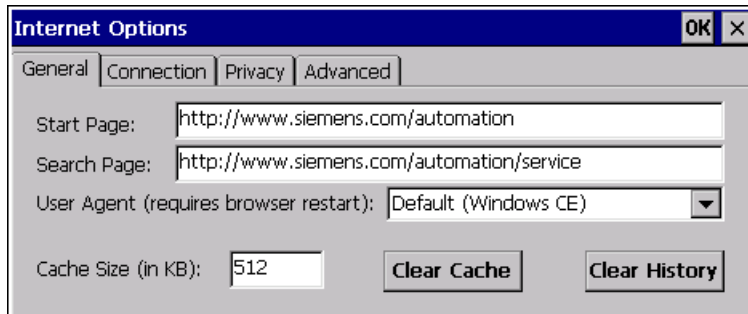## 6.12 Changing Internet settings

6.12.1 Changing general settings

You can use this function to set the homepage and search engine page for an Internet connection via the Internet Explorer. Ask your network administrator for the required information.

Requirement

You have opened the "General" tab in the "Internet Options" dialog box using the "Internet Options" icon.

Procedure

Proceed as follows:

1. Enter the homepage for the Internet browser in the "Start Page" text box.

2. Enter the address of the default search engine in the "Search Page" text box.

3. Enter the display format of the Internet pages in the "User Agent" text box.

   The following display formats can be selected:

   – Default (Windows CE)

   – Same as Pocket PC

   – Same as Windows XP

   Note

   The "Default (Windows CE)" display format is optimized for Internet pages on a HMI device with the Windows CE operating system. "Default (Windows CE)" is therefore the most suitable.

   ---

4. Enter the required amount of cache in the "Cache" text box.

5. If you want to delete the cache, press the "Clear Cache" button.

6. If you want to delete the history, press the "Clear History" button.

7. Confirm your entries.

   The dialog closes.

Result

The general parameters for the Internet browser have been set. The settings take effect the next time you start the Internet Explorer.
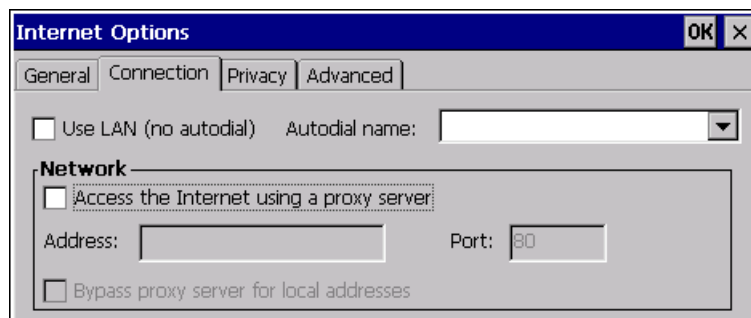
6.12.2 Setting the proxy server

Use this function to configure the type of Internet access. Ask your network administrator for the required information.

Requirement

You have opened the "Connection" tab in the "Internet Options" dialog box using the "Internet Options" icon.

Procedure

Proceed as follows:

1. Select the "Use LAN (no autodial)" check box.

2. If you are using a proxy server, in the "Network" group, select the "Access the Internet using a proxy server" check box.

   Specify the address and port of the proxy server.

3. If you want to bypass the proxy server for local addresses, select the "Bypass proxy server for local addresses" check box.

4. Confirm your entries.

   The dialog closes.

Result

The parameters for the LAN connection have been made.

6.12.3 Changing privacy settings

Cookies contain information sent by a Web server to a browser. The cookie is sent back when the Web server is accessed at a later time. This step involves sending stored information for subsequent access.
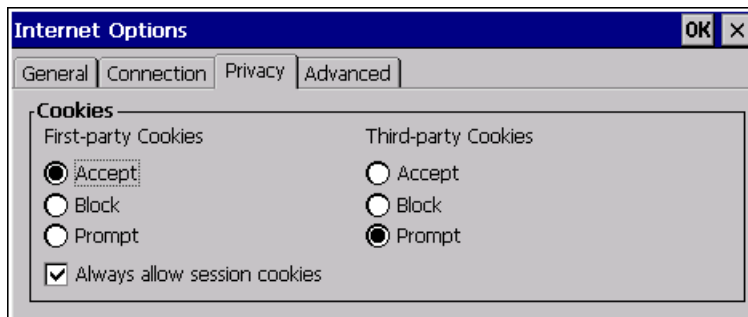
Data can be sent encrypted for greater data security on the Internet. Common encryption protocols include SSL and TLS. You can activate or deactivate the usage of encryption protocols.

Ask your network administrator for the required information.

Requirement

You have opened the "Privacy" tab in the "Internet Options" dialog box using the "Internet Options" icon.
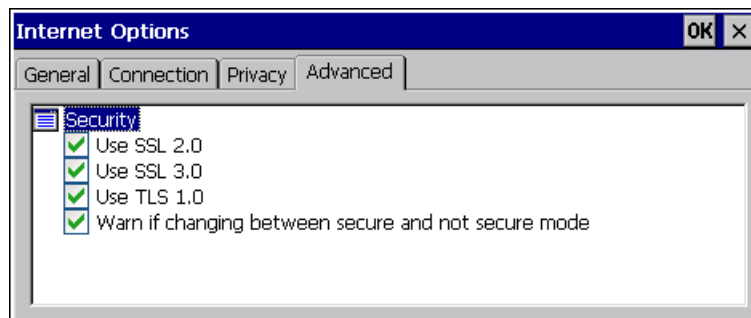

Procedure

Proceed as follows:

1. Select the required cookie behavior by means of the radio buttons.
   - "Accept"

     Cookies are stored without request.
   - "Block"

     Cookies will not be stored.
   - "Prompt"

     Cookies will be stored on request.
2. If you want allow cookies which are restricted to a single session, select the "Always allow session cookies" check box.

3. Change to the "Advanced" tab.

4. Activate the required encryption protocol.

5. Confirm your entries.

   The dialog closes.

Result

The accepted cookies and the required encryption protocol are set.

6.12.4   Importing, displaying and deleting certificates

You can use this function to import, display and delete certificates. The certificates differ as follows:

- Certificates that you trust

- Own certificates

- Other certificates

A digital certificate consists of structured data, which confirms ownership and other properties of a public key. Ask your network administrator about the certificates required for your application.

Requirement

You have opened the "Certificates" dialog box with the "Certificates" icon.

Procedure

Proceed as follows:

1. Select the type of certificate from the selection box:
   – "Trusted Authorities" for reliable certificates
   – "My Certificates" for your own certificates
   – "Other Certificates" for other certificates

2. If you want to import a certificate, press the "Import" button.

   A dialog with information about the source opens.
   – Select the required source.
   – Close the dialog.

3. If you want to display the properties of the selected certificate, press the "View" button.

   The following dialog appears:
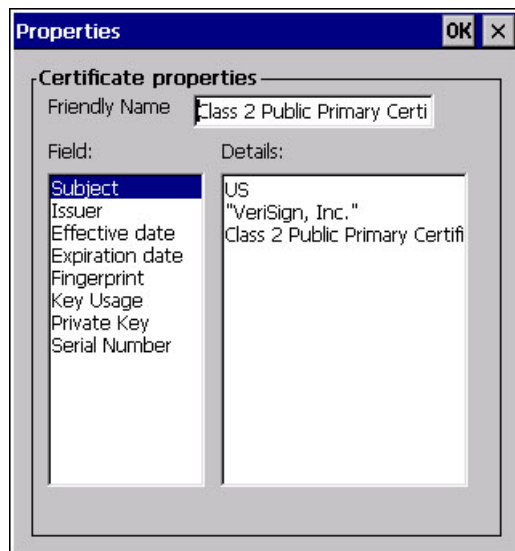
4. If you want to delete a certificate, first select it.

5. Confirm by pressing the "Remove" button in the "Certificates" dialog.

Note

The entry is deleted immediately and without further inquiry.

If you want to again use a deleted certificate, you need to import it again from a storage medium.

---

6. Confirm your entries.

   The dialog closes.

Result

The number of saved certificates has changed.

6.13 Saving to external storage medium – backup

You can use this function to back up the operating system, applications and data from the internal in flash memory of the HMI device to an external storage medium. See section "Displaying information about the HMI device (Page 158)".

The following external storage media can be used:

- Memory card
- USB memory stick

Requirement

- Storage medium with sufficient free capacity is inserted in the memory card slot.

  See section "Inserting a memory card (Page 87)".

- Data that might be overwritten are saved.
- You have opened the "Backup/Restore" dialog box using the "Backup/Restore" icon.

Procedure

Proceed as follows:

1. Click the "BACKUP" button.

   The "Select Storage Card"" dialog box is displayed. The "--- no storage card available ---" message appears if there is no memory card in the HMI device or it is defective. Insert a memory card or insert another one.

2. Select the storage medium for backup from the "Please select a Storage Card" list box.

3. Click the "Start Backup" button.

   The HMI device checks the storage medium.

   If the "This storage card..." message appears, you need a storage medium of greater capacity. Acknowledge this message. Backup is aborted at this point. Insert a storage medium with a greater capacity and restart the backup process.

   If the "You may have an old backup on the storage card. Do you want to delete it?" message appears, there is already a backup on the storage medium. If you do not want to overwrite the backup, press the ""No"" button. Otherwise, click the "Yes" button.

   Several messages are displayed in sequence during the backup process:

   – Saving registry data

   – Copy files

   A progress bar shows the status of the backup process. When the backup process is completed, the "The operation completed successfully." message is displayed.

4. Acknowledge this message.

   The dialog closes.

Result

The HMI device data is now saved on the storage medium.

6.14   Restoring from external storage medium – Restore

Use this function to restore data from a storage medium to the HMI device.

A restore operation deletes the old data from flash memory of the HMI device on confirmation. The data stored on the storage medium is then copied to the internal flash memory.

Requirement

- The storage medium with the backup data is inserted in the HMI device.

  See section "Inserting a memory card (Page 87)".

- You have opened the "Backup/Restore" dialog box using the "Backup/Restore" icon.

Backup / Restore ☒

All other application must be ended before
starting <BACKUP> or <RESTORE>.

Backup (to storage card)

        BACKUP

Restore (from storage card)

        RESTORE

NOTICE
Data loss
All data on the HMI device will be deleted during a restore operation. License keys will be deleted after query.
Back up the HMI device's data before restoring if required.
Memory card with data backup
If several storage media with data backups are inserted, the data cannot be restored.
Remove the storage medium with the data backups you do not need.

Procedure

Proceed as follows:

1. Click the "RESTORE" button.

   The "Storage Card" dialog box opens.

   ① No memory card available
   ② Only one memory card with a backup is permitted. No memory card detected. Insert a memory card and press the "Refresh" button.

2. Select the storage medium with the backup from the "Storage Card with Backup detected" selection box.

   The "--- no storage card available ---" message appears if there is no storage medium in the HMI device or it is defective.

3. If the "--- no storage card available ---" message appears, press the "Cancel" button.

   Restoring is then aborted.

   – Insert a storage medium or another one.

   – Click the "Refresh" button.

     The content of the selection box changes.

   – Select the storage medium with the backup from the "Storage Card with Backup detected" selection box.

4. Click the "Start Restore" button.

   Restoring is started.

5. The data to be restored is checked.

   The following messages are displayed in sequence during the check.

   – "Starting Restore"

   – "Checking data"

   When the data has been checked, the following message is displayed:

   "You are starting RESTORE now. All files (except files on storage cards) and the registry will be erased. Are you sure?"

6. If you do not want to permit that data are deleted from the HMI device, abort the restore process by pressing the "ESC" button.

7. Start to restore the data by selecting "Yes".

   The following messages are displayed in sequence during the restore:

   – "Deleting files on flash"

   – "Restore CE Image"

   A progress bar shows the status of the restore process.

   When restore is completed, the following message is displayed:

   "Restore succesfully finished. Press ok, remove your storage card and reboot your device."

8. Remove the storage medium.

9. Acknowledge this message.

   The HMI device starts again.

Result

The data from the storage medium is now on the HMI device.

Note

After the restore, check whether it is necessary to calibrate the touch screen.

6.15 Activate memory management

If memory management is activated, the HMI device will automatically close the project if the memory needs reorganizing during the active project.

If the project is closed due to this setting, then a message will be displayed on the HMI device. You have to start the project again.

NOTICE
Memory management
If you do not activate memory management, malfunctions can occur during the runtime of the project.
Select memory management in the "OP Properties" dialog.

