

Control panel backups in 580 series

Control panel backup and restore functions

The 580 series drive control panel can store multiple drive backup files and restore the information as directed. This technical note is an expanded explanation of the drive control panel backup and control panel restore functions. This technical note is applicable for ACH580, ACQ580, and ACS580 drives. The ACH580 is used as the base drive but the functions reviewed are applicable for other 580 series drives.

Technical note formats and definitions:

- 1) When referencing control panel functions the function is in bold type. Ex: **Menu, Backups, ID-run results, Create backup, Restore.**
- 2) A Backup is the file stored in the control panel containing the information from the drive programming and control panel programming.
- 3) **Restore** function is the act of uploading the backup file information to the drive.
- 4) Drive parameter number format of "Group.Number". Parameter 12.03 is group 12 and parameter number 03 in group 12.

Overview

You can save parameter settings in the control panel memory as a backup file and restore the parameter settings from the control panel backup file to the drive. You can store up to two backup files on the control panel. In addition to the two user backup files, the control panel has a dedicated space for one automatic backup. The control panel memory is non-volatile and does not depend on the control panel battery.

The backup file contains most editable values in parameter groups 10...99 and control panel home view information. However, read only data, faults, alarms, drive history logs are not part of the backup file. When a restore is used the restore will not overwrite the date and time from the original backup but will set the desired date formats stored in the backup file. The actual date and time are stored in the control panel.

The control panel backup information can be used in multiple ways:

- 1) To restore the drive to a saved backup programming and setup.
 - a. Restore all parameters.
 - b. Restore individual selected groups of parameters.
- 2) To transfer programmed information from one drive to a replacement drive.
- 3) To transfer programming information from one drive to other drives of same size or different sizes.

Control panel backup and restore functions for identical drives

The control panel can be used to restore all parameters to configure identical drive, as shown in Figure 1. The **Restore all parameters** option includes motor data and Motor Id Run information. This option is best for recovering a drive to a backup parameter set for replacement of the drive or for multiple drives of the same size performing the same functions. See "**Creating a parameter backup file**" and "**Restoring parameter backup file**" section of this technical note for backup and restore procedures. After the original control panel is installed the current date and time will need to be entered.



Figure 1 Control panel backup / restore of multiple drives

Control panel backup and restore functions for different drive sizes

The control panel can be used to transfer setup information for one drive to other drives of different HP sizes, as shown in Figure 2. To restore application parameters, use the restore groups **Select par restore group**, **Select user sets**, and **Select prod. data items**. Motor related information is stored in the **Select par restore group - ID-run results** and should not be selected when restoring to drives of different sizes or drives with different motors.

When restoring backup files not all parameters maybe compatible with all drive types. See **“Backup compatibility”**, **“Creating a parameter backup file”** and **“Restoring parameter backup file”** sections of this technical note for compatibility, backup and restore procedures. After the original control panel is installed the date and time will need to be entered.



Figure 2 Control panel backup/restore of different drives

Backup compatibility

When using stored backup file to transfer information to multiple drives of different sizes not all parameters can be directly transferred. If the original backup was created on a 100 hp drive and the backup is being restored to a 5 hp drive, the motor data, maximum drive current, and other firmware parameters may not be compatible or values are out of range of the new drive parameter. The control panel will display backup icons for **“Partly compatible backup”** and **“Incompatible backup”** as shown in Table 1. Using the restore groups **Select par restore group**, **Select user sets**, and **Select prod. data items** selection to reduce the incompatible parameter handling performed by the drive.

Handling partially compatible backup

In some situations, an exact copy of the download is not appropriate for the target drive. Some examples:

- The drive firmware is different due to control board type.
- A download to an old drive specifies parameters/values that are not available on the old drive.
- A download can include an illegal value for the target drive, e.g. a backup from a small drive can have a switching frequency of 12 kHz, whereas a large drive has a maximum value of 8 kHz.

As a default, the control panel handles these situations by:

- Discarding parameters/values not available on the target drive.
- Using parameter default values when the download provides no values or invalid values.
- Providing warnings and **How to fix** information, as shown in Figure 3.

