is acceptable, but be aware of lower overall distance limits. Always pay attention to grounding and shielding, and when in doubt, measure wiring resistance.

The Fieldbus Foundation developed its H1 Cable Test Specification for use by manufacturers developing cables for FOUNDATION fieldbus H1 (31.25 kbit/s) installations. The specification test cases, based upon the IEC 61158-2:2003 standard for Type A cable, include (but are not limited to) impedance, capacitive unbalance, connector pin-outs,
Certified training ensures professionals with a strong knowledge of Foundation technology.

and attenuation. Cable manufacturers submit their test reports to the foundation, which provides official cable registration.

There are many choices today for registered cable, but there are also ways to test your installed instrument cable to see if it would be compatible with a Foundation fieldbus installation.

Components of fieldbus segments can be connected together in various topologies. The topology selected is often, though not always, driven by the physical device location in order to reduce installation costs. Deciding on the appropriate topology requires up-front decisions about applications planning. Generally speaking, fieldbus segments perform at their best with tree, spur or combination topologies. It is good practice to employ connection products and practices allowing devices to be added to and removed from segments without disrupting network communications. This not only simplifies expansion and device replacement, but also assists in troubleshooting.

Adjust your work processes

Traditional lines of authority between crafts and legacy-derived practices should be reviewed to determine if they are a suitable “fit” for Foundation fieldbus. In other words, it will require a few different work processes than you have done before. This is especially true if you want to practice predictive and proactive maintenance, which is where a majority of operational cost savings will occur.

In the early stages of project design, you should define any new or revised work processes that may be required because of the use of Foundation fieldbus. Failure to do so means that people who need the data from fieldbus devices may not be able to get it, or you will continue to rely on traditional maintenance processes that are essentially transformed by fieldbus.

Fieldbus offers a broad pipeline of data, which has the potential to be transformed into useful information. For this reason, it’s important to ask: What kinds of information are maintenance personnel looking for? What about data storage and validation concerns for companies that must undergo regulatory compliance in industries such as pharmaceuticals and food & beverage?

Best practices involve mapping out information flow from the device level to associated applications prior to startup to optimize operational benefits. Intelligent field devices are really data servers, and as such, a large share of the information they contain is not appropriate for plant operators. It’s a good idea to work with a supplier that has a well-designed fieldbus configuration tool integrated with an effective Plant Asset Management (PAM) application. This ensures minimal effort to get the right information to the right people at the right time.

The International Society of Automation (ISA) is currently developing recommended work processes for managing the data from intelligent devices. The ISA 108 standard will identify work processes for different roles in the organization and provide best practices for the project lifecycle.

Be sure to get training

The Fieldbus Foundation offers a wide range of instructional opportunities across the globe to help make fieldbus implementation easier. Its Foundation Certified Training Program (FCTP) establishes uniform standards for fieldbus educational curricula and instructors, and defines acceptable levels of learning for students of the technology.

Certified training ensures professionals with a strong knowledge of Foundation principles, a consistent understanding of fieldbus fundamentals, and a proven ability to implement fieldbus-based control systems. All FCTP sites offer certificates showing a student’s competency within that certification level.

FCTP-approved training facilities have a close working relationship with the Fieldbus Foundation, and continually receive updates on Foundation fieldbus as it continues to improve and develop capabilities. These sites are always on the leading edge of the technology.

Through the FCTP, training facilities, curricula, and instructors are all audited to ensure they meet program requirements. Certified sites are required to maintain multiple Foundation fieldbus hosts and devices onsite in order to demonstrate competence with fieldbus technology. They must also demonstrate to auditors that their course material adheres to set instructional standards.

FCTP currently offers three types of certification: Foundation Certified Professional, Foundation Certified Support Specialist, and Foundation Certified Technical Specialist. Students completing a certified training program are listed in the Student Registry Catalog on the foundation’s website.

Free Foundation technology seminars are also offered in key locations around the world — from North America and Europe/Middle East/Africa (EMEA), to Latin America and Oceania.

Oriented towards process industry end users and engineering firms, the one-day seminars cover all aspects of Foundation technology business value, project execution, and system design. Leading end users, systems integrators, and trainers discuss successful installation and commissioning practices, control strategies, and operational and maintenance practices.
MooreHawke’s end-of-line sensing auto-termination has removed the main cause for delays in starting up fieldbus projects — over- or under-termination. Project managers no longer have to check each and every segment to ensure two and only two terminators are present. Startup engineers no longer have to walk down segments or use advanced diagnostic modules to check this critical item. MooreHawke’s technology ensures that segments are always properly terminated.

Endress+Hauser

Vendor-neutral focus, hands-on exercises and expert know-how in device integration procedures — these are the ingredients of successful FOUNDATION technology training. For more than a decade, Endress+Hauser has offered this highly demanded training worldwide. End users from all industries gain knowledge in segment design, commissioning, troubleshooting and more. Training is offered at Endress+Hauser’s well-equipped fieldbus integration facility in Switzerland as well locally at the user’s site.

Rockwell Automation

The Rockwell Automation PlantPAx FOUNDATION fieldbus solution has incorporated a number of features that reduce commissioning and maintenance efforts for projects of all sizes. When using H1 linking devices to either EtherNet/IP or ControlNet, field instrumentation on H1 is automatically identified and configured to the default settings within the engineering tool. No user configuration is required to start reading sensor values with engineering units. Support for either centralized control or control in the field is enabled with minimal effort.
Use available resources

With the right know-how, resources and support, industrial companies can employ FOUNDATION technology to reduce the risk in the engineering and operational phase of an automation project, which also increases the net value of their capital investment. Implementing FOUNDATION technology requires different thinking and training. It is different, but not difficult.

