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Installation Guide
DCMS^{Link} for Xcalibur
Version 2.11

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1 Definitions

Chromeleon (CM) Server: This is the portion of DCMS^{Link} that handles the data acquisition and communication with the connected instruments.

Timebase: This is the DCMS^{Link} terminology for an instrument system. A Timebase is a complete set of modules that share the same system time.

2 Abbreviations

The following abbreviations are used throughout this document.

CM (6.80)	Chromeleon [®] (Release 6.80)
DCMS^{Link}	Dionex Chromatography Mass Spectrometry Link
IC	Ion Chromatograph(y)
IQ	Installation Qualification
LAN	Local Area Network
MDAC	Microsoft [®] Data Access Components
WDAC	Windows Data Access Components
MS	Mass Spectrometer / Mass Spectrometry
n.a.	Not Applicable
ODBC	Open Database Connectivity
OQ	Operational Qualification
PDF	Portable Document Format
PQ	Performance Qualification
SP	Service Pack
USB	Universal Serial Bus

3 Overview

Dionex Chromatography Mass Spectrometry Link (or **DCMS^{Link}**) for Xcalibur provides an interface for controlling a wide range of Dionex chromatography instruments with the XcaliburTM software (from Thermo Scientific).

DCMS^{Link} is based on Chromeleon[®] technology, i.e., it installs and uses certain portions of the Dionex Chromeleon Chromatography Management System such as the Chromeleon Server, the Chromeleon Server Configuration, Control Panels and the Program Editor.

This guide describes how to install DCMS^{Link} with the Xcalibur software.

 **Tips:** For a list of Dionex instruments that can be controlled from Xcalibur via DCMS^{Link}, refer to 4.3.

Before you install the software, read the ReadMe.html file that is available on the DCMS^{Link} software CD. The file may contain last-minute product information and supplements this documentation.

 **Tip:** To learn more about DCMS^{Link} please refer to the following documents in the “**Additional Documents**” folder of the **installation disk**:

- Release Notes,
- Quick Start Guide,
- Troubleshooting Guide,
- Migration of Methods.

After the installation the above documents, this Installation Guide and the Online Help become accessible via the Start menu:

Start > All Programs > Dionex > DCMSLink > Documentation.

4 System Requirements / Compatibility

4.1 Supported Mass Spectrometry Software

This release of DCMS^{Link} is designed for specific versions of the Xcalibur software from Thermo Scientific as described below. Previous versions are NOT supported.

This release is compatible with:

- **Xcalibur 2.0.7**
- **Xcalibur 2.1** with the Thermo Scientific **Foundation Framework 1.0.1** and **1.0.2** software.
- **Xcalibur 2.1 SP1** with the Thermo Scientific **Foundation Framework 1.0.2 SP2** software.

LCQuan versions from **2.0** to **2.5**.

 **Tips:** *Newer Xcalibur versions may also be compatible with this version of DCMS^{Link}, but this should be tested by the customer. At a minimum, an instrument run with data acquisition should be performed after the upgrade.*

 **Caution:** *A supported version of Xcalibur must be installed before installing DCMS^{Link}.*

4.2 Supported Mass Spectrometers

The type of mass spectrometers that can be used with DCMS^{Link} depends entirely on the MS software (Xcalibur). Please refer to the documentation of the MS software.

4.3 Supported Chromatography Instruments and Drivers

DCMS^{Link} facilitates the control of a wide range of Dionex chromatography instruments and drivers with Xcalibur. This release supports the following instruments/drivers (including all Rapid Separation, micro, biocompatible and thermostatted variants):

UltiMate 3000	NCS-3500RS Nano/Capillary module including
and	- continuous direct flow (splitless) HPG pump ("NC pump"),
UltiMate 3000 RSLC	- ternary LPG micropump ("loading pump"),
	- heated column compartment with up to two switching valves.
	LPG-3x00, LPG-3400RS, LPG-3400SD,
	DGP-3600, DGP-3600RS, DGP-3600SD,
	HPG-3x00, HPG-3x00RS, HPG-3x00SD,
	ISO-3100 and ISO-3100SD pumps
	FLM-3x00 flow managers and thermostatted column compartments

	TCC-3x00(RS) thermostatted column compartments ACC-3000 autosampler column compartment WPS-3000(RS) autosamplers DAD-3000(RS), FLD-3x00(RS), MWD-3000(RS), PDA-3000, UVD-3000, and VWD-3x00(RS) detectors AFC-3000 fraction collector, Probot™ micro fraction collector
ESA	Corona, Corona plus, and Corona Ultra charged aerosol detectors Coulochem III electrochemical detector
UltiMate (Plus)	UltiMate capillary/nano HPLC system (including pump and detector) Switchos capillary/nano HPLC switching device FAMOS capillary/nano HPLC autosampler
Summit	P680 pumps TCC-100 thermostatted column compartment ASI-100 autosampler UVD 170U and UVD 340U detectors PDA-100 and PDA-100U detectors RI-101 refraction index detector RF2000 fluorescence detector
IC	IP20, IP25, and IS25 isocratic pumps GP40, GP50, GS50, ICS-3000DP, ICS-3000SP, ICS-5000DP and ICS-5000SP gradient pumps AXP pump EG40, EG50, ICS-3000EG and ICS-5000EG eluent generators AS50, AS-3000, AS-5000, AS-DV, and AS-HV autosamplers DC-3000, DC-5000, DC-5000CUBE and DC-3000SRS detector/chromatography compartments ED40, ED50, ED50A, ICS-3000ED and ICS-5000ED electrochemical detectors CD20, CD25, CD25A, ICS-3000CD and ICS-5000CD conductivity detectors AD20 and AD25 UV detectors IC20, IC25, and IC25A IC systems DX-120 IC system ICS-90(A), ICS-1000, ICS-1100, ICS-1500, ICS-1600, ICS-2000 and ICS-2100IC systems UI20 universal interface

Miscellaneous

External MSV Motorized Switching Valve,
Rheodyne LabPro and MX Series II Valves,
Valco Two-Position and Multi-Position Valves
ELS 2100, and Varian 380-LC / 385-LC
Evaporative Light Scattering Detectors
TSP AS3500 autosampler
UCI-50 and UCI-100 Universal Chromatography Interfaces
Fraction Collection (Generic driver)
Integrator (Generic driver)
Remote Inject (Generic driver)
Virtual Channel Driver (Generic driver)

4.4 Compatible Firmware

To ensure proper operation, Dionex instruments should be equipped with the most current firmware. A table of validated firmware versions is provided in the “*HPLC Firmware Validation Matrix...*” and “*IC Firmware Validation Matrix...*” documents in the “*Additional Documents*” folder on the distribution disk.

