



Biotech

Instructions For Use

USD 3211⁶

Palltronic[®] Flowstar IV Instrument Data Management Software (DMS)

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Safety and Information Symbols

Safety and information content are identified in these instructions with the following symbols:



Prohibition – Identifies a dangerous situation that will result in personal injury.



Caution – Identifies a potential risk to either the operator or equipment.



Mandatory – Identifies useful information.

1 Introduction

The Data Management Software (DMS) is designed to communicate with one or more Palltronic Flowstar IV instruments connected to a single network.

This document is applicable to DMS starting on software version 1.5.3, which is designed to operate with Palltronic Flowstar IV instrument software version 2.2d and higher.

This software allows the user to:

- Synchronize each instrument's time with the network time
- Manage user names and roles from one location across multiple Palltronic Flowstar IV instruments by connecting the user access control (UserID and password) to an active directory in the network
- Share test programs generated and/or edited on one Palltronic Flowstar IV instrument with all other instruments
- Automatically store test results to folders on the network
- Regularly backup test programs, users and the instrument event audit trail

Each feature may be selected on the Palltronic Flowstar IV instrument during configuration of the data management functions.



If any one of the features of the DMS is used, the time synchronization is active.

It is recommended that this document is used together with the Palltronic Flowstar IV Instrument Instructions for Use, Pall document reference USD2594, on the USB drive supplied with the instrument.

2 Technical Requirements

2.1 Palltronic Flowstar IV Instruments

Each Palltronic Flowstar IV instrument connected to the network requires software version 2.2d or higher to communicate with the data management software (DMS) version 1.5.3.

All Palltronic Flowstar IV instruments must be connected to the same network, and up to 25 instruments may be managed using the DMS.

2.2 DMS

The DMS is supplied on the USB drive provided with the Palltronic Flowstar IV instrument.

This software should be installed on a computer/server with operating system Windows 7 or higher. The use of a virtual machine is not recommended.

Port 4841 is required for communication.

The following packages are required: (See Section **Error! Reference source not found.** System Requirements)

- DotNet Framework version 4.x.x
- Visual C++ 2015 redistributables (x86 and x64 version)

These packages are included in the 'Install' folder of the DMS.zip.

Both are standard packages within the Windows library and are frequently available on systems.

The DMS within the zip file consists of four files:

- DmsServer.exe
- DmsServer.exe.config
- DmsServerNative.dll
- PdfSharp-gdi.dll

The DMS will normally detect the Windows domain. If the domain is secured to limit browsing domain user lists, then the login details for a secure user with access to browse the domain user lists and authenticate users will be required to set up user lists.

Domain name look-up must be supported by your network, for example via a DNS server.

It is recommended to contact your company IT group to establish access if this is likely to be an issue.

3 Preparation of the Palltronic Flowstar IV Instruments

Each Palltronic Flowstar IV instrument connected to the network must be configured to operate with the data management software. This allows individual features to be included as required.

During the configuration of each Palltronic Flowstar IV instrument the user will be asked for:

- A DMS key
- A group name
- An instrument name (friendly name)

The DMS key is used by the DMS to identify Palltronic Flowstar IV instruments on the network for management tasks.



All instruments managed through a single instance of the DMS must have the same DMS key.

The group name is provided to enable Palltronic Flowstar IV instruments to be managed in groups. Certain tasks, such as sharing test programs, are carried out across a group of Palltronic Flowstar IV instruments with the same group name.

The instrument name is displayed in the DMS, together with the instrument serial number, the IP address of the connection and the group name.

The instrument name is provided to enable simple identification of instruments in a list, and could, for example, be the instrument location.

Each Palltronic Flowstar IV instrument must have a connection to the network. This can be checked by viewing the instrument's status bar. If an IP address is displayed, there is a connection.

Figure 1. Ethernet enabled – IP address



It is recommended that static/fixed IP addresses are used for Palltronic Flowstar IV instruments, as this ensures easy reconnection after a loss of communication.

It is also recommended that backup files for test programs and users from each Palltronic Flowstar IV instrument are generated before starting the configuration. A full backup can be generated to record the status of the instrument before implementation of the DMS.

If the same test programs will be shared with a group of Palltronic Flowstar IV instruments, then all test programs must be deleted from each instrument before starting the configuration.

If a backup is available, the test programs may be reloaded after the activation using the data management software, and then will be available on all the instruments.

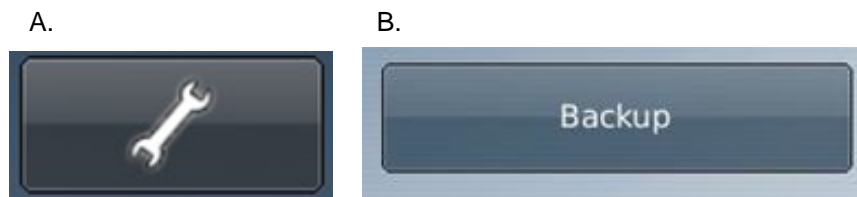
If sharing is not required, and not activated, then the existing test programs will remain active.

