Honeywell

Technical Information

Experion Foundation Fieldbus Integration Specification

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Revision History

Revision	Date	Description
1.0	December 2018	Released version

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1.0 Product Introduction

1.1. Foundation Fieldbus

FOUNDATION Fieldbus™ (FF) is an enabling technology for integrating field devices with digitally-based (Host) process control systems. It defines how "smart" field devices communicate and operate with other devices in a control network. The Fieldbus Foundation is the leading organization dedicated to a single international, interoperable fieldbus standard and responsible for FOUNDATION fieldbus. Effective January 1, 2015, the Fieldbus Foundation has become part of the new FieldComm Group. For more information about the Fieldbus Foundation, see the following website. http://www.fieldcommgroup.org/ or http://www.fieldbus.org/

1.2. Experion Integration

The **Experion® PKS** System provides an effective and robust fieldbus interface through the modules provided in the **Series C** form factor. The generic name used to identify modules is **Fieldbus Interface Module** (FIM). The Experion FIMs are high-performance components that completely and transparently integrate FOUNDATION Fieldbus devices into the Experion PKS.

A numerical suffix is added to the FIM designation to further identify the specific module and indicates the number of FF H1 networks that are provided by the module. Two FIM modules are available today, as follows:

- **FIM4** with 4 H1 networks or **FIM8** with 8 H1 networks

The Experion system fully supports clusters that can be composed of mixtures of FIM4, and FIM8. FIMs can be used standalone, in conjunction with the ACE node or with C300 process controllers.

1.3. Terminology

Fieldbus terminology used in this document:

- **H1**: A term used to describe a Fieldbus network operating at 31.25 kbits/second.
- **H1 Field Device**: Compliant Field Devices (valves, transmitters, analyzers, etc.) that connect directly to an H1 fieldbus.
- **Interoperability**: The ability for multiple disparate devices from multiple vendors to operate safely and interact properly (per foundation specifications) on the same Fieldbus H1 network.
- **Link**: A Link is the logical medium by which H1 Fieldbus devices are interconnected. It is composed of one or more physical segments interconnected by bus Repeaters or Couplers.
- **LAS**: All of the devices on a link share a common schedule, which is administered by that link's current LAS (Link Active Scheduler). It is the data link layer name for a network.
- **Network**: A network as applied in this document is the termination of one or more Fieldbus segments into an interface card of the host system. In this document the term “link” and “network” are used interchangeably.
- **Segment**: A Segment is a section of an H1 fieldbus that is terminated in its characteristic impedance. Segments can be linked by Repeaters to form a longer H1 fieldbus. Each Segment can include up to 32 H1 devices.

2. Product Overview

2.1. Robust Fieldbus Design

The **Series C FIM4** and **FIM8** represent the latest advances in capacity, cost-effectiveness, and performance from Honeywell. They integrate transparently with the Experion PKS C300 Controller and ACE node. The Series C FIMs feature a high-capacity design that delivers system-wide integration of data access, control, connections, diagnostics, and alarms with the Experion PKS system.

Fieldbus is completely and transparently integrated into a single, unified database using a common engineering tool. Either FIM may be used with or without their respective process controllers. Experion supports mixed system containing FIM4 and FIM8.

2.2. FIM Redundancy

All FIM types support full automatic redundancy. Fieldbus function blocks continue to execute and communicate during switchover or failover. With Honeywell's advanced diagnostics, the primary and secondary FIM modules are in constant communication. The absence of a redundant partner, for example, is detected and announced to the user in the form of a system notification, not a process alarm. Diagnostics are also provided for a potential failure or problem with fieldbus power. In the event of a power problem on the IOTA or link, the FIM alerts the operator with a system alarm.

2.3. Easy Engineering with Control Builder (CB)

Control Builder is the Experion PKS graphical engineering tool for creating and configuring process control strategies, including those utilizing fieldbus. Time-saving fieldbus-specific features such as:

- Creation of FF device templates from vendor DDs and EDDLs
- Full device configuration from within Control Builder (CB)
- Assignment of FF device function blocks to the control strategy
- Commissioning and decommissioning devices without pre-configuration
- Function Block instantiation
- Device firmware download
- Device replacement wizards
- Initiatation and running device methods
- Device maintenance and troubleshooting

Chart Visualization to get the correct information to the operator

Chart Visualization is a powerful feature that presents device blocks (Resource and Transducer) and function blocks (AI, AO, PID, and so on) with all manufacturer-defined information directly to the operator. With Chart Visualization, there is no need for custom forms or displays for every type of device.

