

Danfoss Turbocor® Twin-Turbine Series Centrifugal Compressors





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List of Changes

Revision	Date	Page	Description of Change
C	03-28-2022	-	Complete Update
C.1	7-19-2022	14	Added Figure 3-3 and Reset note.
C.2	9-18-2026	-	Complete update to include TT/TG Series Compressors

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Chapter 1.0 Introduction

1.1 Purpose

The purpose of this manual is to provide instructions on how to transfer firmware and configurations into the TT and VT Series electronics via the Compressor Configuration Management System (CCMS) Toolkit.

The following tasks are described:

1. CCMS Toolkit initial setup
2. Transferring firmware and/or configuration to the electronics
3. Viewing History
4. Saving default actions
5. Restore default actions
6. Performing optional actions only

1.2 Scope

These procedures are applicable to the Danfoss Turbocor TT and VT Series compressors.

The CCMS Toolkit is designed to support transfers via a PC COM Port connection (via USB, RS-485 or RS-232) to the electronics.

1.3 Connection Setup

- PC or Laptop with a USB, RS-485 or RS-232 connection to the Compressor Interface Module (CIM) or I/O Board
- Danfoss Turbocor® Compressors (DTC) CIM USB Driver installed (Required for USB connection only)
- The CIM must be properly connected to power

Figure 1-1 VT Series Connection Setup

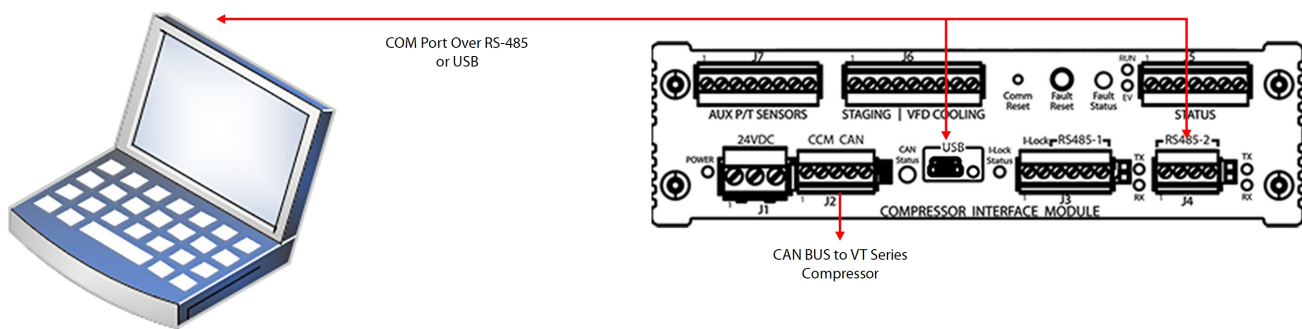
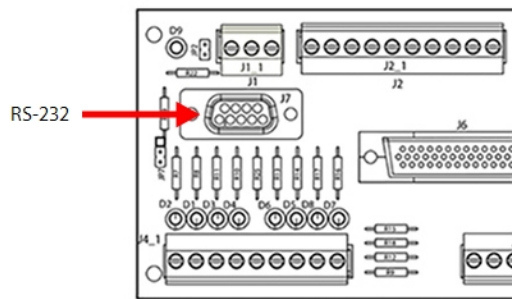
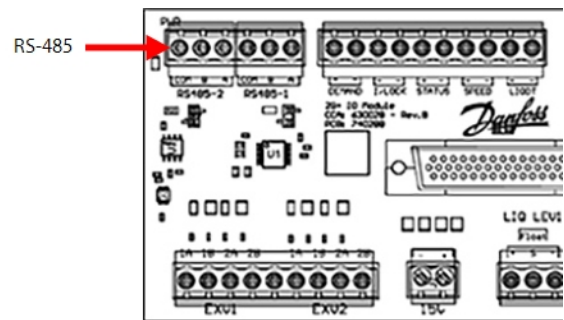