If you have IC instruments with firmware versions older than the listed ones, please contact your local Dionex office for assistance.

For other Dionex instruments, such as the UltiMate 3000 and Summit modules, DCMS^{Link} includes the firmware versions that were the most recent at the time of releasing DCMS^{Link}. You can check the version in your instruments and in DCMS^{Link} and update the firmware from within CM Server Configuration.

 **Caution:** *Be careful not to downgrade the firmware by accident! It is possible that your instrument contains a firmware that is more recent than the one included in DCMS^{Link}. In this case, do not start the “upgrade” process.*

 **Caution:** *During firmware download all operations on the computer should be stopped! Never switch off the module during the firmware update and reset process!*

4.5 PC Requirements

The PC hardware that is needed for DCMS^{Link} for Xcalibur is basically determined by the requirements of the Xcalibur software. For details, please refer to the Xcalibur documentation.

In addition, DCMS^{Link} has the following requirements for the PC:

- **USB port / RS232 serial port / PCI slot** (for information about connecting Dionex chromatography devices see the documentation of the device to be connected)
- **2 GHz processor**, or
2 GHz Dual Core processor, if the system contains a **DAD-3000RS**
- **1 GB RAM (total)**, or
2 GB RAM (total), if the system contains a **DAD-3000RS**



Note: *Dionex can only guarantee the correct operation of DCMS^{Link} if both the above requirements and the hardware and software requirements of the Xcalibur software are met.*

4.6 Supported Operating Systems

The choice of operating system depends on both the requirements of the Xcalibur software (including Service Packs) and the requirements of DCMS^{Link}. To find out which operating system is supported by your Xcalibur / LCQuan version, refer to the software documentation, or contact your Thermo Scientific representative.

The Operating Systems currently supported by both Xcalibur / LCQuan and DCMS^{Link} are:

- Microsoft® **Windows® XP SP3**
- Microsoft® **Windows® 7, 32-bit**

Microsoft has released various editions for Windows 7. The different editions cover different feature sets. DCMS^{Link} 2.11 was tested with Windows 7, 32-bit **Professional** and Xcalibur 2.1 SP1 with Thermo Scientific Foundation Framework 1.0.2 SP2.

Because the incremental features of the **Ultimate** and **Enterprise** editions are not relevant to DCMS^{Link}, Dionex does not expect any problems to occur when using DCMS^{Link} with these editions.



Note: *DCMS^{Link} does not support the use of Home editions of Windows 7.*



Note: *DCMS^{Link} has not been tested with 64-bit editions of Windows 7.*



Note: *Xcalibur requires English Windows.*

4.6.1 Windows Security Updates

For optimum security, Dionex recommends that you keep your systems up to date with the latest security updates. Security updates rarely affect correctly functioning programs or change the specified behavior of the system. Most security updates affect only the handling of invalid input to operating system routines, e.g. so-called buffer overflows. The risk that a security update affects the correct operation of DCMS^{Link} is generally low.

Since security updates should generally be installed as soon as possible to keep the "window of vulnerability" small, it would make no sense for the users to wait until Dionex performs an exhaustive formal validation, which tests various combinations of systems and procedures. Instead, we recommend that users test the security updates briefly in the context of their own installation and operating procedures.

Dionex recommends the following test procedure at minimum:

- Install the security update and DCMS^{Link} on a test PC
- Run Chromeleon IQ (see Tip under section 5.5).
- If desired, also perform further PQ tests according to your needs.

 **Tips:** *Dionex will not formally validate Windows security updates. Installation and testing of security updates is the user's own responsibility.*

Should you find any compatibility problem during testing a Windows security update, please contact your Thermo Scientific support and service center for support. Although we will make reasonable efforts to solve such problems, we cannot guarantee compatibility with every security update.

4.6.2 About Virtualization

Virtualization techniques are usually not fully compatible with real-time operations and usage of multiple communication ports, which are essential for instrument control. For this reason, **DCMS^{Link} cannot (reliably) run on virtual machines.** Communication with the instruments may not be established at all, or communication problems are likely to occur.

4.7 Miscellaneous Requirements

4.7.1 Regional Settings

 **Caution:** *Make sure the decimal point (".") is used as a decimal symbol. Otherwise, operation may fail.*

*(If in doubt, open the Windows **Control Panel** and select **Regional and Language Options**. Click **Customize....** On the **Numbers** tab page, verify that the decimal point is specified under **Decimal symbol**.)*

4.7.2 PC Power Management

 **Caution:** To avoid problems during instrument control, verify that the relevant PC Power Management features are **disabled** under **Control Panel > Power Options** and under **Control Panel > System > Hardware > Device Manager > USB Controllers > USB Root Hub > Power Management**.

4.7.3 Windows User Management

For proper interplay of DCMS^{Link} 2.11 and Xcalibur 2.1 (and Xcalibur 2.0.7 in “Multi User Mode”) the logged on Windows User must have certain privileges (“User” or “Power User” privileges are not sufficient). The User must either be:

- Windows Administrator, or
- Member of the “Chromeleon Operators” Local User Group.

The “Chromeleon Operators” Group is automatically created during the DCMS^{Link} setup and the current Windows user is automatically added to the Group.

4.7.4 Firewall Exemptions Needed in Windows XP SP3

The Dionex IP Utility is used to assign IP addresses to certain Dionex devices that are connected via LAN (P680, UVD 340U, and UVD 170U). With the Windows Firewall of Windows XP SP3 enabled, the Chromeleon IP Utility does not operate properly unless it is added to the Windows Firewall Exemption List. The same is true for the Chromeleon Server. These services are automatically added to the List during installation. If required for some reason, these exemptions can easily be added by selecting <Unblock> in the message box displayed by Windows XP the first time they are launched.

4.7.5 Required MDAC Versions

DCMS^{Link} requires specific database interfaces that are provided with the Microsoft Data Access Components (MDAC). These are normally part of the supported Windows versions. The validated MDAC versions are:

Operating System	MDAC Version
Windows XP SP3	2.8 SP1
Windows 7, 32-bit	WDAC ¹ is part of the Operating System

¹ Windows Data Access Components (WDAC)

 **Tip:** The Chromeleon IQ (see section 5.5) recognizes the following MDAC versions: 2.5 (RTM - SP3), 2.6 (RTM - SP2), 2.7 (RTM - SP1) and MDAC 2.8 (RTM and SP1). Future MDAC versions may not be recognized correctly. If in doubt, check for the newest version of Microsoft's 'Component Checker' tool on the Microsoft homepage. A version of this tool is also available on the CD: Other Tools\ODBC\Component_Check.exe.