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

Experion PKS provides flexibility to create your own custom detail displays. Experion PKS also features device replacement directly from the operator station. A failed or troublesome device can be securely replaced with a new or repaired one.

Experion supports vendor provided EDDL files that greatly enhance the device HMI by the use of graphics and trends, and by allowing the device vendor to better define where and how parameters are displayed and located.

Full Support for Link Active Schedule and Backup Link Schedule

The Link Active Scheduler (LAS) can be considered the traffic cop that determines when and how every FF device (including the FIM) will access the H1 network and what data they will transfer. One device (at any given time) is the LAS. Others can be assigned as backups in the event the lead LAS fails (backup FIMs are always considered the first backup LAS device). Other FF devices can also be configured as backup LAS devices.

LAS setup and management is essential for effective FF H1 communications. Experion provides a best in class solution for the management of the LAS component. Graphical support of the LAS is an important Experion tool for building schemes around fieldbus. Experion PKS supports the Back-up LAS in multiple LAS-capable devices, for the highest possible robustness. Link Schedule Optimization maximizes available communications bandwidth, allowing for more devices and better performance, resulting in significant cost savings over competitive systems.

3. FDM (Field Device Manager) Support

Experion Control Builder and Station provides all the tools and capabilities required to configure, monitor, and manage fieldbus devices and associated control strategies. Users can also identify and respond to device faults.

FDM augments this capability and includes additional functions and features focused on FOUNDATION fieldbus devices and coverage in the asset management arena. FDM communicates through the FIM to access fieldbus devices. FDM is intended for maintenance users and provides an environment optimized for their needs. FDM and Experion provide a complete fieldbus solution.

For more information about FDM, see the latest **FDM Specification,** EP03-480-501.

4. SIM-FFD (Simulation) Support

The Experion simulation capability supports two types of control simulation. One is where an engineer would like to do control strategy checkout. The second type is operator training simulation in combination with the Honeywell's UNISIM product.

SIM-FFD is the simulation environment for the Series C Fieldbus Interface Module (FIM4, FIM8). For more information, see the **Experion Simulation Specification**, EP03-360-500.

5. Fieldbus Host and Device Testing and Validation

5.1. Host Profile Registration Process

As of January 2009, the Fieldbus Foundation has implemented a new and mandatory validation process for Host systems referred to as the “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 chooses the implementation.

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

Use of the Foundation Product Registration symbol in conjunction with a Fieldbus Foundation -registered Host is the manufacturer's representation that a sample of the product has successfully completed all requirements specified in the Host Profile Registration Process.

Experion is a 61d compliant system and has passed all required Host Profile registration testing.

Refer to the foundation website at the following link for proof of compliance. Host systems that have not passed the formal testing cannot appear on the website, http://www.fieldcommgroup.org/ or http://www.fieldbus.org/

6. Fieldbus Device Interoperability Testing

Experion uses vendor compliant device DD and EDDL files in Control Builder (CB) 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 and must comply with a supported ITK (Interoperability Test Kit) level. The test kit verifies the functionality of an H1 (31.25 kbit/s) device and its conformity with the FOUNDATION fieldbus Function Block and Transducer Block specifications.

Experion supports ITK levels 4.0 and higher.

To further ensure proper operation, Honeywell maintains a Fieldbus Interoperability Test Laboratory for testing FOUNDATION fieldbus devices with Experion. This testing is provided to the customer and the device vendor at no charge.

Although most devices integrate without problems, in some cases issues may arise due to differences with regard to the interpretation of FOUNDATION fieldbus specifications. If problems arise, Honeywell and the device manufacturer work together to successfully integrate the devices. This sometimes requires the use of a Honeywell modified DD or EDDL file for proper operation with a particular version of Experion.

To download DD files for devices that have been tested, or for contact information to schedule device testing, see our website, http://www.honeywellprocess.com.

7. Architecture Overview

7.1. Series C FIM4 and FIM8

The C300 controller, all Series C interface and I/O modules use the concept of an IOTA (Input Output Terminal Assembly) where the IOTA mounts to a standard Series C mounting channel assembly. This provides for a standardized cabinet, mounting, power and grounding infrastructure for all Series C modules (for additional details, see the appropriate Experion documentation).

