OPTIONS FOR ABB DRIVES

ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panels

User's manual

ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panels

User's manual

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1

Introduction to the manual

What this chapter contains

This chapter describes the applicability, compatibility, intended audience and the contents of this manual.

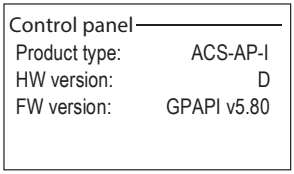
Applicability

This manual applies to the following control panel types and versions:

Control panel type	ACS-AP-I and ACS-AP-S	ACS-AP-W	ACH-AP-H	ACH-AP-W
Hardware version	C or later	A or later	C or later	A or later
Software version	4.61 or later	5.01 or later	5.00 or later	5.40 or later

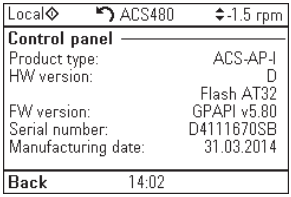
You can view control panel information with either of the two methods:

- With the drive not powered, press and hold the (?) button, then power up the drive and the control panel.

  or

- With the control panel powered up, go to **Menu** → **System info** → **Control panel**.

Note: The images and instructions in this manual are examples, each based on a specific control panel and drive type combination. The details may vary with different control panels or drive types.

Compatibility

The table below shows the drive types that are compatible with the following assistant control panel types.

Control panel type	ACS-AP-I	ACS-AP-S	ACS-AP-W	ACH-AP-H, ACH-AP-W
Drive	ACS180, ACS280, ACS380, ACS480, ACS530, ACS560, ACS580, ACH480, ACH580, ACQ580, ACS860, ACS880, ACQ80	ACS180, ACS280, ACS380, ACS480, ACS530, ACS560, ACS580, ACQ80	ACS180, ACS280, ACS380, ACS480, ACS530, ACS560, ACS580, ACH480, ACH580, ACQ580, ACS860, ACS880, ACS580 MV, ACQ80	ACH180, ACH480, ACH531, ACQ531, ACH580, ACQ580

Note: The table may not be comprehensive. Refer to the appropriate drive manual for more details.

Safety

Follow all safety instructions of the drive.

Intended audience

This manual is intended for persons who use the ACS-AP-I, ACS-AP-S, ACS-AP-W, ACH-AP-H or ACH-AP-W assistant control panel types.

Related manuals

Tool and maintenance manuals	Code (English)
Drive Composer Start-up and maintenance PC tool user's manual	3AUA0000094606
Option manuals and guides	
ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panels User's manual	3AUA0000085685
CDPI-01 communication adapter module User's manual	3AXD50000009929
DPMP-01 mounting platform for ACP-AP control panel	3AUA0000100140
DPMP-02/03 mounting platform for ACP-AP control panel	3AUA0000136205

You can find manuals on the Internet. For more documentation, go to www.abb.com/drives/documents.

2

Installation and start-up

What this chapter contains

This chapter describes how to install and start-up the assistant control panel for the first time.

Installation

Attach the control panel directly to the drive or use a separate mounting kit (for example, for cabinet door mounting).

To attach the control panel,

1. Put its bottom end into the bottom of the slot in the drive (A).
2. Pivot the control panel and push the upper part (B) until you hear a click.

To remove the control panel,

1. Press the clip (B) to release the control panel.
2. Pull the upper end of the control panel out of the slot in the drive.

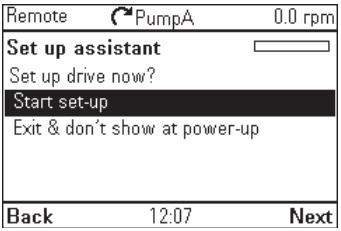
First start-up

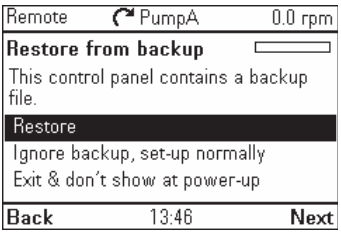
To start-up the control panel for the first time, follow the instructions:

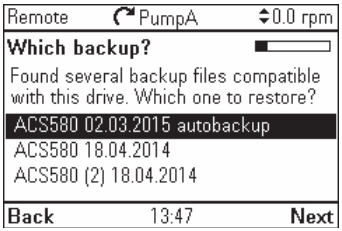
1. Obey all drive-specific safety precautions.
2. Install the control panel. Refer to Installation (page 16).
3. Power up the drive.
   The control panel start-up begins automatically. Wait until the control panel shows the language selection view.
4. Use ▲ or ▼ to select a language.

5. Press ⊂ to confirm your selection.
   Wait until the control panel completes uploading the language file. The progress is indicated by a progress bar.

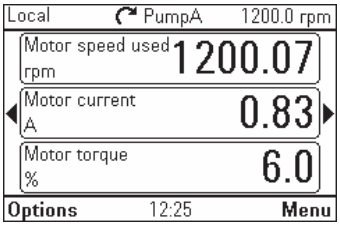
If there is a Basic set-up assistant in the drive, or if the control panel already contains a compatible backup (or backups) that could be copied to the drive, the control panel shows a question.







Once you are in the **Home** view, the control panel is ready for use.



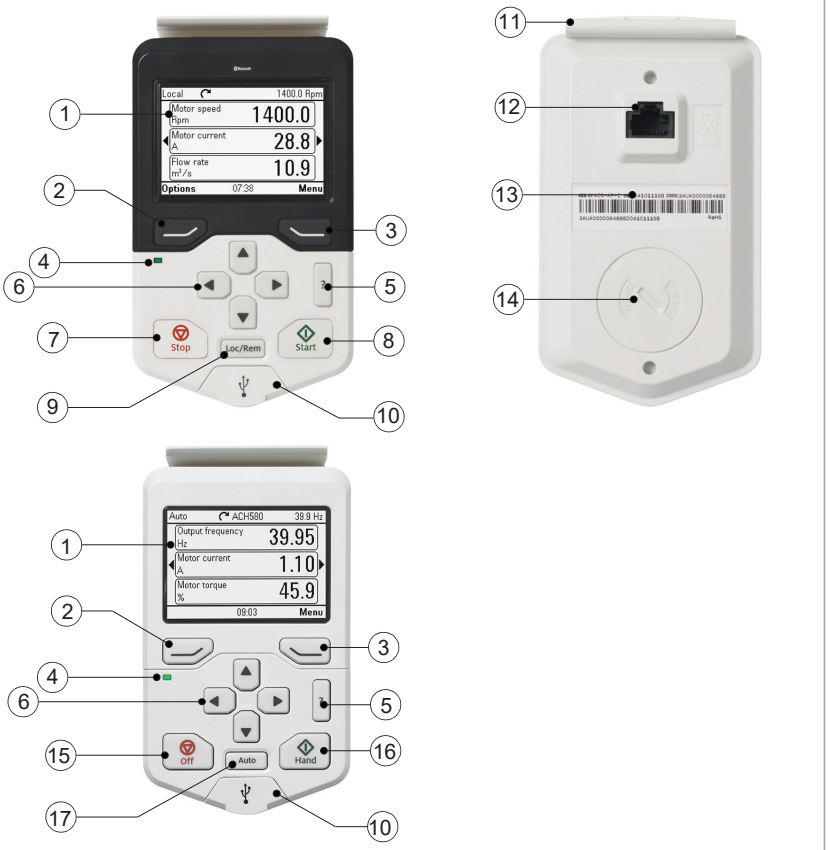
3

Control panel overview

What this chapter contains

This chapter describes the display, keys and main parts of the assistant control panel.

Display, keys and parts

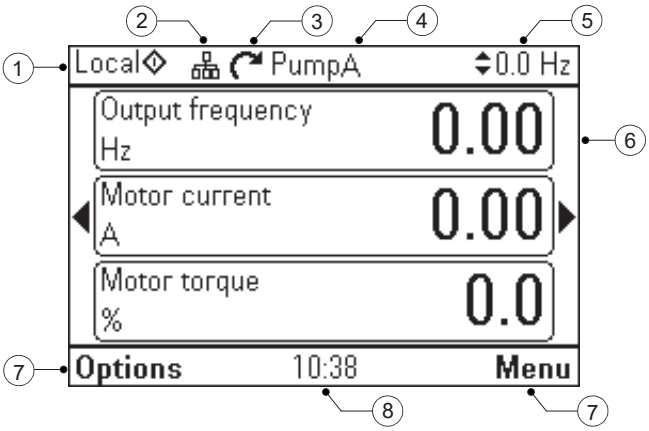


1	Display	10	USB connector
2	Left softkey	11	Clip
3	Right softkey	12	RJ45 connector
4	Status LED	13	Type code label on the control panel
5	Help	14	Battery cover
6	Arrow keys	15	Off
7	Stop (refer to Start and Stop (page 24)).	16	Hand
8	Start (refer to Start and Stop (page 24)).	17	Auto

9	Local/Remote (refer to Loc/Rem (page 25)).		

Display

In most views, the display shows these elements:



1	Control location and related icons	Shows how the drive is controlled: **No text**: The drive is in local control, but controlled from another device. The icons in the top pane show the permitted actions. **Local**: The drive is in local control, that is, controlled from the control panel. **Remote**: The drive is in remote control, that is, controlled through I/O or fieldbus.
2	Panel bus	Shows that there are more than one drive connected to this control panel. To switch to another drive, go to **Options** → **Select drive**.

<table>
<tr><td>3</td><td>Status icon</td><td>Shows the status of the drive and the motor. The direction of the arrow shows forward (clockwise) or reverse (counter-clockwise) active reference direction.

Note: For non-rotating driven equipment, the numbers 1 and 0 are used to show that the drive is running or stopped, respectively.
<table>
<tr><th>Status icon</th><th>Anima-tion</th><th>Drive status</th></tr>
<tr><td>  </td><td>-</td><td>Stopped</td></tr>
<tr><td>  </td><td>-</td><td>Stopped, start inhibited</td></tr>
<tr><td>  </td><td>Blinking</td><td>Stopped, start command given but start inhib-ited</td></tr>
<tr><td>  </td><td>Blinking</td><td>Faulted</td></tr>
<tr><td>  </td><td>Blinking</td><td>Running, at reference, but the reference value is 0</td></tr>
<tr><td>  </td><td>Rotating</td><td>Running, not at reference</td></tr>
<tr><td>  </td><td>Rotating</td><td>Running, at reference</td></tr>
<tr><td>  </td><td>-</td><td>Pre-heating (motor heating) active</td></tr>
<tr><td>  </td><td>-</td><td>PID sleep mode active</td></tr>
</table></td></tr>
<tr><td>4</td><td>Drive name</td><td>If a name is given, it is shown at the top pane. By default, it is blank.
You can change the name in the Primary settings (page 57) or Settings (page 56) menu.</td></tr>
<tr><td>5</td><td>Reference value</td><td>Speed, frequency and so on, are shown with its unit. For information on changing the reference value, refer toSetting the refer-ence (page 62).</td></tr>
<tr><td>6</td><td>Content area</td><td>Shows the actual content of the view in this area. The content varies from view to view. The example shows the Home view which is the primary view.</td></tr>
<tr><td>7</td><td>Softkey selec-tions</td><td>Shows the functions of the softkeys (and) in a given context.</td></tr>
<tr><td>8</td><td>Clock</td><td>Shows the current time. The time can be changed through the Primary settings (page 57) or Settings (page 56) menu.</td></tr>
</table>

You can adjust the display contrast and backlight functionality in the Primary settings (page 57) or Settings (page 56) menu.

Keys

The keys of the control panel are described below.

Left softkey

The left softkey ( ) primarily exits views or cancels actions. The bottom left corner of the display shows the current function of the key.

Hold down to exit each view in turn until you are back in the Home view. This function does not work in special screens.

Right softkey

The right softkey ( ) primarily selects, accepts or confirms values or actions. The bottom right corner of the display shows the current function of the key.

Arrow keys

Use the up and down arrow keys (and) to highlight selections in menus and selection lists, to scroll up and down on text pages, and to adjust values when, for example, setting the time, entering a passcode or changing a parameter value.

