Honeywell

SLN700
SmartLine Level Transmitter
Non-Contact Radar
HART® Option
User's Manual

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About This Manual

This manual provides the details of programming and operating Honeywell SLN700 SmartLine NCR Level Transmitters for applications involving HART$^\circledR$ versions 5, 6, and 7 communication protocols. For installation, wiring, and maintenance information refer to the SLN700 SmartLine NCR Level Transmitter User Manual, Document # 34-SL-25-13.

The configuration of your Transmitter depends on the mode of operation and the options selected for it with respect to operating controls, displays and mechanical installation. Details for operations involving the Universal Handheld Configurator are provided only to the extent necessary to accomplish the tasks-at-hand.

The SLN700 SmartLine NCR Level Transmitter can be digitally integrated with below system:

- Experion PKS: you will need to supplement the information in this document with the data and procedures in the *Experion Knowledge Builder.*

Release Information

This document #34-SL-25-16, SLN700 SmartLine NCR Level Transmitter Non-Contact Radar HART$^\circledR$ Option User's Manual

Revision	Date	Release
Rev. 1.0	October 2020	First release

References

The following list identifies publications that may contain information relevant to the information in this document.

Reference Documents
SLN700 SmartLine Non-Contact Radar Level Transmitter User's Manual, #34-SL-25-13
SLN700 SmartLine Non-Contact Radar Level Transmitter Quick Start Guide, #34-SL-25-14
SLN700 SmartLine Non-Contact Radar Level Transmitter Specification, #34-SL-03-06
FDM LX Field Device Manager User's Manual, EX-FDM-22511

Support and Contact Information

For Europe, Asia Pacific, North and South America contact details, refer to the back page of this manual or the appropriate Honeywell Solution Support web site:

Honeywell Process Solutions	www.honeywellprocess.com
SmartLine Level Transmitters	https://www.honeywellprocess.com/en-US/explore/products/instrumentation/process-level-sensors/Pages/smartline-level-transmitter.aspx
Training Classes	http://www.honeywellprocess.com/en-US/training

Telephone and Email Contacts**Area**	**Organization**	**Phone Number**
United States and Canada	Honeywell Inc.	1-800-343-0228 Customer Service 1-800-423-9883 Global Technical Support
Global Email Support	Honeywell Process Solutions	hfs-tac-support@honeywell.com

Contents

List of Tables

List of Figures

1 Introduction

1.1 Overview

The SLN700 SmartLine NCR Level Transmitter is available for operation with HART® version 7 communication. This manual addresses the processes to configure a transmitter for HART® communication.

1.1.1 HART® Mode Communication

As indicated in Figure 1, the output of a transmitter configured for HART® protocol includes two primary modes:

- Point-to-Point Mode: where one transmitter is connected via a two-conductor, 4-20 mA current loop to one receiver.

- Multi-Drop Mode: where multiple transmitters are connected through a two-conductor network to a multiplexed receiver device.
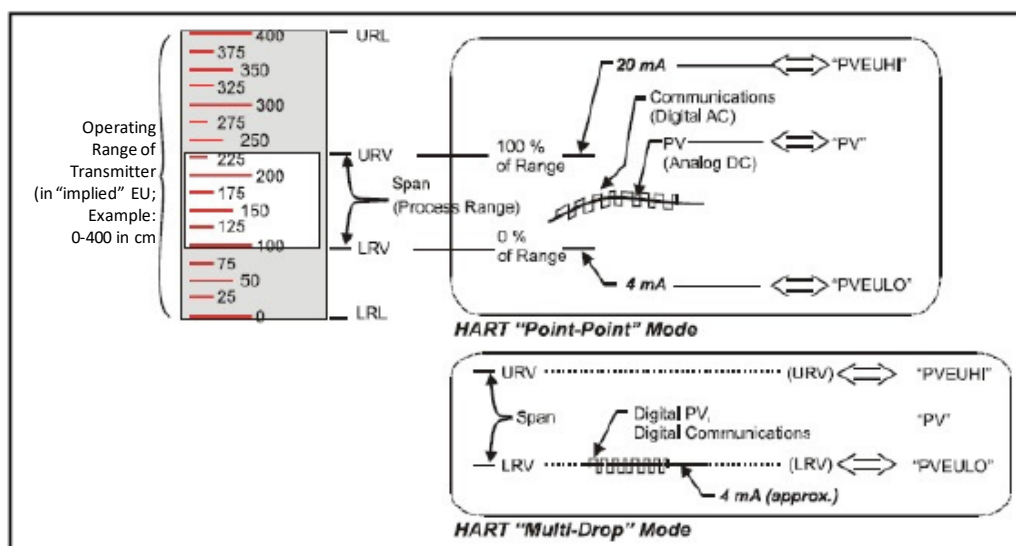
Figure 1: HART® Point-to-Point and Multi-drop Value Scaling

In point-to-point mode, the value of the Primary Variable (PV) is represented by a 4-20 mA current loop, almost identical to that of a transmitter operating in analog mode. In this case, however, the analog signal is modulated by Frequency Shift Keying (FSK), using frequencies and current amplitude that do not affect analog sensing at the receiver. FSK modulation is for sending digital messages in addition to the analog value. The accuracy of the analog level must be precisely controlled for accurate sensing. HART® communication will not bump process variables.

In multi-drop mode, theoretically up to 16 devices in HART® 5 (addresses 0-15) or up to 64 devices in HART®6/7 (addresses 0-63) can exist on the two-conductor network. Practically, the number of devices in a multi-drop installation is limited due to design constraints.

When installing into a multi-drop network, consider that the SLN700 requires a minimum startup current of 17 mA and a minimum terminal voltage of 11 V during startup. During device startup in Multidrop mode the loop current sequence is like 3.4mA (for 6 sec) 8mA (6 sec) then going to 4mA, and the minimum terminal voltage is 14 V. The power source, wiring, intrinsic safety barriers, and other devices in the network must also be considered.

Transmitters with HART® capability have features that vary among manufacturers and with the characteristics of specific devices. The FDM software application supports the HART® Universal, Common Practice and Device Specific Commands which are implemented in the Honeywell transmitters.

1.2 Making Transmitter Adjustments

Adjustments are possible in new generation SLN700 SmartLine NCR Level Transmitters by using the four buttons located on the display module. However, certain capabilities are limited in the following configurations:

- With a display – Display supports configuration of different parameters. Complete transmitter configuration is also possible with HART® DD.

You can also use the Honeywell FDM to make any adjustments to an SLN700 transmitter.

Certain adjustments can also be made through the Experion Station if the transmitter is digitally integrated with a Honeywell Experion System.

SLN700 HART® models can be configured using Honeywell tools such as Experion in conjunction with FDM or Emerson 375 or 475.

1.2.1 Local Display Options

The SLN700 SmartLine NCR Level Transmitter offers the Advanced Display; see Table 1 for a list of features.

Table 1 - Available Display Characteristics

Advanced Display	•	• Display module can be added or removed in the field • 128 by 64 dot matrix graphics display • Large PV font format supported • Echo stem plots with Distance to Product • Display supports English and Chinese languages

2 Configuration Tools and Interfaces

2.1 Overview

This section describes the tools and interfaces involved in configuring a new SLN700 SmartLine NCR Level Transmitter for HART® communication operation. The information in this section also applies to adjusting the configuration of a transmitter that has been in operation and updating one that is currently in operation.