4.7.6 Microsoft .NET Framework

DCMS^{Link} 2.11 requires the Microsoft .NET Framework, **Version 3.5 SP1**, or higher.

If not already present on the target computer, the necessary files are automatically installed. In this case the installation events are logged in a file called DotNetInstall35.log in the \DCMSLink\IQ folder.

The Chromeleon IQ (see section 5.5) checks whether .NET is properly installed. If not, an Error is issued.

4.7.7 Microsoft MSXML

DCMS^{Link} 2.11 requires the Microsoft MSXML **Version 4 SP2**, or higher.

If not already present on the target computer, the necessary files are automatically installed. In this case the installation events are logged in a file called msxmlsetup.log in the \DCMSLink\IQ folder.

The Chromeleon IQ (see section 5.5) checks whether MSXML is properly installed. If not, an Error is issued.

5 Installation and Configuration

 **Note:** *Do not connect Dionex instruments via USB to your PC until DCMS^{Link} installation is finished, i.e., until the PC is rebooted and Chromeleon Installation Qualification (IQ) is completed and passed.*

 **Note:** *The installation and configuration of the MS is not covered in this document. Please refer to the documentation available from the MS vendor.*

 **Tip:** *With Xcalibur you can use the LC front-end without an MS. This can be useful for example, when the LC front-end must be tested without having a properly configured mass spectrometer available, or when the LC system is operated standalone. Simply make sure that the Xcalibur Instrument Configuration does not contain an MS and that the Instrument Setup does not contain an MS part.*

5.1 Installing DCMS^{Link}

 **Caution:** *Make sure that the person performing the installation has **full local administrator privileges**. Otherwise, the installation will fail or be incomplete. After reboot, the administrator running the setup must login again so that the installation process can be completed correctly.*

 **Caution:** *Do not change the installation path, as this may cause various problems.*

 **Note:** *After DCMS^{Link} is installed, the **Dionex Instrument Integration** license is automatically selected on the **License** page in the **Server Configuration** program.*

5.1.1 Upgrading from a Previous Version of DCMS^{Link}

5.1.1.1 Possible Upgrade Paths

- It is possible to install DCMS^{Link} 2.11 on a PC running any former version of DCMS^{Link}.
- It is possible to install DCMS^{Link} 2.11 on a PC running Chromeleon 6.70 SP1 or a newer version up to and including 6.80 SR10. It cannot be installed over versions newer than 6.80 SR10.
- To install DCMS^{Link} 2.11 on a PC running a version of Chromeleon earlier than 6.70 SP1, you first need to upgrade to this or a higher version of Chromeleon (license fees apply).

 **Caution:** *The various DCMS^{Link} flavors have independent life cycles from each other and from Chromeleon. Therefore you cannot upgrade this, or a previous DCMS^{Link} version using any other DCMS^{Link}, Chromeleon, or Chromeleon Service Pack installation disk, e.g. in order to add support for drivers not listed in section 4.3 of this document.*

5.1.1.2 To Install an Upgrade

1. Check section 4 of this document and verify that all requirements are met. For example, you may have to upgrade your Xcalibur installation before you can proceed.
2. Ensure that Xcalibur and DCMS^{Link} are not running.
3. Stop the Chromeleon Server using the Chromeleon Server Monitor, then quit the Server Monitor.
4. Install Dionex Chromatography Mass Spectrometry Link from the DCMS^{Link} software disk:

The Master Setup usually starts automatically when you insert the software disk into your PC. (If CD Autostart is not active, start autorun.exe from the Autorun folder.)

To start the installation, select Install DCMS^{Link} ...

By default, the software is installed to the DCMS^{Link} directory (C:\DCMSLink). Do not change this installation path.

5. When asked, reboot the PC (again, with the same user account with local Administrator privileges). The installation will be completed and an Installation Qualification report will be created. Check the report for possible Errors and Warnings. Their meaning is described in section 5.5.

5.1.2 New Installation of DCMS^{Link}

1. Check that all requirements in section 4 of this document are met; for example, ensure that a supported version of Xcalibur has already been installed.
2. Install Dionex Chromatography Mass Spectrometry Link from the DCMS^{Link} software disk:

The Master Setup usually starts automatically when you insert the software disk into your PC. (If CD Autostart is not active, start autorun.exe from the Autorun folder.)

To start the installation, select Install DCMS^{Link}

By default, the software is installed to the DCMS^{Link} directory (C:\DCMSLink). Do not change this installation path.

3. When asked, reboot the PC (again, with the same user account with local Administrator privileges). The installation will be completed and an Installation Qualification report will be created. Check the report for possible Errors and Warnings. Their meaning is described in section 5.5.

5.1.3 Starting the Chromeleon Server and Enabling Automatic Server Start

To enhance performance, we recommend starting the Chromeleon Server *every time* the computer is started. To do so:

1. Start the Server Monitor in the DCMS^{Link} program group:
Start > All Programs > Dionex > DCMSLink > Server Monitor.
2. Click the **Config...** button (Fig. 1a). The “Configure Server” dialog opens.
3. On the **Server** tab page, select the **Start Server at System Start** check box (Fig. 1b) and click **OK** (Fig. 1c).
4. Start the Server for *this time* using the **Start** button (Fig. 1d) in the **Server Monitor**.
5. **Close** the Server Monitor (Fig. 1e).

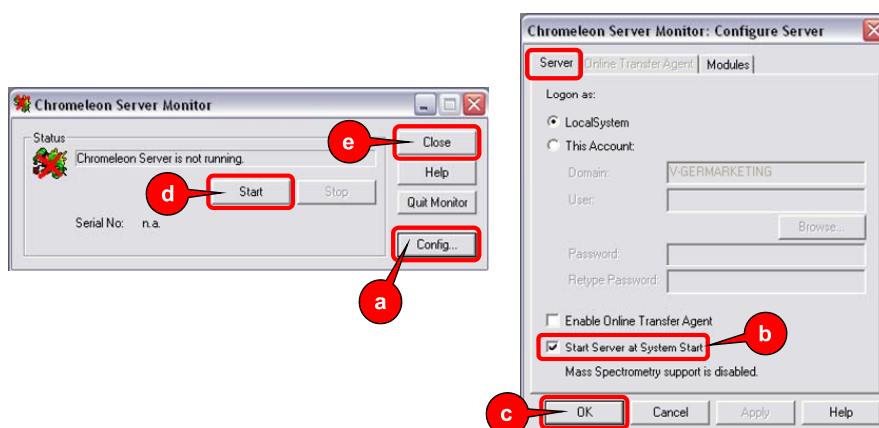


Fig. 1 Enabling Automatic Server Start

NOTE: The dialog on the right shows “Mass Spectrometry support is disabled”. This is normal, as it does not refer to the MS support provided by DCMS^{Link}, but another type of MS support provided by Chromeleon.

