Application Note

FESTO

How to mount SMB (CIFS) share

This application note describes how to establish a SMB (CIFS) share with Festo PLCs CECC-.. and CPX-CEC-..-V3

CECC-...
CPX-CEC-...-V3

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1 Components/Software used

Type/Name	Version Software/Firmware	Version SMB protocol	Date of manufacture
CECC-X-...	>= 2.1.0	SMBv1	29.10.2015
CECC-S/D/LK	>= 1.3.8-cecc0	SMBv1	18.02.2015
CPX-CEC-...-V3	--	SMBv1	--

Table 1.1: 1 Components/Software used

2 Overview

If you want to access a file located in a shared windows folder by using one of the PLCs mentioned above you can follow this tutorial.

Note

If you want to log some process information, it is recommended to do this in the other direction: Write the files on the local file system and download it periodically with a PC via FTP. In this case you don't have to deal with problems concerning the network access in the IEC code.

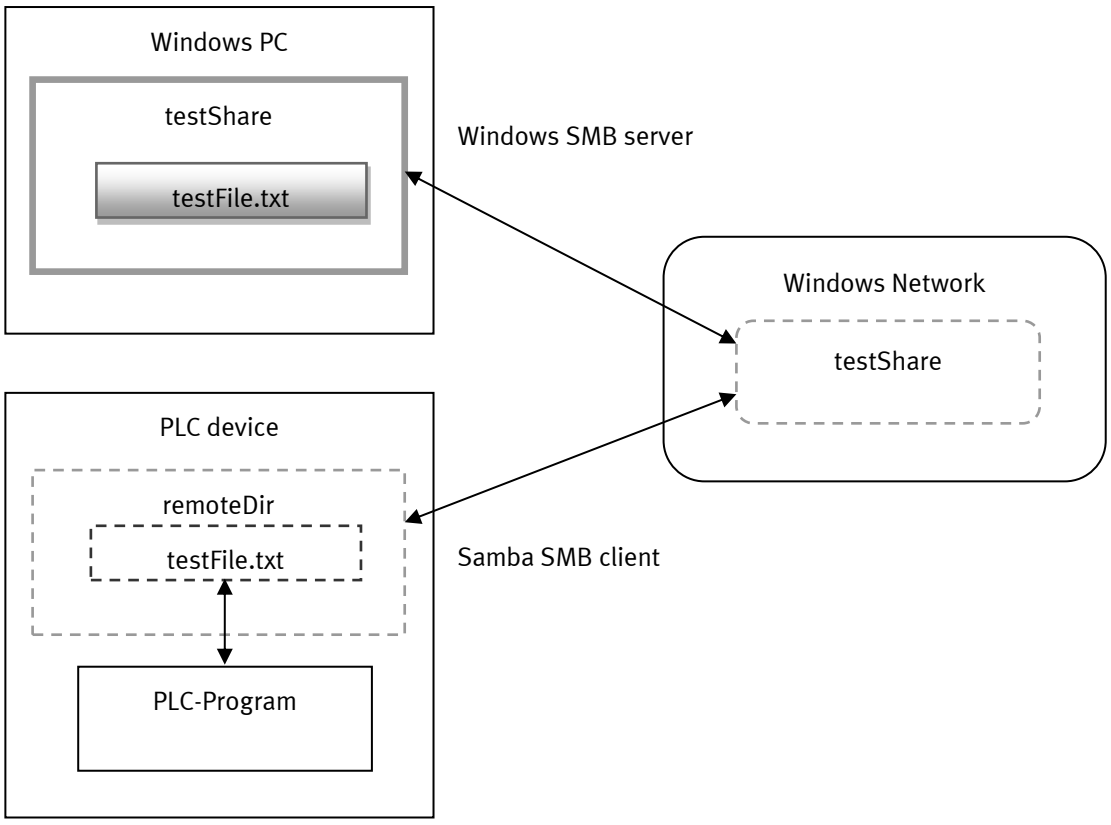
Note

The behaviour of processing the "startup.txt" - which is the subject of this application note - is different for the CECC and CPX.

On the CPX-CEC-...-V3 the startup-script is processed after starting the CODESYS runtime and on CECC devices it is processed before.