Figure 1-2 TT Series Connection Setup



Standard RS232 I/O Board



Dual RS485 I/O Board

Chapter 2.0 Computer Requirements

2.1 General Computer Requirements

- Framework: .NET Framework Version 4.5 or later
- Operating System: Microsoft Windows 10 (32-bit or 64-bit) or later
- Hardware: 1.0 GHz or higher CPU, minimum OS-required RAM. Hard-disc needs to have 20 MB or more free space available
- USB Adapter driver to RS-232 installed for TT Series Compressors or to RS-485 for VT Series Compressors
- For optimal viewing, the minimum display resolution should be set at 1024x768 with 100% DPI, high-color display (or better)

2.2 Required Items Before Utilizing CCMS Toolkit

- Folder containing necessary (.dtcc) configuration packages provided by DTC Applications Engineering

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Chapter 3.0 Tasks

3.1 CCMS Toolkit Initial Setup

1. When the application is first loaded, the **Settings** tab is shown (if it hasn't been setup).
2. If settings have already been set up for a current user in this PC, then the **Program** tab is shown.
3. Under the **Settings** tab, choose the **Packages Directory** that contains the necessary dtcc configuration packages.
4. Select the **Modbus** port settings as per the connection setup to the electronics.
5. Click **Save** to save the current settings.

NOTE

This is an important step and must be completed.

6. A dialog confirming the save is shown. Click **OK**.
7. CCMS Initial setup is now complete to perform.

NOTE

The settings need to be changed if the communication ports or settings change, or if the packages are in a different directory.

3.2 Connecting the Compressor to the CIM (VT Series) or I/O Board (TT Series)

1. Connect Laptop.
 - To connect your laptop to the CIM, use either the RS485 connection (via a RS485 to USB Type A adapter) or the RS232 port (using a RS-232 to USB Type A adapter). Refer to Figure 3-1 CIM Connection
 - To connect your laptop to the I/O Board, use an appropriate USB to Serial Port Cable Adapter. Refer to Figure 3-2 I/O Board Connection on page 14

Figure 3-1 CIM Connection

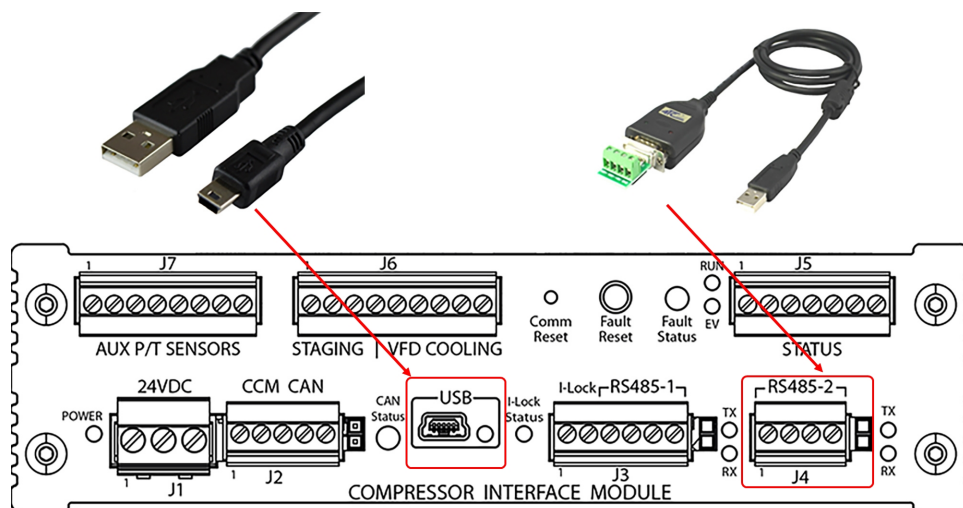
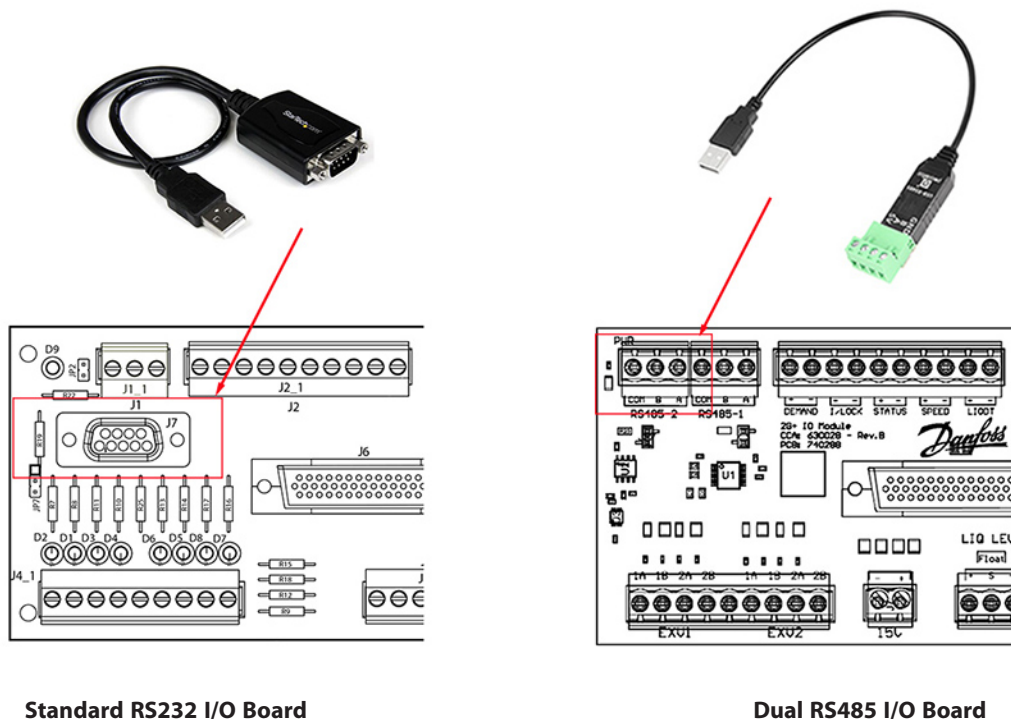