It is also recommended to deactivate all users from each instrument if the domain (active directory) based login will be used. Alternatively, users may be deleted.

Existing users cannot be accessed when using the domain-based login.

Backup and deletion can be found under Tools > Backup

Figure 2. HMI buttons - backup



See the Palltronic Flowstar IV Instrument Instructions for Use (Pall document reference USD 2594).

After deletion of all users, only user1 is available (Default UserID/Password is ADMIN/pall), and this default user ID should be used for configuration.

4 Configuration of Data Management Functions

For the communication, the Palltronic Flowstar IV instrument requires specific settings.

The DMS functionality must be activated on all instruments.

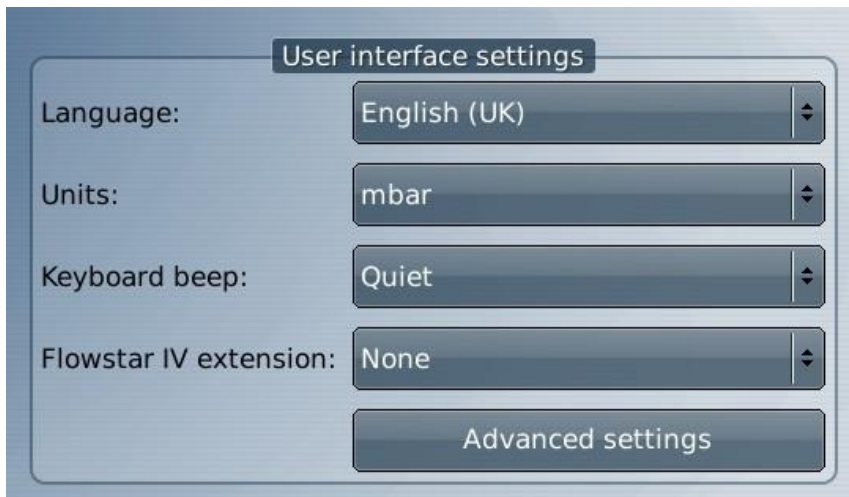
Figure 3. (A-D) HMI buttons - configuration

A.
Go to "Tools" and "Configuration" (Administrator password will be required).



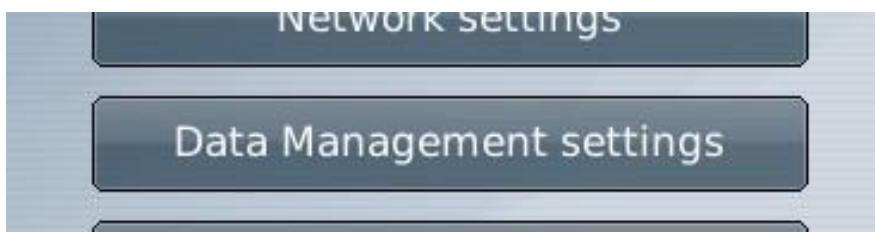
B.

Click "Advanced settings".



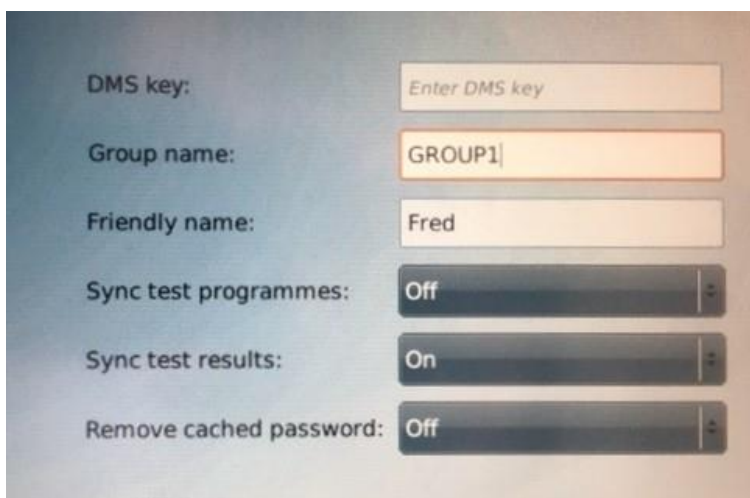
C.

Go to "Data Management settings".



D.

This button opens a screen to enter the required settings as described below.



4.1 DMS Key/Group Name/Instrument Name

Enter the DMS key, group name and instrument name in the required fields. (See Section **Error! Reference source not found.** Preparation of the Palltronic Flowstar IV Instruments).



It is recommended that a separate note of the DMS key is retained. The DMS key is not visible after the configuration has been changed and stored.

Ensure that all test programs are deleted from the instrument before starting the configuration if “Sync test programs” will be switched on.

4.2 Test Programs

Test programs on the Palltronic Flowstar IV instruments may be shared with other instruments within a group. Each instrument can be configured to allow or prohibit local editing of test programs.

