

User guide for MyDrive® HIL

Danfoss Drives iC7 Frequency Converter



Content

Content	2
1 Introduction	3
2 Setup of HIL Compatible iC7 Frequency Converter	4
2.1 Hardware Setup	4
2.2 LEDs on front side of HIL Compatible iC7 Frequency Converter	5
3 MyDrive® HIL package installation	6
4 General Use	7
4.1 Open Example Simulation Model	7
4.2 Configuring and Compiling Example Simulation Model	7
4.3 Simulation in HIL SCADA	8
4.4 Commissioning Frequency Converter	9
4.5 Controlling Frequency Converter through analog / digital IOs	10
5 Data Files and Schemas	11
6 Troubleshooting	12
6.1 Loaded simulation model with missing library components	12
6.2 Typhoon HIL Control Center doesn't start	12
6.3 Exception during compilation	12
6.4 HIL SCADA Trace graph incorrect rendering	12
6.5 No module named 'ddCommunication' or 'ddi_python'	13
6.6 Macro execution hangs in HIL SCADA while communicating with the iC7 FC	13
6.7 Inconsistent / faulty iC7 Frequency Converter after Commissioning	14

1 Introduction

This document describes how to work with the Danfoss Drives iC7 Frequency Converters in combination with Typhoon HIL, after this; *MyDrive® HIL*, see **Error! Reference source not found..**

It is expected that the user has completed the HIL Specialist 2.0 course at the [HIL Academy](#) and is familiar with the Danfoss Drives iC7 Frequency Converters including supporting PC tools. How-to videos can be found in the [MyDrive® Suite](#).

The following programs must be installed on the host Windows PC¹:

- MyDrive® [Insight](#) for iC7,
- Typhoon HIL Control Center (THCC), version 2025.2 or higher,

The document is divided into 3 sections. An initial setup section which describes the delivered hardware and host PC setup, a “how to use” section that covers more general topics such as simulation model and configuration of the MyDrive® HIL setup, and finally a FAQ including list of delivered items.

¹ We recommend having a fixed host PC installed with the MyDrive® HIL setup. Users can then log in locally or through remote desktop.

2 Setup of HIL Compatible iC7 Frequency Converter

2.1 Hardware Setup

Connections needed to operate the MyDrive® HIL, see figures below for details:

1. HIL Compatible iC7 \leftrightarrow HIL404 using the two ribbon cables,
2. HIL Compatible iC7 \leftrightarrow host PC using USB cable,
3. Main power supplies to the HIL Compatible iC7 (24 V and 5 V),
4. HIL404 \leftrightarrow host PC using USB,
5. Main power supply to the HIL404 device (12 V)²,
6. Ethernet based Fieldbus for the iC7 Frequency Converter \leftrightarrow 3rd part equipment, e.g., external PLC (where applicable).



Figure 1: Front with ribbon-cables to HIL404 device.



Figure 2: Rear with connection for main power supplies, USB for access to the service-port of iC7 control unit, and Ethernet based Fieldbus for control unit.

² **NOTICE:** The DC power-connectors for the HIL device and the HIL Compatible iC7® Frequency Converter matches together. Applying 24 V to the HIL device will damage it.

2.2 LEDs on front side of HIL Compatible iC7 Frequency Converter

The enclosure includes two LEDs on the front.

- '24 V Supply ON' is permanently on when external 24 V power supply is provided,
- 'CC Supply ON' turns on when the iC7 control board is powering the basic IO board. There is a delay (up to 30 second) from turning on the grid in the simulation until the LED is lit up (typical boot time of the iC7 Frequency Converter).

3 MyDrive® HIL package installation

The MyDrive® HIL package must be installed through the Typhoon HIL Control Center³, see Figure 3. Select {1} 'Additional tools' → {2} 'Package Manager' → {3} 'Install latest'. More information is available in the Typhoon HIL Documentation.