Requirement

You have opened the "Memory Monitoring" tab in the "OP Properties" dialog using the "OP" icon.
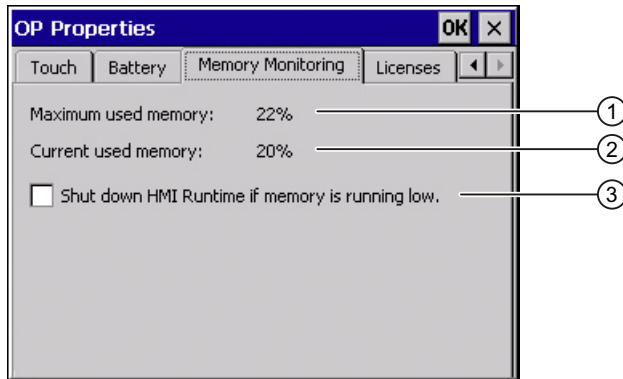
① Percent of maximum memory used since the last startup of the HMI device
② Percentage of memory currently used
③ Check box for selecting memory management

Procedure

Proceed as follows:

1. If you want to enable memory management, then select the check box.

2. Confirm your entries.

   The dialog closes.

Result

Memory management is activated.

Safety-related configuration 7

7.1 General procedure

Programs for fail-safe operation

For fail-safe operation of the HMI device, the following software is required:

- STEP 7, hardware configuration "HW Config"
- Add-on package "S7 Distributed Safety", V5.4, SP3
- WinCC flexible

See also section "Software requirements (Page 25)".

The software is installed on the configuration computer and is called through the SIMATIC manager. You can find additional information in the Start menu.

Program	Task	Start menu
STEP 7, HW Config	Creating a project for the automation system	SIMATIC > Documentation > desired language
S7 Distributed Safety	Create a safety program	SIMATIC > Documentation > desired language
WinCC flexible	Create a project for the HMI device	SIMATIC > WinCC flexible 2007 > WinCC flexible help system

Procedure

Proceed as follows:

1. Create a STEP 7 project in the SIMATIC Manager.
2. Configure the desired F-CPU and a PROFINET connection in the hardware configuration "HW Config".
3. Add a mobile HMI device to the configuration from the hardware catalog of HW Config.
4. Set the parameters for the communication with the controller.

   See section "Assigning parameters for communication between the HMI device and the controller (Page 194)".
5. Configure other components in accordance with your plant.
6. Create a safety program for the F-CPU in STEP 7 with S7 Distributed Safety.
7. Insert the F-FBs required for the HMI device in the safety program.

   Close these FBs according to the instructions. Follow the checklist for this procedure – see section "Checklist for EMERGENCY STOP configuration (Page 197)".

8. Open the program, WinCC flexible ES.

9. Create a project for the HMI device.

10. Set "Ethernet/Wireless" in the project view under "Communication".

11. Configure the PROFIsafe address of the HMI device in the project window under "Device Settings > Device Settings".

12. Configure the effective ranges for your plant under "Device Settings > Effective Ranges".

13. Configure the HMI screens for operator control and monitoring of the plant in fail-safe mode.

7.2 Checklist for configuration

Perform the following tasks for safety-related configuration. Confirm each task by checking it off in the following list.

Task	Information source	Check
STEP 7, HW Config • Add the HMI device to the plant configuration • Set the PROFIsafe parameters	SIMATIC STEP 7 (Page 193)	
S7 Distributed Safety Call the required F-FBs in the safety program	Using F-FBs (Page 198)	
WinCC flexible Configure the unique project identifiers for the effective ranges and operator controls	Configuration in WinCC flexible (Page 209)	
Configuring the HMI device	Configuring the HMI device (Page 127)	

7.3   SIMATIC STEP 7

7.3.1   Configuring in STEP 7

Requirement

- A STEP 7 project has been created in SIMATIC Manager.

Procedure

Proceed as follows:

1. Configure the required F-CPU and a PROFINET connection in the hardware configuration "HW Config".

2. Add a mobile HMI device to the configuration from the hardware catalog of HW Config.

   To do this, drag the HMI device onto the PROFINET connection in the station window.

3. Open the object properties of the HMI device in the shortcut menu and set the parameters for the communication to the controller.

NOTICE
Response time for the logon sequence a maximum of 2 seconds
The response time for the logon sequence may be a maximum of 2 seconds
Consider this during configuration. The response time is calculated as follows:
2 x PROFINET cycle time + maximum cycle time of the OB.

If the HMI device is not listed in the hardware catalog of HW Config, you need to integrate the official GSD file (device database) for the HMI device in the STEP 7 database.

You can find the GSDML file on the data medium included in the scope of delivery or by contacting your Siemens representative in the Internet (http://support.automation.siemens.com/WW/llisapi.dll?aktprim=99&lang=en&referer=%2fWW%2f&func=cslib.csinfo2&siteid=csius&extranet=standard&viewreg=WW).

Note

The supplied GSD files have integrated themselves into STEP 7 during installation of WinCC flexible.

7.3.2 Assigning parameters for communication between the HMI device and the controller

If you select the HMI device in the HW Config, the following modules are displayed:

- Mobile277fiwlan
- Mobile277Standard_IO
- Mobile277Failsafe_IO

You can find information on configuring the F I/O in STEP 7 in the following manuals:

- Programming and operation manual "S7 Distributed Safety - Configuring and Programming" (http://support.automation.siemens.com/WW/view/en/22099875)
- "Safety Technology in SIMATIC S7" system manual (http://support.automation.siemens.com/WW/view/en/12490443)

You can find additional information on working in HW Config in the manual "Configuring hardware and communication connections with STEP 7" (http://support.automation.siemens.com/WW/view/en/18652631) and in the HW Config online help.

Configure the parameters for fail-safe mode in the object properties of the Mobile277Failsafe_IO. A password is required for the safety program. You can find additional information about access protection in the "S7 Distributed Safety, Configuring and Programming" manual (http://support.automation.siemens.com/WW/view/en/22099875).

Procedure

NOTICE
Maximum response time
If an error occurs, the monitoring time will be included in the maximum response time.
Select a monitoring time short enough to ensure that the error tolerance time of the production process will not be exceeded.

Proceed as follows:

1. Set the address area for the process image in the "Addresses" tab.

   The process image is a memory area in the controller which the HMI device and controller access together. At the beginning of the cyclic control program the signal states of the inputs of the HMI device are transferred to the controller via the process input images, PII. At the end of the cyclic program the process image of the outputs, PIQ is transferred as a signal state to the HMI device.

Parameter	Meaning
Input > Address > Start of Address Area	Start address of the inputs in the process image. The safety-relevant user data of the HMI device is shown. The allocation depends on the controller used.
Input > process image	Process image to which the address range of the inputs belongs, PII. This parameter cannot be changed for SIMATIC CPU 300 type controllers.
Output > Address > Start of Address Area	Start address of the outputs in the process image The safety-relevant user data of the HMI device is shown. The allocation depends on the controller used.
Output > process image	Process image to which the address range of the outputs belongs, PIQ. This parameter cannot be changed for SIMATIC CPU 300 type controllers.

2. In the "PROFIsafe" tab, set the "F_Dest_Add" and "F_WD_Time" parameters.

Parameter	Meaning
F_Dest_Add	PROFIsafe address used to uniquely identify the destination throughout the network and station. The address is assigned automatically. The "F_Dest_Add" parameter can have a value between 1 and 65534.
F_WD_Time (ms)	Monitoring time in the fail-safe IO device. A valid current safety frame must reach the F-CPU and be returned to the HMI device within the monitoring time period. This ensures that failures and errors are detected and appropriate responses are triggered to keep the fail-safe system in a safe state or transfer it to a safe state. You should select a monitoring time long enough for message frame delays to be tolerated by the communication system, but short enough for the fault reaction function to respond quickly enough in the event of a fault (for example interruption of the communication connection). You can set the "F_WD_Time" parameter in 1 ms increments. The monitoring period is set at 500 ms. Calculate the minimum watchdog time using the table "s7fcotia.xls" (http://support.automation.siemens.com/WW/view/en/21627074). This table is part of the option package S7 Distributed Safety. You can find the parameters needed to calculate the monitoring time under "General specifications".

The following parameters are fixed:

Parameter	Meaning
F_SIL	Safety class of the HMI device The value of the parameter is set to "SIL 3".
F_Block_ID	This parameter must be set to the value "0", because there is no checksum of the individual device parameters.
F_Par_Version	Implemented PROFIsafe version. The value of the parameter is set to "1". This means PROFIsafe V2 will be used.
F_Source_Add	PROFIsafe address used to uniquely identify the source throughout the network and station. The address is assigned automatically. The "F_Source_Add" parameter can have a value between 1 and 65534.

7.3.3 "SIMATIC S7 Distributed Safety" add-on

During fail-safe operation, a safety program runs in the F-CPU. The HMI device is integrated into this safety program.

The HMI device and F-CPU communicate via PROFINET IO. PROFIsafe as of V2.0 is required for safety-related communication.

The HMI device has the following safety features:

- Detects the signal states of the EMERGENCY STOP button and enabling button
- Sends the signal states to the F-CPU in the form of safety message frames

Safety program and fail-safe blocks

For fail-safe operation of the HMI device, you need to configure a safety program in STEP 7 with the "SIMATIC S7 Distributed Safety" add-on package as of V5.4 SP3. To guarantee availability of the safety functions, the fail-safe function blocks (F-FBs) from the "MP277F_IWLAN" library must be integrated in the safety program.

If you do not use the F-FBs, the HMI device cannot be integrated in the safety program of the F-CPU. The project on the HMI device will not start.

You can find the F-FBs on the data medium included in the product package or at the Internet customer portal (http://support.automation.siemens.com/WW/llisapi.dll?aktprim=99&lang=en&referer=%2fWW%2f&func=cslib.csinfo2&siteid=csius&extranet=standard&viewreg=WW).

Additional information

You can find additional information on working with S7 Distributed Safety in the Programming and operation manual "S7 Distributed Safety - Configuring and Programming" (http://support.automation.siemens.com/WW/view/en/22099875) as well as in the online help for S7 Distributed Safety.

7.3.4 Checklist for EMERGENCY STOP configuration

Read all the information provided in Programming and operation manual "S7 Distributed Safety - Configuring and Programming"
(http://support.automation.siemens.com/WW/view/en/22099875).

Perform the following tasks for configuration:

Task	Information source	Check
Configure hardware	S7 Distributed Safety, "Overview of configuration" section	
Configure F-CPU • Level of protection "CPU contains safety program" • Password • Set specific safety-related parameters. • Define the call time for the F-runtime group in which the safety program is to be executed.	S7 Distributed Safety "Configuring the F-CPU" section	
Save, compile and download the hardware configuration. This step creates the following: • F-shared DB • F-I/O DB for the HMI device • System data	–	
Add F-FBs: • FB161, F_FB_MP • FB162, F_FB_RNG_4 or FB163, F_FB_RNG_16 • FC176, F_BO_W • FC177, F_W_BO • FB215, F_ESTOP1 • F_DB_STATES or a comparable data area in an existing F-DB	• Using F-FBs (Page 198) • F_FB_MP (Page 201) • F_FB_RNG_4 and F_FB_RNG_16 (Page 204)	
Create F-runtime group • Create F-CALL • Assign F-FB and F-FC to F-CALL • Set maximum cycle time for the F-run-time group in accordance with requirements	S7 Distributed Safety, "Defining F-run-time groups" section	
Call the safety program, for example in OB 35	S7 Distributed Safety, "Defining F-run-time groups" section	
Generate the safety program	S7 Distributed Safety, section "Compiling the safety program"	
Test the safety program	• Online help for the F-FBs • F_FB_MP (Page 201) • F_FB_RNG_4 and F_FB_RNG_16 (Page 204)	
Download the safety program to the F-CPU	–	
Testing and acceptance testing of the safety program	S7 Distributed Safety, "Safety program acceptance test" section	

7.3.5   Using F-FBs

You must integrate the following F-blocks into your safety program:

- An F_FB_MP F-block for each HMI device.

  The assigned HMI device is monitored by this F-FB.

- One F_FB_RNG_4 or F_FB_RNG_16 for each machine.

  The assigned effective range for this machine is managed by this F-FB. Whether F_FB_RNG_4 or F_FB_RNG_16 is required depends on the maximum number of HMI devices that are to be logged onto a machine:

  - F_FB_RNG_4 For a maximum of 4 HMI devices
  - F_FB_RNG_16 For a maximum of 16 HMI devices

NOTICE

Only HMI devices of one model can log on to an F-FB

Only HMI devices with the same distance measurement system can log on to an F-FB, this means either HMI devices with a transponder system or HMI devices with an RFID tag system.

Consider this information in the safety program.

- An F_DB_STATES with the WORD data type of a comparable address area in an existing F-DB.

  Using this F-DB, data are exchanged between the F_FB_MP of the HMI device and the F_FB_RNG_n of the effective range.