2.1.1 Prerequisites

This manual contains the information and procedure for performing configuration and calibration tasks of SLN700 Transmitter. The person performing the tasks should be knowledgeable in the use of Honeywell's Field Device Manager (FDM) asset management system.

Furthermore, the reader is familiar with the SLN700 family of SmartLine NCR Level Transmitters and experienced in the type of process application targeted for transmitter deployment. Therefore, detailed procedures are supplied only in so far as necessary to ensure satisfactory completion of configuration tasks.

2.1.2 Field Device Manager

Field Device Manager (FDM) is a complete instrument asset management system that can range from a single self-contained server/client node to a very distributed architecture, such as Experion system. FDM is used for commissioning, and maintenance of smart field devices.

FDM conforms to industry open standards for HART®, PROFIBUS, Foundation Fieldbus, ISA100 Wireless protocols and does not require additional files or programming to support devices to access device-specific features. This includes unrestricted use of both Device Description (DD) and Device Type Manager (DTM) technologies.

FDM uses a unique remote communication infrastructure that allows widely distributed devices to communicate over a local or a wide network, providing anytime, anywhere access in the plant environment.

Below components will be used by user to commission SLN700 device in FDM:

- FDM Server Management Tool – This tool is used to configure a HART® RS-232 network.
- FDM Client Management Tool – This tool is used to configure a device and perform online and offline configurations.

3 Transmitter Configuration

3.1 Transmitter Configuration Flow in FDM (Field Device Manager)

Figure 3 shows the configuration process of a transmitter in FDM:

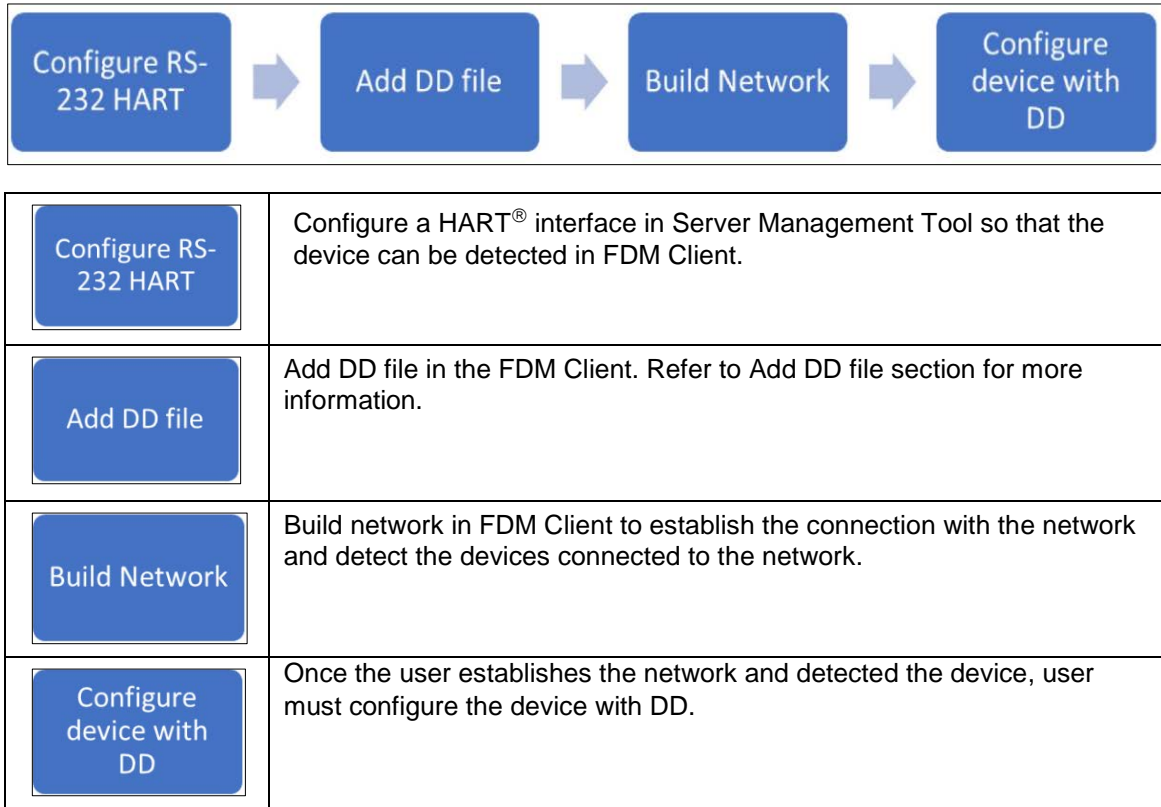|	
Configure RS-232 HART	Configure a HART® interface in Server Management Tool so that the device can be detected in FDM Client.
Add DD file	Add DD file in the FDM Client. Refer to Add DD file section for more information.
Build Network	Build network in FDM Client to establish the connection with the network and detect the devices connected to the network.
Configure device with DD	Once the user establishes the network and detected the device, user must configure the device with DD.

Figure 2: Configuration Process in FDM

3.1.1 Configure HART® device in FDM Server Management Tool

Follow the below steps to configure a HART® device in FDM Server Management Tool:

1. Log in to FDM Server Management Tool using valid credentials.
2. On the homepage, click **Network Configurator.**
3. Select the **RS-232 HART Modem** network from the **Network Type** drop-down list.
4. Once the HART® Modem network is selected, the **Start Poll Address** and **End Poll Address** values will be auto selected to "0". User cannot enter any value in these fields.
5. Click **OK** to save the network configuration. Now the configured network will be available in FDM Client.
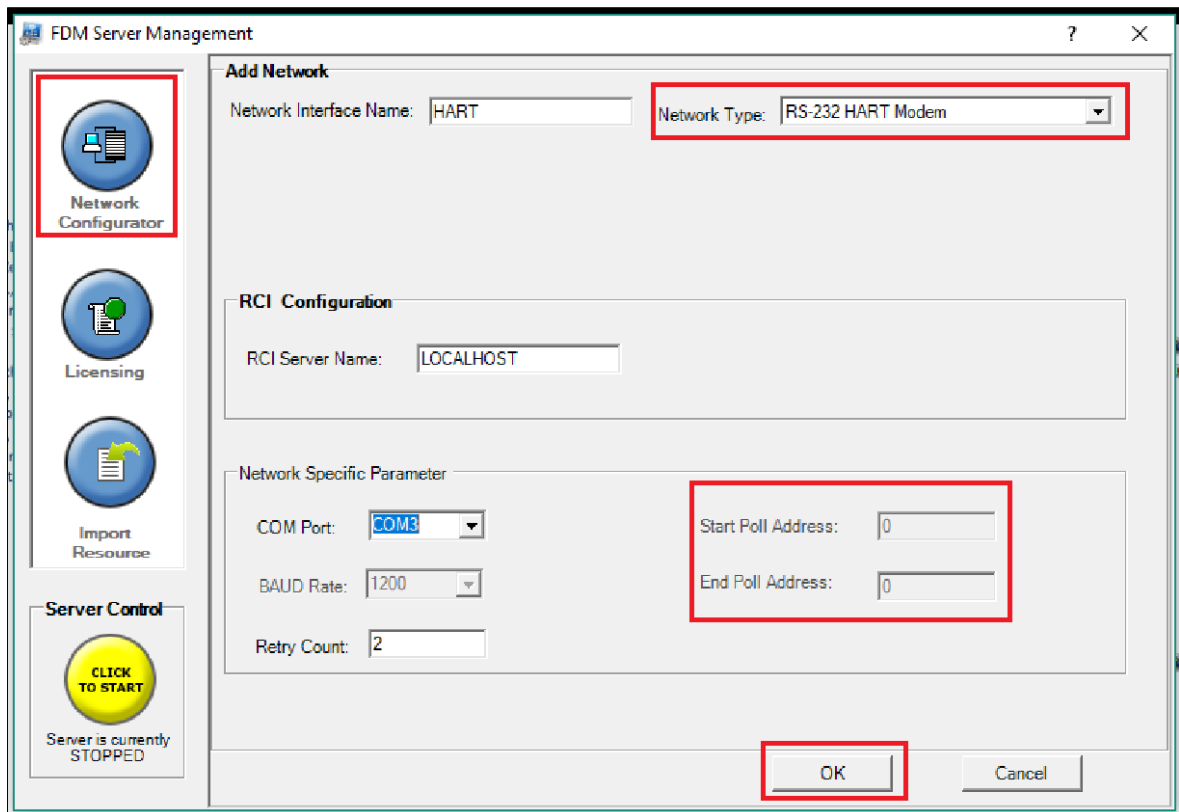
Figure 3: Configure HART® device in FDM

