Process Solutions

Honeywell

Experion FOUNDATION Fieldbus Integration

The Experion Fieldbus solution delivers outstanding system performance and unparalleled ease of use while reducing installation costs, decreasing commissioning time and lowering maintenance expenses. Experion® PKS –The Knowledge to Make it Possible.

The Honeywell Experion System offers unmatched FOUNDATION Fieldbus features and benefits

- Full and easy access to the rich information contained in each Fieldbus device.
- Robust design with optional module redundancy
- Easy, intuitive engineering with Control Builder
- Instant device integration through direct use of Device Description files by Control Builder
- Efficient integration to other applications and control systems with Open Data Access
- Timesaving Firmware Download feature
- Unique Chart Visualization to get the right information in front of the operator
- Full, optimized support of the Link Active Schedule (LAS) and multiple Back-up LAS devices
- Controller-independent design for maximum cost-benefit
- Full support for smart asset management integration
- Efficient and effective integration with Honeywell's valuable suite of advanced applications

Experion and Fieldbus meet the needs of the process control industry

Experion Transparently Integrates FOUNDATION Fieldbus

The open standards of FOUNDATION Fieldbus are integrated transparently with the Experion® Process Knowledge System (PKS), offering a high-performance, advanced Fieldbus solution with a number of exceptional benefits. The Experion Fieldbus solution delivers outstanding system performance and unparalleled ease of use while reducing installation costs, decreasing commissioning time and lowering maintenance expenses.

Why Buy Experion FOUNDATION Fieldbus?

- Delivers significant and measurable cost savings and plant performance improvements today

- Transparently integrates device and sensor information and diagnostics, delivering lowest installed cost and results you can count on
- Provides unparalleled ease of use as well as performance unmatched in the industry
- Honeywell's Fieldbus and asset management integration substantially increases safety, system and process availability - reducing unplanned down time

- Supports implementation of Fieldbus and a wide range of applications with globally integrated engineering and project management services that are best-in-class
- Interoperability is verified and ensured through our global interoperability test lab

Honeywell Offers Unmatched Fieldbus Benefits

The high-performance Experion Fieldbus Interface Modules (FIMs) thrust integration technology light years ahead by completely and transparently integrating FOUNDATION Fieldbus with the Experion system. The Series C and Chassis I/O-Series A (CIOM-A) Fieldbus Interface Modules (FIMs) help provide the benefits you expect from this powerful technology.

The Series C FIM represents the latest advances in capacity, cost-effectiveness and performance from Honeywell. Two module types are available (one that supports four (4) H1 links and one that supports (8) H1 links). Both types can be configured in a redundant or non-redundant fashion and integrate transparently with the Experion PKS C300 Controller and ACE node. The Series C FIM4 and FIM8 features a high-capacity design that delivers system-wide integration of data access, control, connections, diagnostics, and alarms with the Experion PKS system.


The Experion Fieldbus Interface Module (FIM) delivers robust Fieldbus device integration (Series C shown on the left, and CIOM-A FIMs shown on the right)

The field-proven CIOM-A FIM, which supports two (2) H1 Fieldbus links, installs in the Experion C200 Controller rack or in a remote I/O chassis rack to suit the needs of the process. Like the Series C FIM, this field-proven double-width chassis-based module features a high-capacity design that delivers all of the benefits of a world-class Fieldbus integration.

## Control Builder Enables Easy Engineering

Control Builder, the common Experion engineering tool, integrates Fieldbus and other control components into a single, unified database. Connections between FOUNDATION Fieldbus and Controller function blocks are achieved easily, transparently and quickly with a stroke of the mouse. Control "in the field" (between Fieldbus devices) is handled with equal ease. Fieldbus and the Experion function blocks can be mixed and matched in the same control drawings. Just drag, drop and use!

