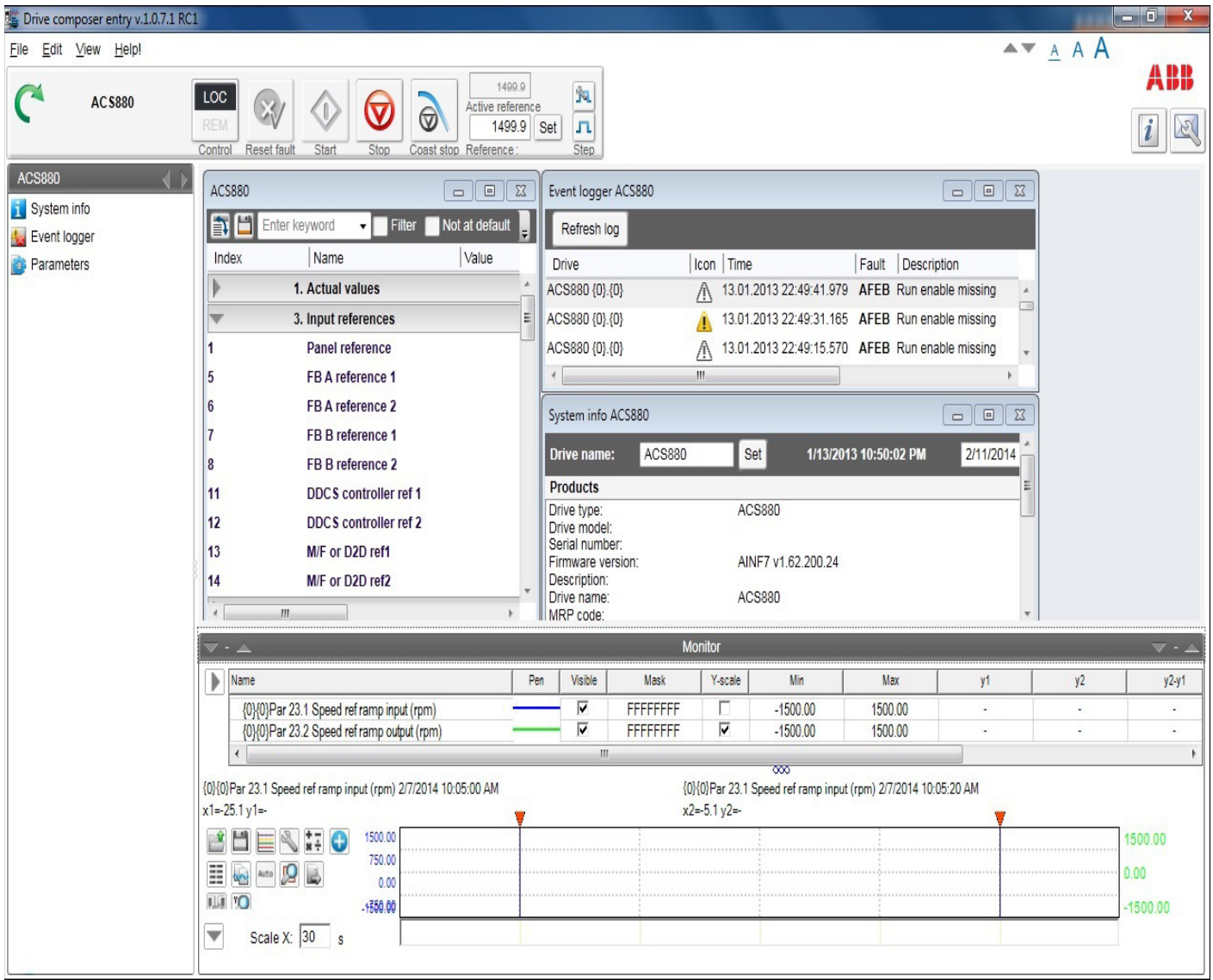
ABB drives

# User's manual
# Start-up and maintenance PC tool
# Drive composer

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# List of related manuals

| Drive firmware manuals and guides | Code (English) |
|---|---|
| *ACS880 primary control program firmware manual* | *3AUA0000085967* |
| *ACS580-01 user's manual* | *3AUA0000076333* |
| **Option manuals and guides** | |
| *FENA-01/-11/-21 Ethernet adapter module user's manual* | *3AUA0000093568* |
| *FSO-11 safety functions module user's manual* | *3AUA0000097054* |
| *FSO-12 safety functions module user's manual* | *3AXD50000015612* |
| FPBA-01 PROFIBUS DP adapter module user's manual | *3AFE68573271* |
| **Tool manuals** | |
| *Drive composer start-up and maintenance PC tool user's manual* | *3AUA0000094606* |
| *Ethernet tool network for ACS880 drives application guide* | *3AUA0000125635* |

All manuals are available in PDF format on the Internet. See section *Document library on the Internet* on the inside of the back cover.

# User’s manual

Start-up and maintenance PC tool
Drive composer

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1

# Introduction to the manual

## Contents of this chapter

This chapter contains information on the applicability, compatibility, target audience and the purpose of the manual. It also describes the contents of the manual.

## Applicability

This manual applies to the Drive composer PC tool available in two different versions:

- Drive composer entry, DCET-01
- Drive composer pro, DCPT-01 (code: 3AUA0000108087).

Drive composer entry can be downloaded for free by navigating to www.abb.com/drives and selecting *Drive PC Tools*. Drive composer pro includes all features and is available through ABB sales channels. Both versions require registration.

**Note:** The features available only with Drive composer pro are indicated with (pro).

## Compatibility

Drive composer is fully compatible with ACS580 and ACS880 drive families. Availability of some functions are dependent on capabilities of the drive and possibly added modules. There is a limited support (parameter editing and monitoring) for ACS800. It requires DriveWindow 2 installation on the same PC.

## Target audience

The reader is expected to be an automation engineering professional or an electrician and familiar with drive products and the concepts regarding their commissioning and operation, including the parameter system of ABB drives. Also a basic knowledge of Microsoft Windows operating system is needed.

# Purpose of the manual

This manual describes the Drive composer PC tool and instructs how to use it in the commissioning and maintenance of the ABB drives.

# Contents

The manual consists of the following chapters:

- *Introduction to the manual* provides information on the applicability, compatibility, target audience and the purpose of the manual.
- *Overview of Drive composer* briefly lists the main features of the Drive composer software and instructs how and where it can be run, and how to get help and additional information.
- *Installation and uninstallation of Drive composer* describes how to install and uninstall the Drive composer software.
- *Connections* describes how to make a connection with a drive through USB or Ethernet.
- *Main user interface components* describes the main user interface components of the Drive composer PC tool, including the menus.
- *Parameter window* describes how to use the parameter window.
- *Monitor window* describes how to use the monitor window.
- *Workspace handling* describes the workspace functionality.
- *Event logger* describes how to use the event logger.
- *Diagnostics* describes how to troubleshoot a drive with the **Support package** button of Drive composer and the data logger included in the drive.
- *Control diagrams (pro)* describes how to use the control diagrams.
- *FSO configuration* contains the configuration procedure of the FSO-11 and FSO-12 safety functions with Drive composer pro and provides an example of how to configure the optional FSO-11 and FSO-12 safety functions module.
- *Other functions (pro)* describes functions that are common to many views, windows and functions that are not associated with any view or window.

# Terms and abbreviations used in this manual

| Term or abbreviation | Explanation |
|---|---|
| Alarm limit of monitoring | You can set a low or high alarm limit for monitoring. Color(s) of the signal(s) change(s) on the monitoring graph area if the limit is reached. |
| Assistant | Provides predefined steps for setting the parameters of the drive. For example, the basic start-up assistant. |
| Assistant control panel | Control panel with an USB connector enabling a PC tool connection for common architecture drives. Assistant control panel is a generic name for ACS-AP-I and ACS-AP-S panels. |
| Autoscaling | Y-axis scaling is set automatically when this button is enabled. User-defined y-axis limits are then disabled.<br>**Note:** Zooming is not possible in the Autoscaling mode. |
| Backup | Backup of the drive. Includes all parameters, application program, user sets. ACS880 memory unit consists of FW and all the files that belongs to backup. Primary method to replace a broken drive control board is to use the memory unit from the old one.<br>**Note:** Backup does not include the firmware of the drive. |
| Basic control panel | Control panel with limited basic functionality used with common architecture drives. |
| Bit mask of monitoring | You can filter bits of the Status word and monitor them individually. |
| Common architecture drives | For example, ACS880 and ACS580. |
| Compare parameters | You can compare parameters between drives or between a drive and a file to find out differences. |
| Control diagrams | Graphical presentation of the drive reference chain or other function. Shows online values of a parameter, switch positions and signals. Parameters can be modified online. Functionality is not available for all drives. |
| Copy/Download parameters | Visible parameters of a parameter window or custom parameter window are copied/downloaded to a drive. |
| Cursor tool | Monitor window has a double cursor tool and the positions of cursors can be freely set in the monitor window. y2—y1 and x2—x1 differences are calculated. |
| Custom parameter window | You can create windows and drag drop (copy) parameters to these windows. You can also change parameter values in the window and save the changes for using in offline mode. The Filename extension for custom parameters is *.dccustparams. |
| Data file viewer | In the Demo/Offline mode, the monitor window can be used as a data file viewer when saved monitored data (*.dcmon) or data logger data is analyzed. |
| Data logger | Signals are buffered inside a drive with a fast sample interval. Can be triggered and uploaded to the monitor window to be analyzed. |
| Demo/Offline | You can set/view saved parameter files offline. Demo mode can be used for monitoring and testing functionality of parameters. |
| DriveAP | Adaptive Programming of a drive. Functionality of a drive can be modified by adding some IEC 61131 -based blocks. Adaptive Programming can be done also with an Assistant control panel.<br>**Note:** Adaptive Programming is not available with all drives. |
| Event logger | Can consist of faults, alarms and events. Only faults stop the drive. Latest faults and alarms are also seen in parameter interface group 4, Warnings and Faults. |

| Term or abbreviation | Explanation |
|---|---|
| FENA-11 | Ethernet adapter module for ABB drives. |
| LOC/REM | LOC denotes local control of the drive, either with an Assistant control panel or the Drive composer PC tool. REM means that the drive is remotely controlled by the fieldbus master PLC or by I/O connections. |
| Lock/Unlock parameter | Parameter can be locked by a drive. You can only view the parameter values, but cannot modify them. |
| Macro script | User-written sequence of macro statements for reading and writing parameters/signals. Filename extension for macro scripts is *.p. |
| Monitoring | You can set parameters or signals to the monitor window. Values are collected with the sampling interval and drawn to a window. |
| NLS support | National Language Support, the user interface (UI) of Drive composer can be easily modified by editing language files found in the LANG folder of the Drive composer PC tool. |
| Online/Offline | Online = PC tool is connected with the drive. Offline = PC tool is not connected with the drive. In the Offline mode it is possible to open parameter files, save monitored data etc. |
| OPC server | OPC DA server interface for Drive composer pro that allows other programs, such as Control Builder Pro (Advanced drive programming), to communicate with the drive. |
| Refresh the parameter | Parameter values are updated when a group is opened. You can set parameters to the Auto-update mode or refresh the value manually. Signals are always updated automatically. Signals are bolded in the parameter list. |
| Report | You can use report templates for energy savings, commissioning and maintenance. Templates can be modified. |
| Restore | You can restore the drive. You can select the parameters to be restored during the restore operation. For example, motor identification run results can be restored or deleted during the restore operation. Can be used for cloning drives. |
| Save parameters | Visible parameters of a parameter window or custom parameter window are saved to a file. Filename extension for saved parameters is *.dcparamsbak.<br>**Note:** Some values are not editable in the Offline mode. |
| Support diagnostics package | You can collect all data from a drive for troubleshooting purposes by clicking a button in Drive composer or on an Assistant control panel. |
| Workspace | Workspace consists of the user interface status, such as parameters shown in the custom parameter window(s) and their status. You can save the current workspace status to a file and restore it later. Custom parameter windows with their contents and the monitor window contents (signals selected, scalings, colors) are saved to a workspace. You can set one default workspace. Filename extension for the workspace is *.dcxml. |

2

# Overview of Drive composer

## Contents of this chapter

This chapter briefly lists the main features of the Drive composer software and instructs how and where it can be run, and how to get help and additional information.

## Drive composer

Drive composer is a 32-bit Windows application for commissioning and maintaining ABB common architecture drives.

The full version is called Drive composer pro and the limited version is called Drive composer entry.

Both versions include a demo that allows testing user interface functionality, edit parameter files offline (pro) or open and analyze saved monitored files without connecting to a physical drive.

# Highlights

With Drive composer, it is possible to:

- control a drive: start, stop, direction, speed/torque/frequency reference
- monitor the operation and status of a drive
- view and adjust drive parameters
- monitor signals in numerical and graphical (trending) format
- work simultaneously with multiple drives like master and follower drives (pro)
- display control diagrams of a drive for parameter setting and diagnostic purposes (pro)
- create user-specific workspaces by customizing parameter windows
- configure the optional FSO-11 and FSO-12 safety functions module (pro)
- handle workspaces
- create and execute macro scripts (pro)
- use Ethernet-based fieldbus adapter modules for PC tool communication (one-wire solution, Profinet, Ethernet IP) (pro) or a drive-embedded Ethernet port
- use the USB port of an Assistant control panel for an USB connection
- use an OPC-based commissioning and maintenance tool (pro).

# Features

| Feature | Drive composer entry | Drive composer pro |
|---|---|---|
| Parameters can be modified | Yes | Yes |
| Parameters can be searched | Yes | Yes |
| Parameters changed by the user (or automatically updated) have an orange background | Yes | Yes |
| Parameters can be saved to a file | Yes | Yes |
| Parameters can be copied/downloaded to a drive | Yes | Yes |
| Parameter windows can be customized | Yes | Yes |
| Parameters can be printed | No | Yes |
| Parameters can be edited offline | No | Yes |
| Parameters can be compared between parameter lists or drives | No | Yes |
| Data for the support service can be collected by clicking the Support package icon | Yes | Yes |
| As a simple monitoring method for basic purposes, signals can be monitored slowly, 2 signals per second | Yes | Yes |
| Monitored data can be saved to a hard drive of a PC | Yes | Yes |
| Monitored data can be exported to a PC by using the tab separated file | Yes | Yes |
| For a professional analysis of a single drive or multidrives, max 32 signals can be monitored and 8 of them can be monitored fast | No | Yes |
| Contents of an event logger (faults, warnings) can be viewed | Partly | Yes |
| Contents of the System info (drive serial number, modules, versions, SW etc.) can be viewed | Yes | Yes |
| Full backup/restore can be used for restoring or cloning a drive | No | Yes |
| Full backup/restore of multidrives can be used for restoring or cloning in a network of drives | No | Yes |
| PC can be used to analyze the data logged in a drive by a data logger | No | Yes |
| Macro scripts can be created and executed | No | Yes |
| Safety settings can be configured to a safety functions module (FSO) | No | Yes |
| Point-to-point USB can be connected through a panel port | Yes | Yes |
| Network drives can be connected via Ethernet or with a panelbus | No | Yes |
| Control diagrams of a drive can be used for parameter setting and diagnostic purposes | No | Yes |
| User interface is available in different languages | Yes | Yes |

# Hardware and software requirements

## Drive composer hardware

- USB type A (PC) type mini B (panel) cable for connecting Drive composer entry/pro through the USB port of the control panel to a drive (max 3 m)

  **Note:** We recommend ferrite core cables.
- Ethernet cable RJ45 if the connection is made through the FENA-11 or embedded Ethernet

## Computer hardware

- IBM compatible PC
- Pentium 2000 MHz or a faster processor (Dual-core or better recommended)
- 1GB RAM
- 1024 x 600 display resolution with 256 colors
- At least 150 MB free hard disk space
- CD drive
- One free USB port or Ethernet port

## Software

- Operating system Windows XP, Vista, Windows 7 or Windows 8 (32- or 64-bit operating system)
- Microsoft.NET Framework 4.5.1 is required for Windows 7/Windows 8 or 4.0.3 for Windows XP.

**Note:** Update the latest version of Microsoft.NET Framework on your PC.

3

# Installation and uninstallation of Drive composer

## Contents of this chapter

This chapter describes how to install and uninstall the Drive composer software. Drive composer entry can be taken into use without the installer program.

## Determining the current Drive composer version

To know the version of the Drive composer PC tool, select **About the product** in the **Help** menu. The **About the product** dialog box displays the Drive composer version.

*Figure 1. About the product dialog box*

# Using Drive composer entry without the installer

Read the license agreement (License.pdf from the downloaded package of Drive composer entry).

To obtain Drive composer entry without using the installer program:

1. Copy the installation files to your PC.
2. Install the Assistant control panel PC drivers as instructed in chapter *Connections*.

**Note:** You must have administrator rights to install Assistant control panel PC drives.

3. Install Microsoft.NET Framework 4.5.1 for Windows 7/Windows 8 or 4.0.3 for Windows XP on your PC.

To remove Drive composer entry from your PC, delete all files that are in the folder where you unzipped the Drive composer entry files.

**Note:** Before deleting all files make sure you do not have your own files. For example, saved parameter files, workplaces or saved custom parameter windows in the folder structure of Drive composer entry PC tool.

# Installing Drive composer with the installer

It is recommended to uninstall all previous versions of Drive composer before installing a new version. Close all applications before starting the installation.

1. Run the *setup.exe* file from the folder where you unzipped the Drive composer files.
2. With Windows 7, right-click on the *setup.exe* file and select **Run as administrator**.

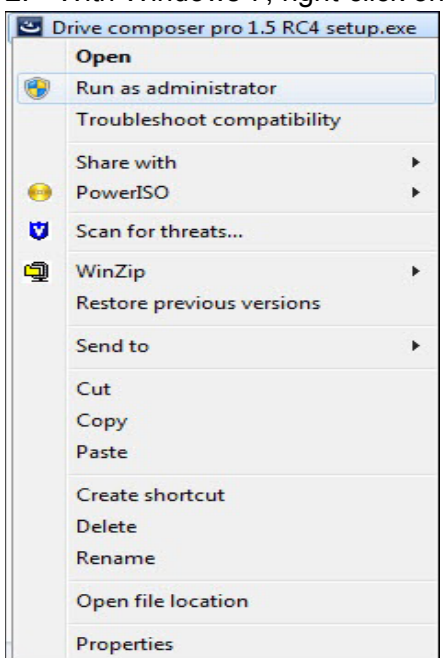



*Figure 2. Run as administrator*

3. In the **Drive composer pro - InstallShield Wizard**, click **Next >**.

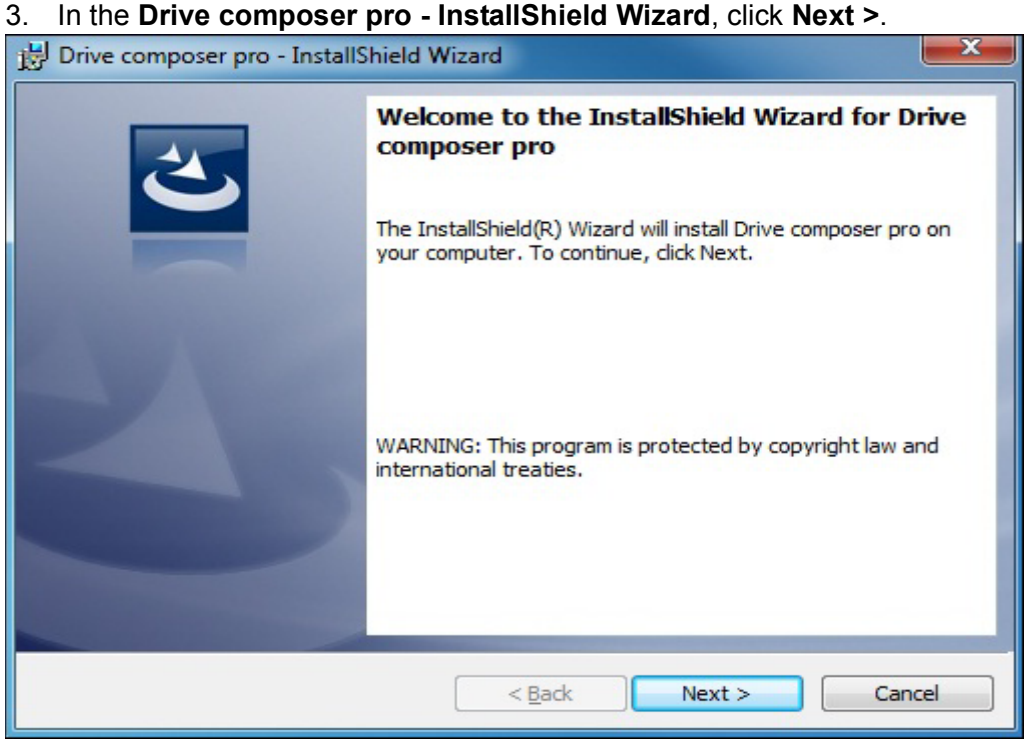



*Figure 3. Drive composer 1.5.0.1 setup wizard window*

4. Choose the destination folder and click **Next >**.

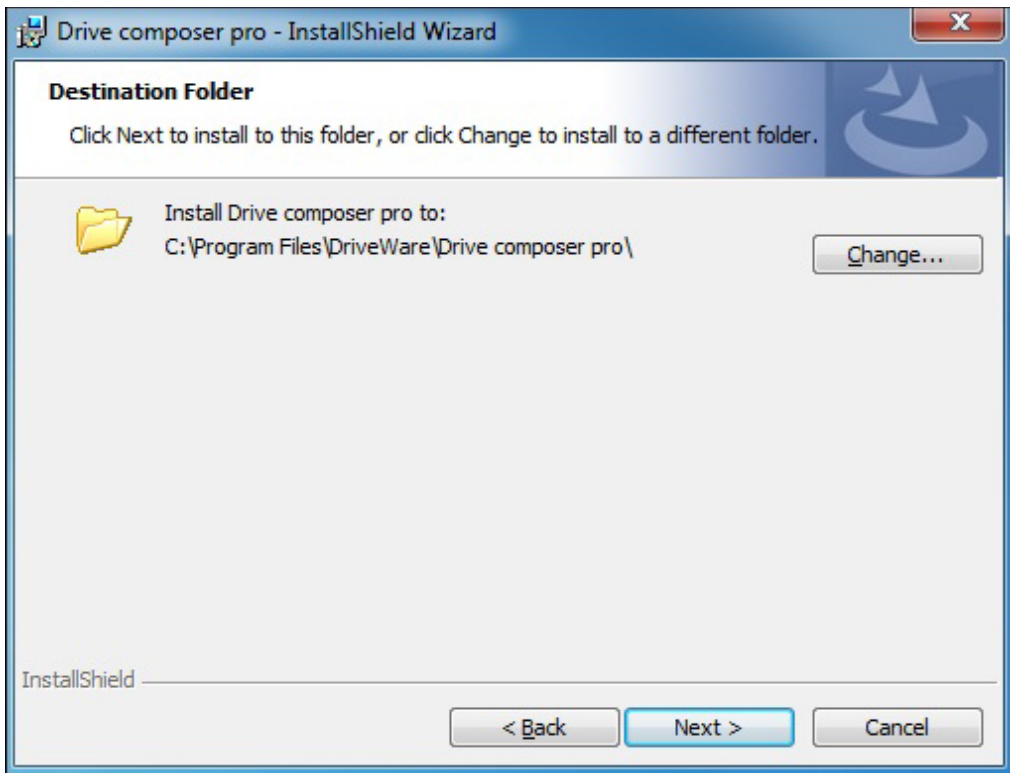



*Figure 4. Destination folder window*

5. Click **Install** to start the installation.

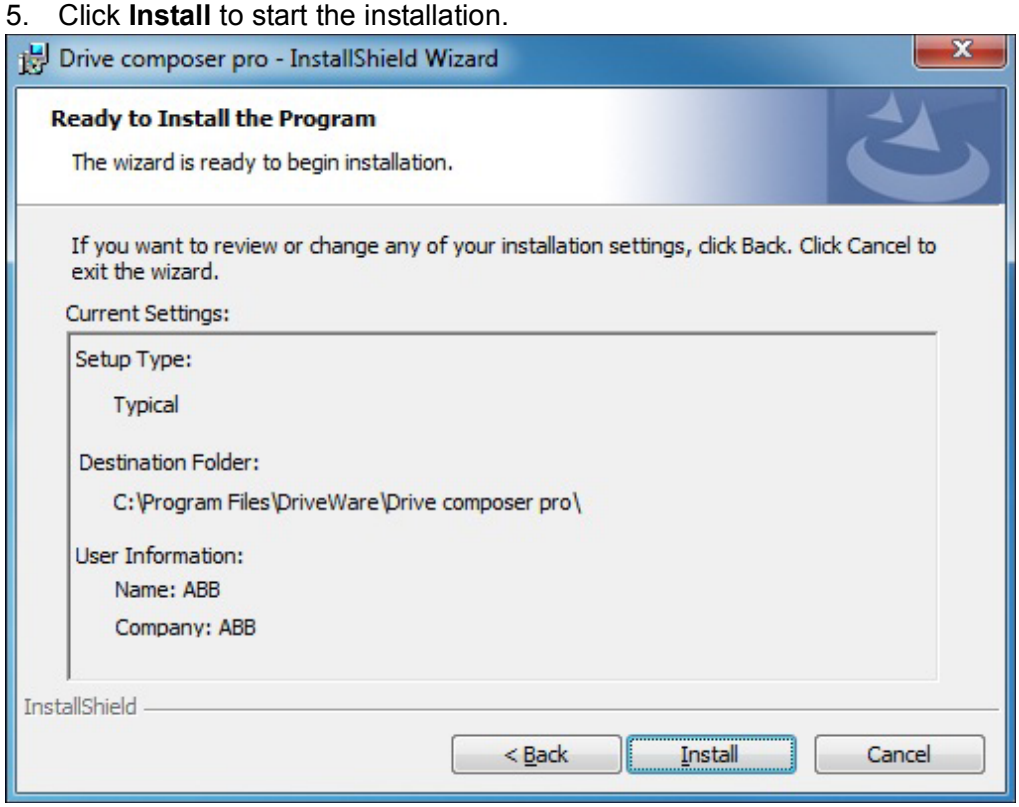



*Figure 5. Installation*

If Drive composer installation is complete, click **Finish**. Now the Drive composer is ready for use.

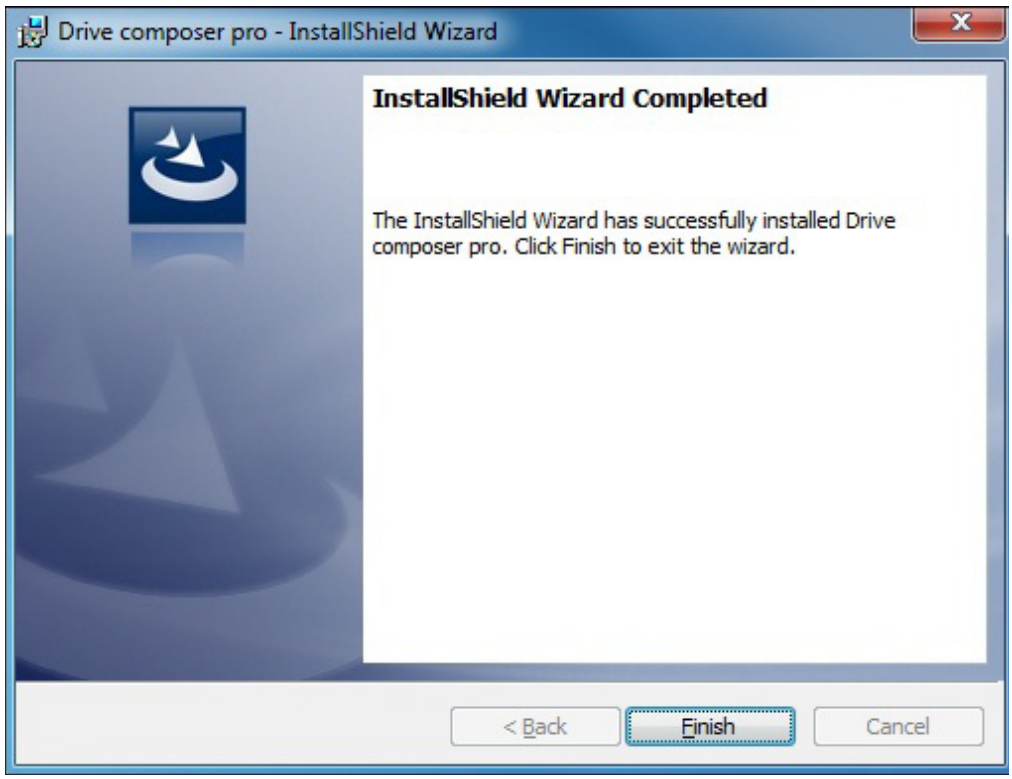



*Figure 6. Installation Complete window*

# Uninstalling Drive composer with the installer

1. In the **Control panel** –> **Programs** –> **Program and features** window, select the installed Drive composer pro program and click **Uninstall**.

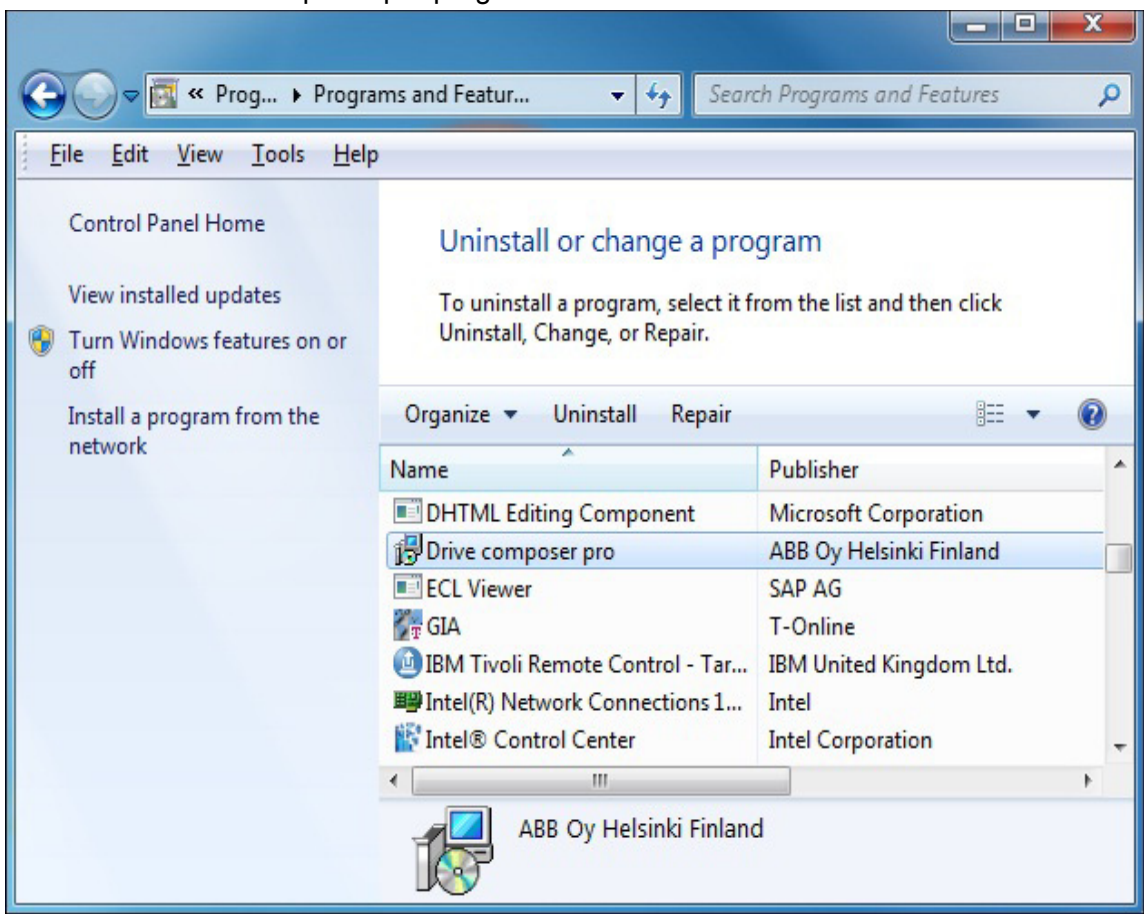



*Figure 7. Removing Drive composer*

2. Click **Yes** to uninstall Drive composer pro application.

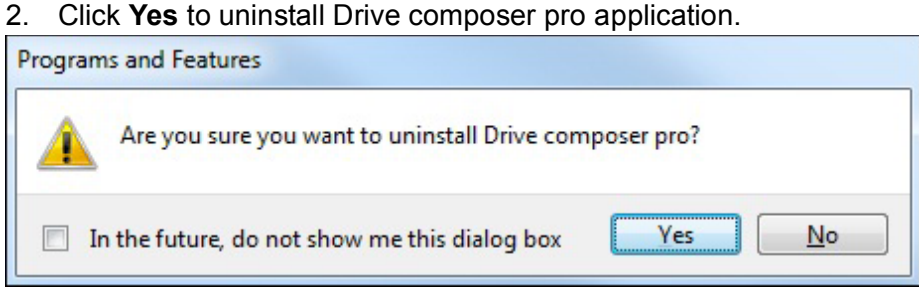



*Figure 8. Confirming the removal of Drive composer*

4

# Connections

## Contents of this chapter

This chapter describes how to make a USB connection or an Ethernet connection to an ABB drive with Drive composer.

## Assistant control panel drivers

An Assistant control panel (ACS-AP-x panel) cannot be used with a PC until the drivers have been installed. If Drive composer entry is used without the installer program, the drivers must be installed separately as instructed below.

Copy the drivers to the installation folder of Drive composer entry (by default C:\Program Files\DriveWare) or to the user-changed installation path.

You can also find the drivers from the Drive composer entry.zip file that can be downloaded from www.abb.com/drives and selecting *Drive PC Tools*.

**Note:** You must have administrator rights to install the drivers.

# Installing Assistant control panel drivers for a Windows XP PC

1. Connect the Assistant control panel to your PC. The following dialog box appears.

*Figure 9. Welcome to the Found New Hardware Wizard dialog box*

2. Select **No, not this time** and click **Next**.

*Figure 10. Hardware wizard window*

3. Select **Install from a list or specific location (Advanced)** and click **Next**.

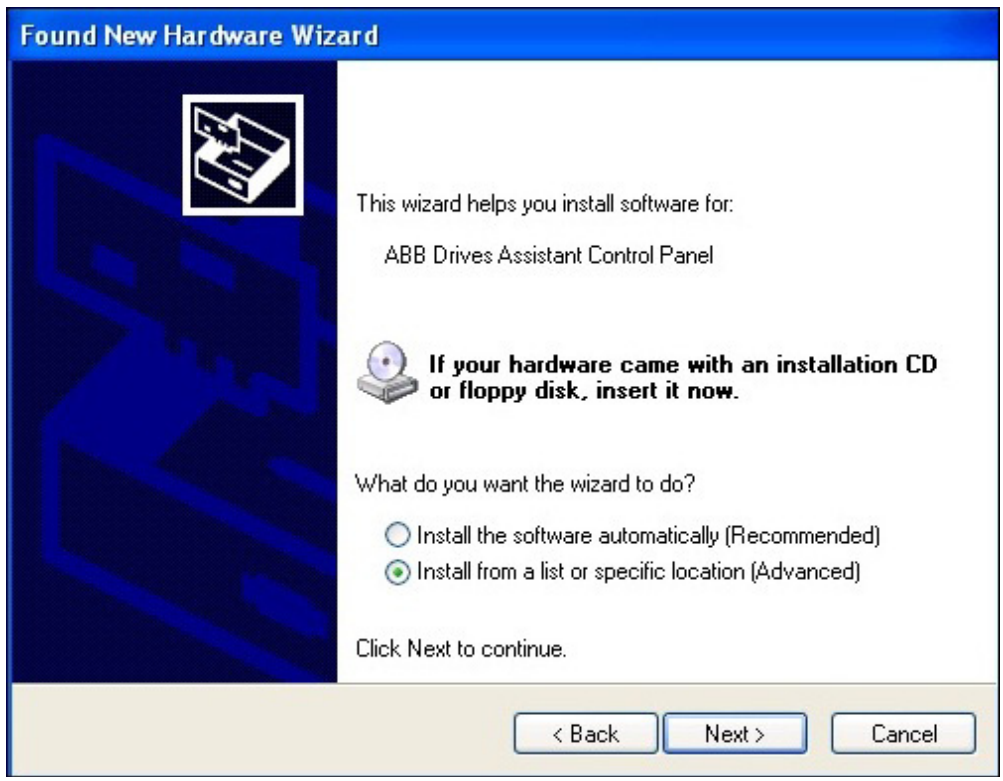



*Figure 11. Install from a list or specific location (Advanced)*

4. Browse to locate the installed files. Normally the location is C:\Program files\DriveWare\Drive composer entry tool\Panel inf files.

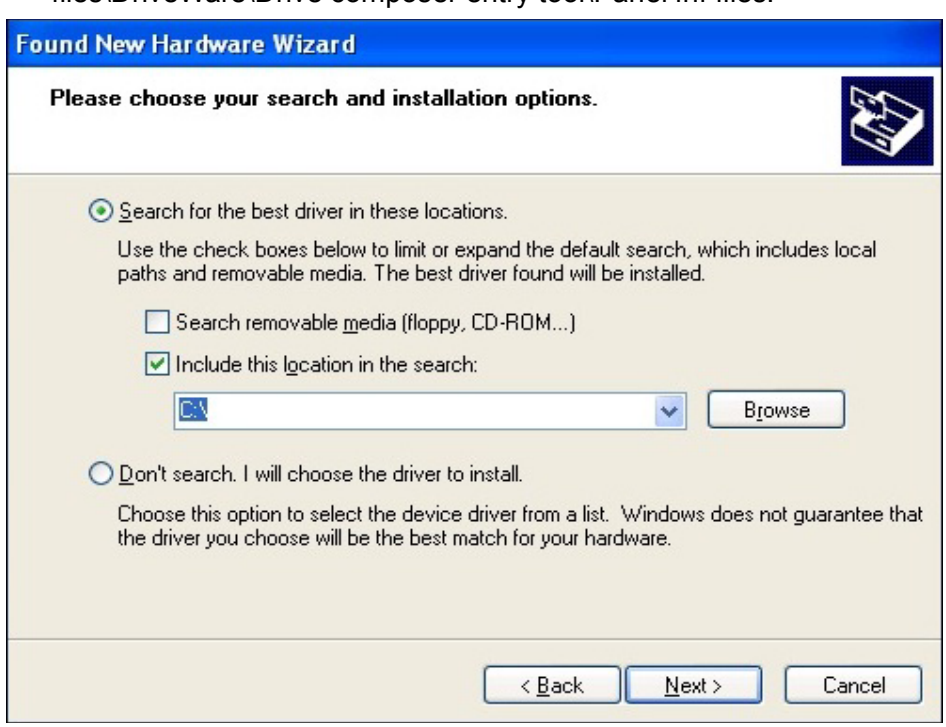



*Figure 12. Search and installation options selected*

5. Click **Next**.

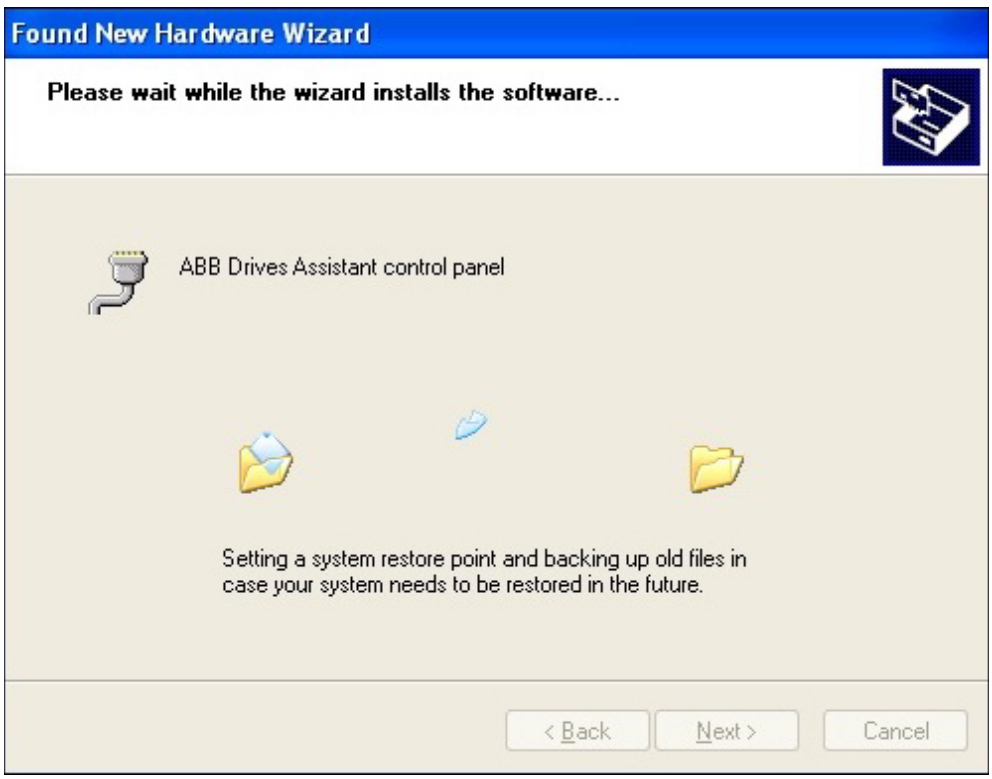



*Figure 13. ABB Drives Assistant control panel dialog box*

6. After the installation, click **Finish**.
7. To check the COM port number, right-click **My computer** on the desktop and select **Manage**.