Use the left and right arrow keys (and) to move the cursor left and right in parameter editing and to move forward and backward in assistants. In menus, and function the same way as and , respectively.

Help

The help key ( ) opens a help page. The help page is context-sensitive, in other words, the content of the page is relevant to the menu or view in question. Refer to Help (page 34) for more information on the help page.

Start and Stop

In local control, the start key ( ) and the stop key ( ) start and stop the drive, respectively.

Off

In Hand and Auto control, the Off key () is used to stop the drive.

Hand

The Hand key () starts the drive in local mode. When the drive is running, if you switch to Auto mode, the drive changes the control location to Remote mode and the drive may stop.

Auto

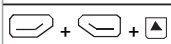
The Auto key () sets the drive in automatic mode. The control is selected from primary or secondary or any DI. You can give the reference inputs in **Menu** → **Primary settings** → **Drive** or by setting the values in parameter groups 19 and 20.

Loc/Rem

The location key () switches the control between the control panel (Local) and remote connections (Remote). When switching from Remote to Local while the drive is running, the drive keeps the same speed. When you change from Local to Remote, the status of the remote location is adopted. Refer to the drive-specific firmware manual for more details.

Key shortcuts

The table below lists key shortcuts and combinations. The plus sign (+) refers to simultaneous actions.

Shortcut	Available in...	Effect
	any view	Save a screenshot. Up to fifteen images can be stored in the control panel memory. For instructions on how to transfer the images into a PC, refer to section Transferring files between the control panel and a PC.
	any view	Adjust backlight brightness.
	any view	Adjust display contrast.
 or	Home view	Adjust reference.
	parameter edit views	Revert an editable parameter to its default value.
	any view	Show/hide parameter index and parameter group numbers.
 (keep down)	any view	Return to Home view by pressing down the key until Home view is shown.

Control panel and panel platform/holder LEDs

The ACS-AP-… control panel has a status LED. The control panel mounting platform or holder has two status LEDs. For status LED indications, see the following table.

Location	LED	Indication
Control panel	Continuous green	The unit operates normally.
	Flickering green	Data is transferred between the PC and the unit through the USB connection of the control panel.
	Flashing green	There is an active warning in the unit.
	Continuous red	There is an active fault in the unit.
	Flashing red	There is a fault that requires the stopping and restarting of the drive/converter/inverter.
	Flashing blue (ACS-AP-W only)	The Bluetooth interface is enabled, in discoverable mode, and ready for pairing.
	Flickering blue (ACS-AP-W only)	Data is transferred through the Bluetooth interface of the control panel.
Control panel mounting platform or holder (with the control panel removed)	Red	There is an active fault in the unit.
	Green	Power supply for the control unit is OK.

USB connector

The USB connector is used to connect the control panel to a PC. When it is connected, the control panel acts as an USB adapter for data transfer between the Drive Composer PC tool and the drive. It is also possible to transfer data between the PC and the control panel through the USB connection.

Refer to External connections (page 79).

Wireless interface

The ACS-AP-W and ACH-AP-W assistant control panels with a Bluetooth interface enable wireless communication for ABB drives. The wireless panels are also embedded with powerful processor and memory that enables faster communication.

For other control panel functions

- ACS-AP-W control panels are the same as ACS-AP-I and ACS-AP-S panels, and
- ACH-AP-W control panels are the same as ACH-AP-H control panels.

Refer to Bluetooth connection.

WARNING! Do not use this device within a 20 km radius of the centre of Ny-Ålesund at Svalbard, Norway.

RJ45 connector

The RJ45 connector connects the control panel to the drive. Mechanical connection is achieved with the clip on the top.

Type code label on the control panel

The type code label on the control panel contains revision information. See an example label below.

Type code label on ACS-AP-I, ACS-AP-S, ACH-AP-H and ACS-BP-S panels

1	ABB Oy
2	Type code
3	MRP code
4	Serial number

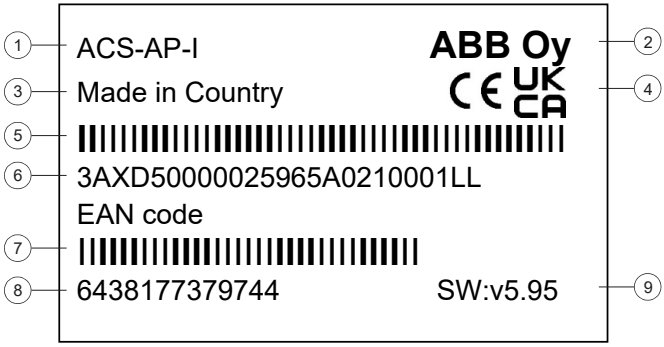
5	CN RoHS, CE, and UKCA markings
6	SW version
7	Bar code
8	Bar code in readable text
9	Manufactured in country

Type code label on ACS-AP-W and ACH-AP-W panels

1	ABB Oy
2	Type code
3	MRP code
4	Serial number
5	Manufactured in country
6	CN RoHS, CE, KC and UKCA markings
7	KC number
8	Bar code
9	CMIIT ID number
10	FCC ID number
11	ANATEL number
12	IC CANADA number
13	SW version

Type code label on the control panel package

The type code label on the control panel package contains revision information. See an example below.



1	Type code
2	ABB Oy
3	Manufactured in country
4	CE and UKCA markings
5	Bar code
6	Bar code in readable text
7	EAN bar code
8	EAN number code
9	SW version

Battery cover

Underneath the battery cover there is a compartment for the battery that powers the real-time clock of the control panel.

4

Basic operation

What this chapter contains

This chapter describes the basic operations and components of the user interface. It also lists the common user tasks and provides instructions to complete the task.

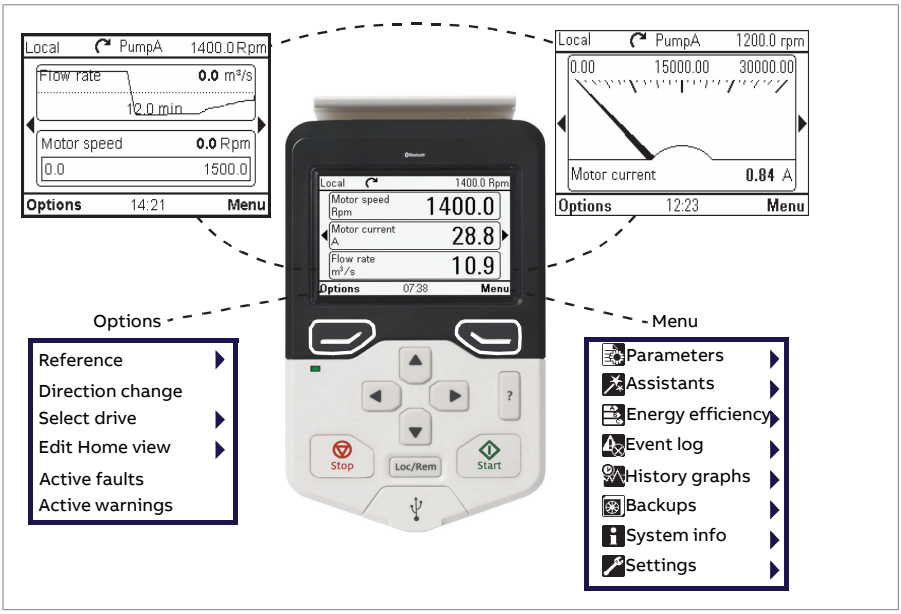
User interface overview

The user interface has these parts:

Component	Description
Home view	Used to monitor signals. Refer to Home view (page 33).
Menu	Access to most functions of the control panel. Refer to the detailed description in chapter Functions in the main Menu (page 37).
Options	Used to set a reference, change the motor direction, select the drive, edit Home view pages, and see the fault and warning status. Refer to the detailed description in chapter Functions in the Options menu (page 61).
Help	Provides information on the current view or menu or on possible problems associated with it. Refer to Help (page 34).
Faults and warnings	Shows faults and warnings when the drive or control panel experiences an error. Refer to Fault tracing (page 71).

Control panel navigation

Use the arrow keys and softkeys for navigation. Follow the choices on the screen.



Note: The menu shown is an example only. The Menu varies based on the drive/device to which the control panel is connected.

Navigation memory

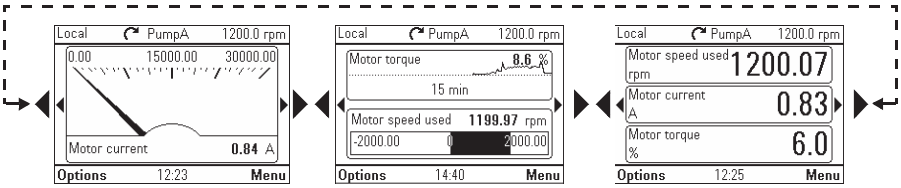
The assistant control panel has a navigation memory that allows you to backtrack your steps through the user interface with the arrow keys ◀ and ▶. The path you last accessed is in the memory for 10 minutes.

- The left arrow key (◀) moves you backwards in the menu structure.
  If you press ◀ repeatedly, you return back to the Home view.
- The right arrow key (▶) moves you forward in the menu structure.
  If you press ▶ repeatedly, you move forward along the path in the menu structure you had previously accessed.

Home view

The Home view is the primary view of the control panel. In the **Home** view, you can monitor the status of the drive, such as its speed, torque or power. The **Home** view has one or more pages, each of which can display up to three signals.

The number of pages and the signals shown on each page are customizable, and the Home view configuration is saved to the drive whenever you change it. The maximum total number of signals displayed varies from 9 to 21, depending on the drive. In the example below, there are three Home view pages with different display formats.



Each application macro and user set has a default Home view configuration. When you select an application macro or restore a user set, the Home view configuration changes accordingly. There is a default Home view configuration in each drive, which can be restored in the Primary settings (page 57) or Settings (page 56) menu.

Note: The Menu varies based on the drive/device to which the control panel is connected.

The **Home** view opens automatically when you power up the drive. The control panel shows the **Home** view from the **Options** menu or the main **Menu**, if no key is pressed for 10 minutes.

Tip: To return to the Home view from any view except special screens, hold down the left softkey.

Navigating in the Home view

- Use ◀ and ▶ to move between the different pages of the Home view. The page numbers are shown while you scroll between pages.
- Use ▲ or ▼ to adjust the reference (visible in the top right corner). Refer to Setting the reference (page 62).
- Press (**Menu**) to open the main **Menu** (refer to Functions in the main Menu (page 37)).
- Press (**Options**) to open the **Options** menu (refer to Functions in the Options menu (page 61)).

Help

To open a context-sensitive help page in all menus and views, press the ? button. The help page has information on the use of the current view or menu, or on possible problems associated with it.

On the help page, you can press the ? button again or press (**Exit**) to exit.

Note:

- With the ? button, you can also view details of the control panel type and version in the panel itself. Refer to instructions in section Applicability (page 12).
- With the ? button, you can also connect the control panel to Drivetune via Bluetooth. Refer to instructions in section Connecting control panel to Drivetune via Bluetooth.

Common user tasks

The following tables list common user tasks and describe how to complete the task. Refer to chapters Functions in the main Menu (page 37) and Functions in the Options menu (page 61) for detailed descriptions of functions in the menus.

Note: The Menu options varies based on the drive/device to which the control panel is connected.

Basic operation of the drive

Task	*Actions*
Start and stop the drive.	In local control, press to start the drive and to stop the drive.
Set the reference (for example, speed) in the **Home** view.	In local control, go to **Options** > **Reference**. Set the reference with the arrow keys. For detailed instructions, refer to Setting the reference (page 62).
Switch between local and remote control.	Press Loc/Rem.
Change the direction of motor rotation.	In local control, go to **Home** view, press (**Options**) to open the **Options** menu and select **Direction change**.