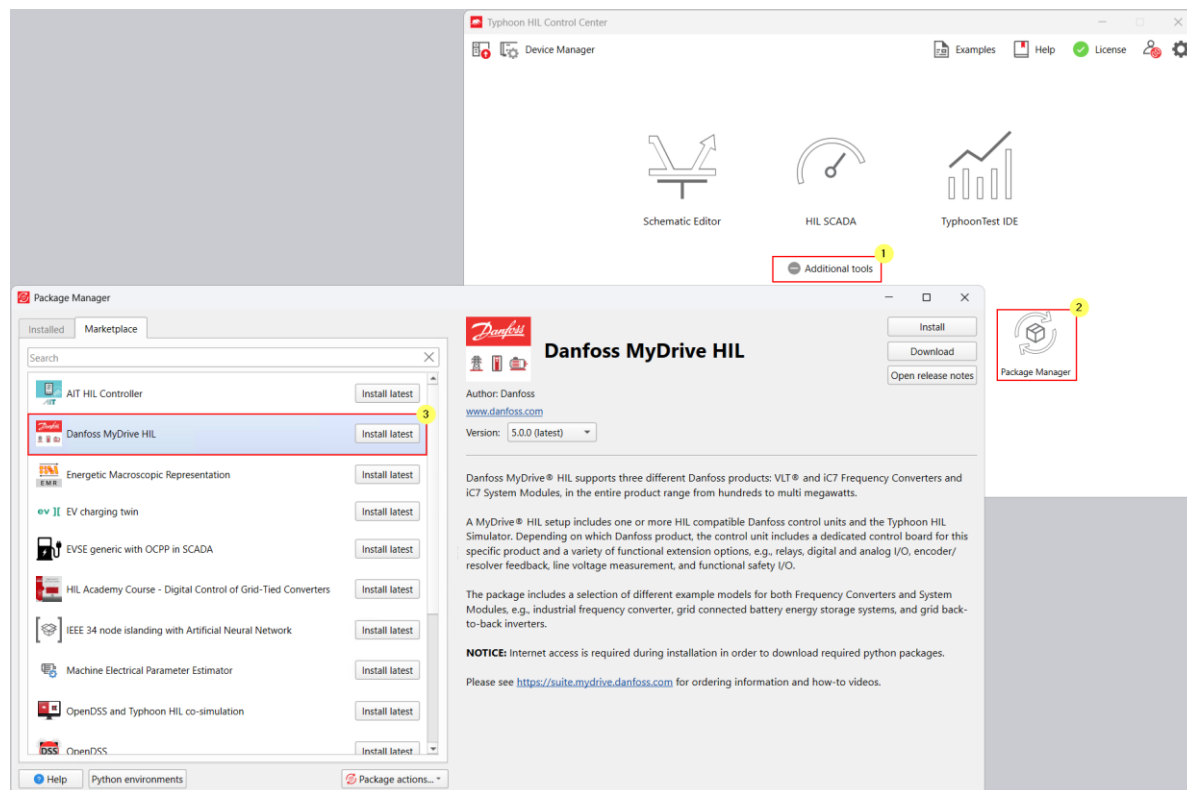


Figure 3: Installing the MyDrive® HIL package.

³ **NOTICE:** Internet access is required during installation in order to download required python packages.

4 General Use

This section describes how to configure the (example) simulation model and the iC7 Frequency Converter such that a HIL simulation can be made.

4.1 Open Example Simulation Model

To open the simulation model, select: {1} 'Examples' → {2} 'Danfoss MyDrive® HIL' → {3} 'Open model' (it takes some time to load), see Figure 4.