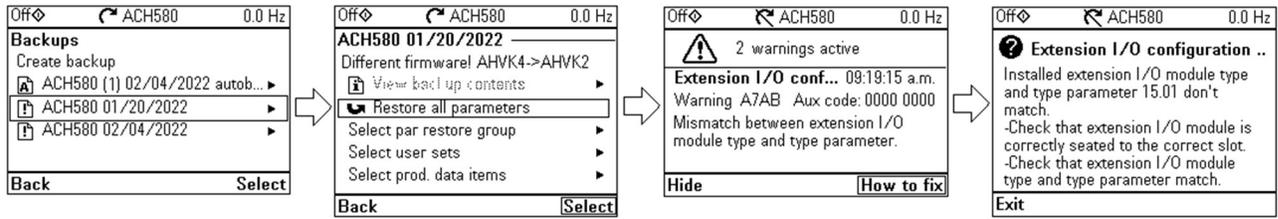


Figure 3 Partly compatible restore with warnings

Table 1 Backup Icons

Definition	Icon	Explanation
Automatic backup		Automatic backup created by drive
Compatible backup		Backup is fully compatible with drive for restore
Incompatible backup		Backup is not for drive the control panel is connected to
Partly compatible backup		Backup can be restored but some parameters do not match usually do to drive firmware revisions differences

Creating a parameter backup file

You can create and store up to two backup files on the control panel. The backup file contains most editable values in parameter groups 10...99 and control panel home view information. Read only data, faults, alarms, drive history logs are not part of the backup function. The drive must be stopped to create a backup file. Reference Figure 4 for the process.

Step 1: From Home Screen select **Menu**, Select **Backups**, select **Create backup**.

If two backups files exist, select one of the backup file to replace.

Step 2: An animation is shown. Wait until the backup animation is completed and the control panel 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.

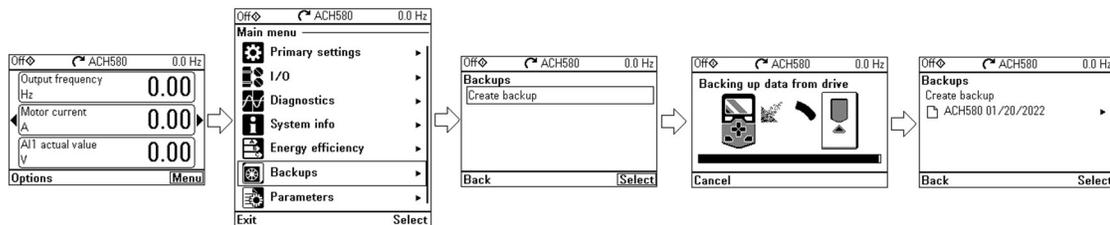


Figure 4 Drive backup process

Restoring parameter backup file

The ACH580 drive has multiple backup file restore options. The control panel can **Restore all parameters** or select individual **parameter restore groups**, **user sets**, and **product data items**. When restoring groups, sets, or items multiple check boxes can be checked to allow the restore of all checked boxes, as shown in Figure 5. Groups, user sets, and product data items are defined later in this technical note. See **Restore all parameters**, **Parameter restore group**, **User parameter sets**, and **Product data items**. The drive must be stopped and in Hand or Local control mode to restore a backup file to the drive.

Step 1: From Home Screen select **Menu**, Select **Backups**, then select the backup file to be restored

Step 2: Select the restore choices as needed from **Restore all parameters**, **Parameter restore group**, **User parameter sets**, or **Product data items**.

Step 3: Select **Restore** and allow the drive animation restoring screen to complete. The control panel automatically returns to the **Backups** menu screen when done.

Note: **View backup contents** is not enabled at the time of this document. This functionality will be available in a future release.

