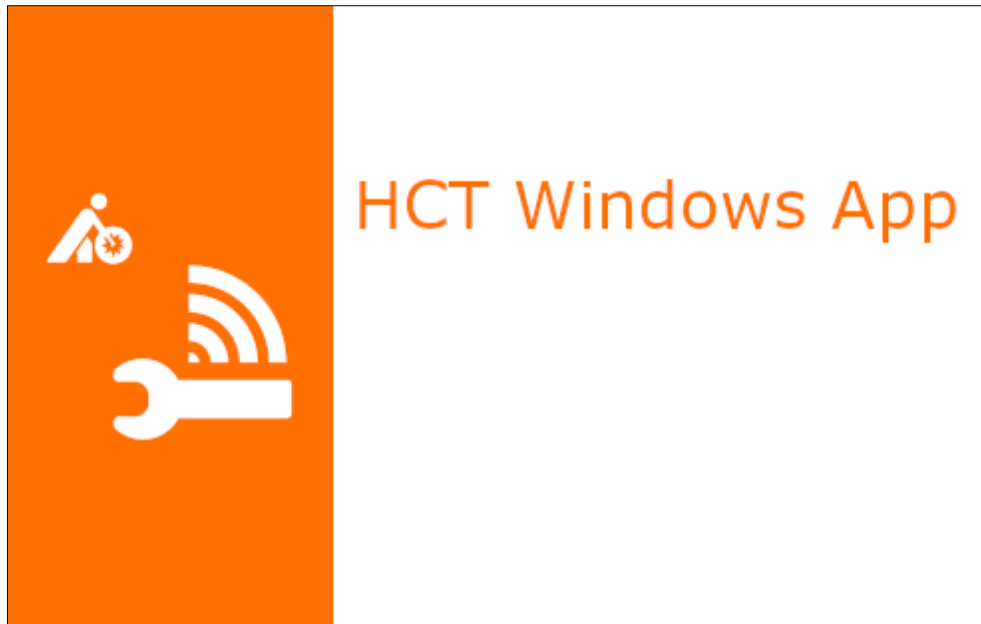


# HCT Windows App



## User Manual

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## 1 Identification data

Product: HCT Windows App valid from version 1.4  
Version: 0013 original user manual  
Creation Date: 01/2023

## 2 Safety instructions

Please read and follow these instructions to avoid hazards.

### 2.1 Target group

All activities described in this user manual may only be carried out by trained and qualified personnel authorized by the plant operator.

### 2.2 User Guide

Please read this user manual carefully before use to prevent failures in the handling of the software or the HCT dongle. This ensures safe handling. The user manual must be stored carefully and must be always available for the user.

### 2.3 Proper use

The HCT dongle must only be connected to a suitable free USB port of a PC with Windows operating system. After use, unplug the HCT dongle to prevent it from being left unattended. The HCT dongle must only be used in dry rooms and must be protected from heat, cold and wet conditions.

The HCT dongle is not suitable for children. The HCT dongle must never be operated and left unattended.

The HCT dongle may only be used for the use described in the user manual.

### 2.4 Accessories

The HCT dongle, item no. 498999, is required to operate the HCT Windows App. This dongle provides the Bluetooth wireless technology.

### 3 The HCT Windows App - An overview

The HCT Windows App allows you to connect your HCT tools to a computer system via Bluetooth. A bidirectional connection is established with which data can be sent from the HCT Windows App to the HCT tools and the generated measurement values are transmitted back to the computer. In addition to the system requirements, your computer system only needs to have a free USB slot where you can plug in the HCT dongle.

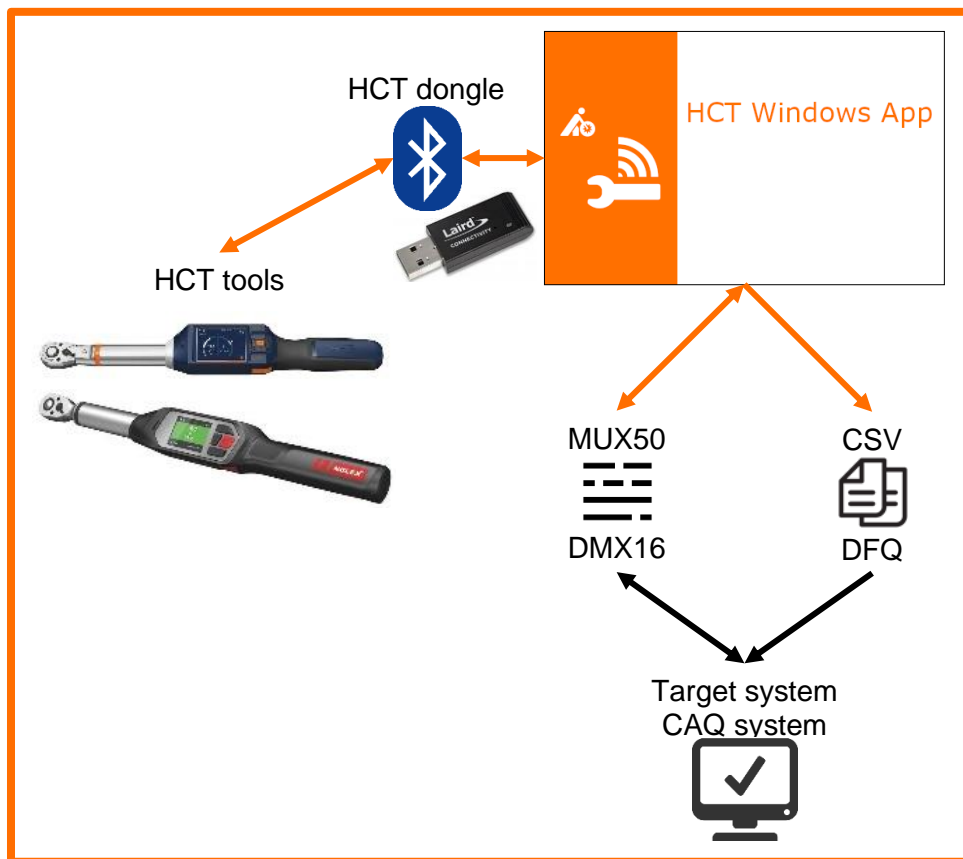
You can connect up to 16 HCT tools to the HCT Windows App. The measurement values are displayed on the screen and saved in measurement protocols in CSV file format.

Additionally, you can create measurement cases and save and manage them in the HCT Windows App and assign them to a suitable HCT tool at any time if required. Even if you add or replace an HCT tool, the measurement cases already created are available for the new HCT tool.

In the sense of worker guidance, working plans can be created and processed, whereby the respective tool whose turn it is signals this. In addition, a workpiece identification can be linked to the sequence plan. You can support your personnel by integrating pictures, drawings etc. for each work step through the sequences. In this way, you avoid errors and ensure complete documentation.

The HCT Windows App can, of course, transmit the measurement data directly to other systems such as CAQ systems or forward them via files. The established and widely used data transmission protocols MUX50 and DMX16 are available for this purpose. For data transmission via files, the HCT Windows App uses the CSV and DFQ formats (also known as AQDEF).

## 3.1 System overview



## 3.2 System requirements

The computer system on which you want to install the HCT Windows App must have the following system requirements:

- PC with operating system Windows 10 or later installed, and .NET **Desktop** Runtime 5.0.17 for **x86** installed:

### .NET Desktop Runtime 5.0.17

The .NET Desktop Runtime enables you to run existing Windows desktop applications. **This release includes the .NET Runtime; you don't need to install it separately.**

OS	Installers	Binaries
Windows	<a href="#">Arm64</a>   <a href="#">x64</a>   <a href="#">x86</a>	

You will find this under the following link:

<https://ho7.eu/win-app-hct> or

<https://dotnet.microsoft.com/en-us/download/dotnet/5.0>

- One available USB slot for the HCT dongle. Since the HCT dongle includes the Bluetooth wireless technology, make sure that the HCT dongle is not shielded by sheet metal parts, cabinet walls etc.
- You must have local administrator rights to install the HCT Windows App. These are no longer required to operate the HCT Windows App.

The HCT tools must meet the following requirements:

- Garant electronic torque wrench DTW: Firmware version 3.31 or higher and BLE version 0.89 or higher.
- Hoxle electronic torque wrench TW: Firmware version 1.1.4 or higher and BLE version 1.2.19 or higher.

## 4 Installation

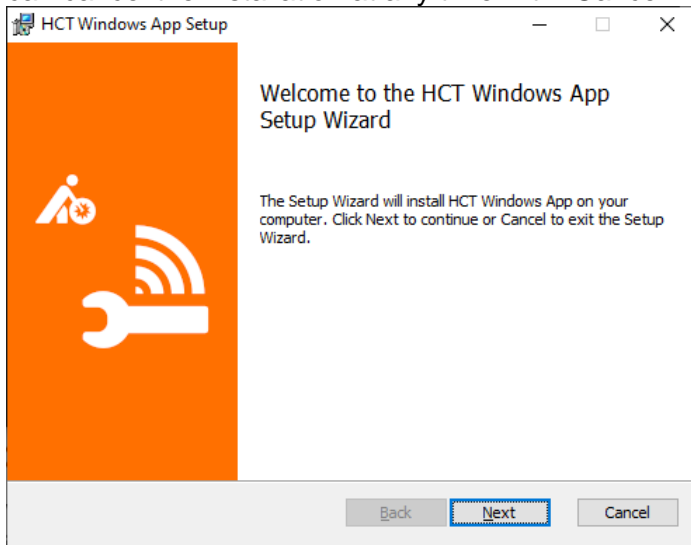
You must have local administrator rights to install the HCT Windows App. If you do not have them, please contact your system administrator.

Before installing the HCT Windows App, please ensure that the .NET Desktop Runtime 5.0.17 for x86 is installed. The links for this can be found in chapter "3.2 System requirements".

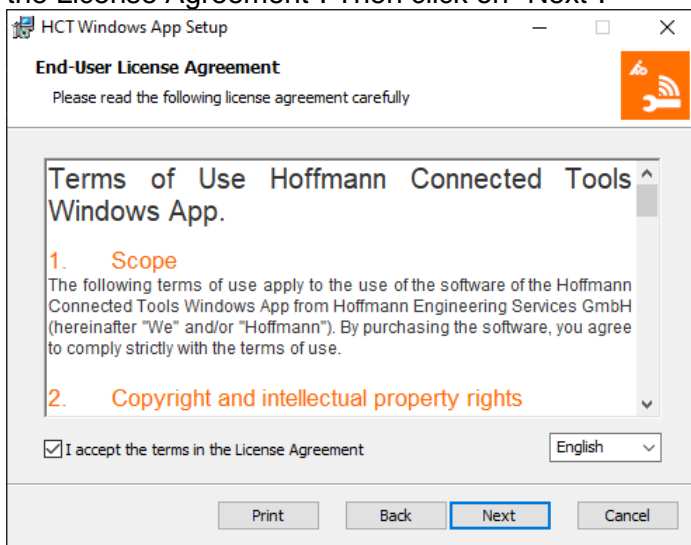
Download the installation package onto the computer on which you want to install the HCT Windows App.

Unzip the installation package into a suitable folder (for example, "Downloads\HCT Windows App\").

Install the HCT Windows App by double-clicking the installation file "HCT Windows App Setup vx.x.x.msi" (x.x.x is the version number of the HCT Windows App) in the above mentioned folder. The installation wizard starts and guides you through the installation. You can cancel the installation at any time with "Cancel". To continue, click "Next".

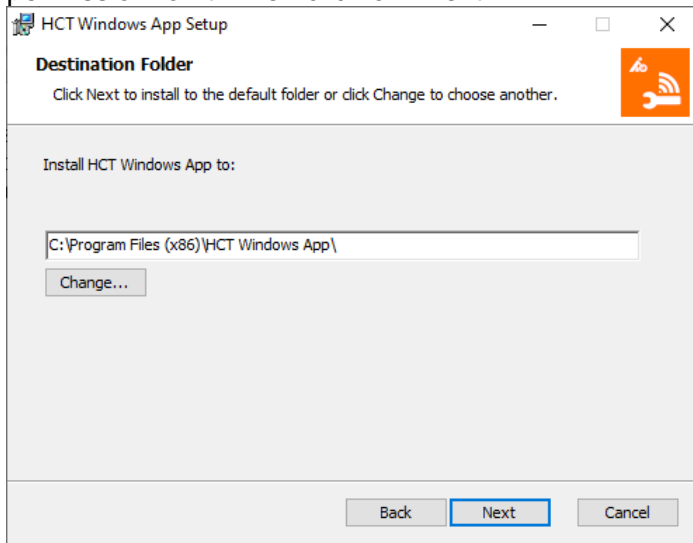


In the next step, select the language in which you want to read the Terms of Use. You can print the Terms of Use by clicking "Print" and following the instructions. To continue with the installation, you must accept the Terms of Use and tick the box before "I accept the terms in the License Agreement". Then click on "Next".



