

OMC

Intelligent Device Management Component User Manual

Notices
<ul style="list-style-type: none"> ● The reproduction, transmission or use of this document or its contents is not permitted without express written authority. ● Information and specifications in this document are subject to change without notice. ● While information in this document is well edited and checked, mistake or omission may exist. Please don't hesitate to contact SUPCON if you have any question about this document. ● Please contact SUPCON via email "SMS@supcon.com" if you have any question.

Trademarks
<p>Trademarks or marks SUPCON, SPlant, Webfield, ESP-iSYS, MultiF, InScan, SupField are all registered, registering or using by Zhejiang SUPCON Technology Co., Ltd., which owns the properties of all trademarks or marks above. Without the written authority from Zhejiang SUPCON Technology Co., Ltd, no individual or company shall use any trademarks or marks above. We reserve the right to take legal action for any individual or company using trademarks or marks above illegally.</p>






Symbol Definition	
	WARNING: Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	RISK OF ELECTRICAL SHOCK: Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	ESD HAZARD: Indicates information that Danger of an electro-static discharge to which device may be sensitive. Observe precautions for handling electrostatic sensitive device
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user.

Table of Contents

Intelligent Device Management Component	1
Section 1 Terminology and Abbreviation	1
Section 2 Brief Introduction.....	2
2.1 Features	2
2.2 Specification	3
2.3 Authorization Illustration	3
2.4 Network Deployment	4
2.4.1 OMC System High-performanceHMI and IDM Structure	5
2.4.2 SmartEIO System and IDM Structure	6
2.4.3 TCS-900 System and IDM Structure	7
2.4.4 G5Pro System and IDM Structure	7
2.4.5 JX-300XP System and IDM Structure	7
2.4.6 The Third Party Heterogeneous System and IDM Structure.....	8
2.4.7 Connection between APL Device and IDM Structure	9
Section 3 Open IDM.....	10
3.1 Initial Settings	10
3.2 Login.....	10
3.3 Component Composition	11
3.3.1 Instruction of Homepage and Function Block	11
3.3.2 Difference Between Center Server and Device Server	12
3.3.3 Switching between Appliance and Center Server.....	13
Section 4 Comprehensive Application Flow	15
Section 5 IDM Configuration.....	17
5.1 Configuration Guide.....	17
5.1.1 Communication Drive Configuration Guide	17
5.1.2 Open Parameter Configuration Guide	18
5.2 Set Server	18
5.3 Clock Synchronization Configuration.....	19
5.4 Communication Driver Configuration.....	20
5.4.1 OMC system High-performanceHMI IDM Communication Driver Configuration ...	20

5.4.2 TCS-900 System IDM Communication Driver Configuration	21
5.4.3 G5Pro System IDM Communication Driver Configuration	21
5.4.4 JX-300XP System IDM Communication Driver Configuration	22
5.4.5 Third-party Heterogeneous System IDM Communication Driver Configuration.....	22
5.4.6 IDM Communication Driver Configuration for APL Device.....	24
5.5 Data Service Configuration.....	25
5.5.1 Add Communication Service	25
5.5.2 Delete Communication Service	25
5.5.3 Re-scan	26
5.6 User Management	26
5.6.1 User Configuration	26
5.6.2 Role Management	27
5.6.3 Password Strategy	29
Section 6 Plant Device Management	30
6.1 Plant Device Account.....	30
6.2 Device Report.....	30
6.3 Senior Report	31
6.4 OPC Configuration	32
Section 7 Device Asset Management.....	33
7.1 Introduction of Views	34
7.2 Device Status	34
7.2.1 Status Identifier.....	34
7.2.2 Tag Status Filter.....	35
7.3 Custom View	35
7.3.1 Add Custom View	35
7.3.2 Enable Devices	36
7.3.3 Device Replacement	36
7.3.4 Confirm Tag Configuration	37
7.4 Plant View	38
7.4.1 Build Enterprise Hierarchy.....	38
7.4.2 Assign Device.....	38
7.5 Manufacturer list.....	38
7.6 Wireless Device.....	39
7.7 Find Device Tag.....	40
Section 8 Device Parameter Configuration	41

8.1 HART Device Configuration.....	41
8.1.1 Details	41
8.1.2 Diagnosis	42
8.1.3 Online Parameters	43
8.1.4 Documents	45
8.2 FF Device Configuration.....	46
8.3 PROFIBUS Device Configuration	46
8.4 Heterogeneous System Tag Matching	46
8.5 APL Device Configuration.....	47
8.6 Wireless Device Configuration	47
Section 9 Device Alarm Monitor	48
9.1 Preparation Configuration.....	48
9.1.1 Device Fault Alarm Configuration	48
9.1.2 Polling Policy Configuration	49
9.2 Device Alarm Management	50
9.3 Shelved Status	51
9.3.1 Operation Steps.....	51
9.3.2 Exit Shelved Status	51
9.4 Reset Configuration Changed Alarms	51
9.5 Health Report	52
9.6 Key Parameter Monitoring.....	52
Section 10 Server Monitor	53
Section 11 Audit Trail	55
Section 12 Bulk Device Management	57
12.1 Preparations of Test.....	57
12.2 Device Loop Test	58
12.2.1 Transmitter Loop Test	59
12.2.2 Valve Loop Test	59
12.2.3 Safety Interlock Loop Test	60
12.2.4 Batch Multi-signal Output Test	61
12.3 View Senior Report.....	61
12.3.1 Add/Delete Templates.....	62
12.3.2 Add Custom Parameters	62
12.3.3 Report Generation	63
12.3.4 Batch configuration.....	63

Section 13 Field Device Parameter Backup	64
13.1 Add Parameter Backup.....	64
13.2 Backup Comparison and Parameter Restoration	65
Section 14 DD/DTM Maintenance	67
14.1 DD File Import	67
14.2 Use Device DTM	68
14.2.1 Manage DTM Catalog	68
14.2.2 Configuration Steps	70
Section 15 Knowledge Base Management	72
Section 16 Virtual Device Configuration.....	73
Section 17 Offline Template	75
17.1 Add Template.....	75
17.2 Apply Offline Template	76
17.3 Delete a Template.....	76
17.4 Import/Export Template	76
Section 18 Calibration Reminder	78
18.1 Create Calibration Plan	78
18.2 Add Device to Calibration Plan	79
18.3 Create Calibration Route	79
18.4 Add Device to Calibration Route.....	80
18.5 Export Device Calibration Report	80
18.6 Execute Device Calibration and Fill in the Calibration Report	81
18.7 Input Test Data	81
18.8 Calibration Notification.....	83
18.9 Calibration Maintenance.....	84
Section 19 OPC Application	87
19.1 Configure OPC Parameter	87
19.1.1 Configure Device Parameter	87
19.1.2 Configure Device Alarm.....	88
19.1.3 Configure Control System Diagnostic.....	89
19.2 Externally Access IDM OPC Data.....	89
19.2.1 Access OPC DA (Device Parameter)	89
19.2.2 Access OPC A&E (Event Record)	91

19.2.3 Access IDM OPC Service Remotely	91
19.2.4 Access OPC UA	91
Section 20 Notes.....	92
Section 21 Fault List.....	93
Section 22 Revision.....	94
Section 23 Appendix: Valve Diagnosis Software ValveLink.....	95
23.1 Installation and Authority	95
23.2 Operation Instruction	96
23.3 Function Instruction	97

Intelligent Device Management Component

Section 1 Terminology and Abbreviation

Terminology/ Abbreviation	Full Name
IDM	Intelligence Device Management
EDD	Electric Device Description
FDT	Field Device Tool
DD	Device Description
DTM	Device Type Manager
EMP	Enterprise Management Platform
FF	Foundation Fieldbus
HART	Highway Addressable Remote Transducer
CCR	Central Control Room
FCR	Field Control Room
DCS	Distributed Control System
SIS	Safety Instrument System
APL	Advanced Physical Layer
PROFIBUS	Process Fieldbus
DP	Decentralized Periphery
PA	Process Automation
GSD	Generic Station Description
IAC	Intelligent Application Center
CCR	Central Control Room

Section 2 Brief Introduction

OMC system intelligent device management component (shorted as IDM below) provides a platform for device management and maintenance, which can realize the interconnection with instruments and equipments of different protocols and manufacturers, so the advanced intelligent device can exert greater benefit, thereby decreasing device losses and reducing maintenance cost.

IDM supports the management of intelligent device, such as HART device, FF device, PROFIBUS device, APL device and wireless device, and the user can manage the devices in field easily.

2.1 Features

- **Device access**
Through the control system (such as OMC system High-performanceHMI component, SmartEIO system, TCS-900 system, G5Pro system and JX-300XP system) or third-party heterogeneous system communication driver, various field bus instruments (such as HART device, FF device, PROFIBUS device, APL device, wireless device, etc.) can be remotely accessed to obtain the field instrument data and realize the functions of intelligent polling, real-time communication, alarm monitoring, etc..
- **Data acquisition**
Support distributed data collection. Supports synchronization control system's tag configuration, and automatically obtains tag attribute parameters.
- **Device management**
Provides various visual models such as Custom View, Plant View, Manufacturer List and Network View to realize the unified monitoring and management of equipments in the whole factory. Supports custom device levels, and provides users with functions such as online viewing, modifying, comparing, restoring, and automatic backup of plant-wide device parameters in the device ledger. When displaying key parameters, IDM provides a friendly Chinese interactive interface and equipment classification, which effectively reduces the learning cost of maintenance personnel.
- **Fault alarm**
Provides fault alarm classification in accordance with the NAMUR NE107 international standard, and supports custom alarm levels and polling strategies, real-time monitoring of the fault alarm status of important device tags on the site, and provides rich fault diagnosis and online debugging functions, such as priority display according to the fault level, alarm shielding, and alarm confirmation functions, to help enterprise users locate and deal with problems quickly and efficiently.
- **Bulk device loop test**
Provides batch test functions of field valve instrument or safety interlock loop can

effectively improve the efficiency of field instrument loop test and support the export of loop test result report.

- Control system hardware and field instruments data open
Support adding the tag parameters or alarm event records of HART devices to the OPC parameter list according to the device tag or device type, so that other control systems can obtain important diagnostic parameters of the field instrument in time through OPC DA, OPC A&E or OPC UA services, and the accuracy of the intelligent diagnostic data of the instrument in the integrated monitoring can be provided. If the instrument data of OMC system High-performanceHMI component is connected, in addition to the OPC server drive, you can also obtain the instrument parameters through the SAMS driver.
- Log audit
It records six types of historical data such as system, application, configuration, operation, alarm, and notification, and supports query by keywords such as time, device tag/identity code, device type, etc..
- User account control
Through the IDM configuration center, you can configure different permissions for user accounts, and control the operating permissions of various users on device or alarms.
- Global tag find
Supports plant-level tag search by tag, device type, device area or device physical address. Select the search result to jump directly to the corresponding page.

2.2 Specification

Table 2-1 Specification of the component

Configuration item	Specification
Number of device servers that can be connected to one center server	100,000 device tags or 25 device servers at most (depend on authorization, please refer to Authorization Illustration for details)
Number of device that can be connected to one device server	5,000 / 10,000 / 20,000 (depend on authorization, please refer to Authorization Illustration for details)
Recodes of history alarms which are stored in one device server	10 million at most
Number of OPC variables for one device server	20,000 at most
Open data	20,000 points
Audit Trail	Query up to 10 million records

2.3 Authorization Illustration

The IDM component requires a dongle authorization, the details are as follows:

Table 2-2 Authorization list

Authorization Type	Illustration	Remark of authorized number
Center Server (IDM-EMP)	<ul style="list-style-type: none"> Authorized: the component can run normally and there is no limit of running time. No authorization: the component cannot be opened. 	No authentication quantity rating
Device Server (IDM-SERVER)	<ul style="list-style-type: none"> Authorized: the component can run normally and there is no limit of running time. The number of devices that can be connected to one device server depends on the authorization. No authorization: up to 25 devices can be online and can run for 120 minutes; after 120 minutes, all devices will be offline and it's unable to get data. 	Configure the authorization according to the number of filed devices (including HART/FF devices and normal devices) Different dongle restrictions: the maximum number of device tags that can be connected are 5,000, 10,000 and 20,000.
IDM Client (IDM-WEBCLIENT-COUNT)	<ul style="list-style-type: none"> Authorized: the client can connect to the server successfully and there is no time limit. No authorization: Allow access for 1 user When the authorization is changed to the unauthorized, it is allowed to continue to run for 120 minutes, and the user will log out automatically after 120 minutes. 	Configure the authorization according to the number of clients. Different dongle restrictions: the maximum number of visiting clients can be 5, 10 and 30
Real-time data opening interface (IDM-SDK)	<ul style="list-style-type: none"> Authorized: the IDM server component provides an open data access interface, and third-party systems or programs can access IDM data 	Configure the authorization according to the field requirement.
Real-time data opening interface of OPC UA service (IDM-SDK-UA)	<ul style="list-style-type: none"> No authorization: access is denied With authorization transformed to unauthorized, data will no longer be provided externally after 5 minutes. 	

2.4 Network Deployment

IDM supports distributed data collection. The network deployment diagram is shown in Figure 2-1. The computer roles of the IDM component are described as follows. In the IDM, you can view the real-time running status of the servers via the "Server Monitor" interface. For details, please refer to "Server Monitor".

- **Device server**
The device server and roles of the engineer station and cabinet of the control system is located in the field control room (FCR). It is used to access the communication driver of the control system or third-party heterogeneous system, synchronize the configuration information of the control system, and obtain the on-site device data.
- **Central server**
The central server, client and control system operating station are located in the central control room (CCR). The central server is used to summarize the meter data of multiple device servers, and display the meter status from different dimensions according to the user configuration.

- Client

The user can log in to the device server in FCR or the center server in CCR through the client, establish a binding relationship between the central server and the device server via the configuration of communication driver and service, create a complete device ledger, and perform unified monitoring of device data and alarm status.

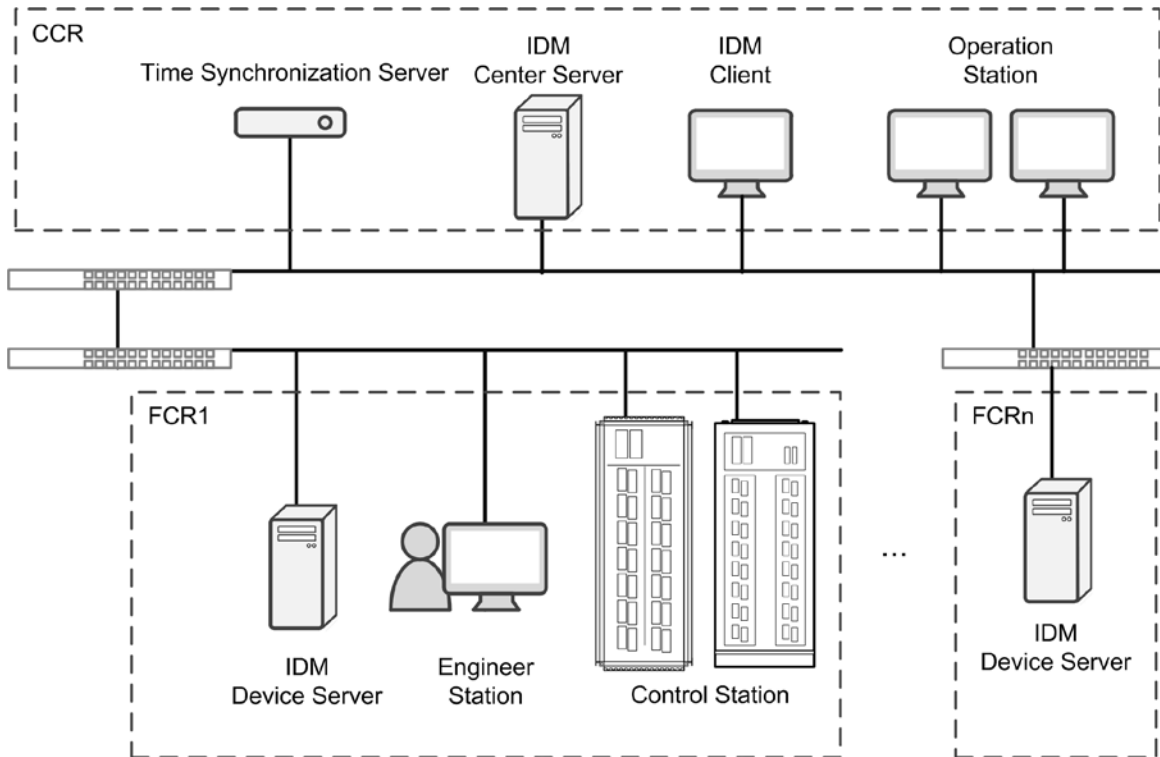


Figure 2-1 Control system integrated with IDM

The following describes the typical networks where IDM is connected to the OMC system, TCS-900 system, and third-party heterogeneous systems. The I/O module, interface communication module or multiplexer module as the intermediate module is updated with each system. Please refer to the actual product of each system.

2.4.1 OMC System High-performance HMI and IDM Structure

IDM is a component for control systems. The main devices and networks are shown in Figure 2-2. In the network, IDM center server should be deployed in the Global IAC (Intelligent Application Center) and IDM device server should be deployed in the IAC of corresponding CCR (Central Control Room).

The information of HART/FF/PROFIBUS-PA intelligent device in OMC system can be transmitted to the DCS engineer station via the I/O modules of HART signal in control station (including AI711-H, AO711-H, AI713-H, AO713-H, AI714-H, AO714-H, AI711P-H11, AO711P-H11), via the interface communication module of FF (including AM712-S and AM716-S), via PROFIBUS communication module (COM722) or via the wireless gateway module (GW042), and then transfer

it to the device server by the data service linking OMC and IDM, therefore realizing the management and maintenance of intelligent device.

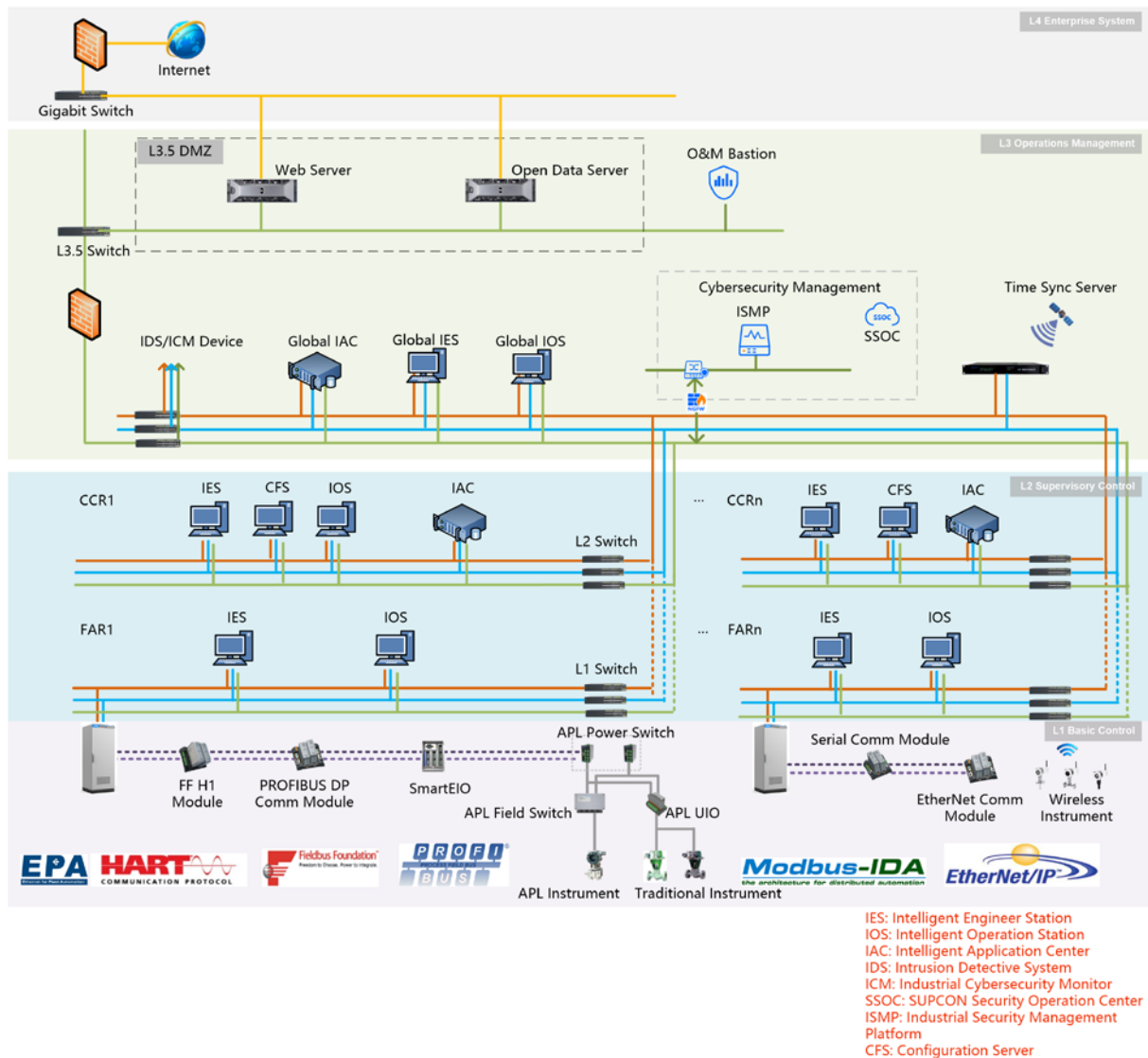


Figure 2-2 System structure diagram

2.4.2 SmartEIO System and IDM Structure

The information of HART intelligent device in SmartEIO system can be transmitted to the IDM server by I/O modules such as UIO811-S, transferring to DCS engineer station, therefore through the data service between SmartEIO system and IDM transferring to IDM device server, thus realizing the management and maintenance of intelligent device. The integrated connection figure is similar to that of OMC system High-performanceHMI component, please refer to "OMC System High-performanceHMI and IDM Structure".