Figure 3-2 I/O Board Connection



2. For VT Series Compressors, remove the Programmable Logic Controller (PLC) cable from the RS485-1 from the J3 connector on the CIM. For TT Series Compressors, remove the Programmable Logic Controller (PLC) cable from the RS485 J1 connector and from the J2 Interlock connector on the I/O Board.

NOTE

The compressor cannot be connected to both the Service Monitoring Tool (SMT) and the CCMS Tool at the same time.

• • • CAUTION • • •

- Failure to remove the PLC cable from J1 (RS485) and from J2 (interlock) will result in data corruption!
- Failure to remove the PLC cable from J3 (Interlock and RS485-1) will result in data corruption!

3. Open the CCMS Toolkit by clicking on the CCMS Toolkit icon.

Figure 3-3 CCMS Toolkit Icon



3.3 Transferring firmware and/or configuration

1. Select the **Program** tab.
2. On the **Enter Part Number** text field, enter the part number that you wish to configure on the electronics.
3. If a configuration file for the entered part number is found, the application will display the package information and clear selections on the Action section. "No Packages Found" text will be shown if a package for the part number cannot be found in the package's directory.

NOTE

To change the search directory, go to the Settings tab.

4. Select an Action you wish to perform.
5. Click **Start** to begin the action.
6. A loader screen is shown with progress bar while the action is in progress. Once the process completes, a message box indicating the status is shown.
7. After the download has completed, **cycle the power to the compressor**.

NOTE

Power should not be reapplied to the compressor until all TT/TG I/O Board or VT CIM LEDs are off.

... CAUTION ...

Neglecting to cycle power to the compressor, could result in the compressor not being fully configured as expected.

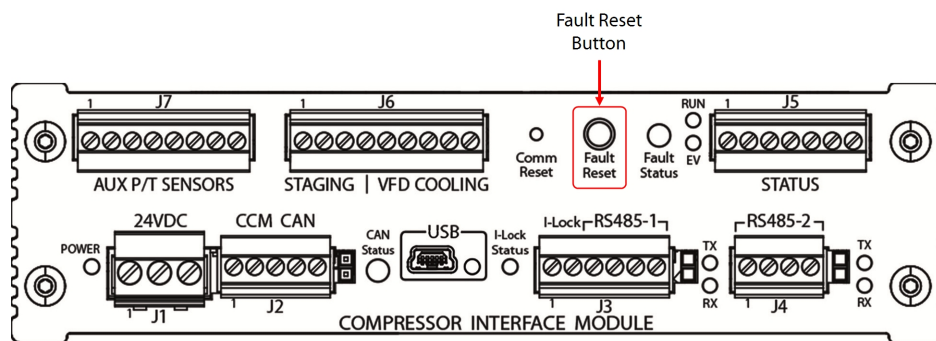
8. Once power is reapplied, connect to the compressor using the SMT. For the VT Series, validate the Compressor Control Module (CCM) and CIM Version as well as the Config Part Number. For the TT Series, validating the Software Part Number and Configuration Extension are identical to the filename of the .dtcc file provided.