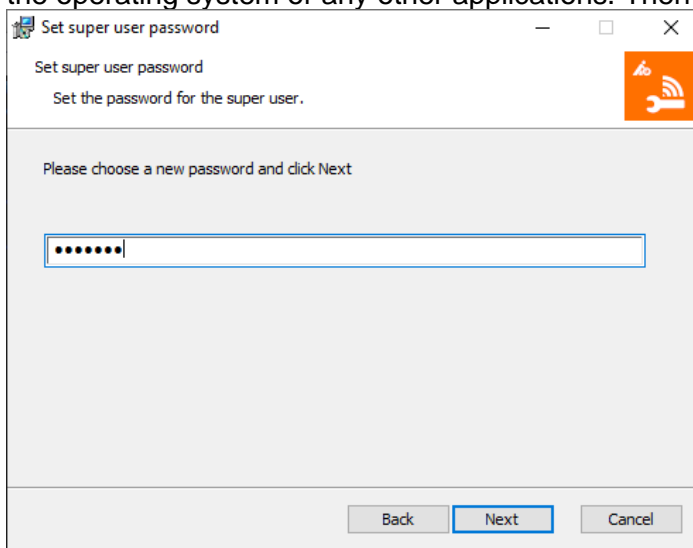
## HCT Windows App

You will now be asked in which folder to install the HCT Windows App. If you want to use a folder other than the one proposed, make sure that the installation wizard has write permission for it. Then click on "Next".



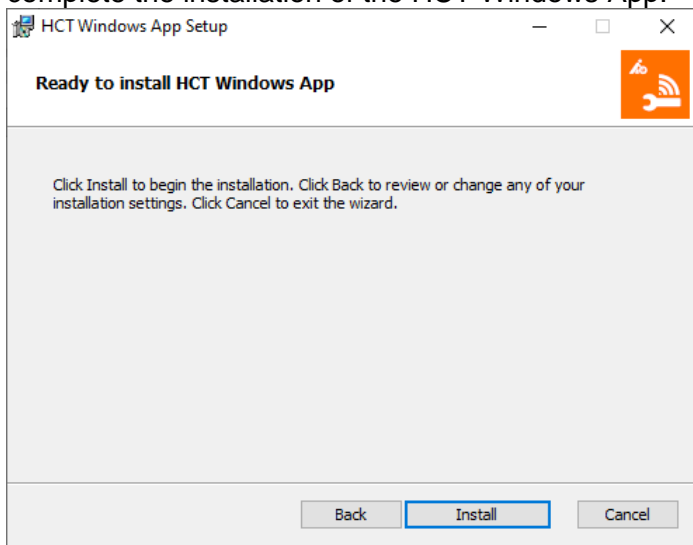
### 4.1 Set super user password

In this step, set a password for the super user. To be able to make far-reaching changes in the settings of the HCT Windows App later, you must log in as super user and use the password to be set therefore here. It is only valid for this purpose and has no relevance for the operating system or any other applications. Then click on "Next".

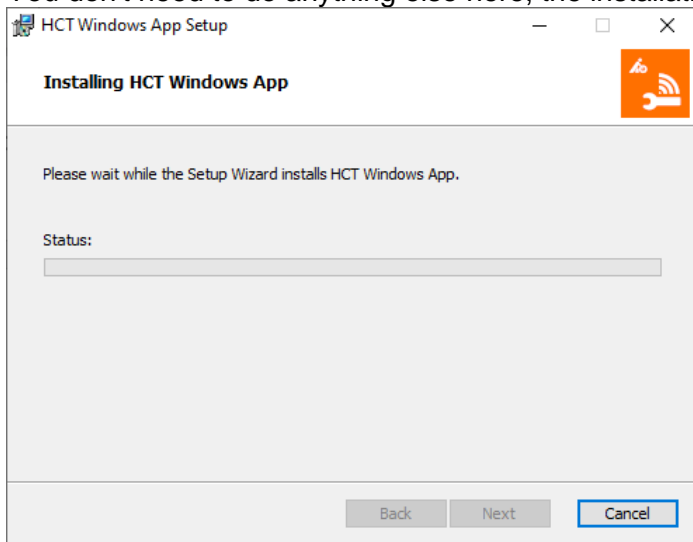


## HCT Windows App

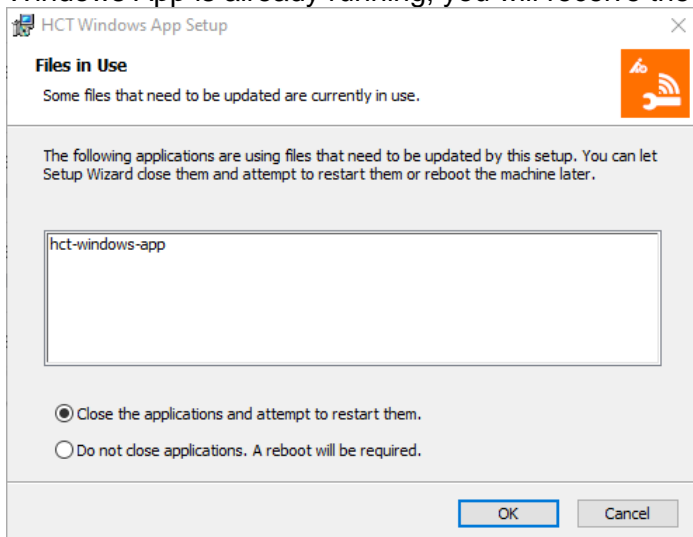
You have now completed all the settings and the installation wizard is ready. Click "Install" to complete the installation of the HCT Windows App.



You don't need to do anything else here, the installation wizard shows you the progress:



If you install a new version on the PC on which an installation already exists and the HCT Windows App is already running, you will receive the following message:

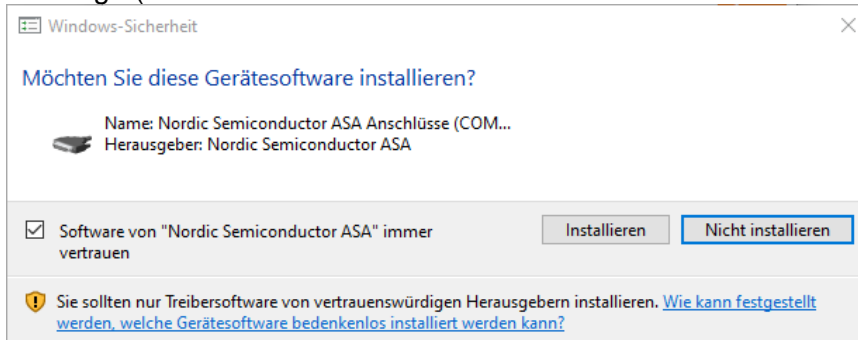




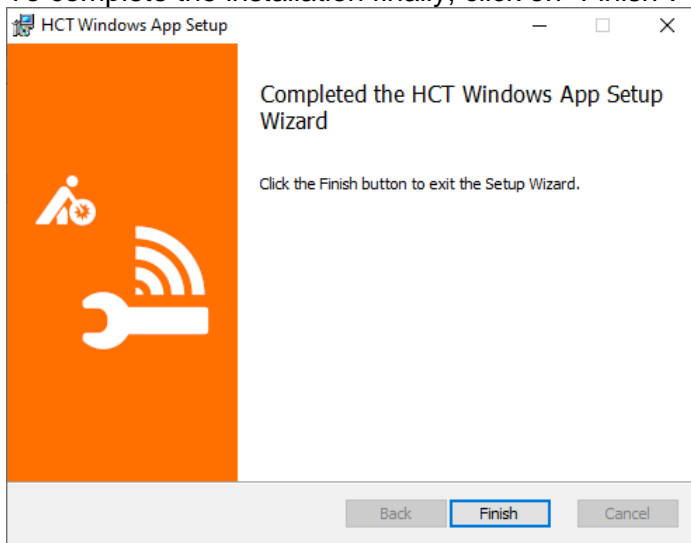
## HCT Windows App

We recommend that you let the installation wizard close the running HCT Windows App and let the installation continue. Leave the selection to "Close the applications and attempt to restart them.". If you cannot close the HCT Windows App that is already running, select "Do not close applications. A reboot will be required." However, keep in mind that in this case a restart of the computer is required after the installation. Click "OK".

When you install the HCT Windows App on your PC for the first time, the device software (driver) for the HCT dongle is usually missing. The installation wizard checks the system for the presence of the device software and if it is not yet installed, it shows you the following message (the screenshot is similar due to the German Windows installation):



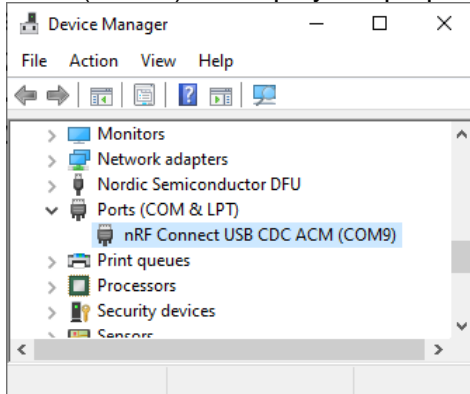
Since the HCT dongle will not work without this device software, tick "Always trust software from "Nordic Semiconductor ASA" and then click on "Install". To complete the installation finally, click on "Finish":



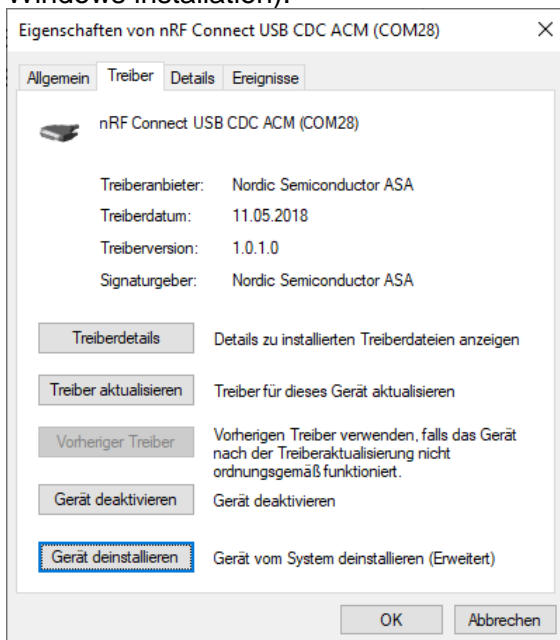
Plug the HCT dongle into an available USB slot on your computer. Note that the HCT dongle includes the Bluetooth wireless technology. Therefore, make sure that the dongle is not shielded by sheet metal parts, control cabinet walls or the like, as otherwise you will not be able to establish connections, or the range of the wireless connections will be severely restricted.

## 4.2 Uninstalling the device software

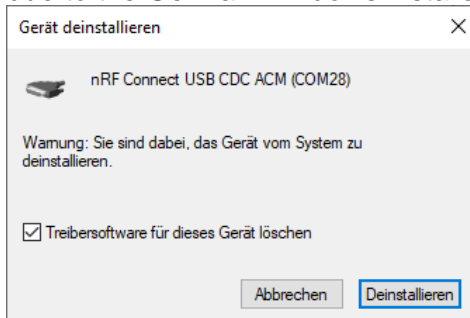
The device software remains on the PC and is not removed when the HCT Windows App is uninstalled. If you want to uninstall the device software, you must do this via the Windows device manager. To do this, plug in the HCT dongle into a USB slot and start the device manager. Open the folder "Ports (COM & LPT)". Double-click on "nRF Connect USB CDC ACM (COM9)" to display the properties:



Click on "Uninstall Device" in the "Driver" tab (the screenshot is similar due to the German Windows installation):



Tick "Delete driver software for this device" and click on "Uninstall" (the screenshot is similar due to the German Windows installation):

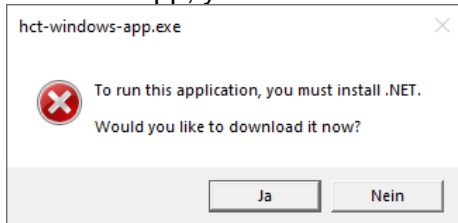


The device software is now uninstalled and the HCT dongle can be unplugged.