The accumulated knowledge governing FOUNDATION fieldbus engineering has been combined into a set of free downloadable guides available on the Fieldbus Foundation’s website, www.fieldbus.org. The AG-181 System Engineering Guide is a comprehensive resource containing best practices for the engineering, design and installation of FOUNDATION fieldbus systems.

In addition to this comprehensive document, the foundation publishes supplemental guides on wiring and installation, intrinsically safe systems, and function block capabilities in hybrid and batch systems.

The Fieldbus Foundation also offers a free automated segment design tool, DesignMate™. DesignMate automatically audits segment layouts for conformance with the FOUNDATION physical layer specification, which is based on the International Electrotechnical Commission (IEC) 61158-2 (Type 1) standard. This assures end users their fieldbus infrastructure will work with desired parameters such as cable length, number and type of installed devices, and selected power supplies. The tool can be downloaded from the Technical References section of the Fieldbus Foundation’s website.

Watching DesignMate Tool Video

As a qualified participant in the Fieldbus Foundation’s FOUNDATION Development Services Provider (DSP) program, Softing’s portfolio comprises a unique range of products and services aimed at making the implementation of fieldbus as simple as possible. Its product range includes FOUNDATION fieldbus starter kits, communication modules, evaluation kits, configuration tools and H1/HSE communication stacks. Besides hardware development (reference design) and product specification, Softing provides training, conformance testing and certification support for a successful device development.

YOKOGAWA

Yokogawa supports users throughout the plant lifecycle with field-proven know-how that is sustained by their extensive project execution experience. In the operation phase, FOUNDATION technology can be effectively implemented by employing the company’s user-friendly and versatile tools such as Plant Asset Management PRM and Device Management Wizard FieldMate, as well as innovative InsightSuite™ consulting services. Yokogawa promises an environment for introducing FOUNDATION fieldbus systems easily.

During a fieldbus start-up, users must account for the in-rush current on segments. This is typically done by designing a lot of spare into fieldbus power supplies, limiting the number of devices, or reducing cable lengths. With R. STAHL power management in all device couplers, this requirement is eliminated. Soft-start functionality energizes one device after another — avoiding a high in-rush current and making the start-up more reliable without restrictions on the number of devices or cable lengths.

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Avoid the number one pitfall of FOUNDATION™ fieldbus networks: All power and communications are vulnerable to a single broken twisted wire pair.

Designed for plant-critical fieldbus segments, TRUNKSAFE™ maintains all process communications without interruption, even if the network cable is broken or shorted.

With TRUNKSAFE, now you can take full advantage of fieldbus technology without worrying about simple cable failures.

High frequency 78 GHz radar. What does this mean for your operations?

More reliable readings. Higher frequency creates better signal reflections, and this 2-wire, FMCW radar transmitter with intelligent echo processing does just that. Even in challenging solids applications, even into your silo’s cone area.

Incredibly easy setup. The combination of a non-intrusive, integrated 3” lens antenna and narrow 4º beam give you the flexibility to install SITRANS LR560 almost anywhere. The Quick Start Wizard and removable backlit Local Display Interface will have you operational in minutes.

Less maintenance. No fine-tuning, no trips to the tops of silos – just level monitoring made easy. With HART, PROFIBUS, or FOUNDATION™ fieldbus communications, SITRANS LR560 easily integrates into new or existing systems.

SITRANS LR560: performance beyond your expectations.

Answers for industry.
Global Seminar Program – Value to End Users

Interactive events cover all phases of the fieldbus project lifecycle

Thanks to the Fieldbus Foundation’s global technology seminar program, a growing number of automation end users, system integrators and engineering firms are coming to the same conclusion: FOUNDATION fieldbus is easier than we thought!

Held in major process industry locations worldwide, the seminars are geared towards taking the mystery out of FOUNDATION fieldbus and helping attendees realize the true lifecycle benefits of the technology.

From new end users contemplating their first fieldbus project, to experienced engineers trying to get the most out of an existing installation, or integrators wanting to implement fieldbus successfully, the seminars are designed to provide practical, hands-on instruction, which emphasizes the practical use and application of fieldbus-based control systems. The best part: through the support of program sponsors, the events are offered at no charge.

The interactive seminar program includes demonstrations of FOUNDATION fieldbus throughout all phases of the plant lifecycle, from engineering and design to operations and maintenance. Speakers include Fieldbus Foundation representatives, end users and fieldbus trainers/educators, as well as knowledgeable representatives of leading automation equipment suppliers.

A typical seminar begins with an overview of key considerations in the engineering, design, installation and commissioning phases of a FOUNDATION fieldbus project. This includes a live demonstration of fieldbus segment design using the Fieldbus Foundation’s powerful DesignMATE tool.

Presentations also describe the technology’s control-in-the-field capability and predictive...
Member Participation in Seminars

MooreHawke often participates in developing content for the Fieldbus Foundation’s seminar program. Additionally, the company exhibits at the North American and many of the international seminars to ensure that end users can see and experience technology designed to make their job easier.

Rockwell Automation has been a long-time and continuous supporter of Foundation technology seminars around the world. Its fieldbus experts participate by sharing application knowledge within the appropriate context of the region hosting the event. This year, with the introduction of a new linking device that ensures fieldbus installations are up and running with a minimal number of configuration steps, Rockwell has piqued the curiosity of many seminar attendees.