A ‘master’ Palltronic Flowstar IV instrument can be defined for editing test programs by setting one instrument to ‘permit local edits’ and all other instrument within this group to ‘prohibit local edits’.

Figure 4. Allow or prohibit local editing of test programs

Friendly name:	Off
Sync test programmes:	Yes (permit local edits)
Sync test results:	Yes (prohibit local edits)



If a test program is being edited on a machine, this test program is blocked on all other Palltronic Flowstar IV instruments during the editing process.

4.3 Test Results

The test result backup can be activated/deactivated by setting “Sync test results” to ON or OFF.

4.4 Remove Cached Password

The Palltronic Flowstar IV instrument retains the active directory username and password of previously logged-in users when disconnected from the network.

This option enables the cached password to be removed after 24 hours to prevent a user who has been removed from the active directory gaining access to the instrument when the instrument is disconnected from the network.

Note – this option will restrict any off-line work to a period of less than 24 hours.

Once all settings have been made, press “OK” to store the settings, followed by the “Home” button to get back to the main menu.

Figure 5. (A-B) HMI buttons – remove cached password



4.5 Access Management Settings

To activate the usage of network domain UserID/passwords (active directory) the function must be activated under ‘Access Management’.

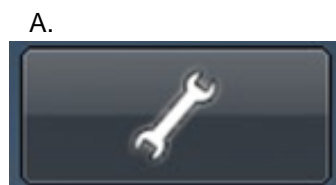


Before starting it is recommended to delete all users on the instrument. This can be done under “Tools” >> “Backup” >> “Delete Stored Data”. If these users are required in the future, a backup should be performed before deletion on an USB drive or network drive.

Existing local users will not be accessible for logins when domain-based login is enabled. The Super Admin user (Default ADMIN/pall) will, however, remain accessible so that system settings can be changed when the network connection is lost.

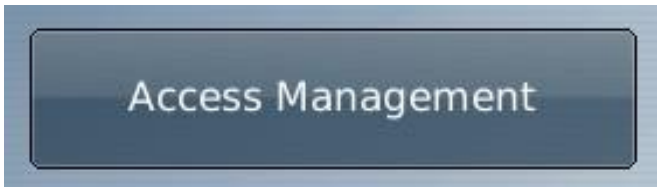
Figure 5. (A-D) HMI buttons – access management settings

Go to “Tools”.



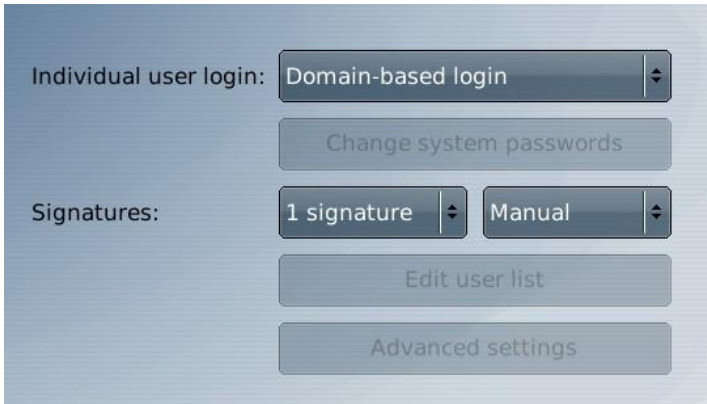
B.

Followed by “Access Management”.



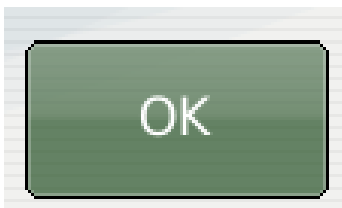
C.

Select “Domain-based login”.



D.

Followed by “OK”.



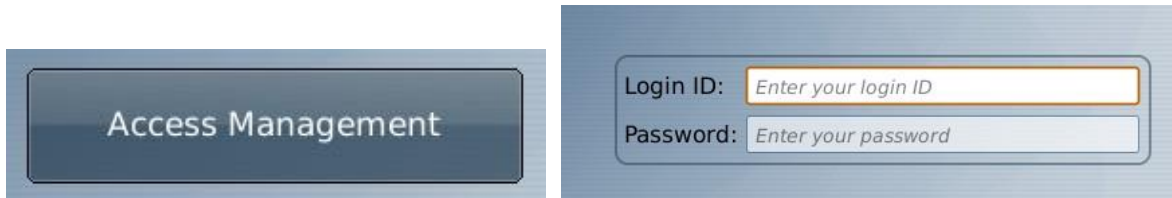
Under domain-based login, the users and their access rights are defined in the DMS. When the user successfully logs in on the instrument, their user record is automatically added or updated with the correct access rights. The password for the user is authenticated against the active directory while a network connection exists. If the network connection is down, then the most recent successful password cached on the instrument is accepted.

The settings for “Password Lockout,” “Lockout Duration” and “Automatic Logout” remain active and can be found under “Advanced settings”.