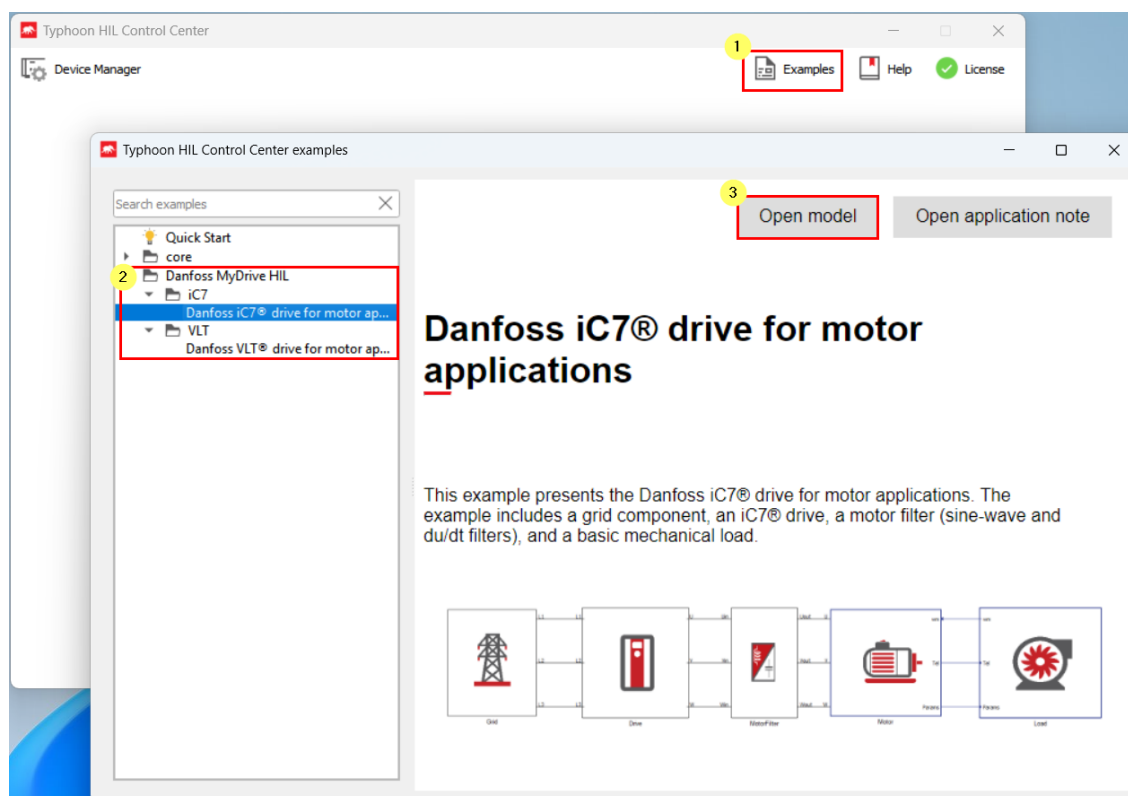


Figure 4: Opening the Danfoss MyDrive® HIL example simulation model.

4.2 Configuring and Compiling Example Simulation Model

The example simulation model is configured to represent a frequency converter with matching motor-filter and induction motor. The load is a basic load with support for speed and torque modes and mechanical brake. The grid impedance is calculated based on the frequency converters nominal current, see Figure 5 for details.

To reconfigure a component, double-click on it and modify the data⁴. Some components support data loading from file. Data for these components can be found in the folder that is given in the *Data path* property value. To get this path click the *Copy Path* button in the component's mask. For more info about the data files, and how to create new data files, please read the Data Files and Schemas section.

⁴ **NOTICE:** The following steps can change the example simulation models from how they were originally created. It is possible to restore the file by reinstalling the Danfoss MyDrive HIL package. In this case, the changes made on the example simulation models will be lost! It is therefore good practice to save the example simulation model into another file (File → Save as...) before modifying it.

When the simulation model has been configured click the ‘*Compile and (re)load model in HIL SCADA*’ button .