Parameters

Task	*Actions*
Choose the parameters displayed on the Favorites list.	Go to **Menu** → **Parameters** → **Favorites** → **Edit**. Refer to also Favorites (page 40).
View/edit parameters.	Go to **Menu** → **Parameters** → **Complete list** to view parameters. Refer to Editing parameters (page 41) for instructions on editing parameters
Add parameters to the Home view.	Refer to Editing the contents of the Home view (page 62).
Show/hide parameter index and group numbers.	Press ◄ + ►.
Restore the default parameter value.	In the editing mode, press ▲ + ▼. To save the default value, press (Save).
View parameters that differ from Application Macro defaults.	Go to **Menu** → **Parameters** → **Modified**.

System information and help

Task	*Actions*
How to get help.	Press ? button to open the context-sensitive help.
To view drive information.	Go to **Menu** → **System info** → **Drive**.
To view control panel version.	Go to **Menu** → **System info** → **Control panel**.
To view application program license.	Go to **Menu** → **System info** → **Licenses**.
To view Product application information.	Go to **Menu** → **System info** → **Product application**.

Faults and warnings

Refer to Fault tracing (page 71) for detailed information on faults and warnings.

Task	*Actions*
Hide/view an active fault.	Faults are automatically shown. If you hide a fault with (**Hide**), it automatically reappears after 60 seconds of no key presses. You can also view the fault through **Options** > **Active faults**.
Open the help page on a fault.	Press ? button to open the help page.
Reset an active fault.	Press (**Reset**) to reset an active fault.
View tripping faults.	Go to **Menu** → **Event log** → **Faults**.

Task	*Actions*
Hide/view an active warning.	Warnings are automatically shown. If you hide a warning with (**Hide**), it automatically reappears if the warning is still active after 60 seconds of no key presses.
Open the help page on a warning.	Press (**How to fix**) or button to open the help page.
Reset an active warning.	Warnings disappear automatically when the condition that has triggered it goes away.
View past warnings and faults.	Go to **Menu** → **Event log** → **Other events**.

Basic settings and assistants

Task	*Actions*
Adjust backlight brightness.	Press and hold , and press or .
Adjust display contrast.	Press and hold , and press or .
Change the language.	Go to **Menu** → **Settings** → **Language**.
Change the time and date, and related settings.	Go to **Menu** → **Settings** → **Date & time**.
Launch an assistant.	Go to **Menu** → **Assistants** and select an assistant to launch.

Backups

Task	*Actions*
Create a backup.	Refer to Backups (page 50).
Restore a backup.	Restore a backup. Refer to Backups (page 50).

Bluetooth configurations

Task	*Actions*
Activate bluetooth (pairing).	Refer to Connecting control panel to Drivetune via Bluetooth.
Disable Bluetooth.	Refer to Connecting control panel to Drivetune via Bluetooth.
Set "Stay discoverable (no timeout)" mode.	Press and hold button for two seconds on the control panel to show a PIN. Press **Options** button on the right corner of the control panel to select **Stay discoverable (no timeout)**.

5

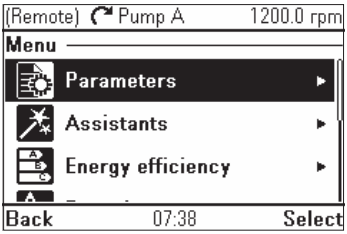
Functions in the main Menu

What this chapter contains

This chapter describes the functions in the main **Menu**.

Menu

All functions of the control panel are accessed through the Menu which is the main menu of the user interface. This section lists the sub-menus and the sections that follow describe them in detail.



The sub-menus varies based on the drive/device to which the control panel is connected:

Sub-menu	Function	Refer to page...
Parameters	View and edit parameters.	39
Assistants	Launch an assistant.	45
Energy efficiency	Use energy-saving features.	48
Event log	View information on faults and warnings.	48
History graphs	View the load profile.	48
Backups	Save settings in the control panel memory and restore them to the drive.	50
System info	View information on the drive and options.	52
Settings	Set time and date settings, language, display and other settings, and edit texts.	56
Primary settings	Set settings related to motor, PID, fieldbus, advanced functions, clock, region, and display.	57
I/O	Shows the terminal name, number, electrical status and logical meaning of the drive.	59
Diagnostics	Shows the faults and warnings information and helps to resolve potential problems.	60

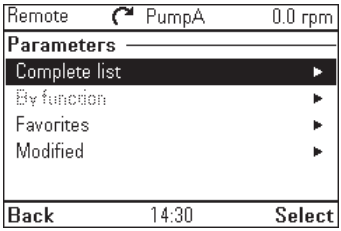
Navigating in the Menu

- Use ▲ and ▼ to select a menu item.
- Use ◀ or ⬭ (**Exit**) to go back to the **Home** view.
- Use ▶ or ⬭ (**Select**) to the open the selected sub-menu.

Parameters

In the **Parameters** menu, you can view and edit parameters. There are four sub-menus to access the parameters. In each sub-menu, the grouping principle of the parameters is different.

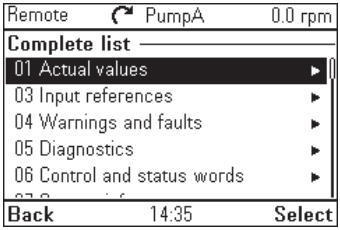
In each sub-menu, to edit a parameter, highlight it and you can edit a parameter by highlighting it and pressing ⬭ (**Edit**). Counter parameters and certain number, text and bit field parameters are read-only and can be viewed by pressing ⬭ (**View**).



Complete list

In the **Complete list** sub-menu, all parameter groups are listed in numerical order. Select a parameter group to see and edit all of the parameters in the group.

This sub-menu shows the parameter numbers.



By function

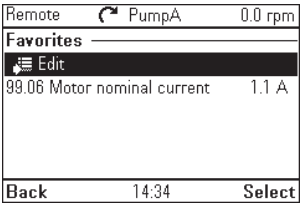
This functionality is available in a future release.

Favorites

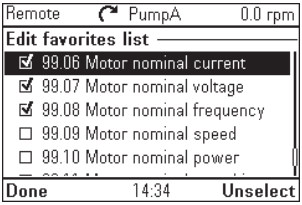
The Favorites sub-menu shows only user-selected parameters. The parameter number determines the order of the list.

Editing the list of favorites

1. Select **Edit**.



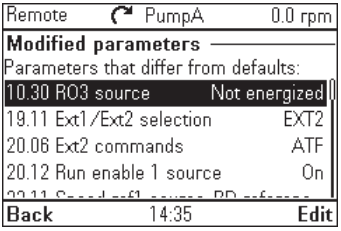
2. To select parameters for the list of favourites, highlight the parameter and press (**Select**).



3. Press (**Done**) to exit and save changes.

Modified

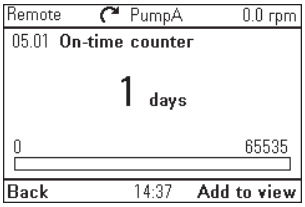
The **Modified** sub-menu shows only the parameters whose values differ from the Application Macro defaults. The order is determined by the parameter number.



Adding parameters to the Home view

When you view a read-only parameter in the **Parameters** menu, you can add the parameter to the **Home** view.

- Press (**Add to view**) to open the Home view in the editing mode to add the parameter to an empty display slot or replace an existing parameter.



- Press (**Back**) to go back to the parameter view.

Editing the **Home** view functions are described in Editing the contents of the Home view (page 62).

Editing parameters

You can edit parameter values with the arrow keys.

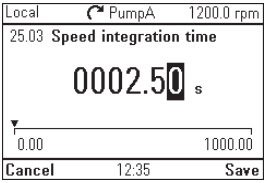
1. Press (**Select**) to select the desired parameter from the list.
2. Press (**Edit**).
3. Use and to change the value.
4. Press (**Save**) to save the value, or press (**Cancel**) to exit the parameter view and discard any changes.
5. Press + to restore the default value of the parameter (this does not save it).

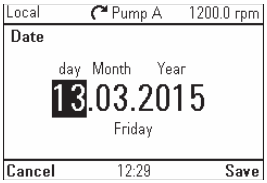
See the sections below for more information on editing specific parameter types.

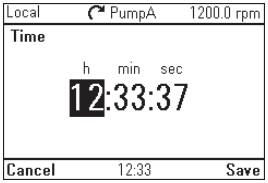
Editing numeric parameters

Numeric parameters include parameters with linear numeric values, passcodes, time and date parameters, durations and exception dates. For numeric parameters with linear values, the minimum and maximum values are shown in the bottom left and right corners of the content area, respectively.

- Use and to highlight digits
- Use and to change the value.
- Press (**Save**) to save the value and exit the view.
- To cancel and exit, press (**Cancel**).



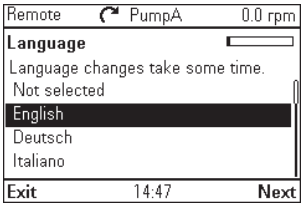




Editing selection list parameters

A selection list consists of mutually exclusive options, such as the language selection list.

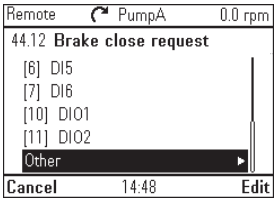
- Use ▲ and ▼ to move the cursor.
- Press (**Save**) to select and save the highlighted option.
- To cancel and exit, press (**Cancel**).



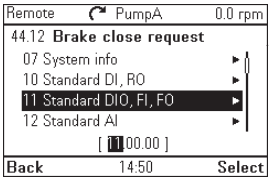
Some selection list parameters allow you to choose another parameter as its value. In addition to a preset list of options, you can select a parameter freely, represented by the selection **Other** in the list.

To select a parameter, follow the instructions:

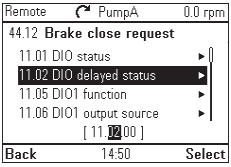
1. Select **Other** to move to a list of parameter groups.



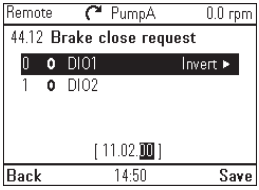
2. Select a parameter group to move to a list of parameters.



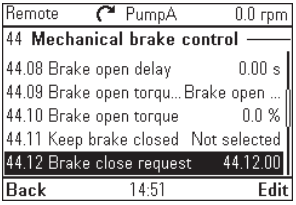
3. Depending on the parameter, select a parameter or an individual bit.
   - If the right softkey label is **Select**, select an individual bit as the value of the parameter. Press (**Select**) to move to a bit selection list.
   - If the right softkey label is **Save**, you can select that parameter as the value of the parameter. Press (**Save**) to save the selection.
   - If the right softkey label is **Save** and there is also an arrow on the right hand side of the selection, you can choose an individual bit or all the bits in that parameter. Press to move to a bit selection list. If you want to select all the bits in the parameter, press (**Save**) instead.



4. Select a bit if applicable (refer to the previous step).
   Press to invert the selected bit and press (**Save**) to save the selection.



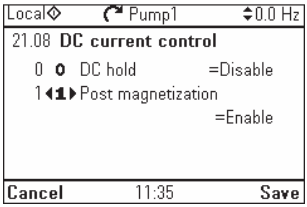
The parameter or bit is now selected as the parameter value.



Editing bit-field parameters

A bit-field parameter is a bit word whose individual bits can be edited. The labels describe the function of each bit, and the current state of the bit is shown as 1 or 0.

- Use ▲ and ▼ to select a bit.
- To change a bit value, press ◀ or ▶.
- To save the bit values and exit, press ⬭ (**Save**).
- To cancel and exit, press ⬭ (**Cancel**).

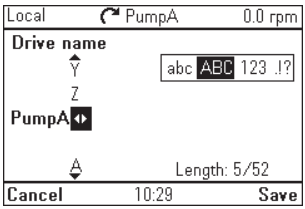


Editing texts

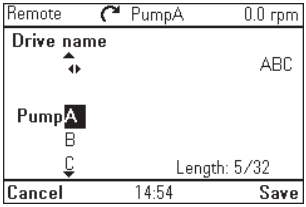
Texts that you can edit with the control panel include parameter display names in the Home view and their units, drive names, fault and warning names, and other customizable notes or names.