5.2 Hardware Installation



Note: *The installation of the MS is not covered in this document. Please refer to the documentation available from the MS vendor.*

5.2.1 Connecting the Dionex Instruments



Note: *Do not connect Dionex instruments via USB to your PC until DCMS^{Link} installation is finished, i.e., until the PC is rebooted and Chromeleon Installation Qualification (IQ) is completed and passed.*

After successful installation of DCMS^{Link}, connect all Dionex instruments to your PC as described in the *Operating Instructions* of the instrument(s).

For instruments with USB connection, we recommend to power them on one-by-one, starting with the instrument with the USB hub, through which the other instruments are connected. Note however, that the DAD-3000RS and the MWD-3000RS must be connected directly to an USB 2.0 connection on the PC. For each instrument, follow the **Found New Hardware Wizard** as described in the *Operating Instructions* of the instrument(s).

5.2.2 Inject Synchronization

In order to start MS data acquisition, the MS start input must be connected to a relay output on one of your Dionex modules (e.g., the sampler or the pump). As the connections vary depending on the instruments, this chapter can only give an example. If your combination of instruments is not described in this chapter, please contact your Thermo Scientific representative.

5.2.2.1 Connecting an Autosampler to the Surveyor MSQ Mass Spectrometer

It is essential to connect an inject response cable between the MSQ and the installed autosampler.

On the rear panel of the Surveyor MSQ, the start input contacts are pins 1 and 2 (pins counted top-down) of the USER I/O connection terminal. The 'Inject Out' of the installed autosampler must be connected to these pins.

For Dionex WPS-3000 autosamplers, the accessories kit includes a 6-pin Mini-DIN signal cable (Dionex P/N 6000.1004). Connect the start input of the MSQ with the Mini-DIN signal cable as follows:

<u>MSQ USER I/O</u>	<u>Mini-DIN signal cable</u>
Pin 1	Pin 6, brown wire
Pin 2	Pin 8, white wire

Connect the Mini-DIN signal cable to the **Relay 4** terminal on the rear panel of the WPS-3000.



Note: When **Relay 4** is used, the autosampler automatically provides a start signal to the MS upon injection. If you do not want to start the MS immediately after the injection, you can configure another Relay of the WPS-3000 (or another Dionex device, e.g. the pump) to provide the start signal. In this case, the corresponding “Relay...” command must be manually inserted into the LC part of the Instrument Method (Program).

After you have finished the hardware installation, you may have to set up the WPS-3000 to output the inject response to Relay 4 (see page 23).

5.3 Instrument Configuration in DCMS^{Link} and Xcalibur



Note: The configuration of the MS is not covered in this document. Please refer to the documentation available from the MS vendor.



Tip: With Xcalibur you can use the LC front-end without an MS. This can be useful for example, when the LC front-end must be tested without having a properly configured mass spectrometer available, or when the LC system is operated standalone. Simply make sure that the Xcalibur Instrument Configuration does not contain an MS and that the Instrument Setup does not contain an MS part.

To control Dionex instruments by Xcalibur via DCMS^{Link}:

- First DCMS^{Link} must be added to the “Configured Devices” list in the Xcalibur Instrument Configuration (section 5.3.1),
- Then the corresponding instrument drivers must be added to the Chromeleon Server Configuration (section 5.3.2).
- Finally, DCMS^{Link} must be configured to retain/delete temporary data (section 5.3.3).

5.3.1 Adding DCMS^{Link} to the Configured Devices List in Xcalibur, Launching Chromeleon Server Configuration



Note: If you need to modify the configuration of your Dionex instruments in the future, follow the steps below, except step 3, to launch the Chromeleon Server Configuration

1. Ensure that Xcalibur is NOT running. (If it does: Stop any sequences on the Xcalibur Homepage and delete any samples from the Acquisition Queue; then close Xcalibur

2. Open the Thermo Scientific Instrument Configuration:
 - Xcalibur 2.0.7: **Start > All Programs > Xcalibur > Instrument Configuration**
 - Xcalibur 2.1: **Start > All Programs > Thermo Foundation > Instrument Configuration**
 - Make sure you display All Device Types, Fig. 2a.
3. (This step is only needed for the initial configuration, not for modifications.) In the **Available Devices** list select **Dionex Chromatography MS Link**, Fig. 2b. Click **Add >>** (Fig. 2c) to add it to the **Configured Devices** list. (Shortcut: double-click on **Dionex Chromatography MS Link**)
4. In the **Configured Devices** list select **Dionex Chromatography MS Link**, Fig. 2d. Click **Configure** (Fig. 2e) to open the Dionex Chromatography MS Link Configuration dialog (Fig. 4). (Shortcut: double-click on **Dionex Chromatography MS Link** in the list on the right).
5. The **DCMSLink Event Log** window opens.

When DCMS^{Link} is configured for the first time, a “**No Timebase selected**” warning appears. Acknowledge this with **OK**, (Fig. 3).
6. The **Dionex Chromatography MS Link Configuration** dialog opens, Fig. 4. (Do NOT click on the “Timebase...” button at this point, because a Timebase has to be configured first.)
7. Click **Device Configuration...** (Fig. 4a) to launch the Chromeleon Server configuration. This may take some time. A small message window indicates that DCMS^{Link} is waiting for the Chromeleon Server Configuration to be finished, Fig. 4b.

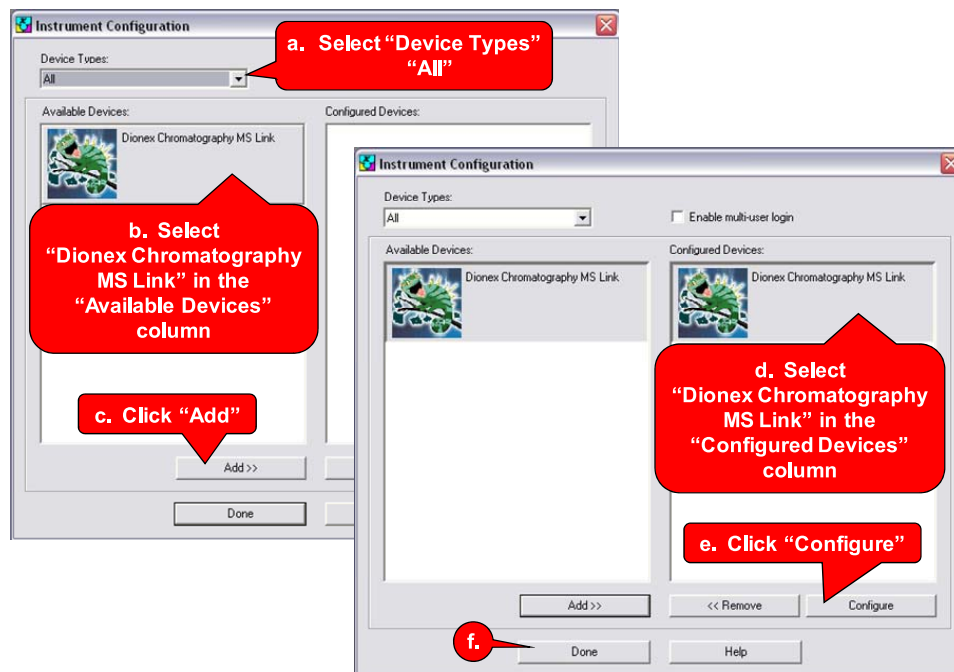


Fig. 2 Adding DCMS^{Link} to the Xcalibur Instrument Configuration.

