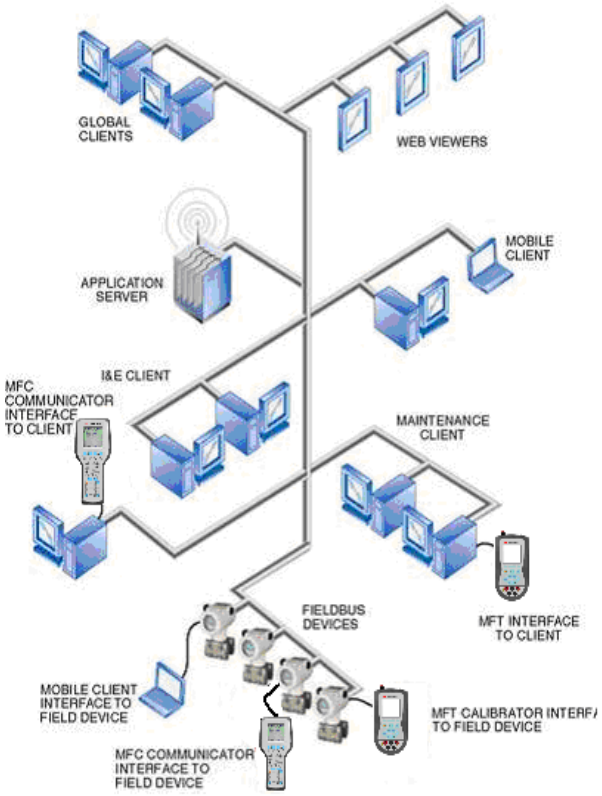
Operating Instructions

Hand-Held Configuration Devices
Mobility DHH820-DMS

Mobility DHH820-DMS
Device Management System Software



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WARNING notices as used in this manual apply to hazards or unsafe practices which could result in personal injury or death.

CAUTION notices apply to hazards or unsafe practices which could result in property damage.

NOTES highlight procedures and contain information which assist the operator in understanding the information contained in this manual.

WARNING

POSSIBLE PROCESS UPSETS. Maintenance must be performed only by qualified personnel and only after securing equipment controlled by this product. Adjusting or removing this product while it is in the system may upset the process being controlled. Some process upsets may cause injury or damage.

NOTICE

The information contained in this document is subject to change without notice.

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Health and Safety

To ensure that our products are safe and without risk to health, the following points must be noted:

- The relevant sections of these instructions must be read carefully before proceeding.
- Warning labels on containers and packages must be observed.
- Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
- Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
- Chemicals must be stored away from heat, protected from temperature extremes a
- nd powders kept dry. Normal safe handling procedures must be used.
- When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

Read First

WARNING

INSTRUCTION MANUALS
Do not install, maintain or operate this equipment without reading, understanding and following the proper factory supplied instructions and manuals otherwise injury or damage may result.

RETURN OF EQUIPMENT
All equipment being returned to the factory for repair must be free of any hazardous materials (acids, alkalis, solvents, etc.). A Material Safety Data Sheet (MSDS) for all process liquids must accompany returned equipment. Contact the factory for authorization prior to returning equipment.

Read these instructions before starting installation; save these instructions for future reference.

Contacting ABB Instrumentation…

Should assistance be required with any of the company's products, contact the following:

Telephone: **24-Hour Call Center**
1-800-HELP-365

E-Mail: **ins.techsupport@us.abb.com**

Internet: **www.abb.com/instrumentation**

- Select your country and language from the **Change Preferences** drop-down menu at the top part of the page
- Select the Customer Support link on the right-side of the page and complete the requested information.

TABLE OF CONTENTS

1.0 General Information

1.1 Introduction

The Device Management System (DMS) is a software application that uses Microsoft SQL Server as the database for field device calibration and configuration data management. Both HART Smart and conventional field devices can be managed with this application. DMS manages all aspects of devices, including associated documents and historical activity. All access to data is controlled through user defined access rights as part of the security feature set.

The DMS is user friendly with its Microsoft Outlook like interface including a Windows Explorer file structure. This includes a Shortcut bar, structure pane, a device listing, and a detailed preview for each device.

1.2 How to Use This Manual

This manual is structured to introduce feature sets as they will be encountered starting at the initial setup and configuration phases, to actual implementation of the software as a device management tool.

1.3 Features

DMS has the following major feature sets:

- Calibration Management
  - Calibration procedure creation, scheduling, calibration history, alerts, calibration equipment tracking
- Device Configuration Management
  - HART Device Configuration storage, editing, tracking
- DPC Interface
  - Upload/Download calibrations procedures and results
  - Upload/Download HART Device Configuration Parameters
- Single Point Access
  - On-Line Access to a HART Device via HART Modem
- Data Security
  - Creation of roles based on access rights for functions and data

1.4 Getting Started

Prior to installation, the System Administrator should plan and map out a file structure that best represents the primary aspects of the environment that this system will be used in. For instance:

- Device Data Organization From a Maintenance Perspective
- Security (Access Rights) to Device Data and Maintenance Functions

This will insure that that the device data structure is consistent with how maintenance will interact with it, and at the same time minimize data security violations and procedure violations.

2.0 DMS Installation and Setup

A general overview of installation configuration options is presented here, however the detailed installation instructions are found in a separate document. Please refer to the "DMS Installation Guidelines" document.

2.1 System Requirements

The system requirements below are the recommended minimum requirements required for the installation of DMS as a standalone application outside of integrated solutions such as ABB's System 800xA. Refer to System 800xA manuals for system requirements when installing DMS integrated within System 800xA.

2.1.1 Server

- Pentium IV +, 500Mhz or higher (recommended)
- 256MB Ram (512MB recommended)
- Microsoft Windows® XP Professional or Windows server 2003
- 500 MB free disk space

2.1.2 Client

- Pentium III+, 300Mhz or higher (recommended)
- 128MB Ram
- Microsoft Windows® XP Professional
- 100 MB free disk space

2.2 DMS SQL Data Server

DMS SQL Data Server is the "data engine" component that maintains and serves data queries from the Client Application. The DMS can be installed in different client/server configurations:

2.2.1 *Client/Server Workstation*

In this configuration the Client Application and the SQL server are installed on the same machine. If this configuration is installed on a laptop, the DMS is a mobile system. Additionally, the laptop can be utilized as the DMS server when it is connected to a network and shared with other network clients.

2.2.2 *Single Server, Client Network*

In this configuration, a dedicated workstation is established for the installation of the Server. The DMS Client application is then installed on one or several Client workstations throughout the network. Each client will be configured to "point" to the Server workstation.

For this configuration, it is recommended that the Server be installed on a dedicated computer that can be left up and running with a regularly scheduled back up.

2.2.3 *Multi-Server, Client Network*

Some systems may require a configuration with a dedicated DMS Server for each multi-user workgroup. With this configuration, a Client Application can be "pointed" to any DMS Server using the Server URL setting at the Log In prompt.

DMS has extensive Security (Access Rights) management tools that enable the overall DMS system administrator to manage what Clients have access to what Servers and the access rights that a client has to a given Server.

The DMS version for the DMS Server and Client must always be synchronized for proper operation and performance. Additionally, the licensed software options for each DMS Server will control the features and number of clients that are allowed to use the software.

2.3 DMS Client

DMS is a Client/Server based system. The Client application can be installed on any client workstation in the Enterprise network. DMS will only allow the number of concurrent users specified in the DMS Client License to Log-In to DMS at one time. This is regardless of the number of Client applications that are installed.

Additional DMS Client Licenses and DMS upgrades can be obtained through an ABB Representative or contact ABB.

2.4 License Manager

DMS has been configured with the number of licenses specified in the original purchase. Please inquire with an ABB sales representative for upgrades on licenses and additional software modules. See the DMS Installation Manual for more info on activating the DMS installation.

2.5 Logon to DMS

Once the DMS Server and Client components are installed and running, the installation can be verified by launching the client application and logging into the server.

Double click on the desktop DMS icon to launch the DMS Client shortcut show below:

The following prompt will appear:

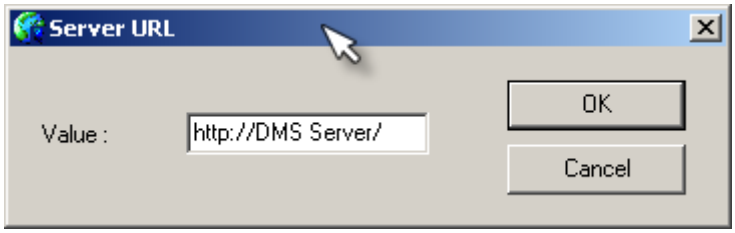
The System Administrator logs on by using “SYSADMIN” (not case sensitive), with the password “admin” (case sensitive).

Note: The System Administrator should change the password and store it in a safe place.

The Server URL is defaulted to http:\\localhost\ because it assumes that the Server and Client were installed on the same machine. This entry tells the DMS Client Application where its data server is located.

Multi-Client installations will point clients to the networked DMS Server. All clients will install DMS Client on their personal or group workstations and the name of the server they want to attach to is entered as the Server URL.

To change the Server URL, select the Server URL button to direct the Client to the proper Server. This is only necessary when there are multiple servers.



Enter the name of the server that the DMS Server database is installed on.

3.0 DMS Setup and Administration

There are several important administrative settings required to configure DMS for a work environment. Perform these settings while logged in as the System Administrator (Default Login - User: SYSADMIN, Password: admin).

DMS is designed to model anything from a single subsystem to a global enterprise. The first level of an enterprise that can be modeled is a “Division” and the next level is based on grouping of Devices within each division.

Device Folders and subfolders enable modeling of systems, or grouping of devices by type.

The following are key system configurations that are required:

- Creation of Division folders for the Enterprise
- Creation of Device Folder Structures
- Registering of DPC’s (MFCs and DHH810-MFTs) and Calibration Standards
- Creating Users, assigning Division Permissions, Roles, and Groups
- Creating Calibration Procedures
- Creating an Action List Folder Structure

3.1 Plant Division Folders

The method of configuring the Enterprise is normally based on how the maintenance effort is structured. For example, if a plant has a single dedicated maintenance crew for three major divisions, then DMS would need to configured to have three divisions, and give all maintenance crew members access rights to all three divisions.

Alternatively, if the three divisions have separate dedicated maintenance crews, each crewmember would be given access rights to only their appropriately assigned division.

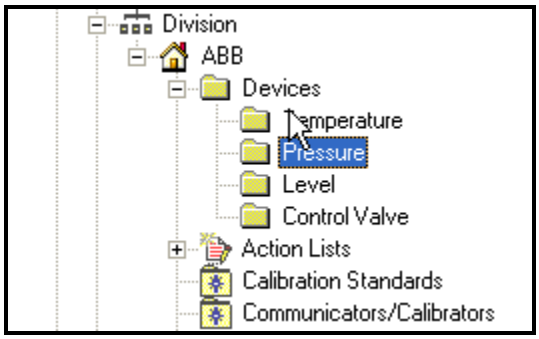
To create a plant division, right click on the “Division” icon, and select the “Create Division” option. Enter the division label and select OK.

After naming the Division, the following default folders/icons will be created in that division:

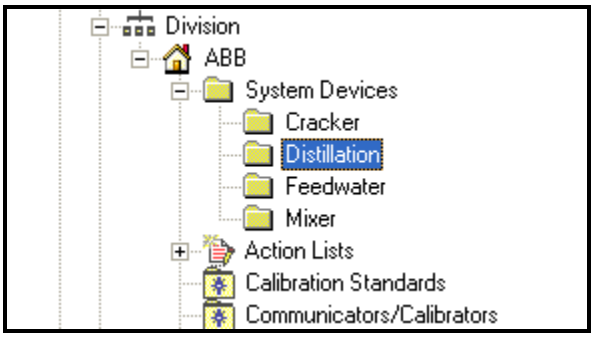
Standard Device Folder Structure

A division can be configured to mimic, for example, a plant structure. Device Folders can be created and named according to the device type or system naming conventions. For example:

Modeling by Device Types



Modeling by Systems and Subsystems



If the System Administrator establishes a standard for how the devices and device folders will be configured, a template division can be developed which can be cloned (see Division Cloning) and used over and over as the base configuration for all divisions created for the Enterprise.

If the device folder configuration rights are granted to the Division Manager, the System Administrator is not required to pre-configure a template for that purpose.

3.1.1 Division Cloning

Any Division can be cloned. This is useful when an existing Division or Division Template can serve as the basis for a new Division. The following components of a Division are cloned when using the Division Clone feature:

- Calibration procedures
- Groups
- Roles
- Devices (non verified) and Device Folder Structure

Permissions (Users) are not cloned into the new Division since there will usually be different users assigned to the new division.

Cloning is controlled by access rights and is a permissive reserved solely for the System Administrator.

To clone a Division, right click on the Division Folder to be cloned, and select ‘Clone’. At the prompt, enter the name of the new Division.

Press OK, and the new Division will appear under the Enterprise with its new name. All cloned devices will appear with the “?” icon because they will not have been verified. Refer to the Section: “Device Configuration Data Management” for detailed information on verification of devices.

Any required changes to Tag ID’s will need to be handled from within the new Division.

3.2 Documenting Process Calibrator/Communicator (DPC)

Interface

The Industry Standard Field Calibrator Interface (FCINTF) Specification has been implemented for the DMS to DPC Interface. If this specification has been adopted by the manufacturer of a DPC and the associated driver is registered with MS Windows, then DMS will recognize the DPC. DMS will process information according to the Field Calibrator Interface.

The FCINTF only applies to calibration procedures and test results. The ABB DPC's (DHH800-MFC and DHH810-MFT) can handle the exchange of HART Device Configuration data in addition to calibration data.

There are two categories of equipment that are involved in performing calibration procedures:

- Calibrators/Communicators
- Calibration Standards

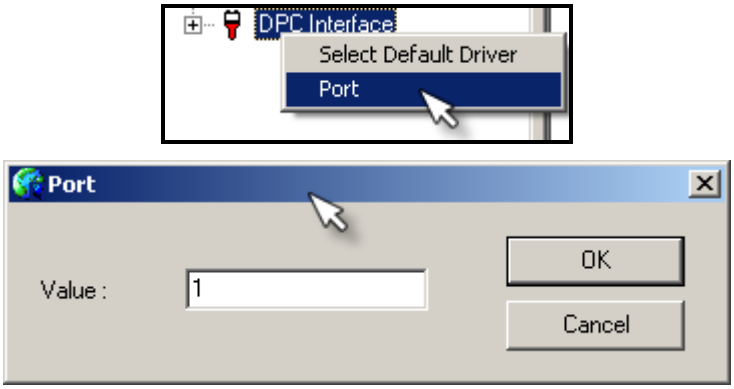
Refer to the section titled "DPC Interface" for a more detailed description of how this interface feature is used.

3.2.1 Setting Up the Interface COM Port

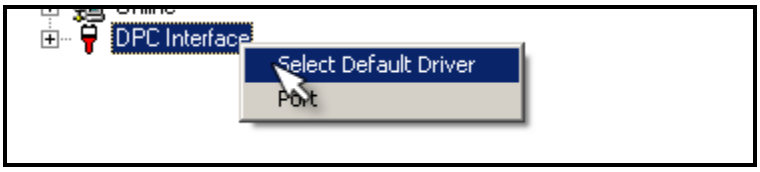
Using the 9 pin RS-232 serial communications port on a workstation, a serial cable can be connected between the DPC and the workstation to upload the DPC information.

Note: Some computers do not have a DB9 Serial COM Port. There are USB/RS-232 adapters available on the market, such as the Keyspan P/N USA-19QW, that can be used as an alternative.

Different workstations may have their COM ports configured differently. The default COM port for DMS is COM1. To change this to a different COM port, right click on the DPC Interface icon and select "Port". Enter the number of the COM port that the serial interface is configured for on the workstation.



By selecting the "Default Driver", the COM interface can be switched between different DPC types. For example, selections are provided for ABB DHH810-MFT and Fluke 74x Calibrator:



Note: If other calibrators are not shown, the DMS option to have other Calibrators may not have been purchased.

3.2.2 Registering DPC's and Calibration Standards

To ensure traceability to equipment used to execute calibration and configuration procedures, the equipment must be registered with DMS. Registration is performed at the Division level; however, calibration equipment can be used in different Divisions.

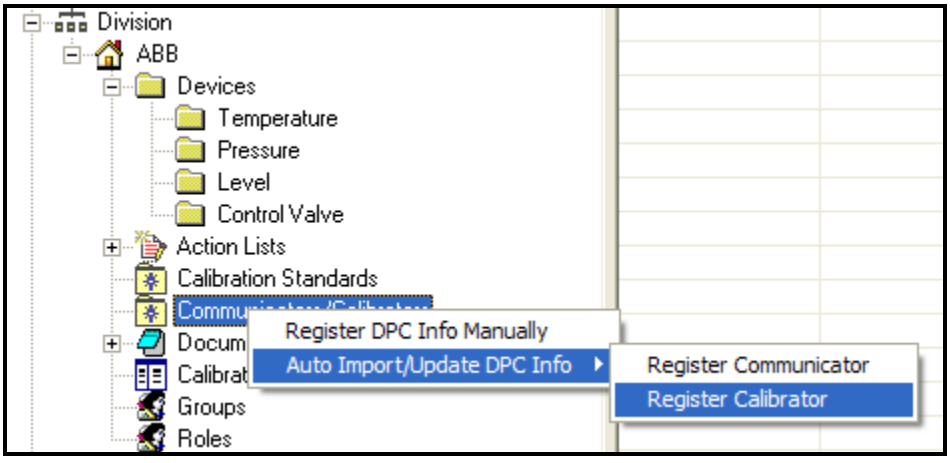
There are two methods for registering DPC's and Calibration Standards:

- Automatic Registration
- Manual Registration

3.2.2.1 Automatic Registration

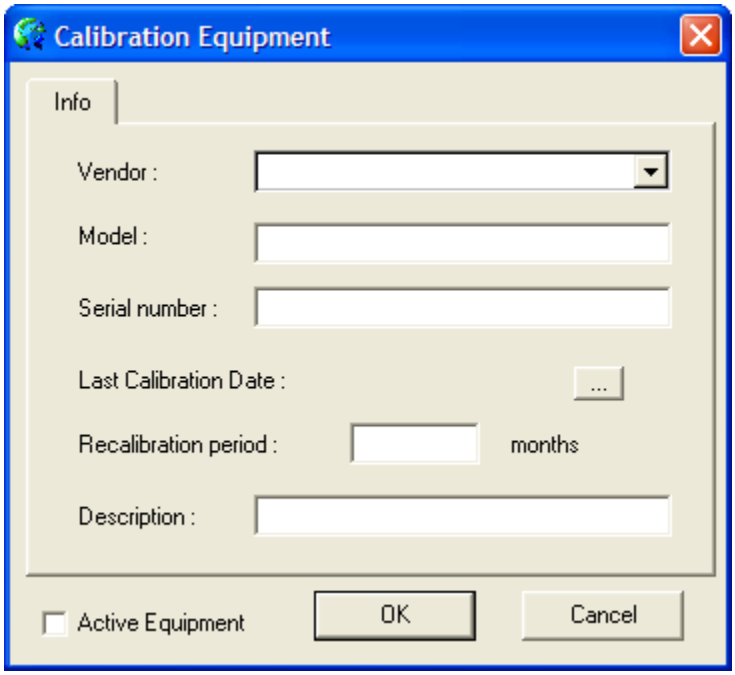
Automatic Registration is available for ABB DHH810-MFT and DHH800-MFC series products. Other handhelds will be supported if they support the industry standard FCINTF Interface Specification.

For automatic registration, right click on the Communicators/Calibrators folder and choose Auto Import/Update DPC Info option to register the DPC automatically.



3.2.2.2 Manual Registration

For manual registration, select the Register DPC Info Manually and the following form will appear:



Enter the DPC and Calibration Standard information manually.

3.3 Setup Folder

The Setup Folder is an Enterprise level folder where Pre-Notice alerts, Device Model Library, Event Log and Alert settings are maintained. Each of these setting groups is addressed below.

All of the System Setup settings apply to the entire Enterprise.

3.3.1 Service Reasons

Whenever a calibration or configuration action item is uploaded or entered manually for a device, an entry is made into the history for the device. Each of these entries has a Service Reason assigned to it.

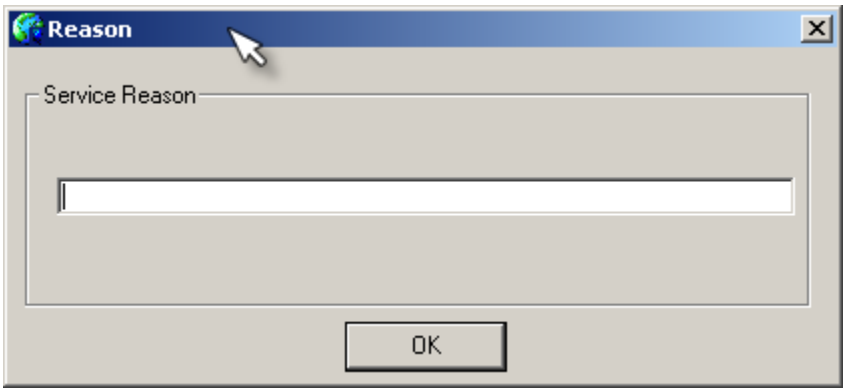
There are four (4) default service reasons defined as follows:

- New Installation
- Routine Service
- Maintenance
- OTS-Device Data (On The Spot)

It is recommended that the System Administrator set up the service reasons based on common plant practices and terminology. This will avoid typos and the entry of Service Reasons that are not clear. As an alternative, if a user has the appropriate rights, they can enter a user defined Service Reason as required.

To add a Service Reason, right click on the Service Reason and select “Add Service Reason” as shown below:

The following window will appear to allow the user to enter the new Service Reason.



The new Service Reason will appear as a default option whenever a calibration or configuration activity is uploaded for a device.

3.3.2 Device Model Library

The Device Model Library (DML) contains files that describe HART and Conventional field devices.

Device Model Libraries are located under the SETUP folder in the DMS folder tree.

HART Device Models

DMS is preinstalled with a DML that lists all HART Device Models that are registered with the HART Communications Foundation (www.hartcomm.org).

DMS supports all of these devices on at least the Generic level. However, ABB has implemented device specific command support for the devices that are "**BOLD**" in this list. A sample portion of the listing can be found below:

Name	Vendor	Category	Revision	Dof
2000T	ABB	Pressure Transmitter	2	1a890291
2600T-262/264	**ABB**	**Pressure Transmitter**	**1**	**1a040101**
2600T-268	ABB	Pressure Transmitter	1	1a030191
2600T-268	ABB	Pressure Transmitter	3	1a030391
652/653S	**ABB**	**Temperature Transmi...**	**1**	**1a0c0103**
658T	**ABB**	**Temperature Transmi...**	**1**	**1a0a0103**
FSM4000	ABB	Flow Transmitter	0	1a1d0091
KST	ABB	Temperature Transmitter	1	1a080191
KSX	ABB	Pressure Transmitter	5	1a010591
TH02	**ABB**	**Temperature Transmi...**	**1**	**16080108**
TRIO-WIRL	**ABB**	**Flow Transmitter**	**0**	**1a1a0002**
AI1500	**Accutech**	**Temperature Transmi...**	**1**	**5eef0101**
VR1500	Accutech	Pressure Transmitter	1	5eee0191
T798	Action Instruments	Temperature Transmitter	1	89ef0191
MODEL 32E	AMERICAN LEVEL	Level	1	b27f0191
IQ Series	Ametek	Analytical	1	03040191
IQ Series	Ametek	Analytical	2	03040291
IQ SERIES	Ametek	Analytical	3	03040391
ANDRSN1	Anderson	Pressure Transmitter	1	5ac80191
MT115	Apparatebau Hundsbach	Temperature Transmitter	1	71ee0191
APT3100	**Autrol**	**Pressure Transmitter**	**2**	**866B0201**
APT3200	**Autrol**	**Pressure Transmitter**	**2**	**86610201**
PRIMO	BADGER METER	Flow Transmitter	1	bd010191
50SM1000	Bailey	Flow Transmitter	4	121a0491
50VM1000	Bailey	Flow Transmitter	0	120f0091
50VT1000	Bailey	Flow Transmitter	0	120e0091
50XE4000	Bailey	Flow Transmitter	0	12080091
50XM1000	Bailey	Flow Transmitter	4	12190491
50XM2000	Bailey	Flow Transmitter	0	12070091
PTH	Bailey	Pressure Transmitter	1	12420191
TB / ML82 EC Cond	**Bailey**	**Analytical**	**1**	**12540102**
TB / ML82 TC Conc	**Bailey**	**Analytical**	**1**	**12590102**
TB / ML82 TC Cond	**Bailey**	**Analytical**	**1**	**12580102**
TB / ML82 TE Conc	**Bailey**	**Analytical**	**1**	**12570102**
TB / ML82 TE Cond	**Bailey**	**Analytical**	**1**	**12560102**
TB / ML82PH IConc	**Bailey**	**Analytical**	**1**	**12530102**
TB / ML82PH ORP	**Bailey**	**Analytical**	**1**	**12510102**
TB / ML82PH pH	**Bailey**	**Analytical**	**1**	**12500102**
TB / ML82PH pION	**Bailey**	**Analytical**	**1**	**12520102**
TB /ML82 EC Conc	**Bailey**	**Analytical**	**1**	**12550102**

Updates are required to install the latest revision of the files or to include newly issued HART Device Models that are supported on the device specific level.

Conventional Devices

DMS includes some pre-installed conventional devices. Additionally, there are features that allow for the creation of user defined conventional devices.

> ***Note:*** *A Device Model must be available in the Device Model Library prior to adding it to DMS.*

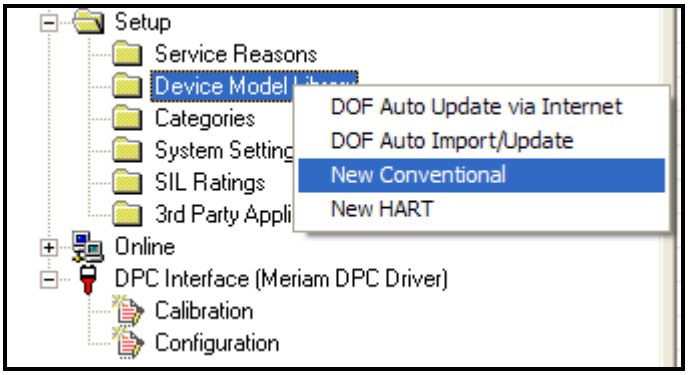
3.3.2.1 Creating New Conventional Device Models

A Device Model that does not exist for a particular conventional device can be created manually. When creating a new device model, the user is prompted for a category. This category defines which standard template of parameters to be used for the device model.

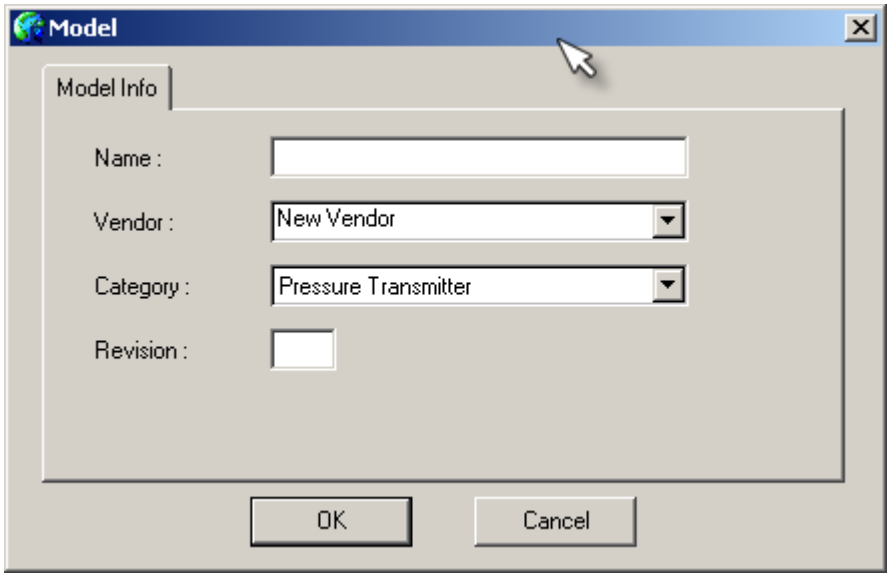
To add a new Device Model, follow this process:

a. Is there an existing Device Category, such as pressure transmitter, that the new Device Model can be associated with?
b. If not, then go to the Categories folder, under Setup, right click and select “New Category”. Add a new Category to associate the new Device Model with.

c. If an existing Category does exist, right click on the Device Model folder and select New Conventional.



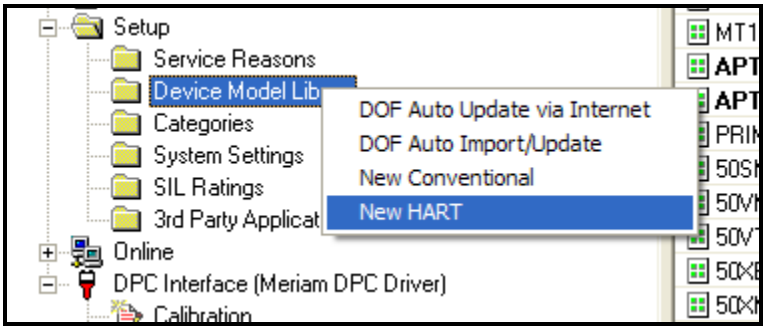
d. Enter the requested data for the various fields in the Model window. Select the existing or a new Category that should be associated with the device by invoking the pull down menu.



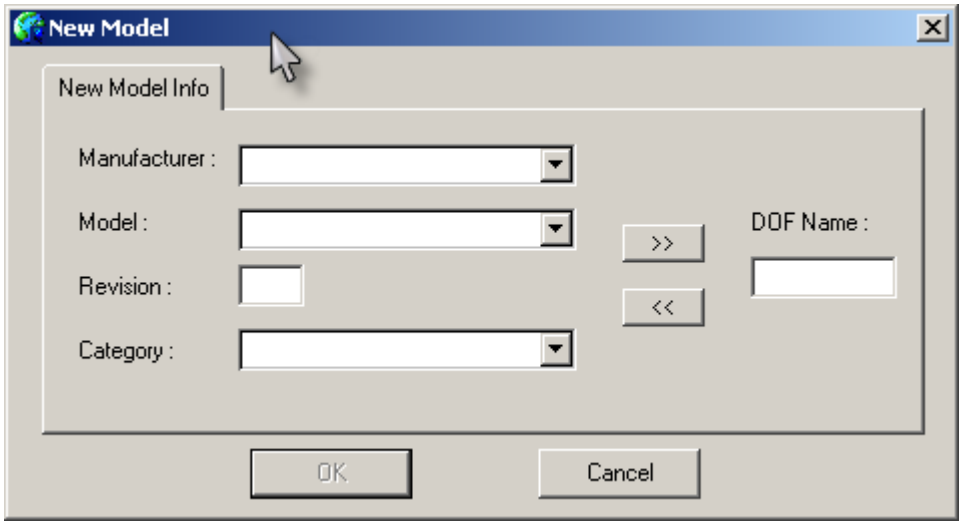
3.3.2.2 Creating New HART Device Models

If the latest DOFs (device object files) were downloaded from ABB, and a HART device modeled in the Device Model Library folder cannot be found, then the device model will need to be created manually.

To do this, right click on “Device Model Library” (in the Setup folder), and click “New HART”:



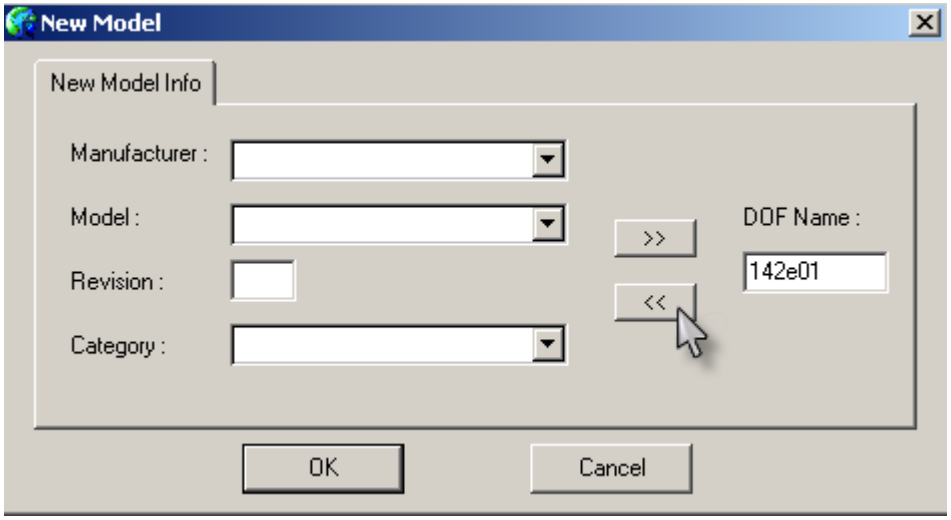
The following input screen will appear:

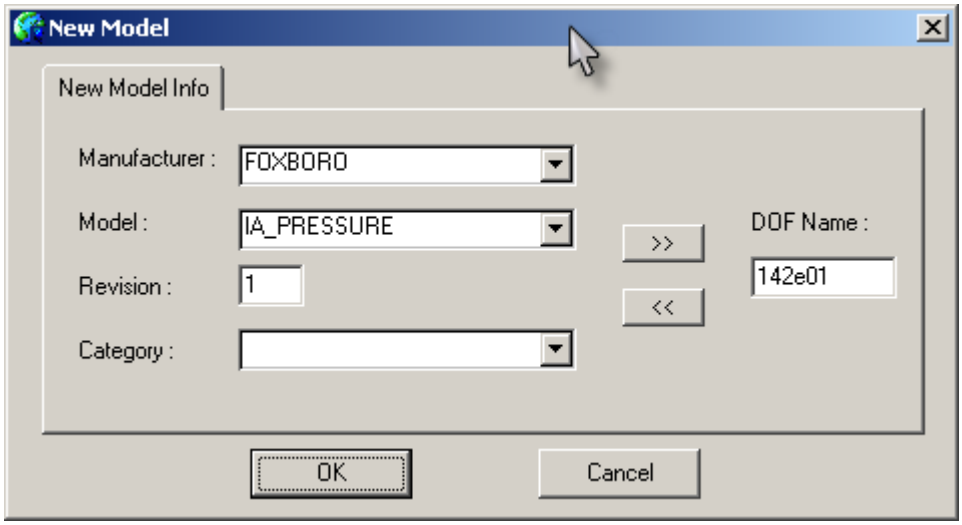


Select the Manufacturer, Model, Category, and enter the Revision of the device. The device Revision can be found using a DHH810-MFT, DHH800-MFC, or other DPC to connect to the device and find its Device Revision parameter.

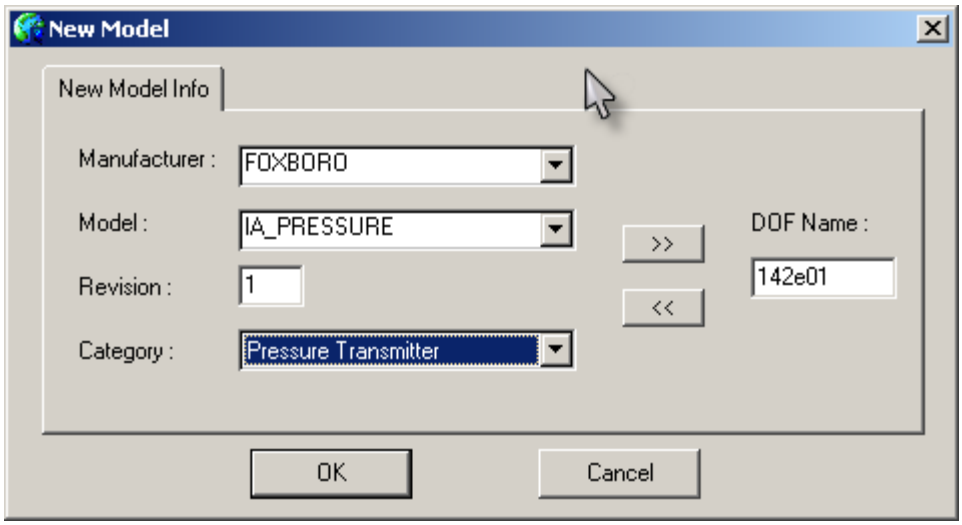
If the drop-down selections do not have a matching Manufacturer or Model, then they can be entered manually, but the DOF name is needed. In order to obtain the DOF name, save a configuration from the actual device to a DHH800-MFC or DHH810-MFT, and then upload the results to DMS (using the DPC Interface). DMS will display the DOF number with a message stating that the Model does not exist yet. The DOF name will be 6 digits.

Click the Left arrows to obtain the model info:



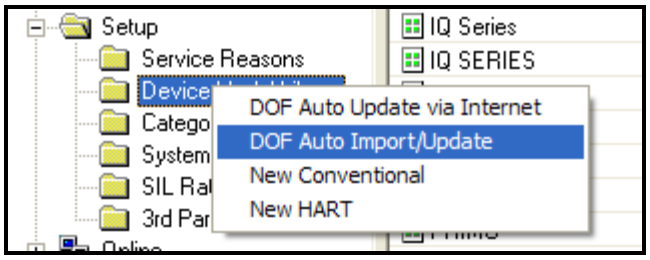


Select the category for the new device model:

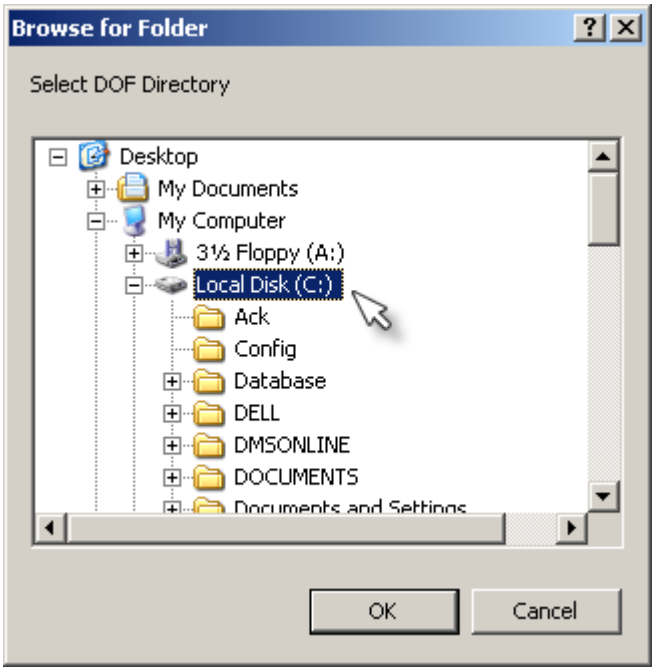


3.3.2.3 Update Device Model Library

Newer versions of a Device Model may exist. To update a device model, right click on the device model library, and click on “DOF Auto Import/Update”. Then navigate to the folder that has the new DOFs (downloaded from the ABB Website).