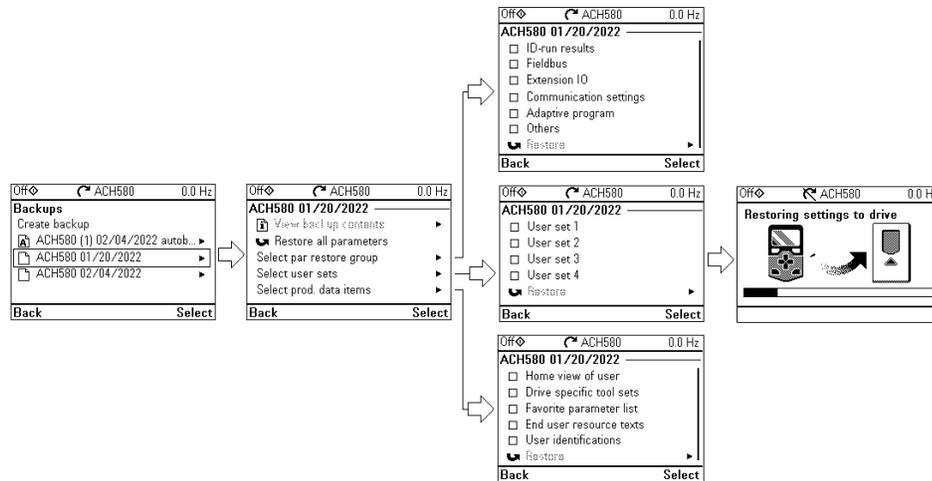


Figure 5 Drive restore process

Restore all parameters

The **Restore all parameters** option, as shown in Figure 6, will restore the backup file and contains most editable values in parameter groups 10...99 and control panel home view information. This includes the motor data and drive specific information to the drive the backup file was created from.

Step 1: From the Home Screen select **Menu**, Select **Backups**, then select the backup file.

Step 2: Select the **Restore all parameters** and allow the drive animation restoring screen to complete. The control panel automatically returns to the **Backups** menu screen when done.

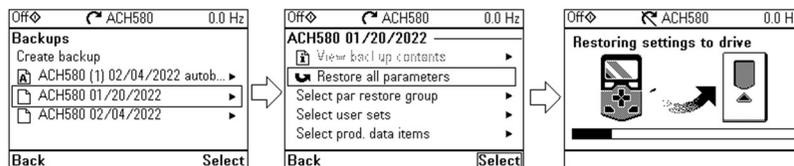


Figure 6 Restore all parameters selection

Parameter restore group details

The parameter restore group allows for selecting different parameter group as shown in Figure 7 and defined in Table 2.

Step 1: From Home Screen select **Menu**, select **Backups**, then select the backup file.

Step 2: Select the **Select par restore group**, check the backup options as needed then select **Restore** and allow the drive animation restoring screen to complete. The control panel automatically returns to the **Backups** menu screen when done.