NOTE

****This Note only applies to VT****

If there is a loss of communication between the laptop and compressor at any point in the download, the firmware can become locked. This will be evident by the inability to connect to the compressor via the SMT after the failed firmware update. In order to restart the download process, depress the Fault Reset button on the CIM five times in rapid succession. This action will place the electronics back into "boot mode" which will allow the firmware download process to be restarted.

Figure 3-4 CIM Reset

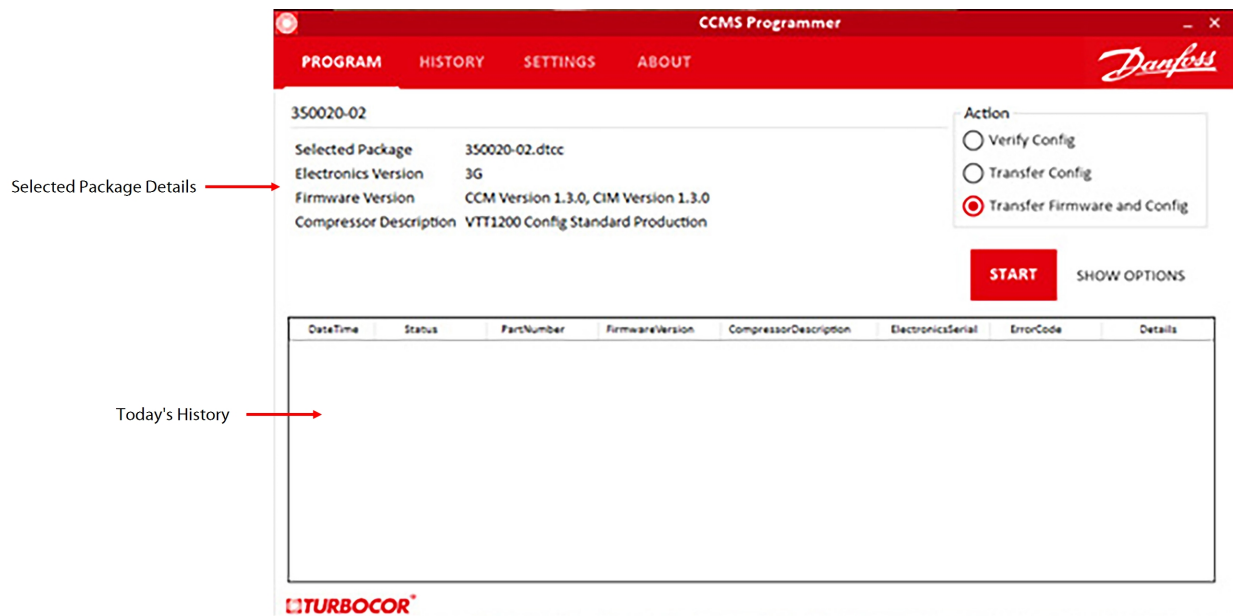


Chapter 4.0 User Interface

4.1 Program Tab

Main page of the application used to select a package and perform an action.

Figure 4-1 Program Tab



IMPORTANT NOTES:

- The part number text box will receive focus as soon as the user enters the part number, even if the focus is currently on a different tab or control.
- The application will start searching almost immediately for the part number in the Packages directory. The user can continue typing more characters to include the revision if necessary.
- User can either search using part number (#####) or part number with revision (#####-###). If only the part number is entered, the application will choose the latest revision for that part number in the Packages directory.
- The Part Number text box will clear once the user hits **Start** button.

Action Definitions:

- **Verify Config** action is used to compare configuration in the electronics with the configuration package and any optional actions if set. No Default optional actions.
- **Transfer Config** action is used to transfer configuration from package to the electronics and any optional actions if set. Default Optional actions: Sync Clock.
- **Transfer Firmware and Config** is used to transfer firmware and configuration from package to the electronics and any optional actions if set. Note: This is only available on 3G electronics.
- Default Optional actions for 3G: Sync Clock.