3.1.2 Add DD File in FDM Client

Refer to Add DD File section for more information.

3.1.3 Build a Network in FDM Client

After configuring the network in FDM Server Management Tool, user must establish the connection with a network and detect the devices connected to the network. This process is known as building a network.

Follow below procedure to build a network in FDM Client:

1. On the FDM Client homepage, under the **Network View**, right-click available network.
2. Select **Build Network** from the list as shown below.
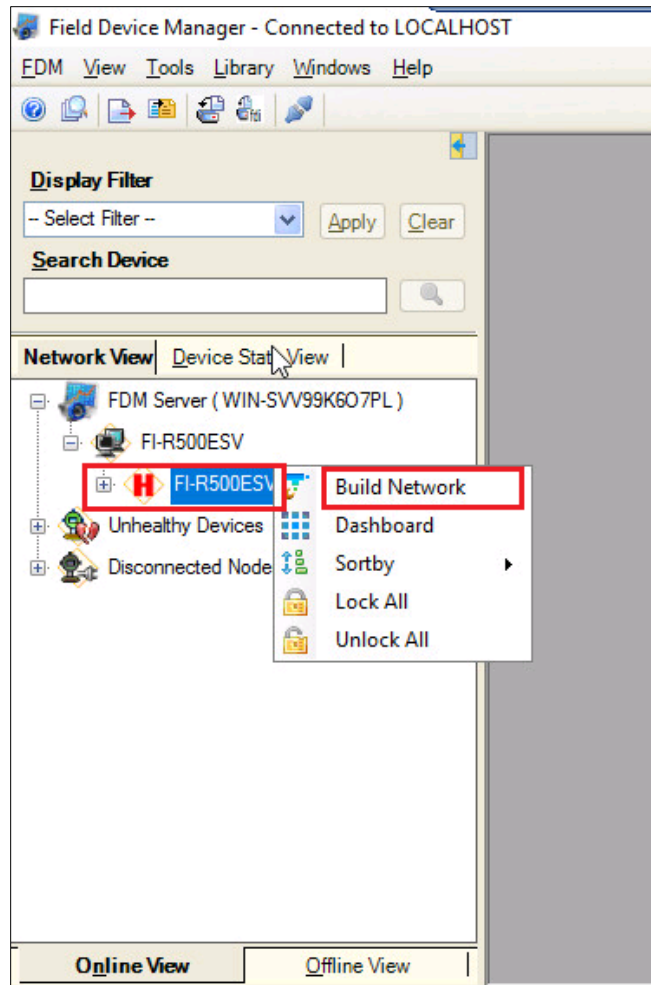
Figure 4: Building a Network in FDM

3. Once the build network is successful, the connected devices will be loaded and can be viewed under the network as shown below:
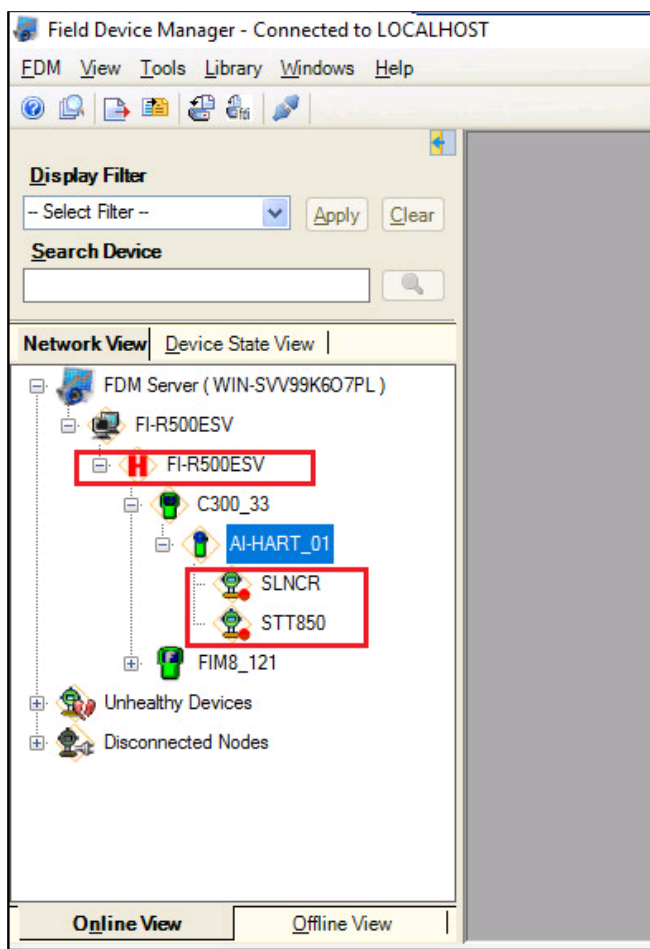
Figure 5: Connected devices in FDM

3.1.4 Configure Device with DD (Device Description)

Once the HART® device is loaded under the network, user must configure the device with DD. Perform below steps to configure a device with DD:

1. Right-click the required device tag under **Online View**.
2. Click **Configure with** and select **DD** from the list. The device is loaded using the DD settings.

Note: A user can also open the device configuration page by double-clicking the device in the Network list under Online View.

Figure 6: Configure device with DD

3.2 Using the Field Device Manager (FDM)

Each new SLN700 configured for HART® protocol is shipped from the factory configured as ordered to meet customer requirements. No reconfiguring should be necessary, however if changes are desired then this section assumes that the user will use the **Field Device Manager (FDM)** for HART® configuration tasks. The **FDM** provide the facilities for online and offline configuration of transmitters operating with HART® protocol.

