Clarity™

DataApex Clarity lite

21 CFR part11

chromatography station for Windows™

DataApex
Clarity™

DESCRIPTION

DataApex Clarity 32bit multi instrument chromatography station for Windows

Multi-detector instruments
Easy to install and easy to use
Graphical user interface
Tools for GLP and 21 CFR Part 11
Add on control modules
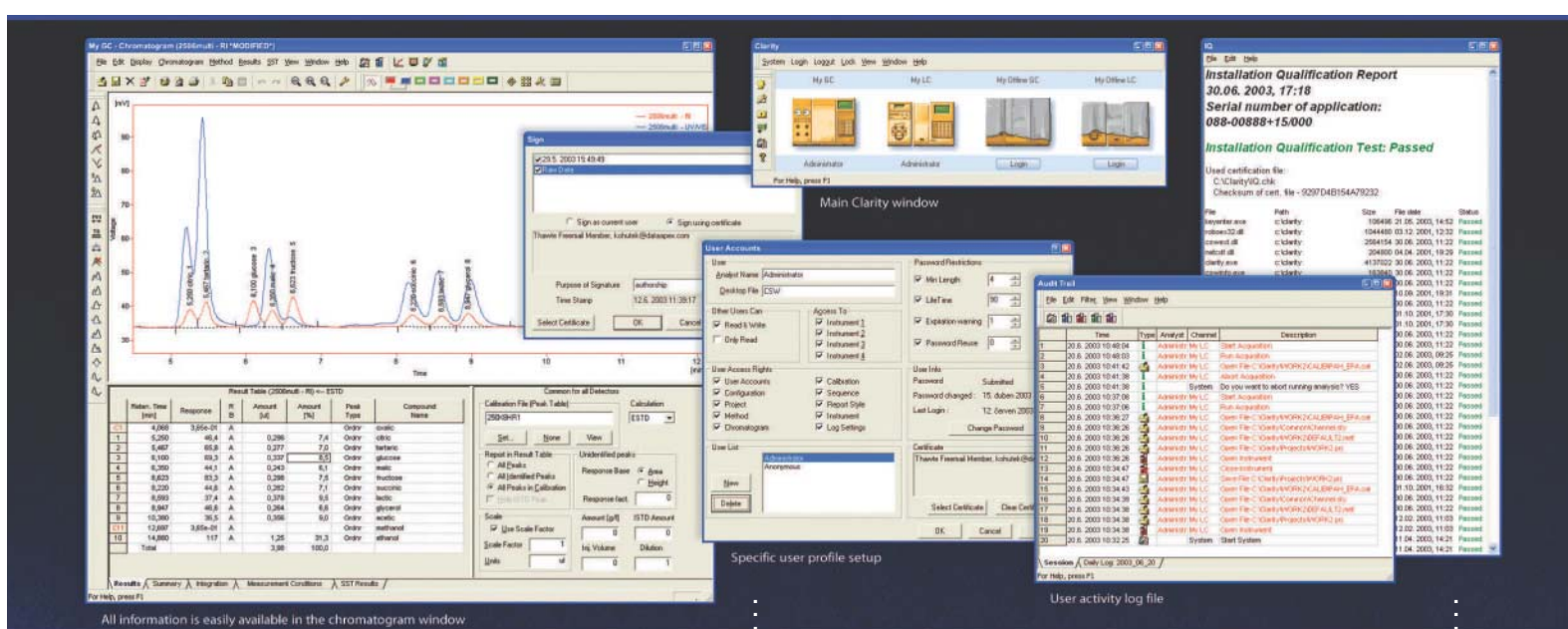On-line user support
Excellent price/performance rate

data solution for GC and LC systems

Support of Multi-Detector measurement

Clarity is an advanced chromatography station designed to acquire and evaluate data from up to four chromatographs at a time. Clarity - a top product in its category - represents a universal solution for laboratories. It enables the user to acquire data from any commercially available chromatograph with standard analogue output.