- To select the character mode (lower case / upper case / numbers / special characters), press ▲, the unit symbol is highlighted and then select the mode with ◀ or ▶.

  Now you can start to add characters. The mode remains selected until you select another one.



- To add a character, highlight it with ▲ ▼ and then press ▶.



- To remove a letter, press ◄.
- Press (**Save**) to accept the new setting, or press (**Cancel**) to go back to the previous view without making changes.

Note: The current software version supports only the English character set (a...z).

Resetting counters

Counters are parameters that measure incremental quantities associated with the use of the drive such as runtime or energy consumption. Counters are updated automatically and cannot be edited. To reset a counter to zero, press (**Reset**) for three seconds.

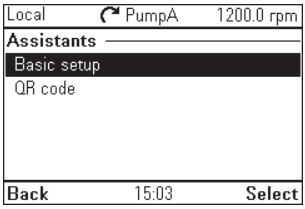
Note: If a trigger value is defined for the counter, the counter's progress from zero to the trigger value is shown as a bar graph.

Assistants

In the Assistants menu, you can launch an assistant, which is a sequence of steps that help you to complete a task, such as setting up the control panel to use with the drive and the motor, or fixing a fault. You can also generate a QR code, which is an optical code containing information of the drive. You can read the code with a mobile device to link to the drive information.

Launching an assistant

1. Use ▲ and ▼ to highlight the desired assistant.
2. Press (**Select**).



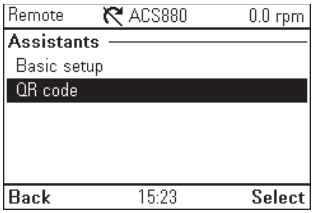
3. Follow the instructions on the display to do the selected task:
   - Use ▲ and ▼ to select settings.
   - To edit a setting, press ⬭ (**Edit** or **Select**).
   - Use ◀ or ▶ to move between the pages of the assistant. The progress bar in the upper right corner of the display indicates the progress.
   - To exit the assistant, press ⬭ (**Exit**).

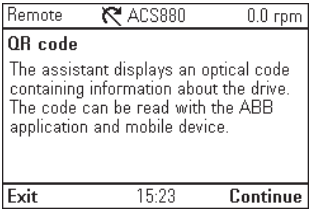
Most settings accessed in assistant steps can also be accessed through the main Menu or the Parameters menu, but the steps the assistants are more user-friendly. You can access most of the settings in the Assistants menu also through the Menu or Parameters menu. The Assitants can give a more user-friendly experience.

Note: If you use the Assistants menu, complete all steps to save the changes, otherwise the changes are cancelled.

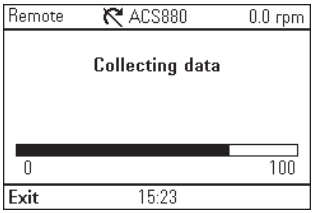
Generating a QR code

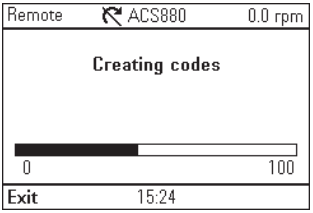
1. In the Assistants menu, select QR code using ▲ and ▼ and press ⌓ (**Select**).





2. Press ⌓ (**Continue**).
   The control panel collects data and generates the code.



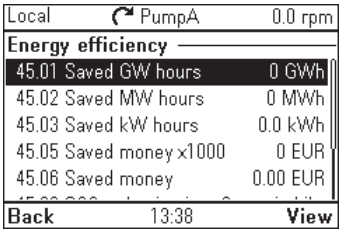


Press << or >> to go to the next screen.

You can also generate QR code from **Menu** → **System info** → **QR code**. Refer to System info (page 52).

Energy efficiency

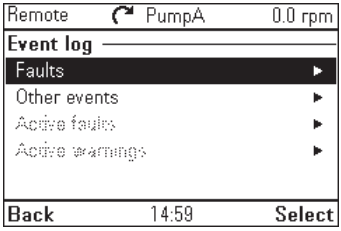
In the Energy efficiency menu, you can view and configure parameters related to energy savings, such as kWh counters.



Event log

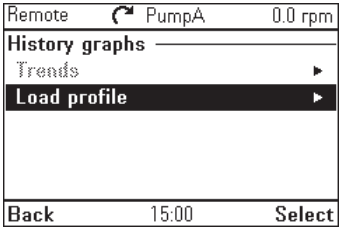
In the **Event log** menu, you can view information collected on faults and warnings. Events are automatically logged. Refer to Fault tracing (page 71) for more information on faults and warnings.

- **Faults** sub-menu shows the faults that have tripped the drive.
- **Other** events sub-menu shows all other faults, and warnings and their details.
- **Active faults** and **Active warnings** sub-menu shows the faults and warnings that are active.



History graphs

The History graphs menu contains the trends and Load profile sub-menus.

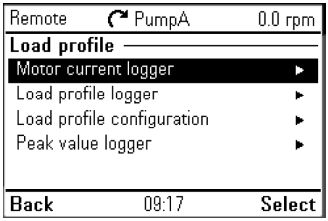


Trends

This functionality is available in a future release.

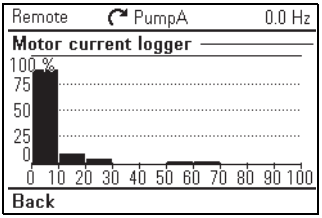
Load profile

In the **Load profile** submenu, you can view and configure load profiles.

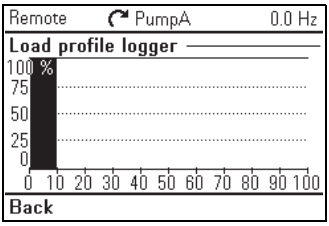


The menu contains the following sub-menus:

- **Motor current logger**: Shows the distribution of motor current in a histogram. This logger cannot be reset.



- **Load profile logger**: Shows the contents of a load profile logger as a distribution histogram. You can select the signal to be monitored.

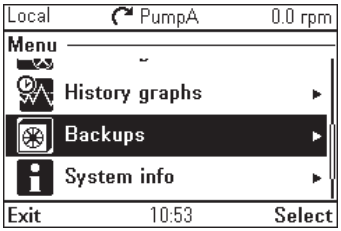


- **Load profile configuration**: Select the signal to be monitored in Load profile logger.
- **Peak value logger**: Select a signal to be monitored by a peak value logger.

For more information on load profiles, refer to the appropriate firmware manual.

Backups

In the **Backups** menu, you can save parameter settings in the control panel memory and restore parameter settings from a backup to the drive. You can store up to two backup files on the control panel.



The control panel has a dedicated space for one automatic backup. An automatic backup is created two hours after the last parameter change. After completing the backup, the control panel waits for 24 hours before it monitors for additional parameter changes. If there are changes, it creates a new backup that replaces the previous one.

You can copy backup files to and from a PC with any file manager application (for example, Windows Explorer).

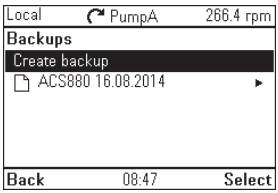
Some of the Backup icons are listed below:

Backup	Icon
Automatic backup	
Compatible backup	

Backup	Icon
Incompatible backup	
Partly compatible	

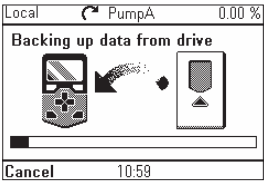
Creating a parameter backup

1. In the **Backups** menu, select **Create backup**.



   If there is a free backup slot in the control panel, the following step is skipped.

2. Use ▲ and ▼ to select one of the existing backup files, and press **Replace**.
3. Wait until the backup is completed. An animation is shown on the control panel during the backup process. The control panel automatically returns to the **Backups** menu.



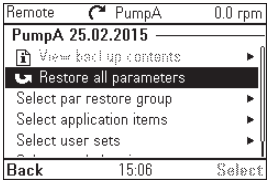
Note: If the backup process is canceled or interrupted, the previously saved backup file is not deleted or damaged. Thus, if you accidentally start a backup process, you can safely cancel it before its completion.

Restoring a parameter backup

1. In the **Backups** menu, select the backup file you want to restore.
2. Select **View backup contents** and check that it is the correct backup file and that it is suitable for restoring.

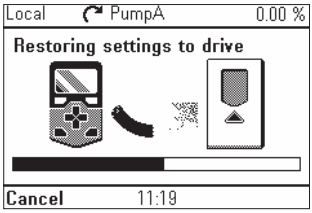
   Note: This functionality is available in a future release.

3. Select one of the restore options:
   - To restore all settings, select **Restore all parameters**.



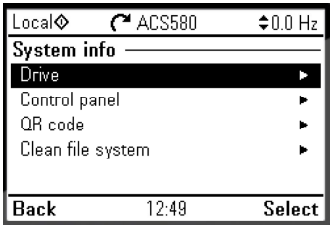
- To restore a set of parameters, select **Select par restore group** and select the desired parameters from the list, and then select **Restore**.
- To select application parameters, select **Select application items** and select the desired parameters from the list and then select **Restore**.
- To select user parameters sets, select **Select user sets** and select the desired user set from the list and then select **Restore**.
- To select production data items, select **Select prod. data items** and select the desired production data and then select **Restore**.

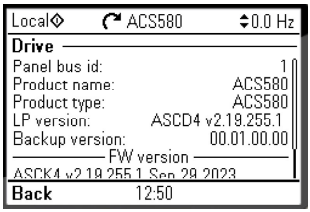
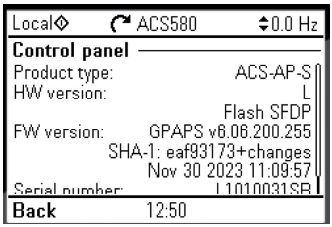
4. Wait until the restore is complete. The control panel display shows an animation during the restoring process. The control panel automatically returns to the **Backups** menu.

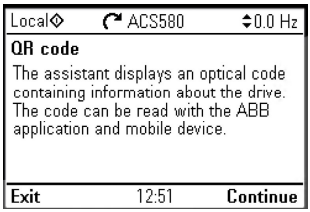
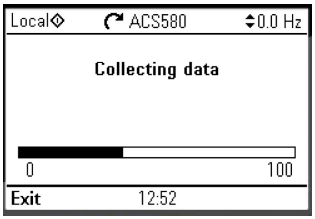


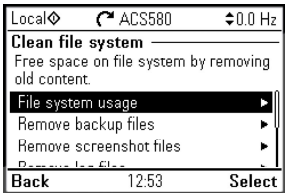
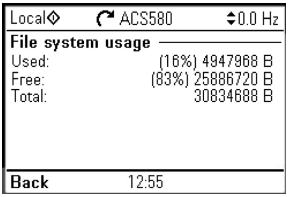
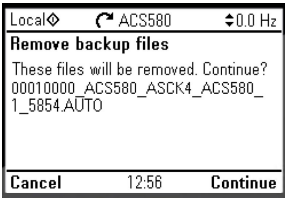
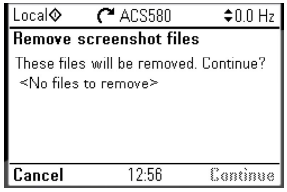
System info

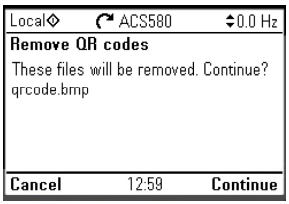
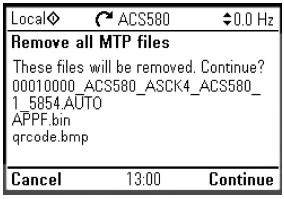
In the **System info** menu, you can view information about the drive, control panel, fieldbus and any installed option modules. You can also generate a QR code that contains the drive information.



Sub-menu	Function
Drive	Shows information on the selected component, such as firmware version, serial number, type code, device ID number or date of manufacture.  **Note:** The content of the view varies between different drive types.
Control panel	Shows information on the hardware and software version of the control panel. 