The Control Builder tool not only offers an efficient process for control system configuration, but it also results in significant project cost and time savings. Control Builder helps make interconnection between FOUNDATION Fieldbus and Experion as effortless as possible.
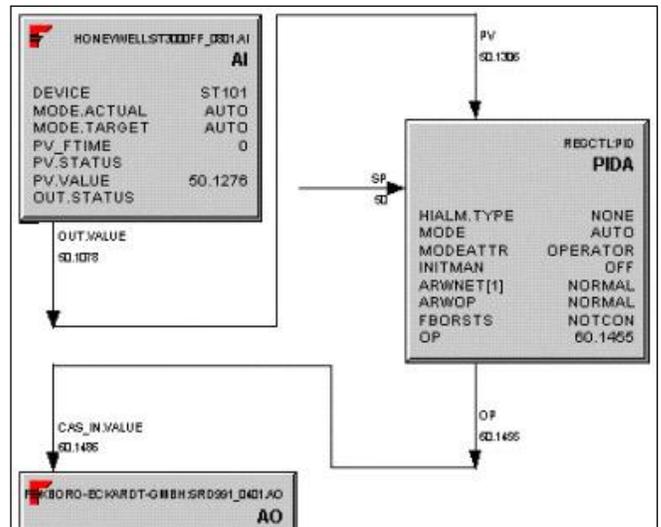
Connections between Fieldbus and Controller blocks are easy with the Experion Control Builder tool

Important timesaving features in Control Builder include device replacement (to replace failed devices), block assign and un-assign (for configuration flexibility), and device upload (to save valuable information in devices). Managing smart devices is made easier with the Compare Parameters function, where it is possible to easily validate the field instrument database against the control system. An especially useful feature is automatic recognition of uncommissioned (new) Fieldbus devices on the link. When a new device is added to the link, its presence is detected and shown on the FIM's informative display as well as in Control Builder. Important information about the device, including tag name, address, model, and revision, are immediately available, so you always know which devices are on the link.
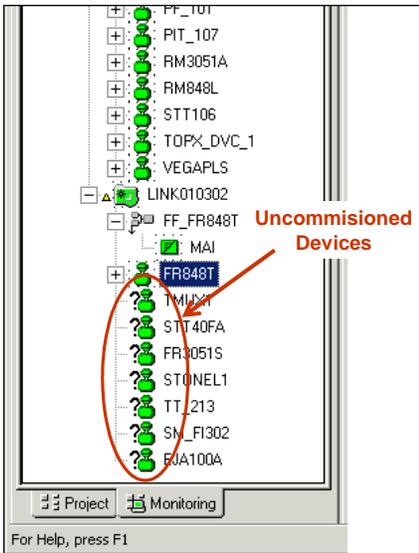
The Experion Control Builder tool provides
on-line recognition of Fieldbus devices
added to the link

Control Builder Enables Direct Use of Device Files

There is no need to wait for special files to use the latest available FOUNDATION Fieldbus devices. Control Builder reads Device Description (DD & EDDL) and Capability (CFF) files from the device manufacturers or from the Fieldbus Foundation. Devices are then added to the Control Builder library in seconds for off-line and on-line configuration. It's that simple and quick!
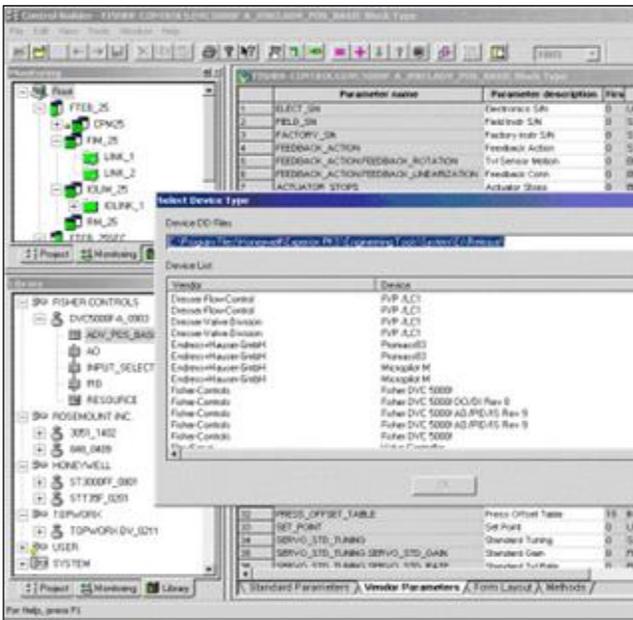
Reading Device Description and Capability Files is easy

Parameter help information, embedded in the Device Description files, is also added to Knowledge Builder (KB), the on-line Experion documentation system. When Control Builder adds this help information to KB, it organizes information about each parameter so it is easy to find. Additionally, each parameter is indexed to Control Builder. From Control Builder, the user simply selects a Fieldbus parameter, strikes the F1 Help key, and KB is invoked with that parameter selected. There is no extra effort required. The entire process is handled by the system, with help information completely integrated and available when needed, saving time and expense.

