FoE – File access over EtherCAT – CompactCom 40

Files can be uploaded to and downloaded from the CompactCom file system over the EtherCAT network using FoE. FoE must be enabled in the CompactCom, and the keyword must be added to the ESI-file, in order to be used. The following sections will describe how to enable and use FoE.

FoE has very limited functionality (only upload and download of files is possible). If more advanced file/folder functionality are needed, it is recommended to enable EoE (Ethernet over EtherCAT) and use FTP instead.

- If FoE is enabled, access to the entire file system is granted. No user accounts can be created for FoE to limit the access rights.
- Password protection when downloading/uploading files via FoE is not supported by the CompactCom.
- FoE is not supported by Anybus IP.

Enable/Disable FoE

FoE is enabled/disabled with attribute #16 (Enable FoE) in the EtherCAT host object (F5h). If this attribute is not enabled in the host application, FoE is enabled in the CompactCom by default.

If FoE is enabled, the tag `</FoE>` must be added to the Mailbox section of the ESI-file, and if it is disabled, the keyword must be removed. The HMS ESI generator will automatically handle this keyword based on the setting in the EtherCAT host object.

```
<Mailbox DataLinkLayer="1">
 <CoE SdoInfo="1" CompleteAccess="1" PdoAssign="0" PdoConfig="0" PdoUpload="1"/>
 </FoE>
</Mailbox>
```

Download CompactCom 40 Firmware Files (HIFF-files)

- When downloading files with the extension HIFF via FoE, the files are always directed to the firmware-folder in the Anybus file system, i.e. it is not possible to download HIFF-files to any other locations in the file system.
- HIFF-files will be renamed to firmware.hiff when downloaded.
- Only one HIFF-file can be downloaded at a time. If a HIFF-file already exists in the firmware folder when a new HIFF-file is downloaded, the first file will be overwritten without notification.
- The HMS Firmware Manager II use FoE when downloading HIFF-files to a CompactCom EtherCAT module.
- When a new HIFF-file is downloaded, the CompactCom requires a restart to start flashing the new firmware. When the new firmware is flashed, the HIFF-file in the firmware folder will be deleted.
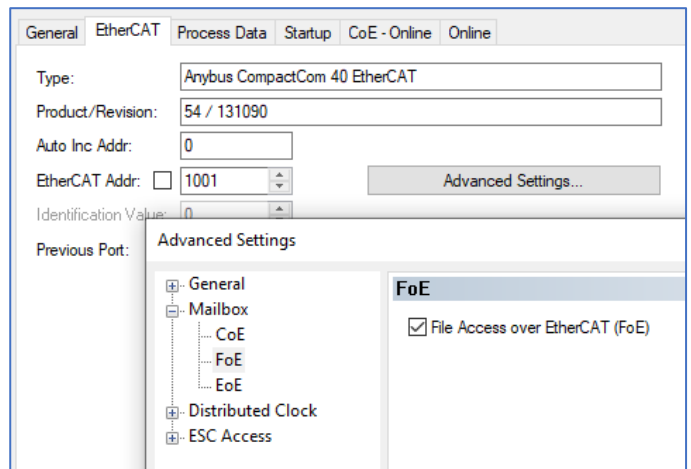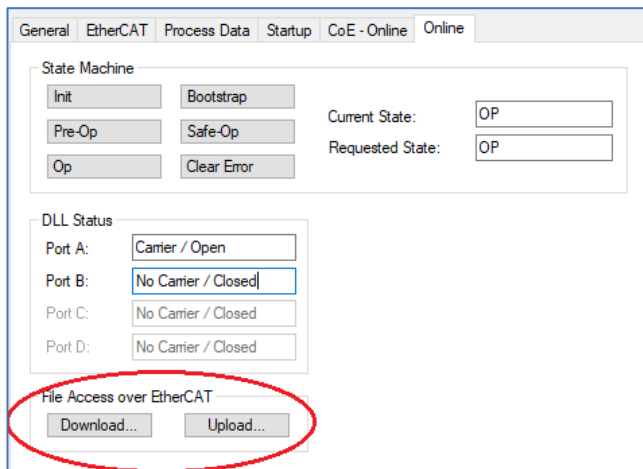
Download to the Anybus File System

