# Basic control panel

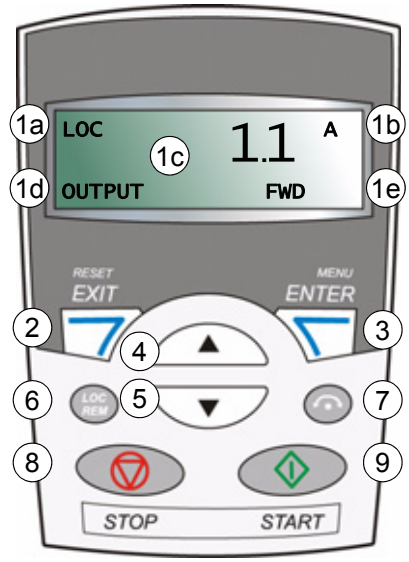
## Features

The basic control panel features:

- numeric control panel with an LCD display
- copy function – parameters can be copied to the control panel memory for later transfer to other drives or for backup of a particular system.

## Overview

The following table summarizes the key functions and displays on the basic control panel.




| No. | Use |
|---|---|
| 1 | LCD display – Divided into five areas:<br>a. Upper left – Control location:<br>LOC: drive control is local, that is, from the control panel<br>REM: drive control is remote, such as the drive I/O or fieldbus.<br>b. Upper right – Unit of the displayed value.<br>c. Center – Variable; in general, shows parameter and signal values, menus or lists. Shows also fault and alarm codes.<br>d. Lower left and center – Panel operation state:<br>OUTPUT: Output mode<br>PAR: Parameter mode<br>MENU: Main menu.<br>FAULT: Fault mode.<br>e. Lower right – Indicators:<br>FWD (forward) / REV (reverse): direction of the motor rotation<br>Flashing slowly: stopped<br>Flashing rapidly: running, not at setpoint<br>Steady: running, at setpoint<br>SET: Displayed value can be modified (in the Parameter and Reference modes). |
| 2 | RESET/EXIT – Exits to the next higher menu level without saving changed values. Resets faults in the Output and Fault modes. |
| 3 | MENU/ENTER – Enters deeper into menu level. In the Parameter mode, saves the displayed value as the new setting. |
| 4 | Up –<br>• Scrolls up through a menu or list.<br>• Increases a value if a parameter is selected.<br>• Increases the reference value in the Reference mode.<br>• Holding the key down changes the value faster. |
| 5 | Down –<br>• Scrolls down through a menu or list.<br>• Decreases a value if a parameter is selected.<br>• Decreases the reference value in the Reference mode.<br>• Holding the key down changes the value faster. |
| 6 | LOC/REM – Changes between local and remote control of the drive. |
| 7 | DIR – Changes the direction of the motor rotation. |
| 8 | STOP – Stops the drive in local control. |
| 9 | START – Starts the drive in local control. |

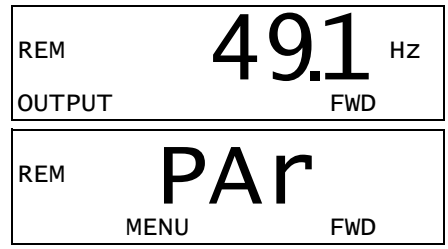
## Operation

You operate the control panel with the help of menus and keys. You select an option, eg operation mode or parameter, by scrolling the ▲ and ▼ arrow keys until the option is visible in the display and then pressing the ☐ key.

With the ↺ key, you return to the previous operation level without saving the made changes.

The basic control panel has five panel modes: *Output mode*, *Reference mode*, *Parameter mode*, *Copy mode* and Fault mode. The operation in the first four modes is described in this chapter. When a fault or alarm occurs, the panel goes automatically to the Fault mode showing the fault or alarm code. You can reset the fault or alarm in the Output or Fault mode (see chapter *Fault tracing* on page *335*).

After the power is switched on, the panel is in the Output mode, where you can start, stop, change the direction, switch between local and remote control and monitor up to three actual values (one at a time). To do other tasks, go first to the Main menu and select the appropriate mode.




