

DCS800 Control Panel operation

Chapter overview

This chapter describes the handling of the DCS800 Control Panel.

Start-up

The commissioning configures the drive and sets parameters that define how the drive operates and communicates. Depending on the control and communication requirements, the commissioning requires any or all of the following:

- The Start-up Assistant (via DCS800 Control Panel or DriveWindow Light) steps you through the default configuration. The DCS800 Control Panel Start-up Assistant runs automatically at the first power up, or can be accessed at any time using the main menu.
- Application macros can be selected to define common, system configurations.
- Additional adjustments can be made using the DCS800 Control Panel to manually select and set individual parameters. See *chapter [Signal and parameter list](#)*.

DCS800 Control Panel

Use the DCS800 Control Panel to control the drive, to read status data, to adjust parameters and to use the pre-programmed assistants.

Features:

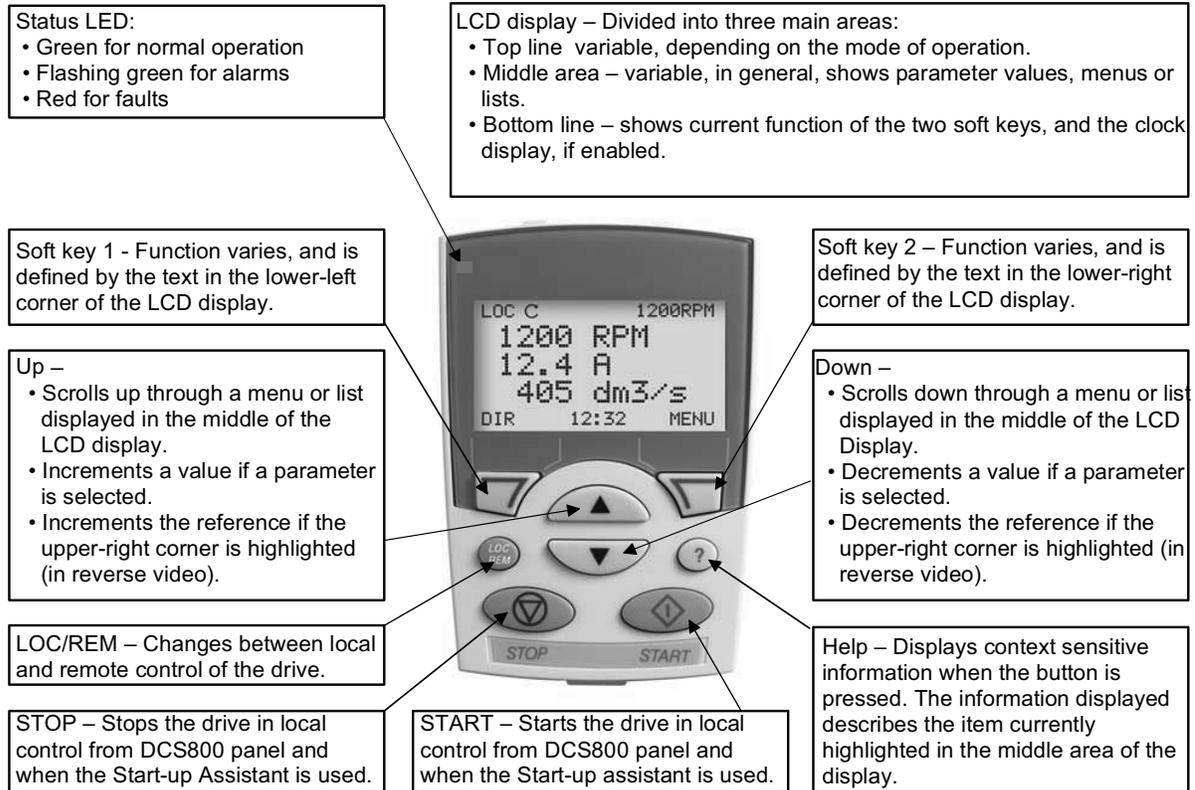
The DCS800 Control Panel features:

- Alphanumeric LCD display
- Language selection for the display by means of *Language (99.01)*
- Panel can be connected or detached at any time
- Start-up Assistant for ease drive commissioning
- Copy function, parameters can be copied into the DCS800 Control Panel memory to be downloaded to other drives or as backup
- Context sensitive help

Fault- and alarm messages including fault history

Display overview

The following table summarizes the button functions and displays of the DCS800 Control Panel.



DCS800 FW pan sum.dsF

General display features

Soft key functions:

The soft key functions are defined by the text displayed just above each key.