7.1.1. FIM4

The **FIM4** module is provided in the Series-C form factor. As Figure 3 shows it can be mounted to a non-redundant or redundant IOTA. The non-redundant IOTA is 6 inches long, while the redundant IOTA consumes 12 inches of channel space. The user can implement the FIM4 as a non-redundant module by using the non-redundant IOTA, or by mounting only one FIM4 (upper position) to a redundant IOTA. You can add a second FIM4 later if redundancy is needed.

Figure 3 also shows the various connection points. Note that 24 Vdc (to power the modules) is provided by mounting the IOTA to the channel and carrier assembly. This 24 Vdc supply is isolated from the 24 Vdc that is provided by the separate power conditioners connected to each of the four H1 networks. Each IOTA provides four H1 connectors (one for each of the H1 networks). There are also redundant FTE (green & yellow) connectors for each FIM4 module. The FIM4 FTE (IP) index address is set using the rotary switches on the IOTA. This represents the last octet of the four octets that make up the complete FTE IP address. A connector is provided for the power conditioners (from Pepperl+Fuchs or MTL) that are provided on Series C IOTAs and mount on the standard Series C channel assemblies. This provides for easier wiring when these conditioners are used. However, you can also implement conditioners from other 3rd party vendors and hard wire the conditioners using standard FF H1 practices. Note that all power conditioners and the H1 network are isolated from the Series C power system.

The FIM4 is a standard FTE node. The FTE cables must be connected to a CF9 (Control Firewall). This can be the same CF9 associated with the C300, or it can be a separate CF9 in the case of a remote configuration. FIM4 can be used with a process controller or can be standalone. When used with a process controller it can only be a C300.

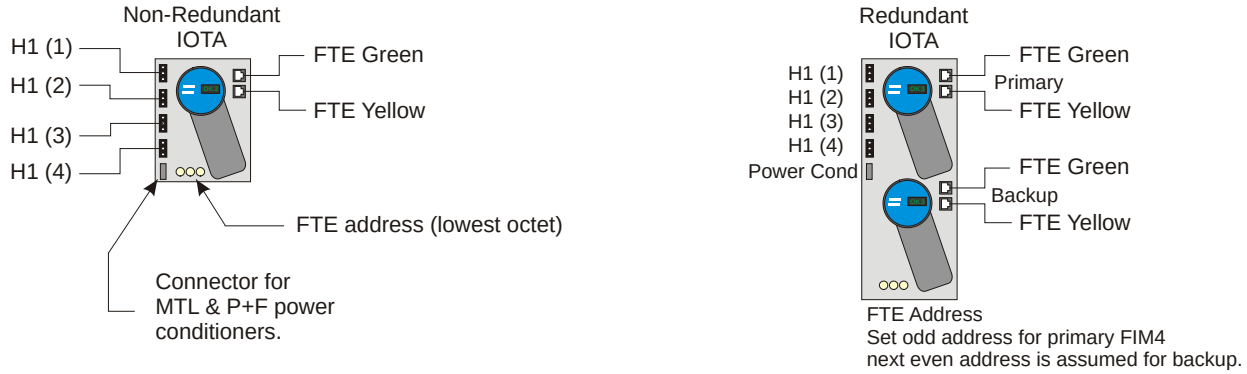

Figure 3: Series C FIM4 IOTA types and configurations (redundant and non-redundant)

7.1.2. FIM8

The 8 channel Fieldbus Interface Module (FIM8) is based upon the field-proven 4 Channel Fieldbus Interface Module (FIM4) design, and this module provides greater cost savings – up to 40% - through higher concentration of FOUNDATION fieldbus segments per module. Available with full redundancy, the FIM8 uses identical circuitry as the FIM4, specifically the FOUNDATION fieldbus certified terminations, Media Attachment Units (MAU), and field proven Series C microcontroller architecture. This core design has been in mission critical applications since 2006, with tens of thousands of segments fielded. Except for the four additional H1 links, all mounting, power and cabling, and solution configuration are identical to the FIM4. Those currently using the FIM4 will find the transition to FIM8 easy and seamless. FIM4 and FIM8 modules can be mixed in any combination to best meet the needs of your plant physical layout.