Yokogawa is committed to a wide range of activities intended to promote Foundation technology. It participates in fieldbus seminars and exhibitions worldwide, including presentations and tabletop demonstrations of new developments such as Foundation for ROM. An EMEA and Asia-Pacific Executive Advisory Council member, the company contributes to the planning, operation and funding of the Fieldbus Foundation’s global seminar program.

diagnostic features based on the NAMUR NE107 guidelines. These topics are explained using a realistic host system demonstration unit.

In addition, leading end users are on hand to address the operational benefits of FOUNDATION fieldbus, such as the ability to achieve single-loop integrity and avoid unplanned shutdowns.

Other informative topics include the development of FOUNDATION for Remote Operations Management (ROM) and FOUNDATION for Safety Instrumented Functions (SIF) solutions, as well as the importance of qualified training to a successful project outcome.

Seminar attendees may receive a certificate good for a 10% discount on instructional courses offered by selected FOUNDATION Certified Training Program (FCTP) training centers. Attendees may also receive Professional Development Hours for their attendance.

The dates and locations of upcoming end user seminars are posted on the Fieldbus Foundation’s website. Please visit www.fieldbus.org.
Fieldbus Foundation’s Upcoming Events Schedule

Where to find seminars, road shows and technology exhibitions

No matter where you are located, it’s easy to find an event related to FOUNDATION™ fieldbus. The Fieldbus Foundation has planned an expanded worldwide program of fieldbus educational seminars, road shows, technology exhibitions and other informative activities. These events serve the needs of process automation end users, device developers, engineering firms and other interested stakeholders. Make plans now to attend an event in your area.

FOUNDATION Fieldbus Events Worldwide

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<tr>
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<td>Tokyo, Japan</td>
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For the latest event information, please visit the Fieldbus Foundation’s website at www.fieldbus.org. Visit the “Global” section and view the event tab under each region.
The Fieldbus Foundation has released a major revision to its AG-181 System Engineering Guidelines. The AG-181 is a comprehensive guide that includes best practices and recommendations for a complete FOUNDATION™ fieldbus installation, from engineering and design through commissioning, startup, operations, and maintenance. The guide includes recommendations on topics ranging from selecting cable to wiring installation, grounding, implementing plant asset management systems, and best practices for project management.

The new edition of the AG-181 has been reformatted and reorganized to make it easier to read and access information. Some content has been rewritten to include more up-to-date information. This includes sections covering the Fieldbus Intrinsically Safe Concept (FISCO) fieldbus design rules, cable length, surge protection and segment scheduling. A section on the use of existing wiring has also been added.

According to Larry O’Brien, Global Marketing Manager for the Fieldbus Foundation, the FOUNDATION fieldbus System Engineering Guidelines is “one of the automation industry’s best-kept secrets” that belongs in the library of almost every process control engineer. It is a highly valuable resource for the growing number of end users, system integrators and engineering firms involved in the implementation of FOUNDATION fieldbus.

“One of the things we try to do at the Fieldbus Foundation is put information into the hands of those who need it around the world. We want people to become proficient in the use of our technology, from engineering and design to installation, maintenance, and operations,” said O’Brien. “Our System Engineering Guidelines document contains the distilled wisdom of many of the world’s leading fieldbus technology experts, from those in the engineering and construction world to end users, systems integrators, educators, and suppliers. It offers many good pointers on how to do your fieldbus project right the first time, and is an essential part of the toolbox of any FOUNDATION fieldbus professional. If you already have the older version, the latest update will look more streamlined and contains several new sections, as well as rewrites of old sections.”

The FOUNDATION fieldbus System Engineering Guidelines is separated into 11 sections, with each covering different aspects of the fieldbus project lifecycle. Specific topics include:

- General Considerations
- Fieldbus Definitions
- Fieldbus Project Requirements
- Host System Requirements
- Software Configuration
- Field Device Requirements
- Segment Components
- Network/Segment Design Guidelines
- Site Installation Guidelines
- Acceptance Testing
- Documentation Requirements

O’Brien indicated that the FOUNDATION fieldbus System Engineering Guidelines provides accurate and current fieldbus information in a vendor-neutral format, and is revised periodically to reflect changes to FOUNDATION technology. He said, “There is no better guide to implementing FOUNDATION fieldbus available today.”

To obtain the FOUNDATION fieldbus System Engineering Guidelines (Document Reference No. AG-181), visit the Fieldbus Foundation’s Technical References page on the foundation’s website (at www.fieldbus.org/about/foundationtech/resources). The document can be downloaded in PDF format.
Latest Advancements in Fieldbus Diagnostics

New technology supports a structured approach to asset management

In May 2006, the Fieldbus Foundation launched a collaborative effort with NAMUR, an international process industry end-user association based in Germany, on fieldbus performance enhancements such as device diagnostics, which both parties identified as requiring further clarification and guidance for the user community.

A key objective of this collaborative effort was to unify the integration of fieldbus self-monitoring data to ensure the availability of valuable device diagnostic information to process plant personnel. Advancements in field diagnostics now support a structured approach to asset management, which simplifies operators’ tasks and increases their...
confidence in utilizing equipment diagnostics and asset software.

New field diagnostics profiles benefit a wide range of automation stakeholders, including process engineers, maintenance technicians and operators. This technology optimizes plant asset management programs and enables improved process performance, greater reliability, increased uptime and lower operating costs.

Understanding user requirements

Some network protocols offer diagnostic information, either digitally or through 4-20 mA technology. Digital networks can handle more diagnostic data than their analog counterparts, but the real value goes beyond diagnostic data. It’s what you do with all that data to turn it into useful information to help you run your business.