Other password controls – password aging, minimum length and history are disabled. These parameters are controlled through the active directory.

Figure 6. (A-D) HMI buttons – password lockout,

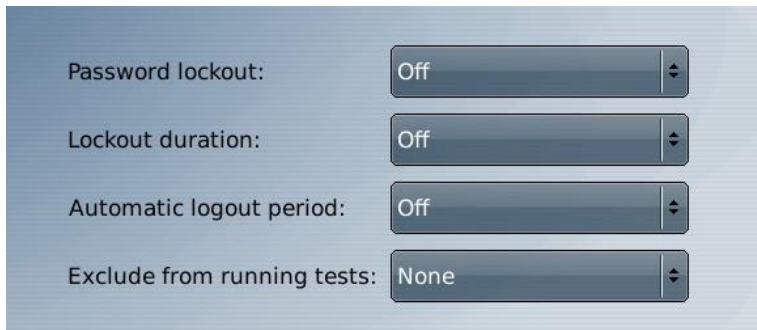
A.
Re-enter “Access Management”.



B.
An Administrator UserID/password must used to log in. If this has not been changed the default is “ADMIN/pall”.



C.
Under “Advanced settings” additional local settings can be defined.



- | | | |
|------------------------------|--|---|
| • Password lockout | | Number of false attempts to login |
| • Lockout duration | | Lockout time after exceeding number of false attempts |
| • Automatic logout period | | Time for inactivity to lockout automatically |
| • Exclude from running tests | | Administrators can be excluded from running tests |

D.

Then press “OK” to store the settings, followed by the “Home” button to return to the main menu.



See Palltronic Flowstar IV Instrument Instructions for Use (USD2594) for more details on password controls.

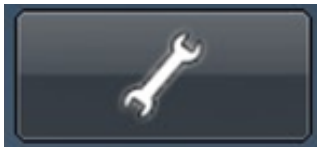
4.6 Date / Time Synchronization Settings

The Palltronic Flowstar IV instrument can synchronize its clock to the DMS server. This can be done under “Tools” >> “Date/Time”. Set “Clock Synchronization” to “Use Palltronic Flowstar IV Sync software”. It is not necessary to set the password field – it is not used by the DMS server software. Log in as Administrator.

Figure 7. (A-D) HMI buttons – date / time synchronization settings.

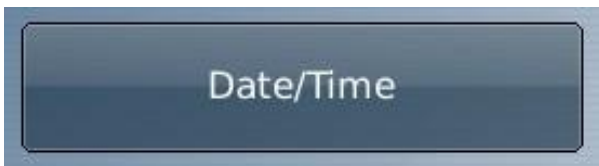
A.

Go to “Tools”.



B.

Followed by “Date/Time”.



C.

Select “Use Flowstar IV Sync software”. Do not enter a password.

Clock synchronisation:	Use Flowstar IV Sync software
Password:	
Date format:	DD/MM/YYYY
Time format:	24 hour
Timezone:	KST-9

D.

Press “OK” to store the settings, followed by the “Home” button to return to the main menu.



The synchronization is performed every hour when the communication of the DMS is available.

5 Installation of the Data Management Software on a Central PC

The data management software should be installed on a PC/server connected to the same network as the Palltronic Flowstar IV instruments.

5.1 System Requirements

Port 4841 is required for communication.

The operating system should be Windows 7 or higher. The use of a virtual machine is not recommended.

The following packages should be installed:

- DotNet Framework version 4.x.x
- Visual C++ 2015 redistributables (x86 and x64 version)

These packages are included in the ‘Install’ folder of the DMS.zip.

Both are standard packages within the Windows library, and are frequently available on systems.

If they are already included, this will be flagged during the installation process. If already installed, they should not be re-installed.

The DMS within the zip file consists of four files:

- DmsServer.exe
- DmsServer.exe.config
- DmsServerNative.dll
- PdfSharp-gdi.dll

These should be extracted and saved together in one folder.

If you want the DMS to start-up automatically, add it to your start-up group (AutoStart folder). If the PC is rebooted the application will restart without user interaction required.

6 Setting up the DMS

The software can be started by running DMSserver.exe.

Once the DMS starts, a window appears with 3 tabs (Instruments, Connection and Domain Users).

1. **Connection:** Connection details, time synchronization and test result retrieval options are shown. See more details below.
2. **Instruments:** This displays a list of the registered instruments. There is a right-click menu in the instruments list to remove or reconnect instruments.
3. **Domain Users:** This tab enables the user to register the Windows domain and list the users that have access to the instruments. See more details below.

6.1 Connection Tab

The connection tab should be set-up first.