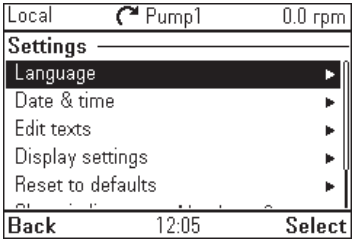
Sub-menu	Function
QR code	Shows an optical code containing information of the drive. You can read the code with a mobile device.  To generate the QR code, press (**Continue**).  The control panel collects data and creates the code. 

Sub-menu	Function
Clean file system	Shows the file system usage information and how to remove backup files, screenshot files, log files, QR codes, old language files and all Media Transfer Protocol (MTP) files.  File system usage shows the percentage of used and free space of the file system.  To remove backup files, press (**Continue**).  To remove screenshot files, press (**Continue**).  To remove log files, press (**Continue**). 

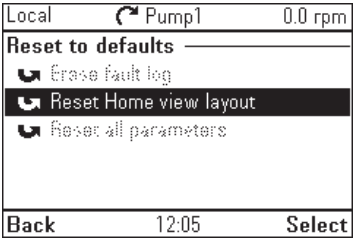
Sub-menu	Function
	To remove QR codes, press (**Continue**).  To remove old language files, press (**Continue**).  To remove all MTP files, press (**Continue**). 

Settings

The Settings menu has the following sub-menus:



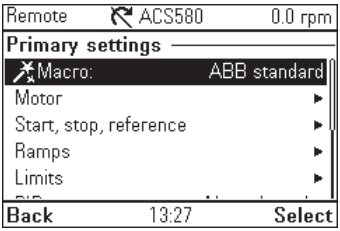
Sub-menu	Function
Language	Select different language in the control panel.

Sub-menu	Function
Date & time	Set the date and time, and select their display settings and whether the control panel automatically adjusts the time for daylight savings changes. The time and date display setting determines how time stamps are formatted.
Edit texts	Customize editable user interface texts, such as the drive name.
Display settings	Set backlight power save on/off and adjust display contrast and brightness.
Reset to defaults	Reset settings to their default values. **Erase fault log**: This functionality is available in a future release. **Reset Home view layout**: Default Home view settings are restored. **Reset all parameters**: This functionality is available in a future release. 
Show in lists	Show or hide the numeric IDs of: • parameters and groups • option list items • bits • devices in **Options** → **Select drive**.
Pass code	Enter pass codes into this parameter to activate further access levels (for example, additional parameters).

⚙ Primary settings

The **Primary settings** menu has the following sub-menus.

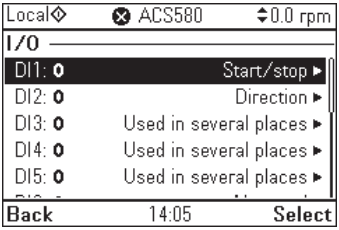
Note: The contents displayed may vary based on the drive/device to which the control panel is connected. The menu shown is only an example.



Sub-menu	Function
Macro	Set up drive control and the reference source by selecting from a set of predefined wiring configurations.
Drive	Adjust drive related settings, such as control location, run permissions, ramps, limits, constants speeds, flying starts references.
Motor	Adjust motor-related settings, such as control mode, nominal values, ID run or thermal protection. Note that the settings that are visible depend on other selections, for example, vector or scalar control mode, used motor type or selected start mode.
Loop controller	Set up loop controller settings and actual values. The loop controller is only used in remote control.
Pump and fan control	Controls one motor connected to the drive and up to 3 auxiliary motors.
Communication	Use the drive with a fieldbus.
Start, stop, reference	Set up start/stop commands, reference, and related features, such as constant speeds or run permissions.
Ramps	Set up acceleration and deceleration settings.
Limits	Set the permitted operating range. This function is intended to protect the motor, connected hardware and mechanics. The drive stays within these limits, no matter what reference value it gets.
PID	Set up the settings and actual values for the process PID controller. PID is only used in remote control.
Fieldbus	Set up the settings of Fieldbus communication.
Advanced options/functions	Contains settings for advanced functions, such as triggering or resetting faults through I/O, or switching between entire sets of settings.
Clock, region, display	Contains settings for language, date and time, display (such as brightness) and settings to change how information is shown on the display.
Reset to defaults	Here you can reset the Home view to its original factory state.

I/O

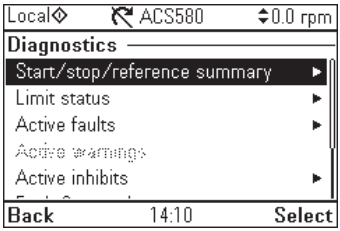
In the **I/O** menu, each row provides terminal name, number, electrical status and logical meaning of the drive. Each row also provides a sub-menu with more information on the menu item and allow you to make changes to the I/O connections.



Diagnostics

The **Diagnostics** menu provides diagnostic information, such as faults and warnings and helps you to resolve potential problems. Use the menu to make sure that the drive setup is functioning correctly.

Note: The contents displayed may vary based on the drive/device to which the control panel is connected, and the menu shown is only an example.



Sub-menu	Function
Start, stop, reference, summary	Shows where the drive is currently taking its start, stop commands and reference. The view updates in real time. If the drive does not start or stop as expected, or runs at undesired speed, use this view to find out where the control comes from.
Limit status	Describes current operating limits. If the drive is running at undesired speed, use this view to find out if any limitations are active.
Active faults	Shows the currently active faults and provides instructions on how to fix and reset.
Active warnings	Shows the currently active warnings and provides instructions on how to fix and reset.
Active inhibits	Shows the currently active inhibits. The drive cannot start. The drive is not parameterized correctly.
Fault & event log	Lists the faults, warnings and other events that have occurred in the drive.
Fieldbus	Provides status information and sent and received data from the fieldbus for troubleshooting.
Load profile	Provides status information of load distribution (that is, drive running time spent on each load level) and peak load levels.

6

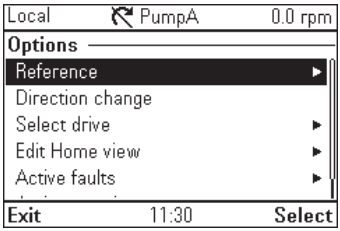
Functions in the Options menu

What this chapter contains

This chapter describes functions in the **Options** menu.

Options menu

In the **Options** menu, you can control the settings related to the **Home** view.



Note: The contents displayed may vary based on the drive/device to which the control panel is connected.

The menu shown is only an example.

The **Options** menu has the following sub-menus:

Sub-menu	Function
Reference	Set the reference value with ▲ and ▼. The changes occur when you save them with a key press ⏎. Refer to Setting the reference (page 62).

Sub-menu	Function
Direction change	Change the direction of the motor rotation in local control mode.
Select drive	Enable or disable the panel bus. If it is enabled, view the status of drives in the panel bus and select which drive to control with the control panel. Refer to Control of multiple drives (page 67).
Edit Home view	Edit the contents of the **Home** view. Refer to Editing the contents of the Home view (page 62)..
Active faults	View active faults. Refer to Fault tracing (page 71).
Active warnings	View active warnings. Refer to Fault tracing (page 71).

Setting the reference

You can change the reference when the drive is in the local control mode. You can also change the reference in remote control mode if the drive configuration permits it. Changes take effect when saved with a key press.

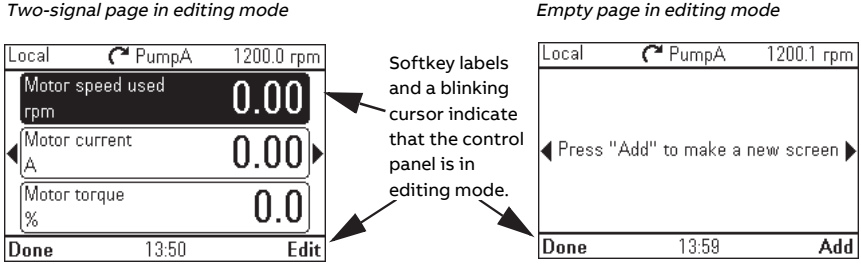
1. Press Loc/Rem key to switch to the local control mode, if the text in the top left corner of the display reads **Remote**.
2. In the **Options** menu, select **Reference**.
3. Change the reference:
   - Use ◄ or ► to select a digit to edit.
   - Use ▲ and ▼ to change the value of the selected digit.
4. Press (**Save**) to save the reference value, or (**Cancel**) to discard the changes. The control panel returns to the **Home** view.

Tip: To adjust the reference from the **Home** view, press ▲ or ▼ and the reference changes immediately. The reference value is highlighted during the change. If you hold down the arrow key, the rate at which the value changes accelerates.

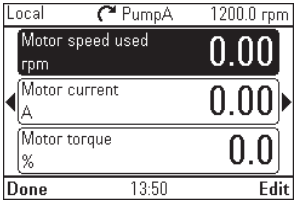
Editing the contents of the Home view

1. In the **Options** menu, select **Edit Home view**. The **Home** view opens in editing mode.
2. In the editing mode, you can add, edit and delete the displayed parameters.

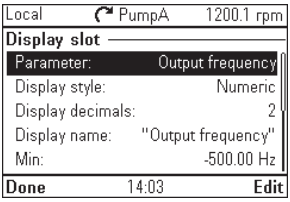
After editing the contents, press (**Done**) to confirm the changes and to exit the editing mode and return to the **Home** view.



3. In the editing mode, use ◀ and ▶ to move between the different pages of the **Home** view.
   - To add a new page, navigate to the page that reads Press **Add** to make a new screen.
   - To edit, add or delete parameters on an existing page, navigate to that page.
4. Use ▲ and ▼ to move the cursor highlight.
   - To add a new parameter to an existing page, highlight an area above, between or below an existing parameter.
   - To edit or remove an existing parameter, highlight that parameter.



5. Press (**Edit**) to open the **Display Slot** menu.



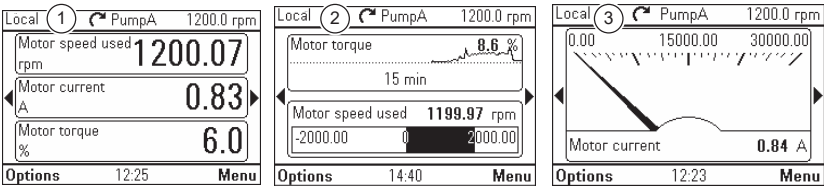
6. Choose a parameter, its display settings and scaling.

Note: Parameters whose values have textual representations (such as the names of bit states) or contain characters other than numbers (such as dates or durations) are automatically shown as text. For these parameters, Display style and the selections for numeric parameters are not available.

- **Parameter**: Select the parameter to show in the selected slot. The most commonly used parameters are listed as presets.

  For bit field parameters, you can select either a single bit or the full bit field to add to the **Home** view. With individual bits, the bit state is shown. Full bit fields are shown in either hexadecimal or binary format.

  Note: If **Empty** is selected, the parameter is removed from the **Home** view.
- **Display style**: Select how the signal values are shown. It is possible to use different display types on the same page.
  - **Numeric**: The parameter values are shown as numbers (figure 1 below). If there is only one parameter on the page, there is also a bar graph.
  - **Gauge/bar**: When there is one parameter on the page, the parameter value is shown as a dial gauge (figure 3 below). When there are two or three parameters on the same page, the value is shown as a bar graph (slots in figure 2 below).
  - **Graph** 15 minutes, 30 minutes, 1 hour or 24 hours: The parameter value is shown as a graph within the selected time frame (bottom slot in figure 2).



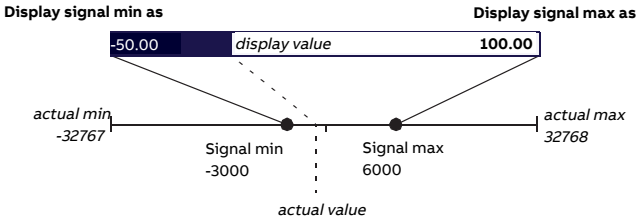
Note: The data shown in the graph is not stored in the drive memory, that is, if you remove or restart the control panel, the data is lost.

