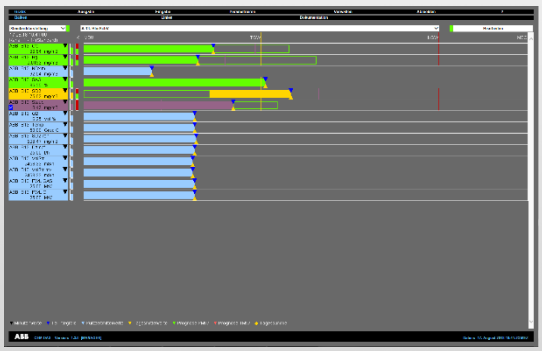
CEM-DAS

Data acquisition and handling system for continuous emission monitoring



Performance-tested program system for acquisition and handling of continuous emission data.
Software version 1.3.2

Measurement made easy

CEM-DAS

Introduction

CEM-DAS is a complete networkable system for continuous recording and evaluation of emission data in all industries. The system provides important information for the environmental and economic operation of production facilities.

CEM-DAS is scalable to support smallest one stack installations up to multi-block plants with numerous measuring points.

Field data from gas analyzers, dust monitors, etc. can be acquired via conventional I/O's or Modbus TCP/IP. These data are processed in the CEM-DAS server. All results are saved in a database and on the file system. Optionally a Data Acquisition Unit can be used to buffer field data.

Additional Information

Additional documentation on CEM-DAS is available for download free of charge at www.abb.com/analytical.
Alternatively simply scan this code:

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1 Introduction

1.1 General Information

CEM-DAS / DAA-Controller is the qualified data acquisition and handling system for continuous emission monitoring according to ”Bundeseinheitliche Praxis bei der Überwachung der Emissionen“ (BEP 2017) from ABB.

It is designed for use as an intranet application and consists of the acquisition systems DAA-Controller and the software CEM-DAS, which runs on a Windows computer (PC).

CEM-DAS is certified according to MCERTS[1] and thus complies with directive on industrial emissions 2010/75/EU (IED). The characteristics of an MCERT installation are listed in chapter 9.

Further information for structure and use of CEM-DAS / DAA-Controller can be found in the System Manual /1/. The User Manual is meant as a help for using CEM-DAS. If the user knows how to operate programs, especially Web Browser under Windows the User Manual can be used as a reference book.

The surface of CEM-DAS is composed with functions for evaluation of data and for parameterization (= adaption to the local tasks). The structure of the description follows the program menus. For each menu command you will find a screen dump followed by a description listed in a table (functions are shown in boldface letters).

1.2 Technical Condition

To record emission data in CEM-DAS DAA systems are used. Further information is in the System Manual DAA-Controller (/7/).

CEM-DAS needs a web browser and a Java Runtime (JRE) for special graphics. For more information about supported web browsers and JRE, see the system manual (/1/).

All reports will be created as pdf files and offered for downloading. If no PDF support is available in the web browser used, a PDF presentation program should be installed.

For further use the data of some reports can be exported. For that the data are issued as CSV files and offered for download. If MS Excel© is installed MS Excel©[2] will be started and the data will be pictured on the monitor.

1.3 Terms and Abbreviations

Please refer to /14/ for the terms and abbreviations used in **CEM-DAS / DAA-Controller.**

[1] The certification was carried out by Sira Certification Service (CSA Group).

[2] The regional adjustment of the list separation figure for CSV export in the operating system has to match the adjustment in CEM-DAS (see 4.5.1)!

2 Operating Concept

2.1 General

CEM-DAS is operated by menus which are shown on the top of the browser window. Here in the first line the main menus are shown. The second line delivers the appendant submenu.
After selecting a submenu the respective mask with further parameters and control buttons is shown. The following picture shows a summary of the menu structure:

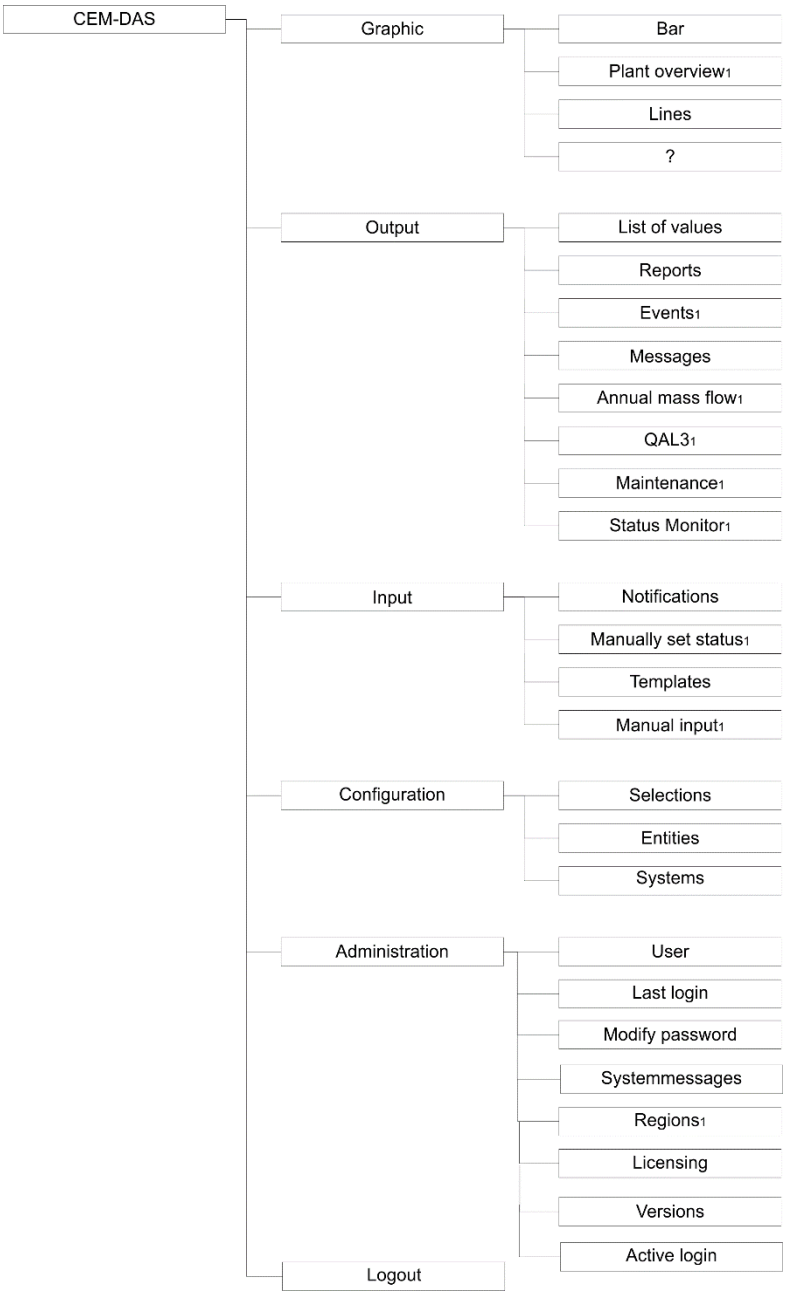


Figure 1: menu structure[1]

[1] Additional menu functions may be included if CEM-DAS is configured accordingly; further information by ABB.

2.2 Selection of date and time

Often time periods (date and time) are needed in the menus to select data. This selection can be made by DateTimePickup Control:

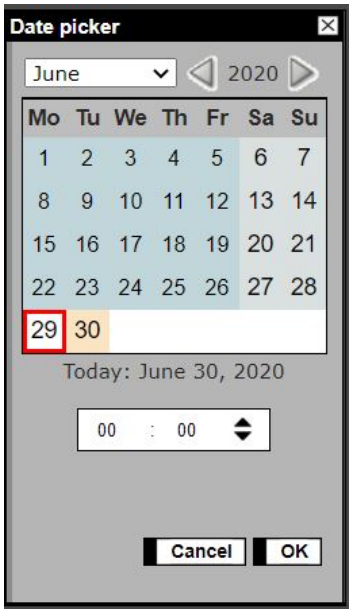


Figure 2: select date / time

The selection of the date can be made by mouse click on the calendar. The time can be either entered directly or, after marking the position of hour or minute, selected by mouse click. Time periods can also be entered directly in the format [tt.mm.jjjj ss:mm].

2.3 Show and hide monitor areas

The display selected by a menu in the browser often extends the size of the window. Windows standard is that the hidden areas can be blended in by a scroll bar on the right side.
To avoid scrolling all the time areas which are currently not interesting, can be hidden. The actual display with its blended or hidden areas will be stored user-depended by CEM-DAS.

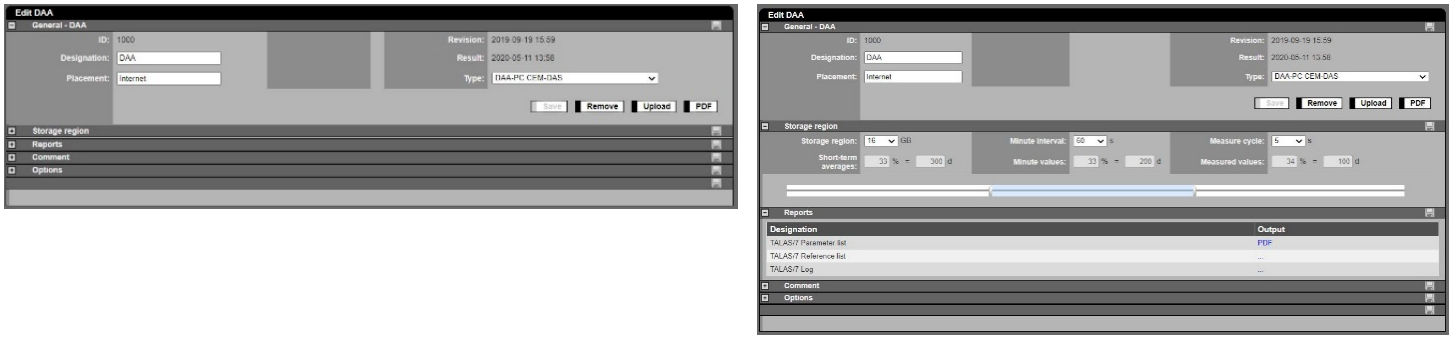


Figure 3: Show and hide monitor areas

Lettering	Explanation
⊞ / ⊟	By click the hidden area will be shown/hidden
💾	By click the complete page will be stored. This function equals the function of the button **Save**

2.4 Selections

Often a selection from all entities is made, e.g. to create a list or for graphic display. In a window on the left all entities are listed (Figure 4). From these a subset can be selected by mouse click, resorted and transferred to the right window by drag and drop. This selection can be stored under a significant name.

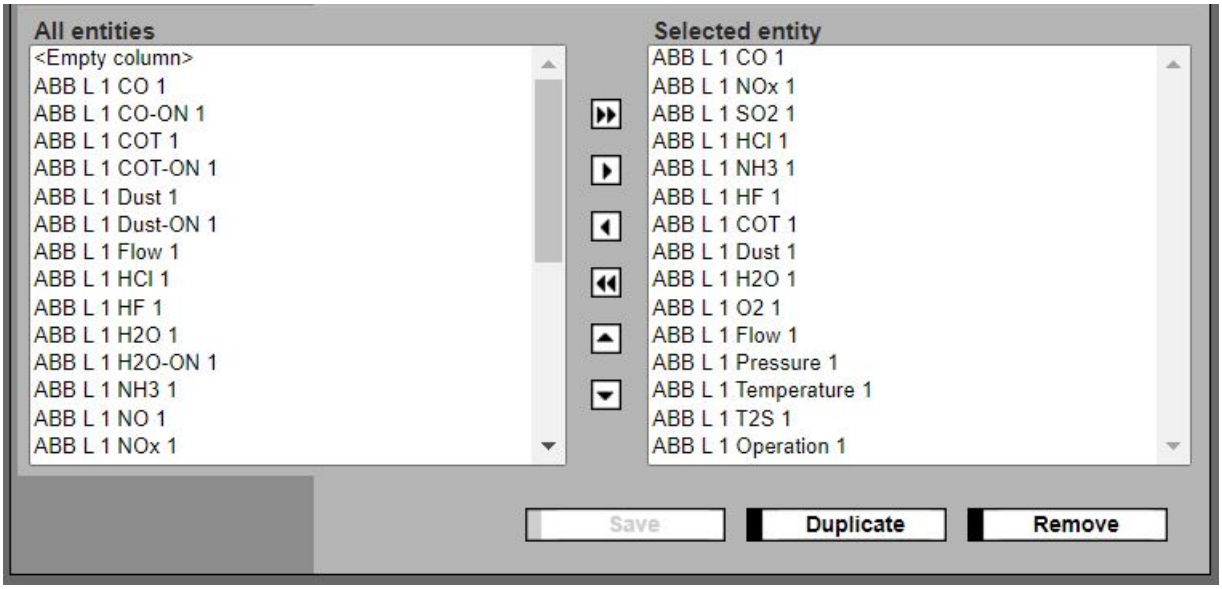


Figure 4: Entity selection

Lettering	Explanation
All entities	All available entities
⏩	Addition of all entities,
▶	Addition of selected entities,
◀	Deletion of marked entities,
⏪	deletion of all entities,
▲	Dragging marked entities up,
▼	Dragging marked entities down
Selected entities	Selected entities from all available entities. These can be named with a significant name.

2.5 Input field

Blue highlighted fields are input positions that can be displayed and changed at several places in the program.

3 CEM-DAS start

The program is started via Web Browser, e.g. the Internet Explorer. In the address line the address of the server on which CEM-DAS is installed including the context “emission” must be filled in (http://<Servername>/emission). Then the CEM-DAS registration page will show:

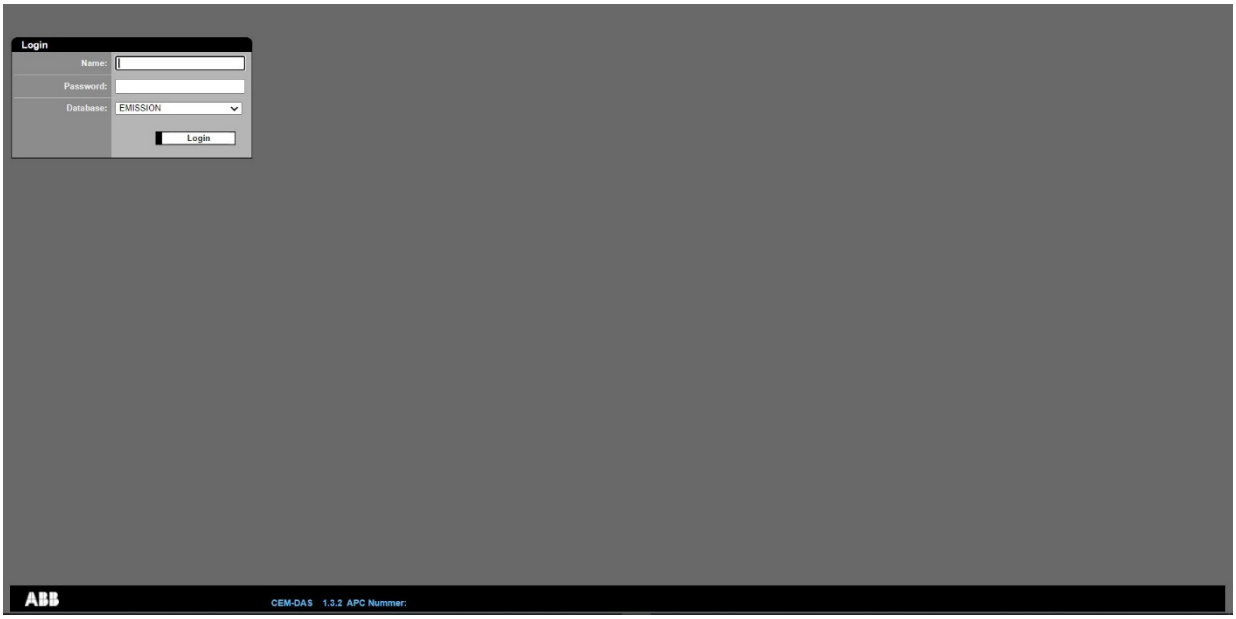


Figure 5: Log into CEM-DAS

Lettering	Explanation
Name	User name which is defined in the menu “administration/user“ and belongs either to user group ”Manager“ or “User“
Password	Password, which is defined and later changed by the user in the menu ”Administration/user“ **Note:** With the first registration a new user will be asked to change his password! The user “Manager” has the initial password “Manager” The user “User” has the initial password “User”
Database	Designation of the database, by default EMISSION
Log in	After selecting the database and entering the user name and password, you will be logged in.

4 Functions

After registration the menu with the main and sub functions for data display and administration of the system is shown:

Lettering	Explanation
Graphic	Selection of • Bar charts (see 4.1.1) • Line graph (see 4.1.2)
Output	Output of: • Value lists (see 4.2.1) • Agency log (see 4.2.2) • Messages (see 4.2.4) Selection of possibly activated special functions like: Events (connectible option, see 4.2.3) Annual mass flow[1] (connectible option, see 4.5.6) QAL3[4] (connectible option, see 4.2.5) Maintenance (connectible option, see 4.2.6) Status Monitor (connectible option, see 4.2.7)
Input	Input of messages to the agencies or just for own documentation and for manual input of average values and status (see 4.3)
Parameterization	Creates and adjusts systems, entities and selection of location and purpose
Administration	Administration of user profiles (name, password, Email, address), last login, modify password, system messages, regions, licensing, versions and active login (see 0)
Logout	Quit CEM-DAS

The menu items **Graphic**, **Output** and **Input** are arranged in the daily work with the program whereas the items in **Configuration** and **Administration** are mainly for system administrators.

[1] This option is not included in the scope of the TÜV test in accordance with the "Bundeseinheitlicher Richtlinie“ /4/

4.1 Graphic

4.1.1 Bar

4.1.1.1 Form “Bars”

Bar charts are appropriate for online emission monitoring, e.g. in a measuring control room. This graphic shows the values within the measuring range as bars while their length is proportional to the value. If the values exceed or fall below the limits (calibration limits or other limits) it will be shown by color conversion. The status of the values (minute values, preview averages, short-term averages, daily average values), the operating state of the plant and the transmission path for the data is also indicated. The compilation of the entities can be adjusted according to the needs of the user groups and other individual rights.

Figure 6: Form "Bar" 1, Minute value

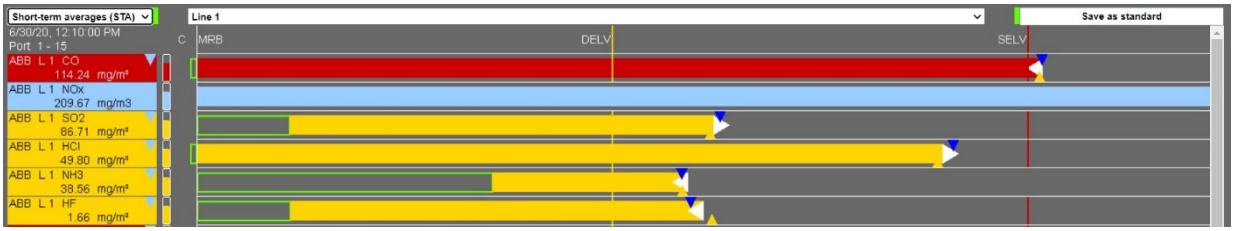


Figure 7: Form "Bar" 2, Preview average

Figure 8: Form "Bar" 3, Daily average

In this form the measured values of the chosen selection are presented as a DAA-Controller bar graphic. The quantities are shown as bars, where exceedings of calibration ranges and limits, which are important for emission monitoring, are shown by color conversion. Particular important is the display of trends and of allowance limits.
In the diagram the measures are shown in relation to the measuring range limit and the limit values. The bars start at the lower limit of the physical measuring range (MRB) and end at the upper limit of the physical measuring range (MRT). For pollutants the length of the bar is proportional to the measured values in the intervals [MRB, DELV], [DELV, SELV] and [SELV, MRT] and for non-pollutants in the interval [MRB, MRT]. For the inverse temperature, the scaling in the intervals [MRB, SELV] and [SELV, MRT] occurs inversely with the short-term emission limit value (SELV). The color conversion happens here with falling under SELV.
Between the bars blank lines for text can be shown. To vary the height of the bars different fonts and variable character fonts can be chosen. In one picture several bar graphics can be displayed, but the recommended practice are two columns, depending on character font and number of entities. The entities of both graphics must belong to one selection.
A sign of life is on the left and on the right side in the headline of the bar chart. An executable graphic in the browser is indicated by a moving sign of life. The colors of the sign of life report green, yellow or red: data ok, no data from or no connection to CEM-DAS.

4.1.1.2 Elements of a bar

The following diagram shows the formal structure of a bar graph:

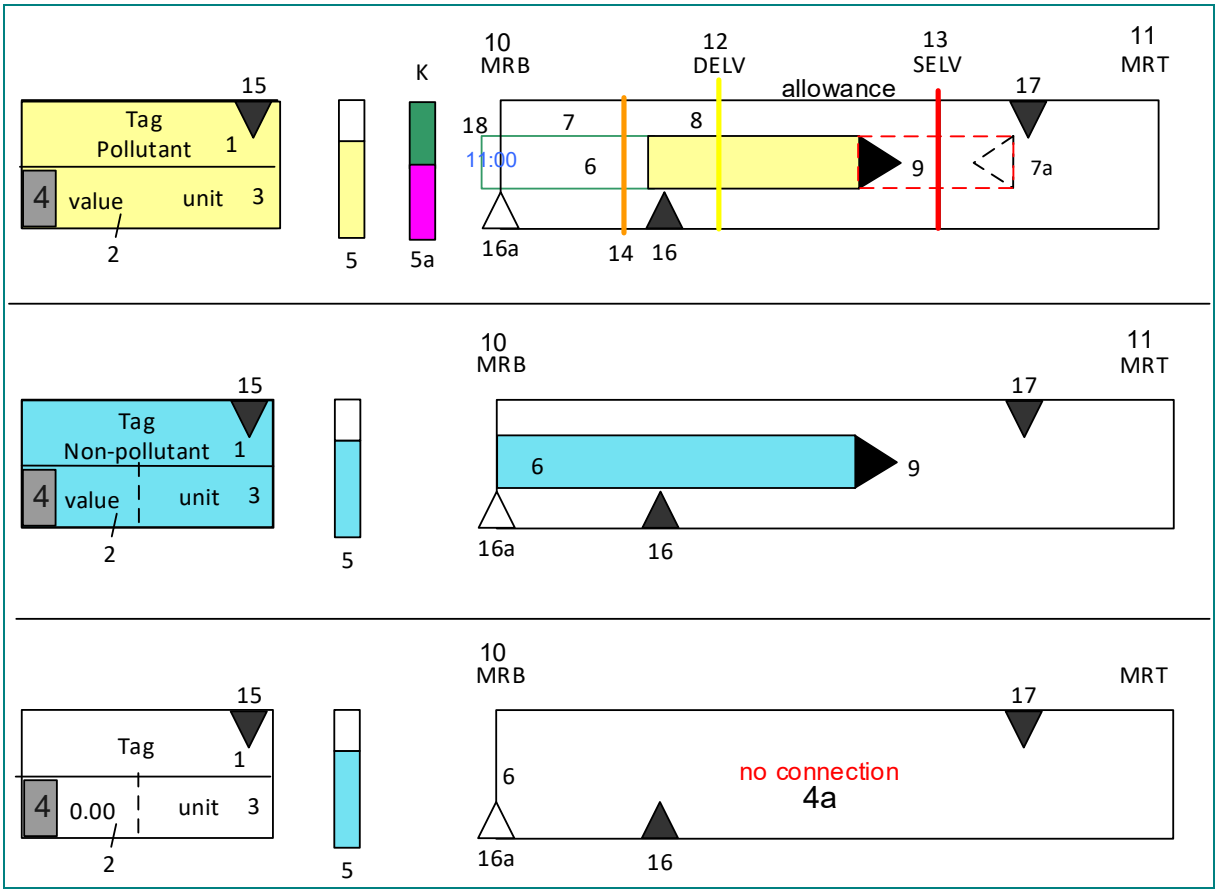


Figure 9: Construction of a bar in the form ‚Bar'

The resolution (number of pixel per measuring interval) depends on the size of the limit values DELV and SELV.

Explanation for the bar construction		
No	**Meaning**	
1	designation of entity according to parameterization	
2	Physical value of entity	
3	Physical unit according to parameterization	
4	Status display for valid values	
	Identifier on blue ground	Standardization with substitute value
	Identifier on blue ground	Outage of a cleaning unit GPU (FGD, DENOx, ...)
	Identifier on blue ground	Start-up operation or shut-down operation of the plant
	Identifier on blue ground	Start-up or shut-down of the plant
	Identifier on blue ground	No monitoring of the plant
	Identifier on blue ground	Plant out of order
	Identifier on blue ground	Entity violates the upper limit of calibration
	Identifier on blue ground	DAA-Controller in test, inspection or simulation mode
No	**Meaning**	
4a	Status text instead of a bar for invalid values, e.g. "no measured values", "invalid", "implausible"	
	Message	Explanation
	GPU outage	Outage of gas purification facility
	Non assessment	The DAA-Controller digital input "non assessment" is activated
	Preliminary	The calculated entity has not processed all data, e.g. because a DAA-Controller could not deliver any values

Explanation for the bar construction		
	No calculation	The calculated entity has not processed any data because values are missing
	FLD implausible	The DAA-Controller parameterization has an lower limit for the current of the analog input or for the scale value of a digital interface. If the limit is undershot, the first level data becomes implausible.
	Failure	The DAA-Controller digital input “Failure“ is activated
	Invalid	The validity criteria (2/3 rule) is not reached
	Maintenance	The DAA-Controller digital input “Maintenance“ is activated
	No measured values	The DAA-Controller digital input “-No measured values“ is activated (e.g. switching the measuring range the not active measuring range)
	No connection	DAA-Controller delivers no values from the entity because e.g. failure in transmission
	No monitoring	The DAA-Controller digital input “No monitoring“ is activated
	Out of order	The DAA-Controller digital input “Out of order“ is activated
	Out of firing range	The value of the firing range entity “FMS“ do not comply the firing range
	Start-up/shut-down operation	Start-up or shut-down of the plant
	Test mode	DAA-Controller works in the test, inspection or simulation mode
	Implausible	The values exceed or fall below the physical plausibility limits defined in DAA-Controller “phys. value range low / high”
	Start-up/shut-down	Start-up or shut-down of the plant
5	Status of the averaging interval. The colored area indicates the remaining time. For daily average (DAV) and prediction DAV: time of day.	
5a	Graphic display of the classification of the calibration surveillance (K or K1, see 4.1.1.4 Calibration monitoring) Upper half portion: Amount of weeks with calibration violence	
	Lower half portion: percentage of calibration violence per valid short-term averages of the current week	
6	Short 'frame' to left, if the allowance limit (see below) ≤ 0.	
7	Display of exemption limit for MIV, PA and DAV. Open frame in green color. The allowance limit is smaller than the current value.	
7a	Same as 7, allowance limit > current value.	
8	Current value as a filled bar.	
9	Trend display: only if new value ≠ the previous value, the display shows a black triangle with its tip in direction of the trend.	
10	MRB: measuring range bottom = phys. value range low	
11	MRT: measuring range top = phys. value range up	
12	DELV: Fixed mark for the daily emission limit value in yellow color. For all pollutants except with inverse classification.	
13	SELV: fixed mark for the short-term emission limit value of a pollutant in red color. The 13. BImSchV und TA- Luft often speak of double limit. SELV(B): fixed mark for limit SELV(B) in grey color.	
14	Variable mark of the upper limit of calibration; when this limit is exceeded, a change of color (from green to orange) occurs. If the upper limit of the calibration is greater than the daily emission limit value (DELV), no color change occurs when the upper limit is exceeded.	
15	Characterizes the data type: ▼ Minute value ▼ Preview averages (PA) ▼ Short-term averages (STA) ▼ Daily averages (DAV) ▼ Prediction STA ▼ Prediction DAV ◆ Daily sum	
16	Value for displayed data type according to 15. With this kind of display it’s e.g. possible to show the readings of the PA and the STA besides the MIV bar. A maximum of two triangles below the bar are possible.	
16a	The same as 16. If the value is invalid the display shows an empty triangle.	
17	The same as 16. Maximum two triangles can be defined.	
18	For the daily average value (DAV): the number of valid STA in **hours:minutes**; this enables verification of the 6h-rule for the DAV.	

The bars change color depending on which parameters are displayed and in regard to the limits. The following part shows possible features of the bars. If there is no valid value an open frame in the a. m. colors will be displayed.

4.1.1.3 Change of color for pollutant bars

Depending on the kind of entity the bars change color to show clearly the change of values between the lower measuring range (MRB) and the higher measuring range (MRT) of the calibration upper limit (CAL) and the limit values (DELV and SELV).

MRB	CAL	DELV	SELV	MRT
T_{NBK} (invers)	DAV			DAV
	MIV,PA,STA			MIV,PA,STA
SAG, SMG (invers)	DAV < 6h[1]		DAV	
	DAV ≥ 6h		DAV	
	MIV,PA,STA		MIV,PA,STA	
SELV not available	DAV		DAV < 6h[1]	
	DAV		DAV ≥ 6h	
	MIV,PA,STA	MIV,PA,STA	MIV,PA,STA	
DELV not available	DAV			DAV
	MIV,PA,STA	MIV,PA,STA		MIV,PA,STA
DELV and SELV available	DAV		DAV < 6h[1]	
	DAV		DAV ≥ 6h	
	MIV,PA,STA	MIV,PA,STA	MIV,PA,STA	MIV,PA,STA
DELV = SELV available	DAV			DAV < 6h
	DAV			DAV ≥ 6h
	MIV,PA,STA	MIV,PA,STA		MIV,PA,STA
Non-pollutant	DAV			
	MIV,PA,STA			

Figure 10: Change of color for pollutant bars

If the upper limit of calibration (CAL) is larger than the daily emission limit value (DELV) or the short-term emission limit (SELV) no change of color will occur. SELV is used in case DELV is not available.

4.1.1.4 Calibration monitoring

For entities with calibration monitoring the upper limit of calibration will be shown as an orange colored line. A validated value is shown as bar, so the calibration upper limit is reduced by the uncertainty. After the remaining time the status of calibration monitoring is displayed as a split rectangle. The upper part shows in color the amount of weeks in which more than 5 % of the values exceeded the upper calibration range. The lower part shows in color the percentage of the exceedings during the present week (Monday to Sunday).

color	Upper part – amount of weeks	Lower part – present week
green	0 or 1 week	< 2.5%
yellow	2 or 3 weeks	< 5%
orange	4 weeks	< 30%
magenta	5 weeks	< 40%
red	> 5 weeks	> 40%

[1] For daily average values the amount of existing valid short-term averages is shown in **hours: minutes** in blue color between the lettering/remaining time and the bar (also see Figure 9). This enables verification of the 6h-rule for the DAV.

4.1.1.5 Abbreviations in the bar graphic

Term	Explanation
MRB	measuring range bottom
MBT	measuring range top
Minute value (MIV)	Physical value averaged over minute interval.
Preview average (PA)	Current, since start of averaging time averaged physical value.
Short-term average (STA)	Physical value averaged over the last averaging time.
Daily average value (DAV)	Current physical value, averaged since midnight (0:00).
Daily sum (DS)	Current physical value, accumulated since midnight (0:00)
Allowance for limit Values	For a valid minute value (or preview average, short-term average) an allowance is displayed by an open green frame. The allowance for the minute value shows the maximum value for the remaining minute values within the averaging time in order to keep the short-term average (STA) below or equal to the daily emission limit (DELV, orange line). For entities without a DELV the short-term emission limit value (SELV) is used instead. The allowance for preview average and the short-term average show the maximum value for all other short-term averages for the day, so that at the end of the day the daily average value equals the daily emission limit value. This allowance can grow up to the short-term emission limit value (red line).
Allowance for the calibration range	The allowance for a valid minute value is shown by an open orange colored frame. The allowance for a minute value (MIV) shows the maximum value for all other minute values during the averaging time, so that the short-term average at the end of the averaging time equals the upper limit of calibration (orange line). This allowance is not activated as standard and must be activated for each user´s settings. The allowance will only be displayed if the upper limit of calibration is smaller or equal to daily emission limit value. Entities which have no daily emission limit value will be examined for the short-term emission limit value. If the current value is larger than the daily emission limit value (or short-term emission limit value) the program switches automatically to allowance for limit values (see above).

4.1.1.6 Displayed values

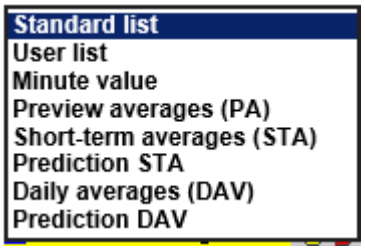


Figure 11: Selection of displayed values in a bar graphic

The user can choose from the following displays:

1. Standard list. This list can only be changed by ‚Managers' and is exactly as configurable as the user menu. With a left mouse click the editing menu shows if only the menu point "display values" is activated. For editing click on the button "editing". After that all functions of the menu are activated.

2. User list, in which a value for each bar can be chosen. With this display the minute values and the short-term averages can be displayed at the same time. The order of entities can be freely selected.

   - The selection Minute value displays all entities as minute values according to the selected order
   - The selection Preview averages (PA) all entities in the selection are displayed as preview averages according to the selected order
   - The selection Short-term averages (STA) all entities in the selection are displayed as short-term averages according to the selected order
   - The selection Prediction STA all entities in the selection will be displayed as a forecast of the short-term averages according to the selected order
   - The selection Daily averages (DAV) all entities in the selection will be displayed as daily average values according to the selected order
   - The selection Prediction DAV all entities in the selection will be displayed as a forecast of the daily average values (DAV) according to the selected order

For each bar an individual value from the list above can be assigned. The kind of value is shown by a colored tab right next to the designation of the entity. Additionally up to four values of the entity can be displayed as tabs in the field of the measured value bar. The amount of bars is only limited by readability of the alpha numeric lettering. The bars however must belong to the entities of a selection.

4.1.1.7 Context menu

The adaption of the graphic to the needs of the user is made with the context menu.
A click on the left mouse button opens the context menu.

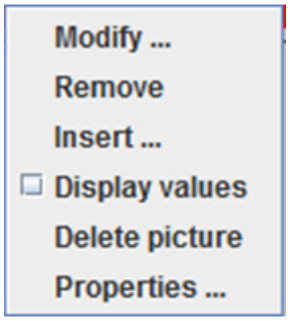
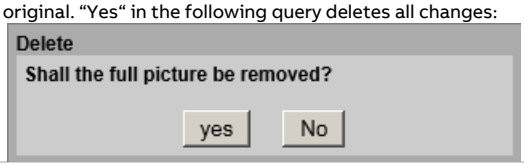


Figure 12: Context menu

Lettering	Explanation
Change...	Changing an existing bar or an existing blank line (see 4.1.1.9)
Remove	Deletes a bar or a blank line at the position of the cursor
Insert	A bar or a blank line is inserted in the graphic before the position of the marked bar (see 4.1.1.9)
☐ Display value	Show/hide numerical values of the following plants: measuring range, limit values and allowances (for pollutants)
Delete picture	The bars which were inserted or changed with the function “Change“ can be deleted and the display will be set back to original. “Yes“ in the following query deletes all changes: 
Properties...	See explanation dialogue properties. (see 4.1.1.8)

4.1.1.8 Dialogue Properties

In the dialogue properties the bar diagram can be changed user-specifically.

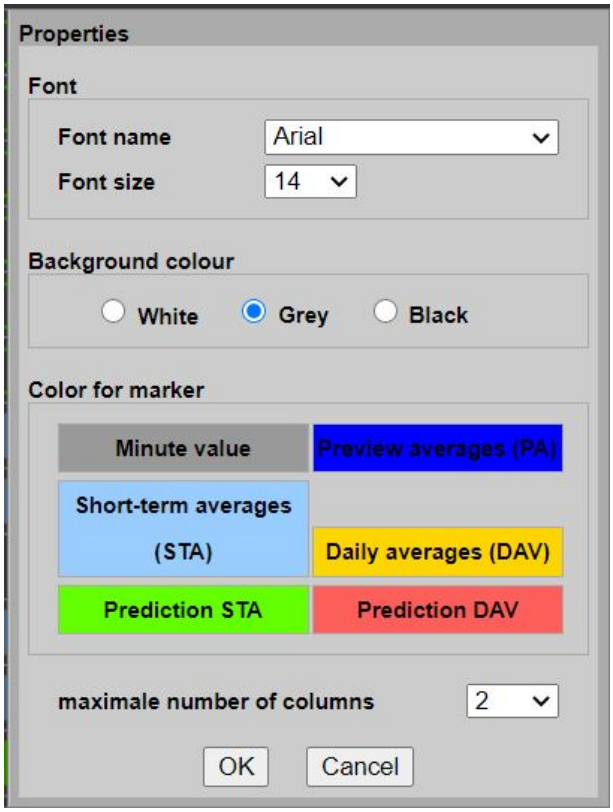


Figure 13: Dialogue Properties

Lettering	Explanation
Font name	Text font setting
Font size	Font size setting
Background color	Selection of background color: white, grey or black
Color for marker	Selection of color for the respective tab by click on the button with the lettering
Maximum number of columns	Maximum number of columns which can be used, in case not all entities can be shown in one column
OK	Accept selected values
Cancel	End without adopting the changes

4.1.1.9 Dialogue Modify

In the dialogue “modify“ the display of an existing entity or a blank line can be edited.

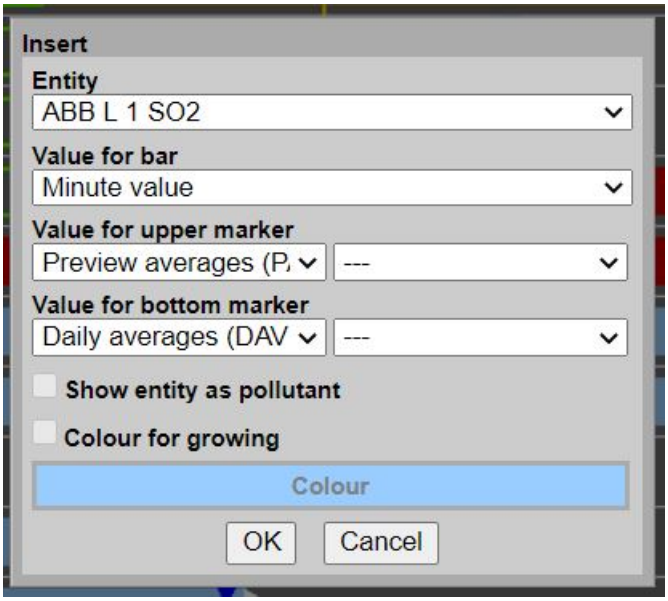


Figure 14: Dialogue change

Lettering	Explanation
Entity	Designation of the entity which is to be changed
Value for bar	Assigning a kind of data to the measured value bar
Value for upper marker	Assigning a kind of data to maximum two upper tabs
Value for bottom marker	Assigning a kind of data to maximum two lower tabs
Show entity as pollutant	Entities of non-pollutants can be displayed with a color conversion like pollutants
Color of growing	Color of sums change into the selected color if the value increase from one cycle count to the next
OK	Adopt selected value
cancel	End without adopting the changes

The following data types are available:

- Minute value
- Preview averages (PA)
- Short-term averages (STA)
- Prediction STA
- Daily averages (DAV)
- Prediction DAV
- Daily sum *(not as tab)*

For daily sums no tabs can be chosen because the daily sums use other entities. For daily sums the parameterized entities and the limits are scaled up with the amount of short-term averages.

4.1.1.10 Allowance

4.1.1.10.1 Minute value

In order to understand the allowances of the standardized pollutant concentrations, which are important for operation, one must look at the requirements of the 13th and 17th BImSchV/TA-Luft. These do not consider the present values but the short-term averages (STA) and daily average values (DAV) of the standardized pollution concentrations.
For operation of the monitored plant for each pollutant CEM-DAS continuously calculates an admissible value (allowance) of concentration under consideration of the official daily emission limit value. To find the allowance rates DAA-Controller calculates a preview average (PA) cyclic according to the timing cycle of the minute value (MIV).
PA is calculated from the range of the standardized pollutant concentration divided by the elapsed time t. If the standardized pollutant concentration was predominately below the daily emission limit value (DELV) the PA also was smaller than the DELV. In this case it is allowed that the pollutant concentration exceeds the limit by a certain amount during the remaining time until end of averaging time without STA exceeding the short-term emission limit value. This allowance changes dynamically. The allowance is calculated cyclically and is displayed in the bar diagram for the minute value. The allowance is not calculated for entities with inverse classification or for entities with invalid preview average (PA).
In the CEM-DAS form “user rights” it can be entered which limit value (DELV or SELV) shall be used for calculating the limit of the minute value. DELV should be used as standard to ensure the daily average values.

4.1.1.10.2 Preview average (PA)

Allowances for the preview average (PA) are also calculated by CEM-DAS. These allowances show the maximum allowed values of the short-term averages for the remaining day time so that the daily average value (DAV) will be smaller than the limit (DELV). The allowances are not calculated for entities with inverse classification and for entities without daily emission limit values.

4.1.1.11 Prediction

4.1.1.11.1 Short-term average

Based on the current preview average and the current minute value the forecast for the next short-term average is made, assuming that for the remaining averaging time all minute values equal the current minute value.

4.1.1.11.2 Daily average value

Based on the current daily average value and the current preview average the forecast for the daily average value is calculated, assuming that for the remaining day time all short-term averages equal the current preview average.

4.1.2 Lines

4.1.2.1 Form “Lines”

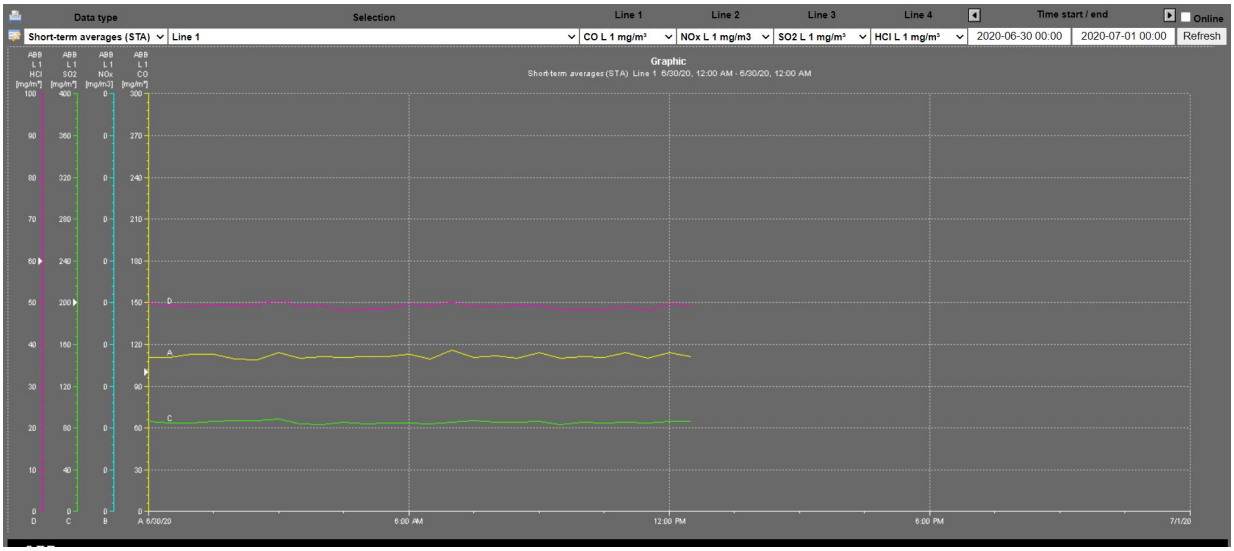


Figure 15: Form lines

This form shows the line diagram according to the settings. By click on the left mouse button a position line (red) can be set within the line area. This shows the values and the status on that particular point of time. The labelling is the same as in the report ‚list of values'. Invalid values are not displayed and cause a blank in the curve.

Keeping the left mouse button pressed a data range can be selected which will be zoomed. The right mouse button opens the context menu in which it is possible to place comments in the display. Comments will not be stored but can be printed in the current print out. This option is enabled only in Java graphic.

Lettering	Explanation
Data type	Selection of data (first level data, measured values, minute value, short-term averages (STA), daily averages (DAV))
Selection	Selection of pre-defined entities
Line 1 … 4	The entities of selection are displayed in these comboboxes. The entities of the selection are shown if mouse cursor is moved in this range.
Time start / end	Input for start and end time of the lines. A selection of a time periods is shown if mouse cursor is moved in this range.
Online	Option for online graphic. This option is available if a time period is selected.
Refresh	Refresh display
	This button takes you to the dialogue modify
	Output of line diagram in PDF format.

4.1.2.2 Dialogue selection

In this dialogue you select the entities and the period for the display.

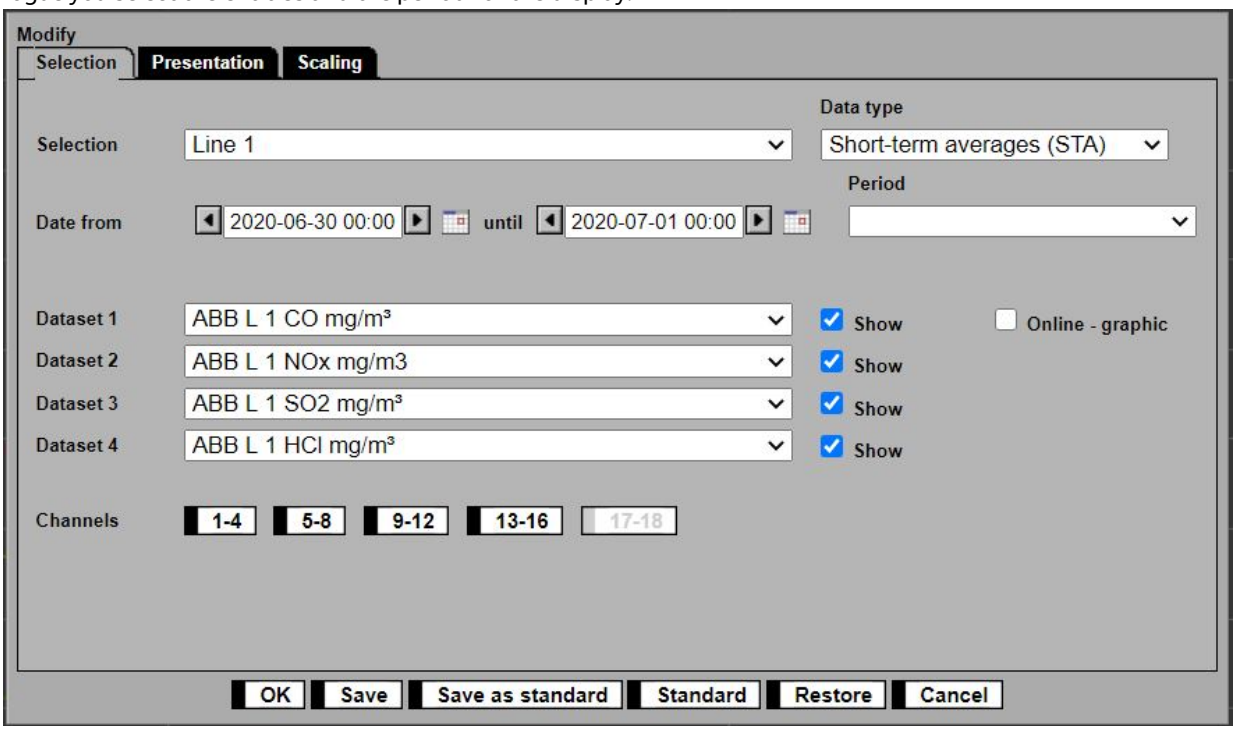


Figure 16: Dialogue Selection

Lettering	Explanation
Tab Selection	Select the dialogue Selection (see 4.1.2.2)
Tab Presentation	Select the dialogue display (see 4.1.2.3)
Tab Scaling	Select the dialogue scaling (see 4.1.2.4)
Selection	Select from the selection given in the form Selection. The included entities are available in the data series 1...4.
Data type	Select the time base of the presented data (first level data, measured values, minute value, short-term averages (STA), daily averages (DAV))
Date from ... until ...	Input of start and end time of the presented data (in this case the standard time period will be deleted). If the time period is for a whole month from the fist to the last day (24:00 h for short-term averages) is selected a normalized output with a time axis of 32 days will be made. This output only takes place if the scaling of the time axis is set on automatic. The origin of the time axis always is the first day of a month. The 32 days are divided in four sections with 8 days each. The output of the values is performed only until last day of the month.