### How to do common tasks

The table below lists common tasks, the mode in which you can perform them and the page number where the steps to do the task are described in detail.

| Task | Mode | Page |
|---|---|---|
| How to find out the panel firmware version | At power up | *78* |
| How to switch between local and remote control | Any | *78* |
| How to start and stop the drive | Any | *78* |
| How to change the direction of the motor rotation | Any | *79* |
| How to browse the monitored signals | Output | *80* |
| How to set the speed, frequency or torque reference | Reference | *81* |
| How to change the value of a parameter | Parameter | *82* |
| How to select the monitored signals | Parameter | *83* |
| How to reset faults and alarms | Output, Fault | *335* |
| How to copy parameters from the drive to the control panel | Copy | *86* |
| How to restore parameters from the control panel to the drive | Copy | *86* |

### How to find out the panel firmware version

| Step | Action | Display |
|---|---|---|
| 1. | If the power is switched on, switch it off. | |
| 2. | Keep key (⌂) pressed down while you switch on the power and read the panel firmware version shown on the display.<br>When you release the (⌂) key, the panel goes to the Output mode. | X.XX |

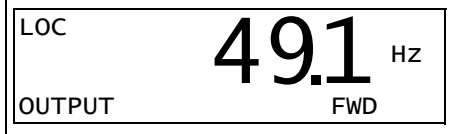
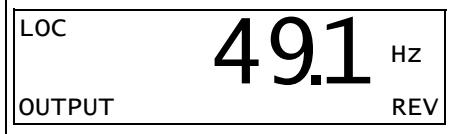
### How to start, stop and switch between local and remote control

You can start, stop and switch between local and remote control in any mode. To be able to start or stop the drive, the drive must be in local control.

| Step | Action | Display |
|---|---|---|
| 1. | • To switch between remote control (REM shown on the left) and local control (LOC shown on the left), press (LOC/REM).<br>**Note:** Switching to local control can be disabled with parameter *1606 LOCAL LOCK*.<br>After pressing the key, the display briefly shows message “LoC” or “rE”, as appropriate, before returning to the previous display.<br>The very first time the drive is powered up, it is in remote control (REM) and controlled through the drive I/O terminals. To switch to local control (LOC) and control the drive using the control panel, press (LOC/REM). The result depends on how long you press the key:<br>• If you release the key immediately (the display flashes “LoC”), the drive stops. Set the local control reference as instructed on page *81*.<br>• If you press the key for about two seconds (release when the display changes from “LoC” to “LoC r”), the drive continues as before. The drive copies the current remote values for the run/stop status and the reference, and uses them as the initial local control settings.<br>• To stop the drive in local control, press (■).<br>• To start the drive in local control, press (▶). | LOC 49.1 Hz<br>OUTPUT FWD<br><br>LOC LoC<br>FWD<br><br>Text FWD or REV on the bottom line starts flashing slowly.<br>Text FWD or REV on the bottom line starts flashing rapidly. It stops flashing when the drive reaches the setpoint. |

### How to change the direction of the motor rotation

You can change the direction of the motor rotation in any mode.

| Step | Action | Display |
|---|---|---|
| 1. | If the drive is in remote control (REM shown on the left), switch to local control by pressing LOC/REM. The display briefly shows message “LoC” before returning to the previous display. |  |
| 2. | To change the direction from forward (FWD shown at the bottom) to reverse (REV shown at the bottom), or vice versa, press .<br><br>**Note**: Parameter *1003 DIRECTION* must be set to 3 (*REQUEST*). |  |

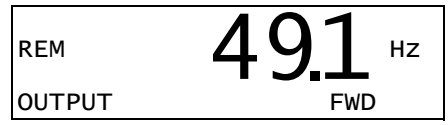
## Output mode

In the Output mode, you can:

- monitor actual values of up to three group *01 OPERATING DATA* signals, one signal at a time
- start, stop, change the direction and switch between local and remote control.

You get to the Output mode by pressing ⌐ until the display shows text OUTPUT at the bottom.

The display shows the value of one group *01 OPERATING DATA* signal. The unit is shown on the right. Page *83* tells how to select up to three signals to be monitored in the Output mode. The table below shows how to view them one at a time.




### How to browse the monitored signals

| Step | Action | Display |
|---|---|---|
| 1. | If more than one signals have been selected to be monitored (see page *83*), you can browse them in the Output mode.<br>To browse the signals forward, press key ▲ repeatedly. To browse them backward, press key ▼ repeatedly. | REM 49.1 Hz OUTPUT FWD<br>REM 0.5 A OUTPUT FWD<br>REM 10.7 % OUTPUT FWD |

## Reference mode

In the Reference mode, you can:

- set the speed, frequency or torque reference
- start, stop, change the direction and switch between local and remote control.

