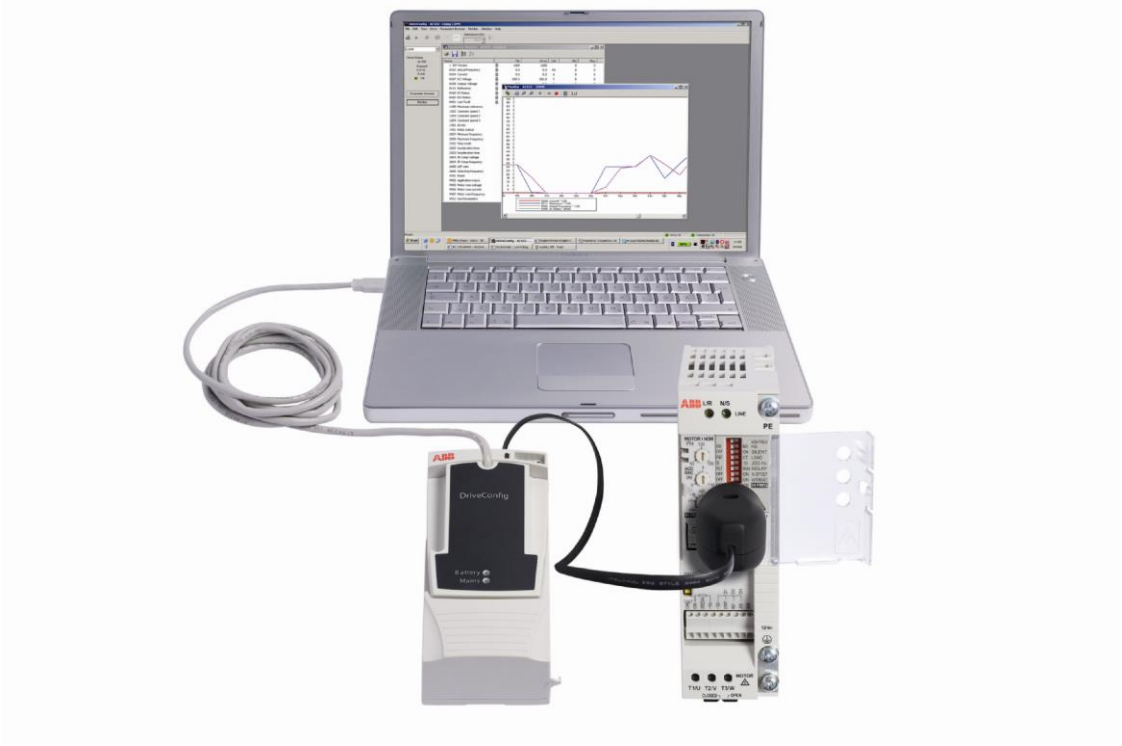
DriveWare

User's Guide
DriveConfig



DriveConfig

User’s Guide

3AFE68910897 Rev D

EN

EFFECTIVE: 2016-02-08

Table of contents

Introduction to the manual

What this chapter contains

The chapter describes the intended audience, compatibility and the contents of this manual. It also includes the safety instructions.

Compatibility

The document is valid for DriveConfig PC tool version 1.2 or later.

Safety instructions

Follow these instructions when using the DriveConfig PC tool.

WARNING! Ignoring the following instructions can cause physical injury or death, or damage to the equipment!

- Connect DriveConfig only to unpowered drive.
- Switch voltage on after connecting.
- Do not use DriveConfig if the cable sheath in between the PC and the drive is damaged.

See also the safety instructions in *ACS55 User's Guide* (3AFE68929300).

Reader

This manual is intended for persons who install and use the DriveConfig PC tool.

Contents

Overview of DriveConfig describes the key functions of DriveConfig.

Getting started describes how to install and start the DriveConfig PC tool.

Drive status describes how to monitor the status of the drive.

Parameters describes how to adjust the parameters and how to load a parameter file into the drive.

Restore factory settings instructs in restoring the factory settings and the customer interface.

Drive control panel describes how to control the drive.

Drive monitoring describes how to monitor drive operations.

Loading drive firmware describes how to transfer firmware to the drive.

Settings describes how to view and edit the settings of DriveConfig PC tool.

Error messages lists the DriveConfig PC tool error messages and the possible reasons and solutions.

Actual signals and parameters of ACS55 describes the actual signals and parameters of the drive.

ACS55 motor overload protection describes the motor overload protection function in ACS55 drive.

Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type code 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/drives and selecting *Sales, Support and Service network*.

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)*.

Overview of DriveConfig

What this chapter contains

This chapter contains information on the compatibility of DriveConfig and lists the key functions of it.

DriveConfig

DriveConfig PC tool is a parameterising and maintenance tool for the ACS55 drive series.

DriveConfig PC tool is designed to run under the Microsoft Windows 2000, Windows XP, Windows Vista and Windows 7 operating systems on IBM-compatible PCs.

The key functions of DriveConfig PC tool are the following:

- Show the actual status of the connected drive
- Show and save the drive parameters
- Edit the drive parameters by loading a parameter file to the drive
- Graphical monitoring of the drive signals
- Numerical monitoring of the drive signals
- Control the drive.

PC can be connected to the drive through an USB link by RFDT-02 adapter kit. For the connection, see section *Connecting drive and PC* on page *15*.

Getting started

What this chapter contains

This chapter describes how to install the DriveConfig PC tool to a PC and how to connect the PC to a drive.

Computer requirements

To operate DriveConfig, your computer must meet the following minimum requirements:

Table 1. System requirements

Category	Minimum requirement
Processor	Pentium 133 MHz
Operating System	Windows 2000, Windows XP, Windows Vista or Windows 7
Display	1024x768, 256 colors
System Memory (RAM)	64 MB
Hard Disk Space	80 MB

Delivery check

Figure 1. The delivery package

The delivery package contains the following items:

- RFDT-02 hardware and PC cables
- Battery charger
- Battery charger mains (AC power) cable
- Set of plugs
- User's Guide
- DriveConfig CD
- Six spare pin headers
- 20 pcs notification stickers for parameterization.

More spare pin headers and notification stickers for parameterization can be ordered. Contact your local ABB office.

Assembling the spare pin headers

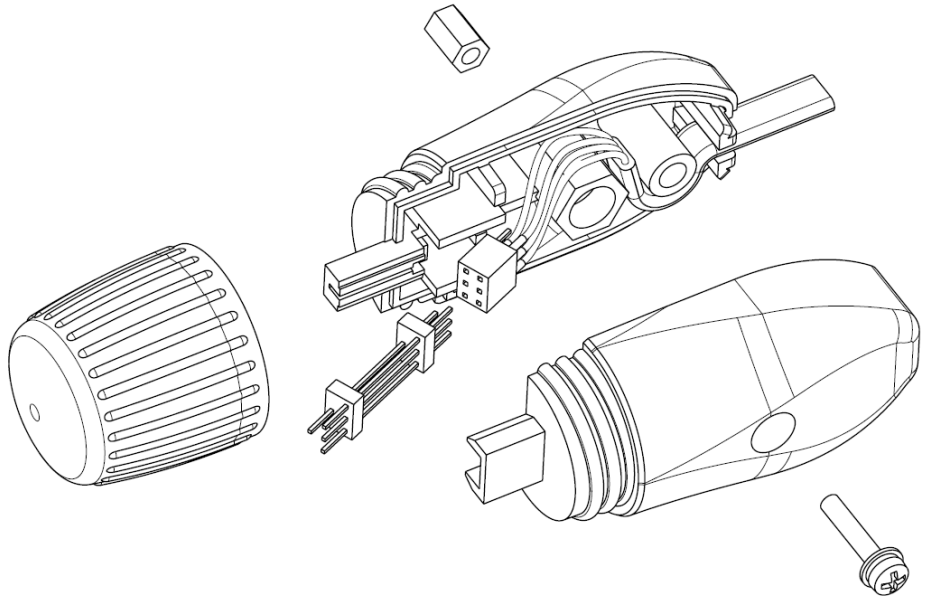


Figure 2. Replacing the spare pin header

Note: Switch off the DriveConfig before proceeding.

Assemble the pin header as shown in the *Figure 2*. Check correct polarization. Please note that the pin header fits in the wand bottom plastic only one way.