Lettering	Explanation
Period	The following preset time period for presentation can be selected:

Data type	period
First level data, 24 Minuten current graphic	12 minutes 24 minutes 40 minutes
Measured values, current graphic	12 minutes 24 minutes 40 minutes
Minute values, current graphic	1 hour 4 hours 6 hours
Short-term averages current graphic	1 day 2 days 3 days 5 days
Daily averages current graphic	6 weeks 6 months 12 months

Data series 1 .. 4	In this combination field the entities who´s data shall be displayed can be selected from the previous chosen ‚Selection'.
Show	Show/hide a data series
Online - graphic	With this button you can decide if a graphic should be updated constantly. This option is only available if a time period was set.
channels	Select four consecutive ports from the ‚Selection' for display.
OK	The button OK updates the display according to the previous settings
Save	The button Save all changes made will be saved
Save as standard	If a ‚manager' uses this button the settings will be saved as standard and can be selected from all users
Standard	Shows all standard settings
Restore	Sets back the changes made
Cancel	With the button Cancel you leave the form without saving the changes

4.1.2.3 Dialogue Presentation

In this dialogue you can adjust the display for the graphic. The buttons and tabs in the dialogue were already explained in 4.1.2.2.

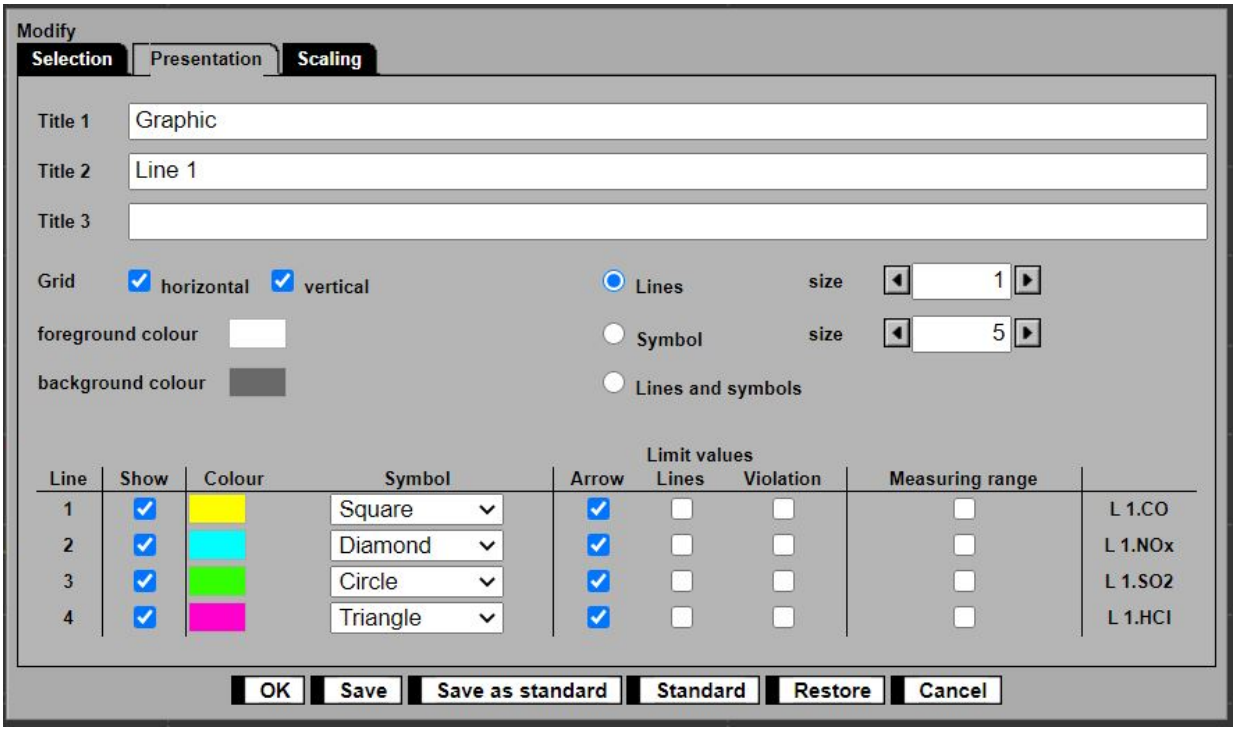
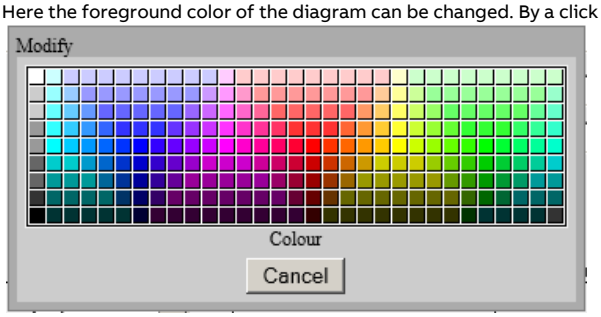


Figure 17: Dialogue Display

Lettering	Explanation
Title 1 ... 3	Enter the diagram title. As default the program uses “Graphic“ as title 1 and the designation of the selection as title 2. Title 3 can be chosen freely. The format of the text cannot be changed.
Grid ☐ horizontal or ☐ vertical	Here can the horizontal and vertical grid lines show/hide can be switched on or off independently from each other.
Color	Select a color for each line
Symbol	Select a symbol for each line
Limit values	Select the kind of display for the lines of limit values: **Arrows:** The limit values are shown as arrows on the y-axis **Line:** In the diagram the limit values are shown as line **Violence:** If the limit value is exceeded the line has double thickness.
Lines	Display of the lines as continuous lines and the selected thickness of the lines.
Symbol	Display of the lines as single symbols and the selected size of the symbols.
Lines und Symbols	Display of the curve by symbols connected with a line

Lettering	Explanation
Foreground color	Here the foreground color of the diagram can be changed. By a click on the symbol the color selection opens: 
Background color	Here the background color of the diagram can be changed. By a click on the symbol the color selection opens.
Table: Line, Show, Colour, Symbol, Limit, Range	For each of the maximum 4 lines the kind of display and additional information to limit values (arrows on the ordinate, continuous line parallel to the abscissa and bold presentation for limit value violation) and the measuring range as a horizontal line can be presented. The selection is made with selection fields, combination field or with color selection fields (see above). In the last column the plant designation and the entity short designation of the chosen line is displayed.

4.1.2.4 Dialogue Scaling

In this form the display of the graphic can be adjusted. The buttons and tabs on the bottom of the dialogue were already explained in 4.1.2.2.

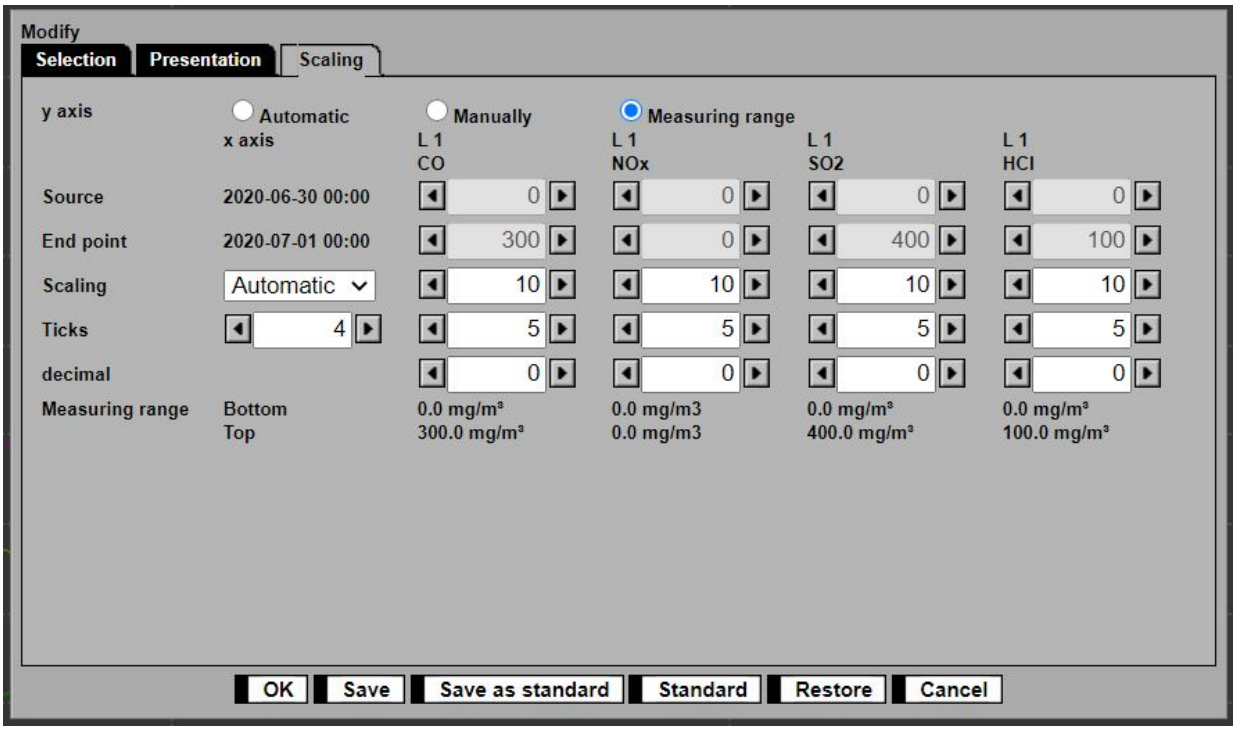


Figure 18: Dialogue “Scaling”

Lettering	Explanation
y-axis	Here you can chose the mode of scaling the y-axes: **Automatic:** The scaling is based on the range of values occurring in the diagram **Manual:** You can chose any scaling you like **Range:** The scaling is based on the measuring range of the entities. The ranges are displayed in the form
x-axis	Plant and entity designation
Source	Here the start point of the display ranges are displayed
End point	Here the end point of the display ranges are displayed
Scaling	Number of time subdivisions of the display area (basic grid)
Ticks	Here you can specify the number of subdivisions between two values of the scale gradation (grid)
decimal	For the description of the y-axis specify the decimal places after the decimal point
Measuring range Bottom / Top	Displays the measuring ranges for the entities

4.1.3 Graphic help “?“

This button gives detailed help functions for interpretation of the graphic display.

4.2 Output

4.2.1 Value list

Via the menu “List of values” lists of values of user definable data types (averaging periods) and periods can be displayed and printed as well as configurable overview reports.Optionally all values or only limit value violations can be displayed.

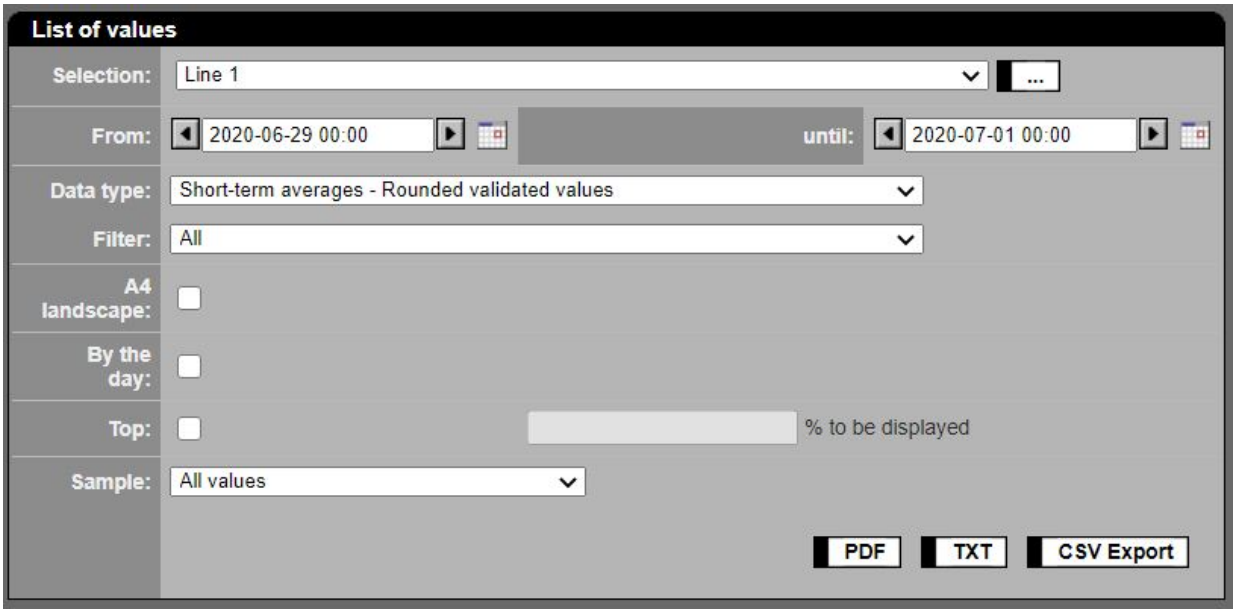


Figure 19: Selection of entities for value list

Lettering		Explanation
Value list		
Selection		Displays a grouping of any selected entities
...		With this button the function for parameterising the selections is activated
From:	until:	Time period from which the values for the report are selected. The input can be made directly by entering date and time or by the button DateTime Picker. (Figure 2). With the buttons, you can scroll the days back and forth.
Data type		First level data (current, scale value): Over 5 seconds averaged input current in mA or a scale value of a digital interface. Measured values – calibrated value: physical value calculated from input value or a value of a calculated entity. DAA-Controller delivers a measured value and additionally a current / scale value for all entities with an analog input / digital interface. The availability of values from the past can be limited. The memory depth depends on the parameterization. Minute value – validated values: Mostly normalized and validated values averaged over 60s or 30s (l. DAA-Controller parameter). Short-term average – rounded validated: The validated value of the entity rounded up to the limit value/final measuring range value according to item 2.9 TA Luft. Short-term average – validated values: values averaged over the averaging time and if necessary standardized and validated. The output uses the parameter FORMAT for the number of decimal places and rounds up to the last decimal place shown. Short-term average – O2 standardized values: values standardized and averaged over the averaging time. This value is used to monitor the QAL2 calibration range. Short-term average – calibrated value: non-standardized and non-validated physical values averaged over the averaging time. Short-term average – classification of validated values: display of the classes to which the final values have been classified. For invalid values the status will be displayed. For valid values the final value will be displayed (rounded if necessary). Short-term average – Mass flow: mass flow (see page 39) The following values are not rounded. Daily values (daily sum or roll. 30-days average or daily average): daily sum or rolling average over 30 days or daily average, depending on parameterization Daily average: always presentation of daily averages. Entities which form daily sum also have a daily average. Daily balance (daily mass flow or daily sum): daily mass or daily sum, depending on parameterization

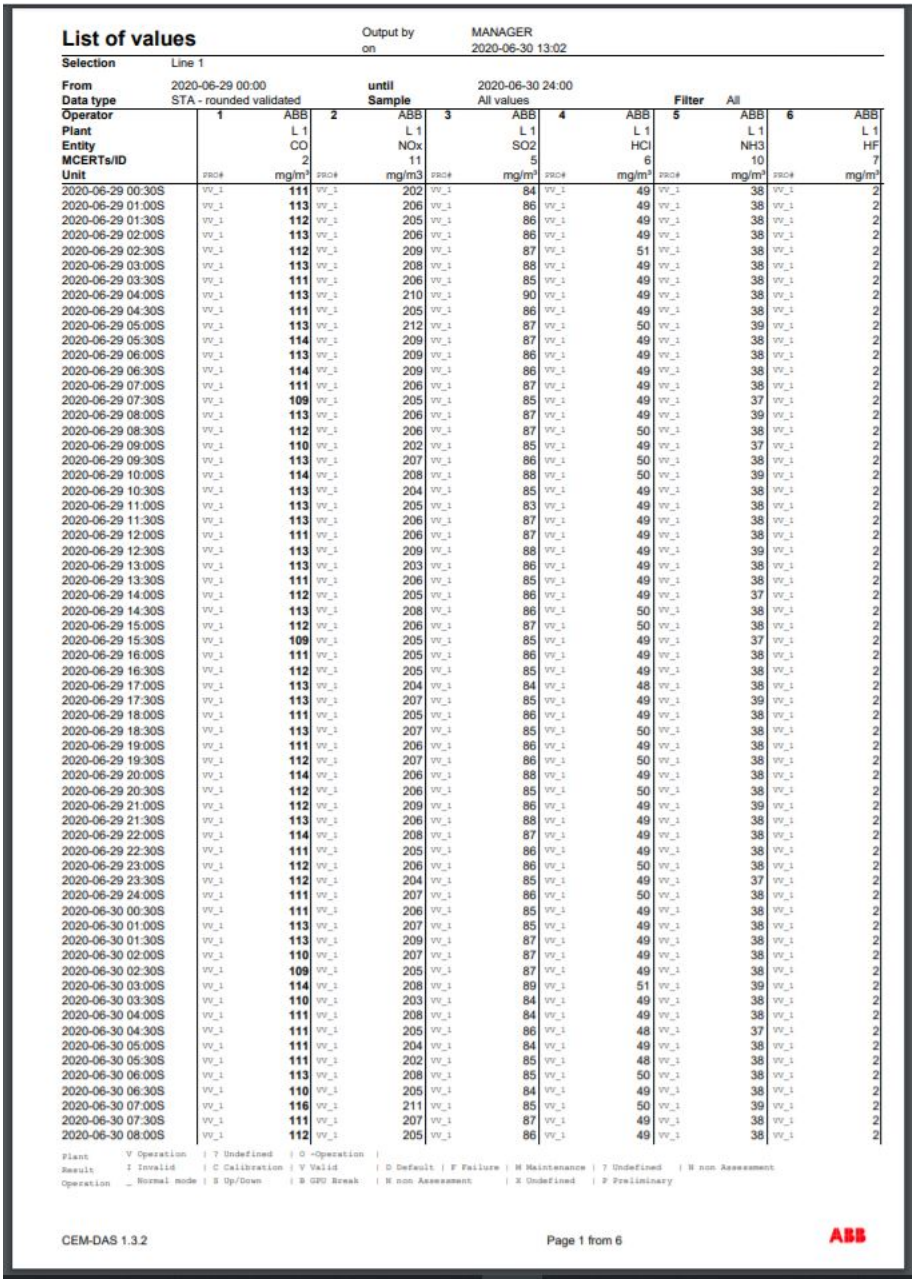
Lettering	Explanation
	Monthly values (monthly sum or monthly average): monthly sum or monthly average, depending on parameterization Monthly average: always presentation of monthly averages. Entities which form daily sum also have a monthly average. Monthly balance (monthly mass flow or monthly sum): sum of the daily balances or daily sums of a month. Annual values (annual sum or annual average): annual sums or annual averages depending on parameterization Annual average: always presentation of annual averages. Entities which form annual sums also have an annual average. Annual balance (annual mass flow or annual sum): sum of daily balances or daily sums of a year
Filter	For all kinds of short-term averages (STA) the following filter can be selected: All Short-term limit violation Limit calibration Daily limit violation Normal operation Gas Pur. Unit outage Startup/shutdown or Startup/shutdown-Operation Startup/shutdown-Operation with S14 or S17 For all other values the following filter can be selected: All Limit violation
A4 landscape	Report will be printed in landscape A4 format.
By the day/month/year	Only activated for the data type short-term average, daily …, monthly … and annual …. The output is sorted by days / months / years.
Show upper %	By entering a certain percentage x only x% of the highest values will be displayed
Sample	To get a quick overview of the emission situation it is possible to show only samples to various extents. The following samples can be selected: Every 30 minutes one value Every hour one value Every 2nd hour one value Every 3rd hour one value Every 4th hour one value Every 6th hour one value Every 8th hour one value Every 12th hours one value
PDF	Output of the selected report in PDF format.
TXT	Output of the selected report in text format.
CSV - Export	Output of the selected report in CSV format. An Excel *.xls file will be created and – after confirmation – either saved as a file or – if installed – opened in Excel.

The following Figure 20 shows a pdf report for short-term averages (STA). Reports for other kind of data are presented accordingly; please note: pop-up windows must be allowed.

The display shows the limit value exceedings (short-term averages STA > short-term emission limit value, SELV) in bold letters. The contents of the list explain themselves. The status indicator for short-term averages has the format PRO#. Further explanations are found in the legend.

- P (Plant) equals the first line,
- R (Result) the second, and
- O (Operation) the third line.
- Number # is the operating mode number (OMN) according to EFÜ specification and is found in the plant parameters (see 4.4.3.8).

The legend also gives detailed explanation for the status indicators for other data types.
For measured values and minute values the status is displayed as a bit coded field (see annex 8) will be displayed.



List of values

Output by MANAGER
on 2020-06-30 13:02

Selection Line 1

From 2020-06-29 00:00 **until** 2020-06-30 24:00
Data type STA - rounded validated **Sample** All values **Filter** All

Operator	**1**	ABB	**2**	ABB	**3**	ABB	**4**	ABB	**5**	ABB	**6**	ABB
Plant		L 1		L 1		L 1		L 1		L 1		L 1
Entity		CO		NOx		SO2		HCl		NH3		HF
MCERTs/ID		2		11		5		6		10		7
Unit	PRG#	mg/m³	PRG#	mg/m3	PRG#	mg/m³	PRG#	mg/m³	PRG#	mg/m³	PRG#	mg/m³
2020-06-29 00:30S	VV_1	**111**	VV_1	202	VV_1	84	VV_1	49	VV_1	38	VV_1	2
2020-06-29 01:00S	VV_1	**113**	VV_1	206	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 01:30S	VV_1	**112**	VV_1	205	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 02:00S	VV_1	**113**	VV_1	206	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 02:30S	VV_1	**112**	VV_1	209	VV_1	87	VV_1	51	VV_1	38	VV_1	2
2020-06-29 03:00S	VV_1	**113**	VV_1	208	VV_1	88	VV_1	49	VV_1	38	VV_1	2
2020-06-29 03:30S	VV_1	**111**	VV_1	206	VV_1	85	VV_1	49	VV_1	38	VV_1	2
2020-06-29 04:00S	VV_1	**113**	VV_1	210	VV_1	90	VV_1	49	VV_1	38	VV_1	2
2020-06-29 04:30S	VV_1	**111**	VV_1	205	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 05:00S	VV_1	**113**	VV_1	212	VV_1	87	VV_1	50	VV_1	39	VV_1	2
2020-06-29 05:30S	VV_1	**114**	VV_1	209	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-29 06:00S	VV_1	**113**	VV_1	209	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 06:30S	VV_1	**114**	VV_1	209	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 07:00S	VV_1	**111**	VV_1	206	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-29 07:30S	VV_1	**109**	VV_1	205	VV_1	85	VV_1	49	VV_1	37	VV_1	2
2020-06-29 08:00S	VV_1	**113**	VV_1	206	VV_1	87	VV_1	49	VV_1	39	VV_1	2
2020-06-29 08:30S	VV_1	**112**	VV_1	206	VV_1	87	VV_1	50	VV_1	38	VV_1	2
2020-06-29 09:00S	VV_1	**110**	VV_1	202	VV_1	85	VV_1	49	VV_1	37	VV_1	2
2020-06-29 09:30S	VV_1	**113**	VV_1	207	VV_1	86	VV_1	50	VV_1	38	VV_1	2
2020-06-29 10:00S	VV_1	**114**	VV_1	208	VV_1	88	VV_1	50	VV_1	39	VV_1	2
2020-06-29 10:30S	VV_1	**113**	VV_1	204	VV_1	85	VV_1	49	VV_1	38	VV_1	2
2020-06-29 11:00S	VV_1	**113**	VV_1	205	VV_1	83	VV_1	49	VV_1	38	VV_1	2
2020-06-29 11:30S	VV_1	**113**	VV_1	206	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-29 12:00S	VV_1	**111**	VV_1	206	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-29 12:30S	VV_1	**113**	VV_1	209	VV_1	88	VV_1	49	VV_1	39	VV_1	2
2020-06-29 13:00S	VV_1	**113**	VV_1	203	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 13:30S	VV_1	**111**	VV_1	206	VV_1	85	VV_1	49	VV_1	38	VV_1	2
2020-06-29 14:00S	VV_1	**112**	VV_1	205	VV_1	86	VV_1	49	VV_1	37	VV_1	2
2020-06-29 14:30S	VV_1	**113**	VV_1	208	VV_1	86	VV_1	50	VV_1	38	VV_1	2
2020-06-29 15:00S	VV_1	**112**	VV_1	206	VV_1	87	VV_1	50	VV_1	38	VV_1	2
2020-06-29 15:30S	VV_1	**109**	VV_1	205	VV_1	85	VV_1	49	VV_1	37	VV_1	2
2020-06-29 16:00S	VV_1	**111**	VV_1	205	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 16:30S	VV_1	**112**	VV_1	205	VV_1	85	VV_1	49	VV_1	38	VV_1	2
2020-06-29 17:00S	VV_1	**113**	VV_1	204	VV_1	84	VV_1	48	VV_1	38	VV_1	2
2020-06-29 17:30S	VV_1	**113**	VV_1	207	VV_1	85	VV_1	49	VV_1	39	VV_1	2
2020-06-29 18:00S	VV_1	**111**	VV_1	205	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 18:30S	VV_1	**113**	VV_1	207	VV_1	85	VV_1	50	VV_1	38	VV_1	2
2020-06-29 19:00S	VV_1	**111**	VV_1	206	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 19:30S	VV_1	**112**	VV_1	207	VV_1	86	VV_1	50	VV_1	38	VV_1	2
2020-06-29 20:00S	VV_1	**114**	VV_1	206	VV_1	88	VV_1	49	VV_1	38	VV_1	2
2020-06-29 20:30S	VV_1	**112**	VV_1	206	VV_1	85	VV_1	50	VV_1	38	VV_1	2
2020-06-29 21:00S	VV_1	**112**	VV_1	209	VV_1	86	VV_1	49	VV_1	39	VV_1	2
2020-06-29 21:30S	VV_1	**113**	VV_1	206	VV_1	88	VV_1	49	VV_1	38	VV_1	2
2020-06-29 22:00S	VV_1	**114**	VV_1	208	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-29 22:30S	VV_1	**111**	VV_1	205	VV_1	86	VV_1	49	VV_1	38	VV_1	2
2020-06-29 23:00S	VV_1	**112**	VV_1	206	VV_1	86	VV_1	50	VV_1	38	VV_1	2
2020-06-29 23:30S	VV_1	**112**	VV_1	204	VV_1	85	VV_1	49	VV_1	37	VV_1	2
2020-06-29 24:00S	VV_1	**111**	VV_1	207	VV_1	86	VV_1	50	VV_1	38	VV_1	2
2020-06-30 00:30S	VV_1	**111**	VV_1	206	VV_1	85	VV_1	49	VV_1	38	VV_1	2
2020-06-30 01:00S	VV_1	**113**	VV_1	207	VV_1	85	VV_1	49	VV_1	38	VV_1	2
2020-06-30 01:30S	VV_1	**113**	VV_1	209	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-30 02:00S	VV_1	**110**	VV_1	207	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-30 02:30S	VV_1	**109**	VV_1	205	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-30 03:00S	VV_1	**114**	VV_1	208	VV_1	89	VV_1	51	VV_1	39	VV_1	2
2020-06-30 03:30S	VV_1	**110**	VV_1	203	VV_1	84	VV_1	49	VV_1	38	VV_1	2
2020-06-30 04:00S	VV_1	**111**	VV_1	208	VV_1	84	VV_1	49	VV_1	38	VV_1	2
2020-06-30 04:30S	VV_1	**111**	VV_1	205	VV_1	86	VV_1	48	VV_1	37	VV_1	2
2020-06-30 05:00S	VV_1	**111**	VV_1	204	VV_1	84	VV_1	49	VV_1	38	VV_1	2
2020-06-30 05:30S	VV_1	**111**	VV_1	202	VV_1	85	VV_1	48	VV_1	38	VV_1	2
2020-06-30 06:00S	VV_1	**113**	VV_1	208	VV_1	85	VV_1	50	VV_1	38	VV_1	2
2020-06-30 06:30S	VV_1	**110**	VV_1	205	VV_1	84	VV_1	49	VV_1	38	VV_1	2
2020-06-30 07:00S	VV_1	**116**	VV_1	211	VV_1	85	VV_1	50	VV_1	39	VV_1	2
2020-06-30 07:30S	VV_1	**111**	VV_1	207	VV_1	87	VV_1	49	VV_1	38	VV_1	2
2020-06-30 08:00S	VV_1	**112**	VV_1	205	VV_1	86	VV_1	49	VV_1	38	VV_1	2

Plant V Operation | ? Undefined | O =Operation |
Result I Invalid | C Calibration | V Valid | D Default | F Failure | M Maintenance | 7 Undefined | N non Assessment
Operation _ Normal mode | S Up/Down | B GPU Break | N non Assessment | X Undefined | P Preliminary

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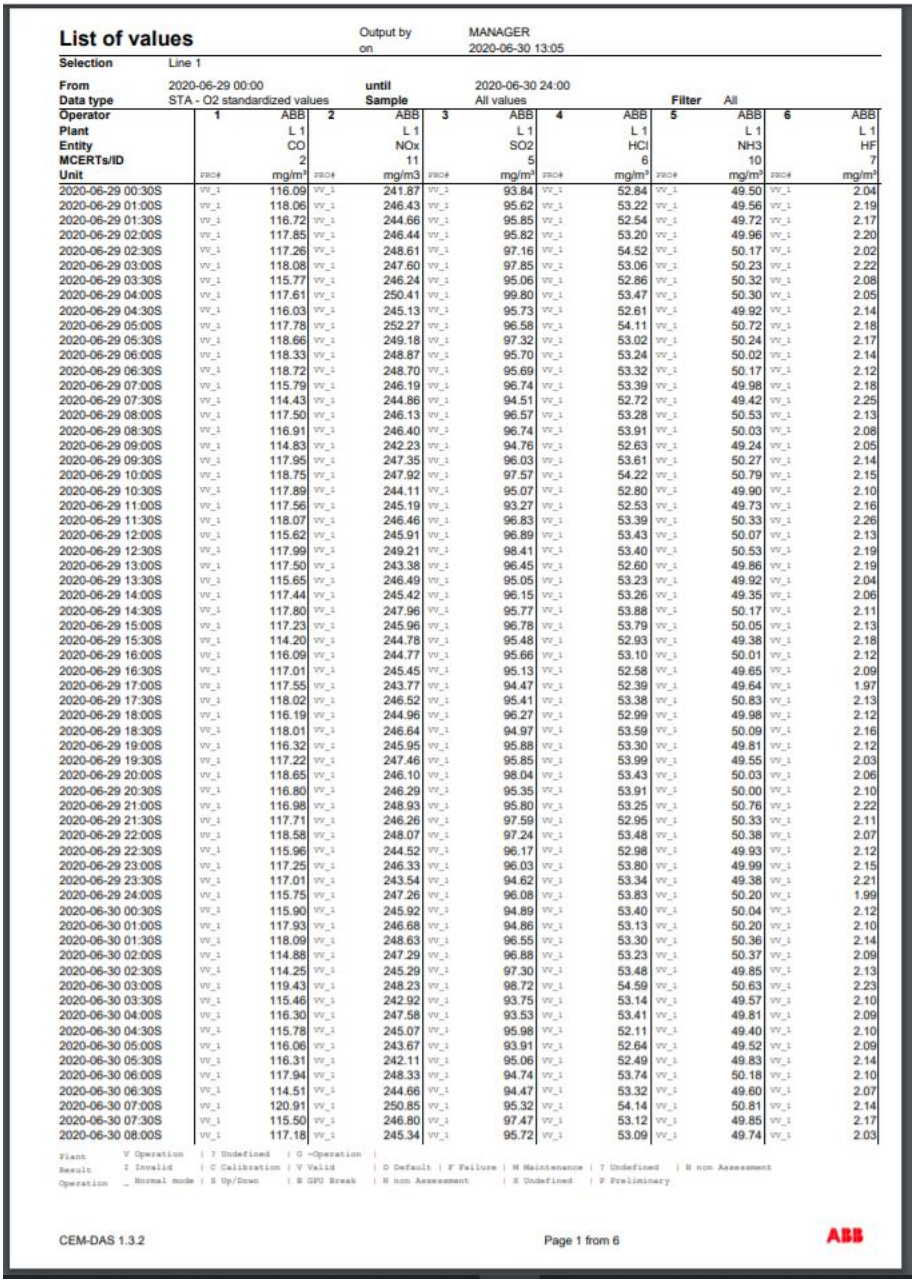
Figure 20: List of values - short-term averages

Note: Empty columns have no data, this means no data were captured e.g. because as data type current values (mA) or measured values (5s values) were chosen but the entity gets the data from a derived entity (without analog input, e.g. when switching to a different measuring range). For example if during a computer test current values or measured values shall be displayed the input entity of the tested component must be included in the selection. If these entities are not available in CEM-DAS they must be parameterized first[1].

The following figure shows the same report with activated filter “short-term limit violation”

[1] Afterwards these values will not be available. They can only be taken from the raw value files.



List of values

Output by MANAGER
on 2020-06-30 13:05

Selection Line 1

From 2020-06-29 00:00 **until** 2020-06-30 24:00
Data type STA - O2 standardized values **Sample** All values **Filter** All

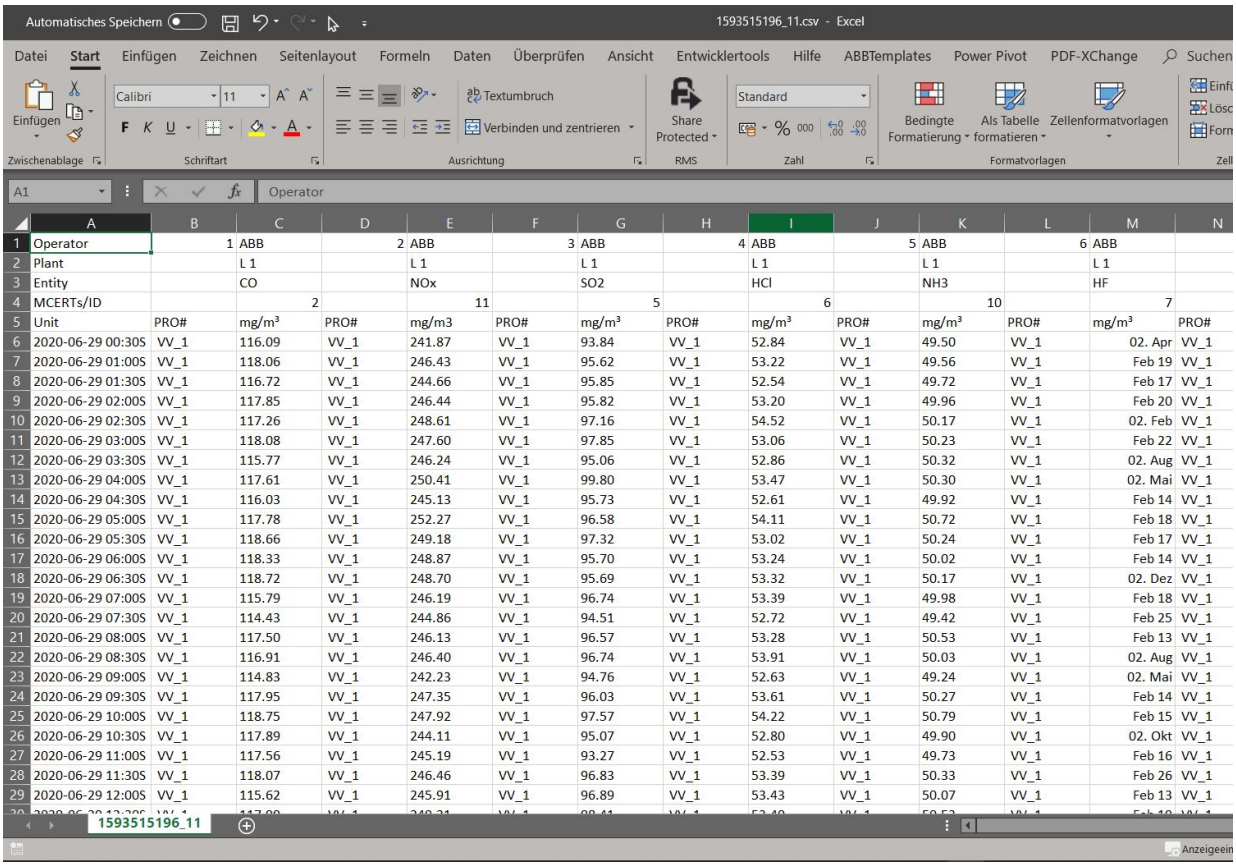
Operator	**1**	ABB	**2**	ABB	**3**	ABB	**4**	ABB	**5**	ABB	**6**	ABB
Plant		L 1		L 1		L 1		L 1		L 1		L 1
Entity		CO		NOx		SO2		HCl		NH3		HF
MCERTs/ID		2		11		5		6		10		7
Unit	PRO#	mg/m³	PRO#	mg/m3	PRO#	mg/m³	PRO#	mg/m³	PRO#	mg/m³	PRO#	mg/m³
2020-06-29 00:30S	VV_1	116.09	VV_1	241.87	VV_1	93.84	VV_1	52.84	VV_1	49.50	VV_1	2.04
2020-06-29 01:00S	VV_1	118.06	VV_1	246.43	VV_1	95.62	VV_1	53.22	VV_1	49.56	VV_1	2.19
2020-06-29 01:30S	VV_1	116.72	VV_1	244.66	VV_1	95.85	VV_1	52.54	VV_1	49.72	VV_1	2.17
2020-06-29 02:00S	VV_1	117.85	VV_1	246.44	VV_1	95.82	VV_1	53.20	VV_1	49.96	VV_1	2.20
2020-06-29 02:30S	VV_1	117.26	VV_1	248.61	VV_1	97.16	VV_1	54.52	VV_1	50.17	VV_1	2.02
2020-06-29 03:00S	VV_1	118.08	VV_1	247.60	VV_1	97.85	VV_1	53.06	VV_1	50.23	VV_1	2.22
2020-06-29 03:30S	VV_1	115.77	VV_1	246.24	VV_1	95.06	VV_1	52.86	VV_1	50.32	VV_1	2.08
2020-06-29 04:00S	VV_1	117.61	VV_1	250.41	VV_1	99.80	VV_1	53.47	VV_1	50.30	VV_1	2.05
2020-06-29 04:30S	VV_1	116.03	VV_1	245.13	VV_1	95.73	VV_1	52.61	VV_1	49.92	VV_1	2.14
2020-06-29 05:00S	VV_1	117.78	VV_1	252.27	VV_1	96.58	VV_1	54.11	VV_1	50.72	VV_1	2.18
2020-06-29 05:30S	VV_1	118.66	VV_1	249.18	VV_1	97.32	VV_1	53.02	VV_1	50.24	VV_1	2.17
2020-06-29 06:00S	VV_1	118.33	VV_1	248.87	VV_1	95.70	VV_1	53.24	VV_1	50.02	VV_1	2.14
2020-06-29 06:30S	VV_1	118.72	VV_1	248.70	VV_1	95.69	VV_1	53.32	VV_1	50.17	VV_1	2.12
2020-06-29 07:00S	VV_1	115.79	VV_1	246.19	VV_1	96.74	VV_1	53.39	VV_1	49.98	VV_1	2.18
2020-06-29 07:30S	VV_1	114.43	VV_1	244.86	VV_1	94.51	VV_1	52.72	VV_1	49.42	VV_1	2.25
2020-06-29 08:00S	VV_1	117.50	VV_1	246.13	VV_1	96.57	VV_1	53.28	VV_1	50.53	VV_1	2.13
2020-06-29 08:30S	VV_1	116.91	VV_1	246.40	VV_1	96.74	VV_1	53.91	VV_1	50.03	VV_1	2.08
2020-06-29 09:00S	VV_1	114.83	VV_1	242.23	VV_1	94.76	VV_1	52.63	VV_1	49.24	VV_1	2.05
2020-06-29 09:30S	VV_1	117.95	VV_1	247.35	VV_1	96.03	VV_1	53.61	VV_1	50.27	VV_1	2.14
2020-06-29 10:00S	VV_1	118.75	VV_1	247.92	VV_1	97.57	VV_1	54.22	VV_1	50.79	VV_1	2.15
2020-06-29 10:30S	VV_1	117.89	VV_1	244.11	VV_1	95.07	VV_1	52.80	VV_1	49.90	VV_1	2.10
2020-06-29 11:00S	VV_1	117.56	VV_1	245.19	VV_1	93.27	VV_1	52.53	VV_1	49.73	VV_1	2.16
2020-06-29 11:30S	VV_1	118.07	VV_1	246.46	VV_1	96.83	VV_1	53.39	VV_1	50.33	VV_1	2.26
2020-06-29 12:00S	VV_1	115.62	VV_1	245.91	VV_1	96.89	VV_1	53.43	VV_1	50.07	VV_1	2.13
2020-06-29 12:30S	VV_1	117.99	VV_1	249.21	VV_1	98.41	VV_1	53.40	VV_1	50.53	VV_1	2.19
2020-06-29 13:00S	VV_1	117.50	VV_1	243.38	VV_1	96.45	VV_1	52.60	VV_1	49.86	VV_1	2.19
2020-06-29 13:30S	VV_1	115.65	VV_1	246.49	VV_1	95.05	VV_1	53.23	VV_1	49.92	VV_1	2.04
2020-06-29 14:00S	VV_1	117.44	VV_1	245.42	VV_1	96.15	VV_1	53.26	VV_1	49.35	VV_1	2.06
2020-06-29 14:30S	VV_1	117.80	VV_1	247.96	VV_1	95.77	VV_1	53.88	VV_1	50.17	VV_1	2.11
2020-06-29 15:00S	VV_1	117.23	VV_1	245.96	VV_1	96.78	VV_1	53.79	VV_1	50.05	VV_1	2.13
2020-06-29 15:30S	VV_1	114.20	VV_1	244.78	VV_1	95.48	VV_1	52.93	VV_1	49.38	VV_1	2.18
2020-06-29 16:00S	VV_1	116.09	VV_1	244.77	VV_1	95.66	VV_1	53.10	VV_1	50.01	VV_1	2.12
2020-06-29 16:30S	VV_1	117.01	VV_1	245.45	VV_1	95.13	VV_1	52.58	VV_1	49.65	VV_1	2.09
2020-06-29 17:00S	VV_1	117.55	VV_1	243.77	VV_1	94.47	VV_1	52.39	VV_1	49.64	VV_1	1.97
2020-06-29 17:30S	VV_1	118.02	VV_1	246.52	VV_1	95.41	VV_1	53.38	VV_1	50.83	VV_1	2.13
2020-06-29 18:00S	VV_1	116.19	VV_1	244.96	VV_1	96.27	VV_1	52.99	VV_1	49.98	VV_1	2.12
2020-06-29 18:30S	VV_1	118.01	VV_1	246.64	VV_1	94.97	VV_1	53.59	VV_1	50.09	VV_1	2.16
2020-06-29 19:00S	VV_1	116.32	VV_1	245.95	VV_1	95.88	VV_1	53.30	VV_1	49.81	VV_1	2.12
2020-06-29 19:30S	VV_1	117.22	VV_1	247.46	VV_1	95.85	VV_1	53.99	VV_1	49.55	VV_1	2.03
2020-06-29 20:00S	VV_1	118.65	VV_1	246.10	VV_1	98.04	VV_1	53.43	VV_1	50.03	VV_1	2.06
2020-06-29 20:30S	VV_1	116.80	VV_1	246.29	VV_1	95.35	VV_1	53.91	VV_1	50.00	VV_1	2.10
2020-06-29 21:00S	VV_1	116.98	VV_1	248.93	VV_1	95.80	VV_1	53.25	VV_1	50.76	VV_1	2.22
2020-06-29 21:30S	VV_1	117.71	VV_1	246.26	VV_1	97.59	VV_1	52.95	VV_1	50.33	VV_1	2.11
2020-06-29 22:00S	VV_1	118.58	VV_1	248.07	VV_1	97.24	VV_1	53.48	VV_1	50.38	VV_1	2.07
2020-06-29 22:30S	VV_1	115.96	VV_1	244.52	VV_1	96.17	VV_1	52.98	VV_1	49.93	VV_1	2.12
2020-06-29 23:00S	VV_1	117.25	VV_1	246.33	VV_1	96.03	VV_1	53.80	VV_1	49.99	VV_1	2.15
2020-06-29 23:30S	VV_1	117.01	VV_1	243.54	VV_1	94.62	VV_1	53.34	VV_1	49.38	VV_1	2.21
2020-06-29 24:00S	VV_1	115.75	VV_1	247.26	VV_1	96.08	VV_1	53.83	VV_1	50.20	VV_1	1.99
2020-06-30 00:30S	VV_1	115.90	VV_1	245.92	VV_1	94.89	VV_1	53.40	VV_1	50.04	VV_1	2.12
2020-06-30 01:00S	VV_1	117.93	VV_1	246.68	VV_1	94.86	VV_1	53.13	VV_1	50.20	VV_1	2.10
2020-06-30 01:30S	VV_1	118.09	VV_1	248.63	VV_1	96.55	VV_1	53.30	VV_1	50.36	VV_1	2.14
2020-06-30 02:00S	VV_1	114.88	VV_1	247.29	VV_1	96.88	VV_1	53.23	VV_1	50.37	VV_1	2.09
2020-06-30 02:30S	VV_1	114.25	VV_1	245.29	VV_1	97.30	VV_1	53.48	VV_1	49.85	VV_1	2.13
2020-06-30 03:00S	VV_1	119.43	VV_1	248.23	VV_1	98.72	VV_1	54.59	VV_1	50.63	VV_1	2.23
2020-06-30 03:30S	VV_1	115.46	VV_1	242.92	VV_1	93.75	VV_1	53.14	VV_1	49.57	VV_1	2.10
2020-06-30 04:00S	VV_1	116.30	VV_1	247.58	VV_1	93.53	VV_1	53.41	VV_1	49.81	VV_1	2.09
2020-06-30 04:30S	VV_1	115.78	VV_1	245.07	VV_1	95.98	VV_1	52.11	VV_1	49.40	VV_1	2.10
2020-06-30 05:00S	VV_1	116.06	VV_1	243.67	VV_1	93.91	VV_1	52.64	VV_1	49.52	VV_1	2.09
2020-06-30 05:30S	VV_1	116.31	VV_1	242.11	VV_1	95.06	VV_1	52.49	VV_1	49.83	VV_1	2.14
2020-06-30 06:00S	VV_1	117.94	VV_1	248.33	VV_1	94.74	VV_1	53.74	VV_1	50.18	VV_1	2.10
2020-06-30 06:30S	VV_1	114.51	VV_1	244.66	VV_1	94.47	VV_1	53.32	VV_1	49.60	VV_1	2.07
2020-06-30 07:00S	VV_1	120.91	VV_1	250.85	VV_1	95.32	VV_1	54.14	VV_1	50.81	VV_1	2.14
2020-06-30 07:30S	VV_1	115.50	VV_1	246.80	VV_1	97.47	VV_1	53.12	VV_1	49.85	VV_1	2.17
2020-06-30 08:00S	VV_1	117.18	VV_1	245.34	VV_1	95.72	VV_1	53.09	VV_1	49.74	VV_1	2.03

Plant V Operation | ? Undefined | O -Operation |
Result I Invalid | C Calibration | V Valid | D Default | F Failure | M Maintenance | ? Undefined | N non Assessment
Operation _ Normal mode | S Up/Down | B GPO Break | N non Assessment | X Undefined | P Preliminary

CEM-DAS 1.3.2 Page 1 from 6 ABB

Figure 21: List of values – list of short-term limit violation

The following figure shows the result of a CSV export as an Excel file in MS Excel©:



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Operator	1	ABB	2	ABB	3	ABB	4	ABB	5	ABB	6	ABB	
2	Plant		L 1		L 1		L 1		L 1		L 1		L 1	
3	Entity		CO		NOx		SO2		HCl		NH3		HF	
4	MCERTs/ID		2		11		5		6		10		7	
5	Unit	PRO#	mg/m³	PRO#	mg/m3	PRO#	mg/m³	PRO#	mg/m³	PRO#	mg/m³	PRO#	mg/m³	PRO#
6	2020-06-29 00:30S	VV_1	116.09	VV_1	241.87	VV_1	93.84	VV_1	52.84	VV_1	49.50	VV_1	02. Apr	VV_1
7	2020-06-29 01:00S	VV_1	118.06	VV_1	246.43	VV_1	95.62	VV_1	53.22	VV_1	49.56	VV_1	Feb 19	VV_1
8	2020-06-29 01:30S	VV_1	116.72	VV_1	244.66	VV_1	95.85	VV_1	52.54	VV_1	49.72	VV_1	Feb 17	VV_1
9	2020-06-29 02:00S	VV_1	117.85	VV_1	246.44	VV_1	95.82	VV_1	53.20	VV_1	49.96	VV_1	Feb 20	VV_1
10	2020-06-29 02:30S	VV_1	117.26	VV_1	248.61	VV_1	97.16	VV_1	54.52	VV_1	50.17	VV_1	02. Feb	VV_1
11	2020-06-29 03:00S	VV_1	118.08	VV_1	247.60	VV_1	97.85	VV_1	53.06	VV_1	50.23	VV_1	Feb 22	VV_1
12	2020-06-29 03:30S	VV_1	115.77	VV_1	246.24	VV_1	95.06	VV_1	52.86	VV_1	50.32	VV_1	02. Aug	VV_1
13	2020-06-29 04:00S	VV_1	117.61	VV_1	250.41	VV_1	99.80	VV_1	53.47	VV_1	50.30	VV_1	02. Mai	VV_1
14	2020-06-29 04:30S	VV_1	116.03	VV_1	245.13	VV_1	95.73	VV_1	52.61	VV_1	49.92	VV_1	Feb 14	VV_1
15	2020-06-29 05:00S	VV_1	117.78	VV_1	252.27	VV_1	96.58	VV_1	54.11	VV_1	50.72	VV_1	Feb 18	VV_1
16	2020-06-29 05:30S	VV_1	118.66	VV_1	249.18	VV_1	97.32	VV_1	53.02	VV_1	50.24	VV_1	Feb 17	VV_1
17	2020-06-29 06:00S	VV_1	118.33	VV_1	248.87	VV_1	95.70	VV_1	53.24	VV_1	50.02	VV_1	Feb 14	VV_1
18	2020-06-29 06:30S	VV_1	118.72	VV_1	248.70	VV_1	95.69	VV_1	53.32	VV_1	50.17	VV_1	02. Dez	VV_1
19	2020-06-29 07:00S	VV_1	115.79	VV_1	246.19	VV_1	96.74	VV_1	53.39	VV_1	49.98	VV_1	Feb 18	VV_1
20	2020-06-29 07:30S	VV_1	114.43	VV_1	244.86	VV_1	94.51	VV_1	52.72	VV_1	49.42	VV_1	Feb 25	VV_1
21	2020-06-29 08:00S	VV_1	117.50	VV_1	246.13	VV_1	96.57	VV_1	53.28	VV_1	50.53	VV_1	Feb 13	VV_1
22	2020-06-29 08:30S	VV_1	116.91	VV_1	246.40	VV_1	96.74	VV_1	53.91	VV_1	50.03	VV_1	02. Aug	VV_1
23	2020-06-29 09:00S	VV_1	114.83	VV_1	242.23	VV_1	94.76	VV_1	52.63	VV_1	49.24	VV_1	02. Mai	VV_1
24	2020-06-29 09:30S	VV_1	117.95	VV_1	247.35	VV_1	96.03	VV_1	53.61	VV_1	50.27	VV_1	Feb 14	VV_1
25	2020-06-29 10:00S	VV_1	118.75	VV_1	247.92	VV_1	97.57	VV_1	54.22	VV_1	50.79	VV_1	Feb 15	VV_1
26	2020-06-29 10:30S	VV_1	117.89	VV_1	244.11	VV_1	95.07	VV_1	52.80	VV_1	49.90	VV_1	02. Okt	VV_1
27	2020-06-29 11:00S	VV_1	117.56	VV_1	245.19	VV_1	93.27	VV_1	52.53	VV_1	49.73	VV_1	Feb 16	VV_1
28	2020-06-29 11:30S	VV_1	118.07	VV_1	246.46	VV_1	96.83	VV_1	53.39	VV_1	50.33	VV_1	Feb 26	VV_1
29	2020-06-29 12:00S	VV_1	115.62	VV_1	245.91	VV_1	96.89	VV_1	53.43	VV_1	50.07	VV_1	Feb 13	VV_1

Figure 22: CSV export of a value list

The file can be saved permanently on the local computer as *.CSV file. If MS Office or MS Excel is installed these data can be processed in Excel. The list separator must be identical in the regions and language options and in CEM-DAS (Administration / User / Properties / Separator for CSV export. For German Windows = ‚Semicolon'= [;]).

