POLICY

FIELDCOMM GROUP™

Connecting the World of Process Automation

FDI Host Registration Policy

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1 Scope

This document defines the registration policy for Host systems that support FieldComm Group's Field Device Integration (FDI) technology. This document is an extension to the registration policy for FOUNDATION Fieldbus and HART EDD hosts. FieldComm Group Product Registration Policy (FCG.PD10026) covers all general registration topics .

2 Normative References

Title	FCG Document Number	IEC Document Number	Current released Version
Host Test Specifications			
FDI Host Conformance Test Overview	FCG PD10030		1.0
FDI Host Conformance Test Specification	FCG TT10131		1.0
FOUNDATION Fieldbus DD & CF Host Application Test Procedures	FCG TT30694, FF-694		3.0
FF Host Test Procedure	FCG PD30218		
HART EDD Host Registration Process	FCG PD20016		
DD Host: Basic Operations Test Specification	FCG TT20510, HCF_TEST-510		1.2
DD Host: User Interface Test Specification	FCG TT20511, HCF_TEST-511		1.2
DD Host: Data Modeling Test Specification	FCG TT20512, HCF_TEST-512		1.2
DD Host: Methods Test Specification	FCG TT20513, HCF_TEST-513		1.2
EDDL Specifications			
HART Device Description Language Specification	FCG TS20500		Revision 14.0 (PRELIMINARY)
Device Description Language Methods Standard Library Specification	FCG TS20501		12.0

Foundation™ Specification Device Description Language	FCG TS30900 FS 6.0		FS 6.0
Foundation™ Specification Device Description Interoperability Specification	FCG TS30901 FS 1.2		FS 1.2
FDI Specifications			
FDI Device Package Style Guide	FCG PD20012		
Common Encoded File Format	FCG TS12041		
FIELD DEVICE INTEGRATION (FDI) – Part 1: Overview	FCG TS62769-1{1.0}	IEC62769-1	1.0
FIELD DEVICE INTEGRATION (FDI) – Part 2: FDI Client	FCG TS62769-2{1.0}	IEC62769-2	1.0
FIELD DEVICE INTEGRATION (FDI) – Part 3: FDI Server	FCG TS62769-3{1.0}	IEC62769-3	1.0
FIELD DEVICE INTEGRATION (FDI) – Part 4: FDI Packages	FCG TS62769-4{1.0}	IEC62769-4	1.0
FIELD DEVICE INTEGRATION (FDI) – Part 5: FDI Information Model	FCG TS62769-5{1.0}	IEC62769-5	1.0
FIELD DEVICE INTEGRATION (FDI) – Part 6: Technology Mapping	FCG TS62769-6{1.0}	IEC TR62769-6	1.0
FIELD DEVICE INTEGRATION (FDI) – Part 7: Communication Devices	FCG TS62769-7{1.0}	IEC62769-7	1.0
Profiles (protocols annexes)			
Foundation™ Specification	FCG TS62769-101-1{1.0}	IEC62769-101-1	1.0
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 101-2: Foundation Fieldbus HSE	FCG TS62769-101-2{1.0}	IEC62769-101-2	1.0
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 103-1: PROFIBUS	FCG TS62769-103-1{1.0}	IEC62769-103-1	1.0

FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 103-4: PROFINET	FCG TS62769-103-4{1.0}	IEC62769-103-4	1.0
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 109-1: HART® and WirelessHART®	FCG TS62769-109-1{1.0}	IEC62769-109-1	1.0
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 1xx-1: ISA100.11a	FCG TS62769-1xx-x{1.0}	IEC62769-1xx-x	1.0
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 1xx-1: Generic Protocols	FCG TS62769-1xx-x{1.0}	IEC62769-1xx-x	1.0
FIELD DEVICE INTEGRATION (FDI) – Protocol-specific Definitions – Part 1xx-x: ModbusRTU	FCG TS62769-1xx-x{1.0}	IEC62769-1xx-x	1.0

3 Terms, Definitions, Abbreviated Terms and Acronyms

The following defined acronyms are used throughout this process description:

Acronym	Meaning
CF	Capability File for a FOUNDATION Fieldbus device.
CFF	Common File Format (Specification) – FOUNDATION Specification FF-103 defines Capability Files and their structure.
.CFF	Filename extension for an H1 Capability File
CT	Conformance Test, sometimes referred to as CTK, or Conformance Test Kit - a test system that verifies that a communication stack in a FOUNDATION Fieldbus Device conforms to specifications. Pre-requisite to interoperability testing.
DD / EDD	Device Descriptions / Electronic Device Descriptions – used interchangeably, and generally mean the same thing. For FOUNDATION Fieldbus technology, EDD can also specifically refer to a DD that is conformant to FDI specifications, so it is commonly called an "FDI EDD" to differentiate it from the older DD4 and DD5 technology for FOUNDATION Fieldbus.
DD4	Refers to the original EDD technology for FOUNDATION Fieldbus. Mandatory for all devices registered to ITK Profiles 4, 5, and 6.
DD5	Refers to an enhanced EDD technology for FOUNDATION Fieldbus that overcomes the early size constraints of DD4 technology. This allowed significant enhancements to the EDD. Optional for devices registered to ITK Profile 5. Mandatory for devices registered for ITK Profiles 6 and 7.
DPCTT	(FDI) Device Package Conformance Test Tool – The software tool that tests the conformance of the structure and signatures of an FDI Package. Required as a test for an FDI package after the contents of the FDI package have been tested with the Device Support File Test tools and processes from the respective technology organizations. (HART, FF, Profibus)
DSFT	Device Support File Test – refers to the process of testing and validating EDD files. A pre-requisite to registration of a device. Also a pre-requisite to registration of an FDI package. With respect to FOUNDATION Fieldbus technology, DSFT is performed by specific test cases during interoperability test as well as some manual inspections by the test administrator.
DUT	Device Under Test is the registration candidate product submitted for conformance assessment.
FBAP	Function Block Application Process – User Layer portion of a FOUNDATION Fieldbus field device.
FDI	Field Device Integration Refers loosely to the entire technology that is FDI, including the latest EDD specifications that are compliant to FDI technology, and all software tools and specs related to FDI technology.
FDI Package	Refers to the complete group of required and optional items that can be combined to form a collection of device support files, documentation, and plug-ins that is compliant to FDI specifications. This includes optional and mandatory items from FOUNDATION Fieldbus, including DD4, DD5, and FDI EDD

	files, but also EDD files from HART and/or Profibus technology, as well as UIP plug-ins and device documentation.
.FDIX	Filename extension for an FDI Package
.FF4	Binary filename extension for a DD4 (FF DD Services 4.x)
.FF5	Binary filename extension for a DD5 (FF DD Services 5.x)
.FF6	Binary filename extension for FDI HART EDD
.FMS	Binary filename extension for a HART non-enhanced EDD
.FM6	Binary filename extension for a HART EDD
.FM8	Binary filename extension for a HART EDD
.FMA	Binary filename extension for FDI HART EDD
H1	31.25kbps FOUNDATION Fieldbus
H1 CT	H1 Conformance Test (Communication Stack Test)
H1 CTK	H1 Conformance Test Kit (product AT-410)
H1 ITK	H1 Interoperability Test Kit (product AT-420)
IT	Interoperability Test
ITK	Interoperability Test Kit (Interoperability Test System)
LD	H1 / HSE Linking Device
PHY	Physical Layer – In this document, refers to any FOUNDATION Fieldbus H1 or HART FSK/HART-IP/wirelessHART network interfaces on a field device, linking device, or host.
PHY Test	Conformance Test for an H1 Physical Layer (FF-830)
.SYM	Symbol filename extension for a DD4
.SY5	Symbol filename extension for a DD5
UIP	User Interface Plug-in - A plug-in that is part of an FDI Package, similar in some ways to a DTM.

4 Requirements Terminology

The following keywords define requirements levels as defined in RFC 2119.

MUST	This word, or the terms “REQUIRED” or “SHALL”, means that the definition is an absolute requirement of the specification.
MUST NOT	This phrase, or the phrase “SHALL NOT”, means that the definition is an absolute prohibition of the specification.
SHOULD	This word, or the adjective “RECOMMENDED”, means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
SHOULD NOT	This phrase, or the phrase “NOT RECOMMENDED” means that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
MAY	This word, or the adjective “OPTIONAL”, means that an item is truly optional. One manufacturer may choose to include the item because a particular marketplace requires it or because the manufacturer feels that it enhances the product while another manufacturer may omit the same item. An implementation that does not include a particular option MUST be prepared to interoperate with another implementation that does include the option, though perhaps with reduced functionality. In the same vein an implementation that does include a particular option MUST be prepared to interoperate with another implementation that does not include the option (except, of course, for the feature the option provides.)

