

Software Manual

Operator Software SafeConfig OS10 For Safety-M compact devices



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1 General

This software manual describes handling and operation of the **SafeConfig OS10** operator surface.

**Important:**

The activation code: >52094< is required for installation and update.

Appropriate Use

The SafeConfig **OS10** operator software described here is suitable for connection, parameterization, operation and simulation of Kübler units as well as certified safety devices of the Safety-M compact series.

All compatible device types will be detected immediately after connecting to a PC with a launched OS10 software and provided with the appropriate working environment and all available windows and components.

This software manual describes all operating elements of the certified safety devices of the Safety-M compact series. The description of the operating elements for the Kübler (standard-) devices series can be found in the Manual OS10 Standard.



Please note: The illustrations, screenshots and several text passages in this software manual are defined as **SMC1**, but also applying to the other **Safety-M compact** device versions (SMC1, SMC2).

The installation and uninstallation of this program and its components are described in the OS10 Installer Manual, which you find at the end of this manual.



Warning: OS10 can only be installed and used on Microsoft® Windows 8.1 and higher versions.

Os10.0 User-Directory

A separate document directory is generated for each user using OS10.0.

This Os10.0 User-Directory is always created under the path

„C:\Users\<<Name>\Documents\Os100“ where <Name> is the login name of the User.

2 OS10 Overview

2.1 Standard Mode

The following figure shows an already started OS10 with state „Searching unit...“:

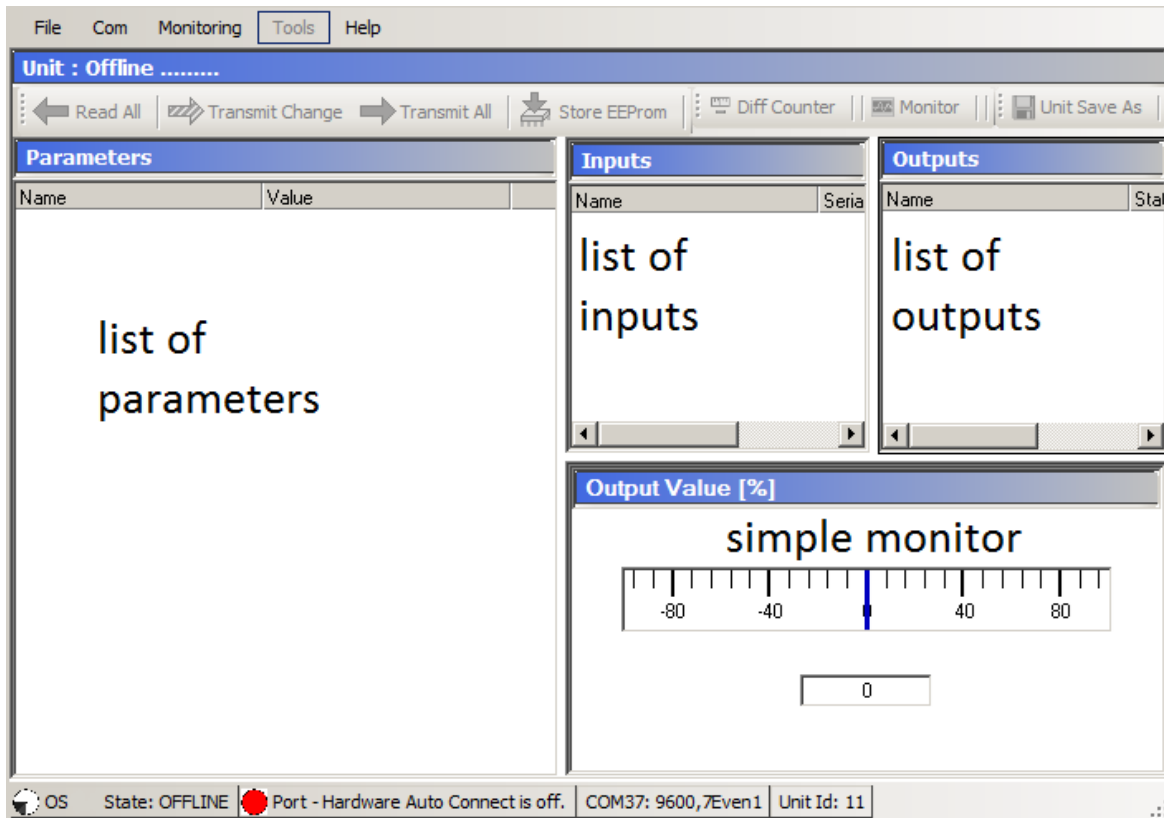


Figure 2-1 Overview „OS10 standard“

2.2 The Safety Mode

The OS10 software includes a "Safety Mode" as an additive component. This is used exclusively for connecting **certified safety devices of the series Safety-M compact**.

Auto-switch to safety mode: If a safety device is connected, the surface will detect automatically its device type and switchover to the special working environment of the safety component. An active safety mode can be recognized by the yellow colored windows of the working environment (blue color in standard mode).

2.3 Structure and differences of the Safety Mode

The **OS10 Safety Mode** screen is similar to the conventional OS10 version but includes 5 instead of 4 display elements. If no safety unit is connected, initially the standard OS10 opens. When connecting a safety unit, the entire safety-version with all 5 display elements is accessible.

A navigation menu as well as a toolbar with buttons allows an easy and intuitive operation of these elements. Not available parts and features are automatically displayed „greyed out“.

Overview of all components:

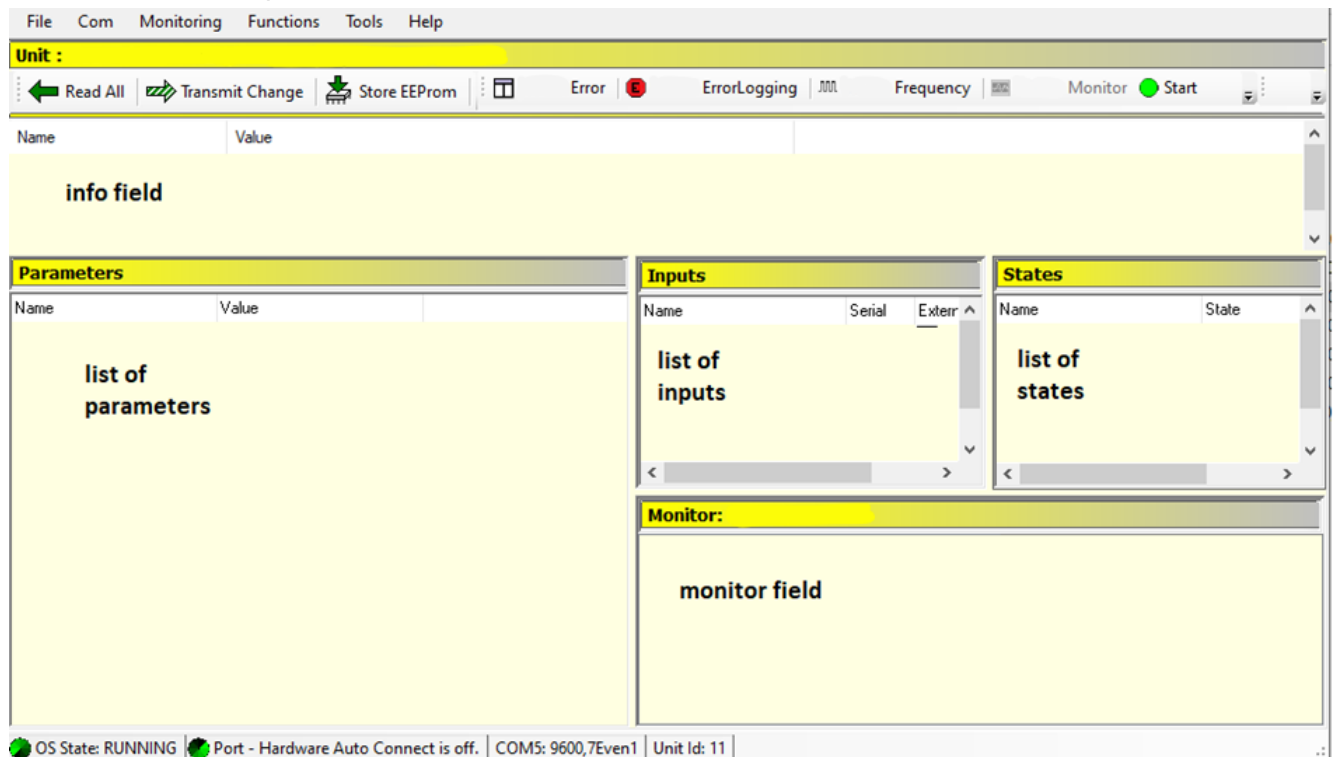


Figure 2-2 Overview „OS10 Safety Mode“

Individual elements are described on the next pages.

OS10 Components:

- **Info** (see chapter 3.1)
Shows important state information of the connected safety device.
- **Parameter** (see chapter 3.2)
This component contains a parameter list, which is used to display and change the parameters of the connected unit.
- **Inputs** (see chapter 3.3)
Serves as pure information display for the respective states of the HTL control and command inputs.
- **Status** (see chapter 3.4)
Summarizes important information about various safety tests and the setting of the DIL switch.
- **Monitor** (see chapter 3.5)
A special feature of the Safety Mode is an extended functionality of the monitor component. Seven different display windows are available:

1. Error
2. Frequency
3. Monitor
4. ErrorLogging
5. OPU
6. Min/Max
7. Output States

Help menu:

- **Show Help** (see chapter 6)
This menu will automatically open the current document directory.
- **Web Page** (see chapter 6)
This menu will automatically open the current manufacturer Webpage.
- **Update Documents** (see chapter 6.1)
With this menu the updating of manuals of the safety devices or of the OS10 can be started.
- **Update OS10** (see chapter 6.2)
With this menu the updating of the OS10 can be started.



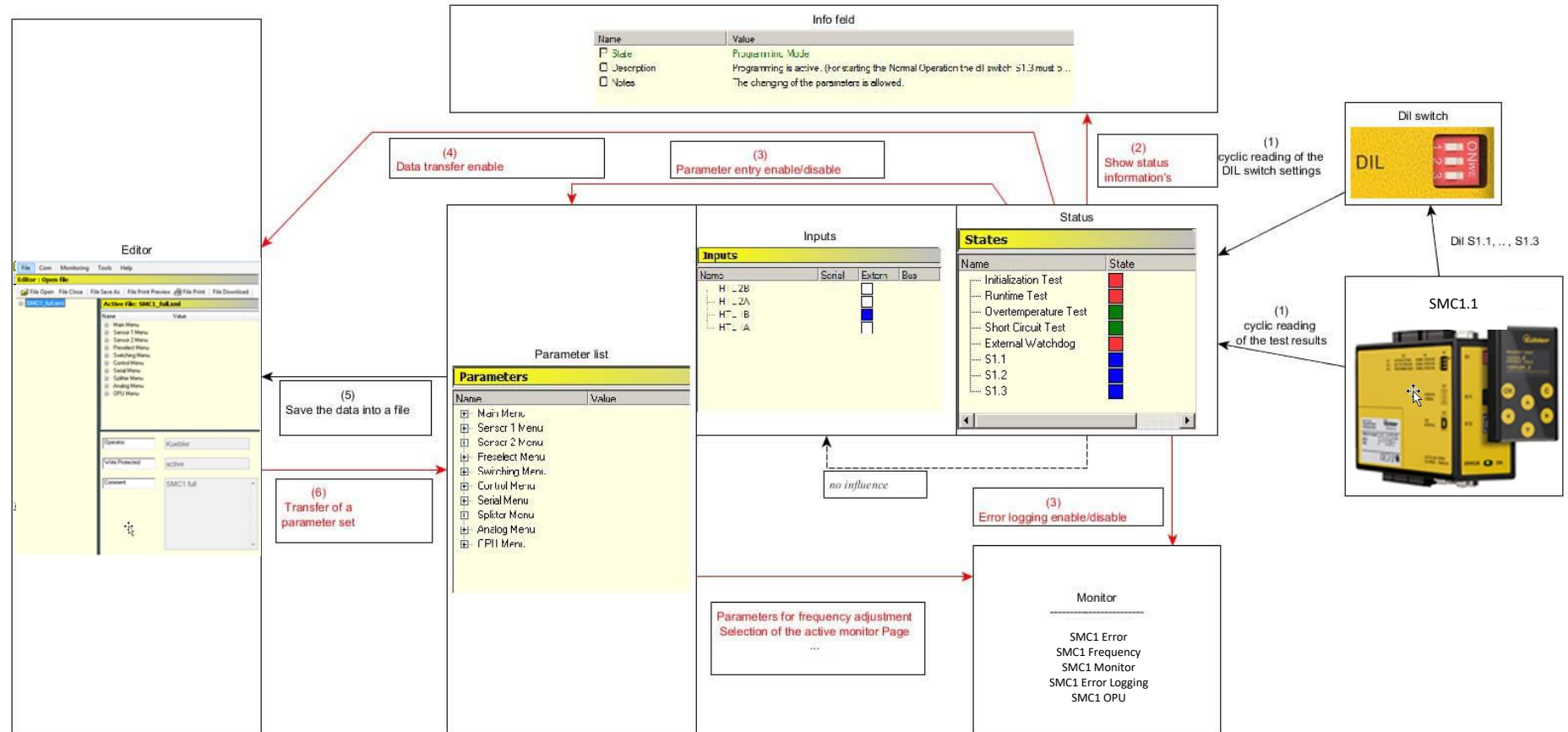
Please note: Fonts and colors can vary depending on the respective Windows settings.

3 Safety Components for the Safety-M compact modul

The different components of the Safety Mode are interdependent. The chart on the following page is intended to illustrate the respective dependencies.

- The **Status** component permanently reads the test results and the DIL switch settings from the connected Safety-M compact **(1)**, evaluates these values and returns the result in the info field **(2)**.
- At the same time the result of the DIL switch evaluation serves for enabling (or disabling) the parameter entry in the parameter list and the monitor component ErrorLogging **(3)** resp. to release the data transfer in the editor **(4)**. Data saving of the parameters via editor is always possible **(5)**.
- Depending on the selected monitor, various parameters from the parameter list are required. These parameters are automatically loaded from the list and transferred to the monitor component **(6)**.

Individual elements are illustrated and described in the drawing on next page.



• Figure 3-1 Overview „OS10 Safety Mode / Dependencies of the different components

3.1 Info field

The info field shows the most important status information about the operating conditions of the connected safety unit.

Name	Value
P State	Programming Mode
0 Description	Programming is active. (For starting the Normal Operation the dil switch S1.3 must b...
0 Notes	The changing of the parameters is allowed.

Figure 3-2 Info-Field State „Programming Mode“

More about the exact relationship of the various states and their detailed explanation are described in the actual Safety-M compact [\[1\]](#) user manual.

Depending on setting of the DIL switch, the safety unit can assume one of the following operating states: **Factory Settings**, **Programming Mode** and **Normal Operation**.

The operating states are recognizable by the info field entrees:

State	Name	Value
Factory Settings	F State	Factory Settings
	0 Description	Factory Setting is active. For starting the Normal Operation the DIL switch S1.1 must be set to on.
	0 Notes	The changing of the parameters is NOT allowed.
Programming Mode	P State	Programming Mode
	0 Description	Programming is active. For starting the Normal Operation the DIL switch S1.3 must be set to one.
	0 Notes	The changing of the parameters is allowed.
Normal Operation	R State	Normal Operation
	0 Description	The unit is still working ...
	0 Notes	The changing of the parameters is NOT allowed.

Table 3-1 Info Field / Indication of Operating States

During **Normal Operation** the OS10 surface is able to detect and display errors automatically. The table shows a list of possible errors:

Error category	Name		Value
Selftest error	E	State	ERROR
	O	Description	During the self-test an ERROR has occurred.
	O	Notes	The changing of the parameters is NOT allowed.
Operation error	E	State	ERROR
	O	Description	During an operation an ERROR has occurred.
	O	Notes	The changing of the parameters is NOT allowed.
Selftest and operation error	E	State	ERROR
	O	Description	Both self-test and operations are FAULTY.
	O	Notes	The changing of the parameters is NOT allowed.

Table 3-2 Info Field/ Error State Indication

The exact error handling can be found in the actual Safety-M compact [\[1\]](#) user manual.

3.1.1 Device Series SMC1.3/SMC2.4: Parameter set checksums

Display of the parameter set checksums

For this device series, two checksums are displayed in the info field (**Check Sum Low** and **Check Sum High**).

The checksums can only be read out and displayed correctly in the state **Normal Operation** (see figure below). The read-out always takes place only during the connection initialization between a DS250/DS260 and the OS10.

Name	Value
R State	Normal Operation
I Description	The unit is still working ...
I Notes	The changing of the parameters is NOT allowed.
I CheckSum Low	73037503
I CheckSum High	1A5812CE

Figure 3-3 Info-Feld / Checksums for DS250/DS260 in the state Normal Operation

For **all other** operating states, no checksums are displayed (see figure below).

Name	Value
P State	Programming Mode
I Description	Programming is active. (For starting the Normal Operation the dil switch S1.3 must b...
I Notes	The changing of the parameters is allowed.
I CheckSum Low	-----
I CheckSum High	-----

Figure 3-4 Info-Feld / Checksums for SMC1.3/SMC2.4 in the state Programming Mode

Read out of the current checksums

The read out takes place in two steps:

1. Set up the device to the operating state **Normal Operation** via DIL switches (see SMC1.3/SMC2.4 user manual [3]).
2. Use the Reinitialization menu to start the connection initialization between a SMC1.3/SMC2.4 and the Os10 (see figure below).

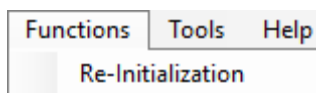


Figure 3-5 Menu Re-Initialization

Reading out and displaying the checksums are done automatically.

3.1.2 Printing and saving of the parameter set checksums via File-Editor

Data transfer, printing, saving to a file and reading from a file are analogous to the other parameters.

In contrast to the other parameters, the checksums are always displayed in the Editor field File information. A data transfer of the checksums from the file editor to the Os10 window is not possible.

For using of the file editor please read the chapter "Editor Tool for Parameter Files" below in this manual.

3.2 Parameters

3.2.1 Parameter List

The parameter list is used to display resp. change the device parameters.



Device parameter changes are only allowed resp. enabled in the Programming Mode.

In other operation states, changing (read from or write to the unit) of parameter sets are blocked resp. disabled. The respective component is greyed out automatically:

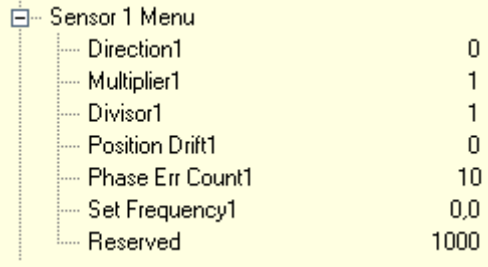
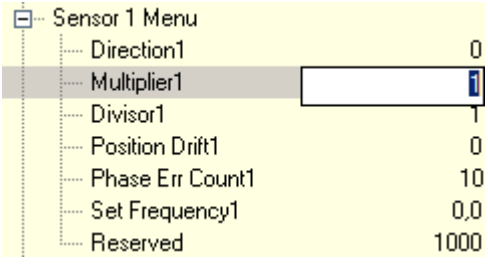
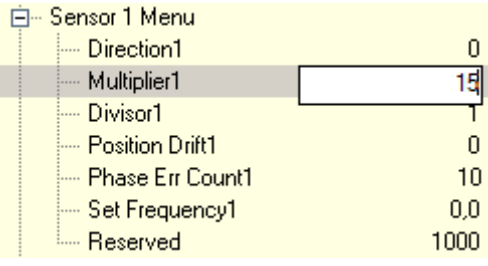
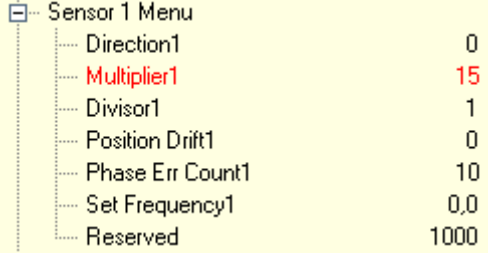
Programming Mode:	Factory Settings, Normal Operation:																																												
<div style="border: 1px solid black; padding: 5px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #ffff00;"> <th colspan="2">Parameters</th> </tr> <tr style="background-color: #ccc;"> <th style="width: 70%;">Name</th> <th style="width: 30%;">Value</th> </tr> </thead> <tbody> <tr><td>⊕ Main Menu</td><td></td></tr> <tr><td>⊕ Sensor 1 Menu</td><td></td></tr> <tr><td>⊕ Sensor 2 Menu</td><td></td></tr> <tr><td>⊕ Preselect Menu</td><td></td></tr> <tr><td>⊕ Switching Menu</td><td></td></tr> <tr><td>⊕ Command Menu</td><td></td></tr> <tr><td>⊕ Serial Menu</td><td></td></tr> <tr><td>⊕ Splitter Menu</td><td></td></tr> <tr><td>⊕ Analog Menu</td><td></td></tr> </tbody> </table> </div> <p style="text-align: center;"><i>Figure 3-6 Parameter list / Programming Mode</i></p>	Parameters		Name	Value	⊕ Main Menu		⊕ Sensor 1 Menu		⊕ Sensor 2 Menu		⊕ Preselect Menu		⊕ Switching Menu		⊕ Command Menu		⊕ Serial Menu		⊕ Splitter Menu		⊕ Analog Menu		<div style="border: 1px solid black; padding: 5px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #ffff00;"> <th colspan="2">Parameters: LOCKED</th> </tr> <tr style="background-color: #ccc;"> <th style="width: 70%;">Name</th> <th style="width: 30%;">Value</th> </tr> </thead> <tbody> <tr><td>⊕ Main Menu</td><td></td></tr> <tr><td>⊕ Sensor 1 Menu</td><td></td></tr> <tr><td>⊕ Sensor 2 Menu</td><td></td></tr> <tr><td>⊕ Preselect Menu</td><td></td></tr> <tr><td>⊕ Switching Menu</td><td></td></tr> <tr><td>⊕ Command Menu</td><td></td></tr> <tr><td>⊕ Serial Menu</td><td></td></tr> <tr><td>⊕ Splitter Menu</td><td></td></tr> <tr><td>⊕ Analog Menu</td><td></td></tr> </tbody> </table> </div> <p style="text-align: center;"><i>Figure 3-7 Parameter list „disabled“</i></p>	Parameters: LOCKED		Name	Value	⊕ Main Menu		⊕ Sensor 1 Menu		⊕ Sensor 2 Menu		⊕ Preselect Menu		⊕ Switching Menu		⊕ Command Menu		⊕ Serial Menu		⊕ Splitter Menu		⊕ Analog Menu	
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⊕ Command Menu																																													
⊕ Serial Menu																																													
⊕ Splitter Menu																																													
⊕ Analog Menu																																													

The operating states can be defined by using the DIL switch S1 - see Safety-M compact [\[1\]](#) user manual.

The effects of parameter list enabling/disabling are described in the chapters **Editor Tool** and **Monitor**.

3.2.2 Edit Parameter Values

The following example for the parameter **Multiplier1** shows how to edit, read or transmit single parameter values:

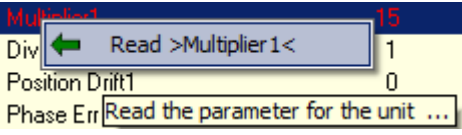
<p>Double-click the parameter value...</p>	 <pre> Sensor 1 Menu Direction1 0 Multiplier1 1 Divisor1 1 Position Drift1 0 Phase Err Count1 10 Set Frequency1 0,0 Reserved 1000 </pre>
<p>... an editing window opens:</p>	 <pre> Sensor 1 Menu Direction1 0 Multiplier1 [] Divisor1 1 Position Drift1 0 Phase Err Count1 10 Set Frequency1 0,0 Reserved 1000 </pre>
<p>Now the value can be changed (e. g.15).</p>	 <pre> Sensor 1 Menu Direction1 0 Multiplier1 15 Divisor1 1 Position Drift1 0 Phase Err Count1 10 Set Frequency1 0,0 Reserved 1000 </pre>
<p>Clicking Enter, the changed value is accepted and marked in red, <u>but not</u> transmitted to the unit.</p>	 <pre> Sensor 1 Menu Direction1 0 Multiplier1 15 Divisor1 1 Position Drift1 0 Phase Err Count1 10 Set Frequency1 0,0 Reserved 1000 </pre>



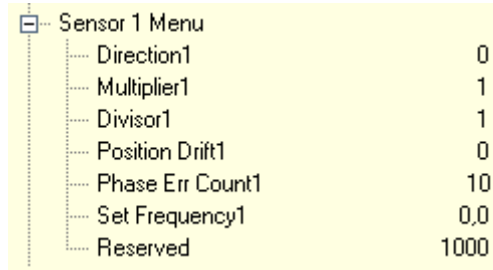
Please note the exceptions for parameters in the appendix chapter.

3.2.3 Read Single Parameters

By using the pop-up menu **Read** a single parameter can be read from the connected unit.



After reading, the parameter is automatically marked black.



Sensor 1 Menu	
Direction1	0
Multiplier1	1
Divisor1	1
Position Drift1	0
Phase Err Count1	10
Set Frequency1	0,0
Reserved	1000

3.2.4 Functions of several parameters

For simultaneous reading and transmission of several parameters, the features **Read All**, **Transmit All**, **Transmit Change** und **Store EEPROM** can be used. All these functions are activated by the respective buttons in the toolbar.

