

## 7.1 Overview

Freelance Operations, based on Microsoft Windows as a graphical user interface, enhances the ease of use and the performance of process operation. In addition, you can also use any PC peripherals such as monitors, printers, mice and keyboards that are available on the market for Windows compliant PCs. The Freelance Operations software supports both the conventional screen formats 4:3 / 5:4 and the wide-screen formats 16:9 / 16:10.

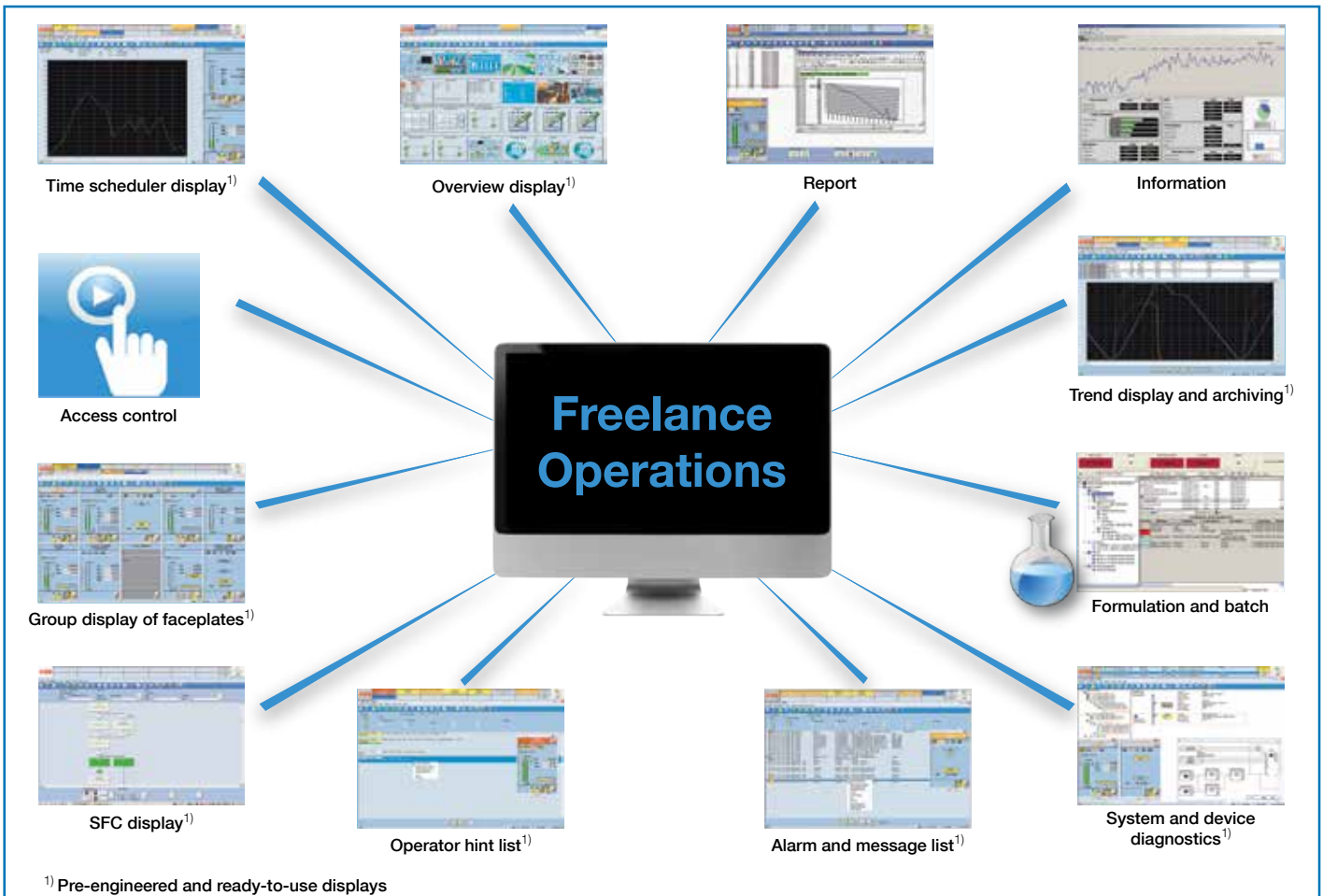
The operation and engineering functions can also be performed together on one PC. Freelance Operations offers the following features:

- Transparent and rapid operation due to a clearly structured information hierarchy
- User-specific function key assignment for fast display selection
- A large number of pre-engineered displays
- Rapid and secure action in case of process alarms
- Trend displays with archiving
- Logging of all operator actions, including name and time-stamp
- System diagnostics, even down to the field device, allowing extended field device diagnostics

- Uniform process alarm and message concept and clearly arranged display of messages and operator hints
- Up to 16 user groups / access profiles, with up to 1000 users, specific password for each user (with optional Security Lock software)
- Various language versions: English, Chinese, German, Spanish, Brazilian Portuguese, Swedish, Russian, Polish, French, and Japanese
- A control aspect, providing access to automatically generated dynamic interlocking displays for the selected tag (in connection with OPC or trend server)
- External aspects, providing access to additional information such as PDF documentation, live videos from the plant, standard operational procedures (SOPs), etc.
- Configurable voice output on the PC for process alarms
- Dual-monitor operation on a single PC, with one mouse and one keyboard

The process visualization is supported by plant-specific custom graphic displays, faceplates for tags and up to 15 plant areas with plain text labeling.

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## Plant-specific displays

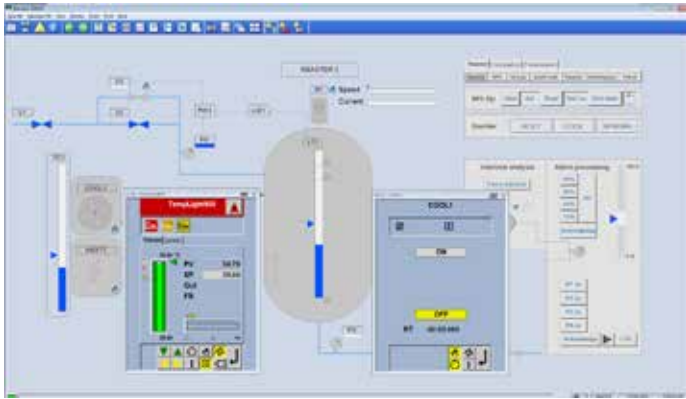


Figure 16: Graphic display with faceplates

Plant-specific displays geared to the specific demands of the plant operator can be configured to depict process activities.

Static sections of the graphic displays can be created using the graphics editor. In addition, you also have the option of inserting such static sections in the form of bitmaps, created by any other graphic editor, scanner, or digital photograph. Current process data or process states can be animated at every suitable position using features such as bar graphs, level indicators and trend windows.

Depending on process states, graphic symbols can, flash, change color and position or be replaced in the graphic display. Tags can be viewed either via faceplates in the graphic displays or via the standard group displays.

Display selector fields or buttons can be used to setup a specific selection hierarchy within custom graphics for operation. The number of custom graphics available in Freelance Operations is limited only by the hard disk capacity.

## Pre-engineered, ready-to-use displays

Pre-engineered displays are adapted to the needs of process control engineering with regard to structure and information content.

The following displays are available:

- Overview display
- Group display
- Faceplate
- Sequential Function Cart (SFC) display
- Time scheduler display
- Trend display
- Web display
- Message list and operator hint list
- Logs
- System display for hardware diagnostics

Therefore, most functions already have fully prepared displays for operation and observation, and can be used without additional work.

## Overview display

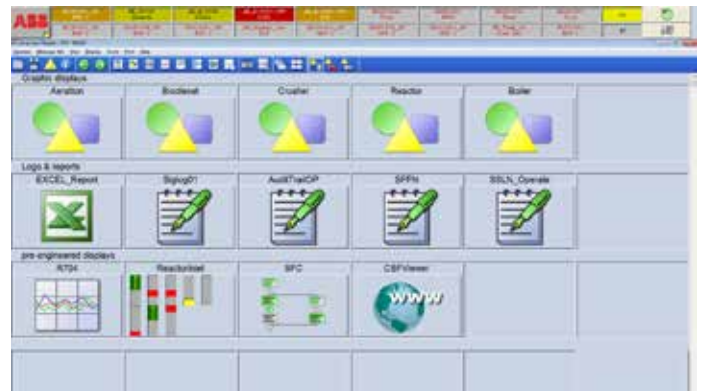
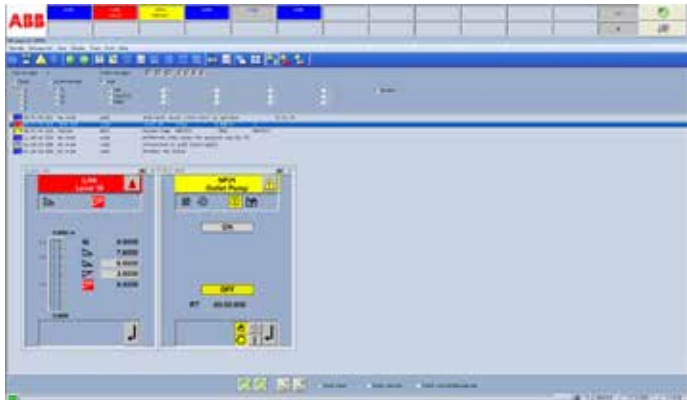