4.2.2 Reports

With the menu “Reports” the daily (monthly or annual) reports will be chosen either by selection or for certain entities:

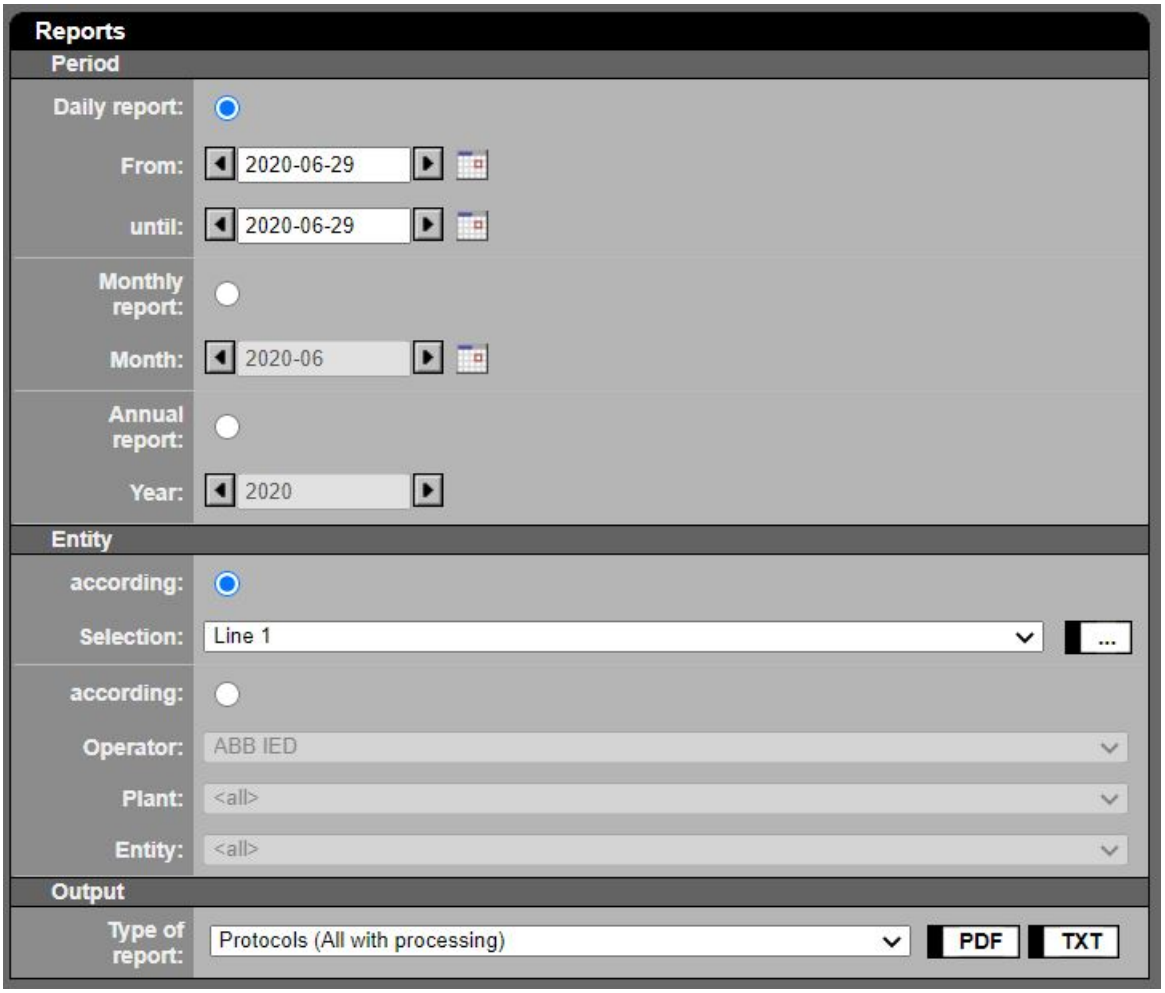


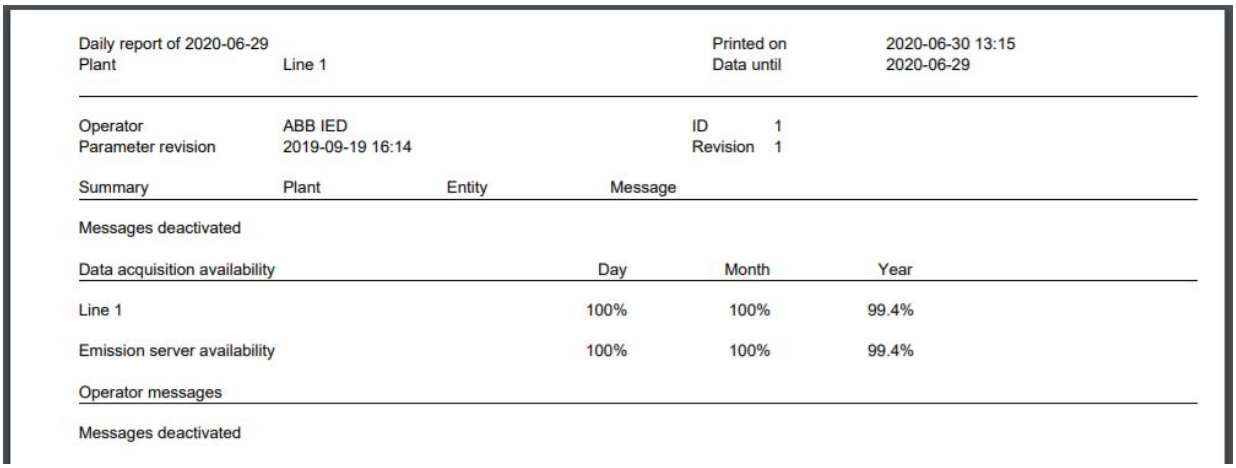
Figure 23: Selecting of reports

Lettering	Explanation
Period	**Period specific selection of the following report types**
Daily report	Mark if a daily report is desired
From: until:	Time span from which the reports can be selected. The time span can be made directly by entering date and time or by selection on the button at the side (DateTime Picker) (Figure 2)
Monthly report	Mark, if a monthly report is required
Month	Selection, input or scrolling of the required month
First half year	Mark, if a report from January 1st to June 30th is required
Second half year	Mark, if a report from July 1st to December 31th is required
Annual report	Mark, if an annual report is required
Year	Input or scrolling of the desired year
Entity	Selection of entity
according ▪ Selection	Select entities from a pre-parameterized range of entities, a selection (see 4.1.2.2)
according ▪ Range	Selection of entities in plants which are assigned to one region
according ▪ Operator	Selection of a plant operator
Plant	Selection of all entities of a plant, standard “all”
Entity	Selection of one entity of a plant, standard “all”
Output	
Type of report	Besides the report format related emission protection agencies require which has to be printed or saved redundantly each day various other formats and other contents can be chosen:

Lettering	Explanation
	Reports (all with classification)
	Reports without messages (all with classification)
	Authority reports (only those with automatic printout for authority)
	Authority reports without messages (only those with automatic printout for authority)
	Overview day / month
	Overview day / year
	Limit violation messages with comments
PDF	Output of the report in PDF format.
TXT	Output of the report in text format.
XLS	Output of the report in Excel file (only for limit violation messages with notifications)

The following figures show the maximum 9 sections (depending on parameterization) of a daily, monthly or annual report:

1. **Summary:** contains all classification messages as e.g. limit violation, violation of the 10 day rule, calibration messages.
2. **Data acquisition availability:** contains the availability of data acquisition and CEM-DAS
3. **Operator messages:** contains a summary of important plant operator specific messages, e.g. release of a new revision.
4. **Operating modes:** contains the operating times per day, month and year for every plant state and the availability of data acquisition.
5. **Plant messages**: contains e.g. beginning and end of interlocking a plant according to 17.BImschV.
6. **Overview:** contains the operating time, the availability and the averages for the entity
7. **Classification:** contains the frequency distribution of the short-term averages and daily average values.
8. **Short-term average:** in the daily report or
   Daily averages: and the mass ratio in the monthly report or
   Statistic over the last 5 years: in the annual report
9. **Messages:** contains all messages of the entity.



Daily report of 2020-06-29 — Printed on 2020-06-30 13:15
Plant Line 1 — Data until 2020-06-29

Operator ABB IED — ID 1
Parameter revision 2019-09-19 16:14 — Revision 1

Summary	Plant	Entity	Message
Messages deactivated			

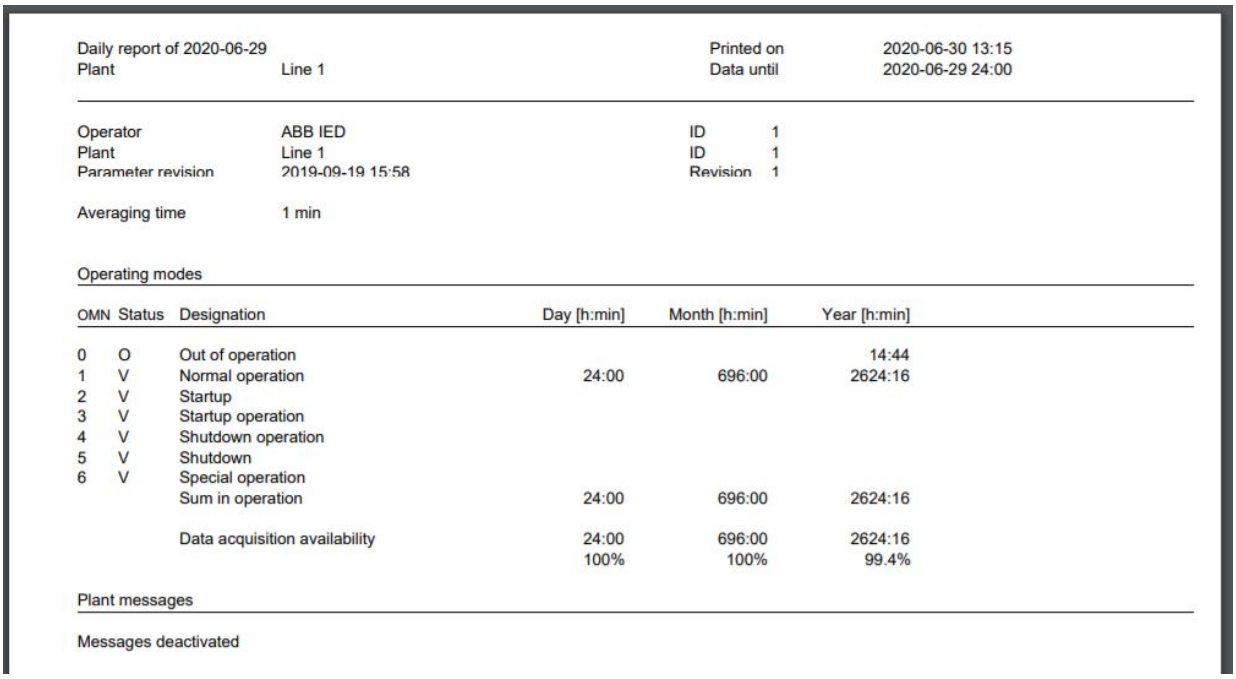
Data acquisition availability	Day	Month	Year
Line 1	100%	100%	99.4%
Emission server availability	100%	100%	99.4%

Operator messages

Messages deactivated

Figure 24: Report IED: summary, data acquisition availability, operator messages

Lettering	**explanation**
Operator	Name of the plant operator
ID	Identifier of the plant operator
Parameter revision	Most recent change of parameters
Revision	No. of the currently released revision
Summary	Next block with summary of the most important messages
Plant	Long tag of the Plant
Entity	Long tag of the entity
Message	Message with number of class (if classification notice): type of event and – e.g. in case of limit violation – details about of the level of the violation.
Data acquisition availability	Plant specific availability of data acquisition. Summary of all plants of an operator (see descriptive table for Figure 25)
Day [%]	Availability in % per day
Month [%]	Availability in % per month
Year [%]	Availability in % per year
Emission server availability	The availability of the data acquisition for all plants is shown within the operator report or range page of the report. Thus the availability of the emission computer is the minimum of the day, month or year.
Operator messages	Plant operator specific messages



Daily report of 2020-06-29 Printed on 2020-06-30 13:15
Plant Line 1 Data until 2020-06-29 24:00

Operator ABB IED ID 1
Plant Line 1 ID 1
Parameter revision 2019-09-19 15:58 Revision 1

Averaging time 1 min

Operating modes

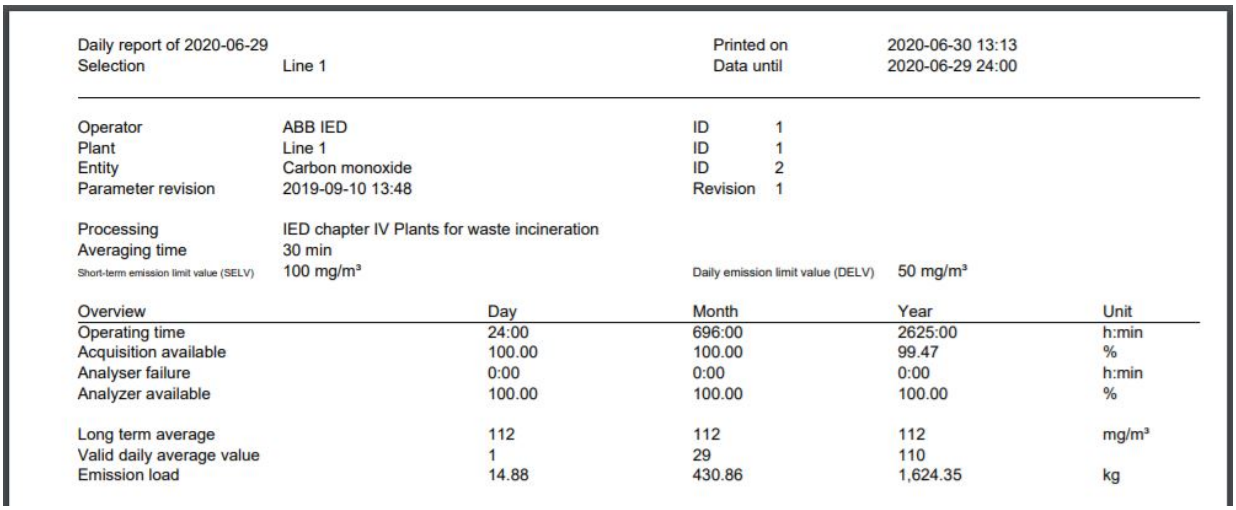
OMN	Status	Designation	Day [h:min]	Month [h:min]	Year [h:min]
0	O	Out of operation			14:44
1	V	Normal operation	24:00	696:00	2624:16
2	V	Startup			
3	V	Startup operation			
4	V	Shutdown operation			
5	V	Shutdown			
6	V	Special operation			
		Sum in operation	24:00	696:00	2624:16
		Data acquisition availability	24:00	696:00	2624:16
			100%	100%	99.4%

Plant messages

Messages deactivated

Figure 25: Report IED: Operating modes, plant messages

Lettering	**Explanation**
OMN	Number of operating mode as defined in chapter 4.4.3.8
Status	Status indicator of the plant
designation	Full designation of operating mode
Day [h:min]	Operating hours per day in each operating mode
Month [h:min]	Operating hours per month in each operating mode
Year [h:min]	Operating hours per year in each operating mode
Sum operation	Sum of operating hours with the status V
Data acquisition availability	Plant specific availability of acquisition in [h:min] is the sum of times “normal operation (V)” and “out of order (O)”. Availability in [%] is the ratio: “availability” / (“availability” + “none acquisition”)
Interlocking/Discontinuation	Time period [h:min] in which the plant was interlocked or interrupted because of signal VUB
Bypass	Time period [h:min] during which the plant was bypassed due to the bypass signal (27.BImSchV)



Daily report of 2020-06-29 — Printed on 2020-06-30 13:13
Selection Line 1 — Data until 2020-06-29 24:00

Operator	ABB IED	ID	1
Plant	Line 1	ID	1
Entity	Carbon monoxide	ID	2
Parameter revision	2019-09-10 13:48	Revision	1

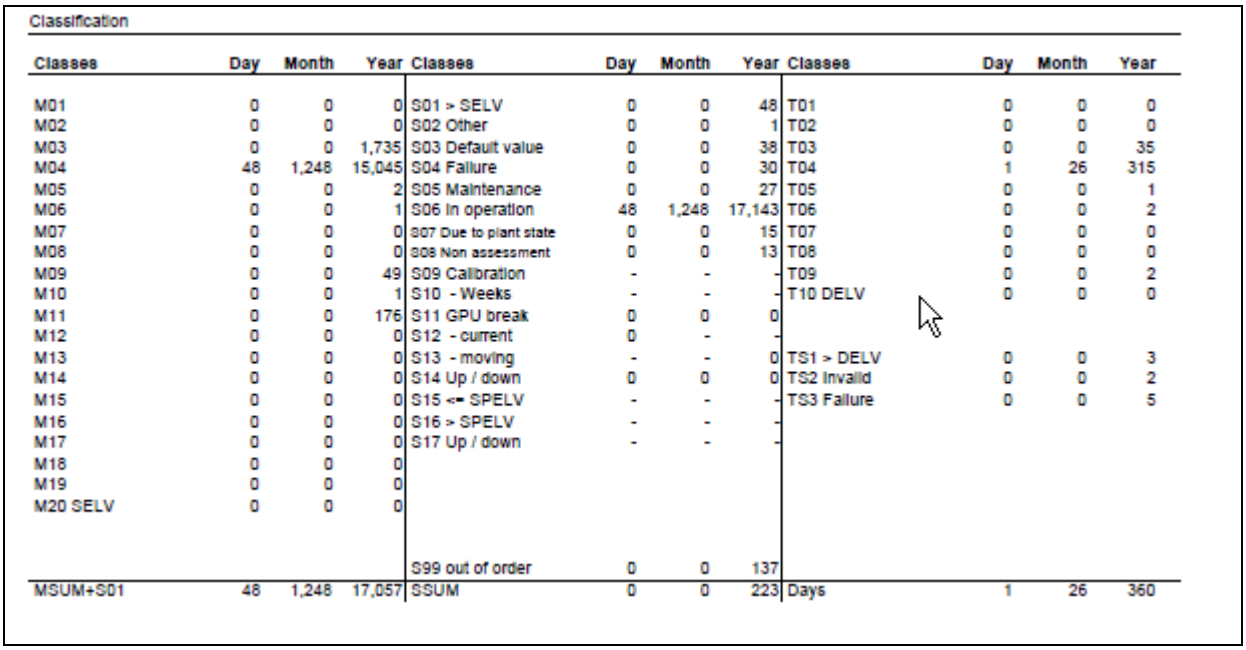
Processing	IED chapter IV Plants for waste incineration		
Averaging time	30 min		
Short-term emission limit value (SELV)	100 mg/m³	Daily emission limit value (DELV)	50 mg/m³

Overview	Day	Month	Year	Unit
Operating time	24:00	696:00	2625:00	h:min
Acquisition available	100.00	100.00	99.47	%
Analyser failure	0:00	0:00	0:00	h:min
Analyzer available	100.00	100.00	100.00	%
Long term average	112	112	112	mg/m³
Valid daily average value	1	29	110	
Emission load	14.88	430.86	1,624.35	kg

Figure 26: Report IED: Report head (per entity)

Lettering	Explanation
Report data	
Daily report of	
Selection or plant or range	Selection of entity
Printed on	Date and time of report output, e.g. date of printout
Data until	Date and time until which the data in the present report are analyzed.
Entity data	
Operator ... ID …	Full designation of the operator, CEM-DAS identifier of the operator
Plant … ID …	Full designation of the plant, CEM-DAS identifier of the plant
Entity … ID …	Full designation of the entity, CEM-DAS identifier of the entity
Parameter revision	Date and time of last change of the CEM-DAS parameter
Revision	Revision status of the CEM-DAS parameterization at the time of the preparation of the report
Classification	Classification requirement /5/
Averaging time	Averaging time of the short-term averages in minutes
Short-term emission limit value (SELV)	Short-term emission limit value acc. BImSchV (/2/, /3/)
Measuring range top (MRT)	For entities without a short-term emission limit
Daily emission limit value (DELV)	Daily emission limit value acc. BImSchV (/2/, /3/)
Margin	For entities of the minimum temperature TNBZ
Overview	Statistic per day, month and year in each plant
Operating time	Operation hours of the entity according to the operating criteria of DAA-Controller
Acquisition available	The availability of data acquisition of an entity MS in [%] is calculated as follows: $V_{acquisition}^{MS} = 100 \times \left(1 - \frac{A}{N_{MSUM+S01} + N_{SSUM}}\right)$ N: classification count from the report A: number of values in simulation, system failure or system maintenance and preliminary or missing values. These values are in class “none operation” and SSUM but are not presented as their own class.
Analyser failure	The outage of an entity analysis in [h:min] is calculated from the count values N of the classes maintenance and failure as follows: $A_{analyser}^{MS} = (N_{failure}^{S04} + N_{\text{maintenance}}^{S05}) \times \text{Integration time}$

Lettering	Explanation
Analyser available	The availability of an entity analysis MS in [%] is calculated from the count values N of the single classes as follows: $V_{analyser}^{MS} = 100 \times \left(1 - \frac{N_{\text{maintenance}}^{S05} + N_{failure}^{S04}}{N_{\text{in operation}}^{S06}} \right)$
Long term average	long term average for day, month, year
Valid daily average value	If the monthly average or the annual average is calculated from the valid DAV (according 13./17. BImSchV) this field shows the amount of valid DAV which were used for the calculation.
Emission load	The emission load is calculated from the non-validated short-term averages and added up over the day. The short-term averages are calculated from the valid first level data. $F_{Day} = \frac{1}{2} \sum_{i=1}^{i=48} STA_i * Vol_i * 1.0*10^{-6}$ STA_i = short-term average of the day in mg/m3, with 30 min. averaging time: i =1…48 $Voli_i$ = volumetric flow – short-term average in m3/h of the day. Monthly or annual emission load are calculated by summing daily or monthly emission load.
TNBZ1 > SELV	Minimum temperature kept
TNBZ2 <= SELV	Minimum temperature undershot
TNBZ3 outage	Minimun temperature: maintenance or failure of device
TNBZU <= SELV	Duration of undershooting the minimum temperature
F1 <= SELV	Dust: alarm value or limit value undershot
FSÜ > SELV	Duration of limit overshot (27. BImSchV): Dust qualitative: output in hh:mm:ss, resolution 5s Dust quantitative: output in h, resolution 1h



Classification

Classes	Day	Month	Year	Classes	Day	Month	Year	Classes	Day	Month	Year
M01	0	0	0	S01 > SELV	0	0	48	T01	0	0	0
M02	0	0	0	S02 Other	0	0	1	T02	0	0	0
M03	0	0	1,735	S03 Default value	0	0	38	T03	0	0	35
M04	48	1,248	15,045	S04 Failure	0	0	30	T04	1	26	315
M05	0	0	2	S05 Maintenance	0	0	27	T05	0	0	1
M06	0	0	1	S06 In operation	48	1,248	17,143	T06	0	0	2
M07	0	0	0	S07 Due to plant state	0	0	15	T07	0	0	0
M08	0	0	0	S08 Non assessment	0	0	13	T08	0	0	0
M09	0	0	49	S09 Calibration	-	-	-	T09	0	0	2
M10	0	0	1	S10 - Weeks	-	-	-	T10 DELV	0	0	0
M11	0	0	176	S11 GPU break	0	0	0				
M12	0	0	0	S12 - current	0	-	-				
M13	0	0	0	S13 - moving	-	-	0	TS1 > DELV	0	0	3
M14	0	0	0	S14 Up / down	0	0	0	TS2 Invalid	0	0	2
M15	0	0	0	S15 <= SPELV	-	-	-	TS3 Failure	0	0	5
M16	0	0	0	S16 > SPELV	-	-	-				
M17	0	0	0	S17 Up / down	-	-	-				
M18	0	0	0								
M19	0	0	0								
M20 SELV	0	0	0								
				S99 out of order	0	0	137				
MSUM+S01	48	1,248	17,057	SSUM	0	0	223	Days	1	26	360

Figure 27: Report 13. BImSchV: classification

The following table gives explanations for the abbreviations of the different normal, special and daily average classes. Depending on the amount of messages further pages are delivered:

Classification	Explanation
Normal classes	
M <	Underflow class (contains values < 0) This class will only be displayed if it contains values.
M01 – M20 SELV M01 – M20 MRT	Classes for valid short-term averages STA in normal operation with the short-term average limit value or final measuring range value as upper limit of class M20. The lower limit of class M01 is zero.
M >	Overflow class (with values > MRT) This class will only be displayed if it contains values.
MSUM+S01	Sum of class M00 to M21 and class S01, including underflow and overflow classes
Inverse classes	
TNBZ > M >	Overflow class TNBZ: values > SELV + Margin/2 (minmum temperature) DSR : values > 100% (desulphurisation rate) This class will only be displayed if it contains values
TNBZ01 – TNBZ SELV – TNBZ20 M01 – M20 DELV	Classes for valid short-term averages during inverse classification. The short-term average limit value is for TNBZ on the upper limit of class 10. The short-term average of desulphurisation rate is classified inverse. The lower daily emission limit value (85%) is on the upper limit of class M20. The lower limit of class M01 equals 100 %. There is no classification in S01 for values smaller than DELV.
TNBZ < M <	Underflow class TNBZ: values < SELV - Margin/2 (minmum temperature) DSR : values < DELV (desulphurisation rate) This class will only be displayed if it contains values
MSUM + S01	Sum of classes M00 to M21 and class S01
TSUM + S01	Sum of classes TNBZ01 to TNBZ20 and class S01

Classification		Explanation
Special classes		
S01 > SELV S01 < SELV		valid short-term averages that do not comply with the short-term emission limit value (SELV)
S02	Other	invalid for other reasons, except: S04, S05, S07, S08
S03	Default value	valid short-time averages, which are calculated with a substitute value for reference quantities. No entry will be made if at the same time S09 (calibration) is increased.
S04	Failure	invalid due to failure of the measuring device
S05	Maintenance	invalid due to maintenance of the measuring device
S06	in operation	operating time counter in monitored operation, parallel classification to all other classes
S07	Due to plant state	invalid due to plant
S08	Non assessment	non-assessable and implausible short-term averages
S09	Calibration	Short-term counter of the valid short-term averages outside the calibration range. If the check is made on a weekly basis: Short-term counter of valid short-term averages that violate the calibration range in the current calendar week. This class will automatically reset at the end of the week (Monday 0:00) If the check is made according to the 168 h rule: Short-term counter of valid short-term averages that violate the calibration range during the last 168 h of monitored operation It can be reset at the annual surveillance test (AST).
S10	- Weeks	Long-term counter. Number of weeks in which more than 5% or more than 40% of short-term averages have violated the calibration range. If more than 40% of the short-term averages violate the calibration range in one week, the counter is always increased by 6. It can be reset at the annual surveillance test (AST).
S11	GPU break	Short-term averages during all outages of GPU of the calendar year.
S12	- current	Short-term averages during a current outage or last outage of GPU. The counter is reset only at the beginning of a new event.
S13	- moving	Short-term averages which occurred during a time range of 12 months in the past (sliding sum of all outages of GPU over 365 days). (according to 13. BImSchV)
S14 Up/down		Short-term averages that exceed the short-term emission limit value during startup and shutdown. The short-term averages are not included in the daily average value. (according TA Luft and 13. BImSchV)
S15	<= SPELV	Short-term averages that are less than or equal to the special emission limit value (SPELV) during an outage of GPU. These values are not classified in M01-M20 and S01. (Dust according to 17. BImSchV)
S16	> SPELV	Short-term averages which are larger than the special emission limit value (SPELV) during the outage of GPU. These values are not classified in M01-M20 and S01. (Dust according to 17. BImSchV)
S17 Up/down		Short-term averages that exceed the short-term emission limit value during startup and shutdown. The short-term averages are included in the daily average value. (according TA Luft and 13. BImSchV)
S99 out of order		Short-term averages that are not counted in S06. The sum of S06 and S99 gives the number of short-term averages in the day / month / year.
SSUM		Sum of values in the special classes: SSUM = S02+S04+S05+S07+S08+S14+S15+S16+S99. The sum (MSUM+S01) plus SSUM is the total number of short-term averages per day/month/year.
FSxx		For qualitative dust measurements according to TA Luft and 27. BImSchV and for quantitative dust measurements according to the 27. BImSchV, the special classes Sxx are marked with FSxx (filter control)

Classification	Explanation
Daily value classes	
T00	Underflow class This class will only be displayed if it contains values
T01 – T10 DELV T01 – T10 MRT	Classes for valid daily average values with the daily emission limit value (DELV) or the upper measuring range as upper limit of class T10. The lower limit of class T01 equals 0. The daily average of DSR is classified inverse. The lower daily emission limit value (85%) is the top of class T10. The lower limit of class T01 always equals 100 %.
T11	Overflow class. This class will only be displayed if it contains values
TS1 > DELV TS1 < DELV	Valid daily average values larger than the daily emission limit value (DSR: smaller than the lower daily emission limit value).
TS2 Invalid	Daily average values which were set “invalid“ because of violating the validity criteria (“25% rule“).
TS3 Failure	Number of days which have too many short-term averages in “maintenance“ or “failure”. Allowed are at most 10 days per year.
TS4 DSR>=DELV TS4 DSR<=DELV	Daily average values on which DSR is kept. This class will only be displayed if a desulphurisation rate (DSR) for the respective entity is parameterized.
TS5	Daily average values on which the DSR is not kept. This class will only be displayed if a desulphurisation rate for the respective entity is parameterized.
Days	Number of classified days

The following section shows in the daily report the short-term averages from an averaging time of 10 minutes.

Short-term average

29.12.2018 00:30W	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17
29.12.2018 03:30W	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17
29.12.2018 06:30W	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17
29.12.2018 09:30W	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17
29.12.2018 12:30W	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17
29.12.2018 15:30W	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17
29.12.2018 18:30W	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17
29.12.2018 21:30W	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17	VV_7 17

Figure 28: Report 13. BImSchV: Short-term averages

In a monthly report, the daily values of the month are displayed here:

Daily averages

01	G 17	G 17	G 17	G 17	G 17	G 17
07	G 17	G 17	G 17	G 17	G 17	G 17
13	G 17	G 17	G 17	G 17	G 17	G 17
19	G 17	G 17	G 17	G 17	G 17	G 17
25	G 17	G 17	G 17	G 17	G 17	G 17
31	G 17					

Figure 29: Report 13. BImSchV: daily averages

An annual report shows statistics for the last 5 years:

Statistic over the last 5 years

Year	AELV	AAV	Valid daily average value	Unit
2018	-	18	363	mg/m3
2017	-	-	-	-
2016	-	-	-	-
2015	-	-	-	-
2014	-	-	-	-

Figure 30: Report 13. BImSchV: Statistic over the last 5 years

The “Messages“ section of a report shows all classification messages. This means all messages about classifications to special classes are displayed

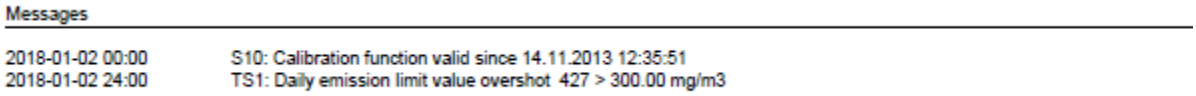
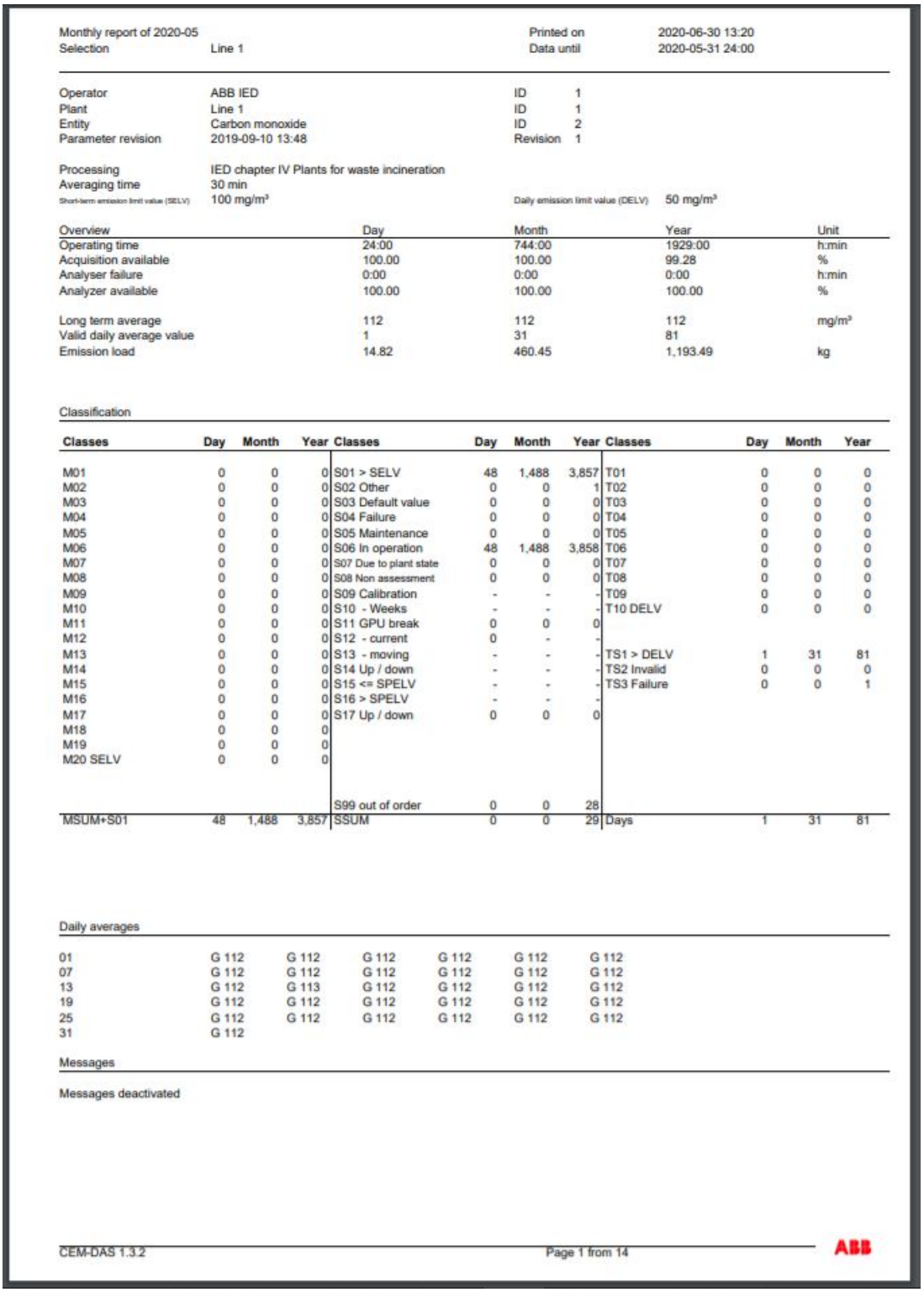


Figure 31: Report 13. BImSchV: messages

Class	Explanation
Messages	
Date time [S]	Timestamp of message
Snn:	Class number of special class
Text	Text of message
x.xx > y.yy	Full text of the reason: e.g. measured value > or < limit value, default value etc.

Except for the agency reports (with or without messages) compressed reports, e.g. “Overview day/month“ or “Overview day/year” can be displayed which contain classifications of several entities on one page (Figure 32). All lettering is according to the agency reports.



Monthly report of 2020-05 — Printed on 2020-06-30 13:20
Selection Line 1 — Data until 2020-05-31 24:00

Operator	ABB IED	ID	1
Plant	Line 1	ID	1
Entity	Carbon monoxide	ID	2
Parameter revision	2019-09-10 13:48	Revision	1

Processing: IED chapter IV Plants for waste incineration
Averaging time: 30 min
Short-term emission limit value (SELV): 100 mg/m³ — Daily emission limit value (DELV): 50 mg/m³

Overview	Day	Month	Year	Unit
Operating time	24:00	744:00	1929:00	h:min
Acquisition available	100.00	100.00	99.28	%
Analyser failure	0:00	0:00	0:00	h:min
Analyzer available	100.00	100.00	100.00	%
Long term average	112	112	112	mg/m³
Valid daily average value	1	31	81	
Emission load	14.82	460.45	1,193.49	kg

Classification

Classes	Day	Month	Year	Classes	Day	Month	Year	Classes	Day	Month	Year
M01	0	0	0	S01 > SELV	48	1,488	3,857	T01	0	0	0
M02	0	0	0	S02 Other	0	0	1	T02	0	0	0
M03	0	0	0	S03 Default value	0	0	0	T03	0	0	0
M04	0	0	0	S04 Failure	0	0	0	T04	0	0	0
M05	0	0	0	S05 Maintenance	0	0	0	T05	0	0	0
M06	0	0	0	S06 In operation	48	1,488	3,858	T06	0	0	0
M07	0	0	0	S07 Due to plant state	0	0	0	T07	0	0	0
M08	0	0	0	S08 Non assessment	0	0	0	T08	0	0	0
M09	0	0	0	S09 Calibration	-	-	-	T09	0	0	0
M10	0	0	0	S10 - Weeks	-	-	-	T10 DELV	0	0	0
M11	0	0	0	S11 GPU break	0	0	0				
M12	0	0	0	S12 - current	0	-	-				
M13	0	0	0	S13 - moving	-	-	-	TS1 > DELV	1	31	81
M14	0	0	0	S14 Up / down	-	-	-	TS2 Invalid	0	0	0
M15	0	0	0	S15 <= SPELV	-	-	-	TS3 Failure	0	0	1
M16	0	0	0	S16 > SPELV	-	-	-				
M17	0	0	0	S17 Up / down	0	0	0				
M18	0	0	0								
M19	0	0	0								
M20 SELV	0	0	0								
				S99 out of order	0	0	28				
MSUM+S01	48	1,488	3,857	SSUM	0	0	29	Days	1	31	81

Daily averages

01	G 112	G 112	G 112	G 112	G 112	G 112
07	G 112	G 112	G 112	G 112	G 112	G 112
13	G 112	G 113	G 112	G 112	G 112	G 112
19	G 112	G 112	G 112	G 112	G 112	G 112
25	G 112	G 112	G 112	G 112	G 112	G 112
31	G 112					

Messages

Messages deactivated

CEM-DAS 1.3.2 — Page 1 from 14 — ABB

Figure 32: Report IED: Overview day / month

4.2.3 Events

With the menu “Events” an event log can be ordered. The event log displays date, time and an event. The events can be enabled from binary inputs (see 4.4.3.7.3) or from plausibility violation (see 4.4.3.7.4). The function can be disabled (see 4.5.6).

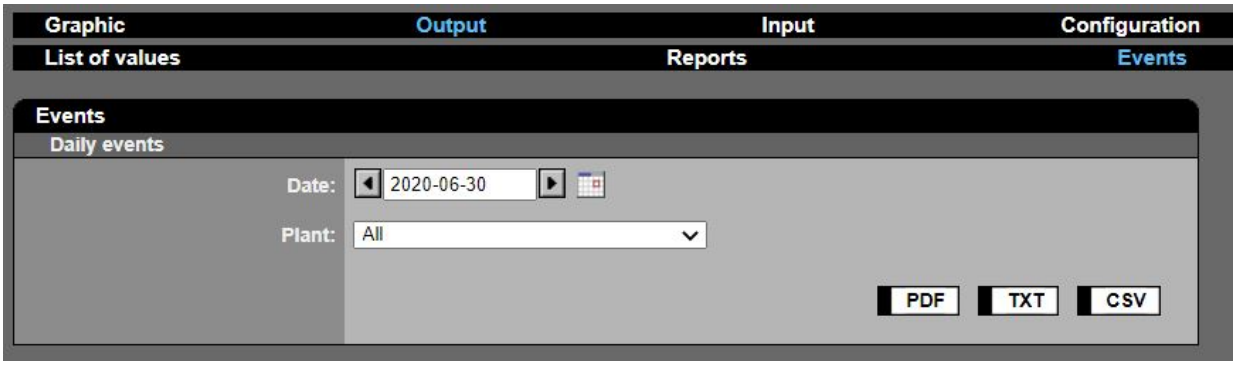


Figure 33: Event log request

After selecting date and plant an event log is reported in PDF, TXT or CSV format.

4.2.4 Messages

”Messages“ in CEM-DAS are all messages which are relevant for emissions rules, e.g. classification messages, emission limit value messages or calibration range messages. In contrast system function relevant messages are called “system messages”. These will be explained in chapter 4.5.4.