Before executing these functions, a security check must be agreed, because all these features will have a significant impact on the Safety-M compact and the OS10. If the security check is not approved, the corresponding feature cannot be executed.

3.2.5 Read All


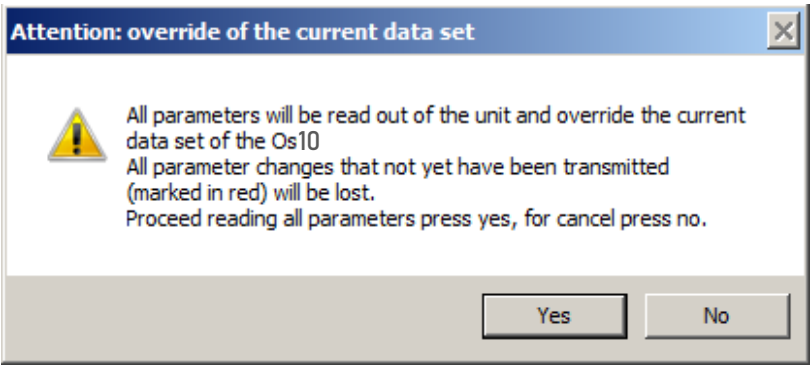
Button	Description
	All parameters*) of the connected unit will be read and all current parameters will be overwritten in the parameter list. All parameters will be marked black .
	Security check: 

Table 3-3 **Read All**

*) „All parameters" refer to the parameter data sets which are "free switched" in the file editor (see also Chapter 5. Editor tool).

3.2.6 Transmit Change

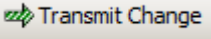
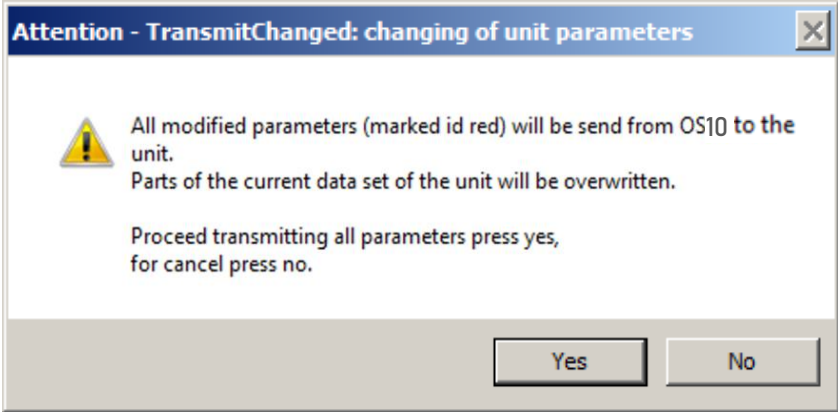
Button	Description
	<p>Only the changed (red marked) parameters are transmitted to the unit. (and marked orange). Afterwards, the OS10.0 automatically activates the transferred parameters at the connected device.</p> <p>After activation, the changed parameters are automatically read back and compared internally. If there is a match, the respective parameters are automatically marked green.</p>
	<p>Security check:</p> 

Table 3-4 **Transmit Change**

3.2.7 Store EEPROM

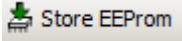
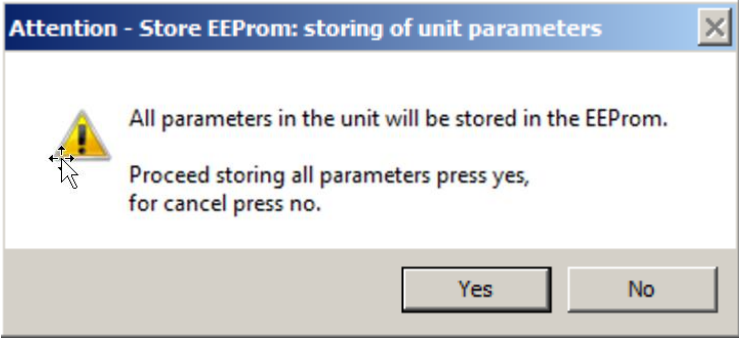
Button	Description
	Save all parameters to the EEPROM. This type of storage has no influence on the parameter colors in the parameter list.
	Security check: 

Table 3-5 Save Parameters to the EEPROM

3.2.8 Save Parameters as File

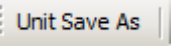
Button	Description
	Clicking the button Unit Save as , the file editor is displayed on the left side of the screen and the actual parameter set can be saved in a file.

Table 3-6 Save Parameters as File

3.3 Inputs

The field **Inputs** is used purely as an information display, which shows the present switching states of the HTL control inputs at terminal **X10** of the Safety-M compact unit.

Inputs			
Name	Serial	Extern	Bus
HTL 2B		<input type="checkbox"/>	
HTL 2A		<input type="checkbox"/>	
HTL 1B		<input checked="" type="checkbox"/>	
HTL 1A		<input type="checkbox"/>	

Figure 3-8 Input Component

Extern	Notice
<input checked="" type="checkbox"/>	Input is HIGH
<input type="checkbox"/>	Input is LOW

Table 3-7 Input Component/ Input States

A description of the inputs can be found in the actual Safety-M compact [\[1\]](#) user manual.

3.4 Status Component

The status component is divided into two columns **Name** and **State**. The individual entries are arranged in rows.

The first five entries are test results, which provide information about the status of the connected unit.

The three entries in the screenshot below show the respective switching states of the DIL switch (S1.1, S1.2, S1.3):

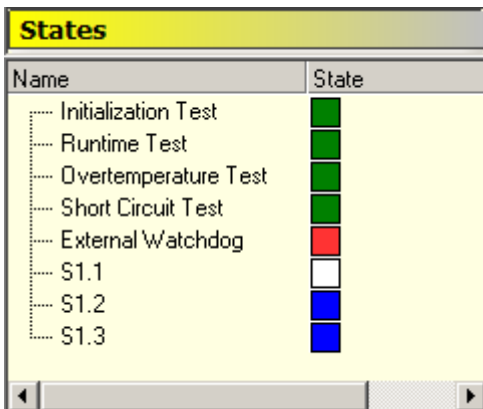


Figure 3-9 Status Component

The table below shows the possible states of the respective entries:





Entry	State	Notice
Test result		The test was NOT successful.
		The test has been completed successfully.
DIL switch		The state of the DIL switch slider is ON.
		The state of the DIL switch slider is OFF.

Table 3-8 Status Component / Entry States

More information about the entries can be found in the actual Safety-M compact [\[1\]](#) user manual.

3.5 Monitor

The Safety Mode offers with the variable monitor windows extensive monitoring possibilities for the safety unit “Safety-M compact”.

List of available display elements:








Display element	Selection by:	
	Menu	Button
Errors	SMC1: Errors	 SMC1: Error
Frequency	SMC1: Frequency	 SMC1: Frequency
Monitor	SMC1: Monitor	 SMC1: Monitor
Error Logging	SMC1: ErrorLogging	 SMC1: ErrorLogging
OPU Viewer	SMC1: OPU	 SMC1: OPU
Min/Max	SMC1: Min/Max	 SMC1: Min/Max
Output States	SMC1: Output States	 SMC1: Output States ¹⁾

Table 3-9 Monitor / Display Element for Monitor Selection

Only one of these monitor windows can be active. The selection of the respective display element can be done via the navigation menu **Monitoring** or by using the corresponding **Button** of the toolbar.



The **Error Logging** monitor can only be used in the “Programming Mode”.

3.5.1 Errors

This monitor shows a detailed itemization of the several error indicators:

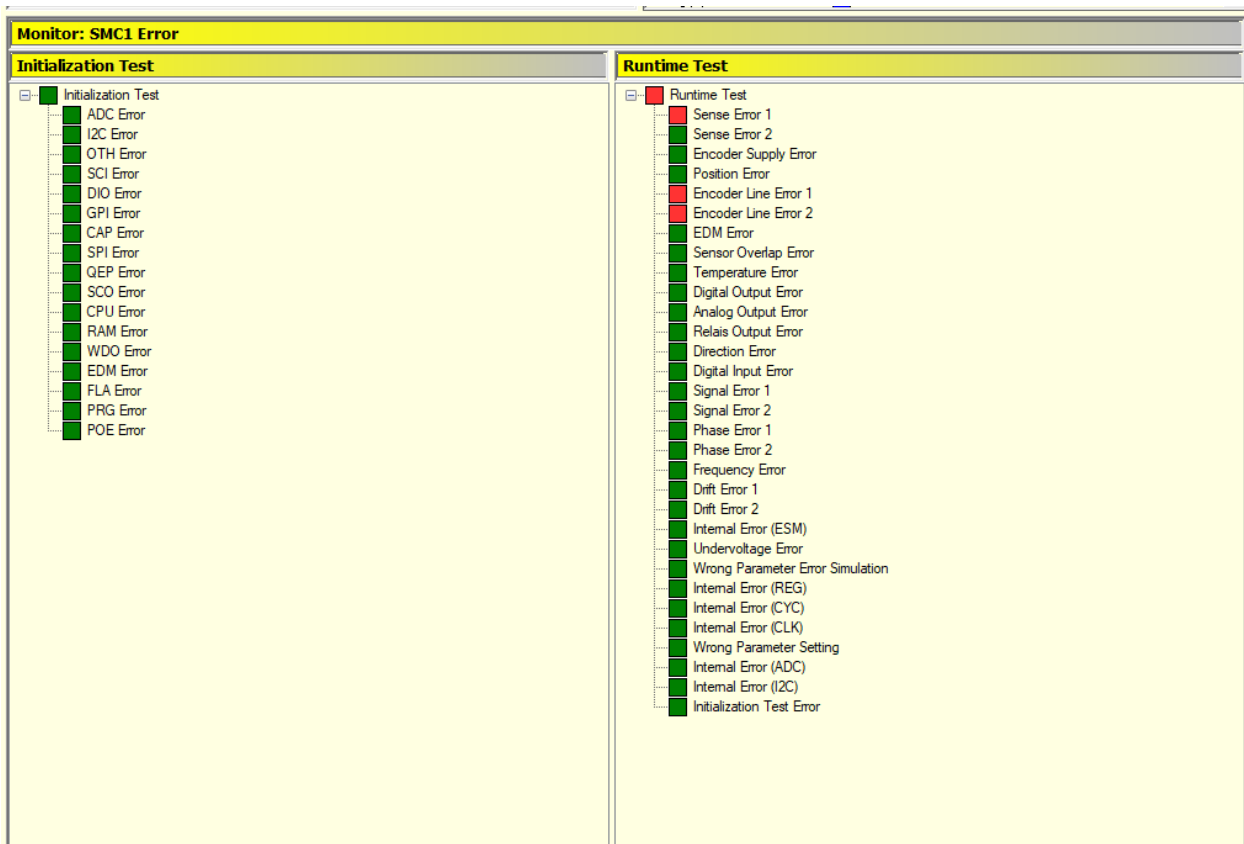


Figure 3-10 Monitor / Errors

The itemization is divided into two groups: **Initialization Test** (left) and **Runtime Test** (right).

The **Initialization Test** shows all indicators which are checked once when startup (booting) the safety unit. The **Runtime Test** shows all indicators which are cyclically checked after starting the unit.

The error identification is shown in the following table.

Display	Description
■	Indicator reports an error
■	No error occurred

Table 3-10 Monitor / Errors – Error Identification

More information about the several indicators can be found in the actual Safety-M compact [\[1\]](#) user manual.

3.5.2 Frequency

This monitor is mainly used as calibration-tool for the sensors connected to the unit. All calibration-related data resp. results are summarized in two groups (**Measurement** and **Result**):

Name	Frequency f_j [Hz]	Multiplier m_j	Divisor d_j	Results r_j
Measurement				
Sensor 1	0,00	1	1	0,00
Sensor 2	0,00	1	1	0,00
Result				
Ratio [%]	F1 and F2 ...			

Figure 3-11 Monitor / Frequency

The first group **Measurement** displays all important information for both connected sensors. The current frequencies of both sensors are cyclically read from the Safety-M compact. The corresponding column of this component is automatically updated with these values. The second group **Result** will show the result of the calibration.

Frequency Calibration via OS10

The frequencies can be calibrated directly in the parameter list of the Safety-M compact unit:

Name	Frequency f_j [Hz]	Multiplier m_j	Divisor d_j	Results r_j
Measurement				
Sensor 1	481,76	1	1	481,76
Sensor 2	704,67	1710	2517	478,74
Result				
Ratio [%]	0,63			

Figure 3-6 Monitor / Frequency Calibration



- This calibration is only accessible in the “Programming Mode”.
- In the Parameter List shows information about the different colors and parameter values.

Values and colors of the respective parameters are automatically transferred from the parameter list to the **Frequency** monitor component.

With each change, the result of the calibration will automatically be calculated and entered in the corresponding column of the result group.

A calibration only makes sense, if the measured frequencies for both sensors are higher than zero. In all other cases a warning information appears (see table):

Display Ratio [%]	Meaning	Notice
Indication of the relative deviation in a range of [-100 % ;100 %]	Both frequencies are higher than zero	Calibration possible
F1 are zero	The measured frequency of sensor 1 is zero.	Sensor 1 stands still or is not connected. ⇒ No calibration possible
F2 are zero	The measured frequency of sensor 2 is zero.	Sensor 2 stands still or is not connected. ⇒ No calibration possible
F1 and F2 are zero	Both measured frequencies are zero.	Both sensors stand still or Are not connected. ⇒ No calibration possible

Table 3-11 Monitor / Frequency - Calibration Conditions

More about the calibration procedure can be found in the actual Safety-M copact [\[1\]](#) user manual.

3.5.3 Monitor

The monitor provides an easy way to monitor the state of a Kübler device. Depending on the requirements, one or more parameters can be monitored and stored as a so-called "log" in a file.

For each devices the monitor loads adapted data or variable sets. The meaning of the monitor variables can be found in the corresponding device manual.

The description of the monitor and its functionality is shown using the example of the „SMC2.4/Assembly: Option SMC1.3“. But it is transferable for every Kübler device.

Overview

The monitor is organized into four sections or modes (see figure below).

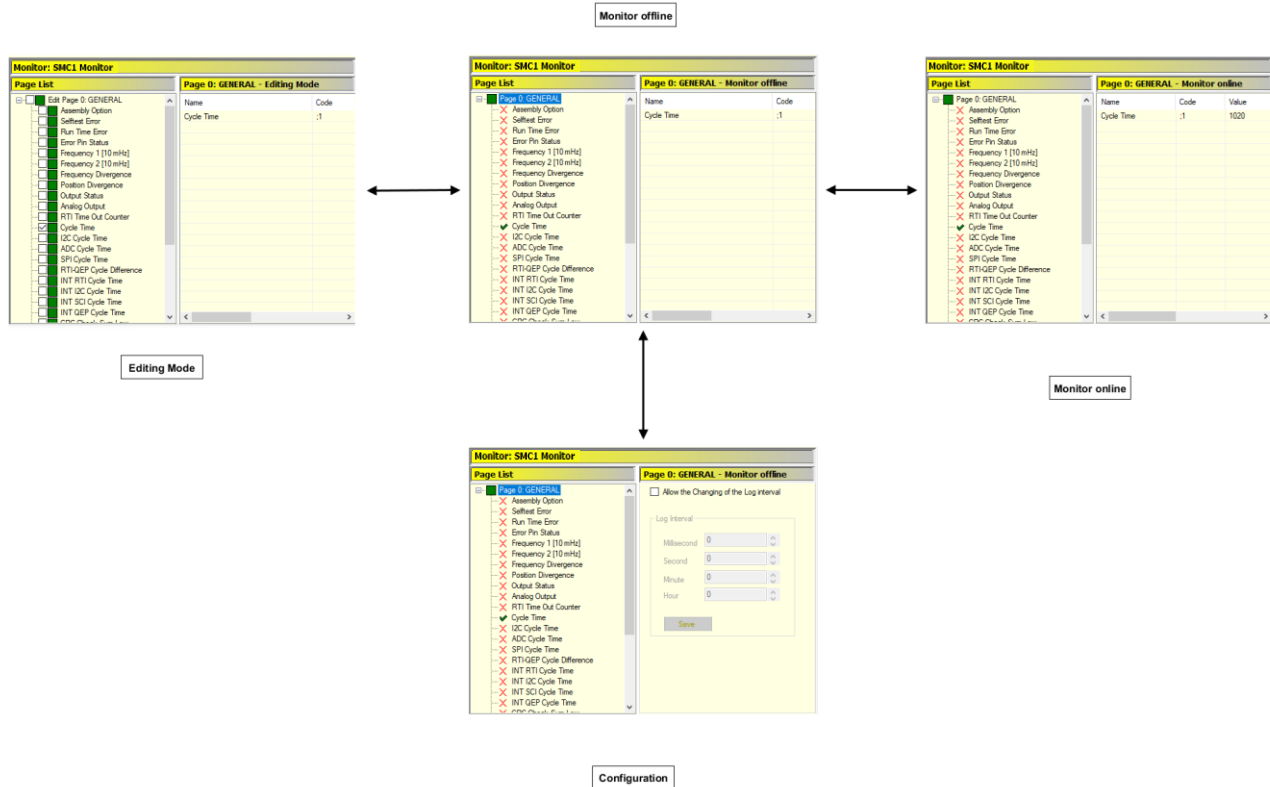


Figure 3-13 Monitor - Overview

The function of the individual sections/modes is summarized in the following table.

Name	Function
Monitor Offline	<u>Display mode:</u> Display all available or selected variables.
Monitor Online	<u>Monitor mode:</u> Cyclic readout and display of the selected variables.
Editing Mode	<u>Editor mode:</u> Selection of one or several monitor variables for the monitoring mode.
Configuration	<u>Configuration mode:</u> This mode is for setting monitor-specific configurations.

Table 3-12 Overview / Monitor

General Handling

The monitor is very easy to use either by a pop-up menu or the control buttons (see figure below).

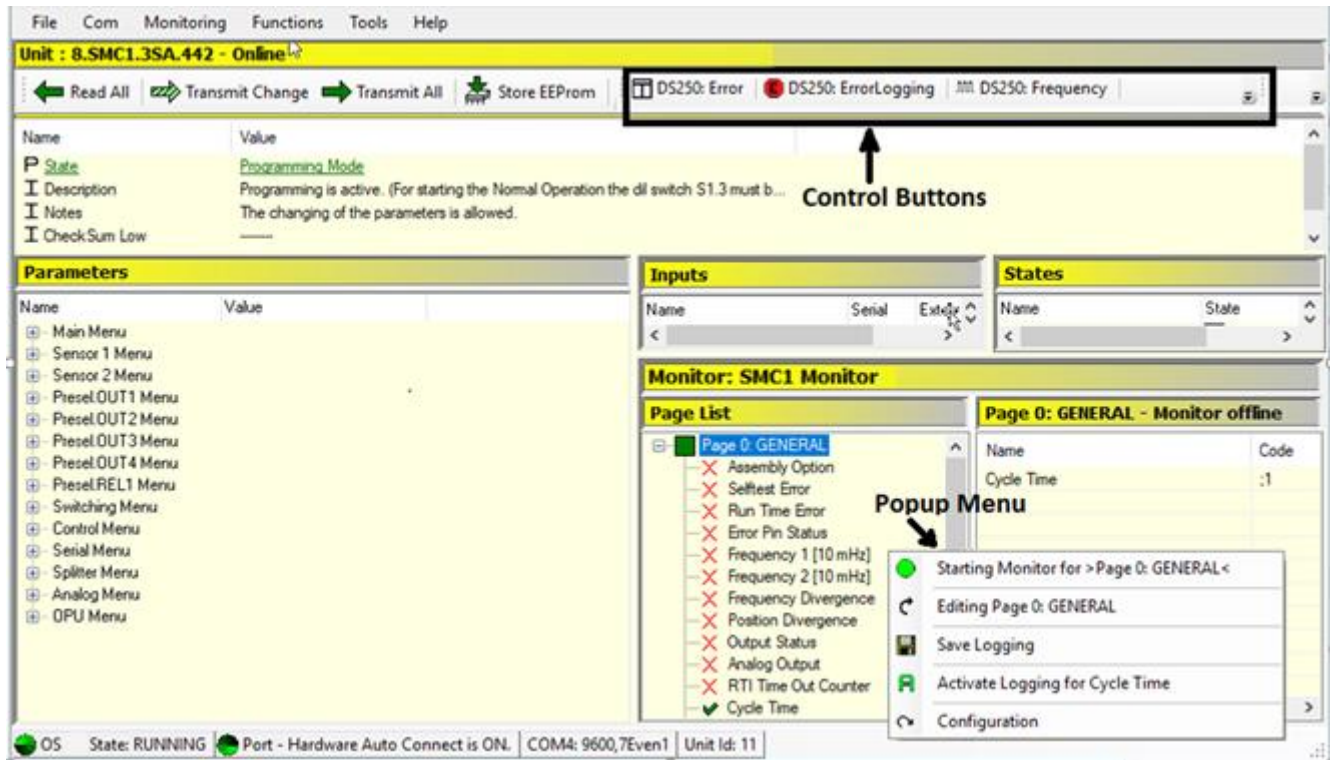


Figure 3-14 Monitor - Popup-Menu and Control Buttons

Depending on the modes used, different popup menu and control buttons are available where the pop-up menu is the main control of the monitor. It opens with a mouse-right-click on the page list (see also figure above).

Unusable controls are automatically grayed out

Display-Mode: Monitor Offline

Monitor Offline is a pure display or overview mode and shows the selected set of variables.

After starting of the monitor this mode is shown automatically.

The monitor is separated in two sections: **Page List** (left) and **Monitor Panel** (right).

Page List (left)

All variables to be monitored by the monitor are marked by the icon . These variables are also shown in the monitor panel (right). All other are marked by the icon .

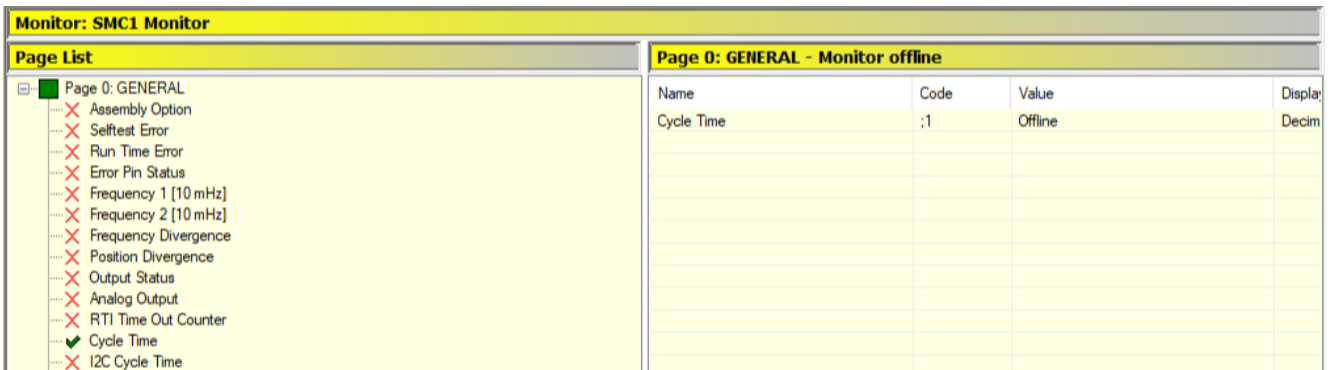


Figure 3-7 Monitor – Page List / Monitor Offline

Monitor panel (right)

In the **monitor panel**(right) all variables to be monitored are shown. In the figure above, it is the variable „Cycle Time“.

The monitor panel is separated into four columns:

Column	Meaning
Name	Name of the variable
Code	Code of the variable
Value	To identify the monitor offline status, "Offline" is always shown.
Display Format	Not relevant for this mode

Table 3-14 Monitor panel/Columns

Selection of the specific variable data set

The selection of the specific variable data set takes place directly in the parameter list by the parameter **Serial Page** in the **Serial Menu** (see figure below).

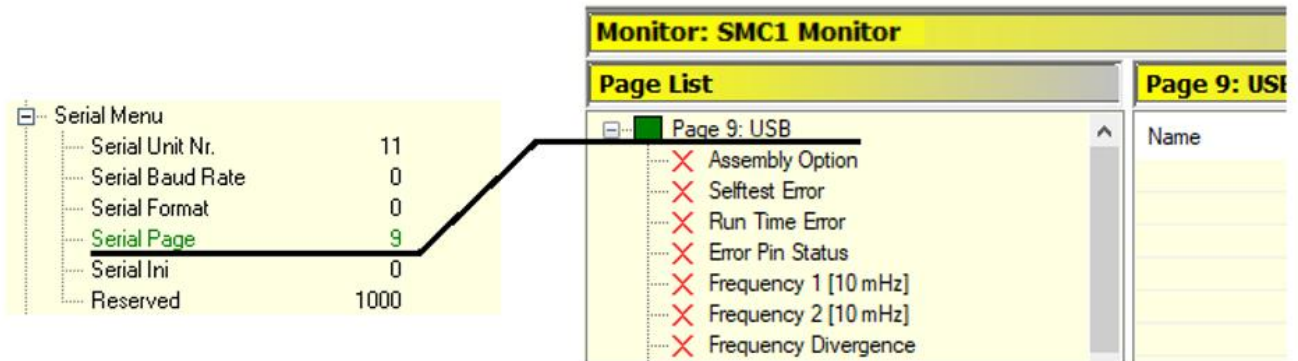


Figure 3-8 Monitor – **Monitor / DS2xx Monitor / Selection of a Page**

A page change occurs automatically after a successful transfer of the above parameter **Serial Page** or after reading this parameter from the connected DS2xx.