The power and cabling concepts described in the previous section for the FIM4 also apply to the FIM8. The FIM8 IOTA uses 12 inches of channel space. As shown in Figure 4 the FIM8 can be configured in a non-redundant or redundant configuration. Note that the FIM8 is provided with only one IOTA version and that same IOTA is used for both non-redundant or redundant configurations.

For redundant configurations, two FIM8 modules are installed on the IOTA. For non-redundant configurations, one FIM8 module is inserted into the upper module position of the redundant IOTA. In either case, the assigned odd and consecutive even FTE addresses are always consumed. You can easily add a backup FIM8 at any time.

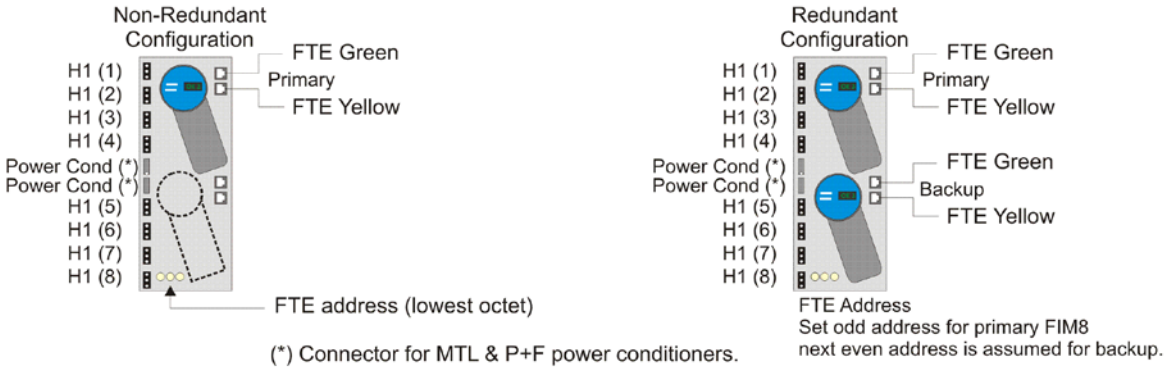

Figure 4: Series C FIM8 configurations

8. H1 Power Conditioner Basics

The diagram in Figure 5 provides a simple depiction of a typical H1 network. All FF devices are connected to the network in parallel. The power conditioners (non-redundant or redundant) are also connected to the network in a parallel arrangement and supply the 24 Vdc to power required by each connected Fieldbus device.

A typical device will use between 10 and 20 mA. The number of devices and the power consumed by each device determines the size of the required power conditioner (in amps) required. For the example below, assume each device requires 20 mA to operate properly. The power conditioner would need to be capable of supplying 80 mA (4 x 20 mA).

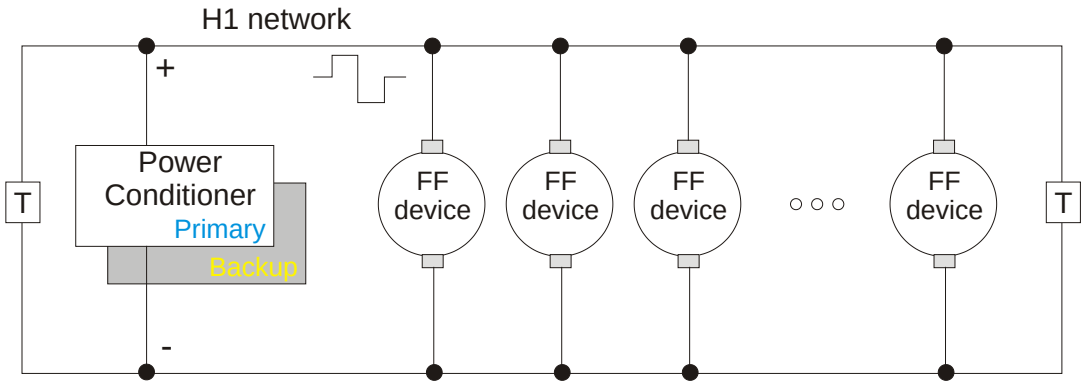

Figure 5: H1 Power Conditioner Basic Diagram

A terminator must be placed at each end of the network (or each segment) to support proper communications.