As the ability to self-diagnose device health and integrity improves, available information is too valuable to ignore. For example, standard temperature measurement options offering hot backup redundancy are being expanded into detecting sensor drift and predicting when a temperature sensor will fail. Pressure transmitters now detect plugged impulse lines and inform the operator when an apparently good measurement is, in fact, not valid.

Control valve diagnostics and the ability to generate valve signatures for online diagnostics allow many valve problems to be easily isolated and remedied without the cost associated with pulling a valve out of service and unnecessarily rebuilding it.

All of these developments in device diagnostics help processing facilities practice more preventive and less reactive maintenance. With approximately 50% of the work accomplished in most organizations being reasonably preventable maintenance, potential cost savings from utilizing device diagnostics data are tremendous.

As part of its work on behalf of process industry end users, NAMUR published recommendations describing the functions and features that should be provided by modern plant asset management systems (NE91, “Requirements for Online Plant Asset Management Systems”) and the types of diagnostic functions and status reports they should offer (NE107, “Self-Monitoring and Diagnosis of Field Devices”).

As part of the NE107 guidelines, NAMUR members expressed the need for a common set of asset management tools ensuring important information regarding device status and operating condition gets to the appropriate person within the plant. In turn, the organization proposed a common structure for representing all instrument diagnostics.

According to the NE107 document, fieldbus diagnostic results should be reliable and viewed in the context of a given application. Plant operators should only see status signals, with detailed information viewable by device specialists. The

<table>
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<th>VENDOR-SPECIFIC STATUS CATEGORIES</th>
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<td>Out of Specification (S)</td>
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</table>

As the ability to self-diagnose device health and integrity improves, available information is too valuable to ignore.
Experience has shown that intelligent diagnostics can reduce maintenance costs significantly.

**Diagnostic Innovations in the Industry**

Understanding that simple devices have over 300 parameters and host suppliers have extensive system-level diagnostics, MooreHawke recognized the potential for information overload. Accordingly, the company has built into its components simple, effective diagnostics such as LED-based alarms for noise, voltage, open/closed circuit, termination and spur status — making it very easy for a technician to identify and correct problems. This also includes field-based test points for that rare occasion when additional test equipment is required.

**Rockwell Automation**

Rockwell Automation is taking a comprehensive approach to diagnostics. In addition to establishing the infrastructure to read the emerging Foundation fieldbus-specified fieldbus diagnostics based upon NE107 recommendations, Rockwell is also providing visibility into the health of the fieldbus installation with network diagnostics both quantitatively via diagnostic values and qualitatively via live scope trace capabilities.

**YOKOGAWA**

Yokogawa’s EJX and EJA-E Series enhanced pressure transmitters are registered based on ITK Version 6.0. They support advancements in field diagnostics per the NAMUR NE107 recommendation, which represent diagnostics in a more consistent way. In addition, EJX Impulse Line Blockage Detection increases plant availability by enabling predictive maintenance. The fluctuation of differential/static pressure and capsule/ambient temperature signals from the multi-sensing sensor are continuously monitored, and the blockage of high, low or both impulse lines can be determined.
ments. Each device comes with a default mapping of the field diagnostics developed by the supplier, and active diagnostic conditions have a recommended course of action.

How benefits are realized

Field diagnostics technology per the NE107 recommendation offers a robust solution for implementing role-based diagnostics, meaning the right information is sent to the appropriate person — when they need it — without flooding others in alarms.

Fieldbus devices offer greater value than older analog 4–20 mA devices through their ability to indicate data quality (i.e., whether signals communicating setpoints, PVs, etc., have good, bad or uncertain quality). This improves diagnosis of equipment problems and helps validate measurement or control actions by field instrumentation.

It is helpful to think of a field diagnostics alert as a “check engine” light on an automobile. The diagnostic features of FOUNDATION fieldbus provide an indication that something is wrong with a particular device, as well as a standardized way to interpret and apply this information for maintenance and repair purposes.

Once an alert is acknowledged, the first step is to determine the nature of the abnormal condition. Next, field diagnostics provides a clear recommended action. The third step is the detailed EDD screen, which helps to back up the operator action. Diagnostic information offered via enhanced EDDL features such as charts and graphs is available to assist troubleshooting.

Field diagnostics enhances user control and distribution of messages between field devices and host/asset management systems. This allows for faster response times as each message is presorted according to criticality, whether it is a process alarm or a maintenance alarm. Users can map alerts (whichever of the four categories) based on their particular device situation and its importance to the overall process line. This, in turn, builds a standardized diagnostic system across all sorts of devices and creates a common way to structure, filter and deliver diagnostics to controllers.

Using this technology, industrial facilities are able to specify the diagnostics most important for a given operation or process area. They can also determine the priority of the diagnostic information and identify all appropriate recipients for particular data.

For example, device diagnostics like those for thermocouple degradation, temperature tracking, and statistical process monitoring can be prioritized and categorized according to the NE107 recommendation.

In the past, operators were frequently overwhelmed by nuisance alarms and alerts that distracted their attention from running the process. This situation can result in unnecessary shutdowns, or cause operators to disregard online asset management tools, which, in turn, leads to valid alarms being ignored. Now, thanks to field diagnostics, plants can avoid wasting money and resources on irrelevant diagnostics, and can take appropriate control or maintenance actions when they are truly needed. Plant personnel are able to make better decisions, in less time, and potentially save or extend the life of valuable assets.