2.4.3 TCS-900 System and IDM Structure

The information of HART intelligent device in TCS-900 system can be transmitted to the IDM server by I/O modules (such as SA09010-H, SAI9020-H), transferring to SIS engineer station, therefore through the data service between TCS-900 and IDM transferring to IDM device server, thus realizing the management and maintenance of intelligent device, as shown in Figure 2-3.

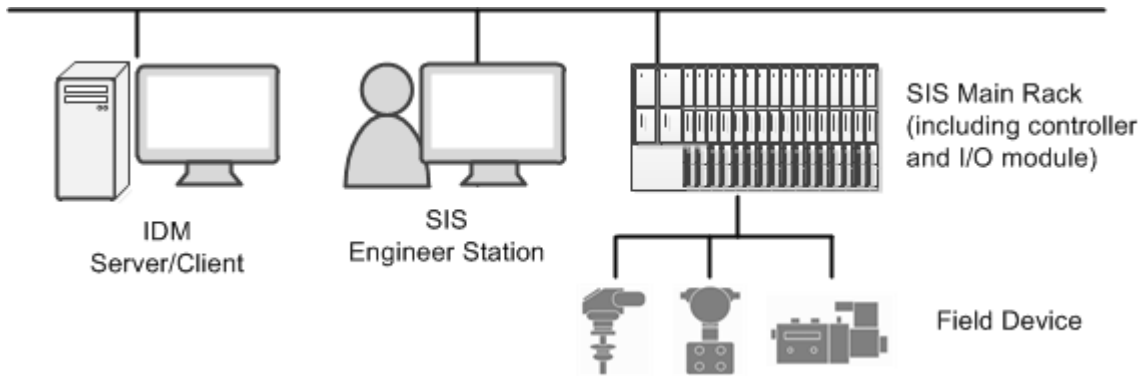


Figure 2-3 Integrated connection between TCS-900 system and IDM

2.4.4 G5Pro System and IDM Structure

The information of HART intelligent device in G5Pro system can be transmitted to the IDM server by I/O modules (such as AI5008-H, AO5008-H), transferring to G5Pro engineer station, therefore through the data service between G5Pro system and IDM transferring to IDM device server, thus realizing the management and maintenance of intelligent device, as shown in Figure 2-4.

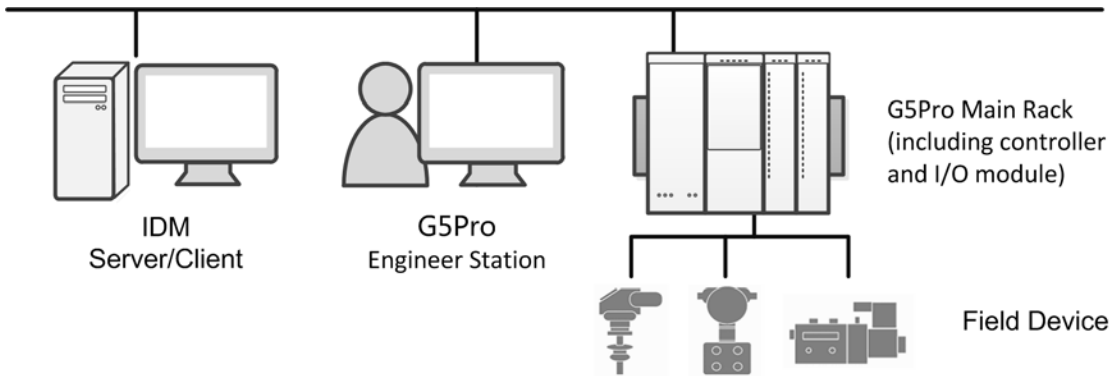


Figure 2-4 Integrated connection between G5Pro system and IDM

2.4.5 JX-300XP System and IDM Structure

The information of HART intelligent devices in JX-300XP system can be transmitted to the IDM server by the HART modules XP351H and XP372H via RS-485/Ethernet converter, to manage and maintain the intelligent device.

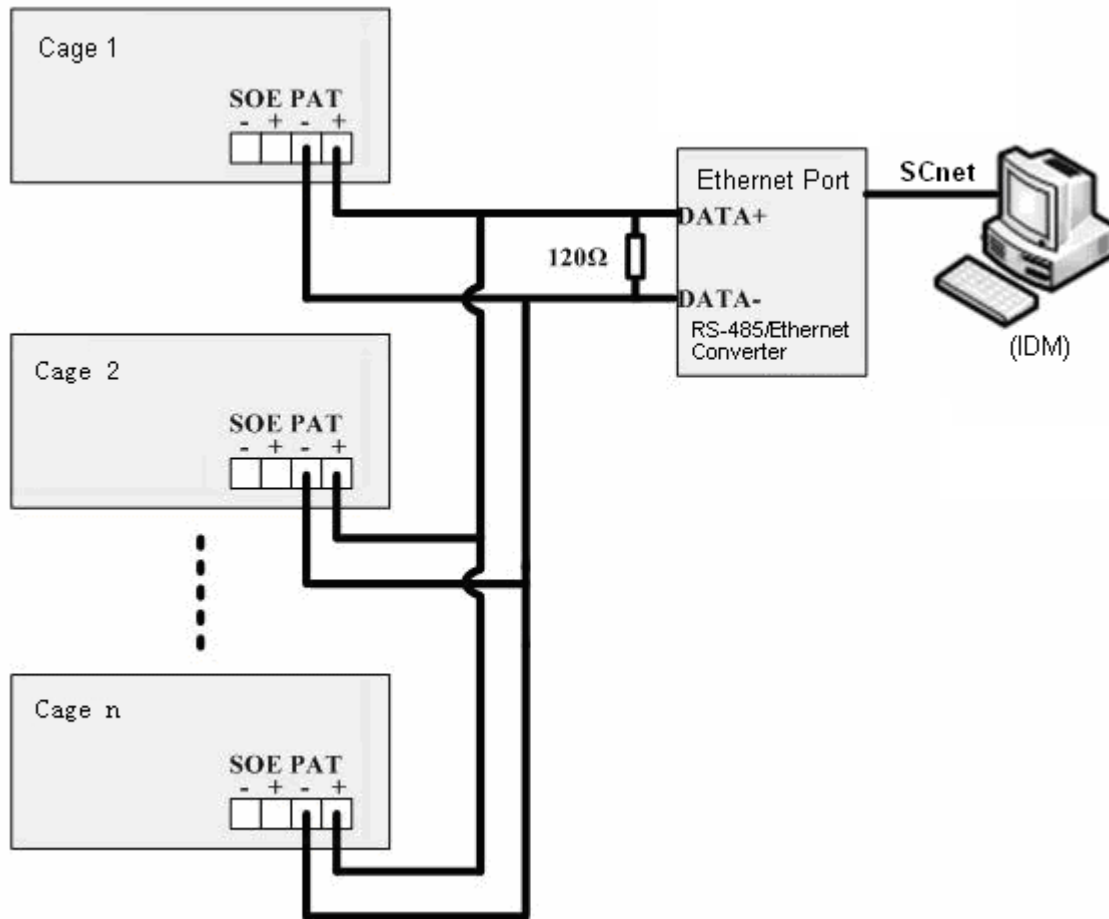


Figure 2-5 Integrated connection between JX-300XP system and IDM

2.4.6 The Third Party Heterogeneous System and IDM Structure

IDM supports to the access way of the third party heterogeneous system's HART devices by SUPCON HART-MUX, HART P+F Multiplexer or HART MTL Multiplexer such converter modules. Communication protocol adopts HART. Take HART-MUX as example, the structure diagram is shown in Figure 2-6.

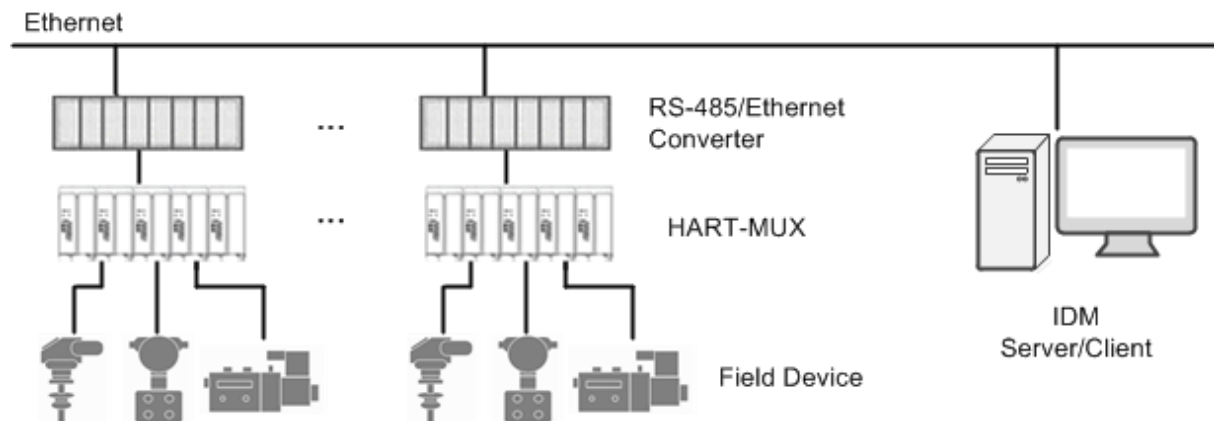


Figure 2-6 IDM works with HART-MUX multiple channel conversion modules

2.4.7 Connection between APL Device and IDM Structure

IDM supports accessing APL devices through APL trunk coupler AEP6101-1E-S or APL power switch, including AEP6204-2E2F-S, AEP6208-2E2F-S, AEP6212-2E2F-S and AEP6216-2E2F-S. Communication protocol adopts HART-IP. The structure diagram is shown in Figure 2-7.

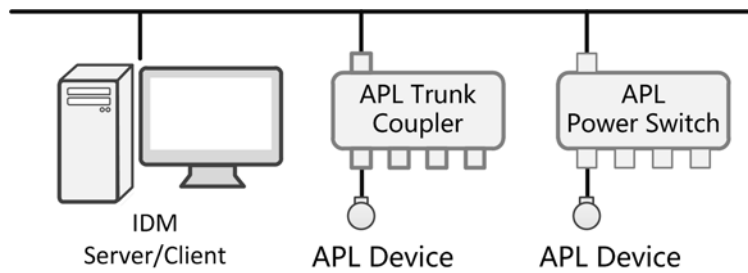


Figure 2-7 Integrated connection between APL device and IDM

Section 3 Open IDM

IDM component is used to complete the management, maintenance and monitoring of system device. Through this component, users can realize the functions of creating enterprise view hierarchy, calibration management, conventional device management, HART device configuration, FF device configuration, alarm monitoring, viewing operation records and so on.



Tip:

There are slightly different functions of center server and device server. For details, please refer to "Component Composition".

3.1 Initial Settings


1. Open Intelligent Application Management software from desktop or start menu. Click **IDM**.
2. Enable **Application Service**.



Tip:

If the default server is an appliance server, you can change it to a center server in the client. For details, please refer to "Switching between Appliance and Center Server".

3.2 Login

Select "Start > OMC > Intelligent Application Management > IDM > IDM Client" to enter IDM login interface. Also, you can click the "Smart Control" button  at top of the HMI interface of the system and select "IDM" in the drop-down list,

When logging in for the first time, the system administrator can log in with the admin account. After logging in, please create a login account for the IDM engineer and configure permissions (see User Management).

**Tips:**


- Even if the server is deployed on this machine, the address should be filled in as the real address, and you can't use 127.0.0.1 instead.
 - Admin account is a built-in manager account in IDM. To ensure the normal running of IDM, admin account property information and management authority are prohibited to be modified. The initial password of admin account is supcondcs. Please modify the password as soon as possible.
 - Guest login: the guest can view the data of asset device management, device alarm monitor, audit trail and so on after login, but he/she cannot perform any action.
 - After you enter the user name and password, if the client is always in the Login state without any error message, please close the client, delete the folder "vxidm-desktop" in the path "C:\Users\[username]\AppData\Roaming" ([username] represents the current user of operation system), and then login again.
-

3.3 Component Composition

IDM component is mainly composed of server and client. Log in to the IDM component through the client. The server is divided into two roles: a central server and a device server. For details about the network nodes, please refer to Network Deployment.

3.3.1 Instruction of Homepage and Function Block

After logging in to the server through the client, the user can see that the IDM platform consists of the following parts:

- The guide bar is in the top of the interface. From the left to the right, the button are alarms and messages(refer to Device Alarm Management), flashing, languages, authorization information, IDM user manual, IDM version and current user. For the interfaces of different features, other operating buttons appears here.
- The searching bar of all tag information is in the middle of the interface. For details, please refer to "Find Device Tag".
- The feature blocks are at the bottom of the interface, including: (click  to edit function block's ranking)
 - Device asset management: Provide asset management services for HART, FF, PROFIBUS and other fieldbus intelligent device, and can configure online parameters and perform real-time fault diagnosis and other operations.

- **Device failure alarm:** Real-time display of failure information of all devices, including maintenance status, alarm frequency, handling opinions, etc., alarm confirmation, secondary statistical analysis and other operations can be performed.
- **Configuration Center:** Provides system configuration items such as system control configuration synchronization, login user account and authorization management, and clock synchronization configuration, OPC variables configuration, etc. When using IDM for the first time, you need to complete the configuration through the “Configuration Center”.
- **Data service operation:** It provides the running status display of the system background data service, and you can check whether the key indicators are normal.
- **Log audit:** Display all operation records and historical alarm events of the system, and support search or export of logs.
- **Field device parameter backup:** Regularly backup the parameter configuration of the field device, and support the comparison of the parameters of different periods and versions, so as to ensure the safety of the device parameter configuration.
- **DD/DTM maintenance:** Provides configuration functions for fieldbus device DD files and device DTM programs, and can perform operations such as adding, updating, and editing basic configuration.
- **Offline device configuration:** Configure and manage offline device configuration. When the device is online, the IDM automatically downloads the configuration in the device template to the field device.
- **Device management in batches:** It generates device report according to the basic information of devices and user configuration. You can export the report to the local and scan it by Excel. Meanwhile, the IDM provides batch loop testing function.
- **Plant device management:** On the center server, you can view the plant-wide device account, KPI report of device, alarm data of device fault, device change account and senior reports. Meanwhile, you can configure the OPC data of the whole plant here.
- **Knowledge Base Management:** Centralized management of device information on the device server, such as instrument design specification documents, instrument manuals, maintenance and repair records.

3.3.2 Difference Between Center Server and Device Server

Depending on the function of the server, different functional modules are displayed on the center

server and the device server.

- Center server: asset device management, device alarm monitor, configuration center, server monitor, audit trail, DD/DTM maintenance and plant device management.
- Device server: asset device management, device alarm monitor, configuration center, server monitor, audit trail, field device parameter backup, DD/DTM maintenance, virtual device configuration, bulk device management and knowledge base management.

After binding the central service and the device server on the "Server Monitor" interface, the device information, alarm information, operation log, configuration, enterprise model, device manufacturer list, device type, user operation authority, and OPC open parameters of the device server will be synchronized to the center server and displayed in categories. Compared with the device server, the functions supported by the center server are shown in Table 3-1. The following function introduction uses the device server as an example.

Table 3-1 Functions of center server

Function	Functions of Center Server	Note
Asset device management	<ul style="list-style-type: none"> ● Summarize and display the device data of the device server ● Support view categories such as custom view, plant view (default), manufacturer list and network view ● Support opening DTM of device tag ● Support exporting device data in custom view 	Not supported in center server: <ul style="list-style-type: none"> ● Replace, enable, or spare device ● Modify the hierarchy of plant view, assign or release the device ● Add conventional devices, upload devices or edit offline configurations in the manufacturer list
Device alarm monitor	Summarize and display the information of alarm monitoring. Support exporting alarms.	Does not support alarm shelving
Configuration center	<ul style="list-style-type: none"> ● Configure server name, broadcast network, clock synchronization, password strategy, display method of device maintenance and users ● In role management, you can configure role permissions ● Display OPC configuration 	The rest of the functions are not supported.
Server monitor	All	-
Audit trail	All	-
DD/DTM maintenance	Support importing DD files of whole plant	The parsed data of DD files will be synchronized to the device server.
Plant device management	Provide device account, device KPI report, device fault alarm data, device change account, senior report and OPC configuration	Only the center server has this module

3.3.3 Switching between Appliance and Center Server

After IDM component is installed, the server defaults to an appliance server. To switch it to a center

server:

1. In center server, open Intelligent Application Management software from desktop or start menu. Click IDM and then click Open Client.
2. Click **IDM Tool** to open its configuration window.
3. Switch to Config Tool tab, and click Switch to Center Server.



Tip:

Configurations under other tabs are for maintenance. For details, please contact maintenance engineer.

Section 4 Comprehensive Application Flow

Create a new IDM configuration application flow as shown in the figure below. For the configuration entry and reference description of each process, please refer to Table 4-1.

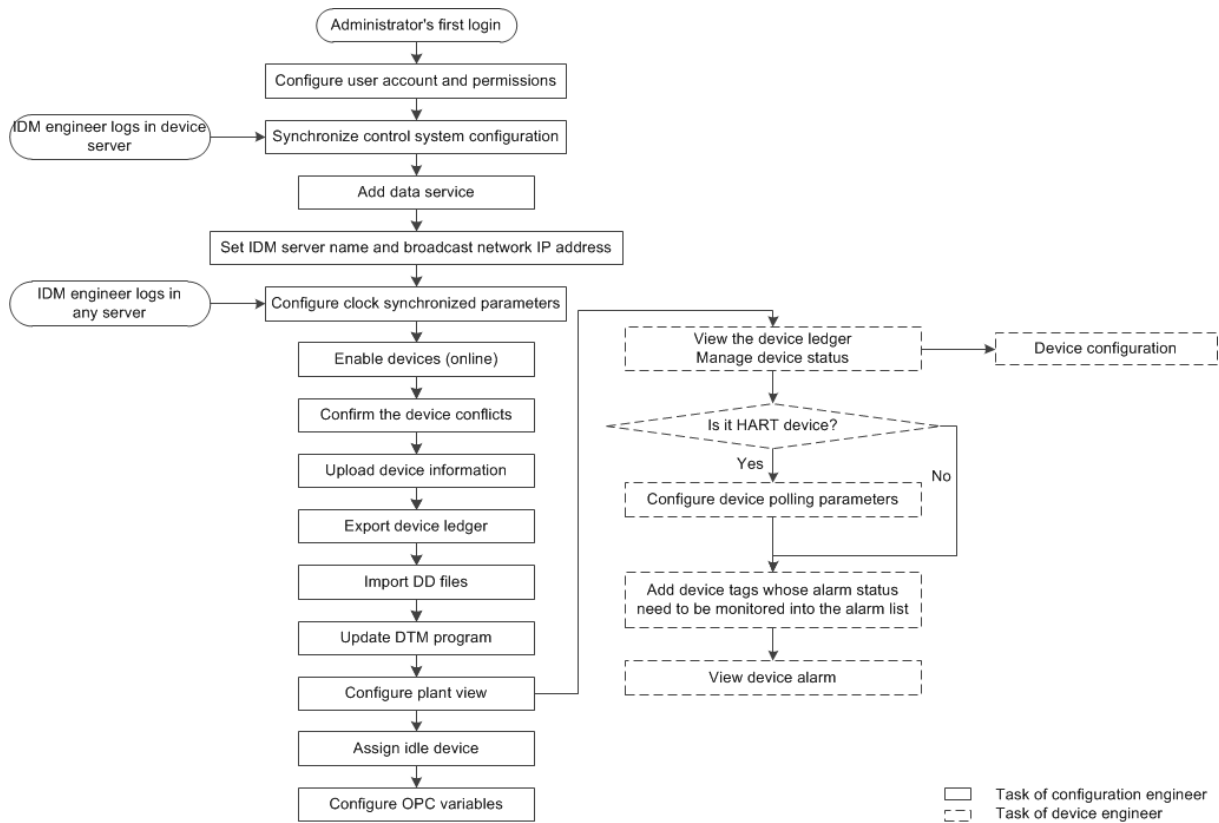


Figure 4-1 Application Flow

Table 4-1 Configuration access and reference list

Operation content	Operation entrance	Reference description
Synchronous drive configuration	Configuration Center > System Setting > Communication Drive Configuration	Communication Driver Configuration
Add data service	Configuration Center > System Setting > Data Service Configuration	Data Service Configuration
Set IDM server name and broadcast network IP address	Configuration Center > System Setting > Server Configuration	Set Server
Configure the user account and account permissions for logging in to the client	Configuration Center > User Management	User Management

Configure clock synchronization parameters	Configuration Center > System Setting > Clock Synchronization Configuration	Clock Synchronization Configuration
Enable devices	Device Asset Management > Custom View	Enable Devices
Confirm the device conflicts	Device Asset Management > Custom View	Confirm Tag Configuration
Upload device information	Device Asset Management > Custom View	Device Asset Management
Export device ledger	Bulk Device Management > Senior Report	View Senior Report
DD File Import	DD/DTM Maintenance	DD File Import
Upload DTM	DD/DTM Maintenance	Use Device DTM
Create an enterprise view hierarchy	Device Asset Management > Plant View	Build Enterprise Hierarchy
Allocate idle devices	Device Asset Management > Plant View	Assign Device
Configure OPC variables	Configuration center > OPC configuration	OPC Application
Check the device account and manage the status of the device	Device asset management	Device Asset Management
Device configuration, can modify, compare parameters or view alarm information	Device asset management, double-click the device tag to enter the device configuration interface	Device Parameter Configuration
Perform loop test on instruments in batches	Bulk Device Management	Device Loop Test
Configure device polling parameters (HART device only)	Configuration Center > Device Configuration > Polling Policy Configuration	Polling Policy Configuration
Add device tags whose alarm status need to be monitored into the alarm configuration list	Configuration Center > Alarm configuration	Device Fault Alarm Configuration

Section 5 IDM Configuration

Please configure the configuration via IDM component as required. To ensure the smoothness of configuration, please make sure that all system related device and field devices have been powered on. For the configuration steps, refer to Comprehensive Application Flow.

5.1 Configuration Guide

IDM provides two configuration wizards: communication drive and open parameter, so as to quickly complete the corresponding operation.