### How to set the speed, frequency or torque reference

| Step | Action | Display |
|---|---|---|
| 1. | Go to the Main menu by pressing if you are in the Output mode, otherwise by pressing repeatedly until you see MENU at the bottom. |  |
| 2. | If the drive is in remote control (REM shown on the left), switch to local control by pressing LOC/REM. The display briefly shows “LoC” before switching to local control.<br>**Note**: With group *11 REFERENCE SELECT*, you can allow the reference modification in remote control (REM). |  |
| 3. | If the panel is not in the Reference mode (“rEF” not visible), press key ▲ or ▼ until you see “rEF” and then press . Now the display shows the current reference value with SET under the value. | <br> |
| 4. | • To increase the reference value, press ▲.<br>• To decrease the reference value, press ▼.<br>The value changes immediately when you press the key. It is stored in the drive permanent memory and restored automatically after power switch-off. |  |

## Parameter mode

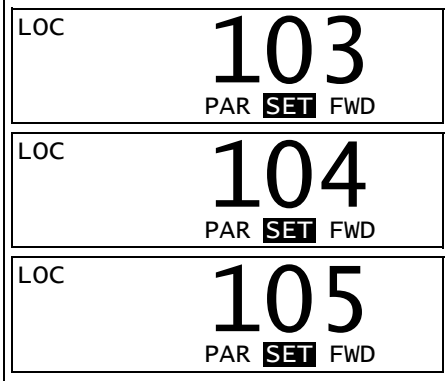
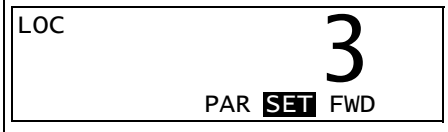
In the Parameter mode, you can:

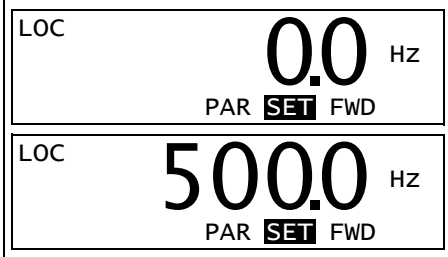
- view and change parameter values
- select and modify the signals shown in the Output mode
- start, stop, change the direction and switch between local and remote control.

### How to select a parameter and change its value

| Step | Action | Display |
|---|---|---|
| 1. | Go to the Main menu by pressing if you are in the Output mode, otherwise by pressing repeatedly until you see MENU at the bottom. | LOC rEF MENU FWD |
| 2. | If the panel is not in the Parameter mode (“PAr” not visible), press key or until you see “PAr” and then press . The display shows the number of one of the parameter groups. | LOC PAr MENU FWD<br>LOC -01- PAR FWD |
| 3. | Use keys and to find the desired parameter group. | LOC -11- PAR FWD |
| 4. | Press . The display shows one of the parameters in the selected group. | LOC 1101 PAR FWD |
| 5. | Use keys and to find the desired parameter. | LOC 1103 PAR FWD |
| 6. | Press and hold for about two seconds until the display shows the value of the parameter with SET underneath indicating that changing of the value is now possible.<br>**Note:** When SET is visible, pressing keys and simultaneously changes the displayed value to the default value of the parameter. | LOC 1 PAR SET FWD |
| 7. | Use keys and to select the parameter value. When you have changed the parameter value, SET starts flashing.<br>• To save the displayed parameter value, press .<br>• To cancel the new value and keep the original, press . | LOC 2 PAR SET FWD<br>LOC 1103 PAR FWD |

## How to select the monitored signals

| Step | Action | Display |
|---|---|---|
| 1. | You can select which signals are monitored in the Output mode and how they are displayed with group *34 PANEL DISPLAY* parameters. See page *82* for detailed instructions on changing parameter values.<br>By default, the display shows three signals.<br>Signal 1: *0102 SPEED* for macros 3-wire, Alternate, Motor potentiometer, Hand/Auto and PID control; *0103 OUTPUT FREQ* for macros ABB standard and Torque control<br>Signal 2: *0104 CURRENT*<br>Signal 3: *0105 TORQUE*.<br>To change the default signals, select up to three signals from group *01 OPERATING DATA* to be shown.<br>Signal 1: Change the value of parameter *3401 SIGNAL1 PARAM* to the index of the signal parameter in group *01 OPERATING DATA* (= number of the parameter without the leading zero), eg 105 means parameter *0105 TORQUE*. Value 100 means that no signal is displayed.<br>Repeat for signals 2 (*3408 SIGNAL2 PARAM*) and 3 (*3415 SIGNAL3 PARAM*). For example, if *3401* = 0 and *3415* = 0, browsing is disabled and only the signal specified by *3408* appears in the display. If all three parameters are set to 0, ie no signals are selected for monitoring, the panel displays text “n.A”. |  |
| 2. | Specify the decimal point location, or use the decimal point location and unit of the source signal (setting 9 [*DIRECT*]). Bar graphs are not available for basic control panel. For details, see parameter *3404*.<br>Signal 1: parameter *3404 OUTPUT1 DSP FORM*<br>Signal 2: parameter *3411 OUTPUT2 DSP FORM*<br>Signal 3: parameter *3418 OUTPUT3 DSP FORM*. |  |
| 3. | Select the units to be displayed for the signals. This has no effect if parameter *3404*/*3411*/*3418* is set to 9 (*DIRECT*). For details, see parameter *3405*.<br>Signal 1: parameter *3405 OUTPUT1 UNIT*<br>Signal 2: parameter *3412 OUTPUT2 UNIT*<br>Signal 3: parameter *3419 OUTPUT3 UNIT*. |  |