Figure 8. Connection tab

The screenshot shows the 'Connection' tab of the DMS software interface. The tab is highlighted with a blue circle. The interface is divided into several sections:

- Data Management connection:** A text field for 'DMS key' with a masked value and an 'Update' button.
- Data Management screen lock:** A text field for 'Password'.
- Current time:** Three text fields for 'UTC time' (1/Apr/2020 13:03:12), 'Local time' (1/Apr/2020 14:03:12), and 'Timezone' (UTC+00:00) Dublin, Edinburgh, Lisbon, London. A 'Sync now' button is located at the bottom right of this section.
- Test result retrieval:** Two rows, each with a checked checkbox and a text field. The first row is for 'XML' with the path 'TestResults\XML' and a browse button (...). The second row is for 'PDF' with the path 'TestResults\PDF' and a browse button (...). 'Retrieve all' and 'Retrieve new' buttons are at the bottom right.
- Periodic backup:** A text field for 'Path' containing 'Backups' and a browse button (...). A dropdown menu for 'Period' is set to 'Disabled'. 'Import Programs', 'Sync now', and 'Export now' buttons are at the bottom.

6.1.1 Data Management Connection

Enter the instrument DMS key in the first field and press “Update”. The software will scan the network for active Palltronic Flowstar IV FFS04 instruments.

6.1.2 Data Management Lock Screen

A password may be defined to prevent accidental changes to the settings. Access to a running server is only possible if the correct password has been entered.

6.1.3 Current Time

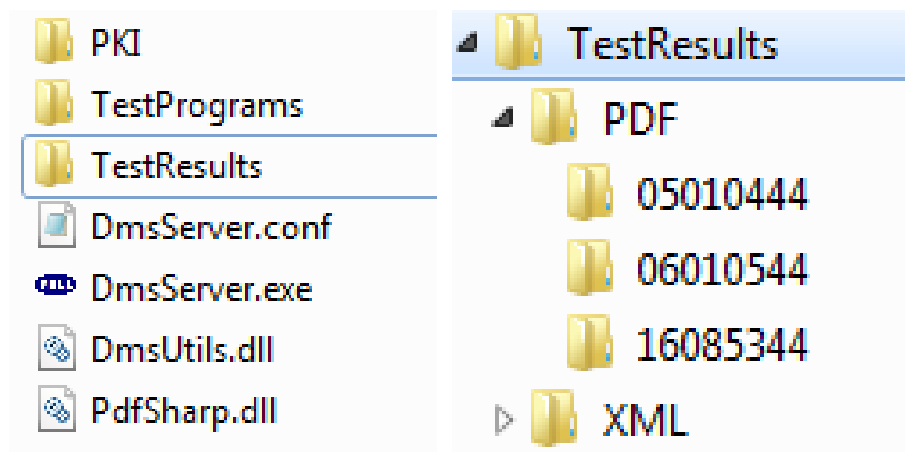
Check the local time and the time zone.

The “Sync now” button will synchronize the instruments to the network time immediately, otherwise the synchronization will happen within the next 60 minutes during the next cycle.

6.1.4 Test Results Retrieval

A folder can be created to store for test results (pdf and/or xml). The path to the destination folder should be entered in the window. If no path is defined the test results are stored in the same folder as the DMSServer.exe, in the folder “TestResults”.

Figure 9. Test results folder



- Retrieve all
- Retrieve new

The software will store all existing test results from the Palltronic Flowstar IV instruments.

Only test results generated after the activation of the DMS are stored on the server.

The software will store any new test results without user interaction. Test results will be marked as ‘unsigned’ or ‘signed’ if an electronic signature is used.

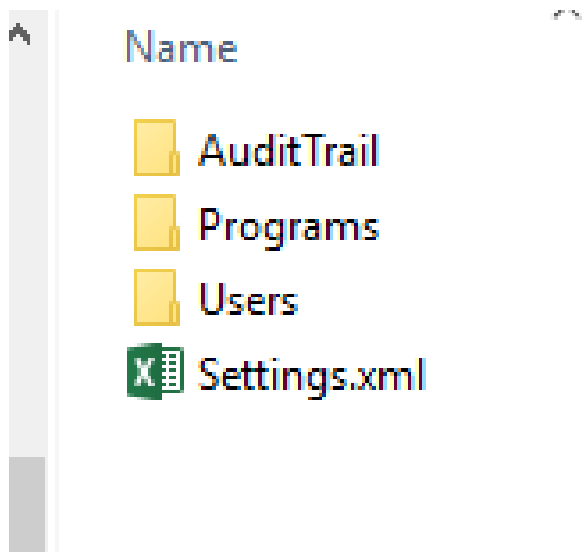


To avoid loss of data if communication is interrupted, test results are stored on the instrument and collected from each instrument at midnight.

6.1.5 Periodic Backup.

The DMS can periodically create a backup of test programs, users, the event audit trail and the configuration settings in xml format.

Figure 10. Backup in XML format



A folder can be created to store back-up files. The path to the destination folder should be entered in the window. If no path is defined the backup folder will be stored in the same folder as the DMS server.

Clicking the button “Sync now” will pull a complete backup of all the data from the instruments to the DMS. “Export now” will then export the backup data to the designated folder.

The automatic backup is carried out at midnight.