Connecting drive and PC

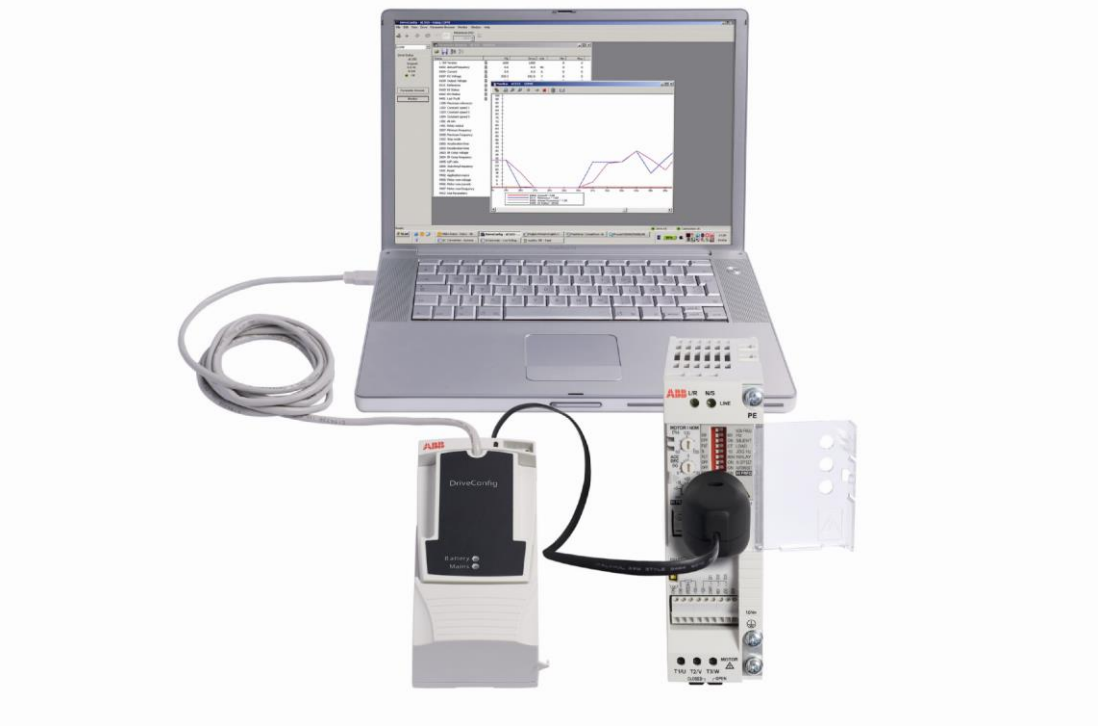


Figure 3. Connecting the drive using the USB port of the PC (RFDT-02)

Note: The RFDT adapter has two LED indicators: green and red.

- The green LED is marked with the text “Battery”. When the green LED is lit, battery power is used for powering ACS55.
- The red LED is marked with the text “Mains”. When the red LED is lit, there is main voltage in ACS55.

Installing DriveConfig

Win2000 and WinXP

- Open the Control Panel.
- Double-click on **Add/Remove Programs**.
- Click the **Add New Programs** button.
- Follow the instructions.

Note: When installing DriveConfig, you must have Administrator privileges.

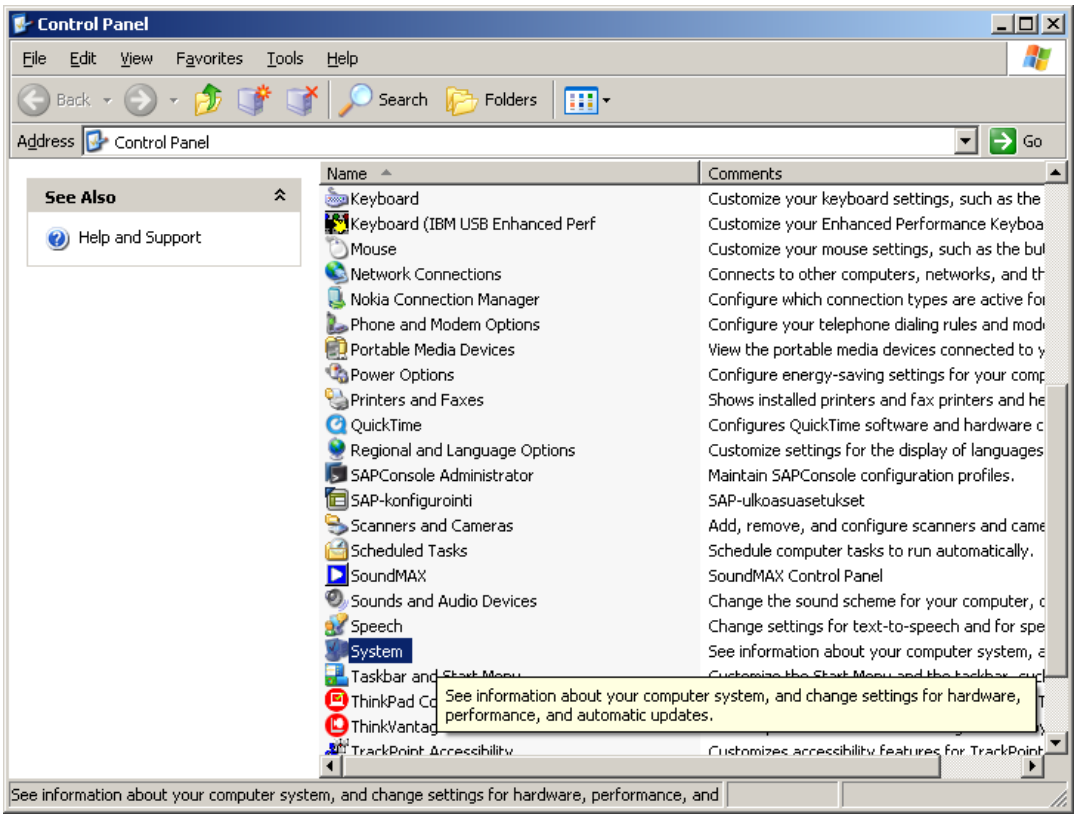
USB drivers for RFDT-02

To use RFDT-02, install USB drivers after the DriveConfig installation. For USB drivers, see http://new.abb.com/drives/software-tools/driveconfig.

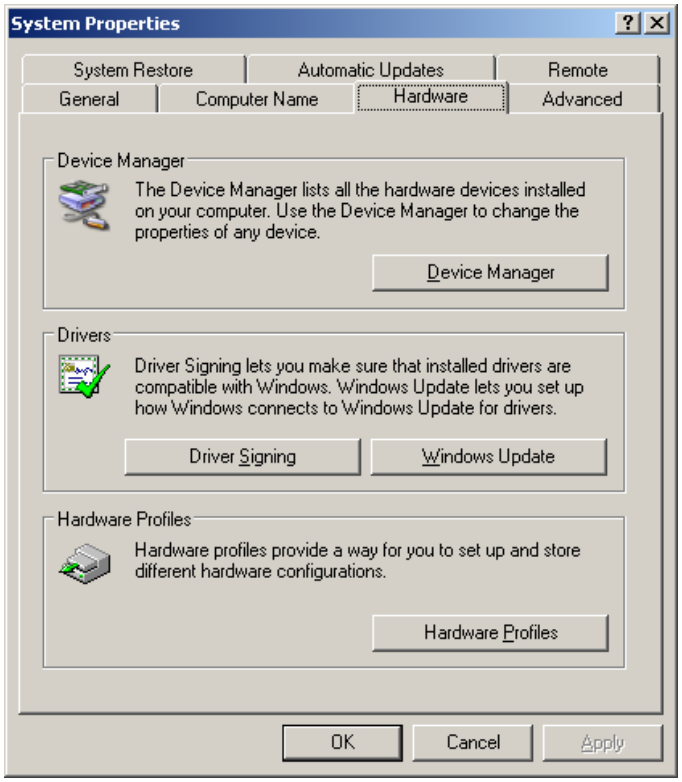
USB converter with DriveConfig

Follow these instructions if your computer does not find USB adapter after the installation of the DriveConfig 1.2.