5.1.1 Communication Drive Configuration Guide



Tip:

If the connected system is the OMC system High-performanceHMI component or a TCS-900 system, please complete the following operations before using the Communication Driver Configuration Guide; If you are accessing a third-party heterogeneous system, you can skip this tip.

1. On the "Network Connections" page of the "Control Panel", confirm that the IP address of the computer meets the settings requirements of the control system network.
 2. Select "Configuration Center > System Settings > Server Configuration" on the IDM homepage, and select the IP address used when the computer communicates with the control system through the drop-down box in the "Communication Driver IP Configuration" item.
-

After configuring the communication driver and adding a data server, you can access the meter's device's data source in the IDM component.

IDM data service configuration is available in two ways: by configuring the data service through the Server Configuration Guide, or by configuring the data service by configuring it item by item.

The content configured in the wizard is the same as the item-by-item configuration. You can modify the configuration at any one place, and the results are automatically synchronized by the system to the other.

If you choose to complete the configuration through the wizard, the steps are as follows:

4. Click the "Configuration Center" function module on the IDM homepage to enter the

"Configuration Center" interface.

5. In the menu directory to the left of the Configuration Center, choose "Configuration Guide > Communication Driver Configuration Guide".
6. Complete the "Communication Driver Configuration" in the Configuration Guide, please refer to "Communication Driver Configuration" for details.
7. Click the Next button in the lower-right corner of the page.
8. Complete the "Data Service Configuration" in the Configuration Guide, please refer to "Data Service Configuration" for details.
9. Click the "Finish" button in the lower right corner of the page to save the changes.



5.1.2 Open Parameter Configuration Guide

After setting the instrument tag parameter to the OPC parameter, other control systems can monitor the value of the parameter through the OPC service.

There are two ways to configure OPC parameters: by using the OPC Configuration Guide, or by configuring open parameter configuration in the OPC Configuration node.

The content configured in the Guide is the same as the configuration in the OPC Configuration node, see Configure Device Parameter for detailed instructions. You can modify the configuration at any one place, and the results are automatically synchronized by the system to the other.

If you choose to complete the configuration through the wizard, the steps are as follows:

1. Click the "Configuration Center" function module on the IDM homepage to enter the "Configuration Center" interface.
2. In the menu directory to the left of the Configuration Center, choose "Configuration Guide > OPC Configuration Guide".
3. On the "OPC-Add Device Parameter" page, click the "Configure by device" or "Configure by type" button in the upper right corner, and select the tag parameter to add to the list in the pop-up dialog box. The newly added parameter is disabled .
4. Click "Next", go to the "OPC-Enable Device Parameter" page, check the parameters that need to be opened and click the "Apply" button, and the parameter status changes to Enabled .
5. Click the Finish button in the lower right corner of the page to save the configuration.

5.2 Set Server


In the IDM interface, click [Configuration center > System configuration > Server configuration], configuration items are as follows:

- Server name configuration: Fill in the server name in the text box, which can contain Chinese, English letters, numbers, and underscores (_).
- IDM broadcast network settings: Used for IDM servers to provide data information to the central server through broadcasts. Select the network address by the drop-down box, and the IDM component will automatically calculate the corresponding broadcast address based on the IP address.
- Communication Driver IP Configuration: Used to set the IP address used when communicating with the computer and the DCS system or the TCS system. Click the drop-down box to select the corresponding IP address, and IDM will automatically obtain the local network address.

NOTE: If the server only communicates with the DCS system, you can skip this configuration item.

5.3 Clock Synchronization Configuration

Click “Configuration center> System configuration > Clock synchronization” in the IDM interface and select the role of IDM server in the clock synchronization internet.

- As Server: The IDM server is also used as a clock synchronization server, and the local network address is automatically displayed in the settings box. If the server has multiple IP addresses, select the address in the clock synchronization network.
- As Client: Click the  button, input the clock synchronization server IP address in the text box that appears, and click OK to complete the clock synchronization server address settings.

The maximum clock synchronization server is 3, with priorities descending from top to down, i.e. giving priority to connect with the main clock synchronization server. Only if this connection fails, it starts to connect with the spare clock synchronization server 1 and 2.



Tips:

- If you want to take clock synchronization into effect, double click TimeSync software in the system tray area and click “Configuration reload” button in the pop-up dialog box.
 - When IDM and High-performanceHMI component are used together, pay attention to ensure that the clock synchronization configuration of the two is consistent, otherwise it may cause the clock synchronization to work abnormally.
 - Before performing the time synchronization operation, confirm that the time of the IDM server is earlier than the time of the clock synchronization server.
-

5.4 Communication Driver Configuration

When the IDM server is already running normally, users can dynamically add, modify and delete communication drivers in the IDM data service, synchronize control system configuration, and access the data source of the meter.



Attentions:

- Please complete the communication driver configuration and data service configuration on the appliance server, not the center server.
 - The controller addresses of the engineering configuration in different configuration servers must not be the same, otherwise, the control domain configuration of the later synchronized configuration server will overwrite the previously synchronized control domain configuration.
 - Before synchronizing the configuration of the control system, please confirm that the system configuration is the correct and latest configuration, otherwise IDM cannot obtain the device data.
-

In the IDM interface, click [Configuration Center / System Configuration / Communication Driver Configuration], the configuration interface pops up. The drive configuration is displayed in the form of a block diagram in the interface, and information such as the server type and the adaptation module is displayed.

5.4.1 OMC system High-performanceHMI IDM Communication Driver Configuration

In the driver configuration, click “Configuration” configuration box and enter control OMC system High-performanceHMI’s configuration server address in the pop-up dialog box, and click “OK”. Then the system will automatically execute configuration synchronization.

The IDM server can be synchronized with High-performanceHMI component configuration servers at the same time. After the system configuration of a configuration server is successfully synchronized, continue to click the configuration box, and the synchronization dialog pops up again. Enter the new server address to continue the synchronization operation.



Tips:

- If you do not perform synchronous configuration operations, or if the HART module is not added to the OMC system High-performanceHMI hardware configuration, you will not be able to see the controller information when configuring the data server.
 - After modifying the OMC system High-performanceHMI configuration, the configuration must be resynchronized.
 - If there is PROFIBUS-PA device in the configuration, you need to import the GSD file of PROFIBUS device before synchronizing the configuration. For details, please refer to "DD File Import".
-

5.4.2 TCS-900 System IDM Communication Driver Configuration

In the interface of drive configuration, click "TCS-900" configuration box and then the "TCS-900 configuration synchronization" dialog box pops up, click and select TCS-900 configuration (.zip format file) to upload.



Tips:

- The size of configuration file can be 200M at most.
 - After modifying the TCS-900 system configuration, the configuration must be resynchronized.
-

5.4.3 G5Pro System IDM Communication Driver Configuration

1. In the interface of drive configuration, click "G5Pro" configuration box and then the "G5Pro configuration synchronization" dialog box pops up, click and select G5Pro configuration (.zip format file) to upload.
2. Click "Add Driver Configuration" button and a dialog box pops up. In the dialog box, set "Type" as G5Pro and set SCnet A address, SCnet B address, redundancy property and description. Then, select uploaded configuration file in the drop-down list of CFG file and click "OK", a new configuration box will display in the interface of drive configuration.

**Tips:**

- The size of configuration file can be 200M at most.
- After modifying the G5Pro system configuration, the configuration must be resynchronized.

5.4.4 JX-300XP System IDM Communication Driver Configuration

1. In the interface of drive configuration, click "JX-300XP" configuration box and then the "JX-300XP configuration synchronization" dialog box pops up, click and select JX-300XP configuration (.sck format file) to upload.
2. Click "Add Driver Configuration" button and a dialog box pops up. In the dialog box, set "Type" as JX-300XP and set server name, port, redundancy property and module address, and then click "OK", a new configuration box will display in the interface of drive configuration.

**Tips:**

After modifying the JX-300XP system configuration, the configuration must be resynchronized.

5.4.5 Third-party Heterogeneous System IDM Communication Driver Configuration

When accessing the configuration data of a third-party heterogeneous system, manually click the "Add Driver Configuration" button in the upper right corner of the page, select the communication server type as HART MUX, HART P+F or HART MTL in the pop-up dialog box, and configure the corresponding parameters.

- The communication server is HART MUX or HART MTL. Please refer to the following table for the attribute parameters that need to be configured.

Table 5-1 Communication server property table

Parameter	Configuration Instructions
Server name	Communication service name, enter it in the text box
The port number	Select the serial port number according to the serial port configuration result of the NPort Administrator Suite software Note: Before configuring the data service, you need to configure the serial port through the NPort Administrator Suite software, see "Server Software Configuration" chapter in <i>Serial Port Server User Manual</i> .

Module address	Select HART MUX to be set, and the upper limit of the address range needs to be no less than the maximum value of the RS485 address of the actual device on the RS-485 bus . Please refer to <i>HART-MUX User Manual</i> for the setting method of hardware module address.
RS485 address	<p>Select HART P+F or HART MTL to be set, and the upper limit of the address range needs to be no less than the maximum value of the RS485 address of the actual device on the RS-485 bus .</p> <p>The address range that can be set: The address range of the P+F series is 1~15 ; the address range of the MTL4842 series is 1~16 , and the address range of the MTL4850 series is 1~63 .</p> <p>The larger the address range set here, the longer the time it takes for IDM to scan the device parameters. Therefore, the actual address of the device can be determined by the following methods, reducing the RS485 address range set in IDM , and improving the scanning efficiency:</p> <p>In the P+F/MTL master card topology, the module accesses meter data through the channel of the slave card. Each slave card supports 16 channels. The RS485 address that needs to be configured in IDM is the slave card address, which is determined by the channel address connected to the field device. The calculation formula is:</p> <ul style="list-style-type: none"> ● P+F slave card address = device channel address /16 ● MTL slave card address = device channel address /16 + 1
Number of enabled slave cards	If HART P+F is selected, you should configure the number of enabled slave cards, Maximum of rotary switch of slave cards connected with the master station of each multi-channel transfer needs to be set respectively. Refer to the illustration after this table.
Number of communication retries without response	Select HART P+F or HART MTL to be set, it is recommended to use the default value (2), which can be modified according to the actual situation
HART busy retries	Select HART P+F or HART MTL to be set, it is recommended to use the default value (5), which can be modified according to the actual situation
Baud rate	Select HART P+F or HART MTL to be set, and it needs to be consistent with the configuration on the serial server configuration tool NPort (see <i>Serial Port Server User Manual</i>), 19200 bps is recommended
Communication no response timeout	Select HART P+F or HART MTL to be set, it is recommended to use the default value (3000ms), which can be modified according to the actual situation
Master mode	Select HART P+F or HART MTL to be set, please choose according to the actual situation

- The communication server is HART P+F, please follow the steps below. Here we take the multiplexer KFD*-HM*-16 series (such as KFD2-HMM-16 and KFD0-HMS-16) as an example.
- 1) After connecting the HART multiplexer, please check whether the positive and negative wiring of the RS-485 data terminal, the baud rate dial code under the master station and the RS-485 address dial code are correct.
 - 2) Perform serial port configuration through NPort Administrator Suite software, see “Server Software Configuration” section of *Serial Port Server User Manual*.
 - 3) The HART multiplexer KFD*-HM*-16 series is a master-slave working mode. A master station can connect up to 15 slave stations, and each station can connect 16 field devices. The dial code of the knob of each master station must be 0; the slave station under each master station must be dialed to different positions from 1 to 15. If you change the dial code, you need to power on the master and slave stations again.

- 4) In IDM, select “Configuration Center > Service Configuration”, add a communication service, and select Communication Service Type as HART P+F. Please refer to Table 5-1 for the property parameters that need to be configured.

Among them, the value of “Slave Card Enable Number” is set according to the number of slave cards connected to the multiplexer master station. The default is 1; if the number of slave cards actually connected is greater than 1, the “Slave Card Enable Number” should be set to the maximum value dialed by the rotary switch of the slave card. As shown in the figure below, the number of slave cards under the master station of address1 is 7, and the dialing code of the rotary switch is 1~7, then the “enable number of slave cards” of address1 should be set to 7.

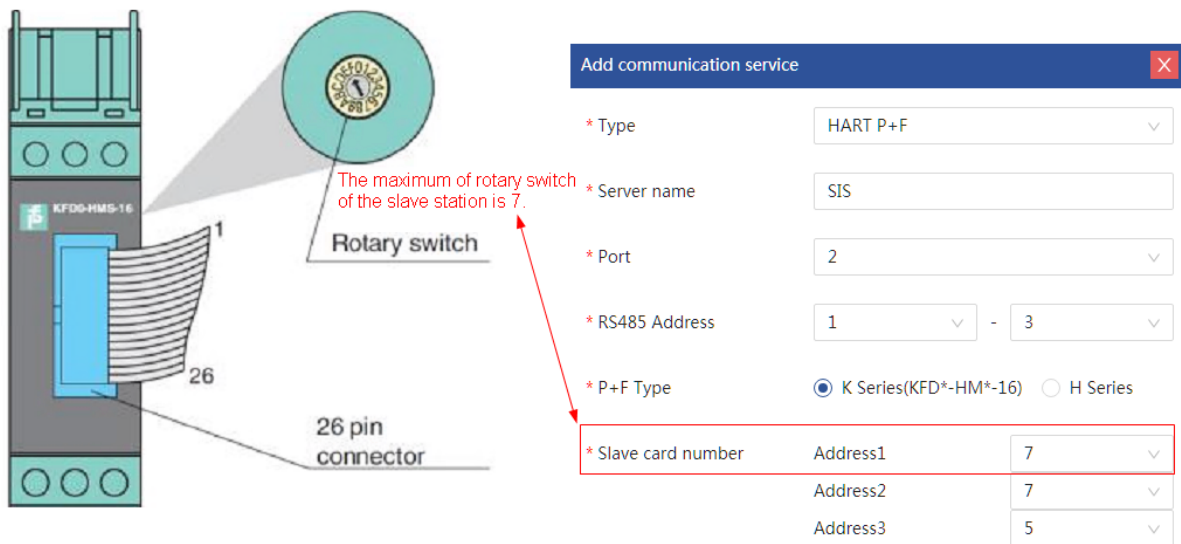


Figure 5-1 HART P+F Settings

Click “OK” to return to the data service setting interface. The newly added data service will be displayed in the interface in the form of data blocks.

5.4.6 IDM Communication Driver Configuration for APL Device

When accessing the configuration data of APL device, click the "Add Driver Configuration " button in the upper right corner of the page, select the communication server type as APL HART-IP in the pop-up dialog box, and configure the name of APL server in IDM and the IP address of APL truck coupler or APL power switch.

5.5 Data Service Configuration



Tips:

- Please complete the communication driver configuration and data service configuration on the appliance server, not the center server.
 - Before adding a server, please complete the configuration of the communication driver. For detailed steps, please refer to "Communication Driver Configuration".
-

Before performing IDM device management configuration, the required data services must be added.

Click "Configuration Center > System Setting > Communication Service Configuration" in the IDM interface to enter the data service configuration interface, and the services are displayed in the form of block diagrams in the interface; When in a scan or abnormal state, the scan status is displayed in the upper-right corner of the block diagram. If the block diagram has a blue box, the service block is selected and can be rescanned or deleted.

5.5.1 Add Communication Service

1. Click the Add Communication Service button and the Add Communication Service dialog box pops up.
2. Click the selection box next to Type and select the server type in the drop-down menu.
3. After selecting the server type, the Controller Settings item appears, click the text box on the right, select the controller you need to add in the drop-down menu, you can select multiple selections, click the x button to delete the selected controller.

Note: After selecting the server type, if the dialog box appears with the message "There is no controller to add under this system type", check whether the communication drive configuration of the server of this type is configured.

4. Click OK to save your changes.

The newly added services are displayed in the interface as a block diagram and display information such as controller address, server type, number of card pieces, and number of meters.

After you add the service, the data service starts automatically, and you can view the instrument data in the device account, see Device Asset Management.

5.5.2 Delete Communication Service

If you want to deactivate a data service, delete the communication server.

Operational steps: In the data service configuration interface, select the service to be deleted (the outer box turns blue), click the "Delete Communication Service " button in the upper right corner, and click "OK" in the pop-up second confirmation box.

5.5.3 Re-scan

When module or device of device is power down or modules are plugged out or plugged in, it is necessary to execute "Re-scan communication server" command to display the live device. The objects are network bridge, HART communication service of control system, HART P+F(PEPPERL+FUCHS) Multiplexer communication service, control domain, controller, node, rack, module and device which are active.

Operational steps: in the interface of data service configuration, select the communication server that needs to be rescanned, and click the "Rescan the Communication Server" button above, and the "Scanning" status prompt appears in the upper right corner of the communication server. When the prompt message disappears, it means the rescanning is complete.

Re-scanning leads to temporary power failure of modules and device but they would get powered again. According to the currently initialized device type and other the number of device each category manages, the order of those devices again get powered would be different from the original one.

5.6 User Management

Click [Configuration Center > User Management] in IDM and configure the login account and authority.

5.6.1 User Configuration

Click "Add user" on the interface and configure the account information in the pop-up account setting interface. The user information is shown in Table 5-2.


Table 5-2 User information

Items	Instruction
Username	The maximum length is 3 to 32 characters, including English letters, numbers and underline. The name cannot be repetitive or empty.
Logout time	Safety settings. The system will automatically logout if the time period expires. The unit is minute and can be set an integer from 5 to 10,080. The default time is 20 minutes.
Select roles	The role determines permissions the user possesses. For details, refer to Configure Role Permission.
Password	Enter the password of the user, and the length is limited to 8 to 32 bits.
Confirm password	Re-enter the password



The newly created user is displayed in the user list. Click the “Enable” column button to switch the active status of the user account.

“Operation” column button

The “Operation” of the user account has the following three buttons:

- Allocate resources : After clicking, select the data server to which the user has operation authority in the pop-up “allocation resource” dialog box. If it is checked, it means all device of the selected device under the role own the “read only” permission, otherwise, they have no permission. “Write” permission is authorized by the user authorization as shown in Table 5-3.

As to the devices with read-only permission, users can open device configuration interface in read-only way to view device parameters but the following functions of IDM component are forbidden over devices with read-only permission:

- Parameter comparison
 - Parameter modification
 - Method execution
 - Add OPC parameter
 - Open EDD interface (only HART device)
 - DTM configuration
- User edit : Click it and the user's basic information can be modified.
 - Delete user : After clicking it, a second confirmation window pops up. Click “OK” to delete the user.

5.6.2 Role Management



IDM manages user rights through the role management module. Click [Configuration Center> Role Management] in the IDM interface and go to "Role Management" interface. The role list is on the left. After selecting a role, the users who have been added to the role group are displayed on the right.

New Role

In the list of roles on the left, click the “New Role” button above, enter the role name and description in the pop-up dialog box, click “OK”, and the newly created role will be displayed in the list.

Configure Role Permission

The role permissions can be configured through the buttons on the right side of the role name.

- Functional module : select the function modules with permission in the pop-up dialog box after user clicks the button.
- Operation permissions : After clicking the button, check the operation permissions that the role has in the pop-up dialog box.



**Attention:**

In order to avoid system faults caused by disoperation, following rules should be followed when configuring user authorities:

- For the central server, when the admin user authorized other users to use some function blocks, in order to avoid conflicts between communication drive and device server, it is recommended not to check “Configuration Center” module.
- Devices related to TCS-900 system are only opened for correlation specialists.
- The authority of the third-party tools should only be opened for users who have some professional skills. The users should know the impact of tool applications on the device and follow the using rules.

The functionalities corresponded by operation permission are shown in following table.

Table 5-3 The corresponding functionalities of operation permission

Operation Permission		Corresponding Functionalities or Menu Commands
Device	OPC Data Configuration Management	OPC tag configuration and application in batch: configuration center/Device configuration/OPC configuration
	Parameter Backup Management	Click “On-site device parameter backup” in IDM interface.
	Third party diagnostic tool	Device asset management/general category, select the DTM configuration button  on the right side.
	Device Replacement Guide	Device asset management/general category, select the device replacement button  on the right side.
	Device Mode Switch	It is used to set device as spare or enabled: by Device asset management/normal category, the two statuses can be switched.
	Controller Write	Tag parameter value modification and DTM configuration
	Offline Template	Asset device management/manufacture list/template view, add a template and template import
	Calibrate Management	Enter asset device management, click calibrate management to go to the interface
Alarm	Alarm Configuration	Configuration Center / alarm configuration
	Real-time Alarm Management	Device fault alarm/alarm shelving, device fault alarm/to-be-confirmed alarm (set alarm shelving, cancel alarm shelving, alarm ACK)
	Configuration change alarm reset	Device fault alarm/device alarm monitor/ reset configuration changed alarm
Configuration center	User Permissions	user management and role management

Role binding and users

Through any of the following methods, you can bind roles and users, and configure user permissions.

- Method 1: In the user property interface, select role groups for users.
- Method 2: In the role management interface, add users under the role group, refer to Role Management.

5.6.3 Password Strategy

Password Strategy configuration allows you to set the password validity period and account lockout policy for user accounts logged into IDM.

Click "Configuration Center > System Setting > Password Strategy" in the IDM interface to configure password validity period, number of failed login attempts, account lockout policy, and so on.

Section 6 Plant Device Management

Click the "Plant Device Manage" module on the homepage of the center server, you can view the plant-wide device account, device KPI report, alarm data of device fault, device change account and senior reports, and configure plant-wide OPC open data.

6.1 Plant Device Account

On the Device Account page, the plant-wide device account information are summarized and displayed in plant view, including device tag, system tag description, manufacturer, device model, device version, equipment name, path of the device in DCS, upper and lower range value of device and system, etc.

Click the "Export" button in the upper right corner to export the account data of the whole plant or the account data of the specified device to a local file.

Double-click the device tag in the device account list to open the details page of the device. In the page, you can view the basic information, operating data, and OPC configuration of the device. For the instruction of the details page, please refer to "Details". The operating data contains the online and offline frequency of device, the latest online time of the device, the alarm statistics displayed by important level distribution, the key parameters of the device tag and their real-time values, and the preset key parameter monitoring strategy, so that the engineers in the central control room can grasp the health status of the device in time.

Tips:

- Before viewing the whole plant account, configure the plant model and assign device on the device server. For device, please refer to "Plant View".
 - The exported account file can contain up to 100,000 tags of devices.
-

6.2 Device Report

The report node contains three nodes: device KPI report, fault alarm data and device change account.