The following window will appear:



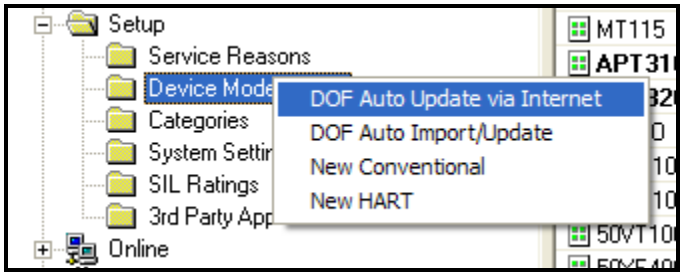
Navigate to the File that contains the DOF's downloaded from ABB's Download Site. The default location is C:\Program Files\ABB\DMS Server\DMS\DOFs.

3.3.2.4 Updating the Device Model Library with Latest DOF's

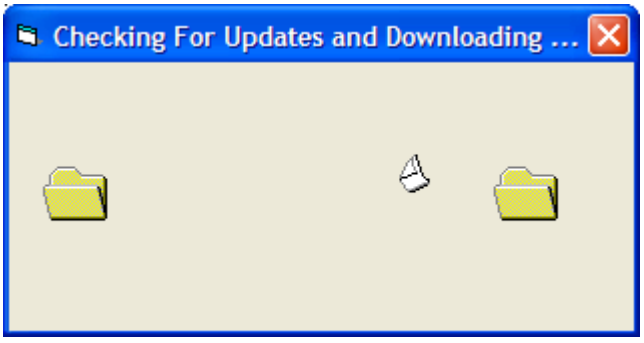
Device Object Files (DOF's) are the same as Device Models; for every Device Model, there is a DOF associated with it. ABB maintains a web download site that contains all the latest DOF's. Access to this site is necessary only if an application requires the use of HART Devices.

The update process is done in 2 steps. First the newer DOFs need to be downloaded to update the DMS Device Model Library, which is maintained on the DMS Server. Second, the DOFs from the Device Model Library must be downloaded to the DPC. There are 2 methods for downloading the DOFs to the PC. The first requires an Internet link to access the DOFs while the second can use the Internet or a CD. The first method downloads all of the latest DOFs regardless of whether they have changed or not. The following steps are required for this method:

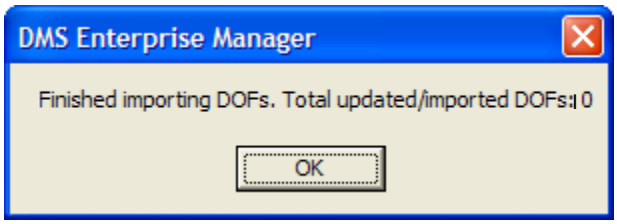
1. From DMS, select the Device Models folder and right click on it



2. Select DOF Auto Update via Internet. The following will appear -

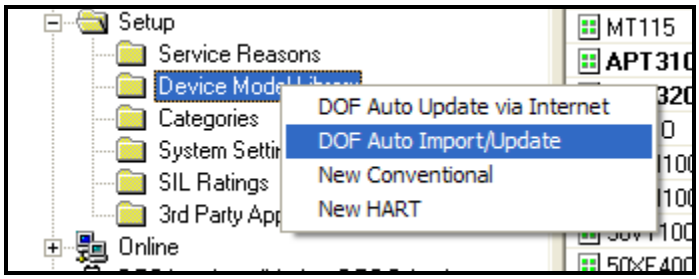


3. This is then followed by:

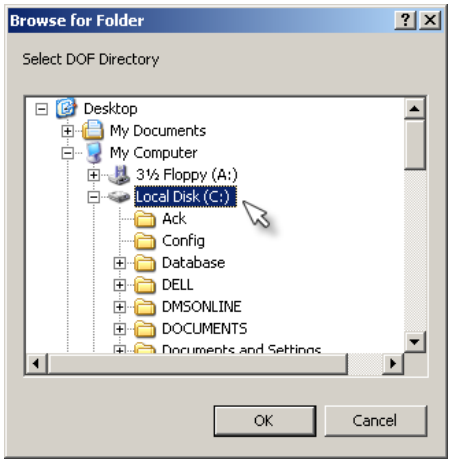


The second method downloads only the DOFs chosen by the user regardless of whether they have changed or not. The following steps are required for this method:

1. Logon to the Download Site.
2. Select the Check All button to grab all DOFs
3. Uncheck any DOFs associated with firmware, DPC Manager, and any files not associated with HART devices.
4. Download the DOFs (these will be zipped and downloaded to the Clients workstation)
5. Extract the DOFs from the zipped file into a MS folder.
   If no access to the Internet is available, later CD versions may be available that contain more up to date DOFs than when originally installed. These later DOFs can simply be copied into the MS folder.
6. From DMS, select the Device Model Library folder and right click on it.
7. Select DOF Auto Import/Update



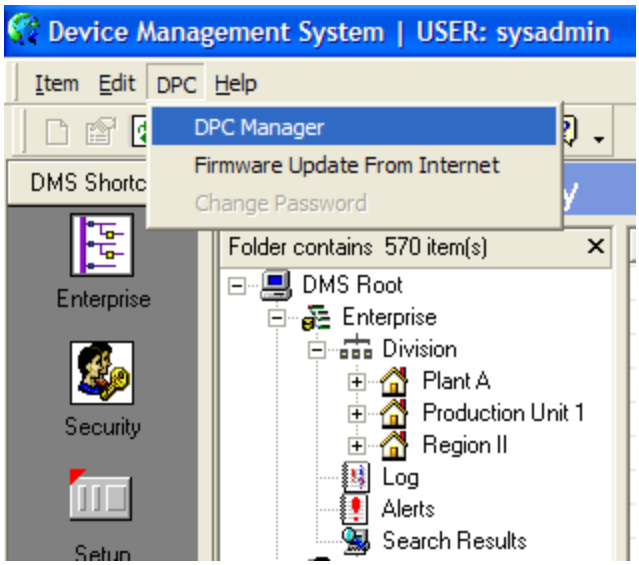
8. Navigate to the location of the folder that contains the DOF's



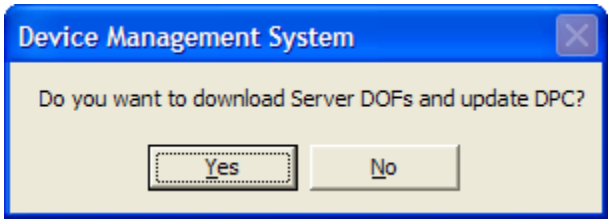
9. Select OK and DMS will install these DOF's into the Device Model Library on the DMS Server.

Once the DOFs are downloaded to the DMS Server PC, they are ready for downloading to the DPC. The following steps are required:

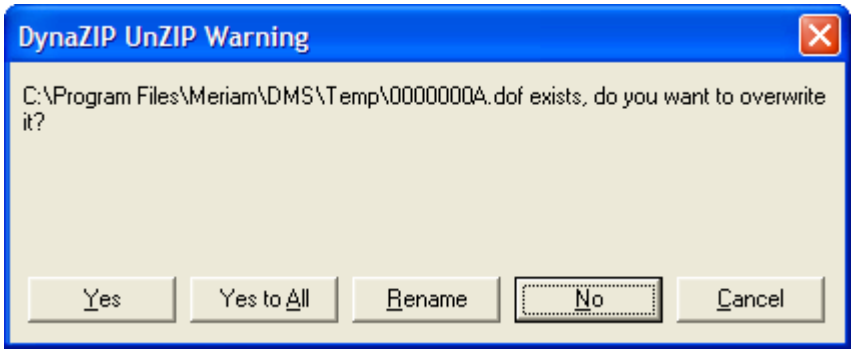
1. From DMS, select DPC Manager from the DPC item in the menu bar



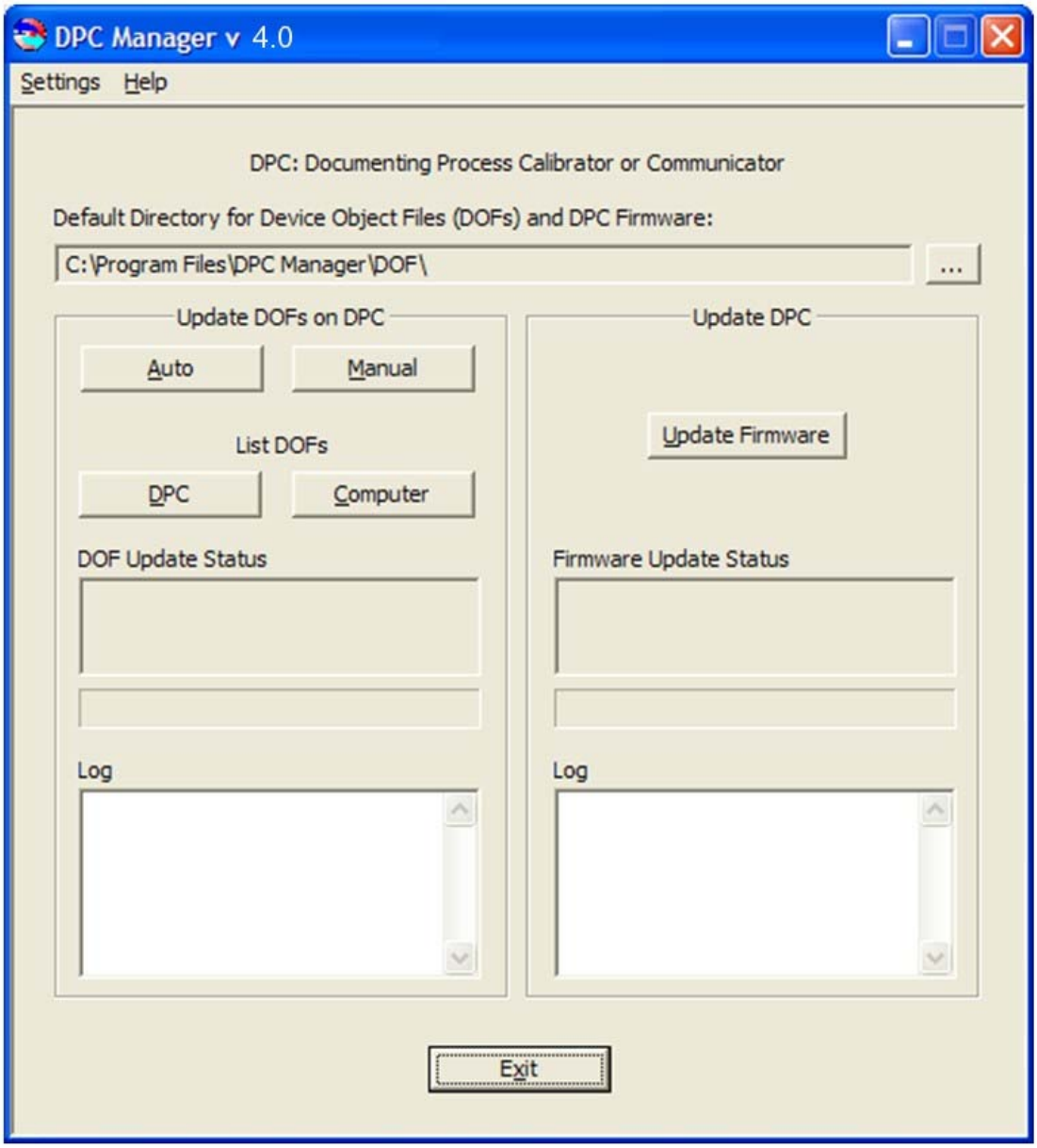
2. Press Yes when the following pop-up is displayed to download all DOF files



3. Select Yes to All if any existing DOFs need replacing.



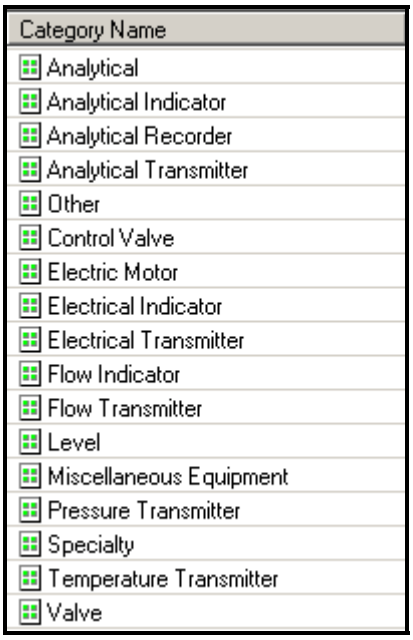
4. The DPC Manager pop-up is then displayed. Press OK to confirm DPC has external power. DPC Manager will automatically update the DOFs onto the DPC.



3.3.3 Categories

Categories allow the user to group device models, which makes the process of accessing common devices simpler. All device models are associated with a category. For instance, a calibration procedure can be defined by category, which makes it easier to cover several devices with a common calibration procedure. Additionally, sorts and searches are simplified by using category filters.

Sample Categories include:



In DMS, users can design and build their own Categories of conventional (non-hart) devices. There may be a need to do this to model specialty devices, or devices that DMS does not have by default.

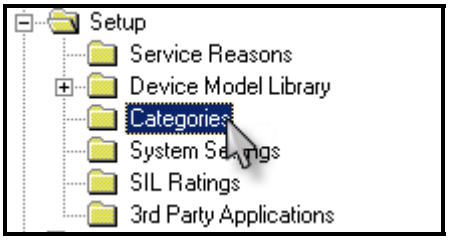
The category building process is done with three steps:

1) Add a category and Edit its Properties
2) Create a Model using this category
3) Create devices using this model

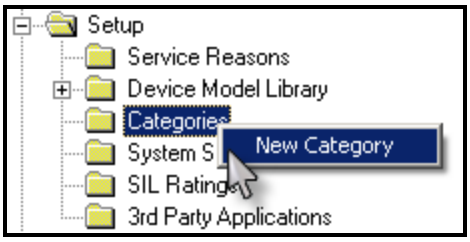
Each step is detailed below:

3.3.3.1 Add/Edit new category

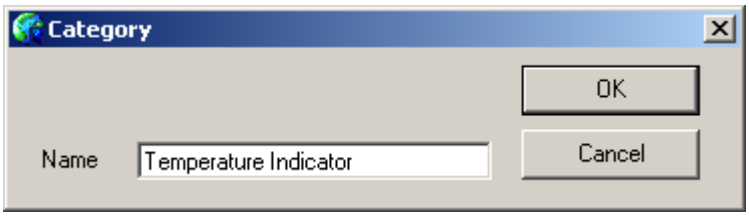
To add a category, click on the DMS SETUP folder:



The existing categories are shown in the right pane. To create a new category, right click on “Categories”, and then click “New Category”:

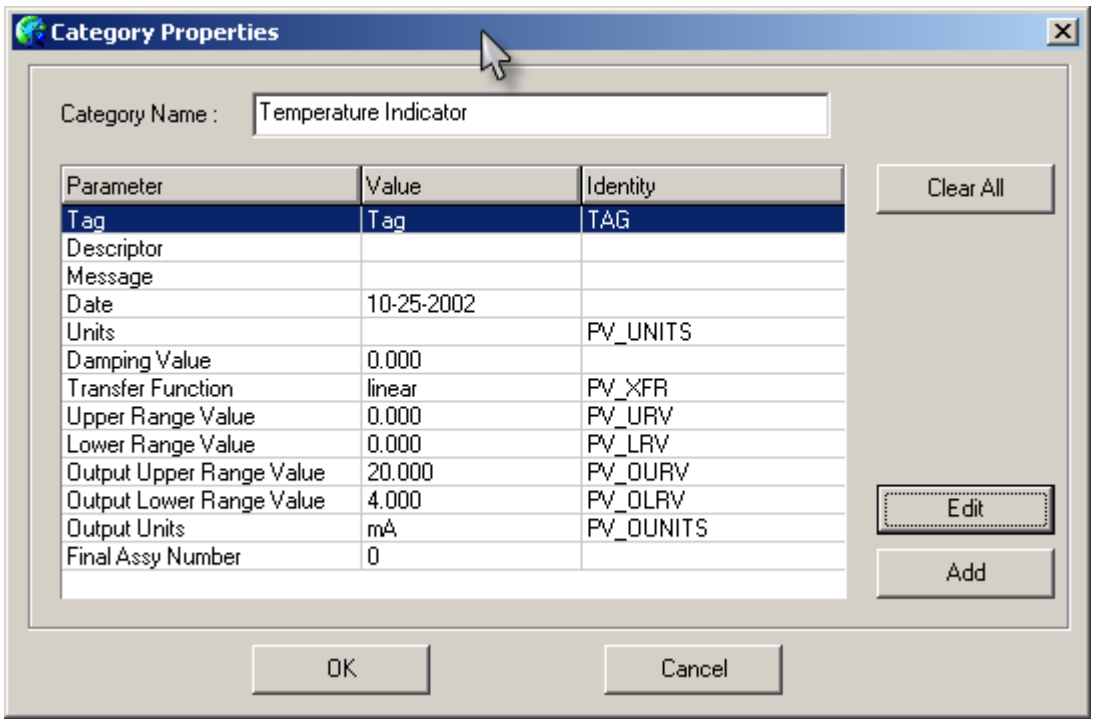


Provide a name for the new category. In the example below, “Temperature Indicator” was chosen:



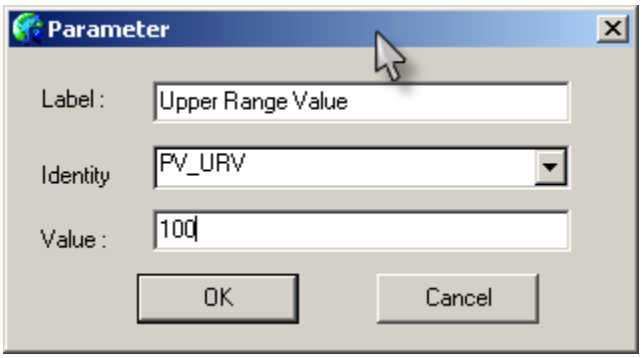
The new category will be created. Then “right click” and click “Properties”:

The default values that were created are shown. These are DMS defaults. All of the items with an “Identity” are values that are used in DMS Calibration procedures/results. If the intent is to use an ABB DHH810-MFT for calibration, then parameters will need Identities. The values can be retained and modified, or they can all be cleared and new values created.

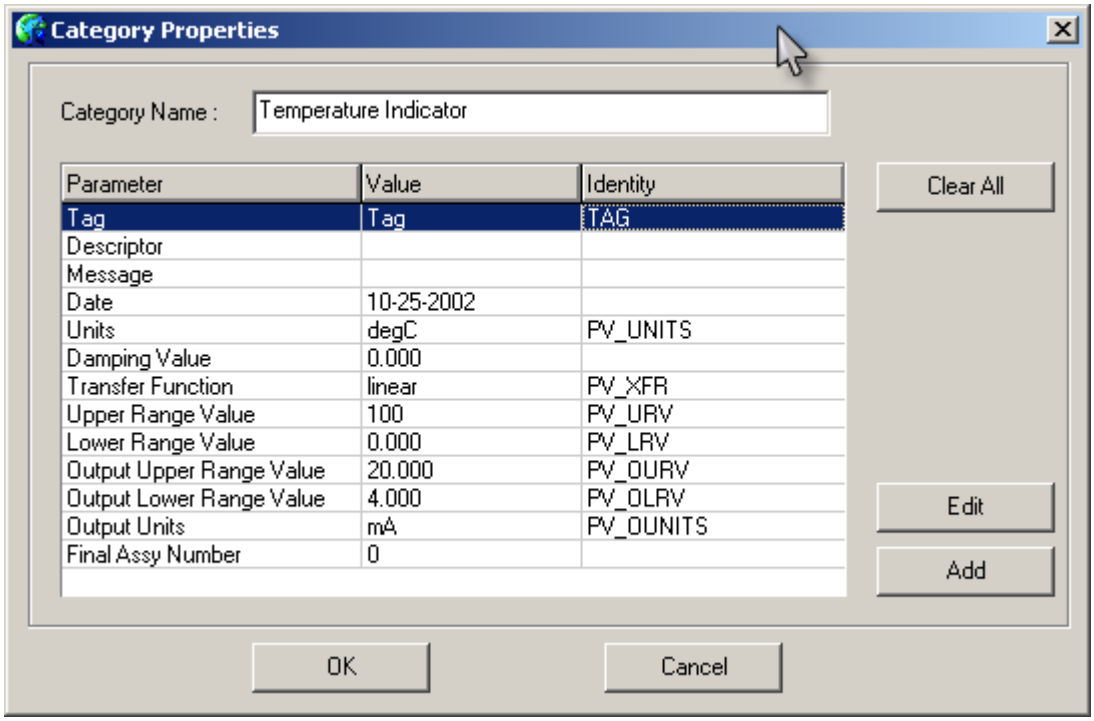


When adding or changing a Parameter, Value, or Identity, the default values for the Category are changed. Any Device Models and Devices that are created using this category will carry these values.

If “Upper Range Value” is selected and “EDIT” is pressed, the following is displayed:

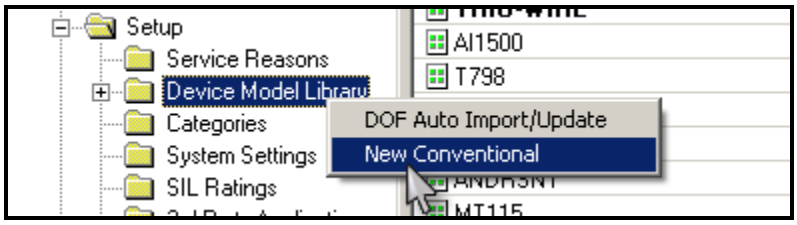


The “Upper Range Value” parameter is assigned the PV_URV identity. By assigning “Upper Range Value” to “PV_URV”, all devices created using this category will have their URV value assigned to PV_URV.

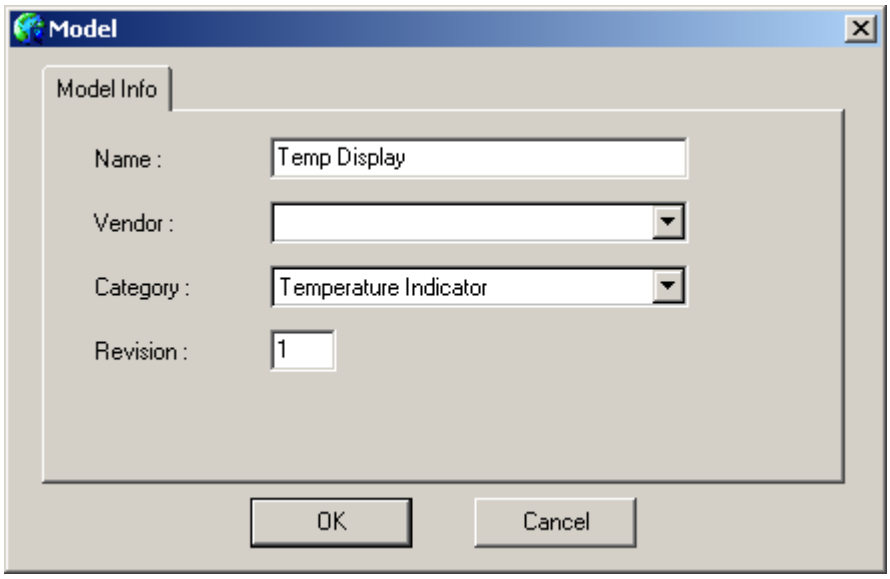


3.3.3.2 Create Model using Category

A model can now be created using the newly created category. Go to the SETUP folder->Device Model Library. Right click on “Device Model Library”, and then click “New Conventional”:



The name Temp Display is assigned to the newly created Device Category of Temperature Indicator.

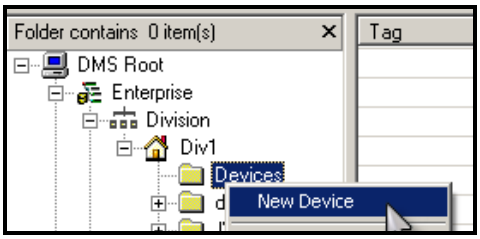


This is then included in the Device Model Library as shown below.

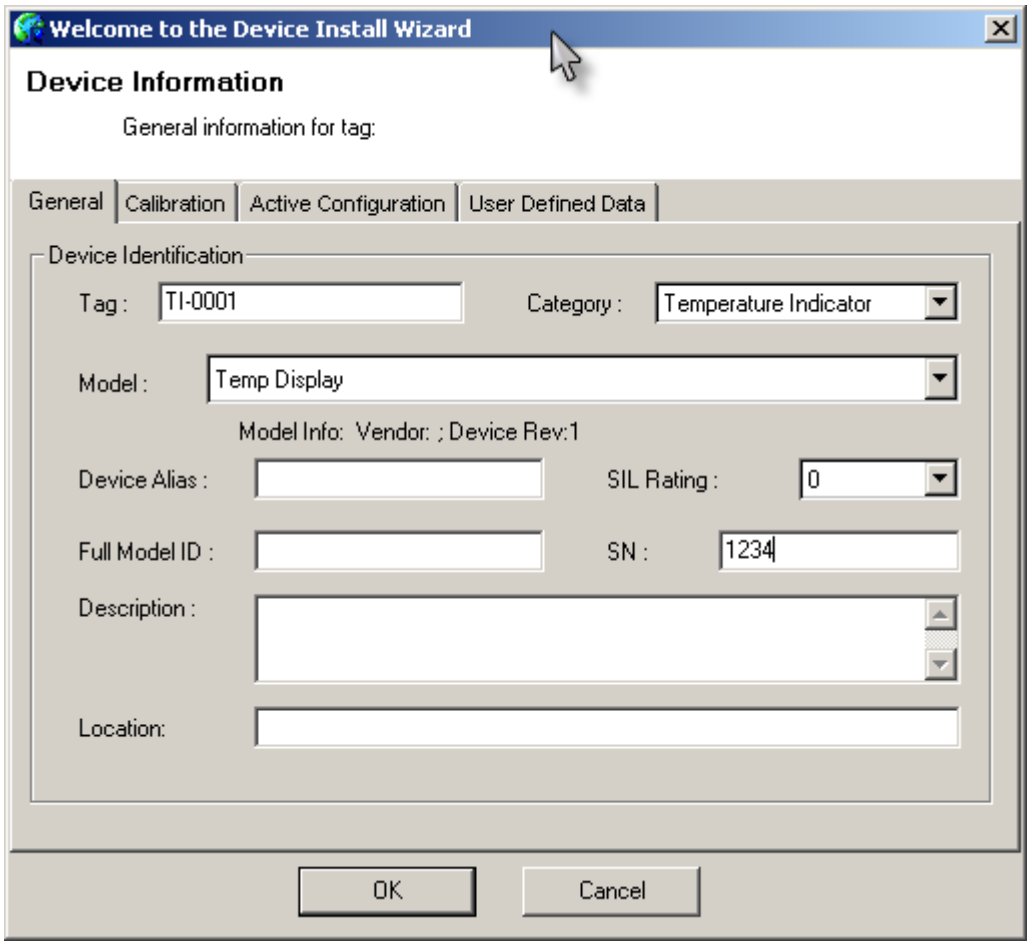
Name	Vendor	Category	Revision
Temp Display		Temperature Indicator	1

3.3.3.3 Create Devices from new Model and Category

New devices can be created based on the newly created model:



The Category will be the new category, and Model will be the newly created model.



3.3.4 System Settings

System Settings are used to set up the time parameters for the various alerts, events and notices. DMS has the following system settings that can be set by the user according to existing work practices and standard operating procedures:

System Setting Description	Value
Pre Notice - Device Calibration Due Date	14 Days
Pre Notice - Standards Re-Certification Due Date	30 Days
Life Span For Alert Log Items	30 Days
Life Span For Event Log Items	30 Days

Pre Notice – Device Calibration Due Date: This is a user settable parameter that represents the number of days prior to the actual calibration due date for a device. Based on this value, an alert will appear in the "Alerts" folder and the device listing will be **BOLD** for the specified number of days prior the calibration due date.

Pre Notice – Standards Re-Certification Due Date: This is a user settable parameter that represents the number of days prior to the actual recalibration due date for a Calibration Standard. Based on this value, an alert will appear in the "Alerts" folder the specified number of days prior to the Standards Re-certification Due Date.

Life Span For Alert Log Items – This is a user settable parameter that represents the number of days that an alert will remain in the Alerts Folder.

Life Span For Event Log Items – This is a user settable parameter that represents the number of days that an event will remain in the Events Folder.

3.3.5 SIL Ratings

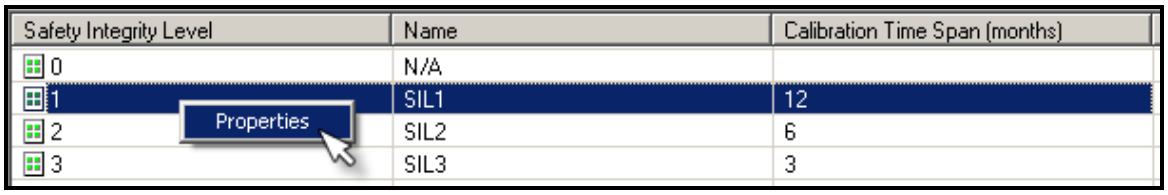
SIL stands for Safety Integrity Level and is defined in the ISA Safety Instrumented Systems standard (ISA Standard 84.01). The SIL rating is a user settable value that represents the Calibration Cycle for a critical device.

If no SIL rating is required and the user prefers to define the Calibration Cycle at the Calibration Tab, the default SIL Rating of "0" should be used.

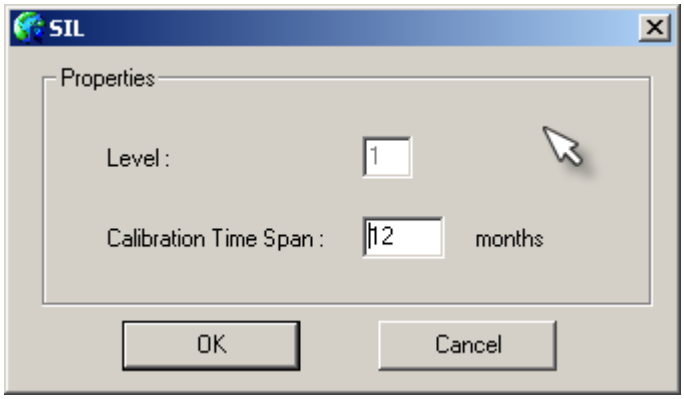
In general, SIL Ratings are 1, 2, and 3, which are defined in terms of Probability of Failure on Demand (PFD). A SIL rating of "3" has the highest PFD and "1" has the lowest.

In order to insure that SIL ratings are met, DMS allows the user to set the calibration cycle to be consistent with the existing preventive maintenance program. DMS then provides the alerts needed to satisfy the required calibration cycles.

SIL Rating 1, 2, and 3 are defaulted to 12, 6, and 3 months respectively. To change Calibration Cycles associated with SIL's, Select the SIL Rating icon, right click, and then select the properties option.



Enter the fields for the following screen:



3.4 User Accounts and Security

DMS has extensive security features designed for optimal control of DMS data and features based on user definable access rights. The Microsoft network security model has been followed for the security features in DMS.

Individual users must be added to the application through the Security Configuration Interface at the Enterprise Level. Each user gets a User Name and Password that becomes the unique electronic signature. It is important that each user login to DMS with their own User Name and Password since all activity performed during a user's session is logged for traceability. Also, one user's access rights may be different from another's.

Adding a user to the DMS does not automatically grant them access to all DMS functions and data. Users must be associated with Roles and Groups within one or more specific Divisions. Access Rights that are assigned in the Role definitions associated with the Division that the Role belongs to.

The "Login to DMS" window appears when the user launches the DMS client applications as follows:

After entering a valid Username and Password, any DMS user can change their Password by clicking on the “Change Password” button. When this is done, the following window appears:

If a password is forgotten, the DMS System Administrator can Reset the password by overwriting the existing password with a new password.

3.4.1 DMS System Administrator

The System Administrator can add all users, however it is more practical to add the Division Administrators and give the Division Administrator the guidelines for adding their Division users.

The System Administrator DMS User Account (Username = SysAdmin) is standard for the DMS Enterprise. The SysAdmin account is set-up to be a member of a pre-defined Group and Role of all Divisions for which all DMS permissions have been enabled. This account is considered location independent and is granted full access to any and all Division’s within the Enterprise. The purpose of the default account is to provide an overall DMS application administrator the ability to configure the application upon installation, and to rectify any security configuration problems that may arise.

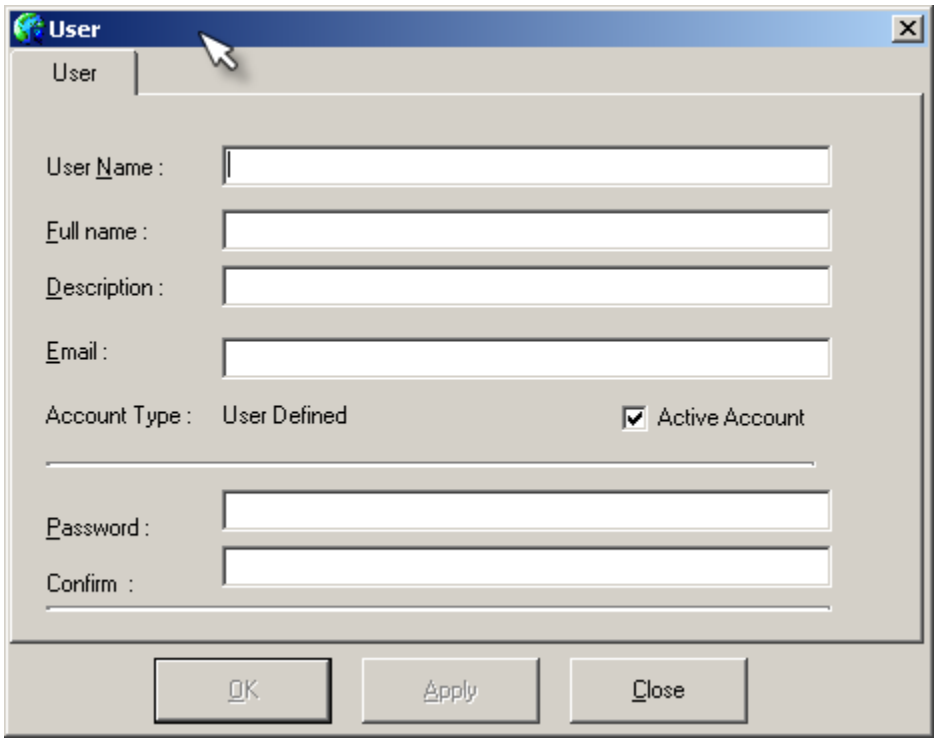
It is recommended that the password associated with this account be modified after the application is installed and configured. Only personnel responsible for overall DMS management and maintenance should have access to this account.

The DMS System Administrator has the following predefined Access Rights:

- ✓ Security Management
- ✓ Define Plant Divisions
- ✓ General DMS Setup

To add a user, expand the Security Folder, right click on the “Users” folder, then select “Create New User”

Enter the fields for the following screen:



By using the “Active Account” check box, a user can be made Active or “In-Active”.

3.4.2 Division Security

Divisions are defined within the Enterprise. Each time a Division is created, a set of default sub-folders are created within the Division. Groups and Roles are managed within each Division. Division Groups are comprised of Division Role(s) and Users.
Joining a User to a Group’s User Membership automatically ‘associates’ the User with that Division.

The following Default Groups and Roles have been pre-defined and pre-installed for DMS.

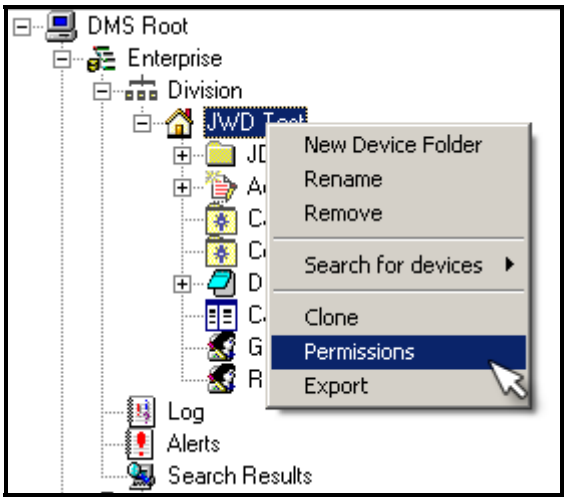
Groups	Role Membership	User Membership
Administrators	Division Administrator	SYSADMIN
Supervisors	Maintenance Supervisor	N/A
Technicians	Instrument Technician	N/A

Roles	Permissions
Division Administrator	Read; Write; Calibrate; Configure; Approve Calibration; Approve Configuration; Local Division Management; DMS Setup; Security Management
Maintenance Supervisor	Read; Write; Approve Calibration; Approve Configuration
Instrument Technician	Read; Write; Calibrate; Configure

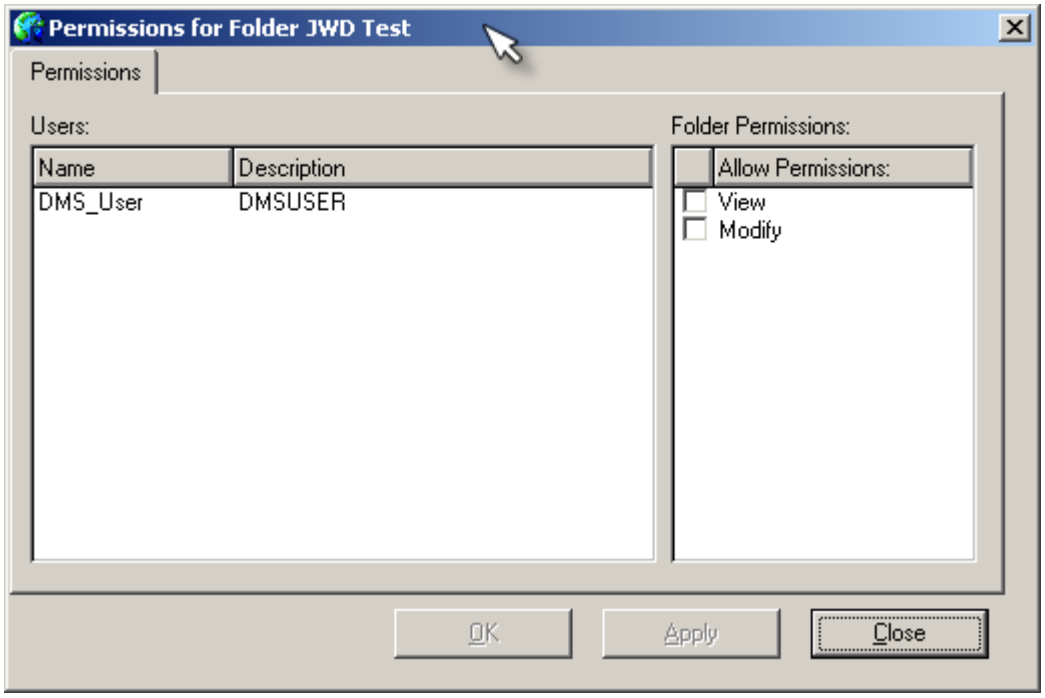
When a Division is created, a copy of these Groups and Roles is made and placed within the Area Group and Role folders respectively. This is done as a convenience to allow for more rapid set-up of the DMS application security.