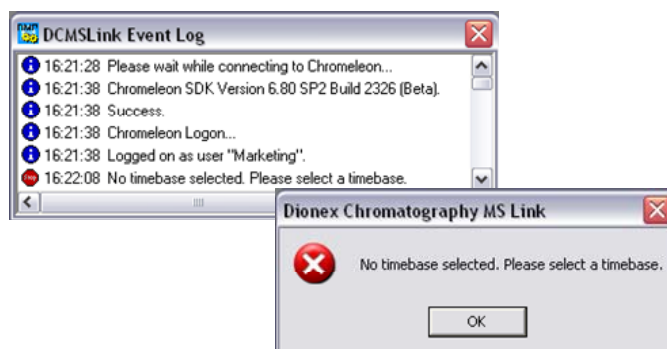


Fig. 3 The DCMS^{Link} Event Log window.

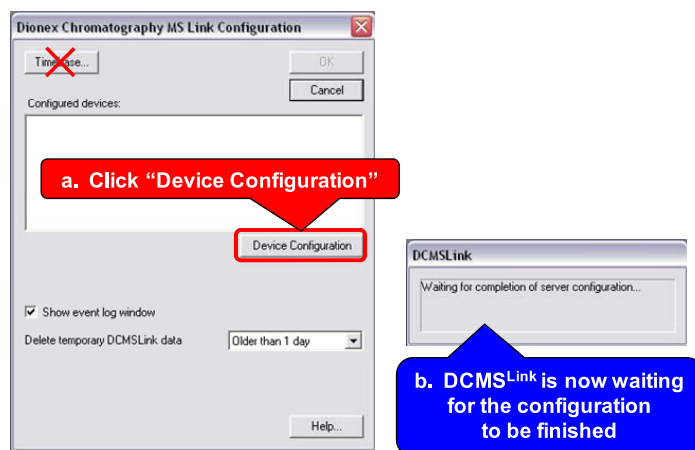


Fig. 4 Launching the Chromeleon Server Configuration

5.3.2 Chromeleon Server Configuration

1. In the Server Configuration program, right-click on the Server name (Fig. 5a) and select **Add Timebase** from the context menu (Fig. 5b). Enter a unique Timebase name (Fig. 5c) in the dialog that opens and click OK (Fig. 5d).

Caution: When you choose a name for the Timebase, remember that the **name must be unique within the computer network** (we recommend including the computer name e.g., choose *UltiMate_on_<Computer Name>*). Do **not** select the **“Create Folder Structure for Your Data”** option.

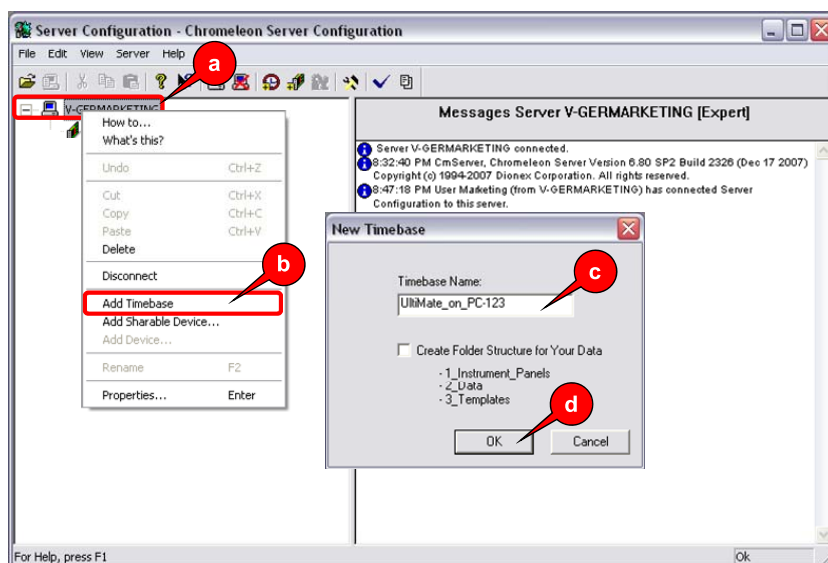


Fig. 5 Adding a Timebase

- Now you must add your Dionex devices to the Timebase. First of all, the “DCMSLink for Xcalibur” driver. This driver is required to link Xcalibur and Chromeleon.

Right-click the new Timebase (Fig. 6a) and select **Add Device...** from the context menu (Fig. 6b). The “Add device to timebase” dialog opens.

- Under Dionex, select **DCMSLink** (Fig. 6c) and add the **DCMSLink for Xcalibur** driver (Fig. 6d) to the Timebase by clicking OK (Fig. 6e).
- Click **OK** in the **Dionex DCMSLink for Xcalibur** dialog, without changing anything (Fig. 7).