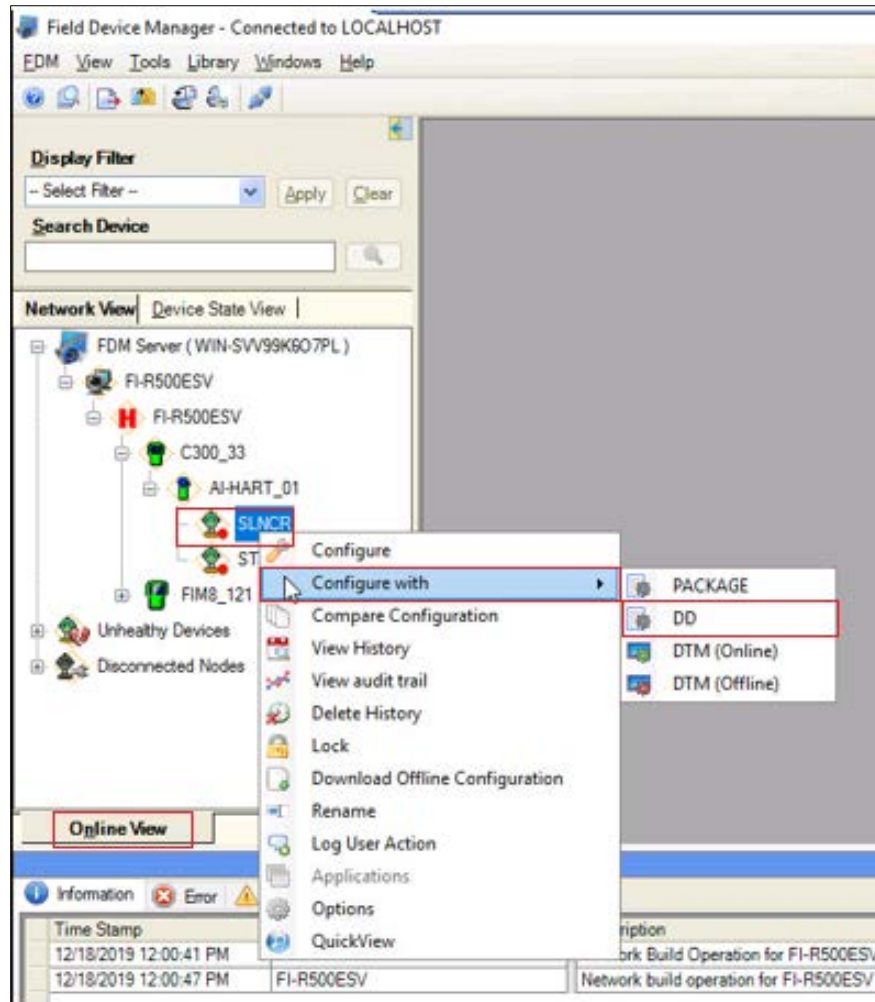Online configuration requires that the transmitter and FDM (through HART® Modem or Experion) are connected and communication between the two has been established. Online configuration provides a set of functions with which to perform various operations on a HART® communication network through an active communication link. These operations primarily include configuration, calibration, monitoring, and diagnostics. Typically, these operations could be realized through various constructs exposed by the Device Description (DD) file.

Offline Configuration refers to configuring a device when the device is not physically present or communicating with the application. This process enables the user to create and save a configuration for a device, even when the device is not there physically. Later when the device becomes available with live communication, the same configuration can be downloaded to the device. This feature enables the user to save on device commissioning time and even helps the user to replicate the configuration in multiplicity of devices with lesser efforts. The FDM supports creating offline configuration and the configurations can be directly downloaded to the device from FDM through HART® Modem.

The following are the tasks that the user needs to perform for downloading offline configuration to the device:

- Create offline configuration template in FDM
  - A User can create three types of offline configurations which are as follows:
    - DD offline configurations
    - Generic DD offline configurations
    - DTM offline configurations
- Save the configuration in FDM
- Download the offline configuration to the device in the Online view.

Note:	For details on creating and using offline configuration, refer to section Offline configuration in FDM User's Guide.

3.3 Overview of FDM Homepage

The FDM homepage consists of two sections **Device Functions** and **FDM Tasks**. Each section contains links for items as mentioned below:

- **Device Functions –** This section contains links for Online Configuration, Offline Configuration, Diagnostics, Process Monitoring, My Device, FDM Device Properties, FDM Device Status and Method List.

- **FDM Tasks -** This section contains links for Print, Export, Saved History Record, Save as Offline Template, Notifications and Enable Dynamic Scanning.

Other information such as FDM Device Status, State Information and Device Information is also displayed on the homepage.
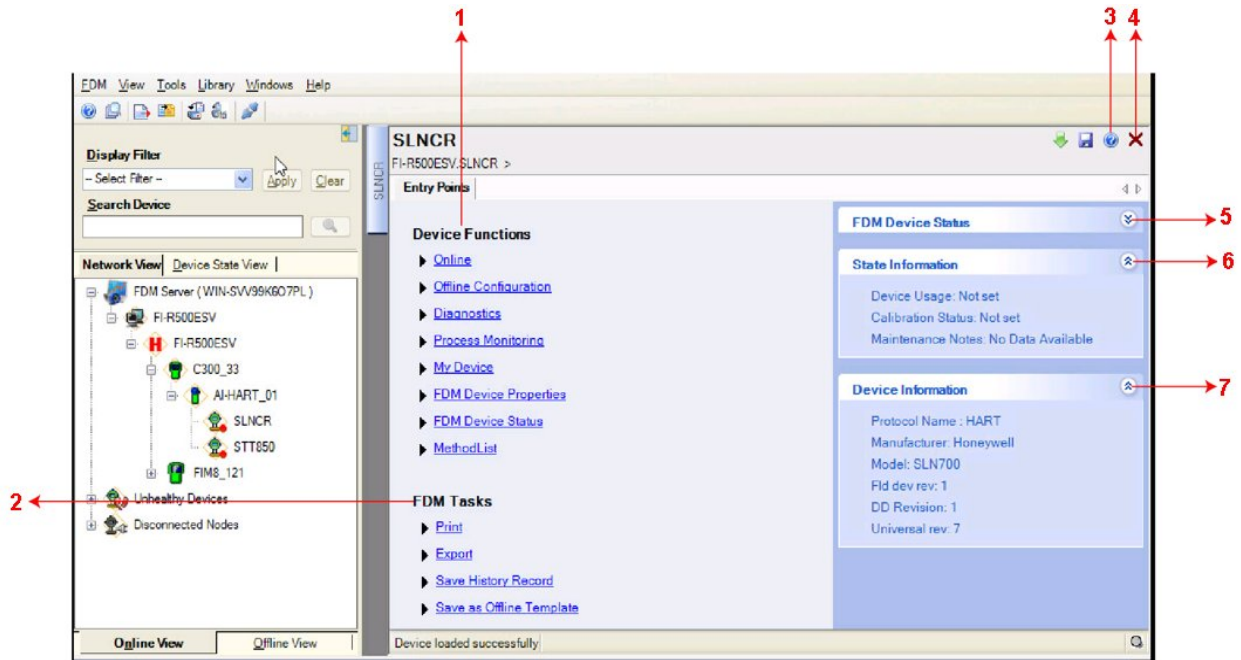
Figure 7: FDM Homepage

Table 2 lists the items that appear on the FDM homepage and its description.