After such a page change the monitor automatically switches to the Display mode (**Monitor Offline**).

Menus and controls

For the display mode the following menus/controls can be used (figure below).

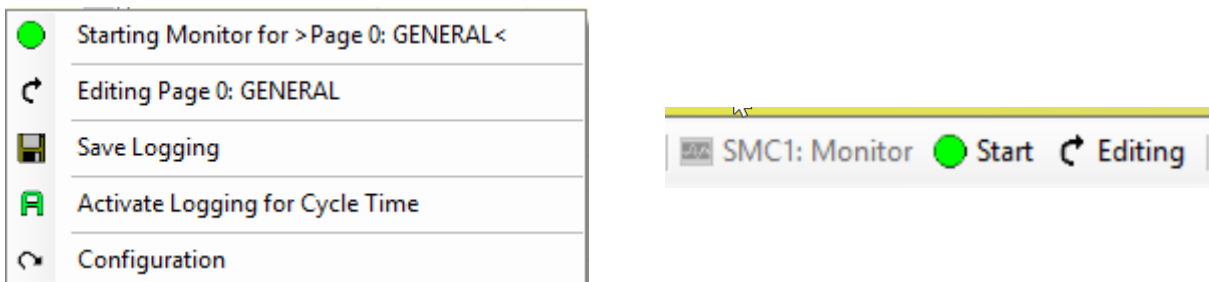


Figure 3-9 Monitor – **Monitor Offline / Popup-Menu (and) and Control-Buttons (right)**

The table below explains the task of the individual controls. Control elements that cannot be used are not listed.

Popup-Menu	Control-Button	Aufgabe
Starting Monitor for Page 0: GENERAL	Start	Switching to the Monitor-Mode
Editing Page 0: GENERAL	Editing	Switching to the Editor-Mode
Save Logging		Saving of the Logging *)
Activate Logging for Cycle Time		Activate of the Logging for Cycle Time *)
Configuration	-	Switching to the Configuration-Mode *)

Table 3-15 **Monitor Offline /Controls**

*) The use is explained as part of the logging.

Monitoring: cyclic reading of parameters

The monitor works in so-called cycles. The monitor panel (right) is cyclical process from top to bottom, whereby exactly one variable is recorded per cycle.

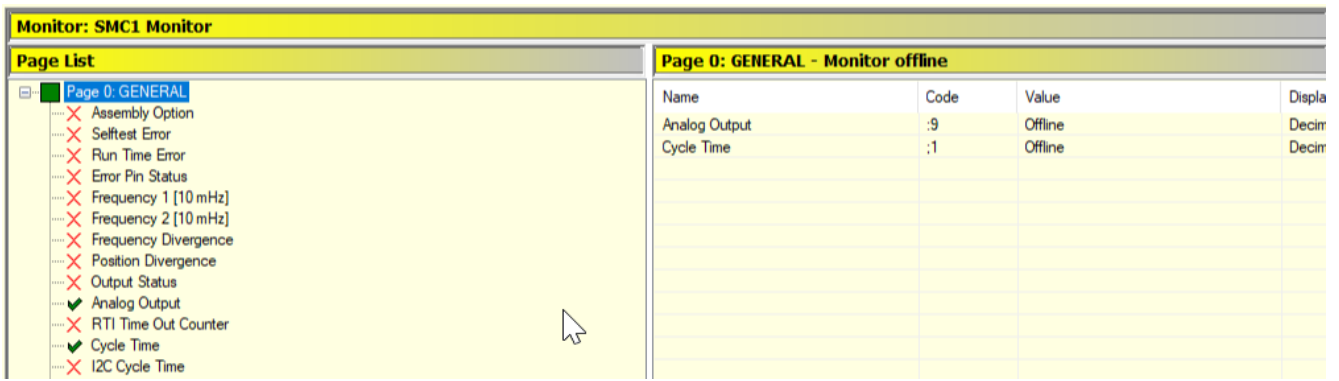


Figure 3-11 Monitor – **Monitor / Monitor Online - example**

For the example above this means:

1. Cycle: Analog Output
2. Cycle: Cycle Time
3. Cycle: Analog Output
4. Cycle: Cycle Time
5. Cycle: etc.

Controls

The following control elements are available in monitoring mode (figure below).

The following controls are available for this mode:

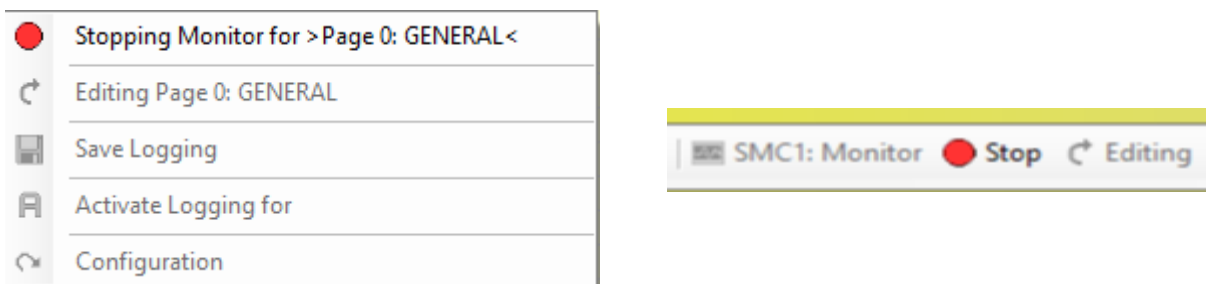


Figure 3-12 Monitor Online – **Popup-Menu (left) and Control-Buttons (right)**

The table below explains the task of the individual controls. Unusable controls are not listed.

Popup-Menu	Control-Button	Note
Stopping Monitor for >Page 0: GENERAL<	Stop	Switching to the Display-Mode

Table 3-17 **Monitor Online / controls**

Editor-Mode: Editing Mode

This mode is using for the (un)selection of variables to be monitored.

Page List (left)

In the **Page List** the desired variables are selected. Selected variables are indicated by an activated checkbox in front of the name of the variable. These variables are also shown in the monitor panel (right). Unselected variables are indicated by a deactivated checkbox (see figure below).

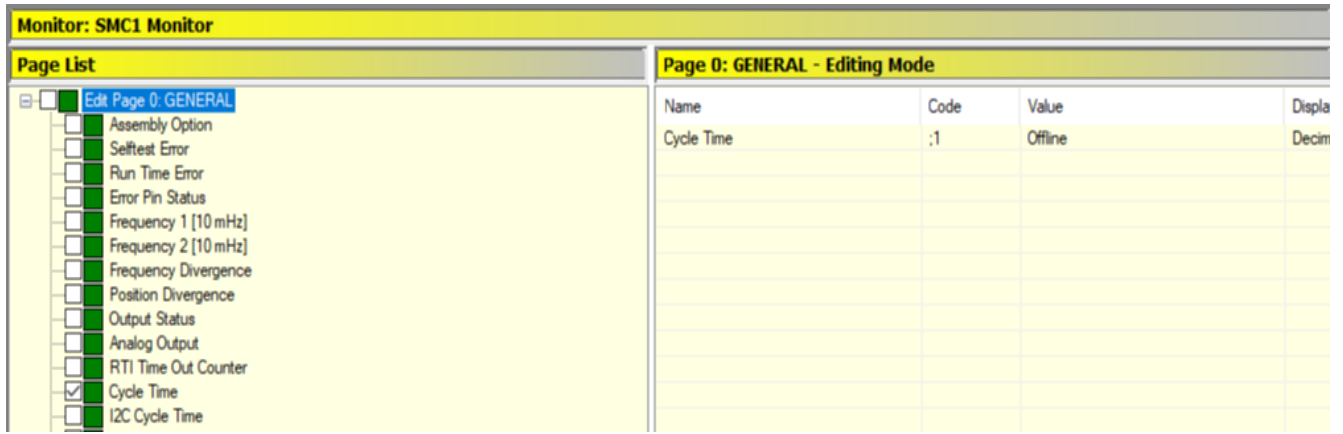


Figure 3-13 Editing Mode / Page list

The variable selection or deselection is done by simply clicking the checkbox in front of the respective variable name. The **monitor panel** is updated automatically.

Monitor panel (right)

In this mode the monitor panel only shows the selected parameters.

Column	Note
Name	Name of the variable
Code	Code of the variable
Value	To identify the editing mode status, "Offline" is always shown.
Display Format	Not relevant for this mode

Table 3-18 Editor Mode / Monitor panel

Menu and controls

The following controls are available for this mode:

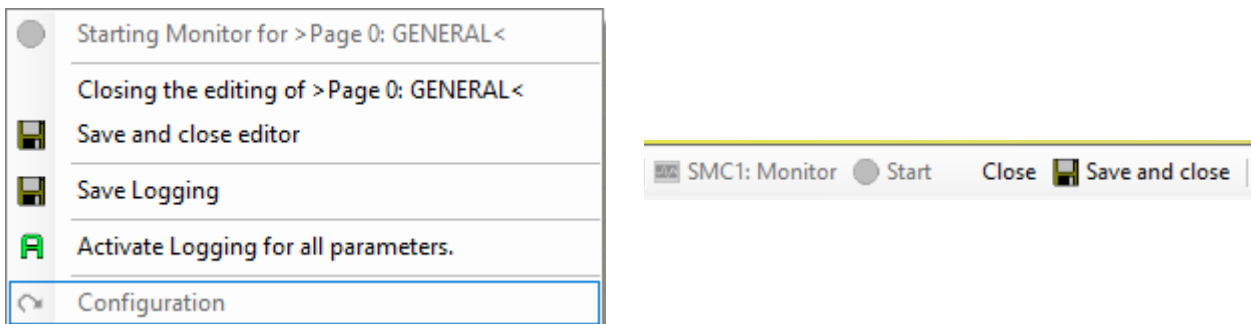


Figure 3-14 Editor Mode / Popup-Menu (left) and Control-Buttons (right)

The table below explains the task of the individual controls. Unusable controls are not listed.




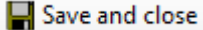


Popup-Menu	Control-Button	Note
 Closing the editing of >Page 0: GENERAL<	 Close	Switching to the Display-Mode
 Save and close editor	 Save and close	Switching to the Display-Mode Additionally, this selection is saved in a device-dependent configuration file and is available for later use.
 Save Logging	-	Saving of the Logging *)
 Activate Logging for all parameters.	-	Activate the Logging for all variables*)

Table 3-1 **Editor Mode / Controls**

*) The use is explained as part of the logging.

Data-Logging

For each selected variable an individual data log can be created. The most important properties are listed in the following table.

Data-Log property	Note
Individual data log	Each variable has his own data log.
Deleting the entries	When the monitor is started (change to monitor mode), all logs are ALWAYS cleared automatically.
maximum size	A data log consists of a maximum of 10000 entries. When the number of entries of 10000 is reached in a data log, then no new entry is taken over.
Save and evaluate	Each data log can be saved in a file. The stored data can be prepared and evaluated with a suitable program.

Table 3-20 Data Logging / Properties of a log

Restriction for logging: time resolution

The time resolution of logging is limited for two reasons.

Limitations by	Limitation
data transfer	A serial data transfer takes time. Unfavourable configuration settings can significantly degrade the time resolution.
OS10	The monitor has to share the serial port with the other components. The Os10 also serves other components besides the monitor, such as the Inputs (see p. 20), the Outputs (see p.21) or the programming of parameters (see p.15). All these components communicate with the connected Kübler device via the same serial interface.



The time interval between two log entries is at least ~330-375 msec.

Also, the specification of a minimum log distance described below are subject to the above restriction.

For the sake of simplicity, the logging is explained using an example and requires the following steps:

1. Selection of Variables
2. Execution of the logging
3. Saving and evaluation
4. Special settings

1. Selection of Variables

The selection of the parameters is made optionally in display or editor mode.

Because the selection procedure is identical in both modes, it is only shown in display mode. The example used here implies that the desired parameters have been previously selected in editor mode.

The initial situation is outlined in the figure below.

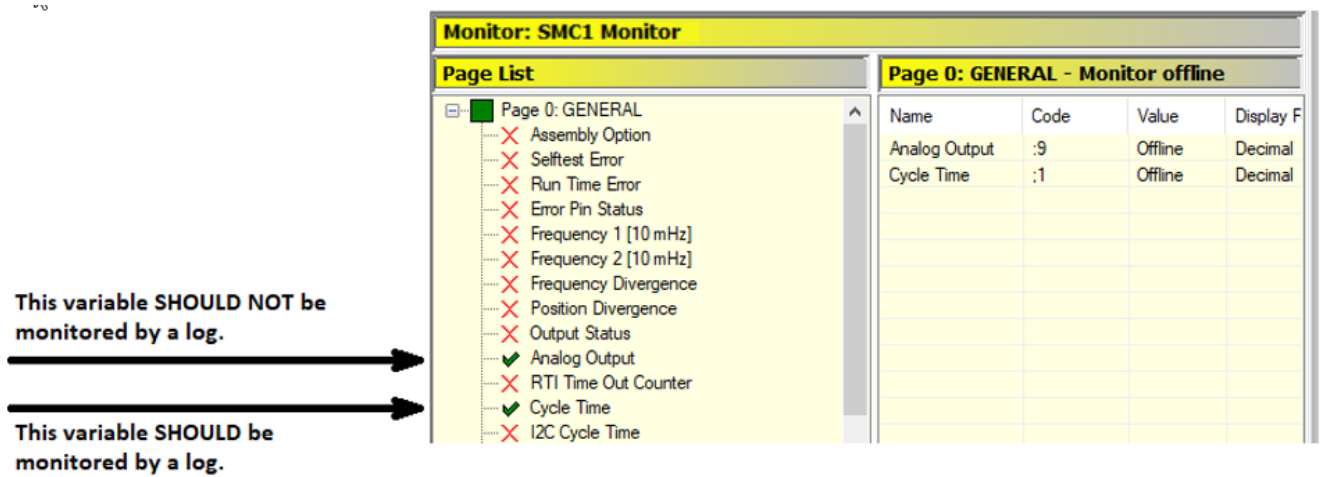


Figure 3-15 Logging - selection of parameters: initial situation

Activate the " Cycle Time " variable (e.g. with a mouse click).

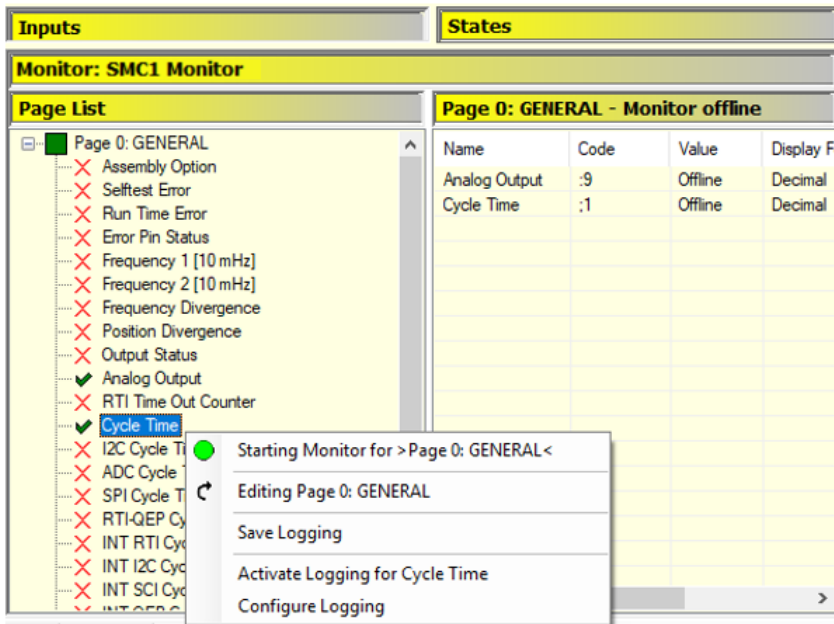



Figure 3-16 Logging - selection of parameters: choice of parameter

Open the pop-up menu. Make sure that the desired variable is shown in the corresponding menu (see also figure below). Activate logging by clicking on the menu  Activate Logging for stime

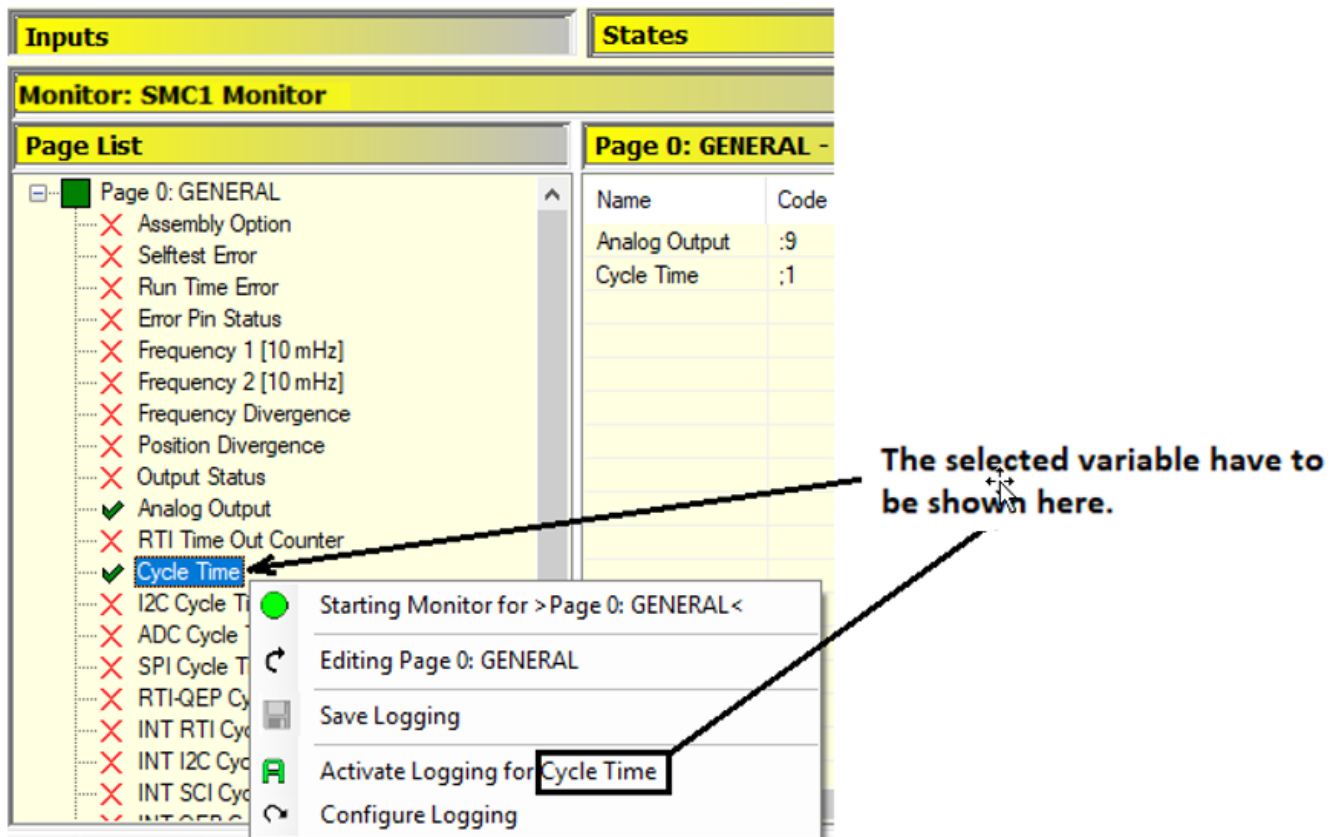


Figure 3-17 Logging - selection of variables: choice of variable - before activation

3. Saving and evaluation

The saving of the data can be done in display or editor mode. Because the selection process is identical in both modes, it is only shown in display mode.

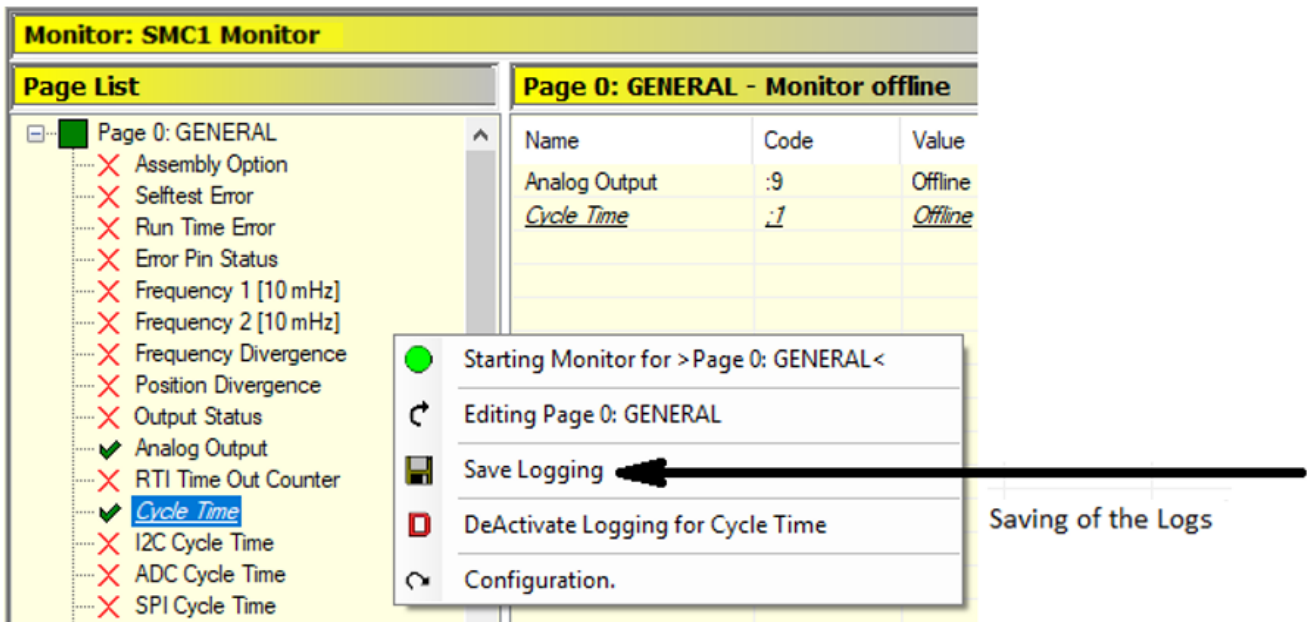


Figure 3-20 Logging – Saving of the Logs

The recorded logs are saved using the menu  Save Logging .

Location of the Logs

Every Log is saved in a sub directory („\Os10\Monitoring“) of the OS10 directory. This directory is not changeable (see figure below).



Figure 3-21 Logging – Location of the Logs

Name of a log file

The name of a log file is generated automatically and follows the following schemas:

< date of saving >_<time of saving>_<name of variable >.txt .

The date of saving is written "backwards" (YearMonthDay). The time of saving has the form "HourMinuteSecond".

Structure of a Logs

The Log is structured as a simple text file (see table below).

example of a Logs	Note
#;Name;Code;LogTime;Value	<- head line
0;stime;":4";+2-2019.09.19-13:24:41.900;+3973	<- entry 0 (start entry)
1;stime;":4";+2-2019.09.19-13:24:42.588;+3684	<- entry 1
2;stime;":4";+2-2019.09.19-13:24:43.306;+3972	<- entry 2
3;stime;":4";+2-2019.09.19-13:24:44.056;+3973	<- etc.
...	...
9999;stime;":4";+2-2019.09.19-15:21:22.798;+4127	<- entry 9999 (Max. possible entry)

Table 3-21 *Data Logging / example of a log*

The first line of a Log is always a head line following by the start entry (entry 0). After this follows the other log entries. A log has a maximum of 10000 entries

Structure of a Log entry

The entry is divided into five parts delimited by a semicolon (;) and has the following structure:


<Number>;<Name>;<Variable Code>;<Time Stamp >;< Value >

#	Part	Note
1	Number	Current number of the entry; value range [0;9999]
2	Name	Name of the entry
3	Variable code	Code of the selected variable This part is always enclosed in quotation marks and has the following structure: " < Variable Code >" Reason: As a code, values such as "; 4" or "; 9" are permissible. The quotes therefore identify the code.
4	Time stamp	Time at which the entry was created. Structure of a time stamp: z-yyyy.MM.dd-hh.mm.ss.fff with z (time zone) yyyy (Year), MM (Month), dd (Day), hh (Hour 24), mm (Minute), ss (Second), fff (Millisecond)
5	Value	logged value of the select variable

Table 3-22 **Data Logging / structure of a log entry**


4. Special settings

Via the configuration mode a log interval (minimum log distance) between two log entries can be specified.



As a result of the boundary condition given under "**Restriction for logging**", only a minimum log distance can be specified. An exact specification of this distance is not possible.

Switching to the configuration mode

Via the pop-up menu  Configuration the display mode can be switched to the configuration mode (see figure below).