Help information from Device Description files is automatically
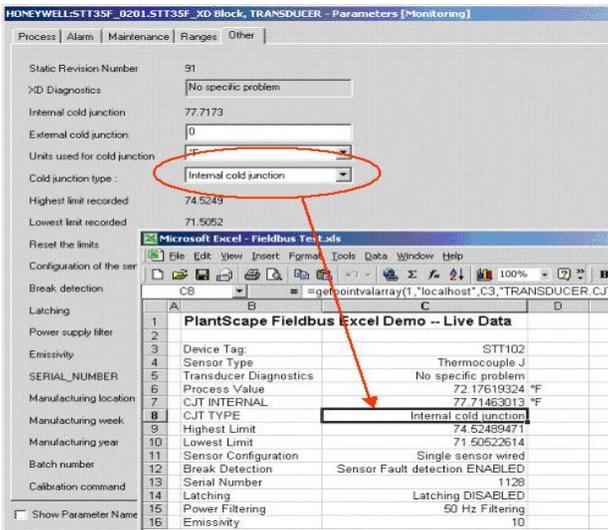added to Knowledge Builder and indexed to Control Builder

Fieldbus Efficiently Integrates Other Applications

Honeywell's Fieldbus solution is designed for efficient data access to any parameter, allowing the fastest possible call-up of device information. Whether you need detailed calibration information, a process variable or just a tuning constant, data call-up is quick and efficient, thanks to an ingenious and patented FIM caching mechanism.

Open Data Access (ODA) provides data from the Experion database, including Fieldbus information, when needed by another application or control system. ODA provides direct third-party access to all device parameters through several mechanisms, including OPC, ODBC Driver and Microsoft Excel Data Exchange. Some examples of ODA applications include:

- Reading data into a Microsoft Excel spreadsheet
- Running a query on the database from Microsoft Access
- OPC Client requiring point data

Network Application Programming Interfaces can integrate third-party applications with the control system. For example, Microsoft Excel Data Exchange enables Excel to access real-time and historical data from Fieldbus and non-Fieldbus devices. This option also provides read and write access to data for powerful data consolidation and reporting applications

Reading data from devices into Excel spreadsheets is easy

Update Devices In-Place with Firmware Download

Firmware Download is a unique and timesaving feature offered with Honeywell's Fieldbus solution. With Firmware Download, there is no need to physically change firmware, and no need to disconnect or remove devices for updating to the latest available revision, as the entire download process is handled directly from Control Builder. Honeywell pioneered this capability to handle new product enhancements and bug fixes, and it has now become a FOUNDATION Fieldbus specification.

Firmware download times vary by device. Experion can simultaneously download the latest firmware to multiple field devices, saving time and money, especially with large projects.

Experion simultaneously downloads firmware to many devices

Unique Chart Visualization Feature Gets the Right Information to the Operator

FOUNDATION Fieldbus enables manufacturers to provide each device with a unique and differentiating set of capabilities and parameters. A temperature transmitter, for example, has a completely different set of capabilities and parameters than a control valve. Chart Visualization is a powerful, timesaving feature for viewing manufacturer-defined information. It presents device blocks (Resource and Transducer) and function blocks (AI, AO, PID, etc.) with all manufacturer-defined information, directly to the operator. Chart Visualization doesn't require custom forms or displays for every type of device.

There is no need to worry about security of parameters. Access to parameters follows the security level of the Operator Station and is the same as for parameters in all other displays. No special engineering effort is required and implementation time is reduced to zero.

Of course, Experion provides complete flexibility to create your own custom detail displays. Once you've used Chart Visualization, though, you'll probably want to take advantage of its time-saving feature.