Table 2 - FDM homepage elements

Items	Description
1	This section has links for Online, Offline configurations and for other features.
2	This section has links for FDM tasks such as Print, Export and Save History Record and other features.
3	Click to open FDM help file.
4	Click to exit the device homepage.
5	Expand/Collapse to view the FDM device status.
6	Expand/Collapse to view the device state information.
7	Expand/Collapse to view the device information.

3.3.1 DD selection

- Use the following options to select DD files when a DD with matching device revision is not available.

  – **Use DD file of previous device revision**: Use this option to automatically communicate using a DD file having device revision lower than that of the device.

  – **Use generic DD file**: Use this option to automatically communicate to the device using an appropriate generic DD file.

  – **Always ask user**: Use this option to always prompt the user with a choice for communicating to the device either using the previous device revision or using a generic DD file.

  – **Always Use Generic**: Use this option to always communicate to the device using generic DD files even if a DD file with matching device revision as the device is present.

| **Note:** | A generic DD file is a DD file that provides access and interface to the universal data and features of a HART® device. |

3.3.2 Manage DDs

Using this feature, the user can manage the DD files installed with FDM. A DD file contains descriptive information about the functionality of a device. By default, a set of DD files are installed with FDM. However, if you do not have a DD for a given device, the user can install it using the "Add DD File" feature under Library tab. Similarly, the user can uninstall a DD file or a set of DD files using "Delete DD File" feature. The user can also directly copy the DD files in appropriate hierarchy using a card reader or "Active Sync/Mobile Device Center" mechanisms. In such a case, the user should validate the library view using the "Refresh" feature.

Overview

Using **Manage DDs** under **Library** tab, the user can add or delete DD file for devices. A list of already available DD files is maintained in the DD Library. FDM lists the installed DD files in a hierarchy as below:

- Manufacturer

- Device Type

- DevRev xx, DDRev yy

- DevRev pp, DDRev qq

Add a DD file
To add a DD file for a device, perform the following steps.

1. From the FDM homepage, click **Library** > **Manage DDs**.
2. The **Manage DDs** dialog box appears.
3. Click **Add DD File** option.
4. Or Click [icon]. The **ADD DD files** dialog box appears.

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5. Browse to the location in which the DD file (**.fm8)** is located and click **OK**.

The **Select device profile** page appears as shown below.

6. Select a device profile from the drop-down list and click **OK**.
7. If the DD file already exists, then the following message appears.

8. Click **OK** to exit from the error message window.

Delete a DD file

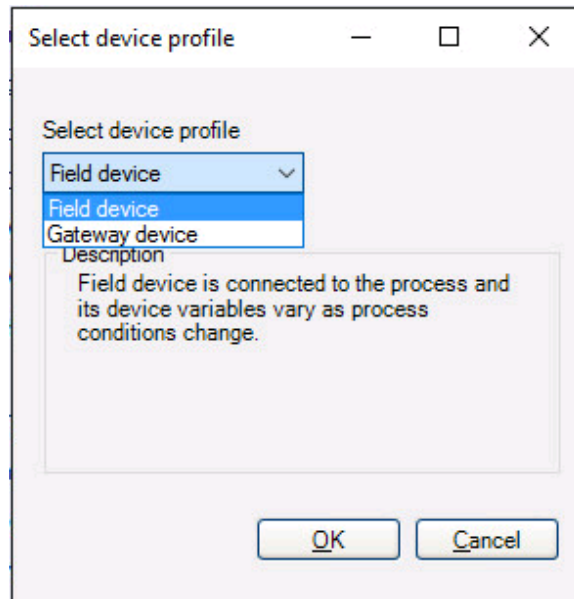Using this option, the user can delete a particular version of a DD file. To delete a DD file for a device, perform the following steps.

1. From the FDM homepage, click **Library** > **Manage DDs**.
   a. The **Manage DDs** dialog box appears.
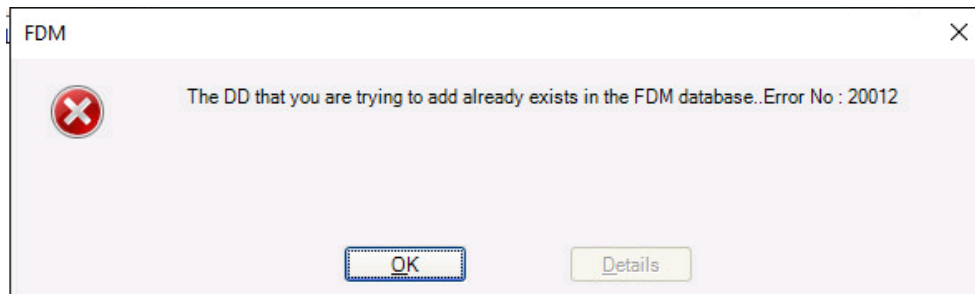2. Click **Delete DD File** option. The **Delete DD File** dialog box appears.
3. From the dialog box, the user can choose to delete DD(s) in one of the following ways:
4. By device manufacturer – Select a device manufacturer to delete all device types and DDs associated with the manufacturer's devices.
5. By device type – Select a device type to delete all DDs associated with the device.
6. By device revision and DD revision – Select the specific entry of device revision, DD revision to delete the specific DD
7. After selecting the above parameters, click **Delete**.
   a. If the DD file is deleted successfully, a success message appears.
8. Tap **OK** to return to **DD Library** page.

3.3.3 Online configuration

Using online configuration, you can configure, calibrate, monitor and diagnose a HART$^\circledR$ device which is connected to FDM. The FDM provides the features to perform these functions through the various constructs offered through the DD file of the device. Besides there are certain other features available under this link for you to conveniently work with a HART$^\circledR$ device with live communication. After making changes to the device the user can also save a snapshot of the device data as history to later transfer it to FDM for record and audit purposes.

3.3.4 Offline configuration

Offline configuration refers to configuring a device offline (without physically connecting to the device) using a template and then downloading the configuration to the device. At present, FDC application software does not support creating offline configuration. However, it supports importing of offline configuration from FDM (R310 and above).

3.3.5 Online Configuration Overview

Online Configuration option provides the user a set of functions with which they can perform various operations on a device with an active communication link. These operations primarily include configuration, calibration, monitoring, and diagnostics of a HART$^\circledR$ device. Typically, these operations could be realized through various constructs exposed by the DD file of the device. In addition, FDM also provides some additional application functions for the user to perform these functions more conveniently.