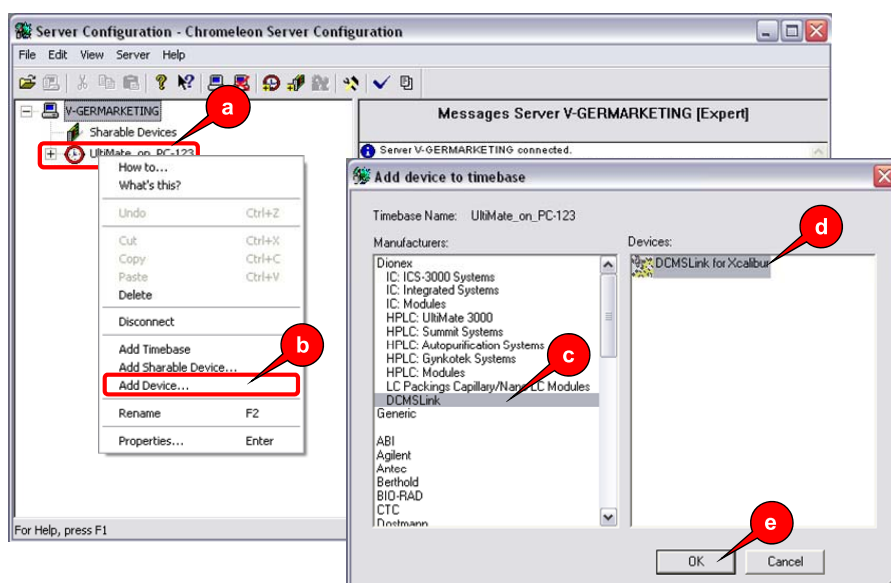


Fig. 6 Adding the “DCMSLink for Xcalibur” driver to the Timebase

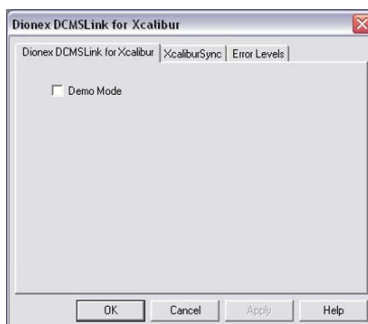


Fig. 7 Do not change anything in the DCMSLink for Xcalibur driver dialog.

5. Add all other Dionex device drivers of the modules that you want to work with to the Timebase by right-clicking on the Timebase and selecting **Add Device...** from the context menu (Fig. 6a-b). Fig. 8b-d (below) shows how to add a VWD-3x00 detector.

 **Tip:** *The default channel used by Xcalibur is determined by the last installed instrument device driver in the CM Server Configuration. To ensure the UV signal is the default channel, add the UV detector device driver last.*

Most devices are connected via a USB interface. The USB address is then used by Chromeleon to detect the device. The USB address typically contains the serial number of the instrument, allowing distinction between instruments when two or more identical modules are present (e.g. two pumps). Click browse and double click on the USB number. Only the USB addresses of corresponding devices are shown; for example, when adding a UV detector only the address(es) from the UV detector(s) are shown.

 **Caution:** *In general, you should accept the default device and signal names on all of the configuration pages. Changed names may cause problems with control via Panels. (Changing the names is only necessary, when you have more than one device of the same kind, e.g. two UV detectors. In this case, duplicate names would cause a conflict. In such situations, Chromeleon provides appropriate error messages.)*

 **Tips:** *Do not add any devices that are not supported by DCMS^{Link}. For a list of supported instruments, refer to 4.3.*

If you want to record UV signals or other digital data channels, make sure the channels you want to record are activated in the Server Configuration.

Note, that there can be interdependencies between the devices. Because of this, you may have to revisit some of the dialogs during the installation. Typical examples are:

- a flow splitter can be assigned to a micro pump,
- a pump can be assigned to an autosampler for inject synchronization
- a WPS-3000(T)SL autosampler can be assigned to a pump for purging.

For some instrument configurations, there is an **optimal order of adding the drivers** to the Timebase, which avoids the need for revisiting the configuration pages. Fig. 8a shows for example the optimal order of adding the modules for Proteomics MDLC.

If you want to use a **Thermo Scientific aQa or MSQ** mass spectrometer with Xcalibur + DCMS^{Link}, then do NOT add the mass spectrometer to the Timebase (this is only necessary when you want to control these mass spectrometers from Chromeleon).

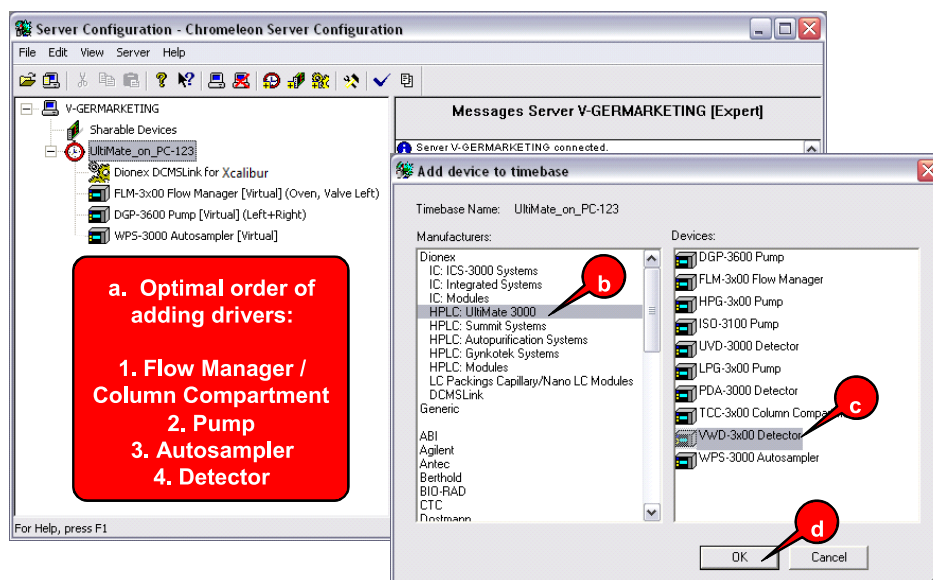


Fig. 8 Adding other drivers to the Timebase.
For optimal workflow, observe the recommended order of adding the drivers.

6. If you use a **WPS-3000**, make sure that **Relay_4** is NOT activated in the autosampler configuration (on the **Relays** tab page). In this case, the autosampler will use the default function of this relay and automatically sends a start signal to the MS at the time of the injection. (In addition, the length of the signal may have to be defined as described in section 5.4.)

 **Tip:** If you do not want to start the MS immediately after the injection, you can configure another Relay of the WPS-3000 (or another Dionex device, e.g. the pump) to provide the start signal. In this case, the corresponding “Relay...” command must be manually inserted into the LC part of the Instrument Method (Program).

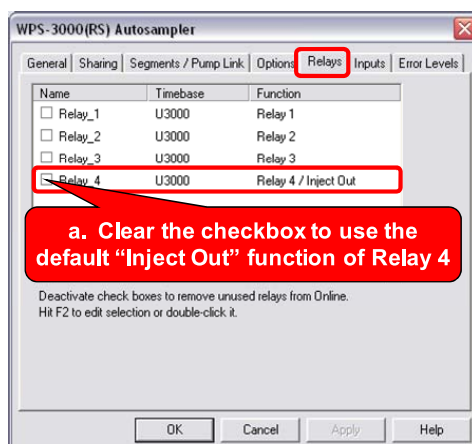


Fig. 9 Using Relay 4 as Inject signal on a WPS-3000.