Final thoughts

Cooperation between the Fieldbus Foundation and NAMUR has enabled the global process automation industry to develop a greater understanding of end user requirements for adopting fieldbus technology. It has also helped pave the way for process plants to implement a powerful new breed of device diagnostics — leading to better and more useful asset management strategies.
In April 2011, the Fieldbus Foundation announced that it had registered the first two fieldbus host systems incorporating new, mandatory host profile “61b.” Fieldbus hosts supplied by Emerson Process Management (DeltaV Digital Automation System, with AMS Suite: Intelligent Device Manager) and GE Energy (GE ControlST) passed tests verifying their support for NAMUR NE107 field diagnostics, which is now required as part of the second phase of the foundation’s host testing and registration program.

Recently, two additional suppliers implementing 61b integrated host features passed the rigorous testing. They include Zhejiang SUPCON Technology Co., Ltd. (ECS-700 V3 & SAMS V2.60 WebField Series Control System) and Honeywell Process Solutions (Experion® PKS Control System).

continued on next page
The Fieldbus Foundation’s Host Profile Registration Process requires that the host profile under test support a clear set of required features. Hosts successfully completing the test requirements are authorized to bear the official Foundation product registration symbol.

What is a host?

A host is essentially something that supports Foundation fieldbus messages. In a Foundation fieldbus system, hosts may include configuration tools, recording devices, alarm display panels, Human-Machines Interfaces (HMIs), or systems with a combination of functionality, all the way up to the integrated Distributed Control System (DCS) type host. It is not necessary for a host to have function blocks. A host may have an H1 interface, High Speed Ethernet (HSE) interface, or a combination of interfaces. It may support safety devices, control & monitoring devices, or both.

Within the Fieldbus Foundation’s automation infrastructure, interoperability is possible because devices and software must all conform to the same standard and they are tested and registered to that standard. Products bearing the Foundation Product Registration symbol have undergone a series of common tests administered by the Fieldbus Foundation. End users can select the best device for a specific measurement or control task, regardless of the manufacturer.

Host registration provides an extra measure of confidence that fieldbus systems incorporate the robust functionality of Foundation technology and are able to function as part of an open, interoperable control system. The host is of particular concern because it is the key element at the system level and can determine the success or failure of a fieldbus project. If a host is not registered and tested, the end user is taking unnecessary chances and has no way of knowing if the host will work with a wide range of H1 and HSE devices from different suppliers.

What are the different host profiles?

In the Foundation fieldbus automation infrastructure, host profiles are key to fieldbus system interoperability, defining required features
for different classes of tested and registered hosts. They include:

- Class 61 – Integrated Host
- Class 62 – Visitor Host
- Class 63 – Bench Host Non-Commissioned Device
- Class 64 – Bench Host Commissioned Off-Line Device, and
- Class 71 – SIF Integrated Host

Each of these host classes has its own set of characteristics, primary end users, and use cases. For the Integrated Host, primary characteristics are what would normally be associated with a DCS. They are an essential part of the process, and are online or “on process” hosts. Integrated Hosts set and manage Physical Device Tags for all devices as well as the network configuration. These hosts also manage the distributed application configuration, including the link schedule, backup link schedule, block instantiation, link objects, macrocycle, VCRs, and alerts. An Integrated Host provides full access to all resource block, transducer block, and function block parameters. It may maintain a backup/off-line database.

Class 61 Integrated Hosts are widely used by many people throughout the plant. Process control engineers use this host system for configuration and analysis. Operators have access to the Integrated Host through operator workstations, while maintenance technicians use it through plant asset management applications. Even management can take advantage of the Integrated Host through other operations management and application workstations.

Class 62 Visitor Hosts are basic on-process hosts that may have read and write access to resource and transducer blocks. However, read-only access may be provided to function blocks. Visitor Hosts do not manage the physical device tags, network configuration or distributed application configuration. They typically reside in handheld devices or PDA-like devices that are used for maintenance and have a temporary connection to the network. Visitor Hosts can also reside in specialized device applications such as online control valve diagnostic applications.

Class 63 Bench Hosts can set the network configuration for off-process testing, but both Class 63 and 64 Hosts are off-process hosts. They may also set a distributed application configuration, including link schedule, backup link schedule, block instantiation, link objects, macrocycle, VCRs, and alerts. Additionally, Class 63 Bench Hosts typically access all resource block, transducer block, and function block parameters. The primary users of these hosts include maintenance and instrumentation personnel. Class 63 Bench Hosts are employed for several applications, including testing of skid operations and setting up a new device for service. They are also utilized for maintenance of a previously configured and operating device that is removed from the process network, or for setup of a new device for device replacement service.

Class 64 Bench Hosts are primary off-process hosts for access to a prior commissioned device. They have nearly identical requirements to a Class 62 Standard Visitor Host with the exception of device address configuration. The primary users of Class 64 Bench Hosts are instrumentation and maintenance personnel. The Class 64 Bench Hosts usually reside in a handheld or PDA-type device connected to an off-process segment or specialized device application such as offline valve diagnostics.

Class 71 SIF Integrated Hosts are the primary on-process Safety Instrumented Function (SIF) host for safety applications. Like the Integrated Host, the Class 71 SIF Host is a fixed H1 address, on-process host. It sets and manages physical device tags for all devices, sets and manages the network configuration and manages the distributed application configuration, and provides all the other functionality of the Class 61 Integrated Host. The difference is the additional SIF-specific functionality, which includes full access to all profiled SIF-related resource block and function block parameters. The host supports the SIF protocol and maintains the SIF configuration signature, and can lock and unlock all SIF devices.

**What are the latest host features?**

The following host features went from “optional” to “mandatory” with the Fieldbus Foundation’s host profile 61b:

- **Block Instantiation** – Allows full utilization of fieldbus devices supporting instantiable function blocks. Primarily intended for control in the field (CIF).