Up to four chromatography systems, each of which can be equipped with up to four detectors, can be connected simultaneously. The chromatography station package includes an A/D converter (internal PCI card or external USB box) and the corresponding Clarity Software.

All information is easily available in the chromatogram window

Main Clarity window

Specific user profile setup

User activity log file

OPERATING SYSTEMS

The Clarity System has been developed and tested for use with 32-bit operating systems Microsoft Windows 98, ME, NT, 2000 and XP

MULTITASKING

Whilst acquiring data, you may work without problems on the evaluation and processing of already measured analyses or the preparation of parameters for subsequent analyses. It is naturally possible to run other programs whilst working with the Clarity station.

SUPPORT FOR GLP/ 21 CFR PART 11

In recent years, chromatography practice has brought about not only the necessity of efficiency in laboratory work, but also new demands relating to monitoring and security mechanisms, particularly in the field of data management. The Clarity supporting tools help you to comply with the requirements of GLP (Good Laboratory Practice) and FDA - 21 CFR Part 11.

Data Security

A system of access rights and passwords is set up within the station. This system allows to create a unique password protected profile for each user. The user profile then defines in detail the user's rights within the station (e.g. authority to effect changes in the methods of measurement) and may limit ones access to only certain connected instruments. Electronic signatures are also incorporated into the system so that a user may sign his or her data. This electronic signature is stored with the name and date and supplemented with a set phrase (e.g. measured by, approved by, etc.).

Audit Trail

Detailed logs and histories of modifications enable users to maintain an audit trail. Clarity documents all parameters describing the conditions and methods of data processing for the user. This allows for easy access to a complete profile of information regarding any prior modification's performance.
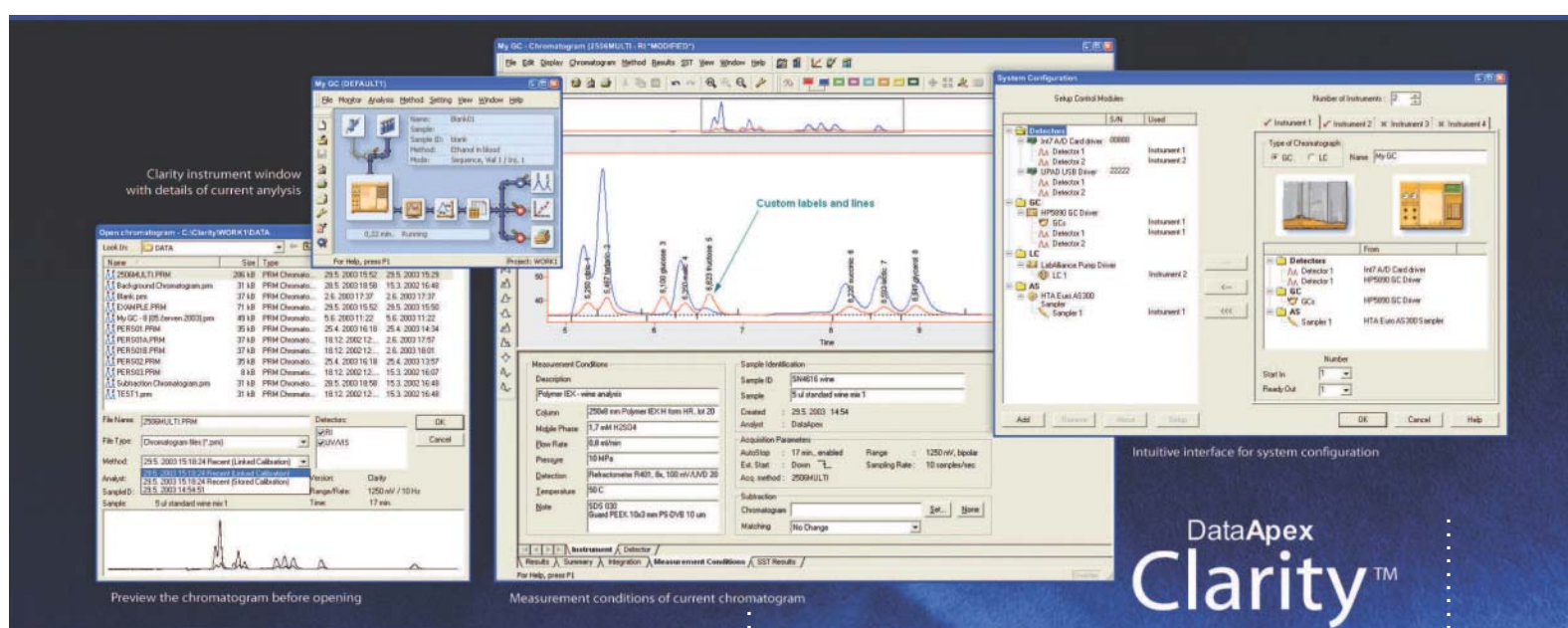
Qualification Tools