- Device KPI report: Select "Whole Plant" or a node in the plant structure tree on the left, and you can see the device KPI data on the right. The IDM component displays KPI statistics in the form of a bar chart from the dimensions of overall equipment availability,

time availability and function availability. The KPI data for each device tag is shown below the bar chart

Click the "Export" button in the upper right corner to generate and export KPI reports.

- Fault alarm data: Select "whole factory" or a node in the factory configuration tree on the left, and you can see the fault alarm data of the device contained in the selected node on the right, including equipment number, equipment category, specific type of equipment, equipment alarm item, equipment version, alarm number, alarm duration and fault level. Click the header item to sort the data in the list by number of alarms or alarm duration, in positive or reverse order.

Select the custom classification in the upper right corner, and then click the "Export Report" button, the IDM component will classify the alarm data according to the device category, device type or fault alarm items, and export it as a local report file, to provide data for engineers to analyze the equipment alarm.

- Device change account: It displays the change record of the whole plant's devices, which is used to display the online time and offline time of the device tags.

In the upper right corner, you can set the filter time period through the time control, and then you can get the online and offline records of the specified time period.

Click the "Export" button to export the device change account as a local file.



Tip:

A single KPI report can contain up to 5,000 device tags. A single alarm data analysis report can contain up to 100,000 alarms.

6.3 Senior Report

In the Senior Reports interface, you can export reports according to the default template. The default template contains common parameters such as basic information about the device, upper and lower ranges, and units. At the same time, you can also create a new template on the basis of the default template and dynamically adjust the parameter column information of the corresponding device type in the report, so as to use the report to complete quick troubleshooting and other work in the early stage of commissioning of the devices.

The senior report of the center server is similar to that of the device server. For details, please refer to "View Senior Report".

6.4 OPC Configuration

IDM component contains the OPC Server, which is used to publish data to outside. After configuring the device parameters as OPC open data, other control systems can access the device data of IDM through the OPC client.

In this node, you can configure plant-wide OPC open data, including adding, deleting, applying, and disabling. Each time you configure, you can add parameters of the same device server as OPC open data in batches, but you cannot select device tags distributed across different device servers at the same time. For detailed instructions, please refer to "OPC Application".



Tip:

The maximum scale of open parameters for several device servers on the center server is 400,000 tags. It is not supported to set the center server as a data server, which is the direct mean to transmit OPC DA data and OPC UA data externally.

Section 7 Device Asset Management

In the device asset management interface, you can configure online parameters for HART, FF, PROFIBUS and other fieldbus intelligent device, and perform real-time fault diagnosis and other operations.

Click “Device Asset Management” in the IDM interface, then the pop-up interface is shown as follows.

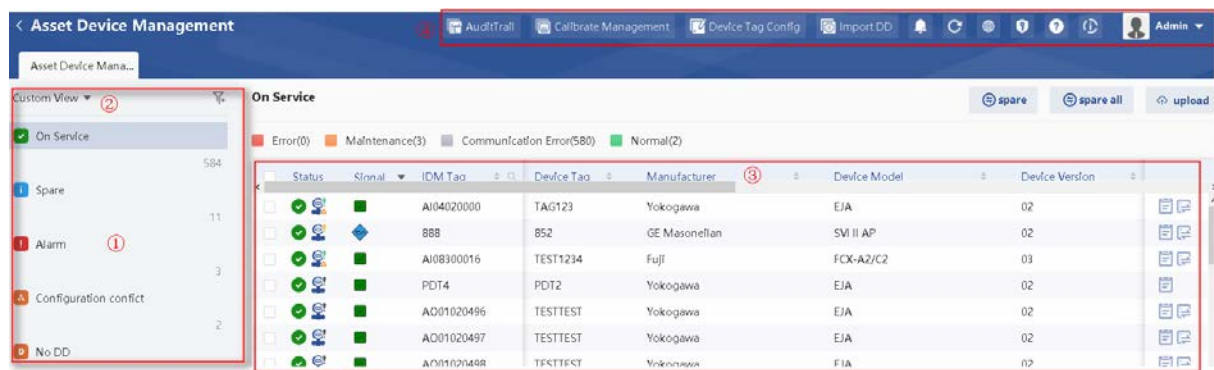



Figure 7-1 Device Asset Management

- ①-Device browsing area: Display the corresponding device classification according to the selected view.
- ②-View category: Click it to switch the view, including normal classification, plant view, manufacturer list, and network view. For details, refer to Introduction of View.
- ③-Device tag list: Select a category or node in the device type area, and the detailed information of the device tag list is displayed on the right, including status, signal, IDM tag, device tag, manufacturer, device model, device version, protocol type, identifier, physical address, online time.
Double click tags to jump to the detail page. Please refer to Device Parameter Configuration or FF Device Configuration.
Click “Upload” button to update the device tag parameter on the new interface such as measuring range, unit and upper and lower limits. Click the arrow on the right of the “Signal” to start filtering. Click  on the right of tags to start searching.
- ④-Menu buttons: From left to right are Audit Trail (refer to Audit), Calibration Management (refer to Calibration Reminder), Device Tag Config (refer to Heterogeneous System Tag Matching), Import DD (refer to DD/DTM Maintenance), alarm and message notification (Device Alarm Management), page refresh, language switching, authority information, user manual, platform version information and currently logged-in user management.

7.1 Introduction of Views

Device asset management interface concludes four view categories:

- Custom view: the custom view is shown in Figure 7-1. Under this category, you can find the device tags by category, and set custom category. For details, refer to “Custom View”. Under category of “On service” and “Spare”, you can switch the device status.
- Plant view: plant view is shown in Figure 7-1. Under the plant view, you can create enterprise view hierarchy according to the process hierarchy allocation, and view device. For details, refer to Plant View.
- Manufacturer list: plant list is shown in Figure 7-1. Under the manufacturer list, you can view device tags according to the manufacturer list. The interface includes device view and template view tabs. Under template view, you can create or import device's offline templates. For details, refer to Offline Template.
- Network view: check device tags according to the device group network hierarchy, which is displayed in groups by communication driver types.
- Wireless device: check wireless device tags according to the device group network hierarchy. For details, please see "Wireless Device".








7.2 Device Status







In the different view classifications of the device asset management interface, there are multiple icons that display the status of the device, which are explained separately below.

7.2.1 Status Identifier

The following icons are used in IDM to indicate the device status, which appears on the left side of the device list.

Table 7-1 Device status list

Status and description		icon
On service / spare status	Enable device	
	Spare device	
Device failure	Communication abnormal (gray exclamation mark, displayed in the upper right corner of the icon)	
	Normal	
	Minor (orange exclamation mark, displayed in the upper right corner of the icon)	
	Serious (red exclamation mark, displayed in the upper right corner of the icon)	
	Configuration Conflict (yellow triangle, displayed in the lower right corner of the device icon)	

	No DD file (light color + dashed frame on the meter icon)	
Maintenance level	Failure: Invalid output signal, device failure requires immediate maintenance or replacement	
	Check Function: Short-term ineffective output signal, the device needs to be calibrated or adjusted	
	Out of specification: The signal output exceeds the specification range, and the device does not work within the specified range	
	Maintenance required: Still valid output signal, device needs maintenance	
	Normal: Effective output signal	

7.2.2 Tag Status Filter

In the network view or enable the device page, there is a status bar above the device tag list, as shown in Figure 7-2, which is used to display the percentage of meters in various states. Click a state to filter the device tags displayed in the list below, and click again to display all tags.




Figure 7-2 Device status bar

- Fault: the device with fault alarm, this can filter out devices with Failure as the maintenance level.
- Maintenance: the device with maintenance status, this can filter out devices with Check Function, Out of Specification and Maintenance Required.
- Abnormal communication: offline devices.
- Normal: There is no device in alarm or maintenance state.

7.3 Custom View

In a bid to offer an easy way to view devices with different properties, exclusive nodes showing devices with shared properties can be set up. Device property categories are fault alarm, enable device, spare device, configuration conflict and no DD files. Select devices with certain properties. Then the list on the right side displays the devices with these certain properties.

7.3.1 Add Custom View

In the Device Asset Management interface (Custom View), click the “Add Filter” button  at the top right of the device browse area, and the “Add Filter” dialog box pops up. Set filter conditions in five aspects: device tag, manufacturer, device model, label, and physical address. Among them, the name of the custom category cannot be empty and no more than 8 characters.

After completing the settings, click the “OK” button, the Custom View is displayed under the list of

commonly used categories, the system will automatically filter the devices, and the devices that meet the custom conditions are displayed under the custom category. Through the button on the right side of the custom classification, you can edit the custom classification conditions or delete the custom classification.

7.3.2 Enable Devices

In the Device Asset Management interface (Custom View) select “Spare” and click the “Enable” command in the upper right corner of the page. The IDM component detects whether the parameter values of the selected device complies with the preset offline device configuration and the pop-up “Enable Device” dialog box displays the comparison result as well as the properties and physical addresses of the devices with a failure comparison result.

According to actual needs, select “Only calibration successfully devices are enabled” or “Enable selected devices”. The IDM component detects whether there are enabled devices in the offline status on the same slot.


- If it exists, “Enable wizard” dialog box pops up:
 - Click “Enable after abandonment”, the IDM component switches the device mode, enable the selected spare device and discard the offline device displayed by the “Enable Guide”, and enable the device without address conflict at the same time.
 - Click “Ignore and Enable”, the IDM component only enables the devices that do not have address conflicts, and doesn’t enable the devices displayed by the “Enable Guide”
- If it does not exist, enter the offline configuration parameter comparison interface. In the interface, the detailed difference items of the device that failed the comparison in the “Enable Device” interface is displayed, that is, the actual value of the field device tag (current value of the parameter) and the set values in the offline device configuration. Check the parameter item and click “Apply parameter value”, then the IDM component assigns the parameter values in the offline device configuration to the on-site device, and display the assignment result in the “Apply parameter” interface.

7.3.3 Device Replacement

Through the meter replacement guide, users can replace smart meters, and related operations will generate corresponding operation records.

The device replacement guide function is only valid for the device tag in the working status. After the replacement, the new device that is online is on the service status, and the old device replaced is discarded and in the offline status.

Select the “Configuration Conflict” category in the browsing area of the device in the Device Asset Management interface, and the device tags with inconsistent configuration are displayed on the

right. Select the old device to be replaced, click the button  on the right, and select “Device Replacement” in the right-click menu to enter the parameter backup setting interface, the following steps are shown below:

1. Rename the IDM tags of the replaced devices and then click “Next” after the settings.
2. Enter "Field Device Parameter Backup" interface, select whether to backup data in the replaced device.
 - Save current device parameters: Save the current device parameters before replacing the new device; after the device is replaced, the saved data will be used. This option can be selected only when the meter is online.
 - Do not save: The system does not save the data, and directly replaces the device.
 - Select historical backup: do not save the current data, directly replace the device; after the device is replaced, the specified historical backup data will be used.
3. After connecting the new device, select the new device to be replaced in the interface. The selection of a new device supports the search function. Enter the device tag in the “Device Tag Search”, and filter the new device that needs to be replaced in the list below. After completing the selection, click “Next” to compare the parameters.
4. Click “Finish” to replace the old device with the new one and exit the device replacement Guide interface.

7.3.4 Confirm Tag Configuration

Among the tags with configuration conflicts, some tags are due to different configuration units, resulting in different displayed values. For example, the default unit of the device is “kilometer” and the value is 1 (kilometer), but it is configured as 1000 meters in the control system configuration. In this case, the tag will be judged as “configuration conflict”. At this time, the operator needs to manually confirm the tag configuration. The operation steps are as follows:

1. In the "Device Asset Management" interface, select the “Configuration Conflict” category under “Custom View” in the device browsing area, and the device tags with configuration conflicts are displayed on the right side.
2. Double-click the device tag to open the tag details interface and compare the data in the two columns of “Device Configuration” and “DCS Configuration”.
 - If it is confirmed that the data of “Device Configuration” and “DCS Configuration” are consistent, return to the “Configuration Conflict” list, select the tag and click the “Confirm” button in the upper right corner of the page to mark the tag as “The configuration is consistent.” The marked device tag will disappear from the “configuration conflict” category. If the data in the “configuration conflict” category are all consistent, you can click the “Confirm All” button to confirm in batches.
 - If it is confirmed that the data of “Device Configuration” and “DCS Configuration” are inconsistent, please do not perform the confirmation operation. The tag of the

inconsistent configuration will be kept in this category for subsequent review.

7.4 Plant View

7.4.1 Build Enterprise Hierarchy

In accordance of IDM enterprise view hierarchy standard and the actual situation, users can create a view hierarchy. Select “Plant View”, and select “Enterprise” in the device browsing area, and select the symbol ⊕ that appears on the right. Enter the node name in the pop-up dialog box, select the node level, and click “OK” to add it. After the configuration of factory model, the typical plant is shown in the figure below,

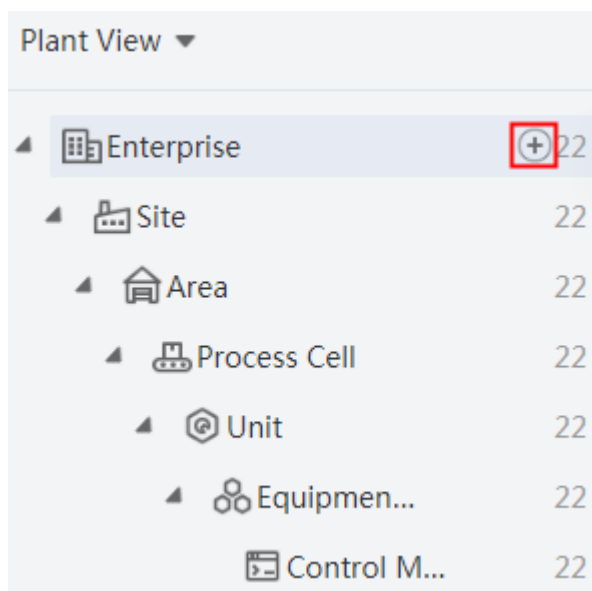


Figure 7-3 Add plant hierarchy

7.4.2 Assign Device

In the IDM device asset management interface, select “Plant View” and select a node in the list on the left, the device that is allocated to this node shows on the right.

Select “Assign” and the “Assign Device” list pops up. The devices listed in the list box are currently idle device (device that is not allocated to other control modules). Select the device to be allocated and click “OK”, the device will be allocated to the current node.

7.5 Manufacturer list


In the Manufacturer List view, IDM provides conventional device management functions. At present, it supports the free addition of manufacturers and provides seven kinds of device templates, which are GENERIC device, GENERICSWITCH, FLOW device, TEMPRATURE device, PRESSURE device, PH analysis device and VALVE.

Procedure

In the Manufacturer List view, select a manufacturer node on the left, click the Add Conventional Device button in the upper-right corner, set the type properties, type name, serial number and IDM tag in the pop-up dialog box, and click "OK" to save.


Attention:



If the currently clicked node belongs to the manufacturer node, type property node or type name node, the manufacturer name, type attribute, and type name of the conventional device cannot be entered. The maximum length of the tag is 50 characters, and the maximum length of the type name and serial number is 32 characters.

Then, a conventional device will be added to the selected manufacturer node of the manufacturer list in real time and the device status is online. The status of the new device is Static Conventional Device .

Double-click the new device to pop up the device parameter template box, in which you can set the device parameters and units. The maximum length of five parameters in the custom parameters page is 255 characters, and the maximum length of the other parameters is 32 characters.

7.6 Wireless Device

Select "Wireless Device" in Device Asset Management" of IDM to view the configuration information of wireless device from the configuration driver of control system. The left structure tree shows the network structure between control station and gateway. When choosing a gateway node, you can view the parameters of device tag or the network topology. By the button  on the top right of the left structure tree, you can switch the view modes in the right interface.

- Table mode : it displays the wireless device attribute parameters connected to the gateway device in the form of a tag list, including status, signal, IDM tag, device tag, manufacturer, device model, device version, protocol, identifier, physical address, online time and etc. Double-click a piece of tag information, you can view the details about the tag. See "Wireless Device Configuration ".
- Topology mode : it displays the star network topology diagram according to the level of "controller (control station) - gateway module - wireless device". If you move the mouse over the icon of the gateway module, you can view the information of the gateway, including RS-485 status, RF module status, two-wire Ethernet A/B port status, LAN A/B status, EBUS A/B channel status and other parameters. Double-click the icon of the

wireless device to enter the details page, please refer to "Wireless Device Configuration " for relevant instructions.

7.7 Find Device Tag

In the main interface of IDM, you can find device tags in the searching box. After users enter the key words, the results display the corresponding devices, log audit or plant view.

Section 8 Device Parameter Configuration

Select the device tag in the main interface of device asset management, double-click the tag to enter the device configuration interface, you can view device details and fault diagnosis and online parameters, and you can also add tags that are easy to search for the device. For device parameter description, please refer to user manuals of relevant devices.

8.1 HART Device Configuration

Double click HART device tags in the “Device Tag” list in the asset device management interface and enter the detailed interface, including details, diagnosis and online parameters. The introduce of the interface is shown in the following table.


Table 8-1 Introduce of the interface

Position	Introduction
Upper left	<ul style="list-style-type: none"> Displays the basic information of the instrument, such as the instrument tag, manufacturer, equipment type, etc Click "View Log", you can open the log audit page of the instrument device in a new page, view or export the log record, for a detailed description of the operation, see "Audit Trail"
Middle left	Manage custom labels for instrumentation devices: <ul style="list-style-type: none"> Click the Add Label button to add custom labels to the instrumentation device Click the x to the right of the label to delete the custom label
Lower left	Show the node address that references the device under the factory view and the network view. Click any node in the address to navigate to this node in the Factory view or Network view on the Device Asset Management page
Right area	After selecting a tab, the details of that page are displayed here. For more information, see Details, Diagnosis and Online Parameters

8.1.1 Details

The basic details page displays the basic information, including the device tag, manufacturer, device type, details version, identifier, software version, online time, protocol, upper and lower limits of the range, corresponding control system configuration information and least records of device alarms. In this interface, you can perform the following operations.

Modify tag parameters

Parameters with icon  can be modified. Click  to configure the parameter value in the text box that appears, and click “OK” after modification.

The IDM tag is the unique label of the device of the IDM component. The legal characters of the tag name are: letters (a-z, A-Z), numbers (0-9), period (.), colon (:), hyphen (-) and underscore (_) etc. The maximum length is 50 characters.

Add labels

On the left side of the Details interface, click the “Add label” button in the “Label” column, and enter the label name in the pop-up text box to add a label to the device. A single device can add up to 8 tags, and the tag names cannot be repeated.

There are two ways to use tags:

- When setting custom categories in the “Common Categories” view, you can use tags as filter criteria. Refer to Add Custom View.
- Enter a tag in the search box on the main interface of IDM, and you can find meters with the tag or log records related to the tag. Refer to Find Device Tag.

View Log

Click the “View the Log” command in the upper left corner of the page to jump to the Audit Trail page. The page has been filtered, and only the log information of the selected device is displayed. For detailed operation instructions, see Audit Trail.

8.1.2 Diagnosis

In the Details interface, select the “Diagnosis” tab to view the device's fault diagnosis information.

- The overall state of the equipment: it is divided into four levels of fault maintenance, such as failure(Failure), Check Function (Check Function) , Out of Specification (Out of Specification) and Maintenance Required (Maintenance Required) and so on.
- Real-time alarm information: Displays the alarms that exist in the current equipment, including alarm name, alarm severity level and other data. If alarm suggestions are configured for an alarm in the alarm configuration, they are displayed below the corresponding alarm item. For some critical alarms, the real-time values and set values of the parameters associated with the alarm are provided to assist in analyzing the causes of the alarms.
- Multivariate diagnostic information: Displays the trend of device data in the past 1 hour with a statistical line chart, and refreshes it every 10 seconds. Click Identify PV, SV, TV, and QV on the left side of the chart to show or hide data in the chart.

Tip:


Meaning of the abbreviated names: PV-Primary Variable, SV-Secondary Variable, TV-Tertiary Variable, QV-Quaternary Variable. For what the value means, see the actual settings of the gauge. For different instrumentation devices, the specific meaning of multivariate PV, SV, TV and QV see the actual settings of the instrument.


8.1.3 Online Parameters


Enter "Online Parameters" tab, the left side is the online parameter type node, the right side displays the instrument parameters under the selected type node, and some parameters will provide Chinese auxiliary instructions in the "Description" column. The user can configure the device parameters and compare the parameters of the original version and the historical version.



Tips:

- When the central server's data is synchronized to the device server, if a prompt of "No permission" appears in the "Online Parameters" interface, please re-login the client. If still, there is no limitation, please contact the administrator for modifying the account's permission.
 - Click the button  on the right side of the "Online Parameters" tab to browse online parameters in the newly opened page.
-

In the online parameter page, the editable data is black with icons  or displayed as drop-down boxes, and the uneditable data is gray. After clicking the edit icon, a text box or drop-down box appears, and parameter values can be configured.

The value of the modified parameter is displayed with a yellow mark , which means that the parameter has been modified and is to be confirmed or cancelled.


- Click the "Download" button on the right side and the system starts to download parameters to the devices (It takes some time to finish the modification. It means the modification is finished until the yellow mark disappears).
- Click "Cancel" to undo this modification operation.
- Click "Add OPC Parameter" to add the parameter directly to the OPC parameter list for easy monitoring by other control systems. For a detailed description of OPC parameters, see "OPC Application".

If the modified parameters are over-range, illegal or unacceptable characters, it prompts "Data limit overflow" or "Error data type".

For some types of devices, IDM provides a parameter grouping page. On the page, IDM filters out the key parameters in the DD parameters and displays them in groups with Chinese label. Meanwhile, the IDM component uses the dashboard to visually display the parameter values of the key status to facilitate the troubleshooting of device failures.

Download multiple parameters to be modified


Device configuration function supports downloading multiple parameters once. Firstly users

gradually modify all the parameters, parameters modified marks yellow mark , and then click "Download All" button and uniformly confirm the parameter modification.

Parameter Comparison

Click "Parameter Compare" button to enter the modification and comparison status of parameters. Uploading parameters takes some time, please wait with patience.