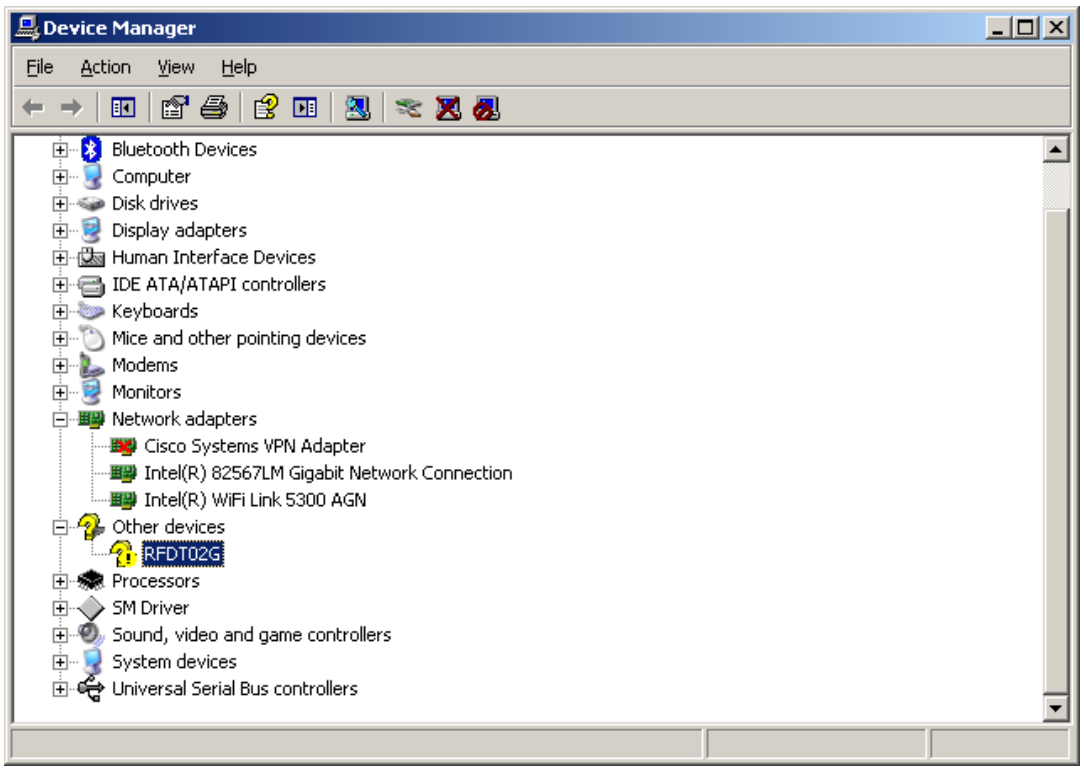
Open **Control Panel/System/**



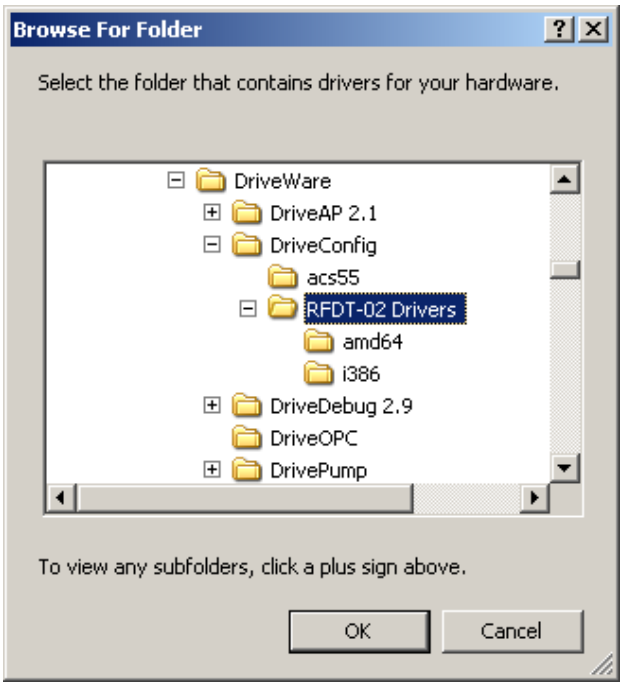
Click the **Hardware** tab:



Click **Device Manager**. Check if you have faulty device in the Device Manager. DriveConfig should be RDFT02G.



Click left mouse button on the faulty device and select **Properties**. If the device is not working correctly, click **Reinstall driver**. Drivers can be found in the DriveConfig installation folder. Default is C:\Program Files \DriveWare\ DriveConfig\ RFDT-02 Drivers\.



Select this folder and click **OK**.

It is possible that you need to install also USB Converter to DriveConfig, but this procedure starts automatically and drivers for the converter can be found from same folder as above.

Starting DriveConfig

To start DriveConfig, select **Start – DriveWare – DriveConfig**. DriveConfig main window opens.

If DriveConfig cannot detect a drive the following dialog appears on the screen:

Figure 4. No drive detected

Click **OK**. The New Parameter File window appears.

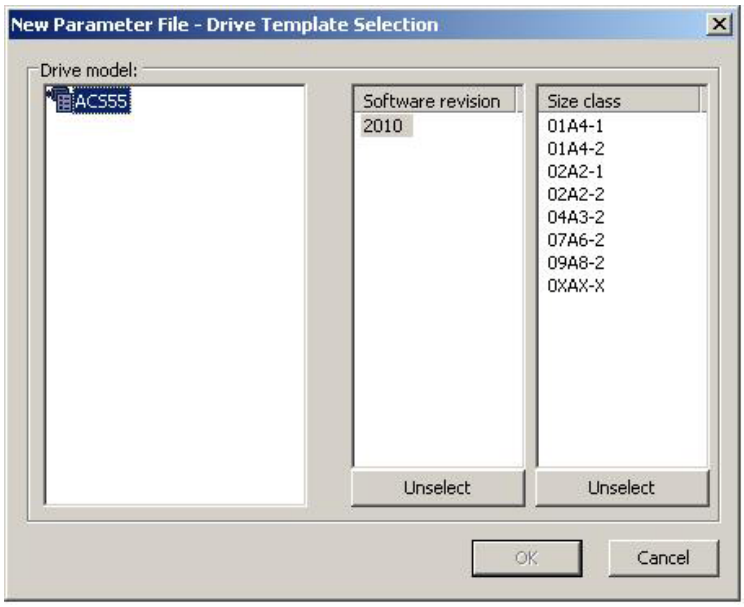


Figure 5. New Parameter File

Select any drive model, software revision, and size class to create a new empty parameter file, and then click **OK**. The DriveConfig main window appears.

Check that the drive has been powered up and connected to the right communication (COM) port. For more information about COM ports, see section *Communication port* on page 41.

In the DriveConfig main window, click the **Read from drive** button to get the drive settings displayed in the Parameter Browser window.

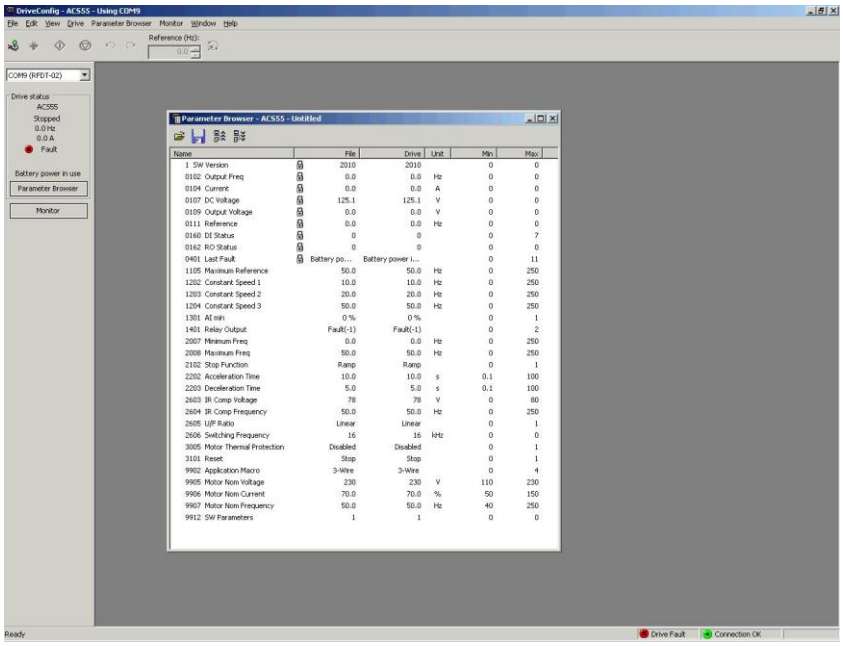


Figure 6. Main window with Parameter Browser

Set Parameter Language

To change the parameter language, select **Edit – Set Parameter Language**. The language selection dialog appears.

Figure 7. The language selection

Note: The Parameter Browser has to be open to change the parameter language.

Drive status

What this chapter contains

This chapter describes how to use the Drive status panel.

Drive status panel

The Drive status panel is located on the left side of the DriveConfig main window.

To view or hide the Drive status panel, select **View – Drive status**.

The Drive status panel shows the following information about the drive:

- type of the drive
- running/stopped
- output frequency [Hz]
- current [A]
- drive status (OK or Fault). If the drive status is Fault, the fault description appears in the panel below the drive status indicator. Fault descriptions can be found on page *43*.

The lower part of the Drive Status panel contains the following function buttons:

- Parameter Browser – changes to the Parameter Browser window
- Monitor – changes to the Monitor window.

Figure 8. Normal drive status

Note: When the drive main circuit is not powered but the control board is powered by the battery solely, the drive status is Fault. To proceed to normal operation the drive has to be connected to mains and the battery power has to be switched off **before** connecting the drive to the mains.

Figure 9. Drive status when the drive is battery-powered

Status bar

The Status bar at the bottom of the screen shows the drive and connection status as well as information on the menu commands and buttons.

To view or hide the status bar, select **View – Status Bar**.