The **Test IQ** (Installation Qualification) is an integral component of the station. This test monitors that the software has been properly installed and the results can be accessed from a printed protocol.

Clarity Validator for OQ (Operational Qualification) is an optional package available for testing and validating the Clarity chromatography station. This is accomplished simply with the use of our chromatogram generator and a software utility.

www.dataapex.com   e-mail: clarity@dataapex.com

Clarity Station - simplicity and effectiveness

Clarity has been developed with a special emphasis on simplification and improved intuition of use. All frequently performed tasks are easily accessible thanks to the clear structure and intuitive graphical user interface. Users will be able to work immediately, without detailed training.

Clarity instrument window with details of current anylisis

Custom labels and lines

Preview the chromatogram before opening

Measurement conditions of current chromatogram

Intuitive interface for system configuration

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WORKING WITH FILES

A **Quick View** feature within an Open Chromatogram window displays the curve and the chromatogram header. This helps the user easily navigate through previously saved chromatograms.

Recently opened chromatograms are easily re-accessed through a configurable recent files list.

Use **Projects** to structure your data and share it among other instruments. Clarity stations can share data through the computer network.

LAYOUT

The core windows of the station use **splitters** (dividing content within one window e.g. graphs and tables) and **tabs** so that all information is conveniently laid out and easily accessed.

CONFIGURATIONS

Individual instruments are clearly, graphically configured in the Clarity station. Each user may customize his or her desktop settings (colours, fonts, graph lines, size and location of windows etc.).

TABLES

Tables throughout the entire station share the same basic behaviour. However, users can adapt them to meet their requirements (width, visibility, column order and arrangement etc.). All can be adjusted to meet specific needs.

Users can easily select available values of individual parameters from combo boxes.

Frequently used functions such as highlighted copying of tables, are immediately accessible in a local menu.

Data can be copied, not only among tables within the station, but also to other programs.

AUTOMATIC UPDATE

Clarity enables you to use and display most files and results simultaneously at a number of places on the station. All information is automatically updated everywhere it is used with each alteration.

This mechanism guarantees ultimate consistency and thus saves you the trouble of checking how current the data is.

USER SUPPORT

Detailed help is available from any window of the Clarity station.

On-line support and access to the knowledge base is available free of charge.

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Acquisition and evaluation of data

Method and calibration files are the basis for acquisition and evaluation of chromatography data.
Clarity performs calculations of all common non-calibrated and calibrated results.
Instant response to a change of integration parameters or change in the calculation of results is definitely a great advantage.

Multi-detector data acquisition

Time programmable integration parameters

Chromatogram graph properties

Calibration overview

Calibration curve for selected compound

ALGORITHM FOR DETECTION OF PEAKS

Highly responsive algorithms enable users to detect hundreds of peaks in each chromatogram.

Data from the analysis can naturally be reprocessed without the necessity of repeating the analysis.

INTEGRATION

All integration parameters are saved in the integration table. Parameters such as Peak Width and Threshold are programmable in time.

There are a total of 27 integration parameters incorporated to ensure the optimal integration of peaks. Most of these parameters can be applied also with the mouse from icons on the toolbar.

Every change of basic integration parameters in the chromatogram window will force immediate reintegration.