## 5 First launch of the HCT Windows App

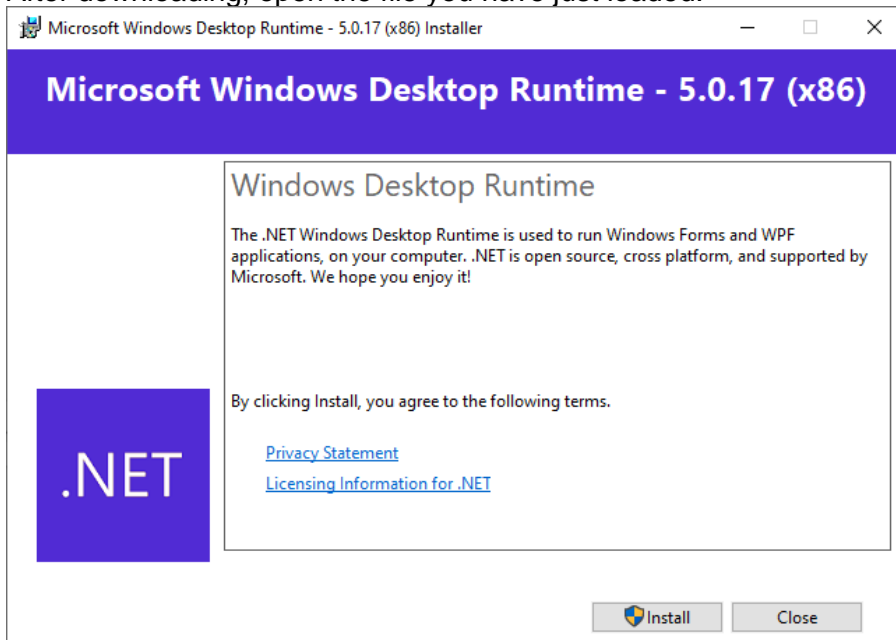
### 5.1 Checking for installation of the .NET Desktop Runtime

If the .NET Desktop Runtime 5.0.17 for x86 was not installed before installing the HCT Windows App, you will receive the following error message:



Click on "Yes" here, you will be redirected to the .NET website and the download of the .NET 5.0 Desktop Runtime (v5.0.17) - Windows x86 Installer will start. After the download, open the file you have just downloaded:

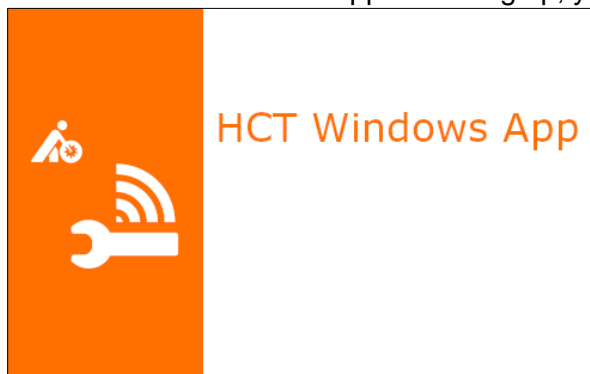
After downloading, open the file you have just loaded:



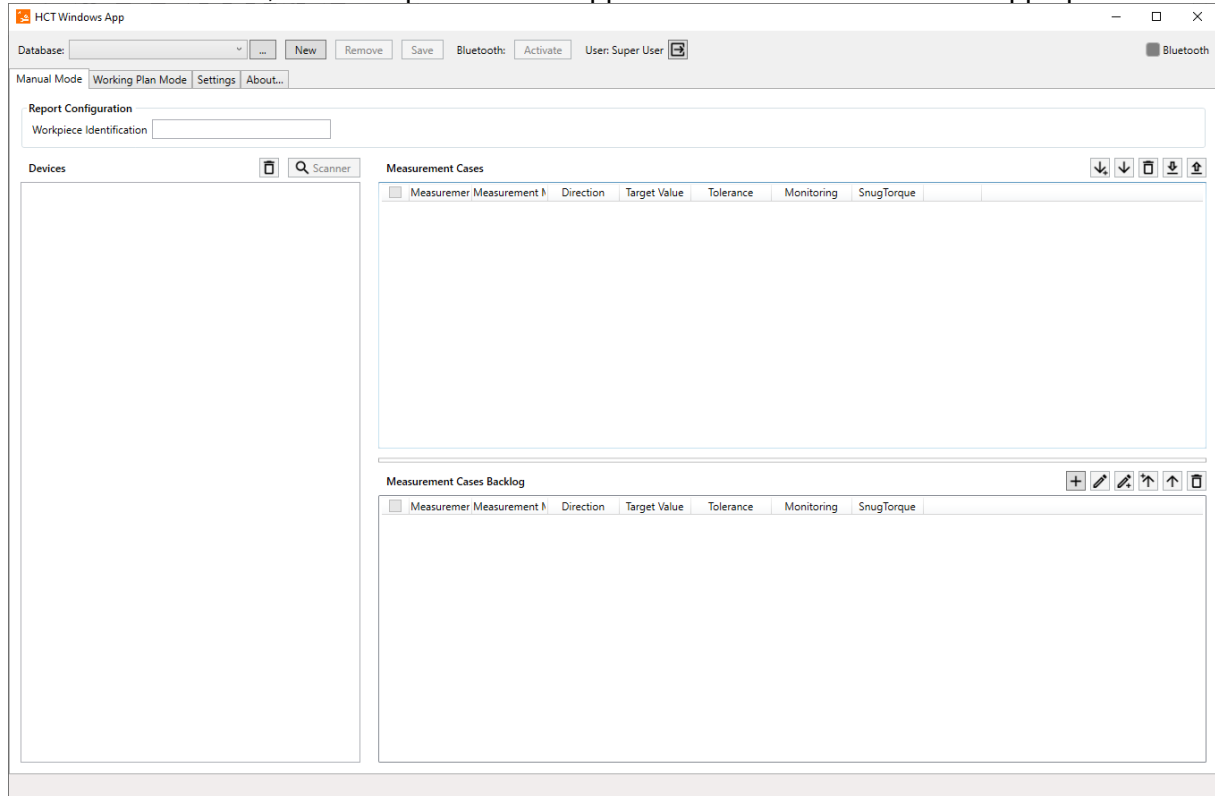
Install the .NET Desktop Runtime 5.0.17 for x86 by clicking on "Install" and following the instructions of the installation wizard.

Now restart the HCT Windows App.

While the HCT Windows App is starting up, you will see the startup window:



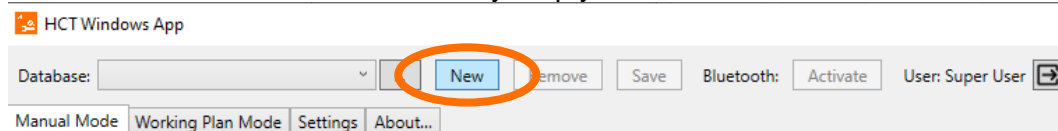
After a few seconds, the startup window disappears and the HCT Windows App opens:



### 5.2 Create database

The HCT Windows App saves all settings, working plans etc. in a database. After the first installation, you must create such a database. You must be logged in as "Super User" to be able to create, change or remove databases.

The field next to "Database:" is initially empty. Click on "New":



In the dialogue that now opens, assign a folder for the database.

The default filename is "Database.xml". If necessary, you can change the filename and the storage location accordingly. In this way, the HCT Windows App allows you to create several databases and switch between them, for example, one database for setting and testing purposes and another for the production process.

Make sure that the HCT Windows App has full access rights to this folder. The default setting is "C:\Users\Public\Documents\hct-windows-app\Customer Files". This folder provides full read and write access on standard Windows systems.

Finally, click on "Save".

To change the database and use an existing database, click on "..." on the right side of the database name field. Select the relevant storage location and the database to be used and open it.

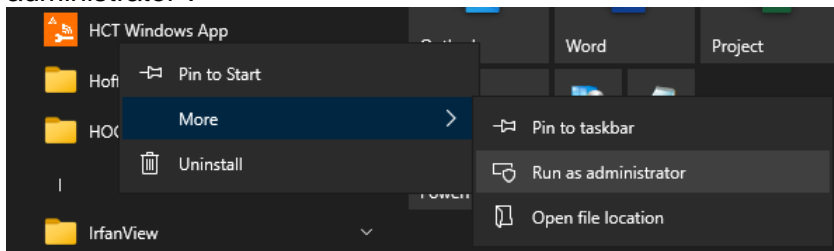
### 5.3 Manage Users


The HCT Windows App allows you to use two user types. As "Super User", you have full access rights and can change all settings. This user type is intended for setting up the HCT Windows App. Note that the "Super User" in the HCT Windows App is **not** the Windows administrator!

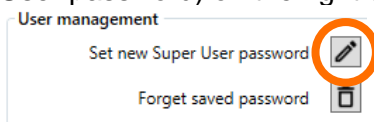
The user "Operator" is intended for later use of the HCT Windows App in production. This user type restricts the changes to the settings so that no tool-relevant parameters or working plans can be modified.



#### 5.3.1 Set Super User password newly

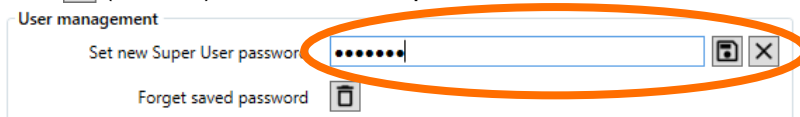
Run the HCT Windows App as administrator. To do this, right-click on the entry "HCT Windows App" under H in the Windows start menu. Select "More" and "Run as administrator":



After starting the HCT Windows App, go to the tab "Settings" and click on  (Set new Super User password) on the right of "Set new Super User password" under "User Management":



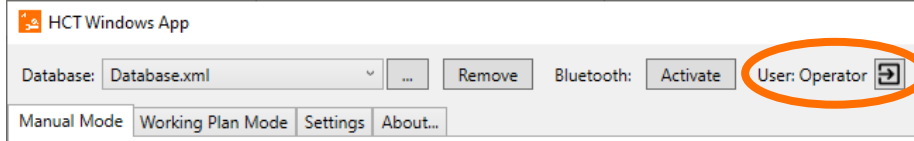
Enter your password in the text field that appears now and save it by clicking on  (Save). Use  (Cancel) to cancel the operation:




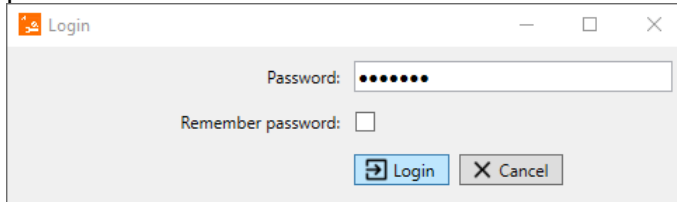
Please note that your settings are saved separately when running the HCT Windows App as **Windows Administrator**. If you later launch the HCT Windows App without administrator rights on your PC, the settings are not applied, but are saved separately. However, the password you set as described above will remain valid.

### 5.3.2 Set up the HCT Windows App as "Super User"

The HCT Windows App starts with the user "Operator":




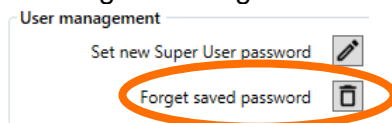
To set up the HCT Windows App and make far-reaching settings, you must login as "Super user". Click  (Login) to the right of "Operator". You will now be prompted for your Super User password, that you defined before as described in the chapter "5.3.1 Set Super User password":



To switch between "Super User" and "Operator" without entering the password during setup, check "Remember password"

Click "Login".