Note: When the drive main circuit is not powered but the control board is powered by the battery solely, the drive status is Fault.

Figure 10. Status bar

Figure 11. Status bar when the drive main circuit is not powered but the control board is powered by the battery solely

Parameters

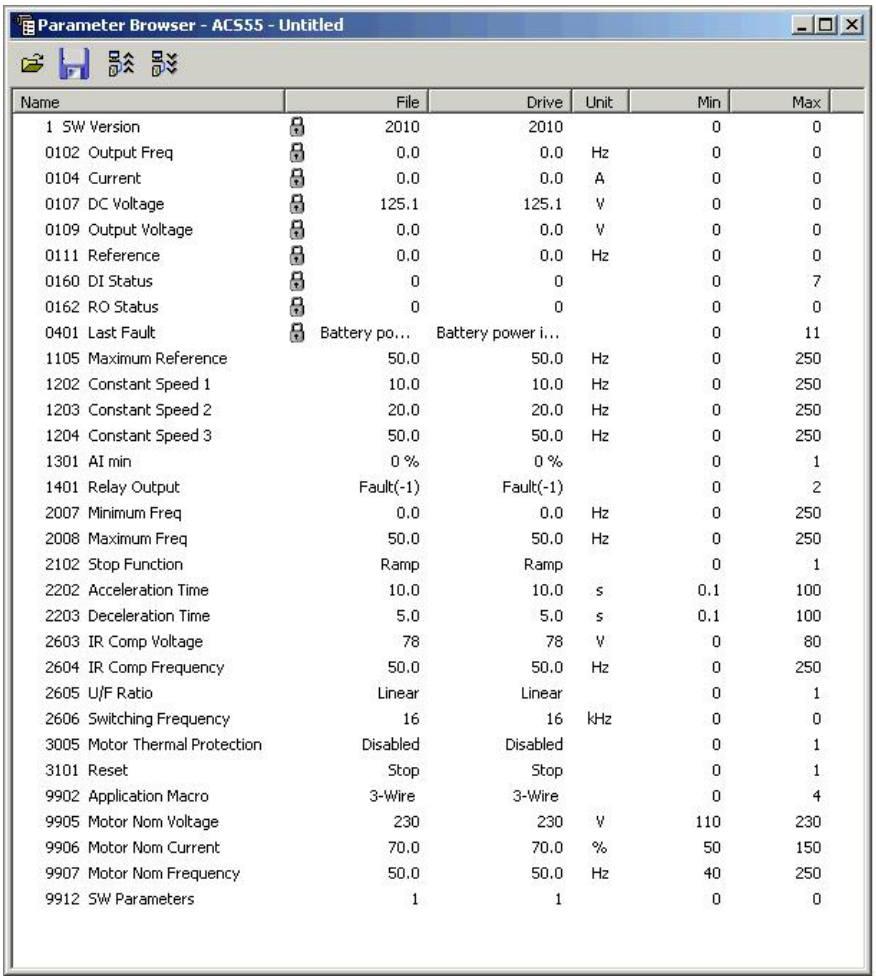
What this chapter contains

This chapter describes how to use the Parameter Browser to view and edit parameters and actual signals.

Parameter Browser

You can use Parameter Browser to view the parameters and actual signals and to modify the parameter values by transferring a new or modified parameter file to the drive.

For a list of parameters and their descriptions, see chapter *Actual signals and parameters of ACS55*.



Name	File	Drive	Unit	Min	Max
1 SW Version	2010	2010		0	0
0102 Output Freq	0.0	0.0	Hz	0	0
0104 Current	0.0	0.0	A	0	0
0107 DC Voltage	125.1	125.1	V	0	0
0109 Output Voltage	0.0	0.0	V	0	0
0111 Reference	0.0	0.0	Hz	0	0
0160 DI Status	0	0		0	7
0162 RO Status	0	0		0	0
0401 Last Fault	Battery po...	Battery power i...		0	11
1105 Maximum Reference	50.0	50.0	Hz	0	250
1202 Constant Speed 1	10.0	10.0	Hz	0	250
1203 Constant Speed 2	20.0	20.0	Hz	0	250
1204 Constant Speed 3	50.0	50.0	Hz	0	250
1301 AI min	0 %	0 %		0	1
1401 Relay Output	Fault(-1)	Fault(-1)		0	2
2007 Minimum Freq	0.0	0.0	Hz	0	250
2008 Maximum Freq	50.0	50.0	Hz	0	250
2102 Stop Function	Ramp	Ramp		0	1
2202 Acceleration Time	10.0	10.0	s	0.1	100
2203 Deceleration Time	5.0	5.0	s	0.1	100
2603 IR Comp Voltage	78	78	V	0	80
2604 IR Comp Frequency	50.0	50.0	Hz	0	250
2605 U/F Ratio	Linear	Linear		0	1
2606 Switching Frequency	16	16	kHz	0	0
3005 Motor Thermal Protection	Disabled	Disabled		0	1
3101 Reset	Stop	Stop		0	1
9902 Application Macro	3-Wire	3-Wire		0	4
9905 Motor Nom Voltage	230	230	V	110	230
9906 Motor Nom Current	70.0	70.0	%	50	150
9907 Motor Nom Frequency	50.0	50.0	Hz	40	250
9912 SW Parameters	1	1		0	0

Figure 12. Parameter Browser

Parameters and actual signals

The Parameter Browser shows the parameters and the actual signals of the drive. These types are identified with the icons shown in *Table 2 Parameter icons*.

The most common type is parameter. The parameters displayed in the Drive column are read from the drive. A parameter's value is read only once to the Drive column.

Edit the parameter values displayed in the File column by double-clicking the parameter. After editing a parameter or opening a previously edited parameter file, the changed parameters are marked with the Value changed in file icon until you transfer the parameter file to the drive.

Actual signals are like parameters, but you cannot edit their values. When the drive is connected, the values are updated cyclically in the Parameter Browser.

Table 2. Parameter icons

Icon	Parameter
	Parameter has no icon
	Signal
	Value changed in file

Configuring parameter file

When a drive is connected, you can read the parameter values from the drive, edit the parameter values in the Parameter Browser and transfer the data back to the drive.

You can also save the parameter names and values in a DriveConfig Parameter (DCP) file. The DCP files are in ASCII or UNICODE format with semicolon delimiters and can be opened with most spreadsheet applications. When a drive is not connected, you can open a parameter file in the Parameter Browser, edit the parameter values and save changes to the file. Later you can open the file and transfer the parameter values to the drive.

Handling parameter files

To save parameter names and values in a DCP file

In the DriveConfig main window, select **File – Save** or **File – Save as…**

To open a DCP file and read the parameters

In the DriveConfig main window, select **File – Open**.

To read the parameter values from the drive

In the Parameter Browser window, click the **Read from drive** button or in the DriveConfig main window, select **Parameter Browser – Read from drive**.

To transfer the parameter file to the drive

In the Parameter Browser window, click the **Transfer to drive** button or in the DriveConfig main window, select **Parameter Browser – Transfer to drive**.
Note: When transferring parameters between DriveConfig 1.2 and ACS55 drive that has been factory-configured to firmware version 2200, you do not need to shut down the drive to save parameters.

Pressing  initiates the parameter download and results to (if any parameter has been modified by the user):

- **Yes**, you need to save the parameter file to your PC, Save dialog opens.
- **No**, your changes are transferred to the drive.

A dialog (*Figure 13*) appears.

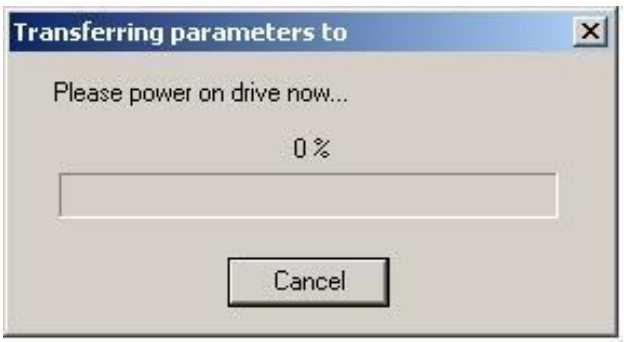


Figure 13. Transfer dialog

DriveConfig transfers the parameter file to the drive. When the parameter file has been transferred to the drive, the values in Drive and File columns in the Parameter Browser table are identical.

Note: If the transferred parameter file version differs from the drive firmware version DriveConfig 1.2 asks to close and reopen the Parameter Browser to activate the changes. Figure 14 appears.