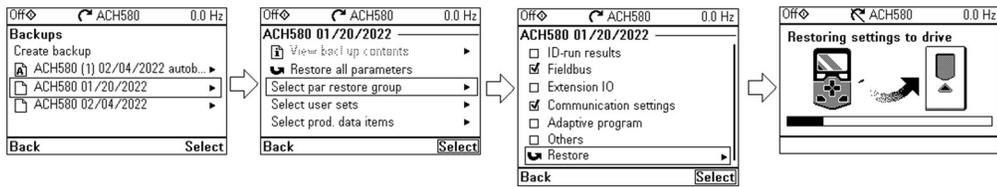


Figure 7 Select parameter restore group

Table 2 Select par restore group

Selection	Description	Parameters
ID-run results	Restore identification run and motor data information	Group 98 User motor parameters Param 99.13 ID run requested Param 99.14 Last ID run performed
Fieldbus	Restore embedded fieldbus and fieldbus adapter information	Group 50 Fieldbus adapter (FBA) Group 51 FBA A settings Group 58 Embedded fieldbus
Extension IO	Restore I/O extension module parameters installed in slot 2 at the time of the backup creation. I/O modules include CAIO-01, CHDI-01, CMOD-01, CMOD-02, or CPTC-02.	Group 15 - I/O extension module of the module installed at the time of backup creation
Communication settings	Restore embedded fieldbus, fieldbus adapter (FBA) and panel port communication parameters	Group 49 Panel port communication Group 50 Fieldbus adapter (FBA) Group 51 FBA A settings Group 58 Embedded fieldbus
Adaptive program	Restore adaptive programming code	Param 96.70 Disable adaptive program Adaptive programming code
Others	Restore write parameters that are not listed in the ID-run results, Fieldbus, Extension IO, Communication settings, and Adaptive program options	Write parameters not listed above. Other does not include control panel information. See Select prod. data items for more information.

User parameter sets details

The user parameter sets allows for selecting different parameter user sets as shown in Figure 8 and defined in Table 3.

Step 1: From Home Screen select **Menu**, select **Backups**, then select the backup file.

Step 2: Select the **Select user set**, check the backup options as needed then select **Restore** and allow the drive animation restoring screen to complete. The control panel automatically returns to the **Backups** menu screen when done.

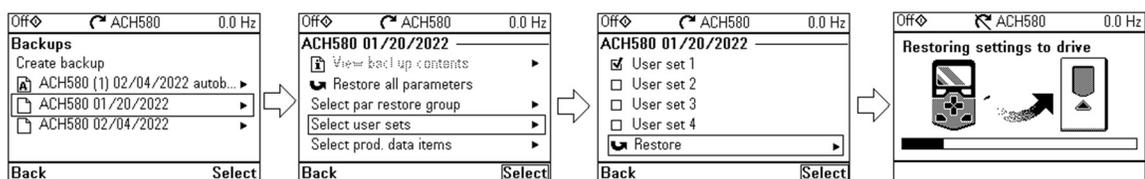


Figure 8 Select parameter restore group

Table 3 Select user sets

Selection	Description	Parameters
User set 1	Restore user set 1	Editable values in parameter groups 10...99 except: <ul style="list-style-type: none"> • Forced I/O values • I/O extension module settings (group 15) • Data storage parameters (group 47) • Fieldbus communication enable parameter (50.01 FBA A enable) • Other fieldbus communication settings (groups 51...53 and 58) • Some hardware settings in group 95 HW configuration (for example parameter 95.01 Supply voltage) • User set selection parameters 96.11...96.13
User set 2	Restore user set 2	As defined in User set 1
User set 3	Restore user set 3	As defined in User set 1
User set 4	Restore user set 4	As defined in User set 1

Product data items

The product data items allow for selecting different parameter user sets as shown in Figure 9 and defined in Table 4.

Step 1: From Home Screen select **Menu**, select **Backups**, then select the backup file.

Step 2: Select the **Select user set**, check the backup options as needed then select **Restore** and allow the drive animation restoring screen to complete. The control panel automatically returns to the **Backups** menu screen when done.

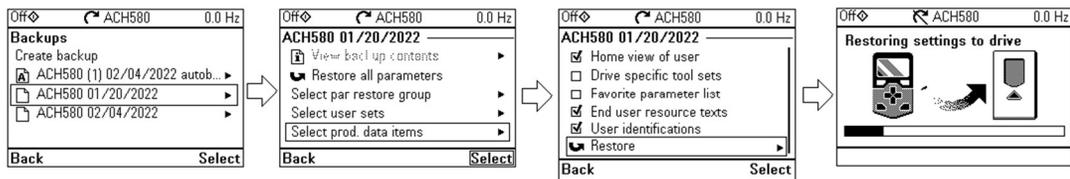


Figure 9 Select parameter data items

Table 4 Select prod. data items

Selection	Description	Parameters
Home view of user	Restore all backed up home views	The home view programming is native to the control panel and does not have parameters
Drive specific tool set	Restore specific setting pertaining to the drive setting	Date and time format setting First start assistant selections Enable/disable contact info in fault view Parameter display mode
Favorite parameter list	Restore parameters in “Favorites” list	All editable parameters assigned to the “Favorites” list
End user resource texts	Restore programmed custom text	Restore all texts located in Primary settings – Clock, region, display - customized warnings, and faults
User identifications	Restore drive name	Clock, region, display - Drive name

Automatic backup

An automatic backup is created two hours after the last parameter change. After completing the backup, the panel waits for 24 hours before checking if there are additional parameter changes. If there are, it creates a new automatic backup overwriting the previous one. The automatic backup function delay time cannot be adjusted or be disable. The automatic backup does not update from parameter changes from fieldbus interfaces unless **96.07 Parameter save manually** is forced to **Save**.