- FB215, F_ESTOP1

  Use this function block to ensure that the operator must acknowledge an EMERGENCY STOP before restarting the plant. You can find this block in the "Distributed Safety" F-library in the "F-Application Blocks" block container.

- FC176, F_BO_W and FC177, F_W_BO

  Insert the "FC176, F_BO_W" and "FC177, F_W_BO" blocks into your safety program. These blocks are used as calls. You can find these blocks in the "F-Application Blocks" container of the "Distributed Safety" F-library.

⚠ WARNING

F-application block

Ensure that the following match when changing the names of an F-application block:
- The symbolic name in the symbol table
- The name in the object properties of the block (header)

Do not change the number of the F-application block!

Safety program

> ⚠ **WARNING**
>
> **EMERGENCY STOP button**
>
> The EMERGENCY STOP button is evaluated when an F_FB_RNG_n is called in the safety program.
>
> Configure the safety program so that an F_FB_RNG_n is always called. The same applies if there is no effective range in your plant.
>
> **Restarting the plant**
>
> Once the EMERGENCY STOP button has been triggered, the plant can only be restarted after operator acknowledgment.
>
> Use FB215 F_ESTOP1 in the safety program to ensure acknowledgment by the operator.
>
> **EMERGENCY STOP button evaluation delayed**
>
> If the cycle time for OB35 is set lower than the PNIO update time, the message frame may be lost and the evaluation of the "E-STOP" output of F_FB_RNG_n may be delayed.
>
> Set the cycle time of OB35 to a value higher than the PNIO update time.
>
> **EMERGENCY STOP button not enabled**
>
> If a communication error triggers a global rampdown, the EMERGENCY STOP button will no longer be available on the affected HMI device.
>
> You have the option of interconnecting the "Global Rampdown" signal so that an EMERGENCY STOP is triggered.
>
> **Unintentional restart of the plant**
>
> The plant may not be automatically restarted after a communication error on the HMI device is acknowledged.
>
> Therefore, ensure that your safety program requires an additional operator action before the plant can be restarted.

> ⚠ **CAUTION**
>
> **Safe operating state**
>
> A safe state, such as a global rampdown, can only be evaluated if you call an F_FB_RNG_n in the safety program.
>
> Call an F_FB_RNG_n in your safety program, even if an effective range is not used in the plant.

Call sequence for the F_FBs

The F_FBs used are called cyclically in the safety program. Configure the calls of the F_FBs in the safety program in the following order:

1. All F_FB_MP
2. All F_FB_RNG_n

Interconnecting FBs

The F-blocks must be interconnected to each other and with the process image of the HMI device.

The following figure is a schematic representation of the interconnection of F-FBs among one another and to the PII and PIQ.
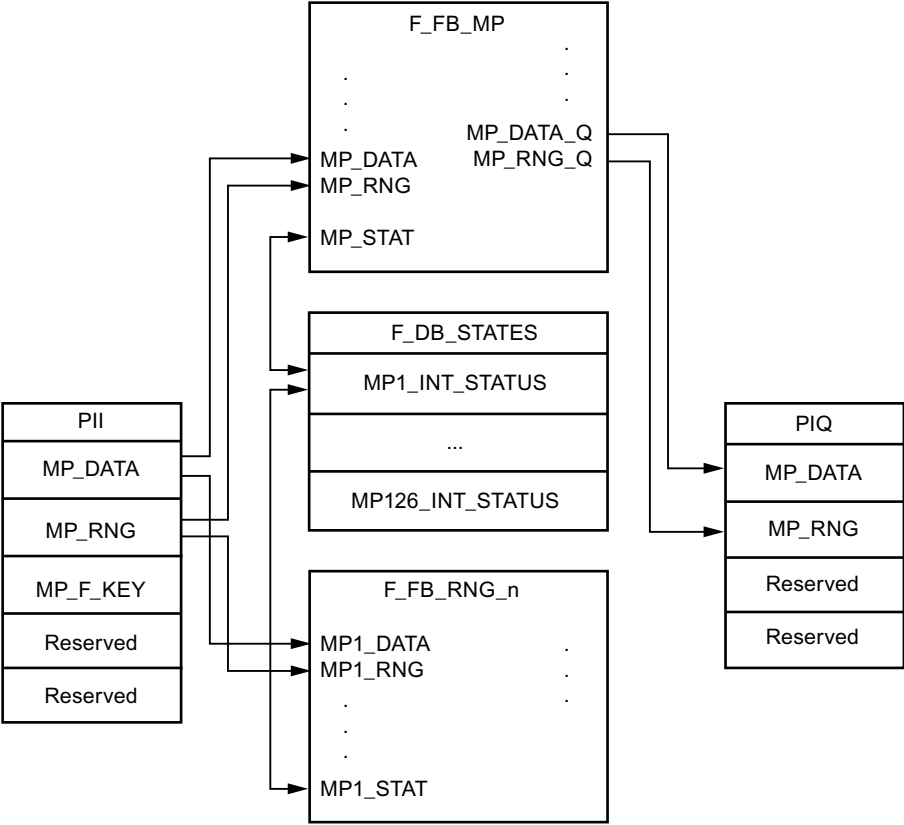
Example of an application

When using the F_FB_RNG_n, consider the application examples:

- Example of application for transponder system (Page 385)
- Application example RFID tag system (Page 398)

Creating an I/O DB

An F-I/O DB is automatically generated in HW Config for every F-I/O.

> ⚠️ **WARNING**
>
> **EMERGENCY STOP button**
>
> If you change the parameters for the output PASS_ON = 0, then the EMERGENCY STOP will not be evaluated.
>
> Keep the parameter for the output PASS_ON = 0 in F-I/O DB of the HMI device.

Access to and working with the F-I/O DB are described in detail in the manual "SIMATIC S7 Distributed Safety – Configuring and Programming", "F-I/O Access" section.

7.3.6   F_FB_MP

This description applies to version 1.0 of F_FB_MP.

> **Note**
>
> Insert the FC176 F_BO_W and FC177 F_W_BO blocks into your safety program because they are called by F_FB_MP. You can find these blocks in the "F-Application Blocks" container of the "Distributed Safety" F-library.

Purpose

The assigned HMI device is monitored by F_FB_MP. An F_FB_MP must be used for each HMI device.

F_FB_MP performs the following tasks:

* The block integrates the HMI device in the safety program of the F-CPU after startup.

* The block removes the HMI device from the safety program after a communication error.

  As soon as the communication error has been corrected and the operator has acknowledged this step, the block will integrate the HMI device back into the safety program.

* The block passes the states of the HMI device through F_DB_STATES to F_FB_RNG_n.

  The following HMI device states are possible:

  – Integrated

  – Removed

  – Communication error

  – Acknowledgement required

The QBAD output monitors the F-I/O for integrating and removing the HMI device.
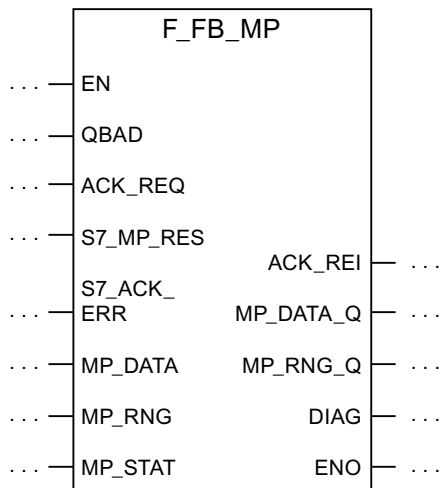
- QBAD = 0

  PROFIsafe communication takes place between the HMI device and the F-CPU.

- QBAD = 1

  No PROFIsafe communication takes place between the HMI device and the F-CPU.

⚠ WARNING
Automatic restart
The security program must ensure that after S7_MP_RES is set, the plant does **not** restart automatically.
The operator must explicitly perform an action for the restart.

Configuration

```
                F_FB_MP
      ┌──────────────────────────┐
 ...──┤ EN                       │
      │                          │
 ...──┤ QBAD                     │
      │                          │
 ...──┤ ACK_REQ                  │
      │                          │
 ...──┤ S7_MP_RES                │
      │                ACK_REI ──├── ...
      │ S7_ACK_                  │
 ...──┤ ERR          MP_DATA_Q ──├── ...
      │                          │
 ...──┤ MP_DATA       MP_RNG_Q ──├── ...
      │                          │
 ...──┤ MP_RNG           DIAG ──├── ...
      │                          │
 ...──┤ MP_STAT           ENO ──├── ...
      └──────────────────────────┘
```

Inputs of F_FB_MP

Parameter	Data type	Description	Interconnection
QBAD	Bool	QBAD indicates if the F-I/O has been passivated.	I/O DB: DBx2.1 = QBAD
ACK_REQ	Bool	Acknowledgement required After a communication error, the fail-safe system sets QBAD = 1 and ACK_REQ = 0. ACK_REQ = 1 indicates that the PROFIsafe message frames are being exchanged again.	I/O DB: DBx2.2 = ACK_REQ

Parameter	Data type	Description	Interconnection
S7_MP_RES	Bool	This input is set so that the F-CPU resets the status of F_FB_MP to its "original state", in other words: • The HMI device has the status "removed" • If a rampdown or shutdown was set, it is reset. • If the HMI device was logged onto a machine, the associated effective range will be enabled once again. The input is only evaluated if Q_BAD = 1. The S7_MP_RES input has to be set if the HMI device cannot return itself to a defined state, for example when a system error occurs or the main rechargeable battery is dead.	Must be specifically interconnected for plant. The security program must ensure that after S7_MP_RES is set, automatic restart of the plant is not possible. The operator must ensure that he executes a separate operator action to begin the restart.
S7_ACK_ERR	Bool	Communication errors may not be acknowledged automatically. This input is set to have the F-CPU to acknowledge a communication error during ongoing PROFIsafe communication. F_FB_MP only reacts to a rising edge.	Must be specifically interconnected for plant.
MP_DATA	Word	User data of the fail-safe process image inputs	PII: Word 1 = MP_DATA
MP_RNG	Word	ID of the effective range in which the HMI is included.	PII: Word 2 = MP_RNG
MP_STAT	Word	Data are exchanged with F_FB_RNG_n through this input and output via F_DB_STATES.	F_DB_STATES

Outputs of F_FB_MP

Parameter	Data type	Description	Interconnection
ACK_REI	Bool	Acknowledgement for reintegration The automatic reintegration is regulated via the F-I/O DB through this output.	F-I/O DB: DBx0.2 = ACK_REI
MP_DATA_Q	Word	User data of the fail-safe process image outputs:	PIO: Word 1 = MP_DATA
MP_RNG_Q	Word	The effective range ID is transmitted to the HMI device through this output.	PIO: Word 2 = MP_RNG
DIAG	Word	Information about any occurring errors is provided through this output for servicing purposes. Bit 0: HMI device removed Bit 1: HMI device integrated Bit 2: Communication error on the HMI device Bit 3: Communication error must be acknowledged. Bit 4 to 15: Reserved	You can evaluate the DIAG output in your program.

EN and ENO

When you call an F-FB, the enable input EN and enable output ENO appear automatically.

Note the following for EN and ENO:

- Do not connect them.
- Do not set "0" for them.
- Do not evaluate them.

Addresses of PII and PIQ

You can find the start address of the PII and PIQ in HW Config in the WTPFailsafe_IO module of the HMI device.

Wiring the inputs and outputs

You have to wire the inputs and outputs of the F-FB manually. No automatic wiring is performed.

7.3.7 F_FB_RNG_4 and F_FB_RNG_16

The description in this section applies to the following F-FBs:

- F_FB_RNG_4, version 1.0
- F_FB_RNG_16, version 1.0

When the term "F_FB_RNG_n" is used, the information applies to both F-FBs.

Note

Insert the FC176 F_BO_W and FC177 F_W_BO blocks into the safety program because they are called by F_FB_MP. You can find these blocks in the "F-Application Blocks" container of the "Distributed Safety" F-library.
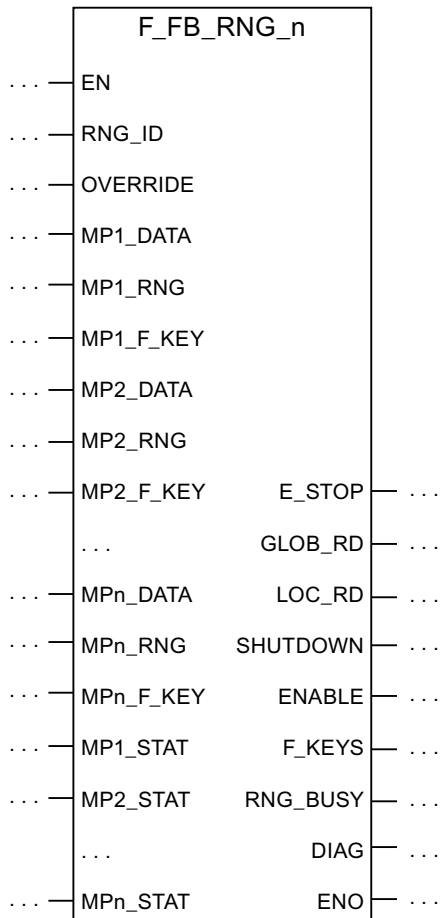
Purpose

Depending on the operating status of the HMI device, the F-FBs performs the following:

- Connect the outputs of F_FB_RNG_n
- Prepare the output user data

Each HMI device in the wireless network can assume one of the following operating states:

- Removed without communication error

  The HMI device has been successfully removed from the safety program of the F-CPU. This ends PROFIsafe communication. The HMI device has no influence on the outputs of F_FB_RNG_n.