2.1 Architecture

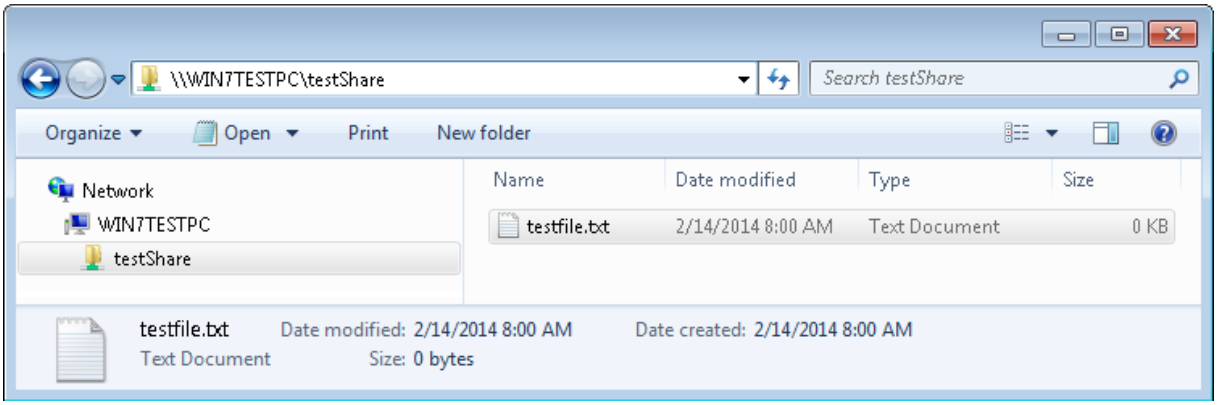
A shared folder in a windows network is called SMB share. The CODESYS program can only access the local file system. To access a shared folder you have to mount the folder in your local file system.