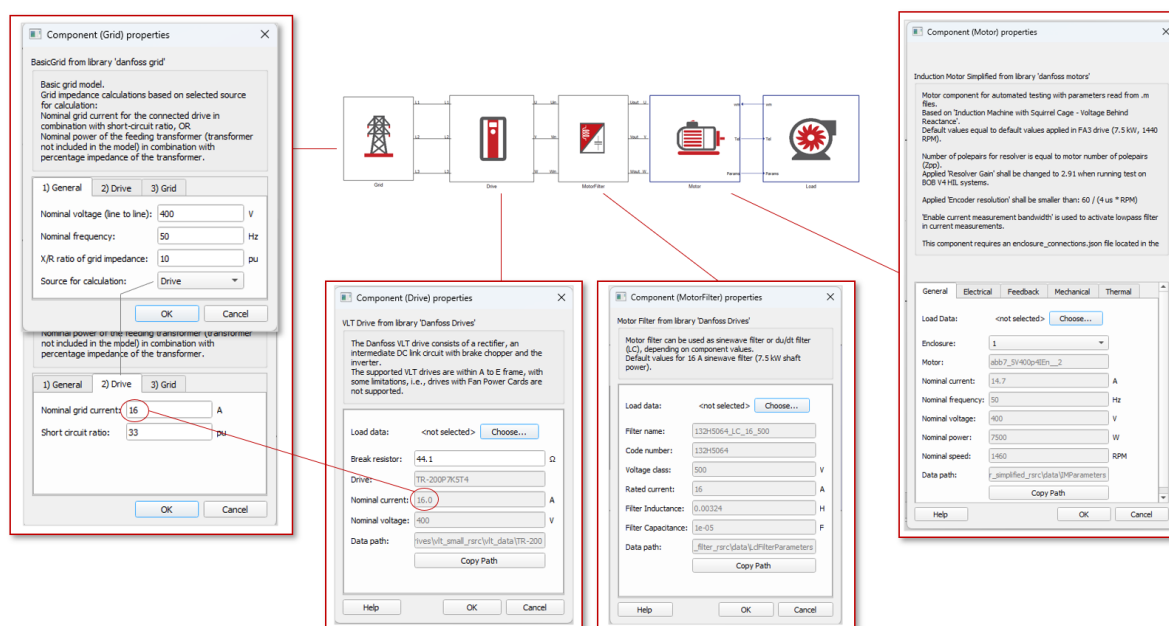


Figure 5: Configuring Danfoss components.

4.3 Simulation in HIL SCADA

When the simulation model is compiled, the simulation can be started in HIL SCADA. (If *compile and load in HIL SCADA* button was used in Schematic Editor, the first 3 step below are automatically performed)

- 1) Start THCC and select HIL SCADA,
- 2) In HIL SCADA select File → Load model,
- 3) Browse for the compiled simulation model (*.cpd),
- 4) As the simulation model has been loaded, select a SCADA panel (*.cus),
- 5) Start the simulation by clicking on the simulation icon
- 6) In the Basic Grid widget, set Grid Mode to ‘Nominal’ to turn on the simulated grid,
- 7) Connect to the frequency converter with MyDrive® Insight.