- Integrated without communication error

  The F_FB_RNG_n reacts as follows:

  – The operator can log onto a machine with the HMI device, if no other HMI device is logged onto this machine.

  – The E_STOP output will be set by pressing the EMERGENCY STOP button.

  – The ENABLE output of the F_FB_RNG_n is set according to the state of the enabling button if the HMI device is logged onto a machine.

  – The RNG_BUSY output of the F_FB_RNG_n is set to "1" if the HMI device is logged onto a machine.

  – The OVERRIDE input must be set for an RFID logon within five seconds after the confirmation of logon for the logon to be successfully completed on a machine.

  – When the HMI device is logged onto a machine, it can be logged off the machine.

- Removed with communication error

  PROFIsafe communication with the HMI device was interrupted without explanation.

  The following outputs are set in F_FB_RNG_n:

  – GLOB_RD, if the HMI device was not logged onto a machine.

  – SHUTDOWN, if the HMI device was logged onto a machine.

    The corresponding signal is reset following acknowledgment of the communication error or the MP status reset is set. The machine is enabled again by F_FB_RNG_n for logon of an HMI device.

- Integrated with brief communication error

  PROFIsafe communication with the HMI device was interrupted after a short disruption

  reestablished so that the usage data between the HMI device and F-CPU

  can be exchanged. The E_STOP output will be set by pressing the EMERGENCY STOP button.

  , even if the communication error was not yet confirmed.

Configuration

```
                    F_FB_RNG_n
    . . . ─┤EN
    . . . ─┤RNG_ID
    . . . ─┤OVERRIDE
    . . . ─┤MP1_DATA
    . . . ─┤MP1_RNG
    . . . ─┤MP1_F_KEY
    . . . ─┤MP2_DATA
    . . . ─┤MP2_RNG
    . . . ─┤MP2_F_KEY        E_STOP├─ . . .
            . . .            GLOB_RD├─ . . .
    . . . ─┤MPn_DATA          LOC_RD├─ . . .
    . . . ─┤MPn_RNG         SHUTDOWN├─ . . .
    . . . ─┤MPn_F_KEY         ENABLE├─ . . .
    . . . ─┤MP1_STAT          F_KEYS├─ . . .
    . . . ─┤MP2_STAT        RNG_BUSY├─ . . .
            . . .              DIAG├─ . . .
    . . . ─┤MPn_STAT            ENO├─ . . .
```

The follow applies for MPn:

- With F_FB_RNG_4 for up to four HMI devices
- With F_FB_RNG_16 for up to 16 HMI devices

Inputs of F_FB_RNG_n

Parameters	Data type	Description	Interconnection
RNG_ID	Integer	Click on this input and enter the ID of the effective range to be monitored by F_FB_RNG_n. The RNG_ID must be unique throughout the plant and is set in WinCC flexible-.	–
OVERRIDE	Bool	0 = "Override" mode inactive, 1 = "Override" mode active	Result of connecting the RNG-BUSY output to the security system
MPn_DATA	Word	User data of the fail-safe process image inputs	PII: Word 1 = MP_DATA
MPn_RNG	Word	ID of the effective range associated with the machine on which the HMI device is logged on.	PII: Word 2 = MP_RNG

Parameters	Data type	Description	Interconnection
MPn_F_KEY	Word	Reserved	–
MPn_STAT	Word	Data are exchanged with F_FB_MP through this input and output via F_DB_STATES.	F_DB_STATES

NOTICE
Connect OVERRIDE input
The OVERRIDE input should only be enabled as long as the assigned security systems are enabled. Configure the following connections in the safety program to ensure this reaction: • AND operation of the switch position of the RNG_BUSY output of F_FB_RNG_n and the signals of the security system. • The result of the AND operation with the OVERRIDE input of F_FB_RNG_n

Outputs of F_FB_RNG_n

Parameters	Data type	Description	Interconnection
E_STOP	Bool	EMERGENCY STOP Evaluation of the EMERGENCY STOP button of all HMI devices connected to F_FB_RNG_n. 0 = At least one EMERGENCY STOP button pressed 1 = EMERGENCY STOP button not pressed	Output for evaluating whether an EMERGENCY STOP has been triggered.
GLOB_RD	Bool	Global rampdown	Output for evaluating whether a global rampdown has been triggered.
LOC_RD	Bool	Local rampdown	Output for evaluating whether a local rampdown has been triggered.
SHUTDOWN	Bool	Shutdown	Output for evaluating whether a shutdown has been triggered.
ENABLE	Bool	This output passes on the control state of the enabling button to the logged on HMI device in the effective range. 0 = enabling button not pressed or enabling button in the "Panic" switch position 1 = enabling button pressed	Output for evaluating whether enabling buttons have been triggered.
F-KEYS	Word	Reserved	–

Parameters	Data type	Description	Interconnection
RNG_BUSY	Bool	This output passes on the state of the effective range associated with a machine. 0 = effective range free, 1 = effective range in use	Output for evaluating whether the effective range is free or allocated. In an RFID tag system, this output is evaluated together with the signals of the security system in the form of an AND operation. The result of the AND operation is wired to the OVERRIDE input of F_FB_RNG. You use this output to control a signal lamp that indicates if the machine associated to the effective range is in use.
DIAG	Word	This output indicates which of the HMI devices with permission to log on in the effective range are actually logged on. Bit 0: 1. panel logged on Bit 1: 2. panel logged on Bit 2: 3. panel logged on Bit 3: 4. panel logged on With F_FB_RNG_16: Bit 4: 5. panel logged on ... Bit 14: 15. panel logged on Bit 15: 16. panel logged on	The "DIAG" output can be evaluated in the user program.

EN and ENO

When you call an F-FB, the enable input EN and enable output ENO appear automatically.

Note the following for EN and ENO:

- Do not connect them.
- Do not set "0" for them.
- Do not evaluate them.

Addresses of PII and PIQ

You can find the start addresses of the PII and PIQ in HW Config in the WTPFailsafe_IO module of the HMI device.

Wiring the inputs and outputs

You have to wire the inputs and outputs of the F-FB manually. No automatic wiring is performed.

Override switch

The override switch should only be enabled as long as the assigned security systems are enabled. Configure the following connections in the safety program to ensure this reaction:

● AND operation of the switch position of the RNG_BUSY output of F_FB_RNG_n and the signals of the security system.

● The result of the AND operation with the "Override" input of F_FB_RNG_n

7.4 Configuration in WinCC flexible

For fail-safe operation of the HMI you must configure the following areas of WinCC flexible ES:

● Device settings

 Configure the PROFIsafe address of the HMI device in the project window under "Device Settings > Device Settings".

● Editor "Effective Ranges (RFID)"

 Configure the effective ranges specified in the plant design in the project window under "Device Settings" > "Effective Ranges (RFID)".

● In the project window under "Screens":

 – HMI screens

 – A display for the project ID

  Assign a unique project ID to each project. The project ID is used to check which project is currently on the HMI.

  Update the project ID for each project change.

  Configure the display of the project ID at a position in the project that can be displayed at any time in the active project. A start screen or a service screen is suitable for this purpose.

 – Objects that were especially designed for fail-safe operation of the HMI device.

For more detailed information about configuration, refer to "WinCC flexible Information System".

Safety-related configuration

7.4 Configuration in WinCC flexible

Commissioning a project

8

8.1 Using an existing project

You can use a WinCC flexible project for the following HMI devices:

- Mobile Panel 177 PN
- Mobile Panel 177 DP
- Mobile Panel 277
- Mobile Panel 277 IWLAN V1
- Mobile Panel 277F IWLAN V1

Adjusting the project

You have to adjust an existing WinCC flexible project for the HMI device as follows:

NOTICE
Predecessors
The behavior and possible fields of the enabling button and EMERGENCY STOP button on the Mobile Panel 277F IWLAN are different from those of its predecessors, which do not have safety integrated functions.
An existing project can be used if the project is configured without a safety integrated function or was adjusted correspondingly.

- Communication via WLAN
- Perform an HMI device replacement.
- Applies for the transponder system:
  - Connection point detection

    If you have used point detection with box ID in an existing project, you have the following option:

    In the place of the connection box, set up a zone that consists of at least a transponder. In the transponder, set the previously used box-ID as ID.

  - Recognize configured zones

    If you are using zone recognition, you will need one or more transponders for one zone. In WinCC flexible, you can parameterize zones in "Device settings". In this case, changes may be required in the control program.

    Perform an import of the effective ranges.

- Applies for RFID tag systems:
  - Perform an import of the effective ranges.

    The IDs of the transponders are converted to RFID tag IDs.

You can find additional information in the WinCC flexible online help or in the "WinCCF flexible migration" user manual.

See also

Fail-safe operation (Page 253)

8.2   Operating modes

The HMI device may be in the following operating modes:

- Offline
- Online
- Transfer

Enable the "offline" and "online" modes as follows:

- On the configuration PC
- On the HMI device, when the corresponding operator control is configured.

"Offline" operating mode

In this operating mode, the HMI device and the PLC do not communicate via the connections configured in the WinCC flexible project. You can operate the active project on the HMI device. Data of the project will not be transferred.

Note

In "Offline" mode, the EMERGENCY STOP button is active when the following requirements are met:

- The HMI device is in the wireless network.
- The HMI device is integrated in the safety program of the CPU.

"Online" operating mode

In this mode, the HMI device and PLC communicate. You can operate the plant on the HMI device according to your system configuration.

"Transfer" mode

In this mode, you can transfer a project from the configuration PC to the HMI device or backup and restore HMI device data, for example.

Changing the operating mode

The configuration engineer must have configured an appropriate operator control to allow a change of the operating mode on the HMI device during ongoing operation.

More detailed information is available in your plant documentation.

8.3　Available data channels

The following table shows the possible routes for data communication between the HMI device and configuration PC.

The Ethernet data channel is used for communication via WLAN and LAN (RJ45).

Type	Data channel	HMI device
Backup	USB	Yes
	Ethernet	Yes
Restoring	USB	Yes
	Ethernet	Yes
Updating the operating system	USB	Yes
	Ethernet	Yes
Updating the operating system with restore of factory setting	USB	No
	Ethernet via the RJ45 interface	Yes
Transferring a project	USB	Yes
	Ethernet	Yes
Install or remove WinCC flexible option	USB	Yes
	Ethernet	Yes
License key transferring or transferring back	USB	Yes
	Ethernet	Yes

8.4　Preparing and backing up a project

8.4.1　Overview

In order to operate a plant, you need to transfer the corresponding WinCC flexible project to the HMI device.

Transferring the project to the HMI device

You can transfer a project to an HMI device as follows:

- Transfer from the configuration PC
- Restore from a PC using ProSave

  In this case, an archived project is transferred from a PC to the HMI device.

  WinCC flexible need not be installed on this PC.

Commissioning and recommissioning

When the HMI device is commissioned there is no project at first. The HMI device is also in this state after the operating system has been updated.

When recommissioning, any project already on the HMI device is replaced.

8.4.2 Transfer

8.4.2.1 Overview

The following types of transfer can be performed:

- Transfer

  Transfer of a project to the HMI device.

- Backtransfer

  Backup of a project from the HMI device to the configuration PC.

Transfer

When the configuration phase is completed, transfer the runtime project from the configuration PC to the HMI device.

You can start the "Transfer" mode manually on the HMI device.

- When the HMI device starts up

  You start the "Transfer" mode with the appropriate button in the loader.

- During ongoing operation

  Start the "Transfer" mode manually with a configured operator control.

The transferred project is written directly to the internal flash memory of the HMI device.

Backtransfer

You have the option to transfer the compressed project file together with the runtime project to the HMI device. If necessary, the compressed project file can be transferred back to the configuration PC and edited.

The HMI device must be equipped with an external memory to which the compressed project file can be saved.

NOTICE
Compressed project file and runtime project
If you only transfer the runtime project, there is the risk that the runtime project will not be identical to an existing compressed project file. WinCC flexible does not check if the two are identical.   Therefore, always transfer the compressed project file together with the runtime project.