In the menu ”messages“ all messages are filtered for the following criteria:

- Time range
- category
- source: single entity, selection or region
- Notification: processing status

Since the messages can also contain events which must be commented and send to superior authorities (e.g. supervisory agency, EFÜ) the function output is linked to the input function “messages” (see 4.3.1). By a click on the button “Notification” the respective page for input will be displayed. After entering the criteria the filtered data will be displayed as a list:

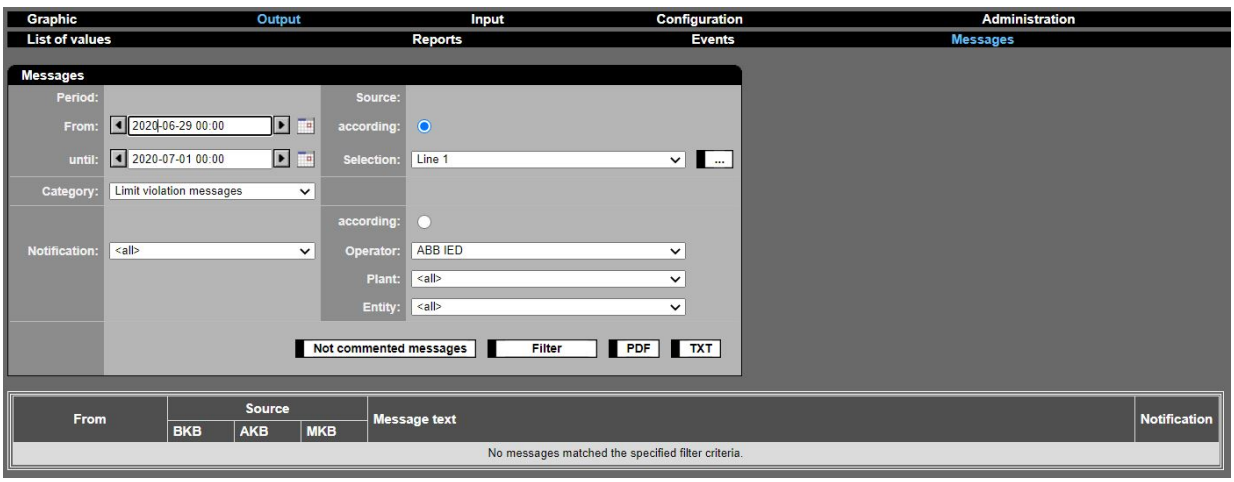


Figure 34: Filtering of messages

Lettering	Explanation of the selection criteria
Period	Selection referring to the time range of the following kind of reports
From: Until:	Time range from which the messages can be selected. The selection can be made by direct input of date and time or by the button DateTime Picker (Figure 2).
Category	Selection depending on a category
Category:	Selection of messages about or for: Limit violation messages Calibration messages Maintenance / failure Failure 10-days rule Failure and 10-days rule GPU-break messages Agency messages (EFÜ) Classification messages QAL3 <all messages> After selection filtering starts immediately
Notification	Selection regarding the processing status
Notification:	Identifier for the status of message comments: <All>: all messages regardless of the processing status still due to commentation - N entered - E checked - G released - F Approved for agency - B After the selection is made the filter starts at once.
Source	
Source:	Option field which enables to select messages from various entities by different methods: A group of entities from a selection A group of entities from one region Single entities selected from an operator / plant / entity With the button ... the selection method can be chosen. Filtering starts after confirming the selection with the button Filter
- Selection	Marks if the entities which messages shall be selected, belong to a group. After that the selection of entities is made from the operator, the plant and finally the entity.
- Range	Selection of messages from entities which belong to one region.
- Operator / Plant / Entity	Selection of an operator -> all entities of one plant operator
Not commented messages	Display of the not commented limit violation messages in a new window (see 4.2.4.1)
Filter	Starts the defined filter
PDF	Output of the entity list in pdf format
TXT	Output of the entity list in text format
Lettering	**Explanation of the message list**
From	Date and time of the event creating the message
Source	Entity which caused the message
- BKB	Designation of plant operator of the entity
- AKB	Full designation of Plant of the entity
- MKB	Full designation of entity of the causer
Message text	Message text
Notification	Status of processing the message. A click on this button starts the commenting of the message. A windows will be opened and the current message can be commented (see 4.3.1). N: due to be commented E: edited and stored G: checked F: released (intern) B: released for EFÜ transfer to the agency (externally)

The following table shows the messages. For classification messages, the class number is output in the first column. The output is spontaneous (spont.), after the averaging time (AT) or daily.

Message text	Zyklus
Operator	
Parameter of revision *13* für operator *ABB* released	spont.
DAA-Controller [*Name*] Power failure for *02:34* h:min	spont.
DAA-Controller [*Name*] New parameters with revision *15 !* / Revision *15.07.2017 12:01:23* loaded	spont.
DAA-Controller [*Name*] Start of system maintenance	spont.
DAA-Controller [*Name*] System maintenance finished after *1.35* h	spont.
DAA-Controller [*Name*] New program version *7.3(000)*	spont.
Authority	
Special limit value overshot *210 > 200 mg/m3*	AT
Short-term emission limit value overshot *25 > 20 mg/m3*	AT
Short-term emission limit value undershot 700 < *850 degree C*	AT
Daily emission limit value overshot *51 > 50 mg/m3*	daily
Daily emission limit value undershot *80 < 85 %*	daily
Too much Maintenance/Failure [20] during the day	daily
New Calibration required	daily
RESET10 Classification reset	spont.
4 h GPU-outage per Event with *6.0* h exceeded	AT
120 h GPU-outage 12-Months with *122* h exceeded	daily
120 h GPU-outage per year with *123* h exceeded	daily
Classification using special class S14 during Start-up/Shut-down *220.59 mg/m3*	AT
Plant	
Start plant locking / no waste feeding	AT
Plant locking finished / no waste feeding Start at *15.07.2017 12:00* duration *3.00*h	AT
Start plant locking	AT
Plant locking finished Start at *15.07.2017 12:00* duration *3.00*h	AT
Plant locked during the day for *1.00* h Plant locked during the year for *123.00* h	daily
Entity	
S01: Short-term emission limit value overshot *25 > 20 mg/m3*	AT
S01: Short-term emission limit value undershot *720 < 850 degree C*	AT
S01: Short-term emission limit value undershot *720 < 850 degree C* S01: Plant locked / no waste feeding	AT
S01: Short-term emission limit value undershot *720 < 850 degree C* S01: Plant is locked	AT
S02: invalid	AT
S03: Classification with default value	AT
S04: invalid due to failure	AT
S05: invalid due to maintenance	AT
S05: invalid due to inspection mode	AT
S07: invalid (plant	AT
S08:	AT
S08:	AT
S09: Exceeding the calibration range *50 > 25.00 mg/m3*	AT
S09: Calibration range violations per week 100.00% > 40.00% / 28 of 28	daily
S09: Calibration range violations currently 39.58% / 76 of 192	daily
S09: RESET09 Classification reset	spont.
S10: NEW CALIBRATION REQUIRED Calibration function is invalid since 01.07.2017 00:00:00	daily
S10: Calibration function violated / 6 weeks > 5.00% / 2 weeks > 40.00% /	daily
S10: RESET10 Classification reset	spont.

Message text	Zyklus
S10: No checking possible, because of less then 168h in operation (*99.00*h)	
S10: No checking realized, because of no operation in the last week.	
S11: *120* h GPU break per year with *122* h overshot	daily
S11: GPU break *5.0* h	AT
S12: 4.*0* h GPU break per event with *8.0* h overshoot	AT
S12: GPU break after *16.0* h finished	AT
S13: *120* h GPU break 12-months with *125.00* h overshoot	AT
S14: Start-up / shut-down of the plant	AT
S16: Special limit value overshot *258* > *200.00 mg/m3*	AT
S17: Classification using special class during Start-up/Shut-down *89.56 mg/m3*	AT
Manual input changed for *15.07.2017* old *35.47 mg/m3* new *15.00 mg/m3*	spont.
TS1: Daily emission limit value undershot *80 < 85 %*	daily
TS1: Daily emission limit value overshot *25 > 20 mg/m3*	daily
TS2: …*25* criterion for the DAV violated *0.00 mg/m3*	daily
TS3: Too much Maintenance/Failure 12 during the day	daily
TS5: Daily emission limit value undershot *80 < 85 %*	daily
TS5: Daily emission limit value overshot *125 > 100 mg/m3*	daily
Month	
Monthly emission limit value exeeded *45 > 25 mg/m3*	daily
Complied with the monthly emission limit value *15 < 25 mg/m3*	daily
Monthly average invalid *89.00 mg/m3*	daily
Monthly emission limit value currently exeeded *45 > 25 mg/m3*	daily
Currently complying with the monthly emission limit value *15 < 25 mg/m3*	daily
Monthly average currently invalid *46.00 mg/m3*	daily
Mass ratio (monthly value) overshot *88 > 85 g/Mg*	daily
Mass ratio (monthly value) kept *70 < 85 g/Mg*	daily
Mass ratio currently overshot *88 > 85 g/Mg*	daily
Mass ratio currently kept *70 < 85.00 g/Mg*	daily
Rolling 30-Days average: No valid Short-term averages available	daily
Rolling 30-Days average: Monthly emission limit value overshot 125 > 100 mg/m3	daily
Rolling 30-Days average: Monthly emission limit value kept 95 < 100 mg/m3	daily
Year	
10-days rule per year violated during *12* day(s)	daily
10-days rule per year violated during *13* day(s)	daily
Annual emission limit value overshot *134* > *100 mg/m3*	daily
Annual emission limit value kept *90* < *100 mg/3*	daily
Annual value invalid *8.96 mg/m3*	daily
Annual emission limit value currently overshot *123* > *100 mg/m3*	daily
Annual emission limit value currently kept *90* < *100 mg/m3*	daily
Annual value currently invalid *6.98 mg/m3*	daily

Table 1: CEM-DAS: messages

4.2.4.1 Not commented messages

Not commented limit violation messages are displayed in a separate window.

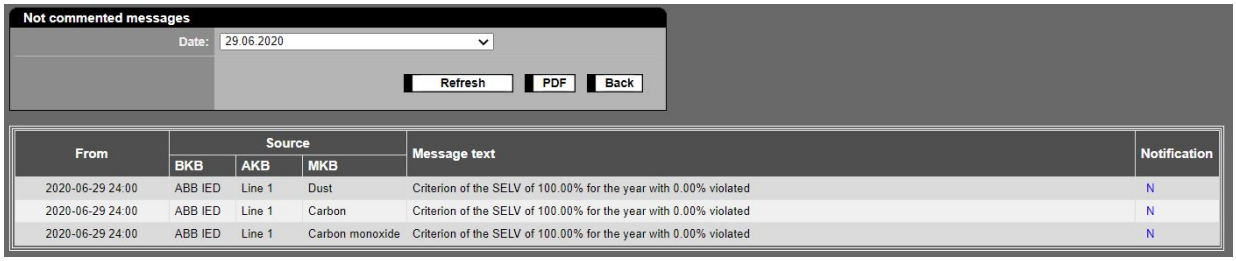


Figure 35: Not commented messages

Lettering	Explanation of the selection criteria
Not commented messages	
Date	Date of the message. Only days with not commented messages are available.
Refresh	Refresh list
PDF	Output list in pdf format
Back	Back to the menu “Messages” (see 4.2.4)
Lettering	Explanation of the message list
	See 4.2.4

4.2.5 QAL3

The function “QAL3” enables to manage QAL3 measurements und test gas. The function is described in /9/. The function can be disabled (see 4.5.6).

4.2.6 Maintenance

With the menu “Maintenance” the maintenance and status log for some selected entities can be logged. The function can be disabled (see 4.5.6).

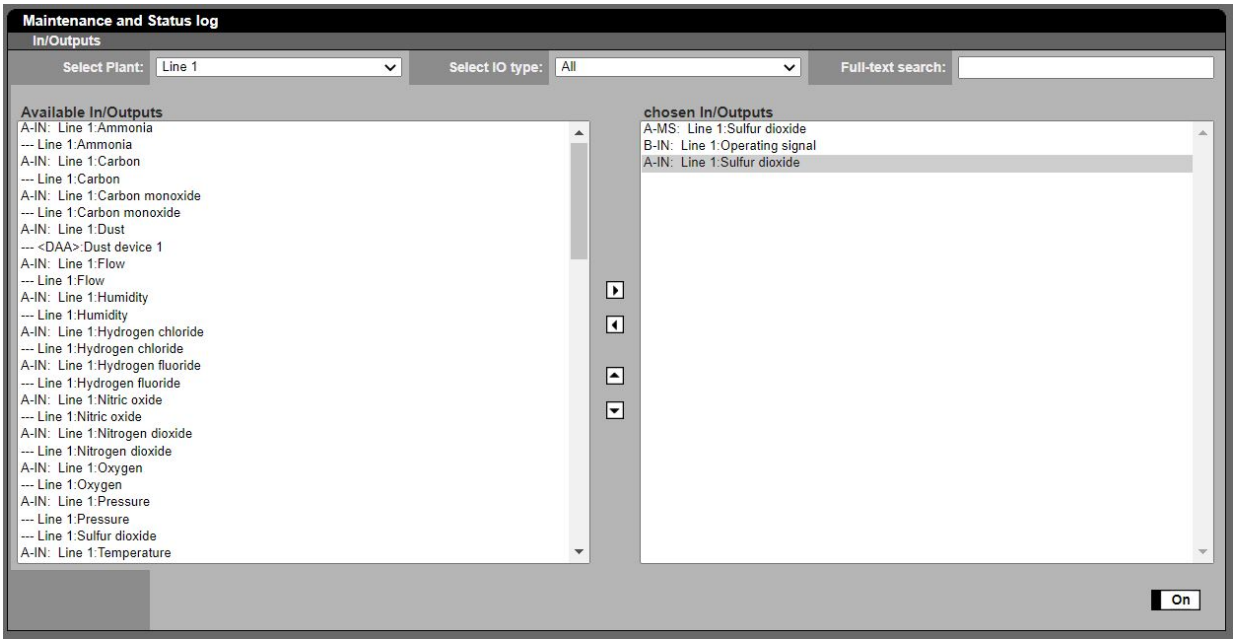


Figure 36: Selection of entities for maintenance and status log

Lettering	Explanation of the selection criteria
Selected Plant	Selection of a plant
Select IO types	The following types are: • ALL all • A-IN analog inputs • B-IN binary inputs • B-MS binary entities • A-MS analog entities • B-OUT binary outputs • A-OUT analog inputs
Full text search	The rows of In/Outputs are visible which include the given text
Available In/Outputs	In/Outputs according to selected filter
Chosen In/outputs	In/Outputs for the log
On	Activates the maintenance and status log

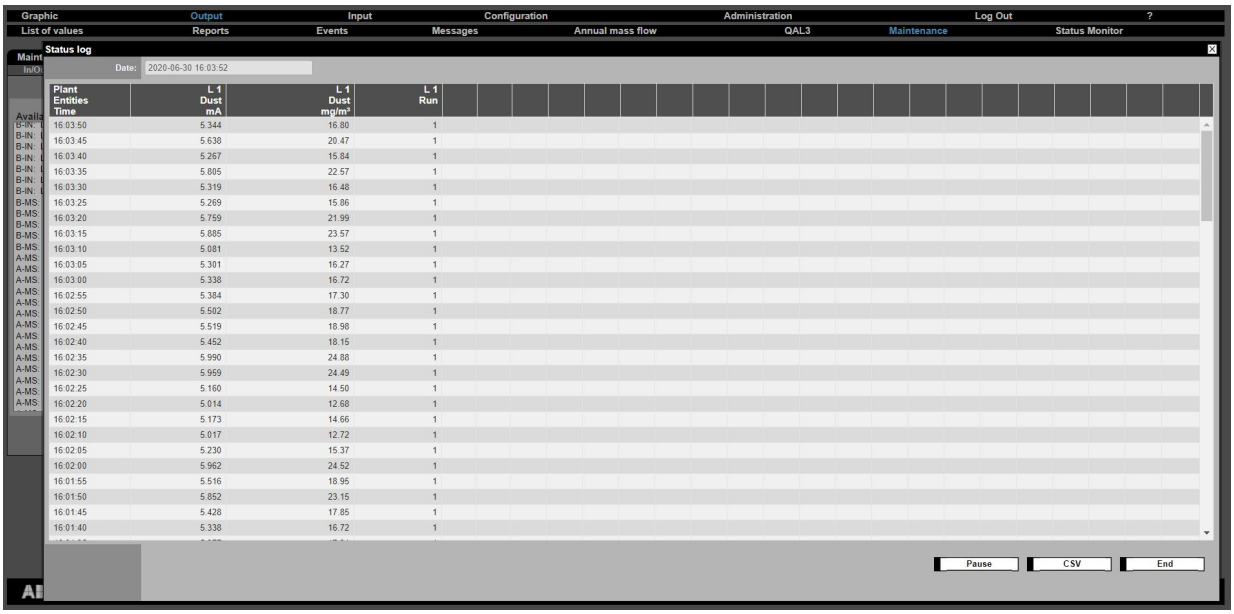


Figure 37: Maintenance and status log

Lettering	Explanation of the selection criteria
Date	Selection of a plant
Plant	The following types are: • ALL all • A-IN analog inputs • B-IN binary inputs • B-MS binary entities • A-MS analog entities • B-OUT binary outputs • A-OUT analog inputs
Entities	The rows of In/Outputs are visible which include the given text
Unit	In/Outputs according to selected filter
Status	In/Outputs for the log
Pause / Actualization	Break / Activate the maintenance and status log
CSV	Output of the report in CSV format
End	Terminate the log

4.2.7 Status Monitor

With the menu “Status Monitor” the current state of the AMS (automated measuring system) can be controlled. This function is described in /8/. The function is available if a “Digital Interface” is configured and have been licensed (see 4.5.6).

4.3 Input

4.3.1 Notifications

The function **Notifications** is used to send messages to the authorities (EPA, etc.[1]). All notifications will be saved and after being checked and released and the final release automatically transmitted to the agency. The transmission is executed either with the next report or once a day. The displayed messages can be filtered for:

- Reference time or creation time
- Type of notification
- Operator, plant and entity

In the list is also an overview of the processing state (“entered”, “checked”, etc.) and also gives information if the message has been already transmitted to the agency.

The following figure shows a list of messages according to the set filter criteria:

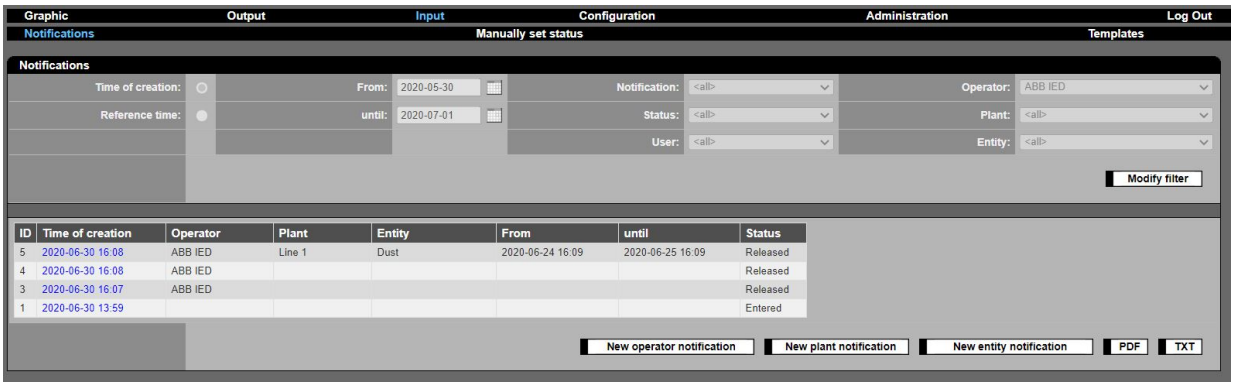


Figure 38: List of messages and the filter criteria with output list

Lettering	Explanation
Filter definition	
Time of creation	Mark if the messages shall be selected regarding the creation time
Reference time	Mark if the messages shall be selected regarding the reference time
From: until:	Selection regarding the creation or reference time of the messages
Type	Selection regarding the type of notification: - All - Message - Plant related comment - Entity related comment
Status	Selection regarding the processing status of the notifikation: - All - Entered - Checked - Released - Released for the authority
User	Selection regarding the creator of the message
Operator	At first selection regarding the short name of the plant operator
Plant	Afterwards selection regarding the short name of the Plant
Entity	Finally selection regarding the short name of entity
Modify filter	Enabling of the filter criteria for editing. After that the functions in **Apply filter** will change.
Apply filter	After selecting a combination of criteria the filtered messages will be displayed.
List of messages	

[1] Authorities must be equipped with a compatible system in order to get into connection to CEM-DAS.

Lettering	Explanation
ID	Identifier of the notification
Time of creation	Date and time of creation of the notification. By clicking on the time the notification will be displayed as a form.
Operator	Designation of the plant operator who is responsible for the message
Plant	Designation of the concerned plant, empty, when message is from plant operator
Entity	Designation of the concerned entity, empty, if message is from operator or plant
From, until	Reference time of notification, empty if message
Status	Status of processing or transmission Entered (can be deleted) Checked (can be deleted) Released Agency
sent	Labelling, if message has been sent ☑
	Buttons to scroll through the notifications This group of button is only displayed if more than 50 messages exist.
New operator notification	Create a new notification with reference to the operator
New plant notification	Create a new notification with reference to a plant
New entity notification	Create a new notification with reference to an entity
PDF	Output of message in PDF format
TXT	Output of message in text format

After selecting the function **“new operator notification”** (Message) the text can be entered in the following form:

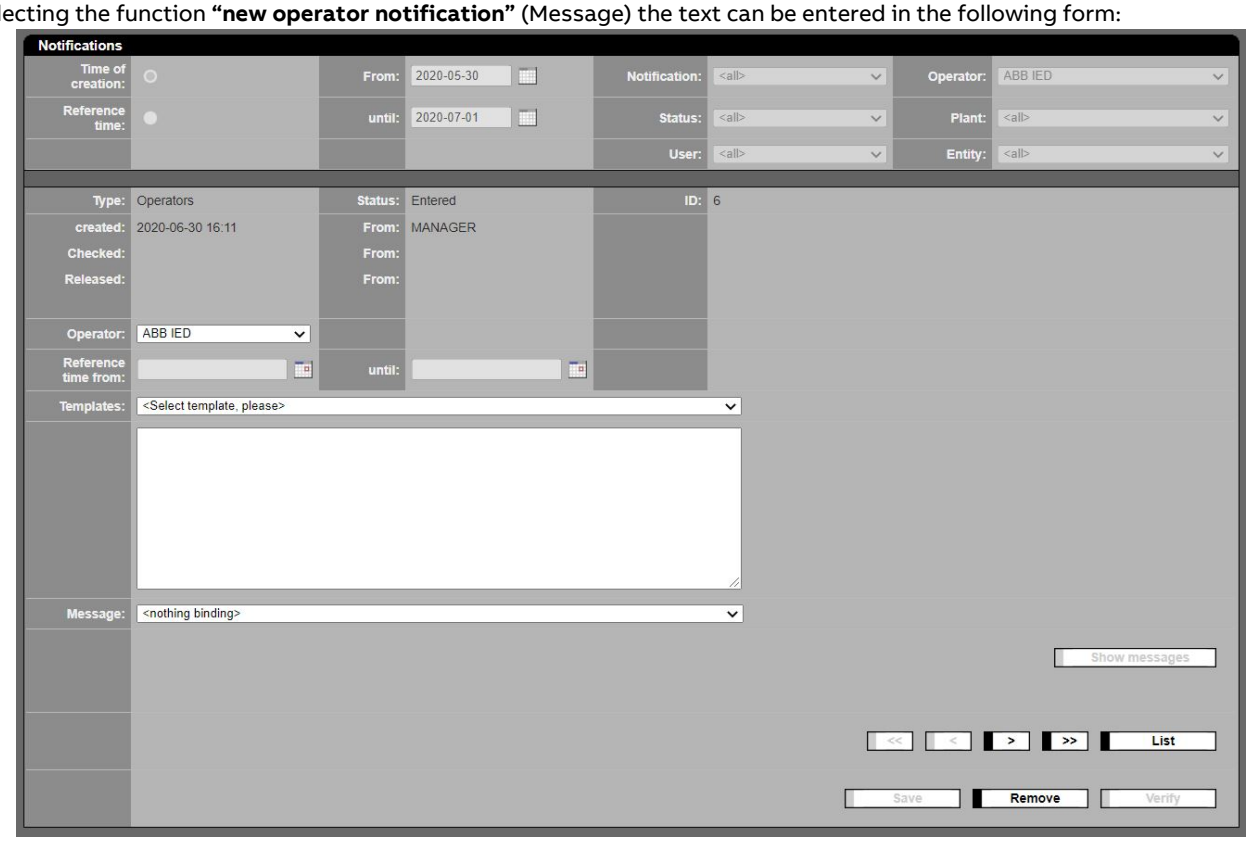


Figure 39: Input of operator notifications

After selecting the function **”new plant notification“** (Plant related comment) the text can be entered in the following form:

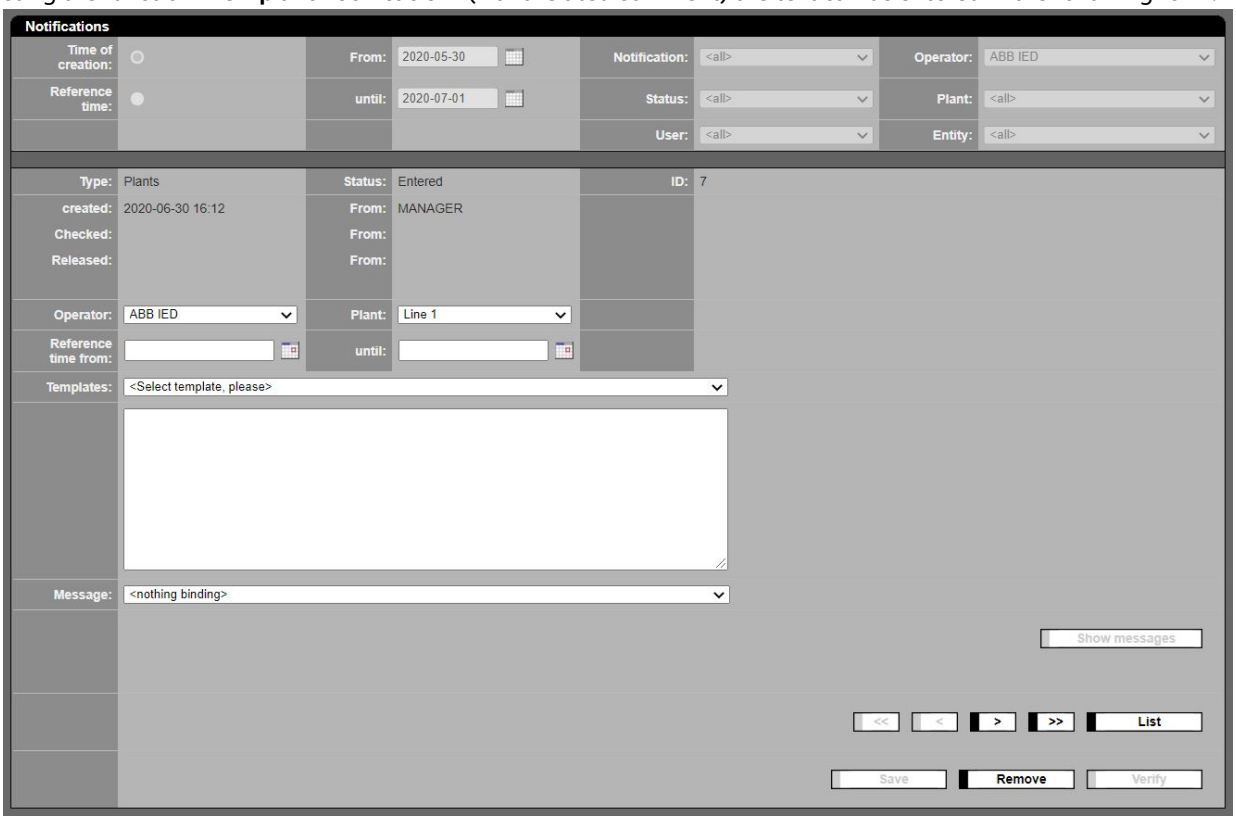


Figure 40: Entering a notification regarding the plant

After selecting the function **”new entity notation“** (message) the text can be entered in the following form:

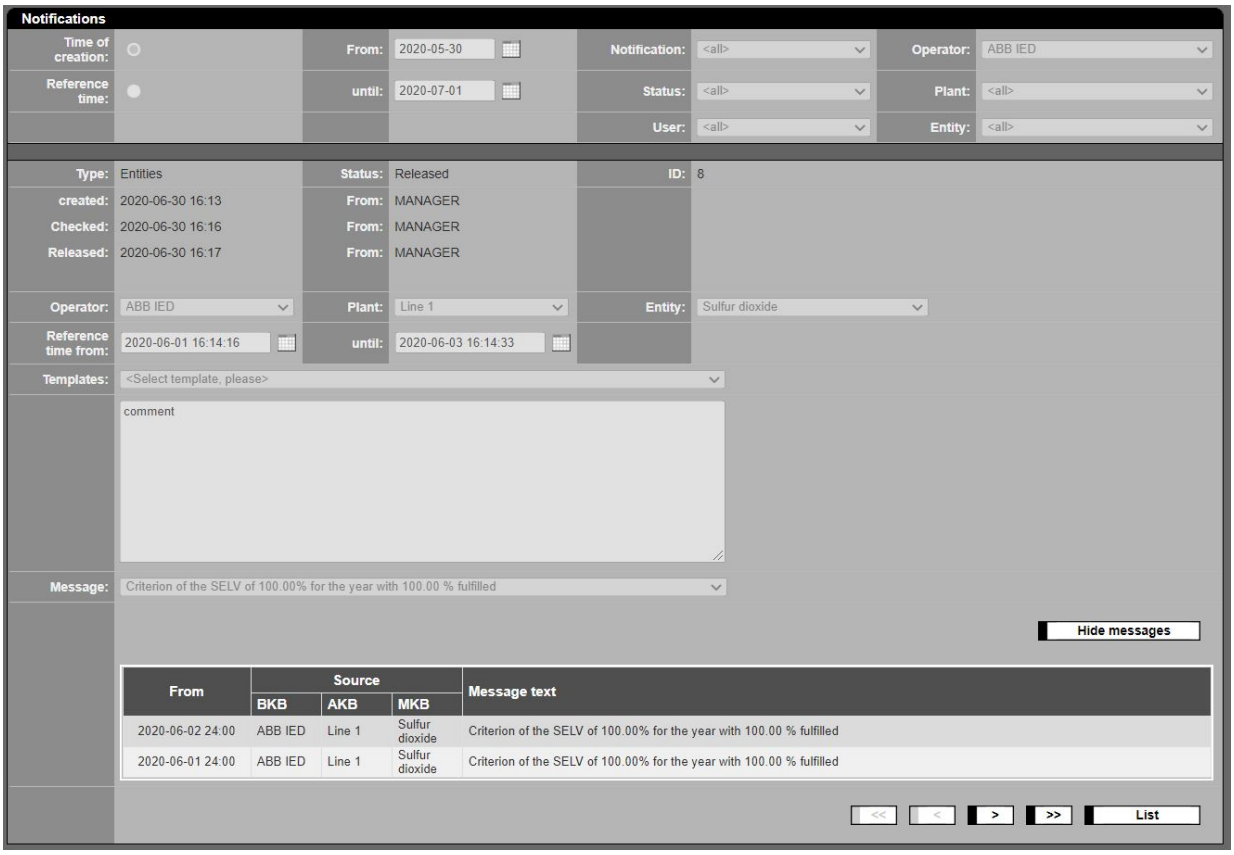


Figure 41: Entering a notation regarding an entity

Lettering	Explanation
Filter definition	
	s. table to Figure 38
Message contents and references	
Type	Type of message
Status	Processing status of message
ID	Identifier of the notification
created, From	Creation time and author
Checked, From	Date of checking and auditor
Released, From	Date of release and releaser
Agency,From	Date of release for agency and responsible person
Operator	Designation of the operator
Plant	Designation of plant (only for plant and entity messages)
Display	Only show authority entities Show all entities influences the selection under "Entity"
Entity	Designation of entity (only for entity messages)
Reference time, from, until	Reference time interval
Templates	A suitable template can be selected from a list
Text box	Text of message
Message	Enables to select a certain message from all messages which occurred during the “reference time from: … until: …” In this selection the present message is linked with all messages of the selected type which occurred during the reference time. The entered comment is also valid for all selected messages in this time range.
Show/Hide messages	After saving shows/hides the message list with the selected messages

Lettering	Explanation
List	List of notations linked with the reference time and type of notations
<< < > >>	Buttons to scroll in the notation forms. This group of button is only displayed if more than 50 notations exist.
List	Switch to list display
Save	Saves the message text
Remove	Deletes an entered or checked notation. Released of released for agencies cannot be deleted.
Check, Released, Agency	Check, release or release for agency, depending on processing status of the notification. Note: The button agency is only active for a notification about an entity the respective entity is transmitted to the agency, a notification about a plant of at least one entity is transmitted to the agency a notification to an operator and at least one entity of this plant operator is transmitted to the agency.

The following Figure 42 shows a list of linked messages directly in the message window to:

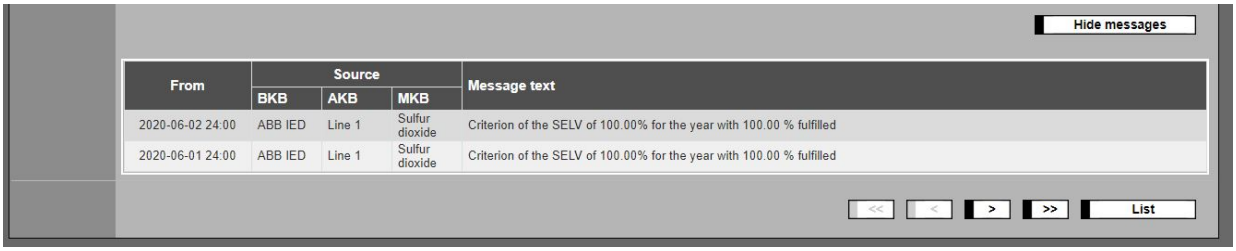


Figure 42: Classification messages to be commented with notifications

4.3.2 Manually set status

The function ”Manually set status“ enables to change the status of measuring values subsequently. For distinction new status indicators are given which equal the automatically given status only in small letters. To display the menu “Manually set status” the respective module must be activated in the form “licensing” (see 4.5.6).
After selecting the menu the status of the by “manually set status” changed entity will be displayed in form of a filtered list. The filter is made in accordance to the set filter criteria in the previous started function “manually set status”.
Two displays of manually set status are available:

- List of all important information of all manually set status (Figure 43).
- Form to enter and edit a single manually set status

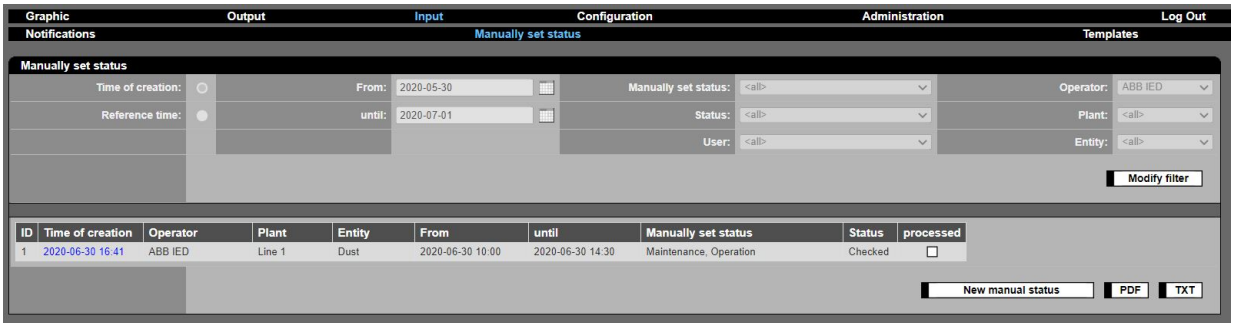
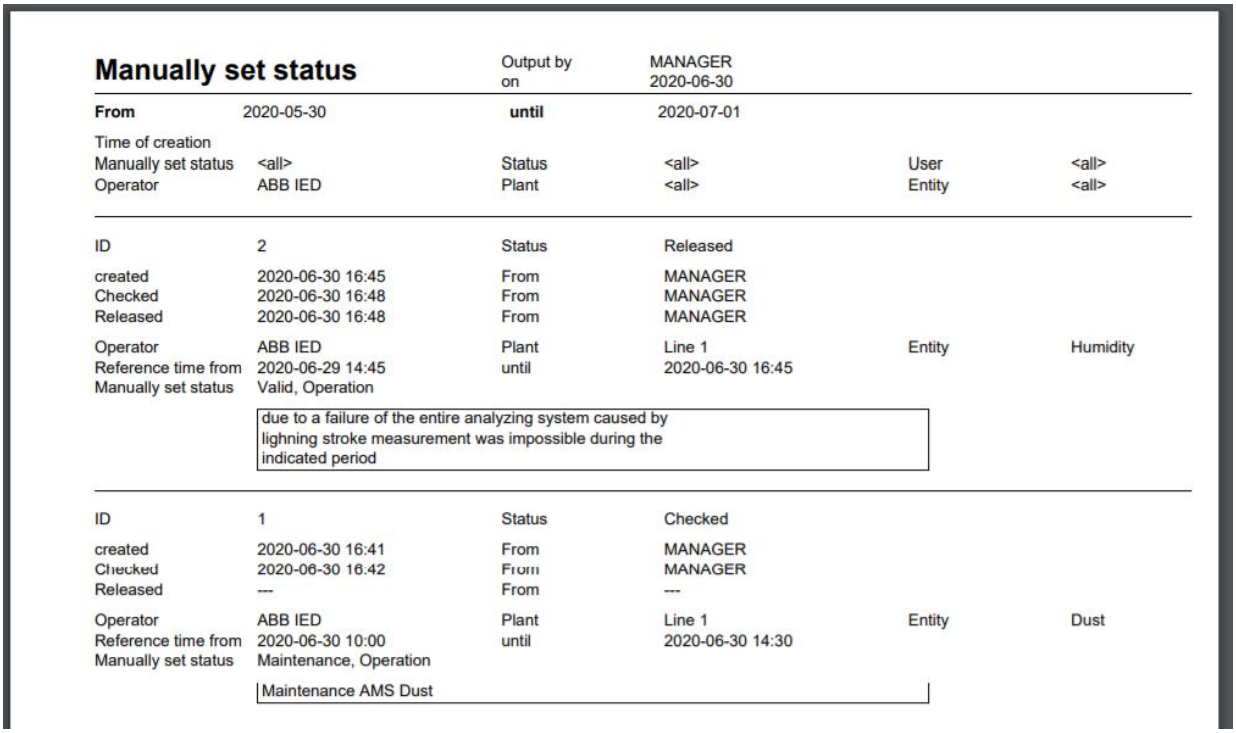


Figure 43: List of entities with manually modified status

Lettering	Explanation
Filter definition	
Time of creation	Mark if a selection is desired with respect to the time of the creation of the status change and the related notification
Reference time	Selection with respect to the reference time of the creation of the status change
From: … until: …	Timely interval of the creation time or reference time of the status changes
Manually set status	Selection of the manually set status
Status	Selection according to processing status of the manually set status: entered checked released released for agency
User	Selection for creator / editor of the manually set status
Operator	At first selection regarding the short description of the plant operator
Plant	In a subsequent step, select the plant short description
Entity	Finally selection regarding the short description of entity
Modify filter	Release of the filter criteria for editing. After that the functions in Apply filter will change.
Apply filter	After selecting a combination of criteria an overview of the filtered messages will be displayed.
List of manually set status	
ID	Identifier of the manually set status
Time of creation	Date and time of input
Operator	Designation of plant operator
Plant	Designation of plant
Entity	Designation of entity
From	Date and time of start of validity of the manually set status
until	Date and time of end of validity of manually set status
Manual status	Full text description of the manual status
Status	Current state of processing of the manual status
Worked	Marked after release and processing in CEM-DAS

Lettering	Explanation
sent	Marked after the status and/or the comment was transmitted to the agency
New manual status	A new form to enter a manually set status will be opened
PDF	Display of the manually set status in PDF format
TXT	Display of the manually set status in TXT format

The following Figure 44 shows a printout of all processing steps of some manually set status from input to transmission to the agency:



Manually set status

Output by MANAGER
on 2020-06-30

From 2020-05-30 **until** 2020-07-01

Time of creation
Manually set status <all> Status <all> User <all>
Operator ABB IED Plant <all> Entity <all>

ID 2 Status Released

created 2020-06-30 16:45 From MANAGER
Checked 2020-06-30 16:48 From MANAGER
Released 2020-06-30 16:48 From MANAGER

Operator ABB IED Plant Line 1 Entity Humidity
Reference time from 2020-06-29 14:45 until 2020-06-30 16:45
Manually set status Valid, Operation

due to a failure of the entire analyzing system caused by
lighning stroke measurement was impossible during the
indicated period

ID 1 Status Checked

created 2020-06-30 16:41 From MANAGER
Checked 2020-06-30 16:42 From MANAGER
Released --- From ---

Operator ABB IED Plant Line 1 Entity Dust
Reference time from 2020-06-30 10:00 until 2020-06-30 14:30
Manually set status Maintenance, Operation

Maintenance AMS Dust

Figure 44: Printout of manual status processing steps

By click on the button ”new manual status“ a new form for input will be opened:

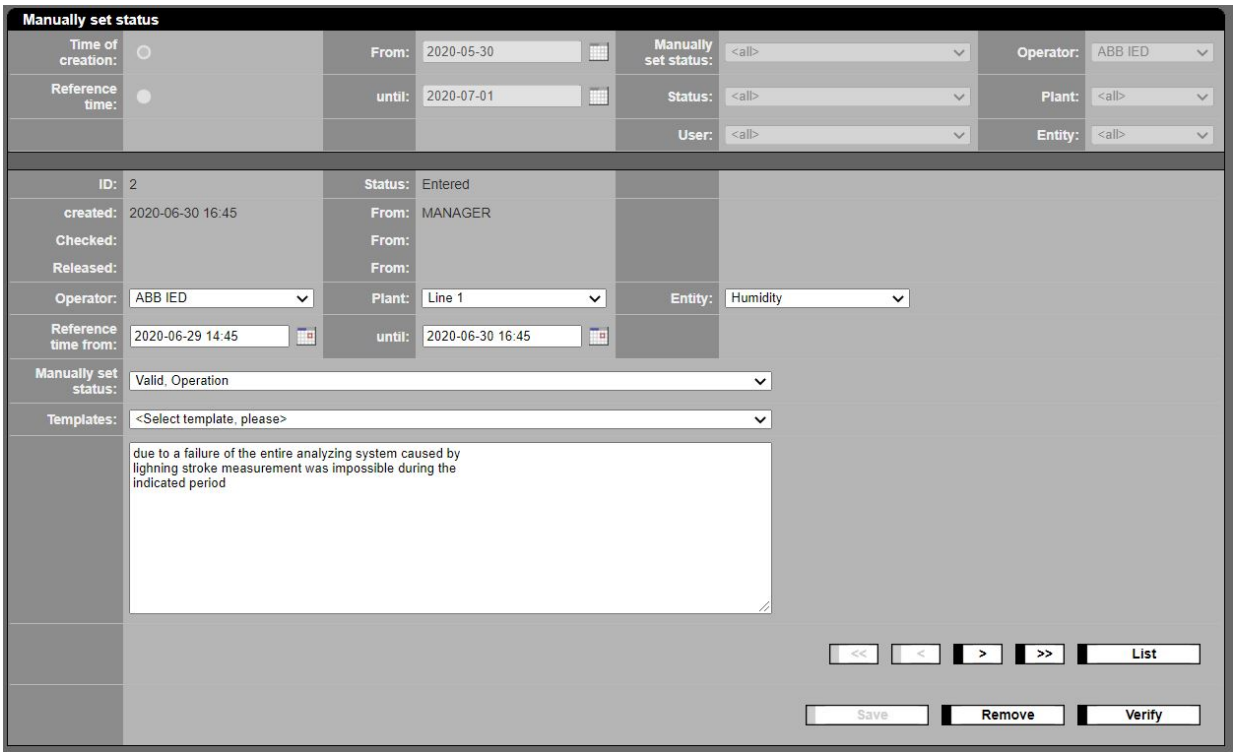


Figure 45: Manually set status, status definition and comment

Lettering	Explanation
Filter definition	
	see table to Figure 43
Message contents and references	
ID	Identifier of message
Status	Processing status of message
Created, From	Date of creation and creator
Checked, From	Date of check and auditor
Released, From	Date of release and responsible person
Agency, From	Date of release for agency and responsible person
Operator	Designation of plant operator
Plant	Designation of plant
Entity	Designation of entity
Reference time, from, until	Time range in which the manually set status is valid
Manually set status	Selection from a list of possible status
Templates	A suitable template can be selected from a list.
Text field	Free Text as comment for the manually set status
Send notification to authority ☑	If not only the manually set status but also the comment shall be sent to the agency this field has to be marked
<< < > >>	Buttons to scroll in the manual set forms. This group of buttons is only displayed if more than 50 manual set entries exist.
List	Switch to list display
Save	Saves the comment to the manual status
Remove	Deletes an entered or checked manually set status. Manually set status which are released or released for the agency cannot be deleted.
Check, Release, Agency	Check, release or release for agency, depending on processing status of manually set status

4.3.3 Templates

Templates are standard texts for often repeatedly comments with similar or likely text in the function “message” (see 4.3.1). Using templates can save a lot of writing. The following figure shows a list of available templates which can be activated by a click. You can also create new templates here.