DMS has a Secondary Level of security available for each Division that when configured, is inherited by all Division sub-folders. Divisions contain 'VIEW' and 'MODIFY' permissions, which can be configured separately for each User that is a member of a Division Group. By default, users who are members of a group within a Division are granted 'VIEW' and 'MODIFY' access to the Division and all its sub-folders and content. If a particular scenario requires it, specific users could be granted 'VIEW' only access to a Division. This would imply that the User (based on their Role permissions) would be able to perform 'Read only' operations on the data in the Division.

To access the View/Modify security options, right click on the Division of interest. Then, click on "Permissions".



The following screen will appear with the list of Users that are associated with that Division:



Check the View or Modify button accordingly.

3.4.2.1 Access Rights (Permissions)

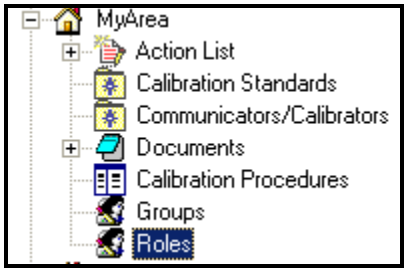
Several permissions are defined within the DMS to describe the various activities and/or operations that can be performed on the DMS data. Permissions are associated with Security Roles. Each security role defined in a specific area can be granted or denied each of the DMS permissions. The exception is the 'Define Plant Division' permission. This permission is granted to the built-in system account only. The following permissions comprise the DMS security system:

Permission	Description
Read	General read/view permission. Roles with this permission enabled allow users to view DMS application data.
Write	General Write/Modify permission. Roles with this permission enabled allow users to modify DMS application data.
Calibrate	Roles with this permission enabled allow users to upload/download Calibration procedure data and results
Configure	Roles with this permission enabled allow users to upload/download device Configuration data.
DMS Division Management	Roles with this permission enabled allow users to define and modify data common to a particular area. This would include defining and managing Calibration Procedures, Calibration Standards, Calibrators and Configurators for a Division.
Approve Calibration	Roles with this permission enabled allow users to validate and approve device Calibration results.
Approve Configuration	Roles with this permission enabled allow users to validate and approve device Configuration data.
Manage Security	Roles with this permission enabled allow users to add users to the DMS application and define and manage membership in Groups and Roles within a Division.

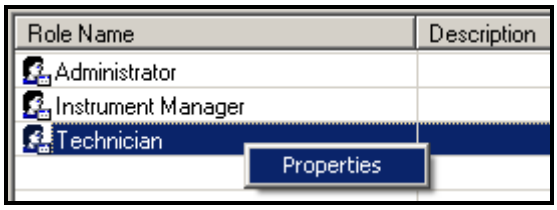
3.4.2.2 Roles

Roles are defined and managed as part of each Division and identify a set of enabled permissions. A minimum of one Role must be defined in each Division to identify the permissions enabled for each Group in the Division.

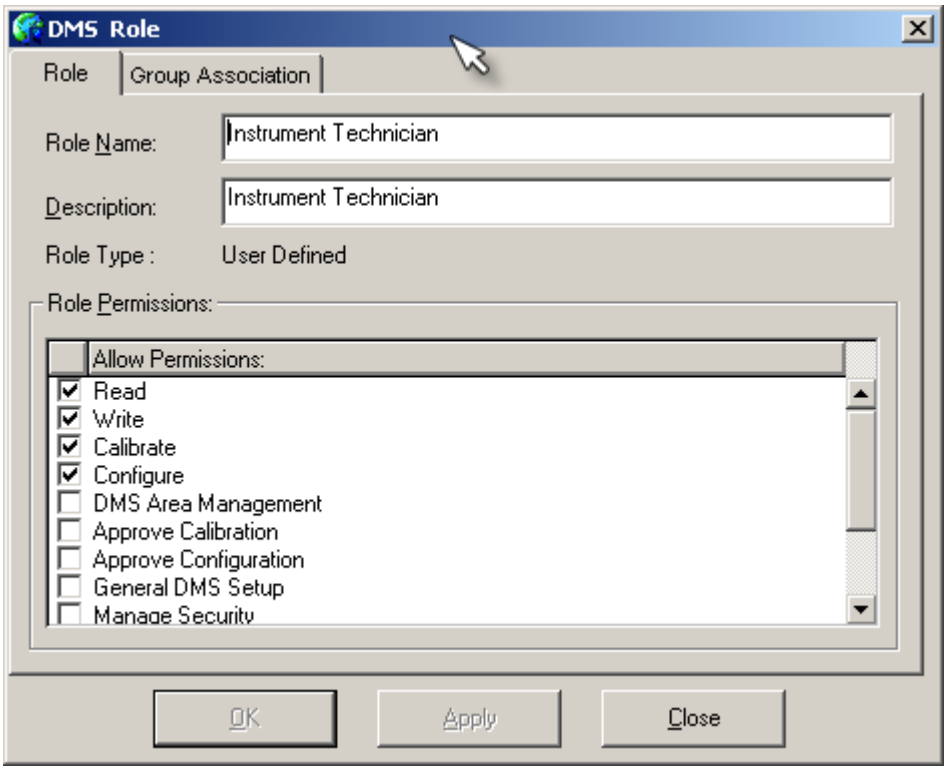
Each Role has pre-configured access rights, which can be viewed by selecting Roles, right clicking on the specific role and then selecting properties as shown below:



right click on the Role and Select Properties:



The following window will appear:



Each Role can be edited, and the Role can be associated to a Group. Users are associated with Divisions as well. When a user logs on, they will only see the Division that they have been given rights to.

In most cases, there will be one Role for every Group, and the Group will have multiple Users. In the event that two (2) Roles are associated with a single Group, the User's permissions will be consistent with the combination of both Roles.

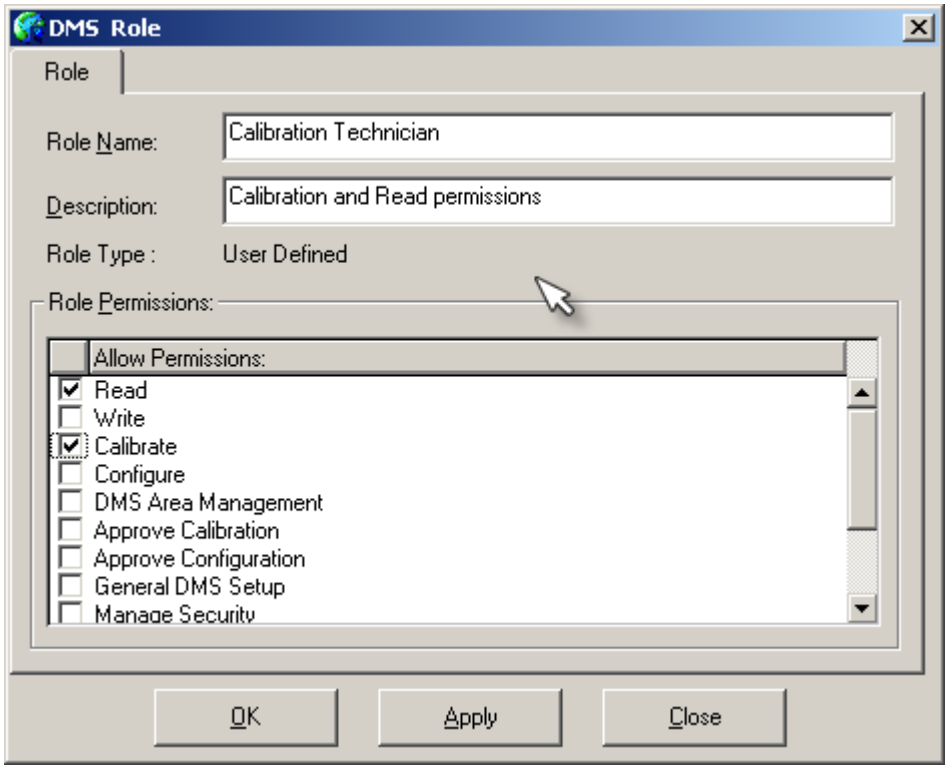
3.4.2.3 Groups

Groups are defined and managed, as part of each Division with a Membership comprised of assigned Users. A minimum of one Group must be defined in each Division. Access to a Division is granted by joining a User to a Group within the Division.

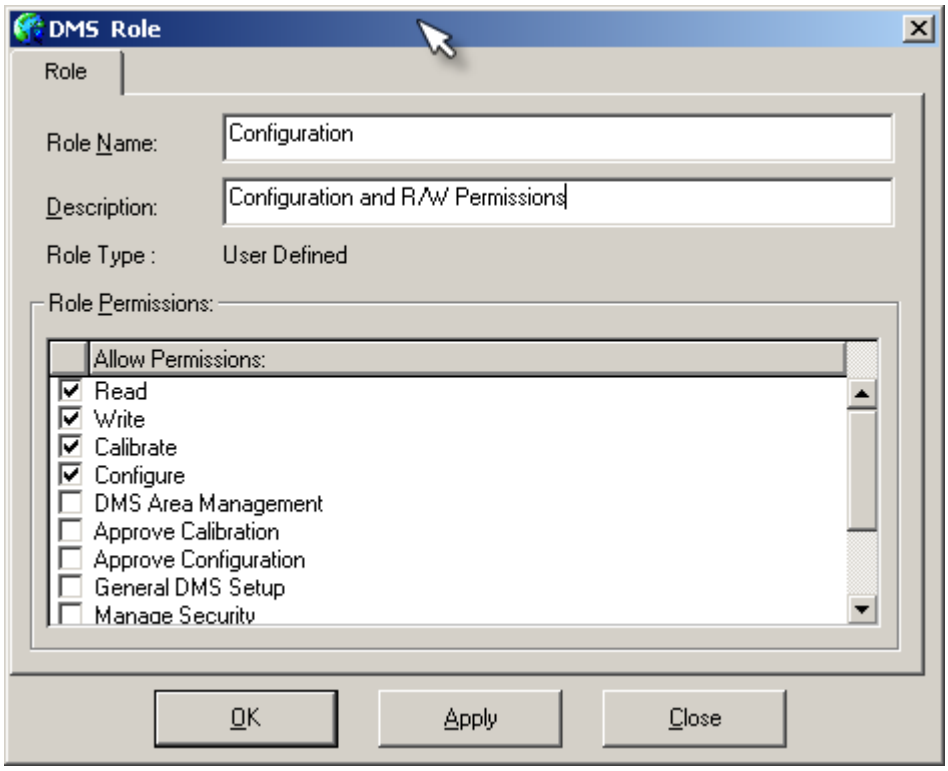
Any number of Groups can be defined per Division as needed to meet a particular set of security requirements. Each Group within a Division is ultimately assigned to one or more Roles in the same Division.

3.4.2.4 Roles and Groups Example

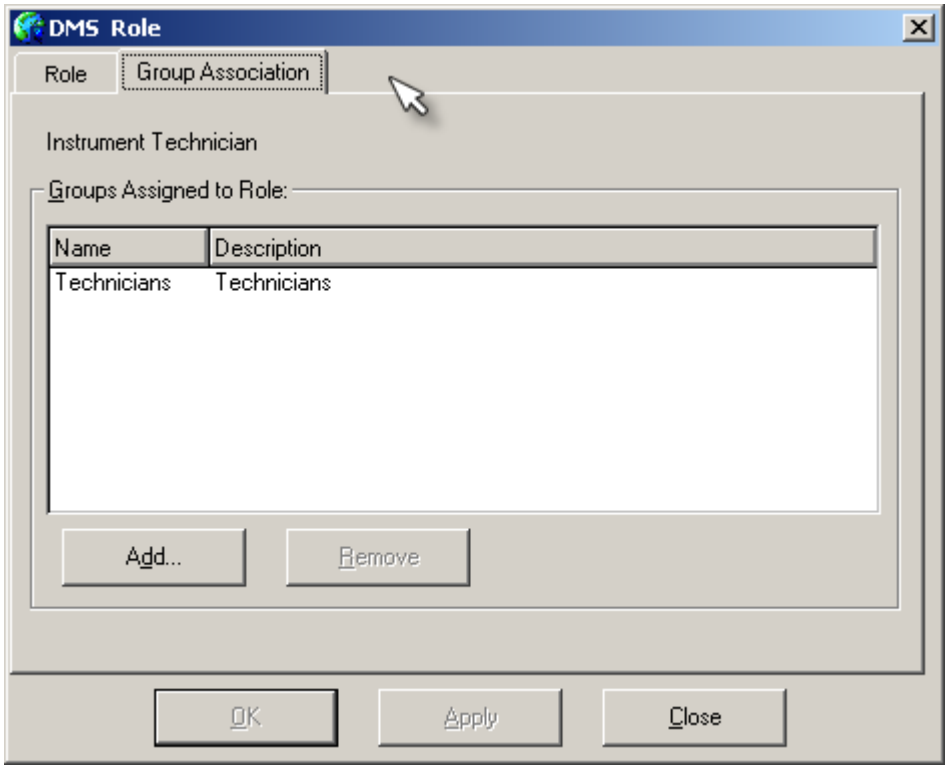
For example, a Role could be "Calibration" with permissions as shown below:



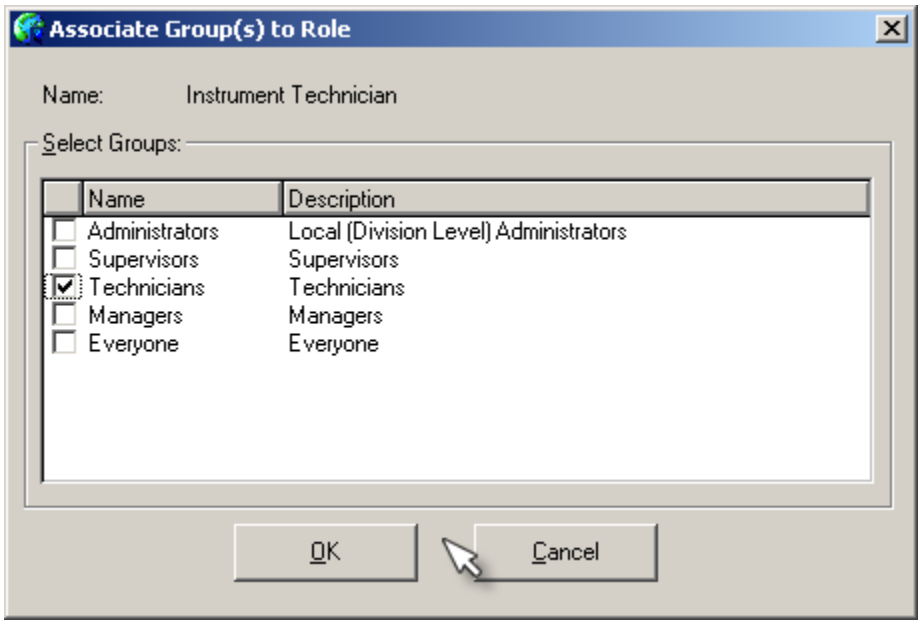
Another Role could be “Configuration” with permissions as shown below:



The Role can be associated with a Group (from the Role Interface) as follows:



A Group that needs to perform both Calibration and Configuration Roles would be associated with the Group as shown below:



3.4.2.5 Security Setup Example

In a typical security setup, different users are assigned Access Rights to manage each Division in the Enterprise. Management of a Division includes the configuration of Users in the Division Groups and Roles. Assume for this example that the Enterprise will be modeled using 10 different Divisions.

1. Login to DMS with the SYSADMIN User ID.

2. Create the Divisions for the Enterprise

3. Create Users to manage Divisions and assign them to the Division Administrators Group for each respective Division. Assign the User ID and a default Password for each User.

4. For each Division, use the DMS preinstalled Role "Division Administrator", or create a new Role with access rights for "Manage Security"

5. For each Division, use the DMS preinstalled Group "Administrators", or create a new Group for the Role created above.

6. The preinstalled "Division Administrator" Role is already associated to the Administrators Group. If a new administrator Role and Group is created, then associate the new Role with the New Group.

7. For a given Division, Join a User (created previously) to the administrator Group. That user will have administrative access rights (as defined by the Role) for that specific Division.

8. When one of these new users (with administrative access rights) logs on to DMS, they will only see the Division for which they were given Group Membership. This could be multiple Divisions or a single Division.

9. Each of the Division Administrators would create any number of new Groups and Roles for their Division as needed.

10. The Division Administrators could also add any number of new Users to the application (if not already done by the SysAdmin user).

11. The Division Administrator can join users to a Group in their Division based on the Access Rights (as defined by the Role of the Group) that the Division Administrator wants that user to have.

12. There may be a need to “override” a user’s access rights. The Division Administrator can quickly do this by assigning that user “View only” or “Modify” rights for the entire Division. Another use for this feature would be to give a user rights to a Division without having to join that user to a Group

.

4.0 Device Configuration Data Management

The Device Data Management Section describes the steps required for managing device data in DMS. This includes how to name folders, where to place devices, and importing device data.

4.1 Device Folders

Device folders are used to store groups of devices in DMS. They can be created and named such a way that fits user requirements for managing devices.

In a small enterprise, one Device folder would be sufficient to manage a group of devices. Larger establishments may have folders and even sub-folders to organize devices.

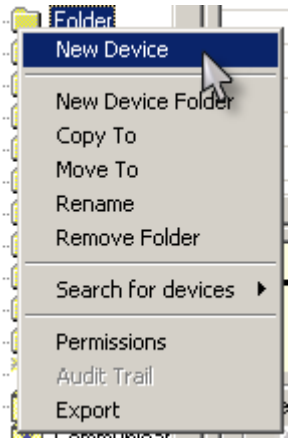
4.2 Devices

Devices will appear in the database listed by the Tag ID. The unique instance of a device in the DMS database is based on the combination of the Device TAG and the Device ID (S/N).

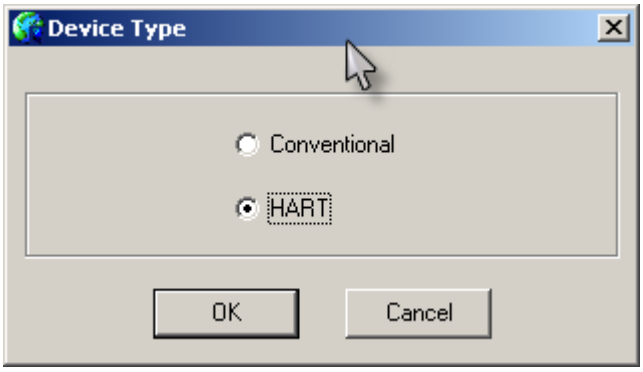
4.2.1 Device Data Entry

Devices are added manually or, if they are Smart Devices, they can be uploaded to DMS.

To create a device, right click a device folder and select Create New Device.



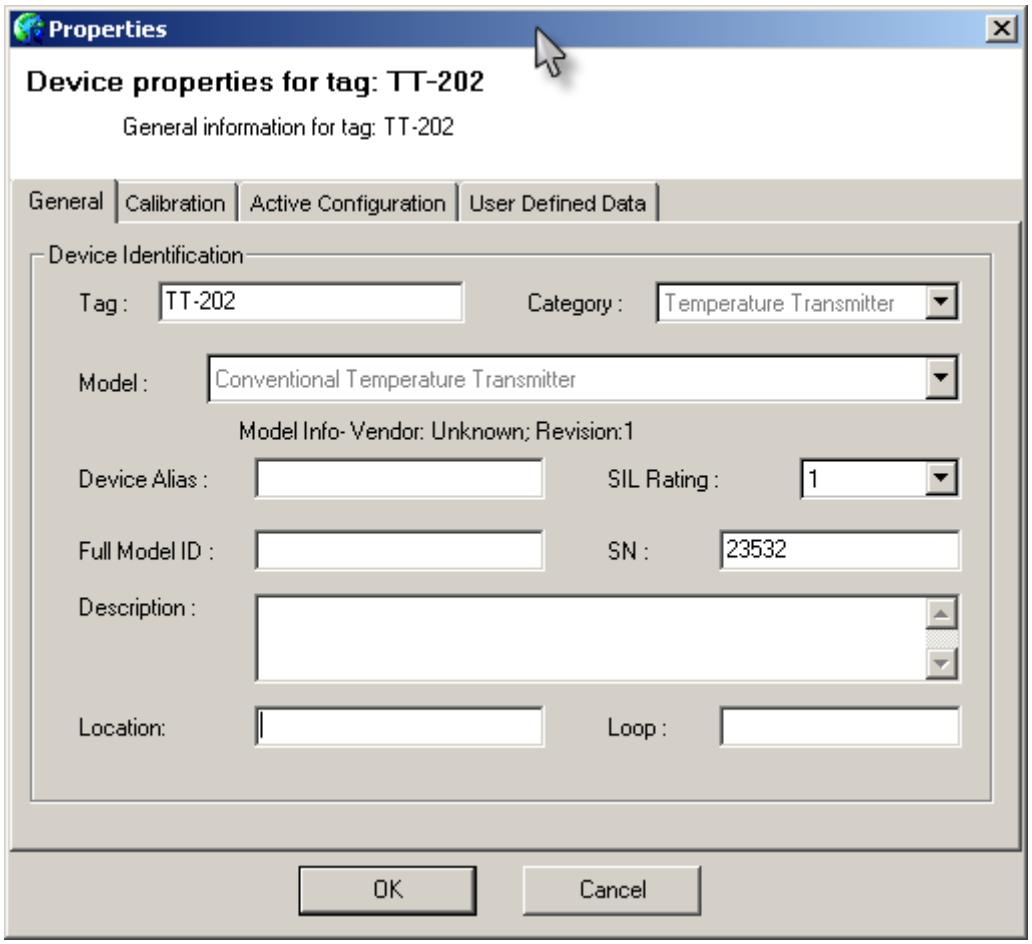
Then select from the ensuing pop-up if this is a Conventional or HART device:



The Properties Window will then appear. There are four (4) tabs to enter device information:

4.2.1.1 General Tab

The General Tab contains the primary device attribute data. The required parameters are TAG, Category, Model, SN, and SIL Rating. See the following "General" tab displayed below:



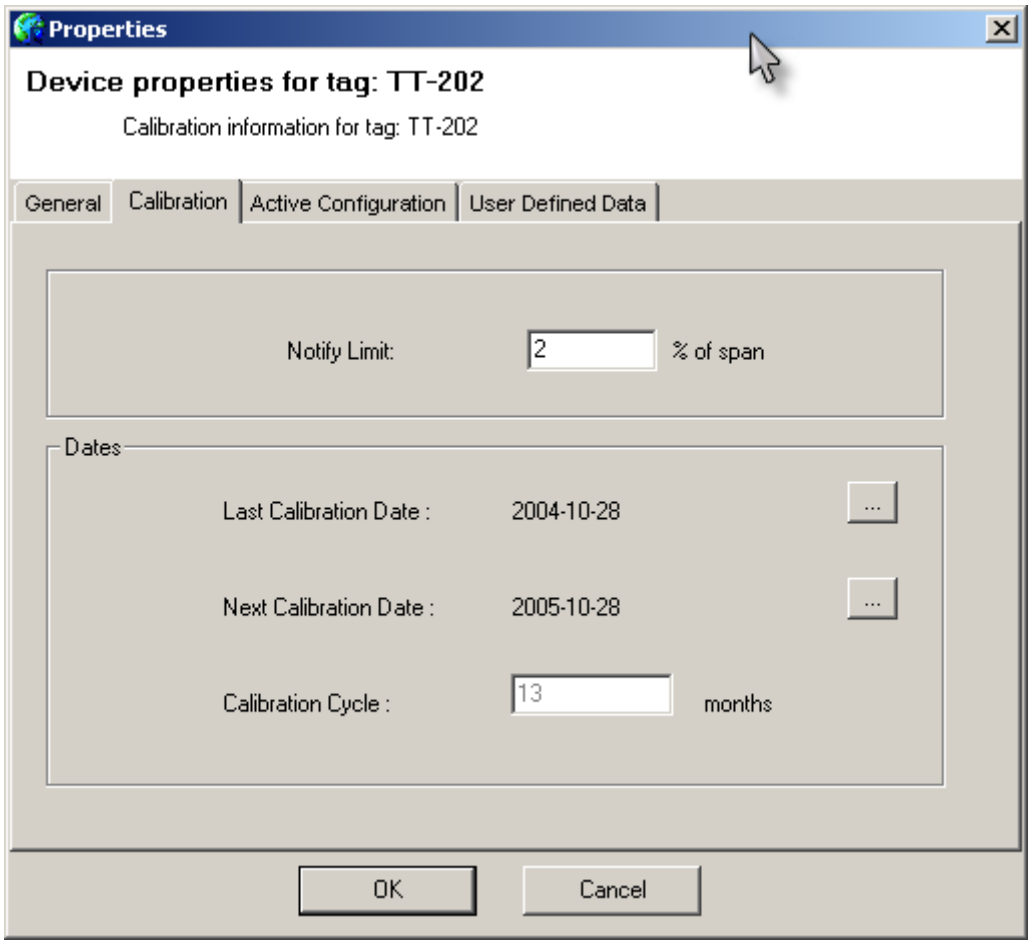
The Parameters for the General Tab are defined in the following table:

	Parameter	Format (alphanumeric)	Description
Req.	**TAG***	27 Chars.	Device ID – This is the DMS device tag, and is separate and different than the HART tag of a Hart Device.
Req.	CATEGORY	Selection	Device Type
Req.	MODEL	Selection	Manufacturer Device Model based on Category
Req.	Device ID		This is the Serial Number for conventional devices and the HART Device ID for Smart devices.
Opt.	DEVICE ALIAS	16 Chars.	An alternate tagging convention, for example, the I/O address.
Req.	SIL RATING	Selection	Safety Integrity Level, 0 = None
Opt.	FULL MODEL ID	36 Chars.	Manufacturer's Model Identifier
Opt.	DESCRIPTION	1024 Chars.	A general description about the device or related system.
Opt.	LOCATION	16 Chars.	Geographic Location, i.e. building, column, tank, line, etc.

* ***Important Note:*** The Device Tag is the unique identifier that can only be used one time within a Division. This unique Tag is combined with the Device ID (Serial Number) for complete uniqueness within the Enterprise. Therefore, on the Enterprise level, a Tag ID can be duplicated in different divisions as long as the Device ID is unique.

4.2.1.2 Calibration Tab

The Calibration Tab contains information that defines the calibration parameter of the device as shown in the window below.



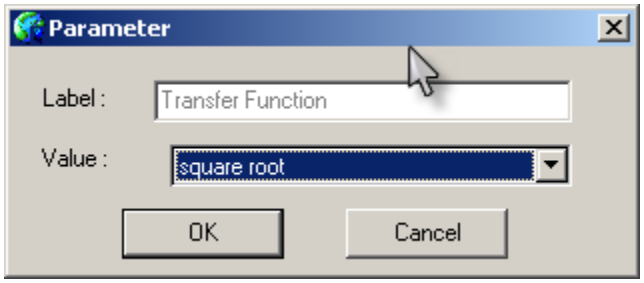
The Calibration Tab parameters are defined in the table below:

	Parameter	Format (alphanumeric)	Description
Req.	Notify Limit	X.XX	Error at which Alert for Out of Tolerance should be reported.
Req.	Last Calibration Date	Date	Last known calibration date for device.
Req.	Next Calibration Date	Date	Desired Next Calibration Date. Will be overridden if a SIL Rating of other than "0" is entered on the General Tab.
Req.	Calibration Cycle	# of Months	When a calibration is performed on a device, the calibration cycle will be added to the date of calibration to establish the Next Calibration Date. A SIL Rating setting > 0 in the Properties Tab will override this field.

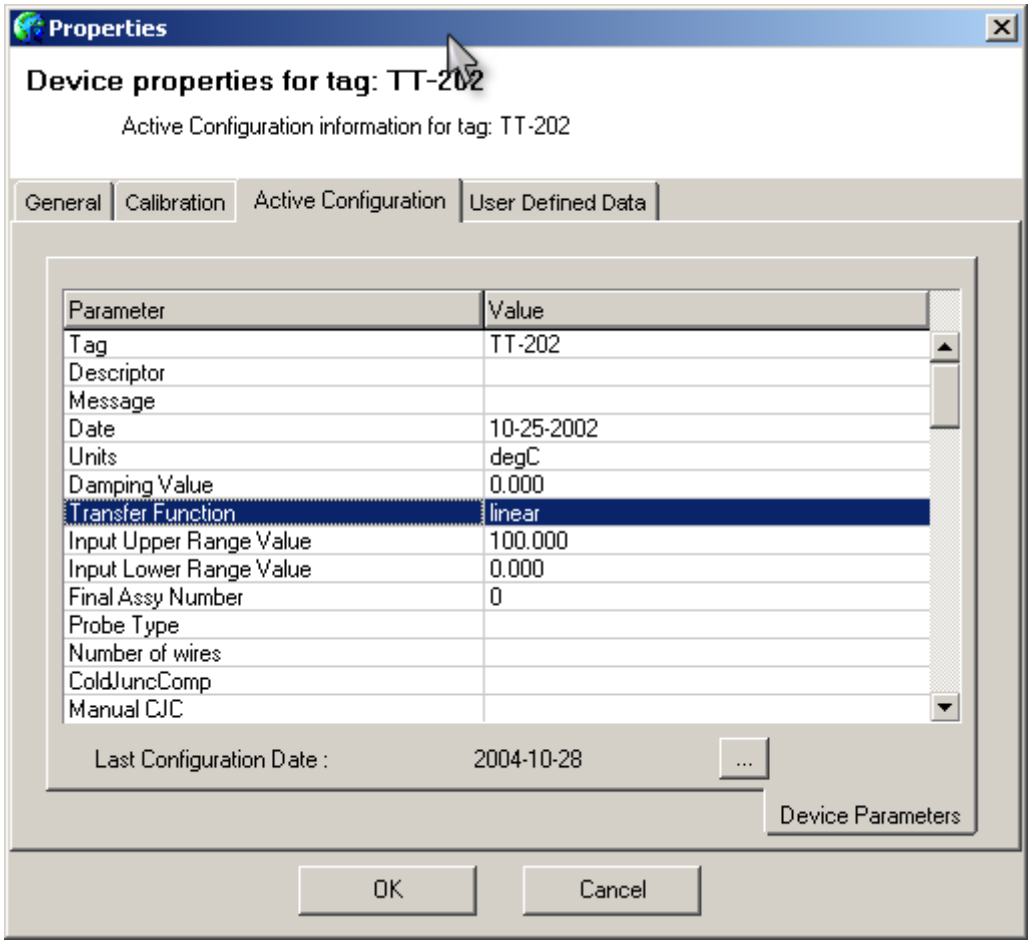
4.2.1.3 Configuration Tab

The Configuration Tab contains all the device specific parameters that are defined in the Device Model. For HART devices, the Configuration Tab is populated when the device configuration is uploaded to DMS. For Conventional Devices, these fields contain default values and must be entered manually.

For CONVENTIONAL devices, double clicking on a parameter allows changes to be made to the values for the device. For example, by double clicking on the selected parameter, "Transfer Function", a pop-up dialog box is presented that allows selection of available transfer functions:

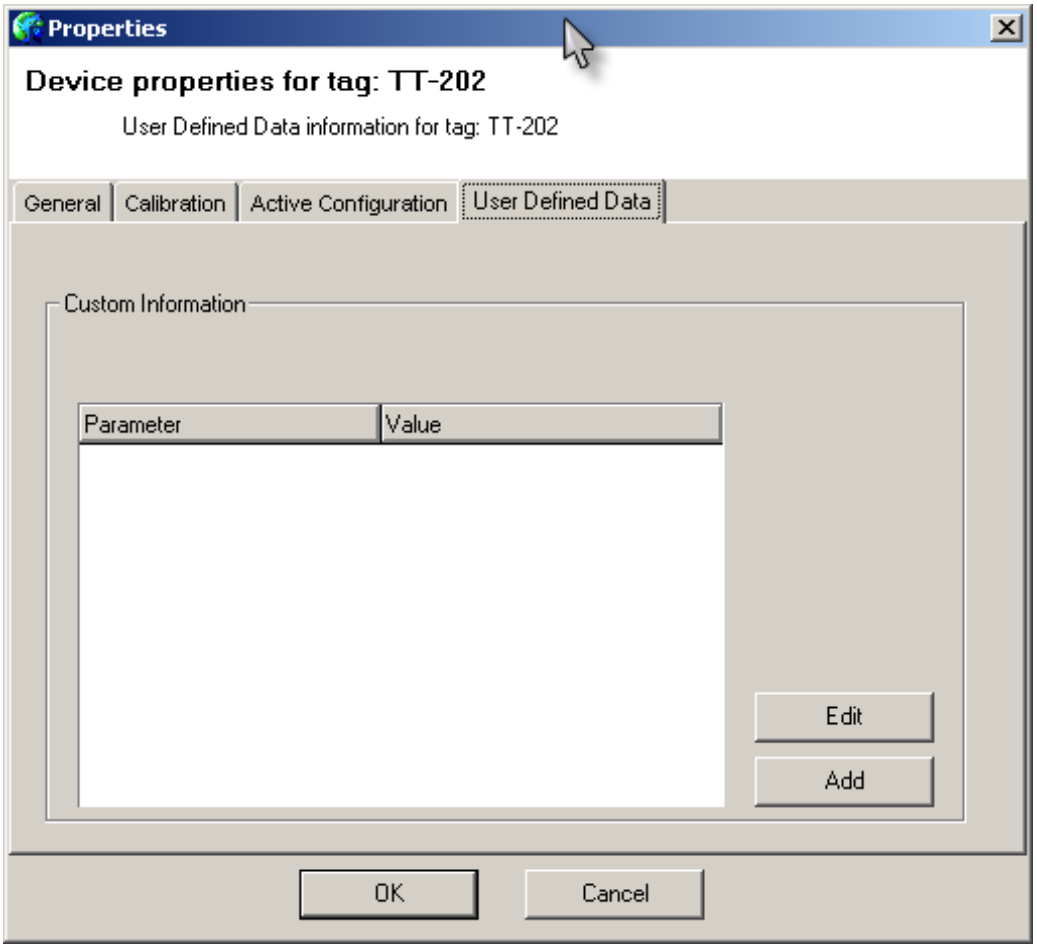


For HART devices, these parameters are READ ONLY, showing the parameters and Values of the device. To initiate a value change for a HART device, use the Configuration->Active function that is explained below.

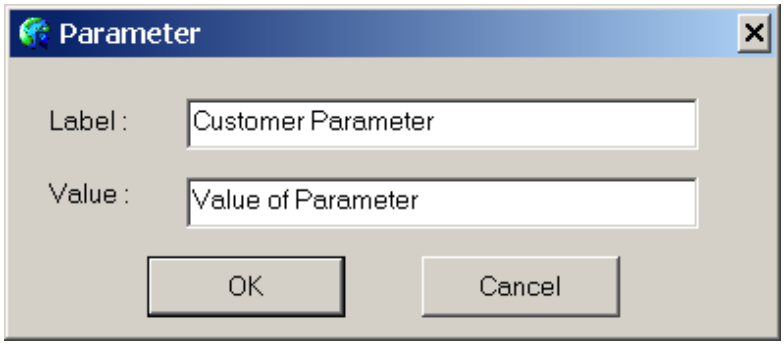


4.2.1.4 User Defined Data

User defined parameters can be added to each device. The User defines the “Parameter Name” and the “Value” of the parameter. This feature allows the user to capture information not otherwise supported by DMS.

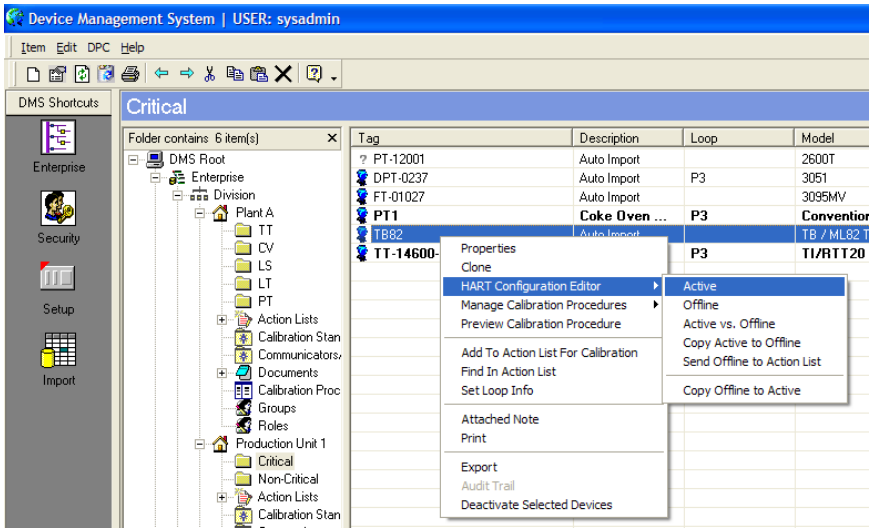


Parameters are edited or added by clicking on the appropriate button and entering the information.