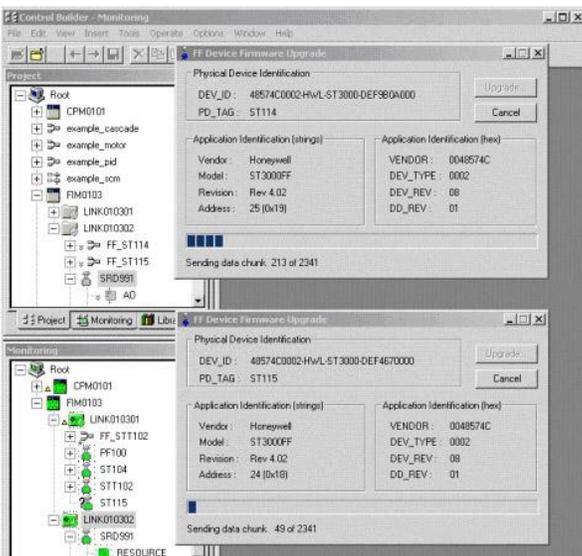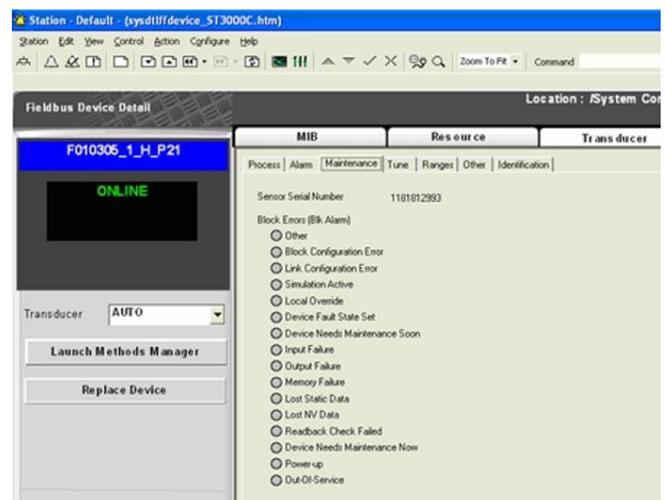## Full Support for Link Active Schedule and Backup Link Schedule

Graphical support of the Link Active Schedule (LAS) allows you to see what's going on, providing complete flexibility to adjust schedules based upon the needs of your control scheme. Experion also supports the Back-up Link Active Schedule – a capability that Honeywell pioneered – in multiple LAS-capable devices.

With Chart Visualization, operators have instant access to all Fieldbus device information
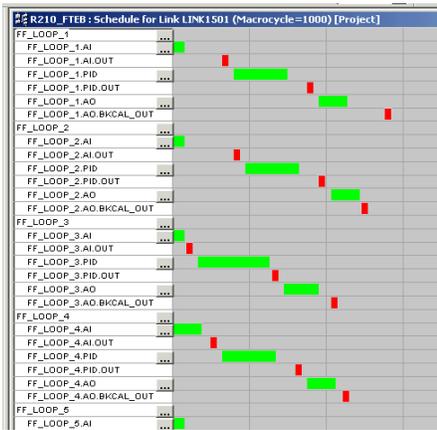
Experion PKS's graphical Link Schedule display
with Optimization

The Backup LAS is an important component of FOUNDATION Fieldbus robustness. It ensures that a device on the link will take control in the unlikely event of FIM failure, removal or disruption. Fully supporting FOUNDATION Fieldbus specifications, Experion provides all devices on the link with active Backup LAS capability, enabling maximum link availability.

Experion supports a patented Link Schedule Optimization algorithm that optimizes the link function block publication schedule. This algorithm prioritizes and optimizes the link by maximizing parallel execution, minimizing loop latency (improving control), and maximizing available communications bandwidth (allowing for more devices or better performance), resulting in significant cost savings over competitive systems.