Figure 17: Overview display

The process information for the entire plant is presented in a condensed manner in a single overview display. It offers facilities for selecting the group, graphic, SFC, Web, time scheduler and trend displays. Logs can also be called up directly from the overview display. Up to 96 displays can be shown in the overview display. The group display symbols within the overview display also feature dynamic updating of tags, allowing disturbance states to be detected rapidly through appropriate symbols and colors. If required, you can also set a graphic display of your choice as overview display. It then replaces the standardized display.

## Faceplates



Faceplates

Faceplates allow both overview and detailed information to be obtained simultaneously. Since faceplates are predefined, they are available immediately in the system following the definition of a tag, without any additional programming. This is also the case for user-defined faceplates. Therefore, faceplates can be displayed together with standardized and freely designed displays.

## 7 Group display

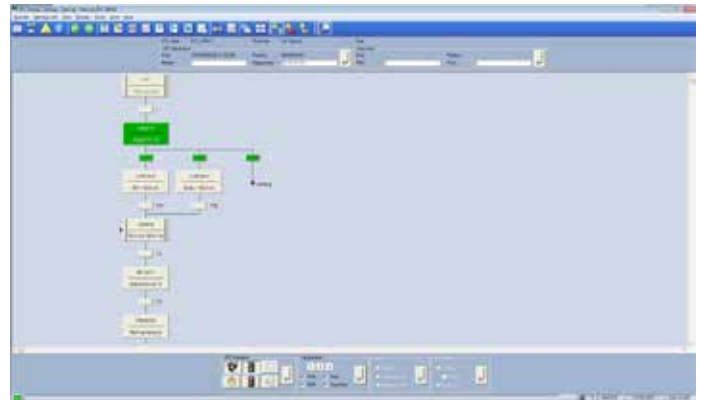


Figure 18: Group display

The group display is a combination of several faceplates and contains detailed information about associated tags. All functions, including controllers, PID-loops, time and monitoring functions as well as open-loop control functions, can be displayed and operated.

To provide a quick source of information, analog values are displayed as colored bars. To allow more precise reading, they are also shown as alphanumeric values. Pending disturbance states in the respective variables can be detected immediately through a change in color and flashing, and can be acknowledged directly in the faceplate or message list. Configured limits can be additionally displayed as symbols. You can create your own faceplates for user-defined function blocks.

## SFC display



SFC Display

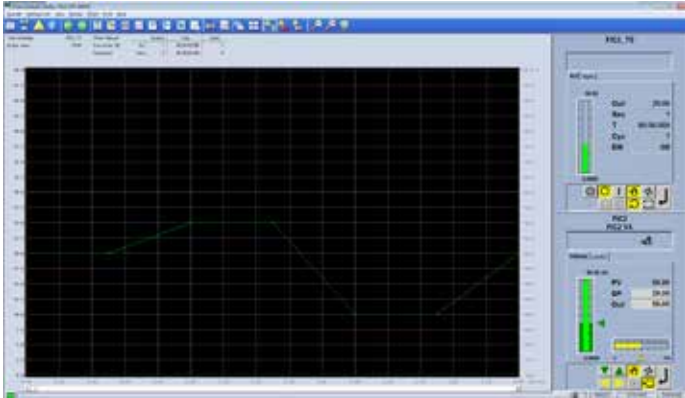
The sequential function chart (SFC) based on the IEC 61131-3 standard is viewed in a standardized SFC display showing the current program state of the sequential function chart. In the SFC display, you see the actual processing status, where already finished and coming steps are marked with different colors. Disturbance states, such as non-fulfilled process criteria or time outs can be easily detected by a color change within a criteria window for steps and transitions.

Furthermore, a display selection can be configured for each step and transition. The variables shown in the criteria window can be operated.

An SFC overview display allows direct access to a step or transition, and the desired information can be selected immediately. This is particularly beneficial in the case of complex open-loop control structures, when rapid intervention by the operator is essential. The Control Aspect allows the animated display of the transition program, similar to the commissioning display in Freelance Engineering.