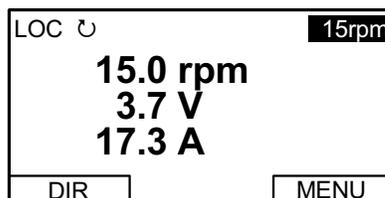
Display contrast:

To adjust display contrast, simultaneously press the MENU key and UP or DOWN, as appropriate.

Output mode

Use the output mode to read information on the drive's status and to operate the drive. To reach the output mode, press EXIT until the LCD display shows status information as described below.

Status information:



Top: The top line of the LCD display shows the basic status information of the drive:

- LOC indicates that the drive control is local from the DCS800 Control Panel.
- REM indicates that the drive control is remote, via local I/O or overriding control.
- ↺ indicates the drive and motor rotation status as follows:

DCS800 Control Panel display	Significance
Rotating arrow (clockwise or counter clockwise)	– Drive is running and at setpoint – Shaft direction is forward ↺ or reverse ↻
Rotating dotted blinking arrow	Drive is running but not at setpoint
Stationary dotted arrow	Start command is present, but motor is not running. E.g. start enable is missing

- Upper right position shows the active reference, when in local from DCS800 Control Panel.

Middle: Using parameter Group 34, the middle of the LCD display can be configured to display up to three parameter values:

- By default, the display shows three signals.
- Use *DispParam1Sel (34.01)*, *DispParam2Sel (34.08)* and *DispParam3Sel (34.15)* to select signals or parameters to display. Entering value 0 results in no value displayed. For example, if 34.01 = 0 and 34.15 = 0, then only the signal or parameter specified by 34.08 appears on the DCS800 Control Panel display.

Bottom: The bottom of the LCD display shows:

- Lower corners show the functions currently assigned to the two soft keys.
- Lower middle displays the current time (if configured to do so).

Operating the Drive:

LOC/REM: Each time the drive is powered up, it is in remote control (REM) and is controlled as specified in *CommandSel (10.01)*.

To switch to local control (LOC) and control the drive using the DCS800 Control Panel, press the  button.

- When switching from local control (LOC) to remote control (REM) the drive's status (e.g. **On, Run**) and the speed reference of the remote control are taken.

To switch back to remote control (REM) press the  button.

Start/Stop: To start and stop the drive press the START and STOP buttons.

Shaft direction: To change the shaft direction press DIR.

Speed reference: To modify the speed reference (only possible if the display in the upper right corner is highlighted) press the UP or DOWN button (the reference changes immediately).

The speed reference can be modified via the DCS800 Control Panel when in local control (LOC).

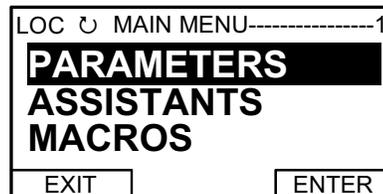
Note:

The START / STOP buttons, shaft direction (DIR) and reference functions are only valid in local control (LOC).

Other modes

Below the output mode, the DCS800 Control Panel has:

- Other operating modes are available through the MAIN MENU.
- A fault mode that is triggered by faults. The fault mode includes a diagnostic assistant mode.
- An alarm mode that is triggered by drive alarms.



Access to the MAIN MENU and other modes:

To reach the MAIN MENU:

1. Press EXIT, as necessary, to step back through the menus or lists associated with a particular mode. Continue until you are back to the output mode.
2. Press MENU from the output mode. At this point, the middle of the display is a listing of the other modes, and the top-right text says "MAIN MENU".
3. Press UP/DOWN to scroll to the desired mode.
4. Press ENTER to enter the mode that is highlighted.

Following modes are available in the MAIN MENU:

1. Parameters mode
2. Start-up assistants mode
3. Macros mode (currently not used)
4. Changed parameters mode

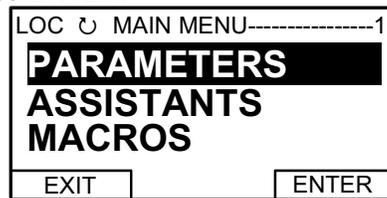
5. Fault logger mode
6. Clock set mode
7. Parameter backup mode
8. I/O settings mode (currently not used)

The following sections describe each of the other modes.

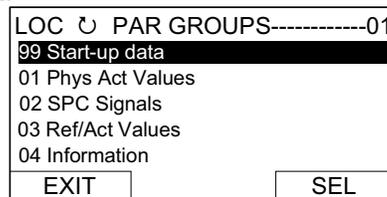
Parameters mode:

Use the parameters mode to view and edit parameter values:

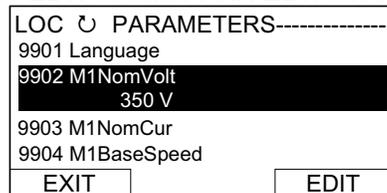
1. Press UP/DOWN to highlight PARAMETERS in the MAIN MENU, then press ENTER.