Online configuration includes a set of functions to perform various operations on a transmitter with active communication link. These operations primarily include:

- Identifying a transmitter
- Reading and reviewing transmitter variable values
- Editing transmitter variable values
- Downloading the selected/edited variable set to the transmitter

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3.3.6 Overview of Device Homepage

Once the device is configured and loaded successfully, the user can view the device homepage for the identified device as shown below:
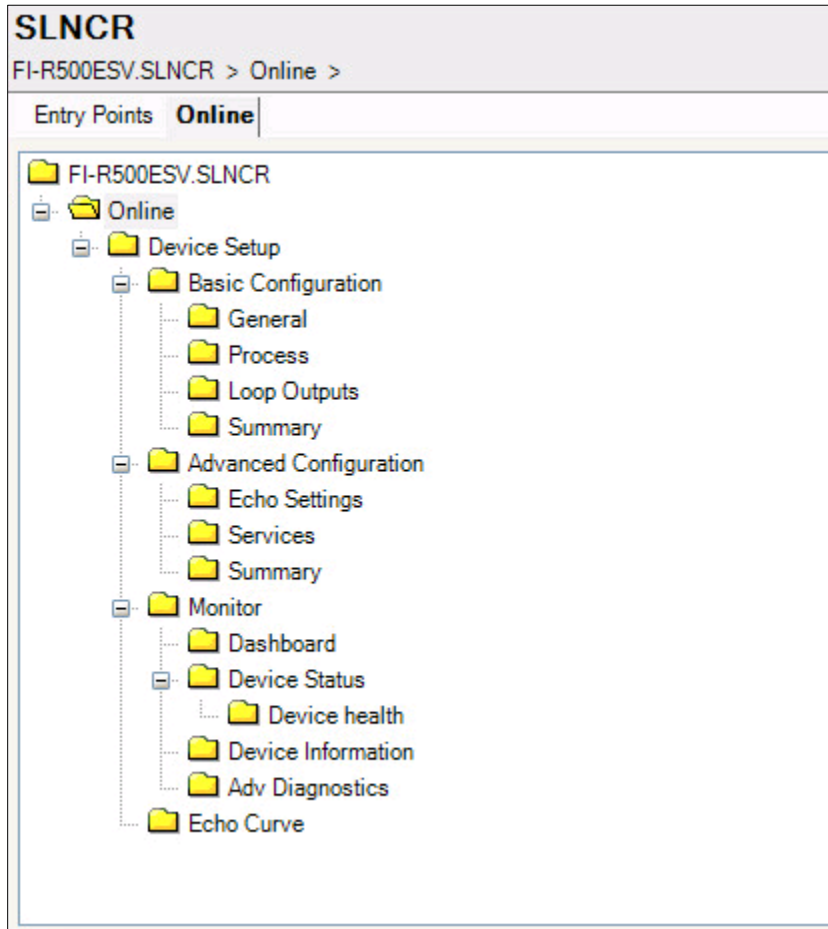

Figure 8: Device Homepage

Table 3 lists the device health status and their indications.

Table 3 - Device health status

Device health icons	Indications
	Indicates there's no health or status indicators reported by the device
	Indicates that the device is potentially reporting a status which needs attention and further investigation. It is advised that the user use Device Status under Functions tab to further investigate the details.

3.3.7 Device Configuration and Parameter Descriptions

Below are descriptions of all parameters for a HART® transmitter with the Online tab menu path. The same parameters may be accessed via the Shortcuts menu under the My Device tab.

Parameters are grouped under the following headings.

Basic configuration (see Table 4)
- General
- Process
- Loop Outputs
- Summary

Advanced Configuration (see Table 5)
- Echo Settings
- Services
- Summary

Monitor (see Table 6)
- Dashboard
- Device Status
  - o Device Health
- Device Information
- Adv Diagnostics

Echo Curve (see Table 7)

Table 4 - Basic Configuration parameters

Key:	Plain = Read only	**Bold** = Configurable	**Bold underline** = Method	***Bold italic*** = Table or graph

General		
Parameters	**Selection options**	**Description**
Tag		Enter Tag ID name up to 8 characters long.
Long Tag		Enter Tag ID name up to 32 characters long.
Distance Unit	ft m in cm mm	Select the unit for all distance related parameters.
Temperature Unit	°C	Unit for all Temperature related parameters.
Descriptor		Enter any desired or useful descriptor of the transmitter.
Date		Gregorian calendar date that is stored in the Field Device. This date can be used by the user in any way.
Sensor Tag		
Final assembly num		Used to identify electronic components.
Process		
Parameters	**Selection options**	**Description**
Medium	Liquid Solid	Select the medium of the material such as Liquid or Solid.
Max Level Rate		Enter the maximum level rate.
Show Max. Level Rate Limits	Min. Value – 0.1 Max. Value - 10	This method shows the maximum level rate limits.
Fixed Range		This is the maximum range supported by the device. This is read only
User Range		Range configured by user as per the installation
Show User Range Limits	Min. Value – 0 Max. Value – 36	This method shows the user range limits.
Fixed blind		This is the fixed minimum value below which Blind Range entry is restricted.
Near Blanking		This parameter is used to define the no measurement/low accuracy zone from top of the transmitter.
Show Near Blanking Limits		This method shows the near blanking limits.

Table 5 - Advanced Configuration parameters

Key:	Plain = Read only	**Bold** = Configurable	**<u>Bold underline</u>** = Method	***Bold italic*** = Table or graph

<u>Echo Settings</u>		
Calibrate Date		Enter the date of calibration.
Dust or Agitation	Normal Mild Medium Strong	Set the degree of Dust or Agitation.
MultiWave	No Yes	Select the MultiWave algorithm to get the correct echo.
First Echo Option	Normal Small Big Bigger Biggest	Select the weight of the first echo.
Envelope Level	dB	Set the level of the envelope.
Echo Threshold	dB	Set the threshold size of the effective echo.
Burnout Direction	No Change 21.5mA 3.6mA	Select the burnout current.
Low Dk Option	No Yes	Select the Dielectric constant
Empty Span	M	
False echo distance	M	Entered distance value will be the range to capture false echo envelop. Echo peaks present in false echo will not be picked as level by the device. Live peaks different than the false echo observed during the operation of the device will be accounted for level qualification when product surface comes in the false echo range.
Set False Echo Distance	Yes No	Use this method to set the False Echo Distance.

Table 5 - Advanced Configuration parameters, cont'd

Key:	Plain = Read only	Bold = Configurable	Bold underline = Method	Bold italic = Table or graph