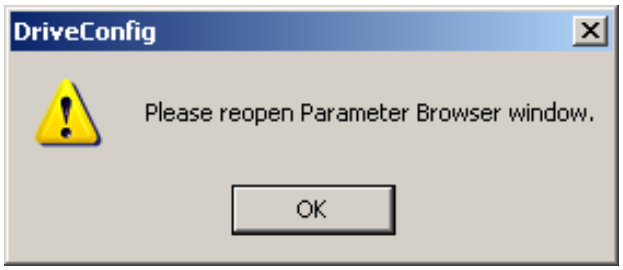


Figure 14. Transfer dialog

Note: One Parameter Browser window can contact only one drive.

Table 3. Parameter function buttons

Icon	Function
	Open parameter file
	Save parameter file
	Read parameters from drive
	Transfer parameters to drive

Figure 15. Parameter buttons

Compare parameters

To compare parameters in the active Parameter Browser window with another Parameter Browser window or a DriveConfig Parameter (DCP) file, select **Parameter Browser – Compare parameters with...**

The Compare Parameters – Selection dialog appears.

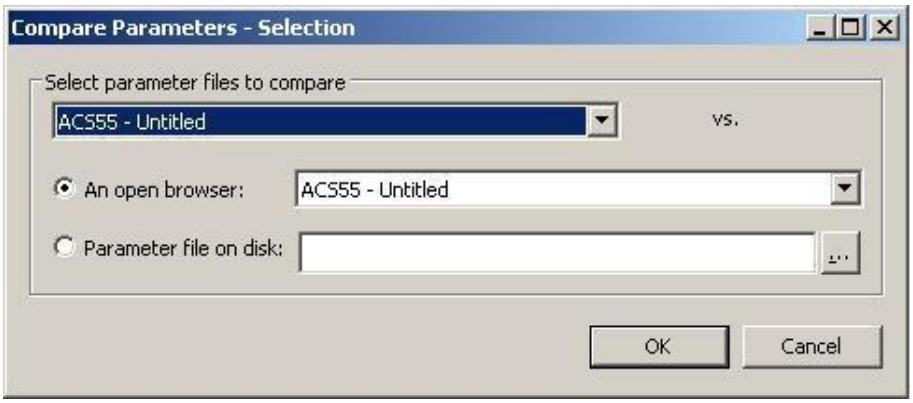


Figure 16. Compare Parameters selection

Select the files to compare and click **OK**. The Result window shows the differing parameter names in the first column. The second column shows the value in the active browser and the third column the value in the other browser window or parameter file.

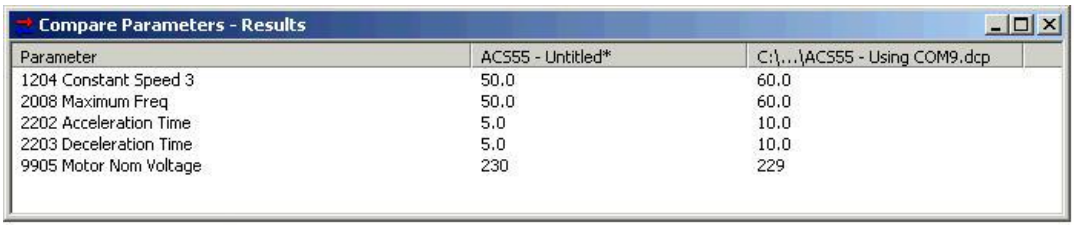


Figure 17. Results of Compare Parameters

Restore factory settings

What this chapter contains

This chapter instructs in restoring the factory settings and the customer interface.

Note: The Restore factory settings function sets the parameters on their default values and also replaces the parameter interface with the trimmers and dip switches.

How to restore factory settings

This function restores the factory settings and enables the customer interface.

1. To restore the factory settings, select **Drive – Restore factory settings**.
2. The following dialog appears confirming the restoring.

Figure 18. Power off dialog

3. Follow the instructions and dialogs on the screen.

Drive control panel

What this chapter contains

This chapter describes how to use the Drive control panel to control the drive.

Operation

You can use the Drive control panel to control the drive operation.

To view or hide the Drive control panel, select **View - Drive Control Panel**.

You can also find all drive operation commands from the **Drive - Control Panel** menu. The Drive control panel has the following buttons:

Table 4. Drive control panel buttons

Button	Function
	Take control – Release control. When control has been released, the other buttons are disabled.
	Reset the active fault on drive
	Start the drive
	Stop the drive
	Run forward
	Run reverse
	Frequency reference edit box
	Download the frequency reference to drive.

Figure 19. Drive control panel

Note: The new reference becomes active when either <return> or the rightmost button in *Figure 19* is pressed.

Note: When using the drive control panel the drive will automatically trip within 15 seconds if the connection between DriveConfig kit and the drive is lost.

Drive monitoring

What this chapter contains

This chapter describes how to use DriveConfig to monitor the operation of the connected drive.

Operation

You can use DriveConfig to monitor the operation of your connected drive. The operational values can be shown in both graphical and numerical format and monitoring data can be saved to a file for later use.

Monitoring is controlled using the Monitor toolbar. To show the Monitor toolbar, click **Monitor** in the DriveConfig main window. The Monitor window appears with the Monitor toolbar at the top of it.

Figure 20. Monitor toolbar

The Monitor toolbar has the following buttons:

Table 5. Monitor toolbar buttons

Button	Function
	Open monitor settings
	Start lasso zoom. An area can be selected with the mouse. Lasso zoom mode can be disabled with a second click on this button.
	Zoom in the trend line graph
	Zoom out the trend line graph
	Clear the monitoring data from the numeric screen, from the graph and from application's memory
	Start monitoring
	Stop monitoring
	Show monitor data in numerical format. You can open several numerical windows in order to compare monitoring data. **Note:** In numerical format the values are shown multiplied with the coefficient set either manually or automatically.
	Activate auto scroll. Scrolls automatically to the rightmost position.

Note: The drive must be online to start the monitoring.

Monitoring settings

You can select the monitored signals and define the monitoring settings in the Monitoring Settings dialog.

To open the dialog, select **Monitor – Monitor settings** or click the **Start Monitoring** button in the Monitor toolbar.

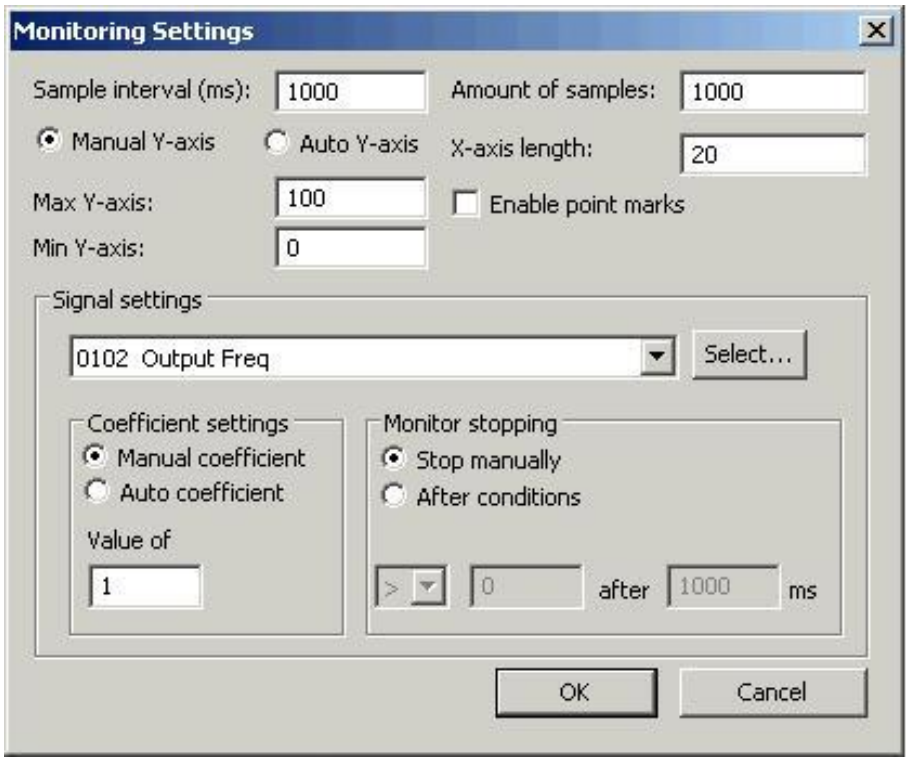


Figure 21. Monitoring settings

There are two kinds of settings: global settings and signal-specific settings.

Global settings are identical for all signals.

You can set the signal-specific settings individually for each signal. First, select the signals displayed in the drop-down menu in the Start Monitoring dialog.

Click the **Select…** button next to the signal drop-down menu and select the signals from the list. Note that signals belong to group 01.