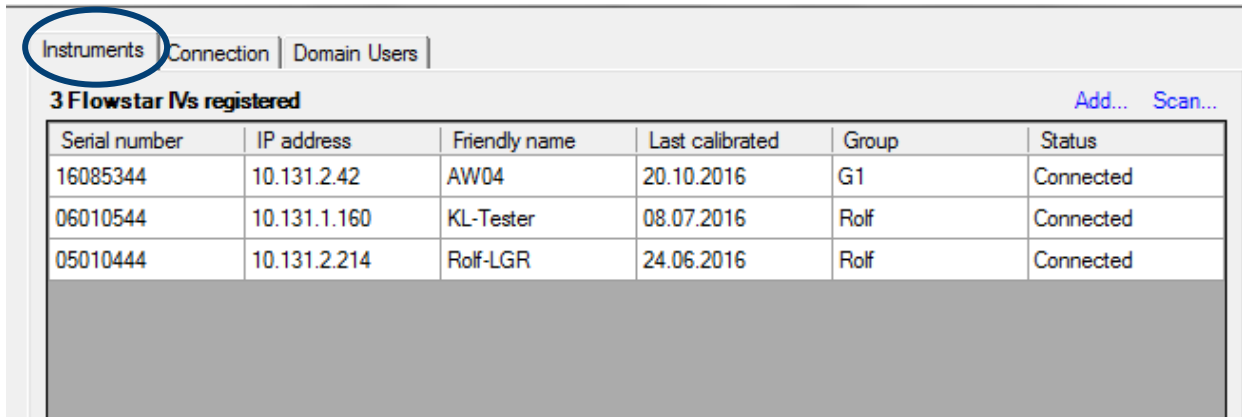
Periodic backup can be carried out daily, weekly or monthly, selected from the drop-down menu.

The “Import Programs” button can be used to share test programs across a group of Palltronic Flowstar IV instruments – see Section **Error! Reference source not found.** Re-Installation of Test Programs for details.

6.2 Instrument Tab

The Instruments tab displays a list of the registered instruments.

Figure 11. List of registered instruments



Serial number	IP address	Friendly name	Last calibrated	Group	Status
16085344	10.131.2.42	AW04	20.10.2016	G1	Connected
06010544	10.131.1.160	KL-Tester	08.07.2016	Rolf	Connected
05010444	10.131.2.214	Rolf-LGR	24.06.2016	Rolf	Connected

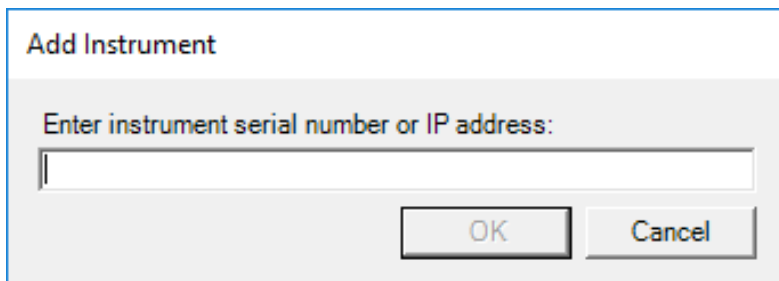
The software should find all active instruments in the network using the same DMS key as entered on the “Connection” tab.

Alternatively, instruments can be included by using the “Add” button and identifying the instrument by serial number.



It is recommended to use fixed IP addresses for the instruments, as this ensures easy reconnection after a loss of communication.

Figure 12. Add instrument



Add Instrument

Enter instrument serial number or IP address:

OK Cancel



Domain name look-up must be supported by your network, for example via a DNS server. If the instruments are configured to use DHCP for IP address registration, the DHCP server should be configured to update the DNS server with the instrument network name. If the instruments are configured to use static IP addresses, then either the DNS server must be configured to provide static name resolution or by manually appending them to the “hosts” file on the server running the DMS.

For manual DNS configuration, the instrument network name is defined in the following way: FFS04_ xxxx where xxxx is the middle four digits of the instrument’s serial number. For example, if the serial number for the instrument is 06**0123**44 then the instrument’s network name is FFS04_**0123**.

The Palltronic Flowstar IV instruments found will be listed with the following information:

- Serial number
- IP address
- Instrument name (friendly name)
- Last calibrated (date)
- Group (name)
- Status (e.g. connected/disconnected/disabled)

To remove an instrument, double-click on the line with the instrument, confirm this instrument should be deleted.

6.3 Domain Users Tab

If the “Domain-based login” was selected under Access Management settings on each Palltronic Flowstar IV instrument, then a list of users with permission to operate Palltronic Flowstar IV instruments should be selected under the “Domain Users” tab.

This ensures only approved users have access to operate the instruments.

It is recommended to add users to the list after appropriate training.



Each user listed under “Authorised users” will have access to all the Palltronic Flowstar IV instruments connected to this instance of the DMS.