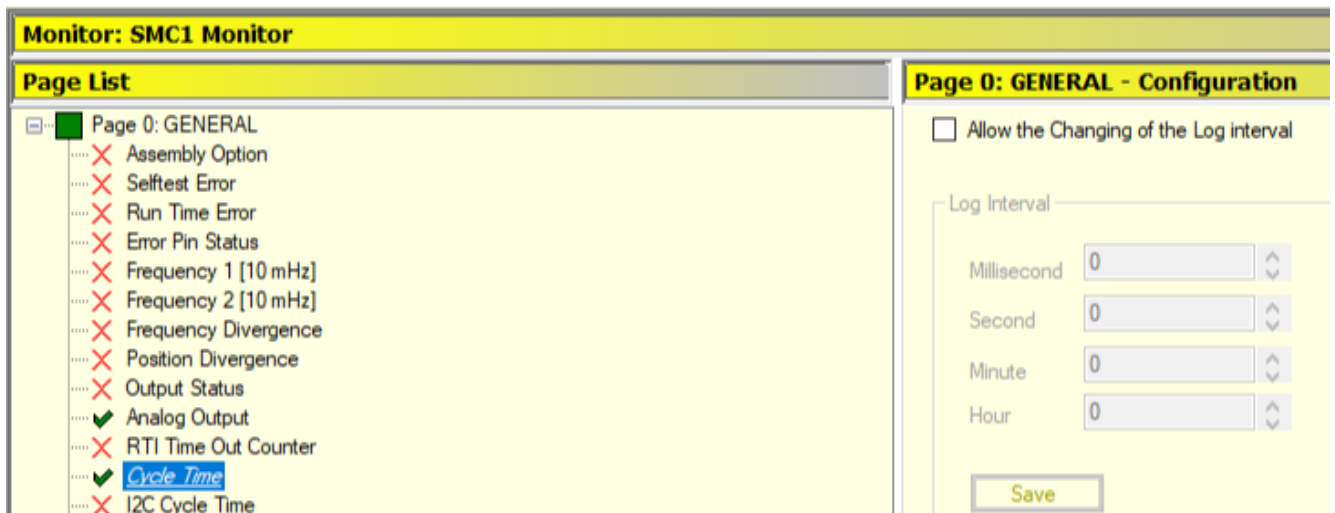


Figure 3-22 Logging – configuration mode: List of variables (left) and field of configuration (right)

Field of configuration (right)

The field of configuration is protected against unintentional changes. To make changes, the field Allow the Changing of the Log interval have to be activated (see figure below).

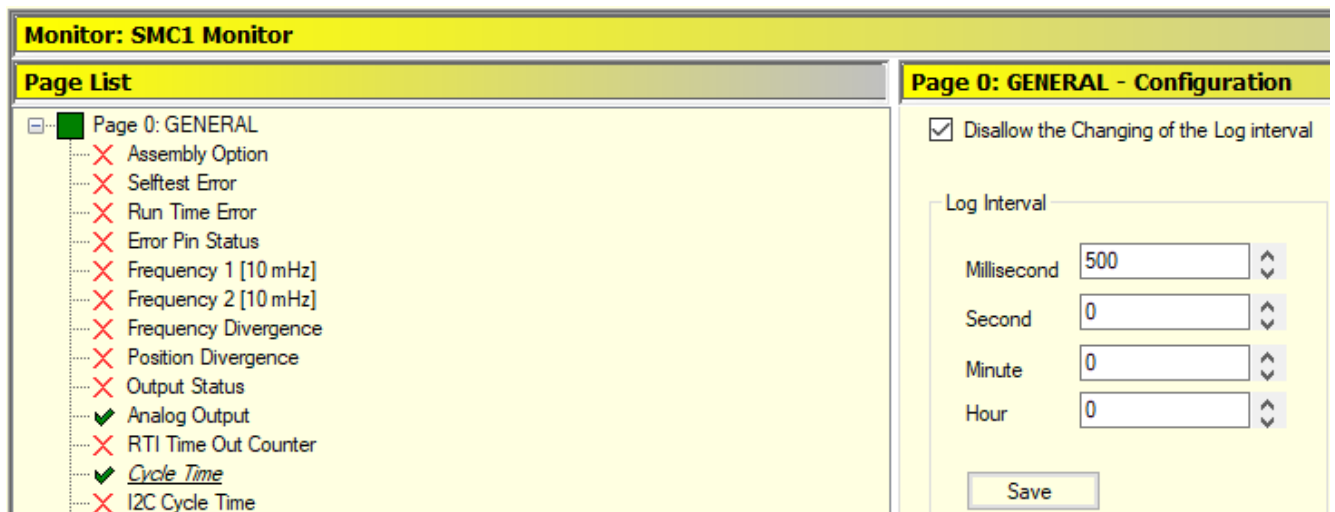



Figure 3-23 Logging – configuration mode: changing/input of a logging interval

The input of the log interval (minimum log distance) is done by the setting boxes listed below.

Setting box	Note
Millisecond <input type="text" value="500"/>	Setting of the milliseconds; Range [0,999]
Second <input type="text" value="0"/>	Setting of the seconds; Range [0,59]
Minute <input type="text" value="0"/>	Setting of the minutes; Range [0,59]
Hour <input type="text" value="0"/>	Setting of the hours; Range [0,23]

Table 3-23 Data Logging – configuration mode: setting boxes



Regardless of the setting made here, the time interval between two log entries given under "**Restriction for logging**" can NOT be underrun.

Menu and controls

The following controls are available for this mode:



Figure 3-24 Logging – configuration mode: Popup-Menu (left) and Control-Buttons (right)

The table below explains the task of the individual controls. Unusable controls are not listed.

Popup-Menu	Control-Button	Note
Close Configuration		Takeover of the log interval and switch to the display mode.
	<input type="button" value="Save"/>	Saving of the log interval in a config file.

Table 3-24 Data Logging – Controls

3.5.4 Error Logging



The **Error Logging** can only be used in the „Programming Mode“. In all other modes this monitor is blocked (analogous to the parameter list).

In case of Safety-M compact errors, this monitor can save the internal state data in a file. These backup data can then be used for further error analysis.

Overview of the Error Logging:

Figure 3-33 **Monitor / Error Logging**

Monitor Components

The monitor consists of the following components:

Component		Description
Operator		Input field: Name of the operator
Date		Current date (is entered automatically)
Contact	Name	Input field: name of the contact person
	Company	Input field: name of the company
	Address	Input field: company or contact address
	eMail	Input field: e-mail
	Phone	Input field: phone number
Comment		Input field: error description
„Start“ Button		Button to start the Error Logging
„Save As“ Button		Button to save the Error Logging

Table 3-25 **Monitor / Error Logging - Components**

Which data will be saved?

The backed up data are divided into four main groups:

1. **OS10 information:** including name and used OS10 version
2. **Customer information:** including all data from the input fields (see above)
3. **General device data:** including main device information, the complete parameter data set, a complete list with the unit states as well as...
4. the special **Error and Monitor data** with a list of all Error Monitor entries and all Monitor pages.

Result of the Error-Logging

The error logging provides an XML-file which is standardly stored into the OS10 directory.

Workflow of Error-Logging

The implementation of error logging is easy and mostly automated. The logging process always follows the same pattern:




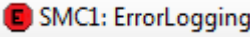


#	Step	
1	Close the Error Logging Monitor	<p>In case of an open Error Logging monitor, please close the monitor.</p>  <p>Actual device data will be read only when the Error Logging monitor opens.</p>
2	Switch the unit to "Programming Mode"	<p>Verify that the Safety-M compact is in "Programming Mode". If not, the "Programming Mode" must be activated by using the DIL switch.</p>  <p>The complete Safety-M compact monitor data set can only be read if the "Programming Mode" is active.</p>
3	Update the parameter data	<p>Be sure that the OS10 displays the parameter values, which were active in case of the error. If necessary, load the complete data set from the unit again (by using the Read All button).</p>  <p>For error analysis, the real parameter values from the device are needed which were active when the error occurred. Other values can significantly complicate or even block the analysis.</p>
4	Open the Error Logging Monitor	<p>Open the Logging monitor by pressing</p> 
5	Start Error Logging	<p>Start Logging by clicking the Start button.</p> <p>The monitor header shows the current logging status.</p>
6	Enter customer data	<p>After logging information resp. customer data can be entered.</p>  <p>Giving information or customer data is optional, but it is useful, to fill out the following fields:</p> <p>Comment: Please enter a precise error description.</p> <p>eMail or Phone: Please fill out one of this fields, to receive a feedback of the error analysis.</p>
7	Save the logging data	<p>Click Save As to save the data. After clicking the button, an input field opens to enter the file name automatically.</p>

Table 3-26

3.5.5 OPU Display

The **OPU** monitor allows to pre-configure the (scalable) displays 3 and 4 of the display and programming unit SMCB. Then each SMCB connected to a Safety-M compact unit shows the same display scaling.



This feature is available for SMCB units from the firmware version 03A.
 This feature is available for Safety-M compact units from the firmware version 04A.

The following figure will explain the relationships.

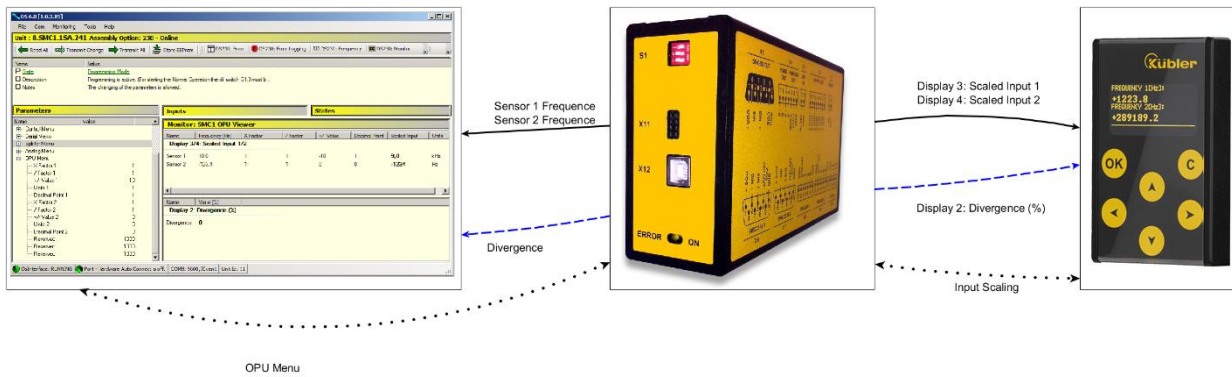


Figure 3-34 Relationships of OS10 <-> Safety-M compact <-> SMCB

The figure shows (from the left) the OS10 surface, the Safety-M compact and the SMCB.

All parameters necessary for the display scaling a SMCB are available in the Safety-M compact unit (see black dotted lines in the figure above). The OS10 reads the parameter set and displays it in the parameter list in the menu **OPU Menu**. Individual parameters can be changed and written back to the Safety-M compact. The changes made in the parameter list are displayed in the **OPU - Display 3/4: Scaled Input 1/2** monitor. The result can be checked in the **Scaled Input** column (see figure below).

Parameters

Name	Value
Main Menu	
Sensor 1 Menu	
Sensor 2 Menu	
Preselect Menu	
Switching Menu	
Control Menu	
Serial Menu	
Splitter Menu	
Analog Menu	
OPU Menu	
X Factor 1	1
/ Factor 1	1
+/- Value 1	-10
Units 1	1
Decimal Point 1	1
X Factor 2	1
/ Factor 2	1
+/- Value 2	0
Units 2	0

Inputs

Monitor: SMC1 OPU!

Name	Frequency [Hz]	X Factor	/ Factor	+/- Value	Decimal Point	Scaled Input	Units
Display 3/4: Scaled Input 1/2							
Sensor 1	10.0	1	1	-10	1	9.0	kHz
Sensor 2	-123.4	1	1	0	0	-1234	Hz
Display 2: Divergence (%)							
Divergence	0						

Figure 3-35 OPU Parameter Menu (left) and Monitor: OPU (right)

The values of the **Scaled Input** column corresponds to the values of Display 3 and 4 of the SMCB (see fig. 3-34, black line). The corresponding deviation (Divergence) of both values is shown in the **OPU - Display 2: Divergence (%)** monitor. The indicated value corresponds to the **Display 2** value of the SMCB unit (see fig. 3-34, blue dashed line). A detailed description of this value and the calculation can be found in [1].

3.5.6 Min-Max Monitor

With this monitor, two parameters of a parameter set (see also "3.5.3 Monitor") can be monitored for minimum and maximum values. Two channels are available for monitoring. Both "channels" are independent of each other and can be configured separately (see figure below).

The screenshot shows a software interface for configuring a Min-Max Monitor. At the top, there is a yellow header bar with the text "Monitor: SMC1 Min/Max". Below this is another yellow bar with "DataSet - Page 0: GENERAL". The main area is divided into two sections, "Channel 1" and "Channel 2". Each channel has a dropdown menu currently showing "0: Assembly Option", a "Start" button, a "Value" input field, and two input fields labeled "Maximum" and "Minimum".

Figure 3-36 Monitor / Min Max / Overview

Selecting the parameter set

The selection of the parameter set is described in chapter "3.5.3 Monitor Selection of parameter set". If the parameter set changes, the monitor is automatically stopped and all displayed values are reset (see figure above).

The name of the selected parameter set appears at the top of the "DataSet" header.

Parameter-Channel

Both channels are identical in structure. A parameter can be selected using a selection box. The selected parameter is automatically displayed to the right of the selection box. The fields "Value", "Minimum" and "Maximum" are used to display the respective measured values.

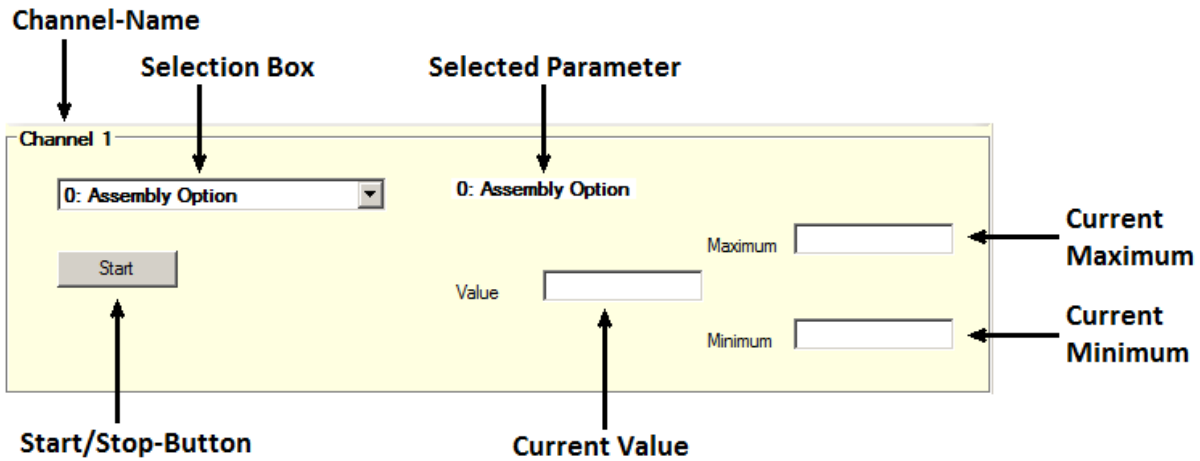


Figure 3-37 Monitor / Min Max / Parameter-Channel

The measurement is started by clicking on the Start/Stop button. After starting the selection box will be grayed out. The current value, the minimum and the maximum value of the measurement are continuously updated (see figure below Channel 2). The measurement is stopped automatically by clicking on the Start/Stop button.

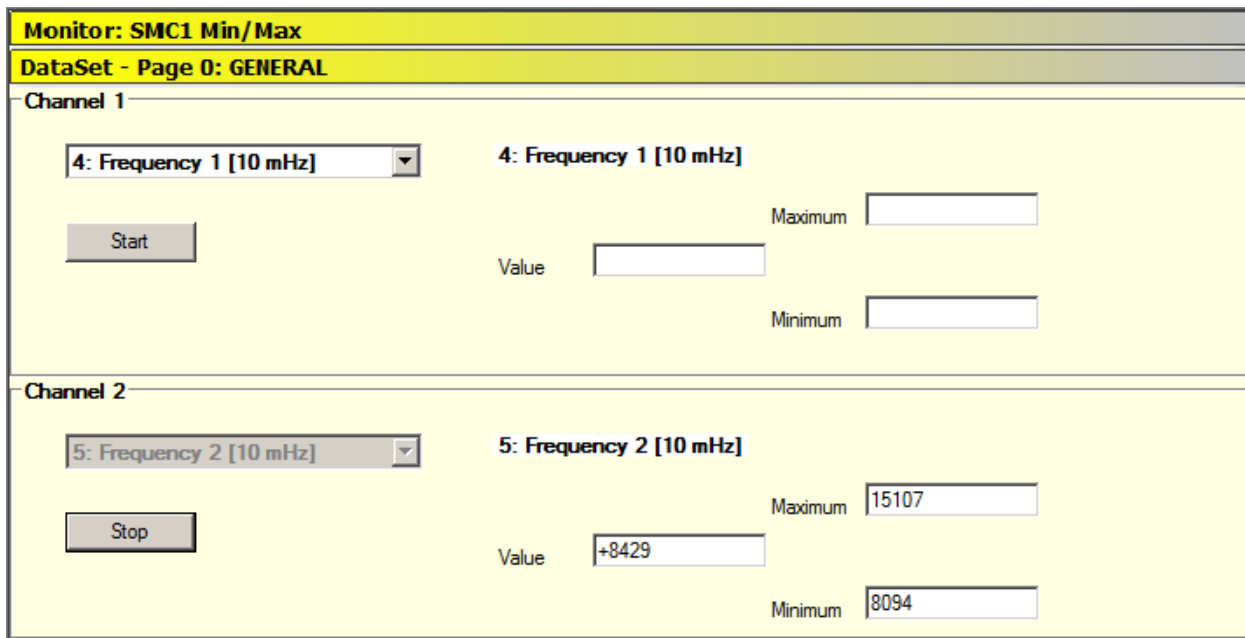


Figure 3-38 Monitor / Min Max / Measurement

3.5.7 Output States Monitor

This monitor enables the direct monitoring of the switching states of the outputs OUT1 to OUT4 (see [1]-5.9. Control outputs) and relays (see [1]-5.10. Relay output).



This monitor is available for devices with the firmware version 04A **or higher** and is automatically grayed out for all other versions.

Setting the parameter set

After opening the monitor, the **serial page** parameter must be checked in the **serial menu**. If the parameter has a value other than 12, the monitor is automatically blocked (see figure below).

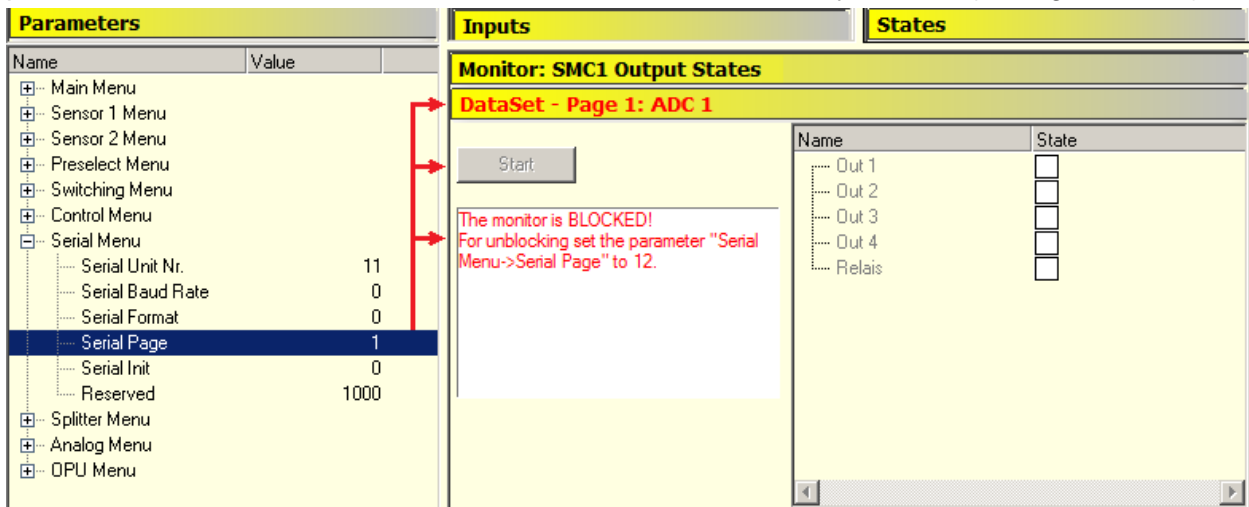


Figure 3-39 Monitor / Output States /Blocked Monitor: Incorrect setting of the serial page parameter

In this case, the **serial page** parameter must be set to 12 and transferred to the connected. A page change occurs automatically after a successful transfer of this parameter. After that, "Monitor" is automatically unlocked (see below).

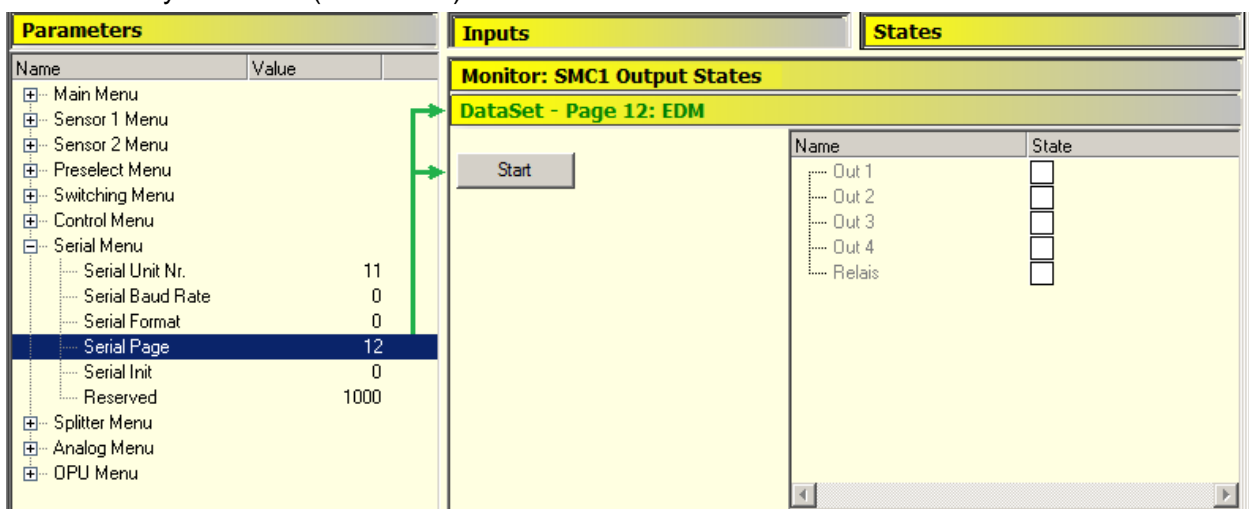


Figure 3-40 Monitor / Output States /Unblocked Monitor: Correct setting of the "serial page" parameter

Monitor Setup

The monitor consists of a "Start/stop" button (left) and a display field (right).

The display field consists of a list of the existing outputs and their states (see figure below).

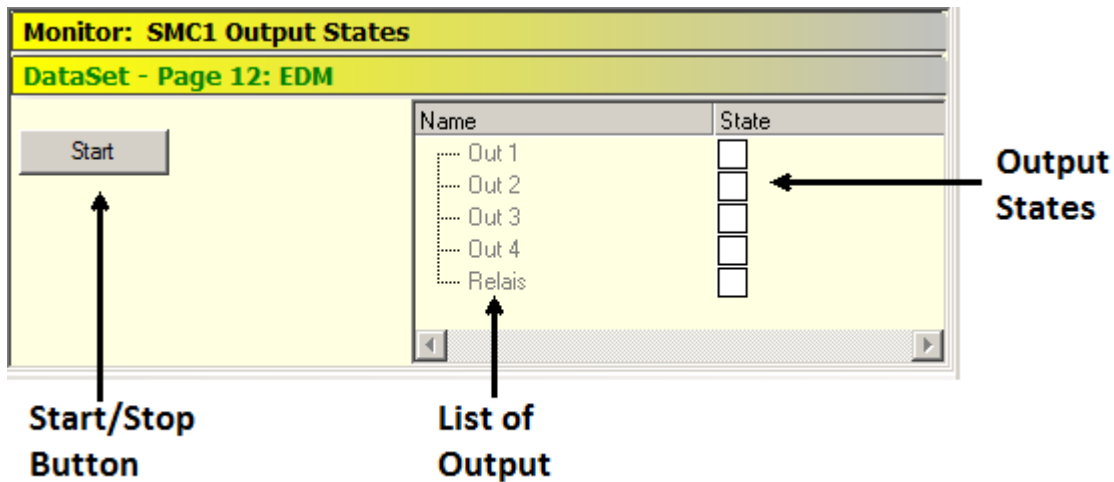


Figure 3-41 Monitor / Output States / Monitor Setup

The monitor is activated by pressing the Start button. After starting, the switching states of the outputs are continuously read, evaluated and displayed in the corresponding "State" column (see figure below).

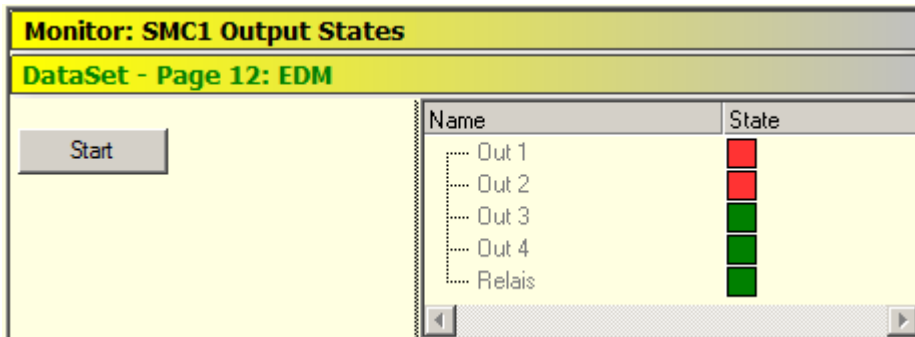


Figure 3-42 Monitor / Output States / Active Monitor

Each output can have one of the following statuses:

Status	Icon	Note
Unknown	<input type="checkbox"/>	Switch state is not yet known (start state).
On	<input type="checkbox"/>	The output is activated.
Off	<input type="checkbox"/>	The output is disabled.