The display is generated automatically and is an alternative to the criteria window, which allows you to configure a standardized, reduced display of the criterias.

## Time scheduler display



Time Scheduler Display

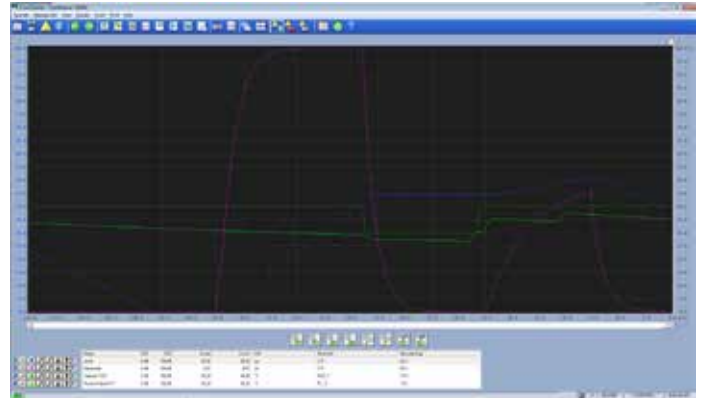
The time scheduler module makes it possible to define analog variables during a pre-defined time by default, e.g. as a set point value for a connected controller. The current set point is determined from a series of up to 32 configured values describing a set point curve. The time scheduler display is easy to operate. Apart from enabling the switching of operation modes, it also permits the modification of the current set point. Manual alterations to the set point are displayed in a separate curve.

A manual set point can be defined by offsetting the configured set point. A return (time-delayed) to the original value is possible at any time. A program can be executed cyclically or by stating a certain number of runs.

## Web display

The Web display provides a simple way to display web pages on the operator station, without covering the message line. For example, this allows you to observe the picture of a camera using a built-in Web server, making it easy to monitor flames or observe chimneys. However, in addition to showing Web pages, it is also possible to start other applications and display documents using this display type.

## Trend display and archiving



Trend Display

The chronological sequence of analog and binary process variables can be displayed as a trend display. The following can be shown in one trend display:

- Up to six signals in different colors
- The associated measuring point name with short text
- The current measured value with scale and unit used

The trend display can be altered by:

- Moving the time axis to show previous values
- Hiding trends
- Increasing and decreasing the signal range
- Selecting specific settings for each trend progression (e.g. color or interpolation)
- Highlighting individual trend curves
- Using a variable time range (seconds through to weeks)

If a trend display is configured with archiving, the measured values are recorded as a cyclical function of the operator station. The archived values can be backed up on any data medium or sent via file transfer protocol (FTP) to any subscriber on the Ethernet. They are then available for further evaluations and can be exported in CSV<sup>1</sup> format using the separate Archive Browser (formerly DigiBrowse) software. The original data is binary coded and therefore protected against manipulation.

## User-defined trend displays

Operators can compile any process values in a trend display themselves by selecting the required process values from a list of all variable names. No additional engineering effort is necessary. The task of archiving this trend data on the hard disk of the operator station PC can also be carried out easily in the same way.

A prerequisite for user-defined trends is that the system contains a trend server.

<sup>1</sup>) CSV = comma separated value, a format in which data can easily be imported into Microsoft Excel and evaluated.



## 7.2 Messages & operator hints

Process disturbances are detected by the controllers and forwarded to the operator stations with a timestamp.

The Freelance system allows the following message types: system alarm (S1-S3), process alarm (P1-P4) fault message and operator hint message (P5). Process alarms are divided into fault messages (P1-P3) and switching messages (P4). When parameterizing the function blocks, it is possible to assign up to 4 messages to its limit monitoring units integrated into the block. Whereas the internal controller time is generally used for the timestamp for messages, you also have the option of using a special function block to assign external timestamps to alarms. In this way, for example, you can generate an alarm from a device connected to the Modbus in the correct chronological order with the device's timestamp. Different methods of acknowledgement can be selected for each priority level. Incoming messages are displayed in different colors, along with the name and disturbed status of the tag in accordance with their priority.

### 7 Message line

The upper area of the display is always reserved as a message line for the higher-level display of all message types from the entire process.

The message line optionally displays either the newest or oldest messages, as well as buttons for acknowledging messages and viewing operator hints. There is also a field for indicating overflow, a field for acknowledging alarms and a field showing the number of unacknowledged messages in the message list. For quick operation, the faceplate of the disturbed tag can be accessed directly from the message line.