See also

Operating modes (Page 212)

Programming the data channel (Page 171)

Available data channels (Page 213)

8.4.2.2   Starting manual transfer

You can manually switch the HMI device to "Transfer" mode as follows:

- With a configured operator control during ongoing operation
- In the Loader of the HMI device

Requirement

- The project you want to transfer is open on the configuration PC in WinCC flexible.
- The HMI device is connected to this configuration PC.
- The data channel is configured on the HMI device.
- The HMI device is in "Transfer" mode

Procedure

Proceed as follows:

1. On the configuration PC, select the "Transfer settings" command in the "Project > Transfer" menu in WinCC flexible.

   The "Select devices for transfer" dialog is displayed.

2. Select the HMI device in the left area of the dialog.

3. Select the type of connection between the HMI device and the configuration PC.

4. Configure the connection.

5. Set the transfer parameters in the right area of the dialog.

6. If you wish to transfer the compressed project file together with the executable project to the HMI device, select the "Enable backtransfer" check box.

7. Start transfer in WinCC flexible with "Transfer".

   The configuration PC checks the connection to the HMI device. The project is transferred to the HMI device. If the connection is not available or is defective, an error message is displayed on the configuration PC.

   When the transfer is completed successfully, the project can be found on the HMI device. The transferred project is then started automatically.

8.4.2.3 Starting automatic transfer

If automatic transfer is selected, the HMI device automatically switches to "Transfer" mode during operation as soon as a transfer is initiated on the connected configuring PC.

Note

The HMI device only switches to "Transfer" mode in the current project.

Automatic transfer is particularly suited for the test phase of a new project since transfer is completed without interfering with the HMI device.

NOTICE

Undesired system responses

If automatic transfer has been selected on the HMI device and a transfer is then initiated on the configuring PC, the current project is automatically terminated following a prompt. The HMI device then automatically switches to "Transfer" mode. The transfer mode can trigger undesired responses in the system.

After the commissioning phase, deactivate the automatic transfer so that the HMI device cannot be inadvertently switched to transfer mode.

You can issue a password in the Control Panel to restrict access to the transfer settings and thus avoid unauthorized modifications.

Requirement

- The project that you want to transfer on the configuration PC is opened in WinCC.
- The HMI device is connected to this configuring PC
- The data channel is programmed on the HMI device
- The automatic transfer is enabled in the data channel.
- The project is started on the HMI device

Procedure

Proceed as follows:

1. On the configuring PC, select the "Transfer settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Select devices for transfer" dialog opens.

2. Select the HMI device in the left area of the dialog.

3. Select the type of connection between the HMI device and the configuring PC.

4. Configure the connection.

5. Set the transfer parameters in the right area of the dialog.

6. If you wish to transfer the compressed project file together with the executable project to the HMI device:

   Select the "Enable backtransfer" check box.

7. Start transfer in WinCC flexible with "Transfer".

   The configuring PC checks the connection to the HMI device. If the HMI device is integrated, it displays the "Start removal" dialog box.

8. Confirm the next dialog.

9. Press one of the enabling buttons.

   The HMI device is removed. The current project is terminated. The HMI device then automatically switches to transfer mode. The project is transferred to the HMI device. If the connection is not available or is defective, an error message is displayed on the configuring PC.

   When the transfer is completed successfully, the project can be found on the HMI device. The transferred project is then started automatically.

8.4.2.4 Starting backtransfer

Requirement

- No project is open on the configuration PC in WinCC flexible.
- The HMI device is connected to this configuration PC.
- The data channel is configured on the HMI device.
- The HMI device is in "Transfer" mode
- The memory card with the compressed project file is inserted in the HMI device.

Procedure

Proceed as follows:

1. On the configuration PC, select the "Communication settings" command in the "Project > Transfer" menu in WinCC flexible.

   The "Communication Settings" dialog is displayed.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuration PC.

4. Configure the connection.

5. Close the dialog with "OK".

6. Select the "Transfer" > "Backtransfer" command in the "Project" menu.

   The "Backtransfer" dialog is displayed.

7. Click "OK" to start the backtransfer process.

   The configuration PC checks the connection to the HMI device. The compressed project file is transferred back from the HMI device to the configuration PC. If the connection is not available or is defective, an error message is displayed on the configuration PC.

   After successful backtransfer, the project is opened on the configuration PC in WinCC flexible.

8.4.3 Testing a project

There are two options to test a project:

● Test the project on the configuring PC

  You can test a project at a configuring PC, using a simulator. You can find additional information in the "WinCC flexible" user manual or in the WinCC flexible online help.

● Offline testing of the project on the HMI device

  Offline testing means that communication between the HMI device and PLC connections, which have been configured in WinCC flexible, is down while the test is being carried out. The PROFIsafe connection between the HMI device and PLC is also available in "Offline" mode.

● Online testing of the project on the HMI device

  Online testing means that the HMI device and PLC communicate with each other during testing.

Perform the tests, starting with the "Offline test", followed by the "Online test".

Note

You should always test the project on the HMI device on which the project will be used.

Check the following:

● WLAN

● Zone recognition, if zones have been configured

● Check the hierarchy of the HMI screens.

● Check the correct layout of the HMI screens.

● Check the input objects

● Enter the tag values

The test increases the certainty that the project will run error-free on the HMI device.

NOTICE
Testing without effective ranges
A plant acceptance test must be performed if you have configured effective ranges in your project. The effective ranges and assigned transponders will be tested as part of the acceptance test. Perform the test without effective ranges.

Procedure – Offline test

- The project has been transferred to the HMI device
- The HMI device is in "Offline" mode.

Procedure

Proceed as follows:

1. In the "Offline" operating mode on the HMI device, test individual project functions that do **not** depend on the controller.

   PLC tags are not updated in this case.

2. Test the operating elements and visualization of the project as far as possible without connecting to the PLC.

Procedure – Online test

- The project has been transferred to the HMI device
- The HMI device is in "Online" mode

Procedure

Proceed as follows:

1. In the "Online" operating mode on the HMI device, test individual project functions that depend on the controller.

   PLC tags are updated in this case.

2. Test all functions that depend on communication.
3. Test the operating elements and views of the project.

8.4.4 Backup and restore

8.4.4.1 Overview

You can back up and restore the following data from the internal flash memory of the HMI device to a PC:

- Project and HMI device image
- Password list
- Recipe data
- License keys

You have the following possibilities for backing up or restoring data:

- With WinCC flexible
- Alongside with ProSave
- Through the control panel

  An external storage medium is required for backup and restore via the Control Panel.

NOTICE
Reset to factory settings required
If a restore operation is interrupted due to power failure on the HMI device, the operating system of the HMI device may be corrupted! In this case, you have to restore the factory settings on the HMI device. See section "Updating the operating system (Page 224)".

Note

If a message appears on the HMI device warning you of a compatibility conflict during the restore operation, the operating system must be updated.

8.4.4.2 Backing up with WinCC flexible

Requirement

- No project is open on the configuration PC in WinCC flexible.
- The HMI device is connected to this configuration PC.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. On the configuration PC, select the "Communication settings" command in the "Project > Transfer" menu in WinCC flexible.

   The "Communication Settings" dialog is displayed.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuration PC.

4. Configure the connection.

5. Close the dialog with "OK".

6. Select the "Backup" command in the menu "Project > Transfer" in WinCC flexible.

   The "Backup Settings" dialog is displayed.

7. Select the data to be backed up.

8. Select a destination folder and a file name for the "filename.psb" backup file.

9. Set "Transfer" mode on the HMI device.

10. Start backup in WinCC flexible with "OK".

11. Follow the instructions in WinCC flexible.

    A status view opens to indicate the progress of the operation. The system outputs a message when the backup is completed.

Result

The relevant data is now backed up on the configuration PC.

8.4.4.3   Backing up with ProSave

Requirement

- The HMI device is connected to a PC on which ProSave is installed.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Start ProSave from the Windows start menu.

2. Select the HMI device type in the "General" tab.

3. Select the type of connection between the HMI device and the PC.

4. Configure the connection.

5. Select the data you want to back up in the "Backup" tab.

6. Select a destination folder and a file name for the "filename.psb" backup file.

7. Set "Transfer" mode on the HMI device.

8. Start the backup in ProSave with "Start Backup".

9. Follow the instructions in ProSave.

   A status view opens to indicate the progress of the operation. The system outputs a message when the backup is completed.

Result

The relevant data is now backed up on the configuration PC.

8.4.4.4 Restoring with WinCC flexible

Requirement

- No project is open on the configuration PC in WinCC flexible.
- The HMI device is connected to this configuration PC.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Select the "Communication Settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication Settings" dialog is displayed.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuration PC.

4. Configure the connection.

5. Close the dialog with "OK".

6. Select the "Restore" command in the menu "Project > Transfer" in WinCC flexible.

   The "Restore Settings" dialog is displayed.

7. Select the "filename.psb" backup file to be restored from the "Open" field.

   You can see the HMI device for which the backup file was created and the type of backup data the file contains.

8. Set "Transfer" mode on the HMI device.

9. Start the restore operation in WinCC flexible with "OK" on the configuration PC.

   If there are license keys both on the HMI device and in the backup, a dialog box will appear. Use this dialog to establish whether you want to overwrite the license keys or abort the restore process.

   – If necessary, abort the backup and save the license keys of the HMI device.

   – Then start the restore procedure again.

10. Follow the instructions in WinCC flexible.

   A status view opens to indicate the progress of the operation.

Result

When the restore is successfully completed, the data previously backed up on the PC will now be available on the HMI device.

8.4.4.5   Restoring with ProSave

Requirement

- The HMI device is connected to a PC on which ProSave is installed.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Start ProSave from the Windows start menu.
2. Select the HMI device type in the "General" tab.
3. Select the type of connection between the HMI device and the PC.
4. Configure the connection.
5. Select the "filename.psb" backup file you want to restore from the "Restore" tab.

   You can see the HMI device for which the backup file was created and the type of backup data the file contains.
6. Set "Transfer" mode on the HMI device.
7. Start the restore in ProSave with "Start Restore".

   If there are license keys both on the HMI device and in the backup, a dialog box will appear. Use this dialog to establish whether you want to overwrite the license keys or abort the restore process.

   – If necessary, abort the restore process and save the license keys of the HMI device.

   – Then start the restore process again.
8. Follow the instructions in ProSave.

   A status view opens to indicate the progress of the operation.

Result

When the restore is successfully completed, the data previously backed up on the PC will now be available on the HMI device.

8.4.5 Updating the operating system

8.4.5.1 Overview

A compatibility conflict may occur when transferring a project to the HMI device. The reason for this problem is that there are different versions of the configuration software and the HMI device image on the HMI device. The transfer is aborted in case of different versions. A message indicating such a compatibility conflict will be displayed on the configuration PC.

You have the following options to remedy the compatibility problem:

● Update the HMI device image if the project was created with the most recent version of the configuration software.

● Transfer a version that is compatible with the version of HMI device image if you do not want to adapt the project to the most recent version of the configuration program.

NOTICE
Data loss
All data on the HMI device, such as the project and passwords, will be deleted when you update the operating system.
Back up the stored data before you update the operating system.
Data channel
If you do not transfer an image via LAN, malfunctions may occur as a result.
Transfer an image only via LAN.

Note

The license keys on the HMI device will be retained when updating the operating system without resetting to factory settings.

After the update, you may have to recalibrate the touch screen.

See also

8.4.5.2 Updating the operating system using WinCC flexible

Requirement

● No project is open on the configuration PC in WinCC flexible.

● The HMI device is connected to this configuration PC.

● The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Select the "Communication Settings" command in the "Projekt > Transfer" menu in WinCC flexible.

   The "Communication Settings" dialog is displayed.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuration PC.

4. Configure the connection.

5. Close the dialog with "OK".

6. In WinCC flexible, select the command "OS Update" from the "Projekt > Transfer" menu.

7. Under "Image path", select the HMI device image file "filename.img".

   The HMI device image files are available under "WinCC flexible Images" in the WinCC flexible installation folder or on the WinCC flexible installation CD.

   The output area provides you with information on the version of the HMI device image file once it has been successfully opened.

8. Set "Transfer" mode on the HMI device.

9. In WinCC flexible, select "Update OS" to run the operating system update on the configuration PC.

10. Follow the instructions in WinCC flexible.

    During the operating system update a status view opens to indicate progress. A message is displayed when the operating system update is successfully completed.

Result

The updated operating system is now on the HMI device.

8.4.5.3 Updating the operating system using ProSave

Requirement

- The HMI device is connected to a PC on which ProSave is installed.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Start ProSave from the Windows start menu.