- To download files, other than HIFF-files to the Anybus file system, use ..\ as a start of the filename.
  - Example: Downloading to "..\ThisIsAnExampleFile.txt" will download the file to the root of the Anybus file system.
  - Example: Downloading to "..\MyFolderNo1\ThisIsAnotherExampleFile.txt" will download the file to \MyFolderNo1\ in the Anybus file system.
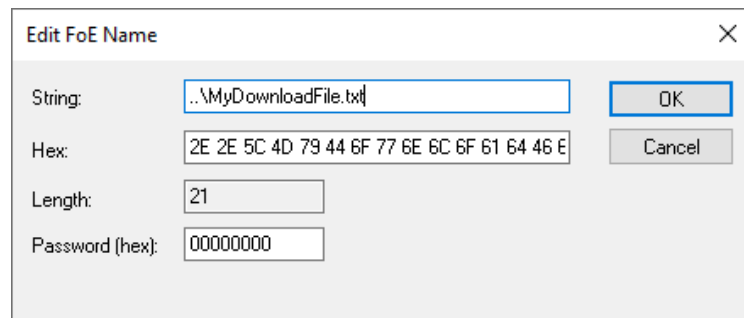
Download to the Application File System

- If the ..\ is not added as the start of the Slave Filename, the files will be directed to the Application File System Interface object (EAh). It is the same as downloading to the application folder ..\application\.
  - Example: Downloading "ThisIsAnExampleFile.txt" will download the file to the root of the Application file system.
  - Example: Downloading "\MyFolderNo2\ThisIsAnotherExampleFile.txt" will download the file to the \MyFolderNo2\ in the Application file system.

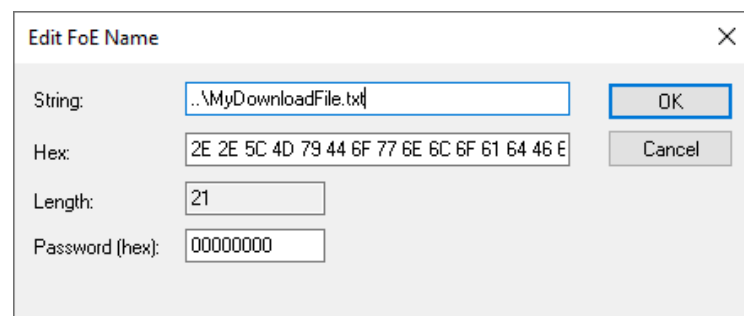# Download/upload files using Beckhoff TwinCAT 3

1. Connect to the slave, and make sure the slave is in Op, Pre-Op, or Safe-Op state.
2. Highlight the slave and click on the Online-tab. If the FoE Download/Upload buttons are disabled (greyed out), make sure FoE is enabled in the Advanced Settings on the EtherCAT tab.

3. To download a file, click the 'Download' button and browse for the file. Click 'Open'.
4. Note that the file extension (e.g. .hiff, .txt, .jpg etc.) is deleted in the 'Edit FoE Name' window. Make sure to add the correct file extension before downloading. Also, follow the syntax for the 'String' box described above depending on file type and target folder.
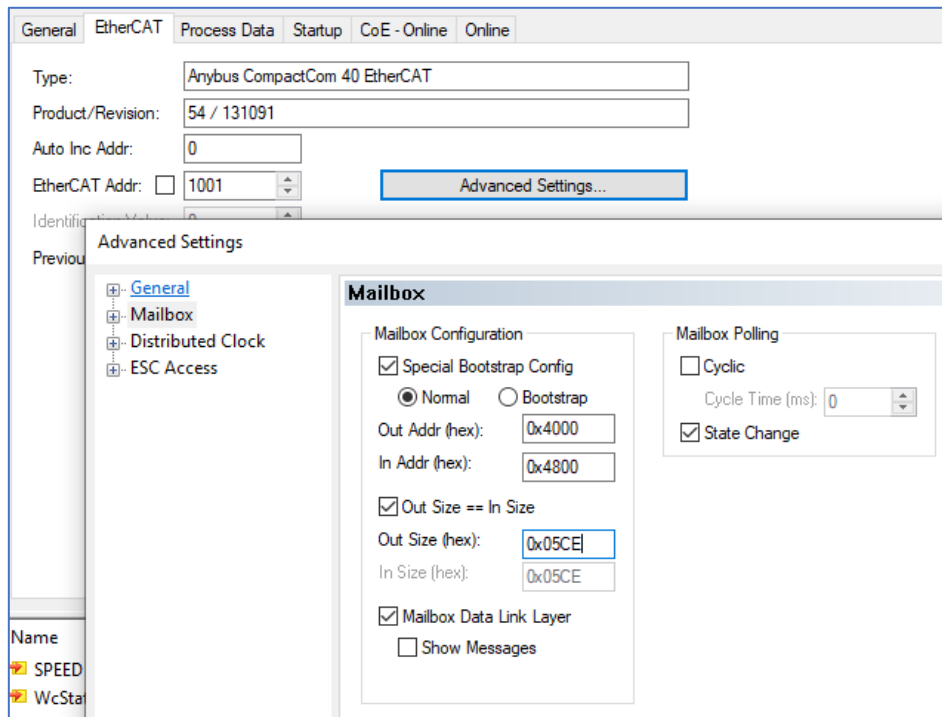

