

# Chromeleon SDK specifications





## Introduction

The Software Development Kit (SDK) is an Application Programming Interface (API), allowing the creation of functional client extensions to Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS). These can be used to connect Chromeleon CDS with other software applications, like Laboratory Information Management Systems (LIMS), Electronic Lab Notebooks (ELN), automation systems, calculations software, custom applications and so forth.

An SDK application or extension is a program created using the SDK to connect to Chromeleon CDS and perform related tasks, for example editing an injection sequence or starting the analysis. There are two types of SDK applications (Table 1).

**Table 1. Out-of-process and in-process SDK applications**

Out-of-process application	In-process application
Implemented as .exe	Implemented as .dll
Typically used to hide or replace the Chromeleon software user interface	Used to extend menus of Chromeleon CDS to provide additional functionality
Examples: <ul style="list-style-type: none"> <li>• Use Chromeleon CDS as an instrument controller</li> <li>• Access data and results</li> <li>• Create a simple single-purpose user interface</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Programmatically transfer information between Chromeleon CDS and another application</li> <li>• Provide specialized post-acquisition analysis</li> </ul>
No SDK runtime license required	SDK runtime license required
No certification by CDS SDK team required	Certification by CDS SDK team required
 .exe Chromeleon Client	 Chromeleon Client .dll

## SDK implementation and use

The SDK is intended to extend the Chromeleon Client functionality, not other areas (Table 2). When planning a project there should be a thorough investigation to clarify:

- If the SDK can support the desired functionality
- That the right expertise and software are available
- If development will be done in-house or outsourced

SDK extensions built by external partners and/or customers are owned and supported by the external partners. Thermo Fisher cannot assume responsibility for these extensions. In-process applications must be certified by the CDS SDK team before they can be run on end-user systems. Please note that applications based on the SDK require a fully operational Chromeleon software installation with a client license on the same computer as the SDK application.

The following tables provide details about the SDK and its implementation and use.

**Table 2. Intended use**

Standalone applications to interface with Chromeleon CDS	✓
Plugins to extend functionality of Chromeleon CDS	✓
Client-based feature development	✓
Server-based feature development	✗
Write instrument control drivers	✗
Edit processing methods, report templates or instrument configuration	✗
Perform Chromeleon Administration Console tasks	✗
Multi-user extensions such as a web service allowing multiple users to connect	✗

**Table 3. License details and requirements**

P/N	Description	Long description
7100.0082	SDK Development License	Required to develop and test uncertified in-process applications including: <ul style="list-style-type: none"> <li>• Context sensitive online help with               <ul style="list-style-type: none"> <li>– Architecture overview</li> <li>– Object API and hierarchy</li> <li>– User interface components</li> </ul> </li> <li>• Code samples and how-to descriptions</li> </ul>
7100.0085	SDK Runtime license	Required to use in-process SDK applications.

**Table 4. Recommendations and requirements for developer's knowledge and experience, software, support and training**

Developer's experience	Windows .NET software development
	Good knowledge of Chromeleon CDS concepts and operation
	Knowledge of C# programming language is recommended
Software platform	.NET version 4.x is required
	The recommended programming environment is Visual Studio 2012 or later
Outsourcing	New SDK users are strongly encouraged to engage with an experienced partner for questions and technical guidance
Support	Thermo Fisher only provides support for the certification of in-process apps and as an escalation point for SDK defects. Developing/implementation of SDK applications is not a service provided by Thermo Fisher.
	Consultancy services can be provided by external partners
Training	Recorded SDK training is available for experienced .NET developers

**Table 5. Chromeleon software functionality accessible via the SDK**

Logon support	<ul style="list-style-type: none"> <li>• Including silent logon</li> </ul>
Object selection	<ul style="list-style-type: none"> <li>• Built-in object browser</li> <li>• User Interface allows user to select items from the Data Vault</li> </ul>
Sequence creation	<ul style="list-style-type: none"> <li>• Via method templates, eWorkflow™ procedures, manual creation and injection query</li> <li>• Read/write sequence properties, including custom variables</li> <li>• Add/remove injections</li> </ul>
Data acquisition	<ul style="list-style-type: none"> <li>• Start, monitor and manage sequence data acquisition and run queues</li> </ul>
Instrument monitoring	<ul style="list-style-type: none"> <li>• Iterate through list of configured instruments</li> <li>• Check instrument status</li> <li>• Read instrument configuration</li> <li>• Read online instrument values</li> </ul>
Injection handling	<ul style="list-style-type: none"> <li>• Read/write injection properties</li> <li>• Read/write custom variables</li> </ul>
Instrument method management	<ul style="list-style-type: none"> <li>• Copy/move existing instrument methods</li> <li>• Read/write instrument method elements (directly edit method script)</li> </ul>
Processing method management	<ul style="list-style-type: none"> <li>• Copy/move existing processing methods</li> <li>• Read processing method elements (limited)</li> <li>• Read component properties</li> <li>• Add/remove concentration levels</li> <li>• Read/write custom variables</li> </ul>
Data access	<ul style="list-style-type: none"> <li>• Access raw data (2D, DAD, MS, audit trails)</li> <li>• Access results (e.g., peak area)</li> </ul>
Reporting and import/export	<ul style="list-style-type: none"> <li>• Trigger import/export of sequences and results</li> <li>• Modification of print/export conditions</li> </ul>

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