5 Overview

FieldComm Group FDI Host Registration Policy defines the rules and guidelines for compliance analysis and registration of FDI Hosts.

The FDI technology is designed to provide device integration support for all devices regardless of communication protocol, system vendor, device vendor, or device type. The FDI device package must conform to the requirements of the communication protocol supported as well as provide an accurate user interface to the field device. The FDI Host must render the contents of the FDI Package and support the features contained in the package including communication with the target field device. Each protocol places specific requirements on hosts. The protocol specific requirements are separately specified.

FDI technology is critical for interoperability between systems and field devices therefore FDI host registration is mandatory.

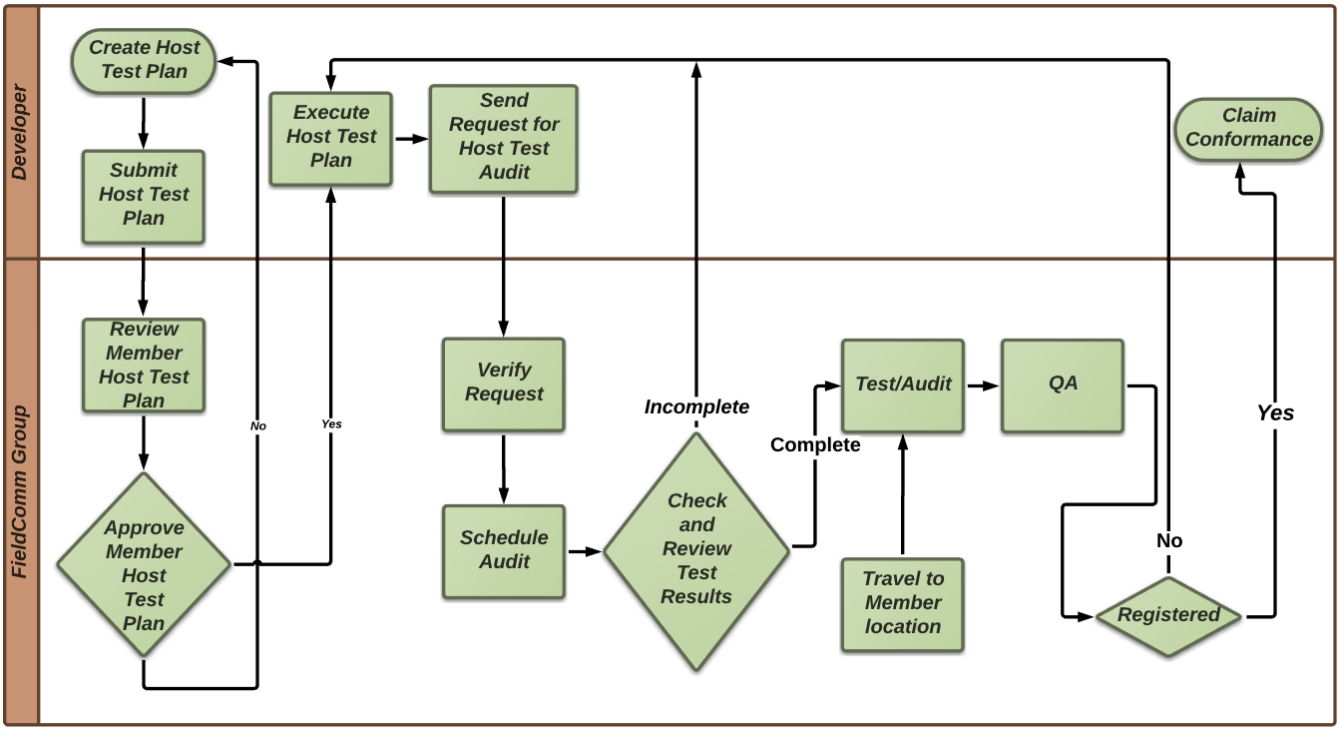

Figure 1. FDI Host Registration Flowchart

6 FDI Device Hosts for All Communication Protocols

6.1 Scope

HART Communication Protocol FDI Device Packages refers to FDI Device Packages for any product that supports the HART Communication Protocol. FOUNDATION Fieldbus FDI Device Packages refers to FDI Device Packages for any product that supports the FOUNDATION Fieldbus protocol.