- **Display decimals**: Specifies how many decimals are shown.
- **Display name**: Enter a custom label to show in the **Home** view instead of the parameter name.
- **Min and Max**: This function depends on whether **Scale value range** is selected or not:
  - **Scale value range not selected**: Select the minimum and maximum signal values that are shown on graph displays.
  - **Scale value range selected**: Select the actual values of the parameter that correspond to **Display min as** and **Display max as** (see below).
- **Scale value range**: Select if you want to specify the value range.
  - **Display min as** and **Display max as**: Select the minimum and maximum values shown in the **Home** view.

This feature permits application-specific scaling.

If the parameter value is below the minimum or above the maximum, the text Off the scale is shown. In the graph format, small arrows are shown instead to indicate values off the scale.

Scaling with Display signal min/max as and Signal min/max



- **Display unit**: Customize the unit shown in **Home** view when scaling is used.

7

Control of multiple drives

What this chapter contains

This chapter describes how to control several drives with one control panel.

Connecting multiple drives to a control panel

1. Connect the control panel (A) to the first drive (B) in the panel bus.
2. Connect the first drive (C) to the second (D), the second to the third, and so on, by daisy chaining RJ-45 leads.

   Note: Each drive must have a node ID set with drive parameter *49.01 Node ID number*.

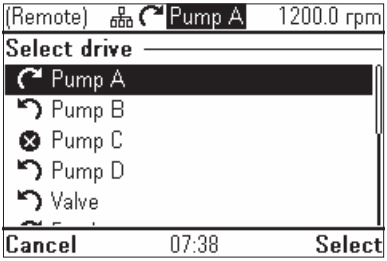
The picture shows a panel bus example with ACS880-01 drives. The ACX580 and ACX480 drives have dedicated panel bus adapters with two RJ-45 slots.

Selecting drive menu

In the **Options** menu, select **Select drive** which lists all the drives connected to the panel bus and shows their current status. If the panel bus is not enabled, only one drive is shown.

In the panel bus, if the connection to the currently selected drive fails, the **Select drive** menu is shown with the other drive list.

In the **Select drive** menu, any drives to which the connection is lost are shown in dimmed text.



Selecting a drive

If there are multiple drives connected to the same panel bus, you can select which drive to control with the control panel.

1. In the **Options** menu, select **Select drive** to open a list of connected drives.
2. Use ▲ and ▼ to move the cursor. When a drive is highlighted, the green LED on the control panel blinks for one second.
3. Press (**Select**) to change control to the highlighted drive.
4. To refresh the drive list on the panel bus, press (**Select**) when **Drive list clean-up** is highlighted.

Control panel features with multiple drives

Control panel views

In a panel bus configuration, the control panel communicates with one drive at a time. The information on the control panel, such as the status bar or signals in the **Home** view are for the currently selected drive. Similarly, the control panel stores data to its memory only from the currently selected drive.

Changes to the **Home** view configuration and any parameter changes are saved in the drive. They can be transferred to other drives using the backup feature.

You can view information on other drives in the panel bus and switch to another drive in the **Select drive** menu.

The Help page

The content of the Help page is drive-specific, and it always refers to the currently selected drive.

Graph data

The data for the graph format in the **Home** view is stored in the control panel only for the selected drive. If you change the selected drive, any stored graph data is discarded, and graph data collection begins for the new drive.

History graphs and all related settings (signal selection, horizontal timescale) are saved in the drive, and the **History graphs** menu shows the graphs for the currently selected drive. Data collection takes places independently in each drive.

Backups

The control panel can store backups from different drives. Conversely, backups from a drive can be uploaded to another drive.

Customized content

Each drive in the panel bus has its own custom content because all the customizations are stored in the drive.

Assistants

Assistants are drive-specific, which means that different drives in the panel bus can have different assistants. However, the assistant framework is the same for all assistants in all drives.

Faults and warnings with multiple drives

Faults and warnings in the currently selected drive

Faults and warnings in the currently selected drive are shown as normal.

Faults and warnings in other drives

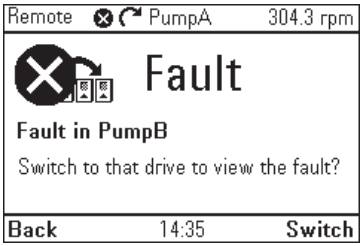
Faults in the other drives in the panel bus appear as remote faults.

Faults that require a restart look like any other remote faults. They are shown normally if you switch to the drive in which the fault has occurred.

In the **Fault** view, the keys have the following functions:

- Press (**Hide**), to go back to the previous view. The fault view does not reappear as with regular faults.
- Press (**Switch**,) to connect to the faulted drive.

The control panel shows only active warnings in the selected drive. To view warnings in another drive, you can select that drive in the **Select drive** menu.



8

Fault tracing

What this chapter contains

This chapter describes how to identify different fault and warning messages on the control panel and how to solve problem situations.

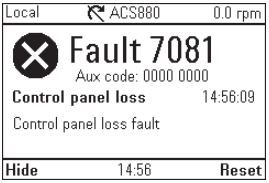
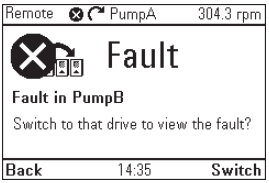
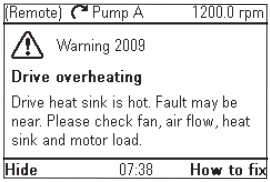
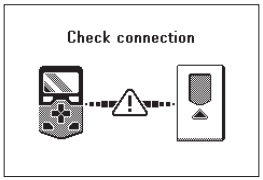
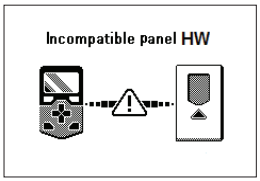
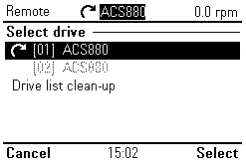
Identifying error and warning messages

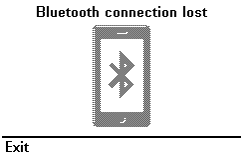
Faults and warnings are drive states that occur when the drive detects a problem in its operation. The display message, backlight and LED indications help you to identify the problem.

Some of the fault and warning icons and their descriptions are mentioned below.

Event	Icon
Fault activate	
Fault reset	
Warning activate	
Warning deactivate	
Pure event activate	
Pure event deactivate	

Refer to the table below to identify faults and warnings.

Display	LED	Type
	continuous red	Refer to Faults (page 73).
	blinking red	Faults of this type require stopping and restarting the drive before it continues to operate normally. Refer to Faults (page 73).
	continuous red	A fault has occurred in another drive in the panel bus.
	blinking green	Refer to Warnings (page 73).
	continuous green	The connection between the control panel and the drive is faulty. Make sure that the connection cable is connected correctly.
	continuous green	The control panel type is not compatible with the drive you attempt to use it with. Refer to Applicability (page 12).
	continuous green	The connection between the control panel and the drive was lost. The lost drive is shown as gray. Check the control panel network connections. Select another drive.

Display	LED	Type
	continuous green	The Bluetooth connection between the control panel and the drive was lost. The Bluetooth connection is shown as gray. Check the Bluetooth connection.

Faults

Faults are problems that require your attention before you start the drive again.

Do the following steps to solve the fault situation:

1. Identify and eliminate the cause of the fault. In the **Fault** view, you can see the fault code. Refer to the relevant firmware manual for more information on the fault.
2. Press (**Reset**) in the **Fault** view to reset the fault.

In the **Fault** view, the soft keys have the following functions:

- Press (**Hide**) or any of the arrow keys to temporarily hide the fault and go back to the previous view. If there is also an active warning, it is shown instead. The fault view reappears after 60 seconds if no keys are pressed.
- Press (**Reset**) to reset the fault and return to the previous view.
- Press the (?) key to open the context-sensitive help. The help page has a shortcut to the Fault Diagnostics Assistant which helps you solve the fault situation.

Warnings

Warnings mean that a possible problem was detected and may need attention, and the drive can still run. A warning message disappears once the condition that triggered it goes away.

- Press (**Hide**) to hide the warning message and go back to the previous view.
  If the warning is still active after 60 seconds of no key presses, the **Warning** view reappears automatically.
- Press the (?) key to open the context-sensitive help.

Note: If multiple warnings are active, the total number of active warnings is shown. Use ▲ and ▼ to scroll through the warnings.

9

Maintenance

What this chapter contains

This chapter describes the service and maintenance tasks of the assistant control panel.

Removing the control panel cover

You can remove the control panel cover to clean any dust inside the cover or to change the cover to customize the control panel.

The cover consists of two parts, both of which can be removed. You do not need tools to remove the covers.

1. Open the USB connector cover.
2. Remove the lower part of the control panel cover.
3. Remove the upper part of the cover.

Reinstall the covers in the reverse order.

Cleaning the control panel

Do not use harsh cleaners to prevent damage to the display window.

Cleaning the connectors

The control panel has two connectors, RJ45 connector (panel back side) and USB connector (panel front side). Clean outside/around the connectors with suitable cleaning solution (for example, Isopropyl Alcohol (IPA) solution). Do not use the cleaning solution to clean inside the connectors.

Replacing the control panel battery

The instructions below describe how to replace the battery that powers the real-time clock of the control panel.

1. Turn the lid on the back of the control panel counter-clockwise until the lid opens.
2. Remove the battery carefully.
3. Replace the battery with a new CR2032 battery. The battery holder has grip nails.
   First slide the battery and then press on the other side. The battery snaps in.
4. Make sure that the battery polarity shows positive on the upside.
5. Put the lid back and turn it clockwise to lock it.
6. Dispose of the old battery according to local disposal rules or applicable laws.

Note: For ZCU-12 (Supply control unit) battery replacement, contact your local ABB representative.

Control panel software updates

If the control panel software needs to be updated, contact your local ABB representative.

Recycling instructions and environmental information

Refer to the drive related Recycling instructions and environmental information.

10

External connections

What this chapter contains

This chapter describes the USB and Bluetooth connection between the assistant control panel and a PC.

USB connection

The three main functions of the USB connection:

- The control panel acts as an USB adapter, allowing the Drive Composer PC tool to communicate with the drive. Refer to Connecting a PC tool to a drive through the control panel.
- It is possible to transfer data (for example, screenshots and backups) between the control panel and the PC with the Media Transfer Protocol (MTP) device.
- The USB port is intended for temporary service.

WARNING!
Use the USB connector carefully. Otherwise the connector may break.

Pull the USB connector cable correctly. Avoid pulling the cable in side ways direction.

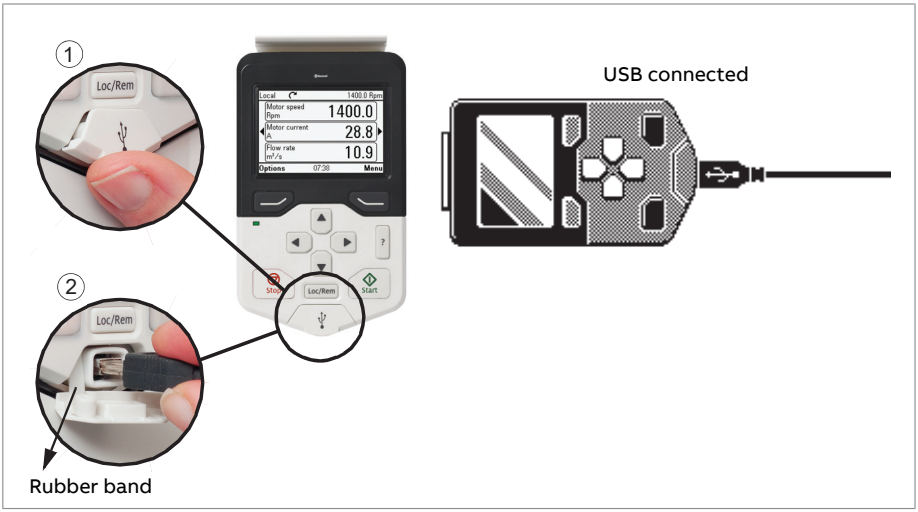
Connecting control panel to PC USB

Note: When connected to a PC, the control panel displays the USB screen and does not respond to key presses. In this mode, you can only interact with the control panel or the drive through the Drive Composer PC tool.