You can remove the remembered password so that the users "Operator" cannot change anything. Go to the tab "Settings". In "User management", click  (Forget saved password) to the right of "Forget Saved Password":



To login again as "Super User" with the password already assigned, proceed as described in this chapter.

You can set a new password as described in chapter "5.3.1 Set Super User password newly".

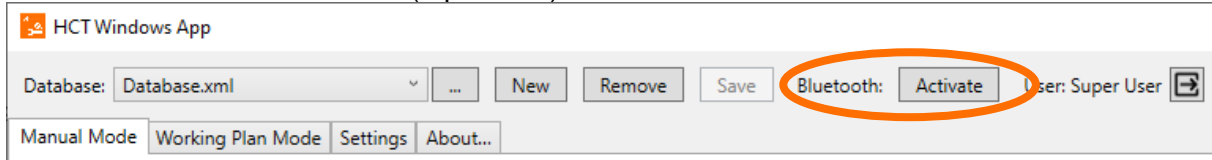
## 5.4 Connect HCT tools

You must be logged in as "Super User" to connect HCT tools.

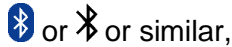
Check in the input field next to "Database:" whether you have selected a database. If not, select a database with the "..." symbol to the right of the input field or create a new database with "New" as described in chapter "5.2 Create database".

The Bluetooth wireless technology cannot be activated without a database.

Click on "Bluetooth: Activate" (top center):



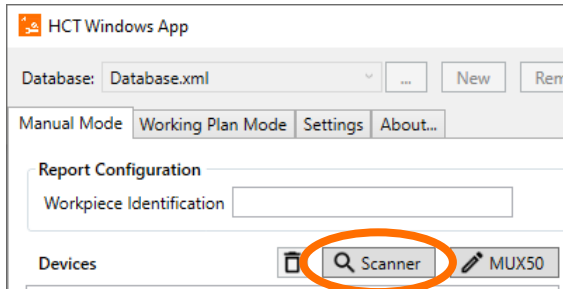
Turn on your HCT tools and make sure their Bluetooth wireless technology is turned on. You can see this from the Bluetooth icons,



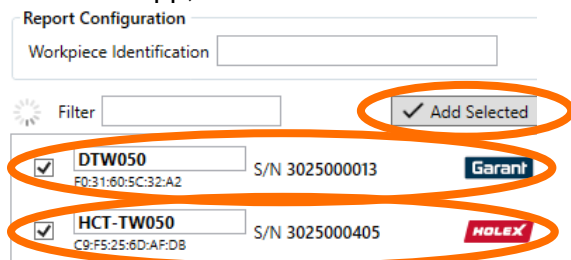
or similar,

in the displays of the HCT tools. If necessary, switch on the wireless modules in accordance with the operating instructions.

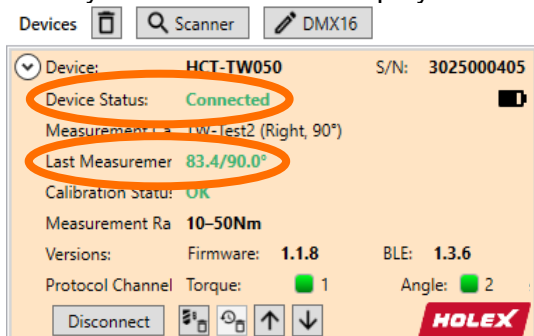
Click on "Scanner":



The nearby HCT tools are now listed. Check the HCT tools you want to connect to the HCT Windows App, and then click "Add Selected":



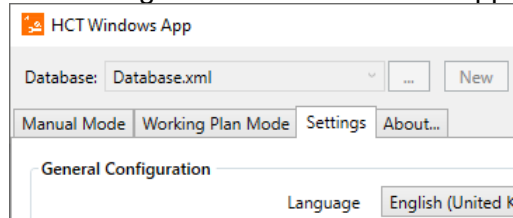
Once your HCT tools are displayed as connected, you can transmit measurement values:



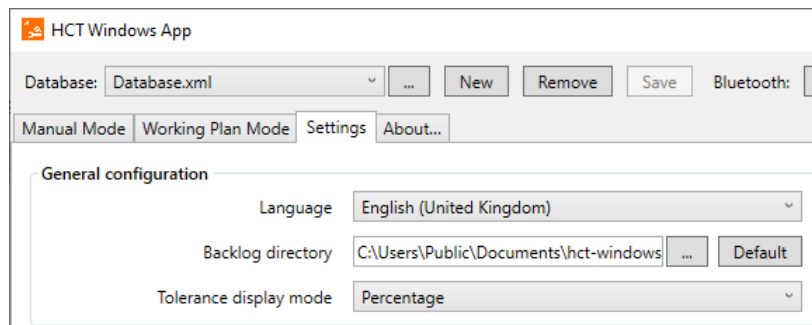
The HCT Windows App and the Bluetooth wireless technology used allow you to connect a maximum of 16 HCT tools. Please note, however, that the connection setup and data transmission is delayed with so many HCT tools. We therefore recommend that you do not connect more than 10 HCT tools to the HCT Windows App. If you use more HCT tools, distribute them to several workstations and thus to several PCs with the HCT Windows App and HCT dongles.

## 6 Settings

The settings of the HCT Windows App are made in the "Settings" tab:

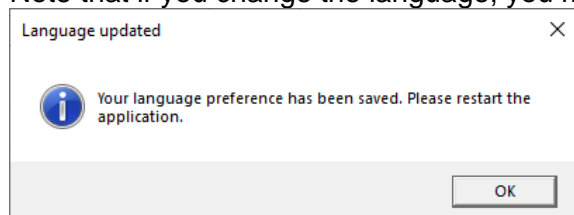


### 6.1 General Configuration



#### 6.1.1 Language

Under Language, select the language in which you want to work with the HCT Windows App. Note that if you change the language, you must exit and restart the HCT Windows App:



In this window, click "OK", exit and restart the HCT Windows App, your preferred language will now be used.

#### 6.1.2 Backlog directory

You must be logged in as "Super User" to change the backlog directory. Assign a folder as backlog directory. Click on "..." to open the dialog for selecting a folder. This folder stores the database of the HCT Windows App. Note that the HCT Windows App requires full access to this folder.

#### 6.1.3 Tolerance display mode

Set here whether the torque tolerances of the measuring cases should be displayed in percent or in the unit of the torque, see chapter "7.1.1 Create measurement case". The angle tolerances remain unaffected by this in the unit "°" (degrees, deg).



## 6.2 Report Configuration

You must be logged in as "Super User" to change the Report Configuration.

Report Configuration

Report Directory: C:\Users\Public\Documents\hct-windows-app\ ... Default

File name: \$(DATE yyyy-MM-dd)\_Report\_\$(IDENT) Default

The following substitutions are supported:

\$(IDENT) - Work piece identification  
\$(DATE format) - Date, e.g.: \$(DATE yyyy-MM-dd)

The preview shows that the file name will look like:

Preview: 2022-07-27\_Report\_Workpiece#1.csv

Generate DFQ report: ☒

### 6.2.1 Report Directory

Assign a folder as a report directory. Click on "..." to open the dialog for selecting a folder. This folder stores the measurement reports of the HCT Windows App in CSV or DFQ file format. Note that the HCT Windows App requires full access to this folder. As default the folder "C:\Users\Public\Documents\hct-windows-app\Customer Files" is set. This folder usually provides full read and write access on standard Windows systems.

### 6.2.2 File names

You can configure the file names of the measurement reports here.

You can use the "\$(DATE format)" placeholder for the date by specifying for "format" how the date should be entered, where dd is the day, MM is the month, and yy is the year

Examples:

yyyy-MM-dd results in 2022-06-30

yy-MM-dd results in 22-06-30

dd.MM.yy results in 30.06.22

dd.MM.yyyy results in 30.06.2022

and so on.

You can embed the workpiece identification in the file name with the placeholder "\$(IDENT)". You will find further information on this topic in the chapter "7.2.7 Start and use working plan".

In addition, you can add any text. However, make sure that you only use special characters that are allowed for file names and that the file names do not become too long. Depending on the location and the associated path, access can be denied if the string is too long.

The preview in the bottom line of the report settings shows an example of how your compilation affects the file name. If you want to return to the file name we have suggested, click on "Default" next to the file name input field.

Report Directory: C:\Users\Public\Documents\hct-windows-app\ ... Default

File name: \$(DATE yyyy-MM-dd)\_Report\_\$(IDENT) **Default**

The following substitutions are supported:

### 6.2.3 Generate DFQ report

Check "Generate DFQ report" if you want to save the measurement values in context of a working plan via DFQ file. For details on this file format, see the chapter "8.2 DFQ files". Remove the check if you do not need these reports. This avoids the creation of unnecessary data.

## 6.3 Working Plan Configuration

You must be logged in as "Super User" to change the working plan configuration. The only exception in this area is the setting "Active signaling of next device", which can also be changed by the user "Operator".

The settings in this area refer to the working plan mode.

Working Plan Configuration

Active signaling of next device ☒

Use custom field ☒

Custom field label

Custom field values

### 6.3.1 Active signaling of next device

Check here if the HCT tool in question shall actively signal that it shall be used in the active step. The Garant HCT torque wrenches signal this by the light ring flashing green and vibrating when the vibration in the torque wrenches is set to "ON". The HOLEX HCT torque wrenches only vibrate because they do not have a light ring, but again the vibration in the key must be set to "ON". Both wrenches indicate this by flashing displays.

Remove the checkmark from this setting if you do not want the active signaling.

### 6.3.2 Use custom field

You can add another column to the CSV files generated by the HCT Windows App by checking this box. Only then are the fields "Custom field label" and "Custom field values" activated.

### 6.3.3 Custom field label

If you want to use the custom field, enter a label for it here. In the CSV files created later, this label is assigned to the additional column in the header.

### 6.3.4 Custom field values

Use the custom field values to create a selection for the working plan mode from which you can then select the entries in the additional column. Click  (Add New) under "Custom field values" to add entries. Use the arrows   (Move down/Move up) to change the order of the entries in the list. Use  (Delete) to delete entries.

Example of using the custom field:

In this example we want to use the additional field to have the worker entered in the CSV files.

To do this, we activate "Use custom field" by checking it.

For the explanation for the workers, we enter a meaningful name in the "Custom field label", in our example "Werker: Innen/Außen" (German for "Worker: inside/outside").

Our colleagues who later work with the working plan are entered one by one in "Custom field values".

## HCT Windows App

**Working Plan Configuration**

Active signaling of next device ☒

Use custom field ☒

Custom field label

Custom field values

+	Werkerin Drehe Momente	↓	↑	🗑️
	Monteur Mon Tages	↓	↑	🗑️
	Schrauber Em Siebener	↓	↑	🗑️
	Kontrolleurin Nache Zieher	↓	↑	🗑️

If we now switch to the "Working Plan Mode" tab, we see our additional field with the name "Werker: Innen/Außen" assigned by us in the upper right-hand area between "Workpiece identification" and "Start" and the selection option with the entries of our "Custom field values":

Workpiece Identification  Werker: Innen/Außen  Start ☐ Auto

ing Steps

Name	Image	Device	Measureme	get Value	Last M
stlayer1		(No repetition)			

## 6.4 Bluetooth Configuration

**Bluetooth Configuration**

Choose automatically ☒

COM port HCT dongle

Activate automatically ☐

### 6.4.1 Choose automatically

Check here to find the HCT dongle automatically. The HCT Windows App searches for the HCT dongle after it has been started and connects to it via a virtual COM port.

### 6.4.2 COM port HCT dongle

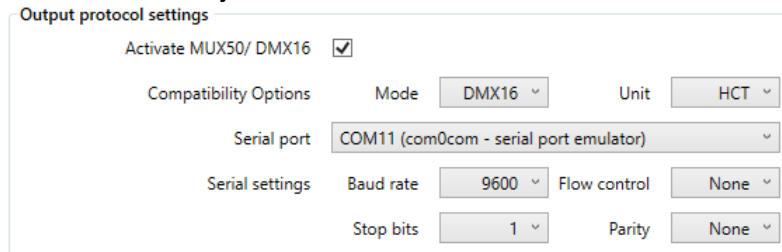
Specify the virtual COM port via which the HCT dongle communicates with the HCT Windows App. You only need to set it if the automatic detection of the HCT dongle does not work. You can use the Windows Device Manager to determine the COM port. Remove the HCT dongle from the USB port and start the Device Manager. Insert the HCT dongle back into the USB port and check which COM port has been added in the Device Manager under "Ports (COM & LPT)". Then enter this COM port.