On the top of the parameter list shows the time bar and "Download" button. The time bar is used for selecting historical parameter time. Select one specific time in the drop-down menu of "Historical Time", then the history values of parameters during the time period are displayed on the right side of the parameter list. If the historical and current values are different, the icon turns to be actionable.

Click  in the list area, the current value of this parameter returns back to the historical value.

Click the command "Download" in the list, then the current values of all parameters return back to the historical value.



Tip:

Due to the limits of parameter modification of devices, parameters of devices after the parameter downloading may have differences with parameters required to be downloaded in terms of values, parameter values may be different with the historical values in the process of parameter comparison, however meanwhile the switching button  is disabled to be used. This is a normal case.

Method

Select Method in the "Online Parameter" page, and the interface shows the corresponding method dialog box. According to the tips in this dialog box, select or input the corresponding content and execute the method step by step.

Example

Select one Method (category is M). Select the "Execute" on the right side and the dialog box pops up. Click "OK" to continue executing Method. Click "Abort" to stop the execution during the operational process.

EDD function

Take checking the device trend as an example, select the "EDD/Trends" node in the "Online Parameters" page of device tag.

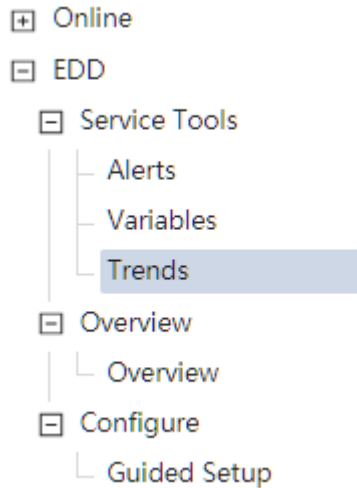


Figure 8-1 Select the operational command

The interface on the right side converts to the trend graphics of the corresponding devices.

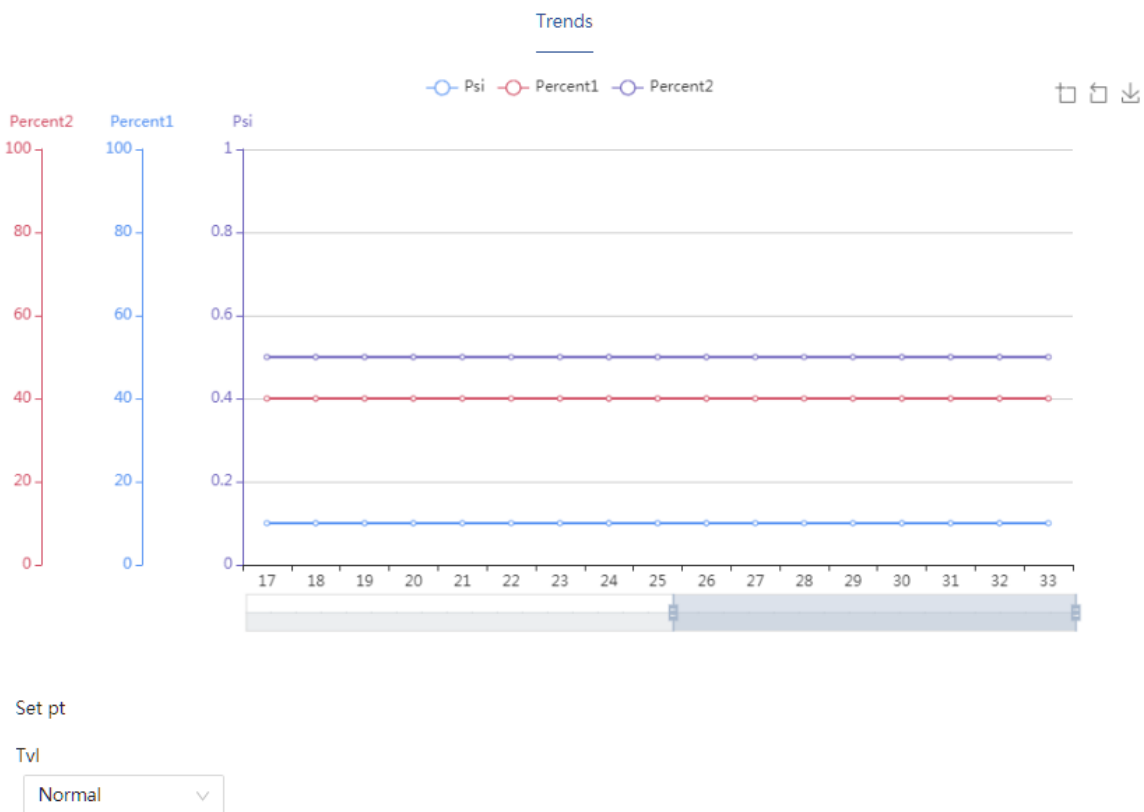


Figure 8-2 Device interface in EDD mode

8.1.4 Documents

The Documents page displays the documents that you have uploaded and bound to your device. You can update, delete, download or view the documents online. For more information, please refer to "Knowledge Base Management". The update operation is to re-upload and overwrite the

original documents, so please pay attention to whether you need to back up the uploaded data before update operation.

8.2 FF Device Configuration

Double click FF device tags in the “Device tag list” of the device asset management interface to enter FF device configuration interface. When the number of device parameters is large, it takes some time to upload parameters. For details, refer to the related device user manuals.

FF device configuration uses device DD (Device Description)/EDD (Electric Device Description) files to communicate with on-site devices. You can execute parameter modification, parameter comparison, and method in this configuration interface. The operational method is similar with HART device. Please refer to HART Device Configuration.

8.3 PROFIBUS Device Configuration

Double click PROFIBUS-PA device tags in the “Device tag list” of the device asset management interface to enter PROFIBUS-PA device configuration interface, which includes 2 tabs:

- Details: it displays the basic information of the device, such as device tag, manufacturer, device model, device version, identifier, protocol type, online time, upper and lower range value, and the physical address of the device tag in the control system.
- Diagnosis: it displays the diagnosis information of defaults, including the overall state of the equipment and real-time alarms.

The operational method is similar with HART device. Please refer to Details and Diagnosis..

8.4 Heterogeneous System Tag Matching

After the device of the third-party heterogeneous system is online, the IDM component selects the device parameter of the Tag type as the device tag displayed in the IDM component by default. The Tag Match function allows you to modify the Tag type of a gauge tag. Optional tag types include tag, long tag, device tag, and system tag, where system tag is only available for configured devices.

Select "Configuration Center > Device Configuration > Instrument Tag Matching" on the IDM homepage, or click the button "Device Tag Config" in the Asset Device Manage interface, and the device tag that has been performed the matching operation is displayed in the interface. The interface buttons are described as follows:

- Tag Matching: Click this button, select the Control Station, select the device type, and click the Start Matching button to perform the tag matching operation. If the Tag type and

the actual gauge tag match, the matching is successful.

- Match failure tag: Click this button and the IDM component will re-perform the matching operation on the tag with the status "Match failed".


8.5 APL Device Configuration

Double-click APL device tags in the "Device tag list" of the device asset management interface to enter APL device configuration interface. If the device has many parameters to be uploaded, it takes some time to upload parameters. For details, refer to the related device user manuals.

APL device configuration uses device DD (Device Description) files to communicate with on-site devices. You can modify parameters, compare parameters, and execute Methods in this configuration interface. The operational method is similar with HART device. Please refer to HART Device Configuration.

8.6 Wireless Device Configuration

On the device asset management interface (except the manufacturer list and network view), double-click a device tag or icon of the wireless device to enter the new interface to view the detailed parameters of the wireless device, including:

- Details: you can view the basic information and diagnostic information of the device and modify the parameters by clicking icon  or add a custom label for the device tag. For the detailed steps, see "Details".
 - Device information, including parameters such as device tag, manufacturer name, device type, device version, identifier, software version, online time and protocol.
 - Diagnostic information, including device online status, configuration information, matching status, RSSI (Received Signal Strength Indicator, which indicates the strength of the received signal) and remaining electricity. At the bottom of the page, a statistical line chart is used to display the trend of PV, SV, TV, and QV in the past one hour, and it refreshes every 10 seconds. The abbreviation meaning of value is: PV-Primary Variable, SV-Secondary Variable, TV-Tertiary Variable, QV-Quaternary Variable. For what the value means, see the actual settings of the device.
- Online parameters: wireless device configuration uses device DD files to communicate with field devices. After importing the DD file, when the device is online, you can view the real-time value of the device parameters, modify or compare parameters. For details, see "Online Parameters". For the specific meaning of the parameters, please refer to the manual of the instrument equipment.

Section 9 Device Alarm Monitor

Through the equipment fault alarm module, the alarm diagnosis capability for equipment failure can be effectively improved:

- The equipment fault alarm module groups the fault level according to the NAMUR standard, you can refer to the NAMUR NE107 equipment fault maintenance strategy system to establish a daily equipment maintenance strategy.
- In the equipment fault alarm page, the instrument alarm monitoring data is displayed in priority order, and you can perform alarm confirmation, alarm shelving and instrument configuration change alarm reset and other operations.
- After collecting the technical documents and fault handling suggestions of instrumentation equipment manufacturers, you can create an expert advice library in the IDM equipment fault alarm module to provide auxiliary reference for equipment maintenance.

9.1 Preparation Configuration

Before using real-time alarm management, you need to import new devices' DD files (refer to DD File Import) and finish device alarm configuration. If you need to modify the device's polling time, you also need to finish the polling policy configuration.

9.1.1 Device Fault Alarm Configuration

Click [Configuration center > Alarm configuration] to enter the device alarm configuration interface and uniformly manage the device alarm level, alarm filter level and fault alarm advice. The interface only shows the device types which has changed alarm configuration, and the update time and update user are the information of the last time operation or import.

Click "Add Configuration" in the right upper corner and the "Add Configuration" interface pops up. Input the information such as manufacturer, protocol, device model and version, and click "OK" to add new device alarm configuration. If there are several pieces of alarm configuration to be imported/ exported in one time, click "Import Configuration" or "Export" to operate.

Double click the information in "Alarm Configuration" interface and its "Alarm configuration" menu pops up. Click the "Edit" button in the upper right corner, the content of the alarm level, the alarm filtering mode, and the alarm proposal should be editable. You can modify the settings by clicking it.

**Tip:**

Single IDM server maximum supports add 20,000 HART device tags (including HART and FF tags) at the same time with alarm monitor function.

9.1.2 Polling Policy Configuration

Click [Configuration center > Device configuration > Polling policy configuration] to enter the interface of polling and the configuration interface pops up. Select a control station from the list on the left, click the “Add” button in the upper right corner, and the “Add” dialog box pops up.

**Tips:**

- There must be an enabled online device under the selected control station, otherwise the polling strategy configuration cannot be added.
- Only HART devices can configure the polling strategy.

Configure the parameters of the polling strategy according to the description in the table below. When finished, click “OK”.

Table 9-1 Polling policy configuration parameter list


Configuration Parameter	Parameter Description	Configuration Illustration
Select Device	Online and enabled devices under the control station	Click and select the tag from the drop-down menu. You can choose a single tag or IO module (that is, select all tags of the module)
Multi-variable inspection interval	Set the polling level for multi-variable data (such as PV, SV, etc.)	<ul style="list-style-type: none"> ● Key: The polling cycle time is 1 minute, and the maximum number of configuration digits is 300. ● Important: The polling cycle time is 15 minutes, and the maximum number of configuration digits is 800. ● General: The polling cycle time is 1 hour, and the maximum number of configuration digits is 5000. ● Custom: The user sets the polling cycle time by himself.
Extended alarm patrol interval	Set polling level for extended alarm	
Eliminate the first configuration change alarm	When the configuration change alarm occurs for the first time, whether to generate an device alarm	

9.2 Device Alarm Management

Click “Device failure monitor” in the IDM interface, and the real-time alarm management interface pops up. In this interface, IDM displays device failures, alarms and expert recommendations according to the NAMUR standard and the interpretation of the device.

Through the device alarm management function, users can view and confirm the current alarm status of all monitored HART device tags, and perform management operations such as monitoring the device parameters.

The icon and tab in real-time alarm management interface are:

- Message prompt icon : located in the upper right corner, it displays numbers of alarm and message. After clicking this icon, you can open the device alarm and message prompt list. Click the alarm tags in the “Alarm” list, you will jump to the device alarm monitoring interface for alarm details.
- Device alarm monitor: display the current active alarm status, including confirmed alarms and unconfirmed alarms. The alarm time is the time when the alarm occurred most recently.

According to the severity level of the alarm, the alarms can be divided into four types: “fault”, “maintenance”, “notification” and “unclassified” in turn. The “alarm level” column corresponds to different label colors.

Double click a alarm message, you can view all historical alarm of the tag in the “Audit Trail” interface that pops up. Refer to Audit for details.

- Alarms to be confirmed: display alarm events that have not been confirmed by the user, including currently active alarms and alarms that are no longer active. The latest occurrence time is the time when the event occurred.

Users can select one or multiple alarms in the “To-be-ACK” page and then click “ACK” in the top right corner. Then fill in causes in the pop-up dialog box to acknowledge this alarm. After alarms are acknowledged, the tab color of “Alarm level” bar in the “Device alarm monitor” won’t change but mark with “Acknowledged” in the column; at the same time, the acknowledged alarm information disappears in the “To-be-ACK” page, and the historical record of the corresponding alarm acknowledgment would be generated in the “Log Audit” page.

- Health Report: show the alarm statistics report exported by custom rules. Refer to Health Report for details.
- Key parameter monitoring: display open device parameters (OPC DA data). Refer to Key

Parameter Monitoring for details.

- Shelved alarm: Displays the shelved alarm in the Device Alarm Monitoring list. Refer to Shelved Status.



Tips:

- The shelving function in “Device alarm monitor” page can only shelve the alarms on the current page rather than those in “To-be-ACK alarm” page.
 - Can IDM working with OMC High-performanceHMI component correctly display FF alarm information as long as the real-time monitoring starts.
-

9.3 Shelved Status

On the device alarm page, when the user can manually shelve the real-time alarm that causes nuisance. Before the shelving state is cancelled, the shelved alarms will not be displayed on the device alarm monitoring page.

9.3.1 Operation Steps

In the alarm management page, click the alarm “Alarm Shelving” button in the upper right corner to block the selected alarm after selecting the alarm. The shelved alarm disappears from the Real-Time Alarm Monitoring page and appears in the list of Shelved Pages.

9.3.2 Exit Shelved Status

1. In the alarm management page, click the “Shelving Status” tab or select the “Shelved Alarm” button in the upper right, switch to the Shelving status page.
2. Select alarm, click the “Cancel shelved” button in the upper right corner of the list to cancel the shielding status, and the alarm will be redisplayed in the real-time alarm monitor page.

9.4 Reset Configuration Changed Alarms

If the device tag configuration has been changed and the alarm status needs to be reset, the steps are shown below.

1. Users can select the button “Reset configuration changed alarm” in the right upper corner in the alarm management interface. Then the alarm batch reset interface pops up.
2. Click the tags which need to be reset alarm status and click “Reset” in the bottom, the alarm status will be changed from “Alarm” to “No Alarm”.

When resetting, the “Reset” button turns a waiting state; after the reset is completed, the reset alarm appear form the reset list.





**Tip:**

When user open the interface of Reset Configuration Change, if he has operating authority of "Reset Configuration Change" but has no WRITE authority of the device, the tag information of the device won't be shown in the interface of Reset Configuration Change. The details of user authority settings, refer to Role Management.

9.5 Health Report

Select "Device Alarm Monitor > Health Report" on the IDM homepage, and the interface displays the alarm statistics report exported according to the custom rules, including the KPI of each device, the fault alarm analysis of the device, etc., which can be filtered by equipment classification or filtered by device configuration.

The interface buttons are described as follows:

- Add Report: Click the "Add Report" button in the upper right corner, fill in the report name in the pop-up dialog box, set the statistical time range, and tick the instrument tag that needs to calculate the alarm information, and then click "OK", the IDM component automatically filters the alarm data and generates a report, and the report progress can be viewed in the list.
- Edit report: Click the "Action" column button , you can modify the filtering range of alarm data in the report, after the modification of the report is in the "Ready" state, click the "Action" column button , the IDM component will regenerate the report.
- Export report: Click the Action column button  to export the report as a .doc format document, and use the office software to view the report content.
- Delete report: Click the Action column button  to delete the report.

9.6 Key Parameter Monitoring

Select "Device Alarm Monitor > Key Parameter Monitoring" on the IDM homepage, and the instrument parameters (OPC DA data) with OPC data open function enabled are displayed in the interface. Select one or more parameters and click the Generate Trend Graph button in the upper right corner to monitor the real-time trend of the parameters.

Section 10 Server Monitor

Click “Server Monitor” in the IDM interface, and the server monitor interface pops up, to display servers in the same local network and their status, including server name, computer name, IP address, run status, role, synchronization state, HART count, FF count, database capacity, hard disk space left, and CPU occupation, etc.

Double click one certain service to view the running status of the background service to restart the designated service.

Click the “Data Server” button in the upper right corner, you can jump to the data server configuration interface, add, re-scan, or delete the communication server. For details, refer to Set Server.



Attention:

After IDM runs, please don't modify the computer clock at will, otherwise it will influence the data display of “Memory Occupation”. If abnormality appears such as the display is 0, please do as follows on all central servers and device servers: delete the data file under the installation directory (the default path is C:\OMC\IDM\prometheus\data) and then reboot the computer.

Depending on the role selected at the time of installation, the server is divided into two categories of central servers and distribution servers. By binding the correspondence between the two, the central server can summarize and demonstrate the device data of each device server to facilitate centralized monitoring and management of the device data.

Binding Device Server

Before binding, please check:

- Whether the time of the hub server and the appliance server are consistent. If it does not coincide, double-click the TimeSync software in the system tray area and click the "Manual Sync" button in the dialog box that opens. (For the settings of the clock synchronization server, see "Clock Synchronization Configuration")
- Mark sure that you have set the server name and broadcast network IP address in the Configuration Center.

Binding steps: In the "Server Monitor" interface, select the current central server, click the “Configure” button of the “Operate” column and the Sync Configuration dialog pops up. All unbinding device servers are displayed in the Sync Configuration dialog box, and then you can

click "OK" to complete the binding operation after selecting the device server you want to bind.

The bound device server is displayed under the center server as shown in the form of a sub node.

After binding operation, the detection period of the center server is 2 minutes. When it is detected that the device server has been offline for more than 1 day, the center server will be unbound. Therefore, after you migrate or reinstall the server, you need to update the binding relationship between the servers in time.

Removing the binding relationship

In the "Server Monitor" interface, the binding relationship can be released by clicking the "Release" button of the Device Server "Operation" column.

Section 11 Audit Trail

Select “Audit Trail” in the main interface to enter historical record viewer interface. History view interface displays various history records. Recording order is set as chronological order, by default. Click on the header item to start sorting.

Double click a record in the list, and the details of the record pops up.

You can search at most 10 million pieces of records in the log audit interface. The main type of history is shown in Table 11-1, and the displayed content can be switched by “Event Type” in the search bar.

Table 11-1 Main types of operational records

Category	Category Description	Sub-category
Application	Record every operation of the user when using the IDM component	User management
		Application record
		Device management
		Filter
		Label management
		Device parameter
		Device alarm
		DCS diagnostic
		Bulk device management
		File database management
Calibration	Record operations related to the calibration function	Calibration plan management
		Calibration route management
		Calibration data
Configuration	Record the operations that affect the field device, such as the user modifying the field device parameters or the device executing the Method	Off-line template
		Off-line device configuration
		Configuration record
		Parameter backup
System	Record system behavior	Server management
		System settings
Alarm	Record fault alarm events of asset device, including alarms generated from control system hardware, field intelligent device meters, and secondary alarm limit configuration	Alarm status
		alarm configuration
		Alarm reset
Notification	Record device configuration changes, asset device online and offline events	Communication drive management
		Configuration update
		Device on/off line

Export logs

1. In the "Audit Trail" interface, click "Export" in the upper right corner and the export setting dialog box pops up.
2. After setting pages, click "Export".
3. Select the saving directory. Click "OK".

The record files and the file format is *.csv. The content is consistent with that on the "Audit Trail" interface. The maximum is 100,000 items.

Section 12 Bulk Device Management

In the “Bulk Device Management” interface, you can complete the single-meter circuit dot test or the safety interlock loop auxiliary debugging, and support the export of equipment ledger information according to custom templates.

12.1 Preparations of Test

Before using the device loop test function, you need to complete the web data server configuration as follows:

1. Select "OMC > System Global Settings" from the Start menu, and select the Monitoring tab in the pop-up dialog box.

The screenshot shows the 'Monitoring' tab of the 'System Global Configuration' dialog box. It features several checkboxes for system settings, a language dropdown menu, and buttons for 'Monitoring Table Alarm' and 'Disk Alarm Config'. Below these are input fields for 'Max Number of Faceplates' (System and Custom) and a 'Service' section with checkboxes for 'Start SOE Server' and 'Start Report Server', along with a 'Web Data Server Config' button.

Configuration	Monitoring	Print	Custom button
<input checked="" type="checkbox"/> Use multi-screen when starting the supervision software.			
<input type="checkbox"/> Run supervision software automatically when starting Windows.			
<input type="checkbox"/> Not display configuration selection dialog box when starting supervision software.			
<input type="checkbox"/> Run supervision software in simulation status.			
<input type="checkbox"/> Hide Monitoring Table Head Automatically.			
<input type="checkbox"/> Start Keyboard Alarm Tip.			
Language:		English ▼	
		Monitoring Table Alarm	
		Disk Alarm Config	
Max Number of Faceplates			
System Faceplate:		8 ▼	
Custom Faceplate:		8 ▼	
Service			
<input type="checkbox"/> Start SOE Server		Web Data Server Config	
<input type="checkbox"/> Start Report Server			

Figure 12-1 System global configuration interface

2. Click “Web Data Server Config” button to pop up the "Web Data Server Config" dialog box.

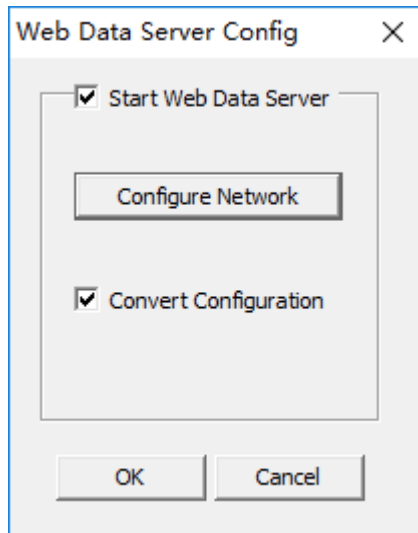


Figure 12-2 Configuration example of Web data server

3. Check "Start Web Data Server", and then the VFDataServer service process will be started when the monitoring starts, to provide the real-time data of the High-performanceHMI component to IDM.
4. Click "Configure Network", then the configuration dialog box pops up.