To connect the control panel to a PC,

1. Open the lid of the USB connector.
2. Plug in a USB cable.
3. Connect the USB cable to a PC.
   The control panel displays the USB screen.

The USB connector lid is attached to the control panel through a loose rubber band. You can always connect the lid to the band, if it disconnects accidentally.



Connecting Drive Composer PC tool to a drive through the control panel

You can use the control panel to connect an ABB Drive Composer PC tool to the drive. When using the control panel, you can only access the drive from the Drive Composer PC tool.

1. Install an ABB Drive Composer PC tool to the PC.
2. Connect the control panel to the drive.
3. Connect the control panel to the PC with a USB cable as shown in Connecting control panel to PC USB.

If Windows prompts you to install USB drivers, install them as shown in *Drive composer user's manual* (3AUA0000094606 [English]).

The behavior depends on the current control location of the drive. Refer to Connecting in local control mode and Connecting in remote control mode.

Connecting in local control mode

1. Connect the control panel to a drive in the local control mode.
2. Connect the control panel to a PC with a USB cable. The control panel shows the USB screen.
3. Start the Drive Composer PC tool and click Connect. The drive keeps its preset reference and direction.
4. To disconnect the Drive Composer PC tool, go to Drive Composer PC tool **File -> Exit**, and disconnect the USB cable.

The local control is transferred back to the control panel and keeps its present reference and direction.

Note: Do not disconnect the USB cable before closing the PC tool.

Connecting in remote control mode

1. Connect the control panel to a drive in the remote control mode.
2. Connect the control panel to a PC with a USB cable. The control panel shows the USB screen.
3. Start the Drive Composer PC tool and click Connect. You can only interact with the control panel through the Drive Composer PC tool. The drive remains in remote control, but you can switch over to local control with the Drive Composer PC tool.
4. To disconnect the Drive Composer PC tool, go to Drive Composer PC tool **File -> Exit**, and disconnect the USB cable. The drive resumes its normal operation.

Transferring files between the control panel and a PC

1. Connect the control panel to a PC with a USB cable as shown in Connecting control panel to PC USB.
2. If Windows prompts you to install USB drivers, install them as ishown in *Drive composer user's manual* (3AUA0000094606 [English]).
   The control panel appears as an MTP device in Windows Explorer.
3. Open **ABB Drives Assistant control panel** with Windows Explorer, and go to the directory where the files are stored.
   - Screenshots are stored in: ABB Drives Assistant control panel\ABB Drives Assistant control panel_a\screen
   - Backup files are stored in: ABB Drives Assistant control panel\ABB Drives Assistant control panel_a\backup
4. You can copy files to and from the folders just like any other files with Windows Explorer.

Bluetooth connection

The two main functions of the Bluetooth connection:

- Connect the control panel to Drivetune via Bluetooth to communicate with the drive. Refer to Connecting control panel to Drivetune via Bluetooth.
- Connect the control panel to Drive Composer via Bluetooth to communicate with the drive. Refer to Connecting control panel to Drive Composer via Bluetooth.

Connecting Drivetune to a drive through Bluetooth on the control panel

Installing Drivetune app on Android device

To install the Drivetune app on your Android device, do the following steps:

1. On your Android device, open Google Play Store and search for **Drivetune** app.
2. Tap **INSTALL** against the Drivetune app and follow the instructions on your screen. Wait for the installation to complete.
3. Tap **OPEN**, to open the app.

Note: For Chinese Android customers, you can download Drivetune app from ABB official website, Yingyongbao store and app stores of your mobile phone.

Installing Drivetune app on iOS device

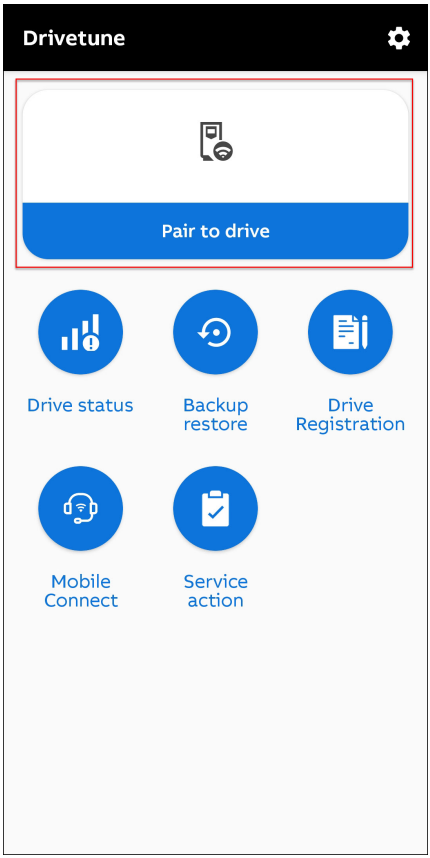
To install the Drivetune mobile app on your iOS device, do the following steps:

1. On your iOS device, open App Store and search for **Drivetune** app.

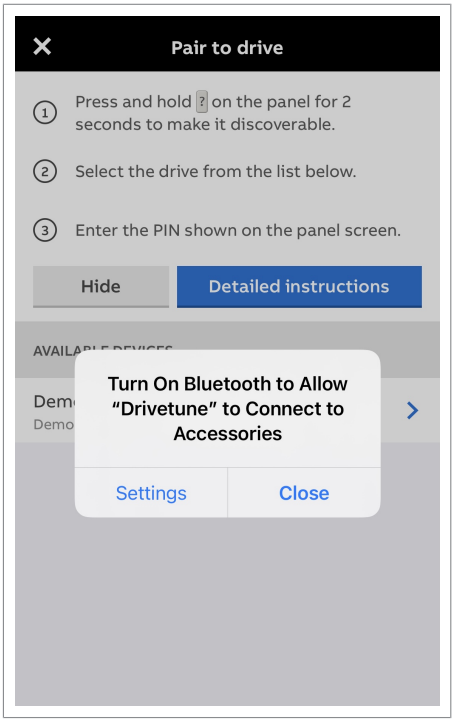
2. Tap **INSTALL** against the Drivetune app and follow the instructions on your screen.
3. Tap **OPEN**, to open the app.

Pairing the drive via Drivetune

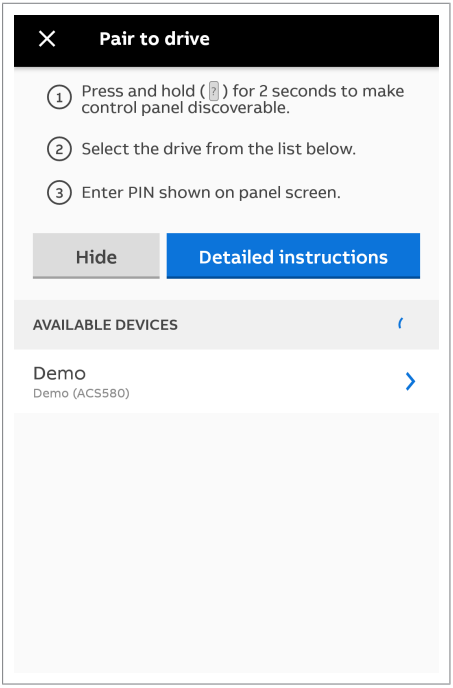
1. On your mobile device, open Drivetune app.
2. Tap **Pair to drive**.



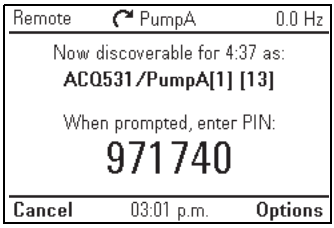
3. If the Bluetooth connection is not on, the message "*Turn On Bluetooth to Allow "Drivetune" to Connect to Accessories*" appears. Tap **Settings** to turn on Bluetooth.



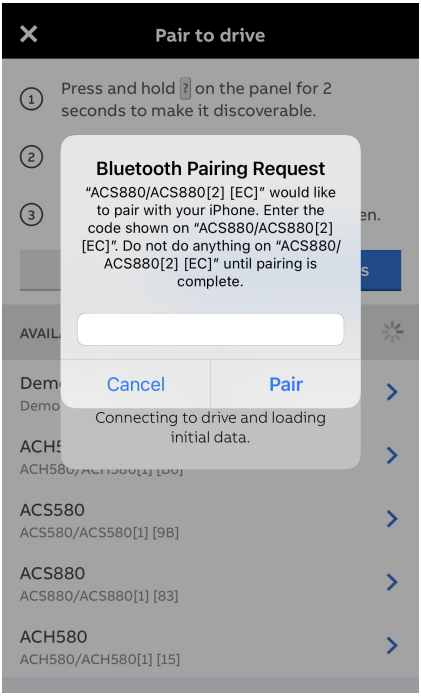
4. Follow the instructions displayed on the mobile screen and select a drive from the device list.



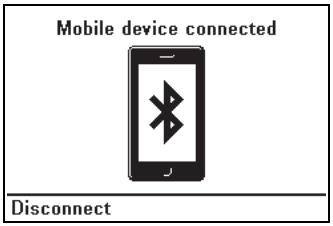
5. On the Bluetooth Assistant control panel, press and hold the **?** button for two seconds to make it discoverable.
   - A blinking Blue LED indicates that Bluetooth is turned on.
   - The control panel displays a PIN.



   - Enter the PIN when your mobile prompts for Bluetooth connection. Tap **Pair** to connect to the drive.



- Drive is paired with Drivetune app and ready for remote access.



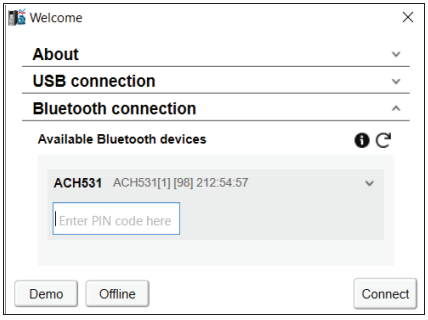
- Press **Disconnect** on the control panel to disconnect the drive.

  Note: It is not possible to have an active connection to both Drive Composer PC tool and Drivetune at the same time.
  - If you attempt to connect a drive paired to Drivetune to the Drive Composer PC tool, while a Drivetune session is ongoing, the connection to the mobile device disconnects automatically, that is, the Drivetune session is deactivated.
  - If the connection between drive and Drive Composer PC tool is active, the Bluetooth option is not available to pair the drive with Drivetune.

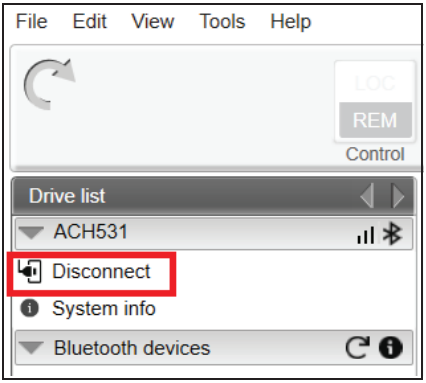
Connecting Drive Composer Entry to a drive through Bluetooth on the control panel

Drive Composer Entry V2.8 and later versions support Bluetooth connection to a drive. To establish a connection between Drive Composer and drive with Bluetooth connection,

1. Double-click **Drive Composer entry** and launch Drive Composer.
2. On the Bluetooth Assistant control panel, press and hold the **?** button for two seconds to make it discoverable.
   - A blinking Blue LED indicates that Bluetooth is turned on.
   - The control panel displays a PIN. Enter this PIN when your mobile device prompts for Bluetooth connection.
   - Tap **Scan**, to connect to the drive.
   - Drive is paired with Drivetune app and ready for remote access.
   - **Note:** It is not possible to have an active connection to both Drive Composer PC tool and Mobile Connect at the same time.
     - If you attempt to connect a drive paired to Drivetune to the Drive Composer PC tool, while a Mobile Connect session is ongoing, the connection to the mobile device disconnects automatically, that is, the Mobile Connect session is deactivated.
     - If the connection between drive and Drive Composer PC tool is active, the Bluetooth option is not available to pair the drive with Drivetune.
3. Click **Bluetooth connection** and from the **Available Bluetooth devices**, select the drive.