Figure 13. Domain users tab

The screenshot shows a software interface with three tabs: 'Instruments', 'Connection', and 'Domain Users'. The 'Domain Users' tab is active and circled in red. Below the tabs, there is a 'Windows domain' section with a 'Domain' field containing 'emea.corp.pall.com', an 'Access' field, and a 'Password' field. Below this is an 'Authorised users' section containing a table with the following data:

Type	User Id	Full name	Access
User	pescheckm	Michael Pescheck	Supervisor
User	jaenchenr	Rolf Jaenchen	Supervisor

Below the table is a large greyed-out area and an 'Add' button at the bottom right.

6.3.1 Windows Domain

The domain will normally be detected by the software and will be populated in the domain field. If the software is running on a PC not connected to the domain or the domain is not detected, the fully-qualified domain name (FQDN) can be manually entered.

If the domain is secured to limit browsing the domain user lists, then the login details (i.e. login id and password) for a secure user solely with access to browse the domain user lists and authenticate users should be given in the “Access” and “Password” fields, respectively. Under normal operation on a Windows domain this is not typically required.

6.3.2 Authorized User / User Group

To add a user or a user group to the authorized user list, the UserID or the user group name of the person should be entered in the box at the bottom of the screen, followed by clicking the “Add User” button. If the UserID is found in the active directory the UserID and the full name will appear on the list, for user groups the group name is displayed. The access rights of the user/user group can be changed using the drop-down list in the “Access” column.



If user groups are used, then all the users in a group will be assigned the same access rights as given to the group.

To delete a user or a user group, use the delete option in the drop-down list in the “Access” column.

During log-on on an instrument, the instrument will authenticate the user against their domain password and will retrieve the given access level from the DMS server. If the user does not yet exist on the instrument, then they will be automatically added, with their full name, retrieved from the domain.



User authentication against the domain can only occur while the instrument is connected to the network. If the instrument is disconnected from the network, the last valid password for a user can still be used to log into the instrument. Users who have not yet logged into the instrument will not be able to access the instrument until the network connection is restored. (See also Section **Error! Reference source not found. Error! Reference source not found.**)

Domain user passwords cannot be changed on the instrument, but must be changed (as required) using a standard PC or laptop connected to the domain and capable of providing this functionality. When a user password is changed, then the next time the user logs into the instrument (and it is connected to the network) then they will need to use the new password.

7 Test Programs

Test programs are only shared and synchronized if this function is activated under “Data Management settings” in the instrument’s configuration menu. There are no further settings required within the DMS.

To enable the synchronization of test programs, any pre-existing test programs should be backed-up or exported to a USB flash drive or shared folder on a server before they are deleted from the instrument. The programs can be reinstalled after the synchronization has been enabled.



The “Import Test Programs” process shares the same test programs across all instruments in the selected group.

Once program synchronization is enabled, the instrument will communicate with the DMS to ensure it has the most recent changes to the test programs within its group. The DMS keeps a copy of the most recent programs, per group, on the server (inside the “TestPrograms” sub-folder).

While an instrument is connected to the network, any edits made elsewhere will automatically synchronize to this instrument (usually within a few seconds). If the instrument is not connected to the network at the time a change is made elsewhere, then the next time the instrument connects to the network, it will automatically update its program list to include the most recent changes.

Any change to a test program must be made on an instrument which has been configured to allow local editing of test programs (See Section **Error! Reference source not found.** Test Programs). If the instrument is not on the network, then the user will be prevented from making any changes. Otherwise, the instrument will communicate with the server to request access to modify the test program to prevent the situation where two separate instruments are being used to modify the same program. Once the modifications are complete, the latest changes will be sent to the server and then on to all other instruments in the same group.

Each instrument will hold the audit trail of modifications to test programs made on that instrument. The audit trail for a test program includes the name of the active user if carried out on the same Palltronic Flowstar IV instrument. If the test program was edited on another instrument it includes the serial number of the instrument where it was edited instead of the user name.

7.1 Deletion of Test Programs

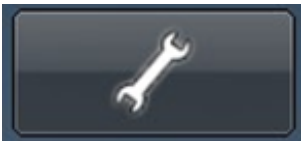
Test programs have to be deleted on Palltronic Flowstar IV and the DMS.

7.1.1 Palltronic Flowstar IV Instrument

Figure 14. (A-E) Deleting test programs from the Palltronic Flowstar IV instrument

A.

Log in as Administrator and go to “Tools”.



B.

Followed by “Backup”.



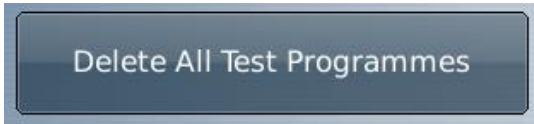
C.

“Delete Stored Data”.



D.

“Delete All Test Programmes”.



E.

Agree deletion process by pressing “OK”.



After the deletion process has been followed you will be required to sign to confirm deletion.