2. Select the HMI device type in the "General" tab.

3. Select the type of connection between the HMI device and the PC.

4. Configure the connection.

5. Select the "OS Update" tab.

6. Under "Image path", select the HMI device image file "filename.img".

   The HMI device image files are available under "WinCC flexible Images" in the WinCC flexible installation folder or on the WinCC flexible installation CD.

   The output area provides you with information on the version of the HMI device image file once it has been successfully opened.

7. Set "Transfer" mode on the HMI device.

8. Select "Update OS" to run the operating system update on the PC.

9. Follow the instructions in ProSave.

   During the operating system update a status view opens to indicate progress. A message is displayed when the operating system update is successfully completed.

Result

The updated operating system is now on the HMI device.

8.4.6 Restoring factory settings

8.4.6.1 Overview

You have to perform an operating system update with restore of the factory setting if the HMI device does not yet have an operating system or if the HMI device operating system is corrupt.

NOTICE
Data loss
The license keys on the HMI device will be deleted when resetting to factory settings.
Back up stored license keys before you restore the factory settings on the HMI device.
Data channel
If you do not transfer an image via LAN, malfunctions may occur as a result.
Transfer an image only via LAN.

Note

The parameters of the data channels are reset when the factory setting is restored. Configure the data channels again before starting transfer.

8.4.6.2 Restoring the factory settings using WinCC flexible.

Requirements

- No project is open on the configuring PC in WinCC flexible.
- The HMI device is connected to this configuration PC over the standard Ethernet cable.
- Have the MAC address of the Ethernet interface on your HMI device to hand.
  - The MAC address is displayed briefly when the HMI device is turned on.
  - The MAC address is displayed in the "PROFINET" dialog in the Control Panel.

Procedure – setting the PC interface

1. Select "Start > Control Panel > Set PG / PC interface" on the configuration PC.
2. Select "S7ONLINE (STEP7) -> TCP / IP" from the "Application access point" area.
3. Select the interface which is connected to the HMI device from the "Interface parameterization used" area.
4. Confirm your entries.

Procedure – resetting to factory settings

Proceed as follows:

1. On the configuring PC, select the "Communication settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication Settings" dialog opens.

2. Select the HMI device type from the "General" tab, and select "Ethernet" from the "Connection" area.

3. Enter an IP address.

> **NOTICE**
>
> **Possible address conflicts with incorrect IP address**
>
> Do not use a dynamic IP configuration for "Reset to factory settings". Specify a unique IP address in which the configuration PC is located. The HMI device will be assigned to the specified address for the duration of the update process.
>
> If the HMI device has already been used with WinCC flexible or ProSave you can use the existing IP address for "Reset to factory settings."
>
> **Reserved IP addresses**
>
> The following IP addresses are reserved for internal communication with the WLAN module:
> - 169.254.2.253
> - 169.254.2.254
>
> Do not use these reserved IP addresses.

4. Confirm your entries.

5. In WinCC flexible, select the command "Update OS" in the "Project > Transfer" menu.

6. Activate the "Reset to factory settings" check box.

   A text box opens where you can enter the MAC address.

7. Enter the HMI device's MAC address in the text box.

8. In "Image path", select the HMI device image file "*.img".

   The HMI device image files are available under "WinCC flexible Images" in the WinCC flexible installation folder or on the WinCC flexible installation CD.

   In the output area, you are provided information on the version of the HMI device image file after it is opened.

9. In WinCC flexible, select "Update OS" on the configuring PC to run the operating system update.

10. In the Control Panel of the HMI device, open the "OP Properties" dialog and select the "Device" tab.

11. Click on the "Reboot" button.

    A query is opened.

12. Click on the "Prepare for Reset" button.

13. On the configuration PC, follow the instructions in WinCC flexible.

    During the operating system update a status view opens to indicate progress.

Result

A message is displayed when the operating system update is successfully completed.

This operation has deleted the project data from the HMI device. The factory settings are reset.

Note

If you can no longer call the Control Panel on the HMI device, as the operating system is missing, switch off the HMI device. Then reset to factory settings and restart the HMI device.

If the HMI device doesn´t start up, switch it off and then on again.

Note

After the restore, you may have to calibrate the touch screen.

8.4.6.3   Restoring the factory settings with ProSave

Requirement

- The HMI device is connected over the Ethernet to a PC on which ProSave is installed.
- Have the MAC address of the Ethernet interface on your HMI device to hand.
    - The MAC address is displayed briefly when the HMI device is turned on.
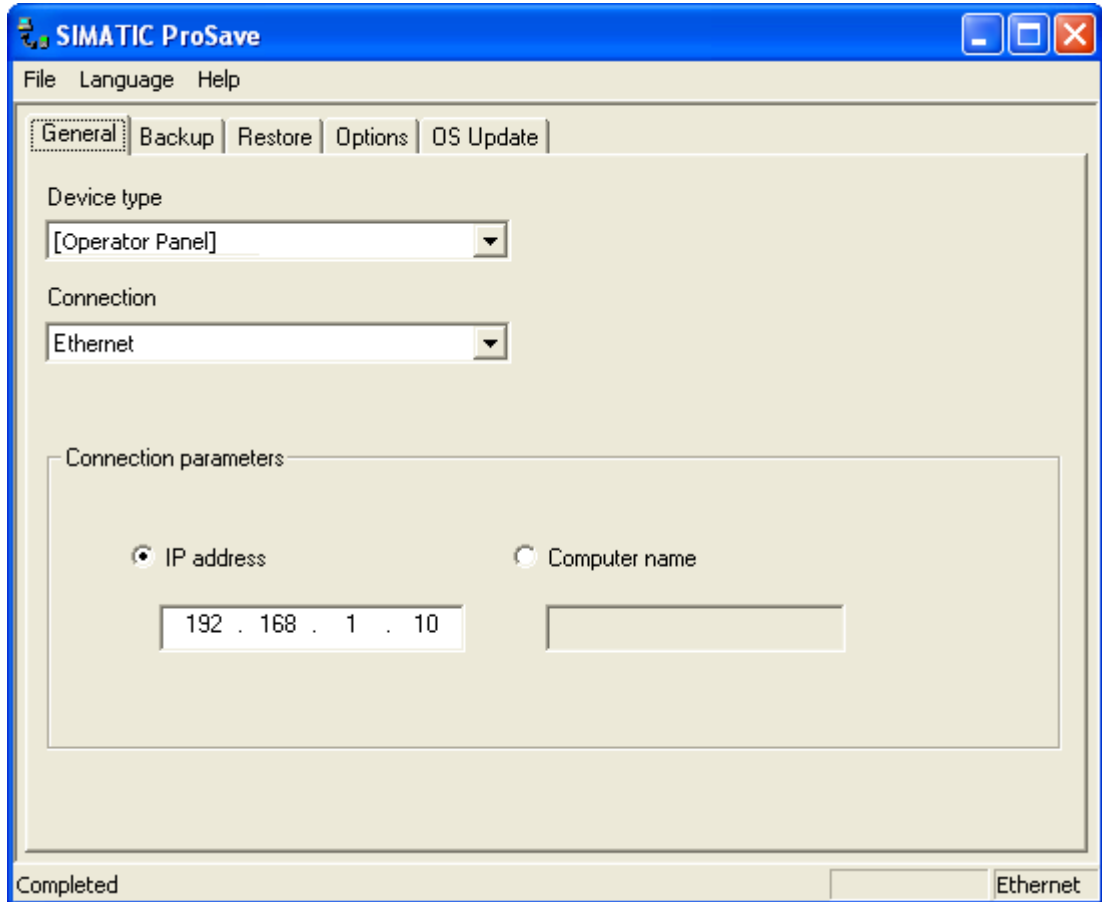   - The MAC address is displayed in the "PROFINET" dialog in the Control Panel.

Procedure - Setting the PC interface

1. Select the menu command "Start > Control Panel > Set PG/PC interface" on the configuration PC.
2. Select "S7ONLINE (STEP7) -> TCP/IP" from the "Application access point" area.
3. Select the interface which is connected to the HMI device from the "Interface parameterization used" area.
4. Confirm your entries.

Procedure - Restoring factory settings

Proceed as follows:

1. From the Windows Start menu, start ProSave on the PC.

2. Select the HMI device type from the "General" tab, and select "Ethernet" from the Connection area.

3. Enter an IP address.

NOTICE

Possible address conflicts with incorrect IP address

Do not use a dynamic IP configuration for "Reset to factory settings".

Specify a unique IP address of the subnet in which the configuration PC is located. This subnet has to be a different one than the WLAN subnet. For the duration of the update process, the HMI device is automatically assigned to the specified address of ProSave.

If the HMI device has already been used with WinCC flexible or ProSave you can use the existing IP address for "Reset to factory settings."

Reserved IP addresses

The following IP addresses are reserved for internal communication with the WLAN module:

- 169.254.2.253
- 169.254.2.254

Do not use these reserved IP addresses.

---

4. Change to the "OS Update" tab.

5. Activate the "Reset to factory settings" check box.

    A text box opens where you can enter the MAC address.

6. Enter the HMI device's MAC address in the text box.

7. In "Image path", select the HMI device image file "*.img".

    The HMI device image files are available under "WinCC flexible Images" in the WinCC flexible installation folder or on the WinCC flexible installation CD.

    The output area provides you with information on the version of the HMI device image file once it has been successfully opened.

8. Select "Update OS" on the PC to start the "Reset to factory settings" process.

9. In the Control Panel of the HMI device, open the "OP Properties" dialog and select the "Device" tab.

10. Click on the "Reboot" button.

    A query is opened.

11. Click on the "Prepare for Reset" button.

12. Follow the instructions in ProSave.

    During the operating system update a status view opens to indicate progress.

Result

A message is displayed when the operating system update is successfully completed.

There is now no project data on the HMI device. The factory settings are restored.

Note

If you can no longer open the Control Panel on the HMI device because the operating system is missing, switch off the HMI device. Then restore the factory settings and restart the HMI device.

If the HMI device does not start up, switch it off and on again.

Note

Calibrating the touch screen

After the reset, you may have to recalibrate the touch screen.

8.4.7 Installing and removing software options

8.4.7.1 Overview

With WinCC flexible-options, you can expand the functional scope of the HMI device.

This chapter describes the installation and deinstallation of WinCC flexible options.

Note

In order to use a WinCC flexible option, a license key may be required. The license key unlocks the option for use.

8.4.7.2 Installing with WinCC flexible

Requirement

- No project is open on the configuration PC in WinCC flexible.
- The HMI device is connected to this configuration PC.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Select the "Communication settings" command in the "Project > Transfer" menu in WinCC flexible.

   The "Communication Settings" dialog is displayed.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuration PC.

4. Configure the connection.

5. Close the dialog with "OK".

6. Select the "Options" command in the "Project > Transfer" menu in WinCC flexible.

7. Select the desired option under "Available options".

8. Set "Transfer" mode on the HMI device.

9. Start the installation of the option in WinCC flexible on the configuration PC with the ">>" button.

10. Follow the instructions in WinCC flexible.

   A status display appears indicating the progress of the installation.

Result

The WinCC flexible-option has now been installed on the HMI device.

8.4.7.3 Removing with WinCC flexible

Requirement

- No project is open on the configuration PC in WinCC flexible.
- The HMI device is connected to this configuration PC.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Select the "Communication Settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication Settings" dialog is displayed.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuration PC.

4. Configure the connection.

5. Close the dialog with "OK".

6. Select the "Options" command in the "Project > Transfer" menu in WinCC flexible.

7. Press the "Device status" button to update the display.

8. Select the desired option under "Installed options".

9. Set "Transfer" mode on the HMI device.

REVIEW ENGLISH
27.07.2010

10.Start the removal of the option in WinCC flexible on the configuration PC with the "<<" button.

11.Follow the instructions in WinCC flexible.

A status display appears indicating the progress of the removal.

Result

The WinCC flexible-option has now been removed from the HMI device.

8.4.7.4   Installing with ProSave

Requirement

- The HMI device is connected to a PC on which ProSave is installed.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Start ProSave from the Windows start menu.
2. Select the HMI device type in the "General" tab.
3. Select the type of connection between the HMI device and the PC.
4. Configure the connection.
5. Select the "Options" tab.
6. Select the desired option under "Available options".
7. Set "Transfer" mode on the HMI device.
8. Start the installation of the option in ProSave with the ">>" button.
9. Follow the instructions in ProSave.

A status display appears indicating the progress of the installation.

Result

The WinCC flexible-option has now been installed on the HMI device.

8.4.7.5   Removing with ProSave

Requirement

- The HMI device is connected to a PC on which ProSave is installed.
- The data channel is configured on the HMI device.