METHOD

All parameters for data acquisition and peak integration, including baseline operations and link to the calibration file are saved in the template method. After creating of a chromatogram, a copy of the template method becomes a part of the chromatogram file.

MULTI-DETECTOR MEASUREMENT

Once a measurement has been completed within the framework of one instrument and more than one detector (up to four), signals are simultaneously displayed and accompanied by a legend identifying each signal and detector. Users may select the number of signals displayed according to preference.

CALIBRATION

The Clarity Station uses linked calibration. Calibration curves are saved in a separate file, to which the template and chromatogram methods are referring.

After updating or modifying this calibration file, results in all chromatograms linked to this file will be automatically recalculated upon opening.

Although the calibration is linked, the current states of the calibration file and methods are stored in the chromatogram every time it is saved (using the commands Save, Print or Export).

The chromatogram with its former method settings and calibration curves may thus be opened from any prior saved state.

CALIBRATION CALCULATIONS

Clarity offers the ability to calculate using external or internal standard methods.

There are six types of curves to fit calibration points with the option to include a zero point.

The station allows you to select automatic or manual (interactive) method of data transmission from the calibration standard into the calibration file. Groups of peaks may also be calibrated.

METHOD OF REFERENCE PEAKS

Use reference peaks and or customizable identification windows for individual peaks to enhance the accuracy of compound identification.
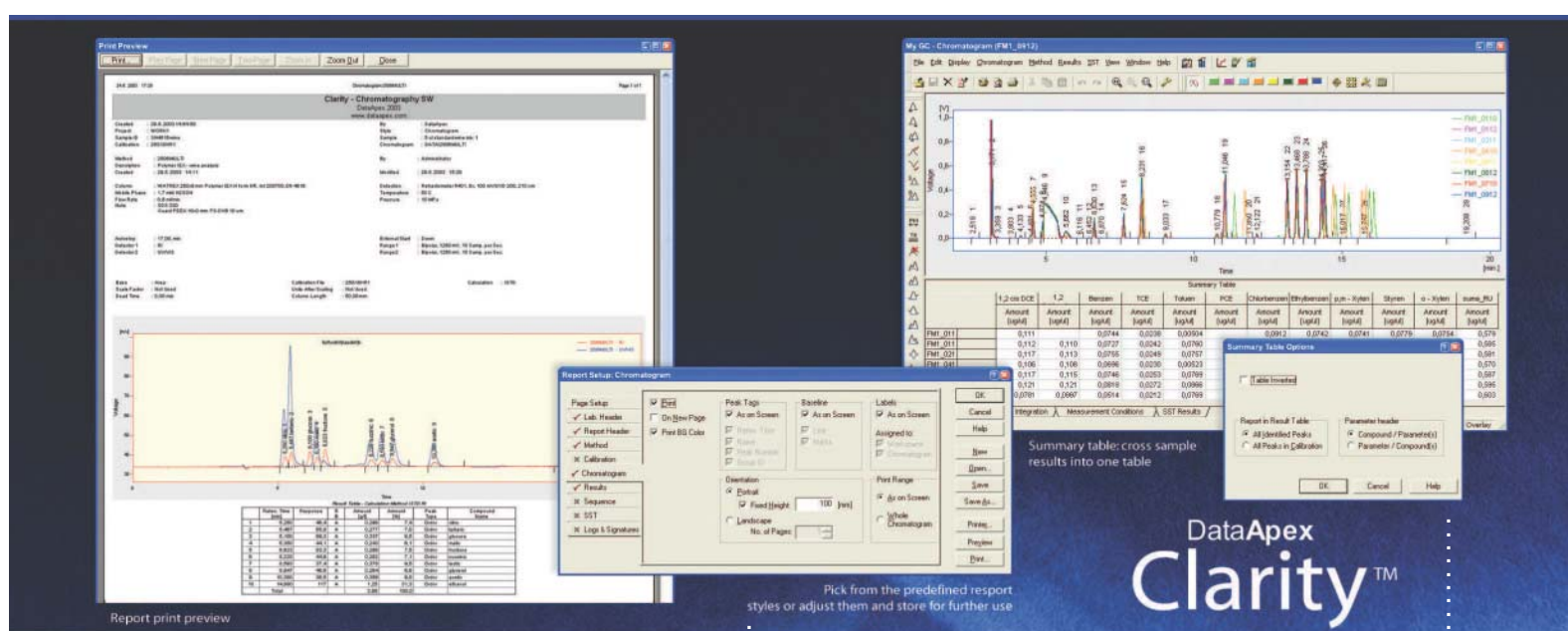
EDITING AND RECALIBRATION