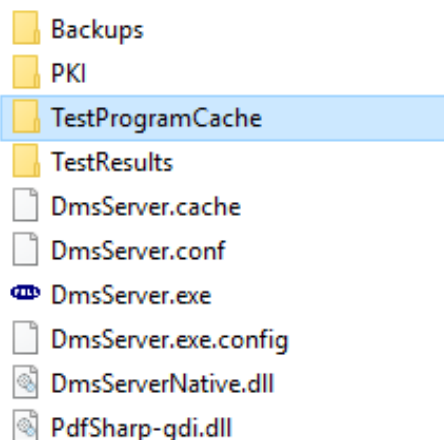
It is not possible to delete single test programs. The deletion function on Palltronic Flowstar IV instrument deletes all existing test programs together.

After deleting test programs on the Palltronic Flowstar IV instrument, it is mandatory to delete the files within the “TestProgramCache” folder of the DMS, too.

7.1.2 DMS

Figure 15. Deleting test programs from the DMS

Locate the folder highlighted below and delete the files within it.

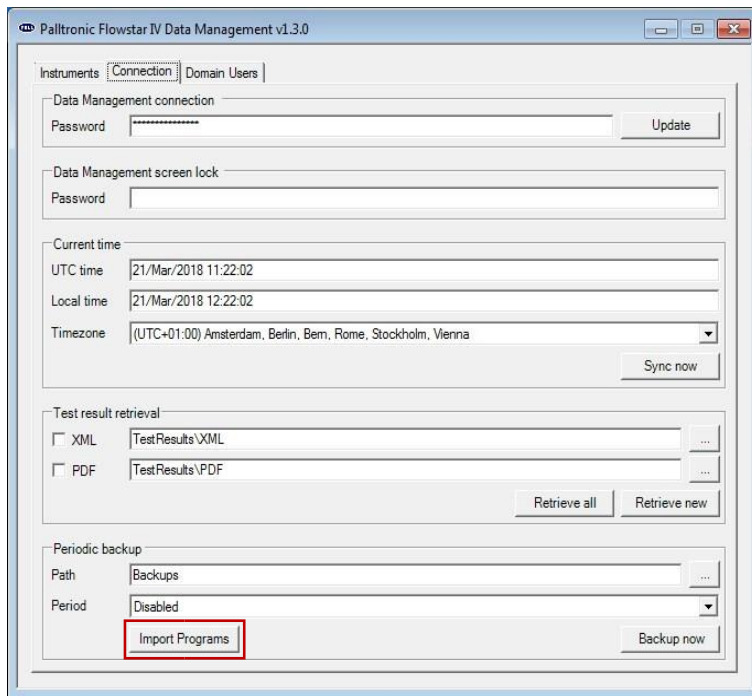


7.2 Re-Installation of Test Programs

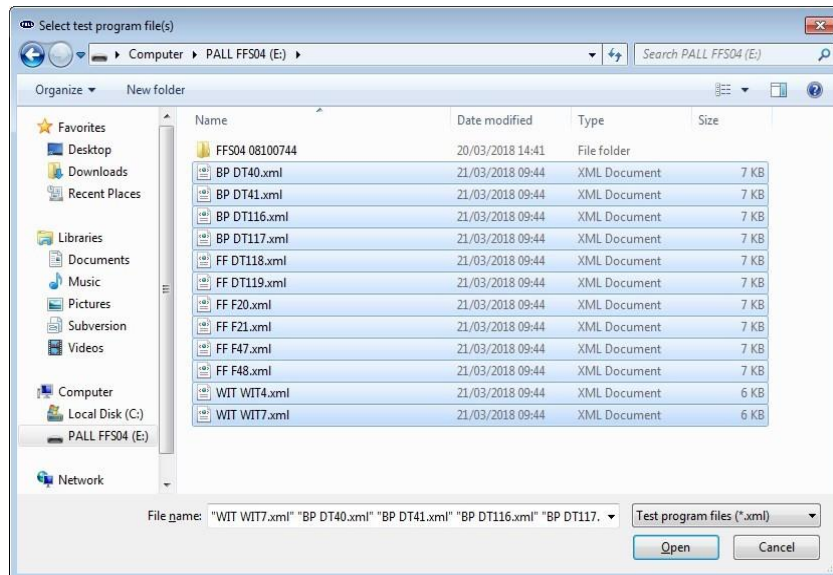
To install the test programs on the Palltronic Flowstar IV instruments from backup, use the button “Import Programs” on the “Connection” tab.

Figure 16. (A-D) Reinstallation process

A. Select “Import Programs” (highlighted in red below)



B. Select the test program XML files you wish to import from the backup



C. Enter the group name for the instruments requiring import of programs



D. Wait for the programs to be imported





Corporate Headquarters

Port Washington, NY, USA
+1.800.717.7255 toll free (USA)
+1.516.484.5400 phone

European Headquarters

Fribourg, Switzerland
+41 (0)26 350 53 00 phone

Asia-Pacific Headquarters

Singapore
+65 6389 6500 phone

Visit us on the Web at www.pall.com/biotech

Contact us at www.pall.com/contact

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