Services		
Latching Mode		When enabled, causes all critical sensor failures to latch to the Critical Fault state. The fault may only be cleared by device reset. When disabled, the critical sensor input failure will be cleared if the input recovers. Enable/disable can be achieved by selecting Yes/No against this parameter.
Distance Offset		This parameter is used to adjust the measured Distance reported by transmitter. This parameter should be used to nullify the difference between the actual distance (hand-dipped or other reference meter reading) and measured distance value from the transmitter. This is a polarity sensitive parameter and based on -/+ value the measured Distance will be adjusted
Simulation Status		This parameter with show the ON/OFF state of simulation
Loop Current Simulation		This parameter will set the Loop Current to the value entered by user
Distance Simulation		This parameter will set the Distance variable value to the value entered by user
Write Protect		Displays the current configuration of the write protect function. Write Protect is "Enabled" if either the write protect jumper on the electronics board is in the "ON" position or the firmware write protect has been enabled. The write protect jumper must be set in the Enabled position for SIL safety applications.
Write Protect On/Off		Configure the firmware write protect option. Write Protect selections are: **Enable:** Enables the firmware write protect option (changes in configuration parameters will not be permitted). **Disable:** Disables the firmware write protect option (requires a password). A 6-digit password is required to change the Write Protect option from "Enabled" to "Disabled" to allow configuration changes. The default password is "000000", and can be re-configured by the user. **Note:** This cannot be changed if transmitter's Write Protect hardware jumper is disabled. See the *SLN700 SmartLine NCR Transmitter User's Manual*, Document #34-SL-25-13 for details.
D/A trim		Defined in section 4.3.1
Loop test		Used to perform the loop test. Choose 4 mA and 20 mA analog output levels and fix the field device outputs at 4 mA and 20 mA
Master Reset		Selecting this option will cause a Master Reset of the transmitter, which is the equivalent to power cycling the device.
Factory Reset		Resets all device configuration parameters to their factory defaults and triggers a soft reset. The User will be prompted to confirm they want to take this action.
Lock dev status		
Lock/Unlock Device		Select the Lock state for access by HART® configuration tools. If "Yes" is selected to lock the device, also select "Yes" or "No" to choose whether the lock is "permanent." If the lock is not permanent, it will be cleared on power cycle or Master Reset of the device. If "Yes" is selected to unlock the device, the lock state will be cleared.
Summary		
Summary		Shows the important advanced configuration parameters.

Table 6 - Monitor parameters

Key:	Plain = Read only	**Bold** = Configurable	<u>**Bold underline**</u> = Method	***Bold italic*** = Table or graph

Dashboard	
Distance To Product	Live value of distance to product.
Product Level	
Product Level %	
Temperature	
PV Loop Current	Live value of PV output current.
Signal Strength	
Device Status	
Critical	Displays all possible Critical Status faults and indicates OFF for inactive faults or ON for active faults.
Critical	
Device Health	
Device Health	
Device Information	
Model Type	Type of the Model
Serial Number	
Date of Manufacture	
Manufacturer	Manufacturer ID
Model	Model ID
Dev id	Device ID
Universal Rev	HART® universal revision
Field dev rev	Device revision
Software rev	Device software revision
MB Version	
DSP Version	
RF Version	
LCD Version	
Final asmbly num	
Poll Address	Polling address of device
MultiDrop Option	
Service Time	

Table 7 - Echo Curve

Echo Curve
Calibrate Date
Dust Or Agitation
MultiWave
First Echo Option
Envelope Level
Echo Threshold
Burnout Direction
Low Dk Option
Empty Span
False echo distance
Set False echo distance

The following sections give some examples as to how to edit the configuration parameters and execute Methods.

3.3.8 Procedure to Enter the Transmitter Tag

1. From the device homepage, make the following menu selections:
2. **Online** > **Device Setup** > **Basic Configuration**.
3. Under **Basic Configuration**, click **General**. The Tag screen will be displayed.
4. Enter the tag name in the Tag field (for example: SLN700) which can be a maximum of eight characters.
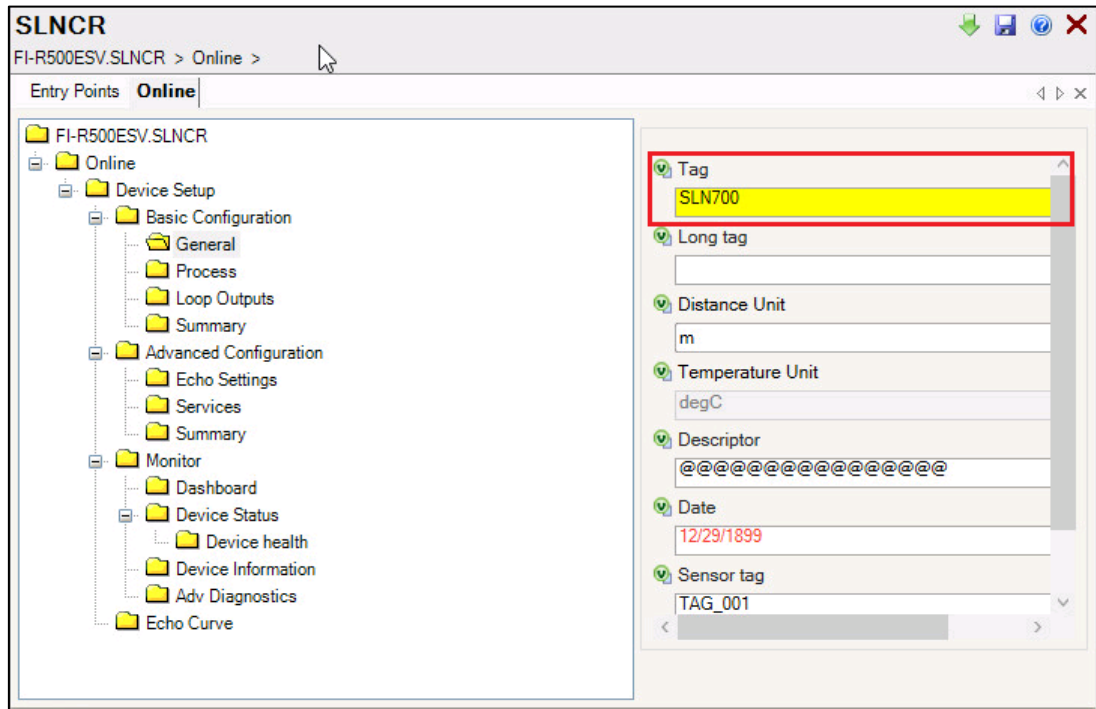
5. Click the download icon [icon]. The **Parameters to Download** window appears with details of Tag such as Label, Value, Edited Value, Write Success and Reason.

The Tag check box in the window is auto selected.

6. Click **Download**. The Tag name will be updated and the **Write Status** field in the window will be updated to Success.

7. Click **Close** to close the window.

3.3.9 Saving device history

FDM provides the user with a feature wherein they can save the device configuration as history. Using this feature the user can save the device configuration snapshot as device history of a connected device at any given time in a predefined location.

To save device history, perform the following steps:

1. On Device Configuration page, click **Save History Records** or click [icon] icon on the upper right corner of the page. The **Save History Record** dialog box appears.
2. Enter an appropriate file name in the **Name** field.
3. If a user wants to set time out for saving history records, enter the time out in minutes in **Time out after** field.
4. Select the **Do Not Time Out** checkbox if you do not want to set a time out for saving history records.
5. Click OK. FDM reads all the parameters from device and shows the status of saving history records as shown below:
6. Once the operation is completed, a success message is displayed on the status bar.

Refer below link for FDM user Guide
https://www.honeywellprocess.com/library/support/Public/Documents/User%27s-Guide-EP-FDM-11511C.pdf

3.3.10 Exporting device history records to FDM

The history snapshot saved in FDC can be imported into FDM for record and audit purposes. This is enabled by the standard Import/Export wizard in FDM. This way FDM allows synchronizing the device configuration data through the MC Toolkit handheld.