3 Mount a SMB share

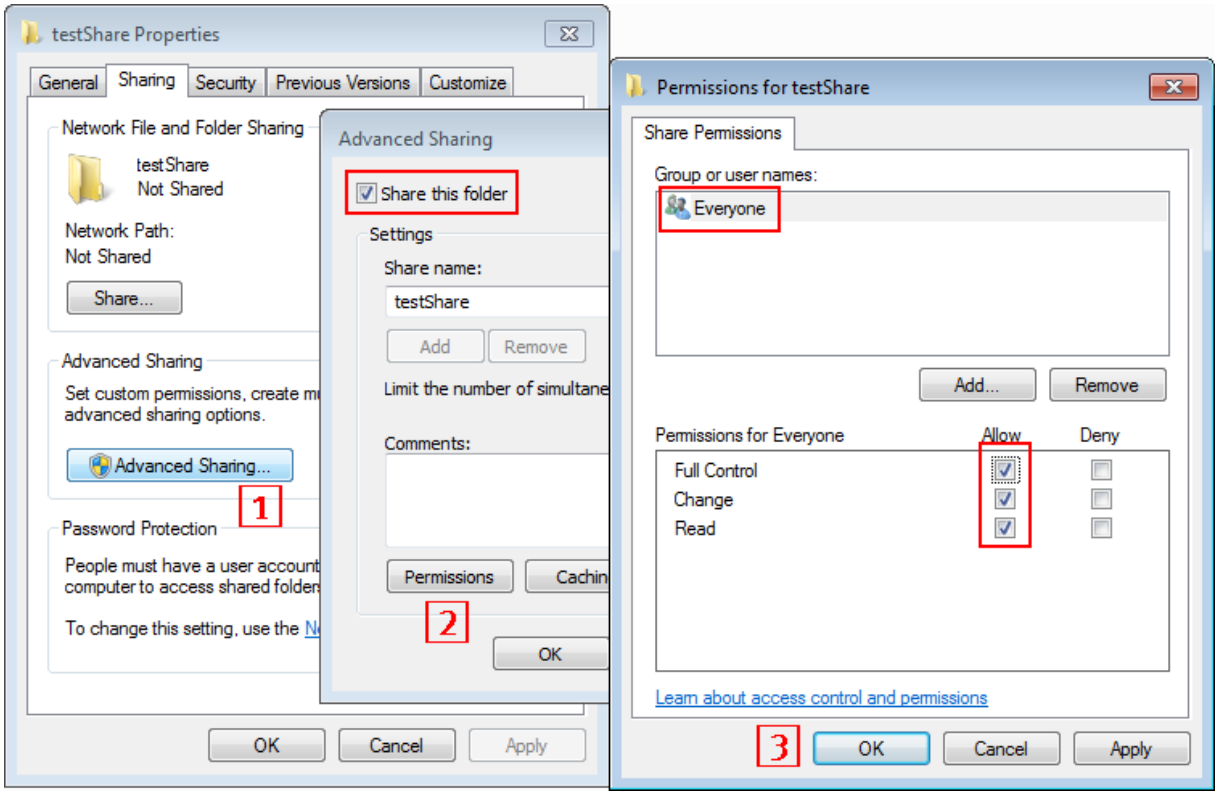
3.1 Step one

Make a SMB share by using windows. A SMB share is a shared folder in windows. Try to access the share with the explorer on a second PC.

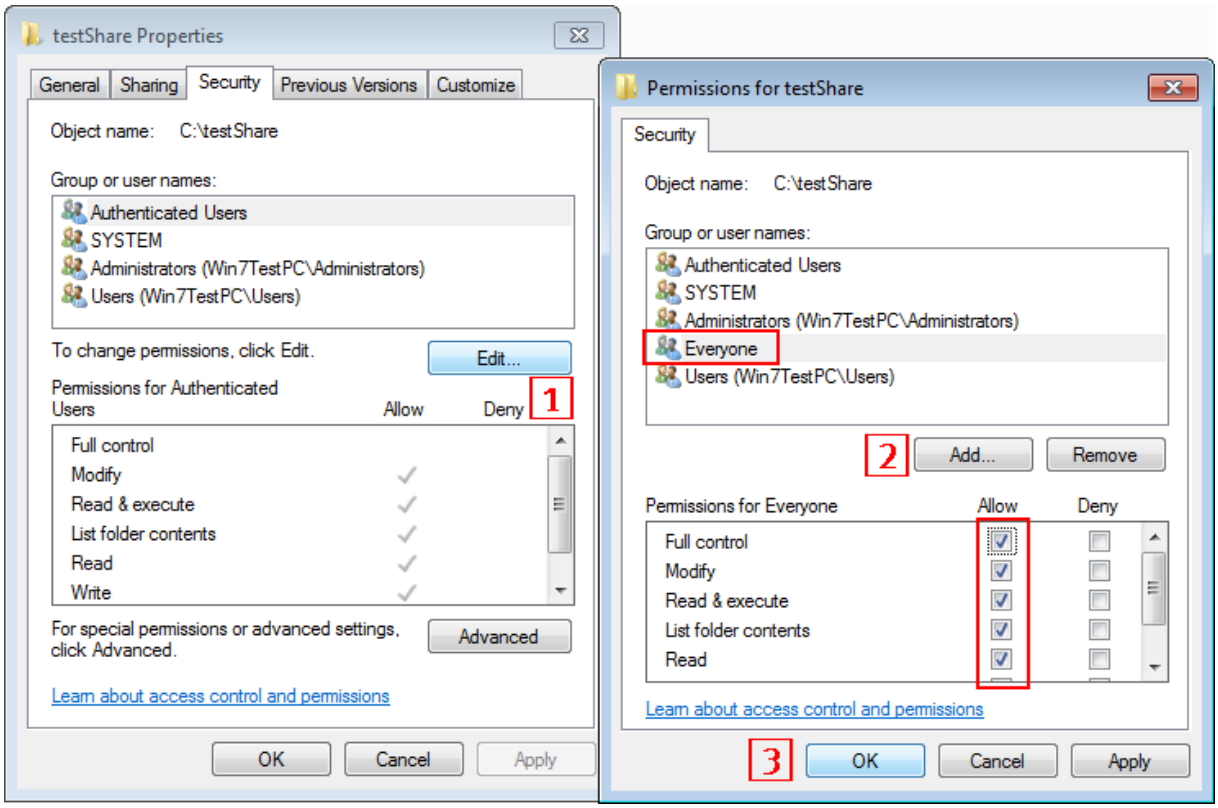


For test purposes you can enable sharing and security for **Everyone** with full access

Sharing



Security



3.2 Step two

Edit the startup script file.