## No Single Point of Failure with Robust Fieldbus Redundancy

With Experion, Fieldbus redundancy is robust – with no single point of failure. The Series C FIM4 and FIM8 support direct module-to-module redundancy. The CIOM-A FIM uses the Redundancy Module (RM) to completely synchronize the primary and secondary FIMs. Fieldbus devices, function blocks, and control strategies are all built in the same way, whether redundant or not and regardless of FIM used. This makes redundancy transparent. The user sees a single set of tags, and there is no need to re-think control strategies to accommodate redundancy. Function blocks continue to execute and communicate during switchover or failover.

With Honeywell's advanced diagnostics, the primary and secondary Fieldbus modules are in constant communication. The absence of a redundant partner, for example, is detected and the user receives a system notification rather than a process alarm. Additionally, any problems with link power are detected and annunciated to the operator.

Asset Manager Allows Real-Time Asset Management

Asset Manager continually monitors status, events and operating conditions around field devices and control system hardware devices. Asset Manager automates collection and assessment of current asset conditions to support directed troubleshooting for condition-based monitoring. Reducing time for identifying and resolving system faults, device faults and abnormal conditions dramatically improves performance related to maintenance activities. Most important, safety, system and process availability is substantially increased when off-spec product, unplanned downtime and process turn-around time is reduced.

Refer to the Asset Manager specifications for details.
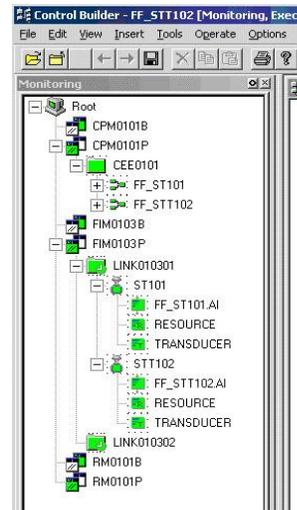
The Control Builder tool consistently configures devices and control strategies for redundant and non-redundant configurations
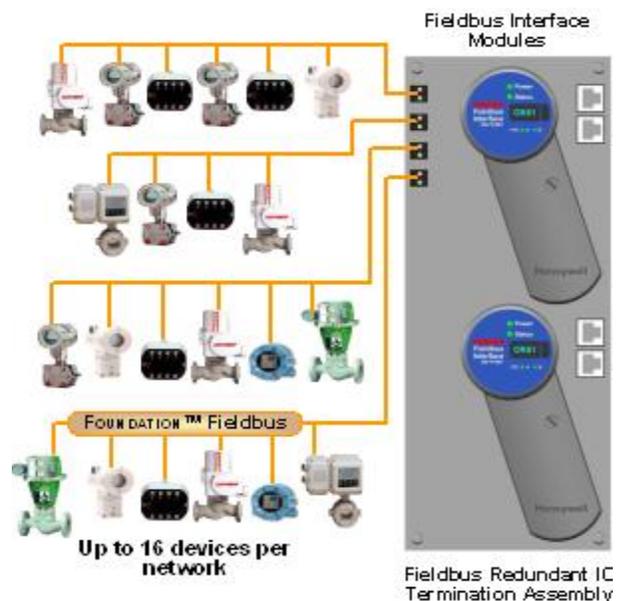

With Experion, your Fieldbus system is secure! A redundant FIM4 is shown above. The redundant FIM8 is similar, but has 8 total H1 link connectors

Honeywell Field Device Manager (FDM)

Field Device Manager (FDM) provides an environment for remote management of smart instruments. Support is available for HART, PROFIBUS and Fieldbus instruments connected to Experion and non-Experion networks. For Fieldbus, this support is provided specifically for advanced diagnostics through FDT/DTM (Field Device Tool/Device Type Manager) technology. This enables the use of manufacturer-created specialized software (DTMs) created for complex devices, such as valves, to provide advanced functionality which is not available via DD or EDDL files.