Operators can choose between three different message line views:

- Standard view



- Area view



- List view



### Message list

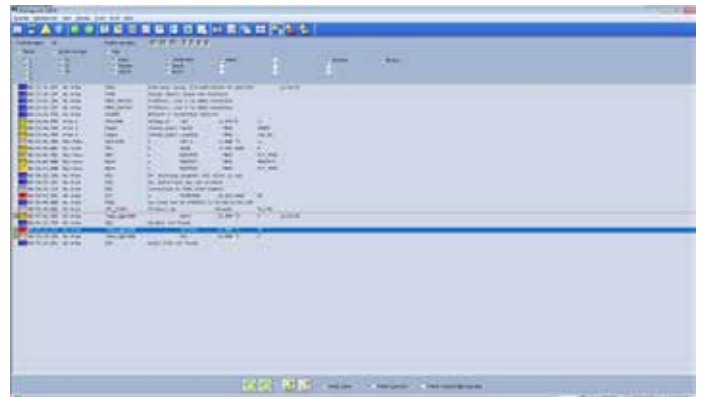


Figure 19: Message list

The message list offers an overview of all pending messages. It features a chronological list of fault, switch and system alarm messages. The latest message is placed at the beginning or end of the list, as configured. This message sequence can be altered by configuration.

Just as in the message line, different priorities are color-coded. Messages can be acknowledged both by block and by page. To provide a better overview, the user can filter certain priorities or plant areas on the screen display.

Other displays belonging to the tag, such as faceplates, graphic or trend displays, can be selected via tag specific aspect navigation from the message list simply by a right-click.

## Operator hint list

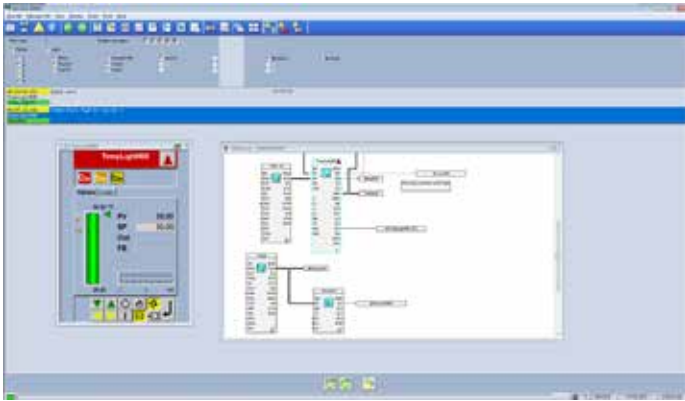


Figure 20: Operator hint list

A hint for the operator can be configured for each process alarm or event. Hints are intended to inform the operator about the cause of the message or about the procedure to be adopted for eliminating a process alarm. If necessary, hints can also provide further user help.

All configured hints are displayed in the hint list. Faceplates or other displays can also be called up directly from the hint list to operate a tag or analyze critical process situations.

## Logging

Logs are used to document events, states and sequences from the process. Log files can be displayed on the screen, printed, and saved on a CD, DVD, or memory stick for further evaluation.

In addition, the archived files can be automatically sent to any subscriber on the Ethernet via the file transfer protocol. The Archive Browser software makes it possible to view the data and

to convert it into ASCII (CSV file) for further evaluation, for instance using Excel.

The Freelance system features the following log types:

### Signal sequence log

The signal sequence log is used for logging events such as process and system messages, switching messages and hints. Even operator intervention can be logged in detail together with the user name and timestamp. The user can determine which message priorities are to be logged. Process messages and alarms are logged with time stamps of 1 ms resolution. "Signal sequence log 1" allows the operation of a line printer in order to immediately print every alarm when it is received.

## Operation log

At certain intervals or in certain situations, the plant log records the current values or states of process variables. It can run cyclically, or can be started and stopped manually or by an event. The output format is freely configurable as table or fill-in-the-blanks text.

## Disturbance course log

The disturbance course log is used to examine the course of disturbances. The process values before and after a disturbance are recorded with a high time resolution and archived in an operator station. Four logs of each type can be configured in one operator station.