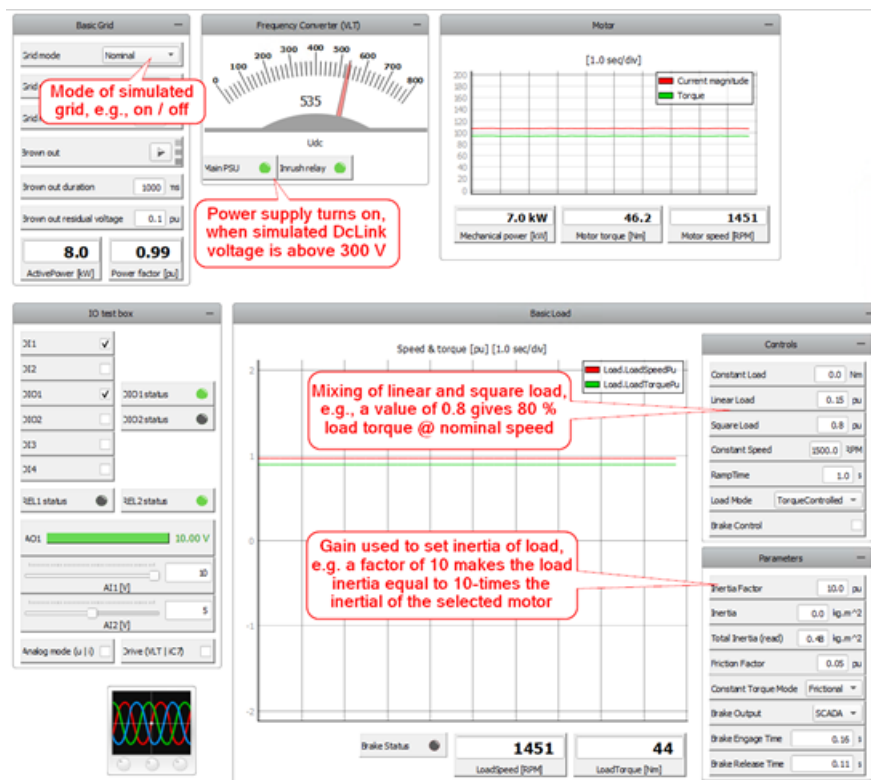


Figure 6: HIL SCADA Panel for example simulation model.

4.4 Commissioning Frequency Converter

Motor and filter parameters as well as frequency converter size must match the settings in the simulation model. The commissioning widget is available from the library-dock in the HIL SCADA and is part of the `app_basic_load` HIL SCADA panel.

The widget gets data from the simulation model. Based on the data it is possible to update power size of the frequency converter, motor data and filter data, when included in the simulation model.

The simulation must run while commissioning the Frequency Converter⁵.

Once the commissioning process is completed, please validate exact state in MyDrive® Insight, Typhoon HIL SCADA should be restarted to remove persistent data in memory. The Frequency Converter may otherwise rise a warning about being inconsistent or power board failure.

If required, the Frequency Converter can be reset to factory settings by MyDrive® Insight.

4.4.1 iC7 Frequency Converter

This is a silent process where no information is presented to the user. The process of commissioning takes a few minutes. The Frequency Converter is ready again when the 'Inrush Relay' LED is green in the Frequency Converter widget.

⁵ **NOTICE:** Do not interrupt the simulation or in other ways power down the setup during commissioning!!!

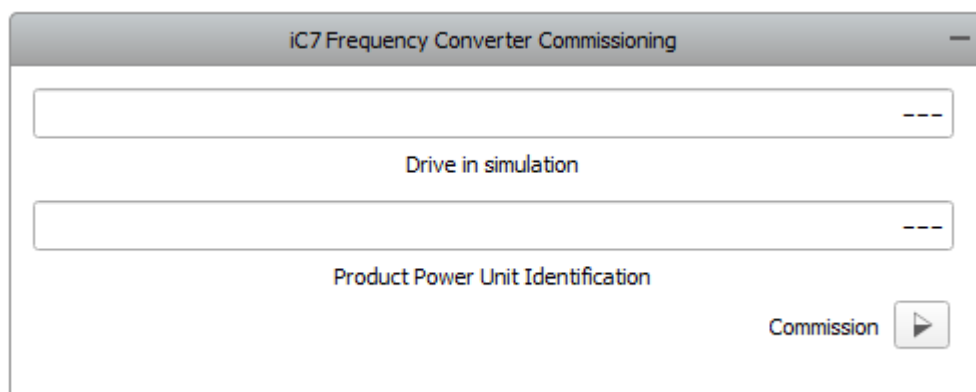


Figure 7: iC7 commissioning widget.

The 'Product Power Unit Identification' in the widget contains the same information as the Power Unit Identification in MyDrive® Insight, as seen in Figure 8.

Slot 300 - IntegratedPower

Firmware

Firmware Name	IntegratedPower	Slot Assignment	300
Firmware Version	4.0.7		

Hardware

Product Power Unit Identification	iC7_60_FX_3NB5_1500A_HIL	Board Product Name	iC7 Integrated Power
Product Power Unit Data Version	0.0.1-alpha.67	Board Sales Number	unknown item number

Figure 8: Product power unit identification as seen in MyDrive® Insight.

4.5 Controlling Frequency Converter through analog / digital IOs

The IO test box widget makes it possible to manually control the Frequency Converter through the analog/digital IO's on the control board, see Figure 9.