### 6.4.3 Activate automatically

Check this box if you want the HCT Windows App to activate the Bluetooth wireless technology of the HCT dongle directly at startup. This makes sense in the operation of the HCT Windows App for users "Operator", because the HCT Windows App then immediately connects the set up HCT tools and is ready to receive the measured values. To set up the HCT Windows App, it is a good idea to turn off the automatic activation because many settings are only possible with Bluetooth wireless technology disabled.

## 6.5 Output protocol settings

You must be logged in as "Super User" to change the output protocol settings. These settings allow you to activate and adapt the transmission of measured values to other systems. A detailed explanation of this can be found in chapter "9 Transfer measurement values to other systems".



### 6.5.1 Activate MUX50/DMX16

Check this box to activate the output protocol in principle.

### 6.5.2 Compatibility options

Use "Mode" to decide which protocol shall be used: MUX50 or DMX16. Select "Unit" to select whether and which units are to be appended to the measured values in the report: HCT, no units or always millimeters "mm". For more details, see chapter "9 Transfer measurement values to other systems".

### 6.5.3 Serial port

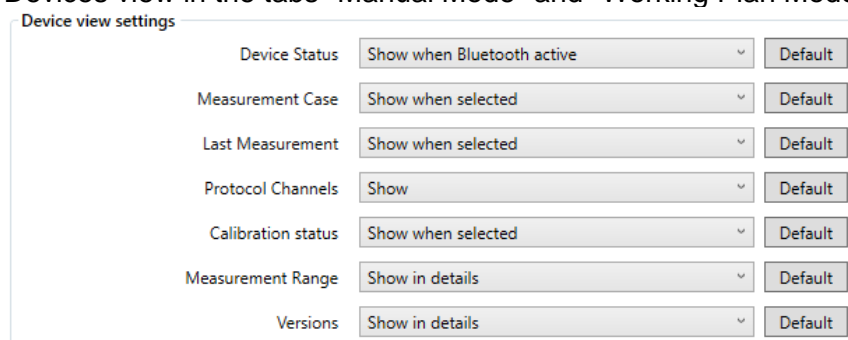
Set here the COM port via which the measured values shall be transmitted. For more details, refer to the chapter "9 Transfer measurement values to other systems".

### 6.5.4 Serial settings

These settings are used to set the parameters for baud rate, the flow control, number of stop bits and the parity. For more details, refer to the chapter "9 Transfer measurement values to other systems".

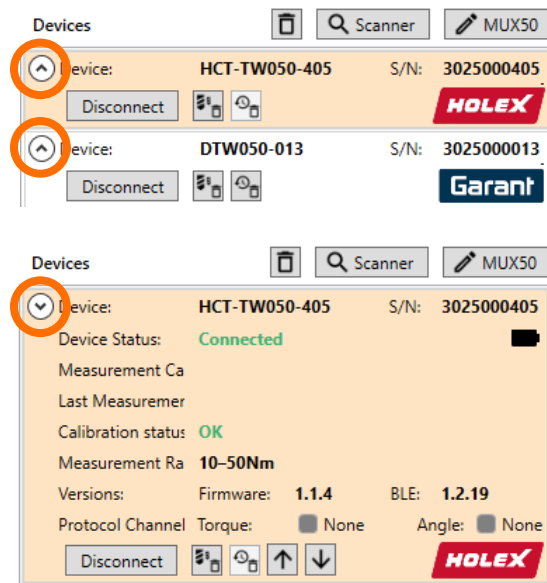
## 6.6 Device view settings

The individual fields allow you to set the information that displays your HCT tools in the Devices view in the tabs "Manual Mode" and "Working Plan Mode".



For each information listed here, you can select the following setting:  
 "Hide": The information is not displayed at all.  
 "Show": The information is always displayed.

"Show in details": You can only see the information if you click on the small circle with the arrow in the device view.



"Show when Bluetooth active": The information is only displayed if you have activated Bluetooth in the HCT Windows App.

"Show when selected": The information is only displayed if you have selected the HCT tool in the Devices view by clicking on it.

You cannot hide the device name and serial number; this information is essential and always displayed. By clicking "Default" to the right of the selection fields, you can reset the settings to our recommendation.

For several HCT tools, we recommend that you always display only the information that is most important to you, as otherwise the Devices view will no longer provide an overview. Display the information that is helpful when working directly with the HCT tool in question with "Show when selected" and click the HCT tool before you want to use it.

## 7 Operating mode tips

The Manual Mode is provided when you have got constantly changing measurement tasks and want to log the measured values. However, you can still use the measurement cases you have created and assign them to the relevant HCT tool as required. For more detailed information on using this mode, refer to the chapter "7.1 Manual Mode".

The Working Plan Mode is suitable for recurring operations such as those usually found in production, for example when fitting a cylinder head whose screws must be tightened in a defined sequence with defined torques. The mechanics can be guided step by step through the assembly task using pictures and instructions in the working plan.


### 7.1 Manual Mode

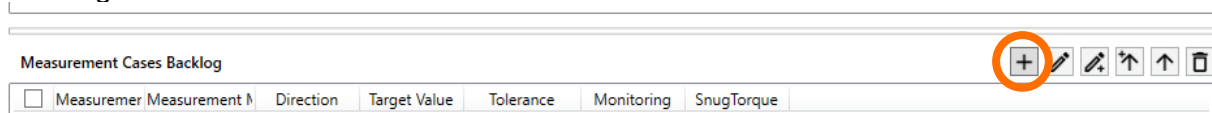
Select the tab "Manual Mode" to use it. In the field "Workpiece Identification", specify which workpiece you want to process. This designation is used for the file names of the CSV and DFQ files in the \$(IDENT) placeholder, see section "6.2.2 File names".

In the CSV file, the identification is filled in the column "Workpiece Identification" and only in working plan mode the identification is filled in the K field K1001/1 "Part number" of the DFQ file.

### 7.1.1 Create measurement case

You must be logged in as "Super User" to create measurement cases.

To create a new measurement case, click  (New) to the right of "Measurement Cases Backlog".



You can enter the data in the now opened measurement case editor. Missing or incorrect entries are indicated by fields highlighted in red.

Name:

Password Protected: ☐

Measurement Mode:

Unit torque:

Target Value:  Nm

Tolerance Min.:  %

Tolerance Max.:  %

Direction:

Monitoring: ☒

SnugTorque:  Nm

Monitoring Min.:  °

Monitoring Max.:  °

#### Name:

Enter the name of the measurement case. Note that the name can be a maximum of 10 characters long. Please note that only ASCII characters can be used. This name is displayed in the tables "Measurement Cases" and "Measurement Cases Backlog" in the column "Measuring Case". In addition, the name is filled in the column "Name" of the CSV file and only in working plan mode the name is filled in the K field K2003/x of the DFQ file.

#### Password protected:

Check here if you want to protect the measurement case against accidental or intentional changes by means of a password. However, password protection only refers to the torque wrench to which the measuring case is transferred and only if a master password has been assigned on the torque wrench.

#### Measurement Mode:

Select the appropriate measurement mode here. Note, however, that you cannot load a measurement case with measuring mode "Angle" into a HOLEX torque wrench for which the angle measurement is not activated.

#### Unit torque:

Set the desired torque unit. Note that this unit is valid for the target value, the snug torque, and in the angle measurement mode for the monitoring Min and Max.

#### Target Value:

Enter the desired setpoint here depending on the measuring mode. If torque is selected, enter the setpoint with the unit selected above, if angle is selected, enter the setpoint in "°". Note that the target value must always be greater than or equal to 0, and in angle measurement mode it must not be greater than 999.9. If you want to make measurements counterclockwise, set the direction of rotation to left, see below.

**Tolerance Min. and Tolerance Max.:**

In the torque measuring mode, you set the upper and lower tolerance limits of the target value here. Depending on how you have selected the tolerance display mode in the General Settings (described in chapter "6.1.3 Tolerance display mode"), enter the values as a percentage of the target value or as a value in the unit of the torque. Note that the lower tolerance must not fall below -10.00 % of the target value and the upper tolerance must not exceed 10.00 % of the target value.

In the Angle measurement mode, enter the tolerance limits in "°". Note that the lower tolerance must not fall below -99.90° and the upper tolerance must not exceed 99.90°.

**Direction (of rotation):**

Select the direction of rotation for measuring of the measurement case. "Right" means that you turn the torque wrench clockwise around its square drive, "Left" means counterclockwise. With the Garant torque wrenches, note that you can insert the tool holder with the square drive facing up, for example to tighten a screw pointing down and you can still look upon the display. In such a case, you would tighten a bolt with a left-hand thread by turning it to the right (clockwise). The rotation direction always refers to the torque wrench when you look upon the display.

**Monitoring:**

This function only makes sense for Garant torque wrenches, since only these have it, Horex torque wrenches, also with angle measurement, do not support the function. If you create a measurement case for a Garant torque wrench, check to activate the function.

**Snug Torque:**

Enter the value for the snug torque here. This is the torque threshold from which the monitoring or angle measurement starts.

**Monitoring Min. and Monitoring Max.:**


In the torque measuring mode, enter the lower and upper limits of the angle of rotation within which the target value is to be reached. The angle monitoring starts when the snug torque is reached.

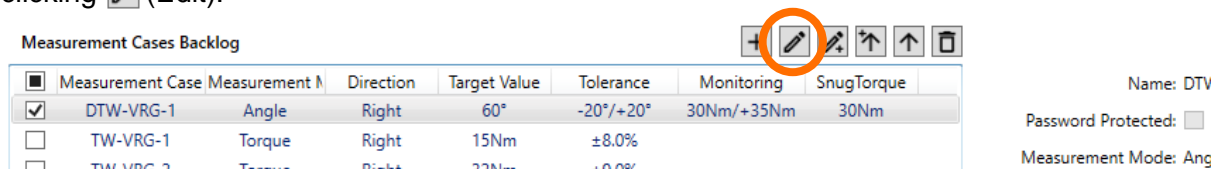
In the angle measuring mode, enter the lower and upper limits of the torque within which the torque shall be until the target angle of rotation is reached. The torque monitoring starts when the snug torque is reached.

When you have made all the settings for the measuring case, click "Save" to save the data and place the measuring case in the measurement cases backlog, or click "Discard" to delete all entries.

## 7.1.2 Edit measurement case

You must be logged on as "Super User" to edit measurement cases.

You can edit a measurement case by selecting the concerning measurement case and clicking  (Edit):




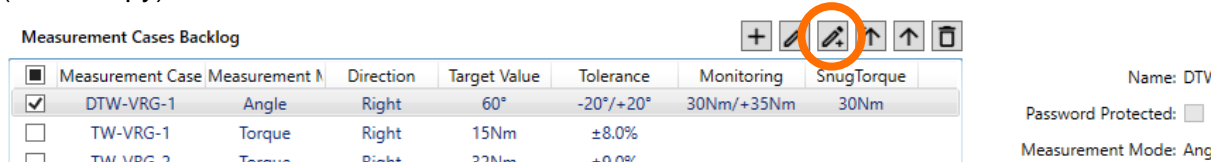
The measurement case editor opens, and you can change the name and values.



### 7.1.3 Copy measurement case

You must be logged in as "Super User" to copy measurement cases.


If you want to create several identical measuring cases, you can use the function copy measurement case. To do this, select the measurement case to be copied and click on  (Edit a copy):

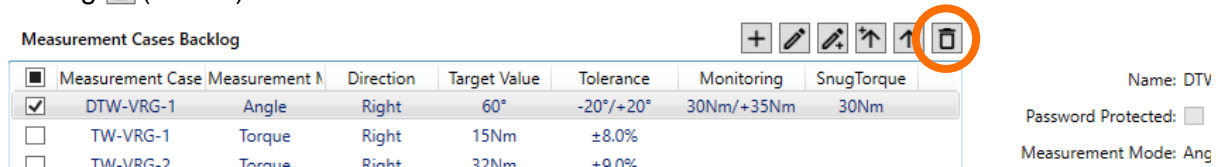


All values of the selected measurement case have now been accepted in the measurement case editor except for its name because there must not be two or more measurement cases with the same name. Assign a new unique name for your new measurement case.