Figure 46: List of available templates

Lettering	Explanation
New	Creates a new template
ID	Identifier of template
Revision	Editing status. By double click on the respective line the editing window will open (Figure 47).
Description	Description / designation of standard text

The following figure shows an open template, ready for editing:

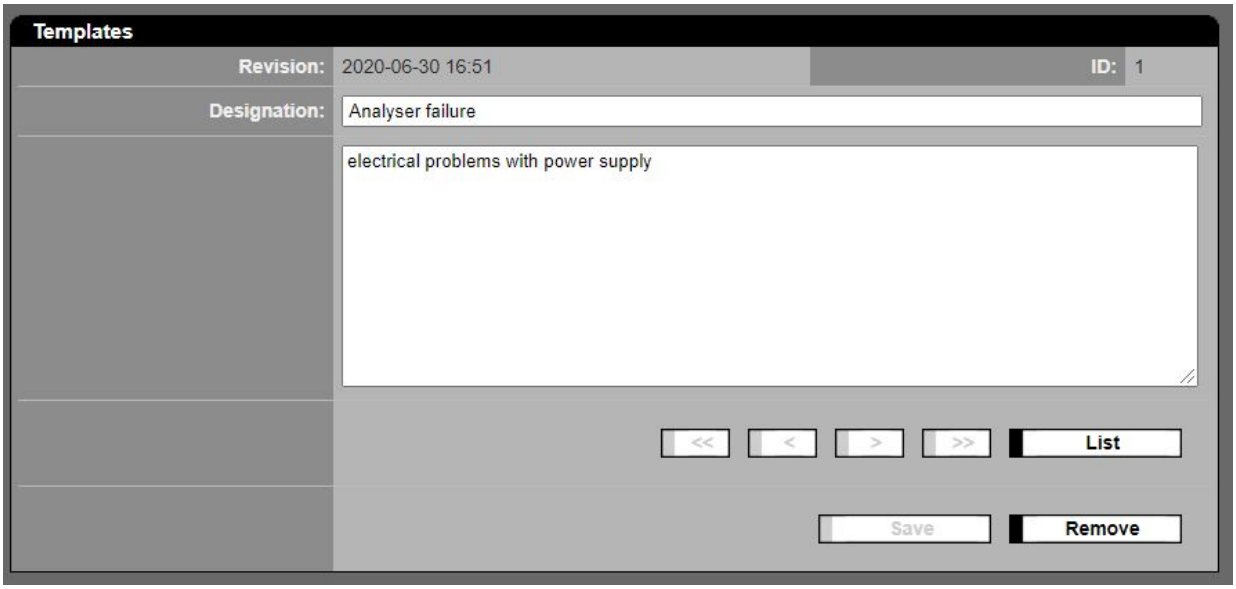


Figure 47: Creation or editing of a template

Lettering	Explanation
Revision	Creation of a new template
ID	Identifier of a template
Designation	Editing status of the template. By double click on the respective line the editing window will open (Figure 47).
Content	Description, designation of the standard text
<< < > >>	Buttons to scroll through the templates
List	Switches from the editing display of a template to the list of templates
Save	Saves the current status of all templates
Delete	Deletes the displayed template

4.3.4 Manual input

The function ”Manual input“ enables to enter daily values (e.g. of input substances according to 30. BImSchV) and set their status. To display the menu ”Manual input“ it must be activated in the form ”licensing“ (see 4.5.6). The entered values can be calculated as input substances. They will be compressed to monthly and annual values. After entering a value and if necessary a status the value is transmitted to a database. The end of the transmission is shown with a mark above the selection field.
The following figure shows the input form for a month:

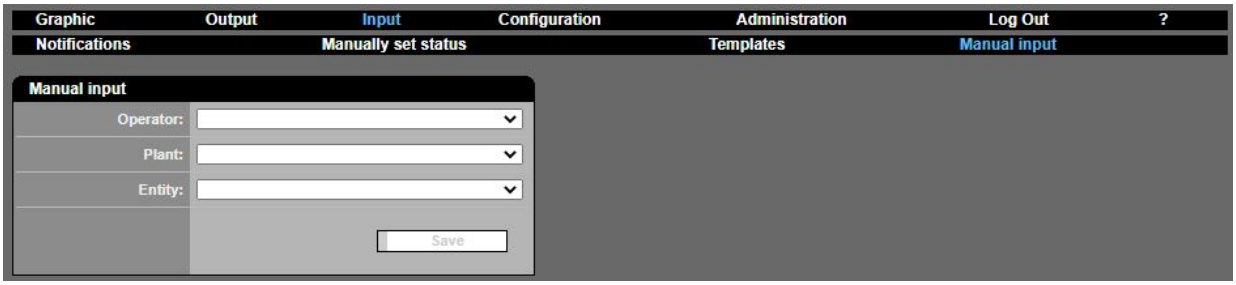


Figure 48: Manual input of daily values

Lettering	Explanation
Operator	Selection of a plant operator
Plant	Selection of plant of the entity which shall be modified
Entity	Selection of entity
	Selection of the month
Day	Day on which the daily average shall be changed
Value	Input of a value for the daily average value
Status	Selection of a status for the daily average
Acceptance occured	Shows that CEM-DAS has accepted and processed the value

4.4 Configuration

4.4.1 General

The sub menus of the function “Configuration“ are organized similar to the Windows file explorer. For new operators, plants and entities a name is created automatically (Figure 49, top left) which should be replaced by a memorable “correct” designation:

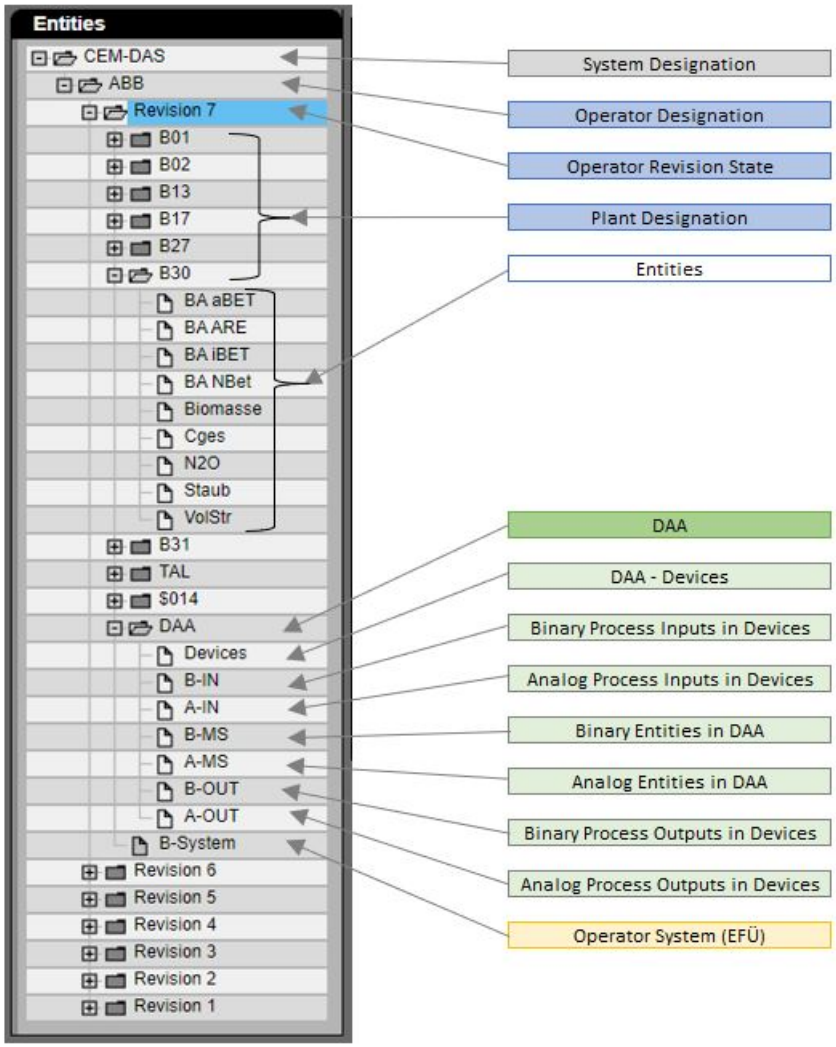


Figure 49: Tree structure of the parameter

Each menu item can be enlarged by ’+’ or closed by ’-’. Opened or closed parameter sets are marked by opened or closed tabs.

The following diagrams show the objects which are generated when parameterizing CEM-DAS and their interrelationship. The minimum necessary processing steps to create a parameterization of CEM-DAS are shown with bold lines in the diagrams:

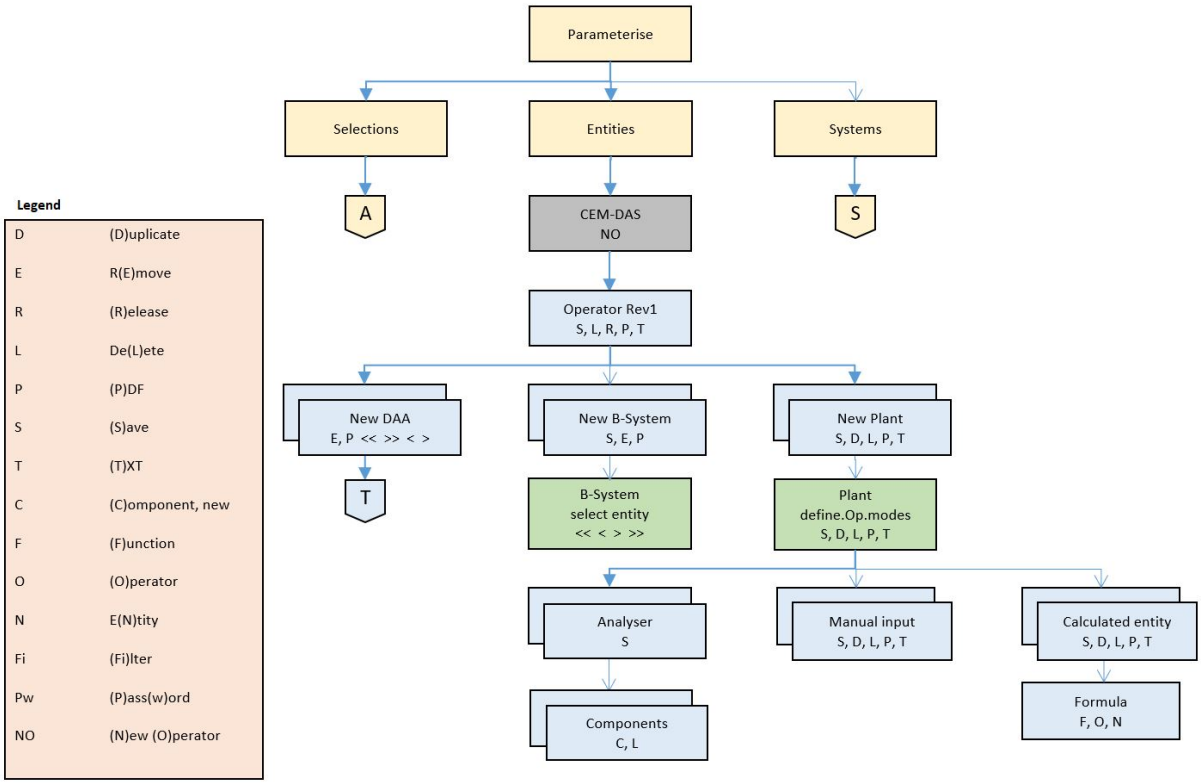


Figure 50: Parameterizable CEM-DAS objects: Entities

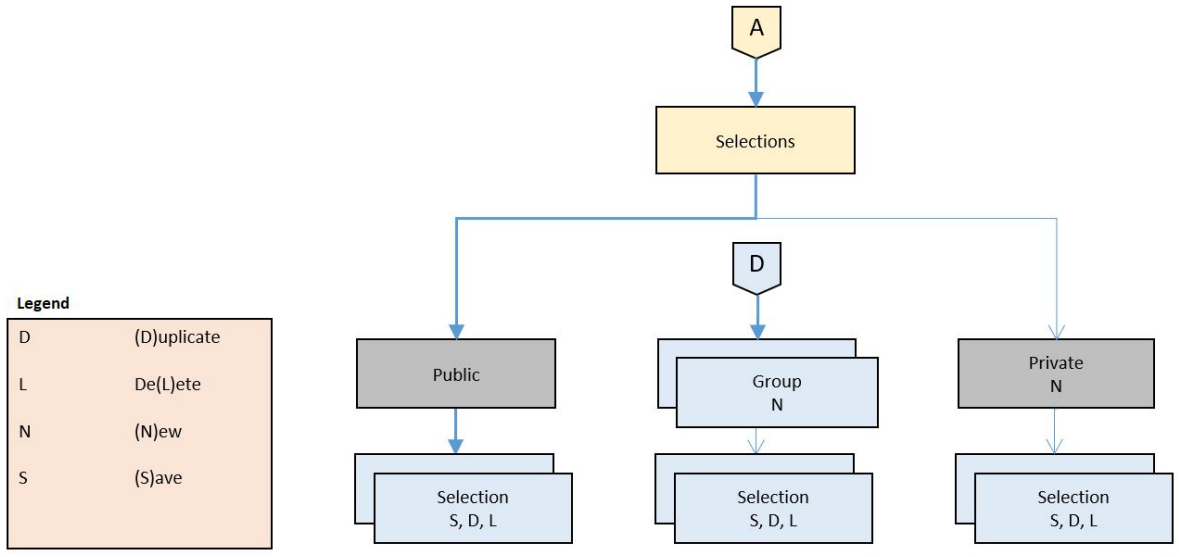


Figure 51: Parameterizable CEM-DAS objects: Selections

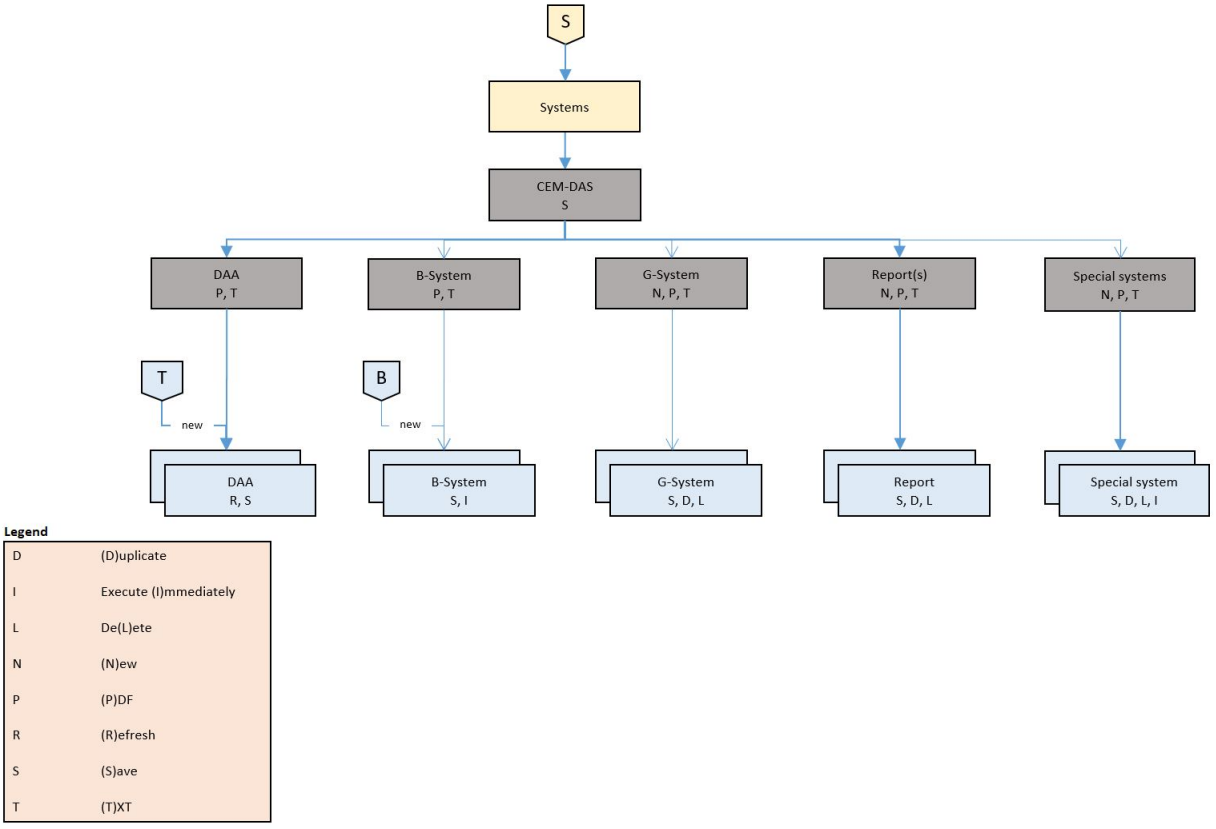


Figure 52: Parameterizable CEM-DAS objects: Systems

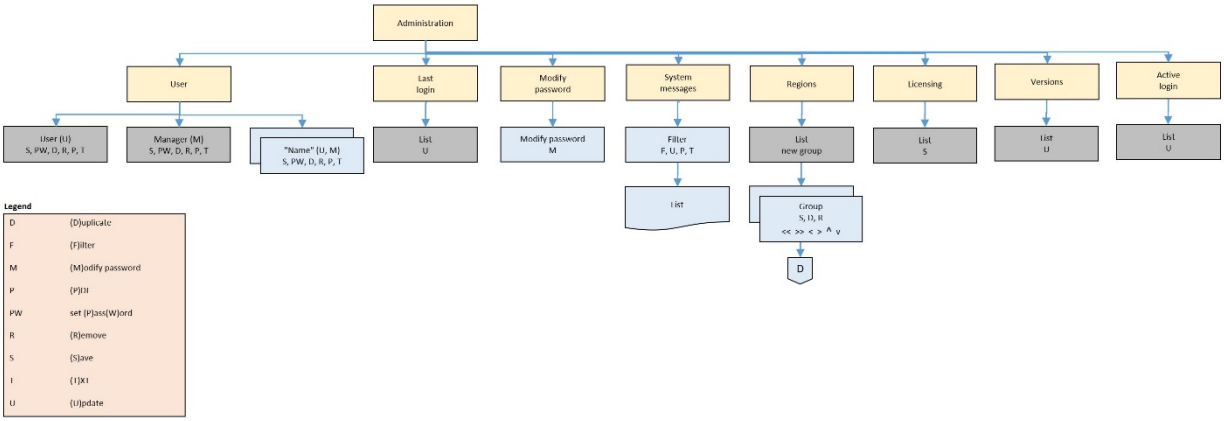


Figure 53: Parameterizable CEM-DAS objects: Administration

4.4.2 Selections

Selections shall gather entities to a group with a memorable designation make the selection comfortable and oriented on the respective tasks. The selections can be public and open for every user. Private selections are only available for the user who created them. Further so called range selections are possible which allow use only for members of a certain region (see 4.5.5).

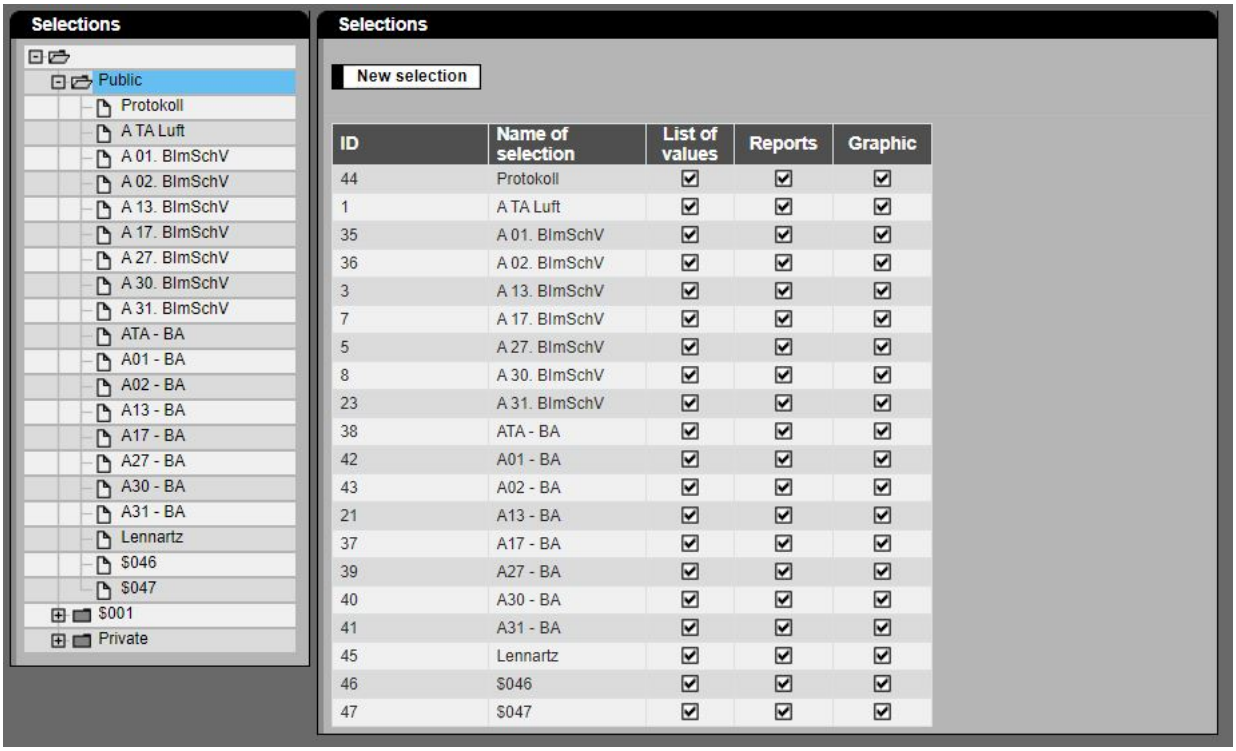


Figure 54: List of selections

Lettering	Explanation
Selections	Overview
Public	Pre-defined group of selections available for all users
Private	Pre-defined group of selections only available for the user who defined the selection
Region (group)	“region west”: User group with group attached selections, defined with the function “Administration / Regions” 4.5.5
Selections	List
New selection	Creates a template for a new selection
Name of selection	List of existing selections
List of values	This selection is available in list of value
Reports	This selection is available in reports
Graphic	This selection is available in graphics (bars, lines)

The following figure shows the details, which means the assignment entity <> selection of a chosen group selection.

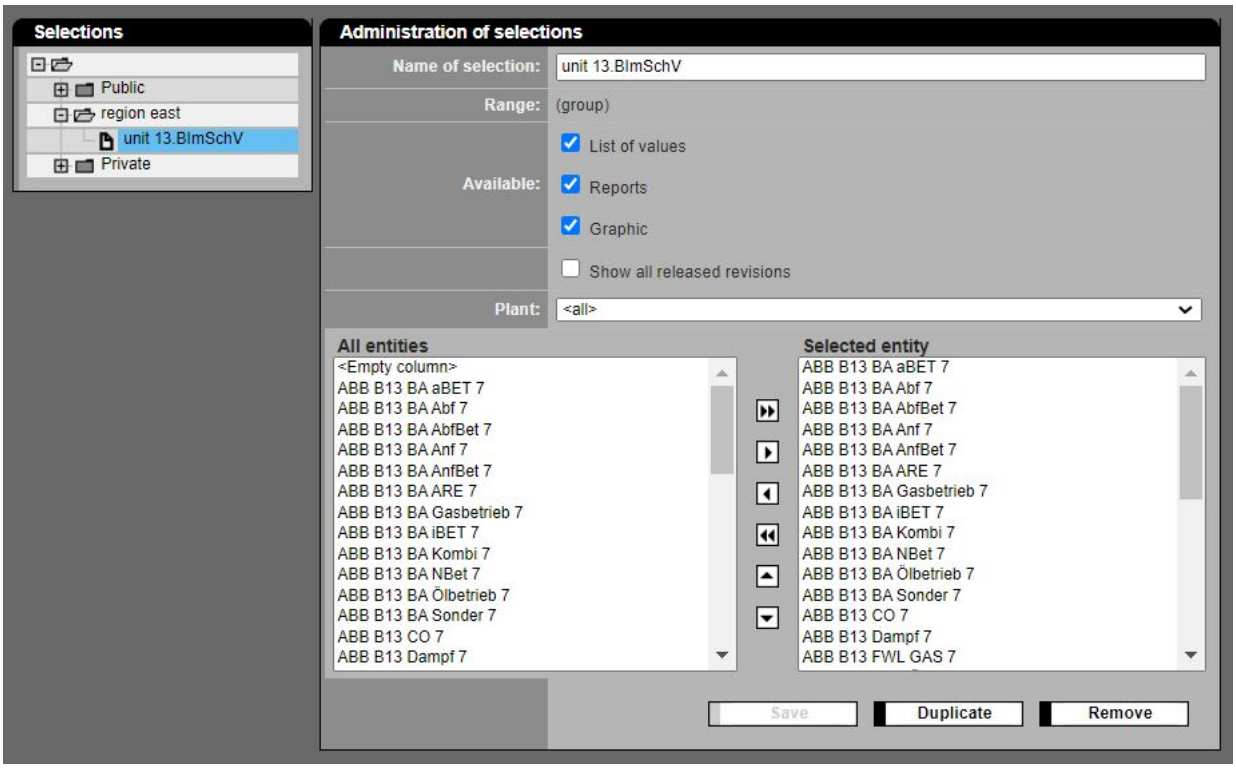


Figure 55: entities of a selection

Lettering	Explanation
Selection management	
Name of Selection	Designation of selection. The designation must be clearly within a region or in “public” or “private”.
Range	Information, if the selection is: • Public, available for all users • Private, available only for the creator • group, available for all user in this region
Available	Information for which function the selection shall be available. The following functions are available: • List of values • Reports • Graphic (bars, lines)
Show all released revisions	The selection list of the entities shows all entities from all released revisions. Otherwise only the entities from the highest revision will be displayed.
Plant	Designation of the plant from which the entities shall be selected
All entities	List of all available entities. On first place is an empty entity available, which creates an empty column in the value list if integrated in the selection.
Selected entities	List of the selected entities
Save	Saves the selection
Duplicate	Duplicates the selection
Remove	Deletes the selection

4.4.3 Entities

4.4.3.1 Set up and edit a new operator

By selecting “CEM-DAS“ a new operator can be set up. In the level of “CEM-DAS” a comment may be attached to an already existing operator.

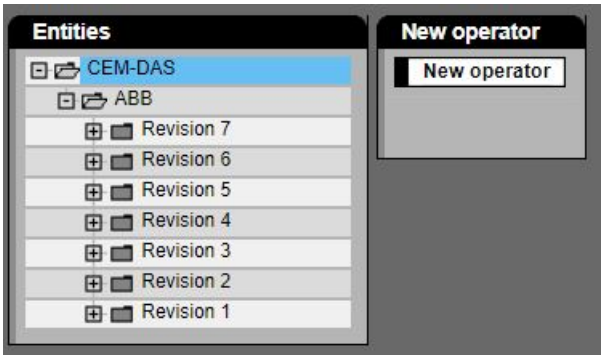


Figure 56: Set up a new operator

Setting up a new operator automatically creates the parameter “revision 1” and the standard values. Furthermore all functions are available here to start parameterization of the system parts like DAA-Controller, B-Systems, plants:

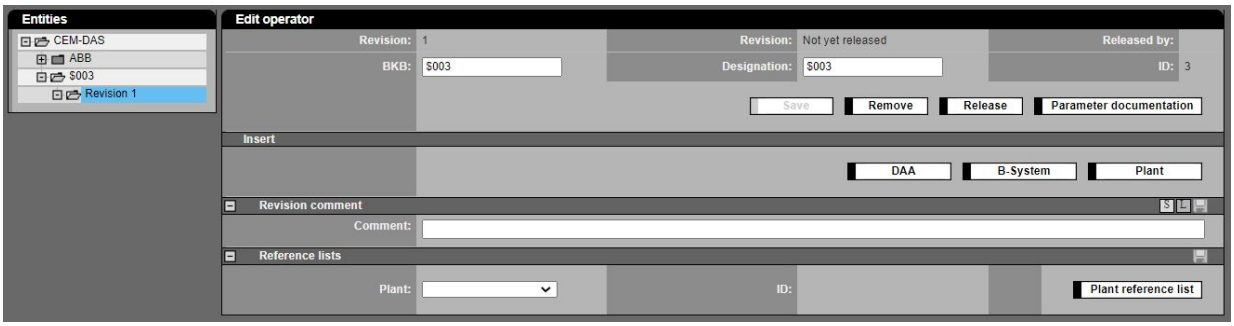


Figure 57: Edit operator prior set up of a new plant

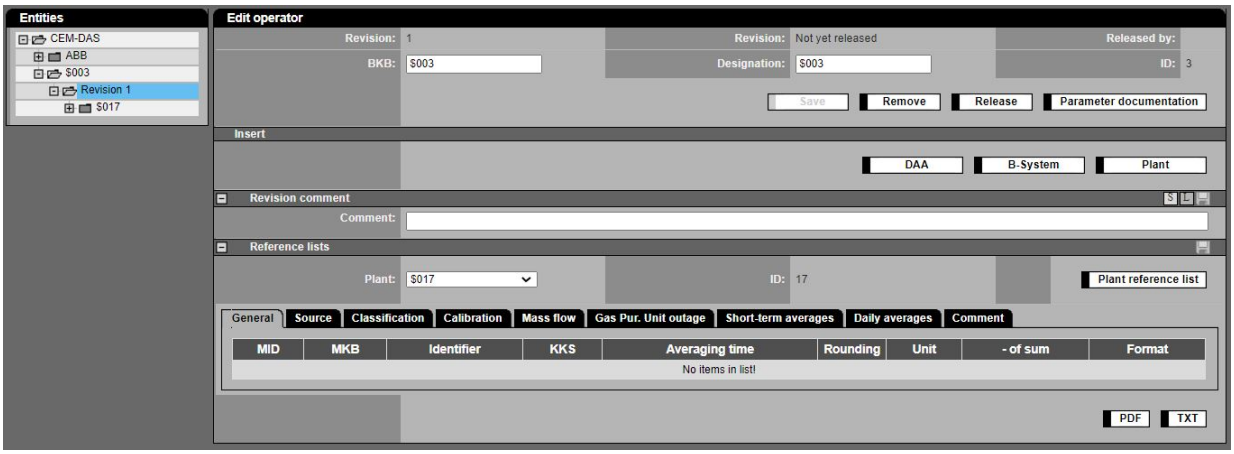


Figure 58: Edit operator after set up of a new plant

Lettering	Explanation
Edit plant operator	
Revision	Parameter revision
Revision	Date and time of release of parameter revision. In case the revision is not yet released a text will pop up: Not yet released
Released by	Name of user, who was registered during the release
BKB	Short designation of operator, max. 4 characters
ID	Identifier of operator
Designation	Full designation of plant operator, max. 20 characters
Save	Saves all entries
Remove	Deletes a not released revision. Revision 1 can only be deleted if the operator is deleted. (Figure 59)
Release	Release of a revision after a change in the parameters. At least one entity must exist and the plant must have an operation entity.
Parameter documentation	Output of all entity parameter in PDF format. System parameters and administration informations are not printed.
Insert	
DAA-Controller	Insert a DAA-Controller system (see 4.4.3.2)
B-System	Insert an operator B-System (see 4.4.3.3)
Plant	Insert a new plant under an operator
Reference lists	
Plant	Selection of a plant to display the plant parameter as reference lists
ID	Identifier of the selected plant
Plant reference list	Output of a subset of the parameters of an operator in PDF format as reference lists. These lists are subdivided according to the selected tabs. The subset is limited by selection of the plant.
PDF	Output of the entity parameter of a plant operator in PDF format.
TXT	Same as PDF output but only as text

If a new operator is selected in the Explorer-like tree below “CEM-DAS“ a list of all revisions and a comment field for free text is displayed. Before releasing a revision, a comment must be entered.

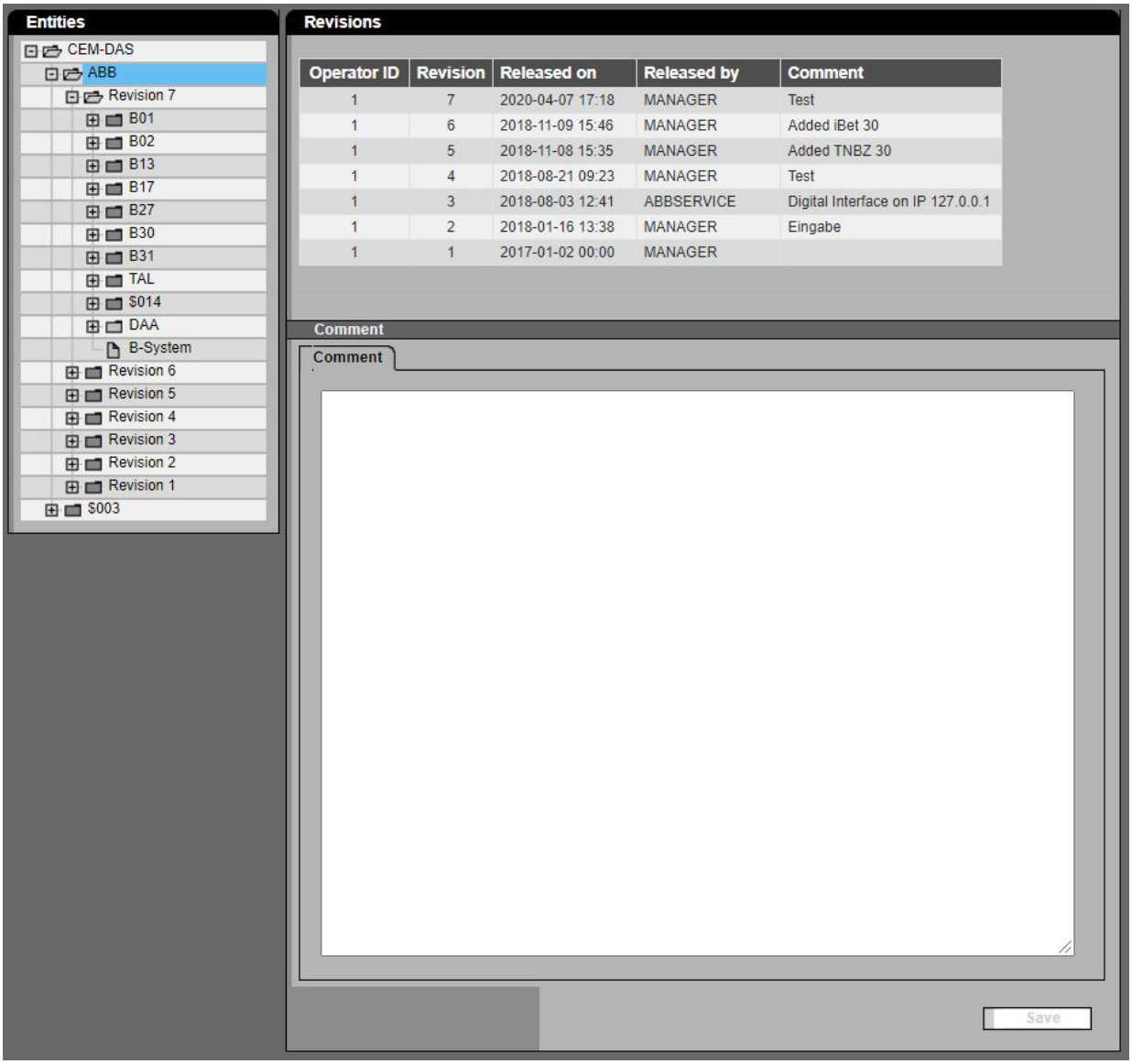


Figure 59: Revision list and operator comment

Lettering	Explanation
Revisions	
Operator ID	Clear code of operator
Revision	Cons. Number of parameter revision always starting with “1“
Released on	Date and time of revision release
Released by	Designation of user, who was registered during the release
Delete operator	This button is only visible as long as no other details to the operator were entered and no revision was released. Only in this case a plant operator can be deleted.
Comment	
Comment	Text field for any text, e.g. for operator specific notes
Save	Saves the text in the comment field

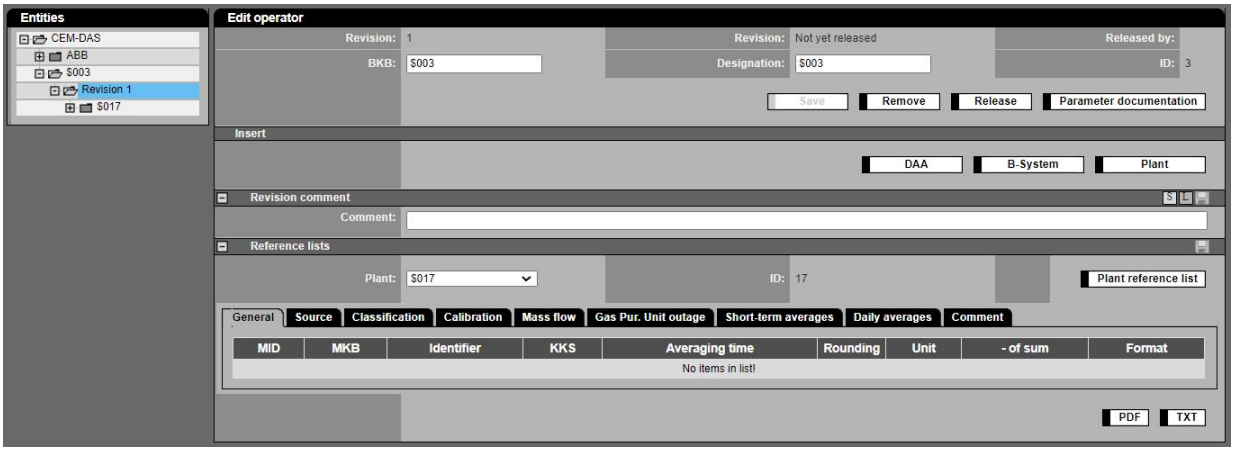


Figure 60: New set up of operators and plants

The parameters of operators, plants and their entity parameters are described in detail in chapter 4.4.3.6.

Lettering	Explanation
Edit plant operator	
	see 4.4.3.6

4.4.3.2 Insert DAA-Controller

4.4.3.2.1 General

To connect a new DAA-Controller to CEM-DAS it is necessary to “insert” a new DAA-Controller system in CEM-DAS. Then devices with inputs/outputs for process signals are assigned to this DAA-Controller. Then modules, clamps which have various combinations of digital and analog inputs/outputs are assigned to these devices. Only after that the binary and analog input/output will be processed in DAA-Controller.

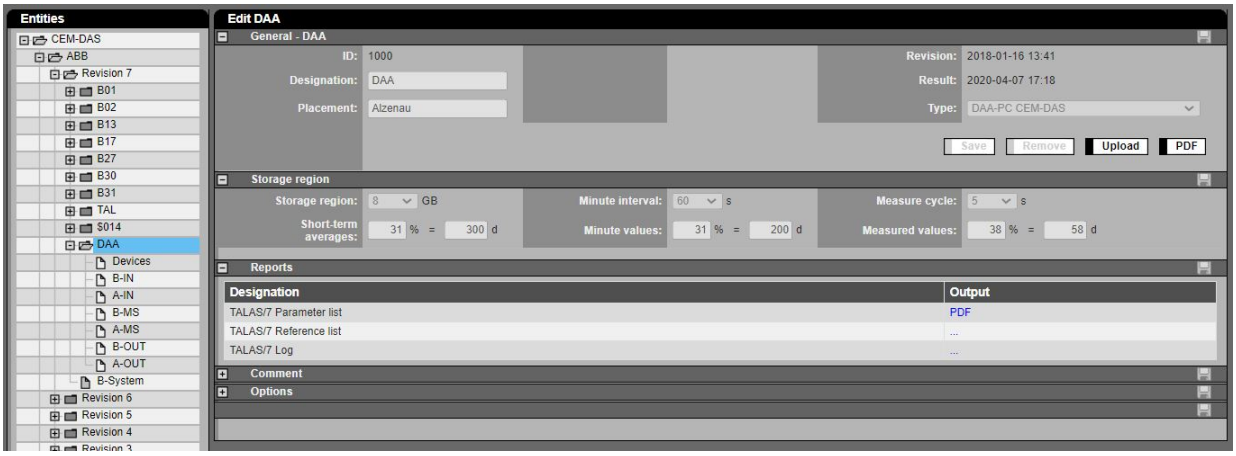
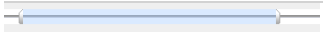


Figure 61: General DAA-Controller system parameter

The display according to Figure 61 will appear after inserting a DAA-Controller.

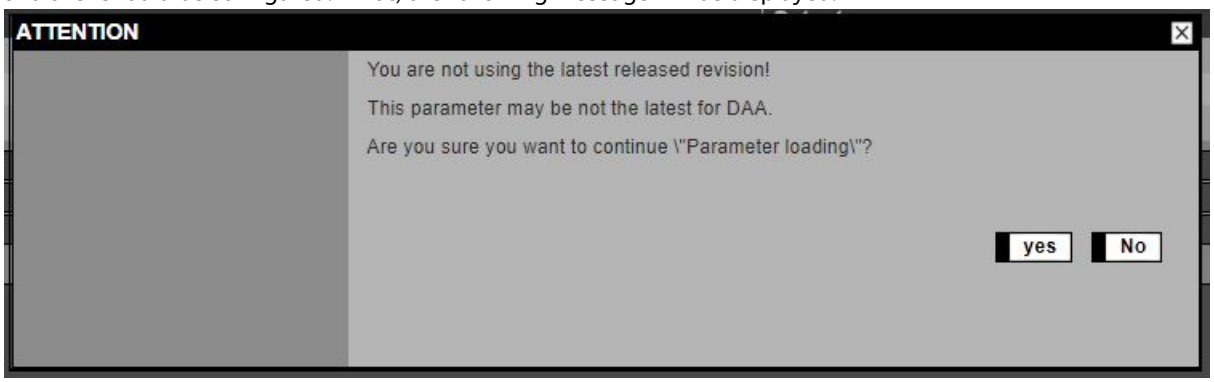
Lettering	Explanation
Edit DAA-Controller	
ID	Clear ID of DAA-Controller
Revision:	Date and time of last change of general parameters
Designation	Full designation of DAA-Controller (max. 20 characters)
Result	Date of last change of any parameter in DAA-Controller
Placement	Designation of location of DAA-Controller
Type	The DAA-Controller program can be installed either: directly in the CEM-DAS-PC (CEM-DAS PC) or another PC on the network (Standalone PC) or DAA-Controller-Controller IOC or DAA-Controller-Controller IOC+ The correct type of installation can be selected here.
Save	Saves the present DAA-Controller-Parameter
Remove	Deletes a DAA-Controller from the present Revision
Upload	Loads the parameter in DAA-Controller
PDF	Output of general parameter in PDF format
Storage region	
Storage region	Selection of a storage region in Gigabyte (GB) on the hard disk which is reserved for DAA-Controller data on a PC. Depending on the size of total memory 8, 16 or 32 GB can be selected. This is important for DAA-Controller running on a PC with limited storage capacity.
Minute interval	The minute interval in [s] can be selected for all entities with a single valued time between 30s and 60s.
Measure cycle	The cycle time is fixed to 5 sec by legal regulation. The narrowest time window is determined by having time critical signals next to each other on the same IO block (for example wind speed and wind direction).
short-term averages	Short-term average storage as a percentage of the total memory. The memory depth in days [d] depends on the number of entities.
Minute values	Minute values storage as a percentage of the total memory. The memory depth in days [d] depends on the number of entities.
Measured values	Measured value storage as a percentage of the total memory. The memory depth in days [d] depends on the number of entities.
	Sliders for easy distribution of variable parts for short-term averages, minute values and measured values on the memory. The relation between short-term averages and minute values are changed with the left slider, the relation between minute values and measured value are changed with the right slider.
Reports	
Designation	Designation of the report
Output	Format of output
DAA-Controller Parameter list	Compiled report containing all parameters according to the screen mask
DAA-Controller Reference list	Output of a PDF document with all parameters broken down into the following 8 parts: Characteristics data of the analog inputs Limit values Data for standardization Measurement uncertainties Calibration range Measurement range Characteristics data of the analog outputs Report alarm threshold of the digital outputs
DAA-Controller Log	Output of a logbook of parameter changes in PDF format
Comment	
	Free text as comment to DAA-Controller
Options	
	Reserved for enlargements etc.

4.4.3.2.2 DAA-Controller Parameter loading

DAA-Controller Parameter are loaded directly from CEM-DAS.

Attention, after the release of a revision the modified DAA-Controller / 7 parameters have to be loaded!

To load DAA-Controller parameter you should make sure to have the highest released revision and the communication to the respective DAA-Controller should be configured. If not, the following message will be displayed:



A successful loading is documented in the terminal window (Figure 62).

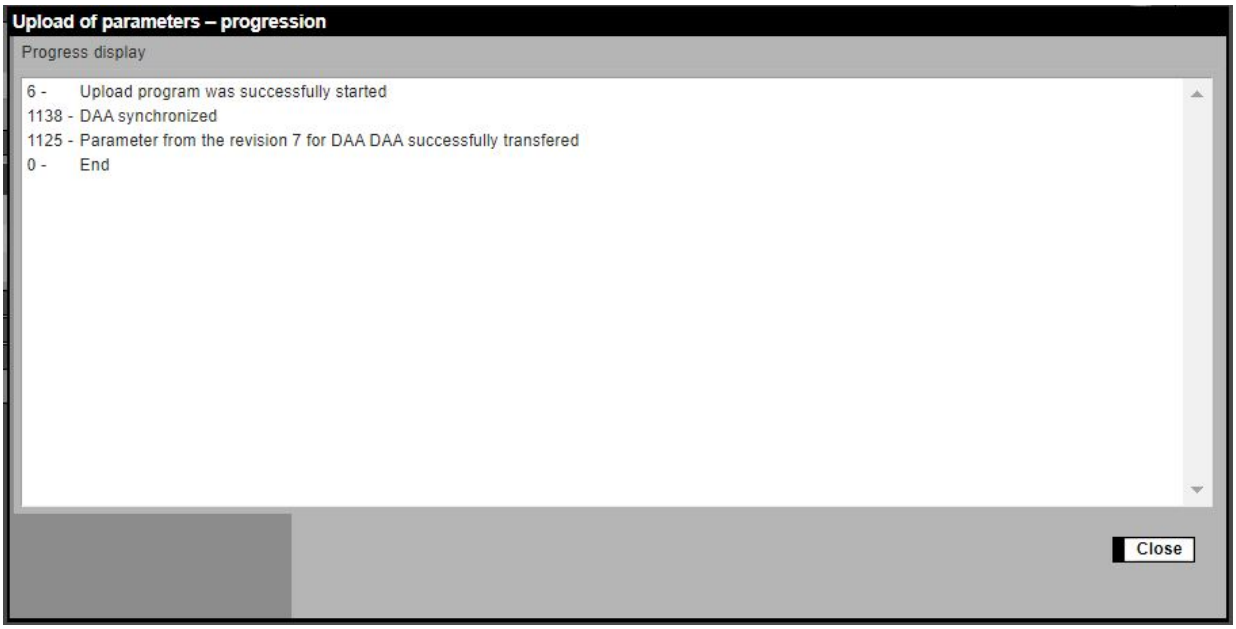


Figure 62: Terminal window with the DAA-Controller loading

4.4.3.3 Insert B-System

Preparation of a new B-System. A B-System is a selection of entities, where their values, limit violations and messages shall be transmitted to the agency. In this case the list of systems shows a new B-System as follows:

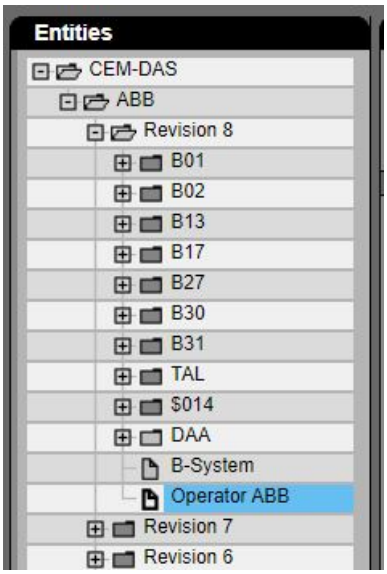


Figure 63: B-Systems in the list of systems

Also next to the list of systems a selection list is displayed to assign entities (left side) to the B-System (right side):

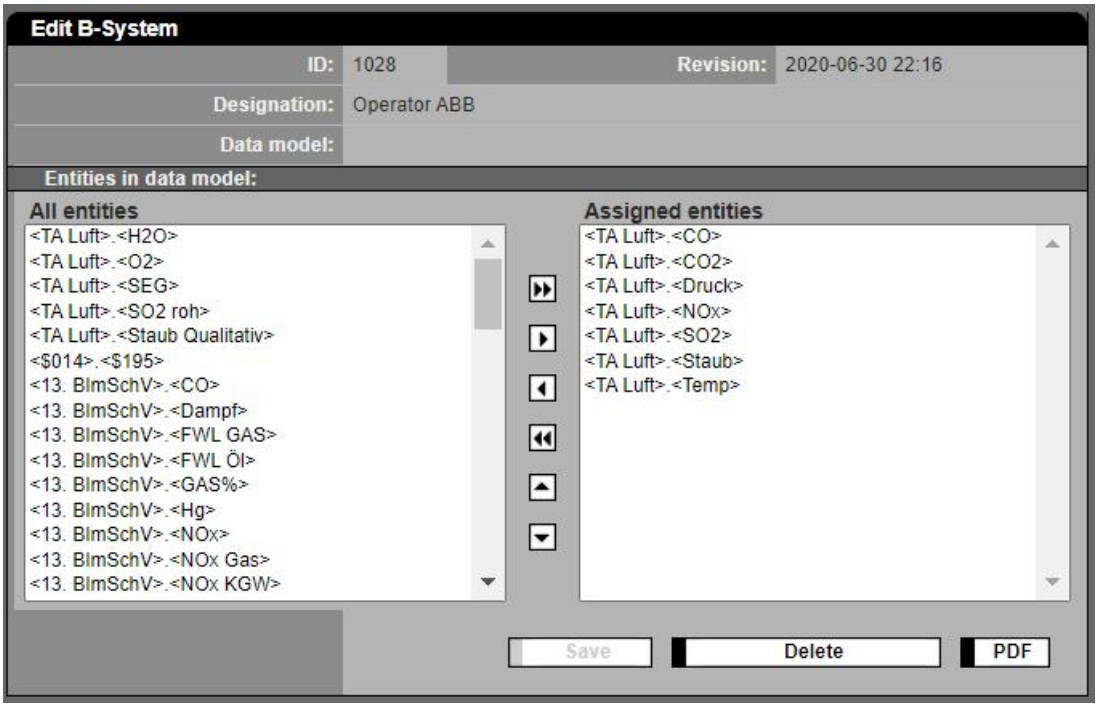
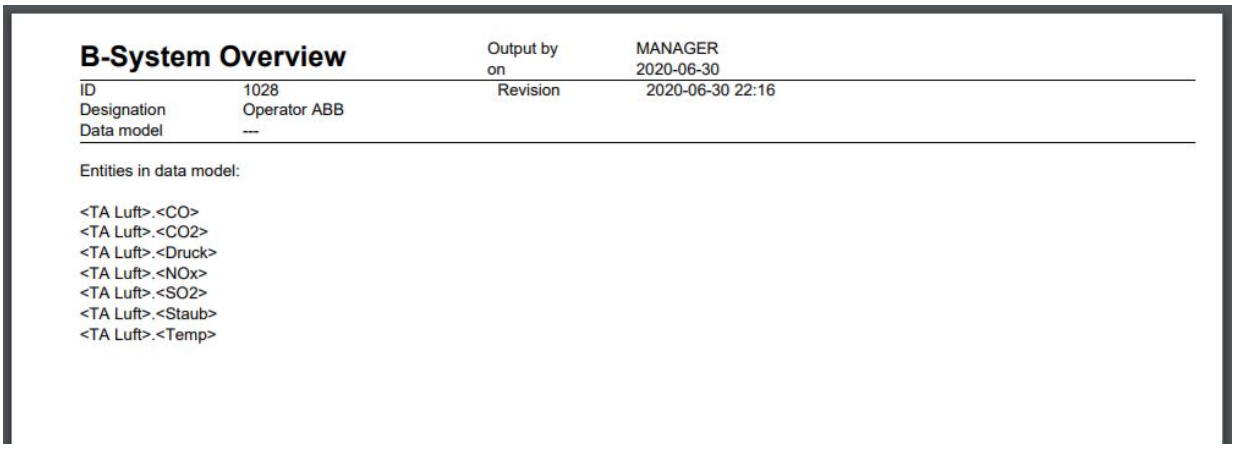


Figure 64: Assigning entities to a B-System

Already here entities can be assigned to the future B-System. The further processing, especially the change of the preliminary designation to a significant designation must be made under “Parameterization / systems”. The B-System can be saved, deleted and printed in PDF format:



B-System Overview

Output by MANAGER
on 2020-06-30

ID	1028	Revision	2020-06-30 22:16
Designation	Operator ABB		
Data model	---		

Entities in data model:

<TA Luft>.<CO>
<TA Luft>.<CO2>
<TA Luft>.<Druck>
<TA Luft>.<NOx>
<TA Luft>.<SO2>
<TA Luft>.<Staub>
<TA Luft>.<Temp>

Figure 65: Overview of selected entities of the B-System

4.4.3.4 Insert plant

A plant is a base to create entities later. A plant is the superordinate unit in which entities are grouped. Furthermore a plant offers optional a graphic for agency message (EFÜ) system. Besides grouping entities it also applies to the entities the plant status or mode of operation. After entering a plant it will be displayed in the list of systems with standard values and general plant parameters:

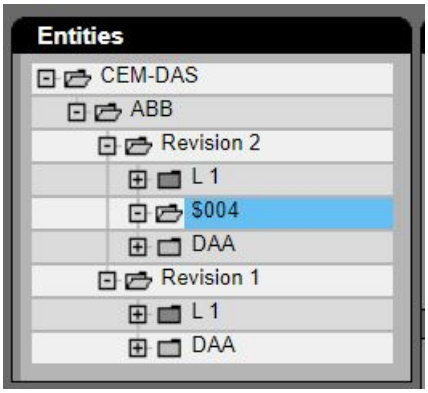


Figure 66: list of systems with newly added plant

The plant contains preliminary values for the plant short designation (AKB) and the designation and the standard designation for the operating mode number (OMN). The further processing is in chapter 4.4.3.8.