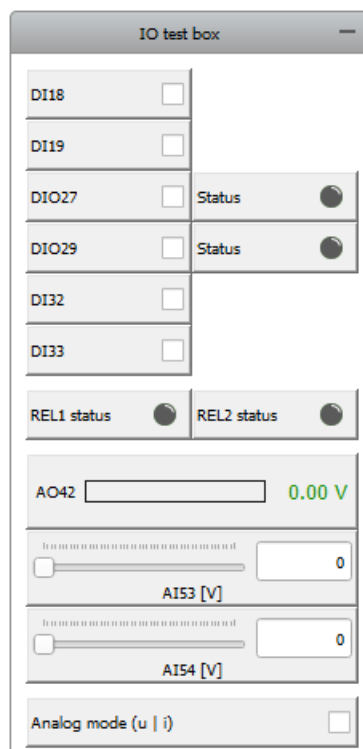


Figure 9: IO test box widget.

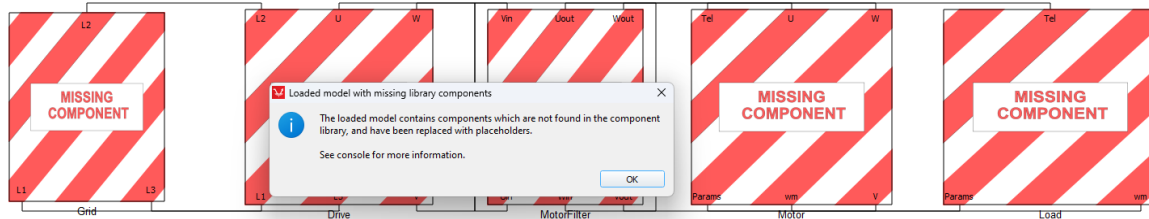
5 Data Files and Schemas

The Danfoss libraries come with a predefined set of data files for the iC7 Frequency Converters and motors. Since there can be a need to generate user defined data files, a folder named 'schemas' is placed in the additional files folder, see **Error! Reference source not found.** The folder contains schemas for the different data files. An *examples* folder is placed inside the schemas folder. This folder holds example files for the different file types.

6 Troubleshooting

6.1 Loaded simulation model with missing library components

If a message like the one below is displayed and some of the components are red and white striped, it means that libraries are missing. If the missing library components are Danfoss components, please try to reinstall the MyDrive® HIL package again in Package Manager. If this does not resolve the problem, please contact Danfoss.