### 7.1.4 Delete measurement case

You must be logged in as "Super User" to delete measurement cases.


You can delete a measurement case by selecting the concerned measurement case and clicking  (Delete):




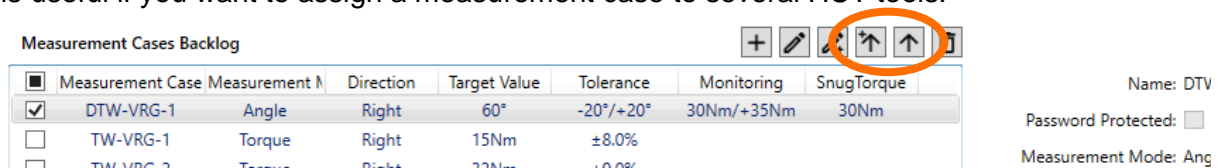
### 7.1.5 Assign a measurement case to an HCT tool

You must be logged in as "Super User" to assign measurement cases.

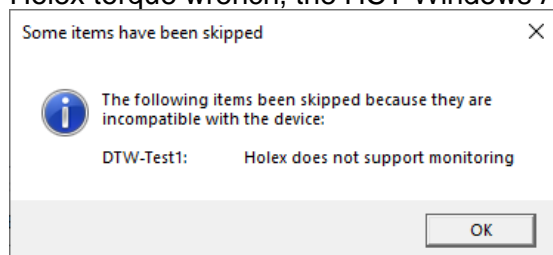
You can now assign the measurement cases created and located in the measurement case backlog to your connected HCT tools. First, select the HCT tool in the devices view with one click. Check the measurement case in the measurement case backlog that you want to assign to the HCT tool.

Now click on  (Move to database) to assign the measurement case and remove it from the measurement case backlog. The measurement case is transferred to the database and is not lost.

Click  (Copy to database) to assign the measurement case and keep it in the measurement case backlog. The measurement case is copied to the database. This function is useful if you want to assign a measurement case to several HCT tools.



Note that not every measurement case can be assigned to each HCT tool. If, for example, you want to assign a measurement case with angle measurement and angle monitoring to a Hoxel torque wrench, the HCT Windows App displays the following error message:



In this case, confirm the error message and then select a suitable measurement case.



### 7.1.6 Activate measurement case


You can now activate a measurement case in the HCT tool that you have assigned to your connected HCT tool. To do this, click "Activate" in the "Measurement Cases" table to the right of the values of the concerned measurement case:

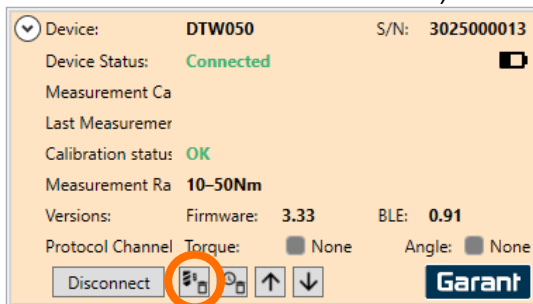
Measurement Cases: HCT-TW050



<input type="checkbox"/>	Measurement Case	Measurement M	Direction	Target Value	Tolerance	Monitoring	SnugTorque	
<input type="checkbox"/>	<b>TW-VRG-1</b>	<b>Torque</b>	<b>Right</b>	<b>15Nm</b>	<b>±8.0%</b>			<a href="#">Activate</a>
<input type="checkbox"/>	TW-VRG-2	Torque	Right	32Nm	±9.0%			<a href="#">Activate</a>

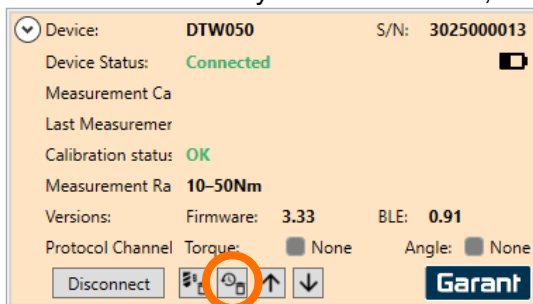
The activated measurement case is now displayed in bold and the relevant HCT tool has adopted the measurement case.

### 7.1.7 Delete measurement cases and history from the HCT tool

You must be logged in as "Super User" to delete measurement cases or histories. Some HCT tools, such as the Garant torque wrench, can store measurement cases and history on the tool, independent of the HCT Windows App. However, if the memory for the measurement cases on the HCT tool is full, you can no longer transfer measurement cases to the HCT tool. In this case, delete all measurement cases on the HCT tool with  (Delete all measurement cases on device) to the right of "Disconnect":



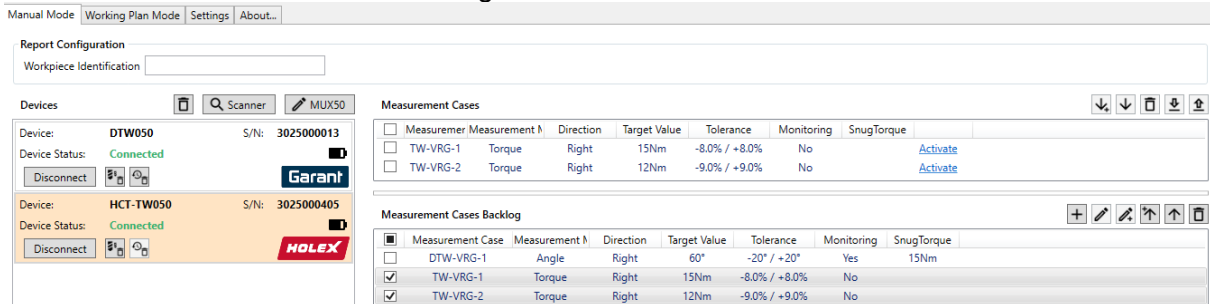
To delete the history on the HCT tool, use  (Delete history on device) to the right of :



Note that you always delete all measurement cases and the entire history on the HCT tool. If you want to delete individual measurement cases, you must do this directly on the HCT tool.

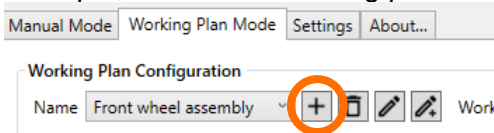
## 7.2 Working Plan Mode

For a working plan, you first create all measurement cases in manual mode. Connect your HCT tools you want to use for the working plan to the HCT Windows App. Copy or move your created measurement cases from the "Measurement Cases Backlog" to the table "Measurement Cases" and thus assign the measurement cases to the HCT tools.



### 7.2.1 Create working plan

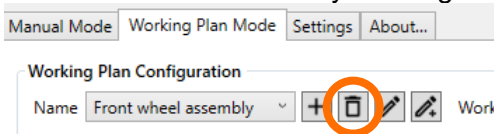
Switch to the tab "Working Plan Mode". Under "Working Plan Configuration", click (Add New) next to the field "Name". Enter a name for the working plan you want to create, in our example, we call the working plan "Front wheel assembly".



To save, click "Save" in the top line of the HCT Windows App.

### 7.2.2 Delete existing working plan

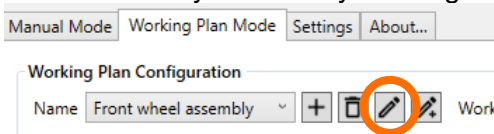
You can delete an already existing work plan from the database with (Delete):



Then click on "Save" in the top line of the HCT Windows App to finally delete the working plan.


### 7.2.3 Edit existing working plan

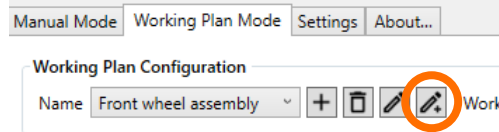
You can modify an already existing work plan with (Edit):



Save your changes by clicking on "Save" in the top line of the HCT Windows App.

## 7.2.4 Copy and edit existing working plan

You can copy an already existing working plan completely with  (Edit a copy). However, the name of the working plan must be changed.



## 7.2.5 Create working plan layers

You must be logged in as "Super User" to create working plans.

A working plan consists of one or more working plan layers. These layers are to be understood as groups of working steps.

For example:

The front wheel and brake calipers are to be assembled to the front fork of a motorcycle. In this case, the following working plan layers are useful:

1<sup>st</sup> layer: Mount the front wheel

2<sup>nd</sup> layer: Mount the brake caliper on the left-hand side

3<sup>rd</sup> layer: Mount the brake caliper on the right-hand side

In the first level, three steps must be carried out:

1<sup>st</sup> step: Tighten the nut of the thrust axle

2<sup>nd</sup> step: Tighten the clamping screw on the left fork dip tube

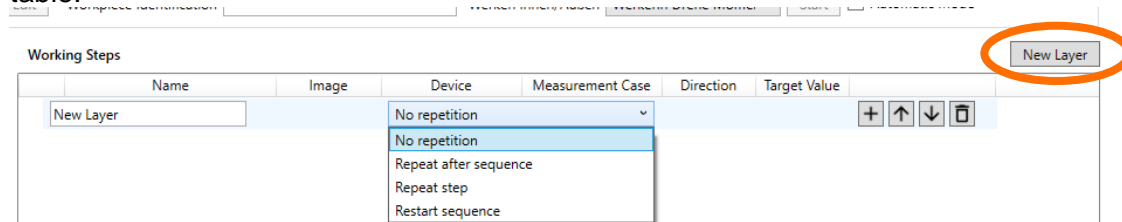
3<sup>rd</sup> step: Tighten the clamping screw on the right fork dip tube

The second and third layers are practically identical, and each has two steps:

1<sup>st</sup> step: Tighten the upper brake caliper bolt

2<sup>nd</sup> step: Tighten the lower brake caliper bolt

Click "New Layer" above the table "Working Steps" on the right. A new row is inserted in the table.





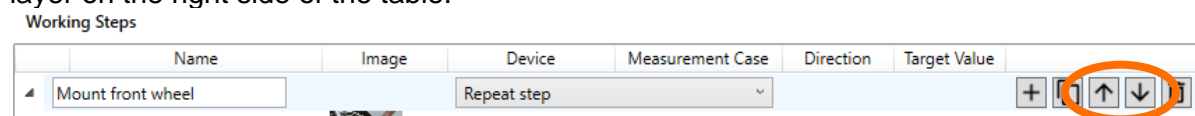
Enter a name for this layer, for our example "Mount front wheel".


Select how a test case should be processed after the incorrect execution:

- No repetition: An incorrectly executed measurement case is registered, but no repetition occurs.
- Repeat after sequence: An incorrectly executed measurement case is registered and the measurement case is only repeated after the steps in this working plan layer have been completed.
- Repeat step: An incorrectly executed measurement case must be repeated immediately
- Abort and repeat sequence: An incorrectly executed measurement case results in the cancellation of the steps in this working plan layer and in a direct restart of all steps within this layer.







To add more layers, click "New Layer" again at the top right of the table. In our example, we add two additional layers "Brake caliper left" and "Brake caliper right".

You can change the order of the layers using the arrow icons   next to the concerned layer on the right side of the table:



You can delete a layer by clicking  (Delete) next to that layer on the right side of the table:


Working Steps

Name	Image	Device	Measurement Case	Direction	Target Value	
Mount front wheel		Repeat step				    











## 7.2.6 Create working steps

You must be logged in as "Super User" to create working plans.

A working step is a measurement case inserted in a working plan.

Insert a step with  (Add New) next to the concerned layer on the right side of the table:

Working Steps

Name	Image	Device	Measurement Case	Direction	Target Value	
Mount front wheel		Repeat step				    
Thrust axle		DTW050	DTW-VRG-1	Right	60°	   


A new row "New Step" is inserted in the table.



Enter a name for this step, for our example "Thrust axle".















If you want to attach a picture to explain the step, click "..." and select your picture.


In the "Device" column, select the HCT tool that shall be used in this step, for our example a Garant DTW050.















In the "Measurement case" column, select the appropriate measurement case for this step. Note that you can only select measurement cases that are assigned to the previously selected HCT tool. For our example, we have selected the measurement case "DTW-VRG-1".

To add additional steps, click  (Add New) next to the concerned layer on the right side of the table. In our example we add two further steps "Clamping screw left" and "Clamping screw right".