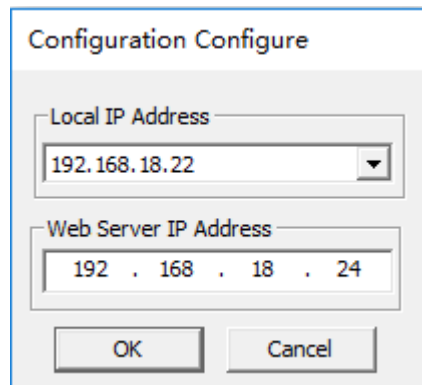


Figure 12-3 Network configuration dialog box

5. Configure the properties of network configuration according to the following table.

Configuration Item	Configuration Illustration
Local IP address	The address is the IP address of the outside network of the local computer for connecting to the IDM node.
Web server IP address	This is the IP address of the local computer where IDM locates.

6. After the configuration, click OK to save the changes.

12.2 Device Loop Test


In the main interface of IDM, select "Batch Device Management> Bulk Calibration" to enter the batch test interface, which includes the following methods.

- Single instrument circuit dot test: suitable for transmitters, control valves and other equipment, can be used for multiple similar equipment for automatic dot test. The test types currently supported in IDM component include batch transmitter loop testing, batch manual valve position loop testing, and batch automatic valve position circuit testing.
- Safety interlock loop auxiliary debugging: suitable for "three out of two" loops or complex safety loops, such as input loops, output loops or loops with DI/DO modules.
- Batch multi-signal output test: multi-signal output, can control the fixed output of multiple instrument signals, often used for dot testing.

The following describes the test method steps.


12.2.1 Transmitter Loop Test

Transmitter loop testing is used to measure the accuracy of current signal values and is suitable for instruments that support AI signals, such as EJA, EJA-Next, etc. In the batch test interface of IDM component, the operation steps of the transmitter loop test are as follows:

1. In the bulk loop test interface, click the button  above the list on the left and the "Add New Group" dialog box pops up.
2. Enter the group name, add the device group for the newly created test task, and then click "Next".
3. Select "Group Type" as "Bulk loop test by transmitters", and then click "Next".
4. In the category, tick the tag of the devices that need loop test.
5. Click "OK", and the newly added device group will appear in the list on the left side of the bulk loop test. After the group is selected, tags in the group and the interface to be looped will be displayed on the right, including the parameters such as tag, value of test point, PV, LRV and URV of device, unit, output and etc. Click the "Add" button above to manually add a new device tag to the device group.
6. Click the button "Set Point", set a uniform value of 3 or 5 for the device tag, and then click the "Start" button to start loop test. During the test process, the detected tags in the upper list will be grayed out, and the results will be displayed in the list below.
7. After the test is completed, the "Export Report" button appears in the upper right corner of the interface. After clicking it, the test results can be exported to .xls format files, and Excel component can be used to view the transmitter test records and process trends of each device tag trend.

12.2.2 Valve Loop Test

Valve position loop testing is used to detect the accuracy of valve positions and is suitable for AO-enabled instruments such as DVC6000, DVC6200, etc. In the batch test interface of IDM component, the valve position loop test has two ways: manual and automatic, and the operation steps are as follows:

1. In the bulk loop test interface, click the button  above the list on the left and the “Add Device Group” dialog box pops up.
2. Enter the device group name, add the device group for the newly created test task, and then click “Next”.
3. Select “Group Type” as “Bulk manual calibrate by valves” or “Bulk auto calibrate by valves”, and then click “Next”.
 - Manual: The operator needs to manually set the mandatory state of the instrument tag in the control system to “Force”, and IDM can set the output value of the instrument to the target value.
 - Auto: The tag of the instrument in the control system must be in a non-mandatory state. During the test, IDM will set the mandatory status of the tag to “Force” and set the output value of the meter to the target value.
4. In the device category that appears, tick modules need a valve position test.
5. Click “OK”, and the newly added device group will appear in the list on the left side of the bulk loop test interface.

After the group is selected, the position number in the group and the interface for valve position test will be displayed on the right side.

Click the “Add Cards” button above to manually add a new device tag to the device group.

6. In the “Set Point” text above, enter the output value set for the instrument, and then click the “Execute” button to start valve position test. After the test has been finished, and the test results are displayed in the list below, including channel number, tag, target setting value, current valve position opening, cumulative time consumption of valve operation, pressure, valve working mode, test results, process trends and other information.
7. After the valve position calibration is completed, the “Export Report” button appears in the upper right corner of the interface. After clicking it, the test results can be exported to .xls format files, which can be viewed by Excel component.

12.2.3 Safety Interlock Loop Test

1. In the batch loop test interface, click the button above the list on the left to bring up the “Add Device Group” dialog box.
2. Enter a device group name, add a device group for the newly created test task, and then click Next.
3. Select Device Grouping Type to Safety Interlock Loop Test, and then click Next.
4. In the device grouping that appears, check the device grouping tag that requires loop testing, and then click Next.

5. In the list of control system tags that appears, check the tag for which you want to view the tag feedback value, and then click OK. If not, click the Skip button to skip this step.
6. The new device group appears in the list on the left side of the test interface. When a grouping is selected, the right side displays the tags in that group and the interface where the loop test will be performed. Click the Add New button above to manually add a new device tag to the device group.
7. Enter the quantity in the tag list, set the tag write down permission via the write-down switch, and click the Test button to start the loop test. During testing, the tested tags in the upper list are grayed out and the results are displayed in the lower list.
8. After completing the loop detection, the "Export Report" button appears in the upper right corner of the interface, after clicking, you can export the results as a .xls format file, you can use Excel component to view the test records and process trend charts of each device tag.

12.2.4 Batch Multi-signal Output Test

1. In the batch loop test interface, click the button above the list on the left to bring up the "Add Device Group" dialog box.
2. Enter a device group name, add a device group for the newly created test task, and then click Next.
3. Select Device Grouping Type to Batch Multi-Signal Output Test, and then click Next.
4. In the device group that appears, tick the device group tag that needs to be tested for the loop, and then click OK.
5. The prompt "Device Grouping Added Successfully" appears, and click "Close" to close the settings interface.
6. The new device group appears in the list on the left side of the test interface. When a grouping is selected, a list of tags in that group and the test interface are displayed on the right. Click the Add New button above to manually add a new device tag to the device group.
7. Enter the quantity in the list of tags, click the Test button, start the output test, and the results will be displayed in the trend chart below.
8. After completing the output test, the "Export Report" button appears in the upper right corner of the interface, after clicking, you can export the results as a .xls format file, you can use Excel component to view the test records and process trend charts of the device tag.

12.3 View Senior Report

Select "Bulk Device Management > Senior Report" in the main interface of the IDM, enter the device account management interface. For the number of device tag data for single-set device,

please refer to "Authorization Illustration".

In the "Senior Report" interface, you can export the report according to the default template. The default template contains the basic information of the device, the upper and lower limits, units and some common parameters. At the same time, you can also create new templates building on the default template, dynamically adjust the parameter column information of the corresponding device type in the report to complete the quick investigation, etc. in the pre-commissioning period.

12.3.1 Add/Delete Templates

Follow these steps to add or remove custom templates:

- Add a custom template

Steps: Select an existing template as the original version, click the "Copy" button and a "template name - copy" new template appears in the list.

Copy the obtained template and the template as a blueprint. Click the "Edit" button of the Actions column or double-click the template name, you can modify the name of the custom template, check the general parameters contained in the template, or add a custom parameter.

- Delete custom templates

The default template "Advanced Device Configuration Information Statistics Template" cannot be deleted, only the custom template can be deleted.

Steps: Select the custom template that you want to delete and click the "Delete" button in the "Operation" column.

12.3.2 Add Custom Parameters

In the "Senior Report" interface, click the "Edit" button of the "Operation" column or double-click the template name, you can enter the template editing page.

In the template, Area, IDM Tag, Device Tag, Manufacturer, Device Model, Device Version, Protocol, Physical Address, System URV, System LRV, System Unit, Device URV, Device LRV, Device Unit 14 parameters are regular parameters, cannot be modified, deleted, or adjusted. You can add custom parameters on this foundation.

After generating a report, each parameter in the template is displayed as a header item of the report. The system is filtered according to the data source of these parameters, and the parameters of the device are filtered and the parameters of the requirements are filled in the corresponding position of the report.

Add custom parameters

1. Click "Add Param" button and the New Parameters dialog pops up.
2. Fill in "Column Name".
3. Set the data source: Select the data type in the left list, display the parameters under the data type on the right, click the "Add" button on the "Operation" column to set the parameter to the data source of the column.
After setting, the data source is shown below the "Column Name". Only one parameter can be added to each device type.
4. Click the "OK" button to add the currently set custom parameter to the list of template, and close the "New Parameters" dialog; click "Continue to Add", add a custom parameter while not turn off the dialog where you can continue setting up other custom parameters.

12.3.3 Report Generation

In the "Senior Report" interface, click the "Report Generation" button on the right side of a statistical template, and the progress prompt of the generated template appears in the lower right area of the interface. After it is completed, the "Status" column shows the generated report name, and the default is "template name _ year+month+day+hour+minute+second".

Click the name of the report, select the saving path in the pop-up dialog, you can export the report to the local directory. The exported report can be browsed by Excel component.

Each row parameter is displayed in the exported report: B ~ O list as 14 conventional parameters, starting from the P column as a custom parameter.

When you adding a custom parameter, if a column name parameter associates multiple data sources of different types, then in the report, the corresponding data is displayed in the cell according to the device type of the row.

12.3.4 Batch configuration


If you need to batch modify the data of the meter, such as the upper and lower limits of the device tag or units, you can use the "Batch Configuration" function of the "Advanced Reports" page as follows:

1. In the "Senior Report" interface, click the report name in the Status column to download the report locally.
2. Use the office component to open the report file and modify the upper and lower limits of the equipment range and the unit of the instrument.
3. In the "Senior Report" interface, click the Batch Configuration button in the upper right corner of the page and select the modified report file to import.

Section 13 Field Device Parameter Backup

Parameter backup functions are used to perform parameter backups on the online HART or FF devices, including device tag, device manufacturer information, device ID and device type, and the backed up data can be restored by data comparison. In the IDM interface, click “Field Device Parameter Backup” to enter the parameter backup management interface.

13.1 Add Parameter Backup

1. In the parameter backup management interface, click the “New Backup” button and the dialog box of new parameter backup pops up.
2. Select the type of backup.
 - Manual backup: select “Immediate Backup” and fill in the file name
 - Automatic backup: select “Time-delay Backup” and set the backup time, the rest of the operation is the same as manual backup.
3. Click “Next” to enter the “Select Backup Device” step.
4. Check the device that requires backup parameters in the figure, click Next, enter the “Perform Parameter Backup” step. Where you click the status selection button  on the right side of Backup Status, you can filter the status in the drop-down boxes, including:
 - Do not check any state: list all states of the device
 - Backup success: List the device for successful parameters backup
 - Backing up: In the process of backup, list the devices that are duplicating data.
 - Cancel backup: List the meter that the backup task is canceled by the user
 - Waiting for the backup: List the devices waiting for backup (backup can only be executed in this status after the execution starts.)
 - Some backup failed: List the meter of some backup failed
 - Communication failed: listing devices that failed communication failure
5. Click the “Complete” button, the system starts to perform the backup, and the meter that is “Wait for Backup” is backed up in sequence. In the interface shown in the parameter backup interface, the backup is displayed as “in progress” state.

Double click one piece of the backup to open the detailed interface to check the historical backup condition. Click “Pause” and the system will stop the current backup. Then click “Start” again to continue the backup.

In the parameter backup interface, select one piece of backup and click “Export” to export the backup data. The exported file is a compressed folder. You can obtain one device tag table with general information and property detailed data of each tag.



Tips:

- The system automatically backs up 1000 devices will take about 24 hours. In order not to affect the overall operation of the IDM component, set reasonable automatic backup intervals based on the actual situation.
 - The IDM tag is the unique identifier of the meter. Do not modify the IDM tag during the parameter backup, other it will cause a backup error.
-

13.2 Backup Comparison and Parameter Restoration

In the "Compare and Restore" function, you can compare the differences between the backups of the two meter parameters, such as the change of the meter or the modification of the parameter. If you want to compare the differences between the historical version and the current data, complete the backup operation of the current version before comparing.

Operation Steps

1. In the "Field Device Parameter Backup" interface, click the “Historical Comparison” button in the upper right corner, you can open the parameter comparison Guide.
2. Select the base backup and the current backup in the interface, the name of the selected backup is displayed in the above text box, click “Next”, enter the Backup Comparison page, display the parameter comparison result.
3. If the basic backup and the two menus in the current backup are identical, there is no display, there is a difference in the list, and the comparison results of the parameters have the following:
 - The parameter value is different: the exact same device, but its backup parameter value is different.
 - Demon replacement: IDM tag and device type are the same, but the device identity code is different.
 - New device: device without this IDM tag in the foundation backup.
 - Delete the device: There is no meter that does not have the IDM tag in the current backup.
4. Select the device needs to restore parameters in the compare dialog box and click “Next” and then select parameters need to restore.

5. After the selection is completed, click “Next” to restore the operation interface.
6. After the variation parameters are selected, click “Finish” to enter the parameter downloading interface and start the downloading process.

Section 14 DD/DTM Maintenance

This section mainly introduces how to use “DD/DTM Maintenance” modules in IDM, including DD file import and how to use DTM to configure device configuration.

If DTM is required, install FDTFrame component and Microsoft.net, Framework 3.5 on the computer with IDM client. For details, refer to *OMC Software Installation and Initialization Guide*.

14.1 DD File Import

Click “DD/DTM Maintenance” in IDM interface and the DD file maintenance tool interface pops up.

If the DD files of IDM client and server are updated differently, when opening the client, it will prompt as lack of DD file exits, user should update DD file manually again. Import DD file by DD tool will add an operation record.

Both HART devices and FF devices support the import of DD files. Here takes HART device as an example to illustrate the operation steps:

1. Click Import DD File, and the “Import DD File” dialog pops up.
2. Select the protocol name, and click “Upload File” to select the corresponding DD file (*. Zip file). Import files supports HART protocol, FF protocol and PROFIBUS protocol.
 - HART protocol file or FF protocol file: the folder hierarchy of imported file archive is "archive.zip / DD / manufacturer code / device type code" or "archive.zip / manufacturer code / device type code".
 - PROFIBUS protocol file: the imported file archive can contain only one level of folders. Instrument files of the same manufacturer are placed in the same folder, and the folder is named as the 6-digit manufacturer code.

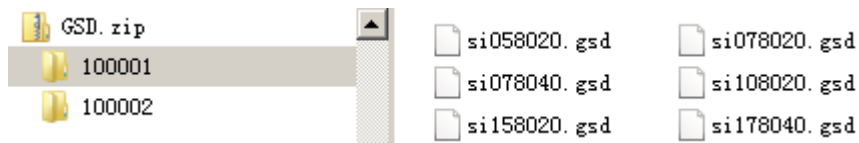


Figure 14-1 Example of PROFIBUS file archive

3. After selecting files, the system automatically execute analysis operation on DD files. After analyzing, “DD file import dialog” such as vendors, manufacturers, device types, and device type codes and display, and click “OK” to import DD files into the system. As to some manufacturers and device type names which cannot be monitored, they are displayed as *unknown*. You can manually complete the device information.
4. Click “OK” to modify” to start importing the DD file. After completion, the prompt “DD import successful” will appear in the upper left corner of the list.

14.2 Use Device DTM

In the DD / DTM maintenance interface, select the Configuration Meter DTM command and the “Configure Device DTM” interface pops up.

Click “Scan device DTM” and the system automatically match the corresponding DTM according to the scanning results. If there is no corresponding DTM or exist multiple matched options, you can select one type and click the “Edit” button in the upper right corner, thus manually selecting the corresponding DTM information according to the device types.

For example, the computer has multiple device versions of Samson device DTM installed. When the system scans the devices, a version of DTM is matched automatically, and then you can check whether the information displayed in the DTM Information column is correct. If the version displayed is different from the actual version, select the device in the list and click Edit button in the upper right corner, you can modify the DTM information in the pop-up dialog box.

14.2.1 Manage DTM Catalog

Click [Upload DTM] in the interface of “DTM Configuration” to open the DTM catalog as shown in Figure 14-2.

Interface Introduction

DTM catalog can be divided into 3 regions: device classification tree, device list and operation button.

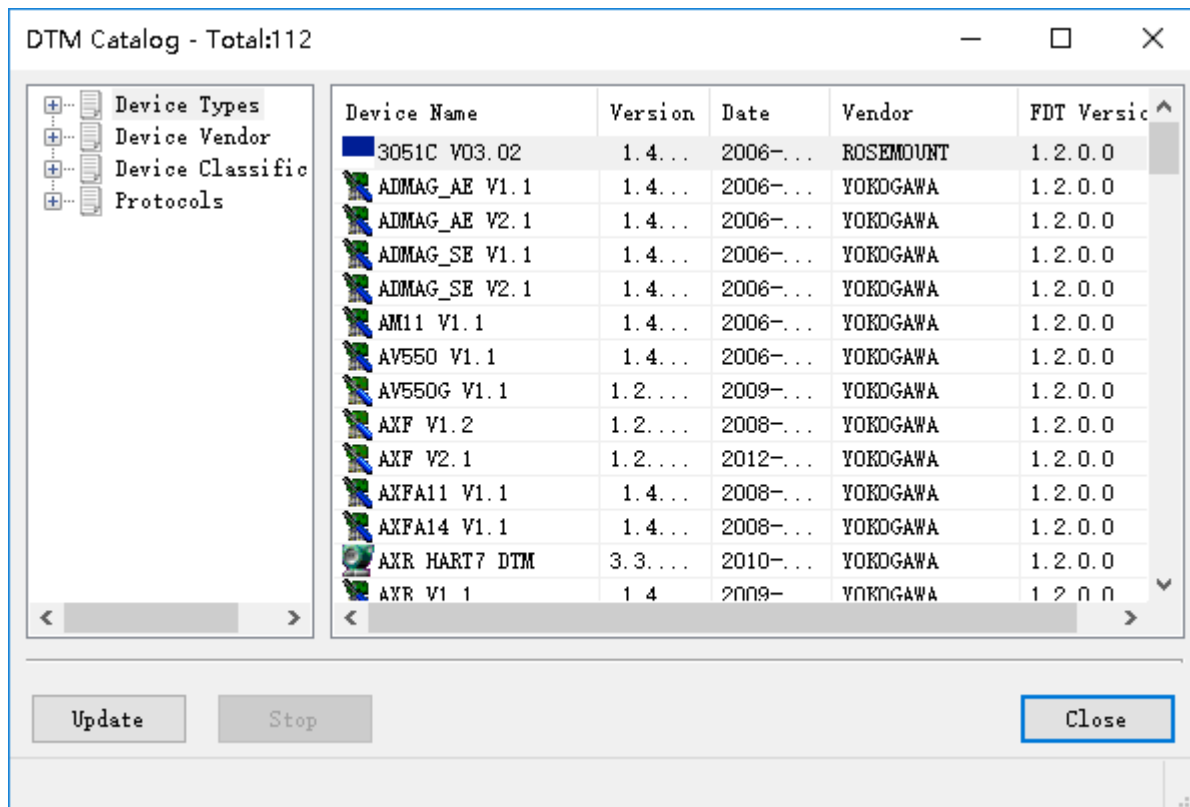


Figure 14-2 DTM catalog

In order to provide convenience for user to find corresponding device DTM, device DTM is classified by its "Device Types", "Device Vendor", "Device Classification" and "Protocols" in the device classification tree.

Table 14-1 DTM device classification description

Name	Instruction
Device Type	Filter by the device type in FDT protocol, including "Communication", "Gateway", "Device", "Composite", "Module" and "Block".
Device Vendor	Vendor list, which is generated by the device DTM installed automatically.
Device Classification	Classified by device function, including temperature transducer, pressure transducer and valve locator, etc.
Protocol	Query by the fieldbus supported by DTM

View Information of Device DTM

Right-click a device DTM and select "DTM Info", and the specific device information interface pops up.

- Device Type Info: shows the device type information supported by DTM, including device "Name", "Vendor", "Version", "Type" and "Date", etc.
- DTM Info: shows the device DTM information corresponding to the DTM, including DTM

“Name”, “Vendor”, “Version”, “FDT Version” and “Date”, etc.



Tips:

- One device type corresponds to one or several field device.
 - One DTM can include several device types. DTM and device may not supported by the same vendor.
-

Update Catalog

Click “Update” in the main “DTM Catalog” interface to update the DTM device catalog. The IDM component will query all DTM in the system automatically, and read their basic information, and save the information to the local DTM catalog.


The IDM component is updating the DTM catalog in Use Device DTM. Updating time varies with the different DTM number in the system. User can click “Stop” to stop the DTM updating, and the DTM catalog will keep the content before update.



Attention:

After installing or uninstalling DTM, user should update the DTM catalog. Otherwise, the DTM installed will be disabled or an error will occur when uploading the DTM has been removed.