Table 3-27

The (activated) monitor is deactivated by pressing the stop button. The list of existing outputs is automatically grayed out (see figure below).

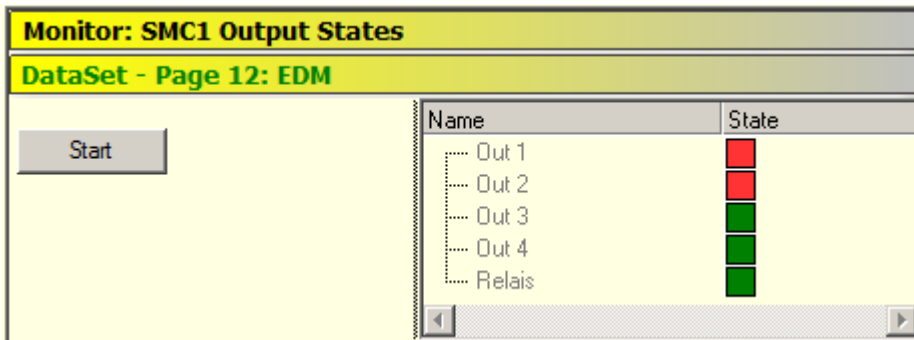


Figure 3-43 Monitor / Output States / Disabled Monitor

The use of this monitor is explained in the Safety-M compact Manual [1].

3.6 Exception: Lost Connection

In case of an interrupted connection between the OS10 safety and the unit, the following message appears:

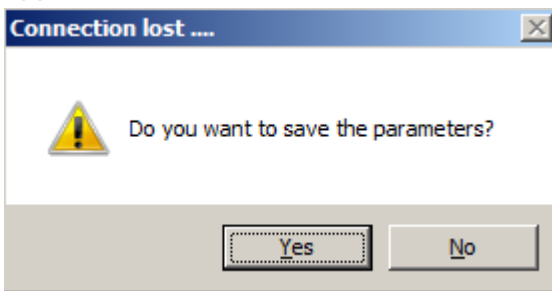


Figure 3-44 Lost Connection Warning

Two options are then available to the user:


Button	Action
click Yes :	All data can be saved by using the File Editor tool. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  This is the last chance to save the data. </div>
click No :	The data will not be saved.

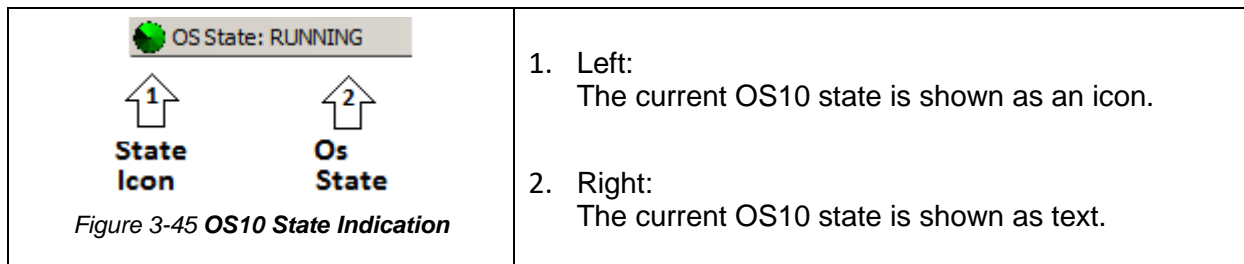
Table 3-28 Options in Case of a Lost Connection

Regardless of the selection above, all data will be deleted from the OS10.



3.7 Status Indication

The OS10 state is shown in the status bar (see figure).



The OS10 has five different operating states (OFFLINE, REINIT, SEARCHING, CONNECTING and RUNNING). The table below will describe these states.

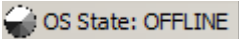
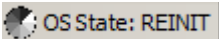
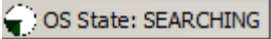
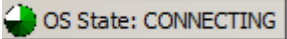
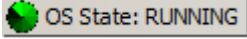
State	Tool Tip Text	Meaning
 OS State: OFFLINE	"No com port. Please check your com port setting ...";	The OS10 is not connected to a serial interface or the interface is closed.
 OS State: REINIT	"Re-initialization of the control.";	The OS10 reinitializes its individual components.
 OS State: SEARCHING	"No unit is connecting. Searching unit ... ";	The OS10 opens the selected serial interface. Then the OS10 searches a device via interface.
 OS State: CONNECTING	"Unit found. Download unit information ... ";	The OS10 has found a device and downloads the device data.
 OS State: RUNNING	"Unit is connected. System is still working ... ";	The device data download is complete. The OS10 is in the normal operating mode.

Table 3-29 OS10 Status Indication

4 Serial Configuration

The configuration tool of the serial interface is accessed via the **Show com port settings** menu or by using the keyboard shortcut Ctrl + K (see fig. below).

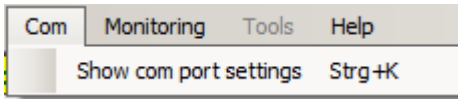


Figure 4-1 **Start Menu for Serial Configuration**

Depending on the connected device (Safety-M compact, any compatible device or no device), the configuration tool appears in different background-designs:

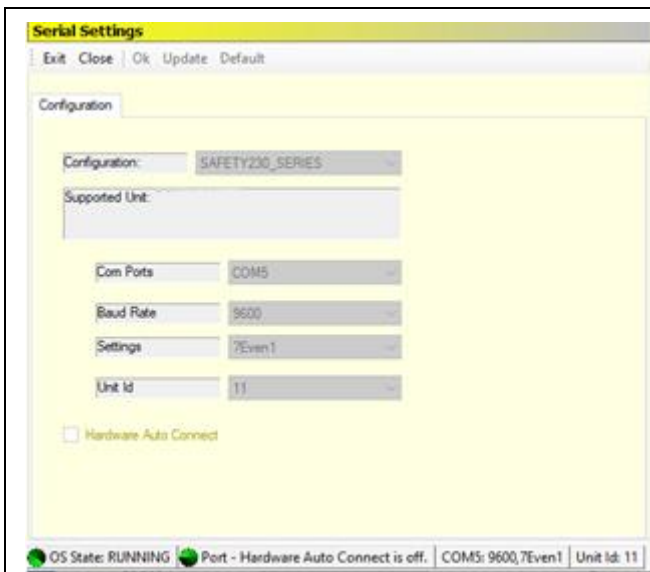


Figure 4-2 **Serial Safety-M compact Configuration**

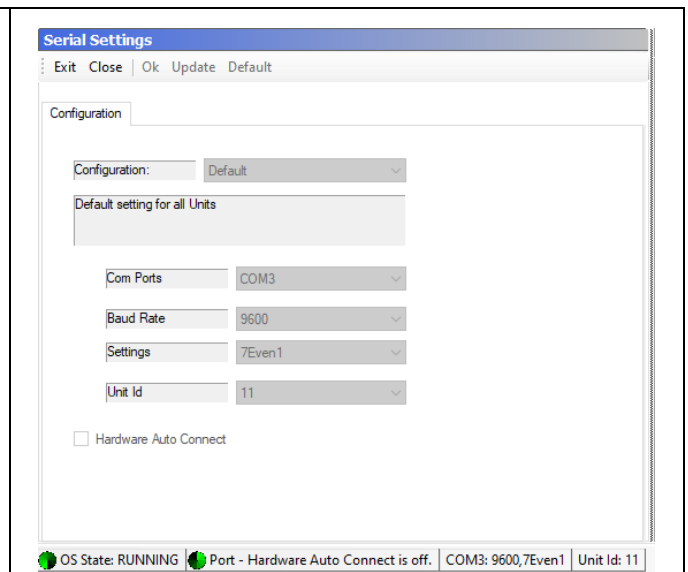


Figure 4-3 **Serial Configuration for Standard Units**

This manual describes only the serial configuration for the Safety-M compact unit.

4.1 Overview

Structure of the configuration tool:

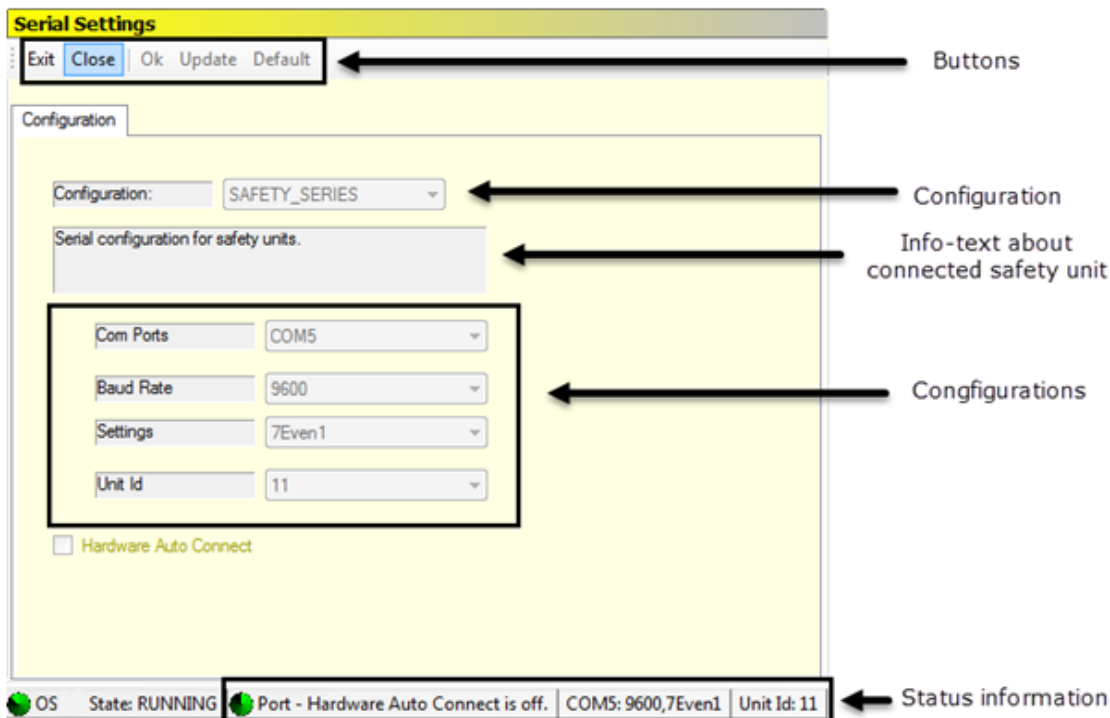


Figure 4-4 Overview / Serial Configuration Tool

For general operation a button bar or a control menu is available:

Com	Monitoring	Tools	Help
	Exit com port settings		Ctrl+K
	Close com port		Ctrl+O
	Ok		Ctrl+Shift+O
	Update com port list		Ctrl+Shift+U
	Set default values		Ctrl+Shift+D

Figure 4-5 Operation Menu

The configuration selection allows to change between different settings. The supported devices are displayed in the information box below the configuration-selection.

The four items **Com Ports**, **Baud Rate**, **Settings** and **UnitId** are used to select resp. set the COM-Port or unit number.

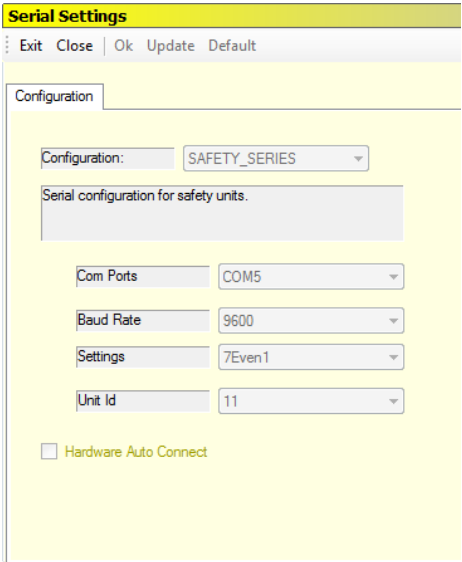
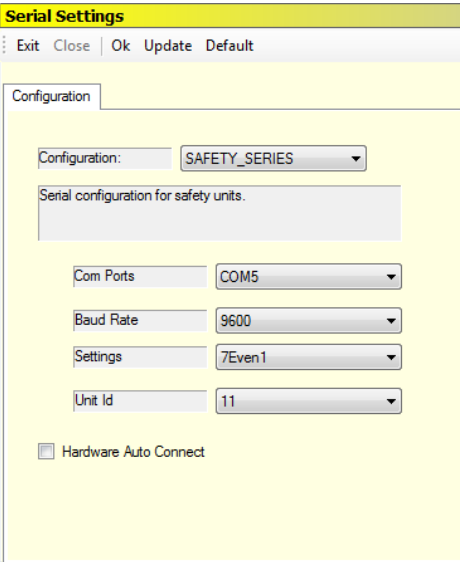
4.2 General Operating Elements

The basic control elements to exit the configuration window and for opening or closing the COM ports are shown below:

Button	Menu	Notices
Exit	Exit com port settings Ctrl+K	Exit the configuration window without changes in the settings
Close	Close com port Ctrl+O	Close the current COM port with Activation of "Ok", "Update" and "Default".

Table 4-1 **General Operating Elements**

Depending on the actual COM-Port state (open or closed), one of the following two variants is shown:

 <p><i>Figure 4-6 COM-Port is open</i></p> <p>Changes in the settings are disabled</p>	 <p><i>Figure 4-7 COM-Port is closed</i></p> <p>Changes in the settings are enabled</p>
--	--



With a connected unit, closing of the COM port will always abort the connection. A warning "Connection lost..." appears.

If the COM port is closed additional features are available:




Buttons	Menu	Notices
	Ok Ctrl+Shift+O	Transfers the edited COM port settings and closes the configuration window automatically. After closing, the OS10 immediately tries to connect a device.
	Update com port list Ctrl+Shift+U	Actualizes the COM port list. In case of a new available COM port at the PC, the list can be actualized by clicking the "Update" button.
	Set default values Ctrl+Shift+D	Resets baud rate, settings and unit number back to the factory settings.

Table 4-2 Operating Elements / Additional Features in case of a closed COM port

4.3 Configuration Selection

Two configurations are available:

#	Name	Units	Baud Rate	Settings
1	Default	Default	9600, 4800, 2400, 1200, 600, 19200, 38400	7Even1, 7Even2, 7Odd1, 7Odd2, 7None1, 7None2, 8Even1, 8Odd1, 8None1, 8None2
2	SAFETYSMC_SERIES	Safety-M compact	9600, 4800, 2400, 1200, 600, 19200, 38400, 56000, 57200, 76800, 115200	7Even1, 7Even2, 7Odd1, 7Odd2, 7None1, 7None2, 8Even1, 8Odd1, 8None1, 8None2

Table 4-3 Configuration Selection

If a device is detected at the serial port, the corresponding configuration is selected automatically and entered into the corresponding operating elements.



Notice: The Safety-M compact unit has an extended baud rate range.

4.4 Operating Elements

The serial COM port selection as well as required settings can be done by the control elements **Com Ports**, **Baud Rate** and **Settings**. Additionally the **Unit Id** item allows to assign a unit number to the connected device. The **Hardware Auto Connect** checkbox allows an automatic detection of “serial to USB” converters. More about this special feature see below.

Overview of all control elements:

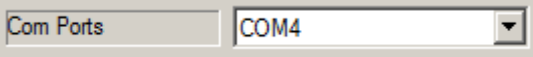

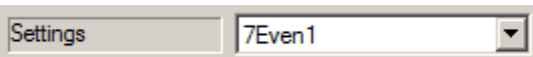
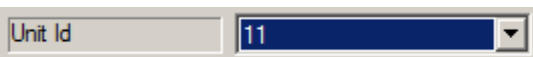
Configuration Tools	Notices
	List of all connected (and activated). COM Ports (COM1, COM4, etc.)
	List of all adjustable baud rates. Default setting: 9600
	List of all usable serial adjustments. Default setting: 7Even1
	List of all available unit numbers. Default setting: 11
<input checked="" type="checkbox"/> Hardware Auto Connect	Auto detection of „serial to USB“ converters Default setting: not active

Table 4-4 Operating Elements / Configuration Tools

Hardware Auto Connect

When enabled, the OS10 automatically detects removal or new connection of a Safety-M compact device to the same USB port. The **Com Port** number for this (new) device will be identically to the port number of the previously connected device. Then the OS10 will immediately connect to this (new) device and automatically begin downloading all necessary data from the device.



It must ALWAYS be used the same USB port (also by connecting via a USB hub).

If this feature is turned off, the connection must be done by the configuration tool resp. has to be initiated via serial interface. The current state will be shown in the status bar (see next page).

4.5 Status Information

All important information about the COM Port are indicated in the status bar (see figure):

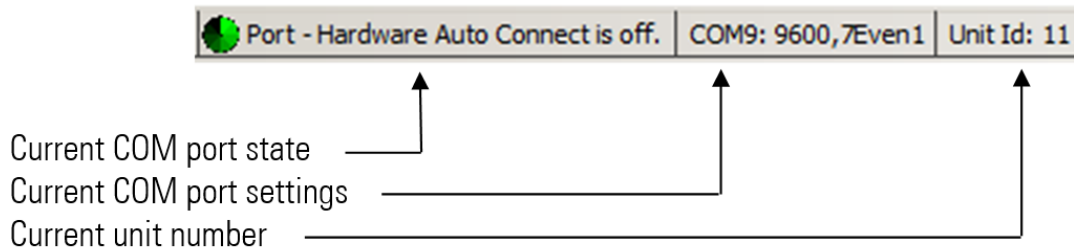


Figure 4-8 Status Bar / COM Port Information

Current COM Port Status

The current COM port status indicates the operating status of the serial interface and the condition of the feature „Hardware Auto Connect”.

<p>Figure 4-9 Current COM Port Status</p>	<p>(1) Left: The current state of the serial interface is shown as an icon. The table below shows all different states and their meanings.</p> <p>(2) Right: Indicates the current state of Hardware Auto Connect (see table on next page)</p>
---	--

(1) COM Port Status

The serial interface has for different states: Down, Close, TryOpen or Working (see table below):

Icon	Status	Meaning	Tool Tip Text
	Down	The serial interface does not work. Reason: Either the serial interface has been removed or no interface is connected.	"Device is down ..."
	Close	The serial interface is closed.	"Device is close ..."
	TryOpen	The OS10 tries to open the selected interface. Remark: This can take up to 3-5 seconds, depending on the "serial to USB" converter.	"Try open select Device ..."
	Working	The interface is working correctly.	"Device is working ..."

Table 4-5 Status of the Serial Interface

General: When removing the interface, the COM Port state is automatically set back to DOWN.

(2) Hardware Auto Connect

Regardless of the COM Port state, the current setting of Hardware Auto Connect is displayed.



Status Display	Meaning
 Port - Hardware Auto Connect is ON.	Hardware Auto Connect is enabled
 Port - Hardware Auto Connect is off.	Hardware Auto Connect is disabled

Table 4-6 **Hardware Auto Connect**

Current COM Port Settings

This item indicates the actual COM Port Settings as well as the warning messages „No com port selected” and **”No com port available”**.

Status Bar Info	Meaning
COM9: 9600,7Even1	COM Port is connected and in use.
Warning: no com port	No COM Port selected , but at least one is connected
Warning: no com port (flashes)	No COM Port available

Table 4-7 **Current COM Port Settings**

Current Unit Number

The last item indicates the currently used unit number:

Status Bar Info	Meaning
Unit Id: 11	Current unit number

Table 4-8 **Current Unit Number**

5 Editor Tool for Parameter Files

The **File Editor** is a helpful tool, which allows to edit and save parameter files quickly and easily. It can be used selectively as a „stand alone“ editor (without a connected unit) or in combination with a unit which is connected by the COM port.

The editor can be used

- as stand alone editor
 - to load and save parameter data sets,
 - to edit parameter data sets,
 - to prevent changes at the parameter data sets („Write Protected“),
 - to print parameter data sets.
- in combination with a connected device
 - to save device parameter data sets in files,
 - to select and free switch the available parameters in the parameter list.

The editor is located on the left half of the screen. The right half shows an OS10 window:

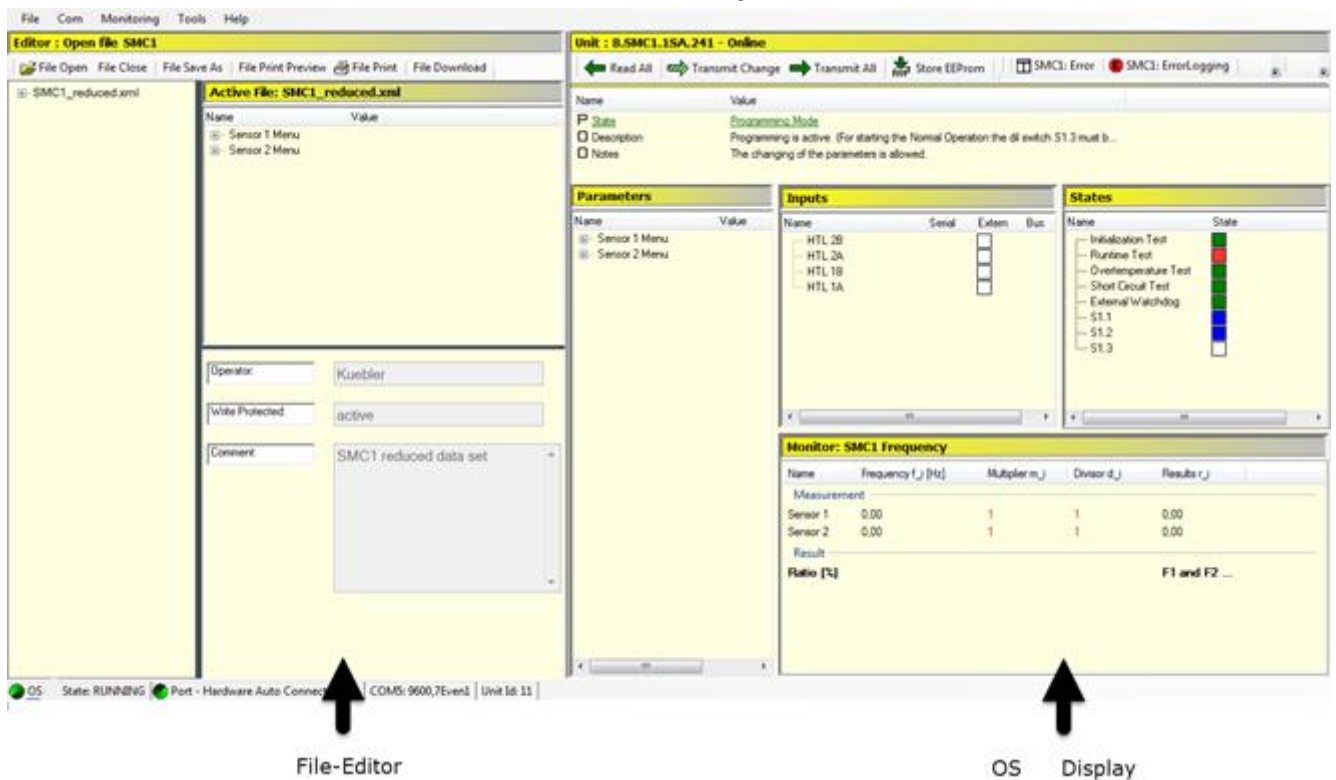


Figure 5-1 File Editor: Parameter list with reduced parameters

5.1 Opening the Editor

Stand alone	The File-Open Editor must be opened to edit an existing parameter data file. An Open file dialog appears and the desired parameter file can be selected.
Combined	<p>In combination with a connected unit, the editor is used to backup the current parameter data sets.</p> <p>Two cases are possible:</p> <ol style="list-style-type: none"> 1. A parameter data set has to be saved in a file. The backup starts by pressing the button "Unit Save as". 2. The serial connection to the device is interrupted (see Chapter 3.6 "Exception: Lost Connection...").

Table 5-1 *Opening the Editor*

5.2 Operation of the editor

For the general operation of the editor a **button** or **menu bar** and a **popup-menu** are available (see also the illustration on the next page).

Information on the currently loaded file can be found in the **File information**.

Important messages from the editor are reproduced in the **Editor information**.

The currently loaded parameter data set can be modified in the window "**List of parameters**".

The "**Input field**" is used for saving the current parameter data set in a file. This saving can be done with or without "**Write Protected**".



A parameter data set that is marked (by using the file editor) with „**Write Protected**“

- **CANNOT** be changed ("read-only"),
- **CANNOT** be saved in an existing file („Write-protection").