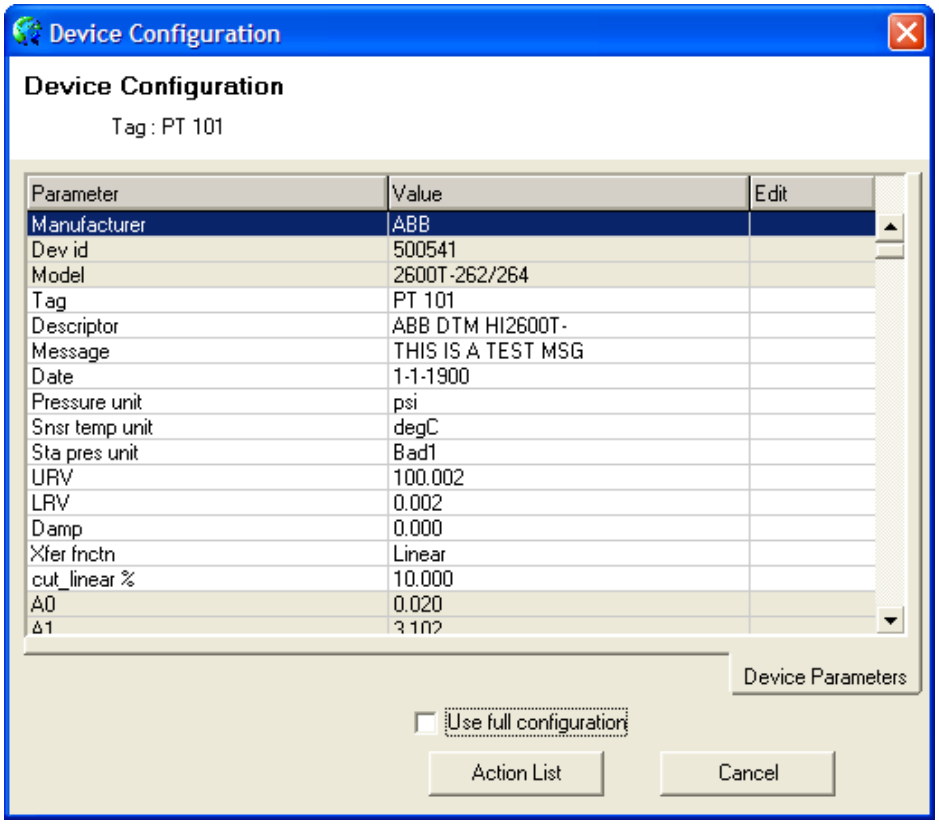


4.2.2 Configurations – Active (HART Devices only)

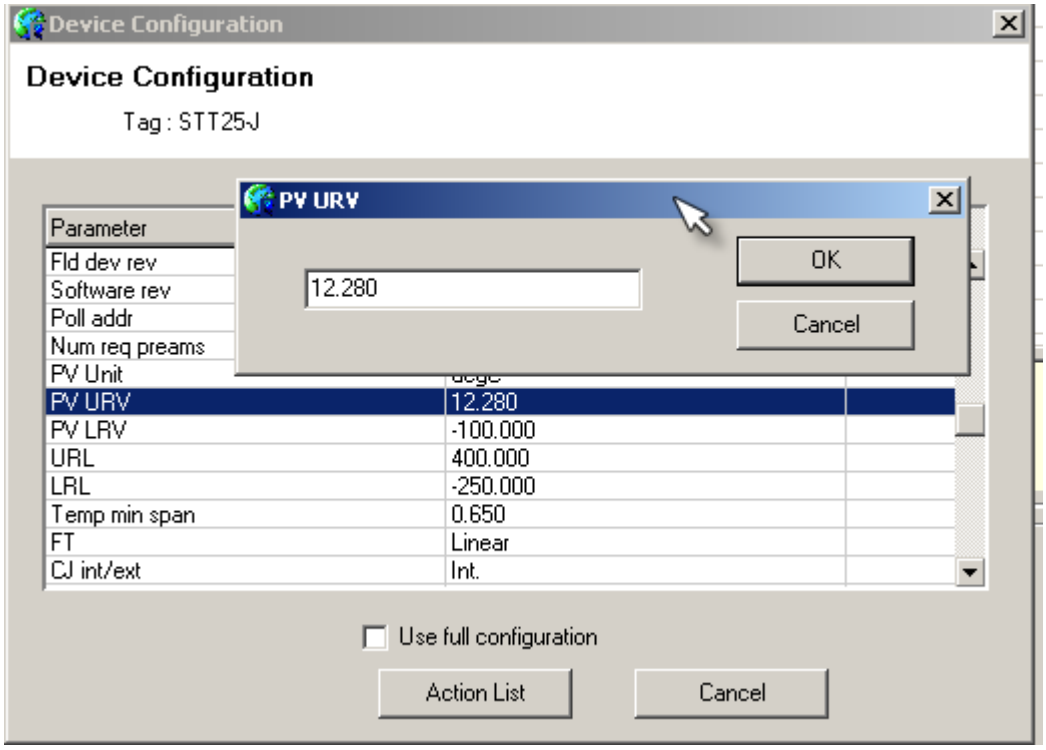
To see the active (current) configuration on a HART device, right click on the device, and then click on Configuration-> Active:



This calls up the configuration screen:



The value of Read/Write parameters can be changed by double clicking on them:

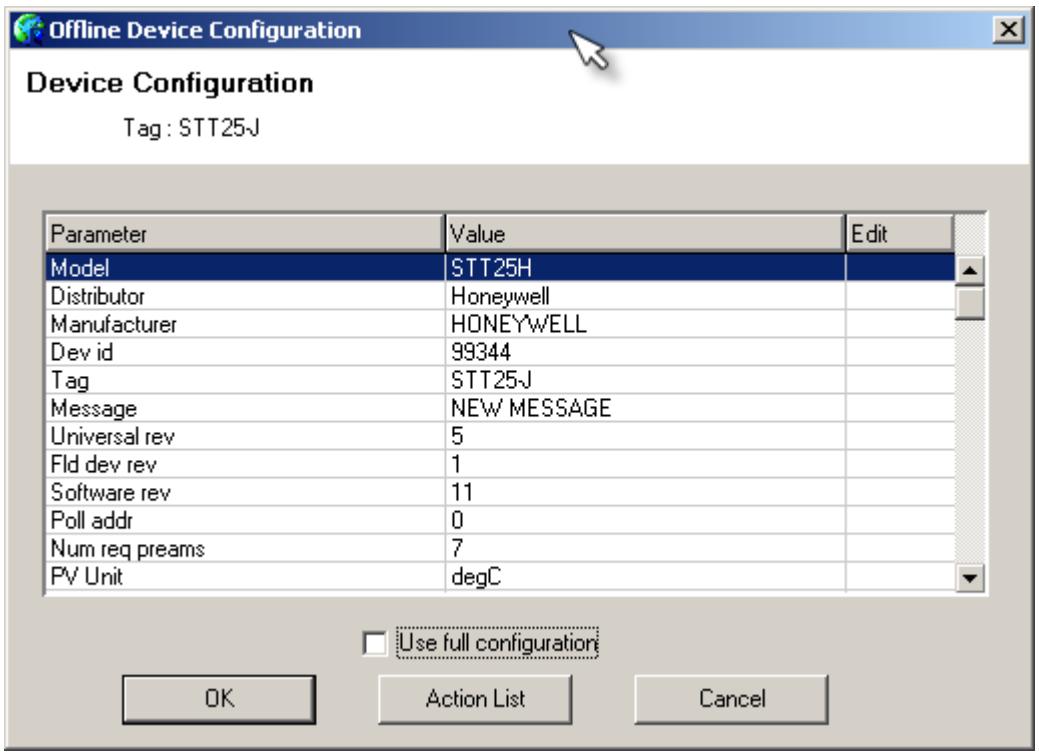


The values will remain in the DMS active configuration until the "Action List" button is clicked to send the configuration to the device and upload the configuration back to DMS.

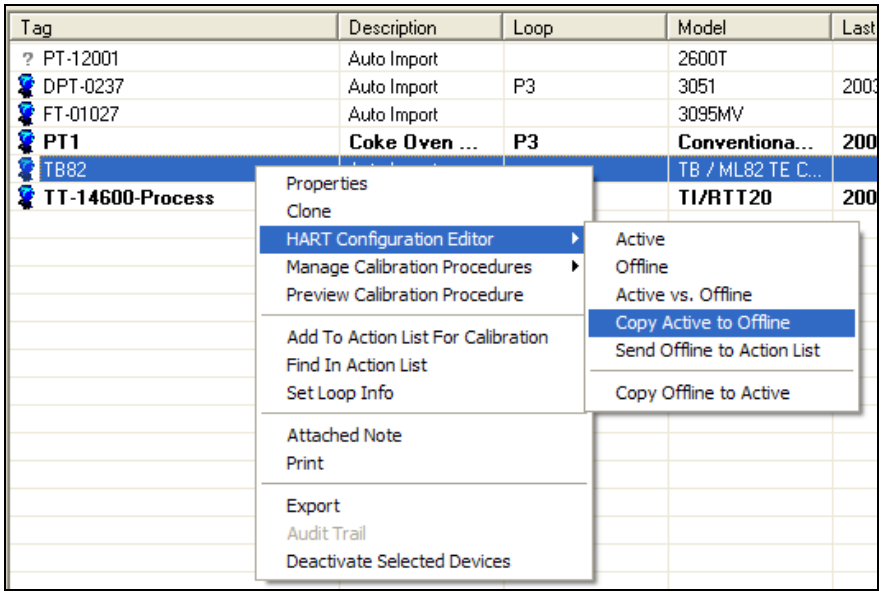
The "Use Full Configuration" checkbox sets the all the parameters to be sent when the configuration is added to the action list. This is used when all the values need to be re-written on the device, not just values that were edited.

4.2.3 Configurations – Offline

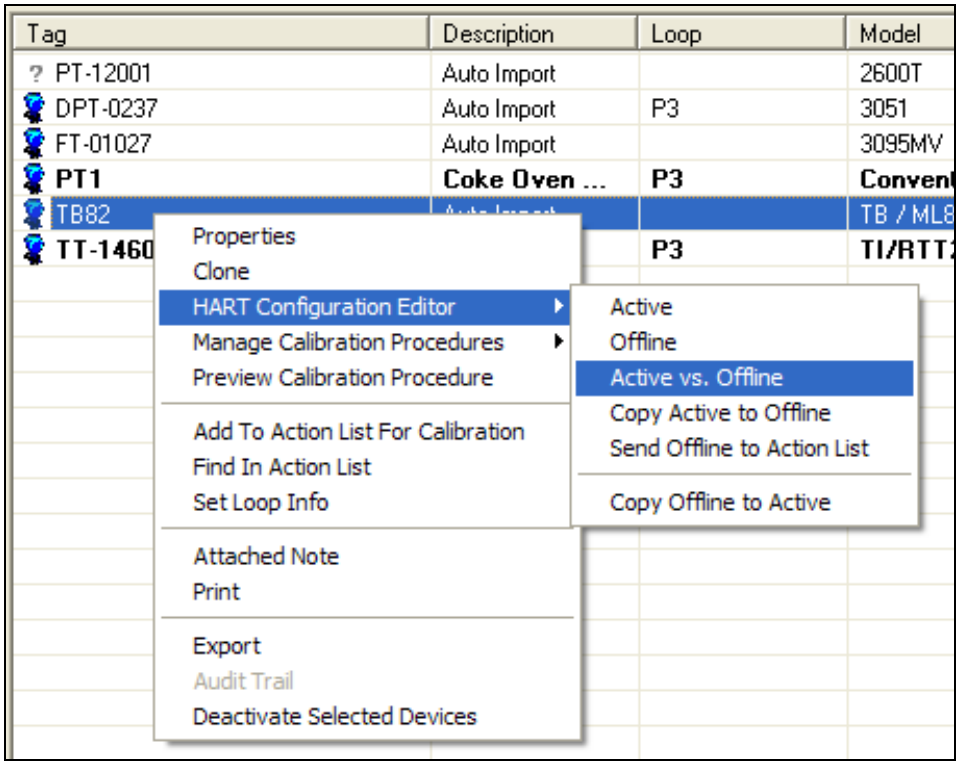
DMS also supports Offline configurations. These are configurations that can be edited without affecting the device until they are copied over to the Active configuration.



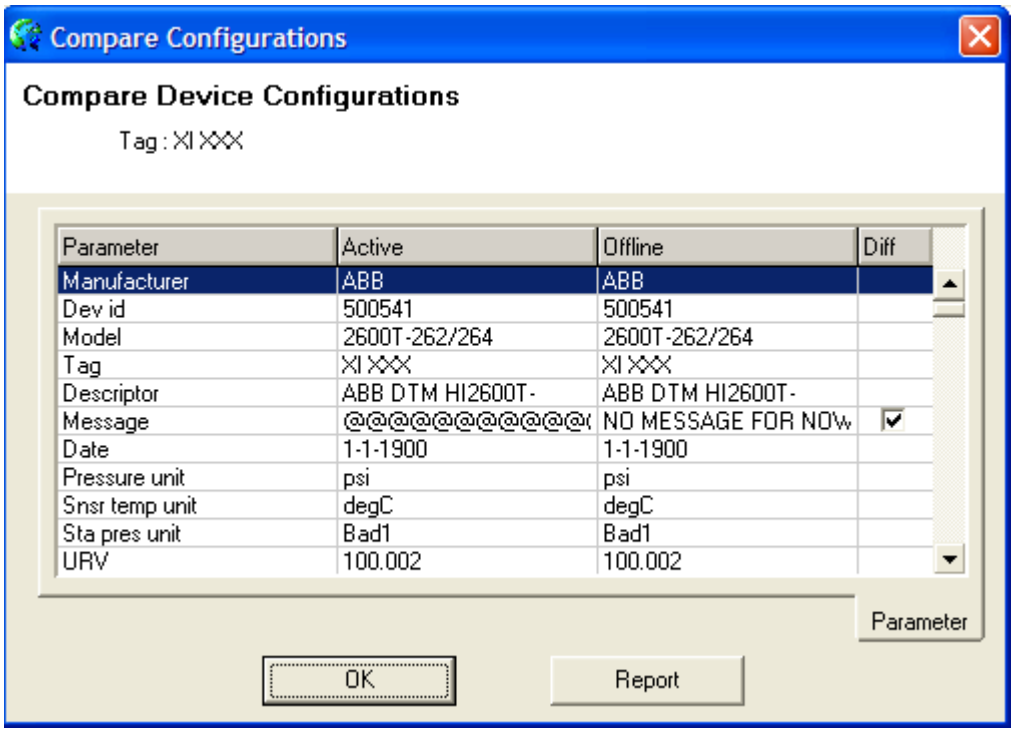
An Active configuration can be copied to Offline to make a backup of the current configuration before making changes.



The Active configuration can be compared with the Offline configuration by clicking "Active vs. Offline":



Parameters that are different will have the checkbox under the "Diff" column.



4.2.4 Uploading Device Data

Depending on the type of device (conventional or HART), the device data can vary widely. This data can be entered manually; however the following methods of importing the data will automate this process:

- Upload from Device to DPC, then from DPC to DMS
- Upload from Device to DMS via HART Modem (See SPA Option)
- Import Device Data to DMS via Import Utility

Additionally, DMS cloning features can be used to replicate single devices and groups of devices, or entire Divisions.

4.2.4.1 Uploading Device Configurations from DPC to DMS

For users of the DHH810-MFT or DHH800-MFC Series communicators, device data can be uploaded to the DMS via an RS-232 Serial Interface. (Refer to the DHH800-MFC and DHH810-MFT User's Manual for more Detail)

Note: The DHH800-MFC and DHH810-MFT must be registered with DMS prior to executing an interface session.

In general the following steps are required to use a DPC to upload configurations to DMS.

- Connect DPC to the HART Device and establish communications
- Navigate through the device menu to the "Save/Send" Function.
- Store the Device configuration into the DPC
- Connect the DPC to the DMS and upload the configuration to DMS

Refer to the **DPC Interface Section** of this user's guide for more detail on uploading configurations from the DPC to DMS.

4.2.4.2 Uploading Device Configuration from HART Device to DMS

Using the Single Point Access (SPA) option and a HART Modem, device configuration data can be uploaded directly from the device and saved into DMS.

Refer to the On-Line (Single Point Access) Option for more detail

4.3 Device Properties Tabs

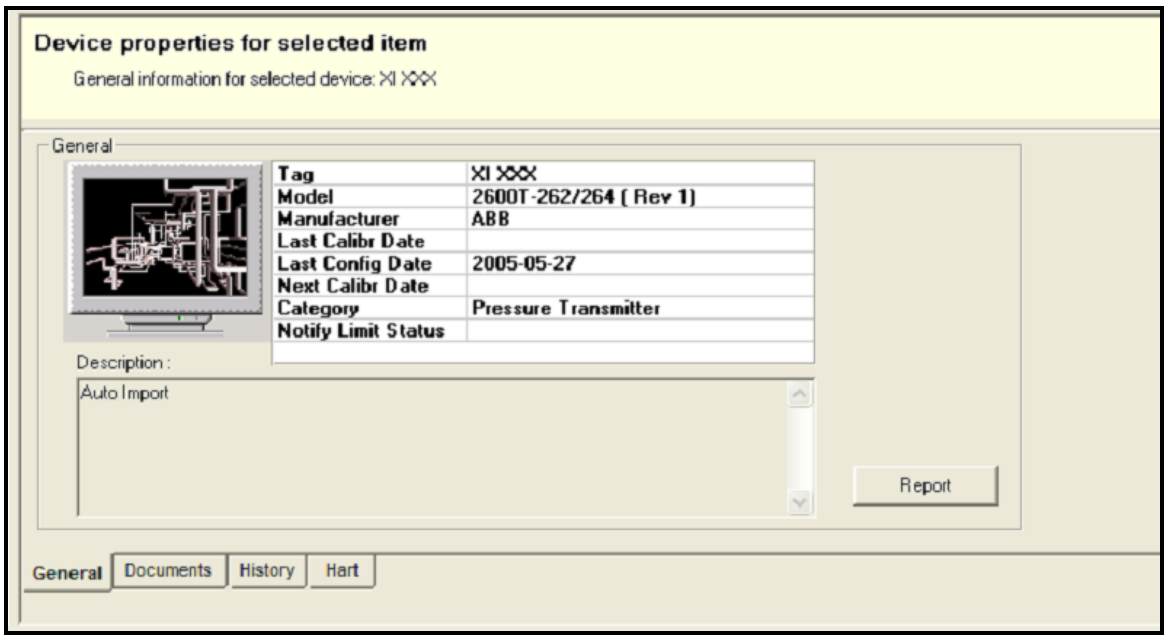
Located below a Device List, there is a Frame with Tabs:

- General
- Documents
- History
- HART

Each tab provides a quick view of data groupings for each device.

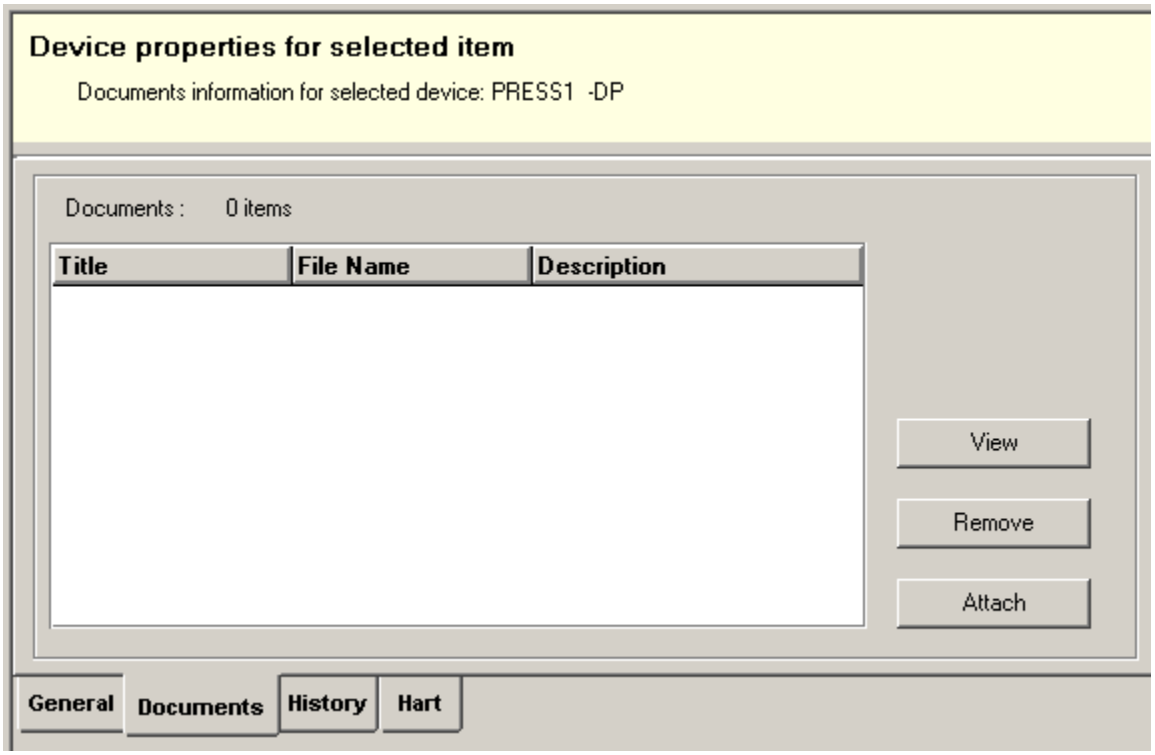
4.3.1 General Tab

The General Tab is a quick view of the key parameters for a device as shown below:

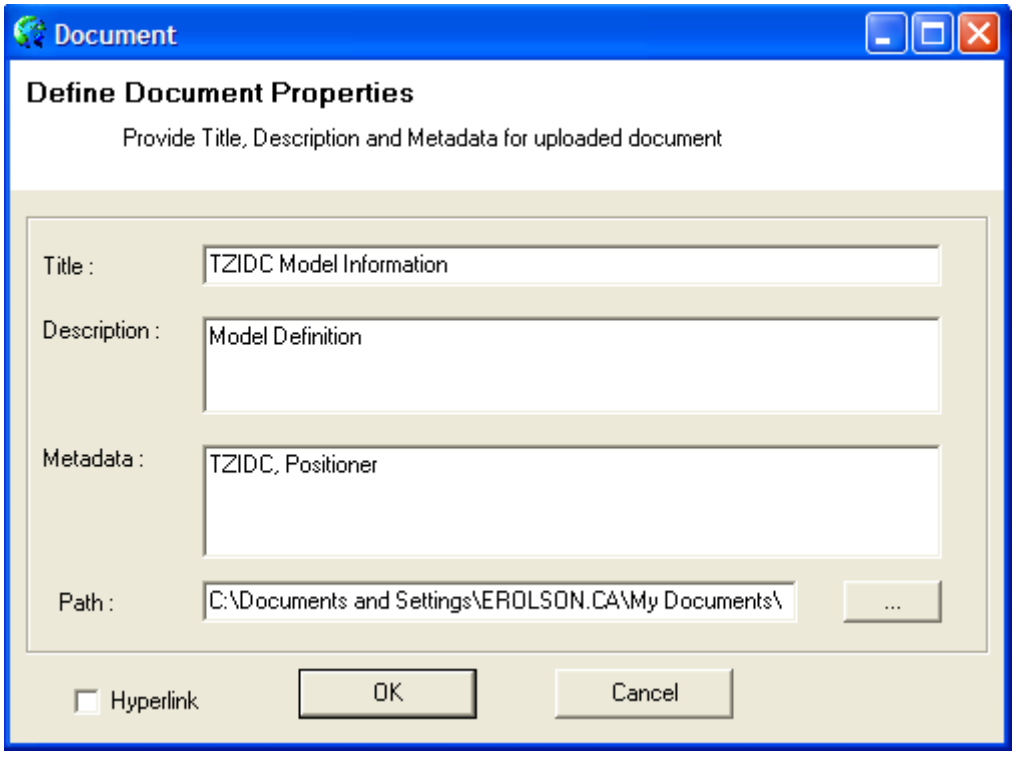


4.3.2 Documents Tab

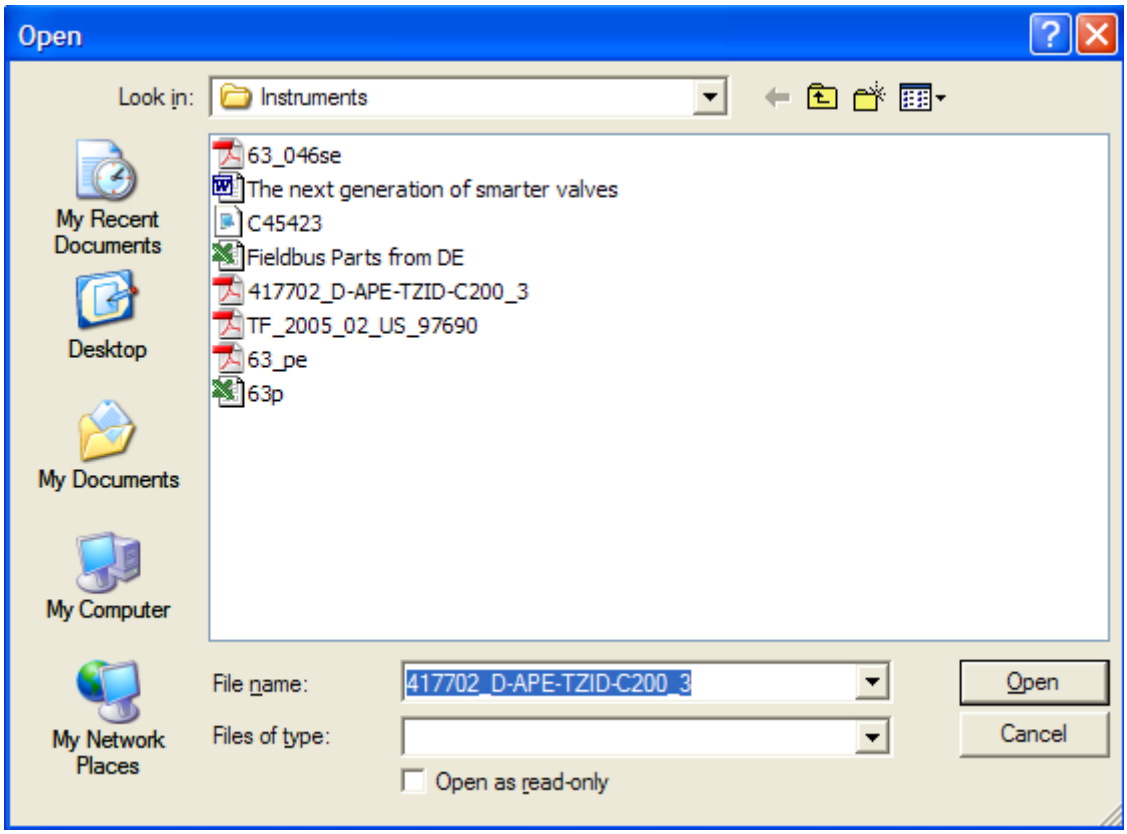
The Documents Tab provides for the association of device documents, such as specifications, design drawings, loop diagrams, etc.



To add a document, click on the “Attach” button and the following window will appear:



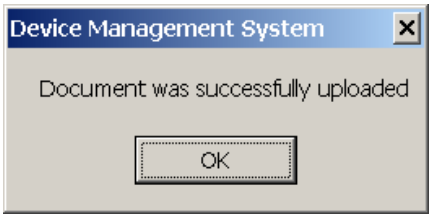
Enter the information to describe the document, and then click on the browser button and the following typical MS Windows interface will appear:



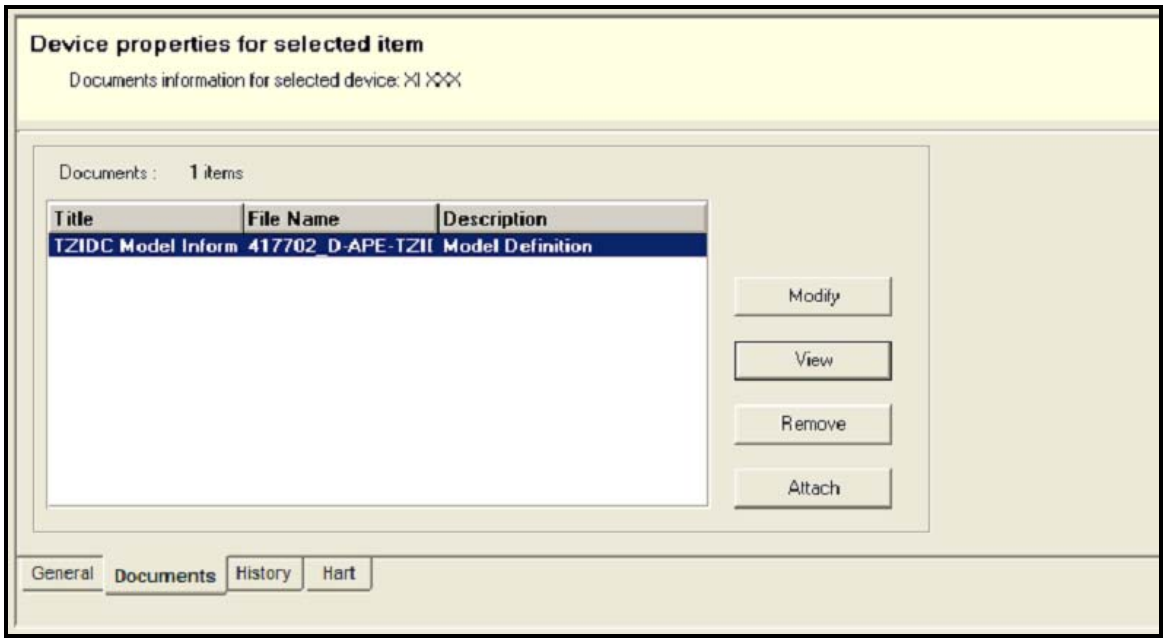
Navigate to the file that that is to be associated to the device.

There are two options for associating a document, if the document is on the server that DMS is installed on, and then a HyperLink can be used. Check the Hyperlink option, and the link will be saved by DMS instead of the actual file.

If the Hyperlink option is not selected, the document will upload into DMS and the following message will appear when this operation is complete.



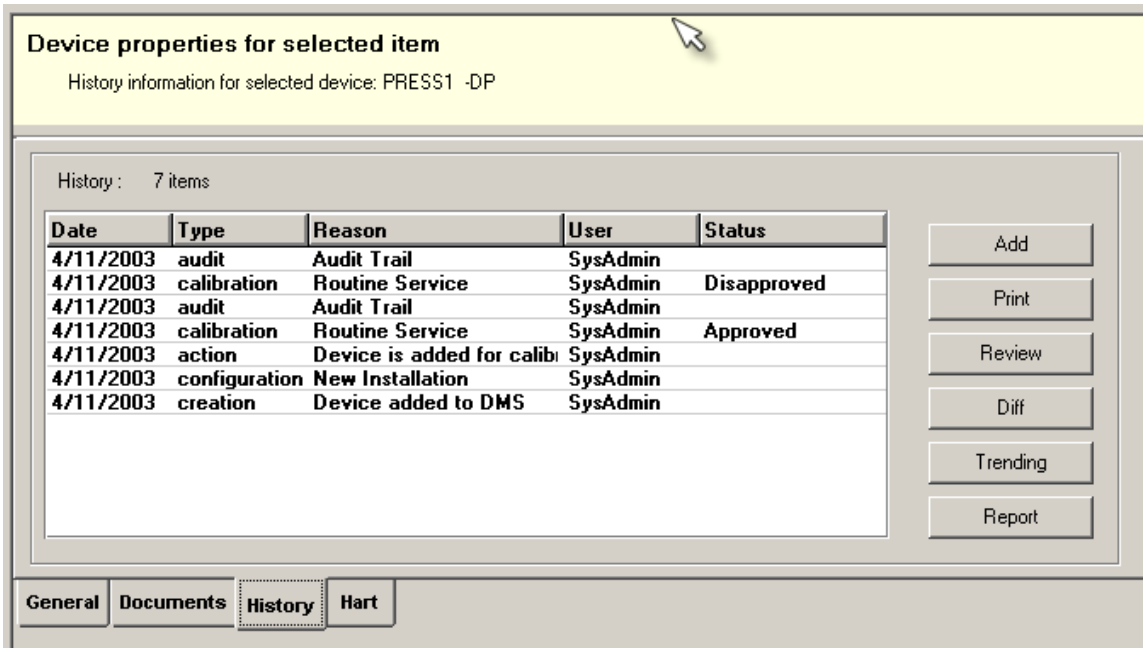
After the document has been Uploaded or Hyperlinked, the user will only have to double click on the file listing as shown in the window below, and the document will open in its native application.



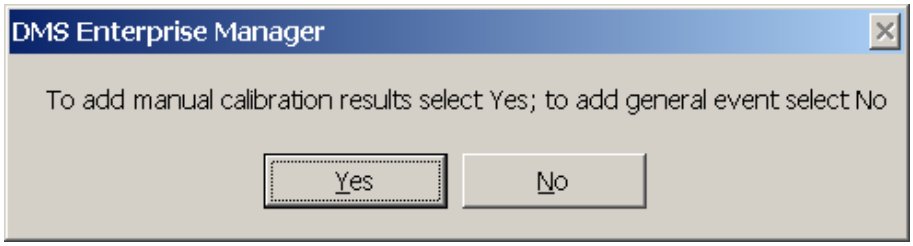
4.3.3 History Tab

This History Tab provides an Audit Trail for a device. Each entry represents an action that has been executed on a device.

The electronic signature or User Name is entered at the time the action item is executed.

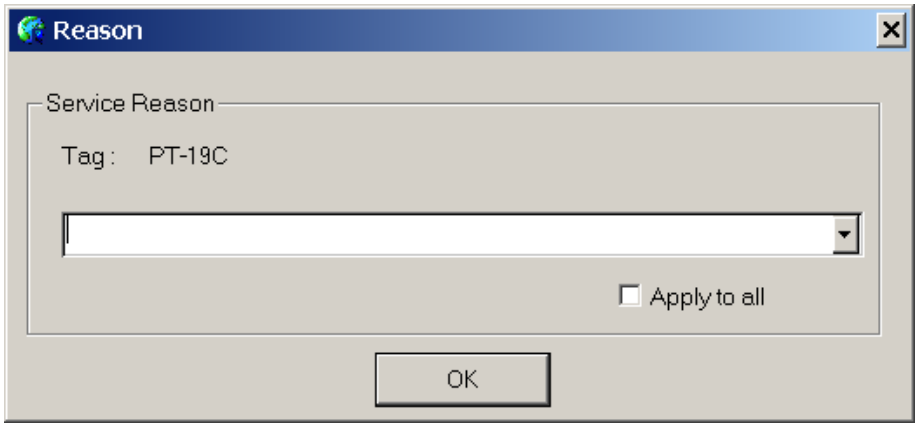


To enter a manual action, click on the Add button and the following window will appear:



Any activity that is not automatically logged by the DMS functions or features is required to be entered manually.

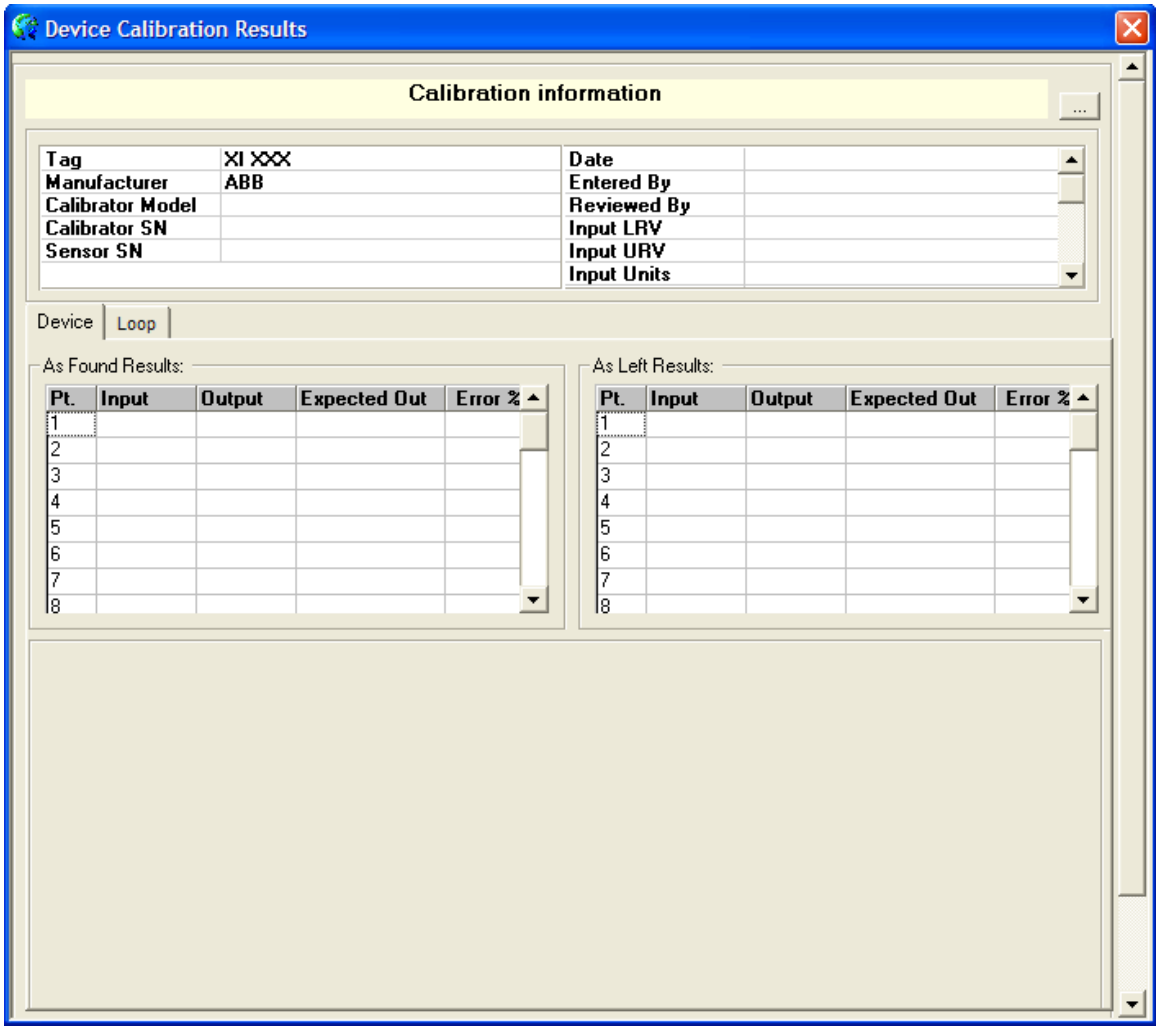
Choosing “NO” will cause the following window to appear:



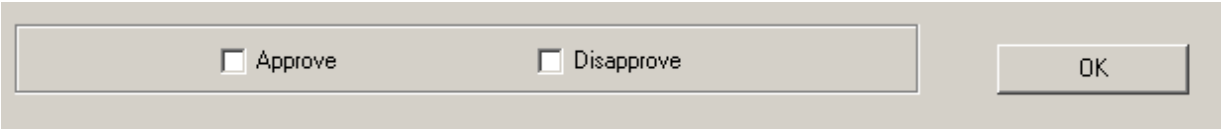
This allows the user to enter a pre-defined or user-defined Service Reason.

4.3.4 Manual Entry of Calibration Data

The Properties Frame interface enables the addition of a Manual Calibration procedure test and results. By choosing “YES” from the window above, the following interface appears for entering all manual calibration data:

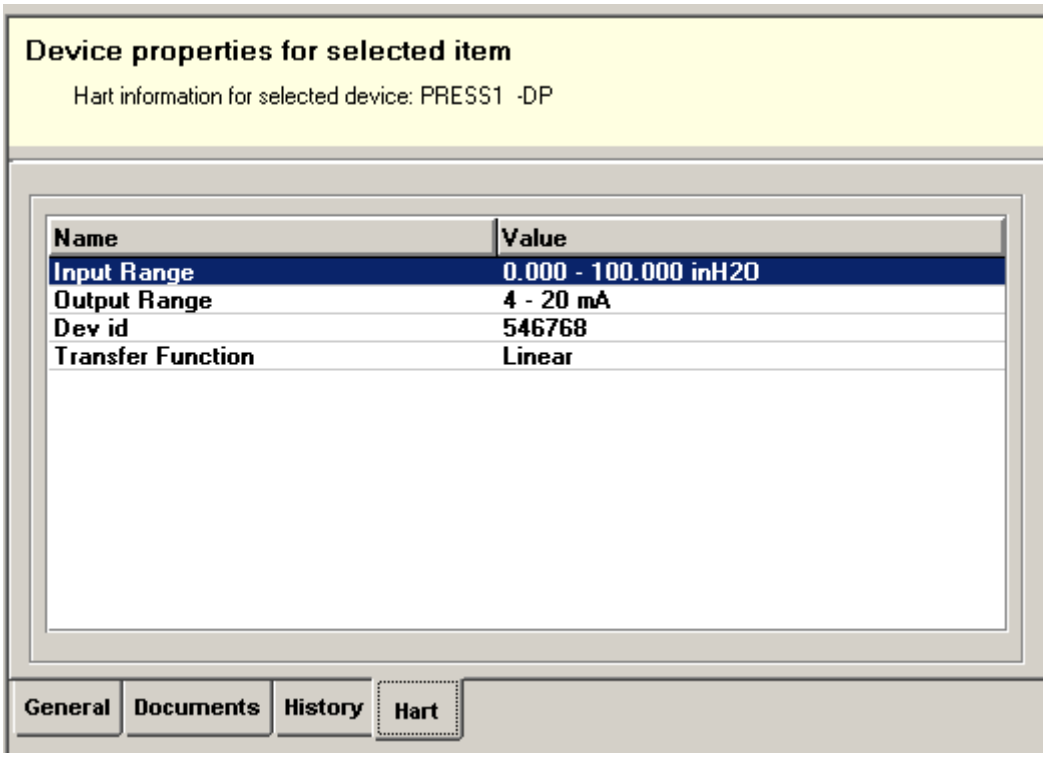


Scroll to the bottom of the Manual Calibration window and there is an Approve and Disapprove check box. By selecting one of these, an authorized reviewer will assign a status to the Calibration Data.