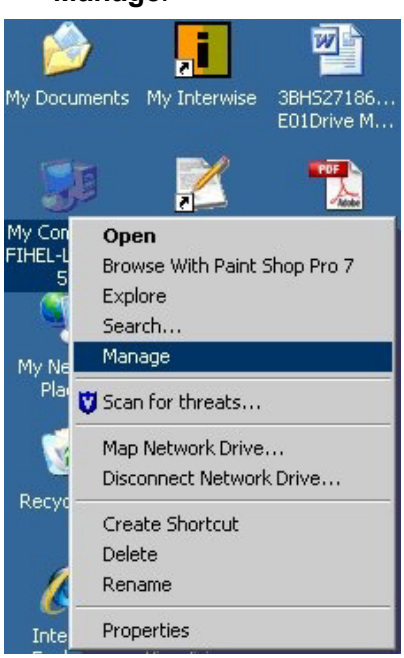



*Figure 14. COM port number check*

8. Select **Device Manager** and click **Ports (COM & LPT)**.

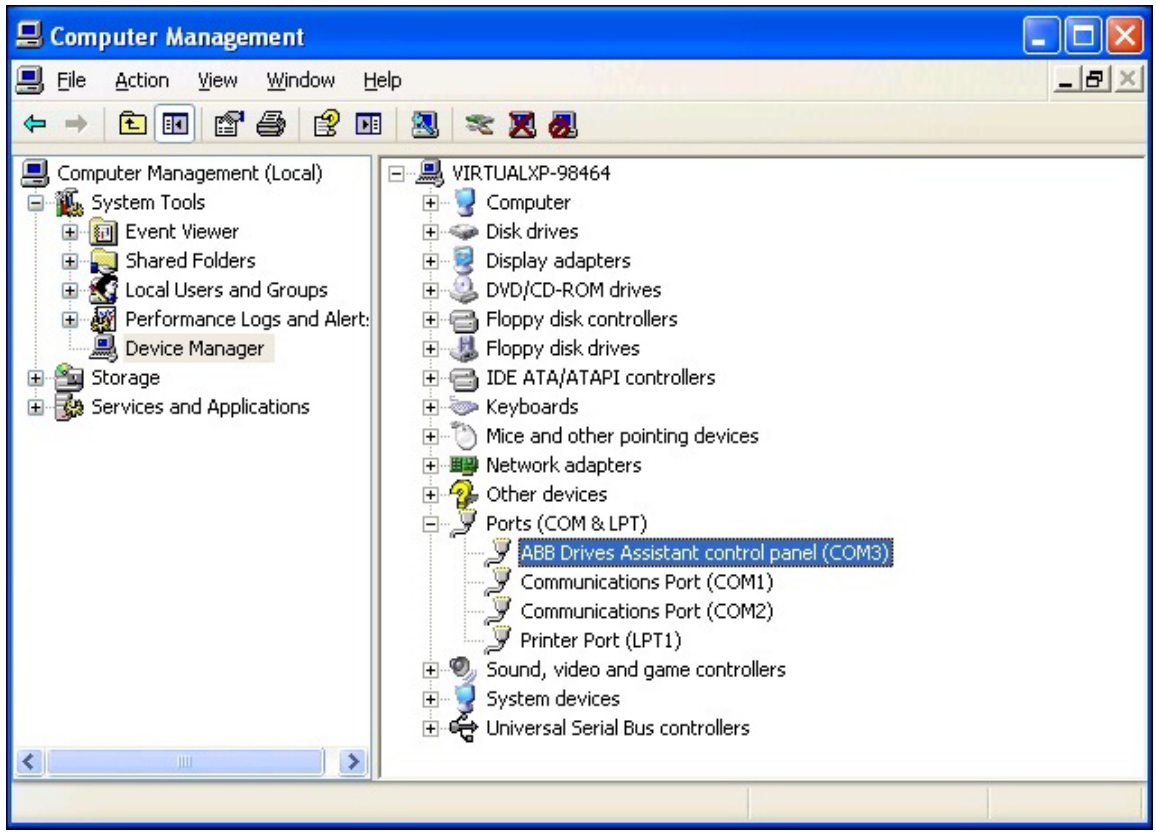



*Figure 15. Ports (COM&LPT) selected*

For example, the Assistant control panel uses COM3 on this PC.

**Note:** After installing the drivers, always use the same USB port when connecting the Assistant control panel with Drive composer entry. If the used USB port is changed, the COM port must be changed accordingly. Drive composer pro scans all COM ports.

# Installing Assistant control panel drivers for a Windows 7 PC

1. Connect the Assistant control panel to your PC.
   The first part of drivers are installed automatically and the following window appears.
   The Assistant control panel can be used as a USB device.

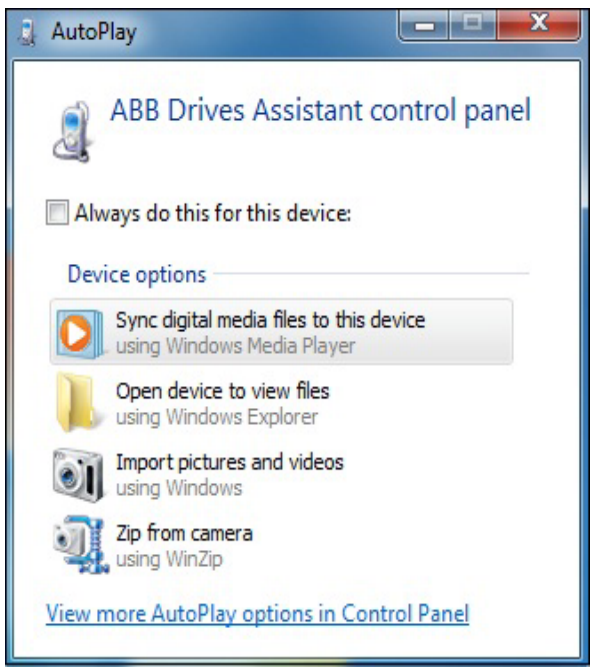



*Figure 16. AutoPlay window*

2. Install the second part of drivers manually as follows (after the installation of the second part of drivers has failed) (Drive composer entry).
3. In the **Start** menu of your computer, enter `Device manager` in the search field and click **Device Manager**.

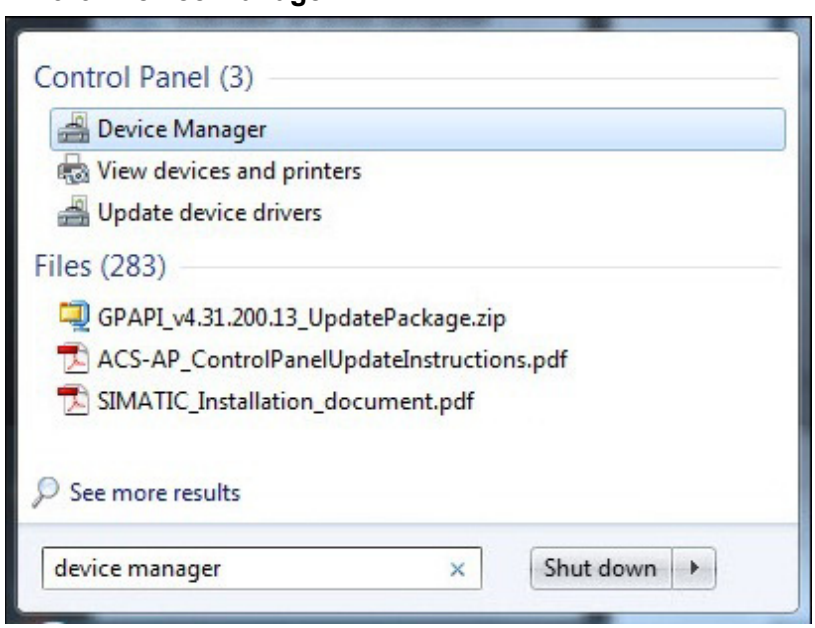



*Figure 17. Device Manager*

4. Expand **Ports**. Right-click **ABB Drives Assistant Control Panel** and select **Update Driver Software…**.

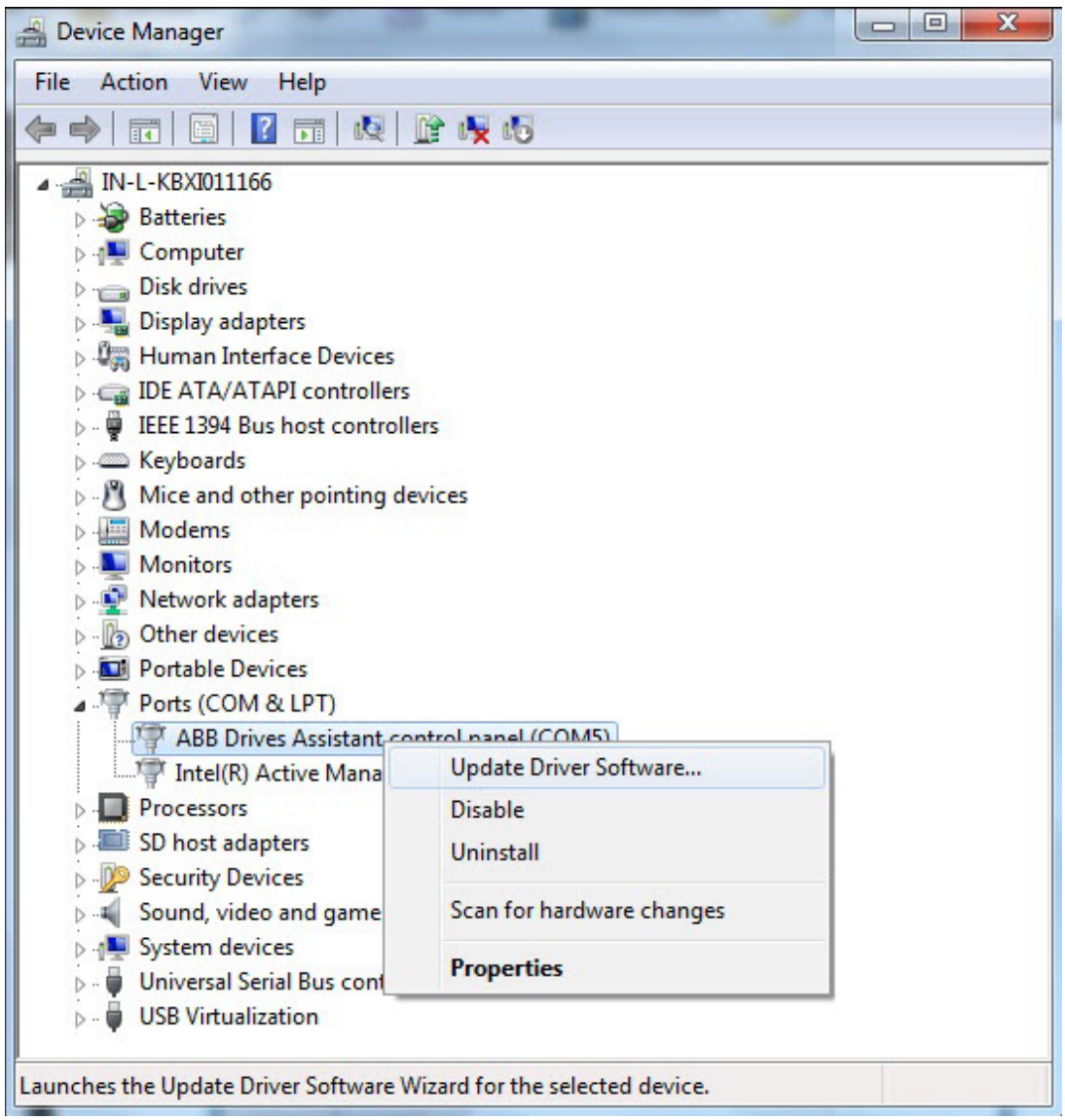



*Figure 18. Update Driver Software selected*

5. Click **Browse my computer for driver software** to search the driver software.

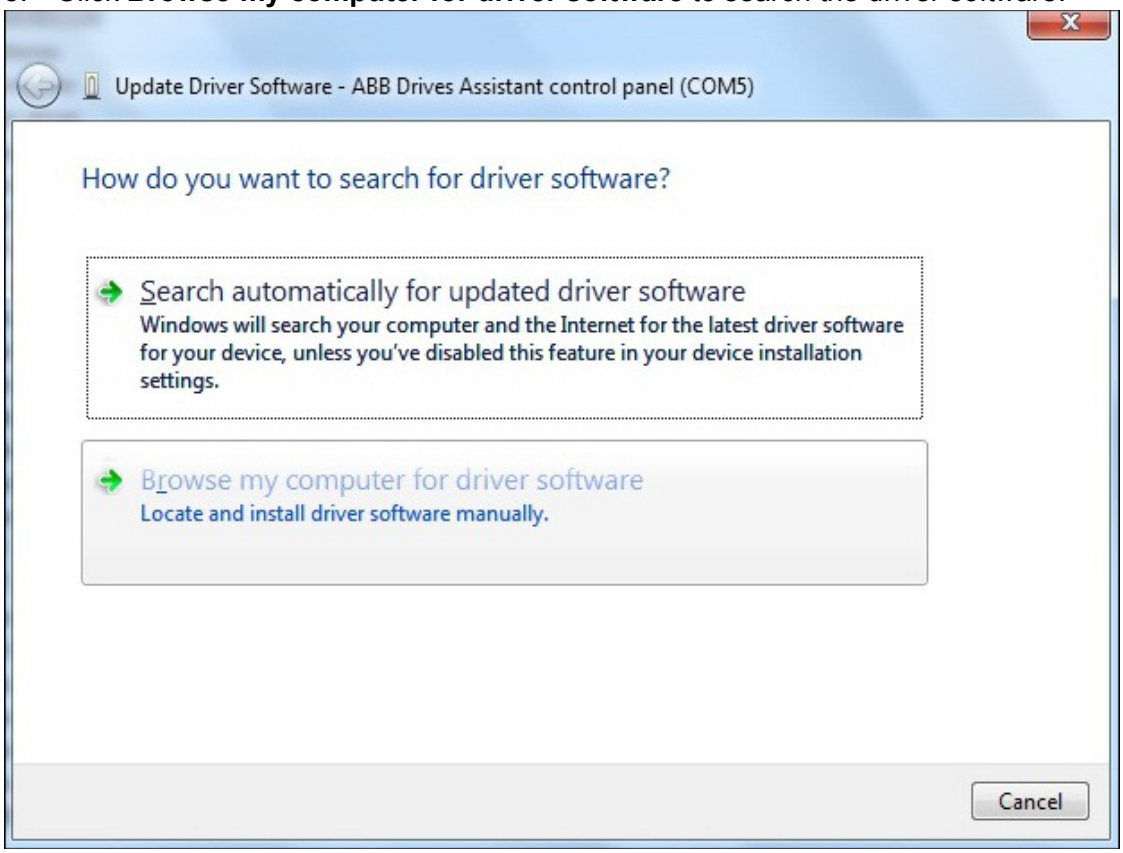



*Figure 19. Search for the driver software*

6. Click **Browse** to locate the drivers and click **Next**.

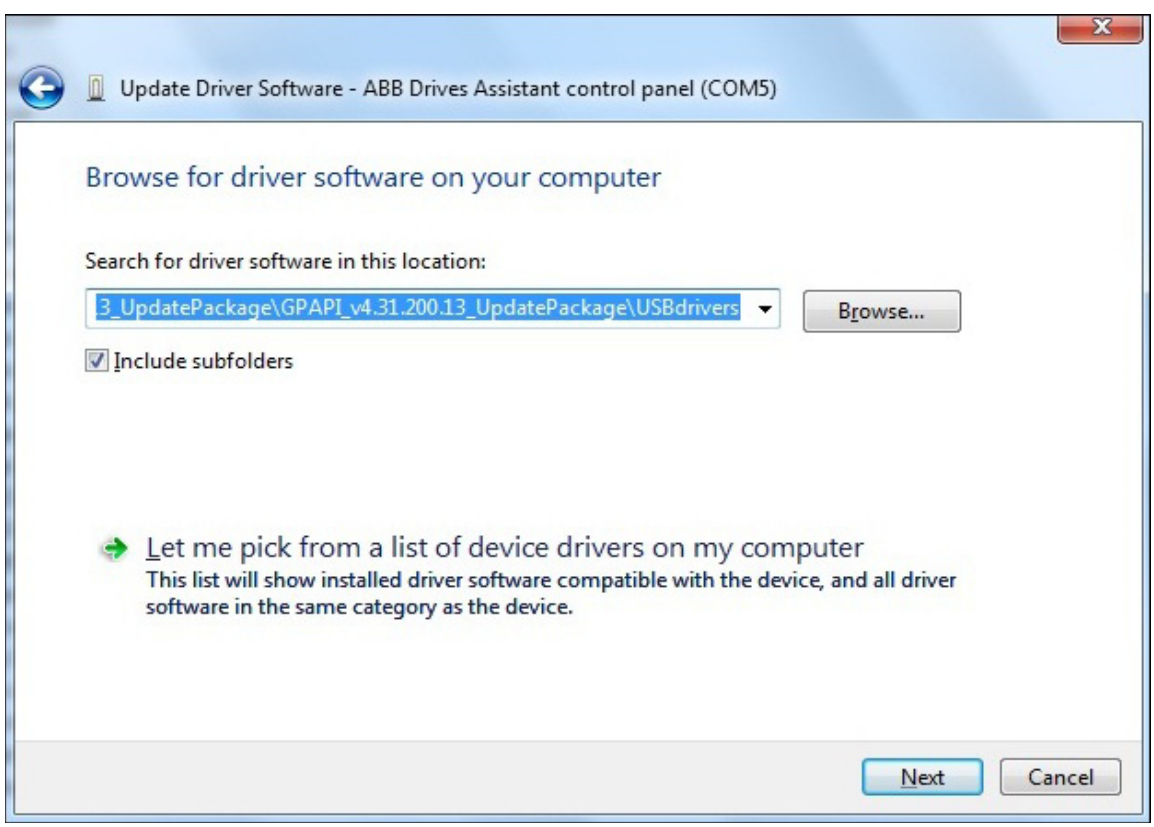



*Figure 20. Browse for the driver software*

7. In the **Windows Security** window, click **Install** to install the device software.

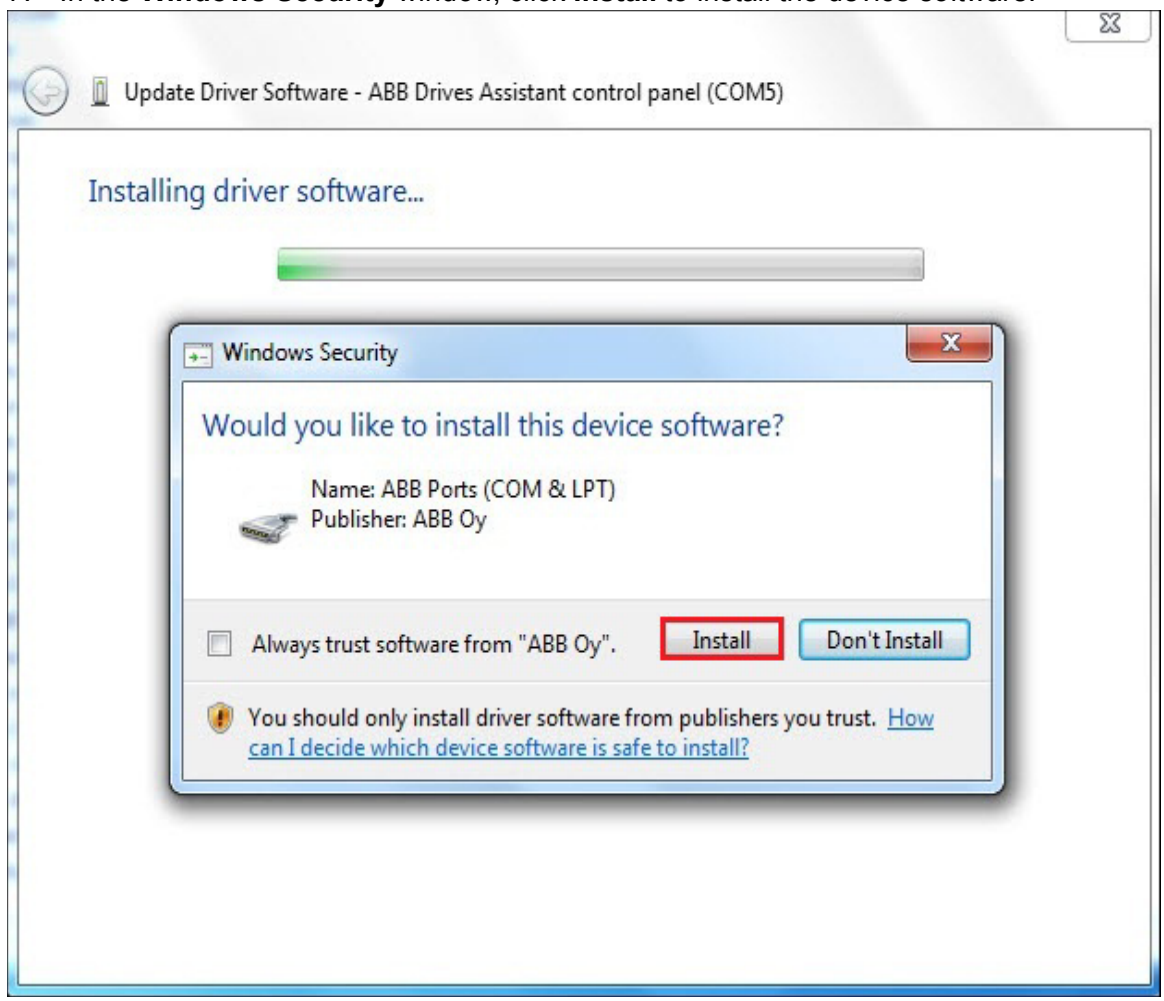



*Figure 21. Windows Security message*

After installation is complete, click **Close**.

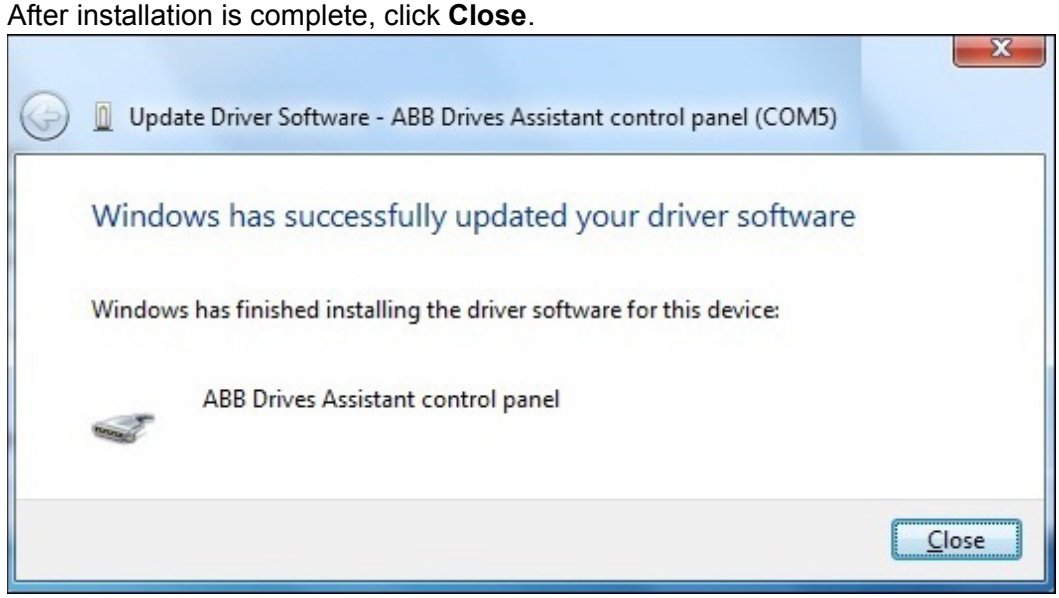



*Figure 22. Driver software successfully installed*

The Driver software for the device is installed.

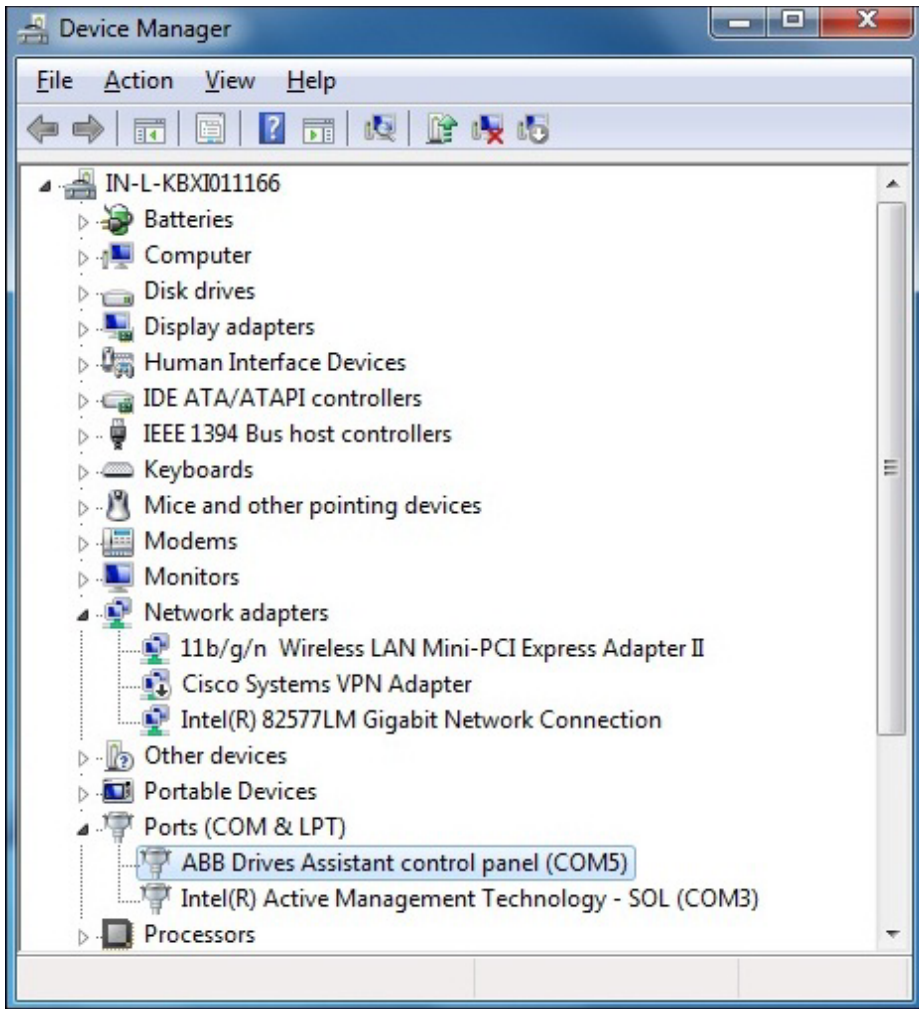



*Figure 23. COM port number*

**Note:** Install the drivers onto the USB port where you want to use the Assistant control panel again.

# Connecting to a drive with an Assistant control panel for the first time

To establish a connection between Drive composer and drive, connect a USB type A (PC) type mini B (panel) cable to the USB port of the computer and the USB port of the Assistant control panel (ACS-AP-x panel). The maximum length of the USB cable should be 3 m. If the drive is used without an Assistant control panel or with a Basic control panel, use separate USB/485 adapter to establish connection between Drive composer and drive.

1. Connect your PC to the Assistant control panel with a USB cable.

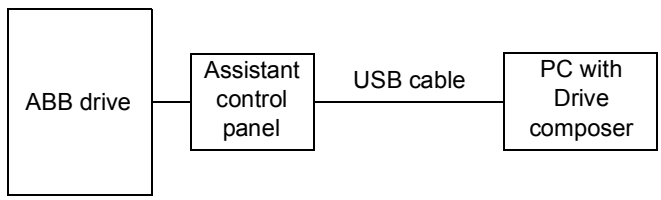



*Figure 24. USB connection between Assistant control panel and PC*

   The following text appears on the Assistant control panel screen: “USB connected”.

   **Note:** The Assistant control panel cannot be used when it is connected to a PC.

2. Launch Drive composer by double-clicking **Drive composer entry/pro.exe**.
3. Click **Connect** if you want to connect to the drive or click **Demo** if you want to choose the Offline mode.

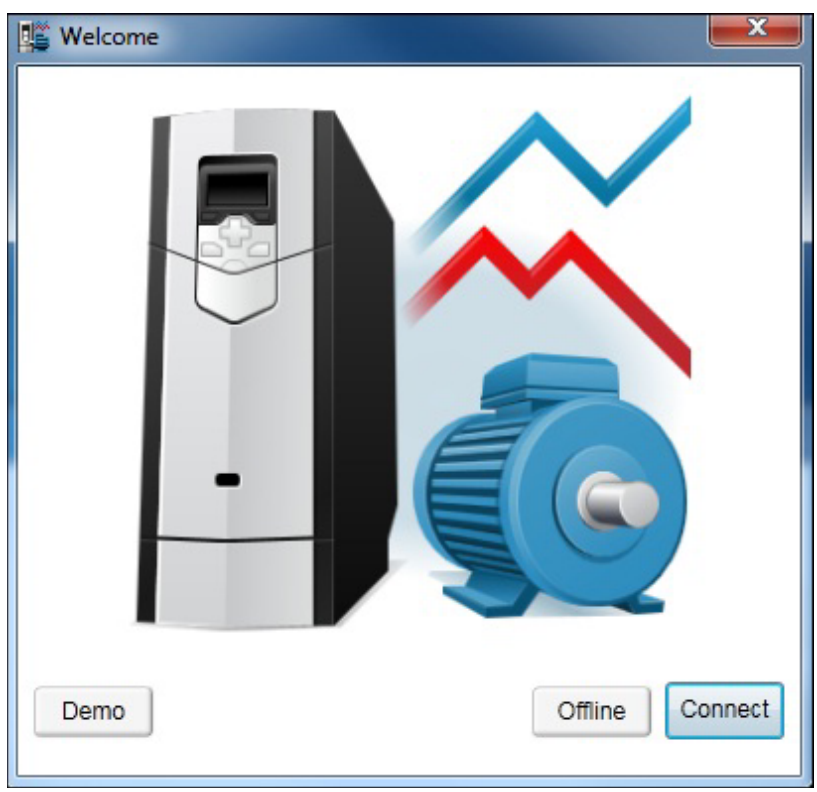



*Figure 25. Connect/Demo button*

**Note:** The status LED starts flickering in the Assistant control panel indicating that there is data transfer between drive and PC and the LED keeps blinking as long as there is a PC tool connected to the drive. The welcome dialog box is shown on the screen indicating that the application is being initialized.

**Note:** First time connection, parameter texts are loaded from the drive and this might take few minutes depending on the drive type.

Drive composer loads parameters and the following window displays.

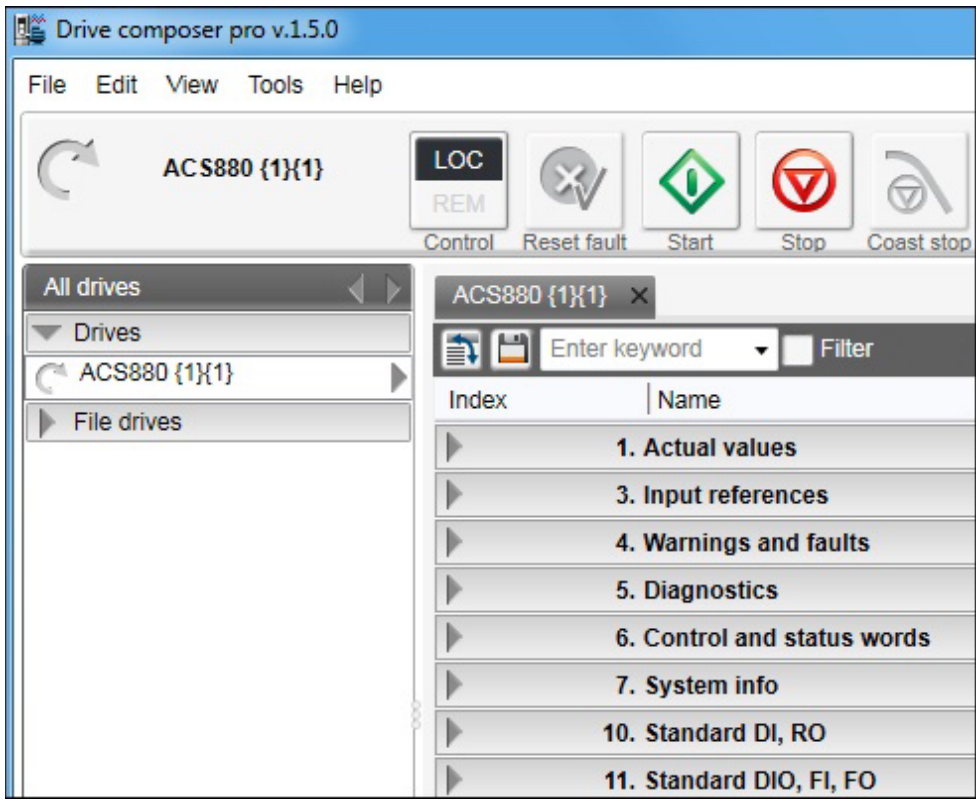



*Figure 26. Parameters loaded*

You have now an online connection to the drive. If you have a single drive and a point-to-point connection, move to chapter *Parameter window*.

4. If you failed to make an online connection to the drive, go to **View** –> **Settings** to check your COM settings and click **View** –> **Refresh** (Ctrl + R) to reconnect Drive composer to the drive.

# Changing the language settings

1. To change the language settings of the Drive composer UI, go to **View –> Settings**.

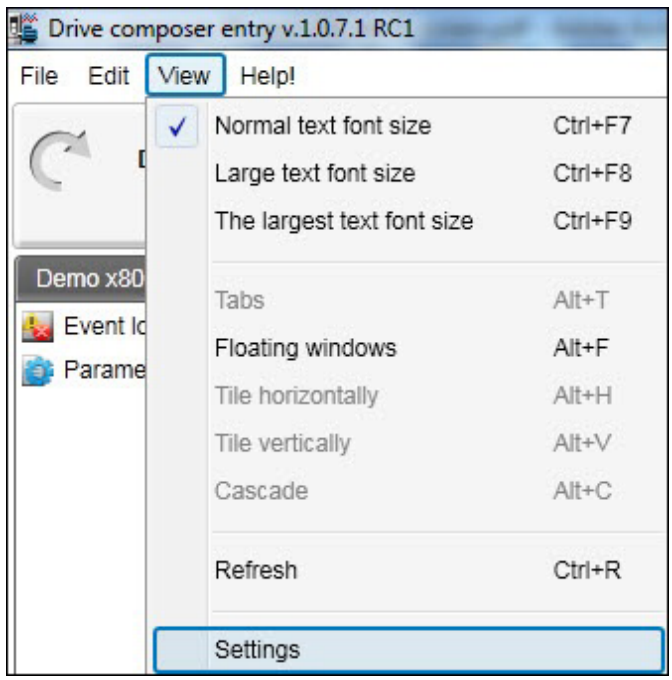



*Figure 27. View-Settings*

2. In the **Settings** window, choose the required language for the Drive composer UI.

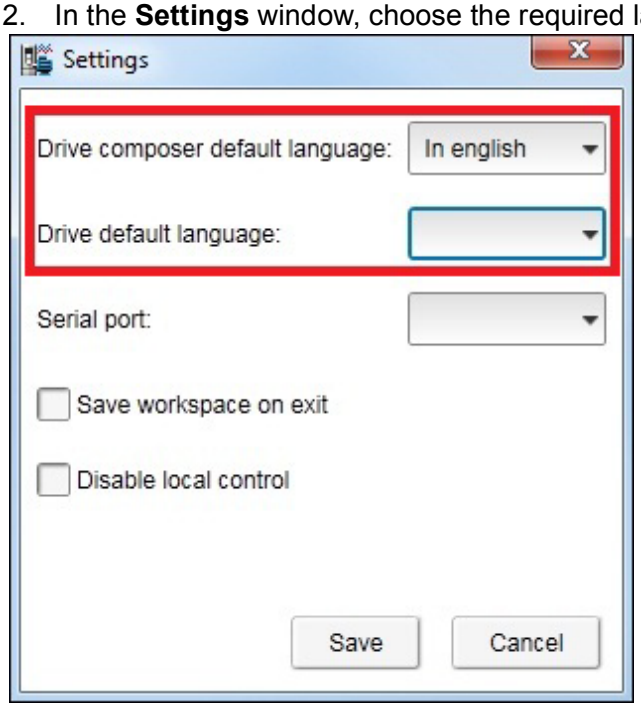



*Figure 28. Language settings*

- **Drive composer default language** to choose the default language of the menu or button text in Drive composer.
- **Drive default language** to choose the default language for parameters.

By changing language settings you can always use the same language when you connect Drive composer to the drive.

3. After changing the language settings click **View** –> **Refresh (Ctrl + R)** or restart the Drive composer application.

**Note:** Some elements might require application restart to update the selected language.

# Connecting to a drive via an Ethernet network

## Ethernet network connection

There are ABB drives which have control boards with an embedded Ethernet port and ABB drives in which the Ethernet connection is made with the FENA-11 Ethernet adapter module. For the installation of the adapter module, see *FENA-01/-11 Ethernet adapter module user's manual* (3AUA0000093568 [English]).

**Note:** The PC/Ethernet Switch firewall must be configured to allow a connection for Drive composer pro (port http 80 and UDP) or the firewall must be disabled.

## Creating an Ethernet network connection with Drive composer (pro)

1. Connect the FENA-11 to a drive.
2. Create a point-to-point connection from Assistant control panel or Drive composer to each drive.
3. If you use one adapter module with a drive, enable the FENA-11 by setting parameter 50.01 FBA A enable to Enable and parameter 50.21 FBA A Timelevel sel to Fast (or Slow for Tool network only).
4. If you use two fieldbus adapters with the drive and the FENA-11 has been installed as FBA B, enable the FENA-11 by setting parameters 50.31 FBA B enable to Enable and 50.51 FBA B Timelevel sel to Fast (or Slow for Tool network only).
5. Set a static IP address for each drive. See *FENA-01/-11 Ethernet adapter module user's manual* (3AUA0000093568 [English]).

| | 51. FBA A settings | | | | | |
|---|---|---|---|---|---|---|
| 1 | FBA type | **Ethernet** | NoUnit | | | **None** |
| 2 | Protocol/Profile | MB/TCP ABB C | NoUnit | | | MB/TCP ABB C |
| 3 | Commrate | Auto | NoUnit | | | Auto |
| 4 | IP configuration | Static IP | NoUnit | | | Static IP |
| 5 | IP address 1 | **192** | NoUnit | 0 | 255 | **0** |
| 6 | IP address 2 | **168** | NoUnit | 0 | 255 | **0** |
| 7 | IP address 3 | 0 | NoUnit | 0 | 255 | 0 |
| 8 | IP address 4 | **11** | NoUnit | 0 | 255 | **0** |
| 9 | Subnet CIDR | **24** | NoUnit | 0 | 32 | **0** |

*Figure 29. IP settings of the drive with Drive composer*

6. Refresh the settings with parameter 51.27 FBA par refresh.

**Note:** Refreshing the Node setting will lose the communication to the drive. To re-establish the connection with the drive, select **View** -> **Refresh**.

7. Name each drive to facilitate the recognition of drives when creating an Ethernet network connection.

   If you use Drive composer, name the drives on the System info tab by typing the name to the Drive name field and clicking **Set**.

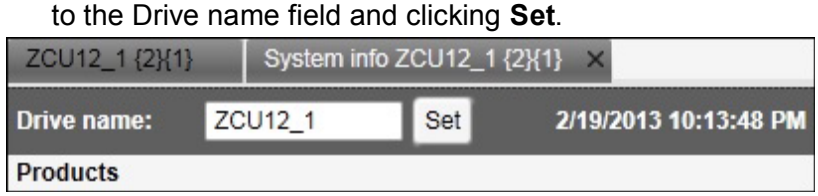



*Figure 30. Naming a drive with Drive composer*

**Note:** The drive name changes after the view has been refreshed. The previous names in other existing workspaces are not affected.

If you use Assistant control panel, name the drives through the Setting menu of the panel.

8. Configure the TCP/IP address of your PC. In this example the TCP/IP address is 192.168.0.1. For more information on configuring the TCP/IP address, see *Configuring the TCP/IP address with Windows XP* or *Configuring the TCP/IP address with Windows 7*.

### Configuring the TCP/IP address with Windows XP

1. Go to **Control panel** –> **Network and Internet Connections** –> **Network Connections.**
2. In the **Network Connections** window, double-click the required connection.

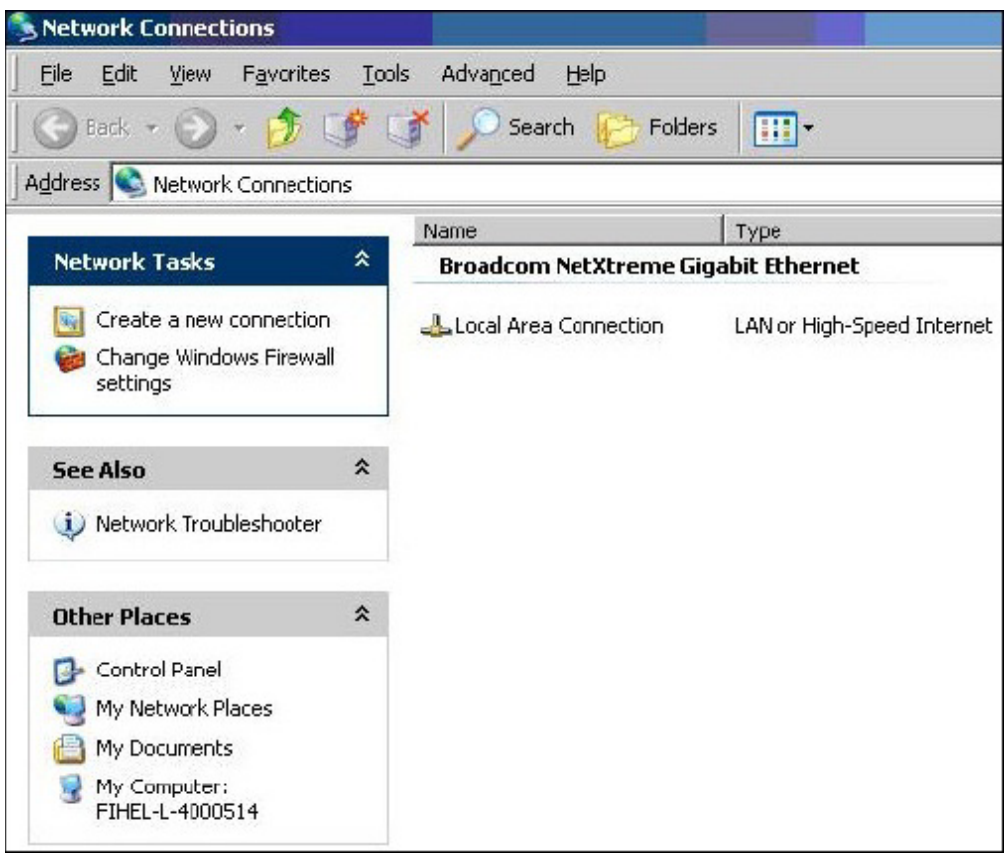



*Figure 31. Network Connections window*

3. Click the **Properties** button. The Local Area Connection Status dialog box appears.

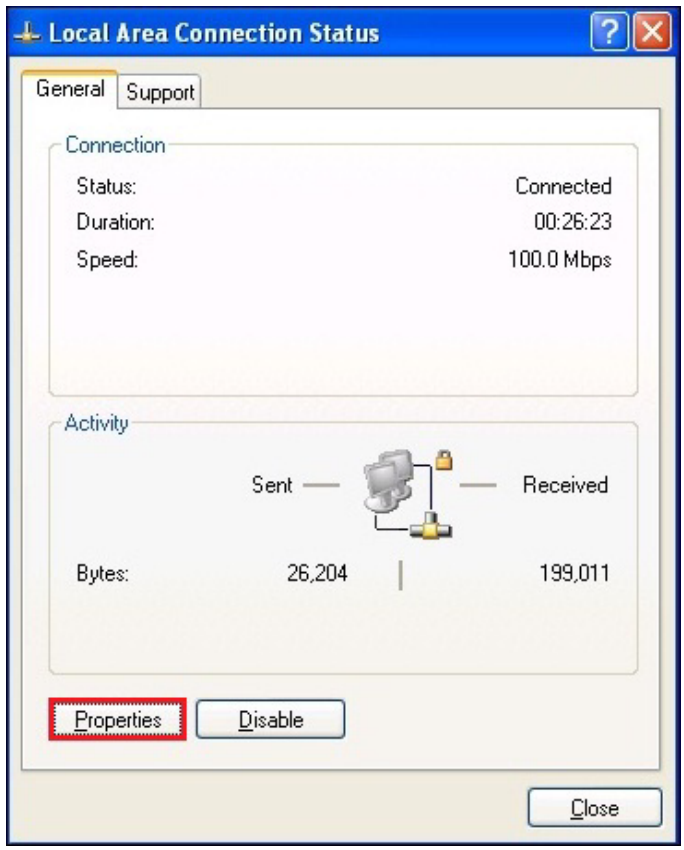



*Figure 32. Local Area Connection Status dialog box*

4. Select **Internet Protocol (TCP/IP)** and click **Properties**.

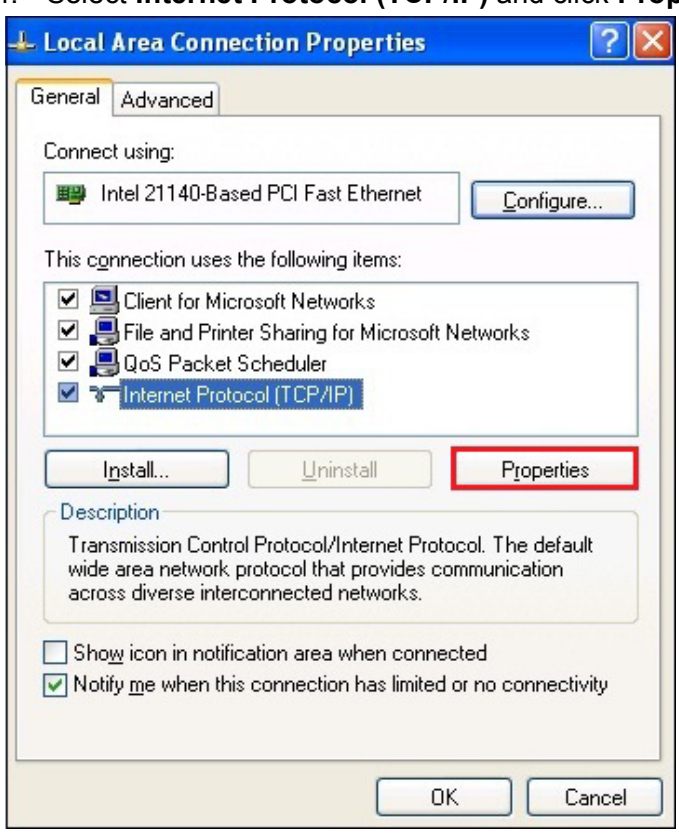



*Figure 33. Local Area Connection Properties dialog box*

5. Select **Use the following IP address** and type the IP address and the subnet mask. Click **OK**.

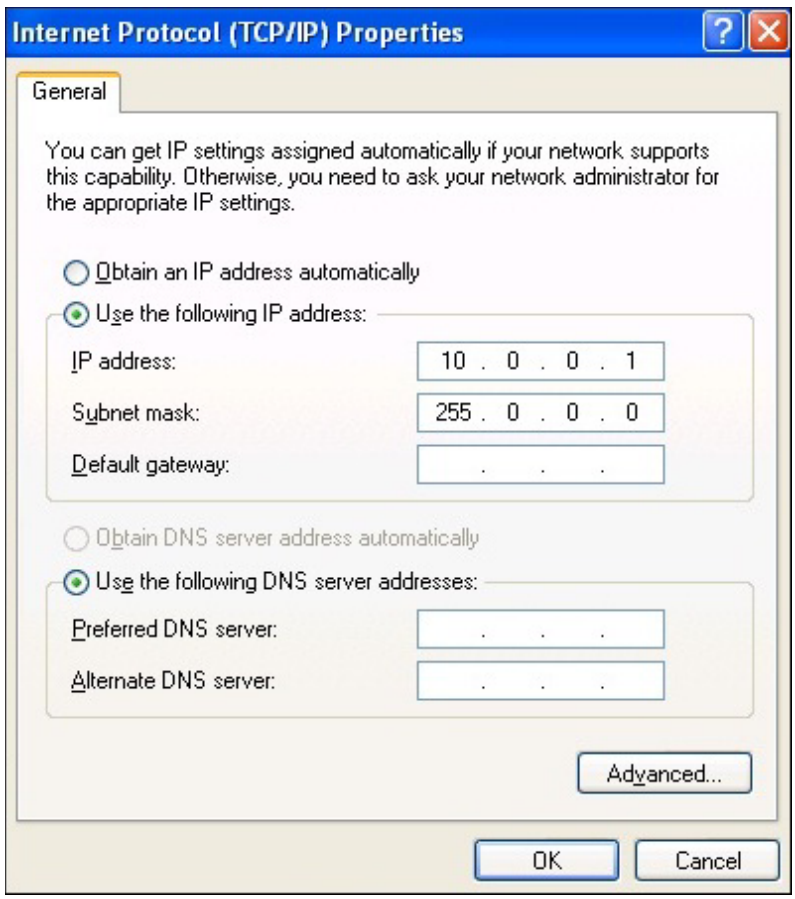



*Figure 34. Use the following IP address option selected*

TCP/IP address configuration is completed.