4. Enter the Bluetooth pairing code. For information on pairing Bluetooth of your computer with the drive, click ⓘ. To reload the drives, click ↻.
5. Click **Connect** to connect to the drive. Click **Demo** or **Offline** if you want to choose the demo or offline mode.
6. To disconnect any connected drive, navigate to the **Drive list** and click **Disconnect**.



Note:

- The status LED starts flickering in the control panel to indicate data transfer between drive and PC. The LED keeps blinking as long as there is a Drive Composer PC tool connected to the drive. The welcome dialog box is shown on the screen indicating that the application is initialized.
- With first time connection, parameter texts are loaded from the drive and this may take a few minutes depending on the drive type.

11

Technical data

What this chapter contains

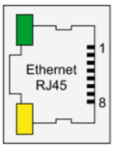
This chapter contains the technical details of the assistant control panel.

Connectors

The control panel has the following connectors:

Connector	Purpose
RJ-45 female connector	Used for connecting the control panel to the drive. • The maximum permitted cable length is 100 meters (328 ft.) • On a panel bus, the combined maximum length of the panel bus cables is 100 meters (328 ft.). • The panel bus can have a maximum of 32 nodes.
Type B mini USB connector	Used for connecting panel to a PC. It is intended for temporary service use (USB 2.0, MTP protocol). The maximum cable length is 3 meters (9.8 ft.).

Pin assignment of RJ-45 connector:

PIN	Signal name	Description	Remark
1	RS485+	RS485 communication data(+)	Female port on the back 
2	RS485-	RS485 communication data(-)	
3, 4	NC	Not connected	
5, 6, 7	GND	Reference potential ground	
8	Vcc	DC power supply(from Drive)	

Power supply (from the drive):

Supply voltage	DC +15V… +24V (±10%)
Supply current	Max. 65mA, 24V DC

Display

The control panel has a monochrome, 240×160 pixel resolution LCD display with adjustable backlight and display contrast.

Refer to Basic settings and assistants (page 36).

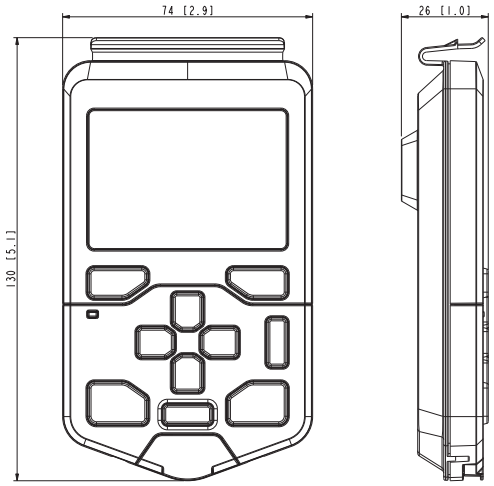
Battery

At an ambient temperature of 25 °C (77 °F), the change interval of the real-time clock battery is approximately 10 years.

Battery type	CR2032

Dimensions and weight

Weight	130 g

Height, width and depth mm [in.]	

Degrees of protection

Degree of protection, attached to a drive	IP55
Separately	IP20
When control panels are connected in stand-alone to RJ-45 cable	IP20
When control panels are connected with USB cable.	IP20
Control panel mounted to DPMP-01	IP55
Control panel mounted to DPMP-02 or 03	IP65
When the control panel is not mounted to DPMP-01 or 02 or 03 holder	IP20

A control panel mounted to a drive provides the same protection class as the drive unit. For more information, refer to the hardware manual of the drive product.

Materials

Enclosure	PC/ABS
Packaging	Cardboard
Screen	Polycarbonate
Disposal	Do not dispose the control panel with municipal waste. Obey the local regulations for disposal of electronic products. Refer to the drive-specific recycling instructions and environmental information.

Environmental limits

	Operation	*Storage*	*Transportation*
Installation site altitude	4000 m (13123 ft.)	-	-
Air temperature	-20 °C to +55 °C (-4 °F to 131 °F)	-40 °C to +70 °C (-40 °F to 158 °F)	-40 °C to +70 °C (-40 °F to 158 °F)
Relative humidity	95% (non-condensing)		
Temperature inside the control panel	-20 °C to +70 °C (-4 °F to 158 °F)	-25 °C to +70 °C (-13 °F to 158 °F)	-

Note: The accuracy of the real-time clock can be affected at very high and very low temperatures.

IEC compliance

	Operation	*Transportation*
Contamination levels (IEC 60721-3-3, IEC 60721-3-2, IEC 60721-1-3-1)	3C3	
Sinusoidal vibration	61800-5-1 ed 2. EN 60082-2-6 test Fc (1g)	class 2M3 in acc. with EN 60082-2-6
Shock	class 3M4 in acc. with EN 60062-2-27	class 2M2 in acc. with EN 60082-2-27
Free fall	IEC-60068-2-32, drop height 1 m. (3.3 ft.)	-
EMC compliance (EN 61800-3: 2004 +A1: 2012)	IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-6	-

LCD specifications

LCD type	FSTN, negative transmissive
Operating temperature	-20 °C to +70 °C (-4 °F to 158 °F)
Storage temperature	-40 °C to +80 °C (-40 °F to 176 °F)
Transportation temperature	-40 °C to +80 °C (-40 °F to 176 °F)
Driver	IC UC1698U

ROHS	Compliant
General tolerance	± 0.2

Note: The response time of LCD display is slow at/below 0 °C (32 °F).

Bluetooth interface

Bluetooth standard	Bluetooth 4.0 Dual mode (smart ready), Bluetooth classic, Bluetooth LE (low energy)
Certification	Bluetooth® Qualified Design
Antenna type	Internal inverted-F on PCB
Operating frequency	2.4000...2.4835 GHz
Antenna gain	Maximum 1.7 dBi

Bluetooth encryption

	Bluetooth classic	**Bluetooth LE (low energy)**
Encryption algorithm	Custom algorithms based on: • SAFER + for key derivation (called E21 and E22) • authentication as message authentication codes (called E1) • payload data encryption (called E0)	AES
Encryption protocol	E0, E1, E21, E22/ SAFER+	AES
Type	Symmetrical	
Key length	128	
Function	Key derivation, authentication and payload data encryption	

Bluetooth radio frequency exposure

Bluetooth (BT)

Operating band [GHz BT]	Frequency [MHz]	Modulation	Data rate [Mbps]	Power level	Transmit power [dBm, conducted]
2.4	2400 to 2483.5	GFSK	1	Maximum	9.3

Bluetooth Low Energy (BLE)

Operating band [GHz BLE]	Frequency [MHz]	Modulation	Data rate [Mbps]	Power level	Transmit power [dBm, conducted]
2.4	2400 to 2483.5	GFSK	1	Maximum	9.3

FCC and Industry Canada certifications

The following FCC and Industry Canada certifications compliance identification numbers are valid for ACS-AP-W and ACH-AP-W panels and Bluetooth.

- FCC ID: 2AFNGAPWSERIES
- IC: 20555-APWSERIES

FCC ID: 2AFNGAPWSERIES

The ACS-AP-W and ACH-AP-W wireless assistant control panels comply with part 15 of the FCC rules.

The operation is subject to the following two conditions:

1. The device may not cause harmful interference, and
2. The device must accept any interference received, including interference that may cause undesired operation.

Note: The wireless panels are tested and found to comply with the limits of a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the panels are operated in a commercial environment.

Note: The wireless panels will generate, use, and radiate radio frequency energy. If the panels are not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of these panels in a residential area is likely to cause harmful interference in which the user is required to correct the interference at his own expense.

Note: Modifications not expressly approved by ABB Oy could void the user's authority to operate the wireless panels.

- **IC: 20555-APWSERIES**

The ACS-AP-W and ACH-AP-W wireless assistant control panels comply with RSS-247, Issue 1, 2015-05. The operation is subject to the following two conditions:

1. The device may not cause interference, and
2. The device must accept any interference, including interference that may cause undesired operation of the device.

ANATEL certification

ANATEL Identifiers are unique authorization numbers assigned by Brazil's Agency of National Telecommunications. The certification make sure product quality and authorize operation at given frequencies and power outputs compliant with regulations of Brazil's Agency of National Telecommunications.

ANATEL ID for ACS-AP-W : 10784-23-02705.

CMIIT certification

The following China Radio Law (CMIIT) certification compliance identification numbers are valid for ACS-AP-W and ACH-AP-W:

- CMIIT ID for ACS-AP-W: 2022DJ0727
- CMIIT ID for ACH-AP-W: 2022DJ0713

Markings

These markings are attached to the panels:

- ACS-AP-W and ACH-AP-W

CE	CE mark Product complies with the applicable European Union legislation. For fulfilling the requirements of Radio Equipment Directive (RED), refer to the additional information concerning the control panel EMC and RF compliance: • IEC/EN 62368-1:2014 + A11:2017 • EN 62311:2008 • ETSI EN 301 489-1 • ETSI EN 301 489-17 • IEC/EN 61000-6-2:2019 • ETSI EN 300 328
20	Electronic Information Products (EIP) symbol including an Environment Friendly Use Period (EFUP). Product is compliant with the People's Republic of China Electronic Industry Standard (SJ/T 11364-2014) about hazardous substances. The EFUP is 20 years. China RoHS II Declaration of Conformity is available from https://library.abb.com.
KC	KC mark Product complies with Korean Registration of Broadcasting and Communications Equipment Clause 3, Article 58-2 of Radio Waves Act.
UKCA	UKCA (UK Conformity Assessed) mark Product complies with the applicable United Kingdom's legislation (Statutory Instruments). Marking is required for products being placed on the market in Great Britain (England, Wales and Scotland).

- ACS-AP-… and ACH-AP-…

CE	CE mark Product complies with the applicable European Union legislation. For fulfilling the requirements of Radio Equipment Directive (RED), refer to the additional information concerning the control panel EMC and RF compliance: • IEC/EN 62368-1:2014 + A11:2017 • EN 62311:2008 • ETSI EN 301 489-1 • ETSI EN 301 489-17 • IEC/EN 61000-6-2:2019 • ETSI EN 300 328
20	Electronic Information Products (EIP) symbol including an Environment Friendly Use Period (EFUP). Product is compliant with the People's Republic of China Electronic Industry Standard (SJ/T 11364-2014) about hazardous substances. The EFUP is 20 years. China RoHS II Declaration of Conformity is available from https://library.abb.com.

UK CA	UKCA (UK Conformity Assessed) mark Product complies with the applicable United Kingdom’s legislation (Statutory Instruments). Marking is required for products being placed on the market in Great Britain (England, Wales and Scotland).

Disclaimers

Generic disclaimer

The manufacturer shall have no obligation hereunder with respect to any product which (I) has been improperly repaired or altered; (II) has been subjected to misuse, negligence or accident; (III) has been used in a manner contrary to the Manufacturer's instructions; or (IV) has failed as a result of ordinary wear and tear. All material in this manual is subject to change without a further notice. The manual is intended as non-contractual document.

Cyber security disclaimer

This product is designed to be connected to and to communicate information and data via a network interface. It is Customer's sole responsibility to provide and continuously ensure a secure connection between the product and Customer network or any other network (as the case may be). Customer shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc.) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

ABB and its affiliates are not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

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/contact-centers.

Product training

For information on ABB product training, navigate to new.abb.com/service/training.

Providing feedback on ABB manuals

Your comments on our manuals are welcome. Navigate to forms.abb.com/form-26567.

Document library on the Internet

You can find manuals and other product documents in PDF format on the Internet at www.abb.com/drives/documents.

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www.abb.com/drives

3AUA0000085685G

3AUA0000085685 Rev G (EN)
2024-07-12