2. Press UP/DOWN to highlight the appropriate parameter group, then press SEL.



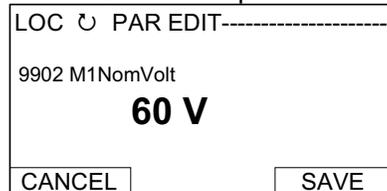
3. Press UP/DOWN to highlight the appropriate parameter in a group, then press EDIT to enter PAR EDIT mode.



Note:

The current parameter value appears below the highlighted parameter.

4. Press UP/DOWN to step to the desired parameter value.



Note:

To get the parameter default value press UP/DOWN simultaneously.

5. Press SAVE to store the modified value and leave the PAR EDIT mode or press CANCEL to leave the PAR EDIT mode without modifications.
6. Press EXIT to return to the listing of parameter groups, and again to step back to the MAIN MENU.

Start-up assistants mode:

Use the start-up assistants mode for basic commissioning of the drive.

When the drive is powered up the first time, the start-up assistants guides you through the setup of the basic parameters.

There are seven start-up assistants available. They can be activated one after the other, as the ASSISTANTS menu suggests, or independently. The use of the assistants is not required. It is also possible to use the parameter mode instead.

The assistant list in the following table is typical:

1. Name plate data	<ul style="list-style-type: none"> - Enter the motor data, the mains (supply) data, the most important protections and follow the instructions of the assistant. - After filling out the parameters of this assistant it is - in most cases - possible to turn the motor for the first time.
2. Macro assistant	<ul style="list-style-type: none"> - Selects an application macro.
3. Autotuning field current controller	<ul style="list-style-type: none"> - Enter the field circuit data and follow the instructions of the assistant. - During the autotuning the main respectively field contactor will be closed, the field circuit is measured by means of increasing the field current to nominal field current and the field current control parameters are set. The armature current is not released while the autotuning is active and thus the motor should not turn. - When the autotuning is finished successfully the parameters changed by the assistant are shown for confirmation. If the assistant fails it is possible to enter the fault mode for more help.
4. Autotuning armature current controller	<ul style="list-style-type: none"> - Enter the motor nominal current, the basic current limitations and follow the instructions of the assistant. - During the autotuning the main contactor will be closed, the armature circuit is measured by means of armature current bursts and the armature current control parameters are set. The field current is not released while the autotuning is active and thus the motor should not turn, but due to remanence in the field circuit about 40% of all motors will turn (create torque). These motors have to be locked. - When the autotuning is finished successfully the parameters changed by the assistant are shown for confirmation. If the assistant fails it is possible to enter the fault mode for more help.
5. Speed feedback assistant	<ul style="list-style-type: none"> - Enter the EMF speed feedback parameters, - if applicable - the parameters for the pulse encoder respectively the analog tacho and follow the instructions of the assistant. - The speed feedback assistant detects the kind of speed feedback the drive is using and provides help to set up pulse encoders or analog tachometers. - During the autotuning the main contactor and the field contactor - if existing - will be closed and the motor will run up to base speed [<i>M1BaseSpeed</i> (99.04)]. During the whole procedure the drive will be in EMF speed control despite the setting of <i>M1SpeedFbSel</i> (50.03). - When the assistant is finished successfully the speed feedback is set. If the assistant fails it is possible to enter the fault mode for more help.
6. Autotuning speed controller	<ul style="list-style-type: none"> - Enter the motor base speed, the basic speed limitations, the speed filter time and follow the instructions of the assistant. - During the autotuning the main contactor and the field contactor - if existing - will be closed, the ramp is bypassed and torque respectively current limits are valid. The speed controller is tuned by means of speed bursts up to base speed [<i>M1BaseSpeed</i> (99.04)] and the speed controller parameters are set. Attention: During the autotuning the torque limits will be reached. - When the autotuning is finished successfully the parameters changed by the assistant are shown for confirmation. If the assistant fails it is possible to enter the fault mode for more help.