4.4.3.5 Select revisions

All changes in the parameter of the CEM-DAS are completely documented. Previous parameter will stay in the database to clearly interpret measure values of the past. This has the effect that once measures were taken with new parameters it is not allowed to change the parameters any more. Therefore parameters need to be released for measurement (function `release´). From this point on these parameters are `frozen' and can only be printed or used for a parameter change (function `change´) in the next revision. In the forms for editing the respective buttons are missing and the parameters are displayed in grey letters.

The following Figure 67. shows revisions of which the newest (2) is not released and can still be edited or deleted. Below the revision list is a comment field in which – similar to a logbook – important information for track of revision changes can be entered. This will be presented if a plant operator is selected.

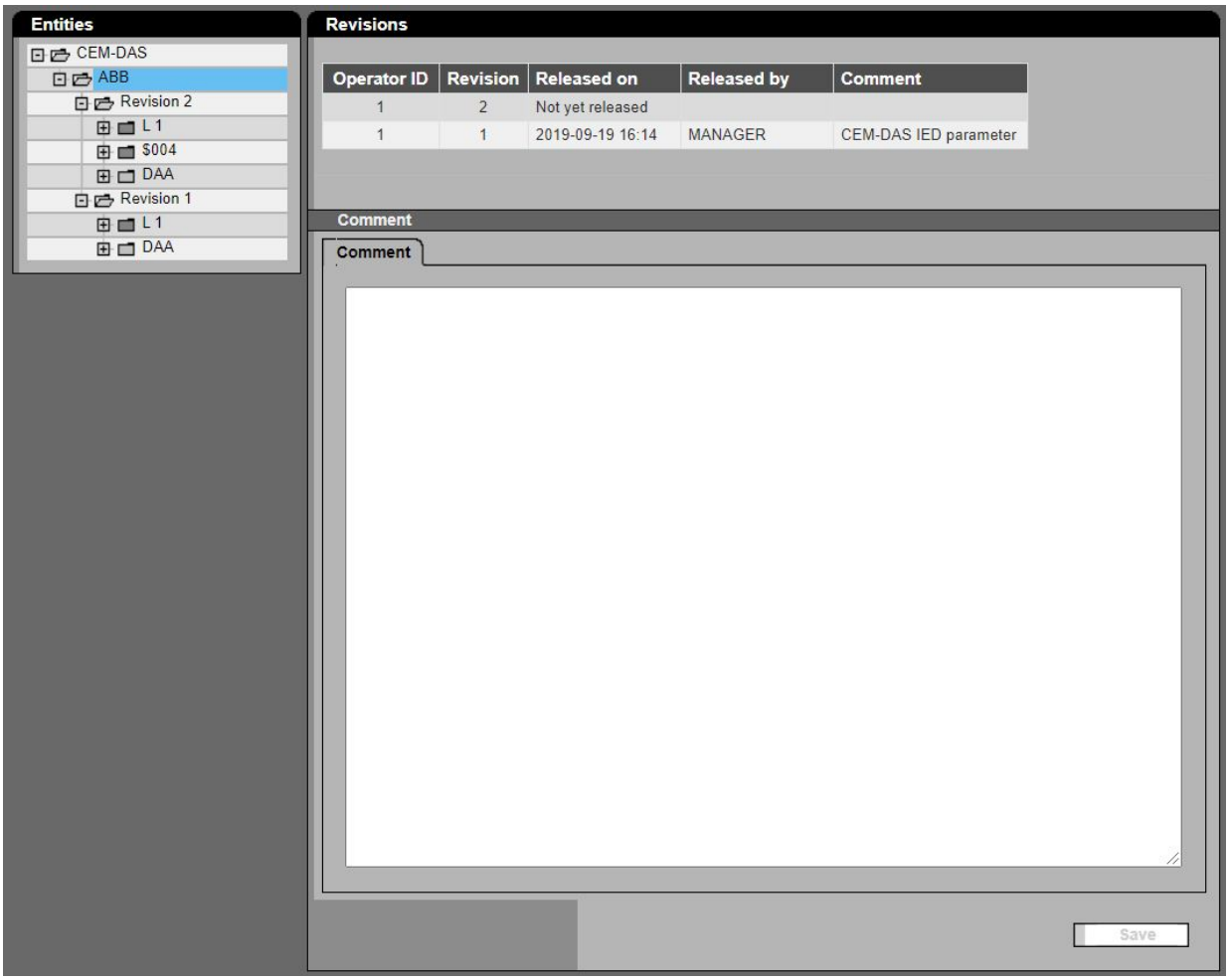


Figure 67: Selection of a revision

4.4.3.6 Editing of a Revision

After selecting a revision the data will be displayed for input or change as shown in the following Figure 69 or Figure 70. The type of presentation depends if the revision is already released or not. If a revision is not yet released all parameter can be edited and the system can be extended which means new plants and entities can be created. During editing the new parameter the data processing will continue undisturbed according to the last released revision. If the system shall be extended you are now able to create new DAA-Controller, new B-Systems and new plants. If just parameters shall be changed, e.g. like after a calibration or functional testing, the clearly arranged reference lists are available (Figure 68). In this display a plant can be selected. By a click on the tab (Figure 69) the entities of this plant will be shown in lists. The related parameter groups can now be edited or just displayed. The description of the single parameter is made in a detailed display by selecting a plant and then the entity (see 4.4.3.9).

Figure 68: Tabs for selection of a reference list

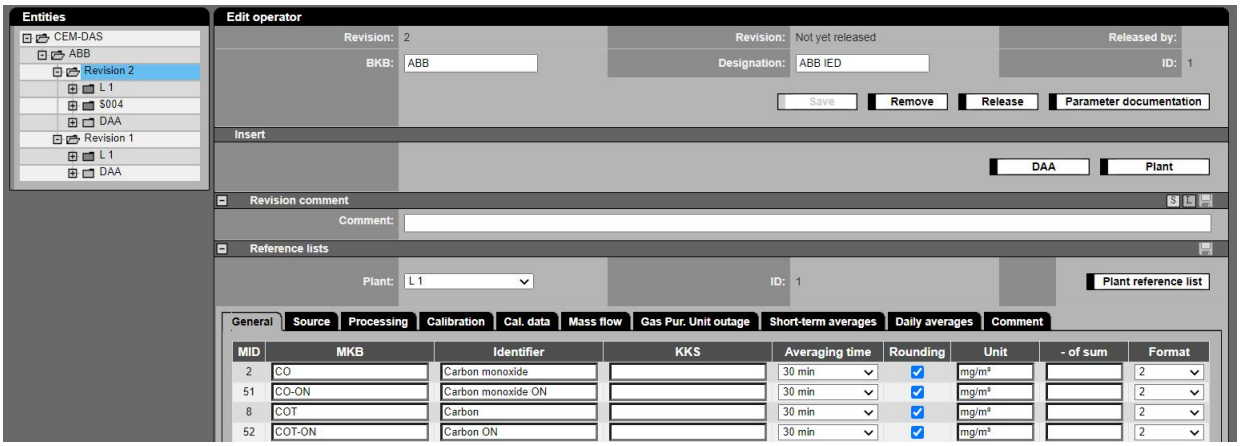


Figure 69: Editing of operator: editable revision

If a released revision is selected the following form will appear (Figure 70):

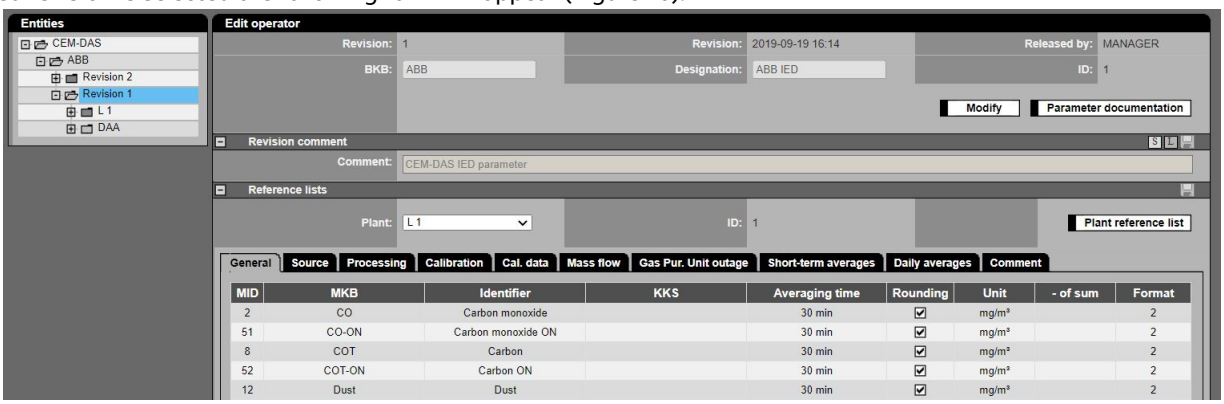


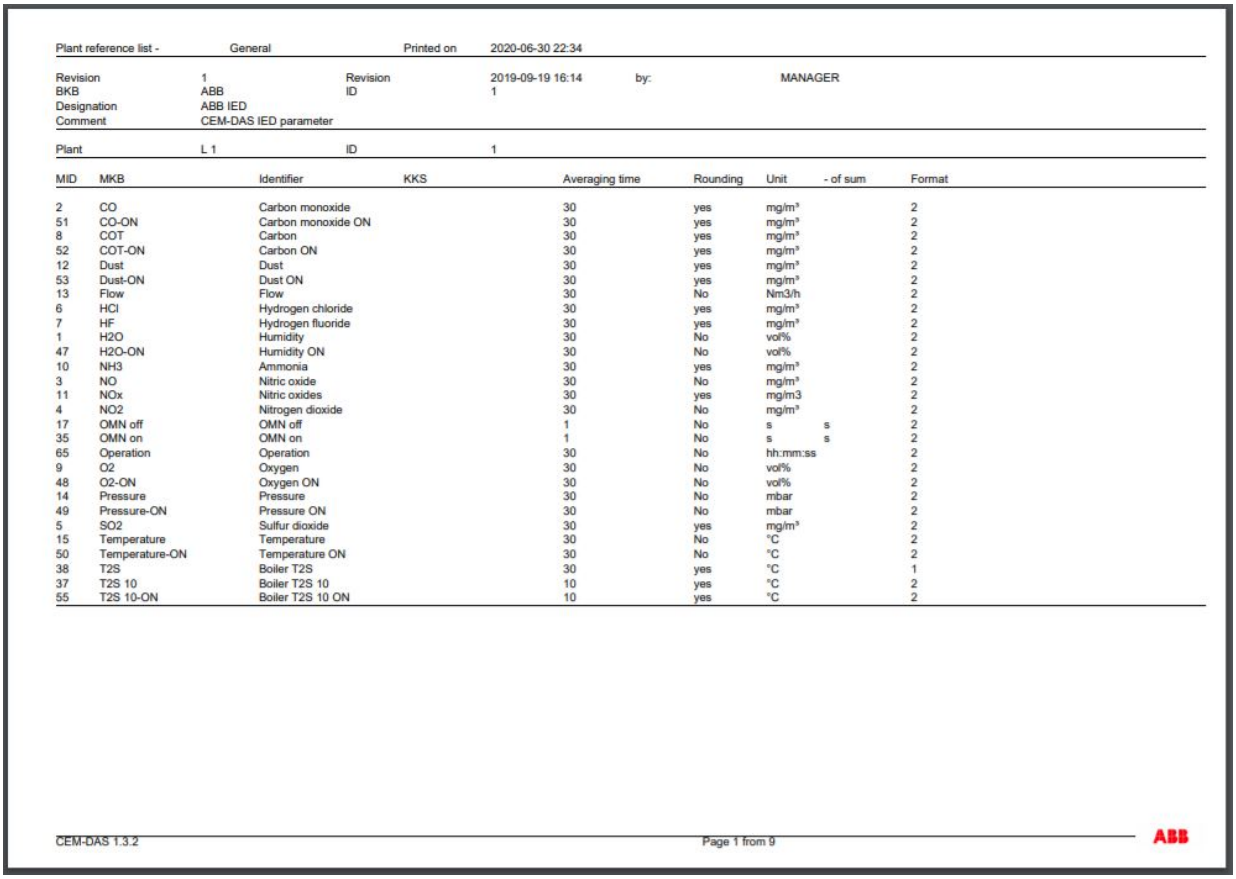
Figure 70: Editing operator: released revision

Now data are not editable because there might be already measured values. But they can be used as base for a new revision (**Modify**), but only, if there isn´t any editable revision.

If so an error message will pop up:

Lettering	Explanation
Editing operator	
Revision	Number of current revision status
Revision	Date and time of the last change or text: “not released“
Released by	Name of user who released the revision or empty
BKB	Plant operator – short designation (max. 4 characters)
Designation	Plant operator – full designation (max. 20 characters)
ID	Clear code of plant operator
Graphic	Graphic file which will be sent to the agency together with the data model. This file is to be coordinated with the responsible agency. This file is not necessary for the system function.
Revision	Date and time of the last change of the corresponding graphic of the plant operator
Modify	Creates a copy of the chosen revision as basis for a new revision. Is only displayed in a released revision.
Save	Saves the current operator parameter of a not released revision. Appears only in a not released revision.
Remove	Deletes the current operator parameter of a not released revision. Appears only in a not released revision.
Release	Release of the revision. After that the data are not editable anymore. Appears only in a not released revision. The release automatically generates a PDF document with all the CEM-DAS and DAA-Controller parameters. The storage takes place in the file storage of the server (see /1/). Before releasing a revision, a comment must be entered (Figure 59).
Paramter documentation	Displays the parameter as a report in PDF format (see 4.4.4): Operator (Figure 96) Plant (Figure 97) Entities (Figure 98, Figure 99)
Insert	
DAA-Controller	Create a new DAA-Controller (see 4.4.3.2)
B-System	Create a new B-System (see 4.4.3.3)
Plant	Create a new plant (see 4.4.3.4)
Comment	
Comment	comment field for free text
Reference lists	
Plant	Select a plant
ID	ID of the plant
Plant reference list	Output of parameters of all entities of a plant as PDF document

Lettering		Explanation
tabs:		Detailed description: see 4.4.3.9
		button on the tab bar to jump one to the left Only appears if more than 11 tabs are available
		Button on the tab bar to jump one to the right Only appears if more than 11 tabs are available
	General	MID, MKB, Identifier, KKS, Averaging time, Rounding, Unit, Unit of sum, Format
	Source	MID, MKB, Source (calculated entity, manual input, DAA-Controller-entity), Details
	Classification	MID, MKB, Pollutant, Daily class. report, MR bottom, MR top, Classification (select classification rule), Margin
	Calibration	MID, MKB, Verify (calibration monitoring active if marked), Top(upper limit of calibration), Initialize (the violation counter S09, S10), Calibration (time of last initialization)
	Calibration data	Port, EKB, designation, characteristic, A, B, C, validate, uncertainty, MBR, MRT, substitute value All fields are filled only for one DAA-Controller
	Mass flow	MID, MKB, Flue gas flow (present entity), Entity (selection of exhaust stream), Unit, Factor (factor for mass flow)
	Gas Pur.Unit outage	MID, MKB, (per) Event, (in calendar-) Year, (gliding over) 12 Months
	Short-term averages	MID, MKB, Validation, SELV top, Entity (statical limit or relative to entity), SELV bottom, Entity (statical limit or relative to entity), SPELV top
	Daily averages	MID, MKB, calculation (select method), Verify, max. STA, DELV top, Entity, DELV bottom, Entity (static or relative to entity)
	Agency	MID, MKB, Agency, SELVt Message, Alarm, SELVb Message, Alarm, SPELVt Message, Alarm, DELVt Message, Alarm, DELVb Message, Alarm
	Comment	comment field for free text concerning the plant



Plant reference list - General Printed on 2020-06-30 22:34

Revision 1 Revision 2019-09-19 16:14 by: MANAGER
BKB ABB ID 1
Designation ABB IED
Comment CEM-DAS IED parameter

Plant L 1 ID 1

MID	MKB	Identifier	KKS	Averaging time	Rounding	Unit	- of sum	Format
2	CO	Carbon monoxide		30	yes	mg/m³		2
51	CO-ON	Carbon monoxide ON		30	yes	mg/m³		2
8	COT	Carbon		30	yes	mg/m³		2
52	COT-ON	Carbon ON		30	yes	mg/m³		2
12	Dust	Dust		30	yes	mg/m³		2
53	Dust-ON	Dust ON		30	yes	mg/m³		2
13	Flow	Flow		30	No	Nm3/h		2
6	HCl	Hydrogen chloride		30	yes	mg/m³		2
7	HF	Hydrogen fluoride		30	yes	mg/m³		2
1	H2O	Humidity		30	No	vol%		2
47	H2O-ON	Humidity ON		30	No	vol%		2
10	NH3	Ammonia		30	yes	mg/m³		2
3	NO	Nitric oxide		30	No	mg/m³		2
11	NOx	Nitric oxides		30	yes	mg/m3		2
4	NO2	Nitrogen dioxide		30	No	mg/m³		2
17	OMN off	OMN off		1	No	s	s	2
35	OMN on	OMN on		1	No	s	s	2
65	Operation	Operation		30	No	hh:mm:ss		2
9	O2	Oxygen		30	No	vol%		2
48	O2-ON	Oxygen ON		30	No	vol%		2
14	Pressure	Pressure		30	No	mbar		2
49	Pressure-ON	Pressure ON		30	No	mbar		2
5	SO2	Sulfur dioxide		30	yes	mg/m³		2
15	Temperature	Temperature		30	No	°C		2
50	Temperature-ON	Temperature ON		30	No	°C		2
38	T2S	Boiler T2S		30	yes	°C		1
37	T2S 10	Boiler T2S 10		10	yes	°C		2
55	T2S 10-ON	Boiler T2S 10 ON		10	yes	°C		2

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Figure 71: Example of a reference list in print format

4.4.3.7 Editing DAA-Controller

4.4.3.7.1 General

After inserting a new DAA-Controller and setting of the most important system parameter in chapter 4.4.3.2 the details of the parameterization can be set. Step by step the following parameter groups are created: DAA-Controller device

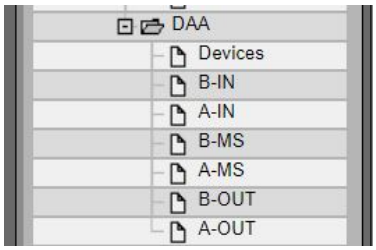


Figure 72: DAA-Controller device

- Modules for data acquisition (devices)
- Binary process inputs (B-IN)
- Analog process inputs (A-IN)
- Binary entities (B-MS)
- Analog entities (A-MS)
- Binary process outputs (B-OUT)
- Analog process outputs (A-OUT)

The following Figure 73 shows in principle the route the data of a CEM-DAS analog entity takes from a connector block of the device to the CEM-DAS entity.

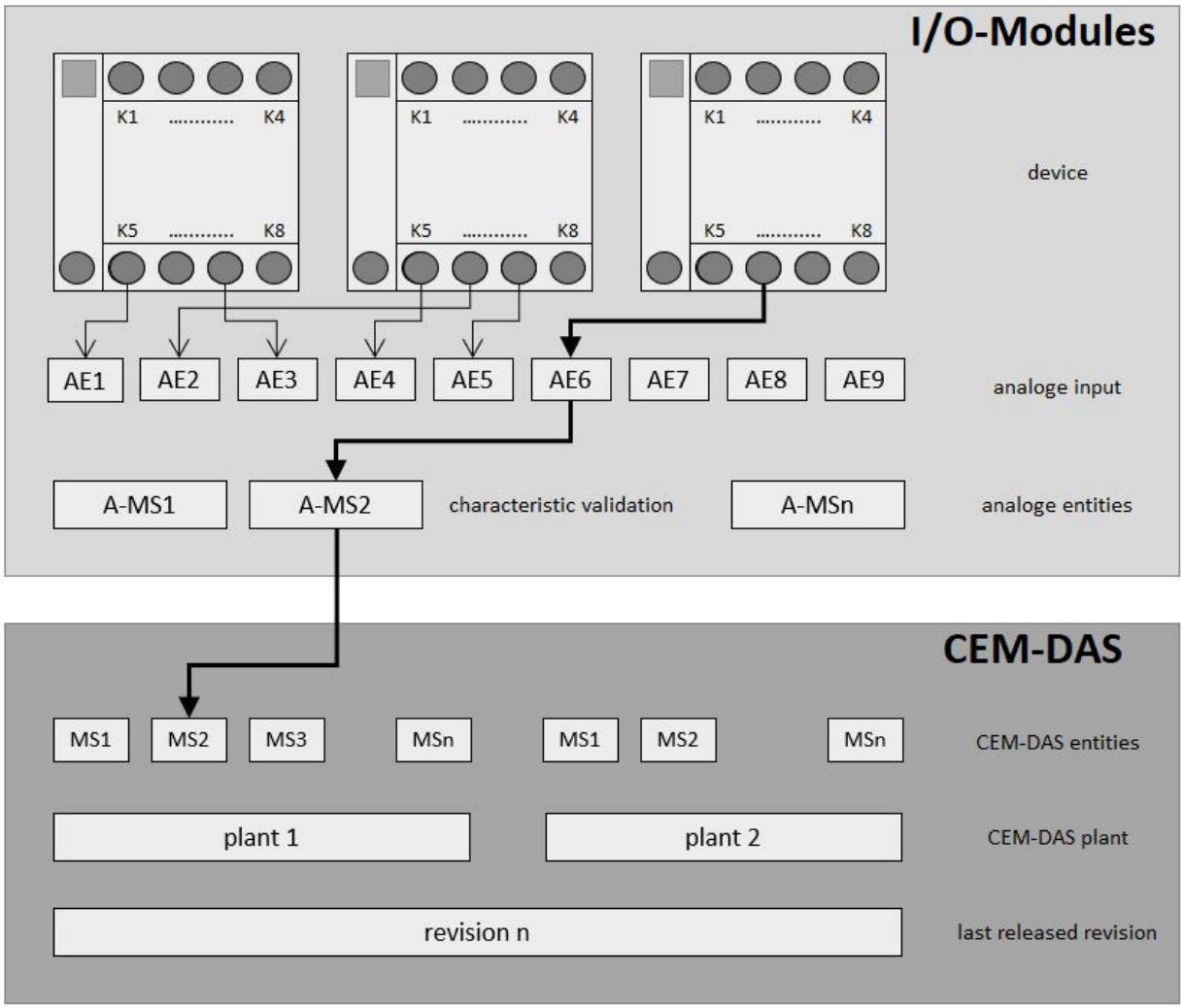


Figure 73: Data flow DAA-Controller and CEM-DAS

The following describes the steps necessary to change the calibration data.

1. Select last released revision
2. Create new revision
3. Select plant
4. Select entity
5. Click tab “DAA-Controller“ (system/port is fixed at DAA-Controller)
6. Click port “nn“
7. Edit characteristic(s)
8. Edit validation
9. Release revision
10. Click “DAA-Controller“
11. Upload parameter

or alternatively after step 2:

3. Chose “calibration data“ in section “reference lists“
4. Edit characteristic(s)
5. Edit validation
6. continue with step 9 from above

4.4.3.7.2 Devices

The devices are basis of any measuring data acquisition with DAA-Controller. A device is a module for data acquisition and data output which processes binary and analog signals. In general any combination of signals on one device is possible. The device type defines the possible connector blocks, channels or ports which are available for signal processing. In a further step of parameterization these connector blocks are attributed to the signals of DAA-Controller so that the parameterization of signal processing can be made independently of the devices.

The following Figure 74 shows a list of parameterized devices and the detailed device parameters of a selected device:

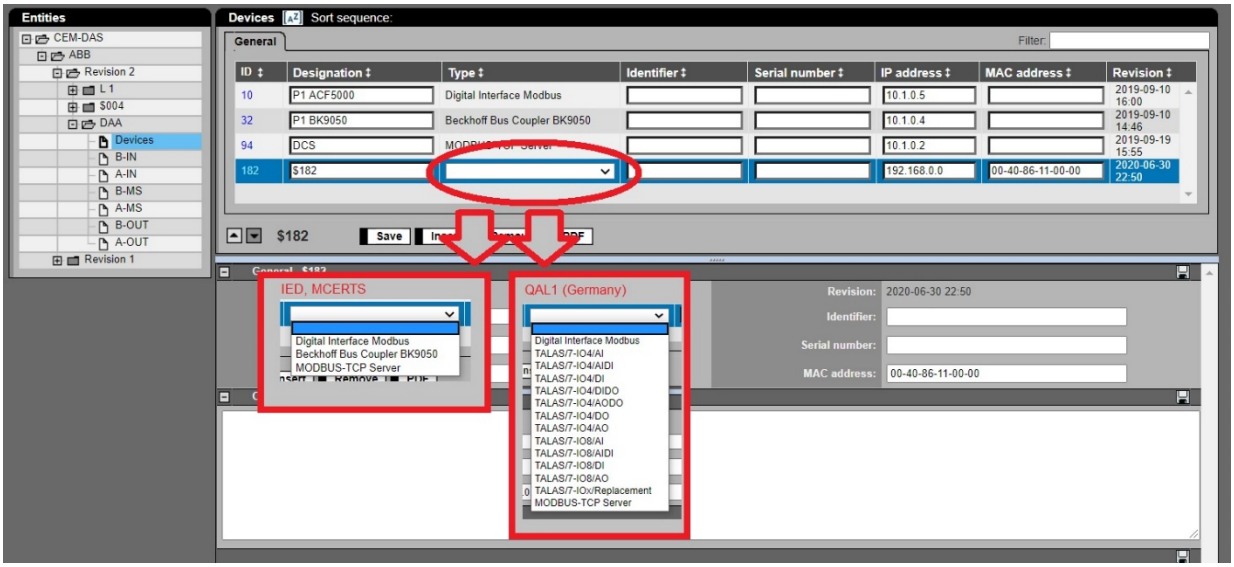


Figure 74: DAA-Controller Device parameter

Lettering	Explanation
Devices	
General	Display of the general base parameters of all devices. By a click on or a not marked line, this line will be activated, recognizably in the dark green color of the line. 10 A AI4 ....
ID	Unique identifier of device
Designation	Designation of device
Type	Official ABB type designation
Identifier	Communication ID
Serial number	Serial number of the device
IP address	IP address of the device
MAC address	MAC (Media Access Control) address of the device
Revision	Date and time of the last change
	Jump to the previous device
	Jump to the next device
A AI4	Designation of the selected device
Save	Saves he settings
Insert	Insert a new device
Delete	Delete the active device
PDF	Output of a list of all devices including their corresponding parameters as a PDF document
Filter	The filter searches the lines in “General” including the text.
	Upwards and downwards movable line
[General] – [Designation]	
ID … Port	A table with all parameter of the device selected in [General]
Input assignments (1:N)	
Connector block	Fixed designation of connector block for input signals on the device. The internal temperature of the device (intern temp.) is displayed at the same time because it can be assigned to an entity.
EKB	Short designation, defined as EKB in chapter [General] in the definition of binary/analog inputs (B-IN, A-IN)
Type	Kind of signal. AE: analog input, DE: digital input
Designation	Designation defined in chapter [General] in the definition of binary/analog inputs (B-IN, A-IN)
Output assignments (1:1)	
Connector block	Fixed designation of connector block for output signal on the device
EKB	Short designation, defined as EKB in chapter [General] in the definition of binary/analog inputs (B-IN, A-IN)
Type	Kind of signal. AE: analog input, DE: digital input
Designation	Designation defined in chapter [General] in the definition of binary/analog outputs (B-OUT, A-OUT)
Options	
	General text field for option parameters

4.4.3.7.3 Binary inputs (B-IN)

Here binary inputs are defined (if necessary inverted) and made available for logical linking or direct use for the status of measured values or plants. These binary inputs can be used by parameterization of DAA-Controller even if the basic hardware for acquisition, the device was not yet selected. By assigning a device here the parameterized inputs are connected with the physical data acquisition.

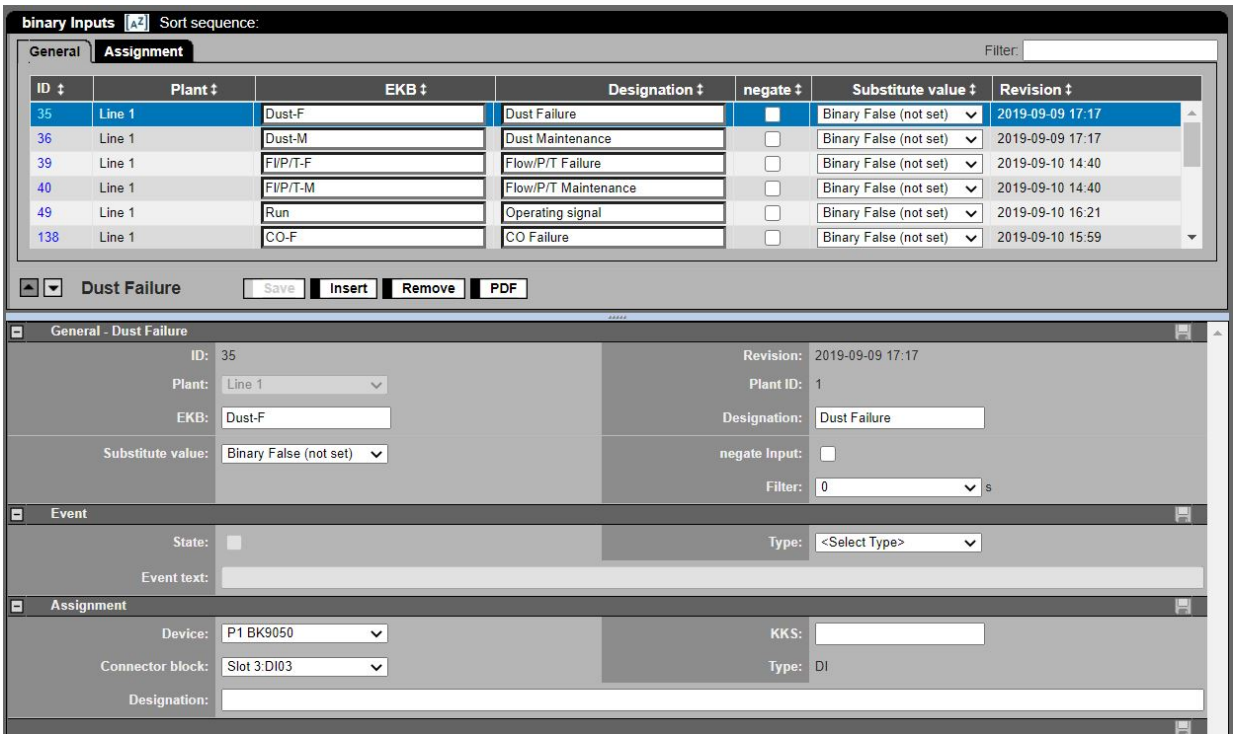


Figure 75: Binary inputs DAA-Controller

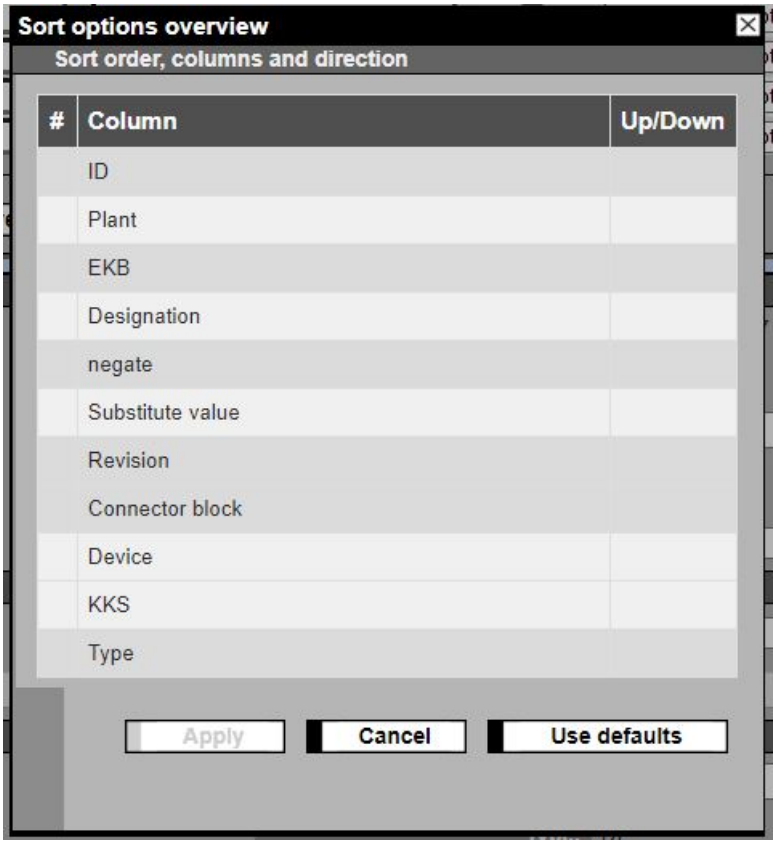


Figure 76: Sort order, columns and direction

Lettering	Explanation
Binary inputs – General (list)	
Sort sequence: EKB	Selection and display of sort order in the window heading In the example column EKB sorted in ascending order Sorting on a single column is achieved by a click on the double arrow in the respective column heading Sorting on a few columns is achieved by a click on the button . A window opens “sorting options overview – web pages dialogue” (Figure 76). For each column a sort order can be set and several sort orders can be combined. By a clicking and dragging of the mouse the columns can be rearranged.
Plant	The yellow highlight of a column heading shows that a filter was set in this column. The selected filter is shown in Tipp text if the mouse is on the column heading: By click on the column heading the filter can be set: The list shows: - all entries of the column - all possible selections (all), - (empty) and - (not empty).
ID	Identifier of the binary input
Plant	Plant to which the binary input is assigned to
EKB	Short designation
Designation	Full designation
negate	Invert the logic of the input after acquisition (0⇨1 or 1⇨0)
Default value	Selection of a default value if the input shows an error
Revision	Date and time of the last change
	Jump to previous binary input
	Jump to next binary input
A Störung MCS	Designation of the selected binary input
Save	Save
Insert	Insert of a new binary input
Delete	Deletes a binary input
PDF	Print out of a list of binary inputs in PDF format
Filter	The filter searches the lines in “General” including the text.
	Upwards and downwards movable line
Binary inputs – Assignment (list)	
ID	Identifier of the binary input
Designation	Full designation
Device	Selection of one device of existing devices
Connector block	Selection of a connector block with the desired binary input
KKS	Designation of binary input according to power plant classification system
Type	Type of connector block: DE
General [Designation]	
ID	Identifier of binary input
Revision	Date and time of last change
Plant	Plant to which the binary input is assigned to
Plant ID	ID of the plant to which the binary input is assigned to
EKB	Short designation
Designation	Full designation
Default value	Selection of a default value of the input if the module shows error
Negate input	Invert the logic of the input after acquisition (0⇨1 or 1⇨0)
Filter	Configurable time in [s] in which a binary input must be open to recognize a change

Lettering	Explanation
Event	
State	If marked the change of the binary input will be registered as event. The event reports the time range in which the binary input is in 1 (ON).
Type	Here different types of events can be defined. Only after selecting a type the state is selectable.
Event text	Free text which shall be displayed in the event report
Assignment	
device	Designation of device which offers binary inputs
KKS	Designation of the binary input according to the Power Plant classification system
Connector block	Number of the connector block with the binary input
Type	Type of connector block: DE
Designation	Designation of the assignment

4.4.3.7.4 Analog Inputs (A-IN)

Here analog inputs are defined which can be used by parameterization of DAA-Controller even if the basic hardware for acquisition, the device was not yet selected. By assigning a device here the parameterized inputs are connected with the physical data acquisition.

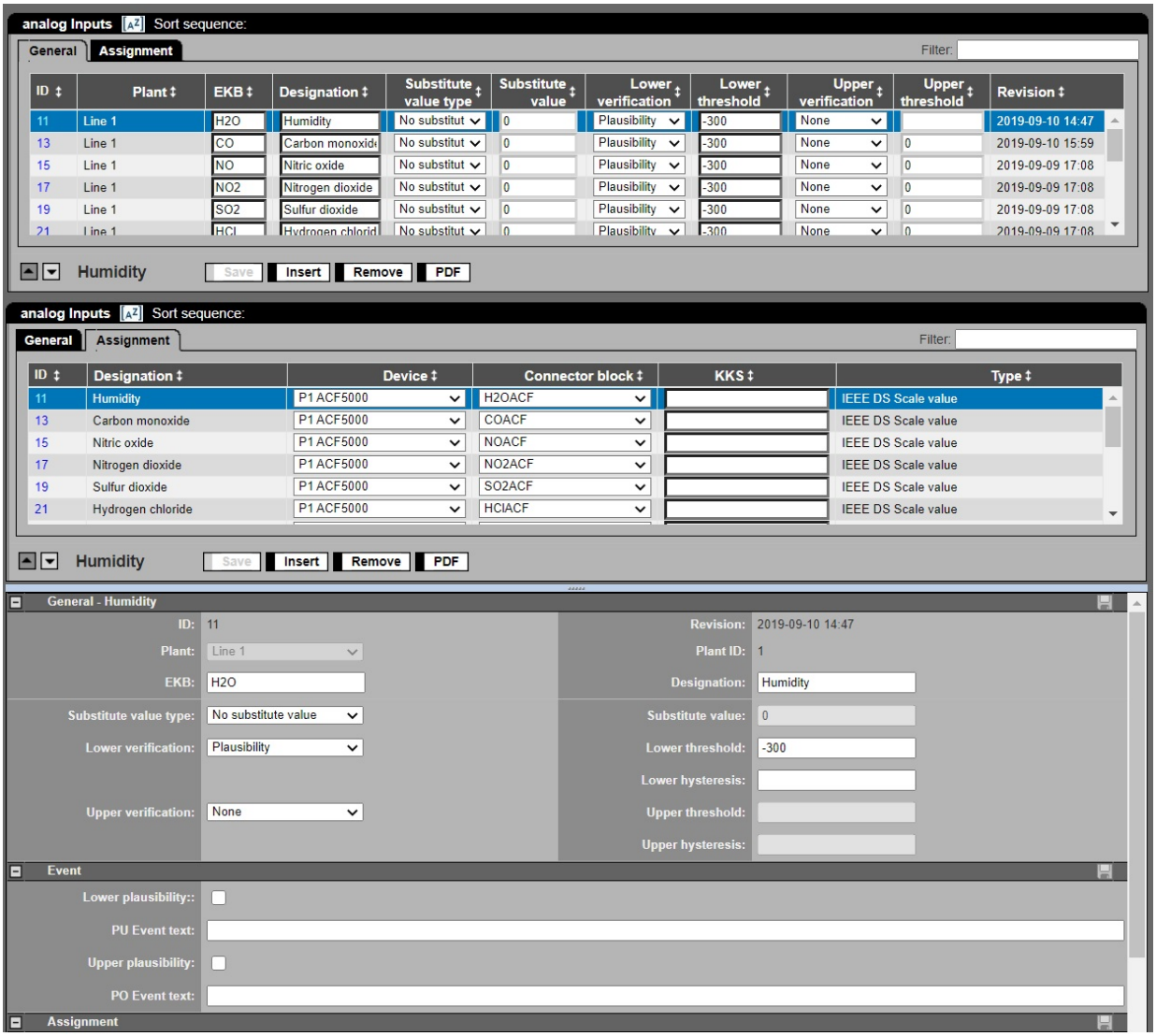


Figure 77: Analog inputs DAA-Controller

Lettering	Explanation
Analog Inputs – General (list)	
Sort sequence: EKB	Selection and display of sort order in the window heading In the example column EKB sorted in ascending order Sorting on a single column is achieved by a click on the double arrow in the respective column heading Sorting on a few columns is achieved by a click on the button . A window opens “sorting options overview – web pages dialogue” (Figure 76). For each column a sort order can be set and several sort orders can be combined. By clicking and dragging of the mouse the order of the columns can be rearranged.
Plant	The yellow highlight of a column heading shows that a filter was set on this column. The selected filter is shown in Tipp Text if the mouse is on the column heading. By click on the column heading the filter can be set. The list shows: - all entries of the column - all possible selections (all), - (empty) and - (not empty)
ID	Identifier of the analog input
Plant	Plant to which the binary input is assigned to → is used for later easy assignment of the analog inputs to the analog entities
EKB	Short designation
Designation	Full designation
Default value type	Selection of type of analog default value if the input shows error. If no default value is selected the analog value is not valid or the last valid value is selected or a “constant” is defined as default value.
Default value	Selection of default value of the input if the module shows error
Lower Verification	Verification if the analog input signal is below the threshold . “None“: No verification “Limitation“: Values < “Lower threshold“ will be exchanged by “Lower threshold“ “Plausibility“: If it is below threshold a plausibility error will be generated and the value will be set not valid.
Lower threshold	Threshold for “verification below“
Upper Verification	Verification if the analog signal exceeds the upper threshold. “None“: No verification “Limitation“: Values > “Upper threshold “ will be exchanged by “Upper threshold“ “Plausibility“: If the “Upper threshold“ is exceeded a plausibility error will be generated an the value will be set not valid.
Upper threshold	Threshold for “Verification above“
Revision	Date and time of the last change
	Jump to previous analog input
	Jump to next analog input
A CO	Shows which analog input is displayed presently in the detail display
Save	Save
Insert	Insert a new analog input
Remove	Delete an analog input
PDF	Output of the list of the analog inputs in PDF format
Filter	The filter searches the lines in “General” including the text.
	Upwards and downwards movable line
analog inputs – Assignment (list)	
ID	Identifier of the analog input
Designation	Full designation
Device	Selection of one device from existing devices
Connector block	Selection of a connector block with the desired analog input
KKS	Designation of the analog input according to the power plant classification system
Type	Type of connector block: AE

Lettering	Explanation
General [Designation]	
ID	Identifier of the analog input
Revision	Date and time of the last change
Plant	Plant to which the analog input is assigned to → is used for later easy assignment of the analog inputs to the analog entities
Plant ID	Identifier of the plant to which the analog input is assigned to
EKB	Short designation
Designation	Full designation
Substitute value type	Selection of type of analog default value if the input shows error.
Substitute value	Selection of a default value of the input if the module shows error
Lower Verification	Verification if the analog input signal is below the lower threshold (see above)
Lower threshold	Lower threshold for the input signal (see above)
Lower hysteresis	Value that has to be exceeded in order to set the lower threshold as exceeded. If field is empty no hysteresis is effective.
Upper verification	Verification if the analog signal exceeds the upper threshold. (see above)
Upper threshold	Upper threshold of the input signal (see above)
Revision	Date and time of the last change
Upper hysteresis	Value that has to be undershot in order to set the upper threshold as undershot. If field is empty no hysteresis is effective.
Event	
Lower plausibility	If this option is set the violation of the lower plausibility will be registered – Events.in the menu Output as an event and saved with the incoming and outgoing timestamps.
PU Event text	Free text which shall be displayed in the event report
Upper plausibility	If this option is set the violation of the upper plausibility will be registered as an event and saved with the incoming and outgoing timestamps.
PO Event text	Free text which shall be displayed in the event report
Assignment	
Device	Designation of the device which offers analog inputs
KKS	Designation of the device according to power plant classification system
Connector block	Connector block with analog input
Type	Type of connector block: AE
Designation	Free text to enter full designation for assignment

4.4.3.7.5 Binary entities (B-MS)

Binary entities are used for further processing of status signals which are acquired by binary inputs (see 4.4.3.7.3). The data processing includes pure logic linking as well as comparisons and the resulting truth-values. Furthermore in each binary entity the 1-status within a definable time range (averaging time, AT) is counted. Every 5 seconds the value of the entity is determined. This means when a binary signal with an averaging time of half an hour is always on the value will be 60[s/min]*30[min]=1800[s] if as time base for "count" the unit "seconds" is selected. If as time base "cycle count" is selected the value will be 1800/5 = 360 [cycle counts].
The counter readings of the binary entities can be transmitted to CEM-DAS.