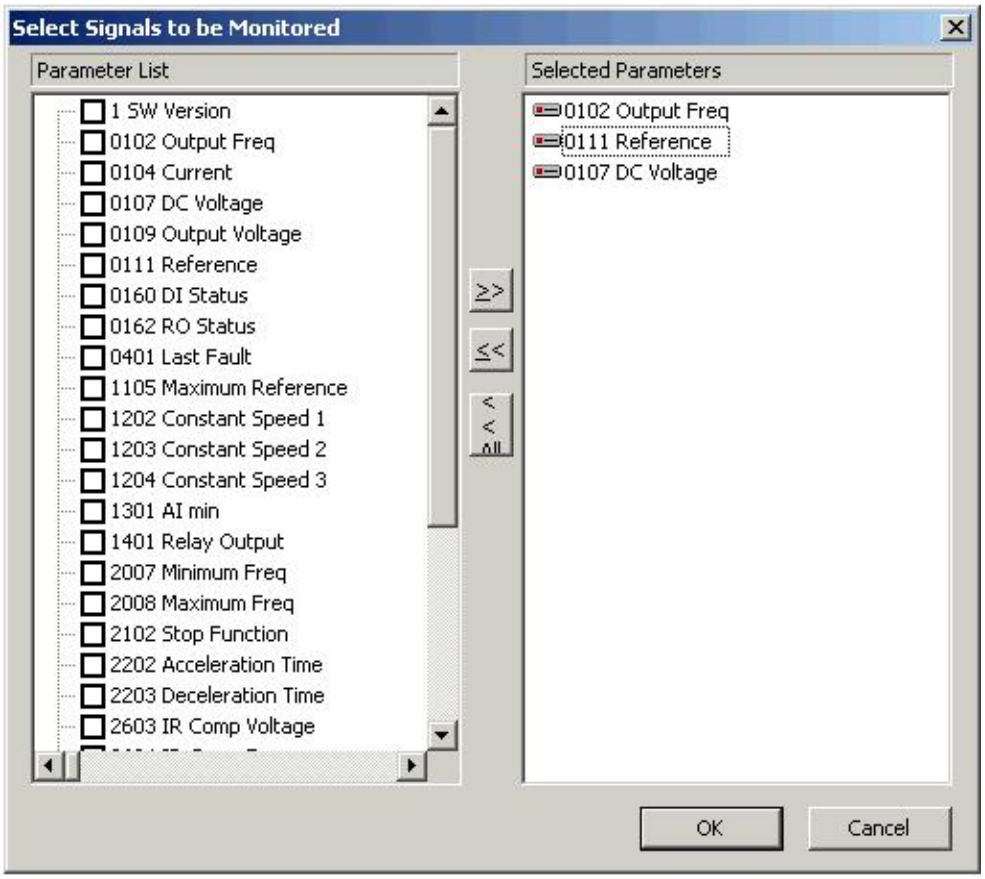


Figure 22. Select signals to be monitored

After you have selected the signals, they are displayed in the drop-down menu. Select the signal to define the signal-specific settings for it. (In the figure above, signal 0102 OUTPUT FREQ is selected.)

Table 6. Global monitoring settings

Dialog Item	Meaning
Sample Interval (ms)	Sample interval in milliseconds. The sample time is between 20 and 10000 ms.
Manual Y-axis	Set the minimum and maximum values of the Y-axis manually.
Auto Y-axis	The minimum and maximum values of the Y-axis are calculated automatically. **Note:** The values are calculated when enabling auto mode and when in auto mode closing the parameter subset selection window.
Max Y-axis	Maximum Y-axis value. In Auto Y-axis mode the value for Y-axis maximum is the biggest maximum value of the monitored parameters. **Note:** The positive Y-axis values are limited to be under 200 000.

Dialog Item	Meaning
Min Y-axis	Minimum Y-axis value. In Auto Y-axis mode the value for Y-axis minimum is the smallest minimum value of the monitored parameters. **Note:** The negative Y-axis values are limited to be over -200 000.
Amount of Samples	The number of samples stored in the RAM. The value should be between 1 000 and 1 000 000.
X-axis length	The length of the X-axis in seconds.
Enable Point Marks	Show point marks to represent actual samples in the trend lines.

Table 7. Signal-specific monitoring settings

Dialog Item	Meaning
Select	Select a maximum of four signals for monitoring. Monitoring signals are selected with the parameter subset selection dialog.
Manual Coefficient	Set the coefficient value for the signal selected in the drop down list. The actual sample values received from the drive are multiplied by this value. Coefficients can be used to scale signals in order to improve clarity.
Auto Coefficient	The coefficients are calculated automatically based on the maximum values of the monitored signals and the maximum value of the Y-axis. **Note:** Auto coefficients are calculated when the Monitoring Settings window is closed. **Note:** Manual or Auto Coefficient selection is the same for all monitored signals. Only the actual coefficients are signal-specific.
Monitor Stopping	Monitoring can be stopped manually with the button in the Monitor Toolbar or automatically when the defined stopping condition is reached.
After conditions	You can define the stopping condition separately for each of the signals. The monitoring is stopped if any of the stopping conditions is true. You can also define the monitoring to continue for certain duration after reaching the stopping condition.

File operations

To save the monitoring data to a DriveConfig Monitoring (DCM) file, select **File - Save**.

To load a DCM file, select **File - Open**.

Note: The Monitor window must be active when saving or loading the monitor data.

Loading drive firmware

What this chapter contains

This chapter instructs in loading the firmware to the drive.

Loading the firmware

Note: Before loading the firmware, check that the .dlt files have been stored in the correct directory in the directory where DriveConfig has been installed: **DriveWare\DriveConfig\ACS55**

1. To load firmware to the drive, select **Drive – Transfer firmware from file**.
2. Locate the file and click **Open**. Upgrading starts immediately after selecting the new firmware package.
3. Load the file to the drive following the instructions given for transferring the parameter file. For instructions, see section *Handling parameter files* on page *26*.

Note: Power-off is not needed when ACS55 has factory-installed firmware version 2200. However, upgrading the firmware from version 2010 to 2200 requires power-off.

Settings

What this chapter contains

This chapter describes how to change the communication port in use and the confirmation settings.

Communication port

Select the communication (COM) port from the drop-down list above the Drive status display.

Note: The maximum allowed COM port number is 9.

Figure 23. COM port drop-down list

Confirmation and options

You can configure DriveConfig to show confirmation dialogs for critical operations. To select the desired confirmations, select **Options - Confirmation and options...**. The Confirmation and Options dialog opens.

For example, if you select Drive Start, the application asks 'Are you sure you want to start the drive?' when you request to start the drive. The default settings are shown in the figure below.

Figure 24. Confirmations and Options dialog

Error messages

What this chapter contains

This chapter lists the DriveConfig PC tool error messages.

ACS55

The fault messages received from the ACS55 drive are also displayed in DriveConfig. The ACS55-related fault messages are listed in the following table.

Table 8. ACS55-related error messages

#	Possible causes and what to do	#	Possible causes and what to do
1	DC overvoltage. 1) Mains voltage is too high: Check supply. 2) Deceleration ramp time is too short compared to the load inertia: Increase ACC/DEC time with potentiometer.	7	Motor overload (I^2t overload): 1) Check the load, and verify that the motor size is suitable for ACS55. 2) Verify that setting of MOTOR I NOM potentiometer is correct. See chapter *ACS55 motor overload protection* on page *53*.
2	DC undervoltage. Mains voltage is too low: Check supply.	8	Inverter overload or excessive internal temperature: 1) Load is too high or 2) drive cooling is insufficient.
3	Output short circuit: Switch off the power and check the motor windings and motor cable.	9	Other fault. Internal error. Turn power off and on again. If problem persists, replace the unit.
4	Output overcurrent. 1) Acceleration time is too short compared to the load inertia: Increase ACC/DEC time with potentiometer. 2) Motor and drive sizes do not match: Check motor.	10	Parameterization fault. **Note:** Both LEDs will blink. DIP switches have been moved from default setting after the drive has been parameterized with DriveConfig tool. Put the switches back to default position.
5	Reserved	11	Drive is battery-powered. Drive status indicates Fault, because it is not possible to start the drive. For drive operation, the drive must be connected to mains. However, when the drive is powered from the DriveConfig kit supply, the connection between DriveConfig and the drive is OK.
6	Analogue input value is less than 4 mA / 2 V. **Note:** This supervision is active if AI OFFSET is ON.	12	Drive has been controlled by DriveConfig (or other application via serial communication) and the communication has been lost. Check the communication.

Parameter Browser

Parameter Browser related error messages are listed in the following table.

Table 9. Parameter Browser-related error messages

Error message	Cause	Solution
Given value was invalid. Please input valid value.	The value you are trying to give does not fit between minimum and maximum values of the parameter.	Check the minimum and maximum values and give a proper value.

Drive status

The drive status-related error messages are listed in the following table.