Browsing and adjustment of calibration data is simple thanks to the consolidation of all compounds in a single global calibration table.

The calibration table and curve of each substance is placed separately on the relevant tab in the main calibration window.

Results

The Clarity chromatography station offers clearly presented results of obtained measurements.
Displayed chromatograms, result tables as well as any subsequent printouts can be configured by the user.

Report print preview

Summary table: cross sample results into one table

Pick from the predefined resport styles or adjust them and store for further use

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DISPLAY OF CHROMATOGRAMS

Users can easily zoom in to any section of the chromatogram. The then zoomed area can be further enlarged, reduced or moved in an auxiliary preview window.

Return to the previous zoom using the commands Previous and Next Zoom.

The appearance of the graph may be selected from an inexhaustible number of variants (colour, enlargement, annotation, axis selection etc.).

Custom labels

Text labels and lines can be attached to the chromatogram, and will automatically shift their position along with any movement of the chromatogram.

The displayed chromatogram always contains a legend with the names of the file and detector in the upper right corner of the graph.

DISPLAY OF MULTIPLE CHROMATOGRAMS

When working simultaneously with several chromatograms (Overlay mode) it is possible to perform basic mathematical operations including shifting, changing scale, calculating difference in sums and derivation. Three dimensional (3D) views for multiple chromatograms are also an option.

RESULTS OF ANALYSES

The results of calibrated and non-calibrated analyses are shown as is common in analytical practice (height and area of peak, quantity of compound etc.).

The Clarity station also offers calculations of parameters describing the quality of the chromatography system (asymmetry, efficiency, etc.). on the basis of three various methods of calculation.

The extended possibilities of these calculations are provided by the Clarity SST module, which is an optional component of the station.

SPECIAL CALCULATIONS

The Clarity station implements a powerful tool for creating and composing your own columns and choosing its calculation. If a station does not offer users a desired calculation, it can be easily created and defined.

Values of all columns of a given table can be combined using 12 predefined mathematical operators, 15 basic and 4 summary functions and several global variables.

SUMMARY TABLE

The user-configurable summary table, displaying cross-sample data, presents a clear display of the results. The display of the summary table is highly configurable (display of individual parameters, orientation of lines and columns).

PRINT PROTOCOLS

The Clarity station supports printing of user defined protocols. Its configuration is saved in report style, which defines the content and form of the printout. Pick from the predefined report styles or adjust them and store for further use.

Different report styles can be predefined according to the dialog in which you are working.

You can review the printout on the screen in the print preview.

For printing protocols from multiple analyses users can either use batch processing of data or print a summary table.

IMPORT AND EXPORT

Clarity data is backward compatible with data of the CSW17 and CSW32 stations. It is also possible to import and export ASCII text and AIA data formats into/from Clarity. The results may also be exported to dBase format.

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Automation, Sequence

Connecting the Clarity station to chromatographs with autosamplers enables you to process data quickly and effectively, including automatic printing of results. Results are printed automatically and cross-samples are clearly presented in the summary table. Unattended sequence operation saves you time.