### Configuring the TCP/IP address with Windows 7

1. Go to **Control Panel** and click **View network status and tasks**.

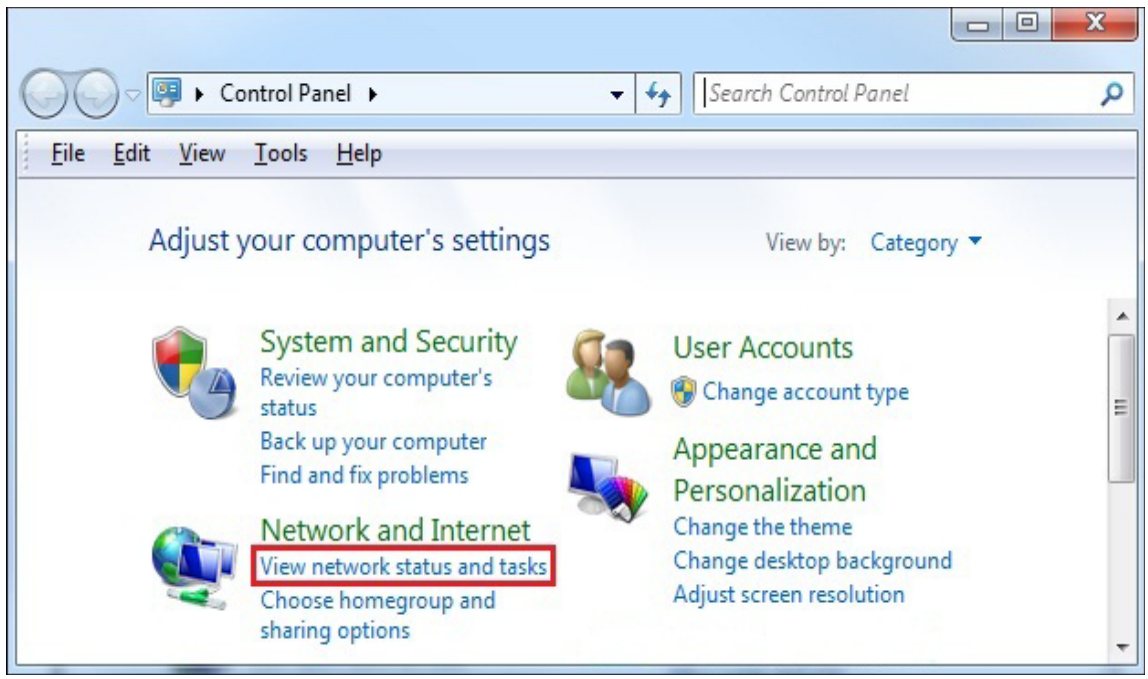



*Figure 35. Win 7 Control Panel*

2. Click **Change adapter settings** on the left pane. A Network connections window displays.

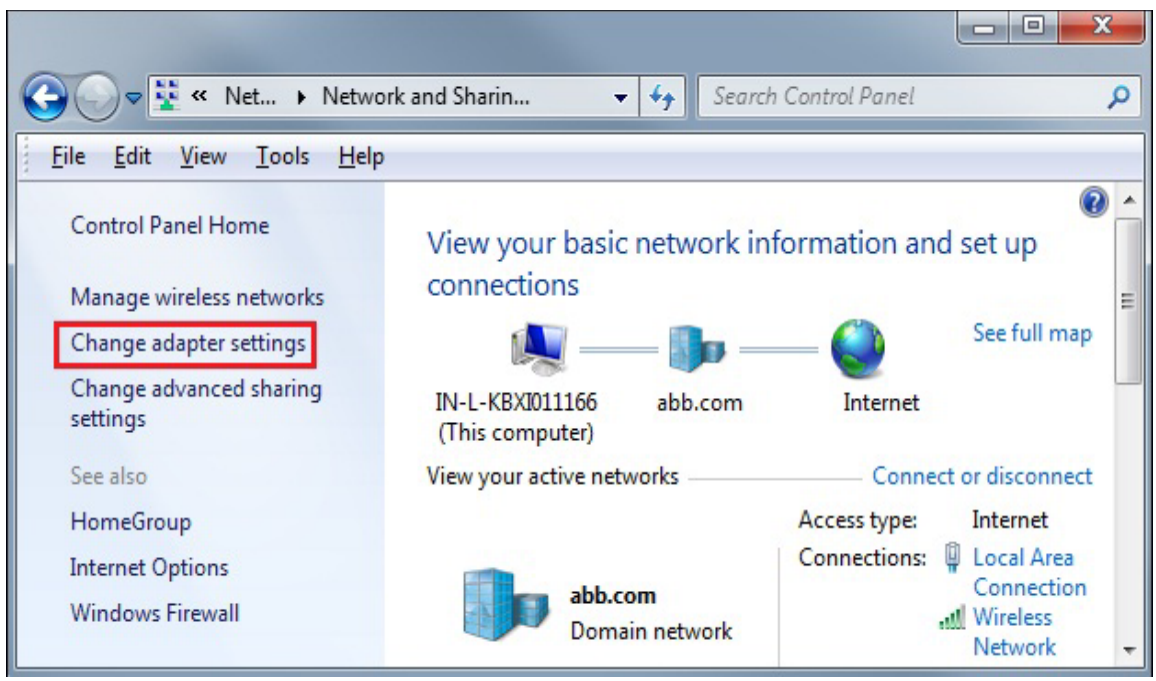



*Figure 36. Network status and tasks*

3. Double-click **Local Area Connection**.

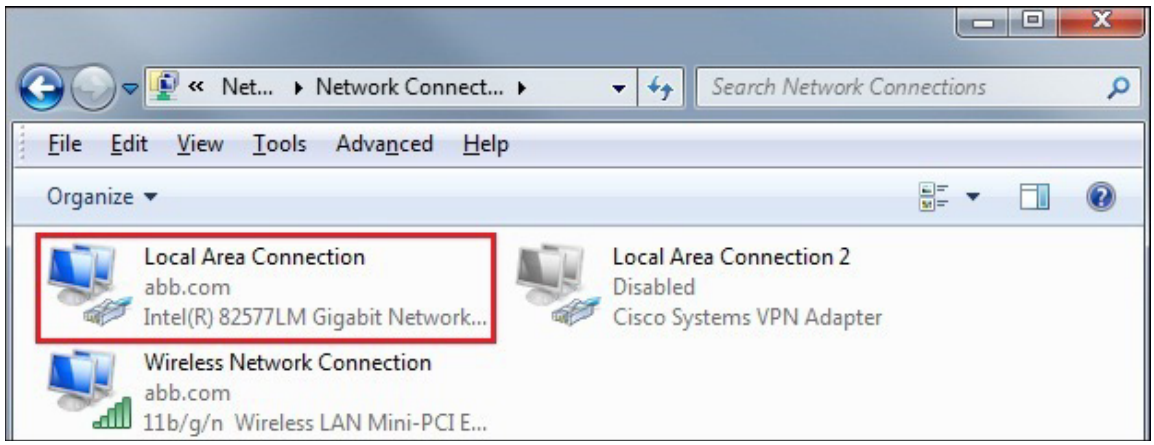



*Figure 37. Local Area Connection*

4. Click **Properties**.

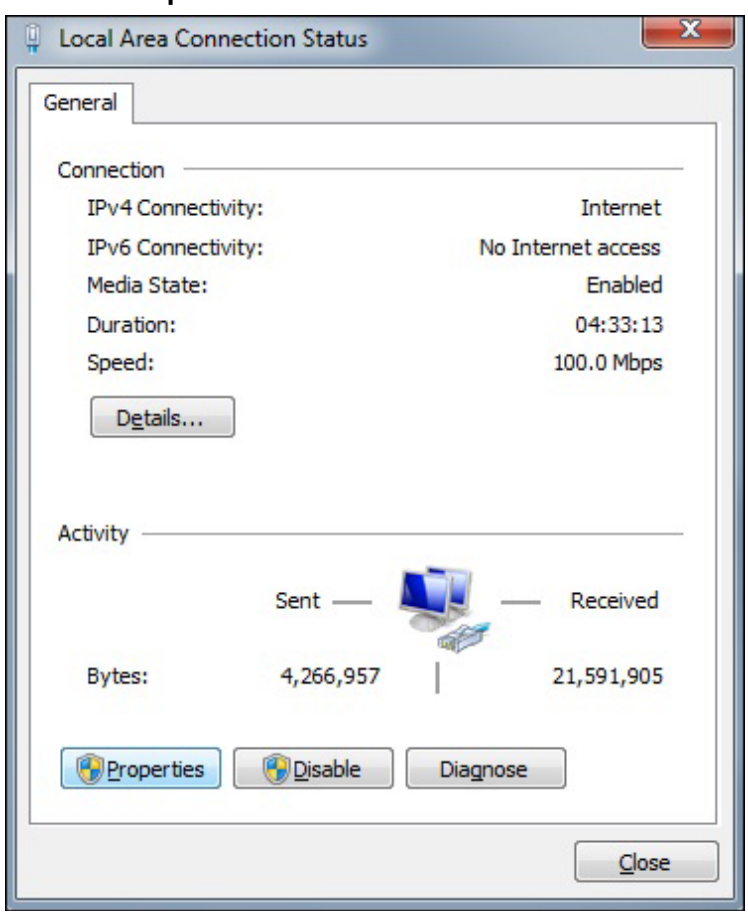



*Figure 38. Local Area Connection Status dialog box*

5. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **OK**.

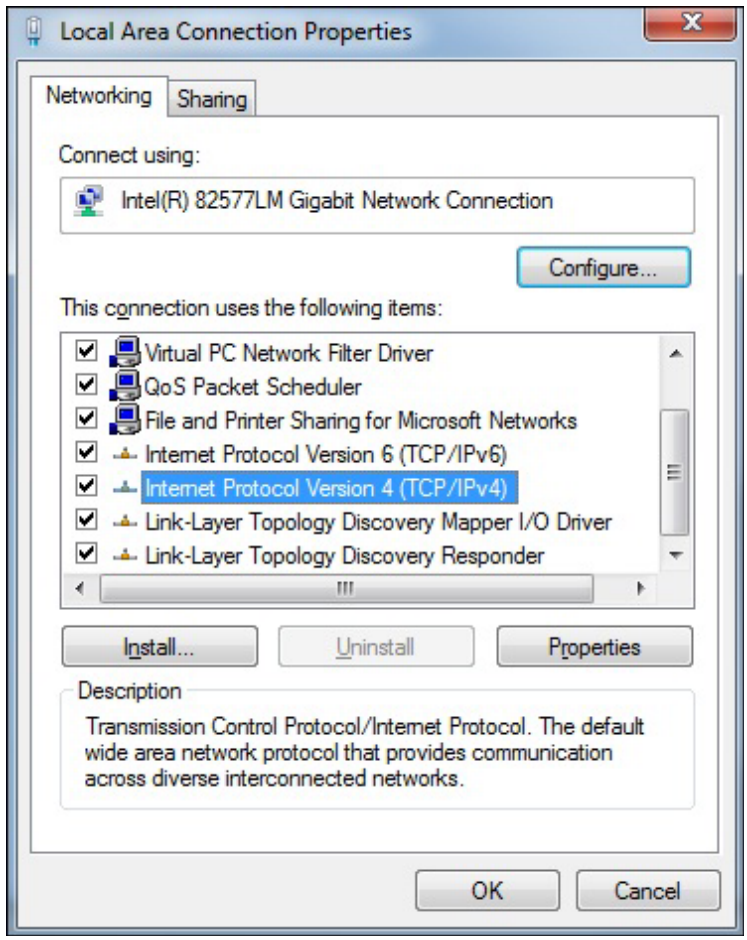



*Figure 39. Local Area Connection Properties dialog box*

6. Select **Use the following IP address**, type the IP address and subnet mask and click **OK**.

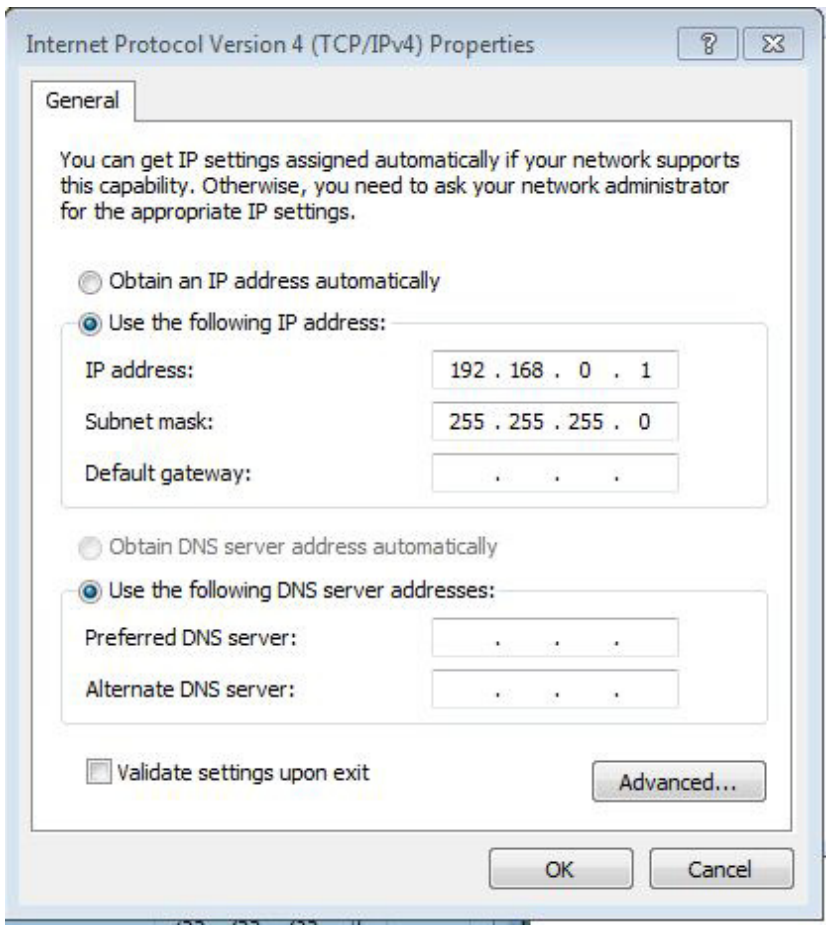



*Figure 40. Selecting the IP address and subnet mask*

7. Connect the RJ45 cable between the FENA-11 and the PC. Alternatively, connect all drives and the PC to the same Ethernet switch.

8. Open command prompt (cmd.exe) and ping all the drives that you have configured.

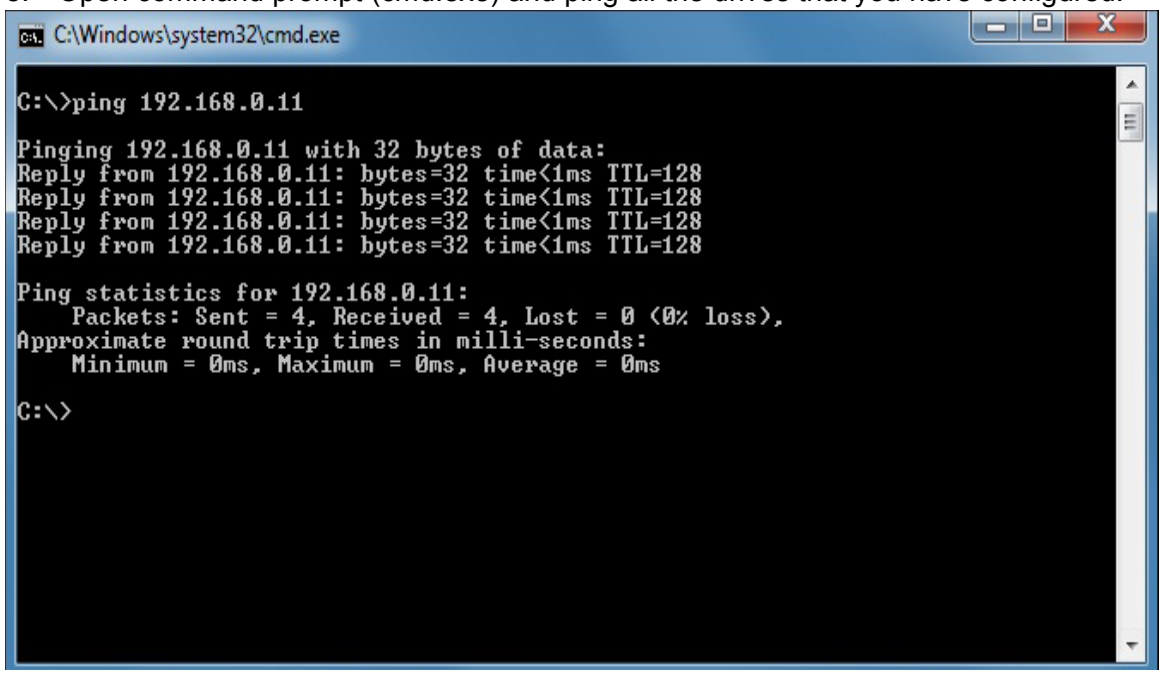



*Figure 41. Pinging drives*

**Note:** You must open http port 80 of the firewall on your PC to enable Drive composer pro to communicate with drives.

9. Open Drive composer pro.

   Drive composer scans all COM ports and Ethernet ports to find drives.

   If problems arise, see *Ethernet tool network for ACS880 drives application guide* (3AUA0000125635 [English]).

# Connecting network drives (pro)

## Panel bus network connection

ABB drives with an ACS-AP-x panel can be daisy-chained through the control panel ports as a network either for a PC tool or a panel bus connection.

**Note:** Some ABB drives control boards (for example, ZCU-13) do not have any daisy-chain connectors. For those drives, a panel bus connection can be created with FDPI-02 option modules. See *FDPI-02 diagnostics and panel interface user's manual* (3AUA0000113618 [English]) for more information.

*Figure 42. Creating a panel bus*

## Creating a panel bus with Drive composer (pro)

1. Create a point-to-point connection from the Assistant control panel or Drive composer to each drive.
2. Set an independent node ID for each drive (with parameter 49.01 Node ID number).
   The node ID must be between 1…32.
3. Refresh the settings (with parameter 49.06 Refresh settings).

**Note:** Refreshing the Node setting will lose the communication to the drive. To re-establish the connection with the drive, select **View** -> **Refresh**.

4. With parameter 49.05 Communication loss action, define how the drive reacts to a control panel (or PC tool) communication break by selecting **No action**.

| | 49. Panel port communication | | | | | |
|---|---|---|---|---|---|---|
| 1 | Node ID number | 5 | NoUnit | 1 | 32 | 1 |
| 3 | Baud rate | 230.4 kbps | NoUnit | | | 230.4 kbps |
| 4 | Communication loss time | 10.0 | s | 0.1 | 3000.0 | 10.0 |
| 5 | Communication loss action | **No action** | NoUnit | | | **Fault** |
| 6 | Refresh settings | Done | NoUnit | | | Done |

*Figure 43. Panel port settings with Drive composer*

5. Give a name for each drive to facilitate the recognition of drives when creating a panel bus connection.

If you use Drive composer, name the drives on the System info tab by entering the name to the Drive name field and clicking **Set**.

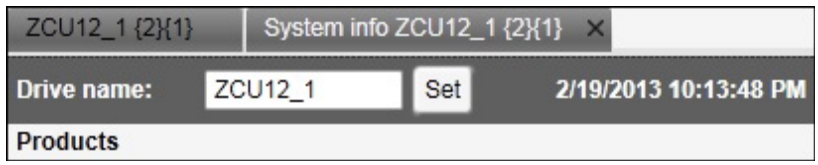



*Figure 44. Naming a drive with Drive composer*

**Note:** The drive name changes after the view has been refreshed. The previous names in other existing workspaces are not affected.

If you use Assistant control panel, name the drives through the Setting menu of the panel.

6. Remove all panels connected to drives.
7. To daisy-chain the drives connect a standard RJ45 (straight CAT5) cable to the left-hand side connector of the Assistant control panel in the first drive (the left-hand side drive in figure *Creating a panel bus* on page *46*).

   **Note**: Heavy-industry type RJ45 male connectors do not fit into the drive side female RJ45 slot
8. Connect a standard RJ45 (straight CAT5) cable from the right-hand side connector of the Assistant control panel in the first drive to the left-hand side connector of the Assistant control panel in the second drive.
9. Continue chaining the rest of the drives as described above.
10. If there is a long distance between the first and last drive in a panel bus, set the resistor to the ON position in the last node.

## Connecting to the panel bus with Drive composer (pro)

1. Connect a USB cable between the Assistant control panel and your PC.
2. Double-click **Drive composer pro.exe** to launch Drive composer.

   The status LED starts flickering on the Assistant control panel.

   **Note:** It may take a long time before all drives are found.

   **Note:** Drive composer does not open automatically any parameter window or other object.
3. Make sure you see all the drives in the Drive list.

   **Note**: If you do not see all the drives, close the PC tool and try again. If you still do not see all drives, check Group 49 Panel port communication for the settings of the missing drives.
4. Select and click a drive from the Drive list.

# Connection sharing (pro)

Select the option **Share connection with Control Builder Plus** to enable the simultaneous connection to the same drive from both applications.

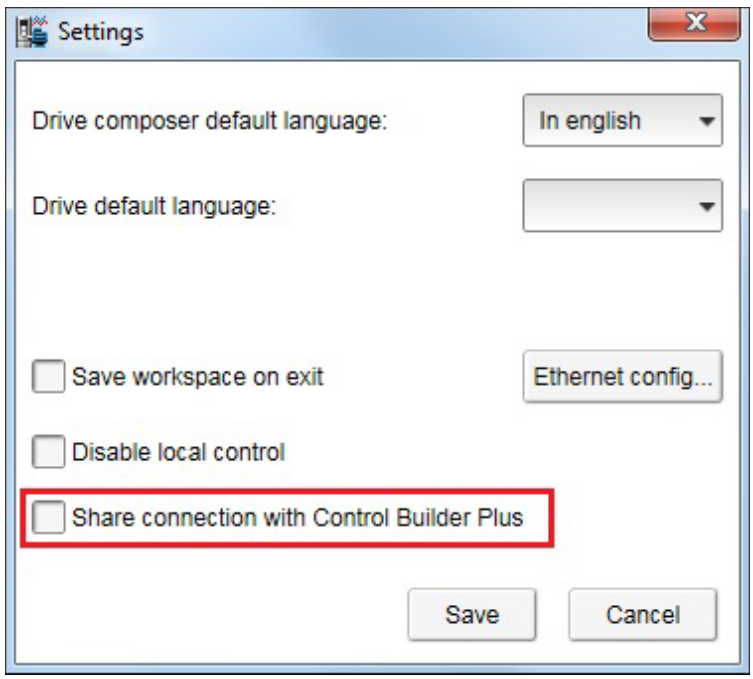



*Figure 45. Connection sharing*

5

# Main user interface components

## Contents of this chapter

This chapter describes the user interface (UI) components and how to use them.

## Overview

The user interface consists of the following parts:

1. Title bar
2. Menu bar
3. Drive control panel
4. Drive list
5. Status panel (including the output view of the selected drive)
6. Working area for parameter windows, event logger, control diagrams, assistants etc.

The working area can be used either with tabs or floating windows. The figure below shows the user interface with floating windows.

The size of the drive list can be adjusted to the left/right. Similarly, the size of the working area can be adjusted by dragging the white separating line up/down. Most of the windows that are not maximized can be resized by dragging any corner. Scroll bars appear on the side or bottom of a window if it is possible to scroll the content.

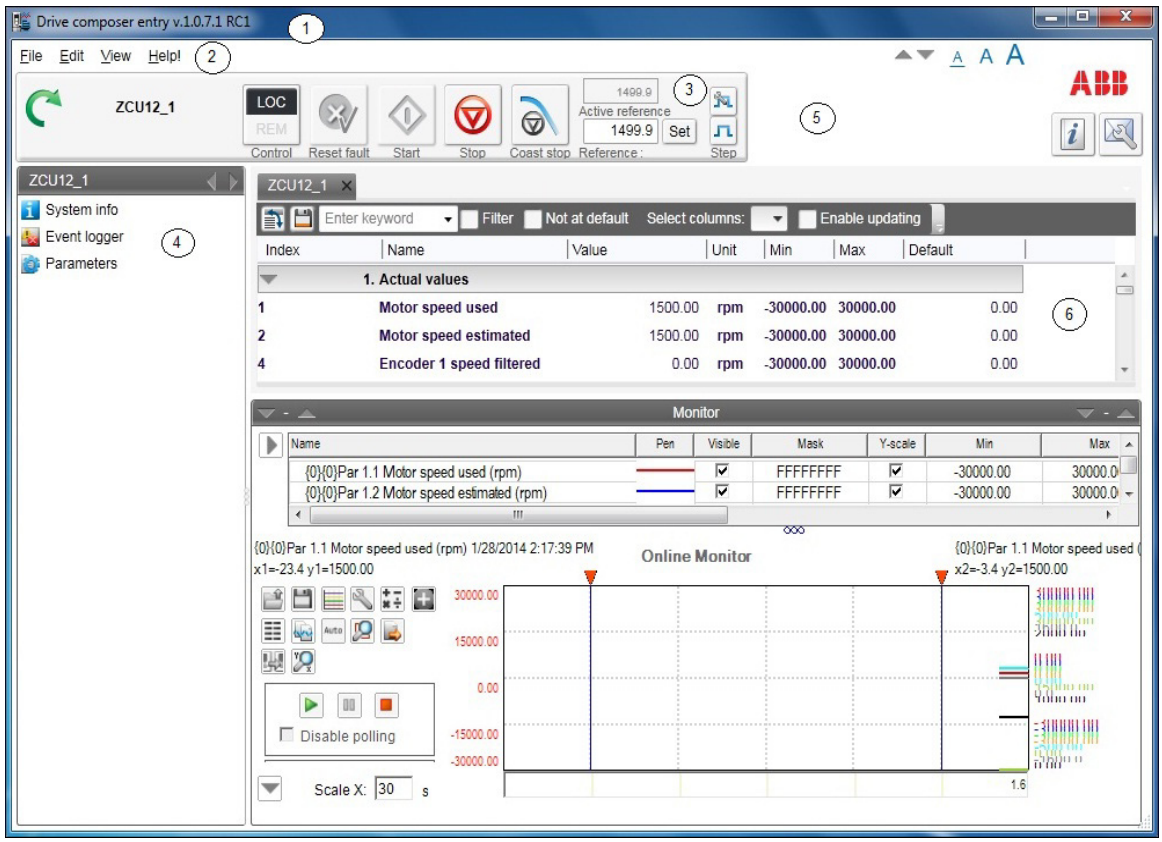



*Figure 46. Overview of the user interface*

# Title bar

The title bar is located at the top of the main window. It consists of the following parts:

- System menu icon
- Application name and version number (Drive composer entry/pro)
- Name of the workspace (if there is an active workspace)
- Minimize button which has the same function as Minimize in the System menu
- Maximize/Restore Down button (the name depends on the status of the maximized window) which has the same function as Maximize or Restore in the System menu
- Close button which has the same function as Close in the System menu.

  **Note:** When you close the application, system prompts to confirm. Click **Ok** to close the application.

*Figure 47. Title bar*

To reduce the main window to the taskbar or a sub-window to the bottom of the window area, click the **Minimize** button or go to **System menu** –> **Minimize**.

To enlarge the window to fill the available space, click the **Maximize** button or go to **System menu** –> **Maximize**.

To restore the window to the size and position it had before it was maximized, click **Restore Down** button or go to **System menu** –> **Restore**.

You can also maximize or restore the window by double-clicking the title bar.

To move a window, drag the title bar. To move a dialog box, drag its title bar. If you have maximized or minimized a window, you cannot move it by dragging the title bar.

To end your Drive composer session, click the **Close** button. Before closing down, Drive composer may:

- warn you about releasing control of the drive if the drive is controlled locally by Drive composer
- prompt you to save the workspace with unsaved changes
- remind you to save your monitor data
- remind you of unfinished printing.

**Note:** If you disconnect cable from the drive *before* closing Drive composer there might be long delay in operation.

**Note:** To disable the function prompting you to save the workspace with unsaved changes, go to **View** –> **Settings**.

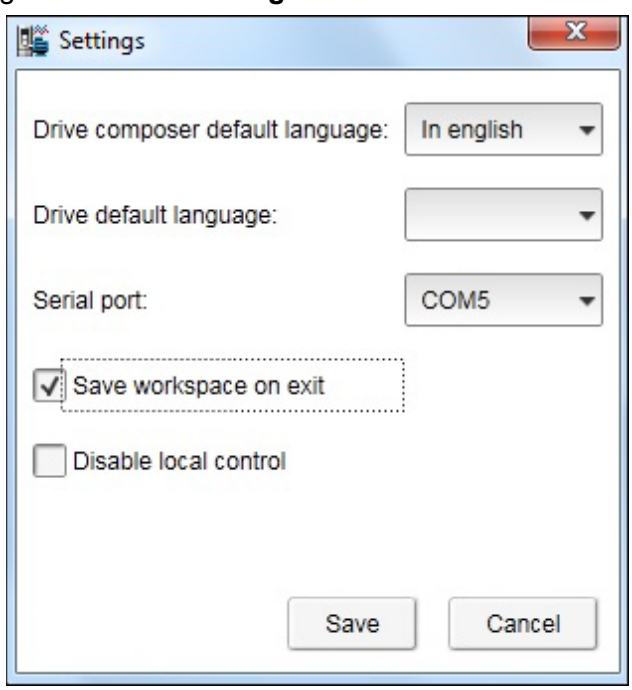



*Figure 48. Save workspace on exit function*

You can close Drive composer by

- double-clicking the **System menu** icon
- selecting **Close** in the System menu
- selecting **Exit** in the File menu
- pressing the shortcut key Alt+F4.

## System menu

You can open the System menu by

- left or right-clicking the **System menu** icon
- pressing the shortcut key Alt+space bar
- right-clicking within the non-button area of the title bar.

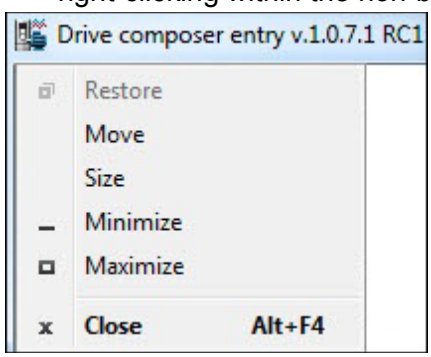



*Figure 49. System menu*

The System menu contains the following commands:

- **Restore** which has the same function as the **Maximize/Restore Down** button in the title bar when the window is maximized. The Restore command restores the window to its size and position which it had before it was maximized.
- **Move** which can be performed also by dragging the title bar. After selecting the Move command from the System menu, it is possible to move the window with the arrow keys. To stop moving the window, press Enter. To cancel the move, press Esc.
- **Size** which can be performed also by dragging any of the sides or corners of the window. After selecting the Size command, it is possible to resize the window with the arrow keys. To stop resizing the window, press Enter. To cancel resizing, press Esc.
- **Minimize** which has the same function as the **Minimize** button in the title bar. The Minimize command reduces the window to the taskbar or to the bottom of the window area.
- **Maximize** which has the same function as the **Maximize** button in the title bar when the window has not been maximized. The Maximize command enlarges the window to fill the available space.
- **Close** which has the same function as the **Close** button in the title bar. The Close command ends the Drive composer session.

# Menu bar

The menu bar is located below the title bar. It contains the following drop-down main menus:

- File
- Edit
- View
- Tools (pro)
- Help.

To execute a command from a menu, click its name on the menu. You can also use the arrow keys to navigate between the menus. To execute a highlighted command, press ENTER. To close a menu, press the ESC key. You can also use the shortcut keys to execute the commands.

## File menu

The File menu is always located in the menu bar.

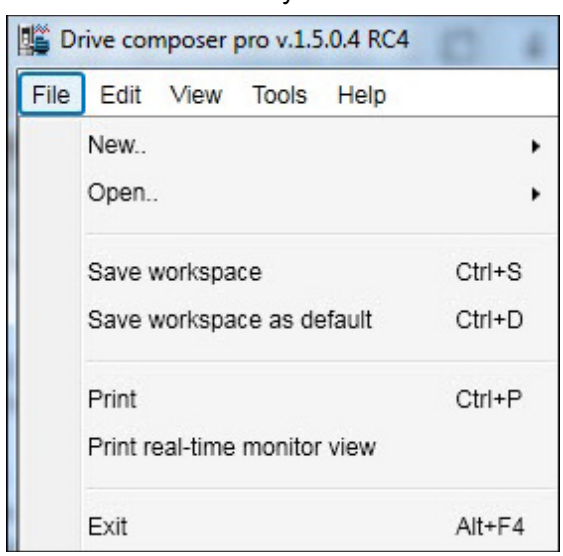



*Figure 50. File menu*

The File menu contains the following commands:

- **New..** opens a window where you can select a custom parameter set window. The keyboard shortcut for the custom parameter set command is Ctrl+N.

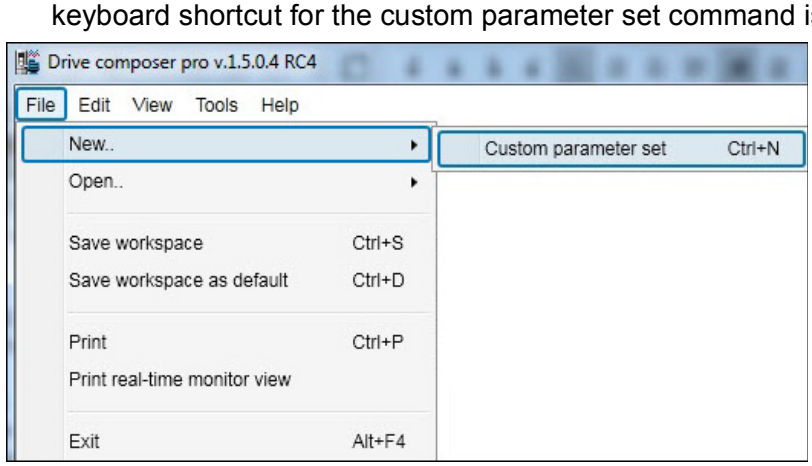



*Figure 51. Custom parameter set*

- **Open..** opens a new dialog.

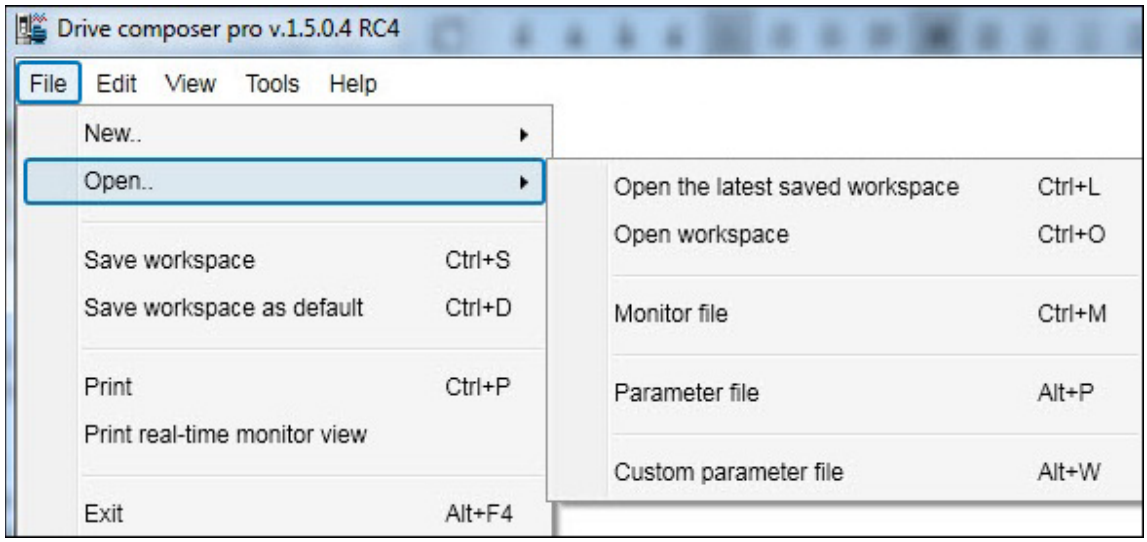



*Figure 52. Open command*

- **Open the latest saved workspace** opens the latest saved workspace. The keyboard shortcut for the open latest saved workspace command is Ctrl+L.
- **Open Workspace** opens a new window where you can select the saved workspace to be opened. The keyboard shortcut for the Workspace command is Ctrl+O.
- **Monitor file** opens a window to open the parameter file for monitoring.
- **Parameter file** opens a new window where you can select the saved parameter file to be opened. The keyboard shortcut for the Parameter file command is Alt+P.
- **Custom parameter file** opens a new window where you can open the saved custom parameter file. The keyboard shortcut for the Custom parameter file command is Alt+W.
- **Save workspace** saves the active workspace to a file. The keyboard shortcut for the Save workspace command is Ctrl+S.
- **Save workspace as default** saves the active workspace to default workspace. The default workspace opens automatically when Drive composer is opened. The keyboard shortcut for the Save workspace as default command is Ctrl+D.
- **Print (pro)** menu prints the parameter screen.
- **Print real-time monitor view (pro)** prints the monitor screen.
- **Exit** ends the Drive composer session.

## Edit menu

The Edit menu is always located in the menu bar.

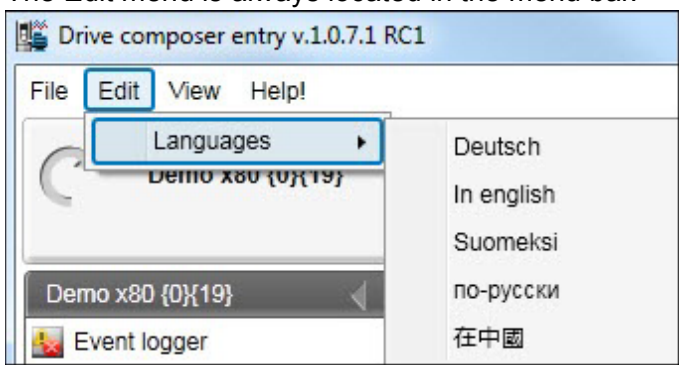



*Figure 53. Edit menu*

The menu contains the language commands with which you can select the language for the Drive composer user interface.

**Note:** Restart the Drive composer to see the language changes.

## View menu

The View menu is always located in the menu bar.

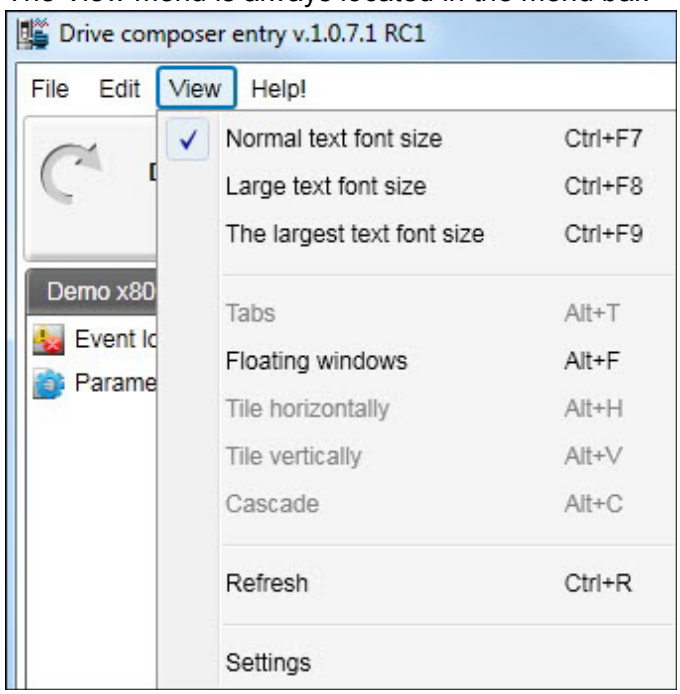



*Figure 54. View menu*

The View menu contains the following commands:

- **Normal text font size** for selecting the normal font size. The keyboard shortcut for Normal text font size is Ctrl+F6.