Table 10. Drive status-related error messages

Error message	Cause	Solution
Communication error occurred while uploading status word.	No communication between the drive and DriveConfig.	Check the connection to the drive and communication settings and try again.
Communication error occurred while downloading command word.	You have given Reverse command before Start or there is no communication between the drive and DriveConfig.	Give Start command first and then reverse. Check the connection to the drive and communication settings and try again.
Communication error occurred while downloading reference parameter.	No communication between the drive and DriveConfig.	Check the connection to the drive and communication settings and try again.
Error occurred while uploading command word.	No communication between the drive and DriveConfig.	Check the connection to the drive and communication settings and try again.
Communication error occurred while uploading reference register.	No communication between the drive and DriveConfig.	Check the connection to the drive and communication settings and try again.
Errors occurred while updating Status panel.	No communication between the drive and DriveConfig.	Check the connection to the drive and communication settings and try again.

Drive identification

Drive identification related error messages are listed in the following table.

Table 11. Drive identification related error messages

Error message	Cause	Solution
No drive detected.	Missing .dlt files. No communication between the drive and DriveConfig.	Check the connection to the drive and the communication settings and try again. Check that there are .dlt files matching the current drive SW version in directory '…\DriveConfig\acs55'.
Error occurred while reading .ini file.	No matching .ini file in DriveConfig.	Check that there is acs55.ini file in …\DriveConfig directory.

Communication

Communication related error messages are listed in the following table.

Table 12. Communication related error messages

Error message	Cause	Solution
Error opening COM port.	COM port setting incorrect.	Check COM port settings and try again.
Communication error occurred while updating status. Stopping status update.	No communication between the drive and DriveConfig	Check the connection to the drive and communication settings and try again.
Could not find the drive, ScanBus failed. Returning to Remote mode.	No communication between the drive and DriveConfig.	Check the connection to the drive and communication settings and try again.
Operation is not possible in Local mode. Change to Remote mode.	You are trying to transfer parameters to drive in Local mode.	Change to Remote mode by Release Control command.
You have control of the drive. Closing application will release the control. Do you want to release control and close the application?	-	If you close the application, you will continue control with I/O. Drive may start/stop depending on DI status.
The drive is in local mode. Closing parameter browser will change the drive to the remote mode. Do you want to change to the remote mode and close the parameter browser?	-	If you close the application, you will continue control with I/O. Drive may start/stop depending on DI status.
Please switch off power supply, both mains and battery. After that press OK button to continue transfer.	Message from DriveConfig to switch of power supply for transferring parameter file or firmware to drive.	Switch off power.

Files

Commissioning wizard-related error messages are listed in the following table.

Table 13. Commissioning wizard-related error messages

Error message	Cause	Solution
The parameter file does not contain valid header, and therefore file can not be opened.	The .dcp file you are trying to open is corrupted or created by another application.	Change to online mode and try again.
Unable to open .ini file.	No matching .ini file in DriveConfig.	Check that there is acs55.ini file in directory '…\DriveConfig'.
Loaded file and active parameter browser version numbers differs. Differences are the following: File information - Drive: (file name), Software revision: xxx and Size class: xxx Parameter browser - Drive: (browser name), Software revision: xxx and Size class: xxx Do you want to download changes to the drive?	You have opened the parameter file which has different software version or size class than in drive you are connected to.	Parameters can be transferred to drive.

Monitor

Monitoring-related error messages are listed in the following table.

Table 14. Monitoring-related error messages

Error message	Cause	Solution
Start of drive monitoring is not possible in Offline mode.	No communication between the drive and DriveConfig.	Check the connection to the drive and communication settings and try again.

Actual signals and parameters of ACS55

What this chapter contains

This chapter describes the parameters and actual signals of ACS55.

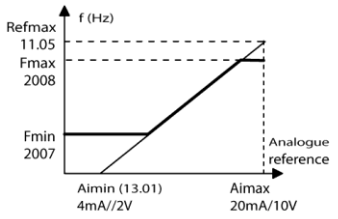
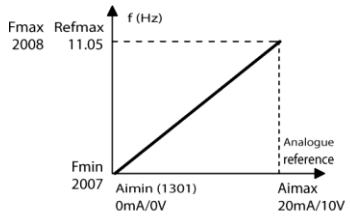
Terms and abbreviations

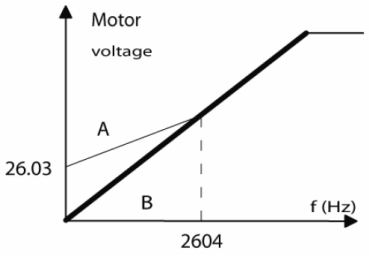
Term	Definition
Actual signal	Signal measured or calculated by the drive. Can be monitored by the user. No user setting possible. Groups 01…04 contain actual signals.
Def	Parameter default value
Parameter	A user-adjustable operation instruction of the drive. Groups 10…99 contain parameters.

Parameters and actual signals

The parameters and actual signals used in the short parameter mode are displayed on the panel in the following order.

No.	Name/Value	Description	Def
1	SW version	Drive's software version	
01 OPERATING DATA		Actual signals for monitoring the drive (read-only)	
0102	OUTPUT FREQ	Output frequency in Hz	
0104	CURRENT	Measured motor current in A	
0107	DC VOLTAGE	Measured intermediate circuit voltage in V DC	
0109	OUTPUT VOLTAGE	Calculated motor voltage in V AC	
0111	REFERENCE	Frequency reference in Hz	
0160	DI STATUS	Status of digital inputs. Example: 100 = DI1 is on, DI2 and DI3 are off.	
0162	RO STATUS	Status of relay output. 1 = RO is energized, 0 = RO is de-energized.	
04 FAULT HISTORY		Fault history (read-only)	
0401	LAST FAULT	Name of the latest fault. No fault = fault history is clear. ACS55 does not save fault messages in power-off.	
11 REFERENCE SELECT		Selection of maximum reference.	
1105	MAXIMUM REFERENCE	Defines the maximum value for frequency reference. Corresponds to the maximum setting of the used source signal.	50
	0…250 Hz	Maximum value. See example in parameter 2008 MAXIMUM FREQUENCY.	

No.	Name/Value	Description	Def
12 CONSTANT SPEEDS		Constant speed selection and values. It is possible to define three positive constant speeds. You can select constant speeds with digital inputs and activate by selecting Constant Speed macro with parameter 9902.	
1202	CONSTANT SPEED 1	Defines constant speed 1 (i.e. drive output frequency).	10
	0…250 Hz	Output frequency	
1203	CONSTANT SPEED 2	Defines constant speed 2 (i.e. drive output frequency).	20
	0…250 Hz	Output frequency	
1204	CONSTANT SPEED 3	Defines constant speed 3 (i.e. drive output frequency).	50
	0…250 Hz	Output frequency	
13 ANALOG INPUTS		Analog input signal processing	
1301	AI MIN	Defines the minimum %-value that corresponds to the minimum mA/(V) signal for the analog input . When used as a reference, the value corresponds to the zero reference. 0…20 mA 0…100% 4…20 mA 20…100%	0
	0% or 20%	Value in percent of the full signal range. Example: If the minimum value for analog input is 4 mA, the percent value for 0.20 mA range is: (4 mA / 20 mA) · 100% = 20%	
14 RELAY OUTPUTS		Status information indicated through relay output.	
1401	RELAY OUTPUT	Selects a drive status indicated through relay output RO. The relay energises when the status meets the setting.	FAULT(-1)
	FAULT(-1)	Inverted fault. Relay is de-energised on a fault trip.	
	RUN	Running: Start signal on, Run Enable signal on, no active fault.	
	FAULT	Fault	
20 LIMITS		Drive operation limits	
2007	MINIMUM FREQUENCY	Defines the minimum limit for the drive output frequency.	0
	0…250 Hz	Minimum frequency.	
2008	MAXIMUM FREQUENCY	Defines the maximum limit for the drive output frequency.	50
	0…250 Hz	Maximum frequency.	
		The following two examples illustrate the frequency reference in relation to the drive output maximum and minimum frequency.  Case 2: Fmin>0,5Hz; Fmax<Refmax; Aimin=4mA/2V  Case 1: Fmin=0,5Hz; Fmax=Refmax; Aimin=0mA/0V	