1. To export device history from FDC and import it in FDM, perform the following steps.
2. Connect the MC Toolkit handheld to the computer as described earlier.
3. Browse to the folder on the computer, SD Card > FDC > Resources > History.
4. The FDC history records are named as per the following convention for the primary name: DeviceTag_ManufacturerIDDeviceTypeDeviceRevisionDDRevision_DeviceID
5. Copy the desired Device History Record files (with .fdm extension) from the above mentioned location to a temporary location on FDM Client computer.
6. Use FDM Import/Export wizard to import the history records into FDM. After imported successfully:
7. The snapshot would get imported into FDM database and appear as a history record for the corresponding device in FDM.
8. The Audit Trail entry for such a record identifies it as being imported through the MC Toolkit handheld.
9. If the device is not part of any of the FDM configured networks, it would appear under 'Disconnected Devices' in FDM network view.
10. All operations allowed on Device History Record in FDM will be allowed for the record imported through the MC Toolkit handheld.

Note: For more details on using FDM Import/Export feature, refer to section Importing and Exporting Device History in FDM User's Guide.

3.3.11 Offline Configuration

Overview

Offline Configuration refers to configuring a device when the device is not physically present or communicating with the application. This process enables the user to create and save a configuration for a device, even when the device is not there physically. Later when the device becomes available with live communication, the same configuration can be downloaded to the device. This feature enables the user to save on device commissioning time and even helps the user to replicate the configuration in multiplicity of devices with lesser efforts.

The following are the tasks that the user needs to perform for importing offline configuration in FDM application software and then downloading it to the device.

- Create offline configuration template in FDM
- Save the configuration in FDM in **.fdm** format.
- Download the offline configuration to the device

Note:	For details on creating and using offline configuration, refer to section Offline configuration in FDM User's Guide.

Refer FDM User guide for more details. Below is FDM user guide link

https://www.honeywellprocess.com/library/support/Public/Documents/User%27s-Guide-EP-FDM-11511C.pdf

Importing offline configuration

Using this feature the user can import offline configuration template. The offline configuration template has to be created in FDM and saved in FDM format.

Note:	In case if the offline configuration template is already imported, an overwrite message appears.

Deleting offline configuration

Using this feature the user can delete an offline configuration template.(Refer FDM User guide)

https://www.honeywellprocess.com/library/support/Public/Documents/User%27s-Guide-EP-FDM-11511C.pdf

Downloading an offline configuration

Using this feature, the user can download the offline configuration when the device is online. (Refer FDM user guide)

https://www.honeywellprocess.com/library/support/Public/Documents/User%27s-Guide-EP-FDM-11511C.pdf

Note:	By default, all the variables selected in FDM will appear as selected and non-editable variables appear in grey color.
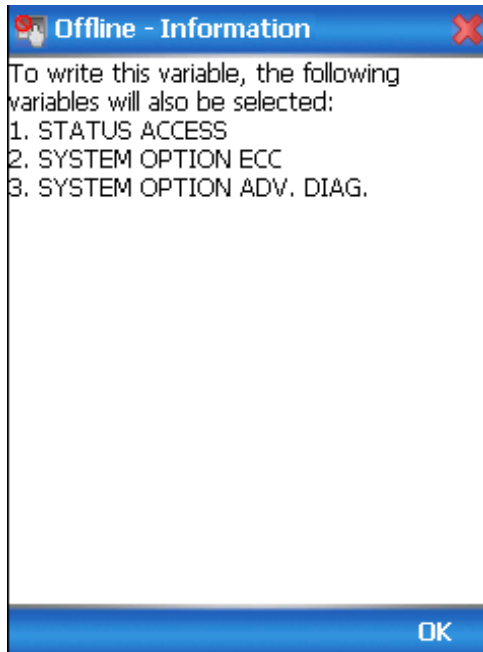
4 Analog Output Calibration

4.1 About This Section

This section provides information about how to calibrate a transmitter's analog output circuit.

 All procedures in this manual assume the transmitter is configured for Loop Current Mode enabled, see section 4.3.2.

4.2 Equipment Required

- Digital Voltmeter or milli-meter with 0.02 % accuracy or better
- 250 ohm resistor with 0.01 % tolerance or better

4.3 Analog Output Signal Calibration Trim

With a transmitter in its constant current source mode, its analog output circuit can be trimmed at its 0 (zero) % and 100 % levels. It is not necessary to remove the transmitter from service.

The user can calculate milliamperes of current from a voltage measurement as follows:

Dc milliamps = 1000 X voltage/resistance

 IMPORTANT: Be sure that the accuracy of the resistor is 0.01% or better for current measurements made by voltage drop.

5 HART® DD binary file format compatibility matrix

<p align="center">Table 7: HART® DD Compatibility Matrix</p>

"Host - SLN700 - HART® DD binary file format" compatibility matrix

Host	DD file format to be used
Experion R410 and above versions	Fm8
Experion R400 to R300	Fm6
Experion below R300	Fms
FDM R430 and above versions	Fm8
FDM R410 – R302	Fm6
FDM Below R302	Fms

 Refer the respective Tools' User Manual for details on loading the DD file on these Tools.

5.1 HART® DD files – Download

Go to:

https://www.honeywellprocess.com/en-US/support/Pages/all-downloads.aspx

Type in SLN700 in the Search field.

The results will show an entry similar to the one below:

HART Device Description (DD) files for Honeywell HART Devices

This .zip file contains the latest version of the DD files for all of Honeywell's HART® field devices. Unzip the file to locate the DD files applicable to the SLN700 transmitter.

6 Security

6.1 How to report a security vulnerability

For submission, a security vulnerability is defined as a software defect or weakness that can be exploited to reduce the operational or security capabilities of the software or device.

Honeywell investigates all reports of security vulnerabilities affecting Honeywell products and services.

To report potential security vulnerability against any Honeywell product, please follow the instructions at:

https://honeywell.com/pages/vulnerabilityreporting.aspx

Submit the requested information to Honeywell using one of the following methods:

• Send an email to security@honeywell.com.

or

• Contact your local Honeywell Process Solutions Customer Contact Centre (CCC) or Honeywell Technical

Assistance Centre (TAC) listed in the "Support and Contact information" section of this document.

Glossary

AWG	American Wire Gauge
d1	Inside diameter of pipe
DD	Device Description
DTM	Device Type Manager
EDDL	Electronic Data Description Language
EMI	Electromagnetic Interference
FTA	Field Termination Assembly
Hz	Hertz
LRL	Lower Range Limit
LRV	Lower Range Value
mA DC	Milliamperes Direct Current
mV	Millivolts
Nm	Newton·meters
NPT	National Pipe Thread
NVM	Non-Volatile Memory
PM	Process Manager
PV	Process Variable
PWA	Printed Wiring Assembly
RFI	Radio Frequency Interference
RTD	Resistance Temperature Detector
SFC	Smart Field Communicator
STIM	Level Transmitter Interface Module
STIMV IOP	Level Transmitter Interface Multivariable Input/Output Processor
URL	Upper Range Limit
URV	Upper Range Value
US	Universal Station
Vac	Volts Alternating Current
Vdc	Volts Direct Current
HART®	Highway Addressable Remote Transducer
HCF	HART Communication Foundation
EEPROM	Electrically Erasable Programmable Read Only Memory

Index