4.3.5 HART Tab

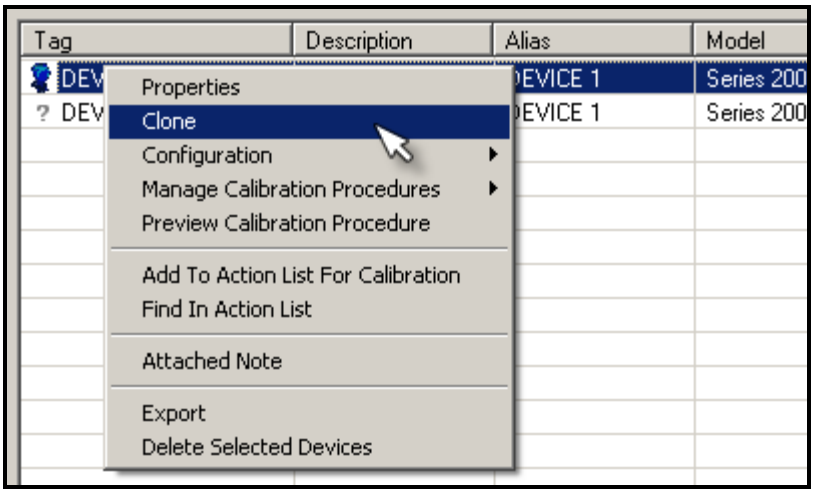
The HART Tab lists a few key parameters that are HART specific for the user's quick review.



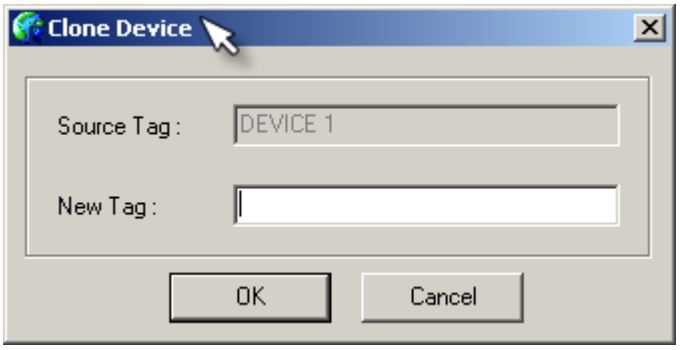
4.4 Cloning a Device

Cloning a device is the same as copying an existing device and saving it to a new device Tag ID. Cloning is used when a new device is being modeled that has the same device configuration as an existing device in the system.

To clone a device, right click on a device in the Device List and select the "Clone" option:



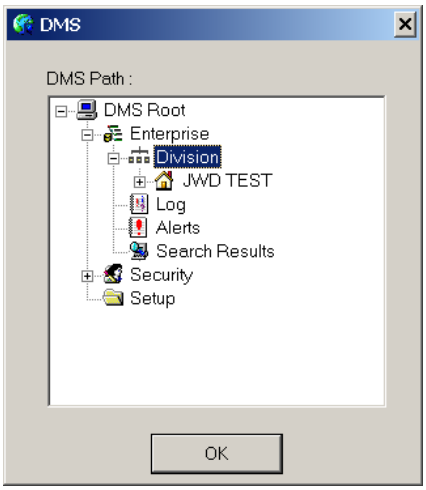
The following window will appear:



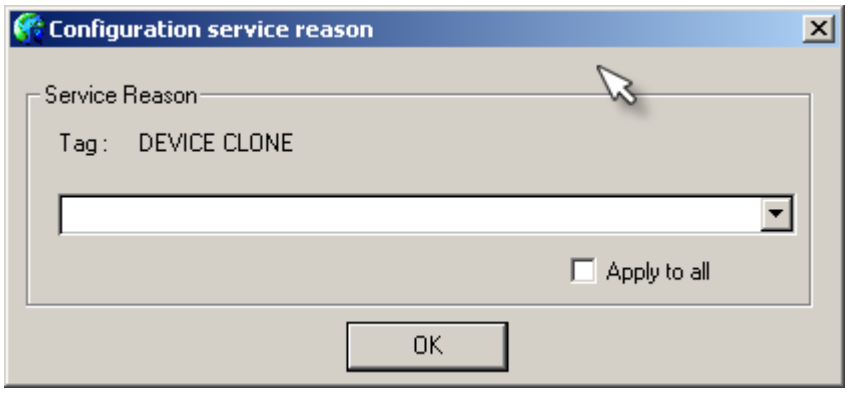
Enter the “New Tag” and all properties of the cloned tag will be copied over to a newly created device with the same Tag ID.

CAUTION: HART uses a unique Serial Number called the Device ID. The cloned device needs to be updated with the new Device ID of the actual physical device being modeled.

Enter the New Tag, select OK, and the following screen will appear:

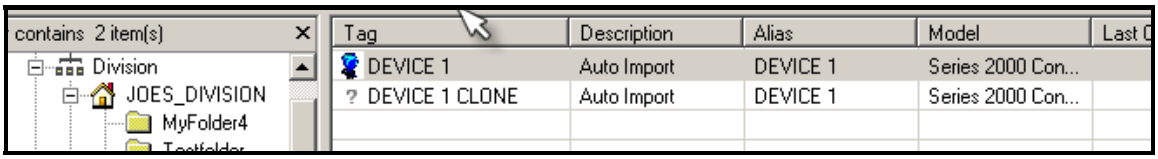


Navigate to where the new device will be placed and select OK.



Select a Service Reason and select OK.

The Cloned Tag will appear in the Device List



After cloning a device, the device will have a question mark '?' in front of the TAG number. This is because the cloned configuration has not been written to a device and updated in DMS.

5.0 Calibration Management

Device Calibration Management includes the following major steps:

- creation of calibration procedures
- setting device calibration cycles
- scheduling devices for calibration
- downloading calibration procedures
- executing the calibration procedure
- uploading as found/as left calibration results
- approving calibration results
- displaying calibration results
- updating device history

Calibrator and Calibration Standard Recertification

The DPC may have on board calibration standards, such as volt/amp meters that need to be recalibrated based on manufacturer's specifications. When a piece of calibration equipment is registered with DMS, this equipment has a next calibration due date, similar to that of a device. This calibration cycle information must be registered with DMS prior to using the calibration equipment on any of the devices modeled in DMS.

5.1 Calibration Procedures

Calibration Procedures are associated with a category and a device. This ensures that the same procedure is used each time a device is scheduled for calibration. Each unique procedure is only created a single time and associated to as many devices as necessary that are in the same category.

Calibration procedures are downloaded to a DPC for use in device calibration activities.

5.1.1 Creating a Calibration Procedure

To create a new calibration procedure, right click on the "Calibration Procedures" folder and select "New Transmitter Procedure" or "New Switch Procedure" depending on the device type.

5.1.1.1 Transmitter Calibration Procedure

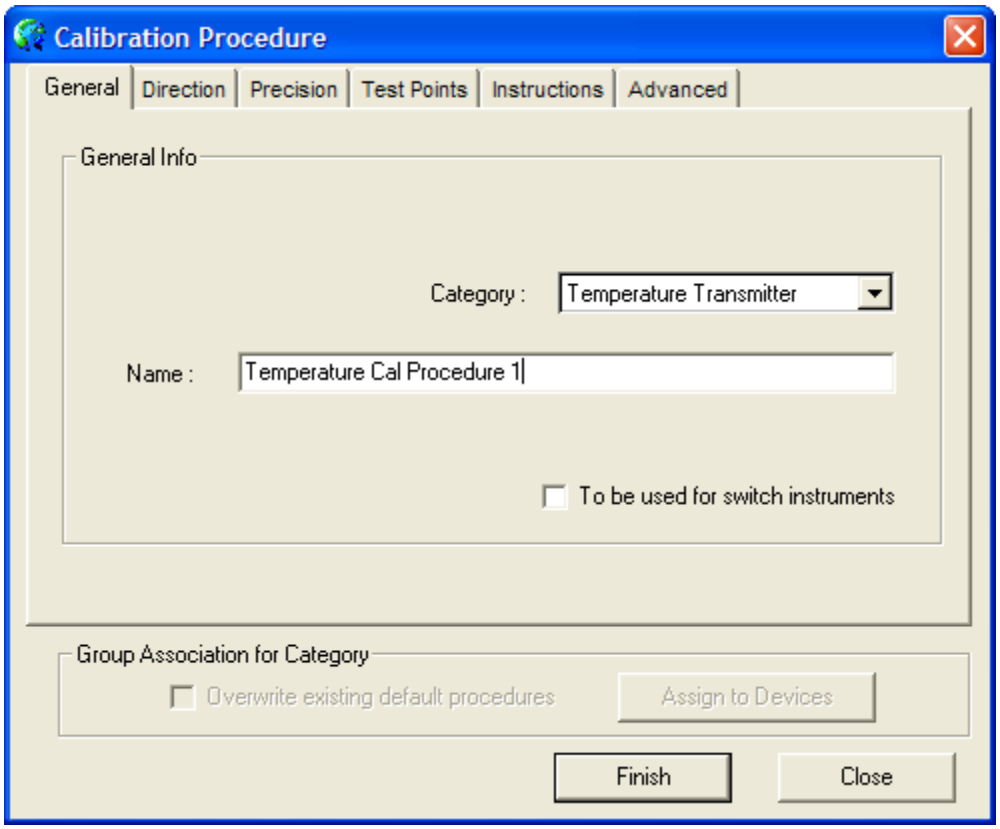
Six (6) tabs are provided for detailing the transmitter procedure requirements.

5.1.1.1.1 General Tab

The General Tab contains the following basic information about the calibration procedure:

Category – a procedure can be assigned to a device category so that procedures are associated with a certain type of device. This prevents a procedure from being assigned to a device that is not in that category and makes existing procedures available to any new devices added in that category.

Name – The procedure name can be a Standard Operating Procedure Title, or any name that will represent the type of procedure.

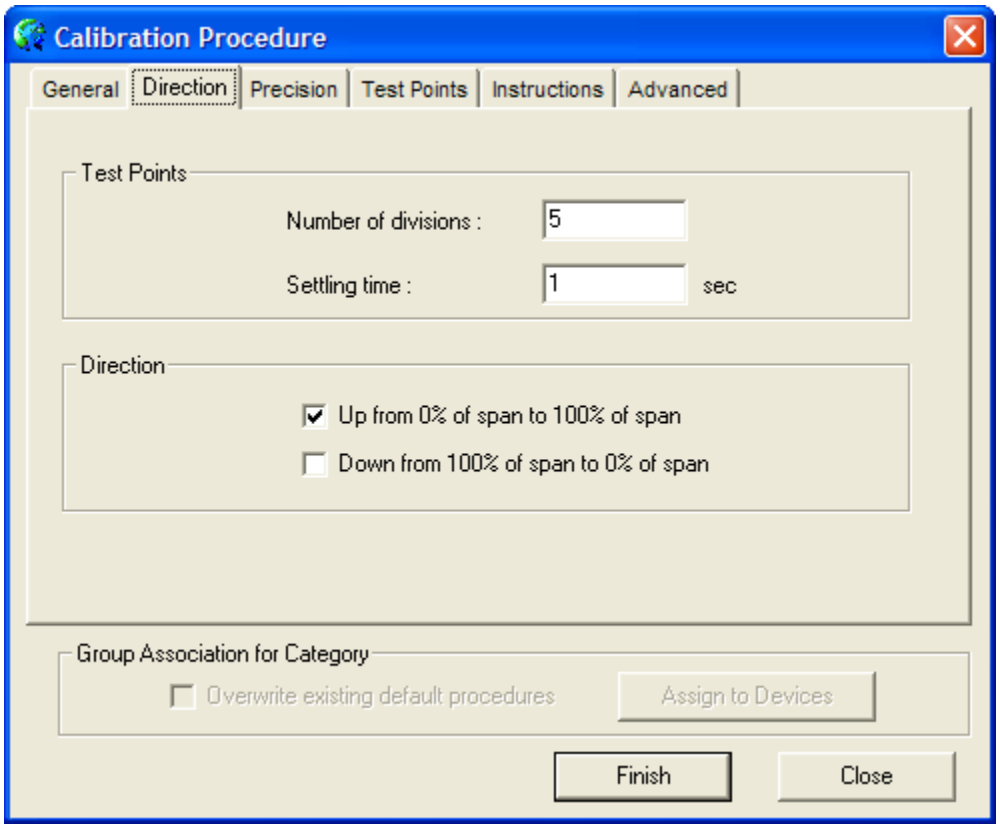


The checkbox “To be used for switch instruments” must be unchecked for transmitter calibration procedures.

5.1.1.1.2 Direction Tab

The Direction Tab defines the number of divisions, and whether or not a hysteresis check is included in the calibration procedure. It includes:

- Number of divisions
- Settling Time (the DPC user must wait for this amount of time prior to saving the next test point)
- Up From 0% of span to 100% of span
- Down from 100% of span to 0% of span

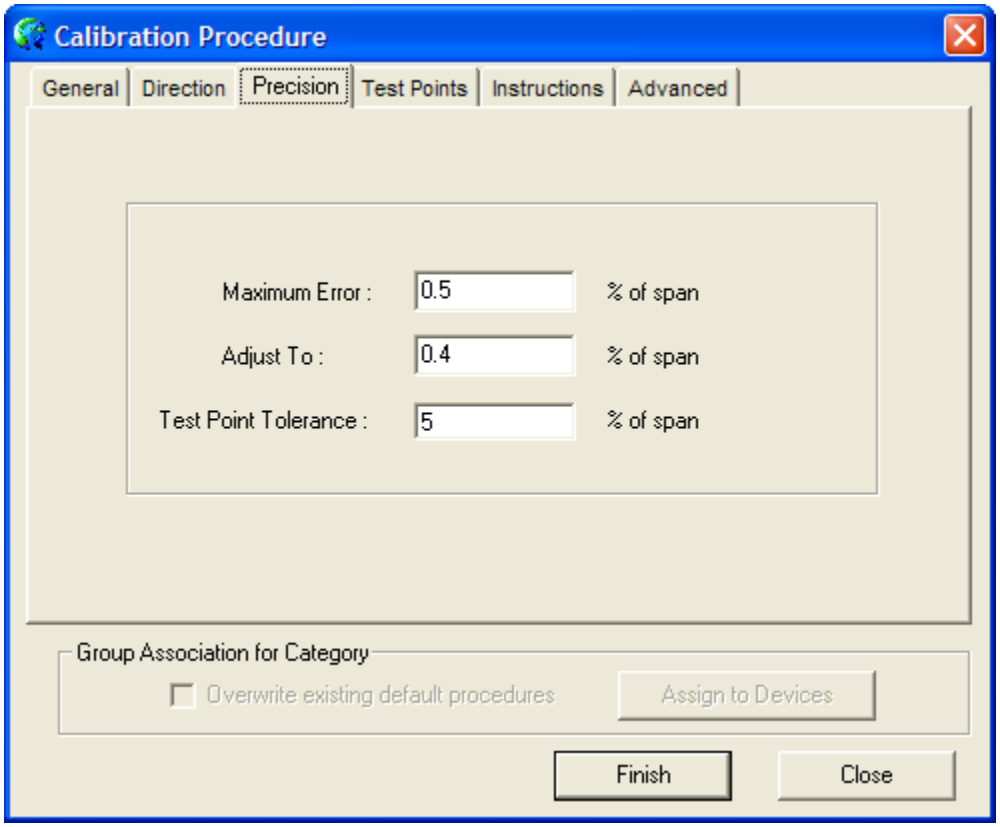


For example: five (5) divisions for up and down direction would result in 11 calibration points from 0% to 100% and back down to 0%.

5.1.1.1.3 Precision Tab

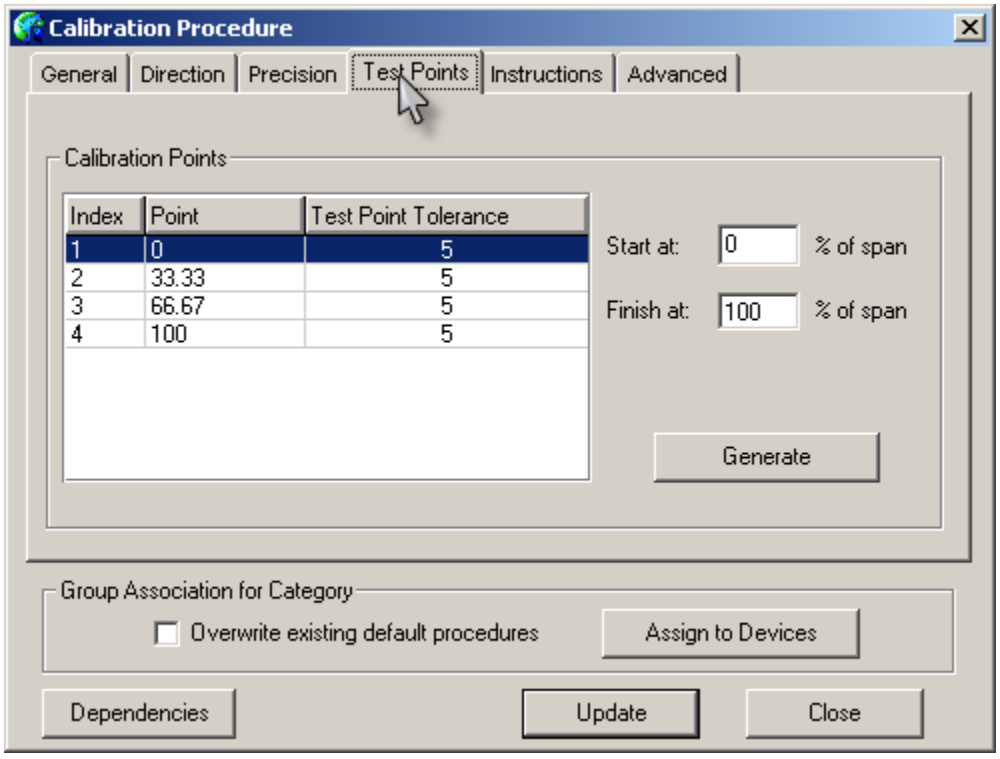
The Precision Tab defines the calibration procedure accuracy:

- **Maximum Allowable Error:** This is the user definable maximum error that is allowed before a device is considered out of tolerance.
- **Adjust To:** This is the target % error for making an adjustment to the device for a given test point.
- **Test Point Tolerance**: The applied calibration signal must be within this tolerance before the DPC will accept the “Save Data” command during the field calibration activity.



5.1.1.1.4 Test Points Tab

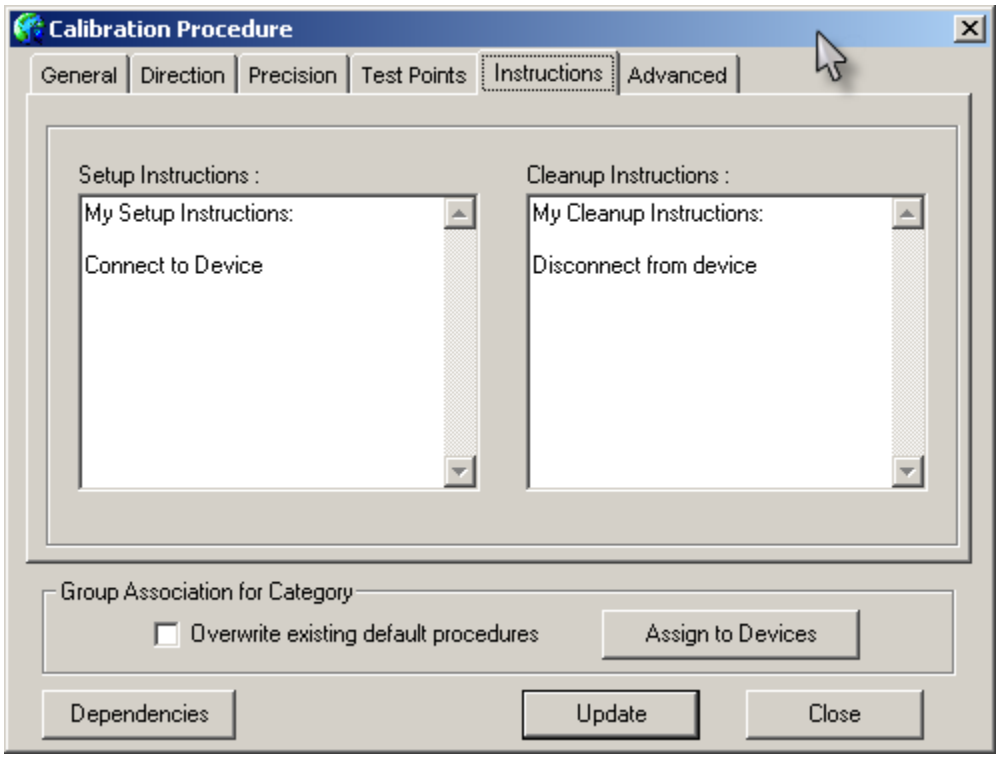
The Test Points tab allows the generation and viewing of the points as a percentage of the span (percentage divided by number of points), and the tolerance of each point. This is dependent on the number of points and precision settings in the “Direction” and “Precision” tabs.



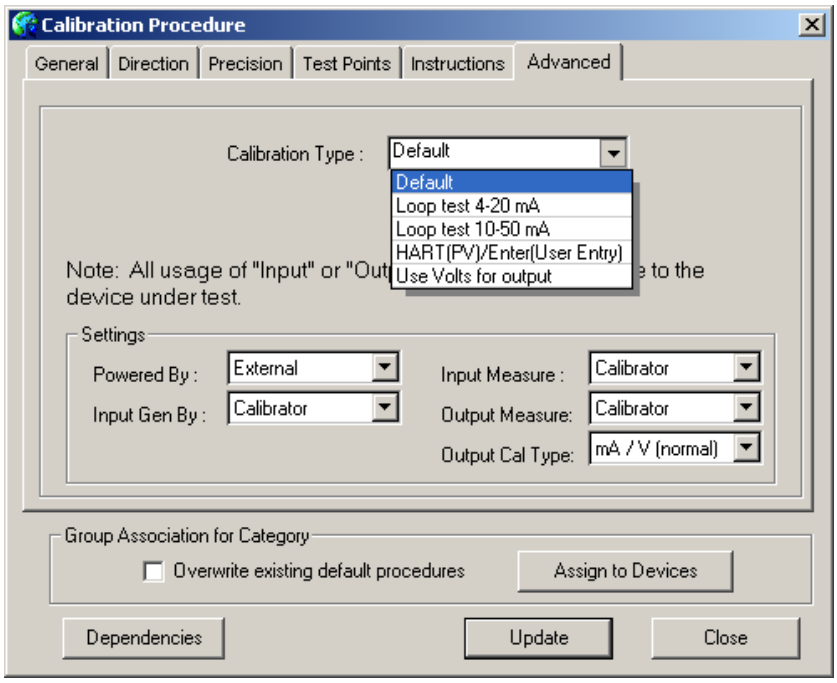
5.1.1.1.5 Instructions Tab

Setup Instructions – This message can be 255 characters and is the message that will be displayed on the DPC when the calibration procedure is performed in the field.

Cleanup Instructions - This message can be 255 characters and is the message that will be displayed on the DPC when the calibration procedure is completed.



5.1.1.1.6 Advanced Tab – Special Calibration types



Calibration Type:

Default – This setting sets the procedure for standard mA and V output proportional calibration, for Conventional AND Hart Devices.

HART PV or USER ENTRY – This setting sets the procedure for a PV reading, which is read automatically from HART devices during calibration, or for Conventional/Fieldbus Devices, is manually entered into the calibrator.

Use Volts for Output – This setting will set the procedure for output to use Volts (instead of mA or PV).

Loop Test (4-20 mA) – This setting will set the procedure to measure the Loop current when set to 4 and 20mA. If the measure mode is set to “Simulate”, the Cal procedure will automatically put the HART device into 4 and 20mA during calibration.

Loop Test (10-50mA) – This setting will set the procedure to measure the Loop current when set to 10 and 50mA. If the measure mode is set to “Simulate”, the Cal procedure will automatically put the HART device into 10 and 50mA during calibration.

Settings:

Powered By – External – This default value tells the calibrator that the transmitter is powered externally. If this is set to Calibrator, the calibrator will attempt to power the device.

Input Gen By – Calibrator – This default value allows the calibrator to generate the input values. Manual allows editing of input values.

Input Measure – Calibrator – This default value tells the calibrator to read the inputs instead of entered Manually.

Output Measure – Calibrator – This default value tells the calibrator to read the outputs instead of entered Manually.

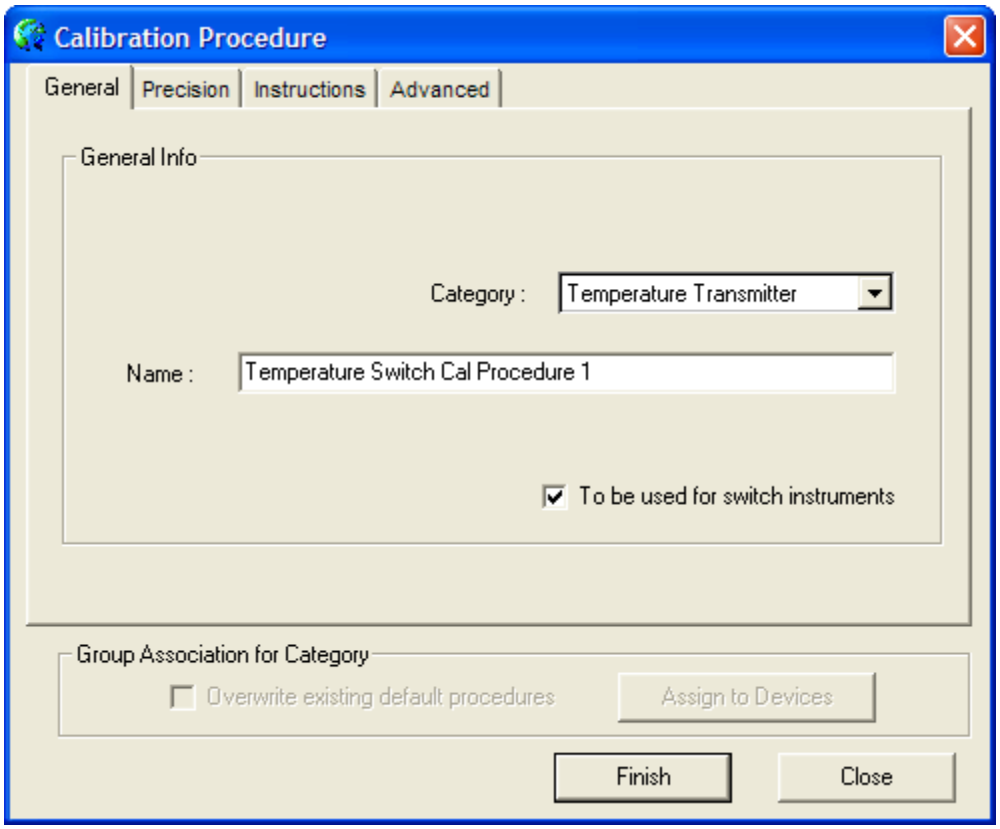
Output Cal Type – ma / V – This selection is for standard Proportional calibrations where the output is in mA or V. It can also be set to Pressure or Temperature for outputs that are entered manually or read directly from the transmitter.

5.1.1.2 Switch Calibration Procedure

Four (4) tabs are provided for detailing the switch procedure requirements.

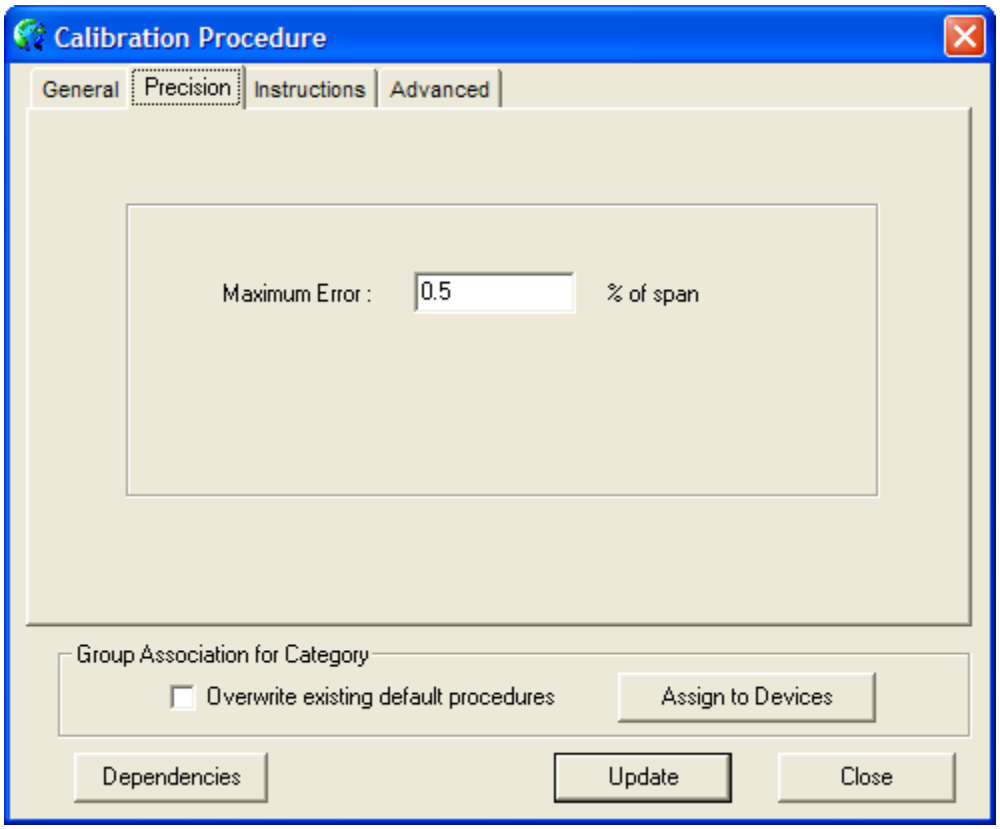
5.1.1.2.1 General Tab

This tab is identical to the one for transmitter calibration procedures except that the checkbox “To be used by switch instruments” must be checked for switch calibration procedures.



5.1.1.2.2 Precision Tab

Unlike the transmitter procedure configuration, this tab only provides a maximum error % of span which is a user definable maximum error that is allowed before a device is considered out of tolerance.

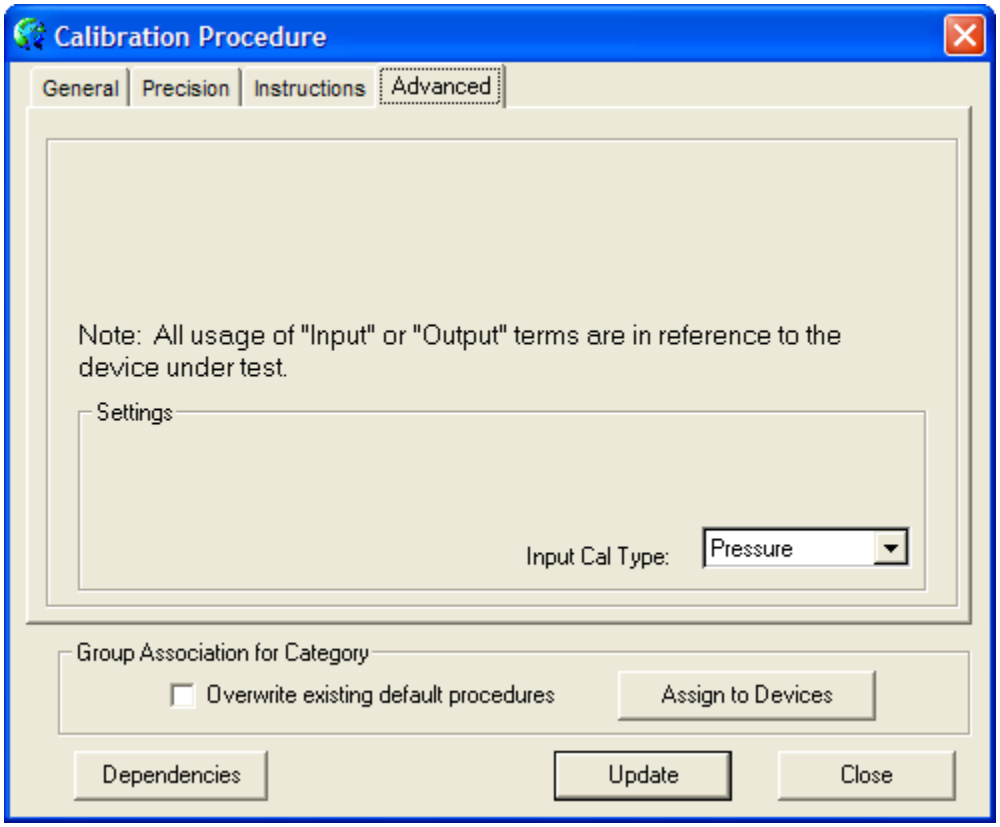


5.1.1.2.3 Instructions Tab

This tab is identical to the one for transmitter calibration procedures.

5.1.1.2.4 Advanced Tab

Unlike the transmitter procedure configuration, this tab only provides an input calibration type which is user selectable for defining the sensor type used to calibrate the switch.



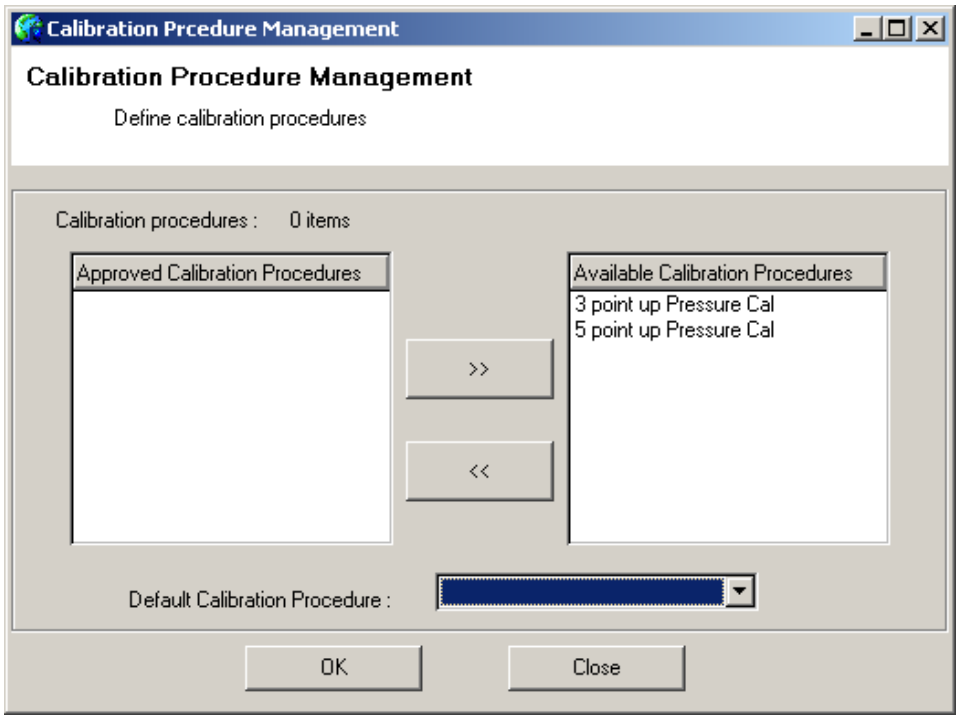
5.1.2 Managing Calibration Procedures

Calibration Procedures are associated with devices and/or Categories. More than one procedure can be associated with a single device, however at least one of the associated procedures must be selected as the default procedure that is used for calibration of a device.

5.1.2.1 Associate Calibration Procedures with Devices

5.1.2.1.1 Associate One Device at a time

To associate a Calibration Procedure with a particular device, click on the device (In the Devices folder), then right click and select Manage Calibration Procedures. Then select Associate Calibration Procedures. See below:



The right hand column lists the available procedures for the Category of the Field Device being working on. Any procedures that were designated as Category “All” will be in this list as well.

If no procedures are presented here, there are two possibilities; there is either no calibration procedure created in the “Calibration Procedures” folder, or there are no Calibration procedures for this Category of device. For example, if a FLOW device is being managed, but there are only procedures defined for PRESSURE devices, then no available calibration procedures would be shown when trying to manage the FLOW device.

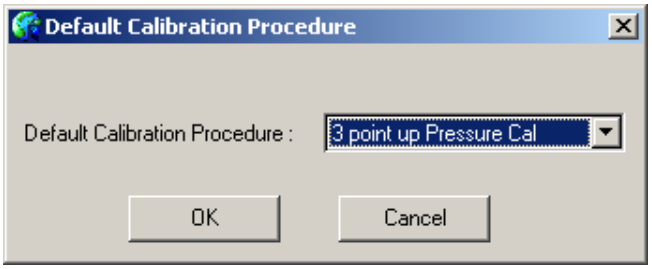
5.1.2.1.2 Associate Groups of devices

Groups of devices can be associated when creating or viewing the calibration procedure. This is done by right clicking on the Calibration Procedure, selecting Properties from the menu, by pressing the “Assign to Devices” button from the General tab, and selecting the folder that the devices are in.

5.1.2.2 Setting Default Calibration Procedure

A default procedure can be set for a particular device. Click on the Device (In the Devices folder), then right click and select Manage Calibration Procedures. Then select the desired Default Calibration Procedure.

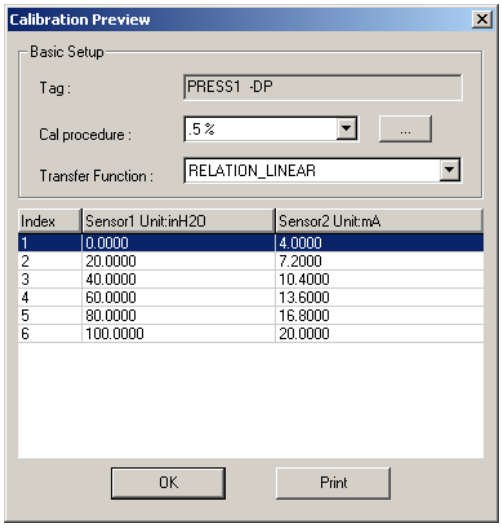
The following window will appear “Default Calibration Procedure” selection box:



The procedure that is selected here will be the default procedure used when calibrating this specific device.