Digital communications

Each device (when communicating on the H1 link) will toggle the 24 Vdc to generate the digital portion of the H1 communications. An H1 power conditioner must have added circuitry to tolerate this digital component and still provide the 24 Vdc required by each device. A standard off-the-shelf power supply could not provide this capability (this is what makes the power conditioner unique). The FIM4 and FIM8 are each considered a device with regard to this example. Although they do not use any power from the conditioner for their operation, they will use about 10 mA when signaling on the H1 link.

Power Conditioner Validation

Honeywell **does not** validate any 3rd party power conditioners at this time. Any power conditioner that complies with the FOUNDATION Fieldbus test specification FF-831 (Fieldbus Power Supply Test Specification) should operate properly with the Honeywell FIM modules. Power conditioners may provide other features that make them suitable for applications such as intrinsic safety. For more information about these products and features, see the 3rd party websites..

Eaton MTL and Pepperl+Fuchs Conditioners

These vendors have adapted their power conditioners to mount to standard Series C IOTAs. More information is provided later in the document.

9. Performance Limits

9.1. Specifications

9.1.1. System

FF System Specifications		
Capacity Description	**FIM4**	**FIM8**
Maximum Number of FIMs per Controller	15 Redundant or non-redundant in any combination (60 H1 Links)	8 Redundant or non-redundant in any combination (64 H1 Links)
Maximum Number of FIMs per Server[1]	125 Redundant or non-redundant in any combination of FIM4s and/or FIM8s	125 Redundant or non-redundant in any combination of FIM4s and/or FIM8s
Maximum Number of Fieldbus Devices per Server	8,000 (using FIM4 only)	12,000 (using FIM8 only)
Note 1 – Combinations of FIM4 & FIM8 on the same Server is supported on FTE-based systems at the 125 FIM limit.		

9.1.2. FIM

FF FIM Specifications		
Capacity Description	**FIM4**	**FIM8**
Number of H1 Networks per FIM	4	8
Maximum Number of FF Blocks per Fieldbus Device	35	35
Maximum Number of FF Blocks per FIM ATTENTION Blocks are counted whether or not the FF Device's Blocks are being used/loaded or not in the FIM strategy. Resources to support every Device's Block set must be reserved when the FF Device is configured on one of the FIM's H1 Networks. For example, a device with 1 resource block, 5 transducer blocks and 5 function blocks will consume 11 blocks from the total block count. It does not matter if the function blocks are in use or not.	1600	3200
Maximum Number of Unique FF Block Types per FIM Note: Unique FF Block Types are defined as the number of unique blocks across all devices connected to a FIM. Each time a new unique device is connected to the link, one unique block type may be reserved for each unique block in that device. For example, suppose device X, containing an AI and a PID block, is connected to a FIM. This would reserve two unique block types. Adding several more of this device to the FIM would not require additional unique block types. Suppose a different device Y, containing an AO, is connected to the FIM. This would reserve one unique block type.	200	200
Maximum Number of Parameters in FIM cache Note: The maximum number of parameters in the FIM cache defines the maximum number of parameters that may be accessed for control, monitoring, and configuration at any given time.	1600	3200
Maximum Peer Connections per FIM	5	5
FIM Publication Method options[1] Note: The FIM Publication Method (PUBMETHOD) is configurable on a per segment/H1 network basis on the FF Link function block and controls how frequently data is published between the FIM4/FIM8 and C300 controller.	Immediate 250 msec 500 msec 1000 msec	Immediate 250 msec 500 msec 1000 msec
Overall Data Access performance - CDA	1600 PPS	2000 PPS

FF FIM Specifications		
Capacity Description	**FIM4**	**FIM8**
FIM Cache Parameter Refresh Rate Note: FIM Cache will refresh parameter values at a maximum rate of once per second. If all parameters cannot be refreshed within one second due to bandwidth limitations, the FIM will allocate additional time as needed. Actual performance will depend on number of parameters within FIM Cache, device performance, and unscheduled bandwidth available on H1 Network	Once per second maximum	Once per second maximum
Note 1 – This option provides a trade-off between controller performance and control end-end response time. Slower publication will reduce the network traffic and the performance load on the controller, but increase the overall end-end response time of a loop (assume AI and AO devices are on H1 and PID is in C300). Conversely, faster publication will increase the network traffic and increase the performance load on the controller, but decrease the overall end-end response time of a loop.		