You can change the order of the working steps using the arrow icons   next to the relevant working steps on the right side of the table:

Thrust axle		DTW050	DTW-VRG-1	Right	60°	   
Clamping screw left		HCT-TW050	TW-VRG-1	Right	15Nm	   
Clamping screw right		HCT-TW050	TW-VRG-1	Right	15Nm	   







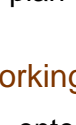
You can delete a step by clicking  (Delete) next to the concerned step on the right side of the table:

Thrust axle		DTW050	DTW-VRG-1	Right	60°	   
Clamping screw left		HCT-TW050	TW-VRG-1	Right	15Nm	   
Clamping screw right		HCT-TW050	TW-VRG-1	Right	15Nm	   

For our example, we add the steps "Brake caliper upper bolt left" and "Brake caliper lower bolt left" to the level "Brake caliper left" and the corresponding steps to the level "Brake caliper right".

Our working plan is now completed:

Working Steps

Name	Image	Device	Measurement Case	Direction	Target Value	
Mount front wheel		Repeat step				+ [Icons]
Thrust axle		DTW050	DTW-VRG-1	Right	60°	[Icons]
Clamping screw left		HCT-TW050	TW-VRG-1	Right	15Nm	[Icons]
Clamping screw right		HCT-TW050	TW-VRG-1	Right	15Nm	[Icons]
Brake caliper left		Repeat after sequence				+ [Icons]
Brake caliper upper bolt left		HCT-TW050	TW-VRG-2	Right	32Nm	[Icons]
Brake caliper lower bolt left		HCT-TW050	TW-VRG-2	Right	32Nm	[Icons]
Brake caliper right		Repeat after sequence				+ [Icons]
Brake caliper upper bolt right		HCT-TW050	TW-VRG-2	Right	32Nm	[Icons]
Brake caliper lower bolt right		HCT-TW050	TW-VRG-2	Right	32Nm	[Icons]

Finally, save the working plan to the database by clicking "Save" in the top line of the HCT Windows App.


## 7.2.7 Start and use working plan

To start the working plan, enter a name in the field "Workpiece Identification", in our example "Motorcycle-1". If you use the custom field and have entered values for it, as in our example in the chapter "6.3.4 Custom field values", select the appropriate entry, in our example worker "Werkerin Drehe Momente" from the list "Werker: Innen/Außen".



In the HCT Windows App, make sure Bluetooth is activated and your HCT tools are turned on and connected.

Click on  (Start):





Working Plan Configuration


Name: Front wheel assembly | Workpiece Identification: Motorcycle-1 | Werker: Innen/Außen | Werkerin Drehe Momente |  | Automatic Mode


Devices

- Device: DTW050 S/N: 3025000013 | Device Status: Connected | Disconnect | 
- Device: HCT-TW050 S/N: 3025000275 | Device Status: Connected | Disconnect | 

Working Steps

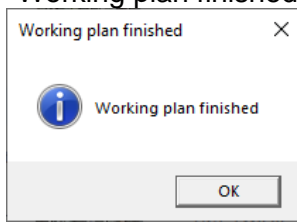
Name	Image	Device	Measurement Case	Direction	Target Value	Last Measurement	Repeat
Mount front wheel		(Repeat step)					
Thrust axle		DTW050	DTW-VRG-1	Right	60°		
Clamping screw left		HCT-TW050	TW-VRG-1	Right	15Nm		
Clamping screw right		HCT-TW050	TW-VRG-1	Right	15Nm		
Brake caliper left		(Repeat after sequence)					
Brake caliper upper bolt left		HCT-TW050	TW-VRG-2	Right	32Nm		







The measuring cases are now transferred step by step to the HCT tools according to the working plan and the HCT Windows App waits for the execution of the measurement case and its confirmation with the send button. Then the HCT Windows App jumps to the next measurement case etc.

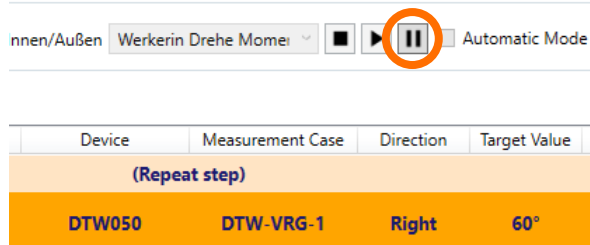
After the working plan has been completed, the HCT Windows App displays the message "Working plan finished".






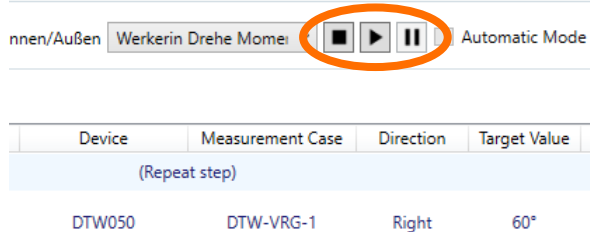
If you check "Automatic Mode" next to  (Pause), this message is not displayed. Instead, the working plan is immediately ready to start again. The cursor is in the "Workpiece Identification" field and expects the next input there. This input can be made by the keyboard or by another device designed for such inputs. Among others, handheld barcode scanners, stationary barcode readers and RFID readers are suitable for this. Then click on  (Start) again. This allows a smooth workflow to be realized.

### 7.2.8 Pause and continue working plan






You can interrupt the already started working plan with  (Pause):




With  (Stop) you finally stop the working plan, with  (Continue) you go on with the working plan at the point where you clicked on  (Pause):



If you have already carried out measurement cases and interrupt the working plan, you can select individual or several working steps or whole layers to repeat, even if they have been carried out successfully. To do this, check in the column "Repeat" the working steps or layers that you want to carry out again:

Name	Image	Device	Measurement Case	Direction	Target Value	Last Measurement	Repeat
Mount front wheel		(Repeat step)					<input checked="" type="checkbox"/>
Thrust axle		DTW050	DTW-VRG-1	Right	60°	60.5/60.0°	<input type="checkbox"/>
Clamping screw left		HCT-TW050	TW-VRG-1	Right	15Nm	14.52/15.00Nm	<input checked="" type="checkbox"/>
Clamping screw right		HCT-TW050	TW-VRG-1	Right	15Nm	15.23/15.00Nm	<input type="checkbox"/>
Brake caliper left		(Repeat after sequence)					<input checked="" type="checkbox"/>
Brake caliper upper bolt left		HCT-TW050	TW-VRG-2	Right	32Nm	30.83/32.00Nm	<input checked="" type="checkbox"/>
Brake caliper lower bolt left		HCT-TW050	TW-VRG-2	Right	32Nm	30.73/32.00Nm	<input checked="" type="checkbox"/>
Brake caliper right		(Repeat after sequence)					<input type="checkbox"/>

After you have made your selection, click on "Repeat":

nnen/Außen Werkerin Drehe Momente  Automatic Mode

New Layer

Device	Measurement Case	Direction	Target Value	Last Measurement	Repeat
(Repeat step)					<input checked="" type="checkbox"/>
DTW050	DTW-VRG-1	Right	60°	56.6/60.0°	<input type="checkbox"/>
HCT-TW050	TW-VRG-1	Right	15Nm	15.65/15.00Nm	<input checked="" type="checkbox"/>

The working plan now repeats the selected measurement cases.

## 8 Data output to files

### 8.1 CSV files

The HCT Windows App generates reports from the measurement cases carried out in the form of CSV files or enters the results there if the file name has not changed. The composition of the file name can be set as in section "6.2.2 File names".

If the file name does not contain any variables such as date or workpiece identification, the HCT Windows App always appends all results to the same file. In some cases, this may make sense, but the file may become very large if you forget to set a new file name. We therefore advise against this.

It is better to use a variable in the file name. If the value of this variable changes, the HCT Windows App creates a new CSV file and enters the results there until the value of the variable changes again.

Example variable date "\$(DATE yyyy-MM-dd)":

As soon as the date changes, a new CSV file with the current date is generated, i.e., latest after 24 hours.

Example of variable workpiece identification "\$(IDENT)":

A new CSV file with the workpiece identification is created with each new workpiece identification. This means that you have one log file per workpiece, especially in the work plan mode, but with the disadvantage that a large number of files may be generated.



Our standard "\$(DATE yyyy-MM-dd)\_REPORT\_\$(IDENT)" generates a new file with each new workpiece identification, but at the latest when the date changes. This ensures that no file of any size is created even if no new workpiece identification is entered.

### 8.1.1 Data in the CSV file

In addition to the measured values that the HCT tools determine, further data is written to the CSV file for each measurement case.

In "Manual Mode", these include:

Date and time stamp

Tolerance limits

Name of the measurement case

Serial number of the HCT tool used

Name of the device

Workpiece identification

The following additional data is entered in "Working Plan Mode":

Name of the working plan

Name of the working plan layer

Name of the working step

Custom field value if enabled in the "Use custom field" settings

Get an overview by using our examples or your own measurement cases so that CSV files can be created and open them with a suitable application.

## 8.2 DFQ files

DFQ files are structured in the AQDEF format. Most CAQ systems can read and process such files.

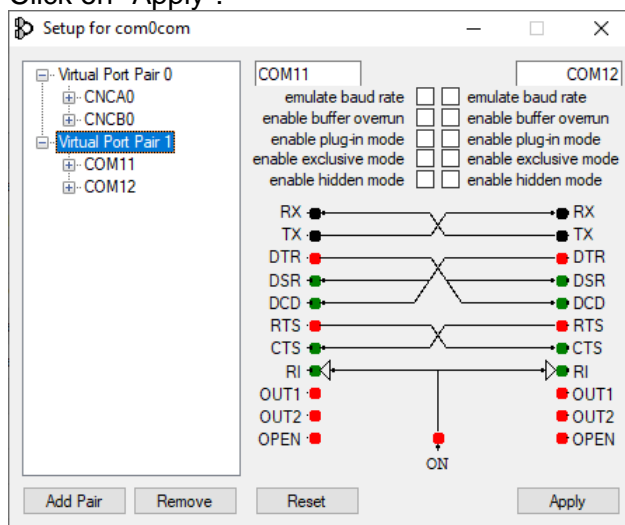
DFQ files only make sense together with a working plan, because only in this way it is defined beforehand what is to be measured with what kind of device and in which limits. The HCT Windows App therefore only generates such files in working plan mode and only if you have activated the generation. In the chapter "6.2.3 Generate DFQ report" you will find information on how to switch the generation on or off. The file name settings are the same as for the CSV files, so in working plan mode you get two files of the same name, which differ only in their extensions (.CSV or .DFQ). The DFQ file is readable with a simple editor without conversion, but it does not contain any explanatory comments, only the K fields and the associated values.



## 9 Transfer measurement values to other systems

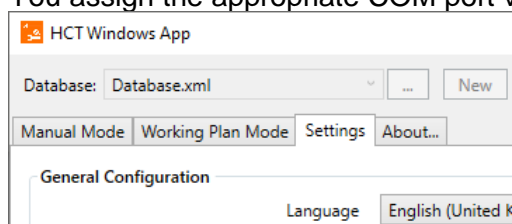
### 9.1 COM port

The HCT Windows App can send the measured values generated by the measurement tools to other systems, such as CAQ software systems. The data is transmitted via COM ports in the MUX50 or DMX16 format. The COM ports must be provided by a virtual COM port driver with null modem functionality. We recommend using the com0com Nullmodem Emulator, whose link you can find on our HCT website. After installing the emulator, it provides pairs of COM ports that function as a null modem. Note that by default the emulator labels the COM ports CNCA0 and CNCB0 and these are not recognised by the HCT Windows App. Using the Nullmodem Emulator setup tool, create a new virtual COM port pair ("Add Pair") and change designations to the usual names such as "COM11" and "COM12". Make sure that these COM ports are not yet in use. Click on "Apply":

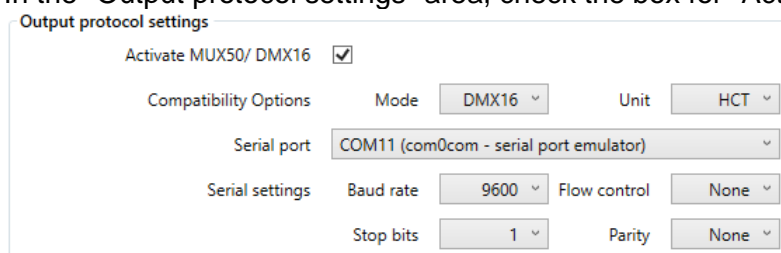


#### 9.1.1 Assignment of the COM port to output the data

You assign the appropriate COM port via the tab "Settings" in the HCT Windows App:



In the "Output protocol settings" area, check the box for "Activate MUX50/DMX16":



Then make further settings according to your requirements.