  **Note:** The change in the font size does not affect the size of the monitor window font.
- **Large text font size** for selecting the larger font size. The keyboard shortcut for Large text font size is Ctrl+F7.
- **The largest text font size** for selecting the largest font size. The keyboard shortcut for the largest text font size is Ctrl+F8. The font sizes can also be changed with the following A-letter icons.

*Figure 55. A-letter icons for changing the font size*

- **Tabs** for changing the working area to be viewed as tabs. The keyboard shortcut for Tabs is Alt+T.

  **Note:** The monitor window cannot be tabbed.
- **Floating windows** for changing the working area in a separate window. The keyboard shortcut for Floating windows is Alt+F.

  **Note:** The monitor window cannot be a floating window.
- **Tile horizontally** for changing floating windows to be tiled horizontally. The keyboard shortcut for Tile horizontally is Alt+H.
- **Tile vertically** for changing floating windows to vertical. The keyboard shortcut for Tile vertically is Alt+V.

- **Cascade** for changing floating windows to cascade. The keyboard shortcut for Cascade is Alt+C. The cascaded windows can be resized and freely located in the working area.
- **Refresh** for creating a new connection to the drive (uploads parameter information from a single drive and creates a new connection with multidrives). The keyboard shortcut for Refresh is Ctrl+R.
- **Settings** for defining the language, serial port and for choosing whether the workspace is saved on exit and whether the local control is disabled.

## Tools menu (pro)

The Tools menu is located in the menu bar. The commands of the Tools menu vary between SW versions and drives.

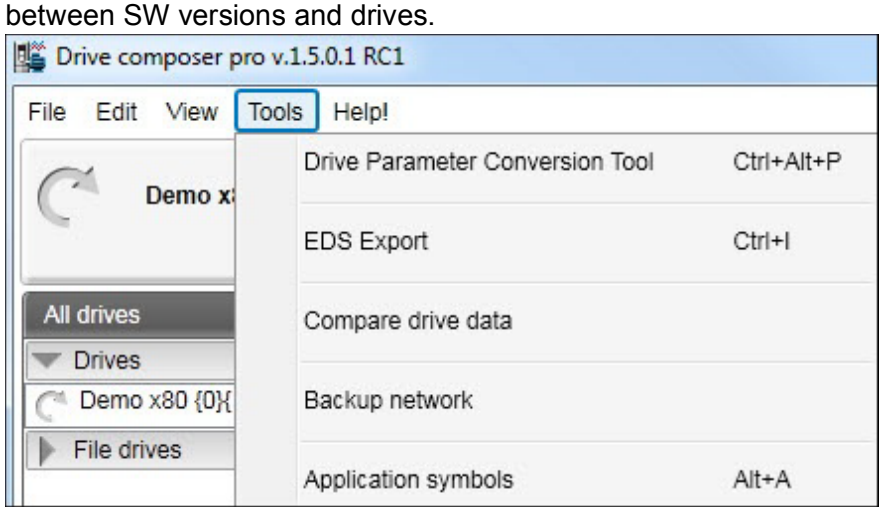



*Figure 56. Tools menu*

The menu contains the following commands:

- **Drive Parameter Conversion Tool** to convert the parameters.
- **EDS Export** for creating the EDS files of a connected drive. The keyboard shortcut for EDS Export is Ctrl+I.
- **Compare drive data** for comparing parameters of two drives or a parameter file and a drive or two parameter files. The keyboard shortcut for Compare drive data is Alt+C.
- **Backup network** for creating backups of all connected drives in a PC tool network. The keyboard shortcut for Backup network is Ctrl+ B.
- **Application symbols** for showing the symbols exported from Control Builder Plus application for the drive. If the drive does not have Control Builder Plus application list remains empty.

## Help menu

The Help menu is always located in the menu bar.

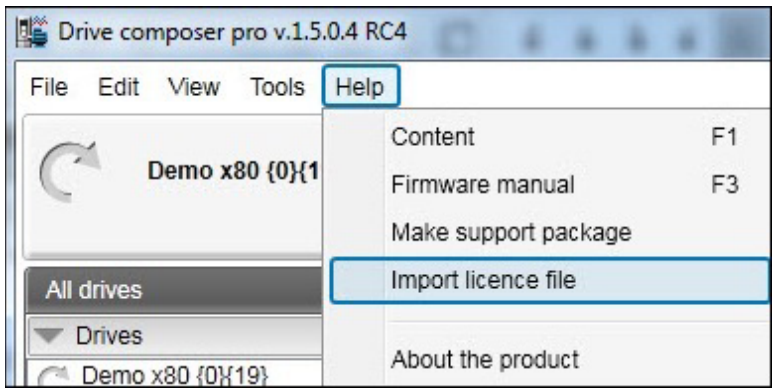



*Figure 57. Help menu*

The Help menu contains the following commands:

- **Content** or the F1 key opens the Drive composer user manual as a PDF file.
- **Firmware manual** or the F3 key opens the firmware manual of the drive in a separate window as a PDF file. If you have selected a parameter or some other significant item when you click this command or press the F3 key, the appropriate chapter in the firmware manual is displayed.
- **Make support package** function creates a single file, that can be sent to local ABB support contact in case of any need for support.
- **Import licence file (pro)** function displays the Product activation window. Enter the activation key and click Activate.
- **About the product** opens a window displaying the program information, version number and copyright text.

# Drive control panel

The drive control panel is located below the menu bar. It has buttons for controlling a connected drive. It also shows the status of the drive.

*Figure 58. Drive control panel*

The drive control panel contains the following buttons and items:

- Name and node number of the currently controlled drive and an indication if it is running. See below for status icons explanations.
- **Control** button controls the selected drive with Drive composer or releasing the control of the drive.
- **Reset fault** button sends a reset command to the drive. If the fault is no longer active, the drive clears it.
- **Start** button starts the currently controlled drive. A motor connected to the drive starts rotating according to the set reference value.
- **Stop** button stops the rotation of the motor connected to the currently controlled drive.
- **Coast stop** button.
- **Reference** value field enables entering a new reference value. When you click the Reference field, a tooltip tells you max and min limits for the reference and current reference value.
- Reference field shows the reference used in the drive. The reverse direction is set manually with the - sign.
- **Set** button enforces the value in the reference value field to the currently controlled drive. The same command can be performed by pressing Enter.
- **Active reference** displays the reference value.
- **Step configuration** cycle button enables to modify Step type, Step value and Step duration with reference value. The available configuration is dependent on the connected drive.
- **Step** functionality activates the step cycle with the reference value.

## Drive list panel

The drive list panel shows all connected drives and open files. Drives are indicated with a motor icon (clockwise open circle arrow).

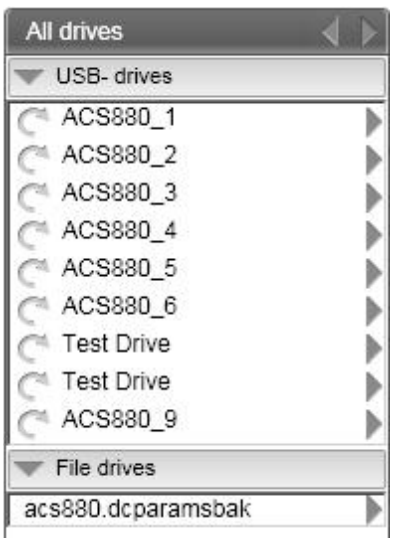



*Figure 59. Drive list panel in Drive composer pro*

A grey circle arrow indicates a stopped drive.

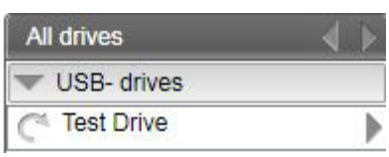



*Figure 60. Stopped drive*

A green circle arrow indicates a running drive.

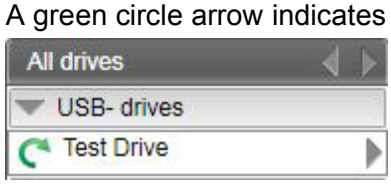



*Figure 61. Running drive*

A red circle with a white cross (x) indicates a faulty drive.

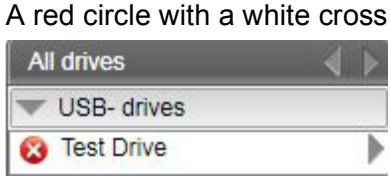



*Figure 62. Faulty drive*

An orange background means that a drive that has an alarm.

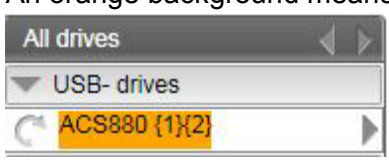



*Figure 63. Drive with an alarm*

A red broken line (—/ /—) means that the connection to a drive has broken.

*Figure 64. Drive with a broken connection*

The views for a drive – parameter window, data logger, event logger, system info, assistants (if such are available for the drive), control diagrams (if such are available for the drive) – can be seen by clicking with the primary mouse button and selecting the corresponding icons from the pop-up window.

You can open those views either as new tabs or floating windows. If an active window is associated with a drive or a file, the corresponding tree item is highlighted in the drive list.

## Using the drive control panel for starting the drive

1. See the firmware manual of the drive for parameters you must set before starting.
2. Click the **Control** button.
   The control box indicator changes to LOC.
3. Enter a reference value and press Enter or click the **Set** button.
4. Click **Start**.
   The drive starts. The indicator box arrow changes to green.

**Note:** Limit settings in group 30 affect reference limits.

# Working area

Parameter windows, custom parameter windows, event logger, system info, control diagrams, assistants etc. are shown in the working area. The user interface is tabbed by default. You can change the order of tabs by dragging them. You can open tabs for a single drive or for multiple drives.

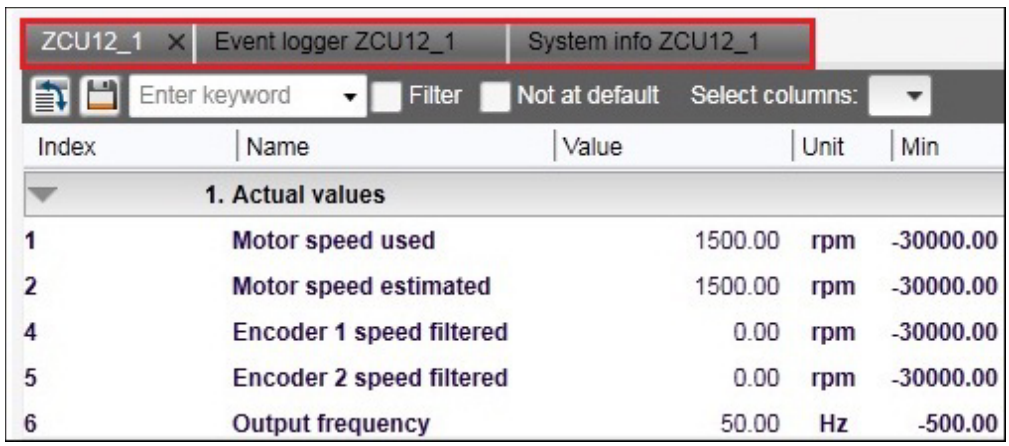



*Figure 65. Tabbed user interface*

The working area can be set to a floating window. For example, parameter window, event logger, system info etc. are shown as floating windows. The floating windows can be tiled vertically or horizontally or cascaded by using the commands in the **View** menu.

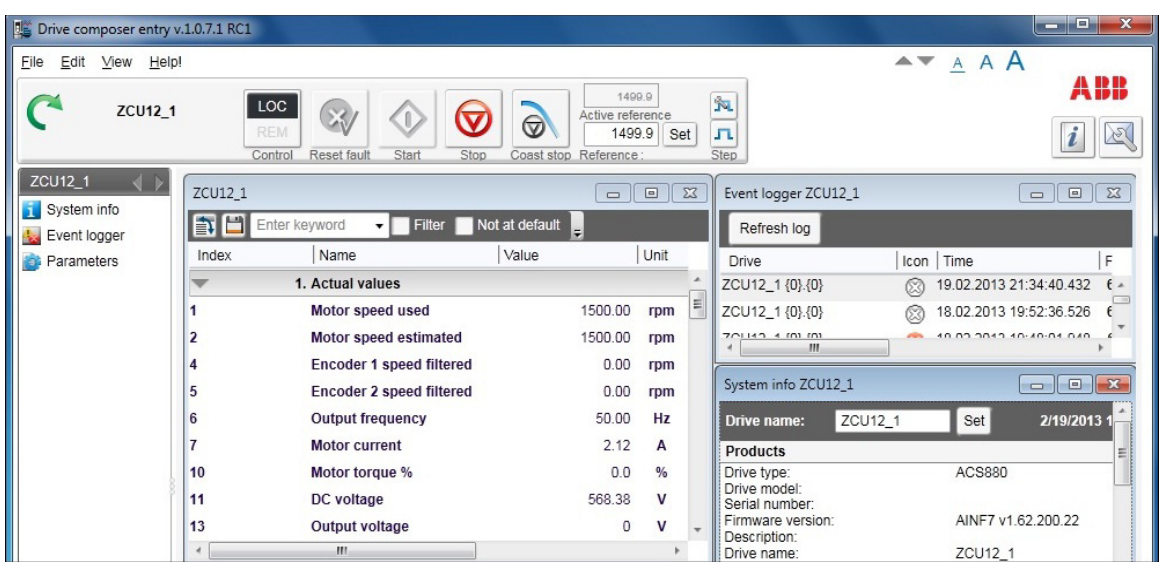



*Figure 66. Floating windows*

6

# Parameter window

## Contents of this chapter

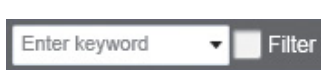
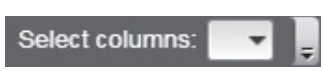
This chapter describes the parameter and custom parameter windows.

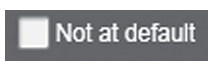
## Parameter window

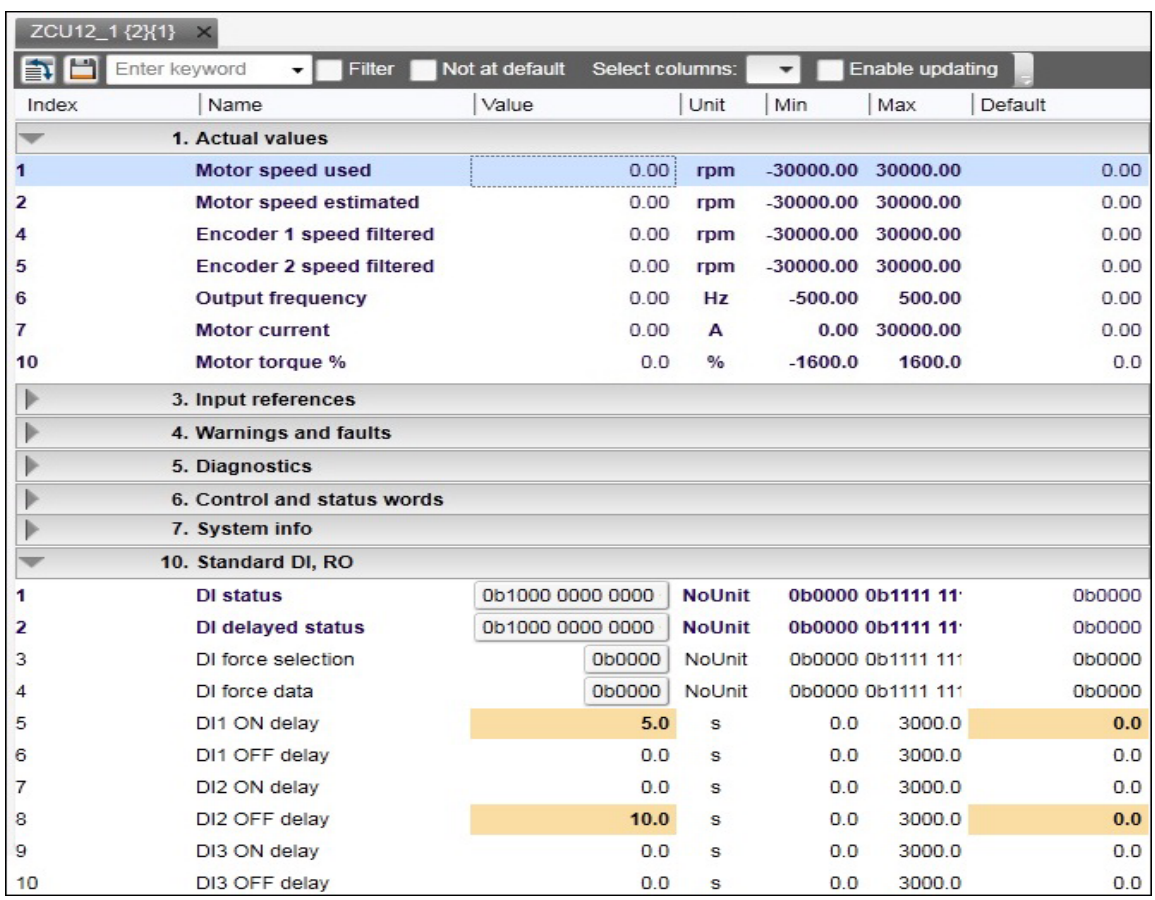
With Drive composer entry the parameter window is always opened when you make connection to a drive. With Drive composer pro the parameter window is opened by clicking on the selected drive in the drive list and selecting **Parameters**.

The parameter window view displays parameter groups, parameters and their values for the associated drive or a file. There can be several parameter windows in the working area. The headline of each parameter window shows which drive it belongs to.

Following are the command icons available in the parameter window.

| Icon | Description |
|---|---|
| | Expands/collapses parameter groups. When parameter groups are expanded, all parameter values are read once from the drive. |
| | Saves parameters to a file. Saves visible parameters to a file. File extension is dcparams(bak). |
|  | Enables you to search parameter lists with a keyword. Search is activated/deactivated by clicking the Filter check box. When the Filter check box is unchecked all parameters are seen.<br>**Note:** If parameter groups have not been expanded, the first search takes about 30…60 seconds. |
|  | Allows you to select/deselect columns to be seen in a parameter window. |

| Icon | Description |
|---|---|
| | Parameters are updated only when a group is opened. With the Enable updating function it is possible to set all open and visible groups to be updated automatically. Parameters that have been set to be updated automatically have a yellow background. |
| | Allows you to download parameters from a file to a drive. With a custom parameter window allows downloading offline values to a drive. |
| | Enables you to change the window target, which is useful if you have Drive composer pro and you have to check certain parameters of another drive. Included only in custom parameter windows. |
|   | Provides you with a list of all user-changed parameters if you click the check box. These parameters have an orange background. |
| | Allows you to add or remove one parameter or signal or several parameters or signals to/from a custom parameter window. |




| Index | Name | Value | Unit | Min | Max | Default |
|---|---|---|---|---|---|---|
| | **1. Actual values** | | | | | |
| 1 | **Motor speed used** | 0.00 | rpm | -30000.00 | 30000.00 | 0.00 |
| 2 | **Motor speed estimated** | 0.00 | rpm | -30000.00 | 30000.00 | 0.00 |
| 4 | **Encoder 1 speed filtered** | 0.00 | rpm | -30000.00 | 30000.00 | 0.00 |
| 5 | **Encoder 2 speed filtered** | 0.00 | rpm | -30000.00 | 30000.00 | 0.00 |
| 6 | **Output frequency** | 0.00 | Hz | -500.00 | 500.00 | 0.00 |
| 7 | **Motor current** | 0.00 | A | 0.00 | 30000.00 | 0.00 |
| 10 | **Motor torque %** | 0.0 | % | -1600.0 | 1600.0 | 0.0 |
| | **3. Input references** | | | | | |
| | **4. Warnings and faults** | | | | | |
| | **5. Diagnostics** | | | | | |
| | **6. Control and status words** | | | | | |
| | **7. System info** | | | | | |
| | **10. Standard DI, RO** | | | | | |
| 1 | **DI status** | 0b1000 0000 0000 | NoUnit | 0b0000 | 0b1111 11 | 0b0000 |
| 2 | **DI delayed status** | 0b1000 0000 0000 | NoUnit | 0b0000 | 0b1111 11 | 0b0000 |
| 3 | DI force selection | 0b0000 | NoUnit | 0b0000 | 0b1111 11 | 0b0000 |
| 4 | DI force data | 0b0000 | NoUnit | 0b0000 | 0b1111 11 | 0b0000 |
| 5 | DI1 ON delay | **5.0** | s | 0.0 | 3000.0 | **0.0** |
| 6 | DI1 OFF delay | 0.0 | s | 0.0 | 3000.0 | 0.0 |
| 7 | DI2 ON delay | 0.0 | s | 0.0 | 3000.0 | 0.0 |
| 8 | DI2 OFF delay | **10.0** | s | 0.0 | 3000.0 | **0.0** |
| 9 | DI3 ON delay | 0.0 | s | 0.0 | 3000.0 | 0.0 |
| 10 | DI3 OFF delay | 0.0 | s | 0.0 | 3000.0 | 0.0 |

*Figure 67. Parameter window*

The parameter window contains different types of parameters. Some of these types are identified by colors or bold fonts as shown in the table below:

| Icon/Example | Explanation |
|---|---|
| Regular | Normal parameters |
| **1.1 Motor speed** | Signals (bold, magenta) |
| **1 DI status** 0b0000 | Bit names of a parameter can be seen by double-clicking on the parameter (bold). New window opens. |
| P2.1.1<br>P2.1.2- | Parameter value is set from another parameter, for example, parameter group 2, index 1, bit 1.<br>Parameter value is an inverted bit of another parameter, group 2, index 1, bit 2. |
| 28 AI2 max 20,000 | User has changed the value of a parameter (shown with an orange background). |

The most common type is the regular parameter. Parameters are normally readable and writable. However, when the drive is running, some parameters may be write-protected.

Parameter names, values, units, default values and different user sets are shown in the parameter window. The number of user sets depends on the drive type.

The value of a parameter is read only once. If you want to update this value, right-click and select **Refresh the parameter**. You can set all visible parameters to update automatically by clicking the **Enable updating** button.

The values of signals cannot be modified. If signals are modified, you will get an error prompt for every signal. Signals are updated cyclically in the parameter window. Parameter signals are also updated frequently, but their values can be modified.

## Navigating parameters and groups

Parameter values are updated if they are modified. A parameter value can be modified by double-clicking the parameter or by pressing Enter on a highlighted parameter. To update parameter group values, right-click the group name and select **Refresh group parameters**.

In special cases, hidden parameters and groups become available by modifying some parameter values, the **View –> Refresh** command updates the whole parameter table. An example for such a group is group 51 FBA A Settings: When the adapter module has been enabled in group 50, the parameter names can be seen by selecting **View –> Refresh**.

**Note:** The parameter window must be closed before refreshing and opened again after refreshing.

There are five alternative formats in which parameters are shown: default, binary, hexadecimal, integer and float format. To change the format of a parameter, right-click and select either **Use default format**, **Use binary format**, **Use hexadecimal format**, **Use integer format** or **Use float format**.

You can change the widths of the columns by dragging the vertical lines between the column headers.

Double-click the value field box to see the bit names of certain binary parameters. For example, see the below parameter 10.1 DI status.

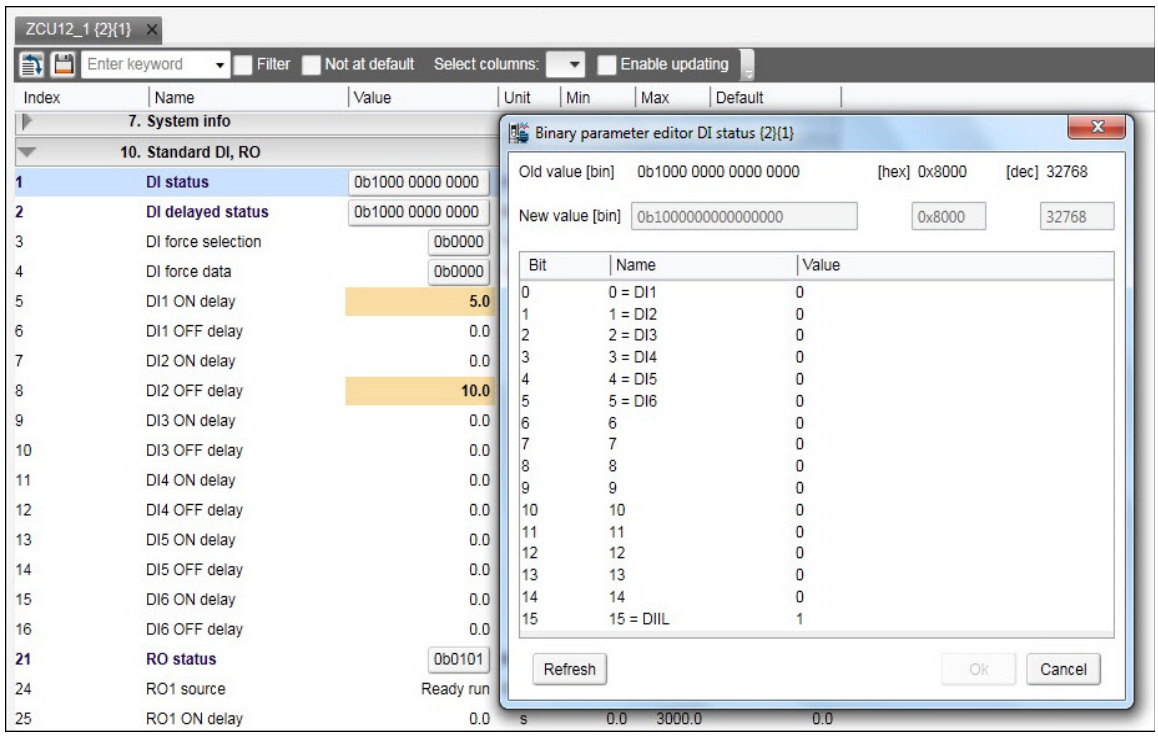



*Figure 68. Bit names for a parameter*

To reset a parameter, right-click it and select **Reset to default**.

Parameter values are read once when a group is opened. Independent parameters from different groups can be set to the Auto-update mode by right-clicking them and selecting **Add to auto-update**. The parameters that are updated automatically are seen with a yellow background as shown in the following figure.

**Note:** Signals are automatically updated cyclically

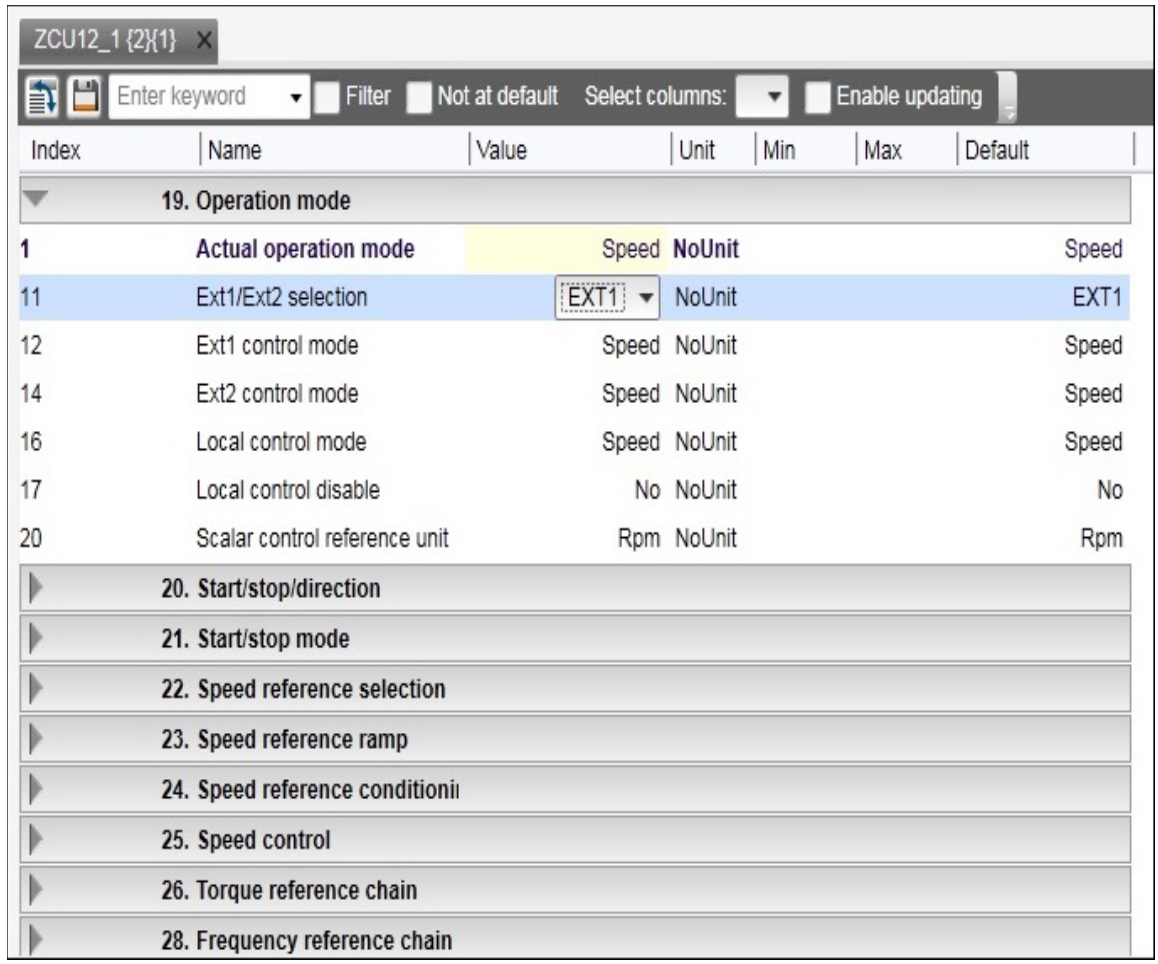



*Figure 69. Parameters with a yellow background*

Parameters or signals can be sent to the monitor window by right-clicking them and selecting **Send to monitor**. Parameters can be copied to a custom parameter window by right-clicking them and selecting **Copy**. In addition, you can drag and drop parameters to a custom parameter window.

# Pointer parameters

One special type of a parameter is a pointer parameter. The value of a pointer parameter is read from the parameter it points to. Depending on the pointer parameter, value or bit pointer, its target can be another parameter or one of its bits. Some pointer parameters can be assigned Active (false) or Inactive (true).

In most cases, common settings are offered as a selection list. In those cases where the selection list does not offer the correct pointer, pointing can be done by selecting **Other…** from a selection list.

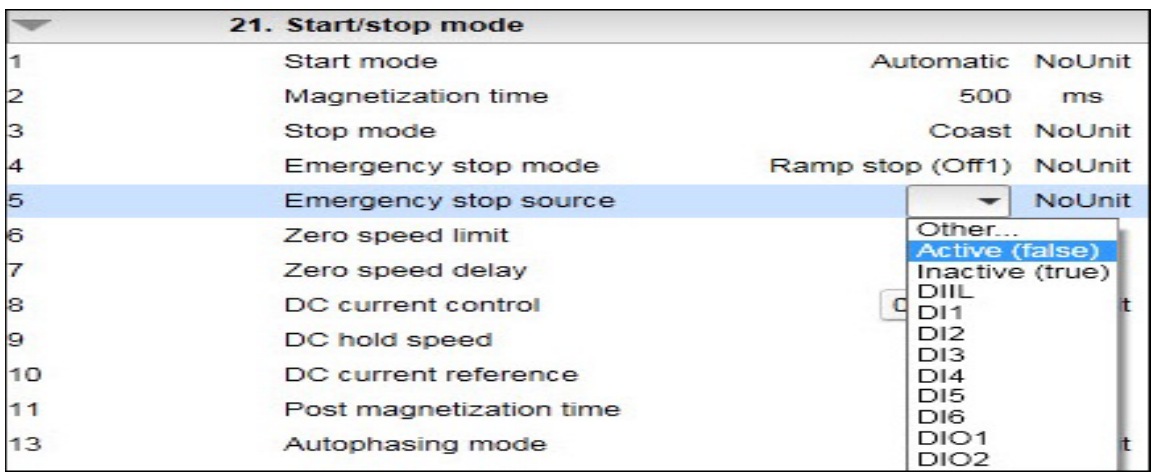



*Figure 70. Constant value for a pointer parameter*

Select a parameter from the list for a value pointer and then its bit from 0 to 31 for a bit pointer.

You can also enter a value manually by selecting the Edit manually check box. The value must follow form P.#.#.#, where the first # is the parameter group number, the second # is the parameter number and the third # is the bit number without leading zeros (for example P.2.1.2).

Active (false) or Inactive (true) are the constant values that can be entered manually.

A bit pointer value can also be inverted by selecting the Invert value check box.

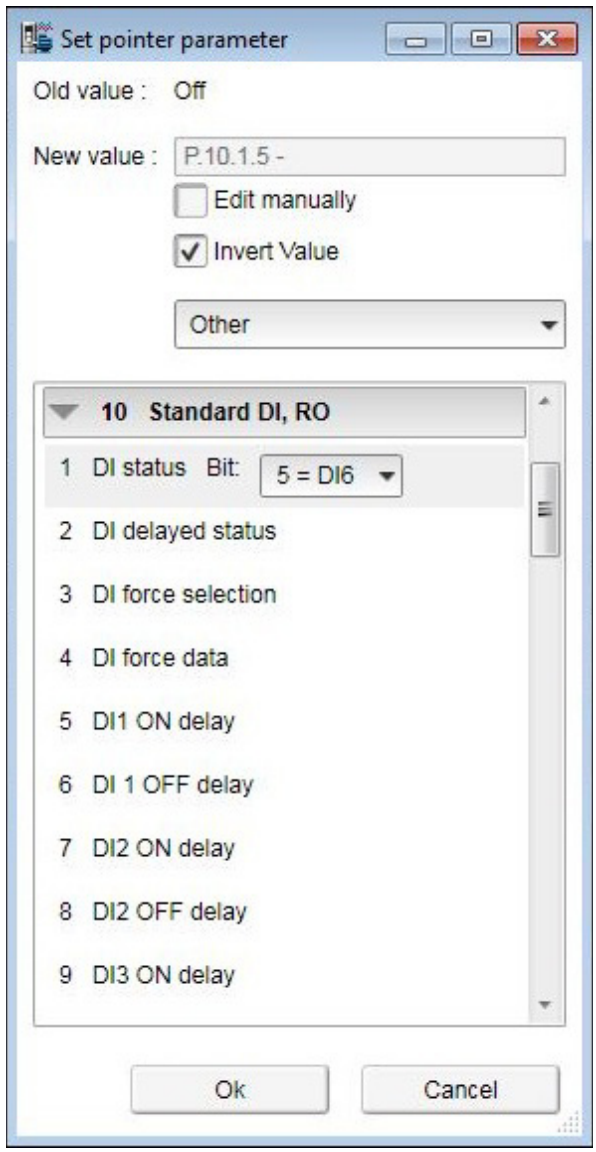



*Figure 71. Inverting a bit pointer value*

The inverted bit pointer value is shown with the minus sign at the end of the parameter.

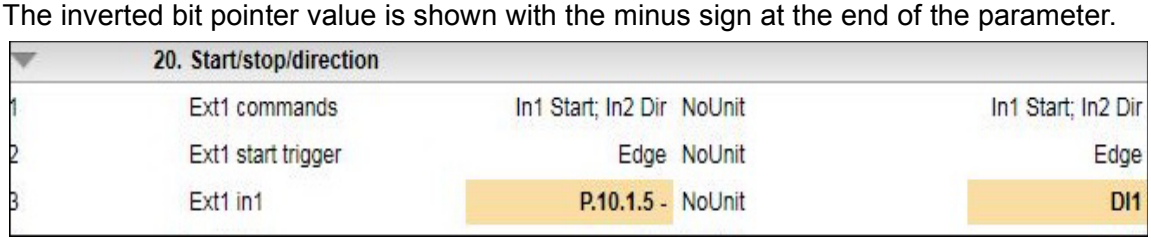



*Figure 72. Inverted bit pointer value with the minus sign*

## Setting fieldbus data in/out parameters

Process data transferred to and from the drive/PLC is set with parameter groups 52 and 53. With an ACS880 drive it is possible to select the data type for each selected parameter/signal in these group.

1. Double-click FBA data in/out parameter and select **Other**.

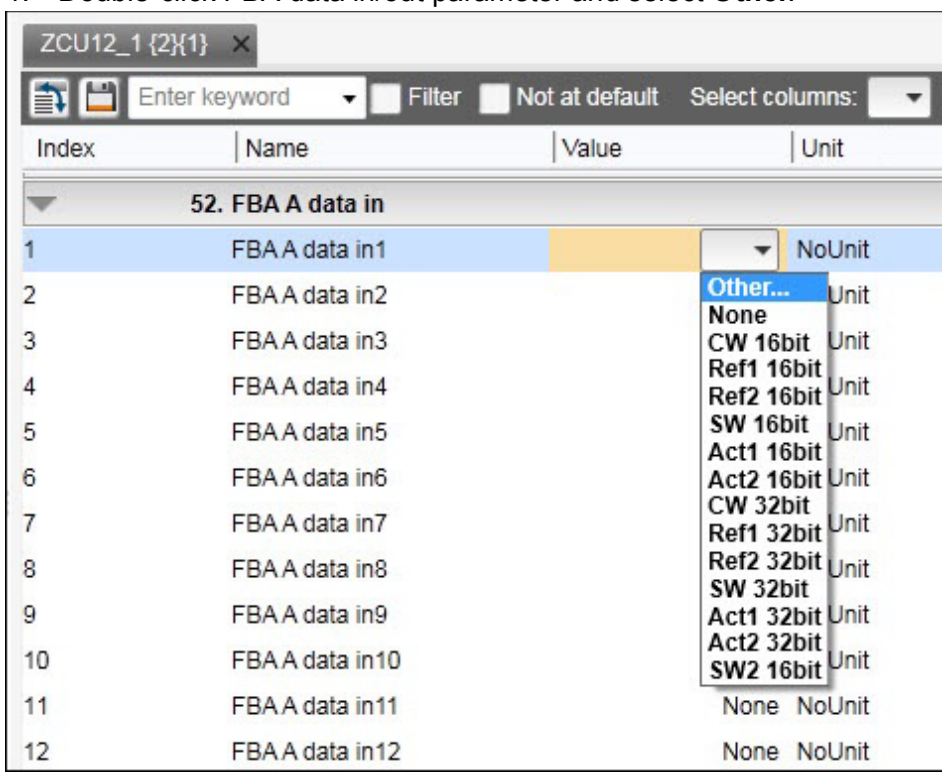



*Figure 73. Selecting the data type*

2. Select the format in which the value is handled:16-bit, 32-bit or floating point format.

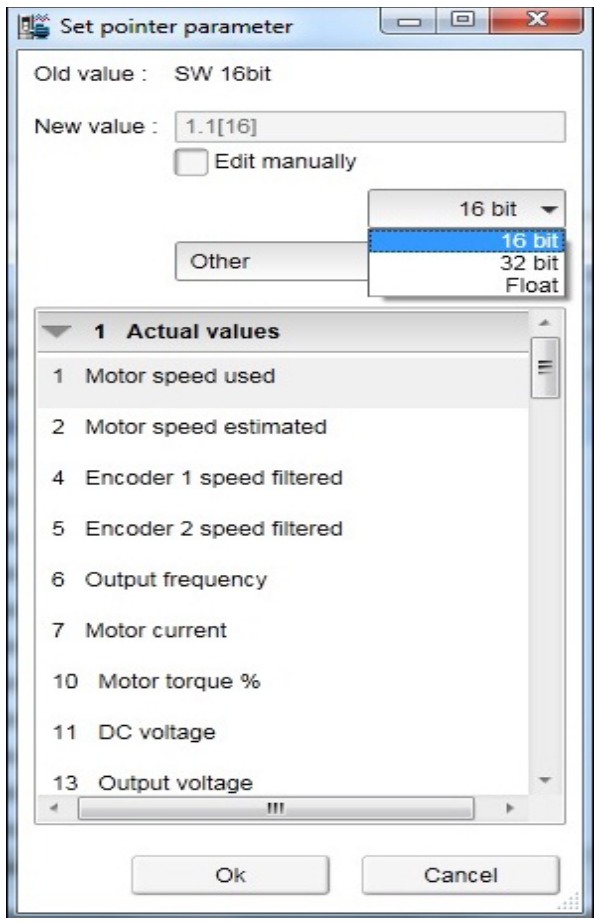



*Figure 74. Selecting the format*

In the parameter window the selections are shown inside brackets: [16], [32] or [F].

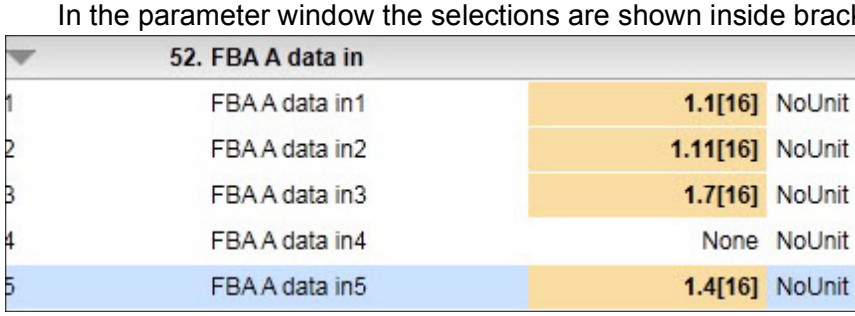



*Figure 75. Formats shown inside brackets in the parameter window*

**Note:** The floating point or 32-bit value reserves 2 slots in the configuration. Consequently, if you try to select a value for parameter 52.04 as in the figure above, you get a Parwrite failed error message. The scalings of parameters/signals are found in *ACS880 primary control program firmware manual* (AUA0000085967 [English]).

**Note:** You should always check the parameter mapping from the manual of the used fieldbus protocol. Example, FENA-01/-11/-21 Ethernet adapter module user's manual (3AUA0000093568 [English]) or FPBA-01 PROFIBUS DP adapter module user's manual (3AFE68573271 [English]).

# Binary parameters

Binary parameters have a special meaning for each of their bits. These parameters are modified in a special Set binary parameter dialog. The value can be modified numerically in binary, hexadecimal or decimal format.

You can modify the values in the bit by double-clicking the value field for each bit. Some bits are greyed out and disable to edit.

Another way to modify a bit is to type the bit value directly to the New value [bin] / [hex] / [dec] field.

Signal values, which are in binary format, can be viewed in a similar dialog.