5.1.2.3 Preview a Calibration Procedure

After the calibration procedure is associated with a device, it can be previewed at any time by right clicking on the Device and selecting the Preview Option:



A print out of the procedure can be obtained by clicking on the Print button.

5.2 Scheduling Calibrations

The scheduling of Calibration activities for devices is automated in DMS based on the Calibration Cycle and Last Calibration Date. Action Lists are used to represent groupings of device calibrations that can be carried out within the same effort.

Scheduling can be event based as well. For instance, if an annual Division maintenance outage were planned, this event would be the basis for calibration activity instead of the calibration cycle. By grouping devices to be calibrated into a folder named after an event, the calibrations are scheduled on an event basis.

Action Lists and/or their Action Items are downloaded to a Documenting Process Calibrator (DPC), in order to execute the procedure in the field.

Note: The DPC must be registered prior to downloading or uploading procedures.

5.2.1 Action Lists

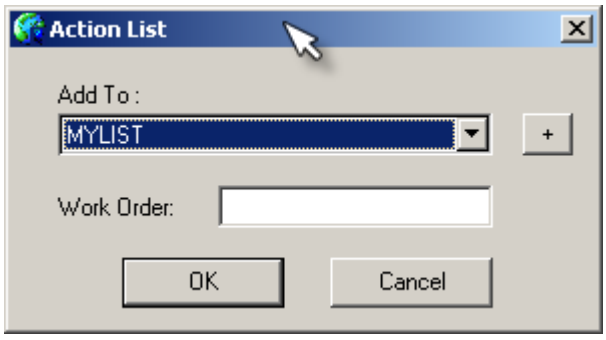
Action Lists are a “TO DO” list of Action Items to be performed on a device. The Action Items are identified with the Tag Name of the device to be calibrated. Multiple Action Lists can be created, each with its own folder. The folders are named based on classification, work order number, personnel assignment (person’s name who will be performing the calibration), or any other user-defined scheme. Action Lists also track the status of the tag numbers listed.

Action Lists are usually populated based on the Alerts for “Device Due For Calibration”. These alerts are based on the Calibration Cycle for each device.

5.2.2 Adding a Calibration to Action List

After a device has been associated with a default Calibration procedure, it can be added to an Action List as an Action Item. To do this, right click on the particular device (In the devices folder), then click “Add to Action List for Calibration”.

The Action List screen appears:



To add the calibration to an Action List, select it from the Pick List and press OK. If there are no selections in the Drop down box, an Action List folder will need to be created with the ‘+’ button.

The 'Work Order:' is a label that can be used to identify this particular action item. It can also be left blank.

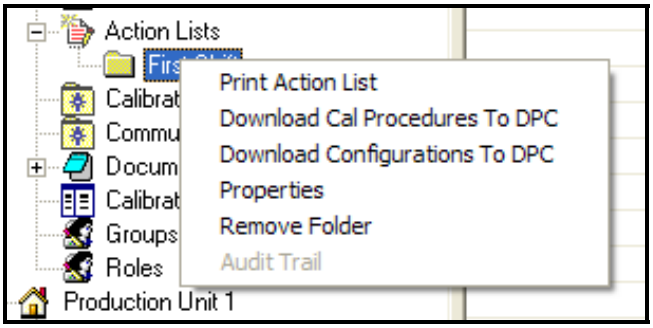
An alternative method of assigning a device to an Action List would be to select a device, then drag and drop it into an existing Action List folder.

5.2.3 Downloading Calibration Procedures to a DPC

Once an Action List's Action Item is created, the Action Item can be downloaded to a DPC.

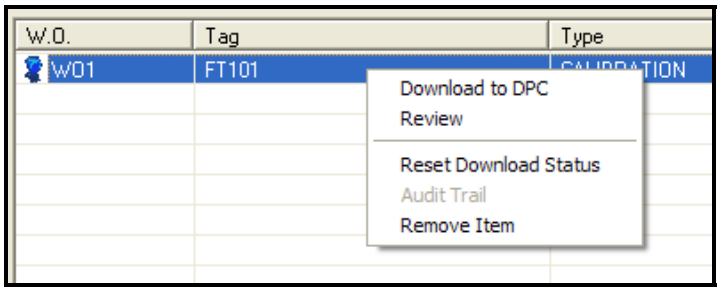
The entire Action List or selected Action Items can be downloaded.

To download the entire Action List to the DPC, right click on the Action List folder and select "Download Cal. Procedures to DPC".



The User will be required to choose between Configurations and Calibration Procedures separately. This is done because not all DPC's can handle device configurations. The only DPC's that DMS supports for transfer of device configurations is the ABB DHH810-MFT and the DHH800-MFC.

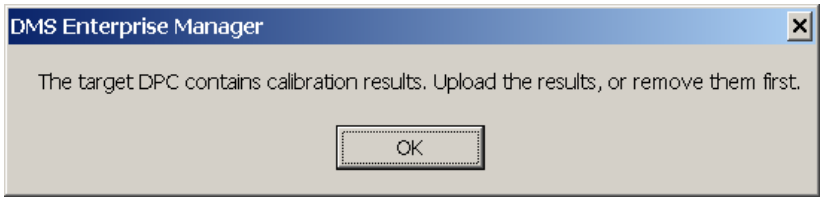
To download selected Action Items inside the Action List, right click on the selected items and select "Download to DPC".



Each Action Item inside the Action List has a Status that indicates whether it has been downloaded or not.

The FCINTF Interface Specification that ABB uses requires that there be no Calibration Results on the DPC prior to adding new Action List items. ABB has implemented this same practice for Device Configurations as well.

If Calibration or Configuration results are found on the target DPC, then a message similar to the following will appear:



To enable the download operation, the User needs to Upload the results, or if the results are not needed for some reason, then the user needs to Remove it from the DPC. The Remove or Upload function is performed from the DPC Interface. Refer to the Uploading Calibration Results section or the Reviewing Calibration Results section for further direction.

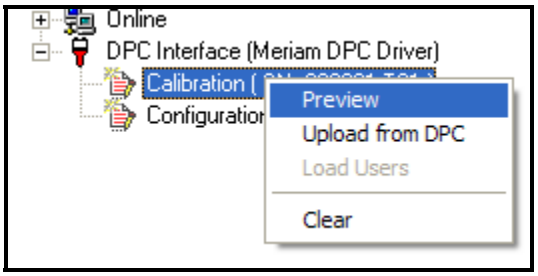
5.2.4 Uploading Calibration Results

After a calibration Action Item is performed on a device, the results can be uploaded to DMS.

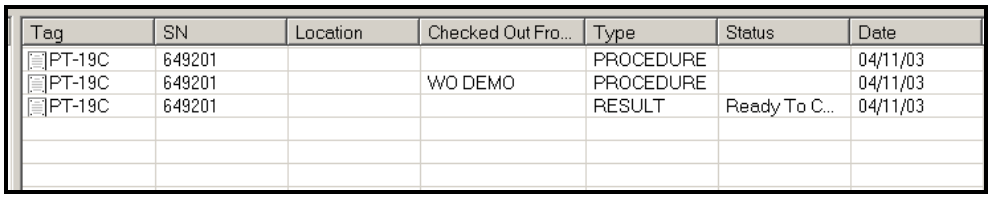
> ***Note:*** The Port Setting must be set-up correctly for upload/download operations to work correctly. right click on the "DPC Interface" icon and select the proper COM port.

On the DPC Interface Icon, expand to show "Calibration" and "Configuration" options.

Right click on "Calibration", and then select "Preview". This will display the calibration procedures that are on the DPC.



The following is a sample Preview of a DPC:

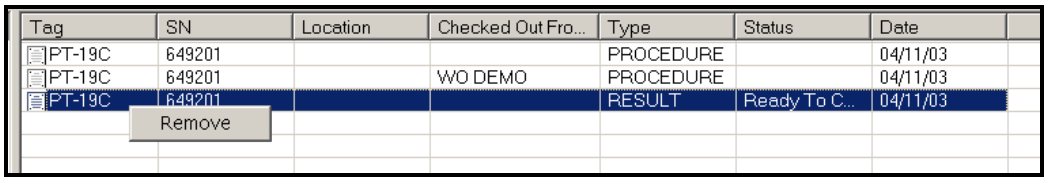


Tag	SN	Location	Checked Out Fro...	Type	Status	Date
PT-19C	649201			PROCEDURE		04/11/03
PT-19C	649201		WO DEMO	PROCEDURE		04/11/03
PT-19C	649201			RESULT	Ready To C...	04/11/03

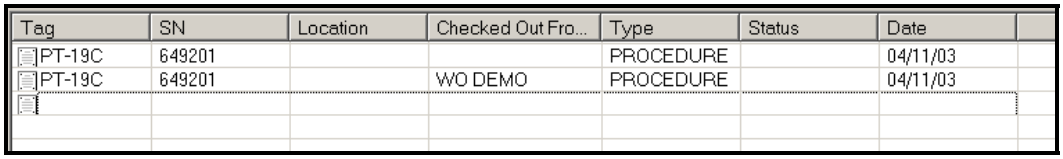
Right click on "Calibration", and then select "Upload Cal Results to DMS". This will upload all the calibration results to DMS and automatically associate these results with their corresponding Action Items.

Additionally, the history for this device is populated with a "calibration" type entry.

To Remove or Clear calibration results from the DPC, right click on the Calibration Icon and select the CLEAR option, or right click on the individual Item and select the Remove option.



After the Calibration Procedure is removed, the windows will refresh and appear as follows:



Once Results are removed or cleared, they cannot be retrieved.

5.2.5 Reviewing Calibration Results

When a device is selected, the Device Properties frame appears at the bottom of the device list window. The “History” tab shows all the activity for the device. There are various types of entries in the History, such as:

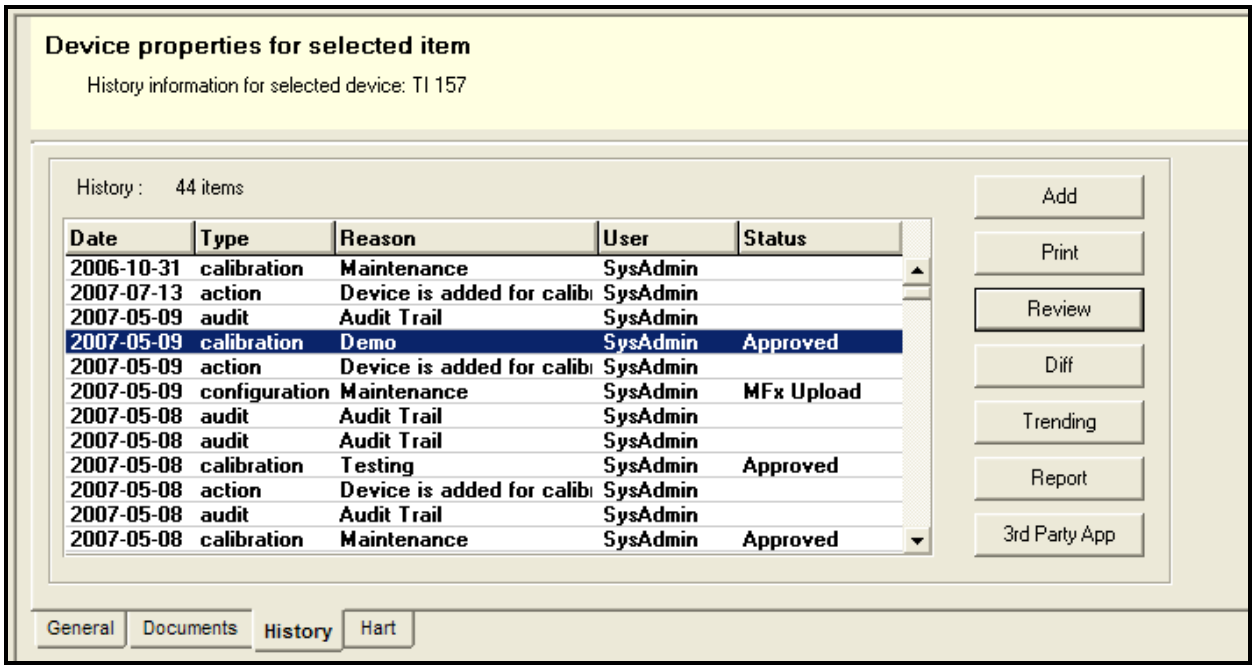
Calibration – Manual or Automated Calibrations

Configuration – Device Configuration Changes

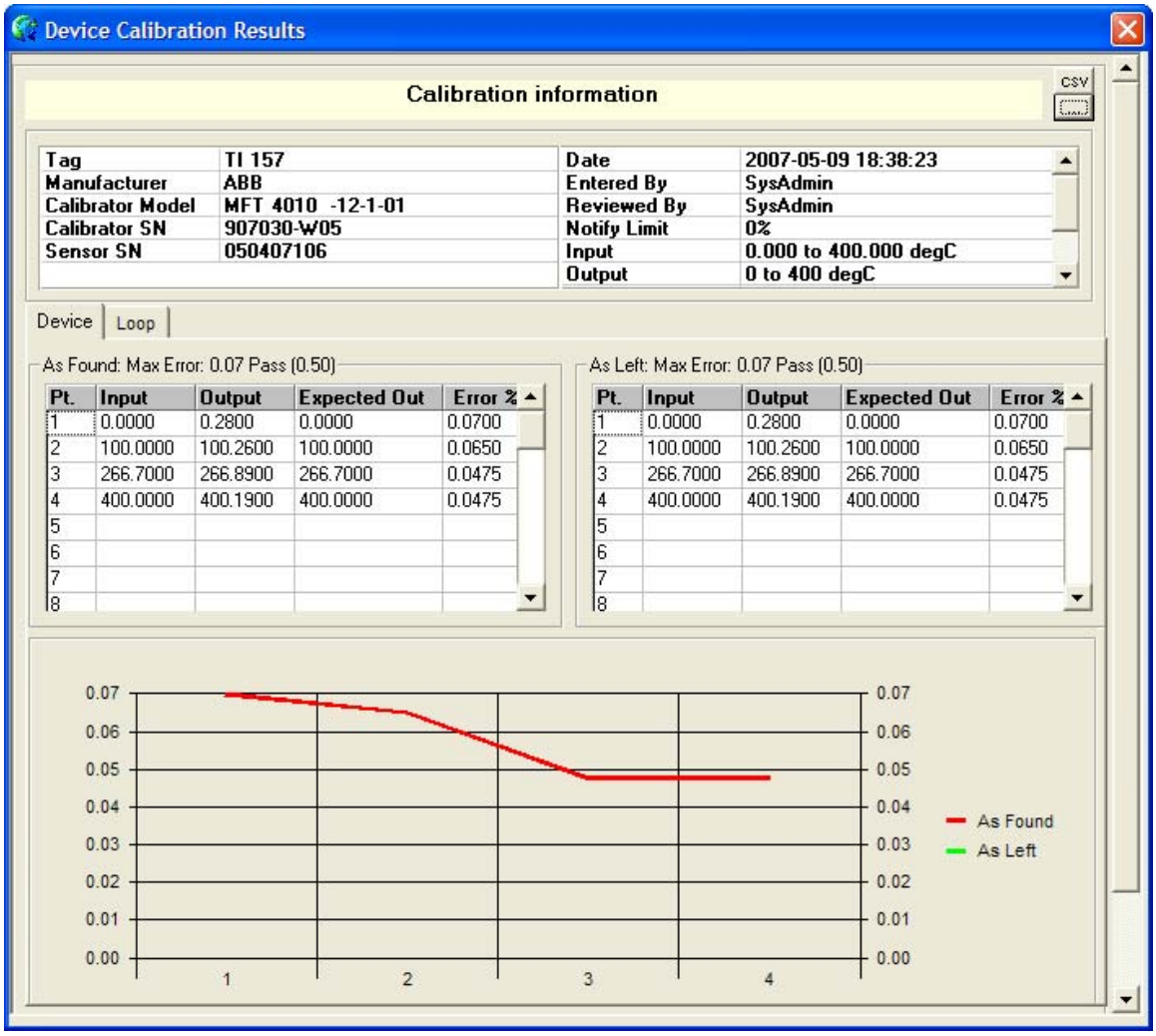
Audit – Manual Audit Event Entry

Creation – New Device added to DMS

The calibration results are Type “calibration”

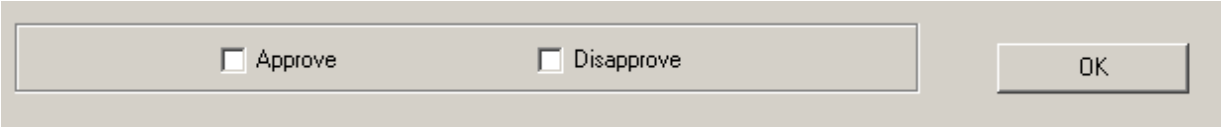


To view calibration results, select the entry by clicking on it and then click on the Review button. The entry can be double clicked to invoke it. The following window will appear:



Press the csv button to save the data into a comma separated value format file which can be used in many spreadsheet and database applications. Press the … button to view the calibration procedure details that were used during the calibration.

Scroll down to the bottom of the Calibration Results Graph. An authorized reviewer can approve or disapprove a Calibration Procedure by checking either of the boxes. This will update the Status of the calibration procedure in the Action List.

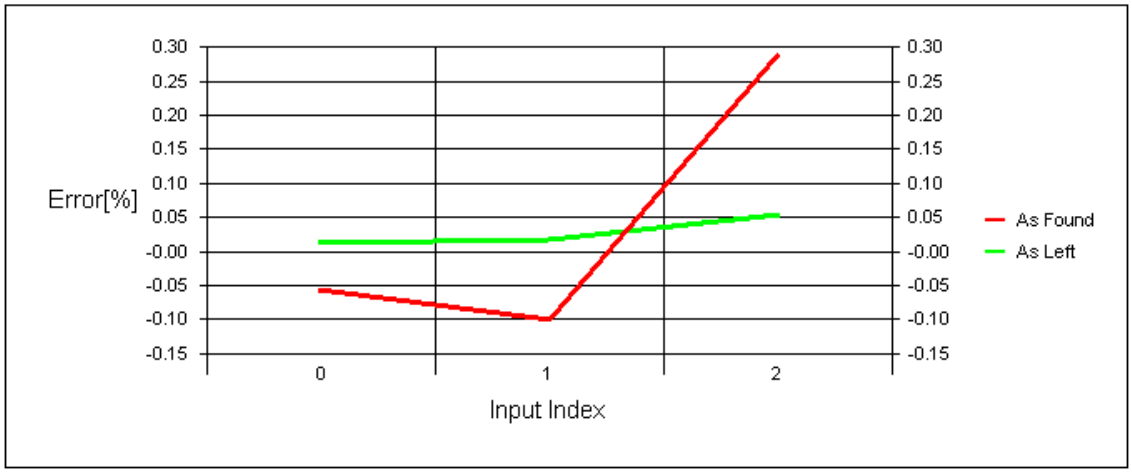


In order to generate a Calibration Certificate, click on the “REPORT” button and then the Print button.

CALIBRATION CERTIFICATE

12/30/2002

TAG:	PTCLONE	ACTIVITY DATE:	12/27/2002
CALIBRATOR MODEL:	MFT 4011	LAST CALIBRATION DATE:	12/27/2002
CALIBRATOR SERIAL NUMBER:	961520-S01	NEXT CALIBRATION DATE:	12/22/2003
MANUFACTURER:	Kent-Taylor	INPUT:	0.000 to 22.370 kPA
NOTIFY LIMIT:	0	OUTPUT:	4 to 20 mA
SNSR SERIAL NUMBER:	011207129	CALIBRATED BY:	SysAdmin
LOCATION:	TEST UNIT/DEVICETEST	REVIEWED BY:	



AS FOUND:

MAX.ERROR: 0.28766979 %

POINT	INPUT	OUTPUT	EXPECTED OUTPUT	ERROR [%]
1	0.0000	3.9910	4.0000	-0.0563
2	11.1460	11.9560	11.9721	-0.1007
3	22.3420	20.0260	19.9800	0.2877

AS LEFT:

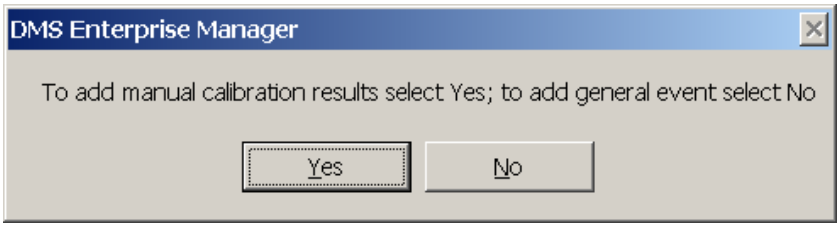
MAX.ERROR: 0.05351878 %

POINT	INPUT	OUTPUT	EXPECTED OUTPUT	ERROR [%]
1	0.0000	4.0020	4.0000	0.0125
2	11.1880	12.0050	12.0021	0.0178
3	22.3790	20.0150	20.0064	0.0535

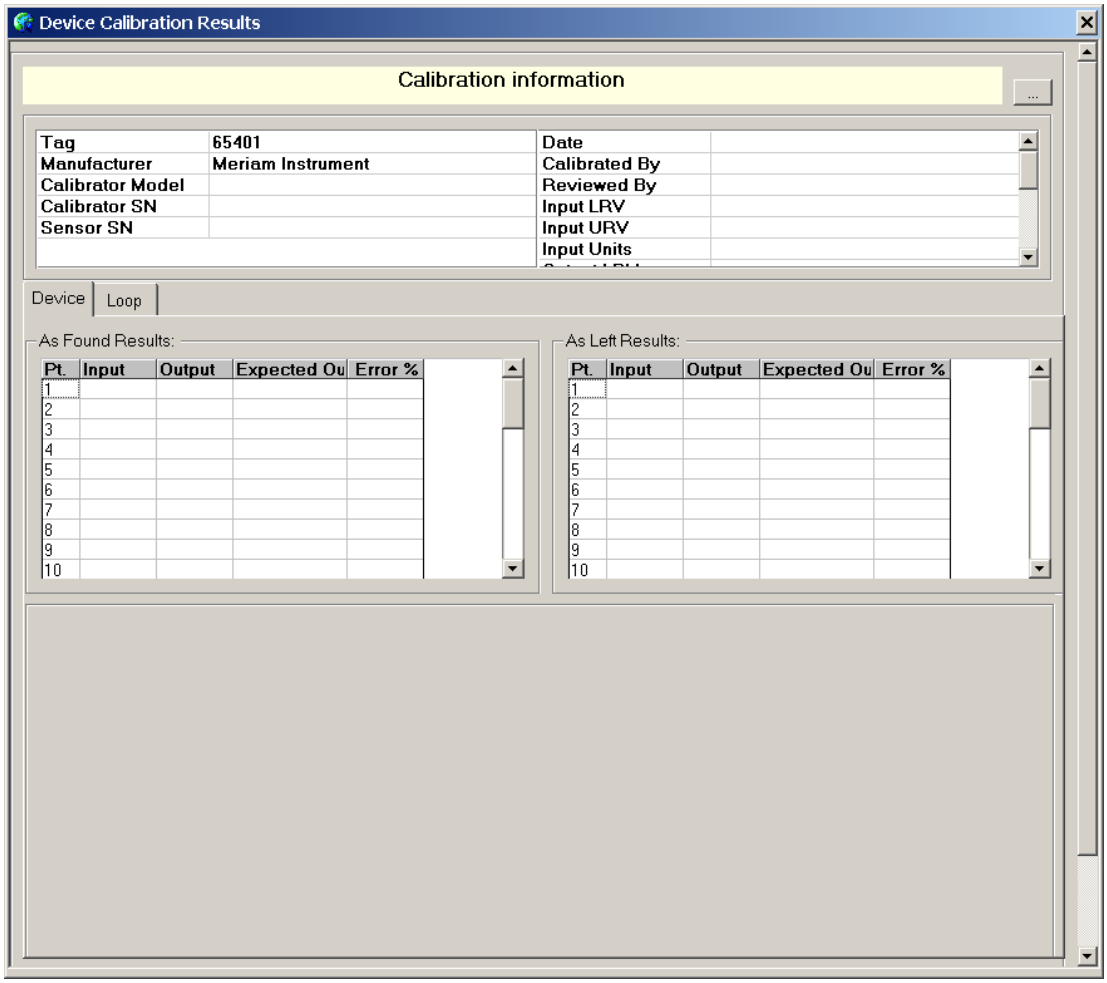
5.3 Manual Calibration

When a DPC is used that does not have the ability to exchange calibration procedure and calibration test results with the DMS software, a Manual Calibration is used to enter the calibration information.

The entry point for this feature is at the Device's History. To initiate a manual calibration, navigate to the device that was calibrated, select the History tab, and click on the ADD button.



Click on YES to add a Manual Calibration and the following window will appear:



The Tag and Device Manufacturer information is entered automatically. Enter all other calibration information by double clicking on the field. For example, the following window pops up when the Sensor SN is double clicked on:

Enter the Value and select OK. The calibration data points are handled in the same manner.

6.0 Documenting Process Calibrator (DPC) Interface

Note: Refer to the section for Registering DPC's and Calibration Standards. Calibration equipment must be registered with DMS prior to performing any upload/download operations between the DPC and DMS.

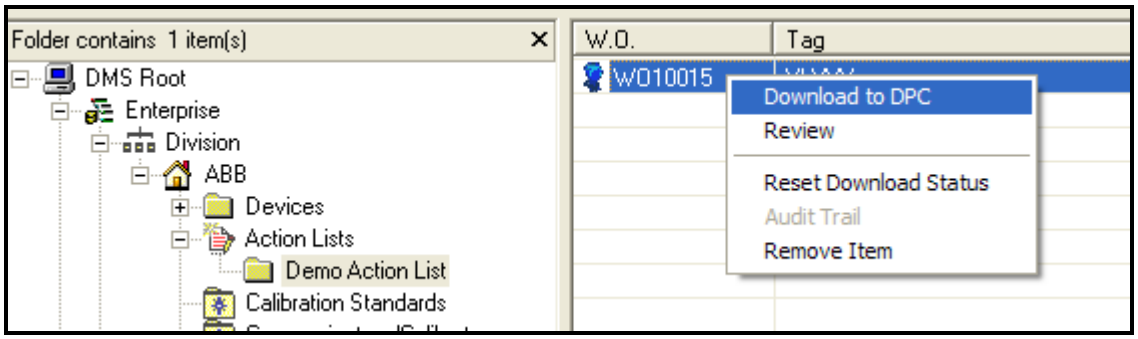
6.1 DPC Recertification Tracking

DMS tracks due dates for calibration equipment recertification. The Last Calibration Date and the Calibration Cycle of a standard or hand held is used to issue an Alert to the user when the equipment is due for recertification

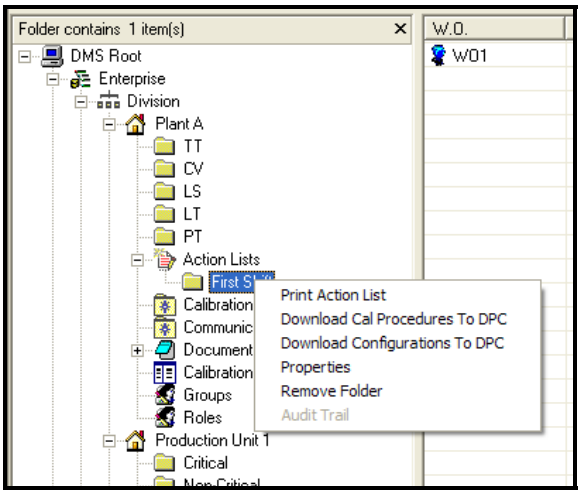
6.2 Downloading from DMS to DPC

All download operations for DMS to DPC are initiated from the Action Lists folder. The Action Lists folder contains Action Items, such as Configuration Changes and/or Calibration Procedures.

Individual Action Items can be downloaded from DMS to the DHH810-MFT by right clicking on the Action Item (TAG ID) in the Action List folder and selecting the "Download to DPC" option



In most cases, an Action List contains multiple Action Items that will be performed by a single individual, or on a given maintenance routine or route. To download an Action List, right click on the Action List folder and select the "Download Cal Procedures to DPC" and/or "Download Configurations to DPC" options.



Only ABB products, such as the DHH810-MFT and the DHH800-MFC, can perform configuration Action Items. Other DPC's do not store and transfer HART Device configuration data.

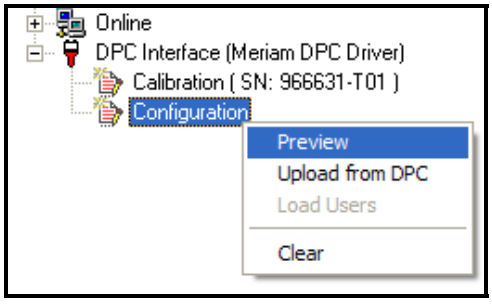
Regardless of which method is used to download an Action Item to the DPC, the "Status" field is updated to reflect that the Action Item(s) has been downloaded.

6.3 Uploading from DPC to DMS

All upload operations for DPC to DMS are initiated from the DPC Interface folder. The DPC Interface folder contains two components;

Calibration – Calibration Results (Preview and Upload) and Procedures (Preview)
Configuration – Device Configuration data (Preview and Upload)

To preview what is available on a DPC to be uploaded, right click on the Calibration or Configuration icon and select the Preview option



To upload Configuration or Calibration results from the DPC to DMS, right click on the appropriate icon and select the Upload from DPC option.

For each item that is uploaded, there will be a prompt for a Service Reason

Note: Although the user can preview configuration edits and results, only the results of a configuration change or a configuration that was saved from a device can be uploaded.

7.0 Search Options

DMS has several Search options available to support analysis of data or to locate devices based on the Search Criteria.

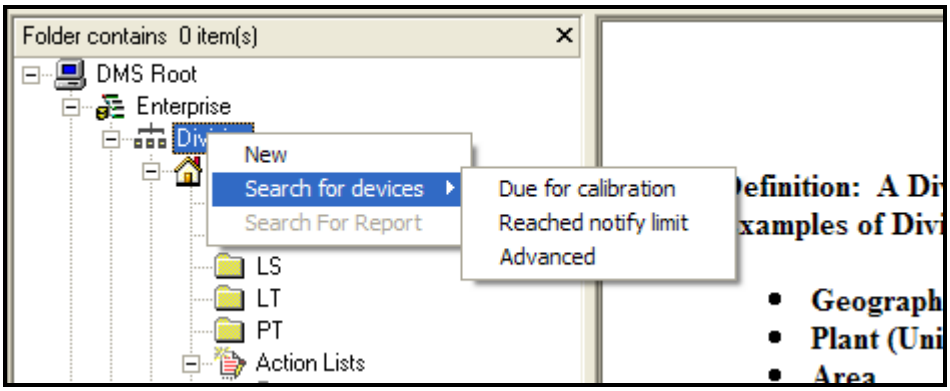
Searches are based on device characteristics and parameters. Searches can be performed at two major levels in DMS;

- Enterprise Level for all Divisions
- Division Level for all Devices within a Division

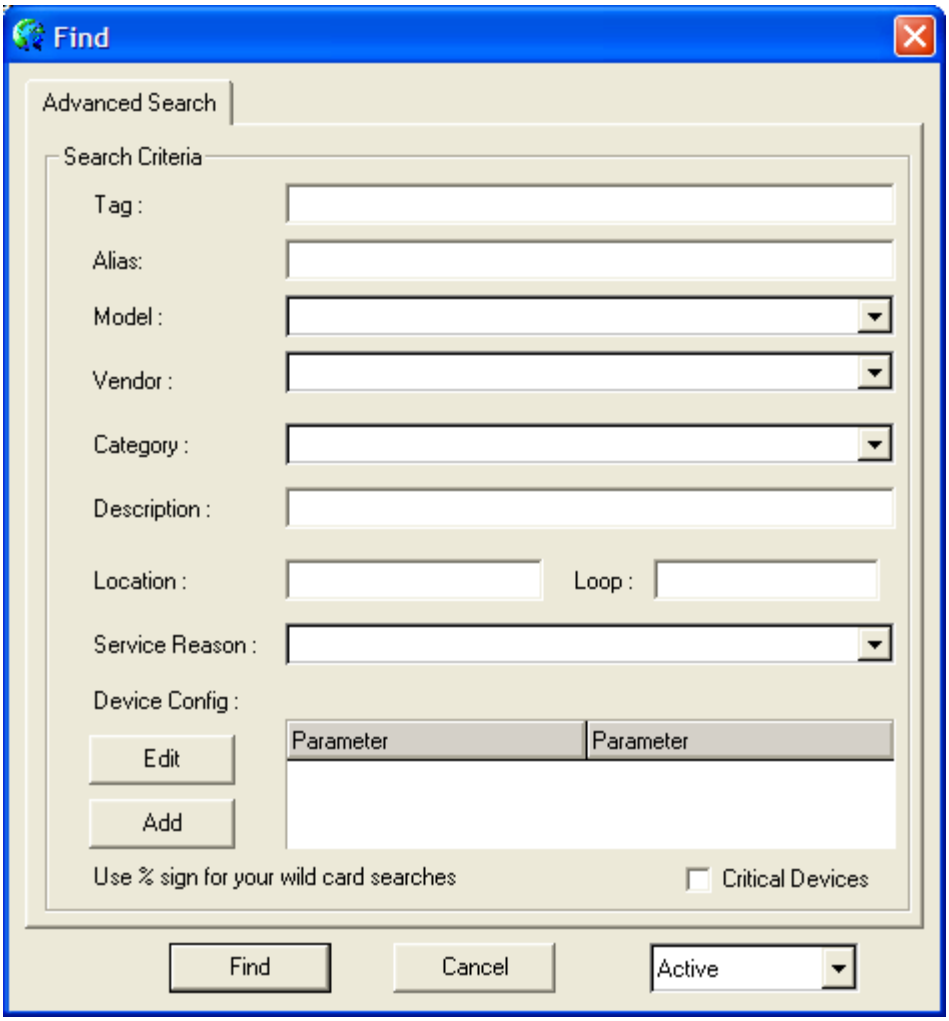
To perform a search on the Enterprise Level, right click on the Division folder and select one of the predefined searches;

Due For Calibration – Devices that are due for calibration based on the device's last calibration date and the Pre-Notice setting.

Reached Notify Limit – Devices that have met the Notify Limit for accuracy that was set for each device (based on the most recent calibration results).



If a more detailed search is required, then select the "Advanced" option, which will provide the following window:



With this interface, the user can search on various device parameters.

General Parameters – A search can be formed on the most common general parameter for a device.

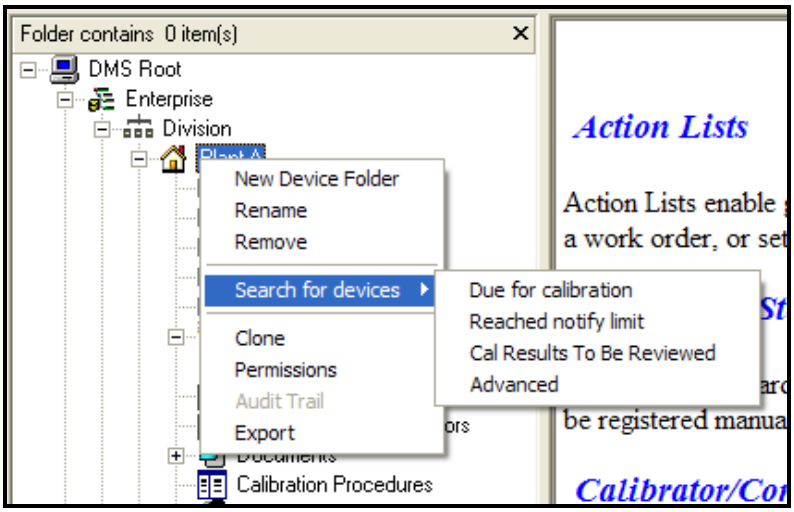
Device Settings - Automatic pull down menu displays the existing Model, Vendor, and Category for quick reference from the search window.

Action Items – A pull down menu is available for easy reference to specific types of activity on devices based on Service Reasons.

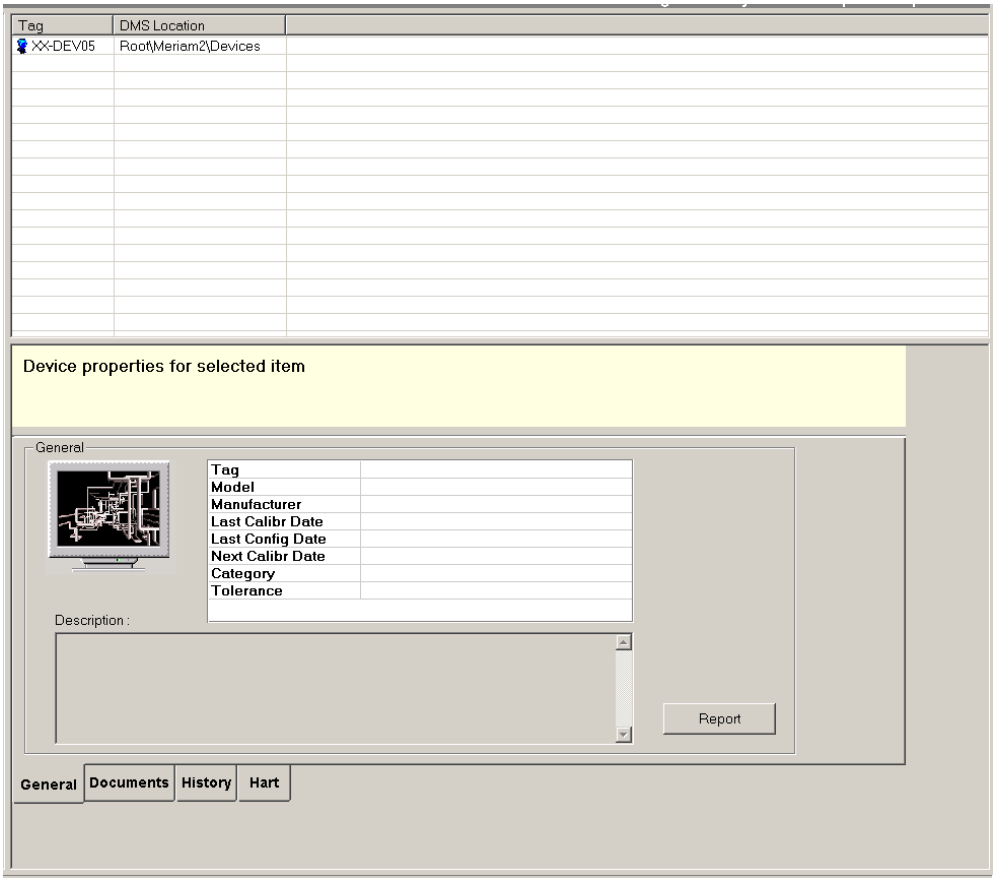
HART Device Parameters - HART parameters vary widely between different device models. This interface allows the user to search devices based on the HART configuration data for a given device.