Procedure

Proceed as follows:

1. Start ProSave from the Windows start menu.

2. Select the HMI device type in the "General" tab.

3. Select the type of connection between the HMI device and the PC.

4. Configure the connection.

5. Select the "Options" tab.

6. Press the "Device status" button to update the display.

7. Select the desired option under "Installed options".

8. Set "Transfer" mode on the HMI device.

9. Start the removal of the option in ProSave with the "<<" button.

10. Follow the instructions in ProSave.

   A status display appears indicating the progress of the removal.

Result

The WinCC flexible-option has now been removed from the HMI device.

8.4.8 Transferring and transferring back license keys

8.4.8.1 Overview

With the purchase of a WinCC flexible option, you also buy a specific usage license with an associated license key. Once you have installed an add-on, transfer a license key to the HMI device. The license key unlocks the option for use. The license key can then be transferred from the HMI device back to the storage location.

Note

The license key can only be transferred using the Automation License Manager or WinCC flexible.

8.4.8.2 Transfer license keys

Requirement

- No WinCC flexible project is open on the configuration PC.
- The HMI device is connected to the configuration PC.
- A data channel is configured on the HMI device.
- A storage medium with the license key is available.

Procedure

Proceed as follows:

1. Switch to "Transfer" mode on the HMI device.

2. When transferring using WinCC flexible:

   Select the "Transfer" > "License Keys" command in the "Project > Transfer"" menu. The Automation License Manager is displayed.

3. For transfers using the Automation License Manager:

   Start the Automation License Manager via the Windows Start menu.

4. Select the "Connect HMI device" command in the "Edit > Connect Target System" menu.

   The "Connect Target System" dialog is displayed.

5. Under "Device type", select the HMI device type.

6. Select the type of connection from the "Connection" box.

7. Configure the connection.

8. Confirm by clicking "OK".

   The connection to the HMI device is established. The connected HMI device is displayed in the left window of the Automation License Manager.

9. Select the source drive in the left window.

   The right window displays the available license keys.

10. Drag and drop the selected license key from the right window to the HMI device in the left window.

    The selected license keys are transferred to the HMI device.

8.4.8.3 Transfer license keys back

Requirement

- No WinCC flexible project is open on the configuration PC.
- The HMI device is connected to the configuration PC.
- A data channel is configured on the HMI device.
- The license key on a storage medium.

Procedure

Proceed as follows:

1. Switch to "Transfer" mode on the HMI device.

2. When transferring back using WinCC flexible:

   Select the "License Keys" command in the "Project > Transfer" menu.

   The Automation License Manager is displayed.

3. When transferring back using the Automation License Manager:

    Start the Automation License Manager via the Windows Start menu.

4. Select the "Connect HMI device" command in the "Edit > Connect Target System" menu.

    The "Connect Target System" dialog is displayed.

5. Under "Device type", select the HMI device type.

6. Select the type of connection from the "Connection" box.

7. Configure the connection.

8. Confirm by clicking "OK".

    The connection to the HMI device is established. The connected HMI device is displayed in the left window of the Automation License Manager.

9. Select the HMI device in the left window.

    The right window displays the available license keys.

10. Drag and drop the selected license key from the right window to the drive in the left window.

    The selected license keys will be transferred back to the storage location.

8.5   Commissioning an RFID tag

Commissioning

If you have transferred a project with configured effective ranges and RFID tags to the HMI device and start the HMI device for the first time, the HMI device goes into commissioning mode. In the commissioning mode, you assign a unique ID to each RFID tag in the plant.

Once IDs are assigned to all RFID tags, you can determine the CRC checksum, which must be entered in the project. Finally, the verified project must then be transferred back to the HMI device.

Recommissioning

If the mapping between effective ranges and RFID tag changes in the project, you need to commission the RFID tags again.

NOTICE
Repeated acceptance of the plant
The RFID tags installed in the plant may not be replaced or locally changed without performing an acceptance procedure.
If a replacement or change is made, the plant needs to once again go through acceptance, as described in the section "Acceptance of the plant (Page 241)".

Requirement

A project with configured effective ranges and RFID tags has been transferred to the HMI device. The project starts immediately after transfer. The following dialog is displayed.

The dialog shows the configured effective ranges and RFID tags with their assigned IDs in the project.

Procedure

To recommission the RFID tags, proceed as follows:

1. Select an effective range in the "Effective range" list.

   The "Tag" list shows the RFID tags that are assigned to this effective range in the WinCC flexible project. The "Effective range" box shows the configured ID of the selected effective range.

2. In the "Tag" list, select the RFID tag to which you want to assign an ID.

   The "Tag" box shows the configured ID of the selected RFID tag.

3. Bring the HMI device into the immediate proximity of the RFID tag, in other words, into the effective range of the RFID tag to which you want to assign the ID shown in the "Tag" box.

4. Press "Save ID".

   The ID is sent to the RFID tag and stored there. A check mark is set in the "Tag" list, if the configured tag ID is successfully written to the RFID tag.

NOTICE

Recording the ID of the RFID tag

If you replace the RFID tag at a later date due to a defect, for example, you will always need the ID of the RFID tag.

Therefore, record the ID of the RFID tag so that it is at hand at all times. For example, write it on the front of the RFID tag using a permanent marker.
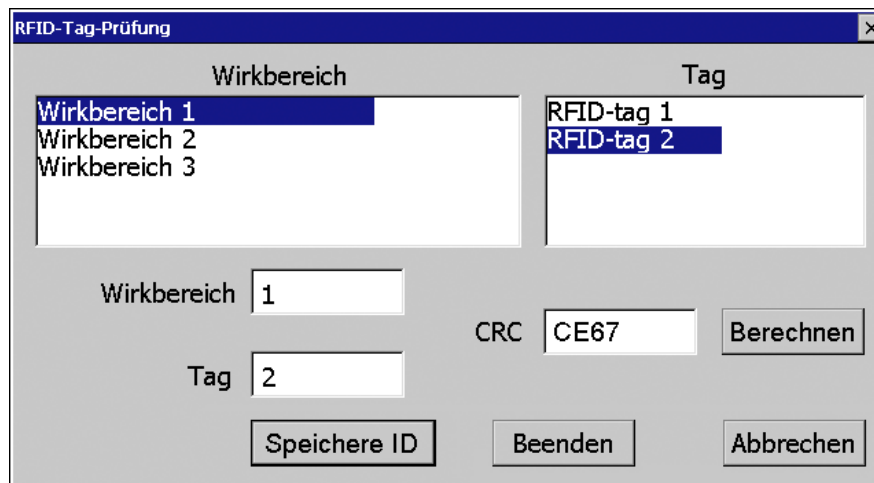
---

5. Repeat steps 2 to 4 for all RDIF tags of this effective range.

NOTICE
Only describe RFID-tag once
It is not possible to describe an RFID tag multiple times. No inspection occurs to see if an RFID tag was already described.
If you accidentally try to describe an RFID multiple times with one ID, then you will not receive a response from the system and you have to execute the commissioning again.
Make sure that you describe an RFID tag only once with an ID.

When all the RFID tags of an effective range have an ID, the selected effective range has a check mark in the "Effective range" list.

6. Repeat steps 1 to 5 for all effective ranges.
   The "Calculate" button is gray and only becomes black again, and thus enabled, when all RFID tags have successfully been assigned an ID.

7. Press "Calculate".

   The CRC checksum is displayed.

8. Record the checksum or enter it immediately in "Effective ranges (RIFD)" in the WinCC flexible editor.

9. Click "Exit" to close the dialog.

Result

You have assigned a unique identifier to all RFID tags and determined a checksum.

Transfer the project with the added CRC checksum again to the HMI device. You can log onto a machine and operate the machine in fail-safe mode.

8.6 Replacing an RFID tag

If it is not possible to log onto an effective range, the HMI device or RFID tag may be defective. This section describes the configuration work carried out after replacement of a defective RFID tag.

Requirement

- The defective RFID tag has been replaced.
- The ID of the defective RFID tag is available.
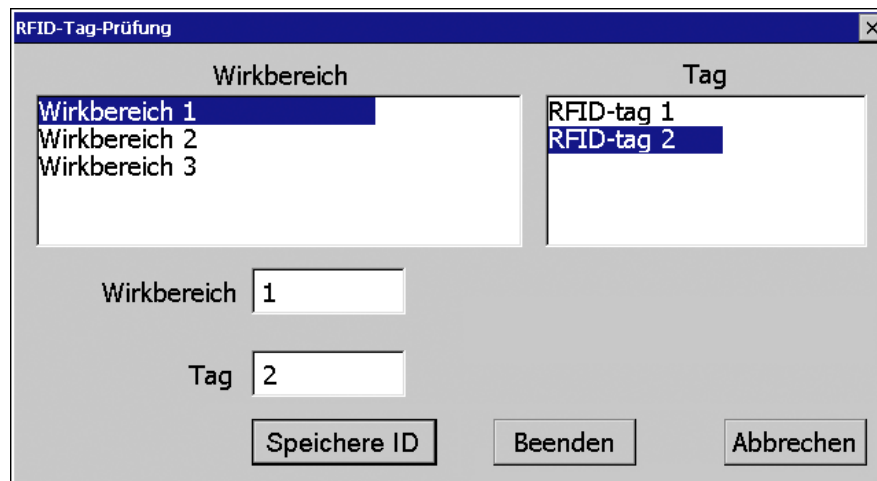- The project, in which the RFID tag has failed, is still on the HMI device.

Procedure

Proceed as follows:

1. Switch on the HMI device.
2. Open the Control Panel.
3. Press the "RFID Config" icon.

   The following dialog appears:

4. Select the effective range ID in the "Effective range" selection box and the ID of the defective RFID tag in the "Tag" selection box.
5. Bring the HMI device into the effective range of the RFID tag.
6. Press "Save ID".

   The HMI device transmits the ID to the RFID tag. The new RFID tag has the ID of the previously used RFID tags.

7. Click "Exit" to close the dialog.
8. Close the Control Panel and start the project.
9. Log the HMI device onto a machine to check the new RFID tag.

   – When the logon is successful, you can continue working in the project.
   – If logon is not possible close the dialog and repeat steps 2 to 8.

Commissioning the plant

9

9.1 Overview

The acceptance of the plant involves the following:

- Safety-related project
- Safety program
- RFID tags with effective ranges

9.2 Acceptance of the plant

All of the relevant application-specific standards and the procedure described in this section must be observed in the course of final acceptance of the plant.

Note

This section provides a detailed description of the additional tasks required for the fail-safe operation of the HMI device.

Read the detailed description provided in the "System Acceptance Test" section of the "S7 Distributed Safety, Configuring and Programming" (http://support.automation.siemens.com/WW/view/en/22099875) manual when performing an acceptance procedure for the plant.

The acceptance of the plant involves the following tasks:

- Configure the F-CPU and F-I/O
- Create a safety program

Requirement

- The hardware configuration has been created in HW Config.
- The safety program has been created and generated.
- A backup of the STEP 7 project has been created.

Configuring the F-CPU and F-I/O

- Printing and archiving the hardware configuration.

- Check the following parameters in the hardware configuration:

  - Parameters of the F-CPU

  - Parameters of the F-I/O

    This includes unique PROFIsafe addresses and additional PROFIsafe parameters.

- Save the hardware configuration with the STEP 7 project.

A detailed description is provided in the "Acceptance test for the configuration of the F-CPU and the F-I/O" section of the "S7 Distributed Safety, Configuring and Programming" manual.

Acceptance of the safety program

- Print and archive the safety program.

- Check the printed copy of the safety program for existence of the criteria specified in the "S7 Distributed Safety, Configuring and Programming" manual, section "Acceptance of a safety program."

- Download the entire safety program to the F-CPU.

- Test all functions of the safety program.

A detailed description is provided in the "Acceptance test for the configuration of the F-CPU and the F-I/O" section of the "S7 Distributed Safety, Configuring and Programming" manual.

9.3 Transponder system

9.3.1 Accepting effective range

For fail-safe operation, the project of the HMI device must precisely match the plant.

For this reason when first starting a project, you must verify all effective ranges with all transponders. The result of the verification is a CRC checksum that you must enter in the project. Finally, the verified project must then be transferred back to the HMI device.

Note

Transponders that are exclusively assigned to one zone are not considered in this verification.

Accepting effective range after changes

If you replace a transponder or change its location or change an effective range in the plant, the respective project must be adjusted and accepted again.

| NOTICE |
| --- |
| **Repeated acceptance of the plant** |
| The transponder installed in the plant may not be replaced or locally changed without performing an acceptance procedure.

 If a replacement or change is made, the plant needs to once again go through acceptance. |

Requirements

- In the project:
  - Effective ranges and transponders must be configured in the project.
  - The project has been transferred to the HMI device.
- In the plant:
  - The transponders must be mounted in the plant in such a manner that the effective ranges stored in the project are formed.
  - Batteries must be inserted in the transponders. The ID must be set on the transponders that is stored in the project for these transponders.
  - The IDs of the effective ranges must be marked in the plant.
  - The receipt signal from the WLAN is sufficiently strong.