	<p>Attention: This assistant is using the setting of <i>M1SpeedFbSel (50.03)</i>. If using setting Encoder, Encoder2 or Tacho make sure the speed feedback is working properly!</p>
<p>7. Field weakening assistant (only used when maximum speed is higher than base speed)</p>	<ul style="list-style-type: none"> - Enter the motor data, the field circuit data and follow the instructions of the assistant. - During the autotuning the main contactor and the field contactor - if existing - will be closed and the motor will run up to base speed [<i>M1BaseSpeed (99.04)</i>]. The EMF controller data are calculated, the flux linearization is tuned by means of a constant speed while decreasing the field current and the EMF controller respectively flux linearization parameters are set. - When the autotuning is finished successfully the parameters changed by the assistant are shown for confirmation. If the assistant fails it is possible to enter the fault mode for more help.

1. Press UP/DOWN to highlight ASSISTANTS in the MAIN MENU, then press ENTER.
2. Press UP/DOWN to highlight the appropriate start-up assistant, then press SEL to enter PAR EDIT mode.
3. Make entries or selections as appropriate.
4. Press SAVE to save settings. Each individual parameter setting is valid immediately after pressing SAVE.
5. Press EXIT to step back to the MAIN MENU.

Macros mode:

Currently not used!

Changed parameters mode:

Use the changed parameters mode to view and edit a listing of all parameter that have been changed from their default values:

1. Press UP/DOWN to highlight CHANGED PAR in the MAIN MENU, then press ENTER.
2. Press UP/DOWN to highlight a changed parameter, then press EDIT to enter PAR EDIT mode.

Note:

The current parameter value appears below the highlighted parameter.

3. Press UP/DOWN to step to the desired parameter value.

Note:

To get the parameter default value press UP/DOWN simultaneously.

4. Press SAVE to store the modified value and leave the PAR EDIT mode or press CANCEL to leave the PAR EDIT mode without modifications.

Note:

If the new value is the default value, the parameter will no longer appear in the changed parameter list.

5. Press EXIT to step back to the MAIN MENU.

Fault logger mode:

Use the fault logger mode to see the drives fault, alarm and event history, the fault state details and help for the faults:

1. Press UP/DOWN to highlight FAULT LOGGER in the MAIN MENU, then press ENTER to see the latest faults (up to 20 faults, alarms and events are logged).
2. Press DETAIL to see details for the selected fault. Details are available for the three latest faults, independent of the location in the fault logger.
3. Press DIAG to get additional help (only for faults).
4. Press EXIT to step back to the MAIN MENU.

Clock set mode:

Use the Clock set mode to:

- Enable or disable the clock function.
 - Select the display format.
 - Set date and time.
1. Press UP/DOWN to highlight CLOCK SET in the MAIN MENU, then press ENTER.
 2. Press UP/DOWN to highlight the desired option, then press SEL.
 3. Choose the desired setting, then press SEL or OK to store the setting or press CANCEL to leave without modifications.
 4. Press EXIT to step back to the MAIN MENU.

Note:

To get the clock visible on the LCD display at least one change has to be done in the clock set mode and the DCS800 Control Panel has to be de-energized and energized again.

Parameter backup mode:

The DCS800 Control Panel can store a full set of drive parameters.

- AP will be uploaded and downloaded.
- The type code of the drive is write protected and has to be set manually by means of *ServiceMode (99.06)* = **SetTypeCode** and *TypeCode (97.01)*.

The parameter backup mode has following functions:

UPLOAD TO PANEL: Copies all parameters from the drive into the DCS800 Control Panel. This includes both user sets (**User1** and **User2**) - if defined - and internal parameters such as those created by tacho fine tuning. The DCS800 Control Panel memory is non-volatile and does not depend on its battery. Can only be done in drive state **Off** and **local** from DCS800 Control Panel.

DOWNLOAD FULL SET: Restores the full parameter set from the DCS800 Control Panel into the drive. Use this option to restore a drive, or to configure identical drives. Can only be done in drive state **Off** and **local** from DCS800 Control Panel.

Note:

This download does not include the user sets.

DOWNLOAD APPLICATION: Currently not used!

The general procedure for parameter backup operations is:

1. Press UP/DOWN to highlight PAR BACKUP in the MAIN MENU, then press ENTER.

2. Press UP/DOWN to highlight the desired option, then press SEL.
3. Wait until the service is finished, then press OK.
4. Press EXIT to step back to the MAIN MENU.

I/O settings mode:

Currently not used!

Maintenance**Cleaning:**

Use a soft damp cloth to clean the DCS800 Control Panel. Avoid harsh cleaners which could scratch the display window.

Battery:

A battery is used in the DCS800 Control Panel to keep the clock function available and enabled. The battery keeps the clock operating during power interruptions.

The expected life for the battery is greater than ten years. To remove the battery, use a coin to rotate the battery holder on the back of the control panel. The type of the battery is CR2032.

Note:

The battery is **not** required for any DCS800 Control Panel or drive functions, except for the clock.