No.	Name/Value	Description	Def
2021	MIN FREQUENCY TO MODULATE	Defines the absolute frequency below which the converter gives zero voltage to the motor.	0.5 Hz
	0…3 Hz	Minimum frequency to modulate	
21 START/STOP		Start and stop modes of the motor	
2102	STOP FUNCTION	Selects the motor stop function.	RAMP
	COAST	Stop by cutting off the motor power supply. The motor coasts to a stop.	
	RAMP	Stop along a ramp.	
22 ACCEL/DECEL		Acceleration and deceleration times	
2202	ACCELERATION TIME	Defines the acceleration time, i.e. the time required for the speed to change from zero to the speed defined by parameter 2008 MAXIMUM FREQUENCY. - If the speed reference increases faster than the set acceleration rate, the motor speed will follow the acceleration rate. - If the speed reference increases slower than the set acceleration rate, the motor speed will follow the reference signal. - If the acceleration time is set too short, the drive will automatically prolong the acceleration in order not to exceed the drive operating limits.	5
	0…100 s	Time	
2203	DECELERATION TIME	Defines the deceleration time i.e. the time required for the speed to change from the value defined by parameter 2008 MAXIMUM FREQUENCY to zero. - If the speed reference decreases slower than the set deceleration rate, the motor speed will follow the reference signal. - If the reference changes faster than the set deceleration rate, the motor speed will follow the deceleration rate. - If the deceleration time is set too short, the drive will automatically prolong the deceleration in order not to exceed drive operating limits.	5
	0…100 s	Time	
26 MOTOR CONTROL		Motor control variables	
2603	IR COMP VOLTAGE	Defines the output voltage boost at zero speed (IR compensation) in Volts. The function is useful in applications with high break-away torque. To prevent overheating, set IR compensation voltage as low as possible. The figure below illustrates the IR compensation.  Typical IR compensation values: P_N (kW) 0.37 0.75 2.2 IR comp (V) 8.4 7.7 5.6	23
	0…80 V	Value in Volts	
2604	IR COMP FREQUENCY	Defines the frequency at which the IR compensation is 0 V. See the figure for parameter 2603 IR COMP VOLTAGE.	50
	0…250 Hz	Value in Herz	
2605	U/F RATIO	Selects the voltage to frequency (U/f) ratio below the field weakening point.	LINEAR

No.	Name/Value	Description	Def
	LINEAR	Linear ratio for constant torque applications	
	SQUARED	Squared ratio for centrifugal pump and fan applications. With squared U/f ratio the noise level is lower for most operating frequencies.	
2606	SWITCHING FREQUENCY	Defines the switching frequency of the drive. Higher switching frequency results in lower acoustic noise. In multimotor systems, do not change the switching frequency from the default value.	5
	5 kHz	5 kHz	
	16 kHz	16 kHz	
30 PROTECTIONS		Programmable protection functions	
3005	MOTOR THERMAL PROTECTION	Activation of motor thermal protection. See chapter *ACS55 motor overload protection* on page *53*.	ENABLED
	ENABLED	Active	
	DISABLED	Not Active	
31 RESET		Automatic fault reset	
3101	RESET	Selection of reset method	STOP
	STOP	By falling edge of the start signal or stop signal (3-wire macro).	
	AUTOMATIC +STOP	By falling edge of the start signal and automatically, see section *DIP switches* in *ACS55 User's Guide* (3AFE68929300).	
	NO RESET	To reset the drive, reboot of the drive (switch mains power off and on again) is needed.	
99 START-UP DATA		Application macro. Definition of motor set-up data.	
9902	APPLICATION MACRO	Selects the application macro.	ABB STANDARD
	ABB STANDARD	Standard macro for constant speed applications.	

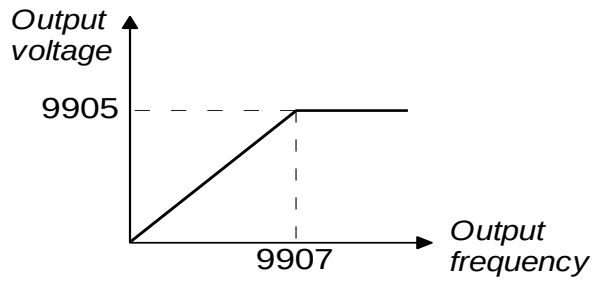
	Function	
	Activated	**Deactivated**
D1	Start	Stop
D2	Reverse	Forward
D3	Parameter 1204 (const speed 3) is f_{ref}.	Analogue input is f_{ref}.

	3-WIRE	3-wire macro for constant speed applications

	Function	
	Activated	**Deactivated**
DI1	Momentary activation with DI2 activated: start	No function
DI2	Enables start with DI1	Momentary deactivation: stop
DI3	When activated: reverse direction	When deactivated: forward direction

	ALTERNATE	Alternate macro for start forward and start reverse applications. **Note:** If both DI1 and DI2 are active, the drive stops.

	Function	
	Activated	**Deactivated**
DI1	Start forward	With DI2 deactivated: stop

No.	Name/Value	Description			Def
		DI2	Start reverse	With DI1 deactivated: stop	
		DI3	Parameter 1204 (const speed 3) is f_{ref}.	Analogue input is f_{ref}.	
	CONSTANT SPEED	Constant speed macro for three constant speeds.			
			Function		
			Activated	**Deactivated**	
		DI1	Parameter 1202 (const speed 1) is f_{ref}.	Stop	
		DI2	With DI1 activated: parameter 1203 (const speed 2) is f_{ref}.	Parameter 1202 (const speed 1) or 1204 (const speed 3) is f_{ref}.	
		DI3	With DI1 activated: parameter 1204 (const speed 3) is f_{ref}.	Parameter 1202 (const speed 1) or 1203 (const speed 2) is f_{ref}.	
	MOTOR POTENTIOMETER	Motor potentiometer macro for digital signal speed control applications. The drive “remembers” the last reference at stop.			
			Function		
			Activated	**Deactivated**	
		DI1	Start	Stop	
		DI2	f_{ref} up	No function	
		DI3	f_{ref} down	No Function	
	MotPotR	Motor potentiometer macro for digital signal speed control applications. The reference is always reset to zero at stop.			
			Function		
			Activated	**Deactivated**	
		DI1	Start	Stop	
		DI2	f_{ref} up	No function	
		DI3	f_{ref} down	No Function	
9905	MOTOR NOM VOLTAGE	Defines the nominal motor voltage. Must be equal to the value on the motor rating plate. The drive cannot supply the motor with a voltage greater than the input power voltage of the drive, except the types for 115 V input voltage that can supply twice the input voltage value to the motor.  **WARNING!** Never connect a motor to a drive which is connected to a power line with a voltage level higher than the rated motor voltage.			230
	110…230 V	Voltage			
9906	MOTOR NOM CURRENT	Defines the nominal motor current as percentage of the inverter nominal current. Must be equal to the value on the motor rating plate.			100

No.	Name/Value	Description	Def
	50…150 %	Current	
9907	MOTOR NOM FREQUENCY	Defines the nominal motor frequency.	50
	40…250 Hz	Frequency	
9912	SW PARAMETERS	Selection if parameters set with DriveConfig are used or if ACS55 customer interface is used instead of modified parameters.	1
	0	0 = DIP switch and trimmer interface in use	
	1	1 = DriveConfig parameter set (= software) in use	

ACS55 motor overload protection

What this chapter contains

This chapter describes the motor overload protection function in ACS55 drive.

Description

ACS55 estimates motor temperature based on measured output current and motor I_{nom} setting, and automatically protects the motor from overheating by tripping. The trip time depends on the extent of the overload (I_{out}/I_{nom}), the output frequency and nominal motor frequency. If the motor cables are long they cause large capacitive currents.

Running at low speed (under 35 Hz break point) motor overload (I^2t overload) takes place. See *Figure 25*.

To avoid unnecessary overload tripping due to long motor cables or low speed, set the MOTOR I NOM potentiometer to the maximum value. This will disable the motor overload fault. Note that after this setting the motor overheat protection in no longer in use and will not protect the motor from overheating. The motor overload protection can also be disabled via DriveConfig by setting the parameter 3005 MOTOR THERMAL PROTECTION to DISABLED.

To reduce large capacitive currents with long motor cables, use output choke (ACS-CHK-X).

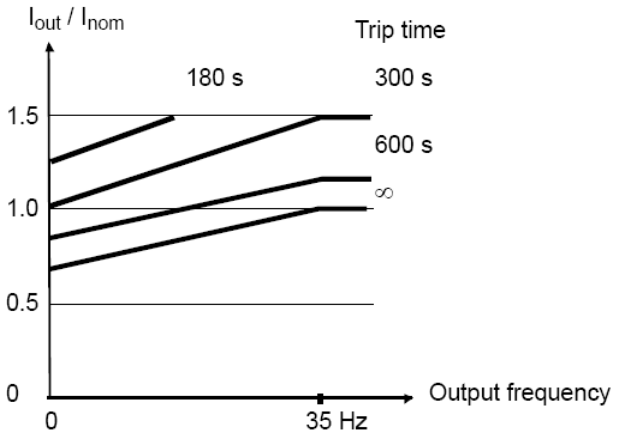


Figure 25. Trip time

By setting the motor nominal speed to 60 Hz by dip switch, the break point in *Figure 25* is set to 42 Hz instead of 35 Hz. If the motor nominal frequency is set by DriveConfig software, the break point is raised from 35 Hz to 42 Hz if the motor nominal frequency is over 55 Hz.

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