



FIELDCOMM GROUP™

*Connecting the World of
Process Automation*

**FDI Device Package
Registration Policy**

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1 Scope

This document defines the registration policy for FieldComm Groups' Field Device Integration (FDI) technology FDI Device Packages (fdix). This document is an extension to the registration policy for FOUNDATION Fieldbus and HART products. FieldComm Group Product Registration Policy covers all general registration topics.

2 Normative References

Title	FCG Document Number	IEC Document Number	Current released Version
FieldComm Group Policies			
FDI Package Signing Policy	FCG PD10050		1.0
Product Registration Policy	FCG PD10026		1.0
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 Usability Style Guide	FCG AG12080		1.1
Common Encoded File Format	FCG TS12041		
FIELD DEVICE INTEGRATION (FDI) – Part 1: Overview	FCG TS62769-1{1.0}	IEC62769-1	1.1

FIELD DEVICE INTEGRATION (FDI) – Part 2: FDI Client	FCG TS62769-2{1.0}	IEC62769-2	1.1
FIELD DEVICE INTEGRATION (FDI) – Part 3: FDI Server	FCG TS62769-3{1.0}	IEC62769-3	1.1
FIELD DEVICE INTEGRATION (FDI) – Part 4: FDI Device Packages	FCG TS62769-4{1.0}	IEC62769-4	1.1
FIELD DEVICE INTEGRATION (FDI) – Part 5: FDI Information Model	FCG TS62769-5{1.0}	IEC62769-5	1.1
FIELD DEVICE INTEGRATION (FDI) – Part 6: Technology Mapping	FCG TS62769-6{1.0}	IEC TR62769-6	1.1
FIELD DEVICE INTEGRATION (FDI) – Part 7: Communication Devices	FCG TS62769-7{1.0}	IEC62769-7	1.1
Profiles (protocols annexes)			
Foundation™ Specification	FCG TS62769-101-1{1.0}	IEC62769-101-1	1.1
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	1.1
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 103-4: PROFINET	FCG TS62769-103-4{1.0}	IEC62769-103-4	1.1
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 109-1: HART® and WirelessHART®	FCG TS62769-109-1{1.0}	IEC62769-109-1	1.1
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 150-1: ISA100.11a	FCG TS62769-1xx-x{1.0}	IEC62769-1xx-x	1.1
FIELD DEVICE INTEGRATION (FDI) – PROFILES – Part 100: Generic Protocols	FCG TS62769-1xx-x{1.0}	IEC62769-1xx-x	1.1
FIELD DEVICE INTEGRATION (FDI) – Protocol-specific Definitions – Part 1115-2: ModbusRTU	FCG TS62769-1xx-x{1.0}	IEC62769-1xx-x	1.1

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 (CTT)	(FDI) Device Package Conformance Test Tool – The software tool that tests the conformance of the structure and signatures of an FDI Device Package. Required as a test for an FDI Device Package after the contents of the FDI Device 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 Device 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 Device 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 Device 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
ITK	Interoperability Test Kit (Interoperability Test System)
.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 Device 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 Device Package Registration Policy defines the rules and guidelines for compliance analysis and registration of FDI Device Packages. . The FDI-Registered Mark on an FDI Device Package is the manufacturer's representation that the FDI Device Package has successfully completed all test requirements specified in the FieldComm Group's FDI Device Package Registration Policy. FDI Device Packages that do not complete the registration process must not claim to be "FDI Registered".

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.

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

6 FDI Device Packages 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.

The registration of packages varies slightly based on protocol but the overall process remains the same. The manufacturer (or its designees) are responsible for building, testing, signing, and submitting packages for registration.

6.2 FDI Device Package Digital Signatures

FDI Device Packages use digital signatures from the FDI Device Package originator and the FieldComm Group. The details of the application of these digital signatures is covered in FDI Device Package Signing Policy (FCG PD10050). This document includes a summary of the details described in the FDI Device Package Signing Policy and the FDI Specifications.