| Step | Action | Display |
|---|---|---|
| 4. | Select the scalings for the signals by specifying the minimum and maximum display values. This has no effect if parameter *3404*/*3411*/*3418* is set to 9 (*DIRECT*). For details, see parameters *3406* and *3407*.<br>Signal 1: parameters *3406 OUTPUT1 MIN* and *3407 OUTPUT1 MAX*<br>Signal 2: parameters *3413 OUTPUT2 MIN* and *3414 OUTPUT2 MAX*<br>Signal 3: parameters *3420 OUTPUT3 MIN* and *3421 OUTPUT3 MAX*. |  |

## Copy mode

The basic control panel can store a full set of drive parameters and up to three user sets of drive parameters to the control panel. Uploading and downloading can be performed in local control. The control panel memory is non-volatile.

In the Copy mode, you can do the following:

- Copy all parameters from the drive to the control panel (uL – Upload). This includes all defined user sets of parameters and internal (not adjustable by the user) parameters such as those created by the ID run.
- Restore the full parameter set from the control panel to the drive (dL A – Download all). This writes all parameters, including the internal non-user-adjustable motor parameters, to the drive. It does not include the user sets of parameters.

  **Note:** Only use this function to restore a drive, or to transfer parameters to systems that are identical to the original system.
- Copy a partial parameter set from the control panel to a drive (dL P – Download partial). The partial set does not include user sets, internal motor parameters, parameters *9905*…*9909*, *1605*, *1607*, *5201*, nor any group *51 EXT COMM MODULE* and *53 EFB PROTOCOL* parameters.

  The source and target drives and their motor sizes do not need to be the same.
- Copy user set 1 parameters from the control panel to the drive (dL u1 – Download user set 1). A user set includes group *99 START-UP DATA* parameters and the internal motor parameters.

  The function is only shown on the menu when user set 1 has been first saved using parameter *9902 APPLIC MACRO* (see section *User macros* on page *119*) and then uploaded to panel.
- Copy user set 2 parameters from the control panel to the drive (dL u2 – Download user set 2). As dL u1 – Download user set 1 above.
- Copy user set 3 parameters from the control panel to the drive (dL u3 – Download user set 2). As dL u1 – Download user set 1 above.
- Start, stop, change the direction and switch between local and remote control.

### How to upload and download parameters

For the upload and download functions available, see above. Note that the drive has to be in local control for uploading and downloading.

| Step | Action | Display |
|---|---|---|
| 1. | Go to the Main menu by pressing if you are in the Output mode, otherwise by pressing repeatedly until you see MENU at the bottom. – If REM is shown on the left, press first to switch to local control. | LOC PAr MENU FWD |
| 2. | If the panel is not in the Copy mode (“CoPY” not visible), press key or until you see “CoPY”.<br><br>Press . | LOC CoPY MENU FWD<br><br>LOC uL MENU FWD |
| 3. | To upload all parameters (including user sets) from the drive to the control panel, step to “uL” with keys and .<br><br>Press . During the transfer, the display shows the transfer status as a percentage of completion.<br><br>To perform downloads, step to the appropriate operation (here “dL A”, Download all, is used as an example) with keys and .<br><br>Press . During the transfer, the display shows the transfer status as a percentage of completion. | LOC uL MENU FWD<br><br>LOC uL 50 % FWD<br><br>LOC dL A MENU FWD<br><br>LOC dL 50 % FWD |

## Basic control panel alarm codes

In addition to the faults and alarms generated by the drive (see chapter *Fault tracing* on page *335*), the basic control panel indicates control panel alarms with a code of form A5xxx. See section *Alarms generated by the basic control panel* on page *341* for a list of the alarm codes and descriptions.