Sequence measurement chart for laboratory automation   Sequence setting   Archiving DataApex   Batch processing
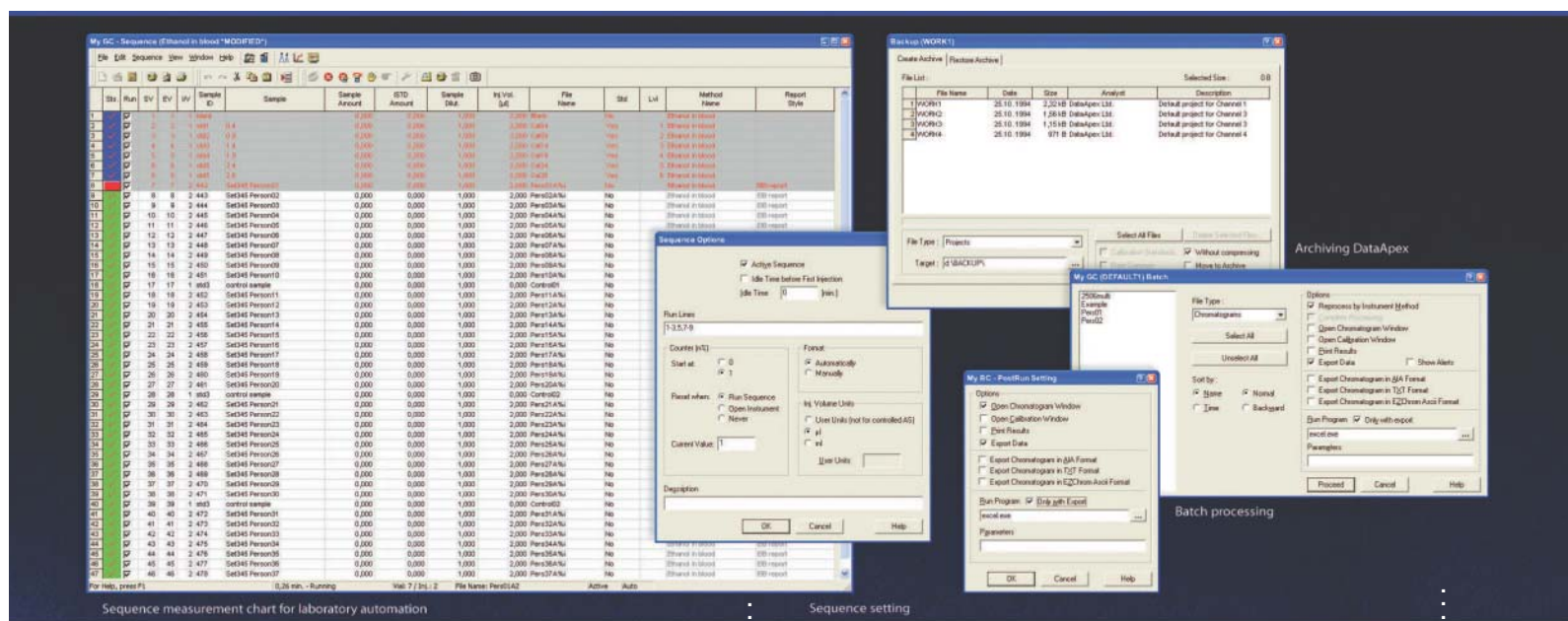
SEQUENCE - SYNCHRONISATION WITH AUTOSAMPLERS

The Clarity station supports synchronisation with practically any type of autosampler without the need to install a control module.

Work is possible using both an active (activity controlled by the Clarity station) and passive sequence (activity controlled by autosampler).

Each sample in the sequence can be processed according to a different method.

Certain samples can be marked as calibration standards so that they can be automatically used in the calibration or recalibration. This is especially helpful in larger sequences to maintain precision of the measurement.

The ability to pause and modify a running sequence makes for great flexibility when working with sequence tables.

The sequence file contains an audit trail, which records all events related to measurement.

With direct control via the AS control module users can select his or her own method of injection, including selecting the order of vials.

BATCH PROCESSING OF CHROMATOGRAPHY DATA

The station offers tools for batch reprocessing of data (Batch), which users can employ in cases where it is necessary to identically process large amounts of analyses or to print out the results of several analyses simultaneously.

POSTRUN FUNCTIONS

The Clarity station allows automated performance of routine operations following processing of data from each analysis.