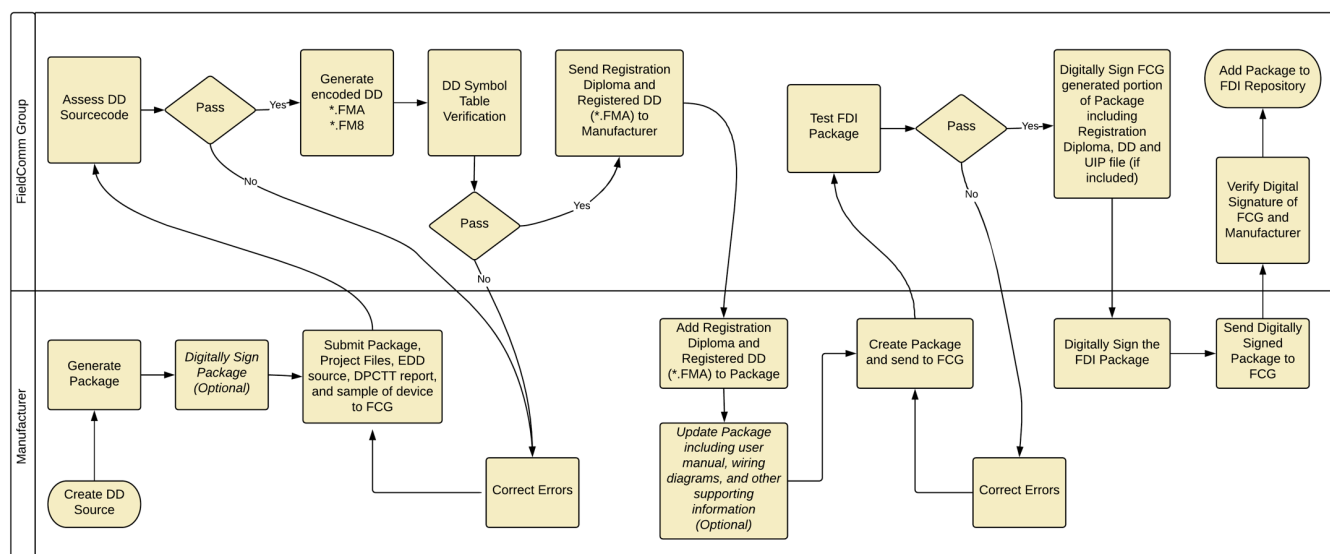


Figure 1. HART FDI Device Package Registration Flowchart

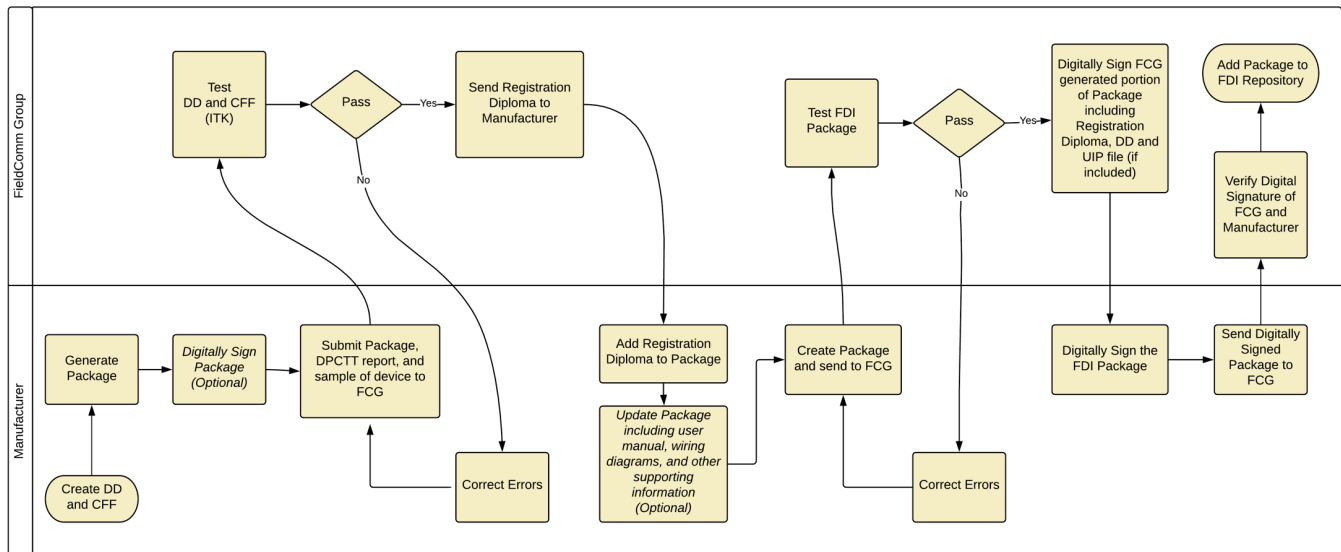


Figure 2. FOUNDATION Fieldbus FDI Device Package Registration Flowchart

6.3 FDI Device Package Development Process Checklist

The FDI Device Package developer will follow the same preparation and development process regardless of communication protocol. This section summarizes the basic checklist of activities that an FDI Device Package developer will follow.