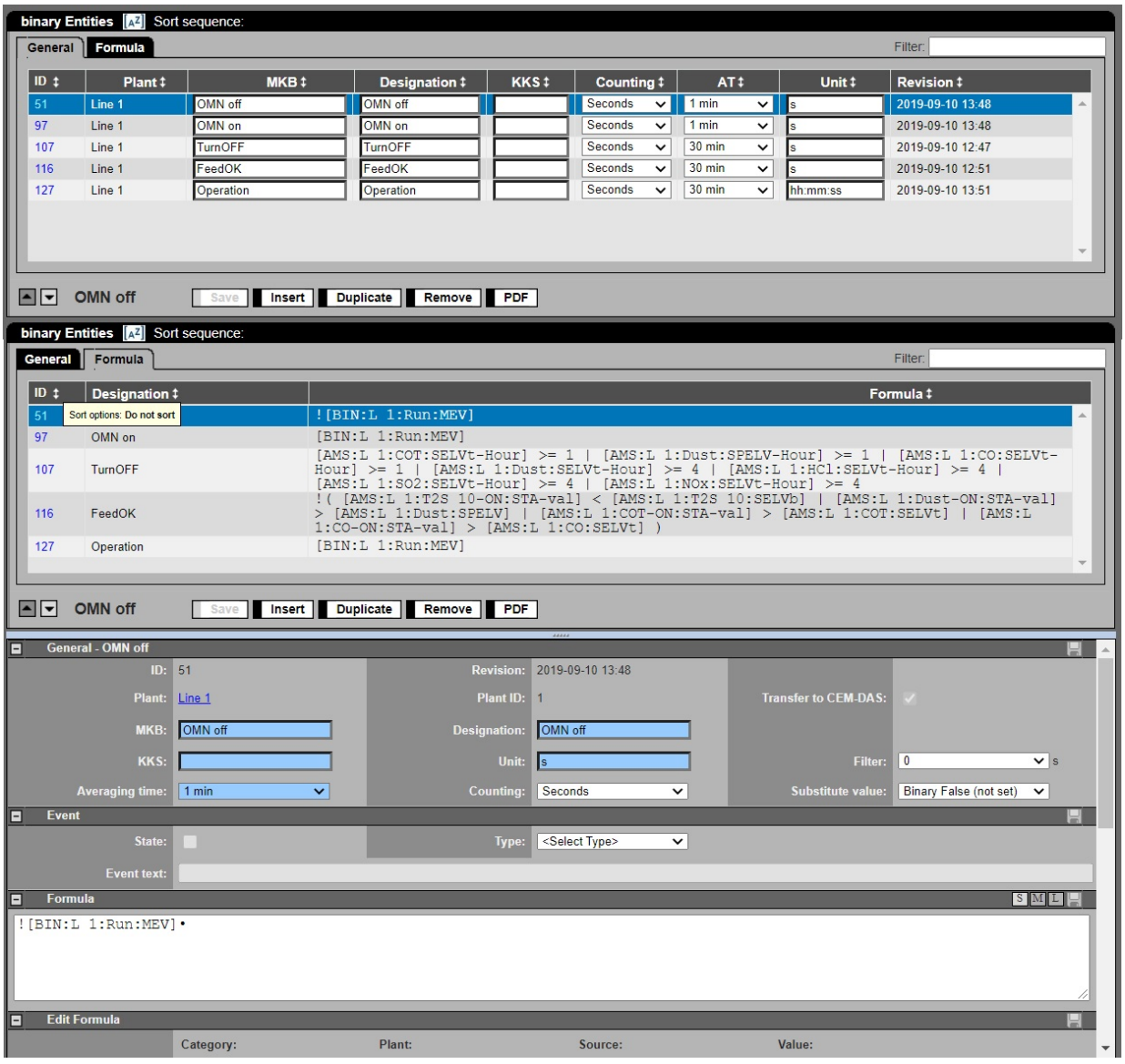


Figure 78: Binary entities DAA-Controller

Lettering	Explanation
Binary entities – General (list)	
Sort sequence: EKB	Choice and display of sort order in the window heading In this example sorted on column EKB ascending By a click on the double arrow in the respective column heading sorting on a single column is possible. A click on the button enables sorting on several columns. A window opens "sort order overview – web page dialogue" (Figure 76). Here for each single column a sort order can be selected and several sort orders can be combined. By drag and drop on a line the order of the columns can be changed.
Plant	The yellow highlight of a column heading shows that a filter was set on this column. The selected filter is shown in Tipp Text if the mouse is on the column heading The filter can be set by click on the column heading.

Lettering	Explanation
	The list shows: - all entries of the column - all possible selections (all), - (empty) and - (not empty)
ID	Identifier of the binary entity
Plant	Assignment of a binary entity to a CEM-DAS plant or treatment as a pure DAA-Controller entity <only DAA-Controller>
MKB	Binary entity - short designation
Designation	Binary entity – full designation
KKS	Customer specific designation
Counting	Amount of the collected 1-states in a time range which can be selected here.
AT	Averaging time. That is the time range in which the 1-state of the binary entities is counted. The averaging time can be selected between 1-120 minutes.
Unit	Unit of sum over the averaging time
Revision	Date and time of the last change
	Jump to previous binary entity
	Jump to next binary entity
Save	Save
Insert	Insert a new binary entity
Duplicate	Duplicate the present binary entity
Remove	Delete the present binary entity
PDF	Output of a list of the binary entities in PDF format
Filter	The filter searches the lines in “General” including the text.
A no operation	Shows which binary entities are displayed presently in the detailed view
	Upwards and downwards movable line
Binary entities – Formula (list)	
ID	Identifier of the binary entity
Designation	Full designation of entity
Formula	Formula text
General [designation] 	
ID	Identifier of the binary entity
Revision	Date and time of the last change
Plant	Assignment of the binary entity to a CEM-DAS plant
Plant ID	Identifier of the plant
Transfer to Umof	If marked this binary entity will be displayed as an CEM-DAS entity in the branch CEM-DAS
MKB	Short designation of entity
Designation	Binary entity – Full designation
KKS	Designation according to power plant classification system
Unit	Unit of counter sum over the averaging time
Filter	Time span for a signal to be present before a change of state is recognized
Averaging time	Time range in which the 1-state of the binary entity is counted
Counting	Amount of the collected 1-states in a time range which can be selected here.
Substitute value	Selection of a default value for a binary entity if no valid value can be calculated
Formula 	
	See Annex 1: DAA-Controller Formula editor

Lettering	Explanation
Edit formula	
Category	Selection of the inserted operand
Plant	Selection of reference plant according to the selected category of the inserted operand
Source	Selection of reference source according to the selected category/plant of the inserted operand. E.g. a binary entity if as reference object BMS: binary entites was selected.
Value	Selection of the type of value for the reference source according to the selected category / plant
Insert	Inserts the from category/plant/source/value selected value in the formula in the editing field
Operator	By a click on an operator this one can be inserted immediately in the formula editing field
Function	Selection of a function which shall be adopted in the editing field of the formula
Insert	Inserts a selected formula in the formula editing field
Comment	
Comment for the above inserted formula	
Options	
Reserved for optional parameter regarding the formula inputs and their interpretation	

4.4.3.7.6 Analog entities (A-MS)

Analog entities are used for further processing of analog entities which are acquired by analog inputs and their status assessment based on the values of binary entities. The further processing is made in the following parameter groups for:

General parameter	Here new entities are created and designated. Also the integration time and the type of acquisition (analog input or formula) is set.
Measuring range	Setting up to 3 measuring ranges and the associated characteristics, measuring areas and validations
Formula Validation	Parameterization of the formula and a possible validation of the result
Normalization	Normalization regarding oxygen concentration, temperature, pressure and moisture in the exhaust gas
Status signals	Start definition of signals, maintenance, failure, etc.
Operation signals	Definition of external operation signals
Operational threshold	Definition of state of operation by exceeding or falling below thresholds
Verification/ Validity	Verification of validity of a value regarding validity regarding exceeding or falling below a threshold. Definition of the % validity criteria
Firing range	Definition of entities and firing ranges for mixed firing with fixed firing ranges.

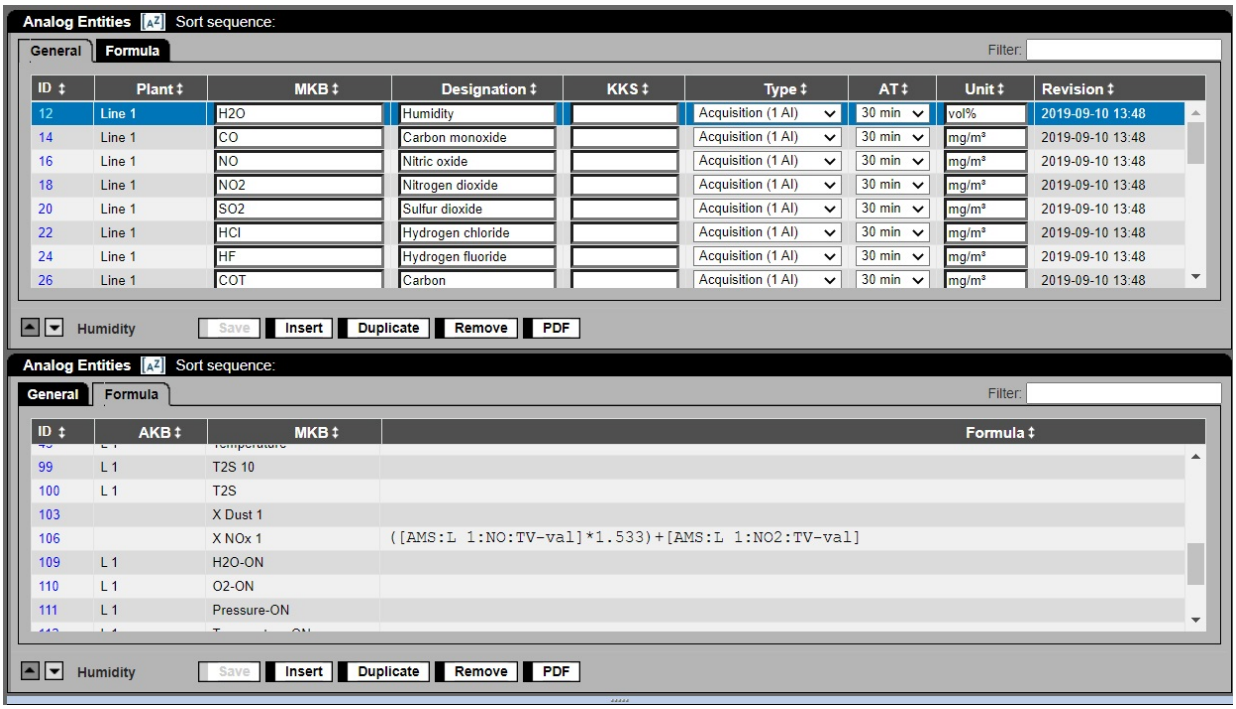


Figure 79: Analog entities DAA-Controller

The following figure shows further sections for various types of entities (acquisition or formula):

Figure 80: Sections of entity parameter, type “acquisition“

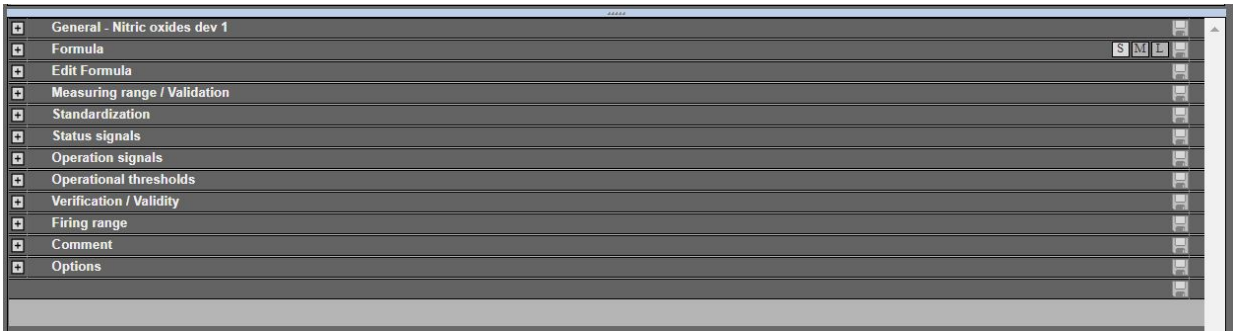
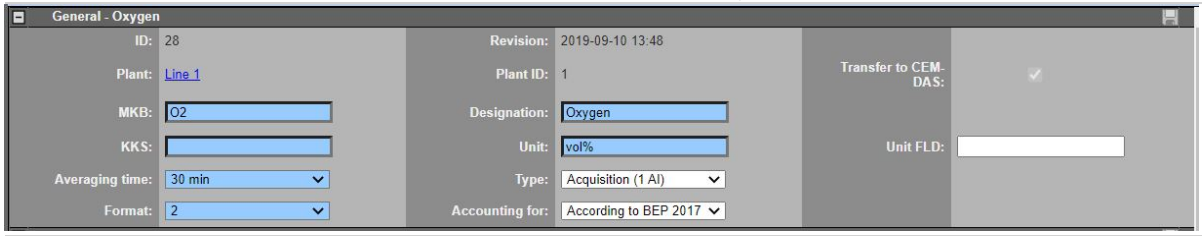


Figure 81: Sections of entity parameter, type "Formula"

Lettering	Explanation
Analog entities – General (list)	
Sort sequence: MKB	Selection and display of sort order in the window heading In the example sorted on column EKB ascending Sorting on a single column is achieved by a click on the double arrow in the respective column heading A click on the button [AZ] enables sorting on several columns. A window opens “sort order overview – web page dialogue” (Figure 76). Here for each single column a sort order can be selected, and several sort orders can be combined. By drag and drop on a line the order of the columns can be changed.
Plant	The yellow highlight of a column heading shows that a filter was set on this column. The selected filter is shown in Tipp Text if the mouse is on the column heading The filter can be set by click on the column heading: The list shows: - all entries of the column - all possible selections (all), - (empty) and - (not empty)
ID	Identifier of the analog entity
Plant	Designation of the plant in which the entity shall be visible or <only DAA-Controller> if the entity shall not be visible in CEM-DAS plant
MKB	Short designation of entity
Designation	Full designation of entity
KKS	Designation according to power plant classification system
Type	Type of entity regarding the kind of measure value acquisition. Measure value acquisition can be made either by 1 analog input or by max. 3 analog inputs. Acquisition with 1 analog input should be chosen if there is either just 1 measuring range or if you wish to switch between various measuring ranges with binary signals with the same analog input but different characteristics. Acquisition with 3 analog inputs should be chosen– with max. 3 measuring ranges – when switching in the next higher/lower measuring range resulting that the input current of the output measuring range will be implausible. The application of a formula offers the possibility to create numerous arithmetically linked values. Analog and binary inputs and entities can be linked. Thereby also analog and binary inputs and entities can be linked.
AT	Averaging time of the entity
Unit	Physical unit of the entity
Revision	Date and time of the last change

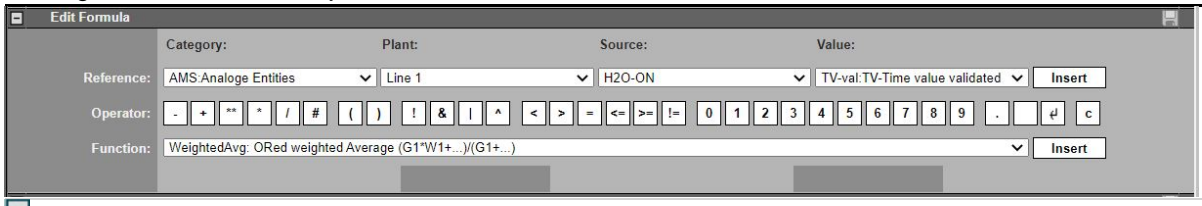
Lettering	Explanation
Analog entities – Formula (list)	
ID	Identifier of the analog entity
AKB	Short designation of the plant of the analog entity
MKB	Short designation of the analog entity
Formula	Display of formula text Changes in the formula can only be made in the formula editor
	jump to previous analog entity
	jump to next analog entity
SO2	Shows the analog entity which is presently in the detail display.
Save	Saves the present parameter in the database
Insert	Inserts a new analog entity
Duplicate	Duplicates the chosen analog entity
Remove	Deletes the chosen analog entity
PDF	Output in PDF format
Filter	The filter searches the lines in "General" including the text.



General [Designation]	
ID	Identifier of the analog entity
Revision	Date and time of last change
Plant	Designation of the plant to which the entity is assigned to.
Plant ID	Identifier of the plant to which the entity is assigned to.
Transfer to Umof	If marked this analog entity will be displayed as CEM-DAS entity in the branch CEM-DAS
MKB	Entity short designation
Designation	Entity full designation
KKS	Designation according to power plant classification system
Unit	Physical unit of entity
Averaging time	Averaging time of the entity
Type	Type of entity regarding the kind of value acquisition (see above)
Format	Number of decimal places in the value output list
Accounting for	Shows the method for integrated values Time values (ZW): Minute values are generated from minute values of the reference entity, short-term averages are generated from the short-term averages of the reference entity.

Formula	
	See Annex 1: DAA-Controller Formula editor

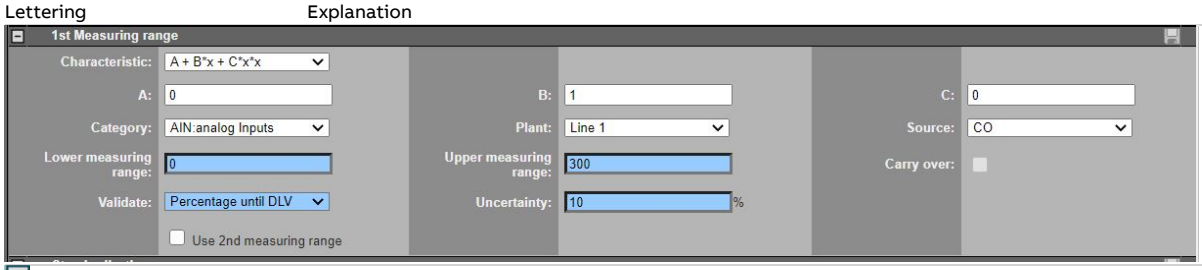
Lettering	Explanation



edit Formula

Reference Category	Select a category for the operand which shall be inserted
Reference Plant	Select a reference plant according to the selected category of the operand which shall be inserted
Reference Source	Select the reference source according to the selected category / plant of the operand which shall be inserted e.g.: a binary entity if as reference object BMS: binary entities was selected
Reference Value	Select the value type for the reference source according to the selected category / plant
Insert	Inserts the value selected from category/plant/source/value in the formula at the text mark of the formula editing field
Operator	A click on an operator causes immediate insertion at the text mark of the formula editing field
Function	Selection of a function which shall be entered in the editing field of the formula
Insert	Inserts the selected formula at the text mark of the formula editing

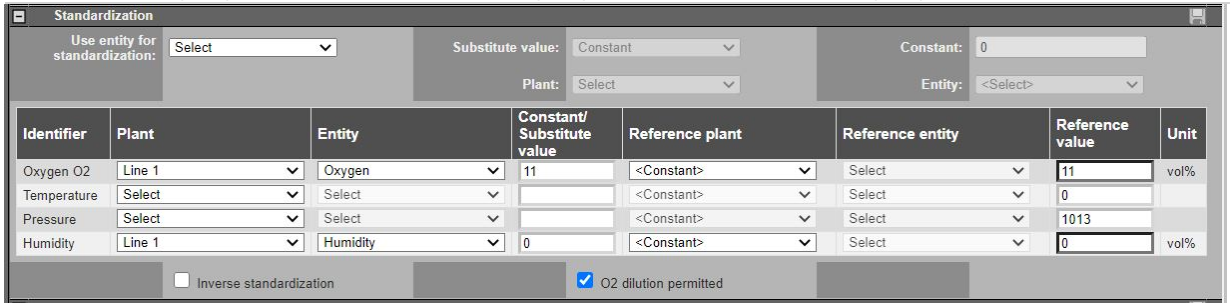
Lettering	Explanation



1. Measuring range (Type: Acquisition, 1 analog input)

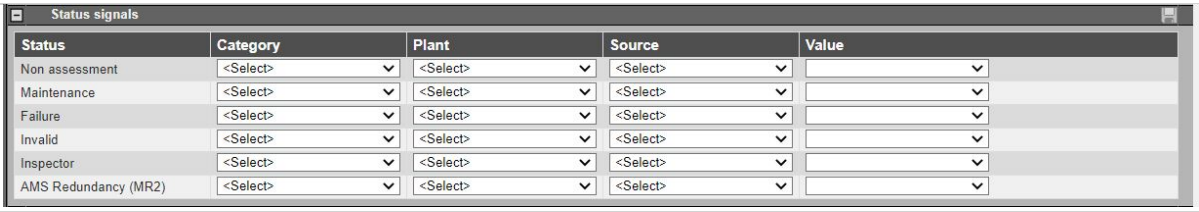
Characteristic	Select a characteristic type. With the characteristic the analog input current or the value of an analog entity is converted to a physical value with the formulas: $y = A + B * x + C * x^2$ $y = A + B * 10^{C*x}$ $y = A + B * \log_{10}(x + C)$ A, B and C are constants which are defined below. X is the input current in mA or the value of an analog entity, depending to which category (see below) the analog entity is assigned to.
A	Characteristic constant A (see above “characteristic“)
B	Characteristic constant B (see above “characteristic“)
C	Characteristic constant C (see above “characteristic“)
Category	Sets if an analog input current or a measured value of an analog entity shall be processed.
Plant	Selection of the plant to the selected category
Source	You can select from the analog inputs or the analog entities depending on which category was chosen
Lower measuring range	Lower limit of the measuring range. The lower limit is used for scaling the graphic when the entity is shown in CEM-DAS
Upper measuring range	Upper limit of the measuring range. The upper limit is used for scaling the graphic when the entity is shown in CEM-DAS
Carry over	Active, if as category an analog entity was selected When marked the data of the selected analog entity will be adopted by the current entity.
Validate	Validation is subtracting an acceptable measurement error from the standardized values starting with minute values up to the short-term averages. These measurement errors are usually found during calibration or functional inspection and communicated to the plant operator together with a new characteristic and a new calibration range and also set in the system. As validation type a constant can be used (standard acc. to Bundeseinheitlicher Richtlinie /4/) or a percentage from the respective value of the entity.
Uncertainty	Value of the error that needs to be considered during validation (see above)
Use 2nd. measuring range	Mark, if another (2.) measuring range shall be used. Max. 3 measuring ranges are possible.

Lettering	Explanation
[n]. Measuring range	
A	Characteristic constant A (see above “characteristic“)
B	Characteristic constant B (see above “characteristic“)
C	Characteristic constant C (see above “characteristic“)
Category	Acquisition (1 analog input) Category of the binary signal to switch to this measuring range Acquisition (3 analog inputs) Category of the analog input for the n. measuring range
Plant	Selection of a plant for the selected category
Source	Input/Entity of the selected category
Lower measuring range	Lower limit of the measuring range. The lower limit is used for scaling the graphic when the entity is shown in CEM-DAS
Upper measuring range	Upper limit of the measuring range. The upper limit is used for scaling the graphic when the entity is shown in CEM-DAS
Carry over	Only with acquisition (3 analog inputs) Active, if as category analog entities were selected. When marked, the characteristic data of the selected analog entities will be adopted by the current entity.
Uncertainty	Value of the error which shall be considered during validation (see above)
[n+1]. Use measuring range	Mark, if another measuring range shall be used. Max. 3 measuring ranges are possible.



Standardization	
Use entity for standardization	Select here for which standardization this entity can be used in other entities
Substitute value	Select here which default value shall be used if the entity doesn´t have a valid value.
Constant	Input of a constant as default value
Plant	Selection of a plant
Entity	Selection of an entity of a selected plant
Identifier	Fixed designation for the physical measured value to select the correct entity for standardization hereinafter. Standardization of pollutant concentrations $c_{normalized}$ will be calculated with the following formula: $c_{normalized} = c_{raw} \cdot f_{O_2} \cdot f_T \cdot f_P \cdot f_H$ with $f_{O_2} = \frac{21-b_{O2}}{21-w_{O2}}$ with $b_{O2} : O_2 - \text{Reference value}$, $w_{O2} : O_2 - Measuring\ \text{value}$ $f_T = \frac{273+w_T}{273+b_T}$ with $b_T : Temperature - \text{Reference value}, i.a. = 0$, $w_T : Temperature - Measuring\ \text{value}$ $f_P = \frac{b_P}{w_p}$ with $b_P : Pressure - \text{Reference value}, i.a. = 1013{,}25$, $w_P : Pressure - Measuring\ \text{value}$ $f_H = \frac{100-b_H}{100-w_H}$ with $b_H : \text{Humidity} - \text{Reference value}, i.a. = 0$, $w_H : \text{Humidity} - Measuring\ \text{value}$
Plant	Selection of a plant to limit the selection of entities presented in the next list.
Entity	Selection of an entity for w_x according to the identifier or the constant $J\,x$.
Constant / Substitute value	If a constant was selected in “entity“ this can be entered here. Otherwise the substitute value for the selected entity will be displayed.
Reference plant	Selection of a reference plant to limit the reference entities presented in the next list.
Reference entity	Selection of an entity or a constant for b_x according to the identifier.

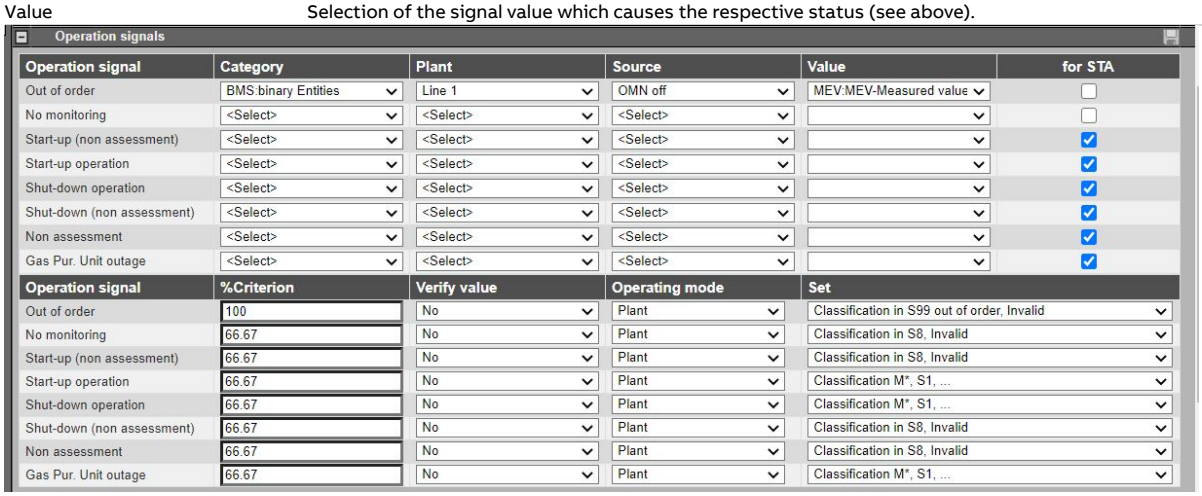
Lettering	Explanation
Reference value	If a constant was selected in “Reference entity“ this can be entered here. Otherwise a substitute value for the selected reference entity can be entered.
Unit	Physical unit of the measurement value and the reference value
Inverse standardization	The invers standardization is applied e.g. to standardization of volumetric flow. $v_{normalized}$ is calculated as follows: $$v_{normalized} = v_{raw} \frac{1}{f_{O_2} \cdot f_T \cdot f_P \cdot f_H}$$
O2-dilution permitted	Factor f_{O2} is < 1 for $w_{O2} < b_{O2}$, which means the measured value is smaller than the reference value. This is called O_2 dilution.


Status signals

Status	Category	Plant	Source	Value
Non assessment	<Select>	<Select>	<Select>	
Maintenance	<Select>	<Select>	<Select>	
Failure	<Select>	<Select>	<Select>	
Invalid	<Select>	<Select>	<Select>	
Inspector	<Select>	<Select>	<Select>	
AMS Redundancy (MR2)	<Select>	<Select>	<Select>	

Status signals

Status	These status result in an invalid first level data: Do not classify: this status can lead to a classification S08 Maintenance: this status can lead to a classification S05 Failure: this status can lead to a classification S04 Invalid: this status can lead to a classification S02 Inspector: this status can lead to a classification S05.
Category	Selection of the signal category which causes the status as shown above.
Plant	Selection of a plant to limit the following list “source“.
Source	Selection of source of the signal which causes the respective status (see above).
Value	Selection of the signal value which causes the respective status (see above).


Operation signals

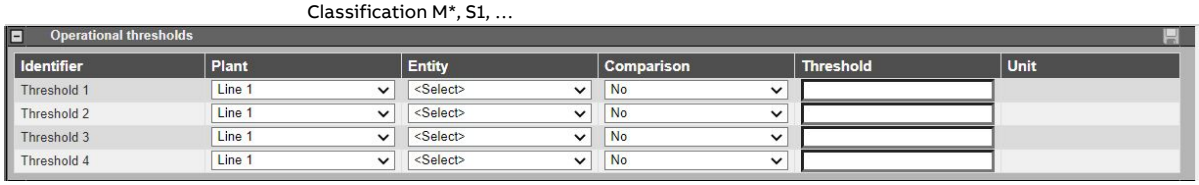
Operation signal	Category	Plant	Source	Value	for STA
Out of order	BMS:binary Entities	Line 1	OMN off	MEV:MEV-Measured value	☐
No monitoring	<Select>	<Select>	<Select>		☐
Start-up (non assessment)	<Select>	<Select>	<Select>		☑
Start-up operation	<Select>	<Select>	<Select>		☑
Shut-down operation	<Select>	<Select>	<Select>		☑
Shut-down (non assessment)	<Select>	<Select>	<Select>		☑
Non assessment	<Select>	<Select>	<Select>		☑
Gas Pur. Unit outage	<Select>	<Select>	<Select>		☑

Operation signal	%Criterion	Verify value	Operating mode	Set
Out of order	100	No	Plant	Classification in S99 out of order, Invalid
No monitoring	66.67	No	Plant	Classification in S8, Invalid
Start-up (non assessment)	66.67	No	Plant	Classification in S8, Invalid
Start-up operation	66.67	No	Plant	Classification M*, S1, ...
Shut-down operation	66.67	No	Plant	Classification M*, S1, ...
Shut-down (non assessment)	66.67	No	Plant	Classification in S8, Invalid
Non assessment	66.67	No	Plant	Classification in S8, Invalid
Gas Pur. Unit outage	66.67	No	Plant	Classification M*, S1, ...

Operation signals

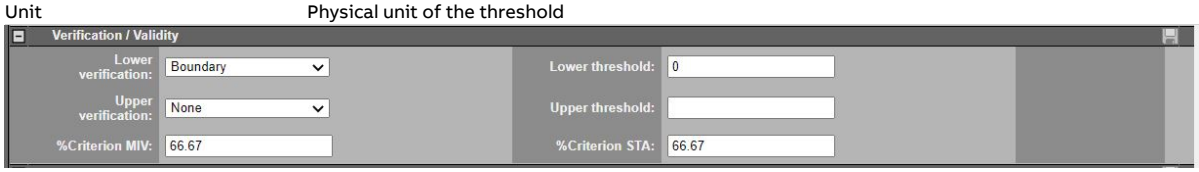
Operation signal (Signal)	In this parameter group the binary signals and criteria for acquisition and valuation are selected which help to determine one of the status.
Category	Selection of a category for input or entity
Plant	Selection of a plant to limit the following list “source“
Source	Selection of an entity from the list with all entities which correspond to the previously selected category/plant.
Value	Selection of a value which is needed to determine the binary status.
For STA	Valid first level data with this operation signal are used for the short-term average (STA).
Operation signal (threshold)	In this parameter group the thresholds for determination of a status are selected. From both part status (signal and/or threshold) the resulting status is formed.
%Criterion	Input of the percentage of the averaging time in which the signal must be present for the described status to occur. (Out of order: 100%)
Verify value	Selection of verification type: No > SELV and %Criteria < SELV and %Criteria

Lettering	Explanation
Operating mode	Number of the operating mode OMN
Set	Determination of the classification of values in this mode of operation. Selectable for startup operation and shutdown operation: Classification in S14, does not enter DAV Classification in S17, enters DAV Classification M*, S1, …



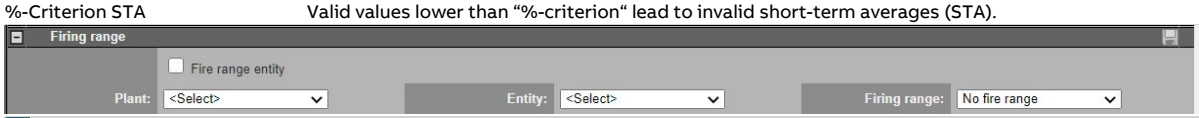
Operational thresholds

Identifier	Up to 4 thresholds can be defined. All requirements of the activated thresholds must be met at the same time to kept the current entity “in operation” (AND requirement)
Plant	Selection of a plant to limit the following list of entities
Entity	Selection of a suitable entity which will be measured against a threshold (see below). If the result meets the comparison (see below) the entity is “in operation”.
Comparison	Selection of a comparative operator to compare the value of the entity with a fixed threshold (>,≥,<,≤) or “No“ to skip the threshold
Threshold	Enters a threshold. In case of exeeding or deceeding the current entity will get the status “in operation“
Unit	Physical unit of the threshold

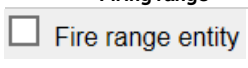


Verification / Validity

Lower verification	Concerns the verification of “lower threshold“ (LT). If “plausibility” was selected deceeding LT will set the value invalid. If “Boundary” was selected the value will be set = LT.
Upper verification	Concerns the verification “upper threshold“ (UT). If “plausibility“ was selected and the value exceeds UT it will be invalid. If “Boundary” was selected the value will be set UT.
Lower threshold	Lower threshold for the verification or limitation described above.
Upper threshold	Upper threshold for the verification or limitation described above.
%-Criterion MIV	Valid values lower than “%-criterion“ lead to invalid minute values (MIV).
%-Criterion STA	Valid values lower than “%-criterion“ lead to invalid short-term averages (STA).



Firing range

	Is marked if this entity is an firing range entity for mixed firing with fixed firing ranges. A detailed description, especially about realization in DAA-Controller, is given in Annex 2: Mixed and multi-fuel firing.
Plant	Selection of a plant to limit the following list of entities
Entity	Selection of an entity where it´s value shows the firing range, if the present entity is no firing range entity
Firing range	Selection of the number of the firing range in which the present entity shall get the status “in operation”

4.4.3.7.7 Binary outputs (B-OUT)

Via binary outputs binary signals are set on connector blocks of appropriate output assembly groups. These outputs, called “Destination can be assigned directly to binary inputs, called “source” or with calculated values. If required the signals can be negated and/or assigned to default values

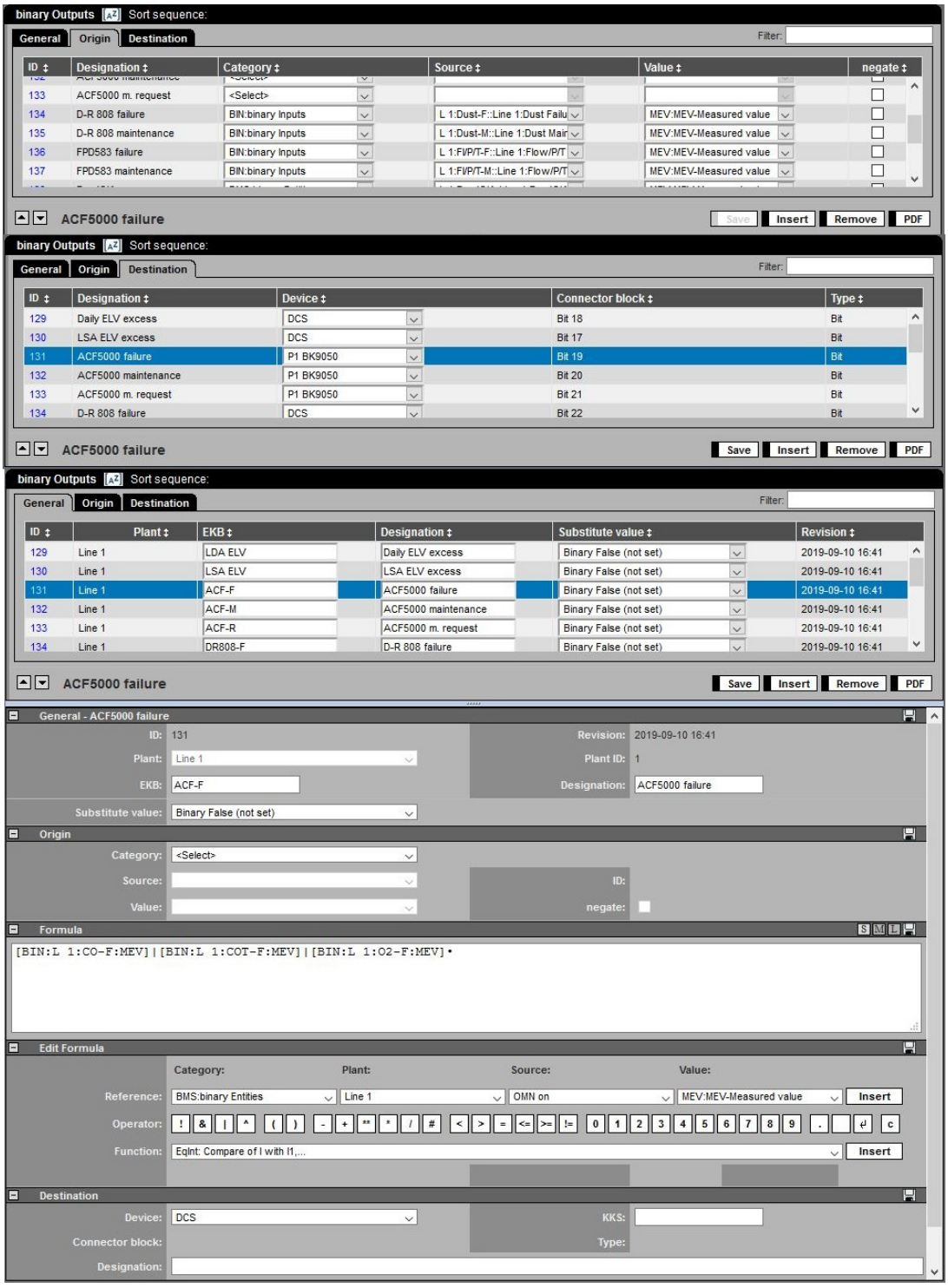
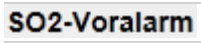


Figure 82: Binary outputs DAA-Controller

Lettering	Explanation
Binary Outputs – General (list)	
	Choice for selection and display of the sorting in the window headline In the example sorted by the column EKB in ascending order A click on the double arrow in the column heading sorts this column. Sorting more columns is made by a click on the symbol . A window “sorting overview – webpages dialogue“ (Figure 76). Here the sorting for each column can be set and various sortings can be combined. By clicking and holding a line the column order can be changed.
	The yellow highlighted column heading shows that a filter was set. The selected filter is displayed in the tip text. The filter can be set by click on the column heading. The list shows: - all entries of that column - selection oportunities (All), - (Empty) and - (not empty)
ID	Identifier of the binary output
Plant	Plant assigned to the binary output
EKB	Short designation of the binary output
Designation	Designation of the binary output
Substitute value	Selection for a default value for the output in case the source or the formula is invalid.
Revision	Date and time of the last change
	Scroll to the previous binary output
	Scroll to next binary output
	Shows which binary output is present in the detail display
Save	Save
Insert	Inserts a new binary output
Remove	Deletes a binary output
PDF	Printout of the list of binary outputs in PDF format
Filter	The filter searches the lines in “General” including the text.
	Upwards and downwards movable line
Binary Outputs – Origin (list)	
ID	Identifier of the binary output
Designation	Designation of the binary output
Category	Selection of the category of a signal from the existing signal categories binary/analog and input/entity
Source	Selection of a signal designation according to the category
Value	Selection of a value type
negate	Mark if the signal shall be negated
General [Designation]	
ID	Identifier of the binary output
Status	Date and time of the last change
Plant	Designation of the assigned plant
Id	ID of the assigned plant
EKB	Short designation of the binary output
Designation	Designation of the binary output
Default value	Selection for a default value for the output in case the source or the formula is invalid
Origin	
Category	Select one out of the existing categories for a signal
Source	Select a signal designation according to the category
ID	Identifier of the source signal
Value	Selection of a value type
Negate	The signal will be negated before attaching it to a connector block (0➡1, True ➡ False)

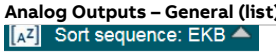
Lettering	Explanation
Formula	
	See Annex 1: DAA-Controller Formula editor
Edit Formula	
Reference, Category	Selection of a category of the operand which shall be inserted
Reference, Plant	Selection for the reference plant according to the chosen category of the operand being inserted
Reference, Source	Selection of the reference source according to the chosen category/plant of the operand being inserted
Reference, Value	Selection of the value type for the reference source according to the chosen category/plant
Insert	Inserts the value selected from category/plant/source/value in the formula in the formula editing field
Operator	By a click an operator will be inserted immediately at the text mark in the formula editing field
Function	Selection of functions which shall be transferred to the editing field of the formula
Insert	Inserts the selected formula in the formula editing field
Destination	
Device	Name of the output device
KKS	Designation of the output device according to power plant classification system
Connector block	Designation of the connector block pair on the output device
Type	Output of the selected connector block type: DA (digital output)
Designation	Full designation of the output connector block

4.4.3.7.8 Analog Outputs (A-OUT)

Via binary outputs analog signals are set on connector blocks of appropriate output assembly groups. These outputs, called “Destination” can be assigned directly to binary inputs, called “source” or with calculated values. If required the signals can be negated and/or assigned to default values

The output gives either the source value in mA, limited by the set output range of the Destination or converted linear from a value range of the source to a mA range of the coal.

Figure 83: Analog outputs DAA-Controller

Lettering	Explanation
Analog Outputs – General (list)	
	Selection and display of sorting in the window headline The example shows sorting to column EKB ascending A click on the double arrow in the column heading sorts this column. Sorting more columns is made by a click on the symbol  . A window opens “sorting overview – webpages dialogue“ (Figure 76). Here the sorting for each column can be set and various sortings can be combined. By clicking and holding a line the column order can be changed.
	The yellow highlight of a column heading shows that on this column a filter was set. The selected filter will be blended in when the mouse is on the column heading. The filter can be adjusted by a click on the column titel. The list shows: - all entries of the column - all possible selections (All), - (empty) and - (not empty)
ID	Identifier of the analog output
Plant	Plant assigned to the analog output
EKB	Short designation of the analog output
Designation	Designation of the analog output
Substitute value	Selection of the kind of default value
Substitute value	If as default value the type “constant“ was selected this constant will be entered here.
Revision	Date and time of the last change
	Jump to previous analog output
	Jump to next analog output
	Shows which analog output is in the current detail display
Save	Save
Insert	Inserts a new analog output
Delete	Deletes an analog output
PDF	Printout of a list of analog outputs in PDF format
	Upwards and downwards movable line
Analog Outputs – Origin (list)	
ID	Identifier of the analog output
Designation	Designation of the analog output
Category	Selection of the category of a signal from the existing signal categories binary/analog and input/entity
Source	Selection of a signal designation according to the category
Value	Selection of a value type
Lower verification	If the signal value is small than the lower threshold the signal can be: allowed for output (no verification) or limited to the lower threshold (boundary) or set implausible (plausibility)
Upper verification	If the signal value is larger than the upper threshold the signal can be: allowed for output (no verification) or limited to the upper threshold (boundary) or set implausible (plausibility)
Lower threshold	Lower threshold for plausibility verification and limitation
Upper threshold	Upper threshold for plausibility verification and limitation

Lettering	Explanation
Analog Outputs – Destination (list)	
ID	Identifier of the analog output
Designation	Designation of the analog output
Convert	If activated with the following information the value will be converted to an output current
Lower output	Minimum output current in mA
Upper output	Maximum output current in mA
Lower source	Minimum physical value of the entity according to “lower output“
Upper source	Maximum physical value of the entity according to “upper output“
Device	Selection of an output device
Connector block	Selection of a connector block pair on the output device
Type	Output of the selected connector block type: AA 0..20mA (analog output)
General [Designation]	
ID	Identifier of the analog output
Status	Date and time of the last change
Plant	Plant which is assigned to the analog output.
Plant ID	ID of the plant which is assigned to the analog output
EKB	Short designation of the analog output
Designation	Designation of the analog output
Substitute value	Selection of the kind of default value which shall be used
Substitute value	If the default value type “constant“ was selected this constant will be entered here
Origin	
Category	Selection of the category of a device
Source	Selection of a category according to the signal designation
ID	Identifier of the source signal
Value	Selection of a value type
Lower verification	If the signal value is smaller than the threshold the signal can be: allowed for output (no verification) or limited to the lower threshold (limitation) or set implausible (plausibility)
Upper verification	If the signal value is larger than the threshold the signal can be: allowed for output (no verification) or limited to the upper threshold (limitation) or set implausible (plausibility)
Lower threshold	Lower threshold for plausibility verification and limitation
Upper threshold	Upper threshold for plausibility verification and limitation
Formula	
	See Annex 1: DAA-Controller Formula editor
Formula editing	
Reference category	Selection of a category of the operand which shall be inserted
Reference plant	Selection of the reference plant according to the selected category of the operand which shall be inserted
Reference source	Selection of the reference source according to the chosen category/plant of the operand being inserted e.g. a binary entity, if as reference object BMS: binary entities was selected.
Reference value	Selection of a value type for the reference source according to the chosen category/plant
Insert	Inserts the value selected from category/plant/source/value in the formula in the formula editing field
Operator	By a click an operator will be inserted immediately at the text mark in the formula editing field
Function	Selection of functions which shall be transferred to the editing field of the formula
Insert	Inserts the selected formula in the formula editing field


Analog output characteristic

Lettering	Explanation
Destination	
convert	Mark if the value of the entity shall be converted linear in mA
Lower output	Minimum output current in mA
Upper output	Maximum output current in mA
Lower source	Minimum physical value of the entity according to “Lower output“
Upper source	Maximum physical value of the entity according to “Upper output“
Device	Selection of the output device
Connector block	Selection of the connector block pair on the output device
KKS	Designation of the analog output according to power plant classification system
Type	Output of the selected connector block type: AA 0..20mA (Analog output)
Designation	Full designation of the destination

4.4.3.8 Edit plant

After selection of a revision all plants which exist in this revision will be displayed. By a click on a plant it´s data will be displayed. If this plant is from a released revision only the plant parameter will be displayed and printed. A change is only possible for plants of a not yet released revision:

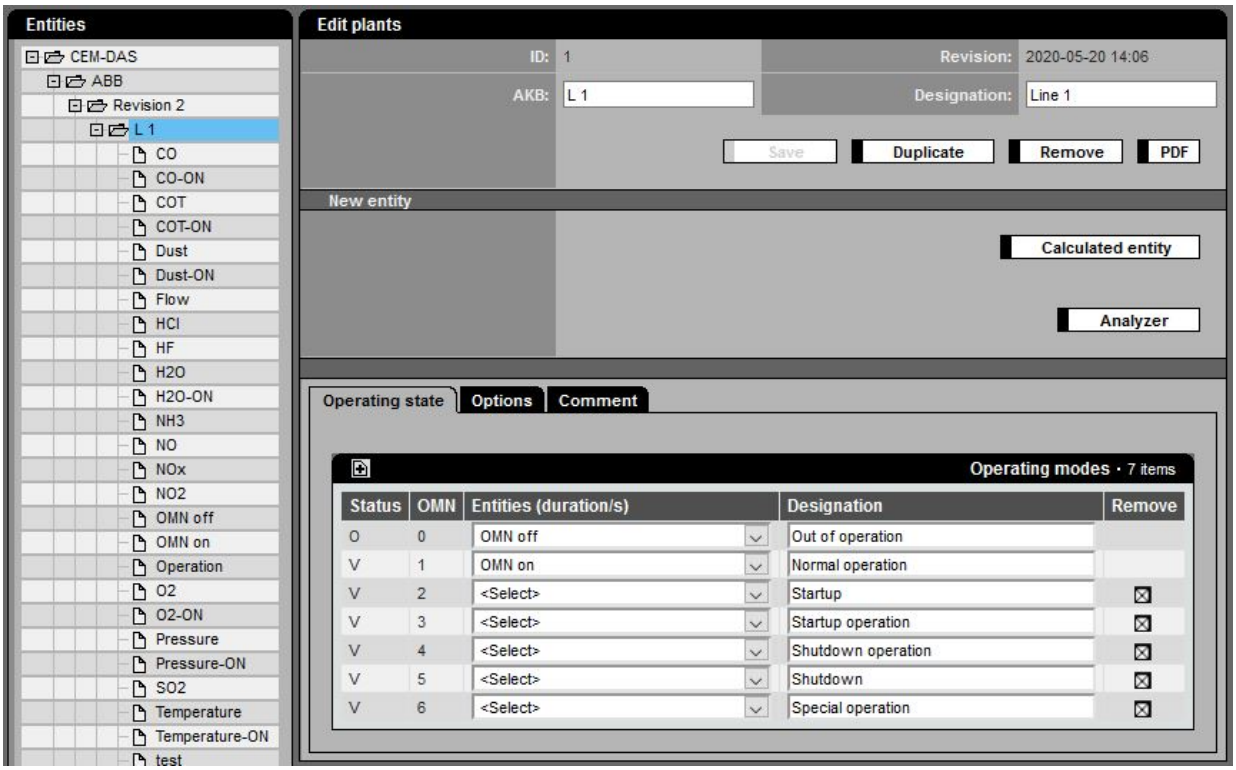


Figure 84: Plant parameter – not released revision, editable

Lettering	Explanation
ID	Identifier of the plant
Revision	Date of the last change
AKB	Short designation of the plant
Designation	Full designation of the plant
Bypass duration/s	Selection of an entity, which indicates the times in seconds in which the plant is operated in bypass
VUB duration/s	Selection of an entity, which indicates the times in seconds in which the plant is locked or the loading is interrupted
Graphic[1]	Bitmap graphic, which will be transferred to the agency together with the data model, e.g. schematic plant mimic
Revision[8]	Date of the last change of the bitmap graphic
Save	Saves the changes of the current revision, but not of released revisions
Duplicate	Copy of the plant with all entities of the current revision if the revision was not yet released
Remove	Deletes the plant of the current revision if the revision was not yet released
PDF	Printout of the selected plant as PDF document (Figure 97, Figure 98, Figure 99)
New entity	
Calculated entity	Definition of a new entity who doesn´t receive the values from a DAA-Controller but via a calculation formula which can also contain values of other CEM-DAS entities.
Manual input	Available if module “Manual Input” is activated (see 4.5.6) Creates a new entity with with manual input acc. 30. BImSchV of daily values.
Analyzer	Available if module “QAL3” is activated (see 4.5.6). Defintion of a analyzer (see /9/)

[1] Only visible if a B-System for the operator exists

Lettering	Explanation
Tab – Operation state: Operating modes	
	By a click on this symbol the list of additional operating modes will be enlarged by one.
Status	Designation of the plant status
OMN	Number of the operating mode of the plant. This number and belonging designation must be defined clearly for the lifetime of the plant.
Entities (duration/s)	Selection of an entity (averaging time: 1 minute) that indicates the times in seconds in which the plant is in this operating mode
Designation	Designation of the operating mode.
Remove	(x) Deletes an additional operating mode OMN
Tab options	
[Text field]	e.g. extra functions etc.
Tab comment	
[Text field]	e.g. explanations of the current plant

4.4.3.9 Edit entities

4.4.3.9.1 Edit entities parameter, generally

Figure 85: General entity parameter – DAA-Controller

Lettering	Explanation
Edit entities	
ID	Clear identification of the entity
Status	Date and time of the last change
MKB	Entity – short designation There must be a clear MKB within a plant
Unit	Physical unit of the measurand
Designation	Entity – full designation There must be a clear designation within a plant
KKS	Designation of the entity according to the power plant classification system
Averaging time	Selection from the allowed averaging times
Format	Selection of the allowed number of decimal places in lists and reports
Pollutant	Has to be marked when a pollutant exists. Without this mark no classification in class S01 will be made
Rounding	Has to be marked if the short-term average (final value) shall be rounded properly prior to classification and limit value verification (/6/)
Lower measuring range	Lower measuring range for display in a graphic
Upper measuring range	Upper measuring range for display in a graphic
Save	Saves the current parameter in the database
PDF	Printout in PDF format

4.4.3.9.2 Edit entities, tab DAA-Controller

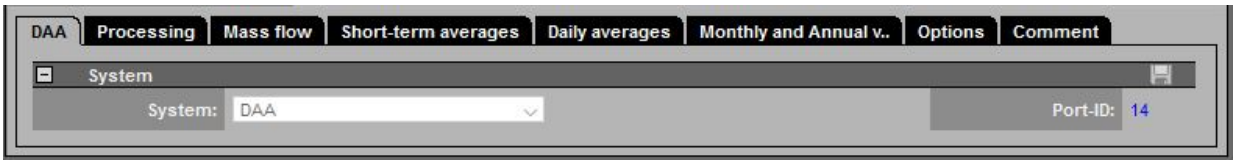


Figure 86: Entity parameter – DAA-Controller – import entity

Lettering	Explanation
DAA-Controller	
System	Display of the DAA-Controller system designation
Port	Display of the DAA-Controller entity as hyperlink With a click on the hyperlink CEM-DAS jumps to the parameterization of the DAA-Controller entity. • A DAA-Controller entity is already assigned to a CEM-DAS entity by the DAA-Controller entity parameterization or the availability in CEM-DAS is waived, e.g. because this entity is only an auxiliary entity or intermediate value and is not relevant in CEM-DAS.