4.2 History Tab

Shows history of actions performed in the past. It will retain information in logs even if application is restarted.

Figure 4-2 History Tab

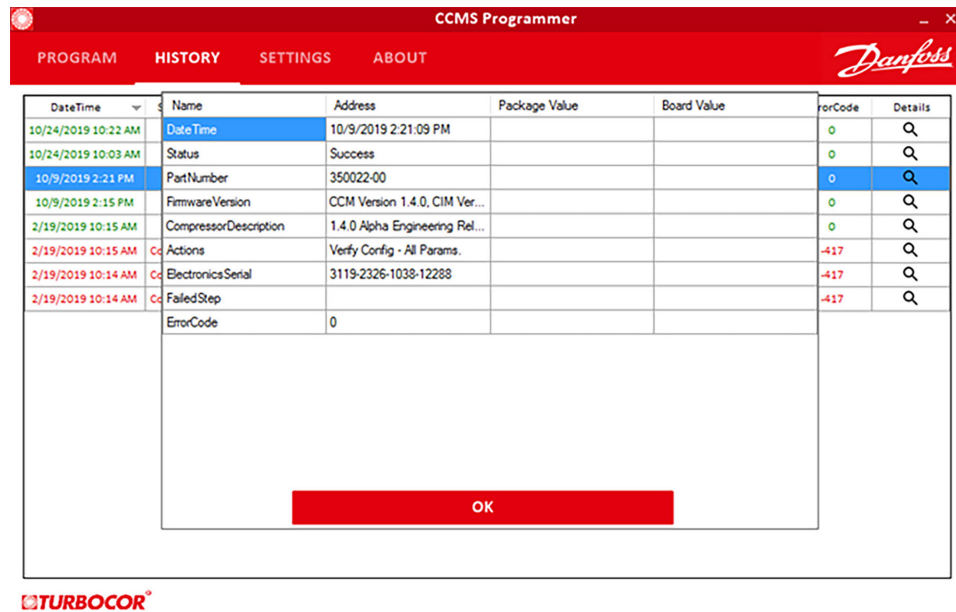
CCMS Programmer							
PROGRAM HISTORY SETTINGS ABOUT							
Danfoss							
DateTime	Status	PartNumber	FirmwareVersion	CompressorDescription	electronicsSerial	ErrorCode	Details
4/20/2018 4:02 PM	Firmware tr...	350020-00	CCM Version 1.3.0, CIM Version 1.3.0	VTT1200			Q
4/20/2018 4:00 PM	Firmware tr...	350020-00	CCM Version 1.3.0, CIM Version 1.3.0	VTT1200			Q
4/20/2018 3:59 PM	Firmware tr...	350020-00	CCM Version 1.3.0, CIM Version 1.3.0	VTT1200			Q
TURBOCOR							

NOTE

Electronics Serial is only shown for Verify Config, Transfer Config, and Transfer Firmware and Config Actions.

A pop-up menu will appear when clicking on the **history details icon**. This will provide details and verification differences.