7. If you use a **DAD-3000RS** or an **MWD-3000RS**, set the number of spectra buffers to a value ≥ 5000 . To do so, right-click on the **Server** name, select **Properties...** and click on the **Advanced** tab. Enter a **Spectra** buffer 5000.
8. Add Sharable Devices (such as the UCI-100 interface) and Generic Drivers (such as the Integrator Driver), as necessary.
9. Click **File** and **Save Installation** to save the current configuration.
10. Create a backup copy of the configuration:
 - Click **File > Save As...**
 - Enter a file name for the backup copy, e.g. **CmServer_<PCname>.cfg**
 - Click **Save**.

 **Tip:** If you ever need to restore the backup, click **File > Import**.

11. **Close** the Server Configuration program.
The **Connect to Timebase** dialog opens, Fig. 10.
12. Expand the **My Computer** node and select the **Timebase** (Fig. 10a) you have configured in the steps above. Confirm with **OK**, Fig. 10b.
13. This takes you back to the **Dionex Chromatography MS Link Configuration** dialog, Fig. 4 and Fig. 11.

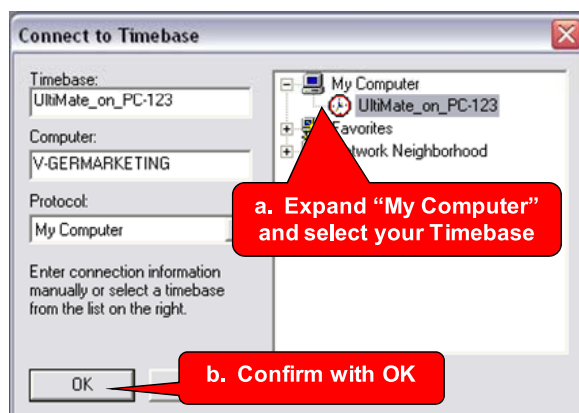


Fig. 10 Selecting a Timebase

5.3.3 DCMS^{Link} Configuration

1. The **Dionex Chromatography MS Link Configuration** dialog box now indicates the selected Timebase and lists the installed devices, Fig. 11a.

 **Tip:** If you need to modify the configuration of your Dionex instruments in the future, click *Device Configuration* in this dialog to open the *Chromeleon Server Configuration*, Fig. 11b.

2. The **Delete temporary DCMS^{Link} data** list box allows you to select how long temporary DCMS^{Link} data are stored on your hard disk.

This data (e.g. Chromeleon sequences, Audit trails and DCMS^{Link} log files) is retained for two purposes. They are necessary for technical reasons during runs, but they can also be useful for support purposes.

Dionex recommends deleting the temporary data **Older than 30 days**. This saves hard disk space, but allows enough time to send such temporary data to Dionex to enable efficient support.

If you also use a full Chromeleon version to analyze data that was acquired via DCMS^{Link}, you may want to manage the temporary files manually and thus avoid their automatic deletion. In this case choose the **Never** option.

 **Tip:** The DCMS^{Link} log files are saved in the Logfiles folder of the DCMS^{Link} installation directory, e.g. C:\DCMSLink\Logfiles.

3. Click **OK** (Fig. 11d) to save the selected DCMS^{Link} configuration.
4. In the Xcalibur **Instrument Configuration** dialog box click **Done**, Fig. 2f.

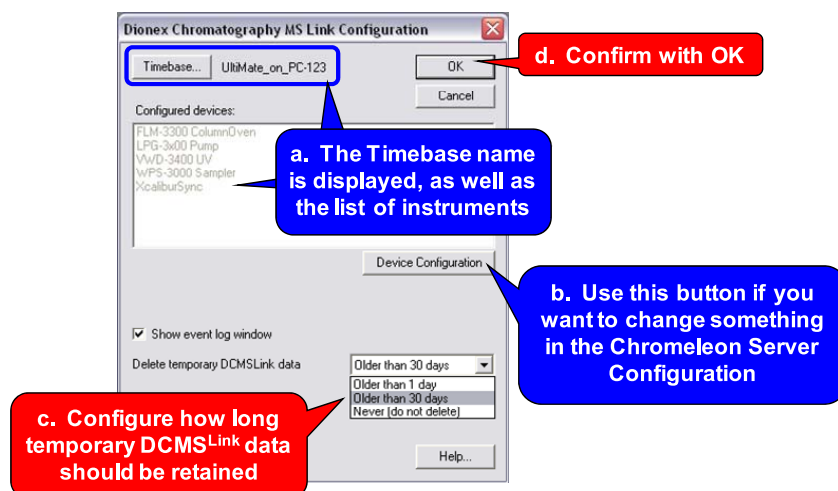


Fig. 11 DCMS^{Link} configuration

5.4 WPS-3000 Autosampler Settings



Note: This section describes steps necessary for a typical connection, when the autosampler automatically provides a start signal via Relay 4 to the MS upon injection. If you do not want to start the MS immediately after the injection, the steps below are not necessary. Instead, configure another Relay of the WPS-3000 (or another Dionex device, e.g. the pump) to provide the start signal. In this case, the corresponding “Relay...” command must be manually inserted into the LC part of the Instrument Method (Program).



Note: Relay 4 must first be configured in the Server Configuration according to section 5.3.2 step 6 (page 20).

Set up the WPS-3000 to output the inject response to relay 4:



Tip: For new WPS-3000 autosamplers (with SN 8022151 or higher / Factory OQ made on 2009-12-18 or later) this setting is applied in the factory, so there is no need to do these steps.

1. Use the Chromeleon Desktop icon (or choose **Start > All Programs > Dionex > DCMSLink > Chromeleon**) to open Chromeleon Xpress window with the Control Panels.
2. Right-click in an “empty” area of a Panel and choose **Commands...** from the context menu (or hit the **F8** key).
3. Right-click in the command list and select **Expert**, Fig. 12a. (This will display all the commands and properties available for the connected instruments.)
4. Double-click **Sampler** and select **Relay4Enabled**, Fig. 13a.



Tip: The **Relay4Enabled** command is further down on the list. If you press the letter “R”, the program will jump to the next command that starts with the letter “R”. Press the letter a couple of times until you have found the **Relay4Enabled** command.

5. Select **10sec_InjectOut** from the drop-down list (Fig. 13b).
6. Click **Execute**, Fig. 13c, and then **close** the dialog box. Fig. 13d.



Tip: The autosampler will remember this setting, even if it is disconnected from the power supply.