The same searches available at the Enterprise Level are available at the Division Level. To perform a search at the Division Level, select the desired Division, right click, and select the Search For Devices option.

There is an additional predefined search for “Cal Results to Be Reviewed”. Otherwise, the search options are the same as for the Enterprise Level.



After any search is performed, the results of the search are displayed in the Search Results Window.



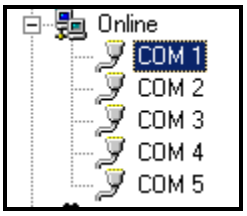
8.0 Optional – DMS Online (Single Point Access)

DMS Online is an optional Software Module for Single-Point Access to Hart Devices using a HART Modem. This enables device monitoring, configuration and upload directly from the DMS.

8.1 Connecting to a device

Connect a Hart modem from a COM port on the PC to a Hart Device.

In DMS the 'Online' symbol should appear towards the bottom of the folder tree. Click on the '+' to expand Online and show the COM ports:



Select the COM port to which the Hart modem is connect, right click and then select connect:

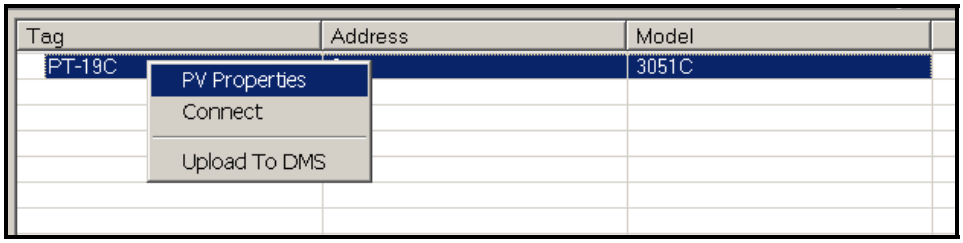
The following message will appear:

Click on 'OK' and DMS will poll the device and show found devices in the right display pane:

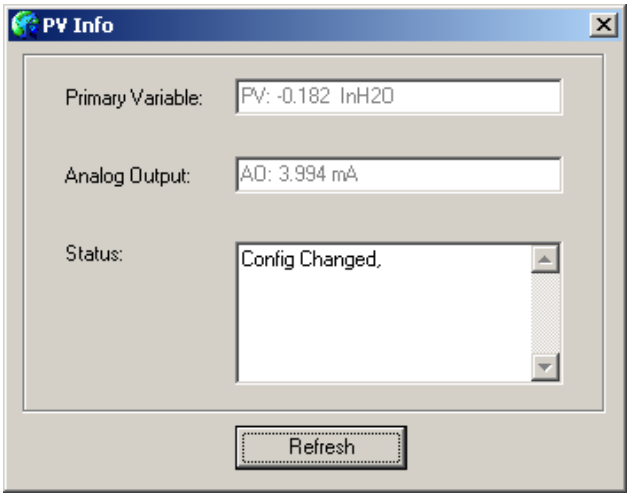
Tag	Address	Model
MYTAG	0	1151s

8.1.1 PV Properties

The first option for an online device is to monitor the PV properties (PV and AO) and the HART Status byte results. Right click on the Tag ID and choose PV Properties.

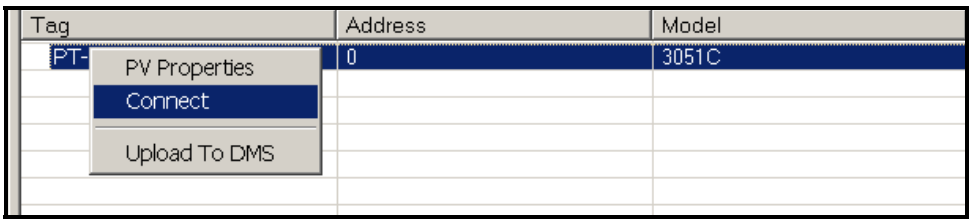


The following window will appear and refresh every 5 Seconds. To force a refresh, click on the refresh button.

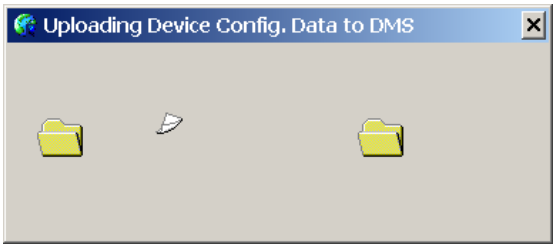


8.1.2 Connect To Device

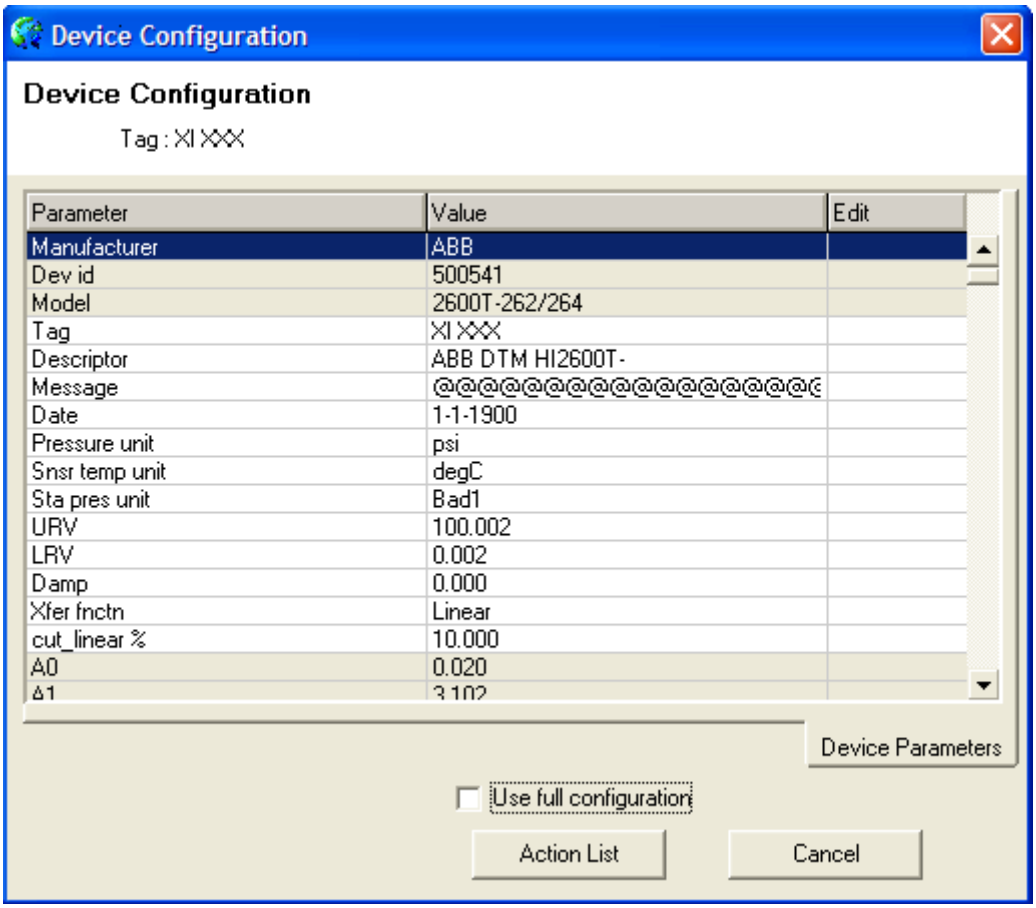
Right click on the Tag ID and select “Connect”. DMS will load the device configuration and display the parameters:



First, the following status message will appear:

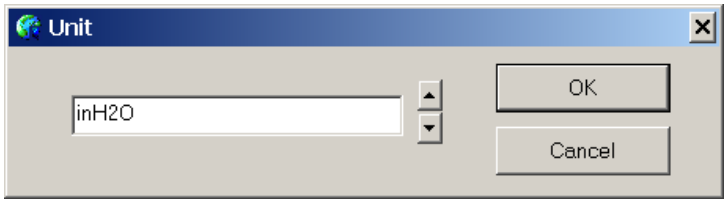


Next the Device Configuration window will appear:

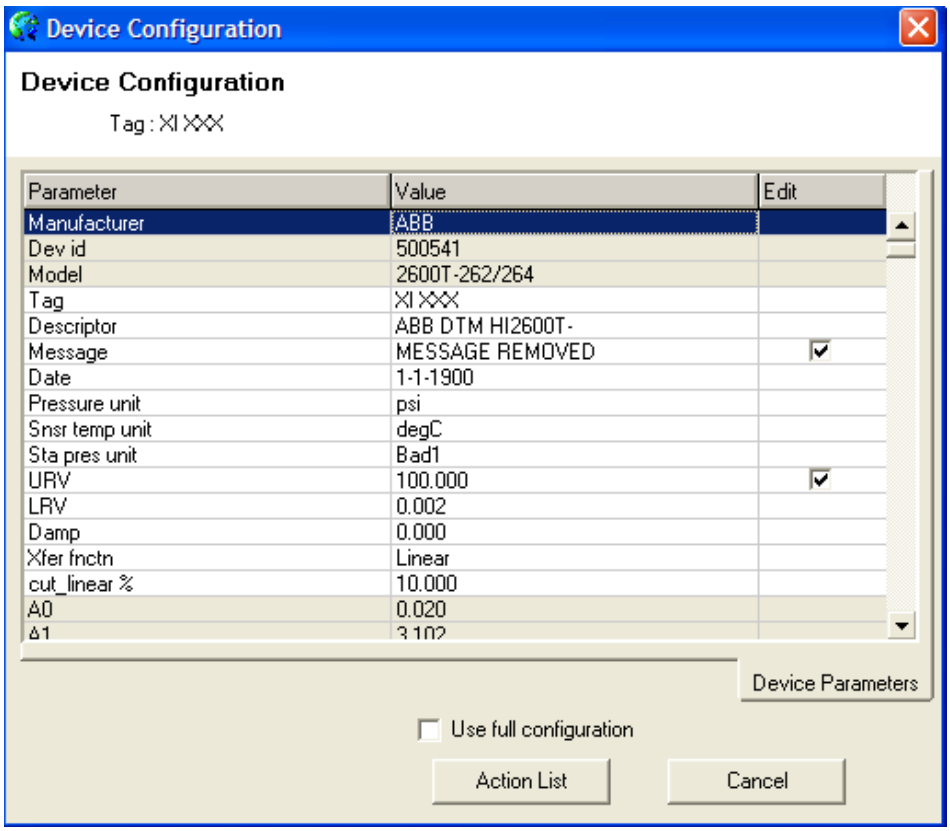


CAUTION: It is recommended that only one parameter be edited at a time, especially when there is a chance that the parameter being changed will have an impact on other parameters. For instance, a change to the "Units" of a device should be done independently. This is so all of the other parameters will be based on the new units setting.

To edit a parameter, double click on the parameter and the following window will appear:



The parameters changed in On-Line mode will be indicated with a checkbox in the 'EDIT' column as they are changed.



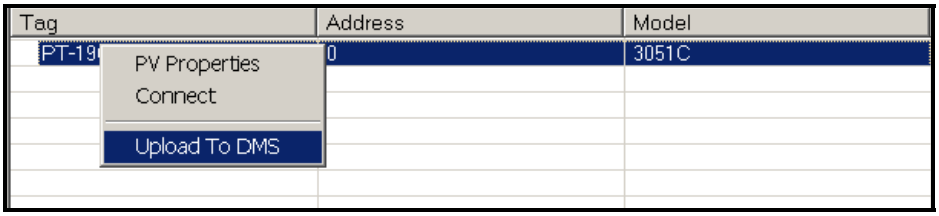
Changed parameters can be sent to the device by clicking 'Send To Device', or clicking the "Use Full Configuration" checkbox first can send the entire configuration. DO NOT check the "USE FULL CONFIGURATION" option for minimal changes.

The "Use Full Configuration" option is primarily used to clone devices.

After sending the changes, DMS will automatically re-poll the device. Select the Connect option and verify that the changes have been made.

8.1.3 Uploading Device Configurations into DMS

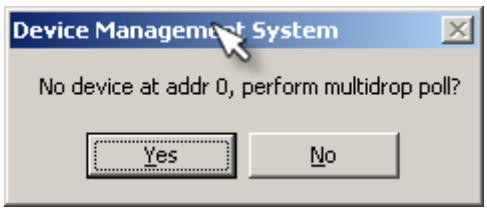
A device(s)'s configuration is imported into DMS with the "Upload To DMS" function:



If it is a new device (Unique Tag name and Device ID), a prompt will be made for inserting the device into a DMS folder. If the device exists in DMS, this function will update the configuration for the existing DMS device.

8.1.4 Multi-drop with Online

If DMS does not find a device at address 0, it will attempt to perform a multi-drop search for devices at address 1-15. The following message is displayed:



Click on “Yes” to search for Multi-drop devices. There will be a 30 second delay while DMS polls all Multi-drop devices. Then the results are shown.

If two devices are connected on a loop with addresses 1 & 2, a screen similar to the following will appear:

Tag	Address	Model	
DEV TAG1	1	653S	
DEV TAG2	2	1151s	

Right click on any of the devices displayed to choose the On-Line options.

9.0 Importing Data into DMS

DMS can import data from comma separated value (*.CSV) or Excel (*.XLS) files using the Import tool built into DMS.

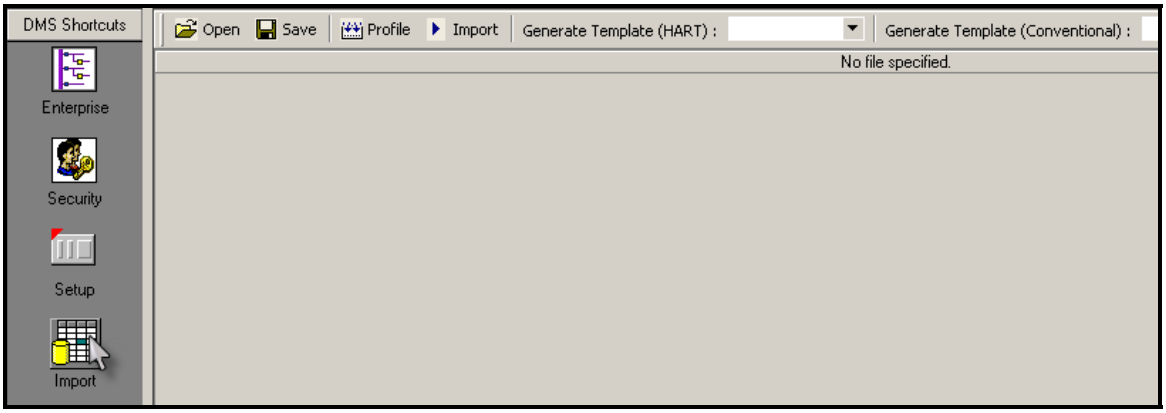
There are four steps to importing data into DMS:

1) Generate ".csv" templates for the device or device types that are in use.
2) Using Microsoft Excel, copy data into the template under appropriate column headings
3) Profile the data and make adjustments with the DMS import tool
4) Import the data into device folders with the import tool.

These steps are discussed in detail below.

To import data, first generate Excel templates (based on type of device) using the import tool built into DMS. Open the generated file and then copy or manually enter the device data into the template being careful to align the data into the matching columns. This prepares the data for importing with the DMS import tool.

Click the "Import" DMS shortcut to load the import tool.



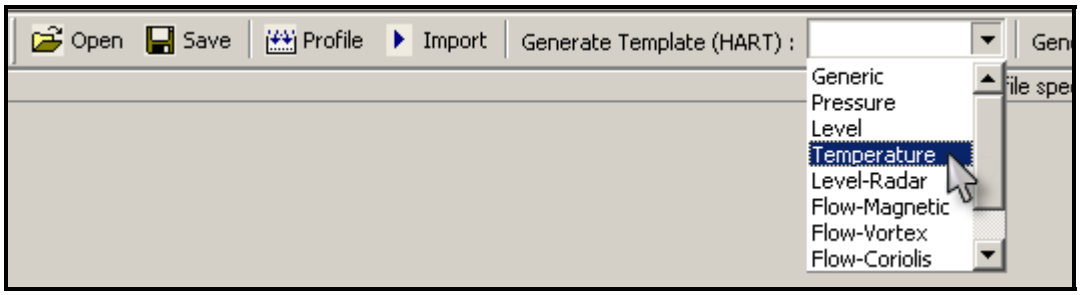
9.1 Generating Templates

Before importing data, templates need to be generated for each type of device that are used. There are 10 possible HART device templates, and 16 conventional device templates. A template can be generated based on a 'Specific Model' of device. If HART devices are in use and the ABB DHH810-MFT or DHH800-MFC is used to save HART configurations, then data should be imported into one of the HART Templates. For all other devices, use the conventional templates to import the data.

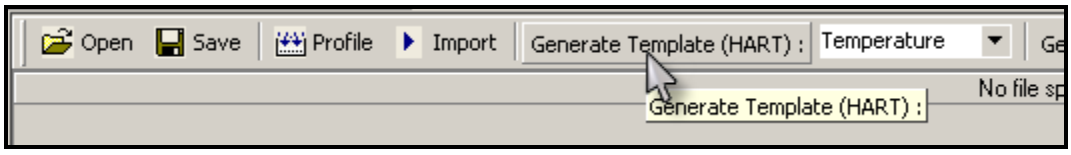
Note: Develop separate import templates for the common types of devices being imported. Do not attempt to mix dissimilar device types in one template.

9.1.1 Generating a template

To generate a template, use the dropdown box next to "Generate Template (HART)" or "Generate Template (Conventional)" to select the device type:

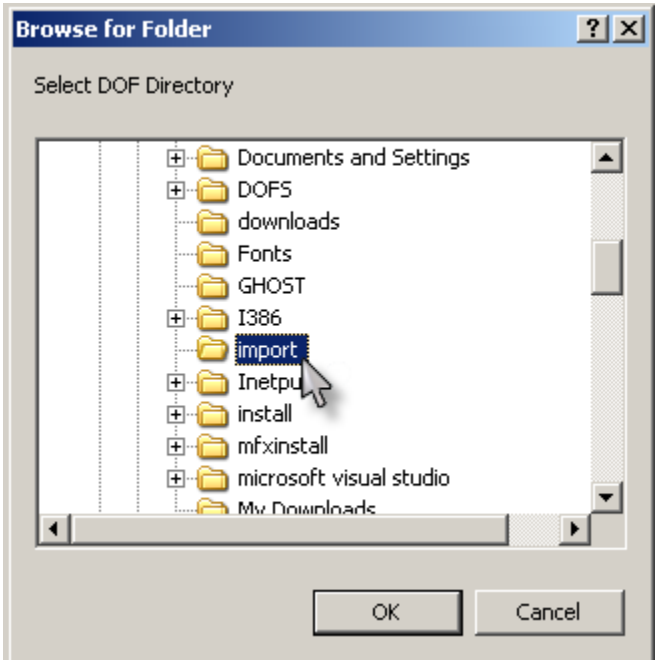


Next, click “Generate Template”:



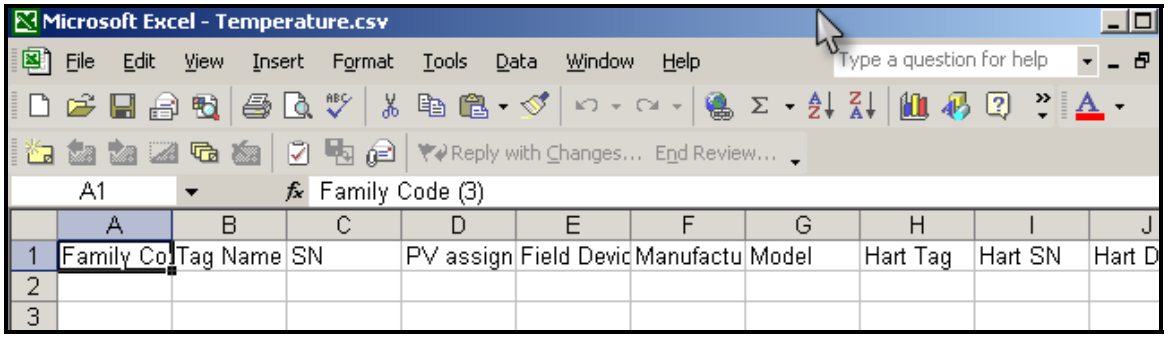
A prompt for a directory to place the template appears. Specify or create a directory that will be used for importing:

Example:



9.2 Putting data into a Template

Open the generated ".csv" file using Microsoft Excel. For example, "temperature.csv" is generated for HART temperature devices:



All the column headings are shown. Many of the columns are standard HART headings, and in this case, many of them are specific to temperature since the generated template is for Hart Temperature devices.

The data can be copied into these columns. Some of the columns are required when using the import tool, like "Tag Name", "Manufacturer", and "Model". However, there is no need to fill all columns if the information is unknown or does not exist.

When finished with entering information into the Excel spreadsheet, save the ".csv" file. It will be loaded into DMS in the "Profiling" step – next.

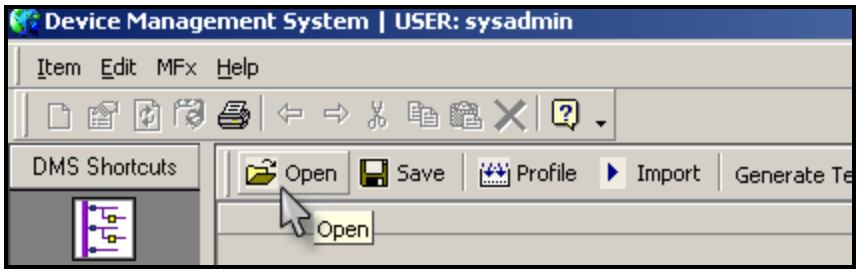
Note: We recommend that only about 20 devices max be profiled at time for optimal speed of profiling and making changes. This will vary depending on the speed of the computer.

9.3 Profiling the Data with the Import Tool

Profiling is the process of verifying that the data is ready to be imported. The DMS import tool uses colors to indicate whether each line of data is ready to be imported, or if modifications are needed.

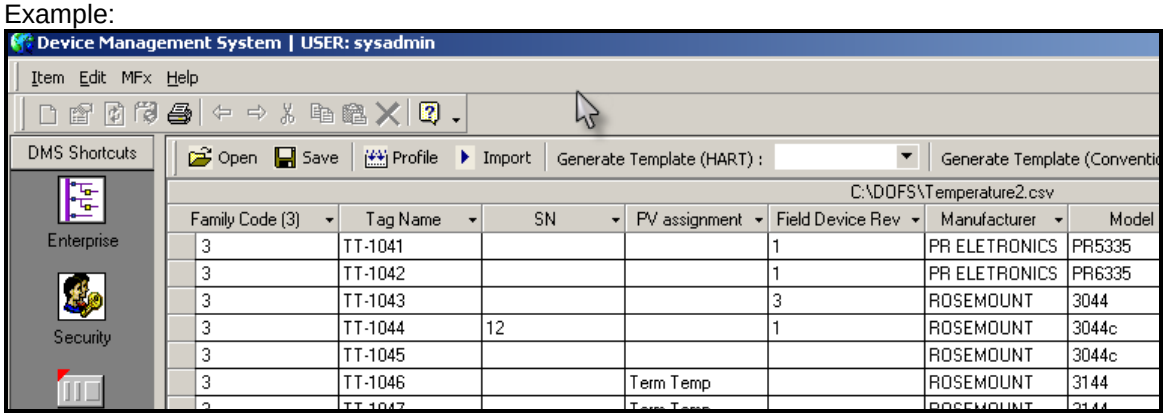
Once data is in a template, the DMS import tool can be launched by clicking on the "Import" DMS shortcut.

Once the import tool is launched, click on "Open" and navigate to the template (with data) that was created:

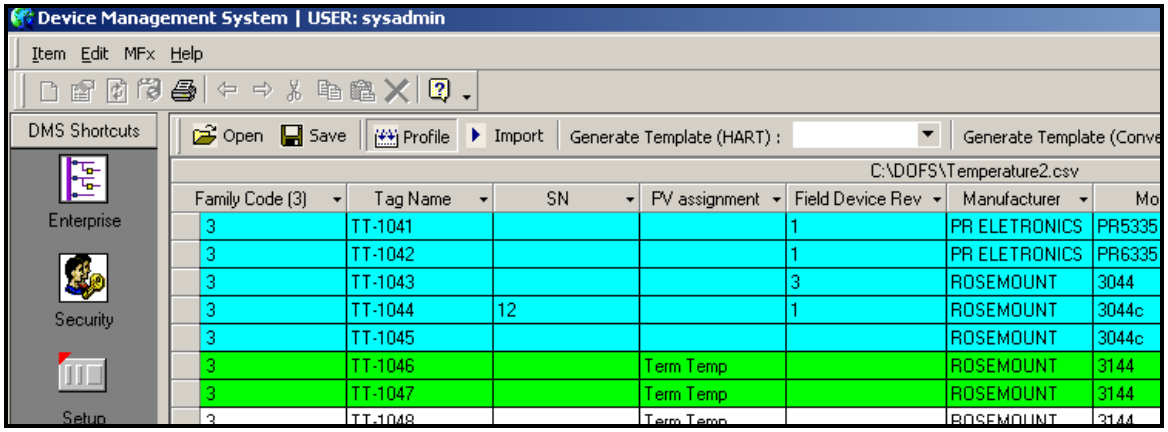


After opening the file, the data is shown in the import tool:

Example:



Once the data is loaded, click on the “Profile” button to begin the Profiling process:



If everything is good, each line will turn green or cyan, indicating a good profile. If the lines turn red, then the Manufacturer and Model will need to be checked to make sure they exist and match the spelling/name in DMS.

To do this, click on the Manufacturer cell for a “Red” line. A drop down list of Manufacturers is presented. Make sure the name that was entered appears in the drop down list. The spelling in the drop down list is correct. If necessary, select the Manufacturer by clicking on the Manufacturer name in the list.

Check the Model in the same way, click on the cell and make sure the model is correct.

For example, a Rosemount 3095 may have been entered for Mfgr and Model. There is only a 3095C in the drop down, so this correct model would need to be selected and re-profiled to correct the problem.

Also, scroll across to the right and verify that all values have a “Green” cell. Some of them may be “Red”, indicating a value that doesn’t exist, or incorrect. See the examples below for more information.

Selected columns can be locked in the import tools so that they stay on screen while scrolling right to look for individual red cells. To implement this, locate the desired column headers (ABB recommends Tag Number, Manufacturer, Model and Field Dev Rev columns) and right click on each column that needs to be locked. To unlock, simply right click on the desired header again.

The order of the import tool columns can be arranged to preference. Simply drag and drop the column headers into the preferred arrangement.

Note: If there are troubles profiling a particular mfgr/model device, the problem could be with a manufacturer / model number mismatch. Some Manufacturers have purchased other manufacturers and still offer the purchased products. The HART data may still recognize the device as being manufactured by the original company. ABB offers products still listed as Hartmann & Braun, Bailey, Bailey Fischer Porter, and ABB. Inputting an ABB model TH02 will cause a Red line since the correct HART listing is Hartmann & Braun model TH02. Refer to the HART DD Library list of devices for correct manufacturer names and exact HART model numbers used. See www.hartcomm.org and search for HART DD Library.

Solid line color key examples:

Ex1

White cells indicate data needs to be profiled. Click on “Profile” to begin profiling.

Ex.2

Template Mismatch – A Pressure device was put in a Temperature import template (Family Code 3). Device types must go into the proper templates.

Ex. 3

Data is valid, and generic (no DMS DOF exists for this device –Universal and Common Practice command information will be imported)

Ex. 4

Data is valid, and has an existing DMS DOF with full device configuration.

Ex. 5

The green line but BOLD AND RED tag indicates Mfgr and Model are correct, but some values further down are incorrect. If this error occurs, scroll to the right to find the errors. Then click the drop down arrow for a list of correct choices or instructions for other remedies.

3	TT-1045				ROSEMONT	3044c

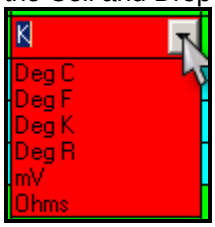
Data is INVALID. In this example, the Manufacturer “Rosemount” is misspelled. Click the Manufacturer cell’s drop down arrow for Manufacturer’s list and spelling. Click the Model cell’s drop down arrow for correct list of the Manufacturer’s model numbers.

Cell Color key examples:

Red Cell:
Ex. 1:

SMAR	TT301			descriptor	message	12/18/2003	K

In this example, the “Units” cell has the value “K”. The real value should be “Deg K” since this particular device uses this format. All possible selections will be listed and selected by clicking on the Cell and Drop-down selection:



Ex. 2:

Upper Range Value	Lower Range Value	Upper Sensor Limit	Lower Sensor Limit	Minimum Span	Transfer Function
100	0	2000	0	ONE	Linear

In this example, the text type is wrong. A value of “ONE” was entered in Field “Min Span”. This value should be a numeric value, like “50” or “1000”.

Yellow Cell:

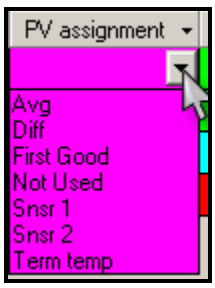
SMAR	TT301			descriptor	message	12/18/2003	Deg K

The yellow cell indicates a Change has been made to the cell value – cell has been modified. Yellow cells are OK to import. (They do not turn green during subsequent profile runs).

Violet cell:

Family Code (3)	Tag Name	SN	PV assignment	Field Device Rev	Manufacturer	Model	
3	TT-1047				ROSEMOUNT	3144	

In this example, a violet cell indicates that a “PV Assignment” value can be selected for a Multi-Variable device. This is a multi-function device that can have a selectable PV assignment. Selecting a PV assignment will likely cause some cells to the right to become red. Always re-run Profile after selecting a PV assignment for a multi-variable device.



If the cell remains red after exhausting all known Manufacturer and Model Number remedies:

A HART device that is not yet listed in the DMS Device Model Library may be the problem. Check the Device Model Library list for the device – in question. If it is not there, right click on Device Model Library found under “Setup” in the DMS root directory. Select “New Hart” and enter the requested data. This will add the device to the DMS list and should allow the red line in the import tool to change to cyan once Profile is re-run. Import can then take place.

9.4 Final import steps

When profiling is finished and all import lines are green or cyan color, and all Tag Numbers text is in black font, click on the “IMPORT” button to begin importing the data into DMS.

In the ensuing prompt, specify a folder to place the new imported Devices. Also specify Service reasons for each device. Before importing it may be desirable to add the Service Reason “Import from Template” to the DMS Service Reasons. This can be done by clicking on “Setup” in the DMS root directory, and then right clicking on the Service Reasons menu option. This Service Reason can then be used for all Template Import work and the activity will be tagged as such in the device history tab.

10.0 3rd Party Application Association

A 3rd party application can be associated to Devices in DMS. This is an external program like ValveVue®, ValveLink®, Word, or Excel. The data from these applications can be stored in the DMS device history, and the application can be launched from DMS when looking at this data or history of data in DMS.

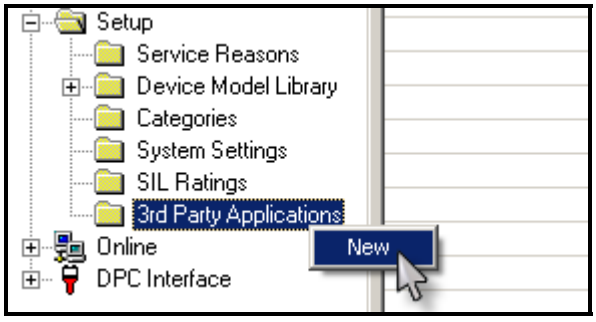
There are 4 steps to setting up a 3rd party application:

1) Add the 3rd party Application association to DMS Setup folder
2) Associate Application to DMS Device Model
3) Create devices that use this model (the model will need to be created if it doesn't exist in the DMS model library)
4) Add data from the 3rd party Application into a device's history.

Each step will be discussed below:

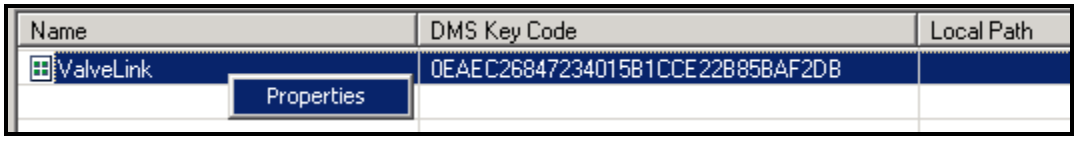
10.1 Add 3rd Party Application to DMS

Go to the DMS Setup folder and then open the "3rd Party Applications" folder.
To add a new application, right click on this folder, and then click "NEW":

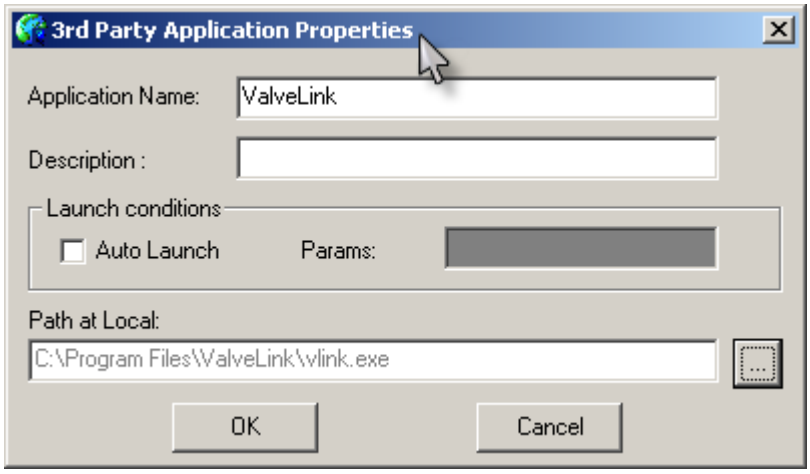


Enter the name of the application. Below, "ValveLink®" was used as an example:

The application will be added in the right pane. Right click on it and click Properties:

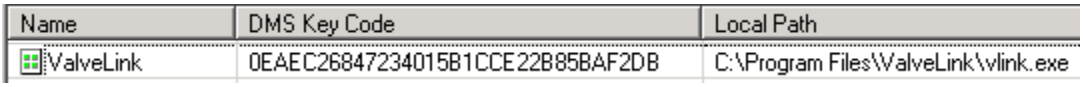


This calls up a pop-up window with entries for the “Application Name”, and “Path at Local”. Use the Browse button to navigate to the location of the Application. The example below locates ValveLink®:



The “Auto Launch” checkbox is un-checked because a valvelink ‘.exp’ export file cannot be auto-launched by double-clicking it. (This checkbox is enabled if the data files that are being accessed can be auto-launched by double clicking on them, like Word (.doc) or Excel (.xls) files.)

The path associated with the name will be shown:



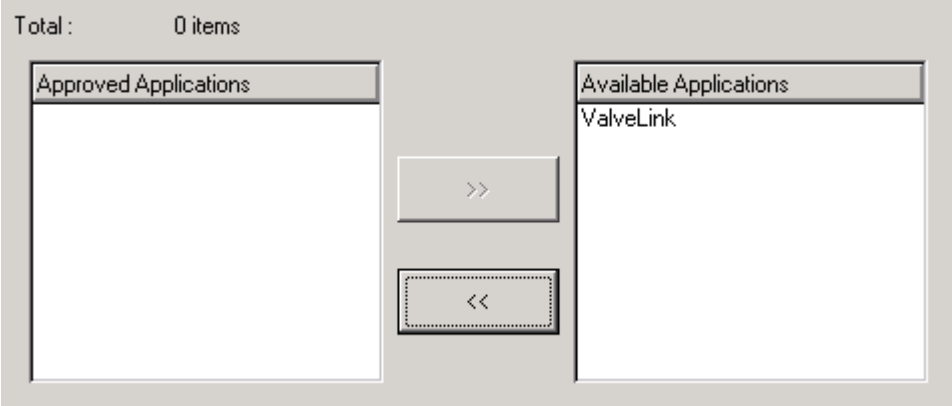
The 3rd party application is now added to DMS “3rd party apps” and is ready to be associated to Device Models.

10.2 Associate Application to a DMS Device Model

Once a 3rd Party application is created in the Setup folder (previous step), it can be associated to a Device Model in the DMS Device Model Library.

Continuing the previous example, the 3rd Party application can be associated to the DVC6000 model in DMS. This association is made in the Device Model Library (in the Setup Folder) by picking the DVC6000, right clicking on it, and choosing “Associate with Application”:

This calls up the screen below allowing selection of the 3rd party application as an approved application for this model by clicking on it, and moving it to the “Approved Applications” by pressing the left arrows.



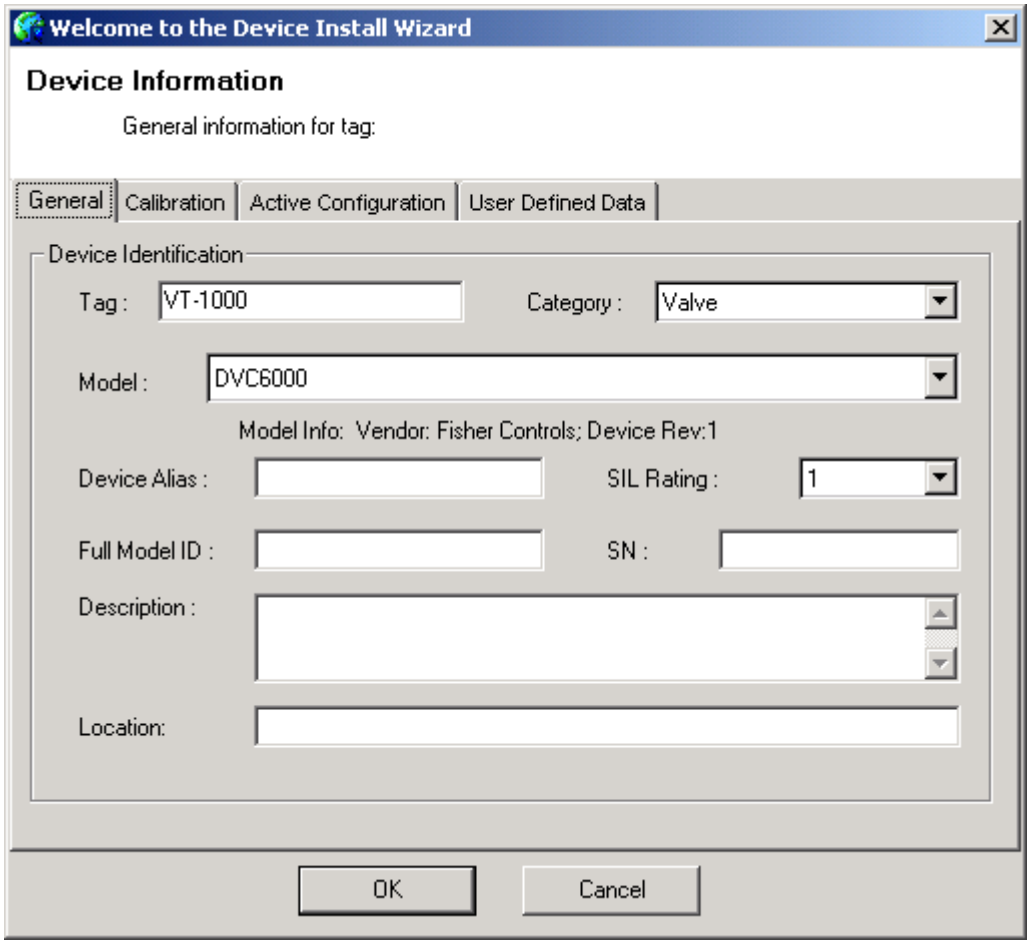
The 3rd party application "ValveLink®" is now associated with the DVC6000 model in DMS.

