

CoreTec 4 (TXpert Hub) Release 2.2



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1. CoreTec 4 (TXpert™ Hub) Software v2.2

1.1. Introduction

This CoreTec 4 software release 2.2 is a platform maintenance release that includes customer requested feature enhancements as well as improvements for functional issues related to cyber security, asset management, engineering improvements and protocol improvements.

1.2. Release Summary

The baseline release for the platform is software version 2.0. In accordance with a semi-annual release strategy, software version 2.2 has been released with additional features to the platform. Refer to the applicable release notes for these platforms to identify the functionality provided at each release.

For a full listing of platform capabilities, refer to the User Manual [1ZBK000069](#) for additional information.

1.2.1. Software Version 2.2

This package will allow upgrades from the following SW versions supported by the CoreTec hardware series.

Software Version: 1.0.3, 1.0.5, 1.0.6, 1.1.3, 2.0, 2.0.1, 2.1, and 2.1.3

The available package for this release is:

Installer-master-v2.2.0-master.img.bz2

1.2.1.1. New Features and Improvements

- Addition of DNP3 Serial outstation support
- Improved handling of Modbus timeout conditions with connected devices
- Introduced revision management strategy for previous configuration files
- Enhanced tap changer position monitoring for rapid position changes
- Addition of Modbus Multi-Master support
- Added support for additional 3rd party devices connected to the platform
- Improved support for ageing calculations using fiber optic temperature sensors
- Enabled analog output port support on the platform
- Enhanced IEC 60076-7 thermal model rating to include representation for 4 and 8 hour periods

1.2.1.2. Resolved Software Bugs

- Enhanced measurement input for the top oil sensor
- Thermal Load calculation – Zero Applied load
- GUI parameter naming clarifications

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1.3. Important Notes for Installation

1.3.1. Creating a bootable USB flash drive

Before a bootable USB flash drive can be created, the administrator needs to contact the TXpert Hub CoreTec 4 manufacturer to obtain the latest file image. This file contains a USB drive image that will automatically boot and flash any existing CoreTec hardware. There are 2 options available to place the update file on a USB Drive.

Option 1: From a Windows environment, download and open the Balena Etcher application. Once open, choose the compressed image file by selecting the “Select Image” button as represented below. This button may also say “Flash from File” Choose your USB drive from the “Select target” dropdown, then click “Flash!”.

Option 2: Utilize a Linux Console executing the following commands:

- Bunzip installer.xxxx.xxx.img.bz2
- sudo dd if=installer.img of=/dev/sdX bs=100Mstatus=progress

Just set /dev/sdX to be the device id of your USB drive (and be very careful not to overwrite your OS partition).

1.3.2. Upgrade the system using a USB flash drive

After preparing the USB drive, you can follow these steps to upgrade the system:

- 1) Access the TXpert Hub CoreTec 4 USB Port on the backside of the unit
- 2) Insert the USB Drive with the latest Software Update
- 3) Initiate a system reset via either power cycling the unit or pressing the reset button next to the USB port
- 4) Once the update is complete, the Uplink LED will either blink red for an unsuccessful update or blink green for a successful update.
- 5) Remove the USB Key containing the software update and the unit will reset itself to complete the update
- 6) Using a local PC, connect to the web interface to verify the software version in the About tab

Note: The software update process shall take several minutes to complete. During the process, it is normal behavior for the System LED to blink.

Note: After flashing, the system will boot with an IP Address that the GUI libraries are pre-compiled with: 192.168.3.20. If the client PC is connected via the expansion PC Ethernet port, ensure that the client PC has a static address to access this: 192.168.3.XX (net mask: 255.255.255.0)

If you are connected via the SCADA Ethernet port utilizing a network configured with a DHCP server, the GUI is accessible through the IP address displayed on the LCD Screen