9.1.3. H1 Network

FF H1 Network Specifications		
Capacity Description	**FIM4**	**FIM8**
Maximum Number of Fieldbus Devices per H1 Network Note: The maximum number of supportable devices per network is highly dependent on application, bandwidth, devices, available current, bus length and topology. An understanding of Fieldbus is crucial to system sizing.	16 non-IS 3 Intrinsically safe	16 non-IS 3 Intrinsically safe
Agents per H1 Network Note: An agent is used to transport data between CEE blocks and FF blocks. Agent specifications are measured on a per H1 Network basis. Agents are displayed in the link schedule when viewed with Control Builder. A connection between a CEE block and an FF block reserves one agent.	100 per H1 Network	100 per H1 Network
Maximum Number of VCRs (Virtual Communication Relationships) per H1 Network Note: A VCR is a connection endpoint on the H1 Network. VCR specifications are measured on a per H1 Network basis. Each connected device reserves two VCRs. A published connection between a CEE block and an FF block reserves one VCR. A published connection with back initialization between a CEE block and an FF block reserves two VCRs. Connections between FF blocks on a single device or between multiple devices do not reserve VCR resources on the FIM. It is recommended that at least one VCR be left free to facilitate device replacement and any control strategy reloading.	128 per H1 Network, 512 per FIM4[1]	128 per H1 Network, 1024 per FIM8[1]
Maximum Scheduled Single-Variable Publications per Second per H1 Network Note: Scheduled Single-Variable Publications per Second may include publications from devices to other devices, from devices to the FIM, and from the FIM to other devices.	16 per H1 Network	16 per H1 Network
Unscheduled Parameter Reads per Second per H1 Network Note: Unscheduled parameter read performance is provided as a guideline. Actual performance will depend on device performance and unscheduled bandwidth available on H1 Network.	16 per Fieldbus Device, 40 per H1 Network	16 per Fieldbus Device, 40 per H1 Network
Unscheduled Parameter Writes per Second per H1 Network Note: Unscheduled parameter write performance is provided as a guideline. Actual performance will depend on device and unscheduled bandwidth available on H1 Network.	5 burst, 1 sustained per Fieldbus Device, 20 burst, 5 sustained per H1 Network	5 burst, 1 sustained per Fieldbus Device, 20 burst, 5 sustained per H1 Network
Available Macrocycle Periods	250, 500 msec; 1, 2, 4, 8, 16, & 32 sec.	250, 500 msec; 1, 2, 4, 8, 16, & 32 sec.

FF H1 Network Specifications		
Capacity Description	**FIM4**	**FIM8**
Note 1 – Device reload or device replacement functionality requires at least one free VCR on a Fieldbus link/segment. If a segment is configured with the maximum number of VCRs allowed (128 for the FIM4 or FIM8), a device replacement will not be able to done without freeing a VCR on the segment first. Freeing a VCR is typically done by deleting a CM or device from the monitoring tree. Therefore, it is recommended that at least one VCR is kept free so that device reloads or replacement will not require a VCR to be freed first. Control Builder will display a warning message when a segment is low on free VCRs.		

9.1.4. Active Link Schedule

FF Link Active Schedule (LAS) Specifications		
Capacity Description	**FIM4**	**FIM8**
Number of LAS Domains per FIM	2	2
Maximum LAS Schedule Size	2000 bytes/LAS	2000 bytes/LAS
Number of Sub-schedules per LAS Note: For example, a 2 second macrocycle could have sub-schedule periods of 1 second, 500 msec, and 250 msec.	4	4
Number of sequences per sub-schedule	64	64

9.1.5. Alarming

FF Advanced Alarming Specifications (Originally introduced with R400)		
Capacity Description	**FIM4**	**FIM8**
Custom conditions per device template	32	32
Device parameters used in any/all conditions, per device template	10	10
Individual parameter references, per device template[1]	36	36

Note 1 - For a device template, among the (max) 32 conditions, there can only be 36 total references to device parameters. For example, you can't have each of the 32 conditions reference the same 2 parameters, since that would create 64 references. See following formula:

$$\sum_{i=0}^{N} ConditionParameters_i$$

Where N = 31, and ConditionParameters = the number of parameters referenced in condition i.