## System diagnostics

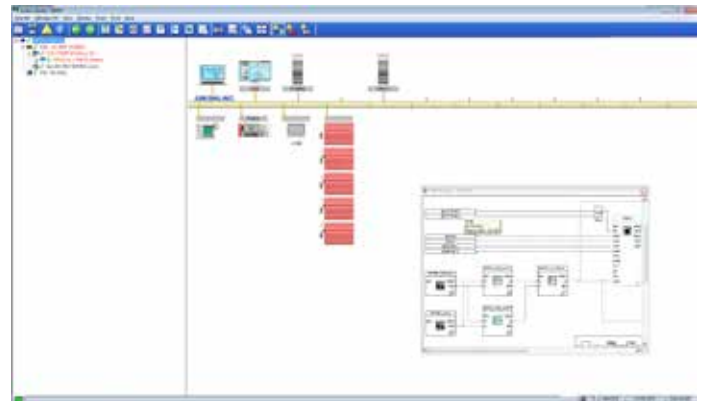


Figure 21: Easy system diagnostics with the system display

The current state of the hardware and software of a Freelance system is shown in the automatically generated system display. Here, information can be obtained in various degrees of detail about the status of an individual controller to a specific field device.

The simple system display is available to all operators of a Freelance operator station. Additional information is also available for field devices on Profibus or FOUNDATION Fieldbus.

## 7.3 Automation Sentinel

Name	Short Description	Article No.
Automation Sentinel Upgrade	Provides software licenses for upgrades/updates free of charge based on an existing and valid 'Automation Sentinel' agreement.  For Freelance systems < 6.2 indicate the Engineering (DigiTool/CBF) or Operations (DigiVis) hardkey number. For a system replacement enter the text "New Hardkey". Enter the "System ID" into the "Quotation ID" input field of the Wizard.	2PAA103267R01
Add to existing Sentinel Sub- scription	Select this item if an existing system/project is to be extended by Freelance Operations/DigiVis. Indicate the System ID.	3BDS008515R09

## 7.4 Freelance Software languages

Name	Short Description	Article No.
Changing the current language	Changing the current language  Indicating the language is mandatory for both, first-time selection and language change. In the specification only one language is possible.  Please refer to ABB library (Products and Services / Control Systems / Freelance / System / System Versions) for the current status and availability of localized software and associated service packs.	3BDS008503R09
English language	English language	3BDS008502R0901
German language	German language	3BDS008502R0903
other languages	Freelance Operations is available in many other languages. Please refer to the price list.	see price list

## 7.5 Freelance Operations license

Name	Short Description	Article No.
Operations (Standard)	Freelance Operations (Standard) supports <ul style="list-style-type: none"> <li>- Control of all Tags</li> <li>- Graphical Displays, Trends, Faceplates</li> <li>- Historian, Reports, Operator Logs</li> <li>- SFC Display, Time Scheduler</li> </ul> Included in this license <ul style="list-style-type: none"> <li>- Extended Diagnostic</li> <li>- WEB display (runtime license)</li> <li>- Archive Browser</li> </ul> No server required. Order one Operations hardkey for each operator workplace	3BDS008790R09
Operations (Lite)	Freelance Operations (Lite) supports <ul style="list-style-type: none"> <li>- All features of Freelance Operations (Standard)</li> <li>- Limited number user defined graphic displays (max. 5 FGR)</li> <li>- No license options available</li> </ul> No server required. Order one Operations hardkey for each operator workplace.	2PAA114214R09

Name	Short Description	Article No.
Combined Workplace	Extends an Engineering workplace to a combined workplace. Freelance Operations (Standard) and Freelance Engineering can be used on the same workplace. Only in combination with an Engineering licenses. Order one Combi hardkey for each combined workplace.	3BDS008794R09

## 7.6 Connectivity

Name	Short Description	Article No.
Generic OPC	OPC Server (Windows 7, Windows 2008)	2PAA110434R09
OPC for Extended Automation	OPC Server (Windows 7, Windows 2008) Connection to 800xA Operations and Process Portal B	2PAA110435R09
Trend Server Package	For trending data on Freelance Operations without using trend acquisition function block. Only one Trend Server is possible per system.	3BDS008755R09

## 7.7 Freelance Operations options

Name	Short Description	Article No.
Dual Monitor Support	For a single operator workplace	3BDS008784R09
Control Aspect	Display (read only) of function block diagrams on a Freelance operator workplace.	3BDS009973R09

## 7.8 Freelance Operations hardkeys

Name	Short Description	Article No.
Combi Hardkey	Combi Hardkey for USB Port	3BDH000196R2
	Windows 2000, Windows XP and Windows 7 The Archive Browser doesn't need a hardkey.	
Operations Hardkey	Operations Hardkey for USB Port	3BDH000197R2
	Windows 2000, Windows XP and Windows 7	