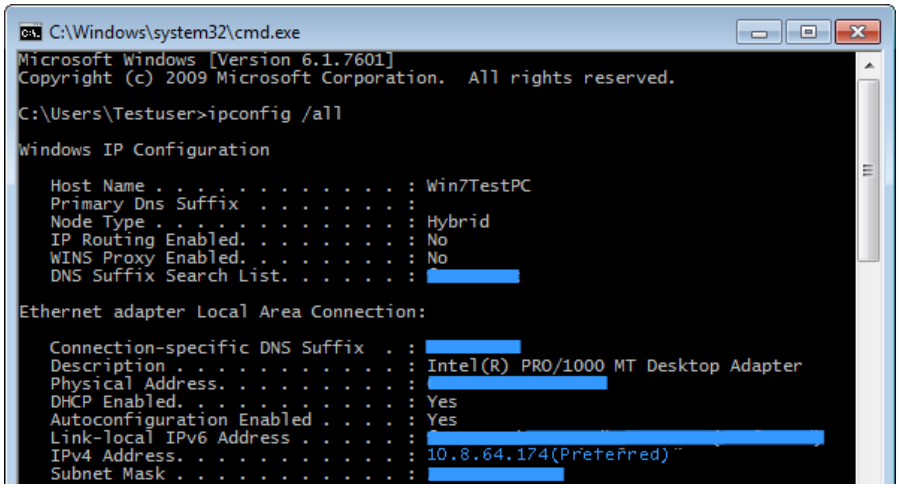
To do that, open or create the file **startup.txt** with your favourite editor. Edit the file as shown below. **Edit only the underlined part of the file.** Fill in your **username, password,** the **IP address** and the **name of your file sharing service**.

> **Note**
> The NetBios name instead of the PC's IP address is not supported.

> **Note**
> The end of line in the "startup.txt" file has to be a "LF" (linux style) not a "CRLF".

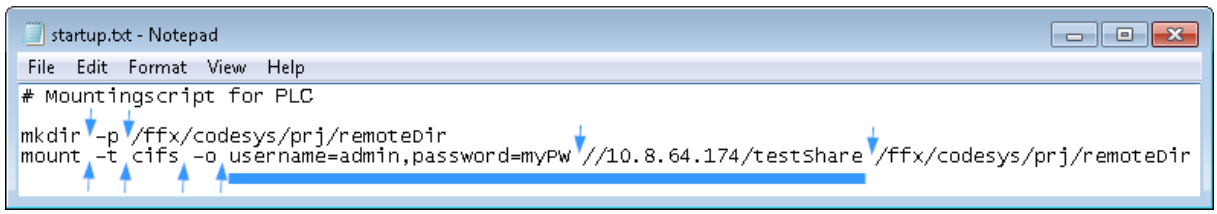
To find out your Windows PC's IP address you can use the Windows command console:

- Open the console with **WINDOWS + R** and enter `cmd`
- Execute the command `ipconfig /all`



In this example the computer **WIN7TESTPC** has the IP address 10.8.64.174.

Note
You may need to surround your password with single quotes like `'myPW'`



Note
Don't forget the spaces at the related arrow positions!
Also the name of the file sharing service is case sensitive. Don't mix this name (in this example "test-share") with the directories inside the share (e.g. `\this\is\a\path\`).

You can test the above script commands directly on an established telnet connection to the device (use the Festo Field Device Tool to open "Telnet") via the Linux command line.

Use the following commands to troubleshoot the CIFS mounting:

- Enable debugging: `echo 7 > /proc/fs/cifs/cifsFYI`
- Disable debugging: `echo 0 > /proc/fs/cifs/cifsFYI`
- Show debugging info: `dmesg`