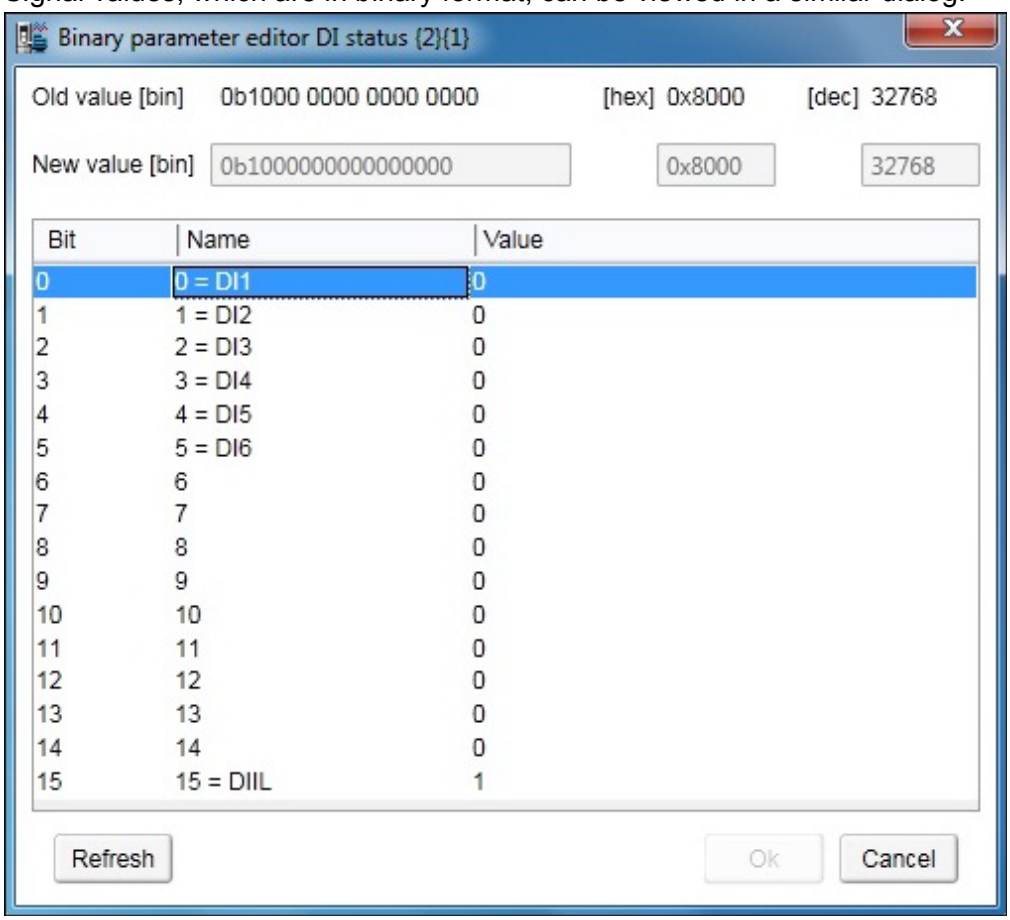
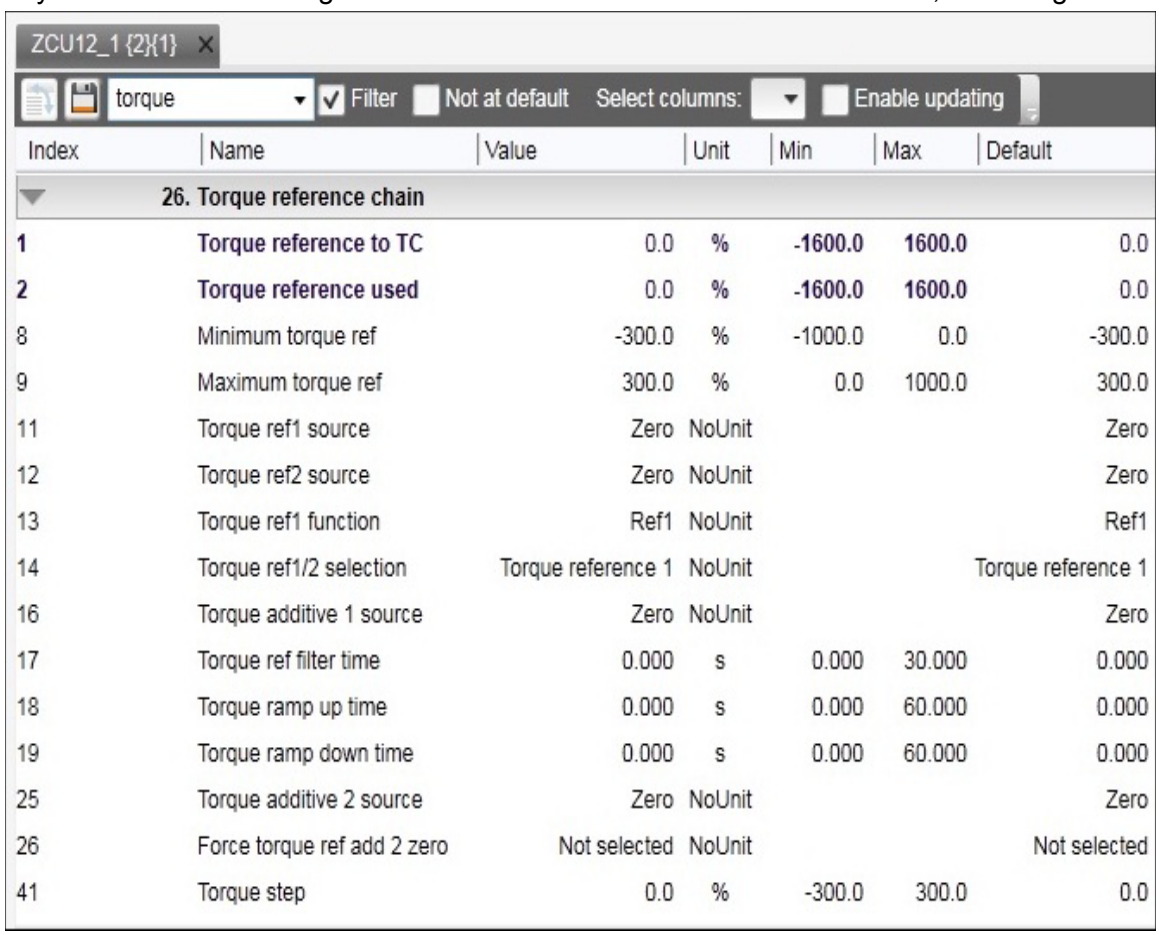



*Figure 76. Binary parameter editor*

# Search for groups and parameters

You can search the names of parameters and groups inside the parameter window. The search result is a list of all parameters matching the search text criteria. For example, all torque-related parameters can be found by entering search criteria “torque” in the Enter keyword field and clicking the Filter check box. To uncheck the Filter box, click it again.




| Index | Name | Value | Unit | Min | Max | Default |
|---|---|---|---|---|---|---|
| | **26. Torque reference chain** | | | | | |
| **1** | **Torque reference to TC** | 0.0 | **%** | **-1600.0** | **1600.0** | 0.0 |
| **2** | **Torque reference used** | 0.0 | **%** | **-1600.0** | **1600.0** | 0.0 |
| 8 | Minimum torque ref | -300.0 | % | -1000.0 | 0.0 | -300.0 |
| 9 | Maximum torque ref | 300.0 | % | 0.0 | 1000.0 | 300.0 |
| 11 | Torque ref1 source | Zero | NoUnit | | | Zero |
| 12 | Torque ref2 source | Zero | NoUnit | | | Zero |
| 13 | Torque ref1 function | Ref1 | NoUnit | | | Ref1 |
| 14 | Torque ref1/2 selection | Torque reference 1 | NoUnit | | | Torque reference 1 |
| 16 | Torque additive 1 source | Zero | NoUnit | | | Zero |
| 17 | Torque ref filter time | 0.000 | s | 0.000 | 30.000 | 0.000 |
| 18 | Torque ramp up time | 0.000 | s | 0.000 | 60.000 | 0.000 |
| 19 | Torque ramp down time | 0.000 | s | 0.000 | 60.000 | 0.000 |
| 25 | Torque additive 2 source | Zero | NoUnit | | | Zero |
| 26 | Force torque ref add 2 zero | Not selected | NoUnit | | | Not selected |
| 41 | Torque step | 0.0 | % | -300.0 | 300.0 | 0.0 |

*Figure 77. Search example*

**Note:** The first search takes about 30…60 seconds, because Drive composer goes through the whole parameter structure. The next searches are fast. All searches are in memory of the PC as long as Drive composer is on.

# Custom parameter window

In Drive composer it is possible to customize parameter windows. This means that parameters/signals can be dragged and dropped or copied from the main parameter window or from other custom parameter windows. You can rename custom parameter windows.

For example, you can collect all the typical parameters used in a quick start-up to one window. You can create separate windows for separate functions (for example, references, limits, ACS880 I/O). Custom parameter windows open automatically when a connection to a drive is made because they are saved with the workplace. Custom parameter windows can also be opened separately.

Parameter values can be changed in custom parameter windows. Custom parameter windows can be used both in tabbed and floating windows environments.

Separate custom parameter windows can be also saved to a file by selecting **Save parameters to file**. The changed values in the Offline value column are saved as well. Therefore the contents of a custom parameter window can be used for the parameterization of another drive. You can send the saved custom parameter windows to other users and they can open them with their Drive composer to see parameters that you want them to check or download to a drive.

**Note:** When a custom parameter window is saved, the actual drive values of the Value column are copied to the Offline value column. During loading the values in the Offline value column are shown in comparison with the current actual values. When you open the file containing the saved custom parameter window you can copy the values of the Offline value column to another drive by clicking the **Download to device** button.

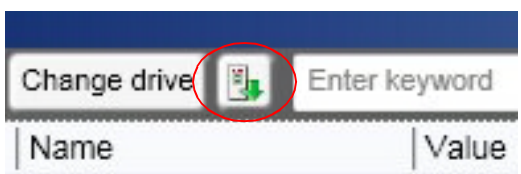



*Figure 78. Download to device button*

In a network of drives, you can create a custom parameter window including parameters/signals selected from different drives. To have a view where all parameters are from one drive, click the **Change drive** button and select the drive.

To see the value of a parameter/signal used in another drive, right-click the parameter/signal and select **Change drive**.

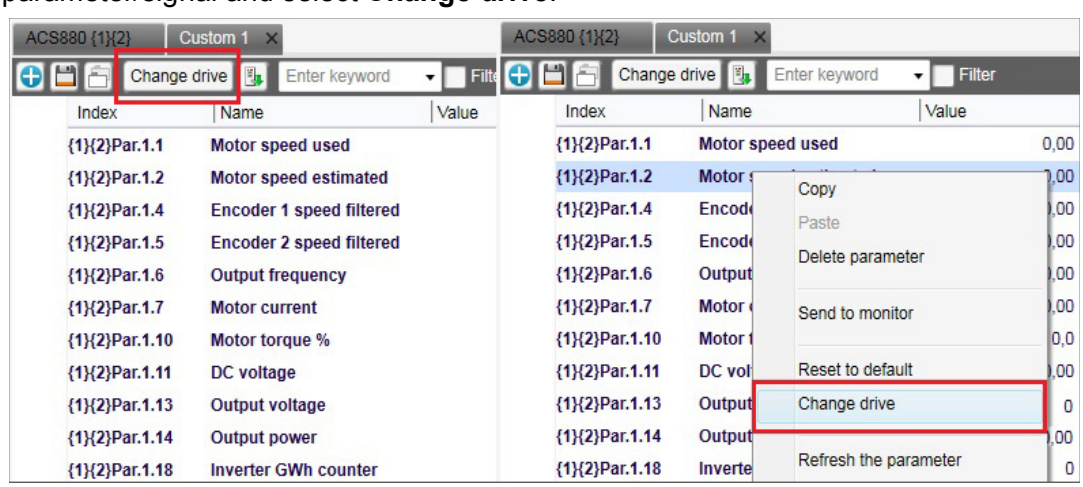



*Figure 79. Change drive button*

# Adding parameters to a custom parameter window

The following example shows how to:

- create a new custom parameter window
- add parameters to a custom parameter window
- modify the Offline value column in the custom parameter window
- copy/download parameters to a drive.

1. Click **File –> New –> Custom parameter set**.

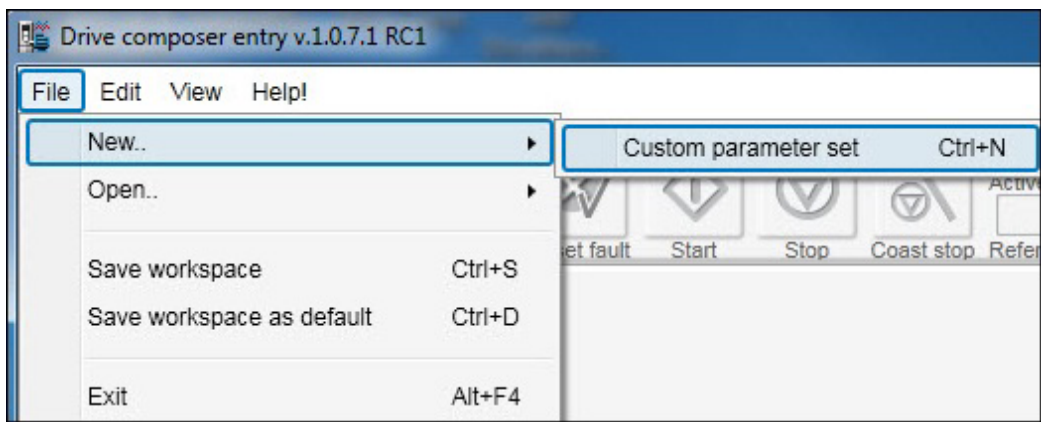



*Figure 80. Custom parameter set*

2. Name the custom parameter window.

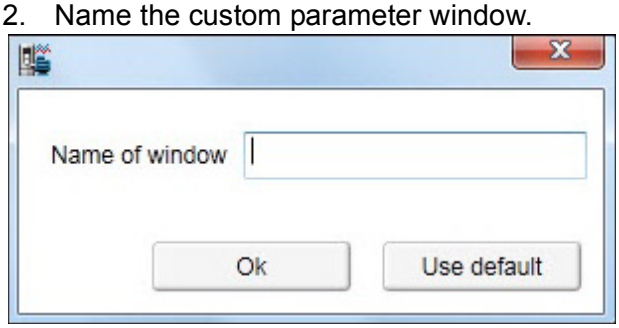



*Figure 81. Name of window*

3. Click **Add** button to add parameters/signals to the new custom parameter window or copy paste from other parameter window.

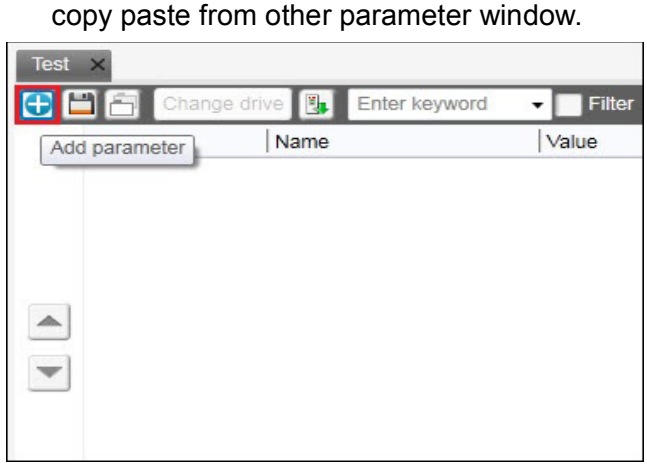



*Figure 82. Add parameter button*

4. Select the minimum and maximum speed values from group 30.

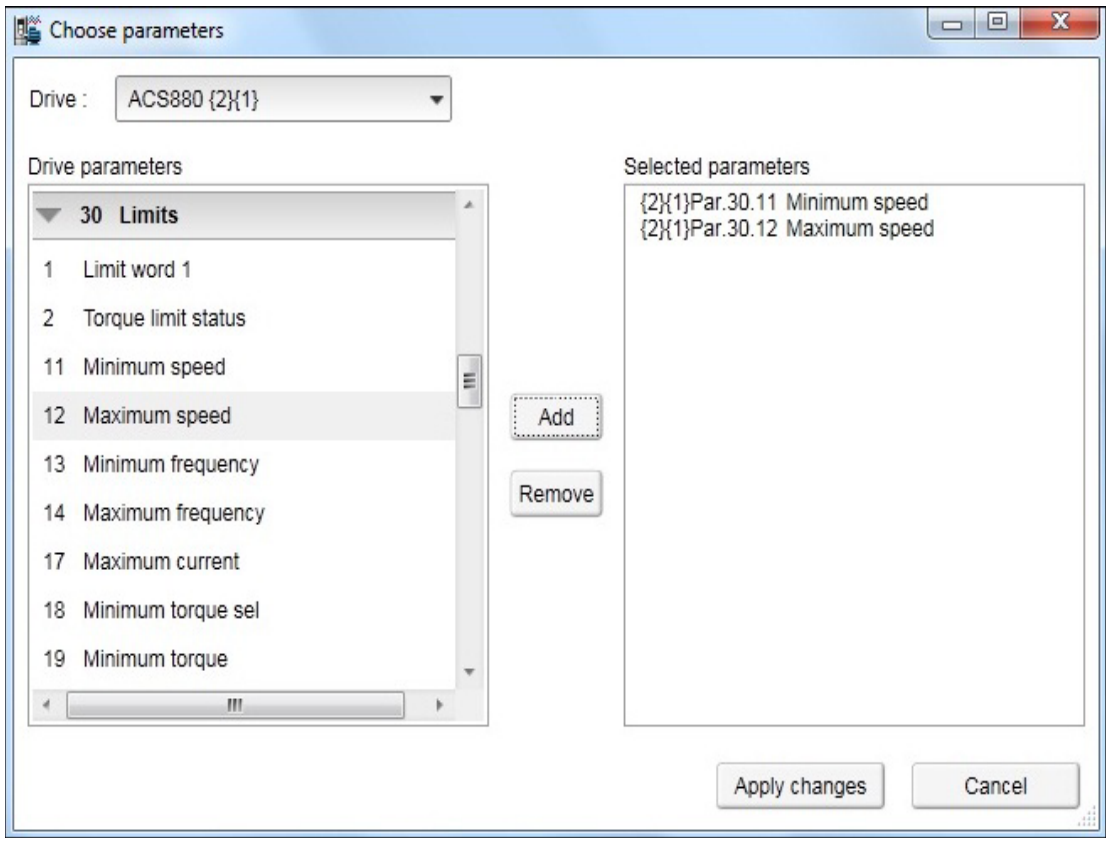



*Figure 83. Add minimum and maximum values*

5. Change the values in the Offline value column to be the same as the online values.

   **Note:** The values in the Offline value column do not have to be the same as the online values.

6. Save the custom parameter window by clicking the **Save parameters to file** icon.

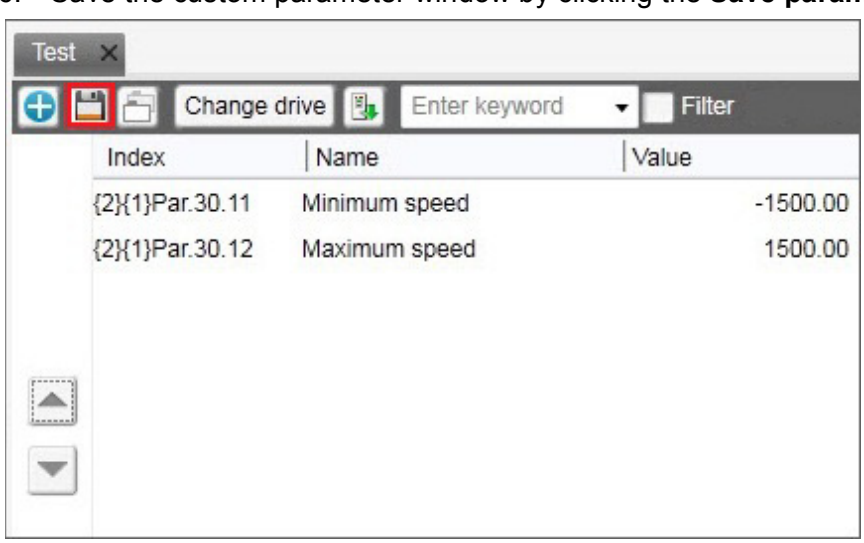



*Figure 84. Save parameter to file icon*

7. When connecting the next drive open the created custom parameter window by clicking **File** –> **Open** –> **Custom parameter file**.

   You can now see the online values of the new drive.

8. Copy the offline parameter values to a new drive by clicking **Download to device**.

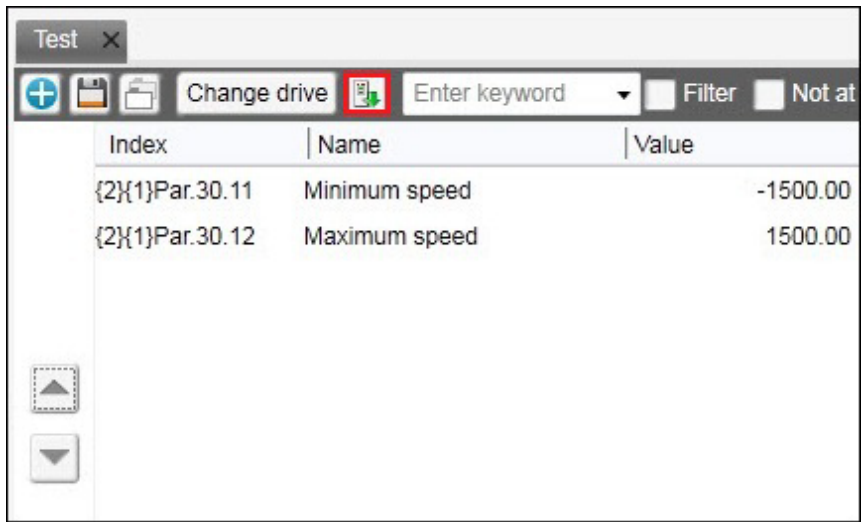



*Figure 85. Download to device*

# Working with parameter files

## Saving/Downloading parameter files

The following example shows how to:

- save parameters to a file
- copy/download parameters to a drive.

1. Start up the drive.
2. Click **Save parameters to file** icon in the parameter window.

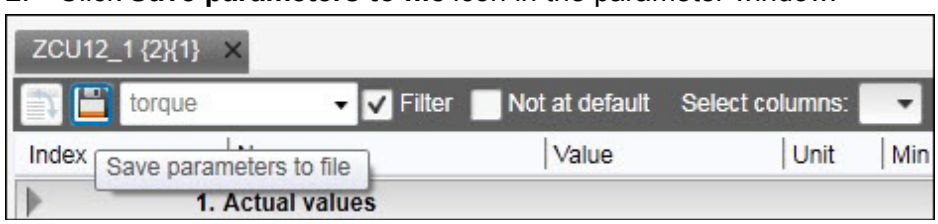



*Figure 86. Save parameters to file icon*

3. Select a folder, enter a name for the dcparamsbak file and click **Save**.

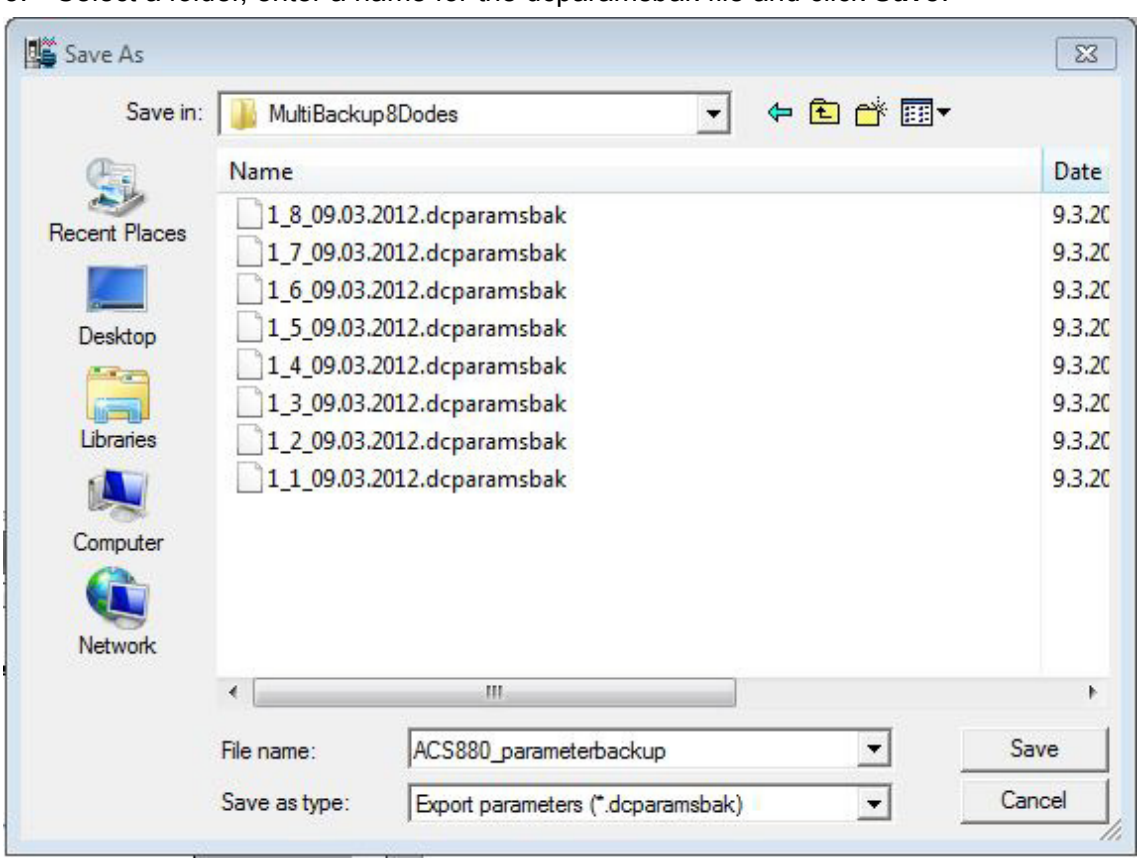



*Figure 87. Saving the dcparamsbak file*

4. To restore parameters to a drive, go to **File** –> **Open** –> **Parameter file…**.
   A separate tab opens.
5. Copy the parameter values to a new drive by clicking the **Download to device** icon.

You are asked to confirm the action.

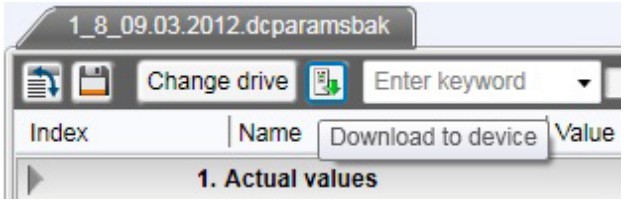



*Figure 88. Download to device icon*

6. If you get a message indicating that the upload of parameter values is going on, click **OK**.

   At the end of the restore operation you get a report of the operation.

7. Check the parameters that have failed during the restore operation.

   **Note:** If you use Drive composer entry you cannot modify parameter files in the offline mode. With Drive composer pro parameter values can be modified offline.

   Drive composer displays the open parameter file in a tree structure.

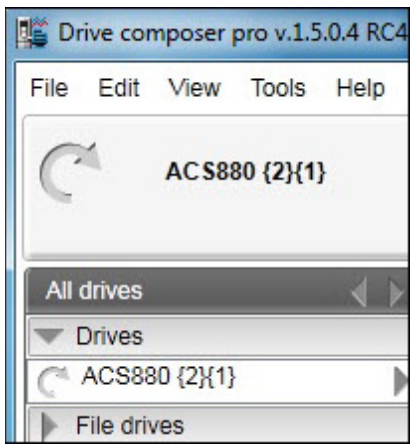



*Figure 89. Parameter file in a drive tree*

**Note:** Drive composer does not check the drive type and software version when copying parameters from a custom parameter window or a parameter file to a drive. Only visible parameters and ID run results are copied to a drive when the download command is used.

Use the backup/restore operation, for example, for the application program (Control Builder Plus program), panel home view configurations and different user settings. With the restore function you can also define how different parts are handled during the restore operation, for example, ID run results can be restored or cleared during the restore operation.

**Note:** The backup/restore function is available only with Drive composer pro.

## Comparing drive data (pro)

**Note:** Both versions of Drive composer have **Not at default** function for listing user-changed parameters. The **Compare drive data** function compares parameter values.

With Drive composer pro you can compare parameters between

- two drives
- two parameter files
- drive and parameter file.

1. Go to **Tools –> Compare drive data (Alt+C)**.

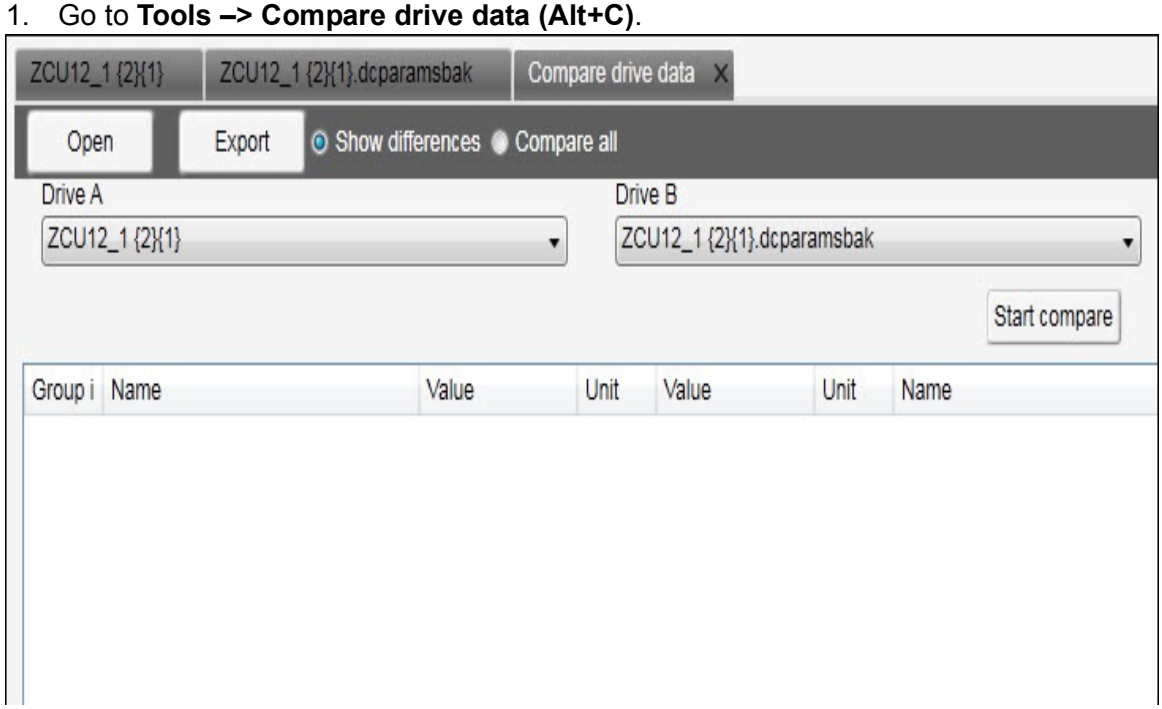



*Figure 90. Comparing drive parameters*

2. In a PC tool network, select drives from **Drive A** and **Drive B** drop-down menus.
3. To open a parameter file for comparison, click **Open**.
4. To see the parameter list without differences, deactivate **Show differences** check box.
5. Click **Start compare**.

   **Note:** The operation may take a some time to compare two different parameter structures.

The following figure shows an example of the result.

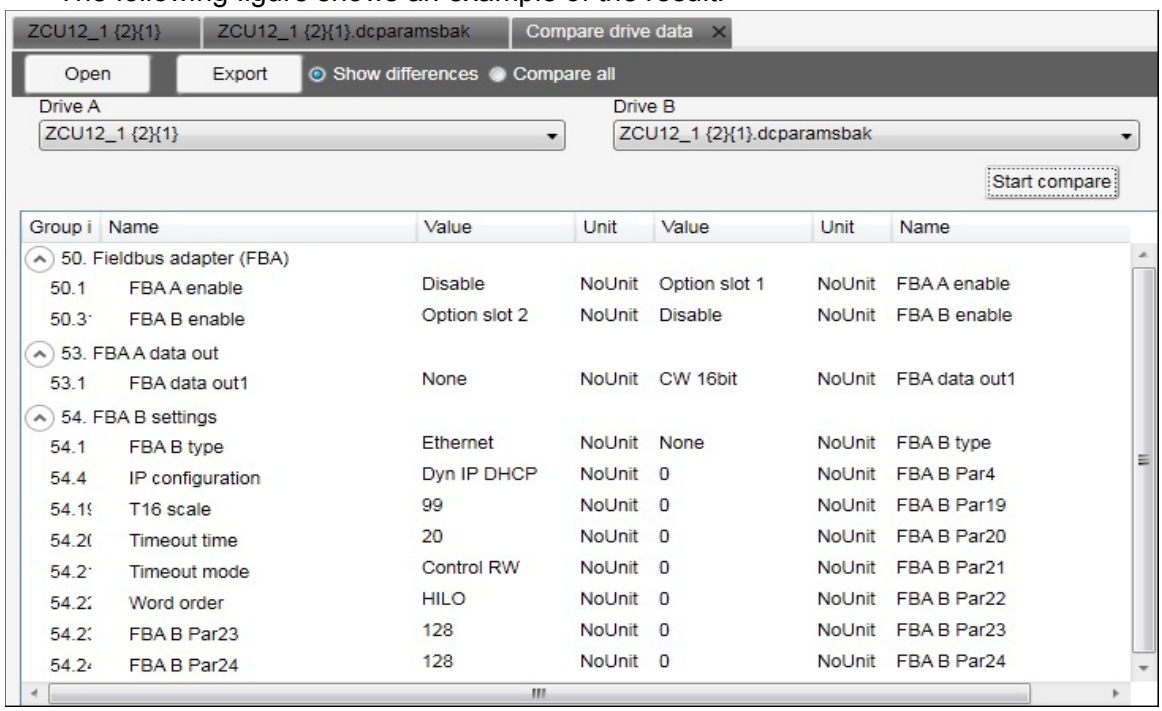



*Figure 91. Result of a comparison*

6. To export the result to a text (*.txt) file, click the **Export**.

**Note:** Click the **>> <<** buttons to copy parameter values from Drive A to Drive B.

7

# Monitor window

## Contents of this chapter

This chapter describes the monitor window and its use.

## Monitor window

In Drive composer you can monitor the operation of connected drives. In the online mode, the monitor window shows signal values in graphical or numerical format. The monitor data can be saved to a file for later use.

With Drive composer entry you can monitor 2 signals using 1-second time stamping.

With Drive composer pro you can monitor 32 signals. 8 signals can be monitored with fast time stamping. If Drive composer pro is used with an ACS880 drive, it is possible to monitor 1 signal per 1-ms time interval.

The monitor window is always a tabbed window, in other words, there is only one monitor window available.

User-made monitoring settings (selected signals, y-scalings for signals, pen colors, number of grids etc.) are saved by default. In other words, when you open the tool, there are always the latest settings available.

## Resizing the monitor window

When you start Drive composer the monitor window is in the minimized position and you have to lift it in the following way before you can start monitoring.

- You can resize the monitor window by clicking the title bar with the primary mouse button and dragging it upwards.

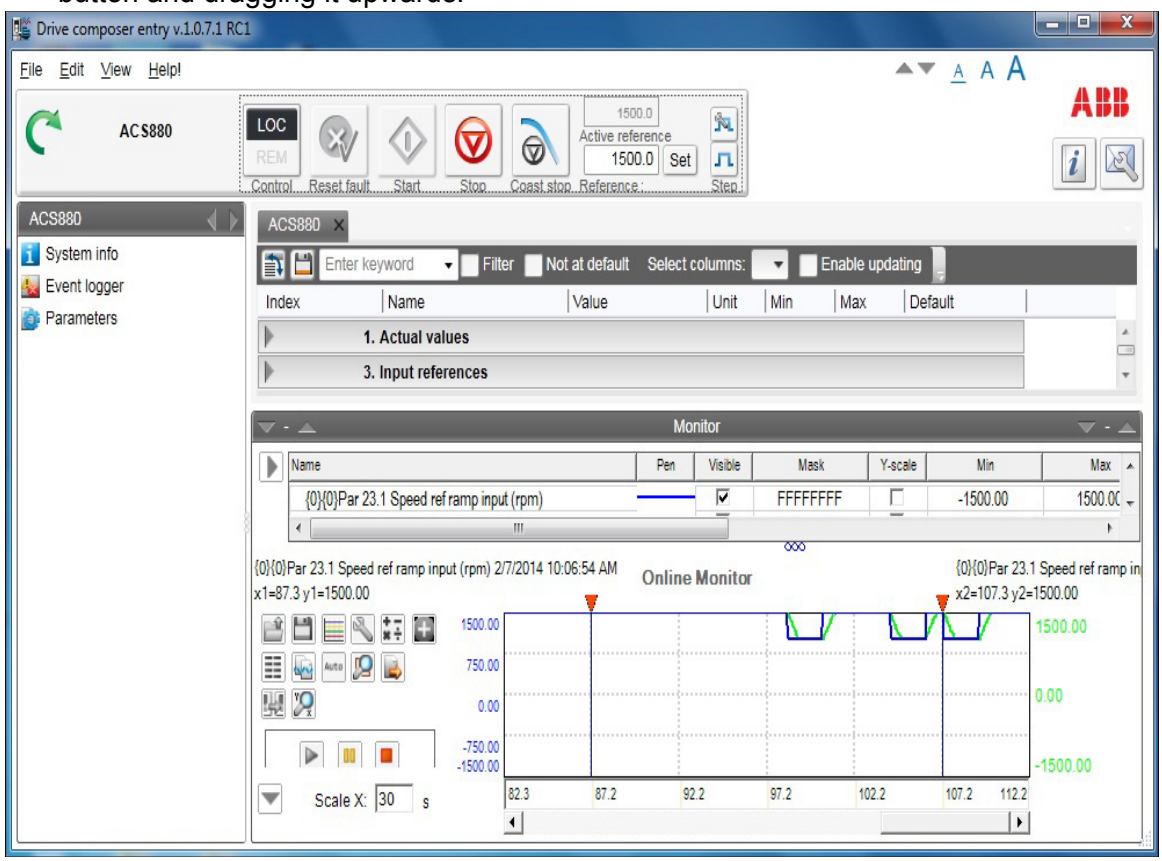



*Figure 92. Monitor window*

- You can resize the monitor window with the Minimize, Maximize and Split monitor buttons included in the Monitor menu bar.
- You can lift the monitor window by clicking the arrow buttons in the title bar.

# Adding parameters/signals for monitoring

There are two ways to add parameters/signals to the monitor window:

- Right-click a parameter/signal in the parameter window and select **Send to monitor**.

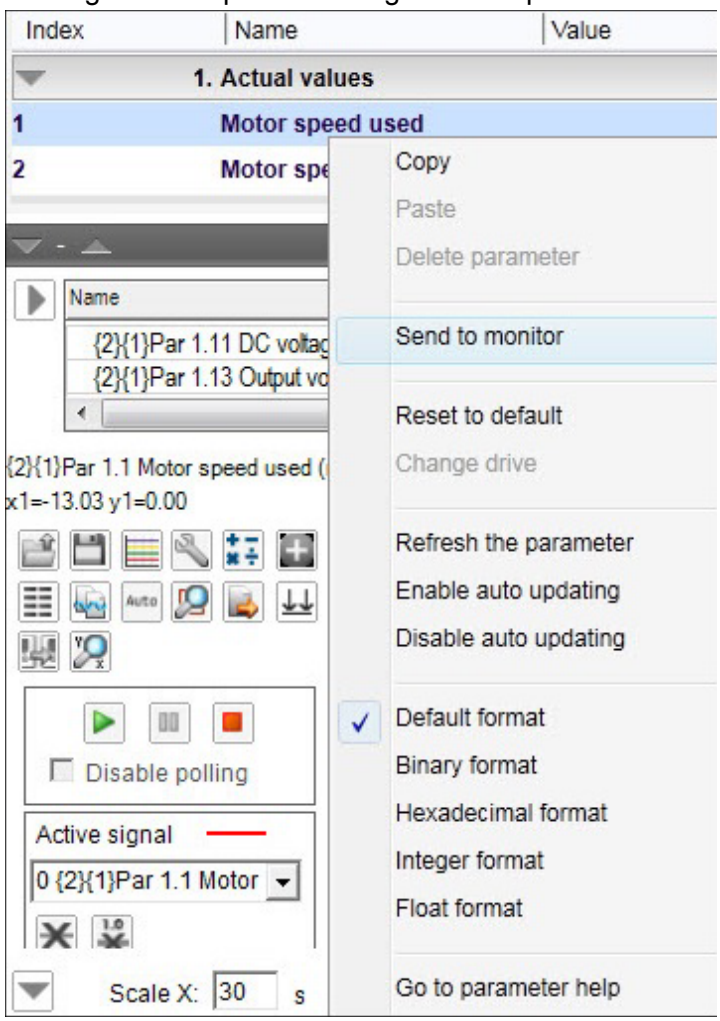



*Figure 93. Send to monitor command*

- Click the **Add signal** icon on the configurations and control area in the monitor window.

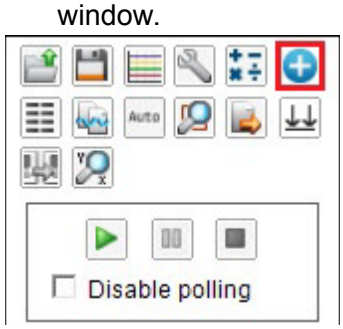



*Figure 94. Icons on the configuration and control area in the monitor window*

Select parameters from the Drive parameters list by double-clicking them or select a parameter and click Add button. You can add maximum of 26 parameters in Drive Composer pro and 8 parameters in Drive Composer entry.

**Note:** With Drive composer pro you can select signals/parameters from many different drives. Change the drive from the Drive list as shown in the following figure.

**Note:** In the PC tool network via Ethernet or with a panelbus, it is recommend that you select **Disable polling** to enable the best sampling result for monitoring. The status of the drive(s) cannot be read before you have unselected **Disable polling**.

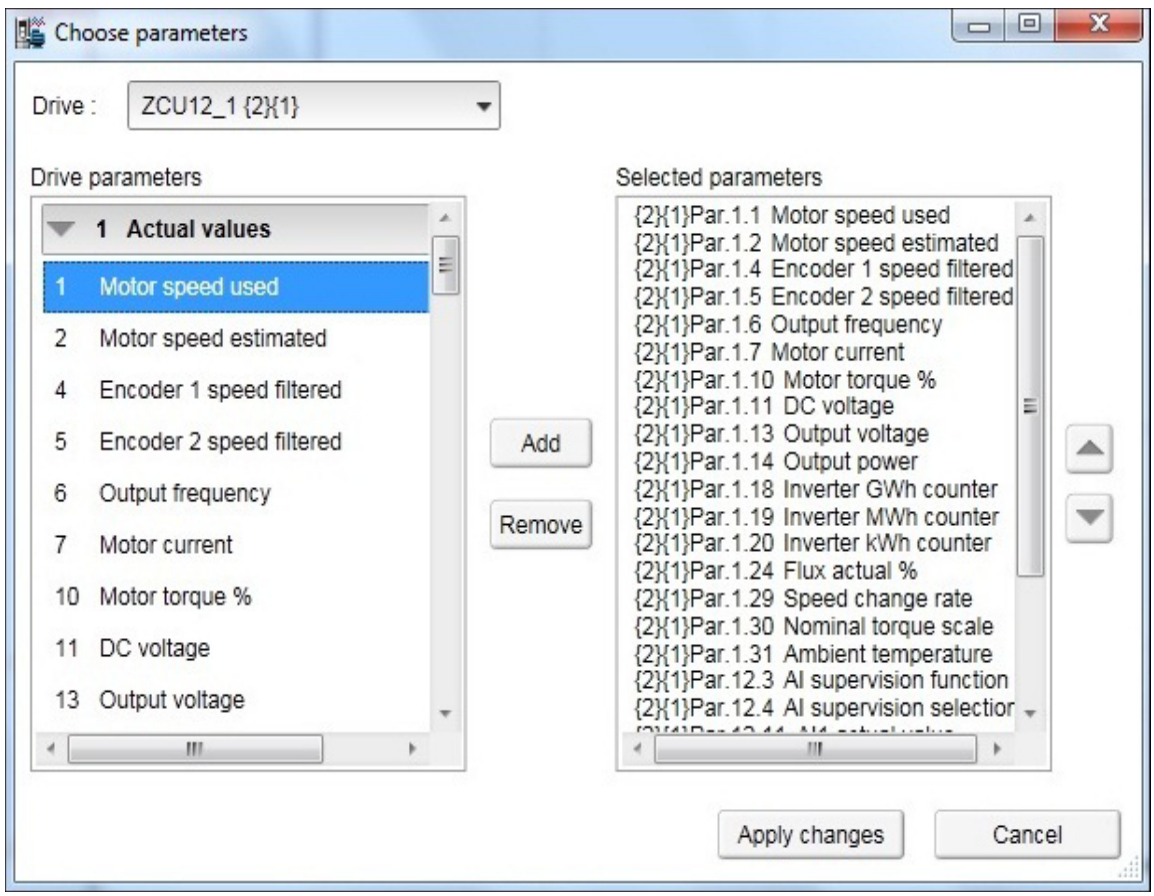



*Figure 95. Drive list*

The selected signals appear in the legend area.