14.2.2 Configuration Steps

1. In “Asset Device Management” module’s device list, click  on the right side of the device. Click “DTM” configuration, if matched DTM devices exist, directly load and open this device; when there is no matched DTM devices, it prompts “This device doesn’t have the matched DTM”. Users need to firstly configure “DD/DTM maintenance” module. For details, refer to Use Device DTM.
2. Open the DTM configuration:

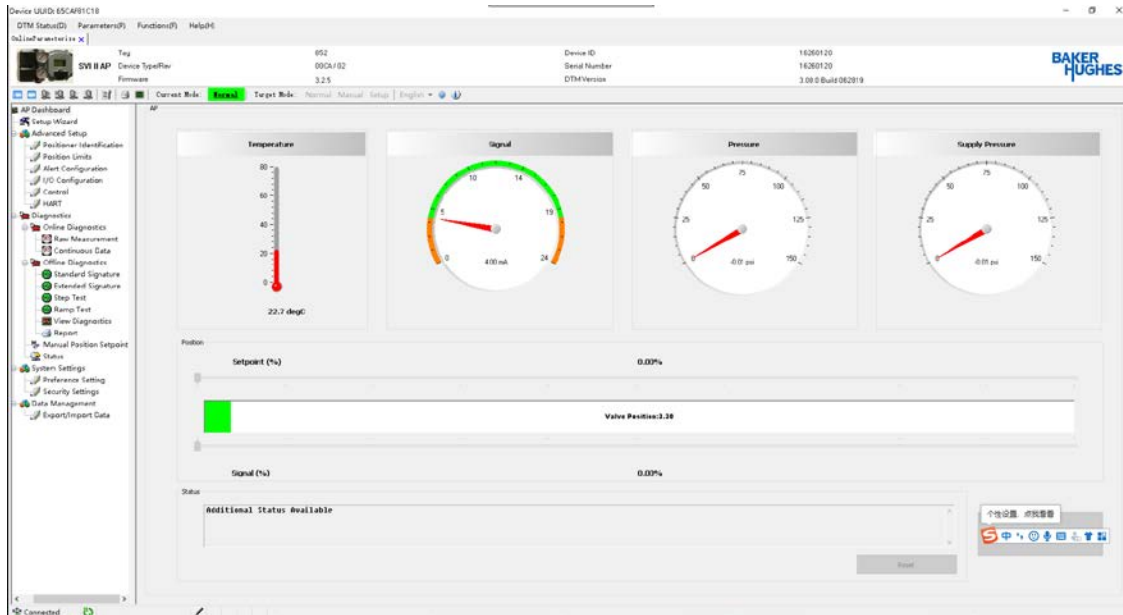


Figure 14-3 DTM configuration interface

DTM configuration menu instructions are shown in Table 14-2.

Table 14-2 DTM configuration menu

Menu	Submenu	Instruction
DTM Status	Online	Switch DTM to online status (real-time communication enabled).
	Offline	Switch DTM to offline status (real-time communication disabled).
Parameter	Upload Parameters from Device	Upload parameters from filed device to local device DTM.
	Download Parameters to Device	Download parameters configured in DTM to filed device.
Function	Offline Parameter	Offline parameter settings
	Online Parameter	Real-time read and write of online parameter
	Compare	Parameter comparison function
	Configuration	DTM configuration.
	Observe	Observe device real-time parameter in read-only parameter.
	Diagnosis	Device diagnosis function
	Additional functions	Other functions please refer to corresponding DTM user manual.
Help	DTM Info	View DTM basic information



Attentions:

- For device DTM's specific operational method and steps, refer to the complementary user manuals offered by device manufacturers.
- If DTM is installed or uninstalled, users need to manually update DTM directory in "Configure Device DTM" interface.

Section 15 Knowledge Base Management

Through the "Knowledge Base Management", you can centrally manage device documents on the device server, such as device design specification documents, device manuals, and maintenance and repair records.

Click Knowledge Base in the IDM homepage to open the maintenance interface of device documents. Click "+" button to create a directory for the documents on the left.

Select a node in the left directory, and then click the "Document Upload" button on the right to select the documents to be uploaded in the pop-up dialog box. The supported formats are XLS, XLSX, TXT, PDF, DOC, DOCX, PPT, XML, WPS and ET.

After uploading the data, select a document, then click the "Allocate" button and select the device tag, you can bind the device tag and document. After binding, you can view the binding document of the device on the Documents tab of the device tag details page. Click "Unallocate" to unbind the device tag and document.






Section 16 Virtual Device Configuration

In the absence of online device connection, the user can pre-configure the tags of devices of different device types through the “Virtual Device Configuration” interface according to the project design data. The supported configuration types are HART device configuration of OMC system High-performanceHMI component, FF device configuration of OMC system High-performanceHMI component and device configuration of TCS-900 system.

When the on-site device is online, the system will automatically match the actual device and offline device configuration information according to the physical address when the device is enabled, and download the preset configuration parameters to the field device through automatic or manual methods, saving the configuration after the device is online Time, improve production efficiency.

Refer to Enable Devices for the steps to synchronize configuration when enabling the device. The steps to configure virtual device configuration parameters are shown below.

Add Single Device Configuration

1. Click “Virtual Device Configuration” in the main interface of IDM to enter the “Offline Device Configuration” page.
2. In the network structure tree on the left, select an I/O module under a control station, click the “Add” button in the upper right corner, and a new configuration dialog box pops up,. Tag properties such as tag, manufacturer, device type, device version, protocol version, and channel address. Among them, The device tag cannot be more than 8 characters. The channel address and network segment address cannot be modified twice. When adding a tag configuration under the same I/O module, the channel address cannot be repeated.
3. The newly-added tag configuration information is displayed in the list shown in the new configuration dialog box, sorted by physical address. Click the button  on the right to modify the tag attributes, select the tag and click the “Delete” button in the upper right corner to delete it.
4. Click the button  on the right side of the tag configuration information to open the tag configuration parameter configuration interface.
5. On the right side of parameters allowed to be manually configured appears icon . Click  to show the text box or drop-down box where you can configure parameter values. After completing the configuration, click the blank place to exit the editing status.  appears next to the modification items and the association nodes.
6. After modifying the parameter values, click “Apply” in the “Operation” column on the right side to save the modification.

7. After completing the configuration, click the "Close" button to close the page.

Add Device Configuration in Batches


1. Click "Virtual Device Configuration" in the IDM homepage to enter the " Virtual Device Configuration" page, and select the system type in the upper left corner.
2. Select the I/O module under the control station in the network structure tree on the left, check the existing configuration data in the list on the right, and click the "Export" button in the upper right corner to export the existing offline device configuration data as a configuration template file.
If fewer configurations are already configured, the "Export All" button can also be selected.
3. Set the file name and archive path of the configuration template file in the pop-up dialog box. The default file name is "offline device configuration + operation time", and the file format is *.xlsx format.
4. Use the table editing software to open the configuration template file, add the offline device configuration according to the exported example, save and close the document after completing all operations.
5. Click "Virtual Device Configuration" in the IDM homepage, enter the " Virtual Device Configuration" page, click the "Import" button in the upper right corner, select the edited file in the pop-up dialog box, and then click the "Open" button to import the file.
The import progress is displayed in the lower-right corner of the page. When the progress bar disappears, the IDM component automatically updates the page data. If the prompt that the import failed appears, modify the file and import it again according to the reason for the error displayed in the prompt box.






Section 17 Offline Template

In IDM, parameter templates can be created for the same version of the device and device, so as to quickly and uniformly set the parameter values of this type of property.

Before adding an offline template, you need to complete the operation of importing DD files, refer to DD File Import.




17.1 Add Template

1. Select "Device Asset Management" from the IDM homepage to enter the "Asset Device Management" interface.
2. From the drop-down menu in the upper left corner, select "Manufacturer List" tab. On the left is the node tree of the instrument manufacturer, showing the hierarchy of manufacturer, protocol type, device type, and device version.
3. In the list of vendors on the left, select a device version node, and select the "Template View" tab in the right interface, which displays the templates that already exist for the device version. Click the "Add Template" button in the upper right corner to bring up the "Add Offline Template" dialog box, fill in the template name and description.
4. The newly created template is displayed in the list. Click the button  on the right side of the template to enter the template parameter configuration dialog box. If the parameter name is too long, move the mouse to the parameter name to view the complete parameter name through the floating information.
5. Configure the template parameters according to the description in the table below.


Icon	Illustration
	1. After clicking the icon, a text box or drop-down box appears, and the parameter value can be configured. 2. After the configuration is complete, click the left mouse in the blank area of the page to exit the editing state, and the modified items and associated nodes appear with button  . 3. After modifying the parameter value, click "Apply" in the "Operation" column on the right to save the modification.
	 is enabled status,  is disabled status, whether the parameters can be downloaded through the button configuration or whether to add OPC configuration

6. Click "Close" after completing the configuration.

17.2 Apply Offline Template

1. Select one template in the list of "Vendor View" tab and click  on the right side, then the application template pops up.
2. IDM component can compare parameters of all devices under the same category. The list displays the current parameter values and template setting values.
3. Check the tag of the parameter that needs to be written, and click "Next" to enter the "Apply parameter value" page. The system automatically updates the current value of the selected parameter to the template value and displays the result of the download.
4. Click "Next" to enter the "Apply OPC parameter configuration" page, click the "Apply" button to update the OPC parameter configuration information of the corresponding device.
5. After the application is completed, the status of the template changes from the inactive status  to the active status . A single template can be applied repeatedly.

17.3 Delete a Template

In the "Vendor View" tab, select a template and click the button  on the right side to delete the template.

17.4 Import/Export Template

1. Export: In the "Edit Template" interface, click the "Export" button to save the template as a .txt file, the file name is "template name_offline template_time", such as template 1_offline template_20210311140234.txt.
2. Modify the parameters in the template:
Use Notepad or Notepad software to open the offline template, use the parameter name as a keyword to search for the parameter that needs to be changed, and then modify the content of the "paramValue" item, as shown in Figure 17-1. Do not modify the remaining parameters at will.

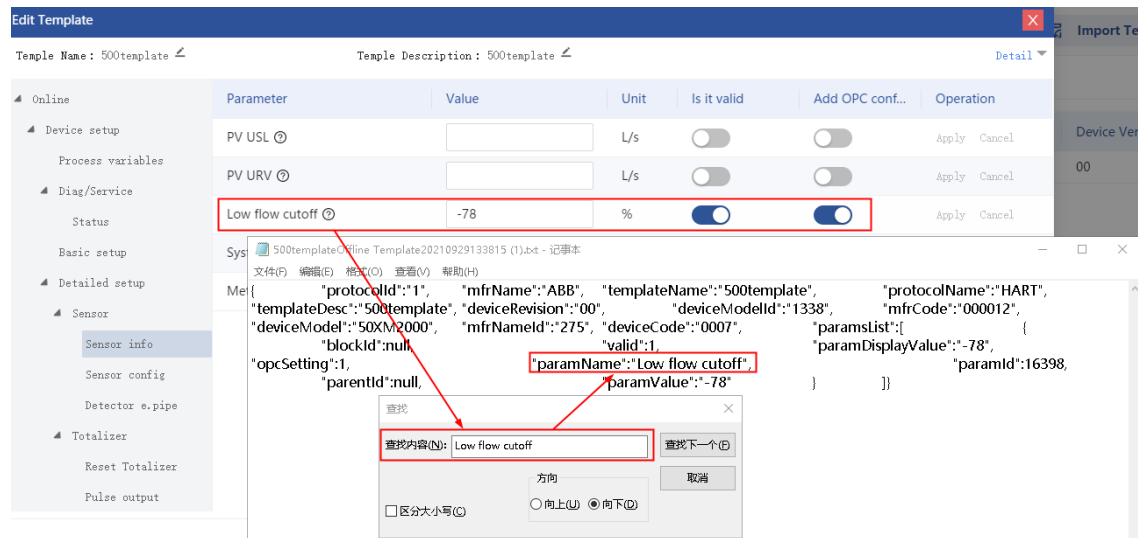


Figure 17-1 Modify the template parameters

3. Import:

In the "Edit Template" interface, select one device version and then click "Import" and select one template file to import this template.




Tip:

The name of the template file selected for import cannot be the same as the name of the template that already exists in the list, otherwise it cannot be imported.

Section 18 Calibration Reminder

The calibration management realizes the management of the device of the enterprise and the calibration of the device to check the damage degree of the device.

18.1 Create Calibration Plan

1. In the "Asset Device Management" interface, click the button "Calibrate Management" in the upper right menu button to open the calibration management interface where you can open the calibration management interface.
2. In the view node in the upper left corner, select "Calibrate Plan".
3. Click  on the right and the "Create a Calibration Plan" dialog box pops up.,
4. Set the basic information of the calibration plan, enter the calibration name, and set the cycle and whether it's a critical calibration.
5. Click "Next" to enter the "Testing point and precision" configuration interface.
 - Testing point property settings
 - The range of start and end is 0-100, and the two cannot be the same.
 - When the item "Start -> End" is selected in the sequence, the range of the quantity is: 2~21. If the number is greater than or equal to 5, the zero point error, span error and linearity error can be set in the accuracy page, and the hysteresis error cannot be set.
 - When the item "Start -> End -> Start" is selected in the sequence, the range of the quantity is: 3~21, and the quantity is an odd number. If the number has been set to an even number, it will automatically increase by 1 to become an odd number; if the number is greater than or equal to 9, the zero point error, span error, linearity error and hysteresis error can be operated on the accuracy page.
 - Precision property settings

The various error values set in the accuracy page are used as the limit value for judging device error in the result of inputting the calibration data.
6. Click "Next" to enter the "Contact and Description" configuration interface.
 - Contact property settings

All options can be selected between manual/measurer.

- Description property settings

Setting security description and cleaning description: The security description is the description information of the setting or security, and the cleaning description is the description information of the cleaning.

7. After configuring all the properties, click “Complete”.


The newly created calibration plan is displayed in the list on the left side of the interface.

IDM records the “add calibration plan” event in the history record, and records the content of the “reason” column in the event description information of the log.

18.2 Add Device to Calibration Plan

After completing the creation of the calibration plan, you can add the device to the calibration plan.

Steps:

1. In the calibration management interface, select one calibration plan from the list on the left. Click  on the right side of the calibrated plan, and select “Add associated device” command in the drop-down menu.
2. In the pop-up “Add Associated Device” dialog box, check the device that need to be associated and click “OK”.



Tip:

Each device can be associated with at most one calibration plan.


The selected device tag will be displayed in the list on the right. IDM writes the event of adding device to the calibration plan into the operation log.

18.3 Create Calibration Route


The calibration route has four states: Available, Checked Out, All Checked In, Partially Checked In. The status of the calibration route can be viewed and modified in the modify route interface.

- When the modification status of the new route or modification route interface is: “Available”, the route status is “Available”; Only in the Available state, can you add or delete devices and modify the name of the route to the calibrated route.
- When setting the calibration reminder, the route status is “Checked Out”;

- When entering the calibration data, when the calibration data of all device are input, the route status is “All Checked In”; when only the calibration data of some device is input, the route status is “Partially Checked In”.

Steps: Select and hold the view node in the left top corner, select “Calibration Route”. Click  on the right side, and the “Create Calibration Route” dialog box pops up. Enter the route name and description information. IDM will write “Creating Route” event into the operational log.

18.4 Add Device to Calibration Route

1. On the calibration management interface, select one certain calibration route in the list on the left side. Click  on the right side of the calibration route, and select the “Add Associated Device” command in the drop-down menu.
2. In the pop-up “Add Associated Device” dialog box, check the device that need to be associated and click “OK”




Tip:

Each device can be associated with at most one calibration route.

The selected device tags are displayed in the list on the right side. IDM writes the event of adding device to the calibrated route into the operation log.

Only when the device has its own calibration plan, can it be added into the route, otherwise users need to define the calibration plan firstly.

18.5 Export Device Calibration Report

1. On the calibration management page, in the view node in the upper left corner, select “calibration plan” to switch to the calibration plan management page.
2. There are four operation buttons in the “Operation” column of the device tag. From left to right, they are: view calibration status, view calibration historical data, export calibration report, and change calibration plan, click “Export Calibration Report” button  to set the export path.
3. The IDM component automatically generates a calibration report according to the attributes of the device and the corresponding calibration plan and saves it to the set export path. The format of the calibration report is a DOCX file, which is used to record some test data when the device is calibrated.

18.6 Execute Device Calibration and Fill in the Calibration Report

According to the calibration report filling requirements, use third-party calibration tools, such as FLUKE tools, to complete the device calibration test, and fill in the calibration test data into the calibration report.

- The “Device Identification” box includes IDM tag, device tag, manufacture, model name, device identifier and block name.



If the device is an FF device, write the value of “Block Name”, otherwise it is not necessary to fill in. “Block name” is the name of the resource block or conversion block.

- The “Device Identification Data” box including:
 - Pre-calibration test: If the pre-calibration test has been carried out, check “√” in this column, otherwise a cross “×”.
 - Post-calibration test: If there is a post-calibration test, check “√” in this column, otherwise, check “×”.
 - Date/Time: Enter the date and time for calibration.
 - Technician: Enter the name of the person who does the calibration.
 - Temperature: Enter the ambient temperature during calibration.
 - Temperature standard (choose one): Please check the corresponding temperature standard in this column.
 - Input range: the input value of the device, including the start value, end value and unit.
 - Output range: the output value of the device, including the start value, end value and unit.
- The “Test Information” box displays the security description information and cleaning description information set in the calibration plan.
- The “Test Point” box includes nominal test point and actual test points(before and after).
 - If the pre-calibration test has been performed, you need to fill in the corresponding test point input and corresponding output data.
 - If the post-calibration test has been performed, the corresponding test point input and corresponding output data need to be filled in.

18.7 Input Test Data

When the device exports the calibration report and finishes the calibration, the corresponding test

data needs to be input into the IDM, and the accuracy of the device is checked through the error judgment mechanism.

1. In the calibrate management interface, click  on the right side of the calibration route, and select the "Input the test data" command from the drop-down menu, and the data entry interface will pop up.
2. The list on the left shows the device that has not entered test data for the route, and the list on the right shows the device that has entered test data. Select an device in the list on the left, click the button , and the data input interface will pop up. Set the test environment and data point range.



Attention:

The input start value and input end value cannot be the same, and the output start value and output end value cannot be the same.

3. Click "Next" and the "input data" interface.
 - When "√" is checked in the "Test before calibration" column of the calibration report, check the "Test before calibration" and input the test data.
 - When "√" is checked in the "test after calibration" column of the calibration report, check the "test after calibration" and input the test data.
4. Set the "temperature" (required) and temperature standard, and enter the remarks.
5. Click "Next" and the "test result" interface pops up.

This interface displays the error analysis of the calibration calibration data, and the results are respectively judged from the five dimensions of maximum error, zero point error, span error, linear error and hysteresis error.

Each dimension has two sub-items, "before calibration" and "after calibration". The result of "after calibration" has a higher priority than the result of "before calibration", that is: when there is a result of "after calibration", if the result of "after calibration" is present If the result is a success and the result of "before calibration" is a failure, the final calibration result is a success; when there is no "after calibration" result, the final calibration result is determined according to the "before calibration" result.

The judgment rules for each sub-item are as follows:

When the absolute value of the actual value <the limit value, the result is "success", otherwise it is "failure".

- Actual value: Obtained by a series of calculations based on the test input and output data sets.
 - Threshold value: calculated according to the error value set on the “Accuracy Properties” page of the calibration plan.
6. Click “Complete” to finish input the test data. On the interface of recording data, this device is transferred from the left side to the right side.
 7. Click the “OK” button in the above figure. When there is device in the list on the left, the route status is changed to “Partially Checked In”, otherwise the route status is “All Checked In”, and the device with test data input is marked in the list on the right .




Tip:

When the reminder time is reset for this route, all the device in the right list are cleared, and the device can be recalibrated and test data can be input.

Most of the test data is based on the data in the calibration report. For specific input value of the data, refer to the description of “Export Device Calibration Report”.

18.8 Calibration Notification

When the route owns devices, the device can set a reminder time for calibration check, which makes the route state set to “Checked Out”, and clear the device symbol that the route has entered the test data. The device tag refers to the input state of the recording device as input test data when the device is input to test data.


In the calibration management interface, click  on the right side of the calibration route, select the “Set Calibration Time” command in the drop-down menu, and set calibration time and reminder time in the pop-up “set calibration time” interface.



Tip:

The reminder time cannot be less than the current time.

After you set the reminder time, IDM will read the relevant calibration time, and show the Alarm

reminder in the IDM client according to the reminder time. The alarm icon  on the top right of the page will display the number of alarms in the form of the way, which is used to notify the user

there is alarm. Meanwhile, IDM will write a calibration reminder event to the operation log.

The reason for the alarm reminder and the corresponding device IDM tags are seen in the interface of the alarm record detailed log.

IDM can export the calibration report for each device by the device name to make the corresponding device calibration.

18.9 Calibration Maintenance

After creating calibration plan and route, you can quickly adjust maintenance according to the actual situation.

Right menu of the calibration plan

Calibration scenarios, right menu commands, including “Modify”, “Delete”, “Rename”, “View”, “Add Associated device”(refer to Add Device to Calibration Plan) and “Remove Associated Device”.

When the calibration plan has assigned with device, the IDM tags of all device will be shown in device tag list.

- **Modify:** You can modify the properties of the existing calibration plan.
- **Rename:** You can modify the names of the existing calibration plan. If the calibration plan's name changes, the confirmation dialog box pops up. IDM writes this operation of renaming the calibration plan into the operational log.
- **Delete:** You can delete the existing calibration plan. When the calibration plan has subordinate devices, the calibration plan is not allowed to be deleted. Otherwise, it is allowed. When users attempt to delete the calibration, the confirmation dialog pops up. IDM will write “Delete Plans” event into the operational log.
- **Remove associated device:** You can remove the association between the device and the calibration plan by the right menu. Select “Remove associated device” in the right menu. The unbinding interface pops up. Click “Device type” text box and in the drop-down list select the associated devices need to be removed and click “OK”.

IDM will write the event of unbinding devices into the operational log.

Calibration route's right menu

The right menu command for calibration route includes “Set reminder Time” (refer to Calibration Notification), “Input the Test Data” (refer to Input Test Data), “Modified Calibration Route”, “Add Associated device” (refer to Add Device to Calibration Route), “Remove associated device”, “Delete”.