The following three pictures show the individual operation elements:

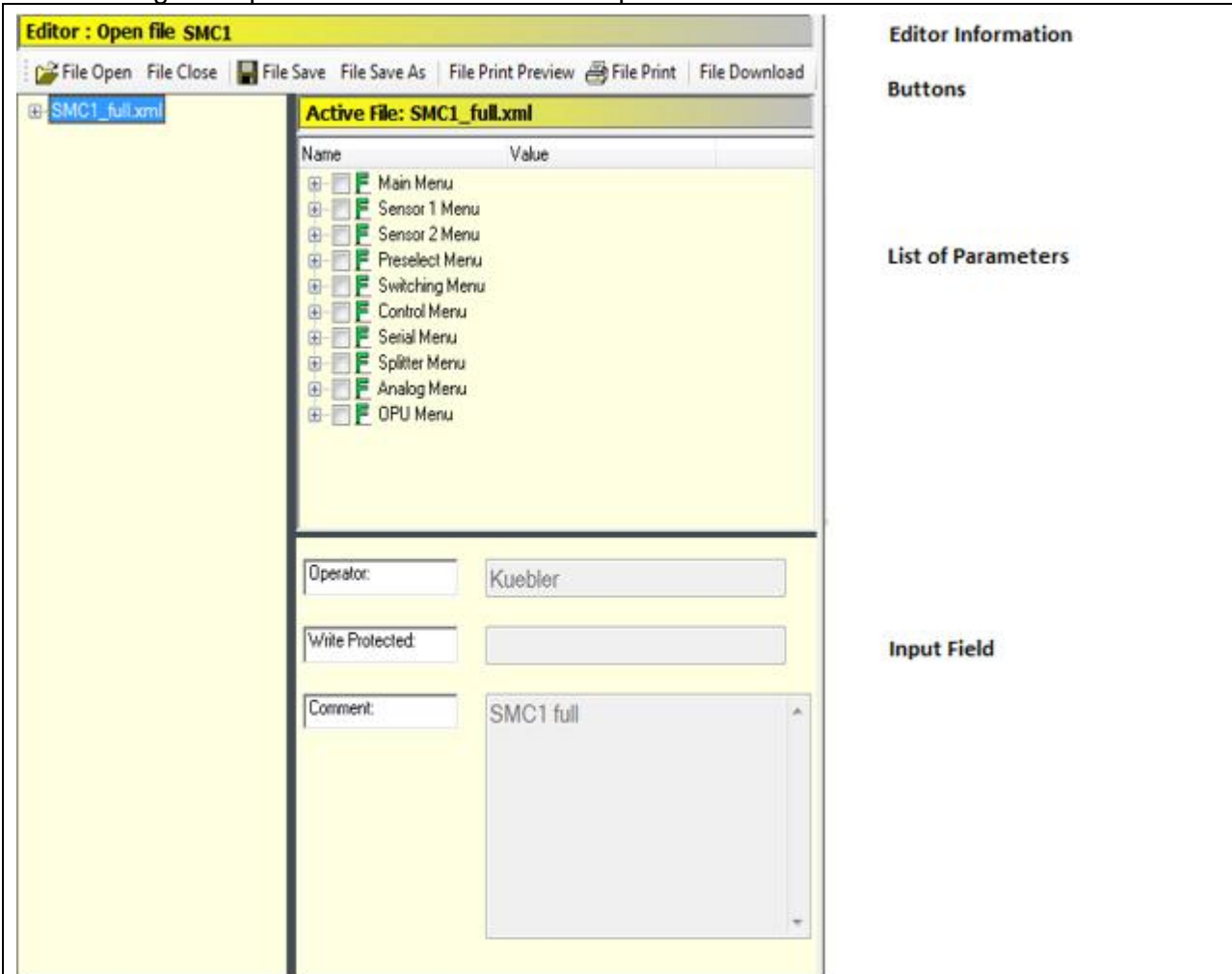


Figure 5-2 File Editor: Components

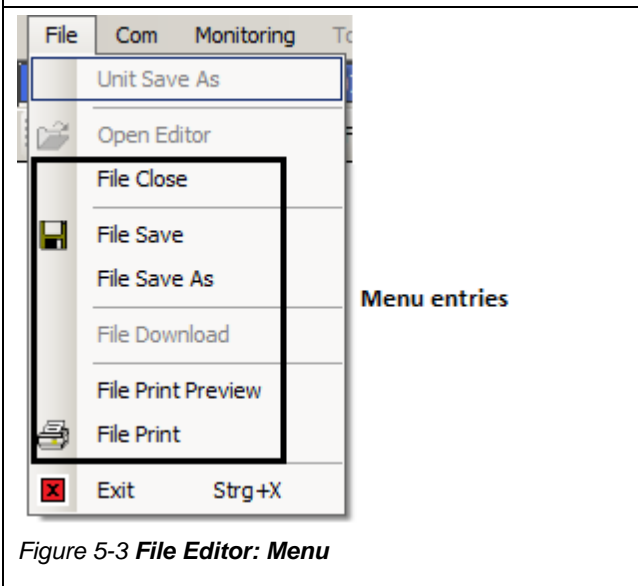


Figure 5-3 File Editor: Menu

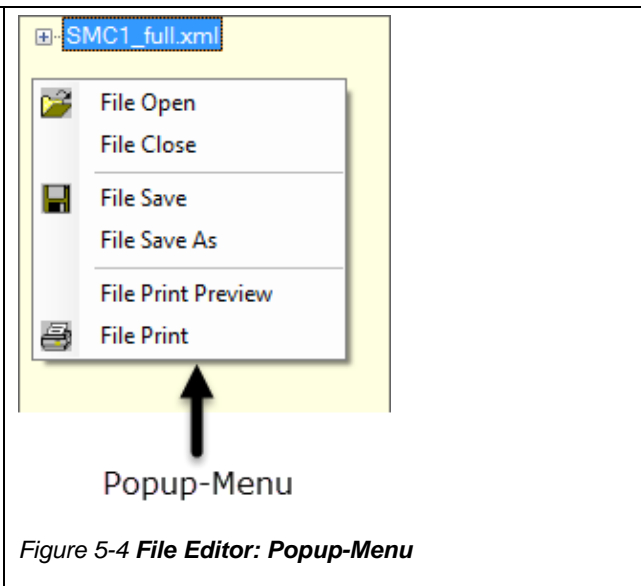


Figure 5-4 File Editor: Popup-Menu

Operating elements of the editor

The available operation elements are described in the following table:

Function	Description	Supplemental Notices
File Open	Opens a new data file. The software is able to proceed the former .par as well as the newer .xml format. The selection is made via file extension.	Overwrites the currently opened data file in the editor.
File Close	Closes the file and the editor.	No saving of the current data file. The current data file is deleted automatically from the file editor.
File Save	Saves to the current data file in the corresponding file.	Restriction if "Write Protected" is selected: It is not available and not visible.
File Save As	Saves the current data file with a user defined name.	The user name entry, set "Write Protected" and a comment about the file can be left here. Restriction if "Write Protected" is selected: In this case the overwriting of existing files is not allowed.
File Print Preview	Creates a preview of the currently opened file.	Only usable with an installed printer!
Print	The opened file will be printed out.	Only usable with an installed printer!
File Download	Copies the actual file into the OS10 window in order to transmit it to the connected unit.	Only usable with a connected target unit. The editor-file has to be compatible with the parameter data of the target unit.

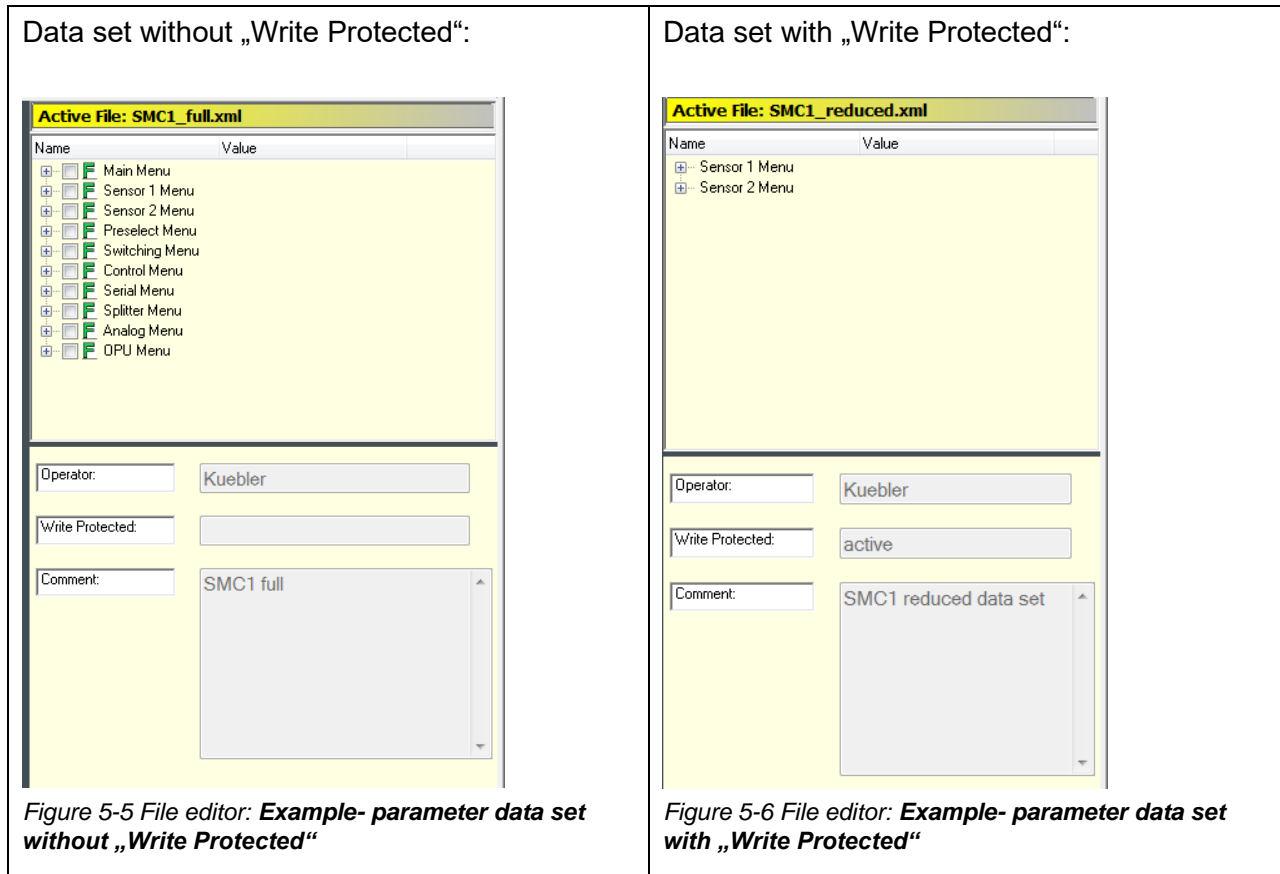
Table 5-2 **File editor: Operation elements**

5.2.1 Load a new parameter data set from a file

A new parameter data set can be loaded from a file using **File Open**.

After clicking **File Open** a choice menu opens automatically and the desired parameter file can be selected and loaded.

The editor automatically recognizes whether a data set with or without "**Write Protected**" exists (see examples below).



If „**Write Protected**“ is active, all blocked features are disabled.

5.2.2 Edit parameter data sets

In the editing window "**List of parameter**" the parameter values can be edited and the menus/parameters can be selected.

The selection of the displayed menus/parameters and parameter data sets with "Write Protected" can be suitable adjusted for the parameter list of Os10

Edit parameter data sets

The editing of the parameter values is analog to the editing of the parameter list of the Os10 window (see also Chapter 2.3.2 edit parameter values). However, the changed parameters are not marked.

The selection of the displayed parameter values or menus

In the editing window, two symbols are used (see table below).

Symbol	Discription
<input type="checkbox"/> F	Free switched: The menu or the parameter is displayed.
<input checked="" type="checkbox"/> B	Blocked: The menu or parameter is blocked and not displayed.

Table 5-3 File editor: Identification – Free switched / Blocked

The selection „Free switched <-> Blocked“ is done by clicking on the square next to the symbol. A menu entry changes all subordinated parameter entries.

5.2.3 Saving a parameter data set

There are two methods available to save a parameters data set.

1. File Save

Via „**File Save**“ the current parameter set is automatically written in the corresponding data file. The file name and location are deposited in the file information.

- A change of file name or location is not possible.
- A change in the optional parameters "**Operator**", "**Write Protected**" and "**Comment**" is not possible.
- All entries in this file will be overwritten.
- "**File Save**" can be performed only for parameter data sets without "**Write Protected**".

2. Files Save As

Via „**File Save As**“ the current parameter set can be written in any data file. After clicking on "File Save As" one of the following parameter change windows opens.

If a file without „**Write Protected**“ or no file is loaded in the editor, the change window without „**Write Protected**“ opens.

The screenshot shows a dialog window titled "Editor : Open file SMC1". The menu bar includes "File Open", "File Close", "File Save", "File Save As", "File Print Preview", "File Print", and "File Download". The "File Save" option is highlighted. The dialog contains three input fields: "Operator" with the value "Kuebler", "Write Protected" which is empty, and "Comment" with the value "SMC1|full". At the bottom, there are two buttons: "Unit Save" and "Abort".

Figure 5-7 File Editor: Change window for optional parameters (without „Write Proteded“)

If a file with „**Write Protected**“ is loaded in the editor, the change window with „**Write Protected**“ opens.

The screenshot shows a dialog window titled "Editor : Open file SMC1". The menu bar includes "File Open", "File Close", "File Save As", "File Print Preview", "File Print", and "File Download". The "File Save As" option is highlighted. The dialog contains three input fields: "Operator" with the value "Kuebler", "Write Protected" with the value "active", and "Comment" with the value "SMC1 reduced data set". At the bottom, there are two buttons: "File Save" and "Abort".

Figure 5-8 File Editor: Change window for optional parameters (with „Write Proteded“)

Please note the following:

Clicking the "file save" button will open a file dialog box. Saving is the same as under Windows. Only after the store operation a superior write protection is enabled and the file editor is adapted.


Optional parameters	Description						
Operator	<u>Name of the operator:</u> Changing this parameter is always allowed.						
Write Protected	<p><u>Indicator for write protection:</u> A change in this parameter is subject to the following limitations:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <p>A set and saved „Write Protected“ cannot be changed via file editor.</p> </div> <p>Setting of „Write Protected“:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Text</th> <th style="width: 50%;">Meaning</th> </tr> </thead> <tbody> <tr> <td>„active“</td> <td>write protection enabled</td> </tr> <tr> <td>all other texts</td> <td>write protection disabled</td> </tr> </tbody> </table> <p>The write protection is enabled with the <u>completion of saving</u>.</p>	Text	Meaning	„ active “	write protection enabled	all other texts	write protection disabled
Text	Meaning						
„ active “	write protection enabled						
all other texts	write protection disabled						
Comment	<u>Any comment</u> Changing this parameter is always allowed.						

Table 5-4 *File Editor: Optional parameters*

- For parameter data sets without "**Write Protected**" the overwriting of existing files is allowed.
- For parameter data sets with "**Write Protected**" the overwriting of existing files is **not allowed** and is blocked automatically. The parameter data sets **must be saved in a new file**.
- All entries in the file are completely newly created or overwritten.

By clicking the "**Abort**" button, the operation can be terminated at any time without saving.

5.2.4 Printing parameter data sets

There are two ways available for the printing of parameter sets.

File Print Preview (Print Preview):

A print preview window opens after clicking "**File Print Preview**". In this window, the print can be checked visually. An adaptation of the print is not possible.

File Print (Immediate printing)

After clicking on "File Print" the "Windows standard" printer selection opens. In addition to the selection of the printer a printer-specific adaptation is also possible.

5.3 Data Exchange between File Editor and OS10 Window

5.3.1 File Editor → OS10 Window

In order to ensure the compatibility between editor and a loaded parameter-set of a connected target unit, the following requirements must be fulfilled:

Compatibility conditions of the file downloads	
1. Unit family:	The first five characters of the unit family and the loaded parameter-set must be identically. The characters are not case-sensitive.
2. Firmware	<p>a.) Standard Firmware: The first seven characters of the firmware and the loaded parameter-set must be identically. The characters are not case-sensitive.</p> <p>b.) Special Firmware: All characters of the firmware, editor file and loaded parameter-set must be identically.</p>

Table 5-2 File Editor→ OS6.0 window

In case of unfulfilled compatibility conditions the **File-Download** button is grayed-out automatically (see example below). In the figure below the first 7 characters do not match:

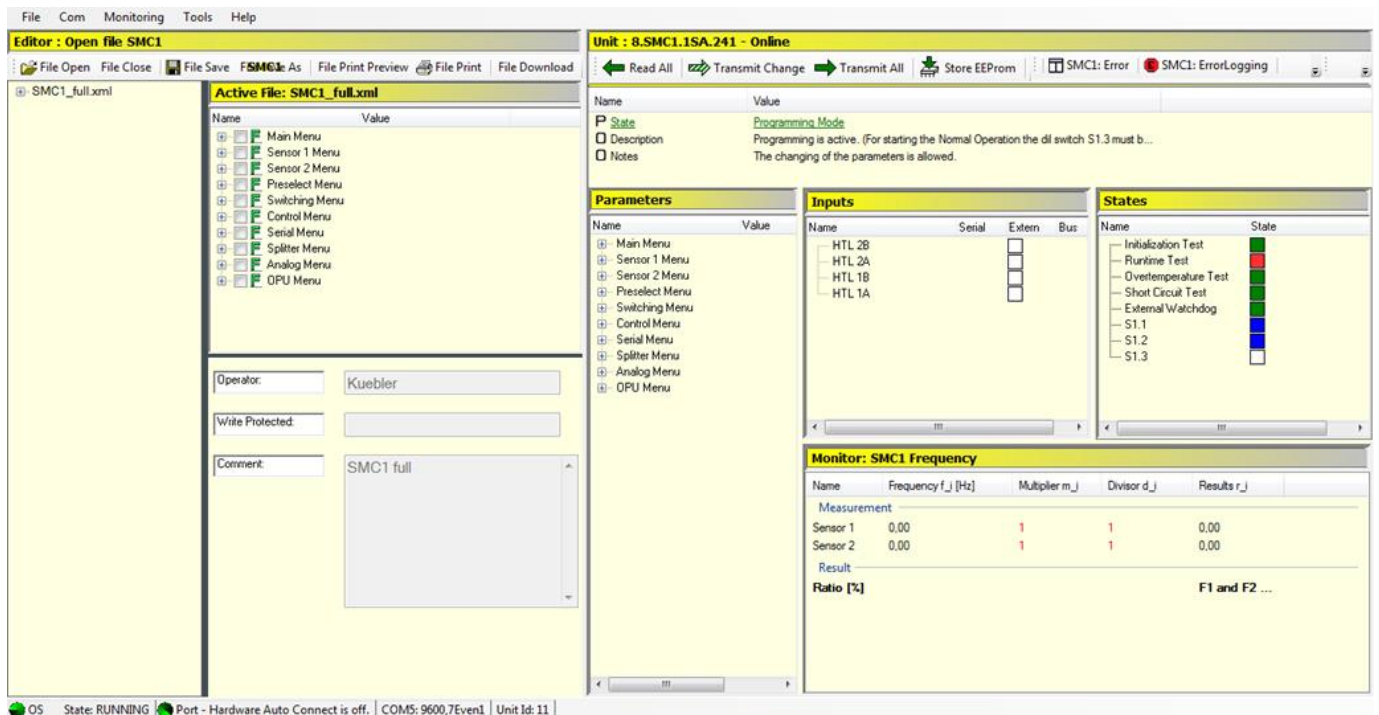


Figure 5-9 File Editor: Data transfer is not allowed

If the compatibility conditions are met, the following is executed after clicking the “Download File” Button:

- For data sets **without "Write Protected"** only “free switched” parameters or menus are transmitted to the OS 10 window. **Only these “free switched” parameters** will then be overwritten and automatically highlighted **red** in the OS10 window. Blocked parameters are not displayed (see figure below).

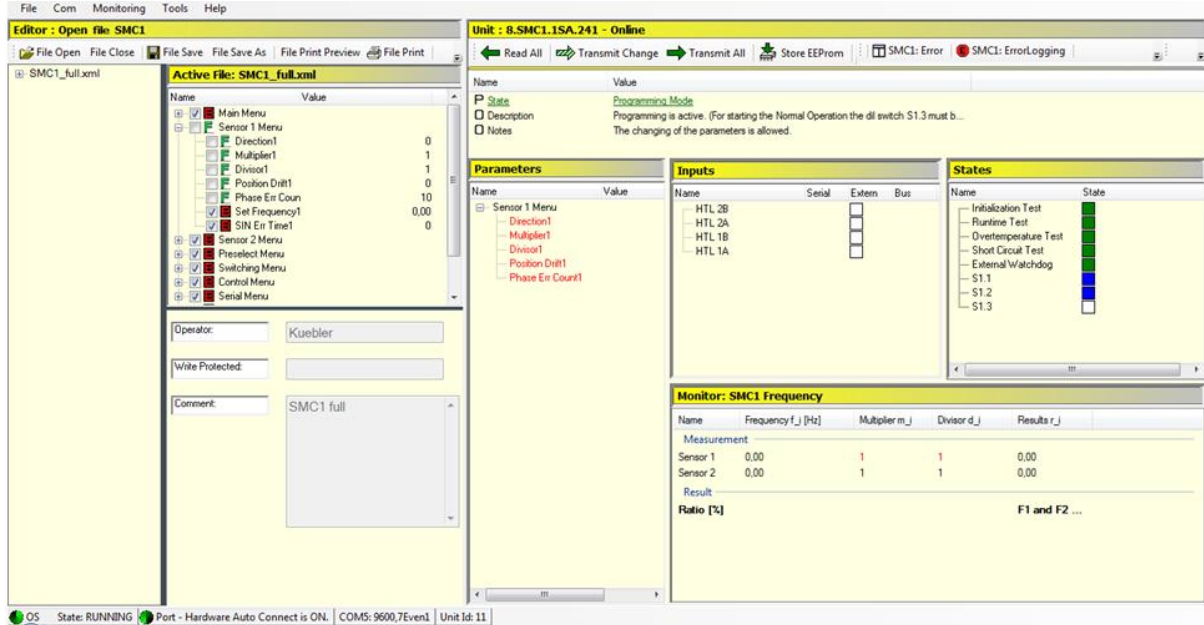


Figure 5-10 File Editor: Data transfer for data records without “Write Protecde”

- For data sets **with "Write Protected"** only the **visible parameters** or menus are transmitted to the OS 10 window. **Only these visible parameters** will then be overwritten and automatically highlighted **red** in the OS10 window. Blocked parameters are not displayed (see figure below).

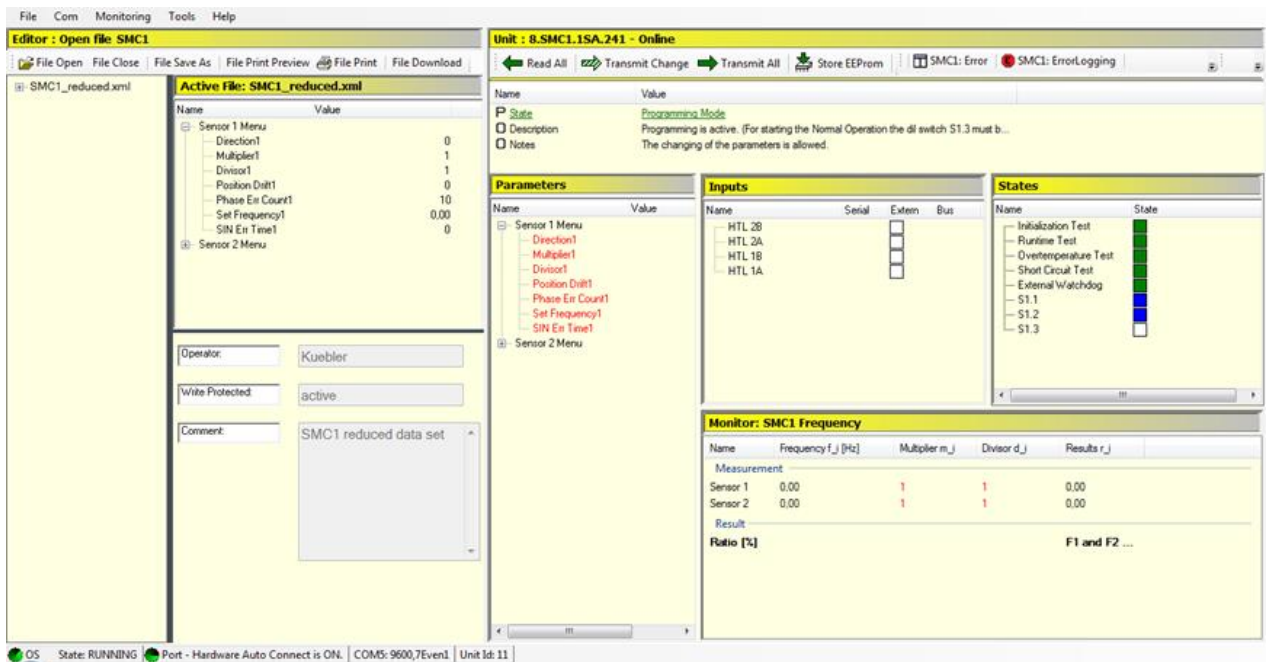


Figure 5-11 File Editor: Data exchange with "Write Protecde"

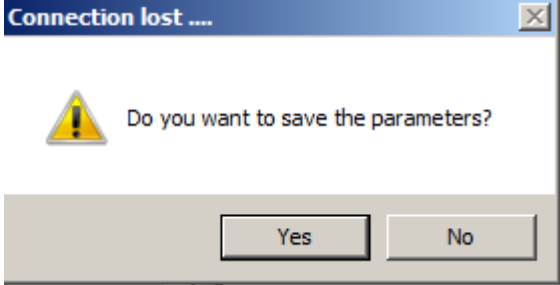
Now **all new parameters** can be transmitted to the target unit.