To change the scalings of the y-axis of selected parameters/signals, click the Min or Max column in the legend area.

Active signals can be changed from the pull-down menu on the left side of the graph area.

All the other signal scalings are performed on the right side of the legend area. The right side y-scalings can be hidden by removing the check mark from the Y-scale column check box.

*Figure 96. Changing the pen color and style in the legend area*

You can change the color and thickness of the pen only after you have minimized, that is hidden, the legend area with the **Arrow** button on the left (see the figure above).

To change the scalings of the y-axis for selected parameters/signals, click the Min or Max column in the legend area.

## Monitor window components

The monitor window consists of the following parts:

- Configuration and control settings
- Graph area
- Y-axis
- X-axis
- Legend area
- Limit, color settings.

# Configuration and control settings

| Icon | Description |
|---|---|
| | Opens the saved monitored file to the graph area, which can be done only after monitoring has been stopped. File extension is *.dcemon or *.dcpmon.<br>**Note:** If you have an online connection and want to start a new monitoring session after viewing opened monitored data, you can click the Monitor configuration icon. |
| | Saves the accumulated monitor data to a monitored data file. File extension is *.dcemon for the entry version and *.dcpmon for the pro version. |
| | Chart configuration can be used to set the colors for grids, number of grids, background color, color of alarm pen etc. |
| | Opens the Monitor settings window where you can modify the monitor settings and the select the sample interval time for monitoring. You can also set the method for starting and/or stopping monitoring (by hand/time). You have to select the HD where the saved data is stored.<br>**Note:** The monitored data is saved cyclically to the selected file.<br>Created monitoring configuration can be saved and restored from Monitor settings window. |
| | Allows you to create an arithmetic signal for monitoring by using two signals used in monitoring. Available operations are ADD, SUB, MUL and DIV.<br>**Note:** Remember to save settings in a workspace. |
| | Opens a dialog where you can add or remove one signal or several signals from the monitor configuration.<br>**Note:** You can use the Add signal function only when monitoring has been stopped. |
| | Shows the signal values in text format. Only the values seen in graph area are included in the numeric signal value list. |
| | Copies the monitoring graph to a clipboard. |
| | Scales the y-axis automatically.<br>**Note:** Zooming is not possible in the Autoscaling mode. |
| | Resets both x- and y-axis zooming to original 100%. |
| | You can export the monitored data in csv format to a PC. Exported data can analyzed with other tools. Use the Tab key for delimiting the columns.File extension is *.dcexp. |
| | Aligns signals. |
| | Selects or changes the drive. |
| | Zooms in the x- and/or y-axis up to 1000%. |

# Monitor controls

| Icon | Description |
|---|---|
| | Starts recording data in the selected drives and displaying it on the screen. |
| | Pauses monitoring on the screen but monitoring continues on the background. When you click the Pause icon again, all values are seen and monitoring continues normally. |
| | Stops recording data in the selected drives. The graph or numerical values remain on the screen. The graph can be saved for later purposes. |

# Active signal

The Active signal area consists of functions that can be done with the selected active signal. The signal can be changed from the pull-down menu.

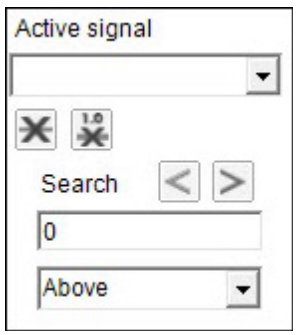



*Figure 97. Active signal area*

The main functions are the following:

| Icon | Description |
|---|---|
| | Allows you to see the numeric values of the measuring points for the active signal. See figure *Measuring points for the active signal*.<br>**Note:** This functionality works only if you have zoomed in enough in the graph area. |
| | Allows you to see the measuring points of the active signal. See figure *Measuring points for the active signal*.<br>**Note:** This functionality works only if you have zoomed in enough in the graph area, that is, if the length of the x-axis is short enough. |
| | Searches to the left. The following search conditions can be selected from the pull-down menu: Above, Below or Either. See figure *Search functionality*. |
| | Searches to the right. The following search conditions can be selected from the pull-down menu: Above, Below or Either. See figure *Search functionality*. |

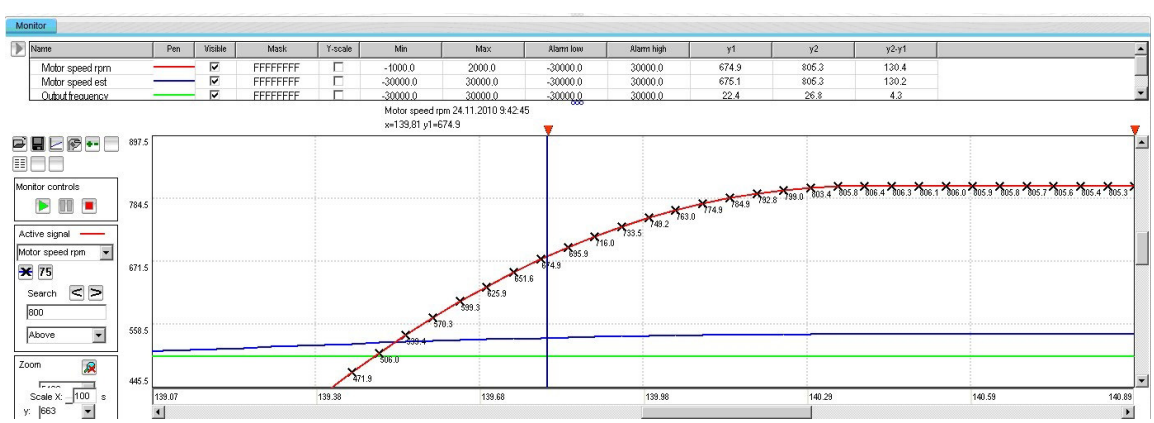



*Figure 98. Measuring points for the active signal*

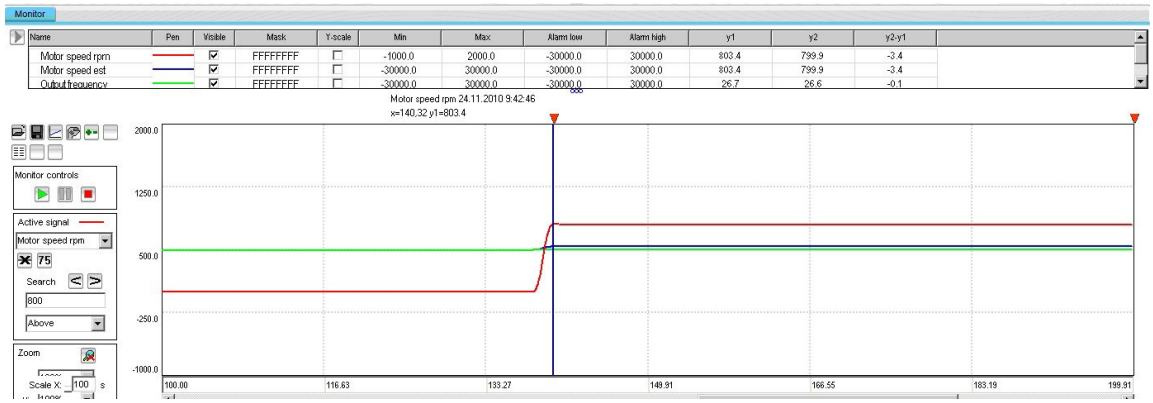



*Figure 99. Search functionality*

# Zooming

To enlarge the graph and take a closer look at the details, follow these steps:

1. To set the starting corner for the enlargement, place the mouse cursor in the graph area and press down the primary mouse button.
2. Drag to the opposite desired corner, and release the button.

   The part of the graph that was inside the selection rectangle zooms out to fill the graph area.
3. To reset the zoom tool, click the **Reset zoom** icon.

You can also use the zooming tool by selecting independent values from x and y pull-down menus.

**Note:** Monitoring is paused during zooming. To continue monitoring, click the **Reset zoom** icon shown in the figure below.

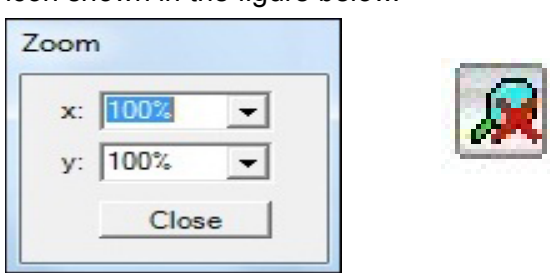





*Figure 100. Zoom tool*

# Panning

The graph can be panned by dragging the graph with the right mouse button pressed down.

# Legend area functions

The legend area shows selected signals. You can perform the following actions in the legend area:

- Change the color of the pen, thickness and style of the pen by minimizing the legend area and setting the values of each signal. See figure *Legend area functions*.
- Make signals visible or invisible by clicking the check box in the Visible column.
- Set a bit mask for monitoring. When you double-click the value in the Mask column, a new window opens allowing you to select bits for monitoring.
- Make Y-scalings visible or invisible by clicking the check box in the Y-scale column.
- Set values for y-axis scaling. You can modify the minimum and maximum values by clicking them and entering a new value. Press Enter to enforce the new value or press Esc to restore the value.

  **Note:** If you do not see immediate changes in the graph area, check that autoscaling is not enabled.
- Set alarm limits for monitored signals. The color of a signal changes when the limit in the Alarm low or Alarm high column is reached. The color and style for the pen are selected from **Chart settings**.
- See the double cursor tool, y1 and y2 values and y2—y1 and x2—x1 differences.

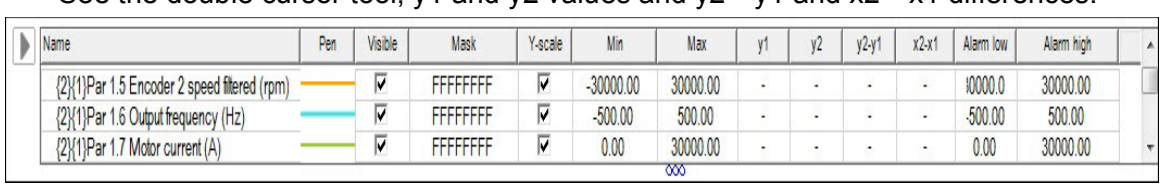



*Figure 101. Legend area functions*

# Graph area functions

The monitor window and data logger window have similar graph area facilities for displaying signal values. Their usage is described here. Before Drive composer starts monitoring online, the OnLine monitor text is seen in the graph area. When monitor files are viewed, the DataFile Viewer text is seen in the monitor window.

The graph area shows the selected signal values with different colors. The x-axis represents Time and can be set from 0 to 120s. You can change the values in online monitoring mode. Scalings of the y-axis are changed in the legend area.

For data logger files, an orange arrow-head on the x-axis indicates where triggering has occurred. Data can be combined from several files to one graph.

## Double cursor tool

With the cursor tool, you can see the exact values of the signals at two positions in the graph area. You can move the position of cursors by clicking the primary mouse button down on the red cursor tool icon and moving it. While the mouse button is pressed down, you can move the cursor line to the left and right.

The time stamp of the cursor tool is shown in the header of the cursor tool. This is shown for the active signal. The time stamp changes if active signal is changed. The values for y1 and y2 are shown in the legend area. Signal value differences are shown in the column y2—y1. The time difference for x2—x1 is also shown in the figure below.

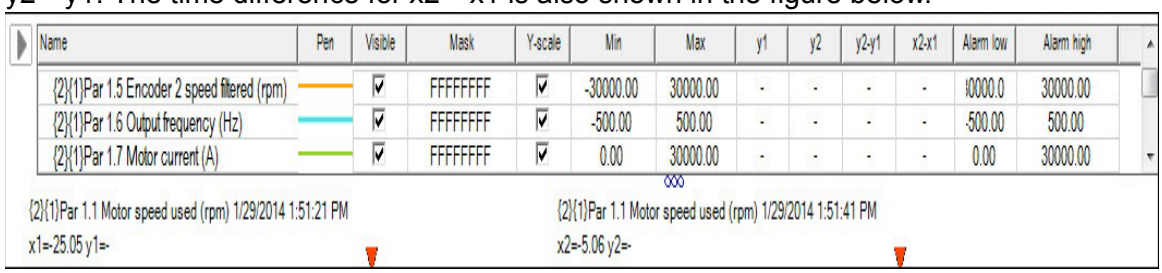



*Figure 102. Double cursor tool*

8

# Workspace handling

## Contents of this chapter

This chapter describes the workspace functionality.

## Overview

Workspace consists of the user interface status, such as parameter windows and custom parameter windows.

The current workspace status can be saved to a file and restored later.

**Note:** You cannot save/restore the following status data:

- drive control status
- If a drive has been controlled locally with Drive composer when the workspace is saved, the workspace is saved without the change in the drive control status.
- content, status and zooming levels of a stopped, paused or running monitor.

**Note:** Do not edit a workspace or graph file. The workspace (.dcxml) and monitored data (.dcmon) files can contain binary data. For example, if the default workspace file is corrupted, Drive composer does not open. If Drive composer does not open, delete your default (.dcxml) file from the PC and open Drive composer again.

# Creating a workspace and using it as a default workspace

1. Make a connection to a drive.
2. Resize the monitor window to half a screen.
3. Create a new custom parameter window by clicking **File** –> **New..**–> **Custom parameter set** and name it “Own limit window”.

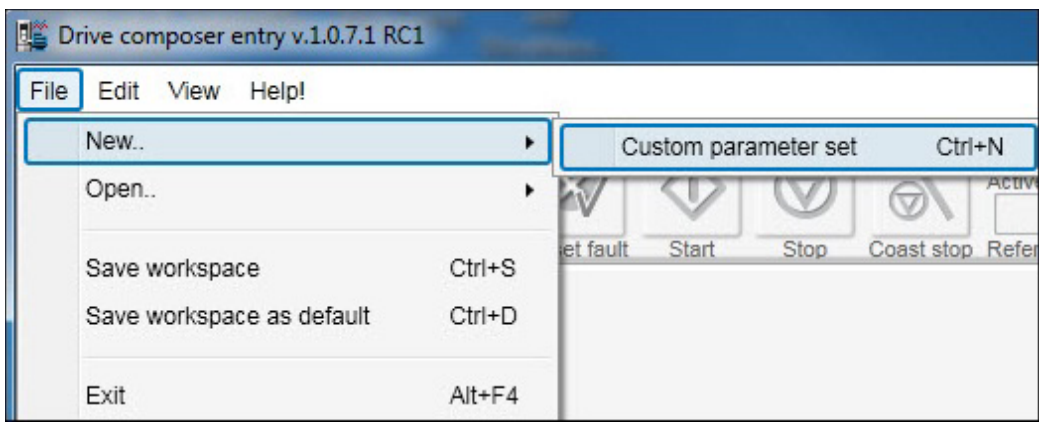



*Figure 103. Custom parameter set*

4. In the File menu, click **Save workspace** to save the workspace.

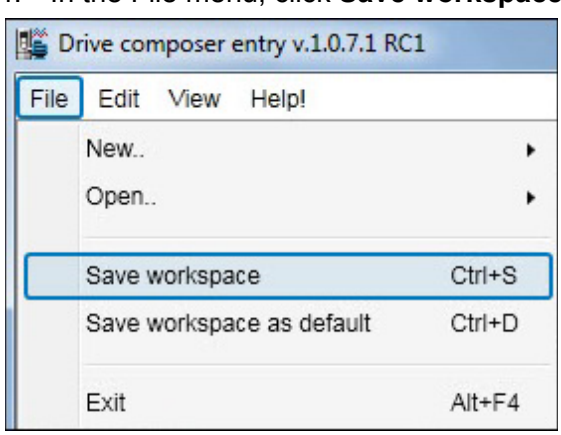



*Figure 104. Save workspace command*

5. Create another custom parameter window and name it “Own reference window”.
6. Select floating windows by clicking **View** –> **Floating windows**.
7. Enter keyword “Limit” in the Enter keyword field of the main parameter window.
8. Select parameters in the main parameter window and drag and drop or copy them to custom parameter window Limit.
9. Clear the search result and enter keyword “ref” in the Enter keyword field.
10. Select parameters in the main parameter window and drag and drop or copy them to custom parameter window Own reference window.
11. Close the main parameter window.
12. Click **Event logger** icon in the drive list on the left.

13. Click **File** –> **Save workspace** and name it “OwnWorkspaceFor_ACS880”. See figure *Save workspace command*.

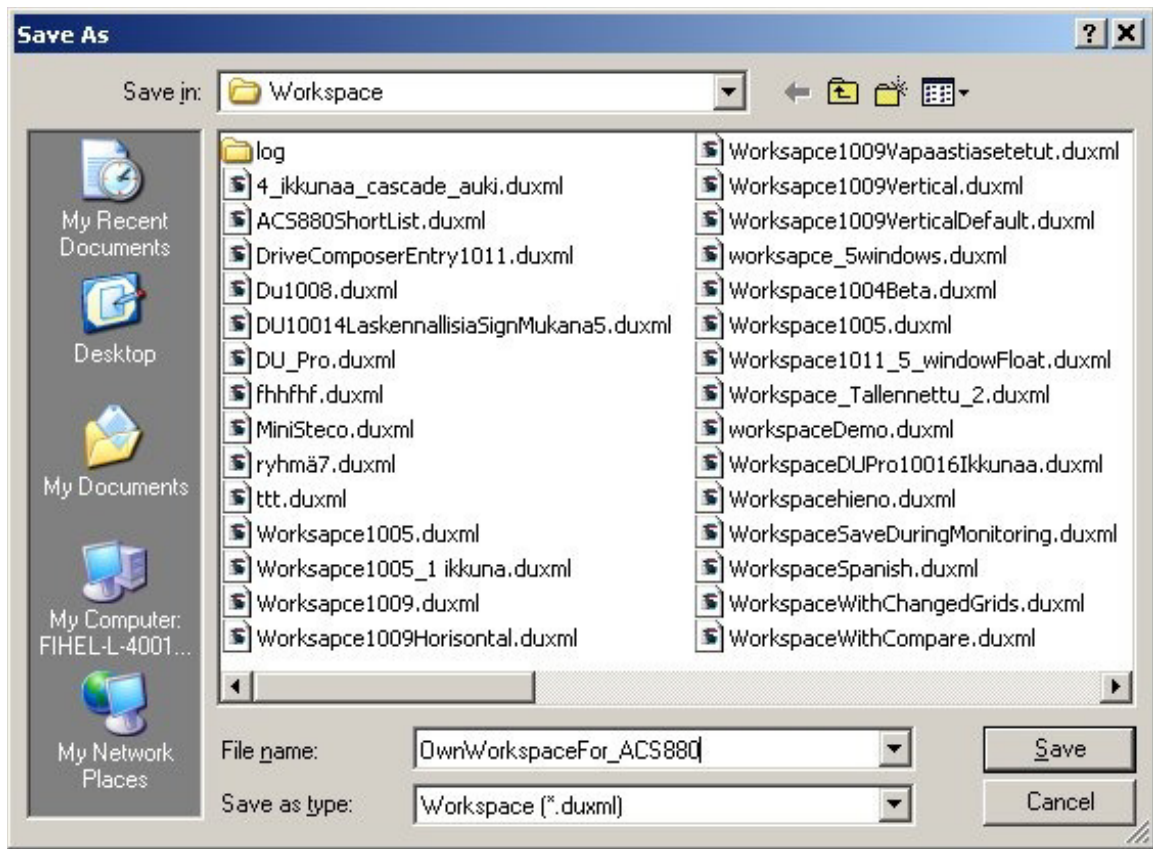



*Figure 105. Name for your own workspace*

14. Close the connection to the drive and make a new connection.

15. Click **File** –> **Open..** –> **Open workspace** and open the workplace that you have saved.

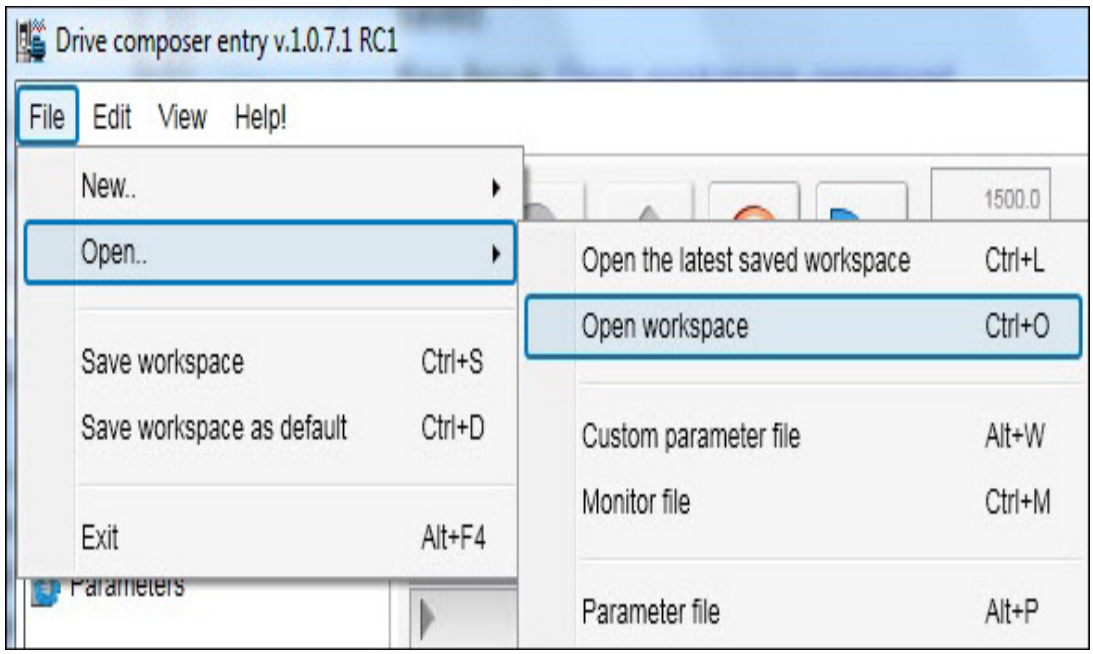



*Figure 106. Open workspace command*

The workspace is ready to use for commissioning and maintaining drives.

The workspace can also be saved as a default workspace which opens automatically when Drive composer is started.

9

# Event logger

## Contents of this chapter

This chapter describes the event logger view and its use.

## Event logger view

The event logger view displays the contents of an event logger of a connected drive. The contents of an event logger can be faults (stopping the drive), alarms or events. See the figure below.

With some drives there can be more data of a fault in the monitor window.

**Note:** Fault logger data can also be seen from other faults than the latest active faults.

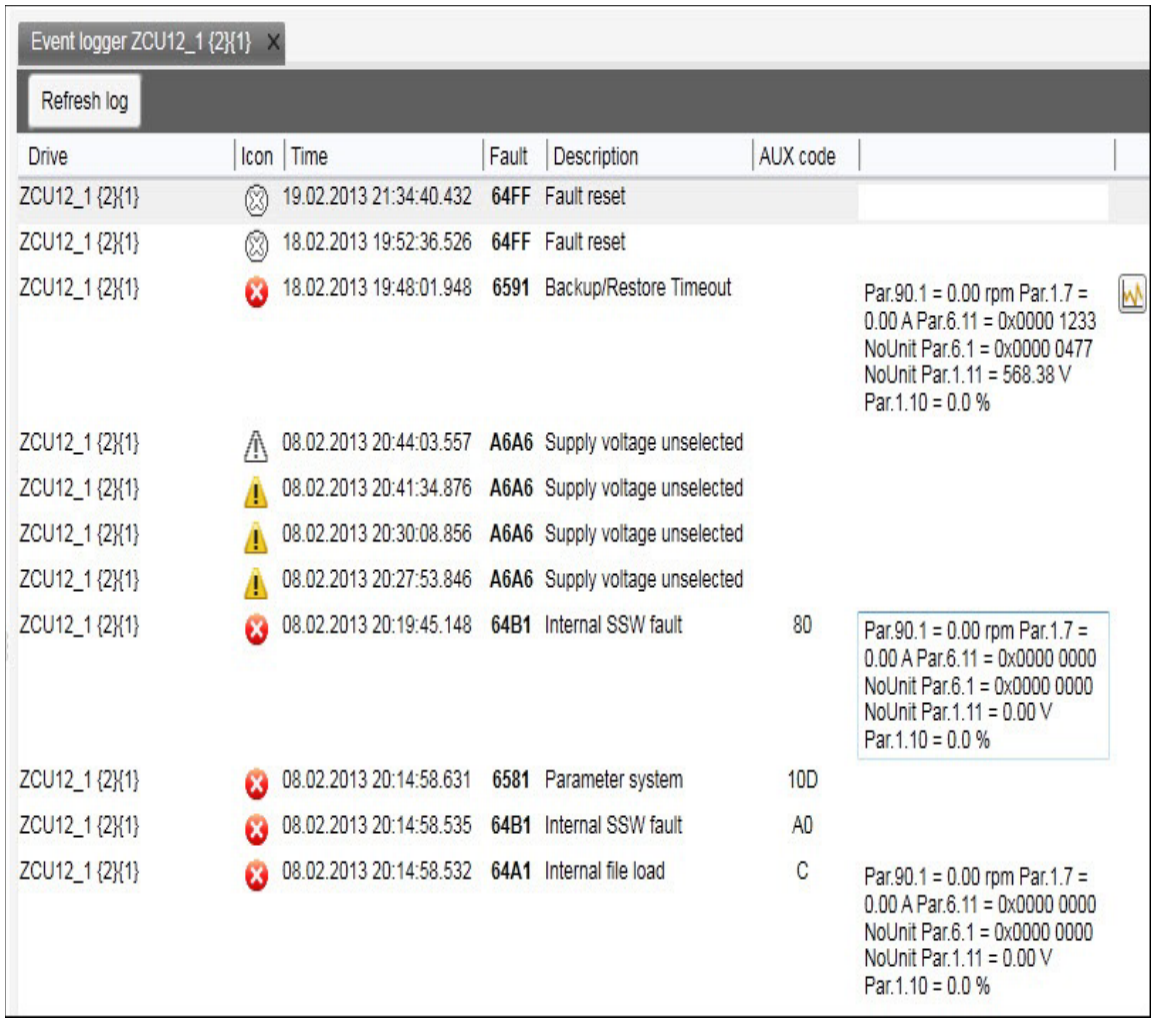



*Figure 107. Event logger view*

The event logger always relates to a single drive and resides in its window.

The Icon column shows the following alarm and fault icons:

- Red circle with a white cross (x) means that the drive has a fault.
- Yellow triangle with an exclamation mark means that the drive has an alarm.
- Grey circle or triangle means that the fault or alarm has disappeared from the drive.

The time stamp for faults, alarms and events comes from the drive.

Faults, alarms and events can be sorted by clicking the header of the Fault column.

# Fault data logger

The **Fault data** icon in the Event logger view shows that the drive has fault data that can be seen with a monitor component. The icon is visible only if the drive sports the functionality.

*Figure 108. Fault data icon*

When you click the icon, the following message appears: “Please wait. Loading fault data appears”. When the message box disappears, the data has been loaded.

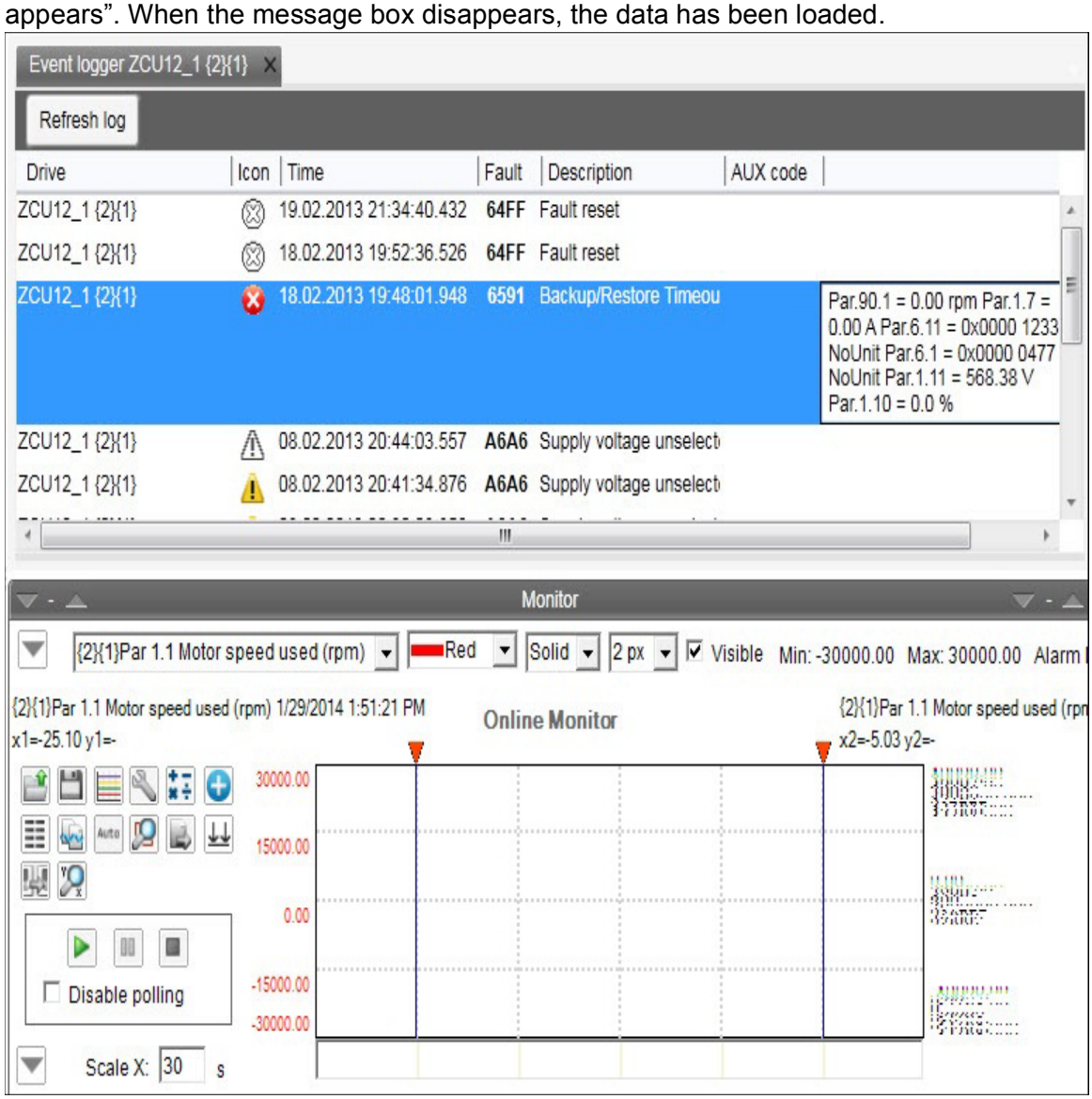



*Figure 109. Fault data logger in the monitor window*

Save the fault data.

**Note:** To continue the normal monitoring, click the **Monitor configuration** icon in the Monitor controls box.

10

# Diagnostics

## Contents of this chapter

This chapter describes how to troubleshoot a drive with the **Support package** button of Drive composer and a data logger included in the drive.

## Support package

By clicking the **Support package** button, you can collect troubleshooting data and send it to the support personnel for analysis.

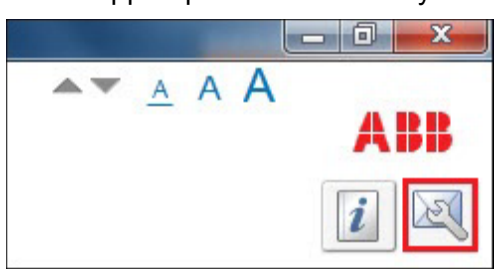


*Figure 110. Support package button*

Drive composer creates a SupportFiles.dcsupport file to the email program installed in the PC. The file can also be saved manually. The support package includes different files depending on the drive type. All parameters, contents of the event logger and System info are always available.

To open the contents of the SupportFiles.dcsupport file with WinZip, rename the file as SupportFiles.zip.

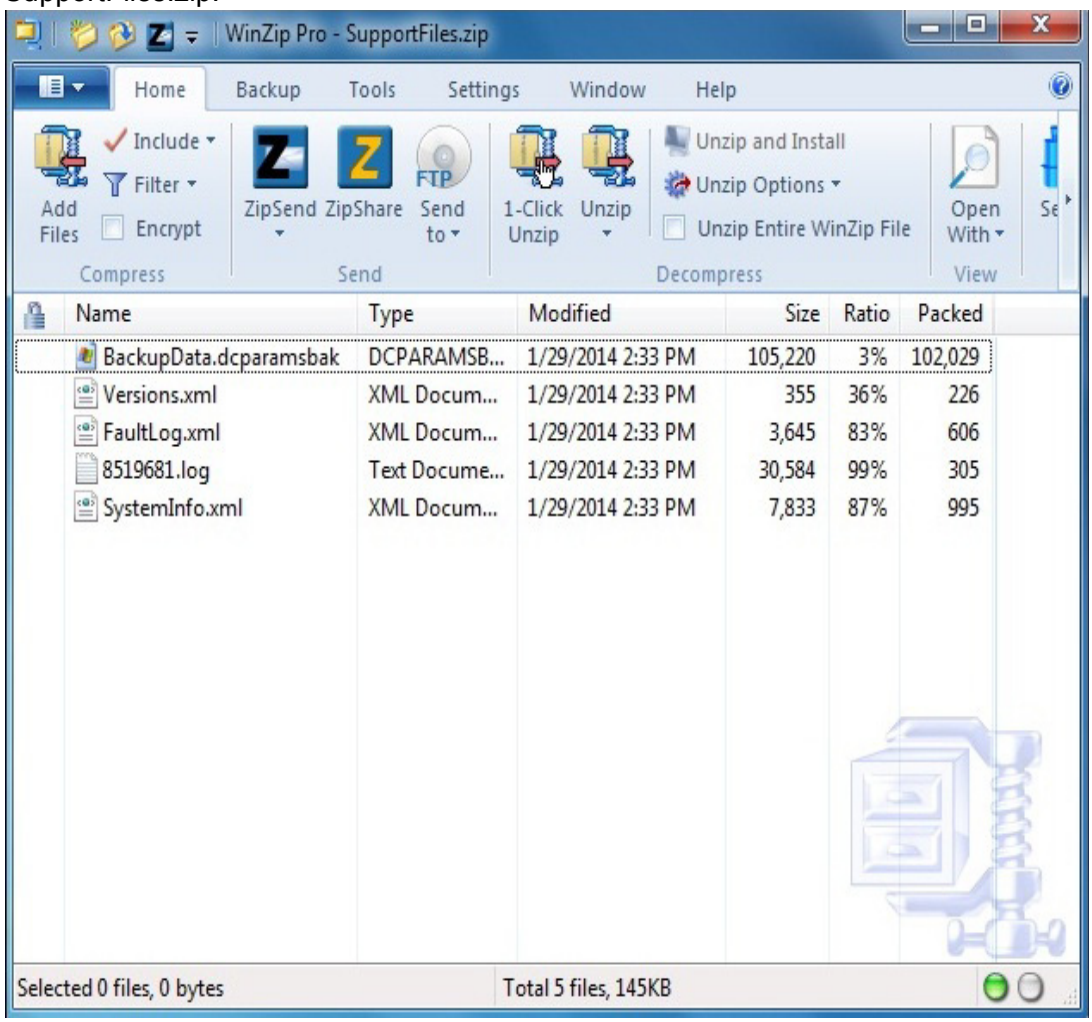



*Figure 111. Contents of the SupportFiles.dcsupport file*

The BackupData.dcparamsbak file can be opened with Drive composer. Other files can be opened with standard windows programs. In the figure below the FaultLog.xml file has been opened with Microsoft Excel.

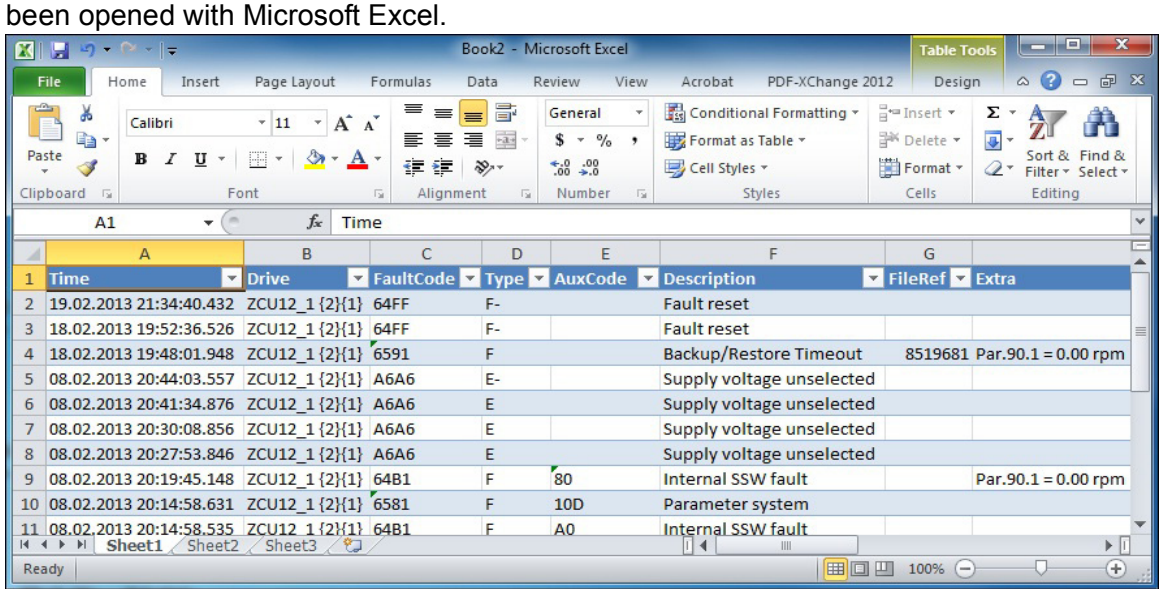



*Figure 112. FaultLog.xml file opened with Microsoft Excel*

# Drive application programming license

The drive application programming license N8010 is required for downloading and executing the program code on the ACS880 drive. In DriveComposerPro, select **System info** tab. Check if the appropriate license is loaded to the drive. If the required license code is not available, contact ABB representative.

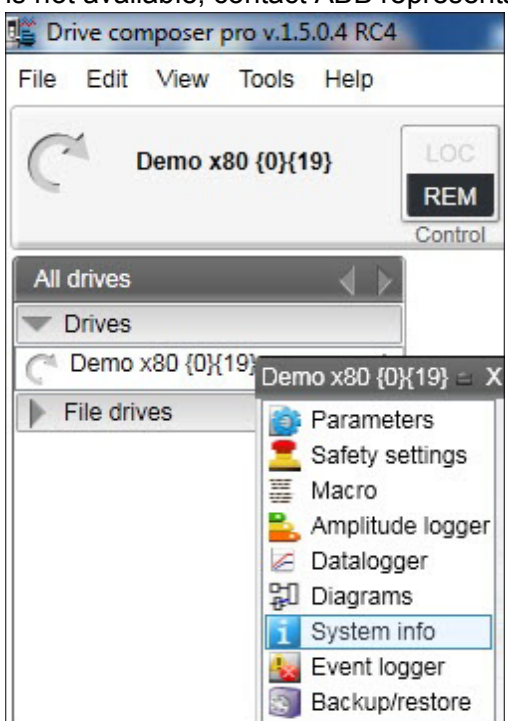



*Figure 113. System info command*

# System info

The System info tab provides basic information about the drive and its options, for example, drive type code and firmware version.

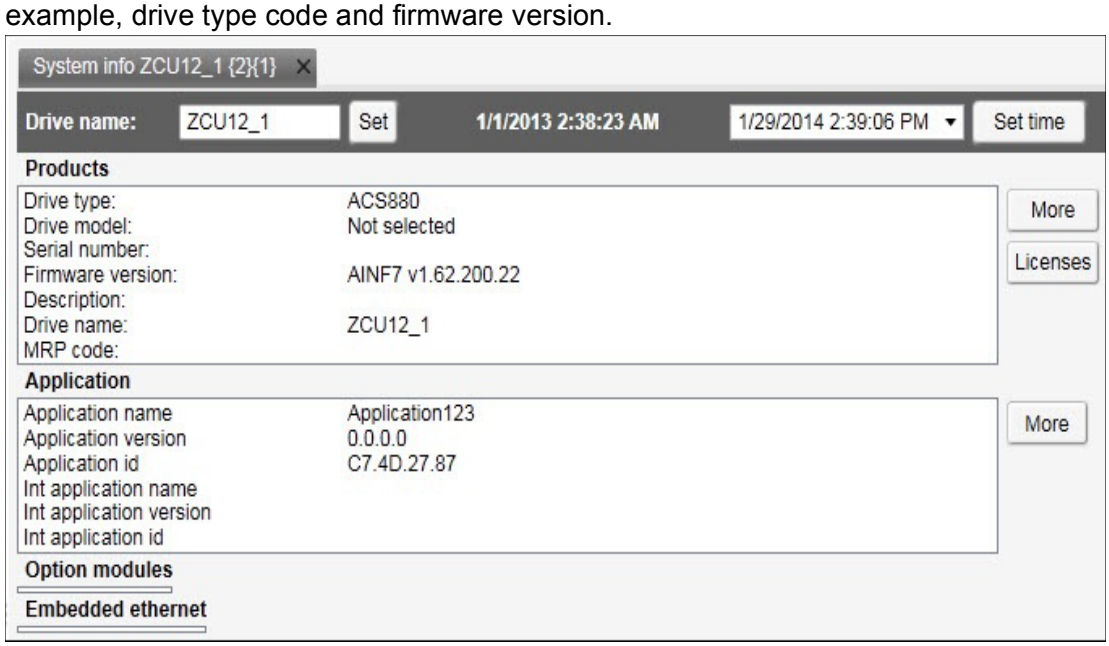



*Figure 114. System info*

You can also set the time for the drive and name the drive.

# Data logger (pro)

ABB drives have data logger(s) that can record data from various signals of a drive even if the drive is not connected to a PC. A Datalogger is operated with the Datalogger view.