Refer to the FDM PIN document for full details.
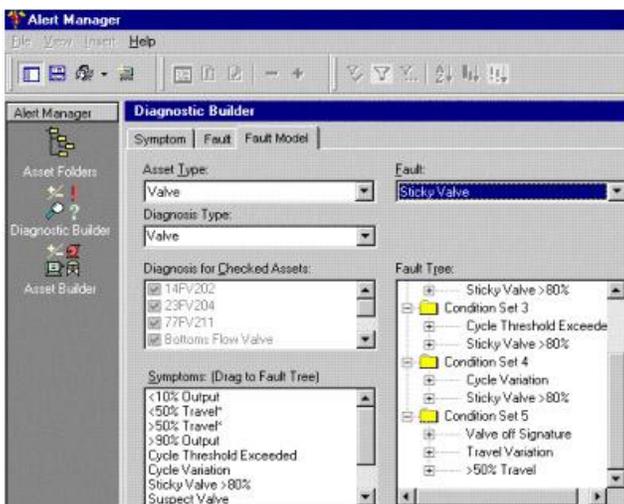
Alert Manager provides simple diagnostic configuration with easy drag and drop capabilities to quickly build fault models

Advanced Diagnostic Handling

All Fieldbus devices provide and report a comprehensive set of diagnostic conditions and information. Although very valuable, this information can flood the operator with information that can't be effectively processed or managed. The Honeywell advanced alarming feature allows the user to categorize and prioritize the device diagnostics into manageable information that an operator can more easily understand and more effectively respond to.

World-Class Fieldbus Project and Engineering Services

Honeywell best-in-class project execution and delivery capabilities provide application knowledge and experience for your next Fieldbus project. Globally integrated project management and engineering deliver the full potential of your process automation hardware and software systems. We have Experion Fieldbus installations that range from small pilot

operations to large plants with thousands of devices. Applications include chemical plants, boilers, pilot plants, offshore and on-shore oil and gas, refining and pharmaceuticals.

Fieldbus Interoperability Test Lab Ensures Successful Device Integration

Experion uses the Control Builder tool to create a library of Fieldbus devices and their function blocks. Experion also uses Control Builder's off-line capabilities to implement strategies involving Fieldbus devices and to support live device commissioning. For the system and the FIM to work properly, devices must be registered with the Fieldbus Foundation at level ITK 4.0 or higher.

Honeywell maintains a Fieldbus Interoperability Test Laboratory for testing FOUNDATION Fieldbus devices with Experion. Although most devices integrate easily, in some cases device manufacturers' interpretations of the Fieldbus specifications may vary. When device interoperability problems arise, Honeywell and the device manufacturer work together to create a successful integration. Contact Honeywell to find out which devices have been tested and to arrange for testing of any devices that are required for your project.

## New Host Profile Registration Process

The Fieldbus Foundation's previous Host Interoperability Support Test (HIST) provided a host test protocol with no provision for formal product registration. With HIST, the host vendor chose the implementation.

As of January, 2009 all HOST systems must pass a formal test process (administered by the foundation) to be considered an official registered Host.

Under the new Host Profile Registration Process, the foundation conducts functional testing with a test device and specialized test Device Descriptions (DDs) and Capabilities Files (CFs). The host profile under test must support a clear set of required features.

With Experion R400 and subsequent releases, Experion is a 61a compliant system and has passed all required Host Profile registration testing.