5.3.2 File Editor ← OS10 Window

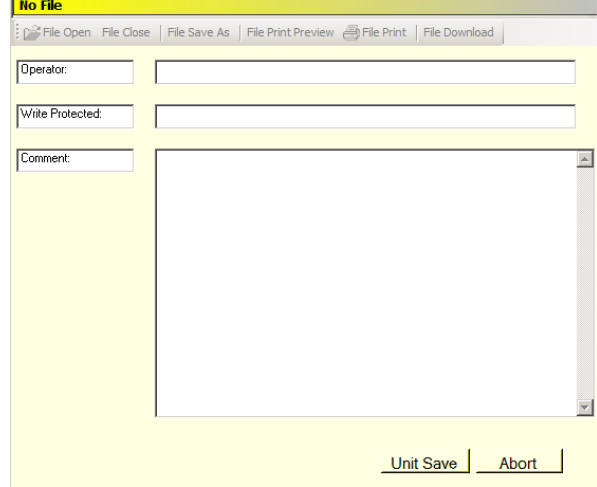
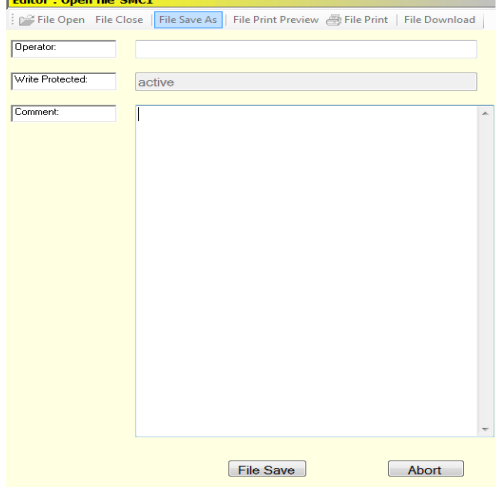


All parameters of the OS10 window (also the blocked parameters) will be taken over in the file editor.

There are two possibilities to transfer **data** from the OS10 window into the editor.

Active possibility	Passive possibility
Active by using the Unit Save As button	Passive because Connection lost ... is detected With a lost connection between the OS10 surface and the target unit the exception Connection lost ... is activated automatically. The following pop-up warning appears: 
If clicking the Unit Save As button...	If clicking the Yes button...
... the editor input field opens left beside the OS10 field.	

able 5-6 **File Editor <- OS6.0 window**

If a file without „Write Protected“ or no file is opened in the editor, the following window will appear:	If a file with „Write Protected“ is opened in the editor, the following window will appear:
	
<p><i>Figure 5-12 File Editor: Change window (without "Write Protected")</i></p>	<p><i>Figure 5-13 File Editor: Change window (with "Write Protected")</i></p>

Saving parameters is described in chapter “5.2.3 Saving a parameter data set”.

6 Tools Menu



The tool menu is used to provide additional (external) tools and is only available in special versions of the OS10.

7 Help Menu

The Help menu summarizes all help or update options for OS10 (Fig.: 7-1).

The main menu is divided into two areas. An upper area with the two menus "**Show help**" and "**Web Page**" and a bottom area in which all the updates of the OS10 have been summarized. The upper menus are presented directly below. The update procedures are explained individually in the next chapters.

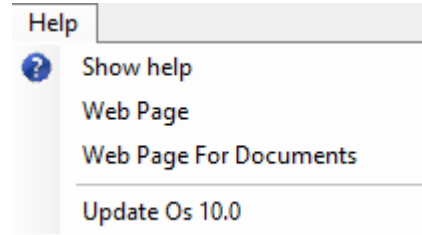


Figure 7-1 Overview help menu

Please note that the following applies to all update procedure:



Regardless of the update method the OS10 will closed for security reasons and restarted after the execution of this update.

Clicking on the "**Show Help**" menu will open the current documentation directory automatically. (Fig.: 7-2).

C:\Program Files (x86) > Os10.0 > Docs

Name

- Os100_Installer_d.pdf
- Os100_Installer_e.pdf
- Os100_Safety_d.pdf
- Os100_Safety_e.pdf
- Os100_Standard_d.pdf
- Os100_Standard_e.pdf

Figure 7-2 Current Documentation Directory



For opening and viewing the document a suitable PDF reader must be installed.

Clicking on the "**Web Page**" menu opens the current producer web page.

Clicking on the "**Web Page For Documents**" menu automatically opens the web page with additional documents from the current manufacturer's website.

7.1 OS10 Update

Clicking the menu **Update OS10** starts the update of the OS10. The update process comprises of the following steps:

1. Automatically update check

First, the update program checks whether a new update is available.

Two different cases are possible:

Case 1: no update is available

Case 2: a new update is available

Case 1: no update is available

Clicking the **OK**-button closes this window and returns to the OS10.

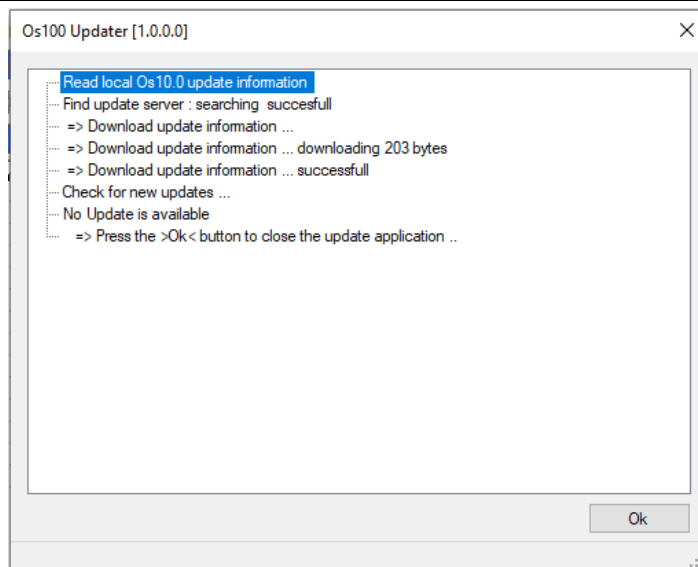


Figure 7-12 Update OS10 - No update is available

Case 2: a new update is available

The update can be **installed or cancelled**.

Clicking the **No**-button closes the update program and starts the OS10 automatically.

The update can be started later again.

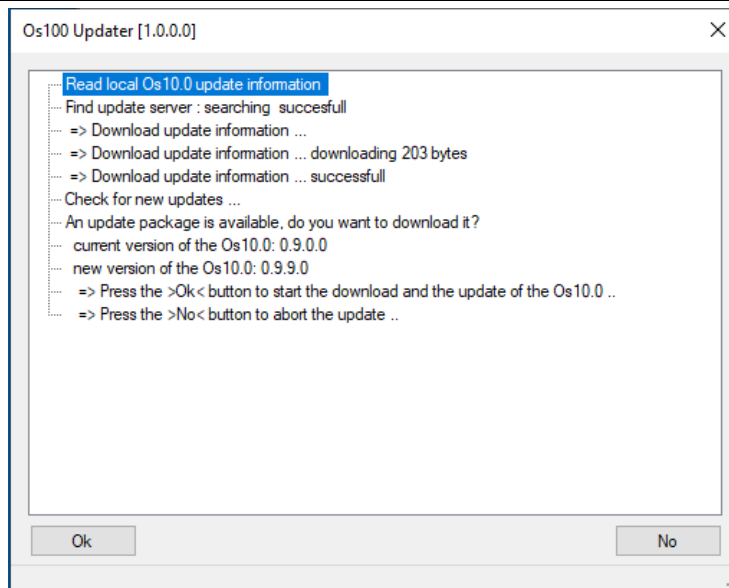
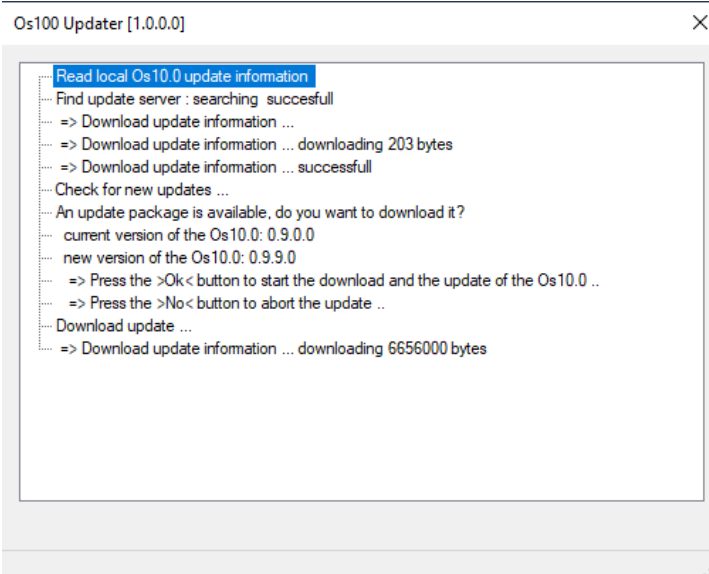


Figure 7-13 Update OS10 - Update available

Clicking the **Ok**-Button, starts the download and the update of the new version.



```
Os100 Updater [1.0.0.0]
Read local Os10.0 update information
Find update server : searching successfull
=> Download update information ... downloading 203 bytes
=> Download update information ... successfull
Check for new updates ...
An update package is available, do you want to download it?
current version of the Os10.0: 0.9.0.0
new version of the Os10.0: 0.9.9.0
=> Press the >Ok< button to start the download and the update of the Os10.0 ..
=> Press the >No< button to abort the update ..
Download update ...
=> Download update information ... downloading 6656000 bytes
```

Figure 7-34 Update OS10 - Download Update

2. Update to a new version

The update and installation of the program are identical.

Further information can be found in the manual of installation of OS10.0 [1].

8 Appendix to the operation

8.1 Literature

[1] User manual of Safety-M compact (download on www.kuebler.com)

[2] User manual of SMCB (download on www.kuebler.com)

[3] User manual of SMC1.3/SMC2.4 (download on www.kuebler.com)

8.2 Special Cases

#	Special Case	Notice
1	Parameter UnitId	Only specific values are allowed for this parameter. Detailed information can be found in the Safety-M compact user manual [1]

Table 8-1 **Special Cases**

8.3 System Requirements

Operating System	Windows 8.1, 10
Hardware	<ul style="list-style-type: none"> • 1-GHz processor or higher with 32 bit (x86) or 64 bit (x64) • 2 GB RAM (32-Bit) or 2 GB RAM (64 bit) • Available Storage: <ul style="list-style-type: none"> - 16 GB for 32-Bit - 20 GB for 64-Bit • DirectX 9 Graphic-Engine with WDDM 1.0 driver or higher • Serial Device (classic COM Port or RS232ViaUsb adapter)
Software	<ul style="list-style-type: none"> • .Net Framework 4.6.1 from Microsoft

Table 8-2 **System Requirements**

9 General information about the installation

This manual describes the installation process of the OS10.0 user interface on a computer with Microsoft® Windows as the operating system.

The OS10.0 is suitable for the Windows 8.1 and 10 operating systems.



Important:

The activation code: >52094< is required for installation and update.

This operator software can be installed from a DVD, a USB stick or a local disk directly. For reasons of convenience, an installation from the local hard drive is assumed.

Removing of old OS10.0 software:

This installer removes old OS10.0 software automatically. If this is not possible, the installation program stops and the old OS10.0 must be removed manually.

Multi-User-Installation:

OS10.0 is **always** installed for all users (multi-user). Installation for a single user is not possible.



Please note:

The installation and deinstallation of the OS10.0 software require **administrator rights**.

.NET Framework 4.6.1

The OS10.0 software requires the ".net Framework 4.6.1" from Microsoft

Driver-Installation (only Windows 8.1)

The OS10.0 **has to be installed before** the driver can be installed.
The USB device has to be connected with the PC.

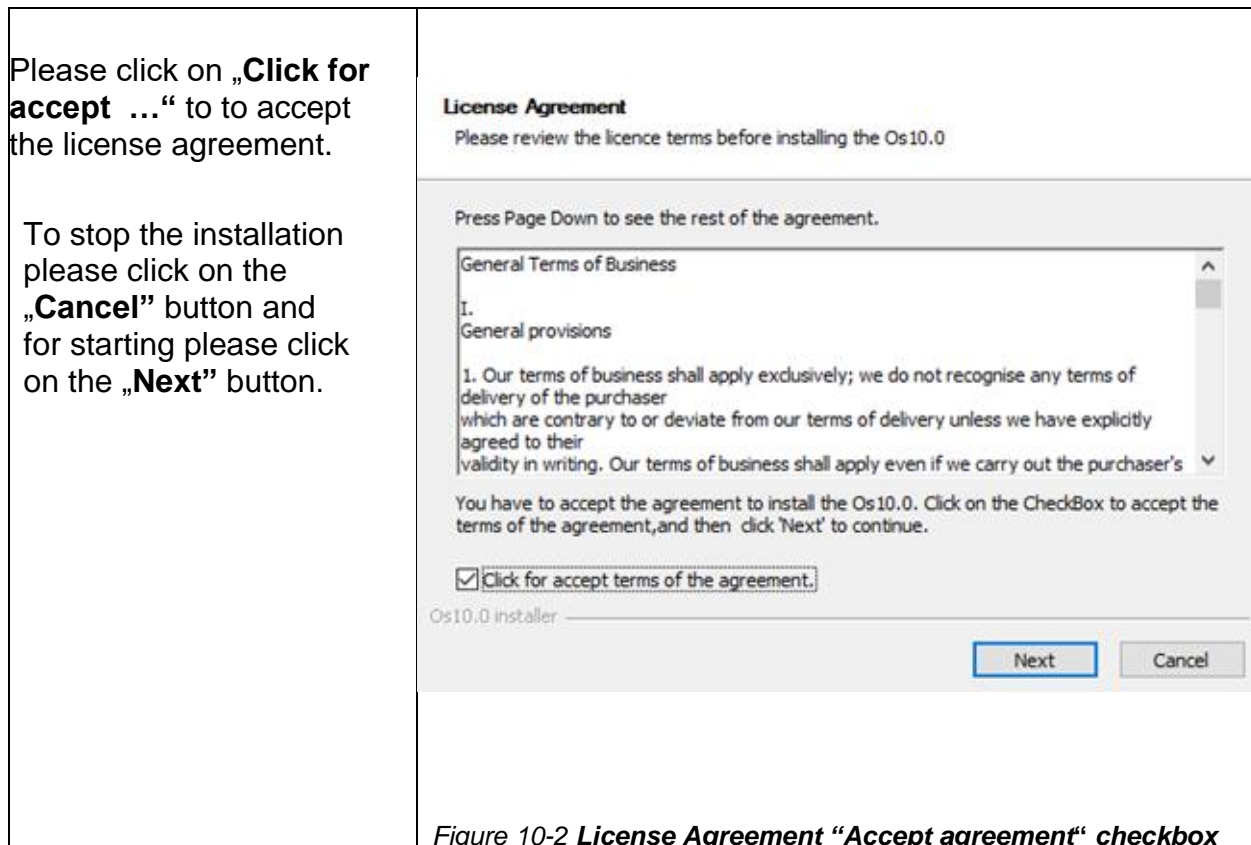
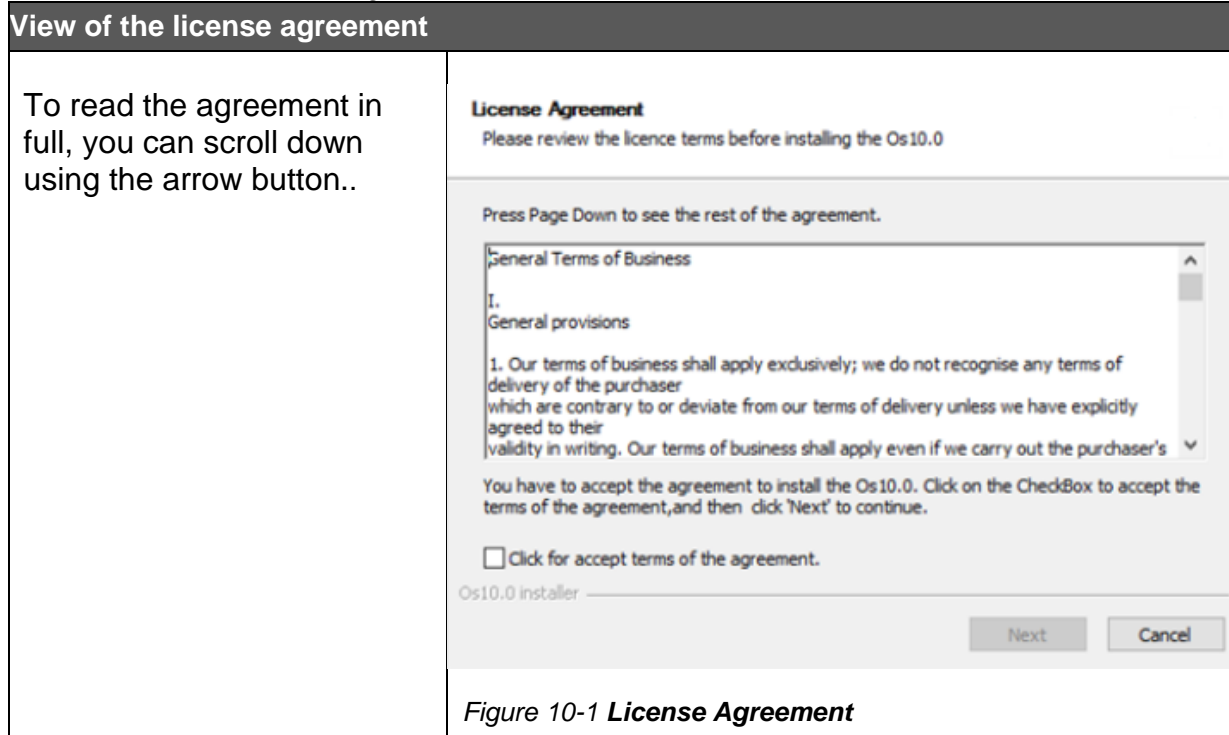
10 Installation of the OS10

This operator software can be installed from a DVD, a USB stick or a local disk directly. For reasons of convenience, an installation from the local hard drive is assumed.

Open the directory in which the installation package is saved. Please start the installation package with administrator rights. The installation of the OS10.0 is largely automatic.

10.1 Installation procedure

The installation preparations run in the background (silent). Only in a case of failure there will be a reference in form of a message box.



Showing of warning terms

To read the warning notices in full, you can scroll down using the arrow key.

Please click on the „**I Agree**“ button to accept this warning notes and to start the installation of the OS10.0.

For stopping the installation please click on the „**Cancel**“ button

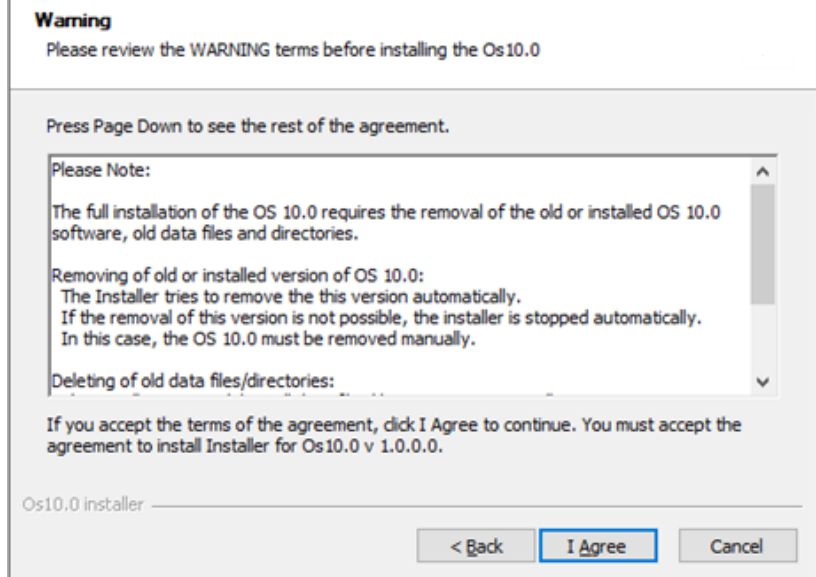


Figure 10-3 warning label



The installation program automatically checks whether the operating system used supports it. Only in the case of an unapproved operating system (see also appendix) will a warning message be issued or the installation program stopped.

The installation program then checks whether the administrator rights required for execution are available. If not, the required administrator password is automatically requested.

The installation runs automatically.

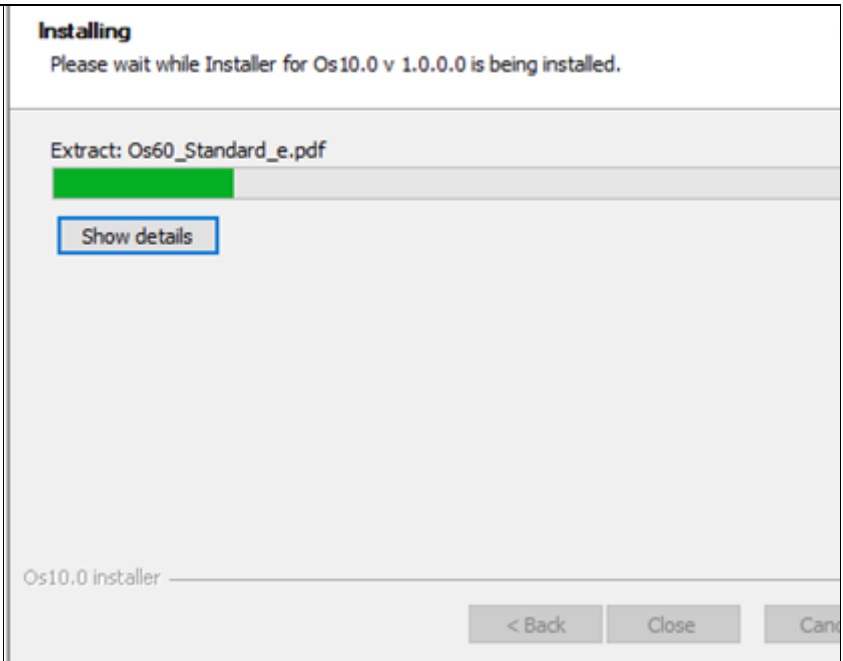


Figure 10-4 installation

Please click on the **Close** button to finishes the installation.

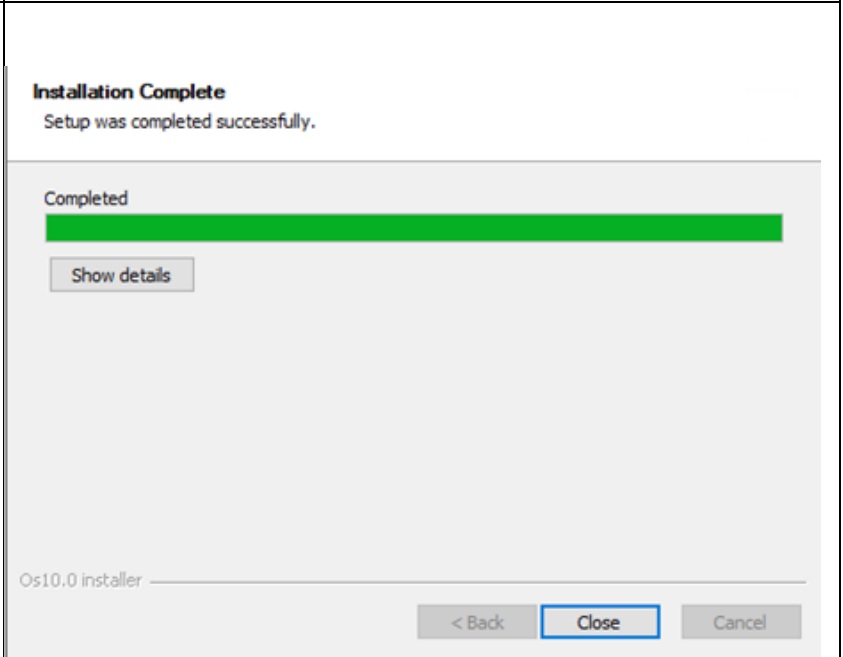


Figure 10-5 end of installation

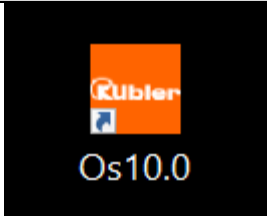

The OS10.0 requires the .net Framework 4.6.1 from Microsoft. This framework is included in the installation package.

The installation program checks whether the .net Framework 4.6.1 is installed on the computer. If not, the installation will start automatically. Please follow the instructions in this installation package of the .net Framework 4.6.1.



The computer may need to be restarted.

After the installation is complete, OS10.0 can be started in two ways.

Starting of the OS10.0	
Via desktop icon	 <p>Figure 10-7 <i>OS10.0: Desktop Icon</i></p>
Via start menu	 <p>Figure 10-8 <i>OS10.0: Start menu</i></p>

11 Installation of USB Device Driver

11.1 Windows 8.1



Please note:

The OS10.0 **have to be installed before** driver installation can be executed. For the installation of the USB-Device driver, **administrator rights** are required. Further, the USB-Device **have to** be switched on and already connected to the USB port of the PC.

The driver installation needs an **INF file** (also called **Setup Information file**), which can be found in the following directory of the already installed OS10.0:

"C:\Program Files (x86)\Os10.0\Drivers\Win7_8"...

The software will detect and select the respective file automatically.

Open the device manager: Start → Control Panel → Device Manager

Depending from the current configuration of the operation system, a new sub-item “Other devices” will be added automatically. This item has an entry of an unknown device called “Motrona DS2xxxx”.