A processed chromatogram may be automatically displayed in the evaluation or calibration window, printed and results exported. It is also possible to define the activation of another program, which may further process the acquired data.

Postrun functions can be applied after batch processing of data, sequences or single analyses.
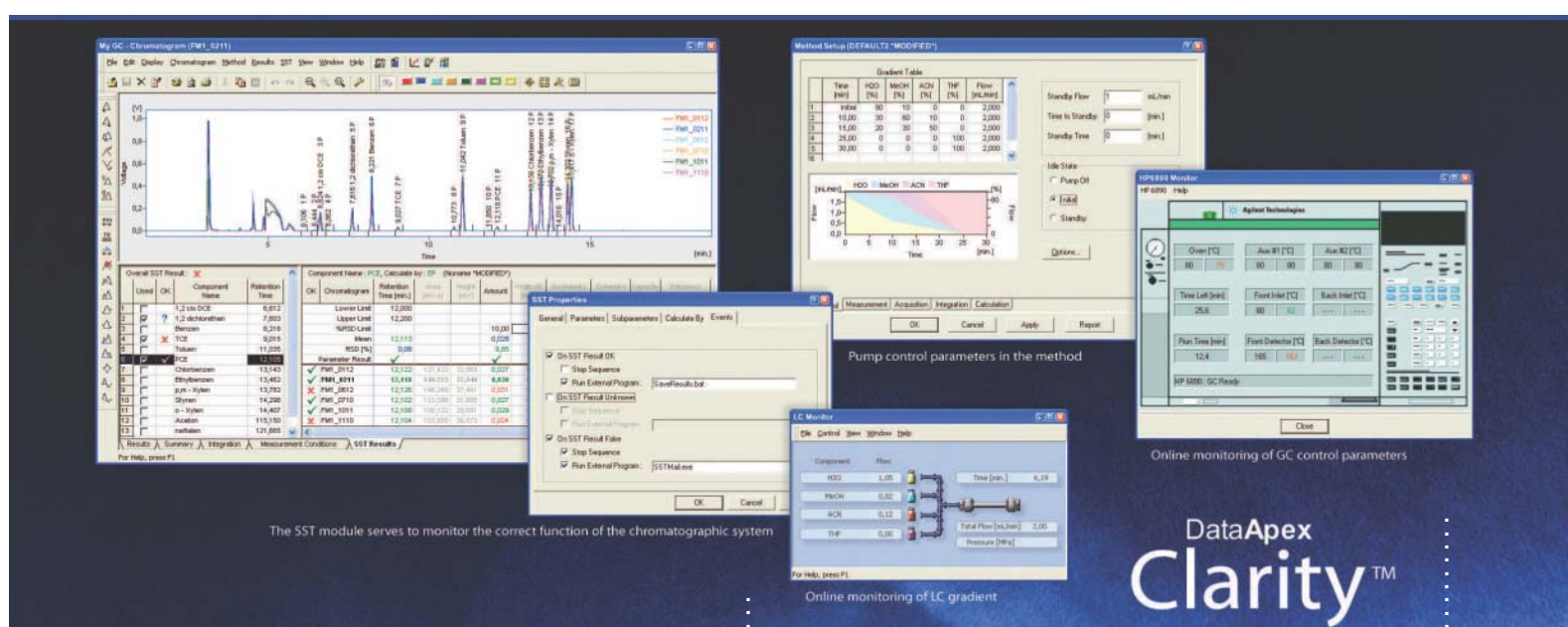
ARCHIVING DATA

The station provides simple tools for backup and restore of chromatography data.

Backup can be defined on the level of whole Projects involving a large number of analyses.

Add on modules and extensions

The basic Clarity station can be extended with add-on software modules: System Suitability Test - SST and control modules for autosamplers, gas chromatographs or HPLC pumps. Drivers for instruments from selected manufacturers, the list of which is constantly extended according to user requirements, are also available.

The SST module serves to monitor the correct function of the chromatographic system.