10. Model Numbers and Specifications

10.1. CC-PFB402 (FIM4) *NOTE: this product replaces CC-PFB401*

10.1.1. Specifications

Series C Foundation Fieldbus Interface Module with 4 H1 Links (FIM4)

Parameter	Specification
Module Type	Series C module, conformally coated
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 IOTA	4 H1 Link Status LEDs (1 per Link)
Configurations	Non-redundant or redundant (side-by-side)
Electro-static Discharge	IEC 1000-4-2: 1995
Power Dissipation	5.3 watts
Module Current	0.212 amps @ 25 Vdc
H1 Link Connection	Using connectors on the IOTA

10.1.2. Additional Model Numbers

Model Number	Model Description	IOTA Length
CC-TFB401	FIM4 IOTA, Non-redundant, 4 Links, coated *Note: This IOTA is obsolete and is replaced by CC-TFB402*	6 inches
CC-TFB402	FIM4 IOTA, Non-redundant, 4 Links, coated *Note: This IOTA replaces CC-TFB401*	6 inches
CC-TFB411	FIM4 IOTA Redundant, 4 Links, coated *Note: This IOTA is obsolete and is replaced by CC-TFB412*	12 inches
CC-TFB412	FIM4 IOTA Redundant, 4 Links, coated *Note: This IOTA replaces CC-TFB411*	12 inches

10.2. CC-PFB802 (FIM8) *NOTE: this product replaces CC-PFB801*

10.2.1. Specifications

Series C Foundation Fieldbus Interface Module with 8 H1 Links (FIM8)

Parameter	Specification
Module Type	Series C module, conformally coated
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 IOTA	8 H1 Link Status LEDs (1 per Link)
Configurations	Non-redundant or Redundant
Electro-static Discharge	IEC 1000-4-2: 1995
Power Dissipation	9.5 watts
Module Current	0.380 amps @ 25 Vdc
Link Connection	Using connectors on the IOTA

10.2.2. Additional Model Numbers

Model Number	Model Description	IOTA Length
CC-TFB811	FIM8 IOTA Redundant, 8 Links, coated Note: This IOTA is also used for non-redundant configurations. In a non-redundant configuration, the single IOTA is inserted into the upper module position and the lower position is not used.	12 inches

10.3. Series C Redundant Powered IOTAs

10.3.1. F860 Redundant Fieldbus Power IOTA

The Eaton-MTL **F860 Redundant Fieldbus Power IOTA** provides redundant, isolated, conditioned power for **eight** (8) H1 fieldbus links, servicing two redundant or non-redundant 4-link **FIM** IOTAs or one redundant or non-redundant 8-link **FIM** IOTA. Connection between the power IOTA and FIM IOTAs is by means of pre-assembled cables, available from Eaton-MTL.

An on-board advanced diagnostic module provides detailed physical layer performance information for all 8 links. The diagnostic module communicates as an FF H1 device, and can be configured as a participant of one of the monitored segments, or on a separate diagnostic segment.

Power supply module options are supported for fieldbus segments with non-incendive spur wiring, or for high-energy applications. The F860 IOTA can be powered either from the Series C cabinet power supply or from an external 24V power source.

Figure 6: Eaton-MTL F860 Redundant Fieldbus Power IOTA

For more information and specifications, contact Eaton-MTL: mtlenquiry@eaton.com

10.3.2. Pepperl+Fuchs Fieldbus Power Hub IOTA

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.

Figure 7: Pepperl+Fuchs Fieldbus Power Hub IOTA with Diagnostic Module

10.4 Fieldbus Usage Model Numbers

TC-FFLXxx, are required based on the total number of FIMs (redundant or non-redundant pair) per Server actually in use. This applies equally to Series C FIMs (FIM4 and FIM8). License model numbers are purchased in combinations that support the total number of FIMs required. Licenses must be purchased starting with the first FIM used.

Fieldbus Usage License Models (applicable to all FIM types)

Fieldbus Usage Licenses	
TC-FFLX01	Fieldbus Usage License, 1 FIM (FIM4 or FIM8)
TC-FFLX05	Fieldbus Usage License, 5 FIMs (any combination of FIM4 or FIM8)
TC-FFLX10	Fieldbus Usage License, 10 FIMs (any combination of FIM4 or FIM8)
TC-FFLX50	Fieldbus Usage License, 50 FIMs (any combination of FIM4 or FIM8)

For more information

To learn more about Honeywell's products or solutions visit our website www.honeywellprocess.com or contact your Honeywell account manager.

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