5. Click 'OK' to download the file.
6. To upload the file, click the 'Upload' button, browse to the folder where you want to save the file, and enter a file name in the 'File name' box. Click 'Save'.
7. Enter the file name and path in the 'String' box. Follow the syntax described above depending on file type and target folder.
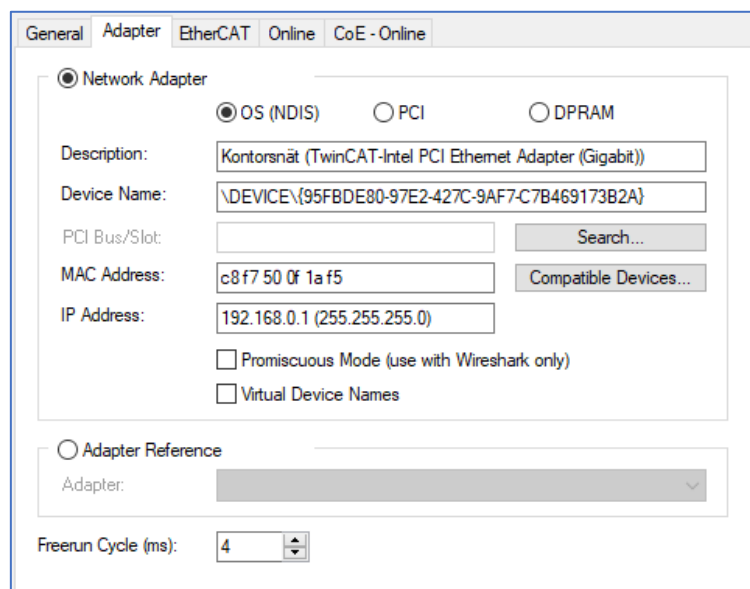

8. Click 'OK' to upload the file.

Improvements for better FoE performance

- Increase the Mailbox sizes on the slave's 'EtherCAT' tab – 'Advanced Settings' – 'Mailbox'. Max size: 1486 bytes (0x05CE).

- Reduce the Cycle Time. When in Freerun, the cycle time is configured on the master's 'Adapter' tab.
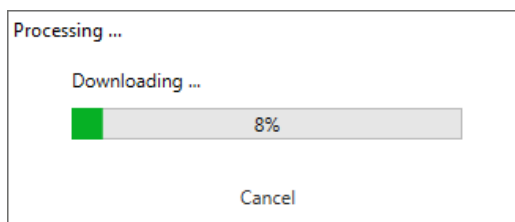
Download/upload files using Acontis EC-Engineer

1. Make sure the installed ESI-file has the FoE keyword present (otherwise the FoE tab will not show up for the slave when changing to 'Diagnosis Mode').
2. Connect to the slave, and make sure the slave is in Op, Pre-Op, or Safe-Op state.
3. Highlight the slave and click on the FoE tab.
4. To download a file, browse for the file by clicking "…" in the 'Local Filename' box. Follow the syntax for the 'Slave Filename' box described above depending on file type and target folder.
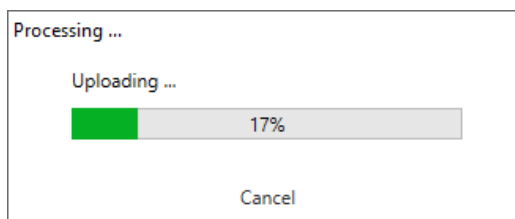
Example: Download/upload to/from the Anybus file system

5. Click 'Download to Slave' to download the file.

6. To upload the file, enter the file path and file name in the 'Slave Filename' box. Follow the syntax described above depending on file type and target folder.
7. Click 'Upload from Slave' to upload the file.
8. The file is uploaded to the folder specified in the 'Local Filename' box.

Improvements for better FoE performance

- Increase the Mailbox sizes on the slave's 'Advanced Options' tab – Overwrite Mailbox Size. Max size: 1486 bytes (0x05CE).

Overwrite Mailbox Size

☑ Output Size: 1486 [bytes]

☑ Input Size: 1486 [bytes]

- Reduce the Cycle Time. The cycle time is configured on the slave's 'Advanced Options' tab – Mailbox Mode.

Mailbox Mode

◉ Cyclic   4 [ms]

○ State Change