Host registration requires testing and registration as protocol specific hosts in addition to the FDI Host requirements. Conformance assessment for each protocol is defined in separate documents (FCG PD20016 and FCG PD30218). The protocol specific requirements vary slightly, but the overall process remains the same. The manufacturer (or its designees) are responsible for creating test plans, reviewing test plans, testing, and submitting FDI Hosts for registration.

6.2 FDI Host Registration Checklist

The FDI Host developer will follow the same preparation and development process irregardless of communication protocol. This section summarizes the basic process of activities that an FDI Host developer will follow.

6.2.1 Create the Host Test Plan

The Host Test Plan is written by the developer to describe the process to perform the host test on the designated product. The Test Plan must include coverage of FDI specific requirements including support of FDI Device Packages as well as protocol specific test plans for support of the encoded Electronic Device Description. Each protocol also requires Host separate testing for the Physical Layer (hardware, noise, etc.) and Data Link Layer (stack, timing, addressing, etc.).

FDI Hosts must consume, use, and support the FDI packages and encoded EDD (and CF if applicable) for the target protocol. Hosts must not require any device files other than the FDI Package (fdix).

6.2.2 Submit and Review the Host Test Plan

The developer's FDI Host Test Plan must be submitted to the FieldComm Group for review prior to any data submission. The FieldComm Group will assess the Host Test Plan for coverage and technical accuracy. The detailed schedule of testing the FDI Host and the format of the data submission will also be outlined. The manufacturer may be engaged in a dialog with the FieldComm Group during the review process.

FieldComm Group will review the following items to determine if host test plan is sufficient to proceed:

- Physical Layer Test Results or designated registered hardware to use for testing.
- Information on Data Link Layer (HART) or stack (FF H1) to determine conformance
- Description of execution procedures for Protocol Specific Host Test
- Description of execution procedures for FDI Host Conformance Test
- Product registration form (template provided through support portal)
- Sample of host or requested date for onsite visit to host developer (or its designees)
- Any vendor specific tests performed, special requests, or issues reports for resolution before audit

6.2.3 Approval of the Host Test Plan

If the test plan is complete and meets the requirements of the targeted protocol and FDI, then the FieldComm Group will notify the manufacturer of approval of the test plan. If the test plan does not meet the requirements, or is incomplete, the FieldComm Group will describe any defencies and work with the submitter to remedy the test plan. Testing and conformance assessment cannot proceed until the test plan is approved by the FieldComm Group.

6.2.4 Manfuacturer Execution of the Test Plan

The FDI Host manufacturer (or its designees) will execute the approved Host Test Plan including all requirements for FDI and protocol specific testing. The results of this testing will be recorded and documented for submission to the FieldComm Group.

6.2.5 Request for Conformance Assessment

All requests for FDI Host Conformance Assessment must include a proposed date for an audit (onsite visit or submission to FCG) as well as all data, results, procedures, tests completed by the host manufacturer, and any

third party hardware or software used in the assessment. FCG will review all host results before determining a date for test audit. FieldComm Group will determine the audit testcases to be used for assessment. If travel is required, FieldComm Group will wait to schedule any transportation or lodging until the initial assessment is complete.

6.2.6 Host Audit

The host manufacturer can either send the host system to the FieldComm Group or FCG staff will visit the host manufacturer for an onsite audit. FCG staff will assess Host conformance based on the specifications by performing a selection of testcases from the Test Specifications. Ad-hoc testing may also be performed to verify several functional elements for conformance. All test results will be discussed with the host manufacturer and summarized in a test report.

6.2.7 FieldComm Group Assessment

The FieldComm Group will assess conformance for each FDI Host submission. FieldComm Group assessment will review data captured during the Host Audit and summarize results of all host manufacturer testing. Final conformance will be based on a combination of Audit data, manufacturer submitted data, and any supporting data. A final conformance report will summarize all findings.

Hosts that meet all requirements of the protocol testing and FDI conformance assessment will be offered registration.

7 Maintenance

Hosts that support FDI may require updates and maintenance from developers. Any maintenance performed on the host must be assessed for impact on registration. Any modification that alters the FDI or protocol specific portion of the FDI host must be submitted for conformance assessment and registration.

Maintenance of non-FDI related portions of the host does not require re-registration. The host manufacturer must verify that changes do not effect the FDI or protocol specific operation of the host.