- **Multiple Capability Levels** – For devices where certain blocks/features are optional (licensed), the standard or higher capability level can be set in the tag placeholder during system configuration to prevent unsupported blocks from being used in the control strategy. This prevents surprises during commissioning. It also makes device replacement easier.

- **Enhanced Function Blocks** – Allows full utilization of enhanced blocks (standard blocks with additional parameters).

- **Profiled Custom Function Blocks** – Allows full utilization of non-standard blocks.

- **Configuration of Scheduled Control Function Blocks** – Allows developers to build CIF control strategies.

- **Device Description (DD) V5.1 Device-Level Access** (enhanced Electronic Device Description Language with cross-block) – Makes fieldbus devices easier to use by enabling a dashboard with all diagnostics on the same page, and all setup on one page, regardless of which block it is in.

According to Fieldbus Foundation Director, Fieldbus Products, Stephen Mitschke, hosts supporting host profile 61b improve the user experience at sites employing FOUNDATION fieldbus-based control systems.

Class 64 Bench Hosts usually reside in a handheld or PDA-type device connected to an off-process segment or specialized device application.
Evolving Solution Builder in Industrial, Building and Life Automation

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We supply the best solution, tailored to the customer's needs, to building management, factories and plants process automation, and even down to life line, gas and water measurements in residential area.

Driven by the Group philosophy of "human-centered automation," the azbil Group strives to utilize its measurement and control technologies to realize safety, comfort and fulfillment in people's lives and societies whilst contributing to higher energy efficiency and the global environment protection.

Under azbil, the Group strives to realize safety, comfort and fulfillment in people's lives and contribute to global environment preservation through “human-centered automation.” To realize this,

We create value together with customers at their site.
We pursue our unique value based on the idea of “human-centered.”
We think towards the future and act progressively.

Yamatake Corporation changed its name to Azbil Corporation on April 1, 2012.

Azbil Corporation
http://www.azbil.com/
systems. “Support for device-level menus, one of the additional features mandated by host profile 61b, makes it easier for users to configure and maintain fieldbus devices,” said Mitschke. “In addition, registered hosts must demonstrate the ability to configure field diagnostics in devices. An enhanced, structured view of diagnostics according to NE107 contributes to effective asset management.”

Using the power of FOUNDATION fieldbus, and considering the NE107 recommendations for field diagnostics, the Fieldbus Foundation developed a profile specification enhancing the organization, integration and presentation of device diagnostics within fieldbus systems. The FOUNDATION fieldbus diagnostic profile includes a standard and open interface for reporting all device alarm conditions, and provides a means of categorizing alert conditions by severity. The technology facilitates routing of alerts to appropriate consoles based on user-selectable severity categories. In other words, it sends the right information to the right person at the right time without flooding the operator with alarms that are irrelevant to his duties. Furthermore, it provides recommended corrective actions and detailed help, as well as an indication of the overall health of the device.

**Why is registration important?**

The Fieldbus Foundation instituted its product testing and registration process which ensures interoperability and helps end users get the most out of their fieldbus technology investments. It is one of the few automation industry organizations with a registration program requiring mandatory testing of critical elements of its technology. The foundation’s testing and registration effort encompasses FOUNDATION fieldbus host systems and field devices, as well as physical layer components.
Module-based architecture – for single loop Integrity

Modular fieldbus components
For reliable connectivity from the process controller to your field devices, choose Phoenix Contact’s line of modular fieldbus components.

Our redundant fieldbus power supplies feature:
- Swappable plugs, providing high availability
- ACB (Automatic Current Balancing) technology
- High power output: 500 mA @ 28 V DC

Field junction box assemblies are approved for installation in Div. 2/Zone 2 areas and field device connectivity in Div. 1/Zone 0 or 1 hazardous location, using modular device couplers.

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Latest Host Development Projects

Pepperl+Fuchs
Pepperl+Fuchs works closely with DCS vendors for tight integration of power supplies with host interface cards for FOUNDATION fieldbus H1. The user receives value from a very compact cabinet design saving space, as well as creative solutions for customized connections reducing wiring and commissioning work. Effective and economic solutions help EPCs, automation vendors and end users achieve their goals.

Rockwell Automation
Rockwell Automation has focused on meeting the requirements of FOUNDATION fieldbus Host Registration profile 61b during the development of new fieldbus linking devices for their PlantPAx Process Automation system. With the release of the gateway device in June 2012, Rockwell is in final preparation to have their solution tested by Fieldbus Foundation personnel and announce completion of all host registration requirements before the end of the year.

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Learn more
The Fieldbus Foundation maintains a registered products page on its website, at www.fieldbus.org/registered, with a complete list of tested and registered products. It also offers resources for device and host developers, including a variety of training and tools. Development tools include conformance test tools, interoperability test tools, and DD development tools. To find out more, e-mail marketing@fieldbus.org.
FOUNDATION™ fieldbus

FFusb – Your Mobile Access to FOUNDATION fieldbus H1 Devices
- Easy to use interface for device parameterization
- Plug and play solution for Windows PCs with USB 2.0 ports
- High-performance CommDTM included, supporting any FDT-container application

FOUNDATION™ fieldbus

FG-110 FF - Your Gateway to FOUNDATION fieldbus H1
- Connection for Modbus systems to FOUNDATION fieldbus H1
- Integrated web server
- Windows-based FOUNDATION fieldbus configurator

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PlantPAx is a trademark of Rockwell Automation, Inc.
The first isolated device couplers based on the Foundation H1 (31.25 kbit/s) device coupler test specification have been registered by the Fieldbus Foundation. Devices from MTL (9370-FB Series Fieldbus Barrier) and R. STAHL (Series 9411/21 & 9411/24 Isolated Device Couplers) successfully completed the rigorous registration process.