Refer to the foundation website at the following link for proof of compliance: http://www.fieldbus.org/ Host systems that have not passed the formal testing cannot appear on the website.
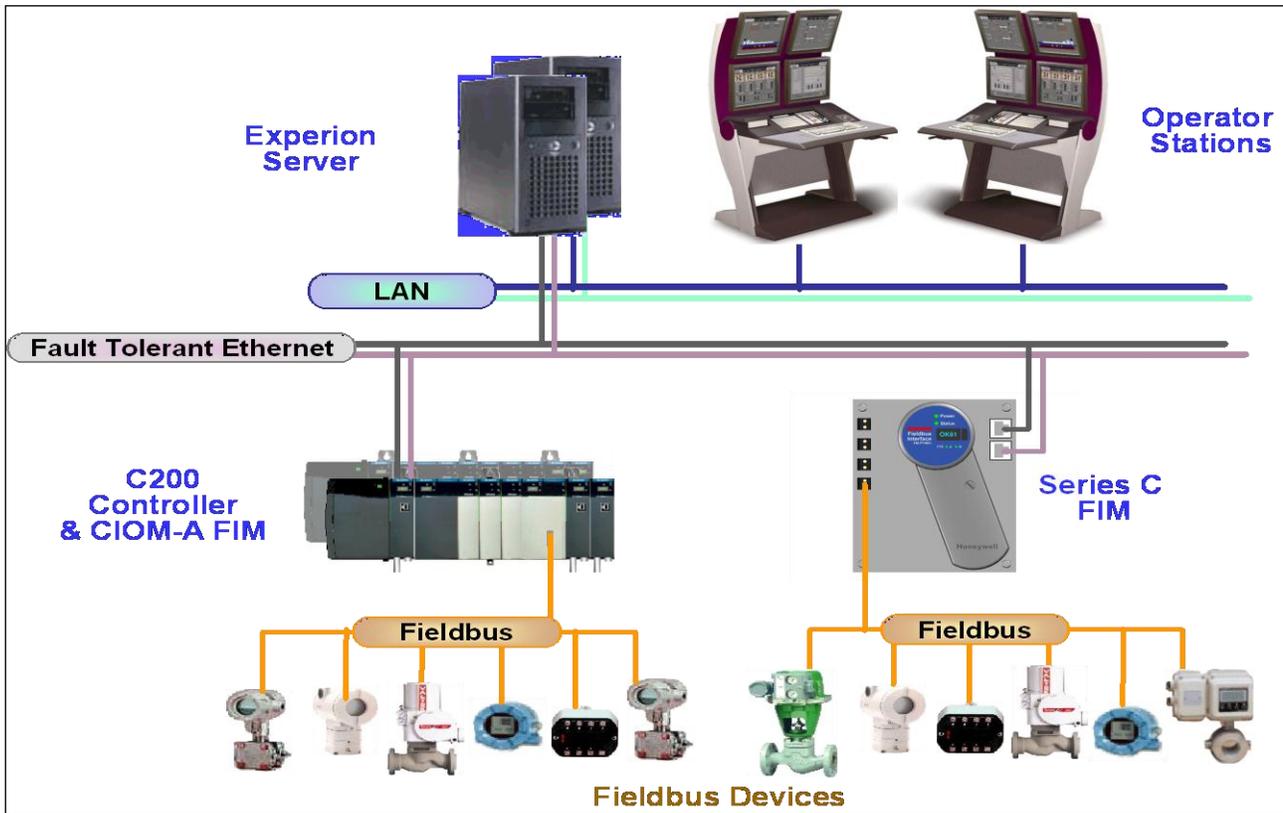
Experion delivers all of the benefits of FOUNDATION Fieldbus

Specifications and Model Numbers

Parameter	Specification
Series C Fieldbus Interface Module (FIM4) Model Number	**CC-PFB401** (conformally coated)
Module Type	Series C module
Physical Interface	H1 FOUNDATION Fieldbus
Number of H1 Networks per FIM (Each network defined as a FOUNDATION Fieldbus 31.25 kbps H1 network)	4
Indicators on Module	• 24V Power, Module & FTE Status LEDs • Front display panel with module and link state information
Indicators on Carrier Board	4 H1 Link Status LEDs (1 per Link)
Configurations	Non-redundant or Redundant (side-by-side)
Maximum Number of Fieldbus Devices per H1 Network	16
Available macrocycle periods	250, 500 ms; 1, 2, 4, 8, 16, and 32 sec

Parameter	Specification
Series C Fieldbus Interface Module (FIM8) Model Number	**CC-PFB801** (conformally coated)
Module Type	Series C module
Physical Interface	H1 FOUNDATION Fieldbus
Number of H1 Networks per FIM (Each network defined as a FOUNDATION Fieldbus 31.25 kbps H1 network)	8
Indicators on Module	• 24V Power, Module & FTE Status LEDs • Front display panel with module and link state information
Indicators on Carrier Board	8 H1 Link Status LEDs (1 per Link)
Configurations	Non-redundant or Redundant (side-by-side)
Maximum Number of Fieldbus Devices per H1 Network	16
Available macrocycle periods	250, 500 ms; 1, 2, 4, 8, 16, and 32 sec