6.3.1 Create the Encoded EDD Sourcecode

The FDI Device Package includes an encoded Electronic Device Description created from sourcecode written in the Electronic Device Description Language. All FDI Device Packages submitted to the FieldComm Group will contain an encoded EDD. For HART based products, the sourcecode of this EDD is required as part of the submission in addition to the FDI Device Package. For FOUNDATION Fieldbus based products, the EDD sourcecode is not submitted. FOUNDATION Fieldbus FDI Device Packages must contain an encoded EDD and corresponding Capabilities File.

6.3.2 Create the Package

The FDI Device Package IDE or equivalent tool must be used to create a complete FDI Device Package for a particular product. The detailed requirements of an FDI Device Package content and format are outlined in the FDI Specifications. Manufacturers are encouraged to follow the FDI Usability Style Guide (AG12080) when creating the EDD and FDI Device Package.

6.3.3 Digitally Sign the Package

All FDI Device Packages submitted to the FieldComm Group must be digitally signed by the manufacturer. Third party signatures (contract developer signatures) are not accepted. FDI Device Packages not yet signed must be transmitted via secure¹ channel to FieldComm Group.

6.3.4 Manufacturer Testing of the Package

The FDI Device Package Conformance Test Tool (DPCTT) results must be submitted with the FDI Device Package. The Conformance Test Tool report is a standalone document of test results. These tests require a corresponding physical device.

Manufacturers who follow the FDI Style Guide must assess the EDD and FDI Device Package based on the requirements of the Style Guide. The results of FDI Style Guide assessment are captured in the FDI Usability Style Guide Assessment Results (FR10087). Manufacturers must indicate their desire for this additional verification when submitting the Package for conformance assessment.

6.3.5 Submit the Package for Registration

All FDI Device Package submissions must include a physical sample of the Registered Device or the device must be submitted for device registration at the same time as the package. The required physical sample of the device must match the submitted FDI Device Package.

Manufacturers submitting packages that follow the optional FDI Usability Style Guide (AG12080) must submit a report of assessment (FDI Usability Style Guide Assessment Results FR10087). The test results and any registration specific documentation must not be included in the FDI Device Package itself.

The submission checklist includes a minimum of the following:

- DPCTT Report
- FDI Device Package (*.FDIX)
- Sample of Physical Device
- FDI Device Package project file(s) (HART only)
- Sourcecode for EDD (HART only)
- Submission form

6.3.6 HART Specific Requirements

FDI Device Packages for devices that support the HART Communication Protocol must include an encoded EDD. The FDI Device Package submission must be accompanied by the FDI project file and EDD sourcecode that matches the encoded EDD that is included in the FDI Device Package

¹ FieldComm Group utilizes a secure online file transfer service for developers to submit FDI Device Packages.

(sourcecode is not in the FDI Device Package). The FieldComm Group will use the submitted sourcecode for assessment and generation of the encoded EDD for the registered FDI Device Package. FieldComm Group generates the encoded EDD due to the need to manage the symbols and historical library requirements. The FieldComm Group is developing tools to eliminate the requirement that FCG generate encoded EDDs for the package.

6.4 FieldComm Group Assessment

The FieldComm Group will assess the conformance of each FDI Device Package submission.

The FDI Usability Style Guide (AG12080) is optional. If the manufacturer desires to claim conformance to the Style Guide then FieldComm Group must assess the conformance. The registration candidate submission may come from the manufacturer or third-party contract developers on behalf of the manufacturer. All submissions must be approved by and conformance test/registration costs covered by the manufacturer.

6.4.1 Test EDD and CF for FOUNDATION Fieldbus Conformance

For FOUNDATION Fieldbus products, the FieldComm Group must ensure both the EDD and CF match the device. The manufacturer must submit a physical sample of the registered device (or the device must be included with the package for registration) which matches the FDI Device Package. The FieldComm Group will use the Interoperability Test System (ITK), FDI Device Package IDE, and DPCTT to confirm the FDI Device Package is consistent with the Registered Device.

6.4.2 Assess EDD for HART Conformance

For HART products, the FieldComm Group must ensure the EDD matches the device and the symbols of the EDD are preserved. The manufacturer must submit a physical sample of the registered device (or the device must be included with the package for registration) which matches the FDI Device Package. The sourcecode for the EDD, FDI Device Package IDE, and DPCTT will be used in this assessment. At this time, FCG will generate the encoded EDD to be included in the final FDI Device Package.