Pump control parameters in the method

Online monitoring of GC control parameters

Online monitoring of LC gradient

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SST - SYSTEM SUITABILITY TEST

The **SST module** serves to monitor the correct function of the chromatography system.

The program compares up to 12 selected parameters (e.g. retention time, efficiency, asymmetry of peaks) calculated according to one of three pre-selected methods (USP, EP, JP).

These calculated values are compared to user set limit values, either for each chromatogram separately or together for the selected series. Deviation of a certain parameter from the permissible limits is immediately reported and may lead to the termination of the sequence in progress.

The **SST module** enables you to monitor the parameters of individual substances and thus to evaluate the reproducibility of the results of the entire chromatography system.

CLARITY EVALUATION STATION

The **Clarity Evaluation Station** is available when evaluating data or preparing methods for measurement on another computer than that on which the measurement is taking place.
This special version of software makes use of all functions except for data acquisition and has the same output as the Clarity station.

This program uses a protective key located in the printer or USB port of the computer.

DIRECT CONTROL OF GC CHROMATOGRAPHS

The GC control module contains means for the complete control of selected types of gas chromatographs.

You can easily set the parameters of the chromatograph from your computer (e.g. temperature program of oven or inlet, pressure program, etc.). The whole description of the GC method is again stored together with the data of the analysis and can be displayed or printed at any time.

The GC monitoring window for given types of gas chromatographs clearly displays both the current and required value of the individual parameters.

DIRECT CONTROL OF LC PUMPS

In the field of LC chromatography, Clarity primarily provides control of pumps.

Clarity Instruments can create the LC gradient from up to four independent pumps for each instrument simultaneously.

The created control method is saved in the chromatogram file.

Intelligent pumps are controlled over the serial interface RS–232. Simpler types, driven by voltage or frequency, are controlled using the dedicated PCI computer CB20 cards.

DIRECT CONTROL OF AUTOSAMPLERS

Control of autosamplers enables Clarity to ensure complete automation services for your laboratory.

The chromatography station provides you with access to all parameters of the injection methods directly from your computer and allows you to determine the order of individual vials.

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Summary of HW

The hardware supplied together with the Clarity station has been developed by the DataApex company.
Choosing between an internal PCI or external USB A/D converter is up to the user. The Clarity chromatography station can handle any combination of available DataApex converters.

DataApex provides a 3-year guarantee on its own hardware.

INT7 INTERNAL PCI A/D CONVERTER

The INT7 is an internal PCI 24-bit A/D card designed for data acquisition from detectors with standard analogue output. The card is designed for PCI slots and equipped with a "Plug and Play" system, which provides you with easier installation under the current versions of OS Windows. The INT7 card contains one to four independent channels on one basic card. The channels are mutually isolated with symmetrical inputs. INT7 is distinguished by its excellent temperature stability.

U-PAD - EXTERNAL USB A/D CONVERTER

The U-PAD is an external measuring unit for acquisition of data from detectors with standard analog output. U-PAD uses a USB communication channel, which allows direct connection from the PC. U-PAD represents an ideal solution for connecting chromatographs to a laptop computer. The unit contains two independent channels equipped with the latest 24-bit A/D converters, which attain higher effective resolution, particularly at higher integration frequencies and lower voltage ranges. The channels are isolated with symmetrical inputs. The input connector is compatible with the internal INT7 card.

	INT7 (PCI internal) A/D converter	U-PAD (USB external) A/D converter
Resolution	24-bit	24-bit
Number of channels	1 - 4	2
Voltage ranges	bipolar: 156, 1 250, 10 000 mV	bipolar: 156, 1 250, 12 585 mV
Integration frequency	up to 100 Hz	up to 100 Hz
Auxiliary inputs/outputs	4/8	2/2

CB20 - INTERNAL PCI D/A AND D/F CONVERTER

The control card CB20 contains four 16-bit D/A converters and four 28-bit frequency converters and is designated for control of analog and frequency controlled pumps (e.g. Waters pumps). The card does not contain any setting jumpers. It is sufficient to install only the relevant driver and set the constants corresponding to your pumps due to the "Plug and Play" technology of the card.