1.3.3. Converting from CT4.0 to CoreTec 4 software Version 2 Operating Environment



UNLESS SPECIFIC ARRANGEMENTS HAVE BEEN MADE IN ADVANCE, CONVERTING AN EXISTING CORETEC SUBSYSTEM TO THE TXPERT HUB CORETEC 4 VERSION 2 OPERATING ENVIRONMENT IS AN IRREVERSIBLE EVENT

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It is imperative that the steps suggested for preserving your existing system be followed as closely as possible. If there are concerns or considerations that need to be addressed prior to performing a conversion, please contact ABB service personnel for guidance/assistance. There are several steps required to successfully convert an existing CoreTec subsystem to the new operating environment. These include:

- Preserving the existing TXpert Hub Coretec 4 Version 1 database contents
- Creating a USB flash drive that contains the new operating environment
- Loading the new operating environment using a USB flash drive
- Utilizing the ABB remote support service by means of cellular communications

1.3.3.1. Upgrade Considerations

Upgrading from CT4.0 to CoreTec 4 Software Version 2.2

When upgrading from CoreTec 4 software version 1.X to software version 2.X, all saved data is erased, including the database, configuration, and transformer algorithm state. This information can and should be downloaded from the 1.X system prior to upgrade, but there is no possibility to re-store the information to the 2.X system following upgrade. The data formats are incompatible.

Upgrading from CoreTec 4 Software Version 2.X to CoreTec 4 Software Version 2.2

When upgrading from an earlier CoreTec 4 software version 2.X to software version 2.2, all saved data is erased, including the database, configuration, and transformer algorithm state. This information can and should be downloaded from the 2.0 system prior to upgrade. Changes to the database schema have been made that impact the mapping of data between these systems.

The existing database can be restored on the 2.2 system after the upgrade, however this will require the database to be provided to HAPG personnel for data to be properly transposed into the new format. The configuration and transformer algorithm state (including thermal aging counters) cannot be restored from the 2.0 backup.

1.3.3.2. Backup of the CT4.0 Database

Prior to updating the firmware/software on the CoreTec hardware, it is vitally important that the contents of the existing database be preserved for future use.

Page 49 of the CoreTec 4 Version 1 Users' Manual, document number AA018426-01 describes how the content of the existing database can be preserved on an external device. The contents of this page are presented below for the reader's convenience.

It is recommended that the entire database be preserved as a .csv file. To ensure data integrity, it is suggested that two backups be created.



SINCE TXPERT HUB CORETEC 4 VERSION 1 DOES NOT ALLOW FOR A SINGLE DOWNLOAD OF ITS ENTIRE DATABASE, THE USER WILL NEED TO CREATE SEVERAL BACKUP FILES TO CAPTURE THE COMPLETE DATASET FOR THEIR EXISTING SYSTEM.

The CoreTec 4 equipment records various types of data. You access this data from the **Events** and **History** tabs on the menu bar (See Figure 14 on Page 25). From these tabs, you can also export

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data for further analysis outside the equipment. Data is exported in comma-separated format (*.csv).

To export data outside the CoreTec 4:

- 1) From the CoreTec 4 dashboard, select **Events** and **History** tab.
- 2) Select a time range. You can select a predefined range or create a custom one
- 3) (If on the **History** tab) Select data to export on the left of the graph area.
- 4) Click **Export**. A dialog box appears, asking you to select the location where the **.csv** file will be exported
- 5) Click Save. The data is saved in the location that you selected.

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2. Additional Information

2.1. Listing of related documents

Ref #	Document Kind, Title	Document No
1	TXpert™ Hub CoreTec 4 Software Version 2 Manual	1ZBK000069
2	TXpert™ Hub CoreTec 4 Software Version 2.1 Release Notes	1ZBK000083

2.2. Revisions

Rev.	Page (P) Chapt. (C)	Description	Date Dept./Init.
V2.10		Initial Document Release	12/16/2020
V2.1.3	(C) 1.4.2, (C) 1.5.3	Update to include new features from Release 2.1.3 New Section	2/11/2021
V2.2	(C) 1.2	Revised document for SW version 2.2 release	6/8/2021

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