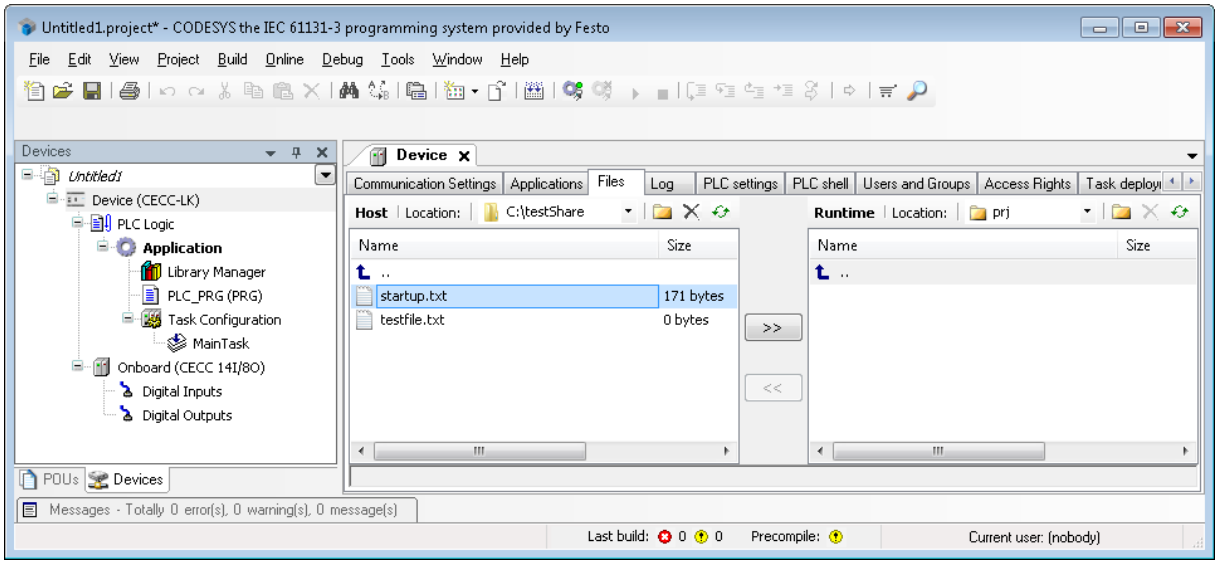
For more information about the mount command visit: http://linux.die.net/man/8/mount.cifs.

The directory `remoteDir` is the mount point on the PLC. This means that you will have a folder in the file system of the PLC if the operation is successful.

3.3 Step three

Copy the startup script file **startup.txt** to your PLC. It is recommended to do that with CODESYS.

1. Click on the PLC node in the project tree on the left.
2. Select the PLC in the tab "Communication Settings".
3. Select the "Files" tab.
4. Connect to the PLC and open the `prj/` subfolder.
5. Copy/Transfer the file **startup.txt** from your PC to the PLC.



3.4 Step four

Reboot the PLC device.

You can test the success of the mount procedure by using the same mechanism you used for uploading **startup.txt**.

Now there should be a subfolder inside the PLC directory `prj/` called `remoteDir/`.

3.5 Step five

Create your CODESYS program.

Use the default functions of library *SysFile* to access the new mount point. You can use the relative path `prj/remoteDir/` to your mount point.

Below is a possible example program using the libraries

- SysFile
- CmpErrors Interface

```
PROGRAM PLC_PRG
VAR
  filePtr : SysFile.RTS_IEC_HANDLE := CmpErrors.HandleErrors.RTS_INVALID_HANDLE;
  init : BOOL := FALSE;
  Result : SysFile.RTS_IEC_RESULT;
  StringRead : STRING(255) := ''; (* string read from shared file 'testfile.txt'
*)
```

```
IF NOT init THEN
  init := TRUE;

  filePtr := SysFileOpen(szFile:='prj/remoteDir/testfile.txt',
                         am:= SysFile.AM_READ,      (* access mode *)
                         pResult:= ADR(Result));
  IF Result = CmpErrors.Errors.ERR_OK THEN
    (* successfully opened file for reading *)
    SysFileRead(hFile:= filePtr,
                pbyBuffer:= ADR(StringRead),
                ulSize:= SIZEOF(StringRead),
                pResult:= ADR(Result));
    SysFileClose(hFile:= filePtr);
    filePtr := CmpErrors.HandleErrors.RTS_INVALID_HANDLE;
  ELSE
    (* error opening file for reading *)
    ;
  END_IF
END_IF
```

If you get a valid file descriptor => Mounting has been completed successfully and you can access your shared file `testfile.txt` stored at the PC.

3.6 Completely remove SMB (CIFS) share

- Remove the file `/ffx/codesys/prj/startup.txt` via register “File”.
- Reboot the device.
- Remove the created mount point directory `/ffx/codesys/prj/remoteDir` via register “File”.