As part of a Foundation fieldbus infrastructure, isolated device couplers are installed where the fieldbus trunk (i.e., home run cable) is connected to the various device spurs. They are specifically designed to allow automation end users to connect more devices per coupler while permitting live segment work in hazardous plant areas. The isolated device couplers provide isolated, conditioned power to multiple fieldbus devices and protect against short circuits caused by excess current in a spur. By enabling more devices per segment, they also help reduce controller input/output (I/O) points and associated installation costs.

The Foundation fieldbus device coupler test specification includes criteria from the international IEC 61158 standard and additional functional tests such as input impedance, short-circuit reaction time, and bus voltage consumption. The specification is designed for coupler manufacturers to perform a standard set of tests against their implementation. A team of volunteers comprised of current members of the foundation who supply coupler products, as well as end users employing registered couplers, developed the test cases.

A complete list of registered Foundation fieldbus products, including isolated device couplers, is available in the Fieldbus Foundation’s Registered Product Catalog at www.fieldbus.org/registered. For more information, please call the Fieldbus Foundation at 512.794.8890 or e-mail member.services@fieldbus.org.

MooreHawke plans to register the ROUTE-MASTER series of device couplers that enable 350 mA of intrinsically safe power for connecting intrinsically safe devices located in Class 1, Div. 1 Groups A, B, C, D (IIC). The couplers also feature end-of-line auto-termination as well as spur short circuit protection that uses 4-5 mA on shorts. Available in 4-, 8-, 10- or 12-way versions, the series includes SS or aluminum enclosures with optional clear covers.

The first device coupler ever registered came from Pepperl+Fuchs. The company was instrumental in devising the specifications for device couplers, which now carry the sign of compliance and interoperability — reducing risk. In hazardous areas, limited energy has been one of the last barriers for fieldbus success. Initially publishing and pushing the high-power trunk concept, Pepperl+Fuchs contributed to this success.

Now, intrinsically safe explosion protection reaches the next level with DART technology, which allows for all parts of the segment to be intrinsically safe in hazardous areas. The same simple wiring method applies to the entire segment and hot work is permitted at any time — all reducing installation and maintenance cost.
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A2BIL • www.azbil.com

WIRELESS HANDHELD FOR FOUNDATION FIELDBUS

The latest version of Field Xpert SFX100 offers Device Xpert software for both FOUNDATION fieldbus and HART devices. Connections can be made to individual devices via an appropriate Bluetooth™ modem or to networks via a WLAN access point. In addition to device configuration and diagnosis, Field Xpert offers parameter comparison functions, device reporting/archiving. The latest device EDD libraries can be downloaded via Internet. Field Xpert is available in standard and Ex-versions.

ENDERESS+HAUSER • www.products.endress.com/SFX100

EVERY ASSET CAN BENEFIT FROM THE INCREASED INSIGHT THAT FVX BRINGS

The FVX110 Segment Indicator is Yokogawa’s latest addition to their FOUNDATION fieldbus device portfolio. Its compact design offers much more intelligence and functionality than a traditional indicator. The FVX not only displays up to 16 process variables with a clear backlit LCD display, but can also offer powerful functionality like additional FOUNDATION fieldbus function blocks, Link Master and online software download as standard.

YOKOGAWA • www.yokogawa.com/fld/indicator/fld-fvx110-01en.htm

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EMERSON INTRODUCES NEW USB INTERFACE FOR FOUNDATION FIELDBUS DEVICES

Emerson’s new USB Fieldbus Interface provides a convenient, cost-effective way to connect a desktop or laptop computer to FOUNDATION fieldbus devices. When used with Emerson’s AMS Device Manager Software, the USB Fieldbus Interface allows you to commission, configure, and troubleshoot devices both on the bench and in the field. Two power modes can be set with the configuration software provided. In the first mode, the USB Fieldbus Interface can simply be connected to a segment that is already powered. In the second mode, the USB Fieldbus Interface itself can provide power (up to 85 ma) and termination to a fieldbus device or segment eliminating the need for an external power supply and terminators. The drivers provided with the USB Fieldbus Interface are supported on Windows XP and Windows 7 (32 and 64 bit). It meets IEC 61826-1 Emission and Immunity standards, IEC/UL/CSA 60950-s Safety standards, and IEC 61158-2 FOUNDATION fieldbus Physical Layer standards.

EMERSON PROCESS MANAGEMENT • www2.emersonprocess.com/en-US/brands/amssuite/USBFieldbusInterface_old/Pages/USBFieldbusInterface.aspx
Fieldbus Product Highlights

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HONEYWELL’S FOUNDATION FIELDBUS SOLUTION
Honeywell’s FOUNDATION fieldbus solution provides an efficient cost-effective bridge between the rich information that resides in every fieldbus device and the extensive features and benefits offered by Experion® PKS Orion. Field Device Manager is tightly integrated with the Experion Process Knowledge System (PKS), providing valuable user benefits from the project phase, through commissioning, and over the full life cycle of the plant. Users can add new device DDs in seconds, enabling Experion® PKS Orion and FOUNDATION fieldbus technology to work together to optimize operations, minimize process downtime, and support better business decisions. Careful attention to detail has provided unparalleled ease of use as well as performance unmatched in the industry. Fieldbus devices have a lot to say and Experion ensures that every word is clearly heard and gets to the right people to keep your plant running in a safe, efficient, and cost-effective manner. Contact your local consultant for more information.