10.3 Add Devices using the 3rd Party Associated Model

At this point, a new DVC6000 device (Tag) can be created that uses the associated 3rd party application model.

Example:

Create a device based on the DVC6000 model:

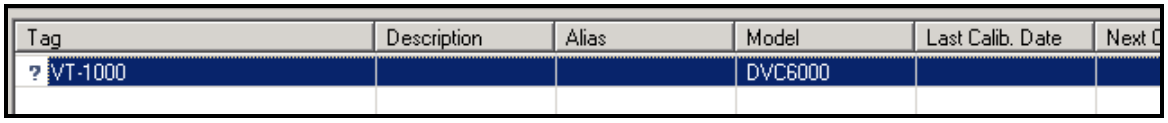


Click “OK” to finish adding the device.

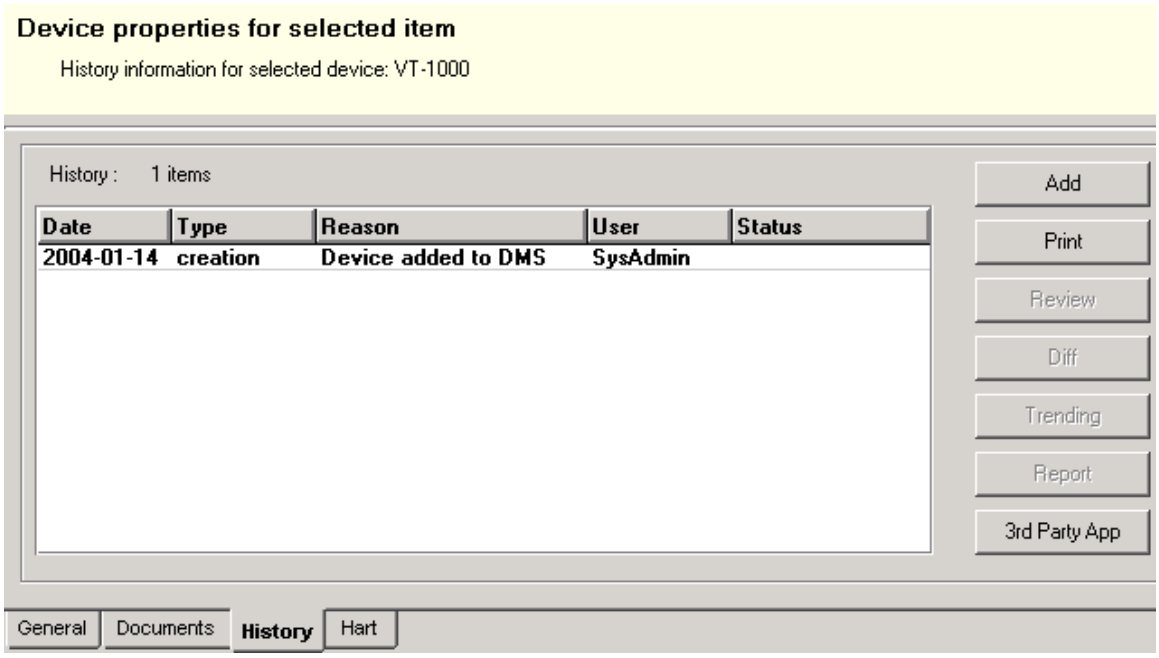
10.4 Add Data from 3rd Party Application to Device History

DMS is now ready to work with data from the 3rd party application. In order to do this, the tag data from the 3rd party application needs to be exported and attached to the “History” of the device. Below are the steps:

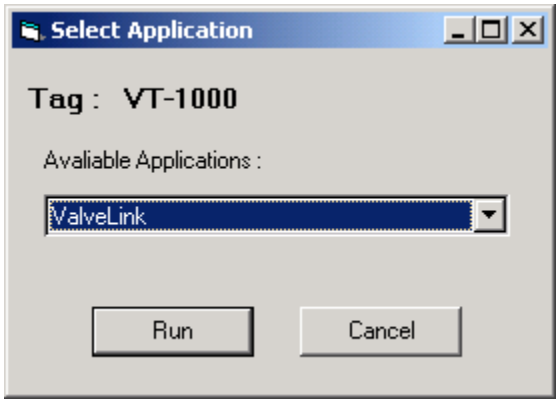
First click on the device. Continuing with the previous example, click on “VT-1000”, which is the Tag name for the DVC6000 device (created in the previous step).



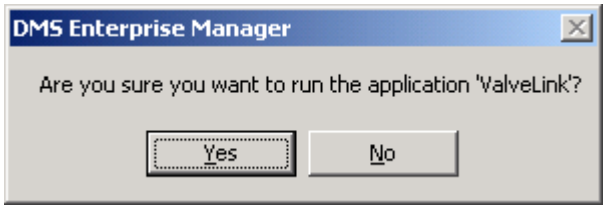
Then click the “3rd part App” button in the “History” tab of this Tag:



After clicking "3rd Party App", select it, and click "Run":



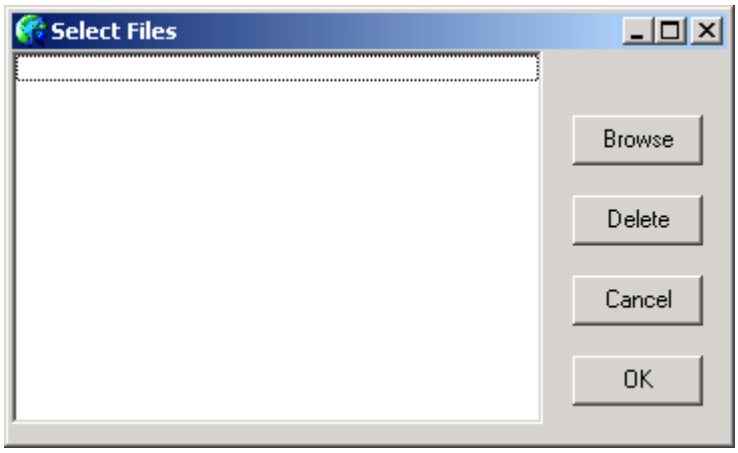
Then answer "Yes" to run the application:



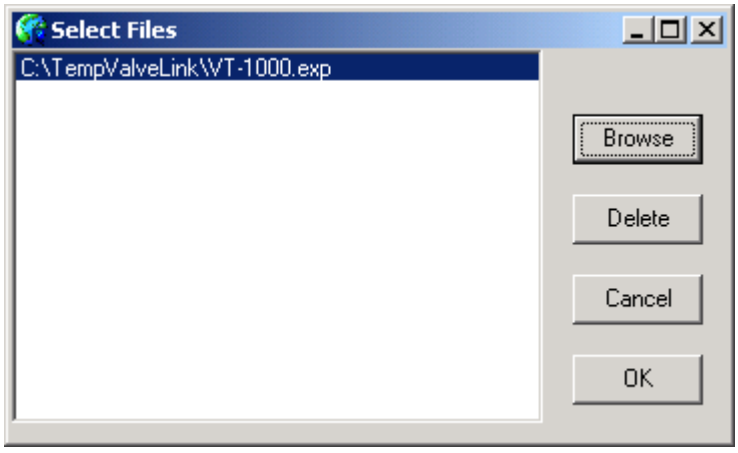
DMS will minimize, and the 3rd party application will run.

Login with the 3rd party application account information, connect to the actual device, perform monitoring/diagnostics, save the dataset, and export the data to a Temporary directory.

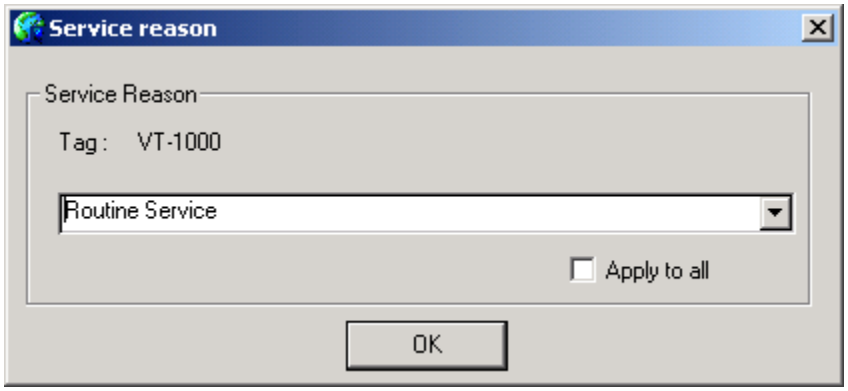
The exported 3rd party application file needs to be saved in a temporary directory. In this example, VT-1000.exp is placed in C:\TempValveLink. When the export is finished, close the 3rd party application and DMS should appear with a prompt to select the exported file:



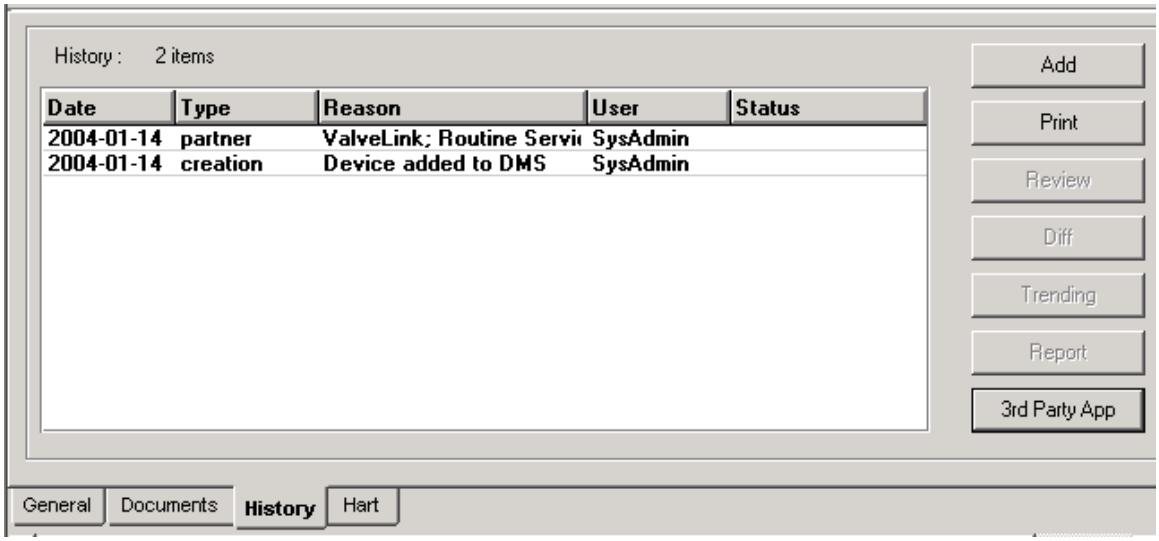
Click “Browse” to select the exported file(s).



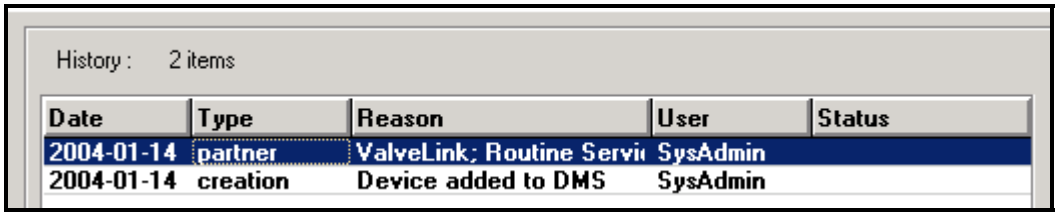
Add a Service reason:



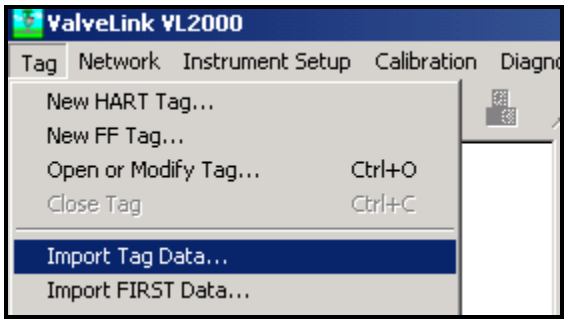
A History record in DMS now exists with the attached ValveLink® exported Tag:

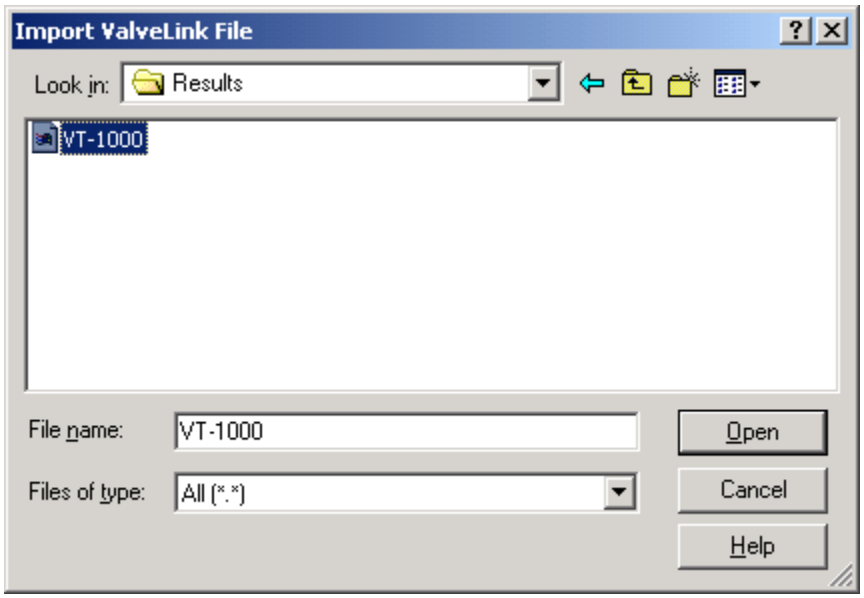


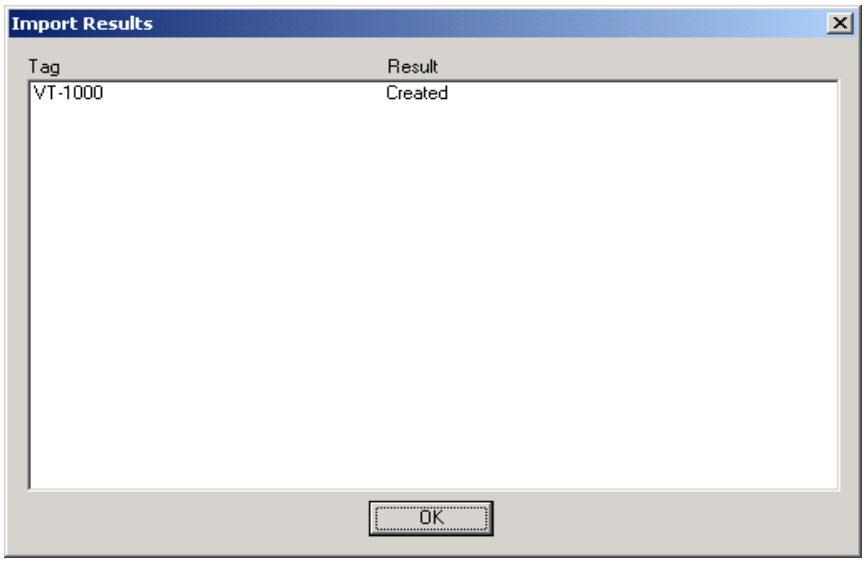
To view the 3rd party application DMS history item, double-click on the item:



DMS will launch the 3rd party application. From here, select “Import Tag Data” and open the file in the “Results” folder that is displayed by DMS.







The 3rd party application opens with the imported data for the selected device.

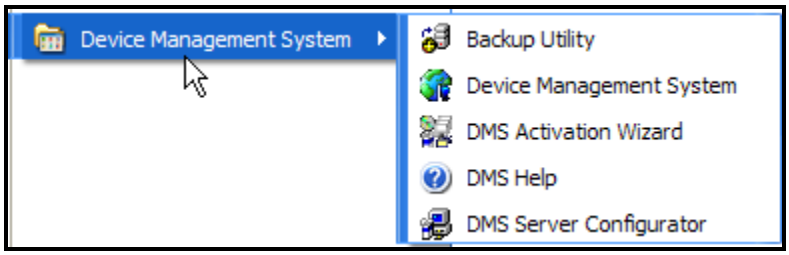
11.0 Backing Up and Restoring DMS data

It is important to back up the DMS Server data on a regular basis in the event of a catastrophic hard-drive crash or erasure. DMS provides a backup utility (located on the DMS CD). This backup utility exports the database and all files needed to recover the DMS server.

11.1 Installing the Backup Utility

The backup utility is located in the folder “DMS Backup” on the DMS CD. **This utility must be installed on the machine that has the DMS Server installed.**

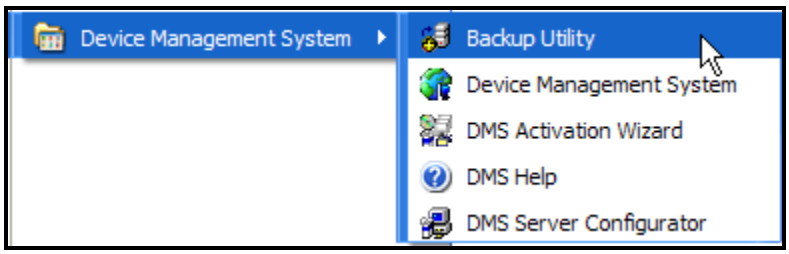
Double-Click on “DMSBackupUtil.exe” to install the program. Once installed, the backup utility will be accessible in the Programs/Program Files ->ABB :



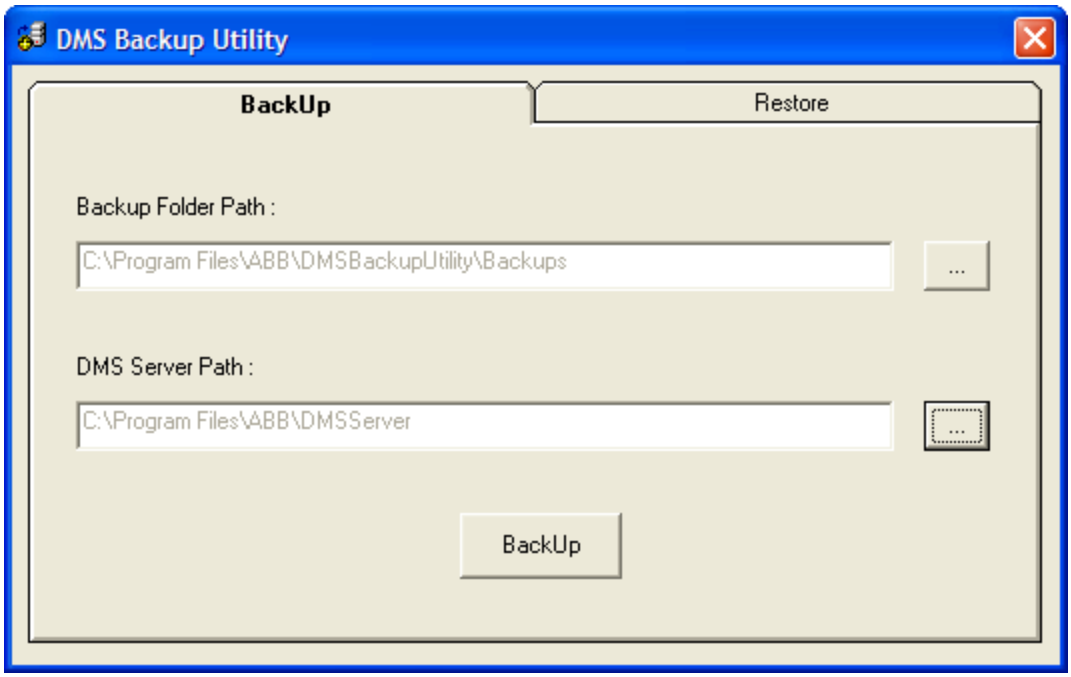
11.2 Performing a DMS Backup

Backup should be performed during off-hours when no DMS clients are connected to the server. This will guarantee that no new data is being added during the backup process.

Launch the DMS Backup utility:



The following should appear:



Make sure the “Backup” tab is selected instead of the “Restore” tab.

The “Backup Folder Path” will be the destination of the backup. It is recommended that this is left as the default directory. Then copy the backup files onto backup media or another drive to have a secondary backup location.

The “DMS Server Path” is the location where the DMS Server was installed. Only change this if DMS Server was installed in a different directory or hard drive.

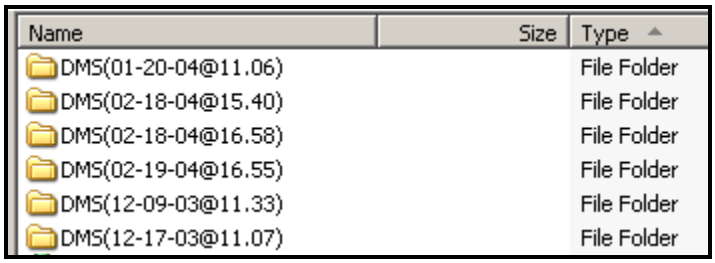
Note: The backup utility does not support Mapped or Network Drives. After performing the backup, it’s possible to copy the created backup folder to a network or mapped drive.

When ready to perform the backup, press the “BACKUP” button:

This backup process will take between 1 and 30 minutes depending on how many Devices and history items the DMS Server has.

The backups will be found in the folder listed below:
“C:\Program Files\ABB\DMSBackupUtility\Backups” folder.

The backup folders will have the Date and Time in the Folder name. See the example below:



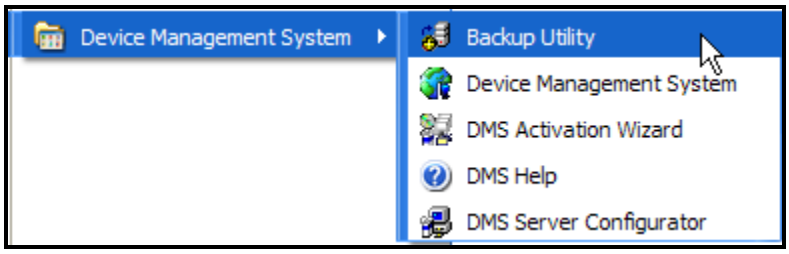
In this example, there are six backups in the “Backups” folder. They are time and date stamped in the folder name.

Important: Backups made with one version of DMS Server should only be restored onto the same version of DMS.

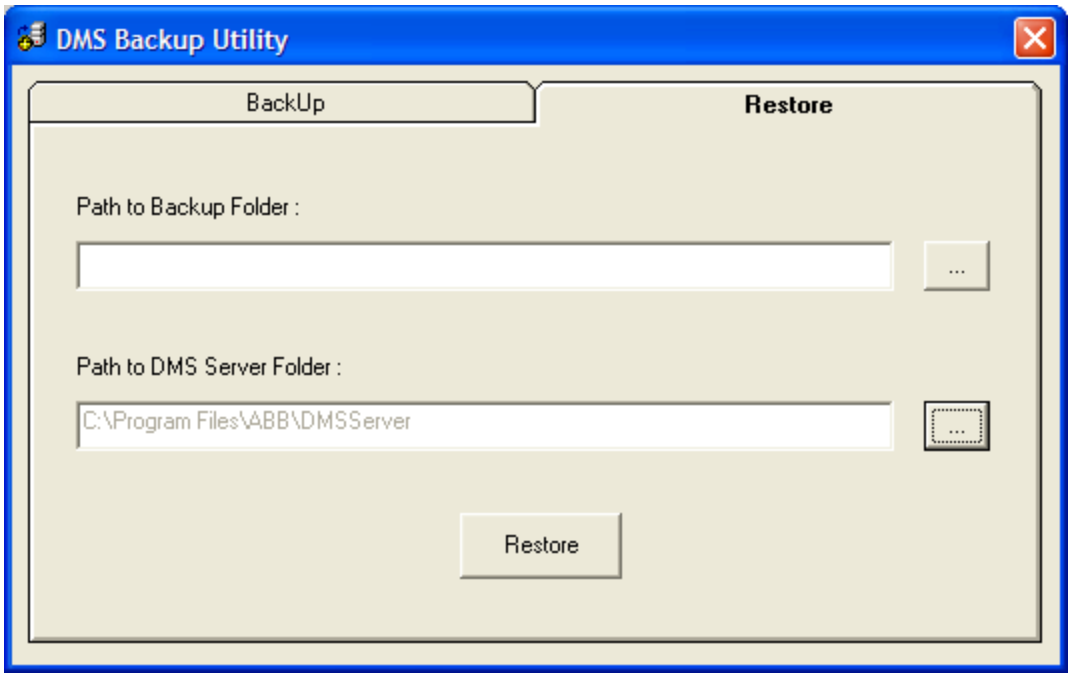
11.3 Restoring a DMS Server Backup

If DMS Data needs to be restored from a backup, the following should be done:

1) Make sure the DMS Server software is installed on the machine where the data is being restored. (The restore utility will then restore the Data backup into the DMS Server software and database)
2) Run the Backup utility:

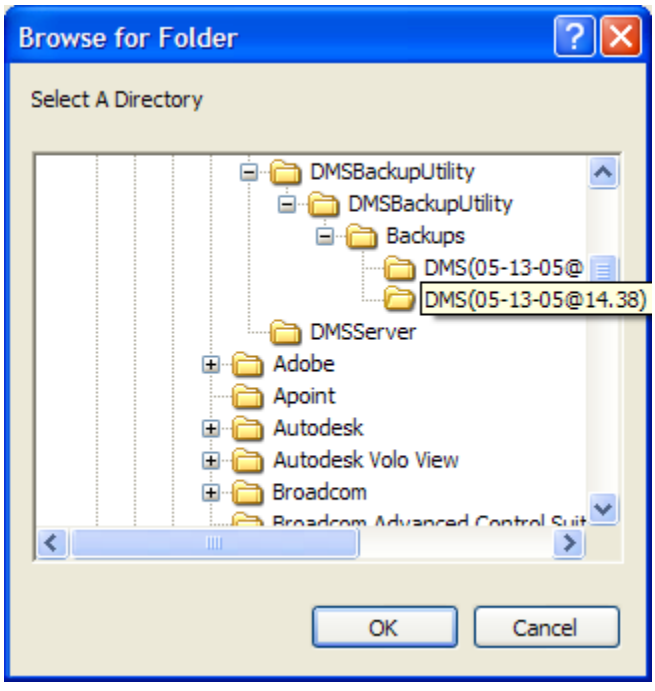


Once the backup utility is run, click on the “RESTORE” tab:

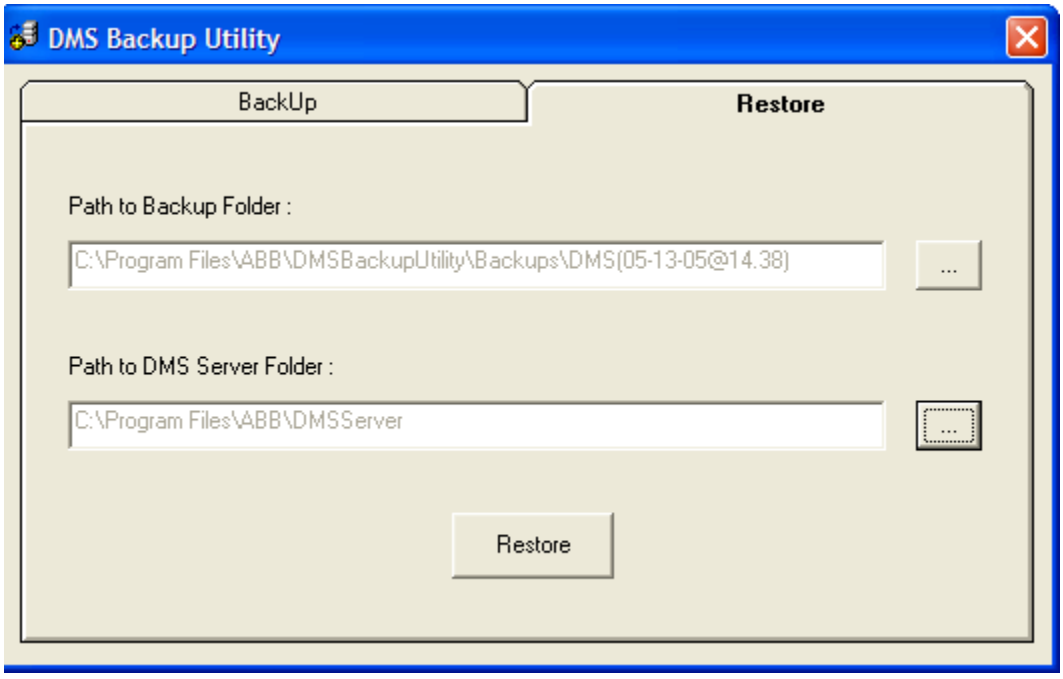


The “DMS Server Path” is the location where the DMS Server was installed. This should only be changed if the DMS Server was installed in a different directory or hard drive.

The “Path to Backup Folder” is the location of the backed up DMS folder. In the below example, the backup done on 05/13/2005 at 2:38PM is selected for restore:



Once OK is clicked, the selected path is shown:



Click the “RESTORE” button to begin the Restore process.

If the restore is made onto the same computer and hard drive, users can login to a DMS client and see the recovered data. If a new machine or hard drive is being restored as part of a recovery procedure, then the DMS Server needs to be re-activated by contacting ABB. Refer to chapter 13 for contact information.

12.0 DMS Terminology

The following is a definition of terms used in conjunction with DMS. Other industry definitions may exist for some of these terms; however, the following are the convention that ABB has chosen for the Device Management Solution.

Action Item – An Action Item is either a configuration edit or a calibration procedure. These are managed separately by DMS, because not all DPC's have the ability to handle a HART device configuration.

Action List – The Action List is a container for Action Items that can be created and named by the user. Commonly, the Action List is named after a Work Order number and contains Action Items to be executed per that Work Order.

Adjust To – If a test point fails, the Adjust To value is the new requirement for Maximum Allowable Error for the present calibration session. This prevents the technician from calibrating a device to be "marginally acceptable". That way, the device should not fail in the near future.

Alert Life Span – This is a System Setting that controls how long an item appearing in the Alert Log will be maintained.

Calibration Cycle – This is the period of time required for recalibration of a device. If a user defined device model does not require calibration, this parameter can be set by the user to represent the period for routine maintenance.

Calibration Equipment Pre Notice - This is a System Setting that controls how many days prior to the calibration equipment's recertification due date that an Alert will be issued.

Calibration Procedure – This is a series of test points including direction up or down the span, error and tolerance requirements, and start-up/wrap-up instructions. Calibration Procedures are user definable and can be executed manually, or via the DPC Interface on a DPC.

Calibration Procedure Terms

Conventional Device – This is any device that is not a HART Device.

Device – A device is any equipment that the user desires to model in their Division. The most common device is a process instrument. However, the flexibility of DMS allows virtually anything to be modeled and as many parameters as necessary can be assigned to define the configuration for the Device.

Device Calibration Pre Notice - This is a System Setting that controls how many days prior to a device's calibration due date that an Alert will be issued.

Device Configuration – The Device Configuration is developed based on its model and category. For HART Devices, the device configuration consists of all the parameters for the HART device as defined by ABB's DOF Technology.

Device Model Library – The Device Model Library contains all device models for DMS. For HART Devices, the Device Model is based on ABB's DOF Technology. For Conventional Devices, the Device Model is based on a standard parameter set or the User Defined parameters.

Device Object File (DOF) – this the name the ABB uses to define the device description, or in other words, the device profile. In DMS, the term Device Model is used interchangeably with DOF. All DOFs are contained in a Device Model Library. Conventional (non-HART) devices do not require a DOF, however they do require a Device Model.

Division – DMS uses the term Division to represent a process system within DMS. A Division carries with it all the standard feature sets available for managing a system of any size. Most importantly, security access rights are driven by the assignment of user's to Divisions.

Documenting Process Calibrator (DPC) - This is a Process Calibrator that has the ability to store calibration procedures and save test results and/or measurements on dedicated memory. ABB' version of a DPC is the DHH810-MFT Series Calibrator/Communicator.

Documenting Process Communicator (DPC) – This is a Process Communicator that has the ability to store device configuration data on dedicated memory. ABB' version of a DPC is the DHH810-MFT Series, Communicator.

Enterprise – DMS uses the term Enterprise to define the most encompassing entity at the top of a hierarchy for any given system modeled in DMS.

Event Life Span - This is a System Setting that controls how long in the Event Log.

Field Calibrator Interface (FCINTF) – This is an industry standard specification that defines the methods used to communicate between a DPC and PC based Software. ABB uses this standard to interface with its DHH810-MFT Series calibrator/communicator. The specification only deals with test and measurement information, not device configuration data.

Group – A Group is a set of similar Roles and associated Users. Groups associate User's with access rights of the Roles.

HART Device – This is a device that conforms to the HART Communication Foundation's HART Specification.

History – The History of a device is maintained for all activity associated with a device. The User Name and Date are recorded for each activity in the History log.

Last Calibration Date - The calibration cycle uses this date as the reference for the next calibration date.

Maximum Allowable Error – This error is defined at the Calibration Procedure level and is the maximum absolute error. If a test point error is outside this requirement, a Fail status will be applied for the Test Point and the overall Procedure.

Next Calibration Date – This date is based on the Last Calibration Date and the Calibration Cycle. However, it can be overridden to force an Alert prior to the end of the Calibration Cycle.

Number of Divisions – This is the number of test points in a span. For instance for a four point test from 0% to 100% of Span, the Number of Divisions would be 4. In this same example, if testing is done up and down the span, then there will be a total 9 test points, not 8. The 100% test point will only be taken one time.

Role – A Role is a set of access rights that can be assigned to a Group, then associated with a User to provide the User the access rights of the Role.

Service Reason – A service reason is a user definable description that is assigned to an activity for the purposes of clarification in the History Log.
System Setting – System settings are user settable parameters that control aspects of scheduling and alerting functions.

Tag –The tag is the identifying name of devices used in DMS. This tag can be up to 27 characters long. This tag identifier is used throughout DMS, in Configurations, Calibrations, and the Action List. It can be changed in the 'General' tab of a device's properties. This is NOT to be confused with the device Tag used in Hart devices

Test Point Tolerance - DMS defines this tolerance as the % of SPAN that a test point must be taken within. For instance, if a test point is required a 75%, an the Test Point Tolerance is 5%, then the test point must be taken within 70% and 80% of SPAN.

User – The System Administrator at the Enterprise level creates A User. Any number of users can be created in DMS, however the DMS Client License controls the number of concurrent users that are able to use the software at any given time.

13.0 DMS Technical Support

This User's Guide has been incorporated into the DMS Software. Most features are accessible using a "right click". Use the right click on every thing that may have an option, and pop up windows will navigate through the software.

For additional information or technical support, go to the ABB Web Site at:

http://www.abb.com

or contact Technical Support on the phone 8:00 AM to 5:00 PM EST, Monday to Friday at:

1.800.HELP.365

or, email questions to:

ins.techsupport@us.abb.com

14.0 Ordering DMS

Ordering information								
Device Management System (DMS) Software	Variant digit No.	1 - 7	8 - 10	11	12	13	14	15
DHH820-DMS	Catalog No.	**DHH820-**						
Mobility Device Management System Software Device Management System (DMS) Software, DMS Server and Integral Client, 1 Year Software Maintenance plus Documenting Process Calibrator / Communicator (DPC) Interface to DMS included. This feature enables users to electronically exchange calibration procedure and /or HART Device configuration data with DMS software through a RS-232 Serial Interface.			**DMS**					
Type	1)							
DMS Server with DPC interface (Calibration and Configuration)	2)			1				
DMS Server with DPC interface (Configuration Only)	2)			2				
No. of DMS Clients								
No	3)				0			
1 Client integral to DMS Server (Calibration and Configuration)	4)				1			
5 Clients (Calibration and Configuration)	4)				2			
10 Clients (Calibration and Configuration)	4)				3			
1 Client integral to DMS Server (Configuration Only)	5)				4			
5 Clients (Configuration Only)	5)				5			
10 Clients (Configuration Only)	5)				6			
Add 21 CFR 11 Support								
No						0		
Expand Existing DHH820-DMS								
New Initial Purchase							0	
Expand from 1 to 5 clients (Calibration and Configuration)	6)						1	
Expand from 5 to 10 clients (Calibration and Configuration)	6)						2	
Expand from 1 to 10 clients (Calibration and Configuration)	6)						3	
Expand from 1 to 5 clients (Configuration Only)	7)						4	
Expand from 5 to 10 clients (Configuration Only)	7)						5	
Expand from 1 to 10 clients (Configuration Only)	7)						6	
Expand Existing DHH820-DMS (already have 21 CFR Part 11)								
No								0

Notes:
1) Latest version of Mobility Interface Software CD set is included. CD sets for previous versions are available on a request basis.
2) Entry of 1 for Digit 11 provides the full DMS. Entry of 2 provides a version of DMS that only supports uploading, downloading, and documenting of device configuration information.
3) Zero entry of Digit 12 is required and only valid when expanding an existing DMS that has already been purchased
4) Non-zero entry of Digit 12 is required for any new DMS purchase. These options may only be selected if Digit 11 is a one.
5) Non-zero entry of Digit 12 is required for any new DMS purchase. These options may only be selected if Digit 11 is a two.
6) Non-zero entry of Digit 14 is only valid if Digit 12 is zero, and requires supply of existing DMS serial number with the PO. These options may only be selected if Digit 11 is a one.
7) Non-zero entry of Digit 14 is only valid if Digit 12 is zero, and requires supply of existing DMS serial number with the PO. These options may only be selected if Digit 11 is a two.

Additional ordering information		
Device Management System (DMS) Software - Accessories		Catalog No.
Mobility Interface Software CD set, latest version	(698B277U01)	3KXD311800L0041
DMS Operations Manual, printed hard copy	(694A200U01)	3KXD311820R4301
One copy included with order at no charge. Pdf instructions included on CD		
DMS Installation and Upgrade Guide,	(694A201U01)	3KXD311820R4401
One copy included with order at no charge. Pdf instructions included on CD		
Annual Subscription for Updating DMS Server		
with Integral Client		3KXD311820L0101
with 5 Clients		3KXD311820L0102
with 10 Clients		3KXD311820L0103

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www.abb.com/instrumentation

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