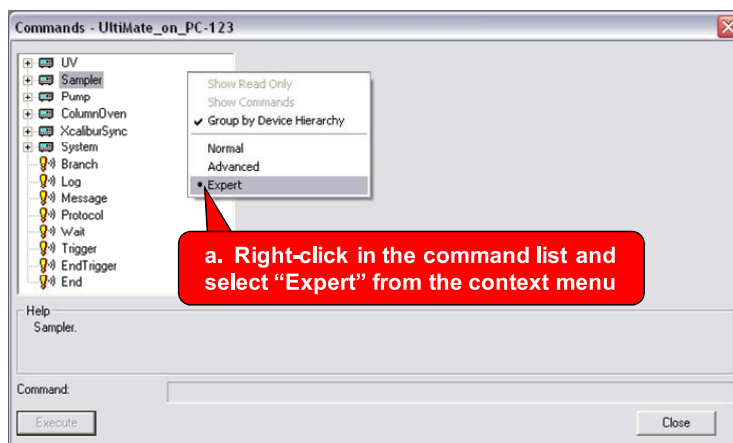


Fig. 12 Choosing Expert mode in the Commands dialog

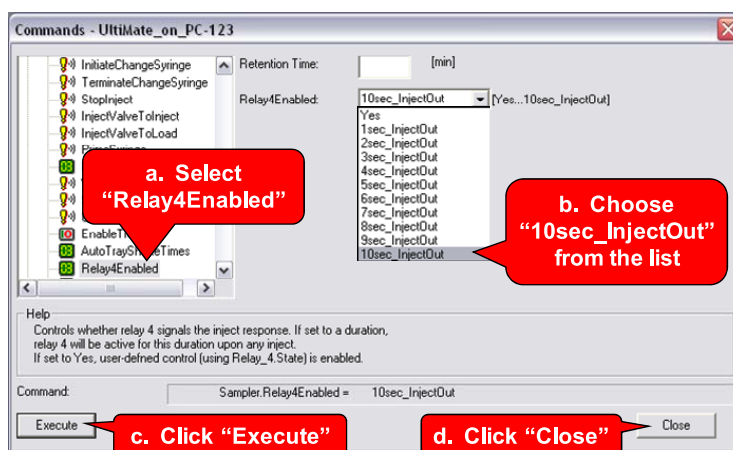


Fig. 13 Executing the Relay4Enabled command

5.5 Chromeleon Installation Qualification (IQ)

The Chromeleon Installation Qualification (IQ) compares current information about the installed files with a reference list supplied by Dionex during the setup. It generates a report that can be read using the Windows Notepad or any other word processor. If the information is identical, successful installation of the software is confirmed. When there are differences, a Note, Warning, or Error message appears indicating the following:

- Note:** No action is required. The file date is different. The note appears only because the file was compared to the file in the list supplied with the setup. The difference should not impair DCMS^{Link} functionality.
- Warning:** Usually, no action is required. If a problem occurs nevertheless, contact Dionex Service. A warning appears when the file size or the version differs from the expected size or version. For example, this may happen if newer versions of system files have been installed during the installation of other programs and if DCMS^{Link} uses these files as well. It is unlikely that such an update impairs DCMS^{Link} functionality. The warning facilitates troubleshooting, just in case a problem occurs.
- Error:** A vital file is missing. Please contact your Dionex representative.

The Chromeleon IQ runs automatically at the end of the software installation process, and it should be run manually again at the end of the configuration process:

1. Choose **Start > All Programs > Dionex > DCMSLink > Installation Qualification**. The Chromeleon Installation Qualification program starts.
2. Click **Check Installation**, Fig. 14a
3. A message appears: "Please stop other programs (including the Server Monitor)...". Acknowledge this warning. However, for running a "Normal" IQ, no special action is needed.
4. The Check Installation dialog opens.
Accept the default settings: **Check Mode = Normal, Report = Full** (Fig. 14b) and click **Start** (Fig. 14c).
5. Be patient. Checking the installation may take a couple of minutes.
6. At the end, a message informs you about the results. Click **Yes** to view the report.
7. **Scroll to the end of the report to see the summary** with the number of Errors and Warnings found, Fig. 15a. **If there are any Errors, the installation is corrupt and must be repeated.** Notes and Warnings are generally acceptable, see above.
8. You can use the **Find** function of your text editor to find quickly the location of any Warnings in the report, Fig. 15b.
9. **Close** the report and **Quit** the Installation Qualification.

 **Tip:** You can run the IQ at any time to check if your installation is intact.

You can open the last “IQReport” at any time by choosing **Start > All Programs > Dionex > DCMSLink > IQ Log Files > Installation Check**.

To learn more about the IQ tool, press **F1** when the Chromeleon IQ window is open. This will launch the related Online Help topics.

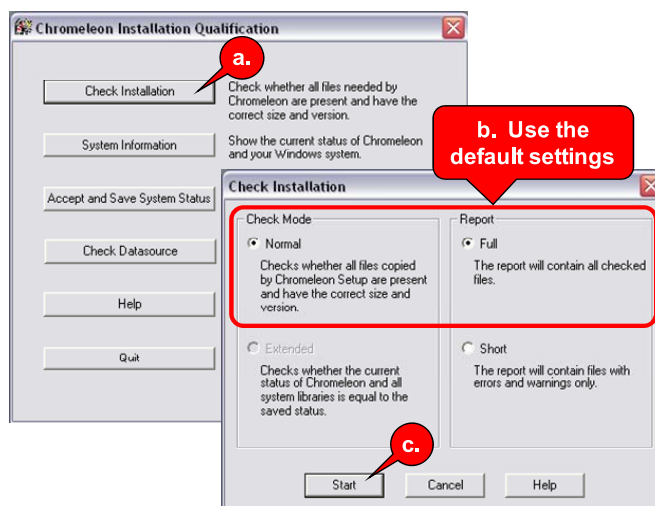


Fig. 14 Starting the Chromeleon IQ manually

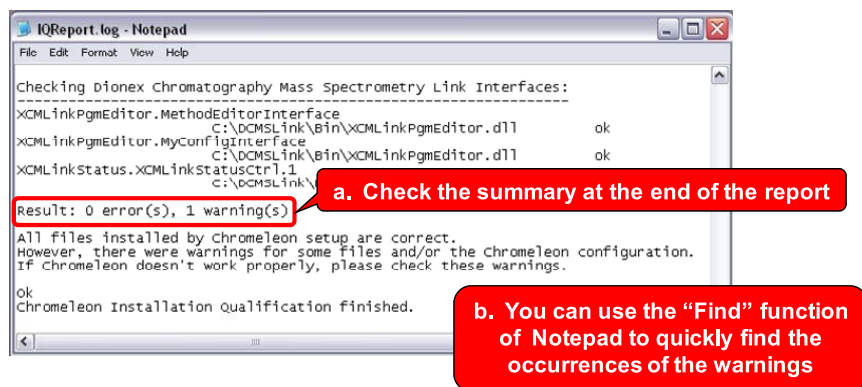


Fig. 15 The summary of the IQ Report.