Procedure - at HMI device

Proceed as follows:

1. Switch on the HMI device.

   The Windows CE desktop with Loader is displayed.

2. Start the project.

   The "Transponder test" dialog box opens.
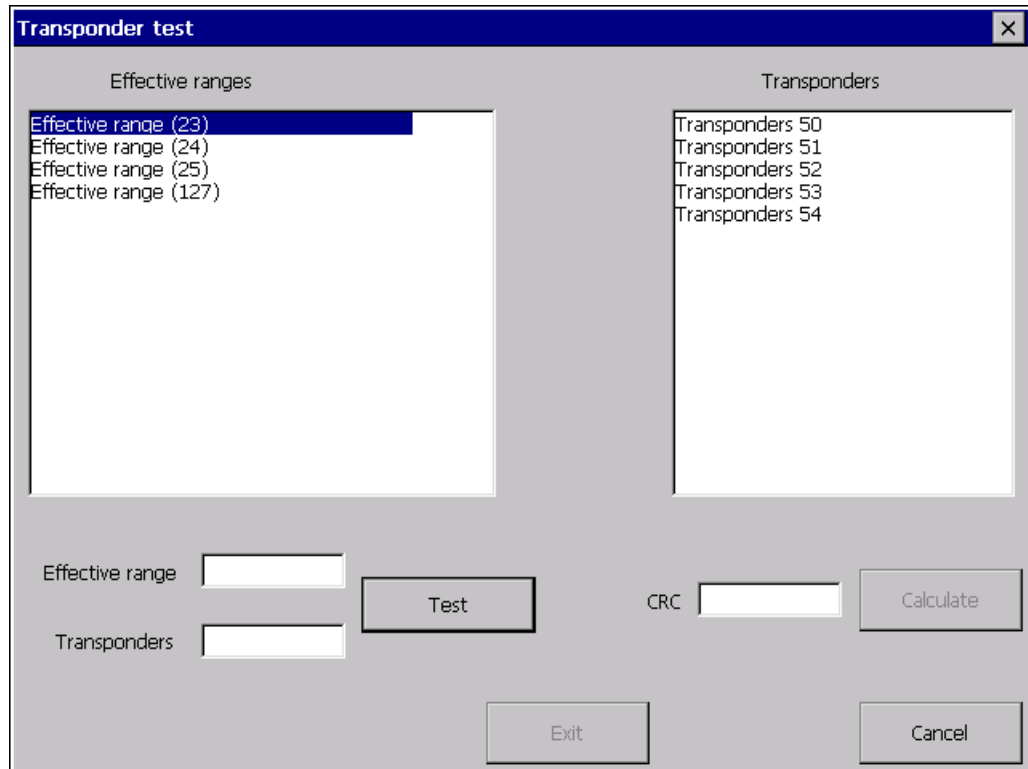
   The "effective ranges" list shows the configured effective ranges.

3. In the "Effective ranges" list highlight the first effective range that you want to verify.

   In the "Transponder" list, the names of the transponders are displayed that are assigned to the effective range in the project.

4. Go to the first transponder that you want to verify.

5. Read the ID of the highlighted effective range and enter this ID in the "Effective range" box.

6. Enter the ID of the transponder where you are located in the "Transponder" box.

7. Verify the entered ID with the "Test" button.

   When the HMI device receives the signal of the transponder specified, that transponder is considered to be checked. The transponder will be marked with a check mark in the list.

8. Repeat steps 4 to 7 for all transponders of this effective range.

   If you have successfully checked all transponders of an effective range, that effective range will be indicated with a check mark in the list.

9. Select the next effective range in the list.

10. Repeat steps 4 to 7 for all transponders assigned to this effective range.

11. Verify all other effective ranges.

12. When you have successfully verified all effective ranges, touch the "Calculate" button.

The HMI device calculates the checksum. The checksum is displayed in the "CRC" box.
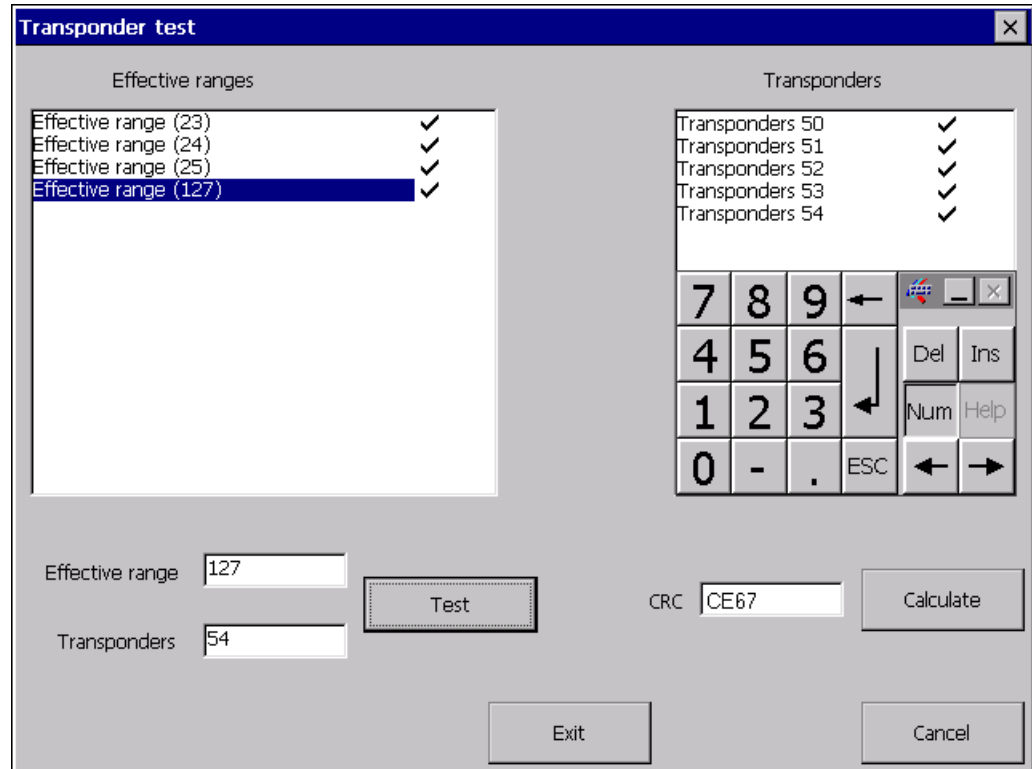
Procedure - at the configuration computer

Proceed as follows:

1. Open the project in WinCC flexible ES.

2. Enter the checksum in the "Effective ranges" editor.

3. Transfer the amended project to the HMI device again.

Result

You can operate the plant on the HMI device in fail-safe operation.

9.3.2   Test effective range

After successful verification of the effective ranges you must test in the plant whether the expansion of the configured effective ranges corresponds to the planning. If the operating elements "Effective range name" and "Effective range quality" are available in the project, you can check the effective ranges on the HMI device.

In particular, check the following cases:

- Do the limits of the effective range run as planned?

  Note particularly that machine operations from excessive distances are not permitted.

- Does the signal light that belongs to the effective range show whether an HMI device is logged on at the effective range?

- Do the moving parts influence the communication between the transponder - HMI device?

  Investigate all positions of moving parts.

- Is WLAN available throughout the entire effective range?

9.3.3 Testing zones

If zones were configured for a monitored system, test to see if the HMI device recognizes all zones.

Requirement

- The project is started.

- The transponders have been fitted and the IDs are set

- The operating elements "Zone label" and "Zone quality" are present.

Procedure

Check the following parameters:

- Are the configured zone limits operating as planned?

- Do the moving parts influence the communication between the transponder - HMI device?

  Investigate all positions of moving parts.

- Is WLAN available throughout the entire zone?

9.4 RFID tag system

9.4.1 Commissioning an RFID tag

Commissioning

If you have transferred a project with configured effective ranges and RFID tags to the HMI device and start the HMI device for the first time, the HMI device goes into commissioning mode. In the commissioning mode, you assign a unique ID to each RFID tag in the plant.

Once IDs are assigned to all RFID tags, you can determine the CRC checksum, which must be entered in the project. Finally, the verified project must then be transferred back to the HMI device.

Recommissioning

If the mapping between effective ranges and RFID tag changes in the project, you need to commission the RFID tags again.

NOTICE
Repeated acceptance of the plant
The RFID tags installed in the plant may not be replaced or locally changed without performing an acceptance procedure. If a replacement or change is made, the plant needs to once again go through acceptance, as described in the section "Acceptance of the plant (Page 241)".

Requirement

A project with configured effective ranges and RFID tags has been transferred to the HMI device. The project starts immediately after transfer. The following dialog is displayed.

The dialog shows the configured effective ranges and RFID tags with their assigned IDs in the project.

Procedure

To recommission the RFID tags, proceed as follows:

1. Select an effective range in the "Effective range" list.

   The "Tag" list shows the RFID tags that are assigned to this effective range in the WinCC flexible project. The "Effective range" box shows the configured ID of the selected effective range.

2. In the "Tag" list, select the RFID tag to which you want to assign an ID.

   The "Tag" box shows the configured ID of the selected RFID tag.

3. Bring the HMI device into the immediate proximity of the RFID tag, in other words, into the effective range of the RFID tag to which you want to assign the ID shown in the "Tag" box.

4. Press "Save ID".

   The ID is sent to the RFID tag and stored there. A check mark is set in the "Tag" list, if the configured tag ID is successfully written to the RFID tag.

NOTICE
Recording the ID of the RFID tag
If you replace the RFID tag at a later date due to a defect, for example, you will always need the ID of the RFID tag.
Therefore, record the ID of the RFID tag so that it is at hand at all times. For example, write it on the front of the RFID tag using a permanent marker.

5. Repeat steps 2 to 4 for all RDIF tags of this effective range.

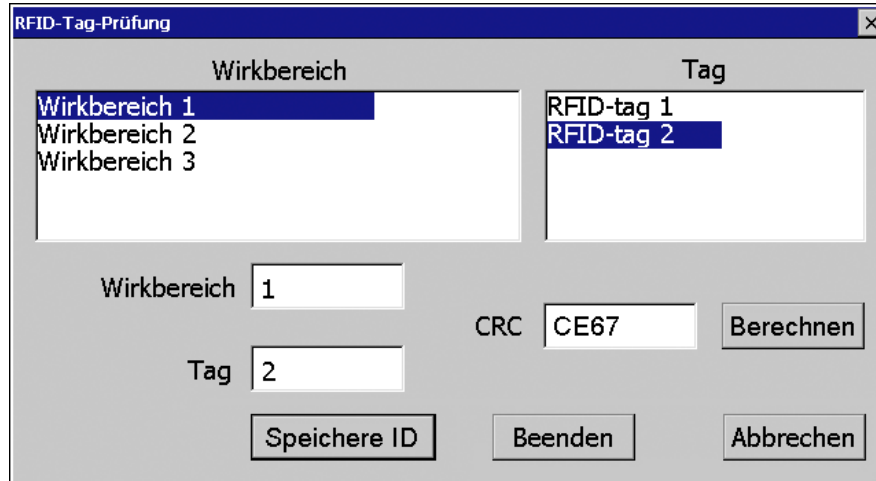 | NOTICE |
   | --- |
   | **Only describe RFID-tag once** |
   | It is not possible to describe an RFID tag multiple times. No inspection occurs to see if an RFID tag was already described. |
   | If you accidentally try to describe an RFID multiple times with one ID, then you will not receive a response from the system and you have to execute the commissioning again. |
   | Make sure that you describe an RFID tag only once with an ID. |

   When all the RFID tags of an effective range have an ID, the selected effective range has a check mark in the "Effective range" list.

6. Repeat steps 1 to 5 for all effective ranges.
   The "Calculate" button is gray and only becomes black again, and thus enabled, when all RFID tags have successfully been assigned an ID.

7. Press "Calculate".

   The CRC checksum is displayed.

8. Record the checksum or enter it immediately in "Effective ranges (RIFD)" in the WinCC flexible editor.

9. Click "Exit" to close the dialog.

Result

You have assigned a unique identifier to all RFID tags and determined a checksum.

Transfer the project with the added CRC checksum again to the HMI device. You can log onto a machine and operate the machine in fail-safe mode.

9.4.2 Replacing an RFID tag

If it is not possible to log onto an effective range, the HMI device or RFID tag may be defective. This section describes the configuration work carried out after replacement of a defective RFID tag.

Requirement

- The defective RFID tag has been replaced.
- The ID of the defective RFID tag is available.
- The project, in which the RFID tag has failed, is still on the HMI device.

Procedure

Proceed as follows:

1. Switch on the HMI device.
2. Open the Control Panel.