6.4.3 Test the UIP and Other Package Components

FieldComm Group will run the Device Package Conformance Test Tool (DPCTT) with a complete FDI Device Package using the physical sample of the device as a target. The UIP and other package content will be assessed for conformance. If a manufacturer indicates the FDI Device Package follows the FDI Usability Style Guide (AG12080) then the FieldComm Group will assess conformance.

6.4.4 Create Diploma for Registration

The human readable version of the “registration certificate” (diploma) is a pdf document describing the FDI Device Package and registered field device. The Human Readable document for registration is included in the FieldComm Group signature and cannot be modified by any other party.

6.4.5 Send Diploma and EDD to the Developer

FieldComm Group will provide the diploma to the manufacturer. For HART products, the registered EDD(s) will also be provided to the manufacturer.

6.5 Manufacturer

The manufacturer will receive the diploma and EDD files (for HART products) from the FieldComm Group. The manufacturer must update the FDI Device Package and return the package to the FieldComm Group. The manufacturer may also update the contents of the package that are not signed by the FieldComm Group. Changes to any portion signed by the FieldComm Group will require a new submission.

6.5.1 Add Diploma to the Package

The FieldComm Group will provide the Human Readable Document (diploma) for inclusion in the FDI Device Package attachments. The manufacturer must re-create the package after including the diploma in the package attachments. These files cannot be modified after registration without re-starting the registration process.

6.5.2 Add EDD to the Package

For HART products, the manufacturer must replace the encoded EDD file in the package with the registered EDD received from FieldComm Group. These files cannot be modified after registration without re-starting the registration process.

6.5.3 Update Package Contents

If the manufacturer desires to make further updates to the package, the manufacturer can update the supporting documentation and content not covered by the FieldComm Group's digital signature. Updates are restricted to the package attachments.

6.5.4 Submit Final FDI Device Package

The manufacturer must return the updated FDI Device Package to FieldComm Group.

6.6 FieldComm Group Assessment

FieldComm Group will assess the updated package.

6.6.1 Assess Pass/Fail Criteria

The FieldComm Group will assess all test results and analyze collected data to determine conformance of the FDI Device Package. All test results must conclude in PASS or NOT APPLICABLE to proceed toward registration.

6.6.2 Apply Digital Signature over EDD, UIP, CF, XML, and Diploma

The FieldComm Group will apply a digital signature (hash) over the encoded EDD, CF (if applicable), UIP (if applicable), XML document, and the diploma. These components of the FDI

Device Package cannot change after registration. The FieldComm Group maintains the digital signature (hash) over this portion of the FDI Device Package.

6.7 Manufacturer

The manufacturer will receive the signed tested package from the FieldComm Group. Changes to any portion signed by the FieldComm Group will require a new submission.

6.7.1 Sign Complete Package

The manufacturer of the FDI Device Package must update the overall digital signature for the package and return the package to the FieldComm Group for inclusion in the Repository. The manufacturer will digitally sign the complete package (including the registered components and FieldComm Group signature).

6.8 FieldComm Group Assessment

The manufacturer must return the signed package to the FieldComm Group. The FieldComm Group will verify the manufacturer's signature and the FieldComm Group's signature before posting to the repository.

6.8.1 Verify Digital Signature for Registered Items

Verify the digital signature of the registered items has not changed. The developer cannot modify the Diploma, Encoded EDD, Capabilities File (CF), and UIP file (if included) without submitting the package for re-registration.

6.8.2 Verify Digital Signature for the Package

FieldComm Group uses a digital signature assessment tool (notary) to perform this task. The manufacturer's digital signature must be valid at the time of registration.

6.8.3 Upload to Repository of Registered FDI Device Packages

The FieldComm Group maintains the official repository for all registered FDI Device Packages. The FDI Device Package shall be uploaded to the Repository upon successfully completing the registration process.

7 Maintenance

FDI Device Packages may require updates and maintenance from developers. Any maintenance performed on the package contents must be assessed for impact on registration. Any package modification which alters the portion of the package signed by the FieldComm Group must be submitted for re-registration.

7.1 Maintenance of Supporting Content

Maintenance of non-registered content does not require re-registration, but requires the update of the package signature and re-submission to the FieldComm Group. The FieldComm Group will verify the signatures then post to the Repository. The repository will retain all versions of the registered FDI Device Packages.

7.2 Maintenance of Registered Content

Maintenance of FDI Device Package content which is covered by the FieldComm Group's signature (hash) includes the encoded EDD file, UIP (if applicable), CF (if applicable), and Registration Certificate (XML document) will require a package submission for re-registration. The developer must not update the encoded EDD, CF, or UIP in a registered package without submitting the entire package to the Fieldcomm Group for re-registration.