HONEYWELL • www.honeywellprocess.com

THE LARGEST FOUNDATION FIELDBUS INSTALLATION IN THE WORLD CHOSE THE FOXBORO I/A SERIES® SYSTEM. THERE’S A REASON.
The robust I/A Series System excels at meeting demanding requirements for uptime, system speed, size and longevity. Our fieldbus solutions offer faster startups, easier device commissioning, and truly open support to manage any device from any vendor. The result is a high availability solution with superior device management, making it easier to engineer and start-up a plant in a fraction of the time.

INvensys • www.iom.invensys.com/EN/Pages/Foxboro_DCSIASeries_FieldbusTechnologies.aspx

NCS-TT108 TEMPERATURE TRANSMITTER, IT’S READY FOR YOU!
As one of the leading suppliers of premium industrial communication products (FOUNDATION fieldbus, Profibus PA, Hart and Modbus), Microcyber has developed an NCS-TT108 Temperature Transmitter with FOUNDATION fieldbus and Profibus PA. It supports 8-channel temperature sensor input and has become a fieldbus temperature transmitter with high performance.

- Supports many types of thermal resistance and thermocouple sensors
- Thermal resistance supports 2/3 wiring connection mode
- Thermocouple can use cold end compensation function

MICROCYBER • www.microcyber.cn/en/index.asp

REDUNDANT FOUNDATION FIELDBUS PHYSICAL LAYERS
One difficulty still remains with fieldbus technology: all segment communications and power integrity are vulnerable to a single broken, twisted wire pair. The MooreHawke TRUNKSAFE Fault-Tolerant Fieldbus System provides a cost-effective, yet highly reliable, strategy to maintain continuous communications between field devices and a host system in the event of any single point failure on a FOUNDATION fieldbus physical layer.

MOOREHAWKE • www.miinet.com/moorehawke

NEW REDUNDANT FIELDBUS BARRIERS FROM MTL
Fieldbus Barriers are widely adopted in FOUNDATION fieldbus networks to connect to intrinsically safe instruments in Zone 1 hazardous areas. The new Redundant Fieldbus Barrier from MTL ensures that your critical fieldbus loops are protected against hardware failure, maximizing plant up-time and avoiding lost production. So you can now get the benefits of heavily loaded segments and long trunk cable lengths with the security of physical layer redundancy and immediate fault notification.

MTL • www.mtl-fieldbus.com
INTEGRATE FOUNDATION FIELDBUS TECHNOLOGY TO THE PlantPAx PROCESS AUTOMATION SYSTEM

The PlantPAx system from Rockwell Automation allows use of devices from many vendors. This flexibility includes fully integrating Foundation fieldbus to any ControlLogix® platform through linking devices 1788-EN2FFR and 1788-CN2FFR. These modules, which provide a direct link from Ethernet/IP or ControlNet to the Foundation fieldbus H1 device level network, enable seamless data distribution and execution of process control with devices from multiple sources.

ROCKWELL AUTOMATION • www.rockwellautomation.com

DISCRETE I/O SIGNALS FOR FOUNDATION FIELDBUS H1

Enabling an effective connection of Ex i discrete signals in a Foundation fieldbus environment, R. STAHL’s explosion-protected Digital I/O Coupler for the ISbus system ensures a direct and consistent integration of simple sensors and actors. The coupler can be used to connect proximity switches, contacts, indicator lights and a wide range of solenoid valves. Up to four intrinsically safe solenoid valves, including two position feedback signals each, can thus be directly integrated into a Foundation fieldbus H1 network. Extensive function block support ensures solutions benefit from advanced functions such as AI for frequency signals, CI for counters, and logic transducer blocks for logical input/output combinations.

R. STAHL • www.r-stahl.com

SITRANS LR560 IS THE FIRST 78 GHz RADAR LEVEL TRANSMITTER FOR CONTINUOUS LEVEL MEASUREMENT OF SOLIDS

Sitrans LR560, Siemens’ newest radar transmitter for solids level measurement, is proving itself in industries across the globe. As the first radar level transmitter to operate at a 78 GHz frequency, Sitrans LR560 is unmatched on the market. Add to that a growing list of accolades, including finalist for the Canadian Manufacturers and Exporters Association (CME) 2011 Awards for New Technology and Processing Magazine’s Breakthrough Product of the Year for 2011. The 78 GHz transmitter emits an exceptionally short wavelength and has a narrow four-degree beam angle, which provides exceptional signal reflection even from solids with a steep angle of repose. Sitrans LR560 reduces installation challenges and costs, as its small size allows it to fit in almost any silo opening without modifications. The transmitter requires little to no upkeep. The Sitrans LR560 can be connected directly to your system via Foundation fieldbus, HART, or Profibus PA.

SIEMENS • www.siemens.com/sitranslr560

SOFTING’S FOUNDATION FIELDBUS STARTER KIT

Softing’s Foundation fieldbus Starter Kit has been designed with ease of use in mind and allows the set up, configuration, operation and monitoring of a fully functional Foundation fieldbus H1 network out of the box without requiring individual development or other time-consuming preparation work. The Starter Kit includes a linking device, a sample Foundation fieldbus H1 field device with interactive simulation capabilities, a Windows-based configuration tool, a power conditioner, as well as all necessary documentation.

SOFTING • www.softing.com
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Analog and digital device networks provide communication capabilities, but stop there. FOUNDATION™ technology is about much more than just communication. It is a forward-looking automation infrastructure for outstanding operations: from engineering, to operations and maintenance.

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- FOUNDATION for Safety Instrumented Functions (SIF) provides much-needed digital diagnostics for process safety systems and devices.

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