Figure 4-3 History Details

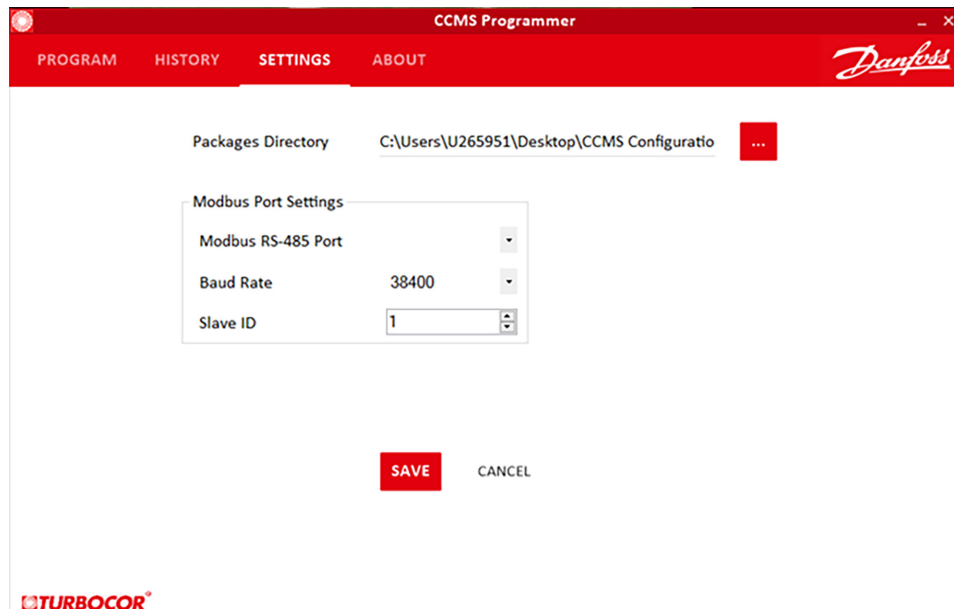


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4.3 Settings Tab

Packages Directory and Communication settings can be updated using the Settings tab.

Figure 4-4 Setting Tab



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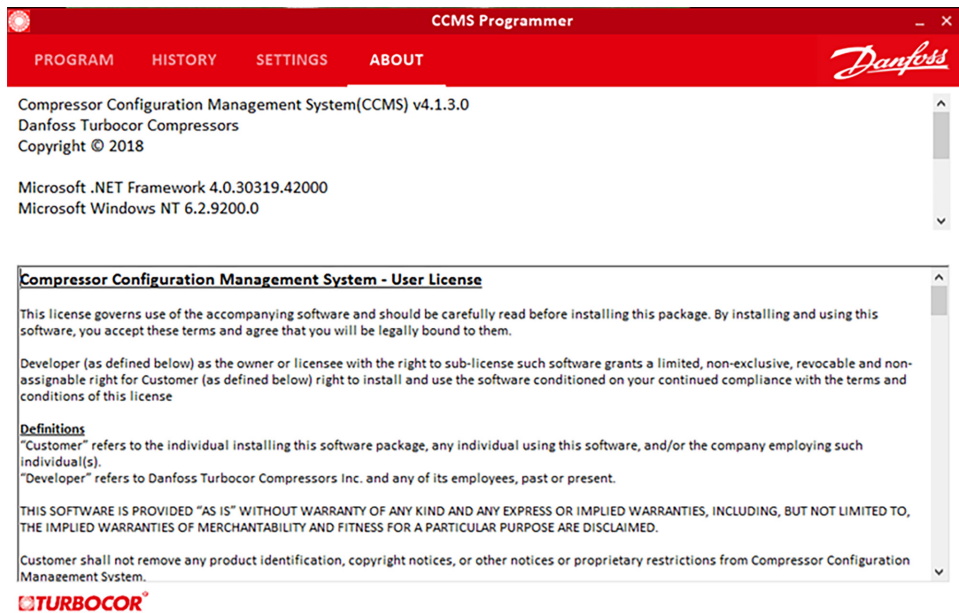
IMPORTANT NOTES:

- Only currently available COM Ports will show in the Modbus and Service port dropdowns
- A path to the directory can be entered via the text box, or the browse (...) button can be used to choose the directory
- The Toolkit will look up all (.dtcc) configuration package files in the selected directory and all its sub-directories

4.4 About Tab

CCMS Version and License information is shown here

Figure 4-5 About Tab



Appendix A Acronyms and Terms

Table A-1 Acronyms and Terms

Acronym/Term	Definition
CCM	Compressor Control Module.
CCMS	Compressor Configuration Management System.
CIM	Compressor Interface Module; the part of the compressor electronics where the user connects all field connection wiring such as RS-485, EXV, and analog / digital wiring. Also known as the I/O board.
COM	Communication Port.
DTC	Danfoss Turbocor Compressors.
LED	Light-Emitting Diode.
LLC	Limited Liability Company.
Modbus	www.modbus.org, Modbus is a serial communications protocol published by Modicon in 1979 for use with its programmable logic controllers (PLCs). It has become a de facto standard communications protocol in industry, and is a commonly available means of connecting industrial electronic devices.
PC	Personal Computer.
PLC	Programmable Logic Controller.
SMT	Service Monitoring Tool.
USB	Universal Serial Bus.



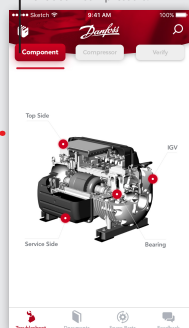
Quick access to Danfoss Turbocor® compressor troubleshooting.