Parameter	Specification
CIOM-A Fieldbus Interface Module (FIM2) Model Number	**TC-FFIF01** (uncoated) **TK-FFIF01** (conformally coated)
Module Type	Double slot-width module
Physical Interface	H1 FOUNDATION Fieldbus
Number of H1 Networks per FIM (Each network defined as a FOUNDATION Fieldbus 31.25 kbps H1 network)	2
Maximum Number of Fieldbus Devices per H1 Network	16
Available macrocycle period	250, 500 ms; 1, 2, 4, 8, 16, and 32 sec
Module Connection to RTP	TC-FFCxxx, Fieldbus RTP Cable *(see next page)*

Series C Model Numbers

Model Number	Model Desription
Fieldbus Interface Module	
CC-PFB401	Fieldbus Interface Module, 4 Links, coated
CC-PFB801	Fieldbus Interface Module, 8 Links, coated
Fieldbus Interface I/O Termination Panels (IOTAs)	
CC-TFB401	Fieldbus IOTA (6 inch), Non-redundant, 4 Links, coated
CC-TFB411	Fieldbus IOTA Redundant (12 inch), 4 Links, coated
CC-TFB811	Fieldbus IOTA Redundant (12 inch), 8 Links, coated Note: for FIM8 there is only one IOTA. Both the redundant and non-redundant confgiurations use this IOTA.

CIOM-A Model Numbers

Model Number	Model Desription
Fieldbus Interface Module	
TC-FFIF01	Fieldbus Interface Module, 2 Links, uncoated
TK-FFIF01	Fieldbus Interface Module, 2 Links, coated
Fieldbus Interface Remote Termination Panels (RTPs)	
TC-FFRU01	Fieldbus RTP, Non-Redundant, Unpowered
TC-FFSU01	Fieldbus RTP, Redundant, Unpowered
Fieldbus Interface RTP Cables	
TC-FFC010	Fieldbus RTP Cable, 1.0 m
TC-FFC025	Fieldbus RTP Cable, 2.5 m
TC-FFC050	Fieldbus RTP Cable, 5.0 m
TC-FFC100	Fieldbus RTP Cable, 10 m
Note: Powered versions of the redundant FIM RTP are available from MTL and P+F. See next page for more details.	

Redundant Fieldbus Power IOTAs are available for the Series C FIM from from MTL and P+F. MTL-Relcom has two products available, both featuring galvanic isolation between the segment and the input power supplies. The F660A Redundant Fieldbus Power IOTA provides redundant power for four (4) H1 Fieldbus links, using two plug-in power modules per link. The F860 Redundant Fieldbus Power IOTA provides redundant, isolated conditioned power for eight (8) H1 links, servicing two (2) redundant or non-redundant Series C FIM IOTAs. An advanced diagnostic module provides detailed information and alarming for all eight links. For more information and specifications, contact MTL Incorporated, Houston, TX, 713-341-7580.

The Pepperl+Fuchs Fieldbus Power Hub IOTA provides redundant, isolated power for four H1 fieldbus links to a single Series C FIM IOTA, using two plug-in power modules per link. An on-board, diagnostic module provides detailed H1 performance information about all 4 links. Both basic and advanced versions of the diagnostic module are available. For details and pricing, contact Pepperl+Fuchs Inc., 1600 Enterprise Parkway, Twinsburg, OH 44087-2245, at 330 486-0171.

For the redundant CIOM-A FIM, powered RTPs are available from MTL and P+F. The MTL-Relcom F650A Redundant Fieldbus Power System provides redundant Honeywell FIM connections as well as fully redundant, isolated power conditioners for each of two Fieldbus networks. The Pepperl+Fuchs RTP provides redundant FIM connections combined with non-redundant power conditioners using high-reliability, passive components for each of two Fieldbus networks. Up to 1 A of conditioned power is available from each link.

For more details and specifications, refer to the Experion FOUNDATION Fieldbus Integration Product Specification.

For More Information
Learn more about Honeywell's Experion Fieldbus solution, visit our website www.honeywellprocess.com or contact your Honeywell account manager.

Honeywell Process Solutions
Honeywell
1250 West Sam Houston Parkway South
Houston, TX 77042

Honeywell House, Arlington Business Park
Bracknell, Berkshire, England RG12 1EB

Shanghai City Centre, 100 Junyi Road
Shanghai, China 20051

www.honeywellprocess.com

Honeywell