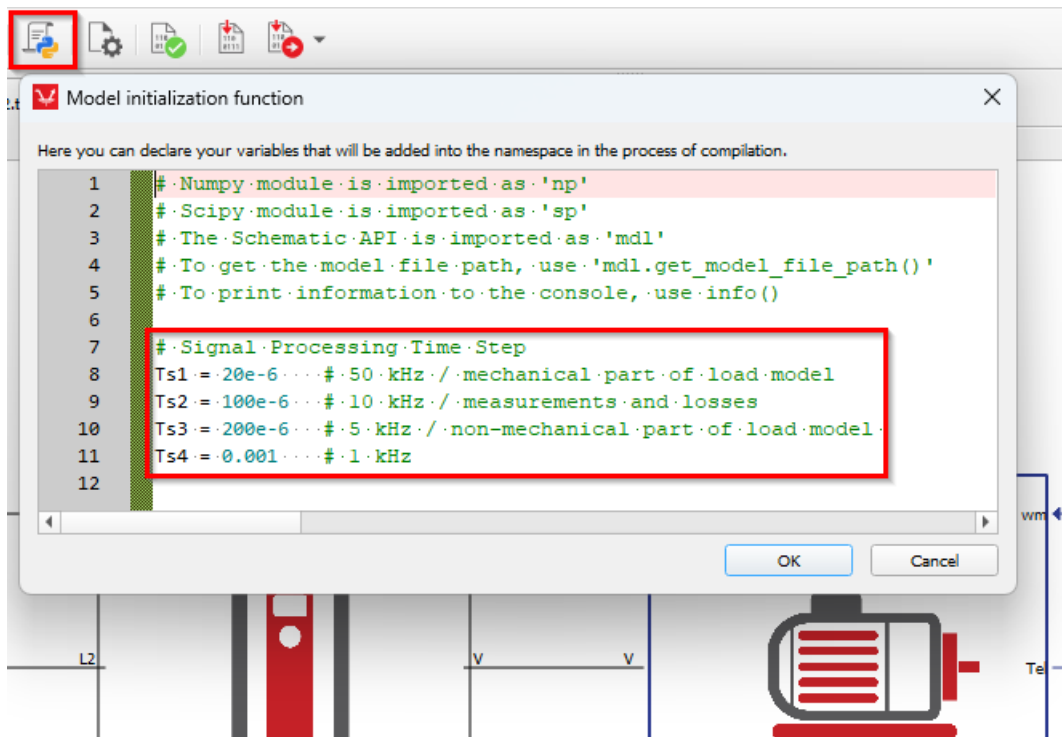


6.2 Typhoon HIL Control Center doesn't start

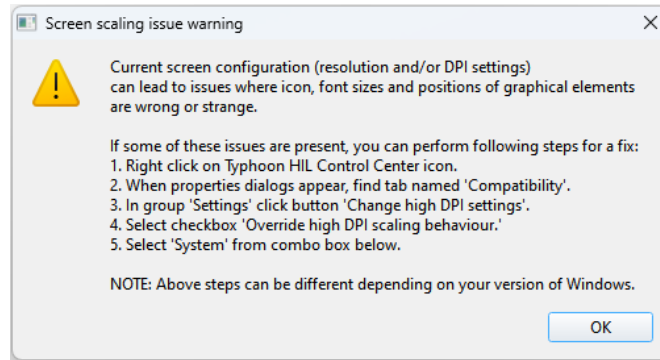
In some cases, another instance of THCC is already running on the host PC. Open task manager, find all instances of running THCC and end the tasks.

6.3 Exception during compilation

If an *"Evaluation failed for the property 'execution_rate' of the component ..."* exception is encountered during compilation, then the execution rates for the Danfoss components has not been set correctly. Open the 'Model initialization function' and add the four lines as depicted below (can also be copied from the example models).



6.4 HIL SCADA Trace graph incorrect rendering



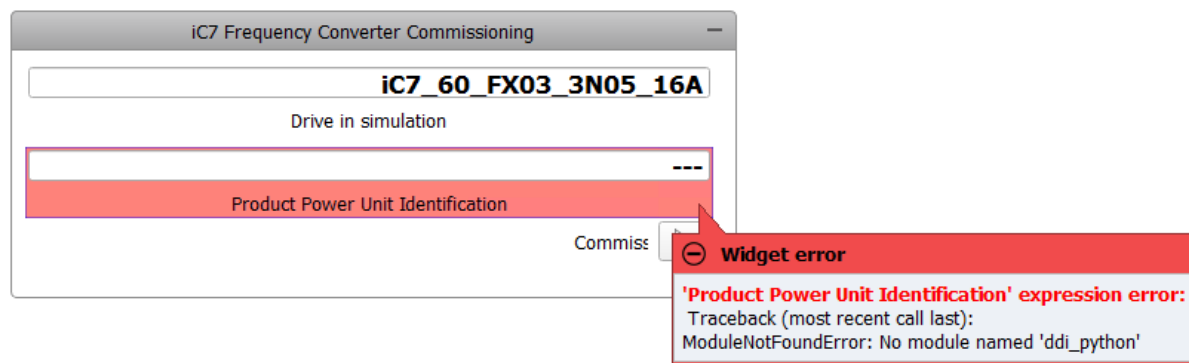
6.5 No module named 'ddCommunication' or 'ddi_python'