The new version of the **Danfoss TurboTool® 2.0** app for all your full service Danfoss Turbocor® compressor needs.

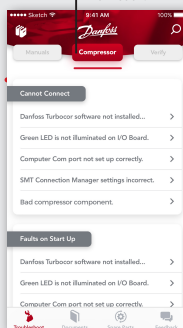
24/7

Access to Danfoss
Turbocor®
compressor
troubleshooting on
site

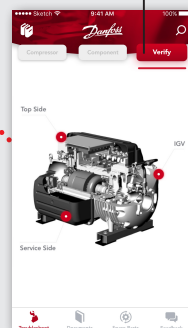
The TurboTool® app makes it easy for technicians to troubleshoot issues on Danfoss Turbocor® compressors.



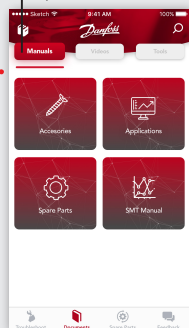
The user can select from a list of symptoms in the app that match the problems exhibited by the compressor being serviced. The app will then list potential causes, solutions to the problem, and service literature for reference for further information.



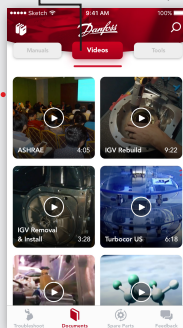
The app provides the correct operating parameters for key components; no need to keep reference documents on hand.



You no longer need to keep hundreds of pages of parts catalogs and training manuals. With the app, all of this information is at your fingertips on your smart device.

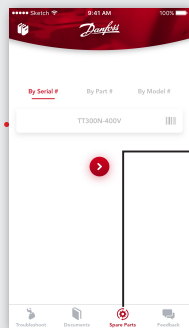


With the app, you can access videos made by Danfoss Turbocor® that demonstrate how to remove, install, and rebuild key components on Danfoss Turbocor® compressors.



Documents
& Video

Spare Parts



TurboTool® helps you to quickly identify the required spare parts. A quick scan of the compressor serial # using your smartphone camera or by entering the part # or model #, and the app will display potential spare parts kits.

Download the
2.0 app today!



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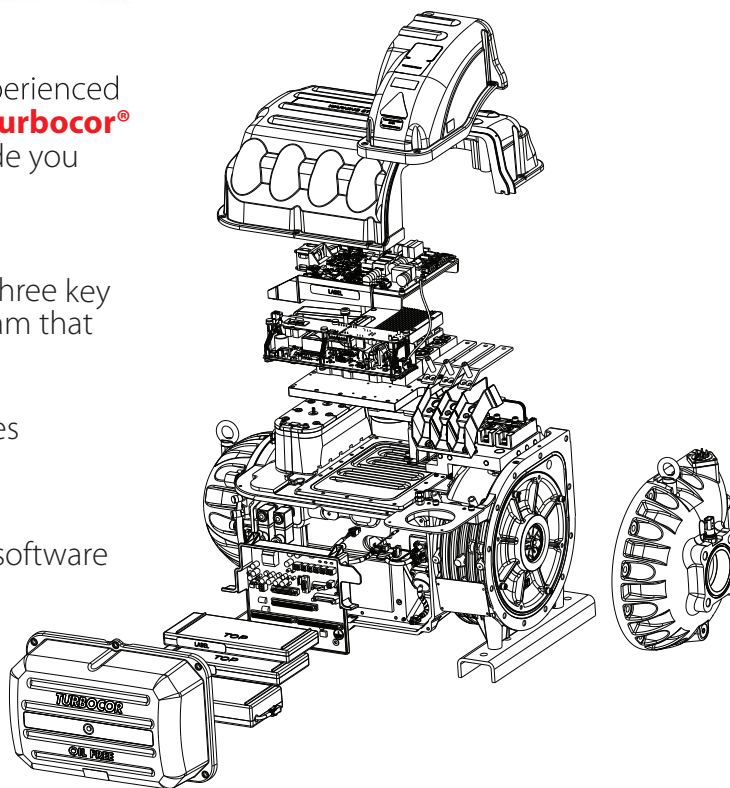
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