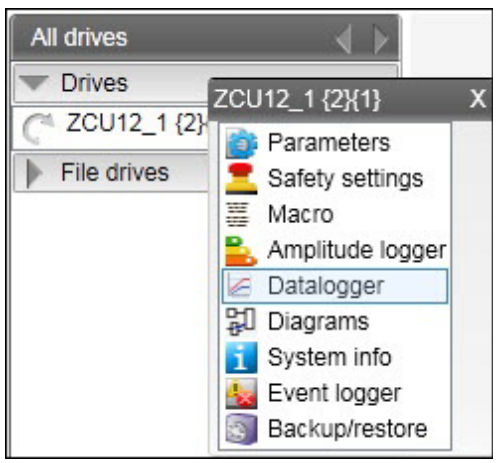



*Figure 115. Data logger configuration*

The data collecting can be stopped with a specific stop command or automatically when a triggering condition is true in the drive. After data collection stops you can read and study the data in Drive composer pro.

The data logger view resembles the monitor window. Normally the data logger view provides data from a single drive.

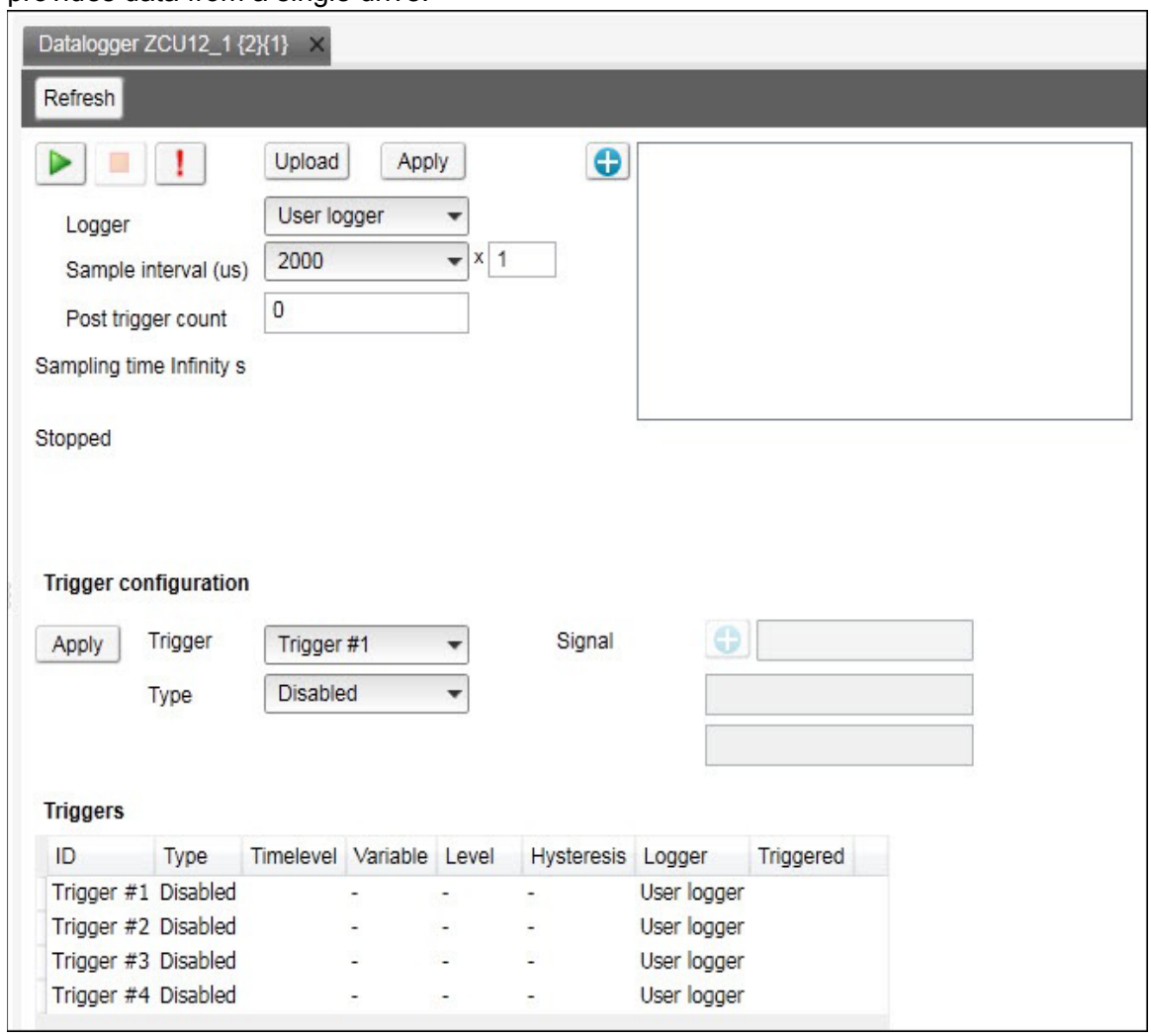


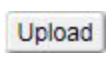

*Figure 116. Data logger view*

## Data logger settings

The data logger settings window contains the following functions:

- Data logger commands
- Data logger content configuration
- Data logger trigger configuration

### Data logger commands

| Button | Description |
|---|---|
| | Start button records data in the current Logger of the drive. |
| | Stop button ends recording data in the drive. |
| | Trigger button triggers the associated Logger. |
|   | Upload button moves data from the drive and draws it to the monitor window. |
| | Apply button is used for Logger and Trigger conditions. |

### Data logger content configuration

With the data logger content configuration you can determine which data logger of a drive is used.

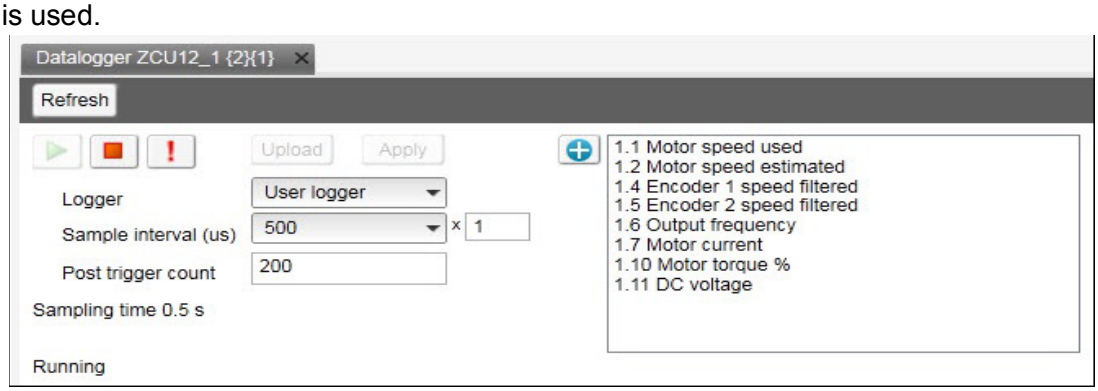



*Figure 117. Data logger content configuration*

- **Logger** determines which logger settings are modified. A drive has user logger(s) and factory logger(s). Factory logger settings cannot be modified.
- **Sampling interval** determines in microseconds how often the logger reads samples of the signal values. The time level shows the available lengths of the internal cycle time of the drive.
- **Post trigger count** specifies how many samples are stored after the triggering condition occurs.
- **Sampling time** shows the length of the sampling time with a selected number of signals and a selected sample interval.
- **Logger signals panel** shows a list of the signals selected to record. You can add/remove a signal by clicking the Add signal icon.

**Note:** The maximum number of signals that a logger can record at one time depends on the drive. Click **Apply** after making the changes.

### Data logger trigger configuration

With the data logger trigger configuration you can determine trigger conditions for each trigger.

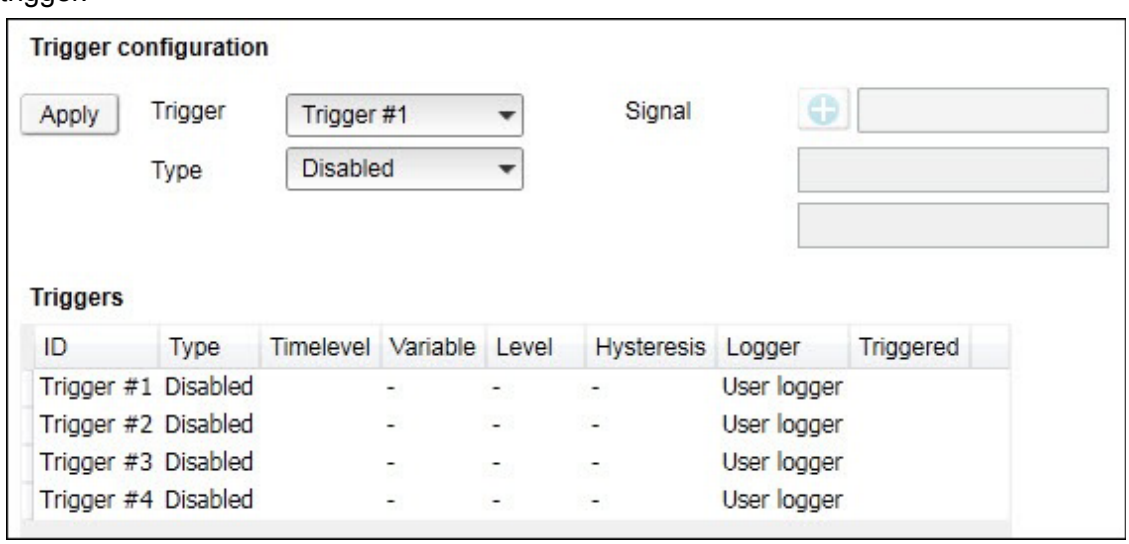



*Figure 118. Data logger trigger configuration*

## Adding a trigger

1. To modify the conditions of a trigger, select the trigger from the **Trigger** drop-down menu.

   Trigger 1 is normally used for user logger 1, Trigger 2 for user logger 2 etc.

2. Choose the type for the triggering condition from the **Type** drop-down menu.

   Following are the alternatives (however, not all of them are available at all times):
   - **Bit mask** stops according to the bit mask of the selected signal.
   - **Disabled** can temporarily disable a trigger condition.
   - **Falling edge level** stops according to the selected signal, triggering level and hysteresis values.
   - **Fault** stops when the drive reports a fault.
   - **Event** stops when the drive reports an event.
   - **Rising edge level** stops according to the selected signal, triggering level and hysteresis values.
   - **Warning** stops when the drive reports a warning.

3. If you use Rising edge level of Falling edge level as the type for the triggering condition, see *Using the level triggers*.

4. Click **Apply**.

### Using the level triggers

When condition Rising edge level is used, the function wakes up when the actual value of the triggering signal is below the triggering level - hysteresis. Similarly, when condition Falling edge level is used, the function wakes up when the actual value of the triggering signal is above the triggering level + hysteresis.

| | |
|---|---|
| Rising edge | Triggering signal is below the triggering level when the data logger is started:<br>Triggering occurs when the signal goes above the triggering level.<br>Triggering signal is above the triggering level when the data logger is started:<br>Triggering occurs when the signal goes above the triggering level, but before that the signal must go below the triggering level - hysteresis. |
| Falling edge | Triggering signal is above the triggering level when the data logger is started:<br>Triggering occurs when the signal goes below the triggering level.<br>Triggering signal is below the triggering level when the data logger is started:<br>Triggering occurs when the signal goes below the triggering level, but before that the signal must go above the triggering level + hysteresis. |

## Uploading triggered or stopped data logger data

1. In the data logger view select a logger from the **Logger** drop-down menu.
   If the logger status is stopped or triggered, data can be uploaded.
2. Click **Upload** to upload data to the monitor window.
   **Note:** If you want to continue normal monitoring after using the data logger, click **Monitor configuration** icon and select a sampling interval for monitoring.

*Figure 119. Continue monitoring after using the data logger*

3. Click **Add signal** icon to add signals for monitoring.

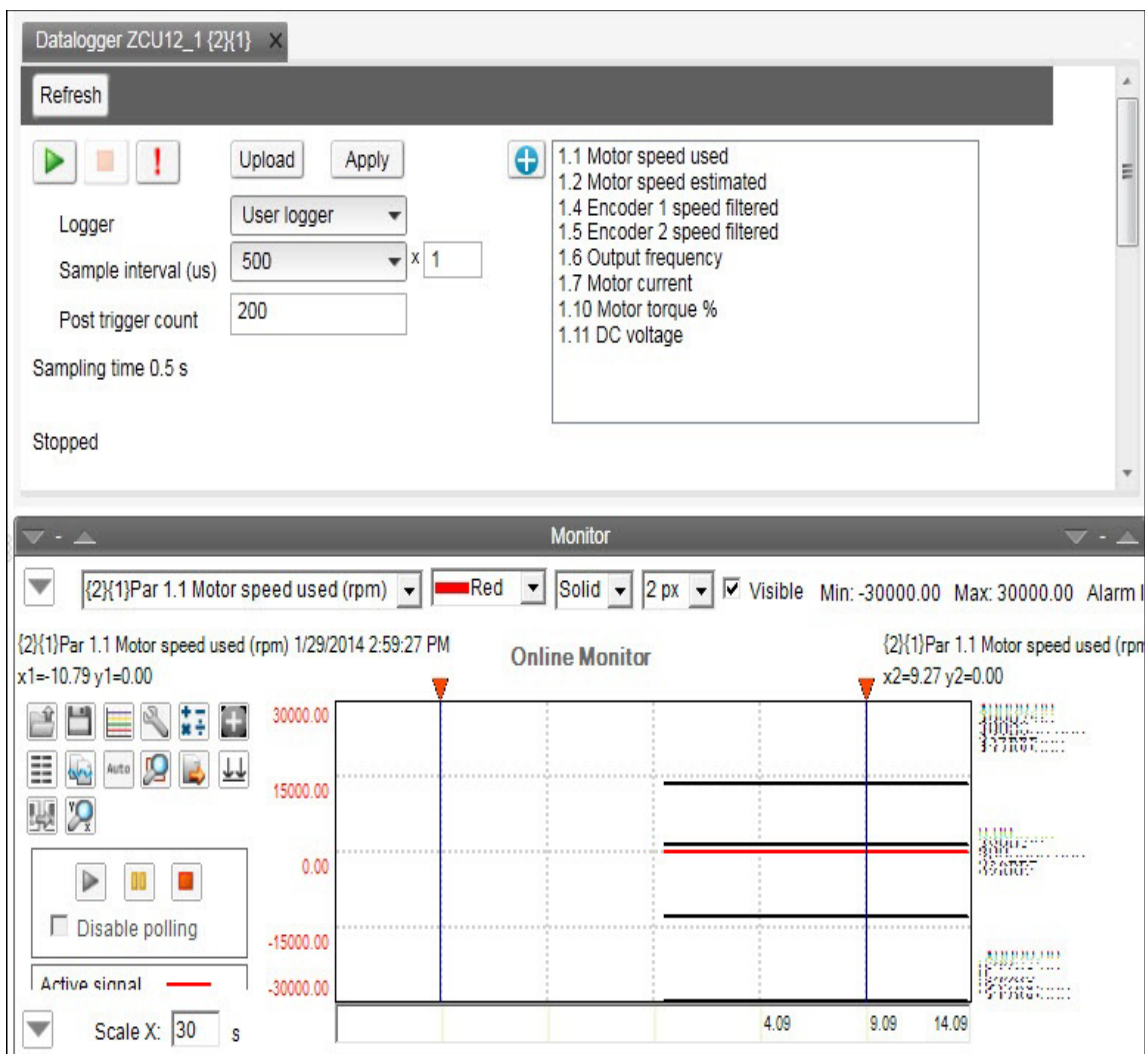
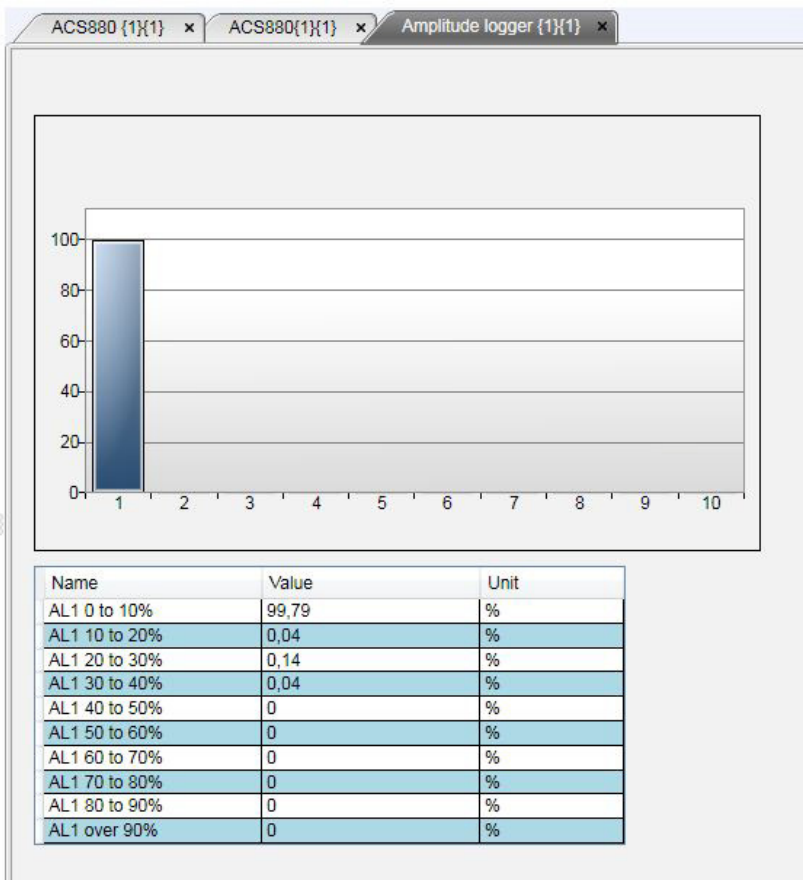



*Figure 120. Uploaded data logger data*

# Amplitude logger (pro)

ABB drives have an amplitude loggers that can record data from various signals of a drive. The results of an amplitude logger 1 (current) are displayed by the following curve. Each parameter represents an amplitude range and shows what portion of the samples fall within that range.

**Note:** Data loggers or amplitude loggers are not available for all ABB drives.




| Name | Value | Unit |
|---|---|---|
| AL1 0 to 10% | 99,79 | % |
| AL1 10 to 20% | 0,04 | % |
| AL1 20 to 30% | 0,14 | % |
| AL1 30 to 40% | 0,04 | % |
| AL1 40 to 50% | 0 | % |
| AL1 50 to 60% | 0 | % |
| AL1 60 to 70% | 0 | % |
| AL1 70 to 80% | 0 | % |
| AL1 80 to 90% | 0 | % |
| AL1 over 90% | 0 | % |

*Figure 121. Amplitude logger*

# Macro (pro)

ABB drives have Macro functionality that can automatize a task or sequence of tasks. Macros are used for parameter value setting to multiple networked drives when custom window functionality is not sufficient. Macros may also be used for tasks which require logical or conditional parameterization of a drive.

- Right-click a drive and select **Macro**.

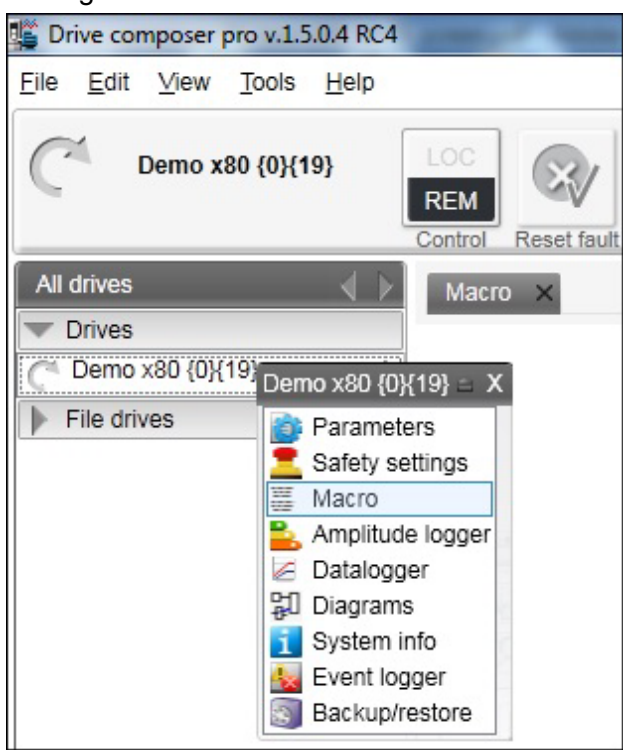



*Figure 122. Macro command*

A Macro screen displays.

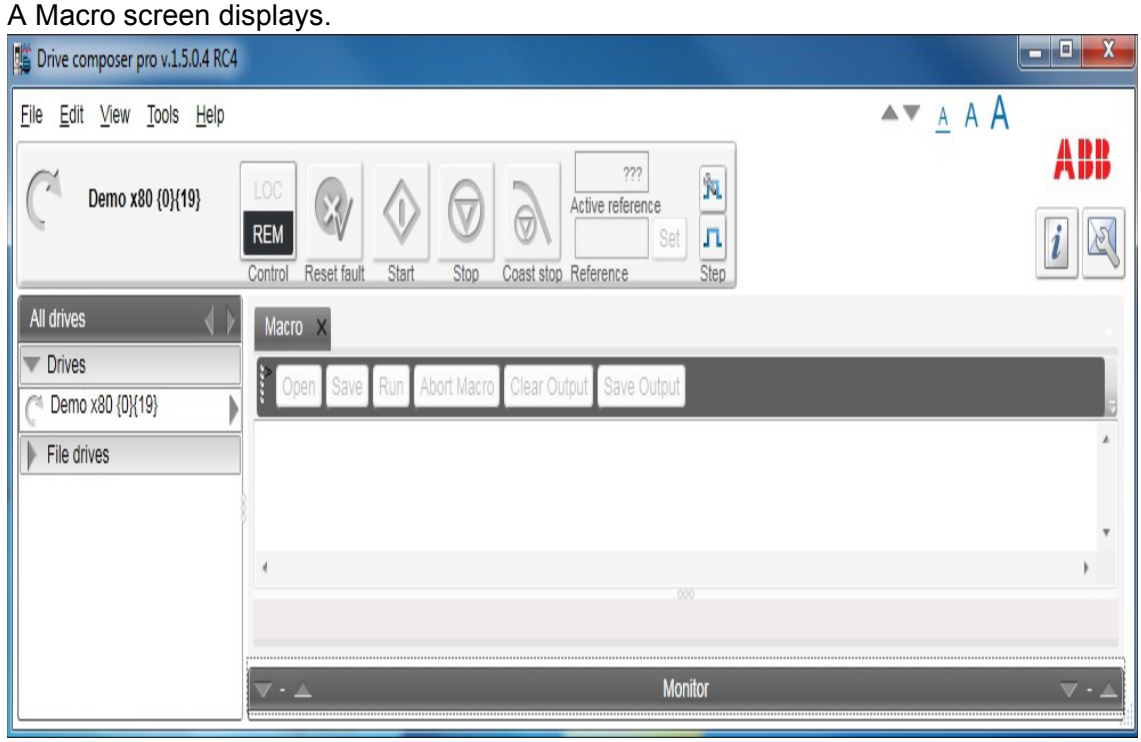



*Figure 123. Macro*

# Macro commands

## Macro language

Macro language is based on PAWN referrer to PAWN manual for general programming guides.

**Note:** Some PAWN features are disabled for security reasons, such as file operations and other external IO functions.

### Simple example

Macro tries to read parameter 1.1 value from each target in 100 network channels.

```
main()
{
   for(new i = 0; i < 100; i++)
   {
      //note the channels are indexed instead of nodes
      // this should be modified according network topology

      //change target
      Target(i+1,1)
      new targetName[100]
      //get target name
      TargetName (targetName)

      //read parameter 1.1 value
      new Float:val0101 = ParRead(1,1);
      //output to console
      printf "%s(%d,%d): %f\n", targetName, 1, 1, val0101 ;
   }
}
```

## Additional macro commands

### Target

Changes the target of the macro commands after target command is issued.

| Syntax | Returns | Example |
|---|---|---|
| Target (Channel, node) | 0 if success, 1 if failed | Target (1, 10) |

### Target name

Command reads the current target name as string.

| Syntax | Returns | Example |
|---|---|---|
| TargetName (string) | 0 if success, 1 if failed | //reserve name string<br>new name[100]<br>if(TargetName(name)==0)<br>{<br>printf "target name is %s\n" name<br>} |

### Parwrite

Command writes parameter value to current target.

| Syntax | Returns | Exmaple |
|---|---|---|
| ParWrite (group, index, value) | 0 if success, 1 if failed | //write value 1 to group 12 index 16<br>ParWrite (12, 16, 1) |

### Parread

Command reads the parameter value to current target.

| Syntax | Returns | Example |
|---|---|---|
| ParRead (group, index) | Parameter value or 0 if failed<br>On error, the error message is shown in the log | //Read value of the parameter in group 10 index 5<br>new Float:val = Par-Read(10,5);<br>printf "value of (%d,%d): %f\n", 10, 5, val105; |

### Wait

Command delays the macro execution for given time in milliseconds.

| Syntax | Returns | Example |
|---|---|---|
| Wait (milliseconds) | 0 in all cases | //wait 0.1 seconds<br>Wait(100) |

### Endmacro

Command ends the macro execution.

| Syntax | Returns | Example |
|---|---|---|
| EndMacro() | 0 in all cases | //End execution<br>EndMacro() |

### Gotomacro

Command changes the macro execution. Currently running macro execution is terminated.

| Syntax | Returns | Example |
|---|---|---|
| GotoMacro(string) | 0 in all cases | //Change execution to macro jeejee<br>new macrofilename[100]<br>macrofilename = “jeejee.p”<br>GotoMacro(macrofilename) |

### Message box

Command shows message box with ok button.

| Syntax | Returns | Example |
|---|---|---|
| MessageBox (string) | 0 in all cases | //show messagebox<br>new message[100]<br>message = "dingalongdangdong"<br>MessageBox (message) |

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# Control diagrams (pro)

## Contents this chapter

This chapter describes the use of control diagrams helping to understand the behavior of a drive.

## Control diagrams

Control diagrams provide a graphical presentation of, for example, the control chain of a drive, the speed and torque control chains and the logic of Start and Stop functions. With these diagrams it is possible to see parameter values related to certain functions. Diagrams also illustrate the position of switches according to parameter values, which helps to understand how the drive logic works. The values of parameters can be changed via control diagrams. A control diagram consists of two levels. The top level shows an overview of the diagrams and connections between them.

**Note:** Control Diagrams are drive-specific and they are not available for all drive types.

**Note:** When you connect a drive for the first time, it takes sometime to upload control diagrams from the drive. If Control Diagrams are not found in the drive, Drive composer asks to upload diagrams from the local source (PC).

Launch Control Diagrams by clicking a drive and selecting **Diagrams**.

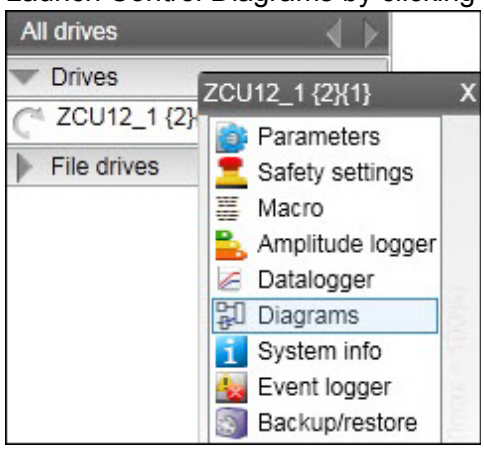


*Figure 124. Selecting control diagrams from the drive tree*

The top level of a diagram consists of several diagrams. To open one part of a specific diagram, click the top of a box. The figures below show an example of a top level control diagram and a lower level control diagram.

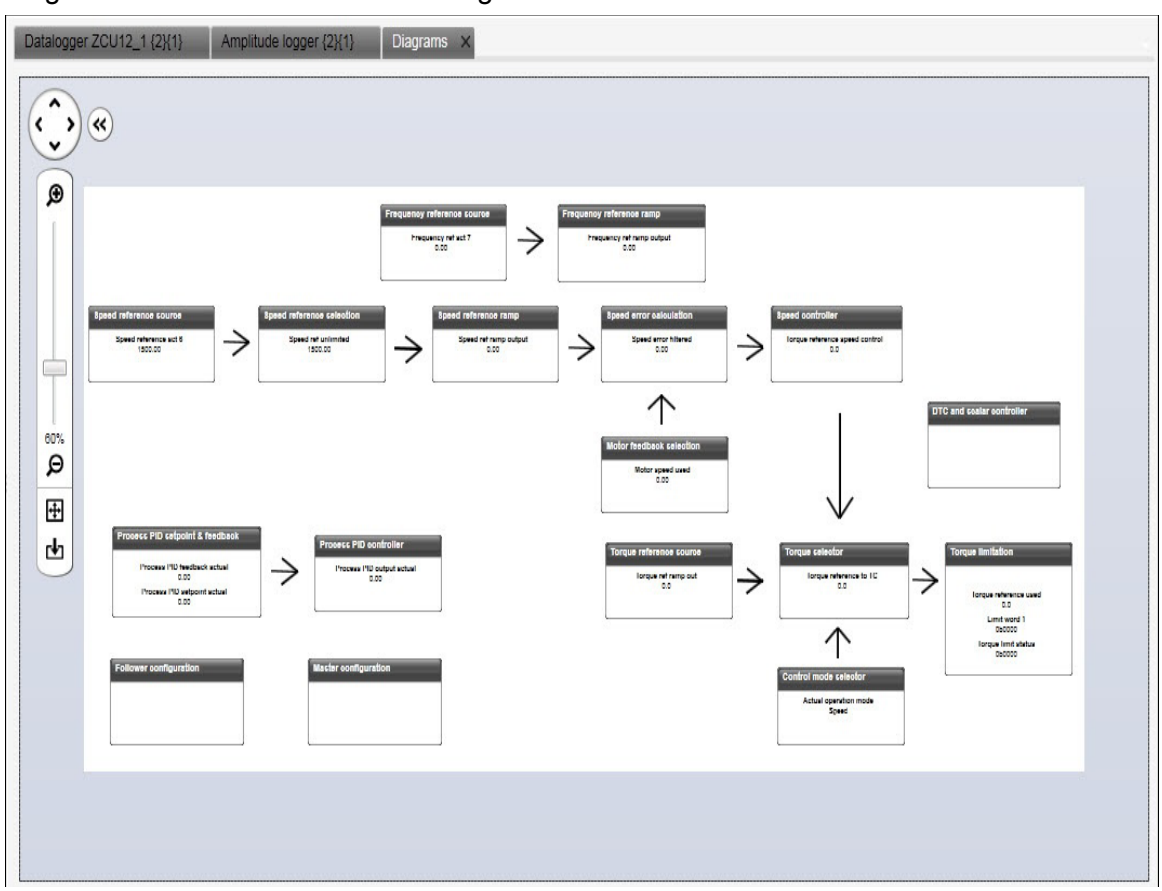


*Figure 125. Top level of a control diagram*

.

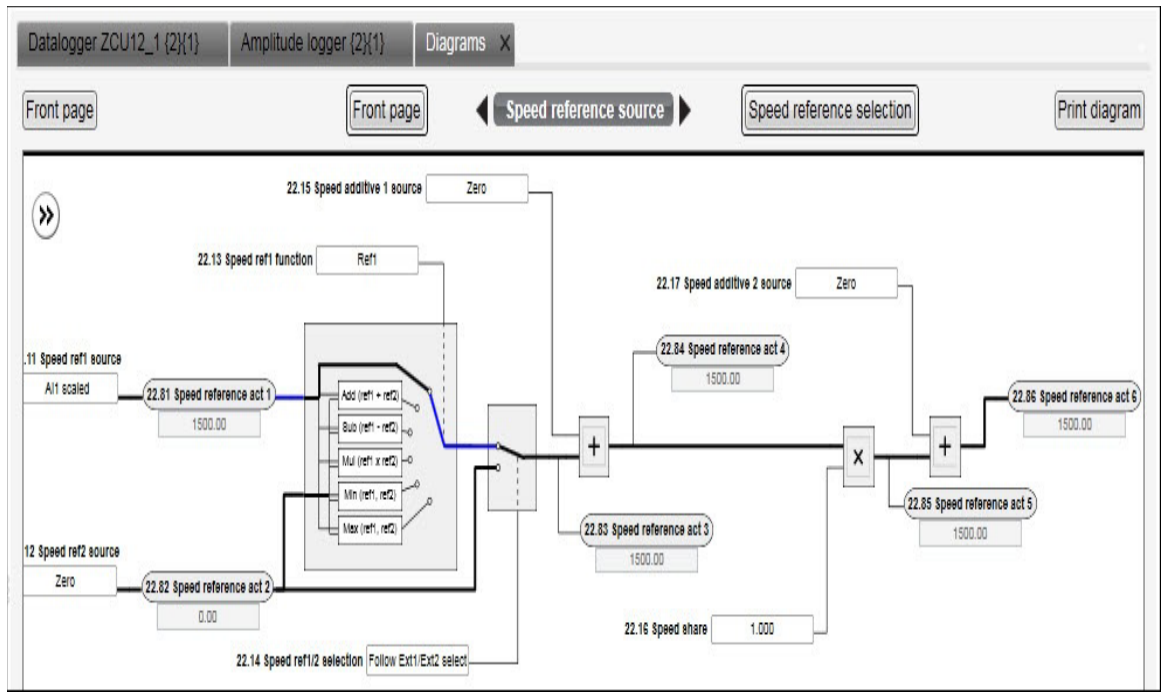


*Figure 126. Lower level of a control diagram*

To navigate back to the top level of a Control Diagram, click the **Diagrams top** icon. To navigate through the reference chain, click the buttons circled in the figure above.

To zoom the control diagrams, use the zooming tool in the top left-hand corner of a Control Diagram.

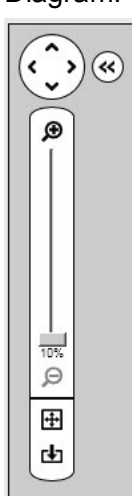


*Figure 127. Zooming tool*

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# FSO configuration

## Contents of this chapter

This chapter contains the configuration procedure of FSO-11 and FSO-12 safety functions with Drive composer pro and provides an example of how to configure these optional FSO safety functions modules.

## Configuring FSO-11 and FSO-12

The safety configuration of FSO-11 and FSO-12 safety functions module is available only in Drive composer pro, DCPT-01 (code: 3AUA0000108087).

**Note**:

- Only trained persons are allowed to configure the safety functions.
- Stop the motor before configuring the safety functions modules. You cannot download/upload the configuration file to/from safety functions module or change the password when the motor is running.
- You need a password to copy the configuration to the safety functions.

For detailed information about FSO-11 and FSO-12, see the respective safety functions module user's manual:

- FSO-11 safety functions module user's manual (3AUA0000097054 [English]).
- FSO-12 safety functions module user's manual (3AXD50000015612 [English]).

### Hardware connection

The hardware connection is common for both FSO-11 and FSO-12 safety functions module. For instructions on the hardware connections see FSO-11 safety functions module user's manual (3AUA0000097054 [English])/ FSO-12 safety functions module user's manual (3AXD50000015612 [English]).

The following configuration description assumes that all hardware-related connections are made properly and the ID run procedure of the drive is completed.

## Setting the FSO-11 safety functions with Drive composer pro

1. Start the drive equipped with the FSO-11 option module using the drive control panel.
   See *Using the drive control panel for starting the drive* on page *61*.
2. Right-click on drive and select **Safety settings**.

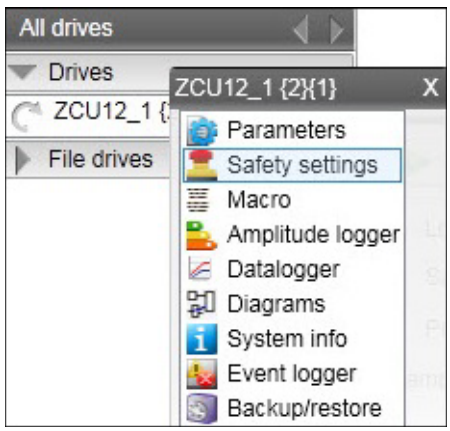



*Figure 128. FSO-11: Selecting Safety settings*

3. Click **Upload from FSO**.
   **Note:** The motor must be stopped.
   Fault FSO Fault 7A8B appears on the drive.

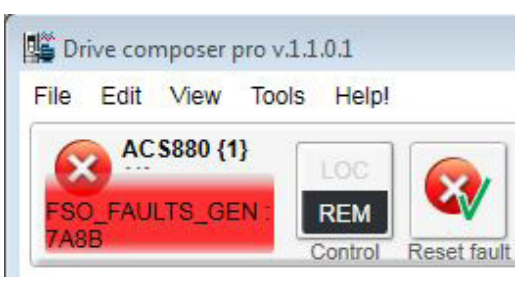



*Figure 129. FSO-11: Fault FSO Fault 7A8B*

4. Type the password (8 numbers).

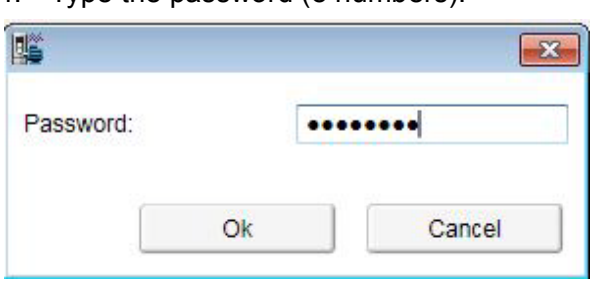
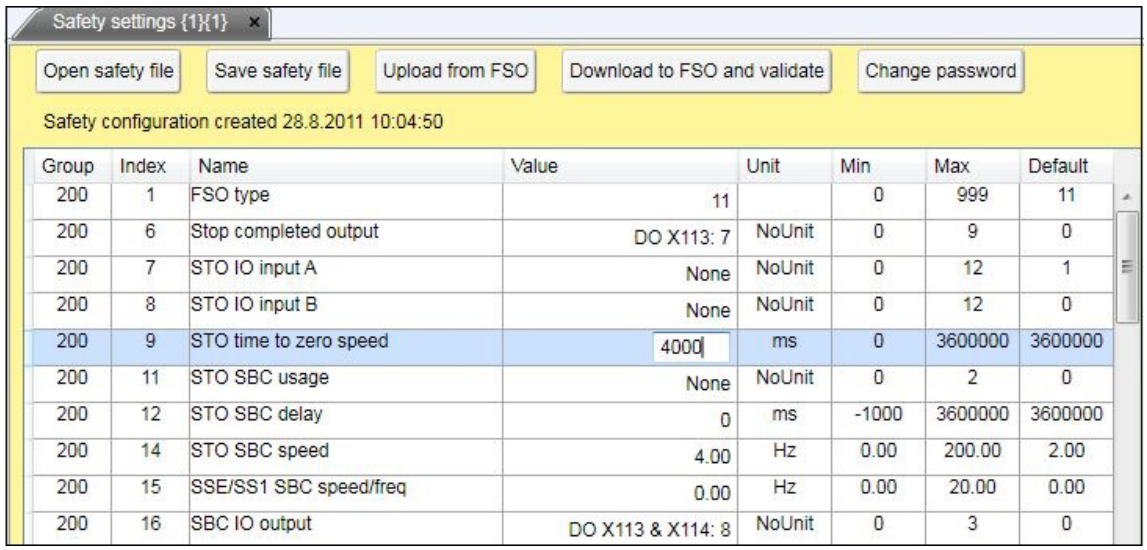



*Figure 130. Typing the password*

5. Double-click on the value filed and change all necessary configuration settings to match your safety configuration.




| Group | Index | Name | Value | Unit | Min | Max | Default |
|---|---|---|---|---|---|---|---|
| 200 | 1 | FSO type | 11 | | 0 | 999 | 11 |
| 200 | 6 | Stop completed output | DO X113: 7 | NoUnit | 0 | 9 | 0 |
| 200 | 7 | STO IO input A | None | NoUnit | 0 | 12 | 1 |
| 200 | 8 | STO IO input B | None | NoUnit | 0 | 12 | 0 |
| 200 | 9 | STO time to zero speed | 4000 | ms | 0 | 3600000 | 3600000 |
| 200 | 11 | STO SBC usage | None | NoUnit | 0 | 2 | 0 |
| 200 | 12 | STO SBC delay | 0 | ms | -1000 | 3600000 | 3600000 |
| 200 | 14 | STO SBC speed | 4.00 | Hz | 0.00 | 200.00 | 2.00 |
| 200 | 15 | SSE/SS1 SBC speed/freq | 0.00 | Hz | 0.00 | 20.00 | 0.00 |
| 200 | 16 | SBC IO output | DO X113 & X114: 8 | NoUnit | 0 | 3 | 0 |

*Figure 131. FSO-11: Safety settings tab*

6. Click the **Download to FSO and validate** button.
   The password is required again.
   The following Validate dialog box appears.