- Modified calibration route: Select “Modify” in the right menu and the route property interface pops up.
 - When the status of calibration route is “Available”, the “Route Name” and “Description” can be modified. The check box of “Override Status to Available” will be grey. If the calibration route is in other status, there is only the check box of “Override Status to Available” can be modified. Other items are all unavailable.
 - When the properties of route are modified, the confirmation dialog will pop up. If the name of route is modified, IDM will record the rename operation to “Event Log”.

- Delete

The added route can be deleted by selecting “Delete” in right menu.


If the route has associated device, it cannot be deleted, and a prompt pops up.

Only calibration route associated with no device can be deleted, and a confirmation dialog pops up. IDM will record the delete operation to “Event Log”.

Device Calibration Menu


Select one device under the calibration plan and you can manage the calibration data via the buttons under the “Operation” column.

- View the calibration status

Click the button “View calibration status”  under the “Operation” column, and the device calibration status interface pops up.

If the device has not been executed with calibration, the “Last Calibration” shows “-”. If the device has been executed with calibration, it shows the last calibration result (according to the last calibration time).

- View Calibration’s Historical Data

The input data can be viewed in the “View Calibration History” interface. Click the button “View history calibration data”  under the “Operation” column, and its interface pops up.

The testing page displays the property content of the corresponding calibration plan of the input test data.

The property interface before and after calibration is the same.

- “Point” list shows the data group corresponding to the input and output of test.
Output Error=actual output-theory output. Output Error(%)=Output Error/theory output*100.
- “Error” list shows value of error.
- Export report

Please refer to Export Device Calibration Report for exporting report.

Section 19 OPC Application

IDM component contains the OPC Server, which is used to publish data to outside. The data types include OPC DA (device parameter) and OPC A&E (event record) data. Other control systems (like DCS) can access the parameters of HART and FF device via the OPC client.

OPC application includes OPC parameter configuration of IDM component and OPC access configuration on the control system side. Settings on the control system side includes accessing OPC DA (device parameter), accessing OPC A&E (event record), and remotely accessing IDM OPC service.

19.1 Configure OPC Parameter

Before a third-party system can access the open parameters of an IDM, it is necessary to configure a list of parameters in the IDM that allow openness, including instrument parameters, instrument alarms, and control system diagnostics.

19.1.1 Configure Device Parameter



Click [Configuration center/ OPC configuration/ Device Parameter] in IDM interface and the OPC configuration interface pops up. According to the device tag or device type, the tag parameter can be added to the OPC parameter list to facilitate monitoring by other control systems. Proceed as follows:

- Configure by device:

Select “Configuration by device” in the interface. In the dialog box, the device tag is displayed on the left. After selecting a device tag, you can check the required parameters on the right interface.

- Configure by type:


Select “configure by type” in the interface, and a dialog box pops up, with the device type displayed on the left. After selecting a device type, you can check the required parameters on the right interface.


After selecting parameters, click “OK”. The selected parameters will be added into the DA configuration list. The newly added parameters are prohibited as . Click “Apply” on the upper right corner after selecting parameters, then parameter status turn activated .



Tips:

- **HART OPC parameters maximum support 20,000 points.**
 - **Parameter types added to the real-time monitor can only be one of real, value, integer and floating.**
 - **The enabled parameters are displayed on the "Critical Parameter Monitoring" tab of the "Equipment Fault Alarm" interface, see "Key Parameter Monitoring".**
 - **Currently, the wireless devices don't support OPC DA.**
-


- Import/export configuration: IDM supports import or export of OPC parameter DA configuration, so that the same configuration information can be used to complete the configuration more conveniently.
 - Export: Click  the top right and click the "Export" button on the upper right and select the storage path in the pop-up dialog box to export the configured DA parameter list to the local directory.

The exported file is in .xls format, the file name is "OPC_CFG_year, month, day, hour, minute, and second", which can be browsed through Excel software.
 - Import: Click  the top right and click the "Import" button at the upper right, and select the file in .xls or .xlsx format in the pop-up dialog box to import.

19.1.2 Configure Device Alarm

Click "Configuration Center> OPC Configuration > Instrument Alarms in the IDM interface to enter the OPC A&E configuration interface. Through the configuration of this node, device alarm can be filtered according to the alarm level of the device, and the alarm event record can be added to the OPC parameter list to facilitate monitoring by other control systems.

The steps are as follows:

1. Click the "Add" button in the upper right corner to pop up the alarm level filtering dialog box, select the filtering level as "Fault", "Maintenance", "Notification", "Uncategorized" or "Function Check". Select an alarm level and click to enter the select tag page, the list displays the tag of the alarm level.
2. Click  on the header item to enter keywords to further filter the tag. After checking the tag, click the "OK" button, and the selected tag will be added to the list. Click the button






on the right side of the tag information to modify the alarm filtering level.

19.1.3 Configure Control System Diagnostic

Click "Configuration Center > OPC Configuration > Control System Diagnostics" in the IDM interface, and the control system diagnostic parameters that have been added to the OPC parameter list are displayed in the interface. Through the configuration of this node, the diagnostic data of the control system connected to the IDM component (such as the OMC system High-performanceHMI component or the TCS-900 system) can be added to the OPC parameter list for monitoring by other systems.

The interface buttons are described as follows:

- Configuration: Click this button to select the system diagnostic parameters to be monitored in the pop-up "Configuration" dialog box, and click "OK" to add the parameters to the list of system diagnostic parameters.
- Delete: Select parameters and click the "Delete" button in the upper right corner to remove the selected parameters from the list.
- Apply: The newly added parameter is disabled . After checking the parameters, click the "Apply" button in the upper right corner, and the parameter status changes to Enabled . The parameters of the "Enabled" state can be obtained by other systems via the OPC protocol.
- Disable: After checking the parameters, click the "Disable" button in the upper right corner, and the parameter status changes to Disabled . Parameters for the Disabled state are not acquired by other systems.

19.2 Externally Access IDM OPC Data

The external system can obtain device parameters and event records collected in IDM through OPC.

19.2.1 Access OPC DA (Device Parameter)


Tips:




- When the OMC system High-performanceHMI component accesses IDM data through the SAMS driver, the maximum amount of open data is 5000 points.
 - OPC DA data only supports reading, not writeback.
-

Take the OMC system High-performanceHMI component acquiring and monitoring device parameters via IDM component as example, the operation steps are shown below:

Access via OPC server driver

- 1) Start the configuration management software of High-performanceHMI component, open the operation domain configuration interface and open the domain variable configuration interface. (Please refer to the user manuals of High-performanceHMI component.)
- 2) Click the "Configure Driver" button  in the domain variable configuration interface, to open the "I/O driver configuration guide" dialog box. Select "OPC server driver" and then click "Next".
- 3) Click the "Add I/O Driver" button in the I/O driver configuration interface, and the "I/O Driver Settings Guide" dialog pops up.
- 4) Configure the domain variable, add the device parameter point to the conventional variable list of domain variable. Select "SUPCON.VxIDM" for the driver when configuring variable.
- 5) Create an overview window named "Intelligent Device Parameter" and input the configured device parameter tag.
- 6) Run the VFLaunch, and the parameter of intelligent device can be viewed anytime in the monitoring software of OMC system High-performanceHMI component.

Access via SAMS driver

- 1) Configure the instrument parameters that need to be opened in IDM component, for detailed steps, see "Configure Device Parameter";
- 2) Start the configuration management High-performanceHMI component, enter the operation domain configuration interface, and then enter the domain variable configuration interface; (For the details, please refer to the user manuals of High-performanceHMI component)
- 3) Click the "Drive Configuration" command button  in the domain variable configuration interface to enter the I/O driver configuration interface;
- 4) Click the "Add I/O Driver" command button in the I/O Driver Configuration interface, pop up the "I/O Driver Configuration Wizard" dialog box, select "SAMS Driver", click "Next", "Finish";
- 5) In the pop-up driver configuration interface, add the device management node and set the IP address, and save the modification after completion;
- 6) Perform domain variable configuration, add the gauge parameter points in the parameter DA configuration list to the general variable list of domain variables. When configuring variables, select SAMS for the driver, and select the instrument parameters that need to be monitored for the I/O address;

- 7) Create a general picture, name it "Smart Meter Parameters", and fill in the configured instrument parameter tags;
- 8) Run the "Monitoring Startup Software", you can view the parameters of the smart meter at any time in the monitoring software of the OMC system High-performanceHMI component .

19.2.2 Access OPC A&E (Event Record)

Before externally access IDM OPC A&E Data, you need to complete the following configurations on the computer where the IDM server resides:

- 1) Open Task Manager from the taskbar, locate the idm-openParams-service server on the Services page and stop the service.
- 2) Switch to the Details page in Task Manager, locate the process VxIDMOPCd.exe and end the task.
- 3) In the installation directory of IDM (the default path is C:\OMC\IDM\IDM), locate the batch file OPCAE_REGAE.bat, right-click the file and select "Run as administrator".
- 4) Switch to the Services page in Task Manager, locate the idm-openParams-service service and start the service.

After completing the above configuration, you can connect the AE server of SUPCON.VxIDMAEServer via the client of OPC A&E, to acquire the event records of IDM, including the alarm events and log events.

19.2.3 Access IDM OPC Service Remotely

Refer to *DCOM Configuration User Manual* for details. The server component of IDM OPC DA is SUPCON.VxIDM, and the server component of IDM OPC A&E is SUPCON.VxIDMAEServer.

19.2.4 Access OPC UA

If the external system connects to IDM through the OPC UA service, the default port of the OPC UA service is 18625. You can use anonymous mode in the client and it doesn't require the user name and password of server. The maximum number of OPC UA clients that can access IDM at the same time is 200.

Section 20 Notes

3. If a computer is started, TimeSync prompts “Fail to stop system clock synchronization service”. Please close Windows Time service in the computer system service. The launch type is set as “Prohibit” or “Manual”. Then restart TimeSync software.
4. During the polling process of UCP communication server, server needs to confirm following three items:
 - Time difference caused by the current devices shall be within the tolerance.
 - SafeContix configuration shall be consistent with the on-site one.
 - SafeContrix configuration and the on-site configuration is both updated to the newest one.

Section 21 Fault List

When the IDM works with OMC system High-performanceHMI component, if the configuration synchronization is not successful, error reasons can be gained according to the configuration synchronization error prompt in Table 21-1 and polling can be carried out according to error resolution prompt.

Table 21-1 Configuration synchronization error prompt

Error Prompt	Error Resolution Prompt
Failed to synchronize configuration file. Please check if system server is installed correctly.	Check if configuration of OMC system High-performanceHMI component is installed.
Failed to connect system server. Please check the network and status of system server.	Check network connect between local computer and configuration server of High-performanceHMI component.
Failed to search configuration record file. Please check the path of the configuration record file of system server.	Check if configuration server record folder of High-performanceHMI component exists.
Failed to synchronize configuration project file. Please check the path of the configuration project file of system server.	Check if configuration server project folder of High-performanceHMI component exists.
Failed to search configuration project file. Please check if the file of system server exists.	Check if configuration file and configuration project file of High-performanceHMI component exists.
Failed to save configuration to the database. Please check whether it is the center server and synchronize the configuration in the device server.	Through the "Server Monitor" interface, check whether this machine is a central server. If it is, configuration synchronization is not recommended. It is recommended that the configuration High-performanceHMI component be synchronized by the device server, and the central server will summarize and display the data.

Section 22 Revision

Table 22-1 Retrofit list of the version

Document Version	Applicable Product Version	Remarks
V1.0 (20230307)	OMC IDM V1.00.00.00	The first edition
V1.1 (20230417)	OMC IDM V1.10.02.00	<ul style="list-style-type: none">● Support access to device data of SmartEIO, G5Pro, JX-300XP and other systems, support accessing PROFIBUS-PA device, support OPC UA service.● Add whole-plant device management function, document database management function.● Add conventional device management function under the manufacturer list view.● In the Virtual Device Configuration, it supports batch import function.● Update specification data
V1.2 (20230828)	OMC IDM V1.20.00.00	Modify the authorization instructions, network structure diagram, software entry instructions and description of buttons in Asset Device Management interface.

Section 23 Appendix: Valve Diagnosis Software

ValveLink

IDM achieves the advanced diagnosis function of valve via generating the DTM of third party. The basic operation method is similar with other DTM. Please refer to the Use Device DTM.

ValveLink is the device management and diagnosis tool of Fisher for the valve controller of DVC series. Supported device are shown below:

- HART Device
- FIELDVUE DVC6200
- FIELDVUE DVC6000
- FIELDVUE DVC2000
- FIELDVUE DVC5000
- FF Device
- FIELDVUE DVC6200f
- FIELDVUE DVC6000f
- FIELDVUE DVC5000f

23.1 Installation and Authority

The software ValveLink should be installed independently when IDM integrating it. Select ValveLink™ DTM, as shown below.

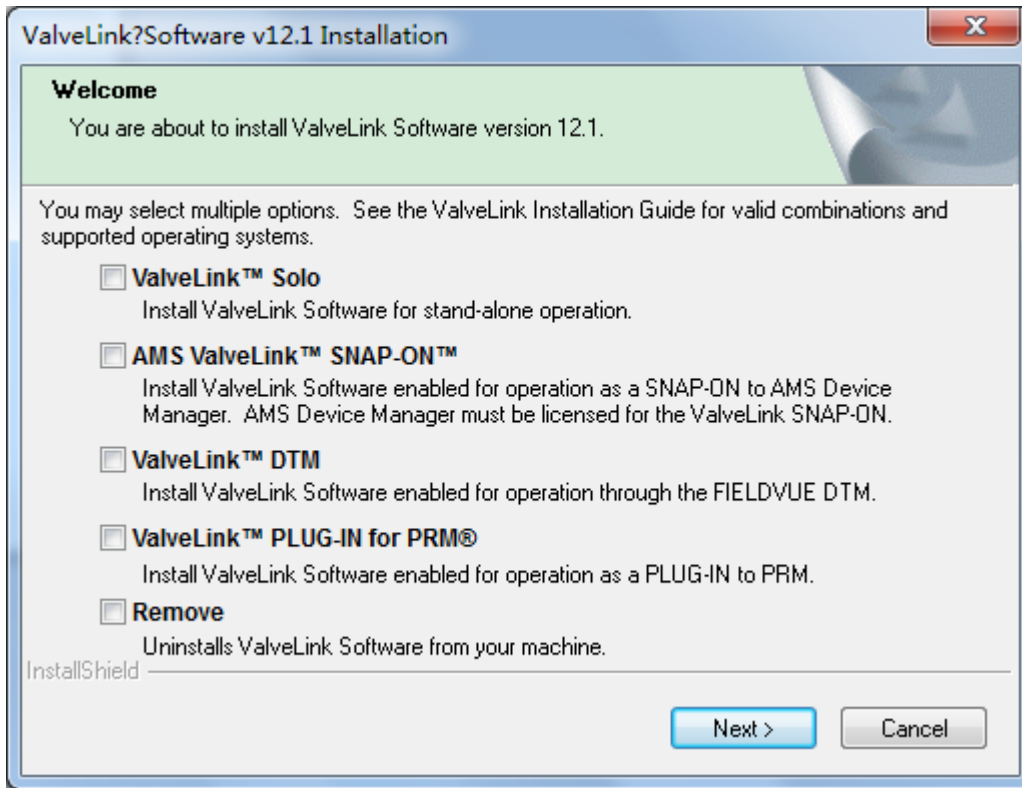


Figure 23-1 ValveLink selection and installation

ValveLink DTM can be applied only with authority. Run ValveLink License Guide after installed successfully, and the program will generate license locally. There are 2 kinds of authority, hardware authority and software authority.

Please refer to the user manual in software for its installation and application. The documents are in the folder Documentation in the installation disk of ValveLink.

After installing IDM software, if the version is inconsistent, an abnormal prompt will pop up when installing the Valvelink for the first time, which will disappear when reinstall valvelink, and the actual components can work normally.

23.2 Operation Instruction

Operation steps:

- 1) Select a DVC device and open DTM, which will start ValveLink automatically.
- 2) Add the DTM of other DVC device one by one. These device tags will be added to the same ValveLink progress.
- 3) All devices can be operated in ValveLink, as shown in Figure 23-2:

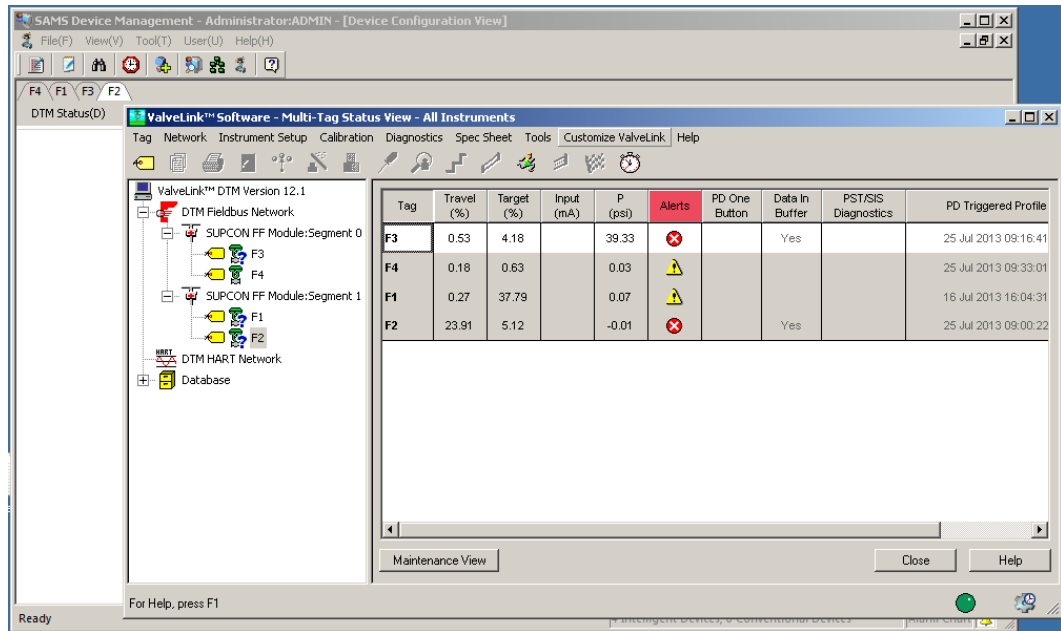


Figure 23-2 Device operation

The detail functions of ValveLink DTM are introduced in the user manual. Paths to open the manual are shown below:

- User can find all help documents in the folder Documentation in the installation directory of ValveLink.
- Click the DTM interface menus [Function/ Additional Function/ documents] to open the help documents of ValveLink DTM and the user manual of the device.
- Click the Valvelink menus [Help/ contents] to open the help documents of ValveLink DTM.

23.3 Function Instruction

Interface of ValveLink is shown in Figure 23-3:

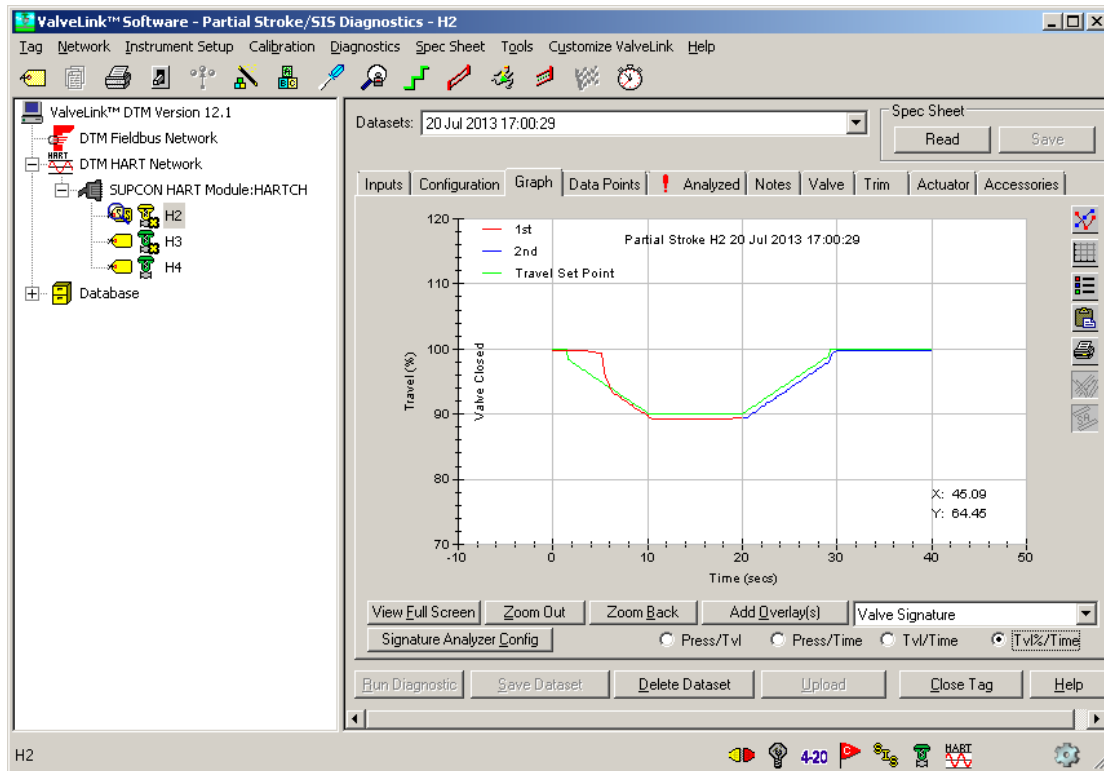


Figure 23-3 Interface of ValveLink

Main functions of ValveLink DTM include parameter read and write, device calibration, diagnosis, data storage and backup, Batch Runner, Scheduler and device upgrade, etc.

Batch Runner refers to the batch operations for the functions of several device.

The function of Scheduler generally is executed when the device work normally. Therefore, it only supports online diagnosis function.

Device of different levels support different diagnosis functions, as shown below:

Table 23-1 Device of different levels support different diagnosis functions

Diagnosis Type	Protocol	FF	HART	
	Capabilities	PD	PD	SIS
Offline Diagnosis	Total Scan	√	√	√
	Step Response	√	√	√
	Stroke Valve	√	√	√
Online Diagnosis	Status Monitor	√	√	√
	Valve Friction	√	√	
	PD One Button		√	
	Partial Stroke			√

Details of above functions please refer to the help documents of ValveLink DTM.