If an error like the one below appears when loading the *Commissioning* widget in SCADA, it is because the package for the frequency converter communication is not correctly installed. Ensure that the PC has access to the internet and try to reinstall the MyDrive® HIL Package in Package Manager again. If this does not resolve the problem, please contact Danfoss.

```
[08:37:19] : Error occurred!
'Frequency Converter      Commissioning' namespace initialization error:
Traceback (most recent call last):
ModuleNotFoundError: No module named 'ddCommunication'

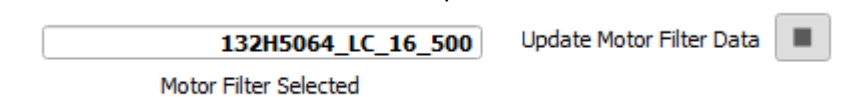
During handling of the above exception, another exception occurred:

Traceback (most recent call last):
Exception: Seems like the module for communicating with the Danfoss drive i
s not installed. Please try to run the package installation script for the
Danfoss libraries.
```



6.6 Macro execution hangs in HIL SCADA while communicating with the iC7 FC

If a macro hangs while communicating with the *iC7 Frequency Converter* the Typhoon Hil Control Center must be restarted. This should resolve the problem.

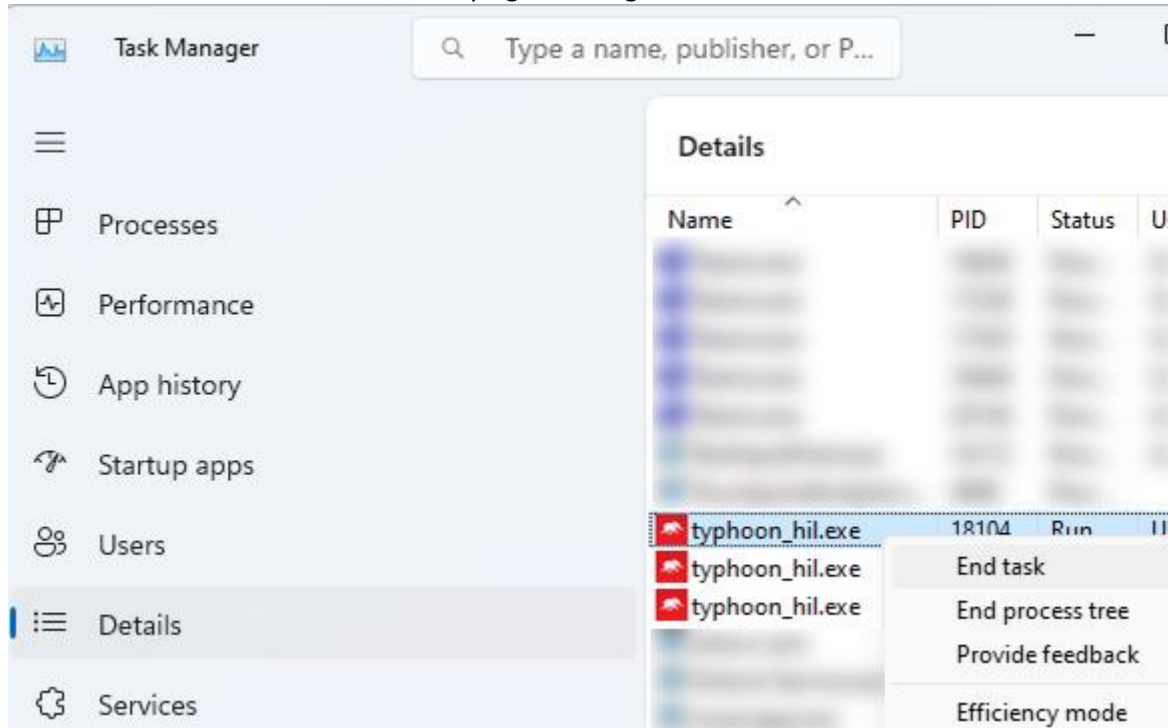


Note: Please inform Danfoss about the issue so that it can be resolved.

6.6.1 Terminating Typhoon Hil Control Center

When terminating the Typhoon Hil Control Center after an error, it is good practice to ensure that all *typhoonhil.exe* processes are killed:

- Start Task Manager,
- In the *Details* tab search for running *typhoonhil.exe* processes,
 - End the tasks by right clicking on them and select *End Task*.



6.7 Inconsistent / faulty iC7 Frequency Converter after Commissioning

Restart Typhoon HIL SCADA to remove persistent data in memory.

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