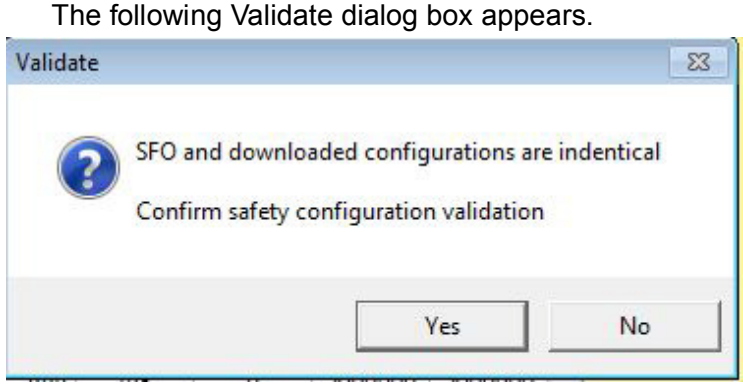



*Figure 132. FSO-11 Validate dialog box*

7. Click **Yes**.
   The following dialog box appears.

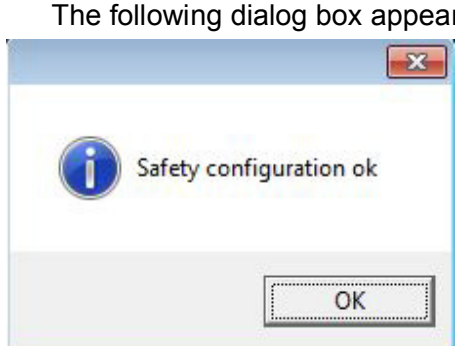



*Figure 133. Safety configuration ok message*

8. Click **OK**.
9. Test your safety configuration when the motor is running.

10. Check the values of parameter group 200.

    **Note:** If there are wrong values, right-click the parameter and select **Refresh the parameter**.

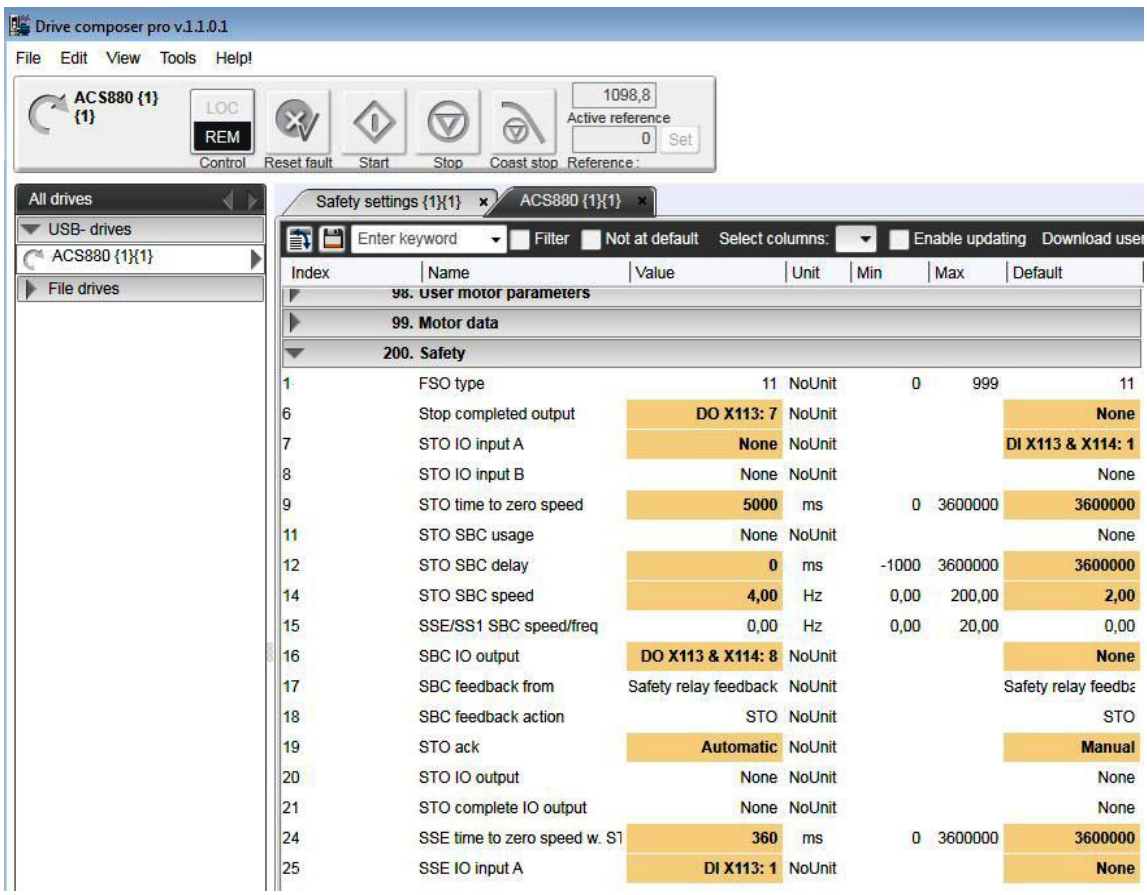



*Figure 134. FSO-11: Parameter group 200*

11. After testing save your safety settings by clicking **Save safety file**.

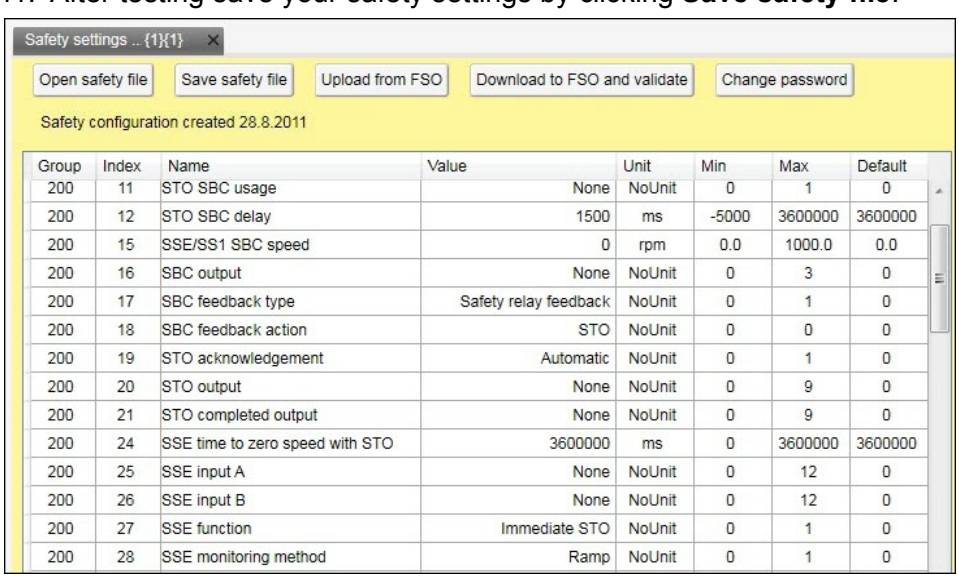



*Figure 135. FSO-11: Save safety file button*

If you want to change the password of the FSO safety functions module, click **Change password** button.

**Note:** Stop the motor when you initiate to change the password.

## Setting the FSO-12 safety functions with Drive composer pro

1. Start the drive equipped with the FSO-12 option module using the drive control panel.
   See *Using the drive control panel for starting the drive* on page *61*.
2. Right-click on drive and select **Safety settings 2**.
   The safety configuration that is already available in the drive is displayed. If there is no safety configuration, the view is empty.

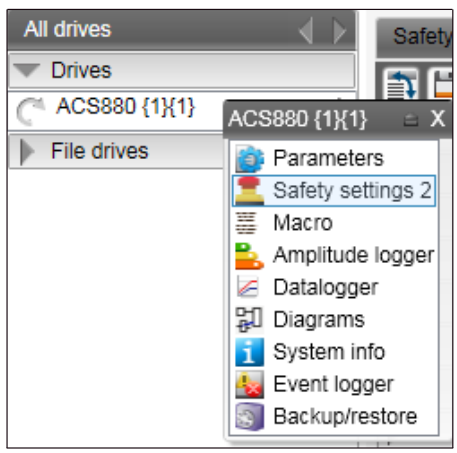



*Figure 136. FSO-12: Selecting Safety settings*

3. Click **Upload from FSO**.
   **Note:** The motor must be stopped.
   When you upload the safety settings from FSO module to PC tool, the FSO goes into Configuration state and indicates a fault. You can exit the Configuration state by rebooting FSO module or by downloading the safety settings to the FSO. Step 7 below.
   The Fault **FSO general fault: 7A8B** appears on the drive.

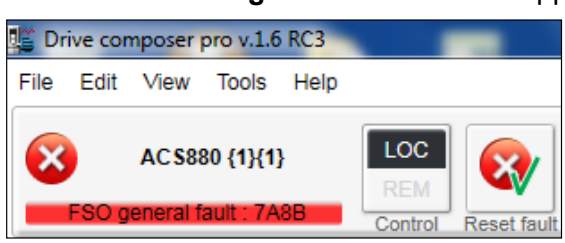



*Figure 137. FSO-12: FSO general fault 7A8B*

4. Type the password (8 numbers).

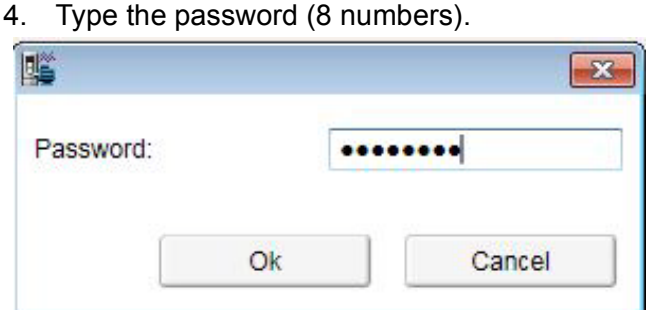
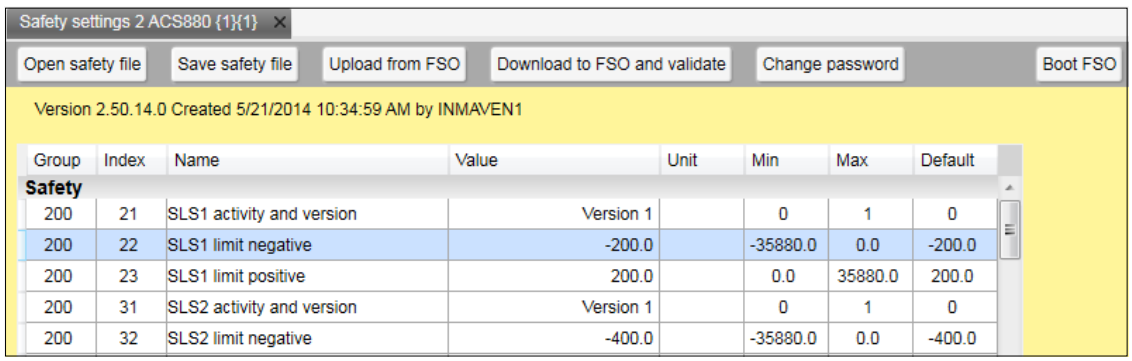



*Figure 138. Typing the password*

5. Double-click on the value filed and change all necessary configuration settings to match your safety configuration.




| Group | Index | Name | Value | Unit | Min | Max | Default |
|---|---|---|---|---|---|---|---|
| **Safety** | | | | | | | |
| 200 | 21 | SLS1 activity and version | Version 1 | | 0 | 1 | 0 |
| 200 | 22 | SLS1 limit negative | -200.0 | | -35880.0 | 0.0 | -200.0 |
| 200 | 23 | SLS1 limit positive | 200.0 | | 0.0 | 35880.0 | 200.0 |
| 200 | 31 | SLS2 activity and version | Version 1 | | 0 | 1 | 0 |
| 200 | 32 | SLS2 limit negative | -400.0 | | -35880.0 | 0.0 | -400.0 |

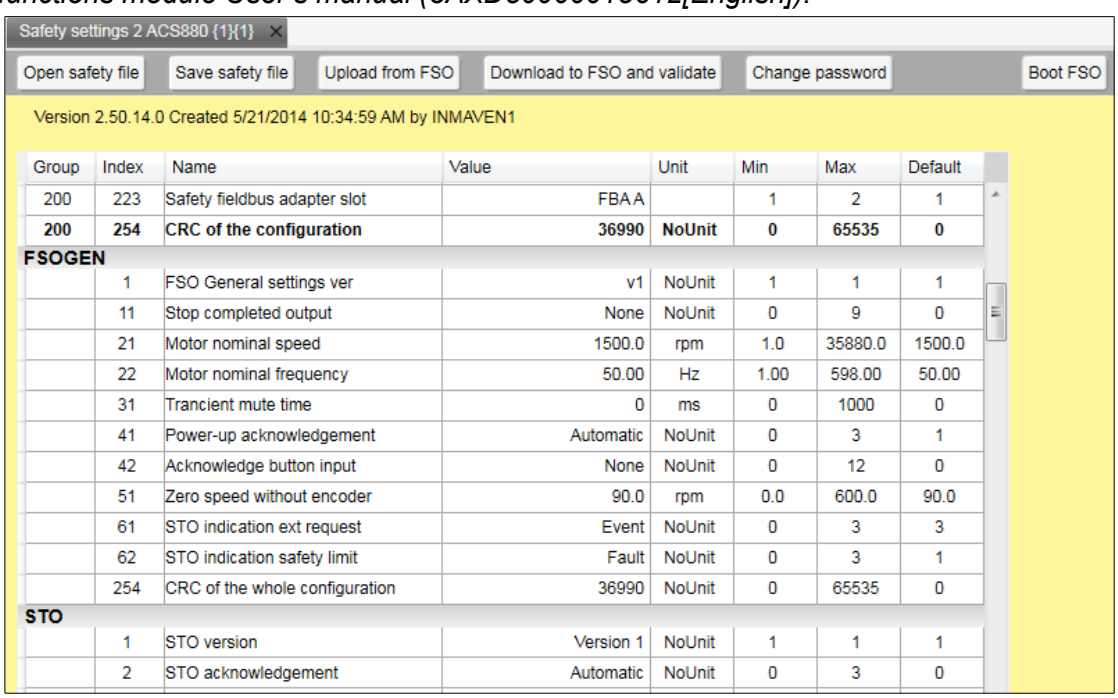
*Figure 139. FSO-12 configuration in Safety group 200*

Set the following safety function parameters:

- General parameters: Check that the motor parameters are correct.
- I/O: Check that I/O parameters are set according to the installation (wiring) plan. Remove diagnostic pulsing from any unused I/O. Check possible safety relays and cascade connections.
- Safety functions: Check all safety settings. You must at least check and set the STO and SSE related settings, regardless of whichever FSO safety functions you use. The FSO activates the STO and SSE functions in internal fault situations. The FSO uses the STO and SSE functions for making the system safe. All other functions are used only for monitoring the drive.

Note that only the group **Safety** is referred with group number and index numbers (see figure *FSO-12 configuration in Safety group 200*) and all other group names like **FSOGEN**, **STO** and so on have only index numbers (see figure *FSO-12 configuration with only group names*).

For examples of configuration settings and list of group names, see *FSO-12 safety functions module User's manual (3AXD50000015612[English])*.




| Group | Index | Name | Value | Unit | Min | Max | Default |
|---|---|---|---|---|---|---|---|
| 200 | 223 | Safety fieldbus adapter slot | FBA A | | 1 | 2 | 1 |
| **200** | **254** | **CRC of the configuration** | **36990** | **NoUnit** | **0** | **65535** | **0** |
| **FSOGEN** | | | | | | | |
| | 1 | FSO General settings ver | v1 | NoUnit | 1 | 1 | 1 |
| | 11 | Stop completed output | None | NoUnit | 0 | 9 | 0 |
| | 21 | Motor nominal speed | 1500.0 | rpm | 1.0 | 35880.0 | 1500.0 |
| | 22 | Motor nominal frequency | 50.00 | Hz | 1.00 | 598.00 | 50.00 |
| | 31 | Trancient mute time | 0 | ms | 0 | 1000 | 0 |
| | 41 | Power-up acknowledgement | Automatic | NoUnit | 0 | 3 | 1 |
| | 42 | Acknowledge button input | None | NoUnit | 0 | 12 | 0 |
| | 51 | Zero speed without encoder | 90.0 | rpm | 0.0 | 600.0 | 90.0 |
| | 61 | STO indication ext request | Event | NoUnit | 0 | 3 | 3 |
| | 62 | STO indication safety limit | Fault | NoUnit | 0 | 3 | 1 |
| | 254 | CRC of the whole configuration | 36990 | NoUnit | 0 | 65535 | 0 |
| **STO** | | | | | | | |
| | 1 | STO version | Version 1 | NoUnit | 1 | 1 | 1 |
| | 2 | STO acknowledgement | Automatic | NoUnit | 0 | 3 | 0 |

*Figure 140. FSO-12 configuration with only group names*

6. Click **Save safety file** to save the FSO configuration to your PC.
7. Click **Download to FSO and validate**. The password is required again.
   The following Validate dialog box appears.
   **Note**: You can boot FSO without downloading to FSO using **Boot FSO**.

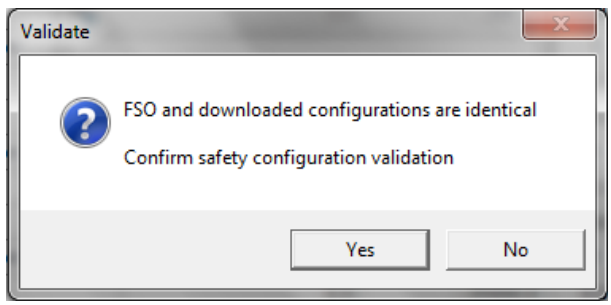



*Figure 141. Validate dialog box*

8. Click **Yes**.
   The following dialog box appears.

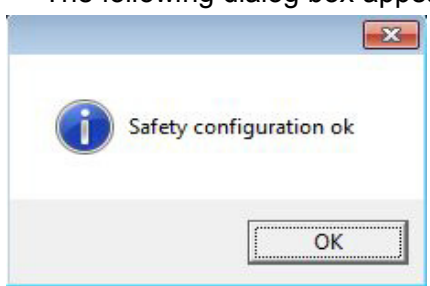



*Figure 142. Safety configuration ok message*

9. Click **OK**.
10. Test your safety configuration when the motor is running.
11. Right-click on drive and select **Parameters** to check the values in parameter group 200.
    **Note:** If there are wrong values, right-click the parameter and select **Refresh the parameter**.

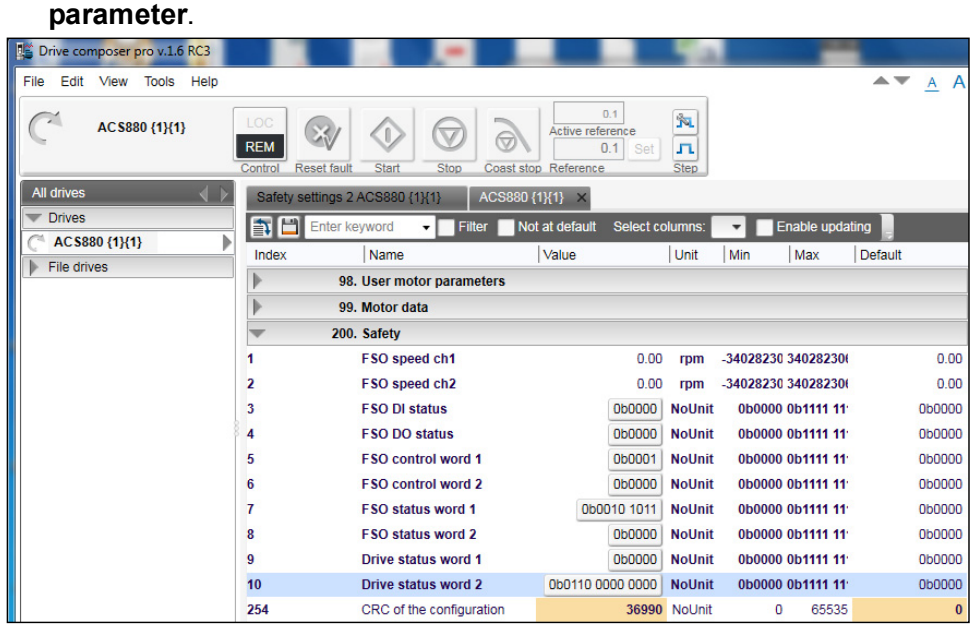
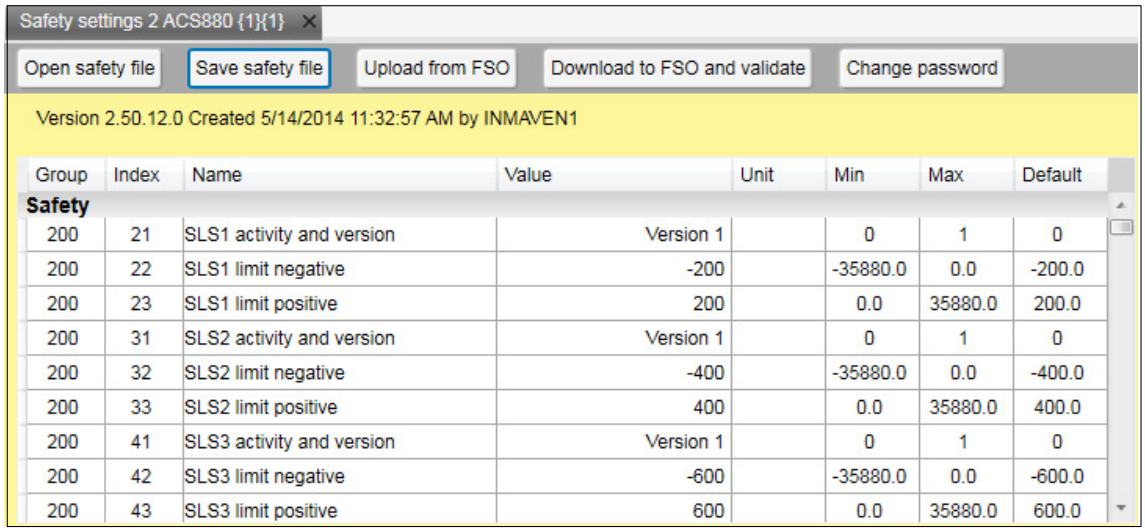



*Figure 143. FSO-12: Parameter group 200*

12. After testing save your safety settings, click **Save safety file**.




| Group | Index | Name | Value | Unit | Min | Max | Default |
|---|---|---|---|---|---|---|---|
| **Safety** | | | | | | | |
| 200 | 21 | SLS1 activity and version | Version 1 | | 0 | 1 | 0 |
| 200 | 22 | SLS1 limit negative | -200 | | -35880.0 | 0.0 | -200.0 |
| 200 | 23 | SLS1 limit positive | 200 | | 0.0 | 35880.0 | 200.0 |
| 200 | 31 | SLS2 activity and version | Version 1 | | 0 | 1 | 0 |
| 200 | 32 | SLS2 limit negative | -400 | | -35880.0 | 0.0 | -400.0 |
| 200 | 33 | SLS2 limit positive | 400 | | 0.0 | 35880.0 | 400.0 |
| 200 | 41 | SLS3 activity and version | Version 1 | | 0 | 1 | 0 |
| 200 | 42 | SLS3 limit negative | -600 | | -35880.0 | 0.0 | -600.0 |
| 200 | 43 | SLS3 limit positive | 600 | | 0.0 | 35880.0 | 600.0 |

*Figure 144. FSP-12: Save safety file button*

If you want to change the password of the FSO safety functions module, click **Change password** button.

**Note:** Stop the motor when you initiate to change the password.

13

# Other functions (pro)

## Contents of this chapter

This chapter describes how to create a backup file of a drive and restore a drive. In addition, there are instructions on how to use the Drive parameter conversion tool.

# Creating a backup of a drive (pro)

1. Right-click a drive and select **Backup/restore**.

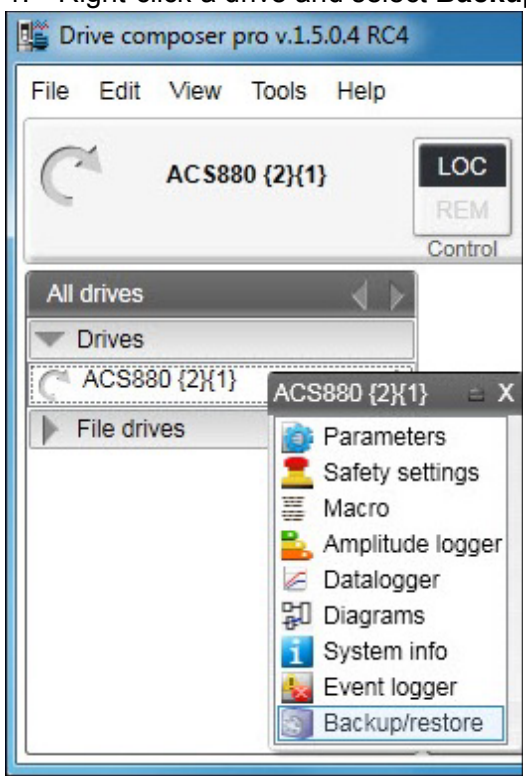



*Figure 145. Backup/restore command*

2. Select a folder for the backup drive and give a name of your backup.

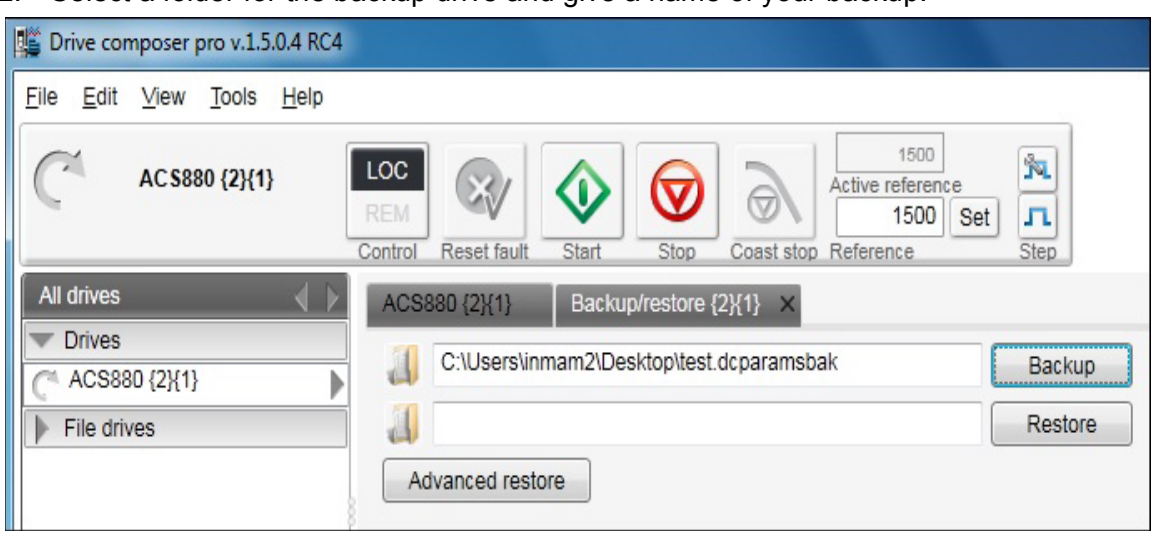



*Figure 146. Selecting a folder for the backup drive*

3. Click **Backup** to start the backup process.
   The backup process takes a few minutes.

# Restoring a drive (pro)

1. Right-click a drive and select **Backup/restore**. See figure *Backup/restore command*.
2. Click **Restore** to select the backup file to the drive with default settings.

All available components are restored from the backup file. All unavailable components are preserved in the drive.

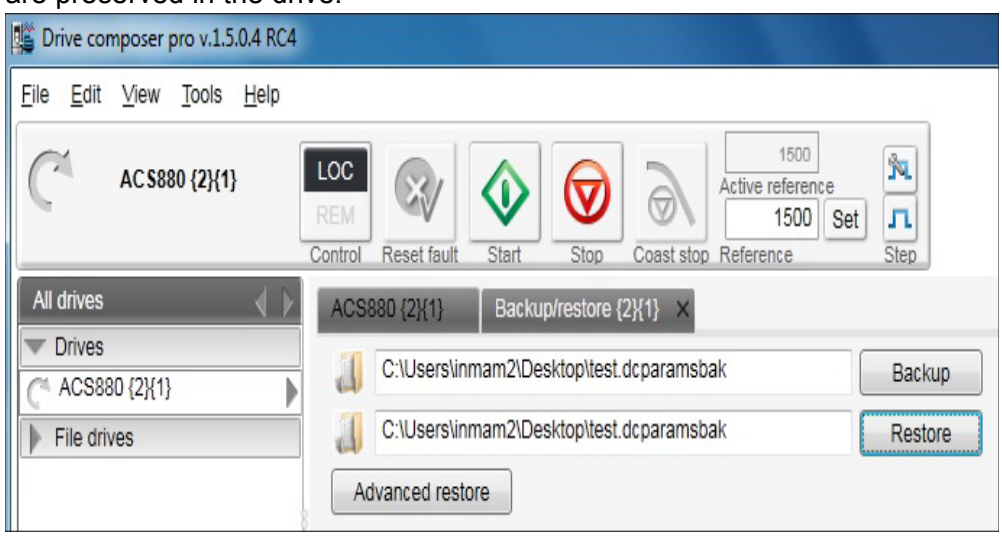



*Figure 147. Selecting the restored backup file*

3. To select a custom set of components to be restored to the drive, click **Advanced restore**.

   The parameter values that are not written to the drive are listed in the restore report after the restore process. If there are grey items in the advanced list, the drive does not allow the item to restore.

# Using the Drive parameter conversion tool

The parameter files of some ACS800/ACS600 ABB drive types commissioned and maintained with DriveWindow can be accessed with Drive composer via the Drive parameter conversion tool.

**Note:** Not all ACS800/ACS600 drives and software are supported.

1. Go to **Tools –> Drive parameter conversion tool**.

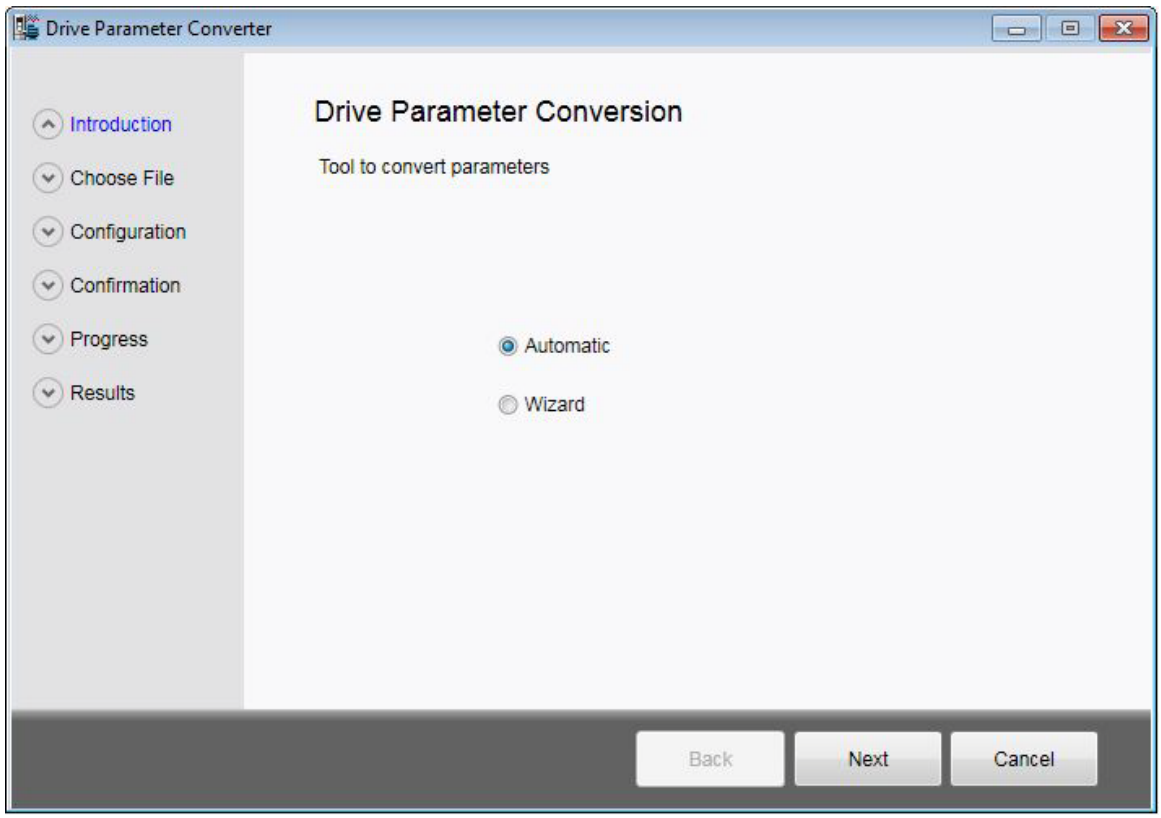



*Figure 148. Drive parameter conversion – Introduction*

2. Click **Next** and select the appropriate ACS800/ACS600 parameter file.

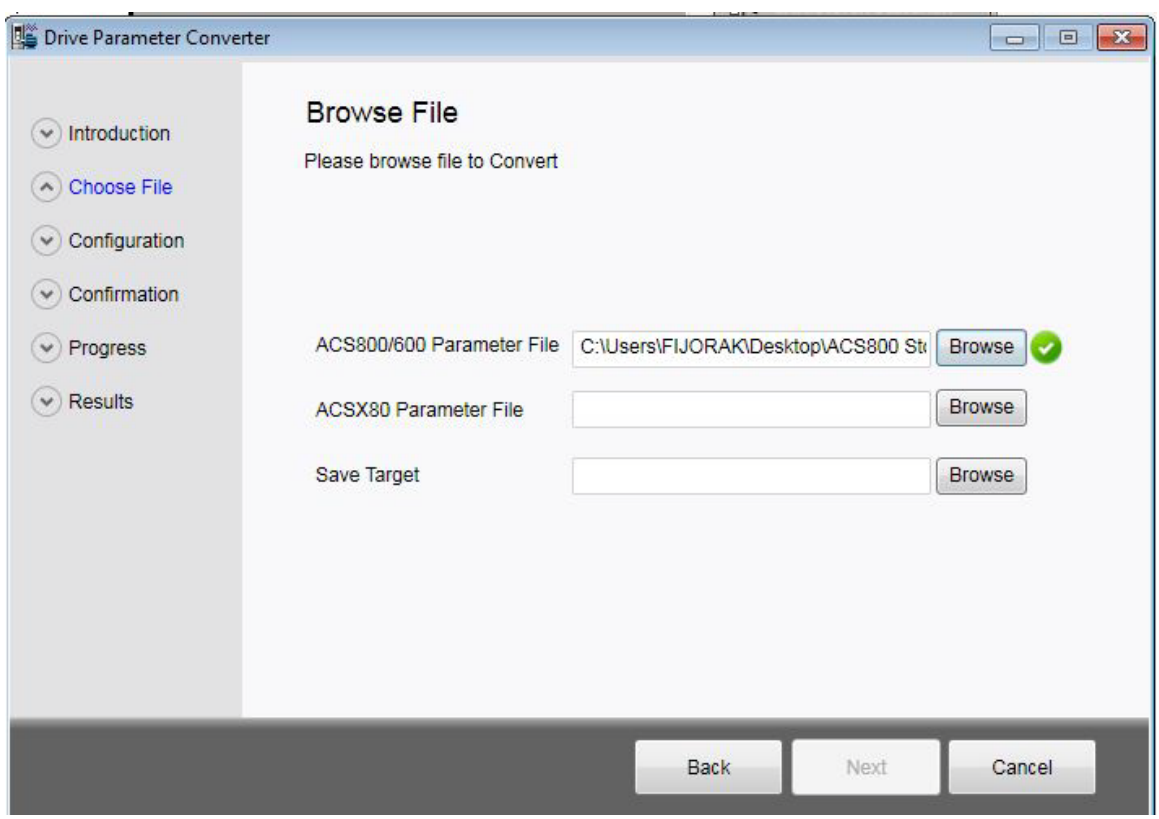



*Figure 149. Drive parameter conversion – Browsing the ACS800/600 file*

3. Select an empty ACx80 parameter file with default values.

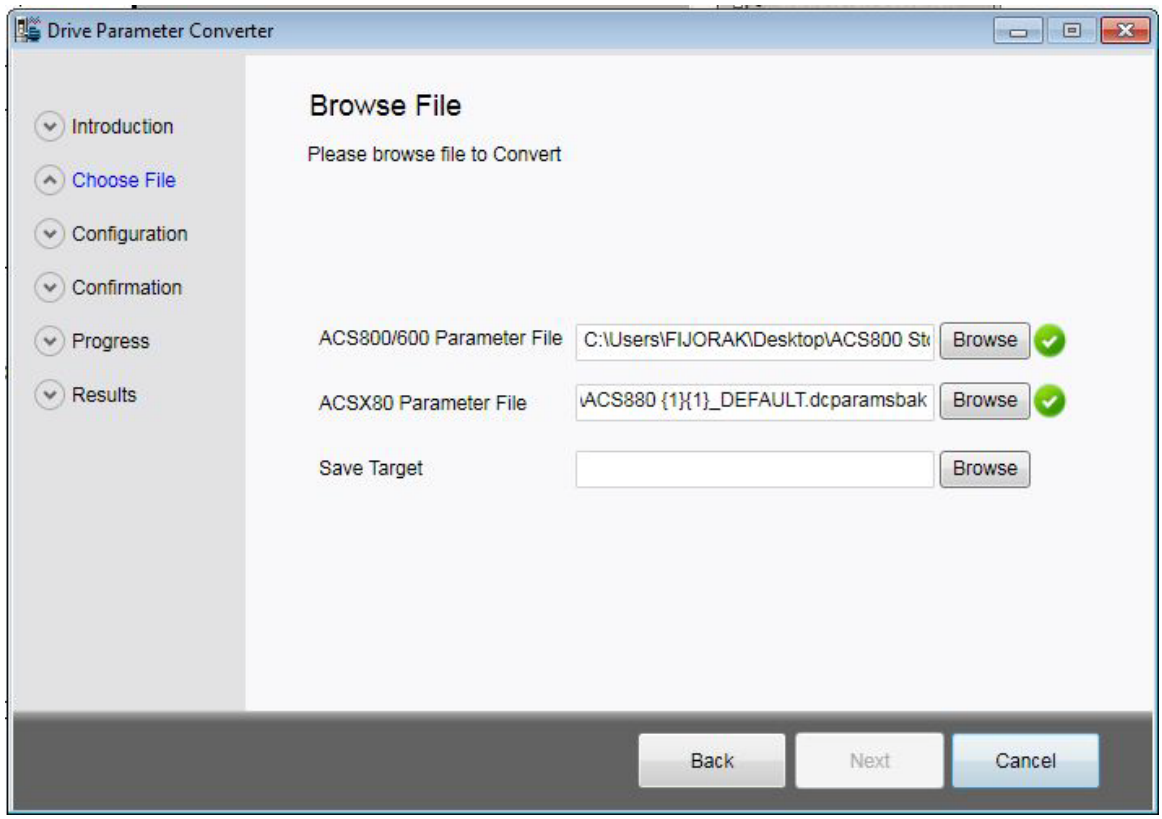



*Figure 150. Drive parameter conversion – Browsing the ACSX80 parameter file*

4. Select name for the drive.

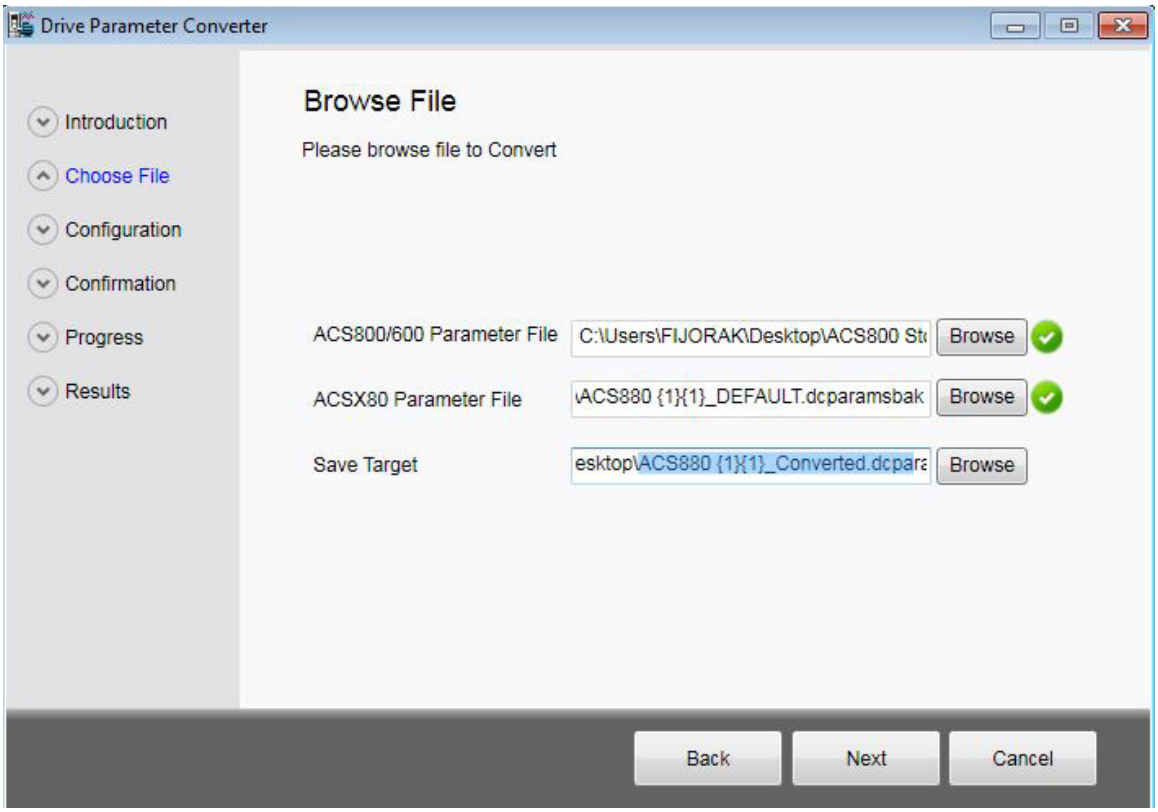



*Figure 151. Drive parameter conversion – Save target*

**Note**: Do not overwrite the empty file.

5. Click **Next**.
6. Answer **Yes**.

The Conversion report shows the parameters which are converted successfully and failed. Read the report carefully and fix the parameter values manually for which the conversion was not successful.

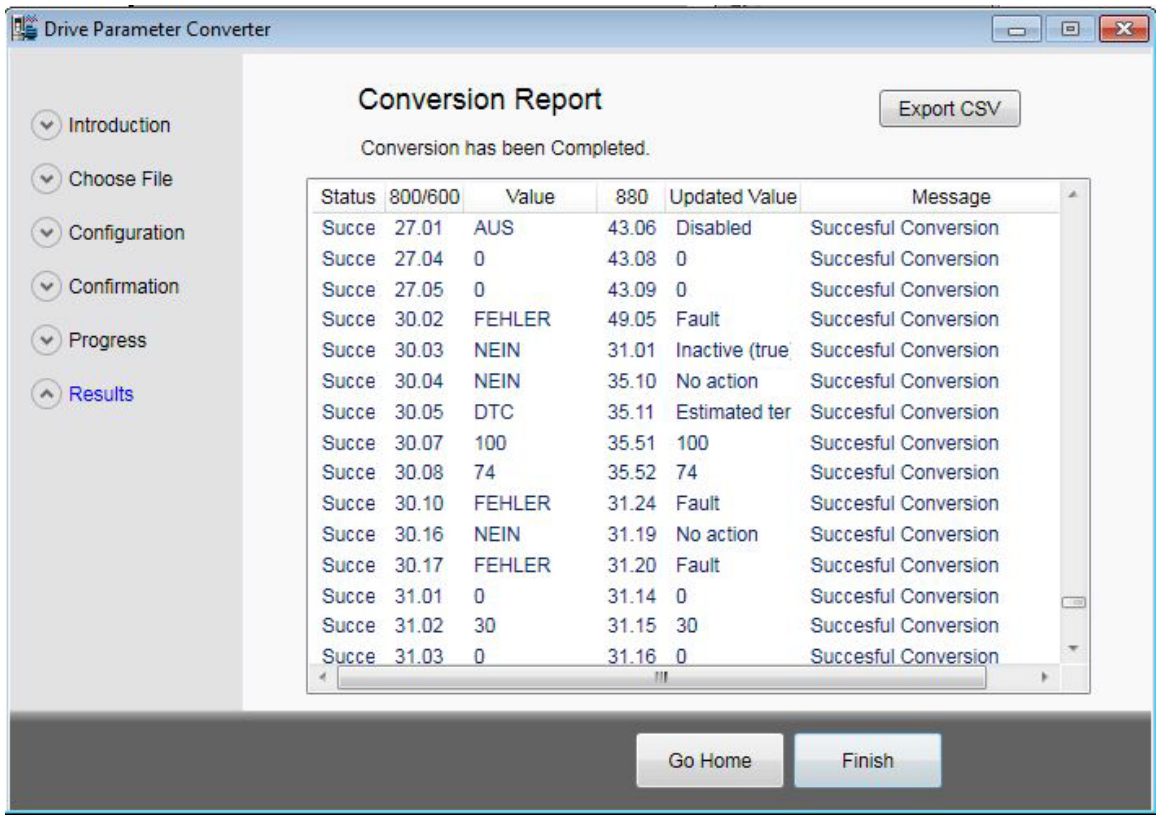



*Figure 152. Drive parameter conversion – Results*

# Further information

## Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to www.abb.com/searchchannels.

## Product training

For information on ABB product training, navigate to www.abb.com/drives and select *Training courses*.

## Providing feedback on ABB Drives manuals

Your comments on our manuals are welcome. Go to www.abb.com/drives and select *Document Library – Manuals feedback form (LV AC drives)*.

## Document library on the Internet

You can find manuals and other product documents in PDF format on the Internet. Go to www.abb.com/drives and select *Document Library.* You can browse the library or enter selection criteria, for example a document code, in the search field.

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