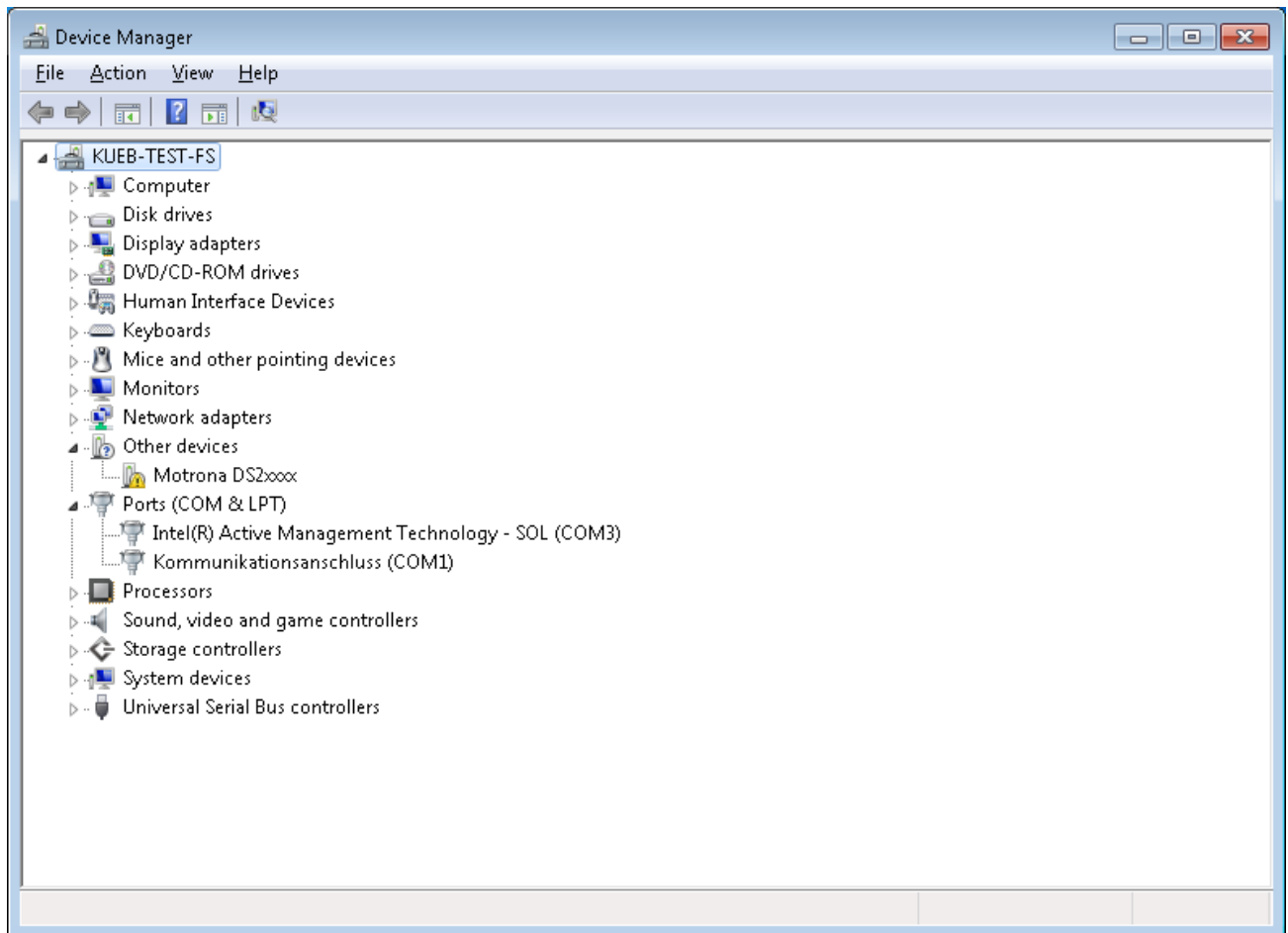


Figure 11-1 Sub-item “Unknown device”

Then choose “**Update Driver Software...**” to open the update selection window and click on the “**Browse my computer for driver software**” area:

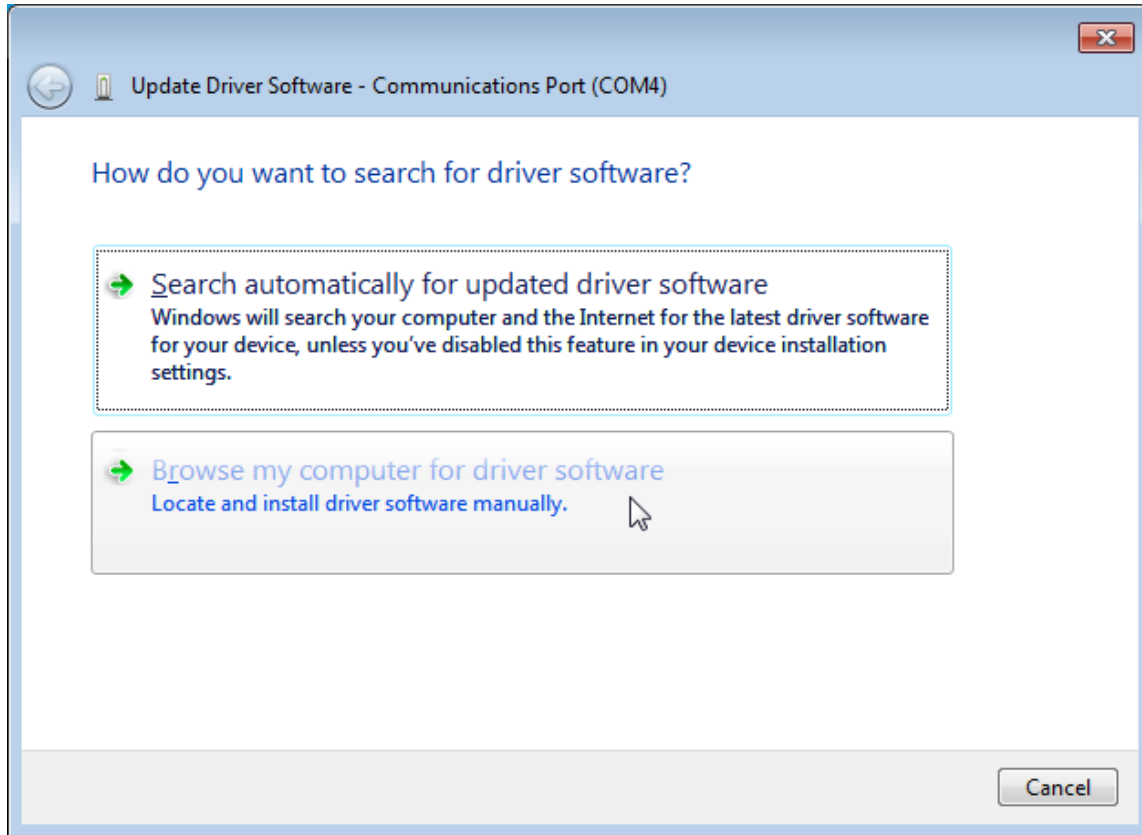


Figure 11-2 Selection window “Browse my computer for driver software”

Fill in the folder path, where the drivers are located. This is the installation path of the OS10 Software, under “...\\Data\\Drivers”

Then press the “**Next**” button to continue ...

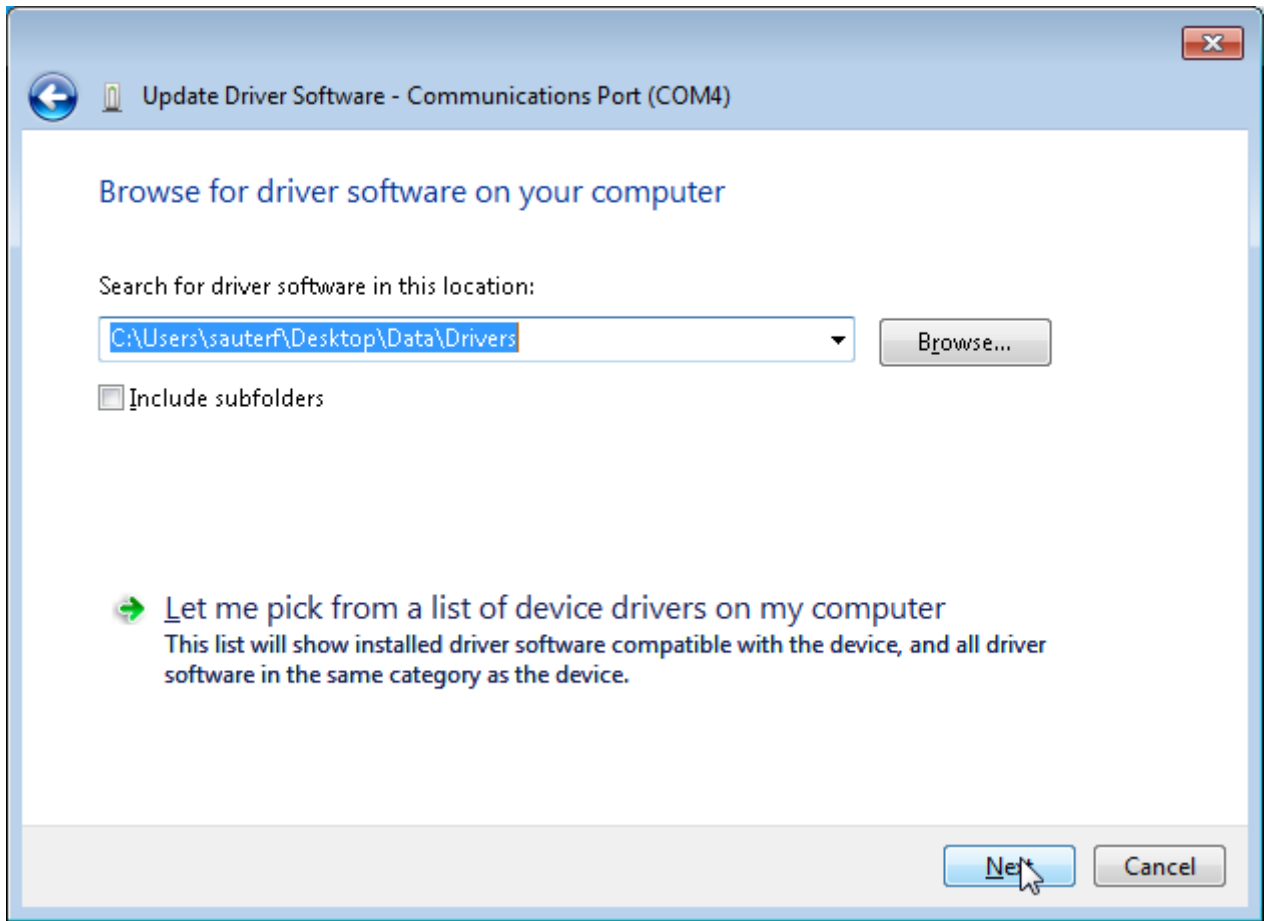


Figure 11-3 OS-Config directory / search path

The windows "Windows security" appears.

Click on "Install" to continue.

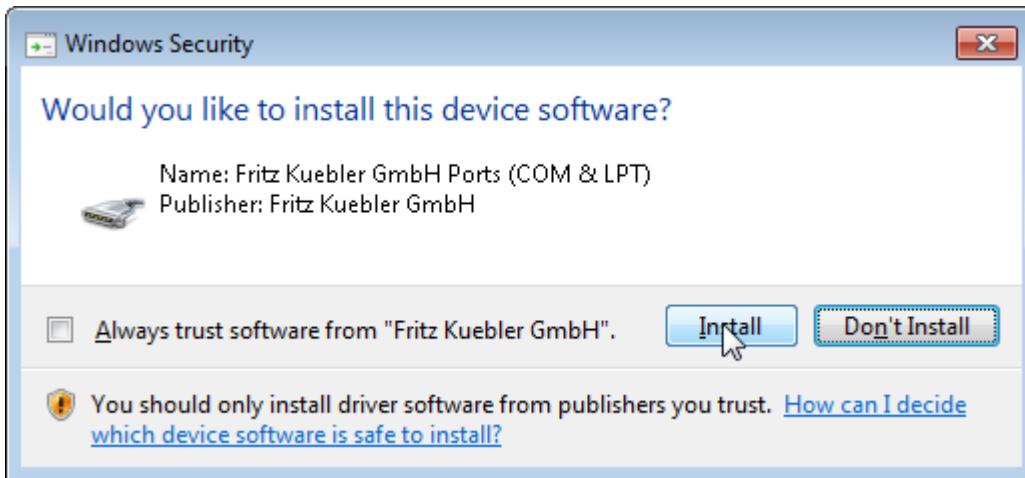
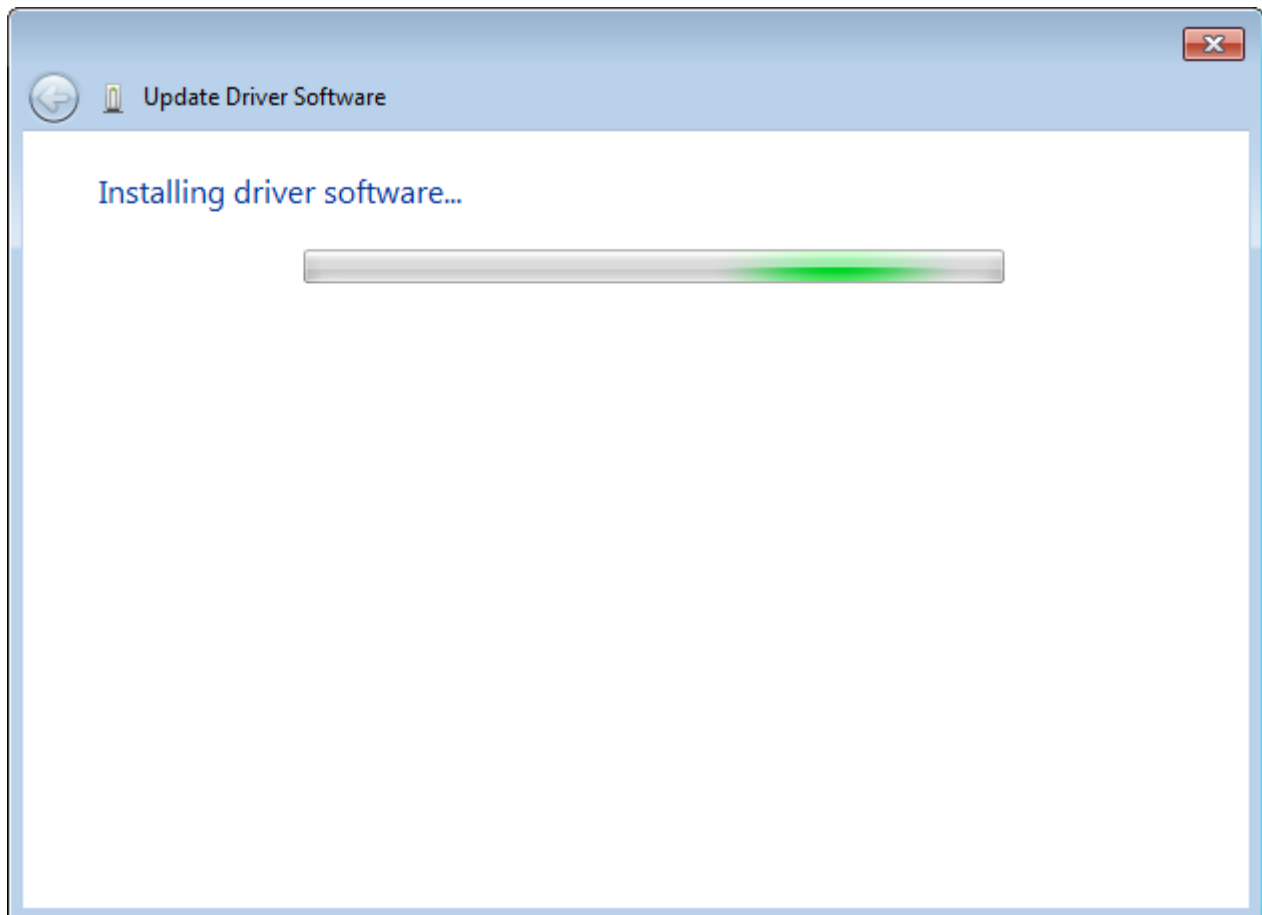


Figure 11-4 **Start installation**

Windows will install the new driver.



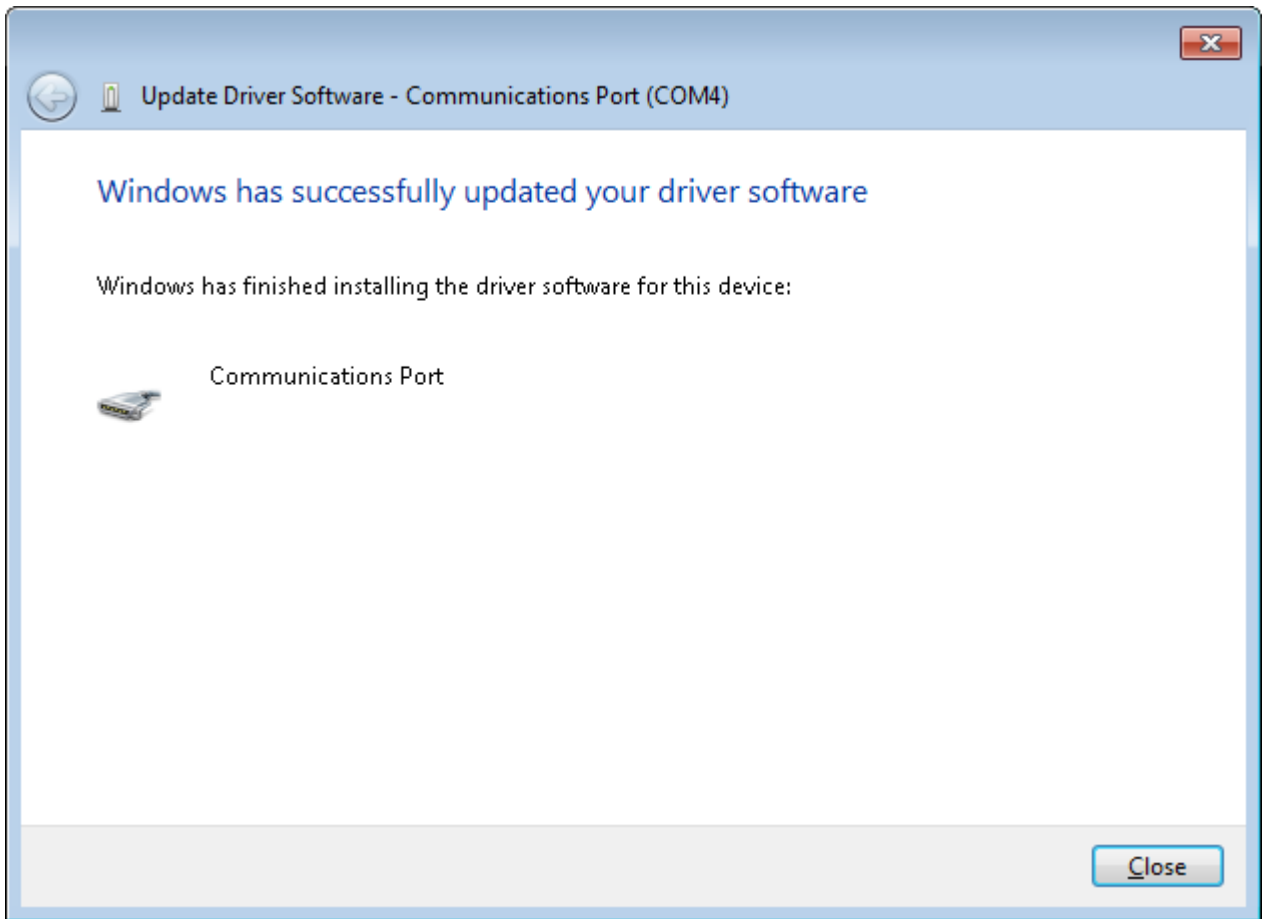


Figure 11-6 *Installation completed, close and finished*

The new device has now been added automatically to "Ports (COM & LPT)".

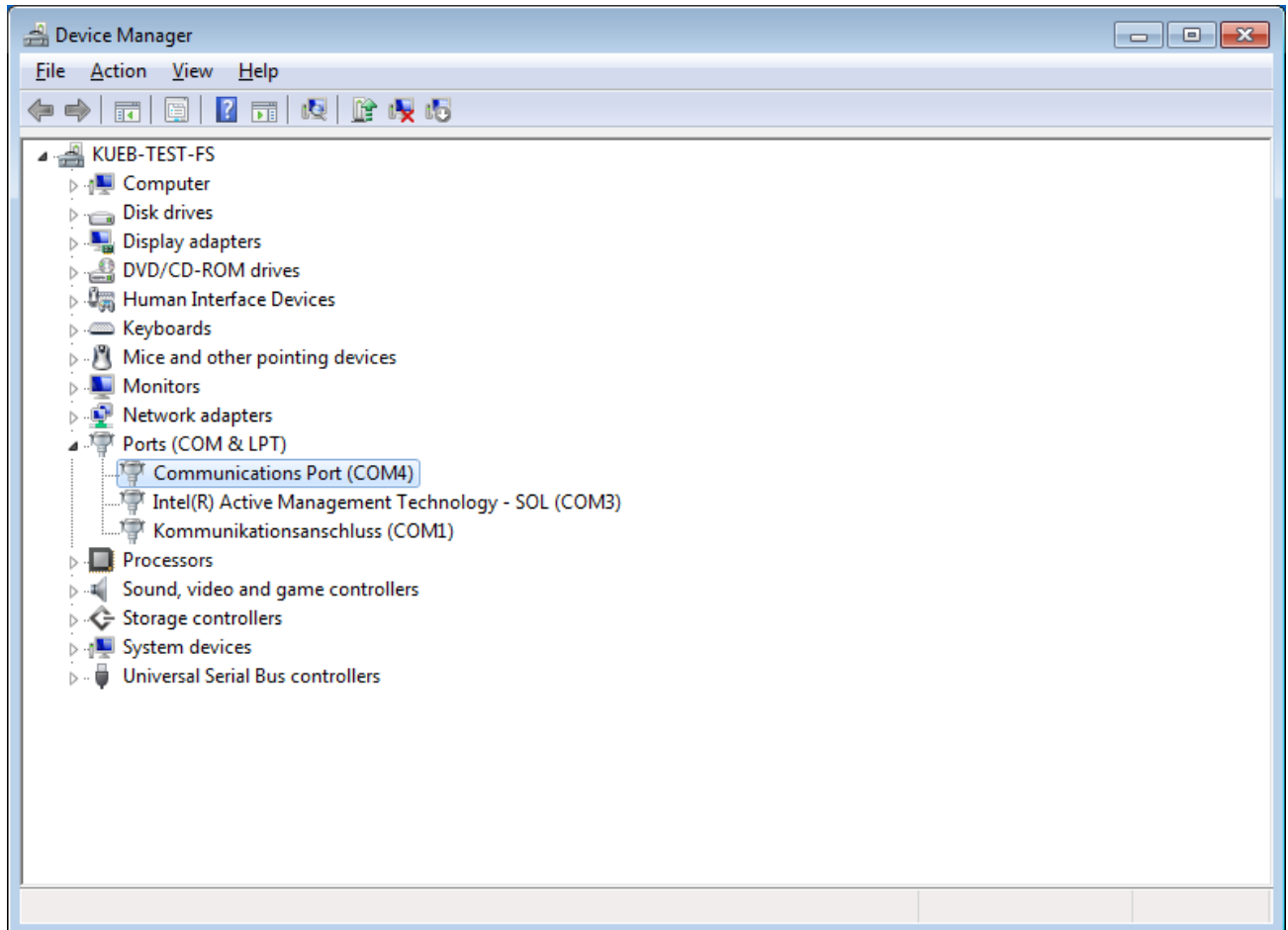


Figure 11-7 New device added to Ports (COM & LPT)

The driver installation is completed.

11.2 Windows 10

Windows 10 detects the SMC2 and configures the necessary drivers automatically. A driver installation by the user is no longer necessary.

12 Uninstall OS10

Depending on the operation system, the OS10.0 operator surface can be uninstalled via the **Windows Control Panel** (Windows 8.1 and 10) or via the **uninstall menu** (not Windows 10).




Please note:

Only the OS10.0 is uninstalled.
"User directory" are NOT deleted (see OS10.0 manual).

12.1 Uninstall via Windows Control Panel

To uninstall the OS10.0 via **Windows Control Panel**, open **Programs and Features** via **Start → System Control Panel → Programs and Features**. A list of all installed software programs will appear on the screen.

By marking the  entry with the right mouse button, one of the following options can be selected:

- „**Uninstall/change**“ and in the next window
- „**Remove the application from this computer**“.

The uninstallation starts automatically.

1.1 Uninstall via Menu

The uninstallation program  can be started directly via **All Programs → Os10.0 → Uninstall** (see figure below).



Figure 12-1 **Uninstall**

The uninstallation starts automatically.

13 Appendix to the installation

Requirements for the OS10

Supported Operating System:	Windows 8.1 (32 or 64 Bit) Windows 10 (Version 1511 build 10586.104; 64 bit)
Framework from Microsoft:	Net Framework 4.6.1

13.1 Installation steps of OS10

1. **Preparation** of the OS10 Installation and
 - 1) Showing "license agreement"
 - 2) Checking of Operation System or old installation etc.
 - 3) (Download and) Starting of OS10 installation program
2. **OS10 Installation**
 - 1) Checking and (if necessary) installation of required software packets from Microsoft
 - 2) Download and installation of the OS10 operator surface

13.2 Requirements for the USB driver installation

The OS10.0 have to **be installed before** the driver installation can be started.

For the installation of the USB-Device driver **administrator rights** are required and the USB-Device **have to** be connected to the PC.

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