Copy backup files to personal computer

You can copy backup files to and from a PC with any file manager application (example, Windows Explorer), as shown in Figure 10.

Step 1: Connect the control panel to a PC with a USB cable.

Step 2: If Windows prompts you to install USB driver, install them as instructed in Drive composer user’s manual (3AUA0000094606 [English]).

Step 3: Open ABB Drives Assistant control panel with Windows Explorer and go to the directory where the files are stored.

- Backup files are stored in: ABB Drives Assistant control panel\ABB Drives Assistant control panel_a\backup

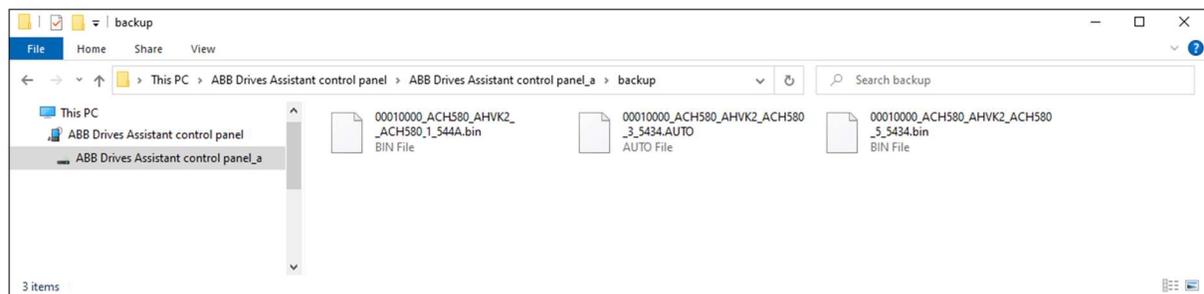


Figure 10 Windows Explorer of control panel backup files

Step 4: You can copy files to and from the folders just like any other files with Windows Explorer.

- Only two backups “.bin” and one “.AUTO” file can be loaded onto the control panel.

Backup notes

The following bullets contain general notes and comments regarding control panel backup and restore:

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- The drive name is shown at the status bar at the top of the control panel screen while using the drive. If more than one drive is connected to the control panel using the panel bus adapters (CDPI-10), the drive names make it easy to identify each drive. It also identifies any backups created for the drive.
- Fault message **1080 Backup/Restore timeout** is caused by the control panel has failed to communicate with the drive when backup was being made or restored. To resolve, reset the fault and request backup or restore again.
- Fault message **6591 Backup/Restore timeout** is caused during backup creating or restoring operation a control panel has failed to communicate with the drive as part this operation. To resolve, check control panel or communication and if it is still in backup or restore state.

Summary

The ABB 580 drive series control panel backup and restore ability allows for programming storage without the use of external equipment. The control panel allows for recovery as needed to backup programmed operating drive unit or replacement drive unit. The control panel backup and restore ability can be used to expedite multiple drive startup when processes are similar for same drive or different drive ratings. The control panel backup and restore ability can be used to expedite multiple drive startup when processes are similar for same drive or different drive ratings. The automatic backup allows for parameter changes and the ability to recover to drive starting state if two hours without changes have not passed.

Supporting Documents

This document is a supplement to the following drive manuals:

- 3AUA0000085685 – ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panel
- 3AXD5000027537 – ACH580 HVAC control program Firmware manual
- 3AXD50000035867 – ACQ580 Pump control program Firmware manual
- 3AXD50000016097 – ACS580 standard control program Firmware manual