**Mode:** Select the appropriate protocol, MUX50 or DMX16. Note that the MUX50 protocol can only transmit channels with numbers 1 through 9. If you want to use channels greater than 9 to a maximum of 99, use the DMX16 protocol. Make sure that your target system can process this protocol.

**Unit:** Here you select the unit with which the measured values are to be assigned.

"HCT": The measured values are assigned the units provided in the measuring tools

"No Units": The measured values are transmitted without units. Use this setting if your target system cannot handle the devices and generates error messages due to incorrect format.

"mm": The measured values are always assigned the unit "mm". Some target systems expect all measured values with this unit, other formats are simply ignored or generate error messages. Note, however, that even for example, angle measurements or measurements in inches are marked with the unit "mm" in the protocol.

**Serial port:** Set the COM port on which the HCT Windows App shall output the data. This is NOT the COM port on which your target system receives the data. To do this, set the paired COM port there. In the case shown above, COM11 includes the COM12 to be used for the target system.

**Serial settings:** These are the transmission parameters for the serial interface, so to say for the COM port. Set the parameters exactly as you have set them in your target system.

The HCT Windows App shows in the top right corner with a green control lamp whether the data transmission is basically working, and the target system is present. If the light is red, communication is not working:



Then check the settings again and whether the target system is present and running. If necessary, you can check the communication with the help of a terminal software, see also the following chapters.

## 9.2 Description of the MUX50 and DMX16 protocols

The MUX50 and DMX16 protocols are used to transmit the measured values acquired by the HCT Windows App to other applications, such as CAQ software or other devices, via a COM port. The protocol is NOT used to communicate with the tools and measuring devices associated with the HCT Windows App, this is done by the HCT protocol.

### 9.2.1 Details of the MUX50 and DMX16 protocols

The protocols consist of ASCII characters and can be read by most CAQ software systems. They also provide some control commands so that the connected application, the so-called host, can control the HCT Windows app.

### 9.2.2 Send and receive measured values

A measured value is always output with 24 ASCII characters in the MUX50 protocol and 25 ASCII characters in the DMX16 protocol and is terminated with the characters "carriage return", here represented as "<CR>" and "line feed", here represented as "<LF>". The difference between the MUX50 and the DMX16 is that the first can only work with single-digit channel numbers from 1 to 9, while the second can handle two-digit channel numbers up to 99. With the DMX16, single-digit channel numbers are preceded by a word space (space). The word spaces, the "spaces", are represented here with the underscore "\_".

Examples include:

MUX50: 3\_MW\_+12345.67\_NM\_\_<CR><LF>

DMX16: Single-digit channel numbers: \_3\_MW\_+12345.67\_Nm\_\_<CR><LF>

DMX16: Two-digit channel numbers: 26\_MW\_+12345.67\_Nm\_\_<CR><LF>

### 9.2.3 Explanation MUX50:

1 <sup>st</sup> character	Channel number	This is the channel on which the measured value is sent or received. The channel numbers can be 1 to 9.
2 <sup>nd</sup> characters	Space	Word space
3 <sup>rd</sup> to 4 <sup>th</sup> characters	Value type	This is the type of measurement. The HCT windows app always uses the MW characters for measured values.
5 <sup>th</sup> character	Space	Word space
6 <sup>th</sup> character	Sign	+ or -
7 <sup>th</sup> to 15 <sup>th</sup> characters	Measured value	The decimal point in the measured value is variable, leading zeros are not suppressed.
16 <sup>th</sup> character	Spaces	Word space
17 <sup>th</sup> to 22 <sup>nd</sup> characters	Unit of the measured value	The unit depends on the protocol settings, see chapter "9.1.1 Assignment of the COM port to output the data". The remaining characters are filled with word spaces.
23 <sup>rd</sup> character	<CR>	Carriage return
24 <sup>th</sup> character	<LF>	Line feed

### 9.2.4 Explanation DMX16:

1 <sup>st</sup> and 2 <sup>nd</sup> characters	Channel number	This is the channel on which the measured value is sent or received. The channel numbers can be 1 to 99. For single-digit channel numbers, the first character is a word space.
3 <sup>rd</sup> character	Space	Word space
4 <sup>th</sup> to 5 <sup>th</sup> characters	Value type	This is the type of measurement. The HCT windows app always uses the MW characters for measured values.
6 <sup>th</sup> character	Space	Word space
7 <sup>th</sup> character	Sign	+ or -
8 <sup>th</sup> to 16 <sup>th</sup> characters	Measured value	The decimal point in the measured value is variable, leading zeros are not suppressed.
17 <sup>th</sup> character	Space	Word space
18 <sup>th</sup> to 23 <sup>rd</sup> characters	Unit of the measured value	The unit depends on the protocol settings, see chapter "9.1.1 Assignment of the COM port to output the data". The remaining characters are filled with word spaces.
24 <sup>th</sup> character	<CR>	Carriage return
25 <sup>th</sup> character	<LF>	Line feed

## HCT Windows App

The following example transmission of the executed measurement case with a Garant HCT torque wrench was sent by the HCT Windows App in MUX50 format to a terminal program and received there:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		M	W		+	0	0	0	0	1	6	.	4	2		N	m						
31	20	4D	57	20	2B	30	30	30	30	31	36	2E	34	32	20	4E	6D	20	20	20	20	0D	0A
2		M	W		+	0	0	0	0	8	8	.	5	0		d	e	g					
32	20	4D	57	20	2B	30	30	30	30	38	38	2E	35	30	20	64	65	67	20	20	20	0D	0A

The first line with green background shows the torque measured value with the unit "Nm", the second line with green background shows the angle measured value with the unit "deg". The two lines with a purple background represent the characters as hexadecimal values (according to ASCII).

The second sample transmission was sent and received in DMX16 format:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	1		M	W		+	0	0	0	0	1	6	.	9	8		N	m						
20	31	20	4D	57	20	2B	30	30	30	30	31	36	2E	39	38	20	4E	6D	20	20	20	20	0D	0A
	2		M	W		+	0	0	0	1	0	0	.	2	0		d	e	g					
20	32	20	4D	57	20	2B	30	30	30	31	30	30	2E	32	30	20	64	65	67	20	20	20	0D	0A

In this case, you can see the spaces in front of the channel number in column 1.

The third sample transmission was sent and received in DMX16 format with two-digit channel numbers and without units:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
2	5		M	W		+	0	0	0	0	1	8	.	0	8									
32	35	20	4D	57	20	2B	30	30	30	30	31	38	2E	30	38	20	20	20	20	20	20	20	0D	0A
2	6		M	W		+	0	0	0	0	9	6	.	9	0									
32	36	20	4D	57	20	2B	30	30	30	30	39	36	2E	39	30	20	20	20	20	20	20	20	0D	0A

You can see the two-digit channel numbers with no spaces in front of them and the spaces instead of the units in columns 18 to 20.

### 9.2.5 Query the HCT Windows App using the MUX50 and DMX16 protocol

The target system or host can send specific commands to the HCT Windows App, which in turn responds accordingly:

Query identification:

Host: I<CR> or I<CR><LF>

HCT Windows App: Hct-windows-app\_0.15.0<cr><lf>

Hexadecimal:

68 63 74 2D 77 69 6E 64 6F 77 73 2D 61 70 70 20 30 2E 31 35 2E 30 0D 0A

Host: D0<CR> or D0<CR><LF> or D00<CR> or D00<CR><LF>

Hexadecimal: 44 30 0D or 44 30 0D 0A or 44 30 30 0D or 44 30 30 0D 0A

With one of these commands, the HCT Windows App disables all channels and therefore does not send measurement values.

Host: E0<CR> or E0<CR><LF> or E00<CR> or E00<CR><LF>

Hexadecimal: 45 30 0D or 45 30 0D 0A or 45 30 30 0D or 45 30 30 0D 0A

With one of these commands, the HCT Windows App activates all channels and sends measured values as soon as a measurement case has been carried out.

The HCT Windows App does not currently allow a channel to be queried by the host, the HCT Windows App ignores these requests.

### 9.2.6 Tips

Many CAQ systems only offer the MUX50 protocol, but still can handle the DMX16 format and understand the two-digit channel numbers. First, set the DMX16 protocol in the HCT Windows App, assign two-digit channels to an HCT tool in the Device View, and verify that your target application receives and processes the measurements correctly.

Some CAQ systems interpret channel numbers above 89 as a sender error, in this case assign channel numbers below this limit.

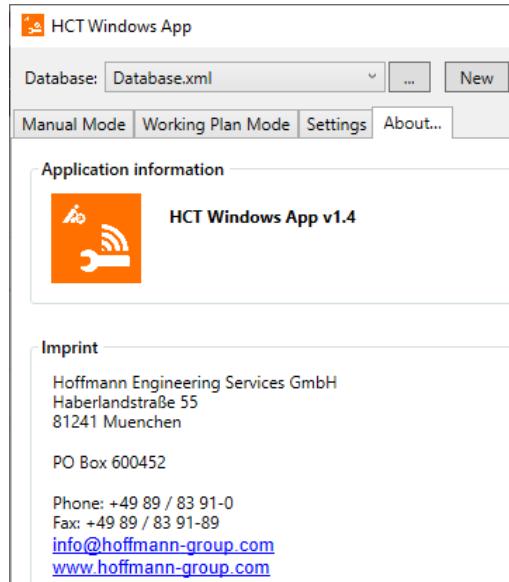
### 9.2.7 Error messages

The HCT Windows App displays errors occurring in data transmission on the right in the bottom line of the window.

## 10 Advice and help in case of problems

### 10.1 Version of the HCT Windows App and Imprint

You can find the version of your installed HCT Windows App and the imprint in the tab "About...":



Please always state the version of the HCT Windows App when contacting our customer service.

### 10.2 HCT Windows App is displayed too large on the screen

Please check the setting of the screen scaling as described in chapter "**Fehler! Verweisquelle konnte nicht gefunden werden. Fehler! Verweisquelle konnte nicht gefunden werden.**" if the HCT Windows App window is displayed too large on the screen and buttons on the edge, the status bar or the menu bar are not displayed.

### 10.3 Bluetooth wireless technology cannot be activated

The Bluetooth wireless technology is built into the HCT dongle and can only be activated if you have created a database, the HCT dongle has been recognized by the system and is connected to the HCT Windows App. Therefore, check the following:

Have you created a database as described in chapter "5.2 Create database"?

Have the settings been made correctly as described in chapter "6.4 Bluetooth Configuration"? In some cases, the HCT dongle is not automatically recognized by the system. Determine the COM port to be set manually for the HCT dongle using the device manager and set the Bluetooth settings accordingly, see chapter "6.4 Bluetooth Configuration".

### 10.4 The Super User password is no longer known

If you can no longer log in as Super User because you no longer know the password for it, you can assign a new password. To do this, proceed as described in chapter "5.3.1 Set Super User password newly".

### 10.5 Nullmodem Emulator and Windows 10 Pro

On some Windows 10 and 11 systems, especially Windows 10 Pro, the current version 3.0.0.0 of the com0com Nullmodem Emulator does not work correctly. We have been

successful in this case with version 2.2.2.0. Please observe the notes in chapter "9.1 COM port". If you are unable to select the COM ports, close the HCT Windows App and, if necessary, your CAQ software and restart both so that the newly available COM ports are recognized by the software. Please contact our customer service if you do not succeed with the Nullmodem Emulator. You will find the link to this on our HCT website under this link <https://ho7.eu/win-app-hct> in the lower part of the page under "Looking for advice about HCT?".

### 10.6 The COM port for data transmission is not found

Check if you have installed a null modem emulator on your system and if it is working correctly. If you have installed the null modem emulator or made changes to its settings while the HCT Windows App or destination application was already running, quit and restart it. This will re-read the port information and apply any changes. Observe the notes in chapter "9.1 COM port".

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