4.4.3.9.3 Edit entity, tab classification

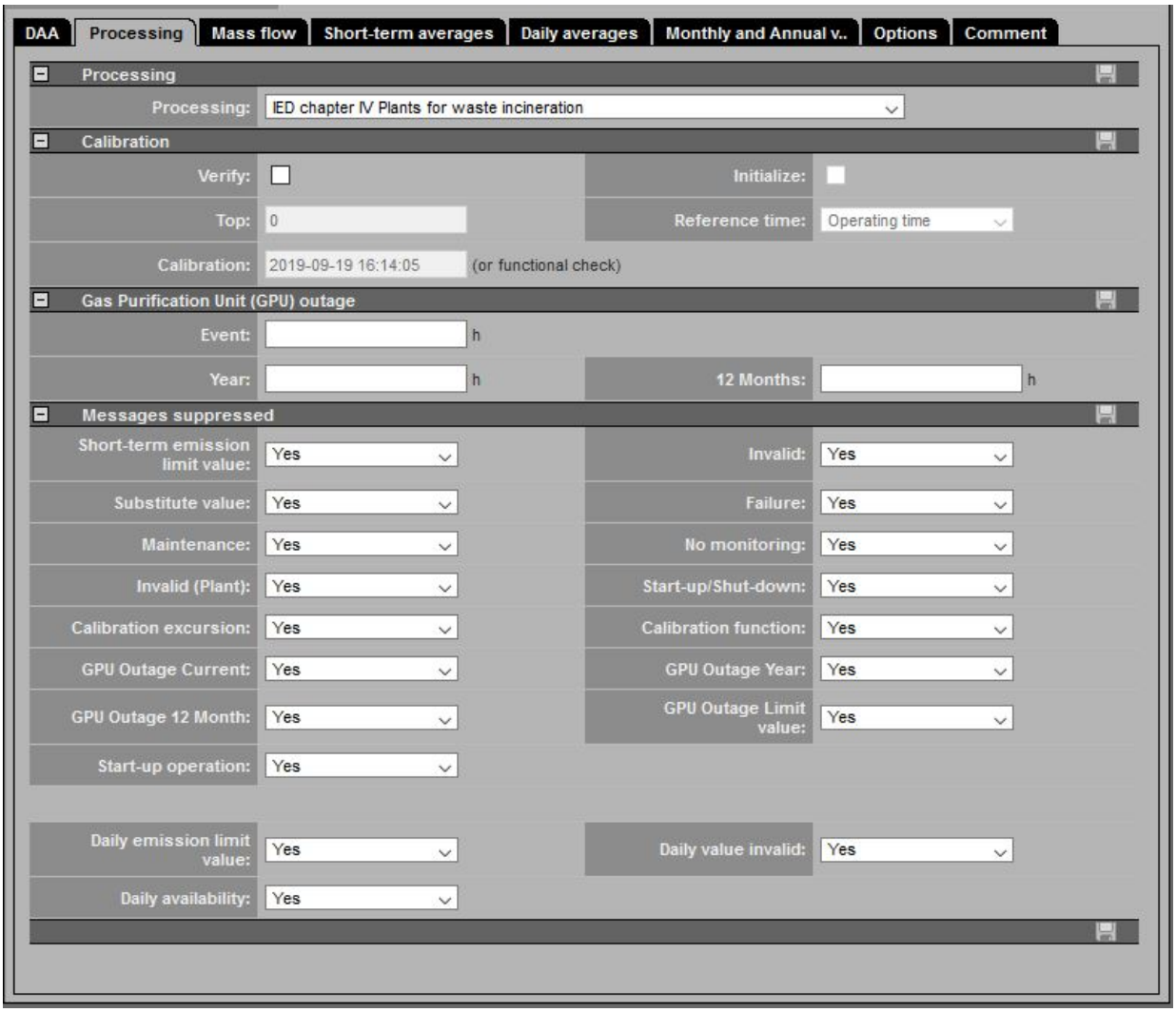


Figure 87: Edit entity, tab classification

Lettering	Explanation
Classification	
Classification	
Classification	Selection from the classification regulation. This can be found in the letter of permit of the plant. The number in brackets is the reference for the classification system as defined in /5/.
Daily report: (automatic printout for agency)	Shows if the entity is in the automatic daily report
Margin	If the classification is according to 17. BImSchV invers (e.g. T- after flame time): Gives the span from the lower edge of class 1 to the upper edge of class 20.
Calibration	
Verify	Specification if the calibration shall be monitored. For pollutant for /3/ and /4/ this is mandatory.
Initialize (Classes S09 and S10)	This will cause that with the release of the revision the special classes S09 and S10 will be reset!
Top	Upper limit of the calibration range. This is specified during calibration and has to be taken from the calibration report without changes.
Reference time	Reference time as basis to determine the calibration range violations per week: Operation time (S06) 168h rule Calendar week Note: Changes can only be made in coordination with the agency!
Calibration (or functional check)	Date of the current calibration. After initializing it will be set on the date of release of the present revision
Gas Purification Unit (GPU) Outage	
Event [h]	Allowed hours of a continuous period (=event) in which the plant may still operate although the gas purification unit (GPU) fails.
Year [h]	Total hours during a calendar year in which a gas purification unit (GPU) may fail according to 17. BImSchV without having to stop operation
12 months [h]	Total hours during a (1) year in which a gas purification unit may fail according to 13. BImSchV without having to stop operation
Messages suppressed	
S01….S17	NO: all events which lead to classification in a special class S01, S01, …, S17 will be displayed as messages Yes: no message when classified in a special class
TS1 (Daily limit violation)	No: all events which lead to classification in the special class TS1, will be displayed as messages Yes: no message when classified in special class TS1
TS2 (no TMW caused by 25% criteria)	No: all events which lead to classification in the special class TS2, will be displayed as messages Not during operation: no message when classified in special class TS2 if the entity is out of order. B Yes: no message when classified in special class TS2
TS3 (TMW with “too many“ RW in maintenance, failure or outage according to 10 day rule)	No: all events which lead to classification in the special class TS3, will be displayed as messages Yes: no message when classified in special class TS3

4.4.3.9.4 Edit entities, tab mass flow

During parameterization of mass flows and the resulting mass balances, especially with pollutants, two physical values are multiplied, e.g. a concentration with the unit [mg/m^3] and an exhaust stream with the unit [m^3/h]. This is the reason why concentrations and exhaust streams must have the same normalization before multiplying.
For calculation of the mass flow no validated measures should be used.

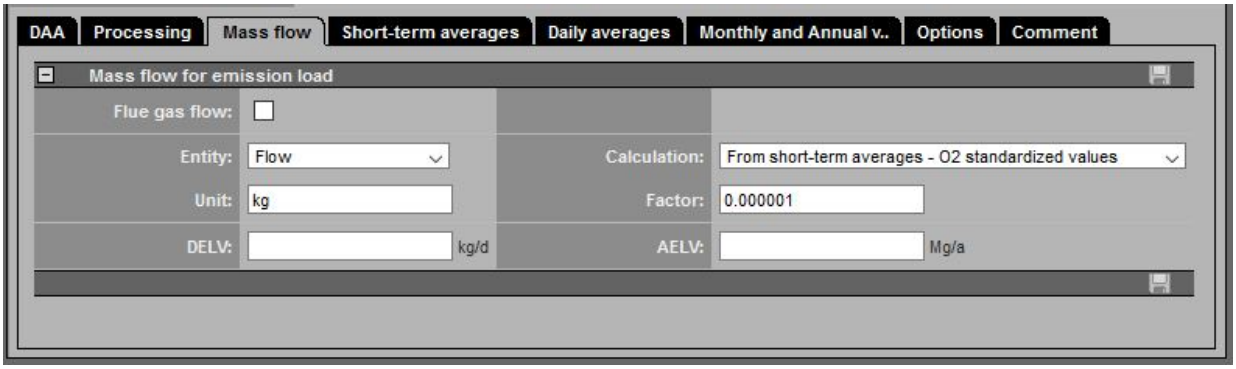


Figure 88: Edit entities, tab mass flow

Lettering	Explanation
Mass flow	
Flue gas flow	Information if the present entity is an exhaust flow and therefore is available for mass flow calculation in other entities
Entity	Selection of the entity of exhaust stream if the present entity shall execute a mass flow calculation
Calculation	Selection of short-term averages which shall be used for calculation: • Short-term averages – O2 standardized • Short-term averages – validated values • Short-term averages – calibrated values
Unit	Physical unit of the mass flow
Factor	Conversion factor to calculate a mass flow from the unit of the concentration entity (e.g. mg/m3) and the unit of the volumetric flow entity (e.g. m3/h),for example: 1.00 * 10^{-6}
Mass ratio (MR)	
Ingredient	Indicates that the present entity is an ingredient in the meaning of the “Verordnung über Anlage zur biologischen Behandlung von Abfällen“ (30.BImSchV).
Entity	Selection of the entity of the ingredient which means of all waste sent to the plant. This selected entity itself must be designated as “ingredient“ (see above parameter “ingredient“).
MR- limit	Limit value of the mass ration in g/Mg
Unit	Physical unit of the ingredient, standard value is Mg (Mega gram)
Factor	Conversion factor in other measured units as Mg of the ingredient, standard value is 1,00 for the unit Mg. For example: if evaluation is in kg, the conversion to Mg is made by entering 0,001.
MR-Unit	Unit of the mass ratio of the mass of emitted substances to the mass of delivered ingredients. The program calculates with the unit g/MG. When the mass of the pollutant is measured e.g. in kg a conversion with a different factor has to be made (see below).
MR-Factor	Conversion factor for the mass ratio if it isn´t in g/Mg. If e.g. the pollutant mass flow is in kg it has to be converted in g by entering 1000.

4.4.3.9.5 Edit entities, tab short-term averages

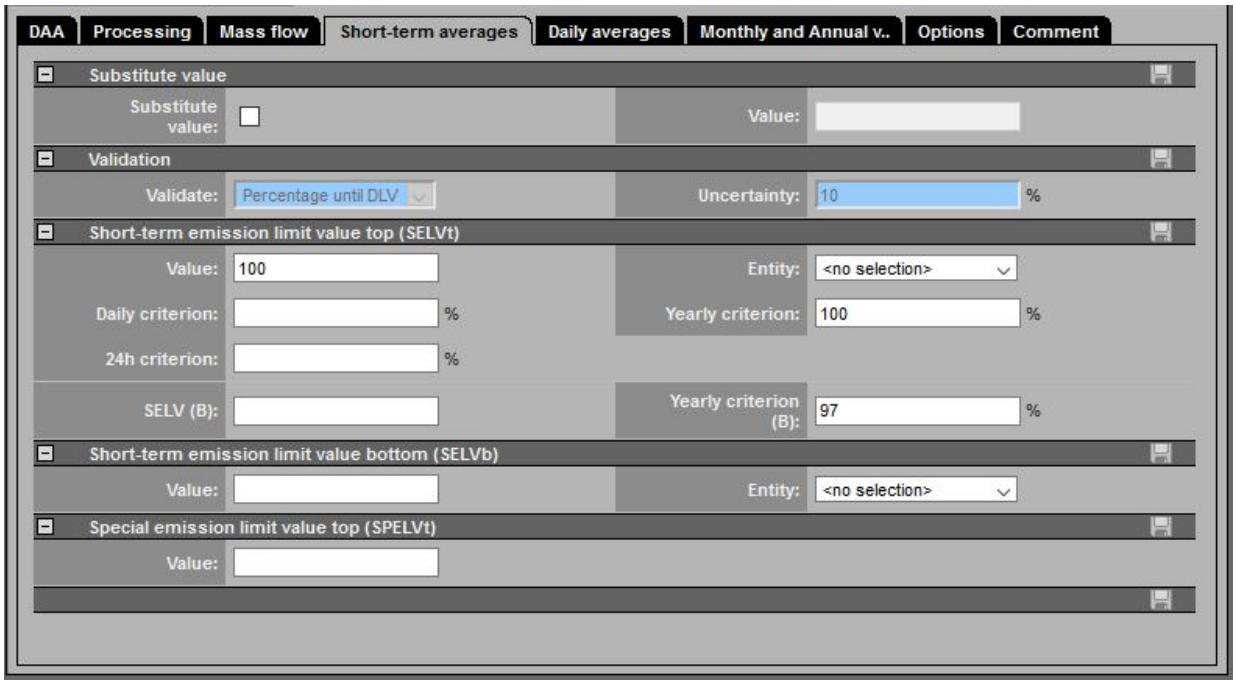
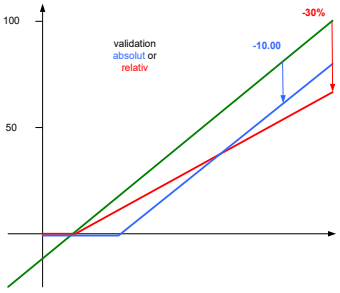


Figure 89: Edit entities, tab short-term averages

Lettering	Explanation
Substitute value	The present entities has a default value
Value	Default value which is used instead of an invalid value of the present entity. This is only for calculation entities or as reference for calculating a formula
Validation	
Validate	Select the kind of validation:  Constant: from the normalized value the following constant called “uncertainty“ is subtracted. If the result is negative it is set to 0. With %-value: from the normalized value the following percentage called “uncertainty“ is subtracted. If the result is negative it is set to 0.
Uncertainty	Absolut value (constant) or the percentage of the normalized value
Short-term emission limit value top (SELVt)	
Value	Upper limit, if no entity is selected or this entity is invalid
Entity	Here the entity is selected for a dynamic upper limit
Short-term emission limit value bottom (SELVb)	
Value	Lower limit, if no entity is selected or this entity is invalid
Entity	Here the entity is selected for a dynamic lower limit
Special emission limit value top (SPELVt)	
Value	Special limit value, e.g. for dust during GPU - outage

4.4.3.9.6 Edit entity, tab daily values

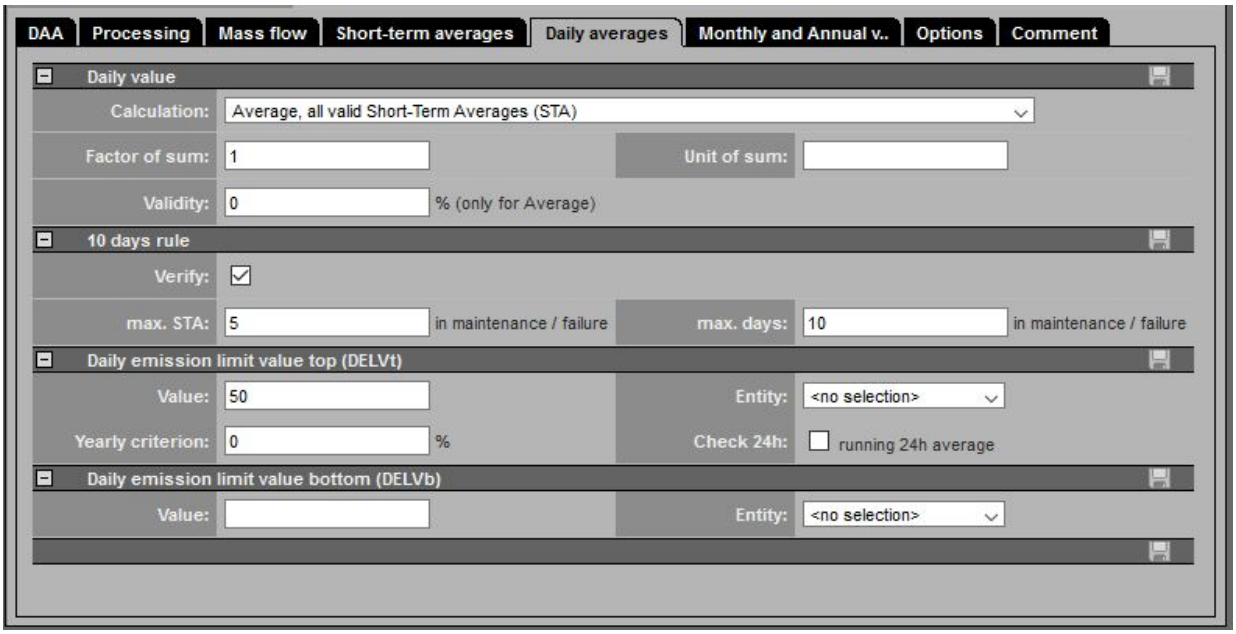


Figure 90: Edit entities, tab daily value

Lettering	Explanation
Calculation	Selection of calculation rule for the daily values (daily average DAV, day sum DS): No calculation of daily average value: DAV = n.v. and DS = n.v. Average. all valid Short-Term Averages (STA): $DAV = \frac{1}{N} \cdot \sum_{i=1}^{N} STA_{i,v}\ ,\ \ 1 \le N \le 48$ Sum/Average, all valid Short-Term Averages (STA): $DS = \sum_{I=1}^{N} STA_{i,v} \cdot \frac{averaging\ time\ [min]}{60} \cdot f_{sum}\ ,\ \ 1 \le N \le 48$ Last valid STA is the DAV: $DAV = STA_{N,v}\ , 1 \le N \le 48$ Max valid STA is the DAV: $DAV = Max\ (STA_{1,v}, \dots, STA_{N,v})\ ,\ \ 1 \le N \le 48$ Ionic strength: (e.g. for the average pH value of the day as daily average) $DAV = -log_{10}\left(\frac{1}{N} \cdot \sum_{i=1}^{N} 10^{-STA_{i,v}}\right),\ \ 1 \le N \le 48$ Ionic mass flow: (e.g.. the average pH value of a day weighted with the volumetric flow as daily average value) $DAV = -log_{10}\left(\frac{1}{\sum_{i=1}^{N} Vol_i} \sum_{i=1}^{N} 10^{-STA_{i,v} \cdot Vol_{i,v}}\right), 1 \le N \le 48$ Use a formular to calculate the daily value (no STA): Visible only for CEM-DAS entities (formula see 4.4.3.9.11.5). For entities for which only daily values are defined (e.g. rolling daily average [RollDAV]) the calculation is according to the formula. Short-term averages are displayed in the list as empty fields. Use a formular to calculate the daily value (no STA) – Last daily value:

Lettering	Explanation
	Visible only for CEM-DAS calculated entities (formula see 4.4.3.9.11.5). For entities for which only daily values are defined (e.g. weighted annual average [WeightedAav]) the calculation is according to the formula. Short-term averages are displayed as empty fields.
Factor of sum	Standard 1.00, Is used to adapt the daily sum.
Unit of sum	Deviating unit of the daily sum
Validity %	For daily average values which are calculated from short-term averages: percentage of the necessary valid short-term averages from the total of all possible short-term averages
10 days rule	
Verify	Is marked if the validation of the 10 day rule for this entity is activated
max. STA in maintenance/failure	Maximum of the allowed amount of short-term averages of a day in the state “maintenance“ or “failure“. If the maximum is exceeded the message “10 day rule violation on 1 day” will be displayed. Corresponding messages will be sent for further violations.
max. days in maintenance/failure	Maximum amount N of days in which the N daily rule (10 day rule) may be violated
Daily emission limit value top (DELVt)	
Value	Upper daily emission limit value, if no entity is selected or this entity is invalid
Entity	Entity with the upper daily emission limit value
Daily emission limit value bottom (DELVb)	
Value	Lower daily emission limit value, if no entity is selected or this entity is invalid
Entity	Entity with the lower daily limit value

4.4.3.9.7 Edit entities, tab monthly/annual values

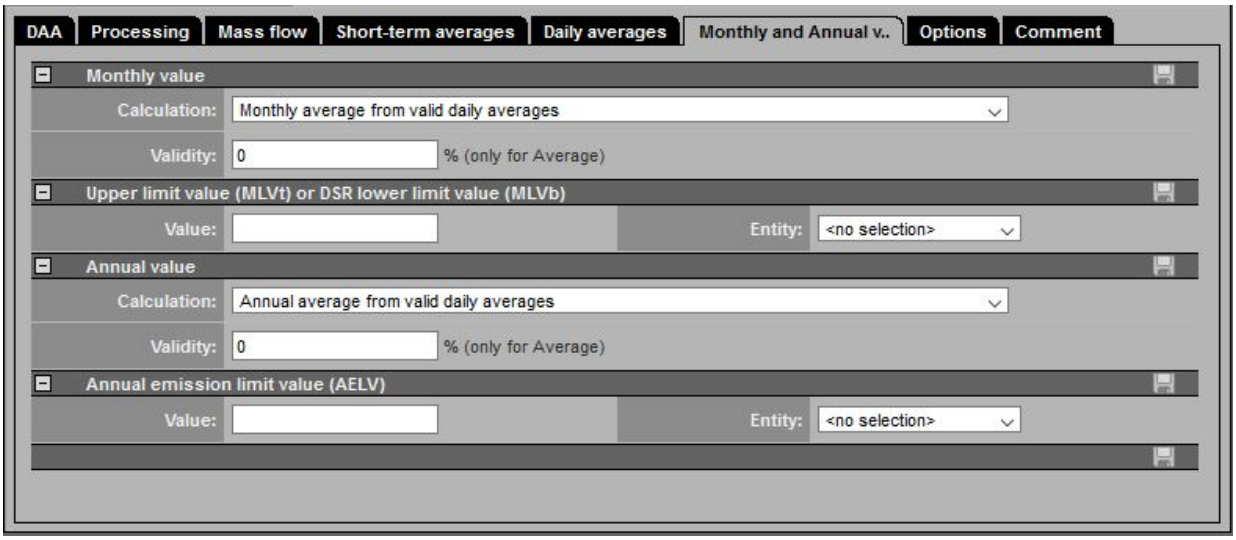


Figure 91: Edit entities, tab monthly/annual values

Lettering	Explanation
Monthly and Annual values	
Monthly value	
Calculation	Selection of the calculation rule for monthly values: Calculate Monthly value like Daily value Monthly average from valid Daily averages (according to 13./17. BImSchV) Monthly average from valid short-term averages / rolling 30-Days average
Validity [%]	Percentage of the minimum share of daily average values to calculate a valid monthly average value
Monthly emission limit value (MELV)	
Value	Monthly limit, if no entity is selected or this entity is invalid
Entity	Here the entity is selected for a dynamic monthly limit
Annual value	
Calculation	Selection of the calculation rule for annual values: Calculate Yearly value like Daily value Yearly average from valid Daily averages (according to 13./17. BImSchV)
Validity [%]	Percentage of the minimum share of daily average values to calculate a valid annual average value
Annual emission limit value (AELV)	
Value	Annual limit, if no entity is selected or this entity is invalid
(Entity)	Here the entity is selected for a dynamic annual limit

4.4.3.9.8 Edit entities, tab Agency

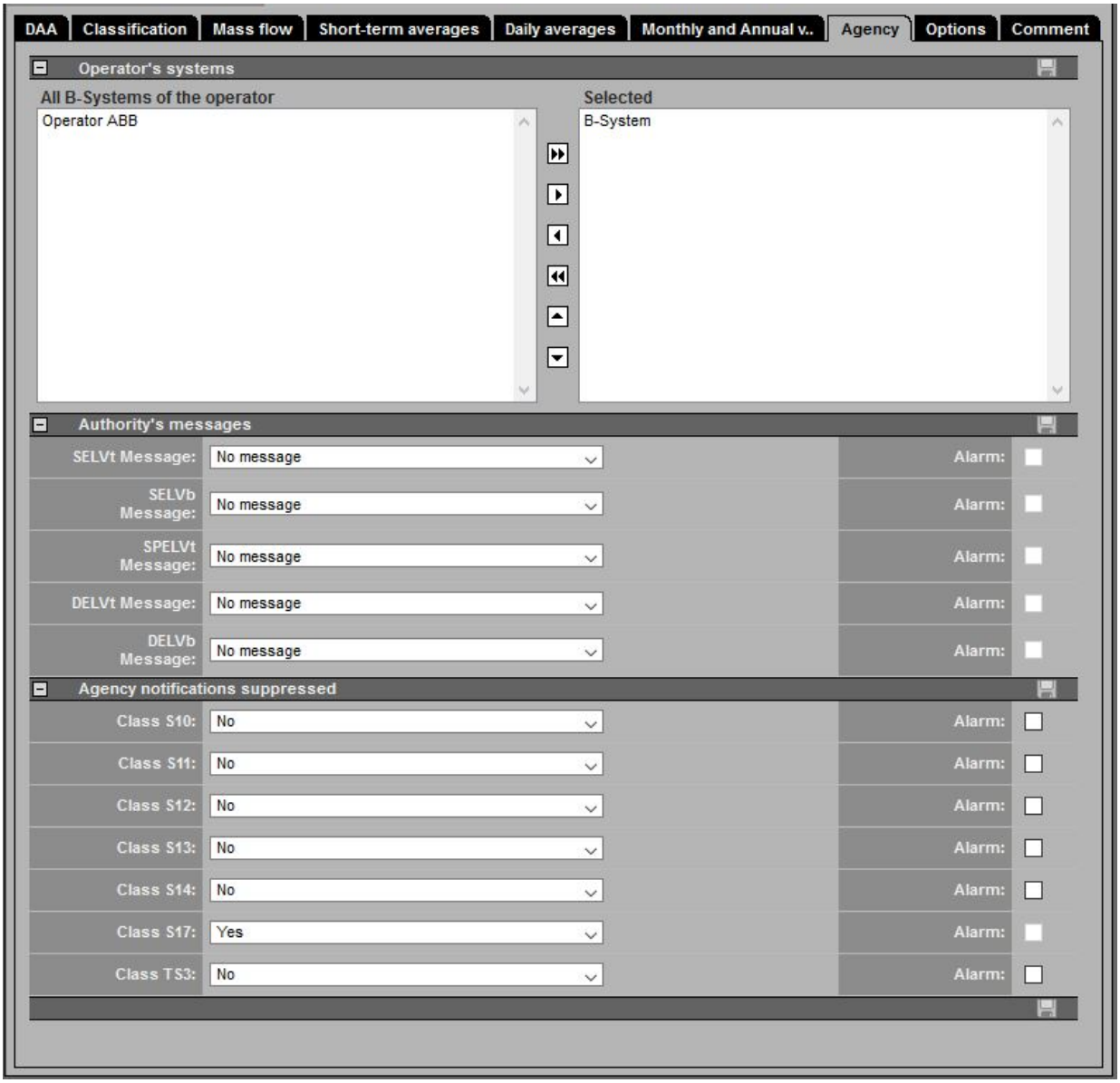


Figure 92: Edit entity, tab agency (not with IED and MCERTS)

Lettering	Explanation
Agency	
All B-Systems of the plant operator	All available B-Systems of a plant operator. A plant operator may have several B-Systems to e.g. send emission values to different agencies (G-Systems)
Selected	From all B-Systems selected systems to assign the present entity to different B-Systems
⏩	Select B-Systems for agencies, delete and change the order
▶	
◀	
⏪	
▲	
▼	

Lettering	Explanation
Authority's messages	
SELVt Message	Message about violation of the short-term emission limit value top on/off
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
SELVb Message	Message about violation of the short-term emission limit value bottom on/off
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
SPELVt Message	Message about violation of the special emission limit value top on/off
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
DELVt Message	Message about violation of the daily emission limit value top on/off
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
DELVb Message	Message about violation of the daily emission limit value bottom on/off
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
Agency notifications suppressed	
Class S10	No: Message of a classification in class S10 (long-term storage for calibration range exceeding) not reset message: A message will be created only if the long-term storage is deleted, e.g. after entering calibration data.
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
Class S11	No: message of an exceeding of the ARE outage in the calendar year
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
Class S12	No: message of classification in S12 (presently upcoming ARE outage) not end messages: Message of a classification in S12 only if the presently upcoming ARE outage was finished.
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
Class S13	No: message of an exceeding of the sliding 12 month ARE outage
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
Class S14	No: message of a classification in S14.
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
Class S17	No: message of a classification in S17.
Alarm	Activate if an immediate (alarm) message of the G-System shall be made
Class TS3	No: message of a classification in TS3.
Alarm	Activate if an immediate (alarm) message of the G-System shall be made

4.4.3.9.9 Edit entities, tab options

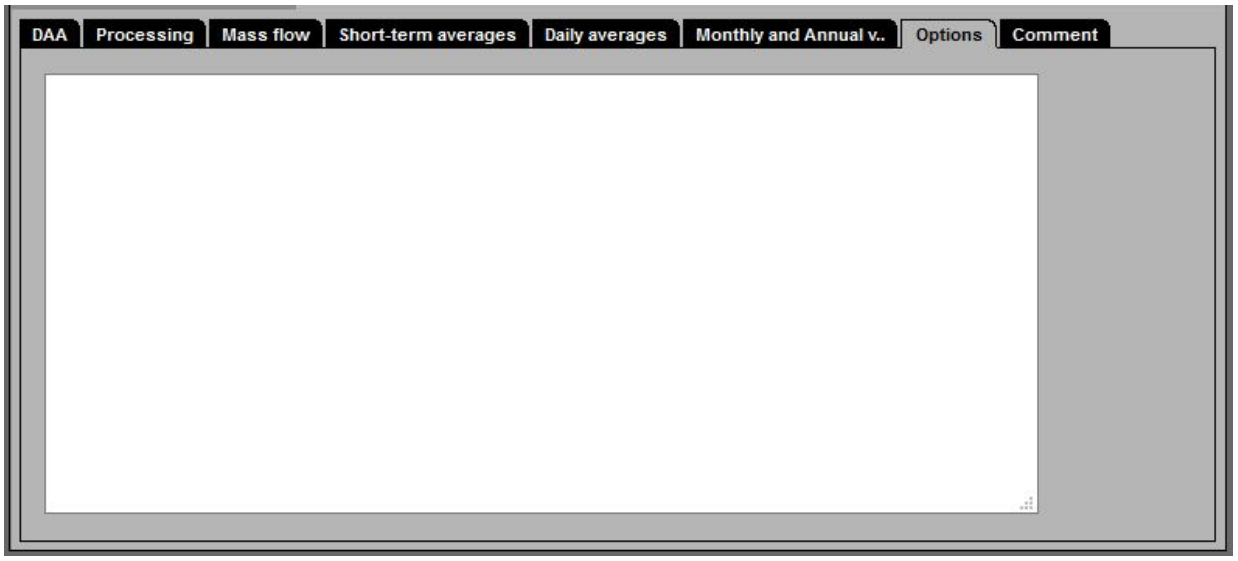


Figure 93: Edit entities, tab options

Lettering	Explanation
Options	
None	Available options acc. to ABB advise

4.4.3.9.10 Edit entities, tab comment

Figure 94: Edit entities, tab comment

Lettering	Explanation
Comment	
None	any text

4.4.3.9.11 Edit entities, tab Formula (calculated entity)

4.4.3.9.11.1 General

If a calculated entity is created the following window with a formula editor is displayed which allows to create entities derived from CEM-DAS. These entities are able to apply all common arithmetic operations to CEM-DAS values. Furthermore many special functions are available which have been approved in processing emission values.

4.4.3.9.11.2 Calculated entities

In CEM-DAS calculated entities can be parameterized which calculate their short-term averages with a formula. In this formula numbers, operators, reference entities and functions can be used. This formula will be interpreted as an algebraic formula from left to right.

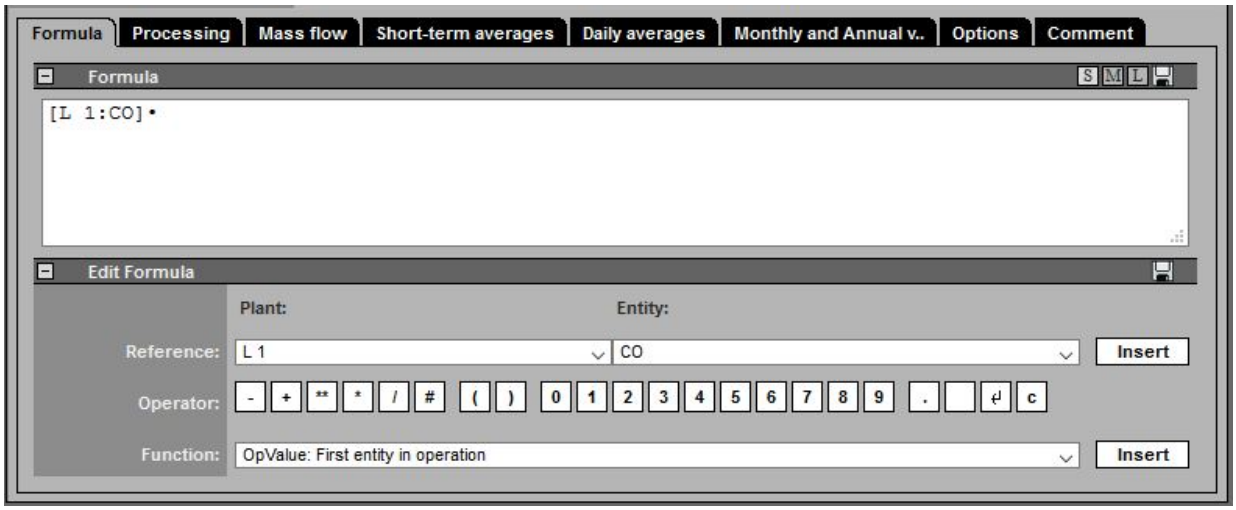


Figure 95: Edit entities, tab formula

Lettering	Explanation
Formular	S M L
Text field	Entry area for the formula to calculate the value of a derived entity. Text, operators and functions are described in the chapters 4.4.3.9.11.3, 4.4.3.9.11.4 and 4.4.3.9.11.5
Edit Formular	
Reference	Selection for a plant and entity, adding to the formular. By “insert“ the entity will be inserted into the editing field of the formula editor to the input position •
- + ** * / # ( ) 0 1 2 3 4 5 6 7 8 9 , ↲ c	Inserts the selected function to the input position •
Function	Selection for a function acc. to chapter 4.4.3.9.11.5.. By “insert“ the function and its arguments will be inserted into the editing field of the formula editor. There the general arguments have to be replaced by concrete references.

4.4.3.9.11.3 Text in formula

Also text can be entered into a formula. Text is limited by ' (single quotation mark).

4.4.3.9.11.4 Operators in formulas

Operators are analyzed by priority. The priority of each operator can be influenced by '(..)'.
Except of the “OR”ed-Addition in all operations both operands must be valid to receive a valid result. In an “OR”ed-Addition just one operand must be valid.

Priority	Operator	Explanation
1	-	Sign (minus)
1	**	Exponentiation
2	*	Multiplication
2	/	Division
3	+	Addition
3	-	Subtraction
3	#	“OR”ed-Addition

4.4.3.9.11.5 Functions in formulas

Certain pre-defined functions can be used for a formula. The arguments of a function are separated from each other by “;“ (semicolon). As arguments numbers or reference entities can be used (depending on a function if numbers or references make sense). Calculated entities can also be used as plant entities to determine the plant condition. If no plant condition was determined during calculation the status and the value of the entity result will be used for determination of the plant condition (analog to a DAA-Controller-entity).

Functions which are marked red only make sense to calculate a daily value! Therefore the daily value calculation must be adjusted correspondingly.

Function	Explanation	Arguments	MIV/PA
OpValue	Gives the value of the first entity in operation	M1;...	
OpSELV	Gives the SELV of the first entity in operation	M1;...	
OpDELV	Gives the DELV of the first entity in operation	M1;...	
Plant	If an entity is operating it delivers plant condition “operating“ otherwise “out of order”. The entity value equals the OMN number of the plant condition.	M1;...	
DB2	Retrieves the short-term average with the indicated ID from a second database (Oracle Alias SECONDDB). The ID refers to the entity in the second database.	ID	always 0,NOK
RollDav	Calculates the rolling value of several DAV with weighting over the present day and N-1 past days. For each day (DAV(M1)*G1+DAV(M2)*G2+...) / (G1+G2+...) is calculated. The result of the several days will be averaged. For the daily value calculation “Use a formular to calculate the daily value (no STA)” has to be set.	N;M1;G1,M2;G2;...	always 0,NOK
Constant	Constant value and plant condition will be displayed in the order value, status, operating state and operating mode number (OMN).	F;N;N;N	
ImportSta	Import of short-term averages from the table DATA_IMPORT which is filled by the operator. If in DATA_IMPORT no entry is found for the requested time (t) the entity stays preliminary until the highest entered point in time lies more than 6 hours in the future of t. All entries in DATA_IMPORT which are older than “Short-term averages complete“ of the set-off 10 days will be deleted by UmofBackup. In the 1. Argument the identifier will be given as text then the external ID of the entry follows. Both units must be agreed with the plant operator.	T;eID[;Takt]	If the 3rd argument is set an import will follow. Otherwise always 0,NOK
RefValue	Gets the short-term average with the given ID from another plant operator	ID	
ifgt	If G1 and G2 are valid and if G1 > G2 the function result is G3 otherwise always G4. The validity of the function result is determined by G3 or G4. When G3 or G4 is a constant the result is always valid.	G1;G2;G3;G4	
min	Determines the minimum value of all valid entities	M1;...	
max	Determines the maximum value of all valid entities	M1;...	
maxMiv	Looks for the maximum valid minute value within averaging time	M1	MIV=MIV(Ref), PA = Maximum of MIV(Ref)

Function	Explanation	Arguments	MIV/PA
			during the averaging time
RollSta	Calculates the rolling value of several STA with weighting over the present cycle count and N-1 past cycle counts. For each interval (M1*G1+M2*G2+...) / (G1+G2+...) is calculated. The result of the several cycle counts will be averaged. To get a valid result there must be at least K valid intervals.	N;K;M1;G1,M2;G2;...	N-1 STA and PA or MIV is averaged
ManSta	Gets the short-term average from the reference which time stamp <= present averaging cycle count is maximum	M1	
Cycle	Delivers as result for PA/STA calculation the elapsed time in the averaging time as seconds. For calculation of MIV it gives the parameterized minute interval in seconds.		
Weighted-Aav	Calculates an annual average of concentration from the daily mass of a concentration and the daily sum of the volumetric flow. For daily value calculation “Use a formular to calculate the daily value (no STA) – Last daily value” has to be set.	M(Konz);M(Vol)	always 0,NOK

Legend for arguments	
N,K	integer larger than 0
I	integer
F	number in decimal format
T	text
O	option
M1,Mi	entities
G1,Gi	entities or constants
ID	ID number of an entity (integer larger than 0)
V	Flag: 0 or 1
[X]	argument X is optional
X|Y	arguments X and Y are alternative

The following figures show examples of printouts of entity parameters:

4.4.4 Parameter Documentation

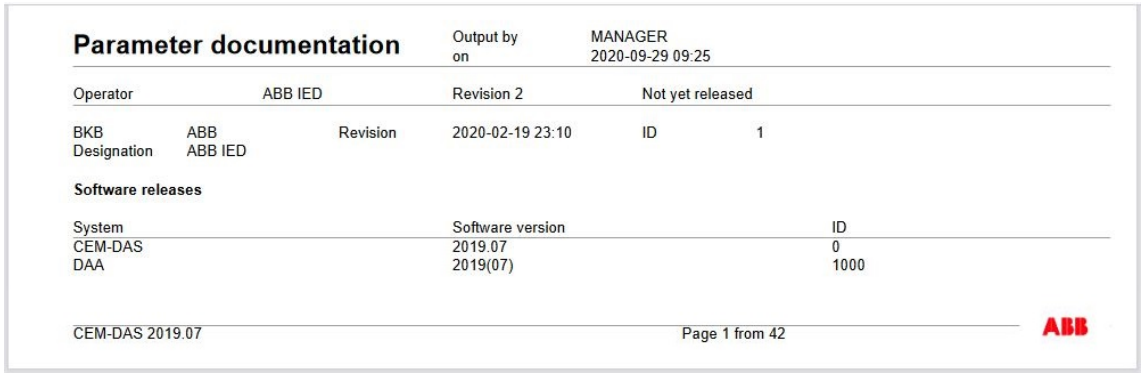
The complete parameter documentation consists of the following parts:

- Operator (Figure 96)
  Information about the operator and the software version (see 4.4.3.6)

- Plant (Figure 97)
  Overview of the plants and their operating modes (see 4.4.3.8)

- Entities (Figure 98, Figure 99)
  All entities of the plant (see 4.4.3.9)

The complete parameter documentation can be retrieved for each revision (see 4.4.3.6).
For each plant of the operator, the plant information with operating modes and the associated entities can be called up (see 4.4.3.8).
The parameters of a single entity in a plant can be printed separately (see 4.4.3.9.1).



Parameter documentation

Output by MANAGER
on 2020-09-29 09:25

Operator	ABB IED	Revision 2	Not yet released

BKB ABB Revision 2020-02-19 23:10 ID 1
Designation ABB IED

Software releases

System	Software version	ID
CEM-DAS	2019.07	0
DAA	2019(07)	1000

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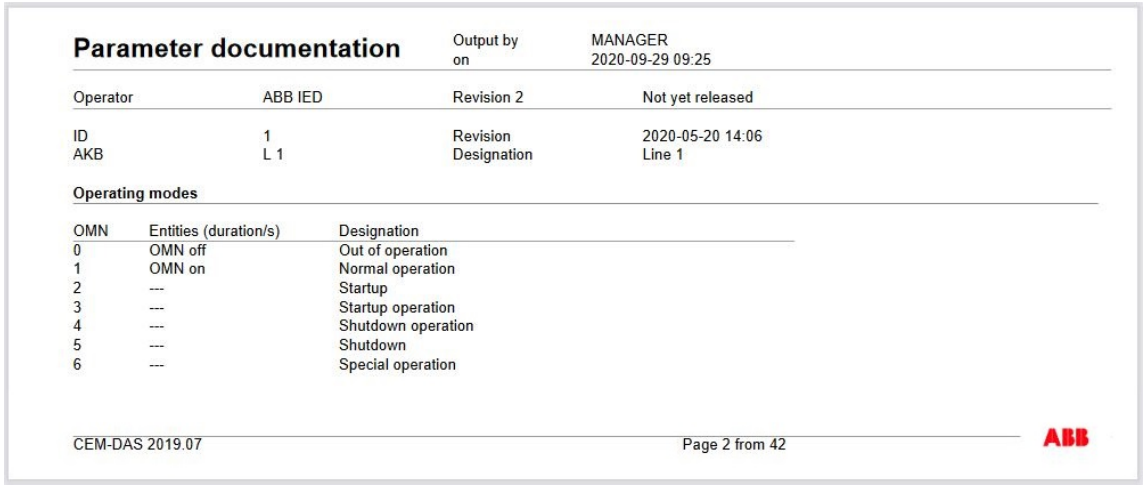
Figure 96: Parameter Documentation: Operator



Parameter documentation

Output by MANAGER
on 2020-09-29 09:25

Operator	ABB IED	Revision 2	Not yet released

ID 1 Revision 2020-05-20 14:06
AKB L 1 Designation Line 1

Operating modes

OMN	Entities (duration/s)	Designation
0	OMN off	Out of operation
1	OMN on	Normal operation
2	---	Startup
3	---	Startup operation
4	---	Shutdown operation
5	---	Shutdown
6	---	Special operation

CEM-DAS 2019.07 Page 2 from 42

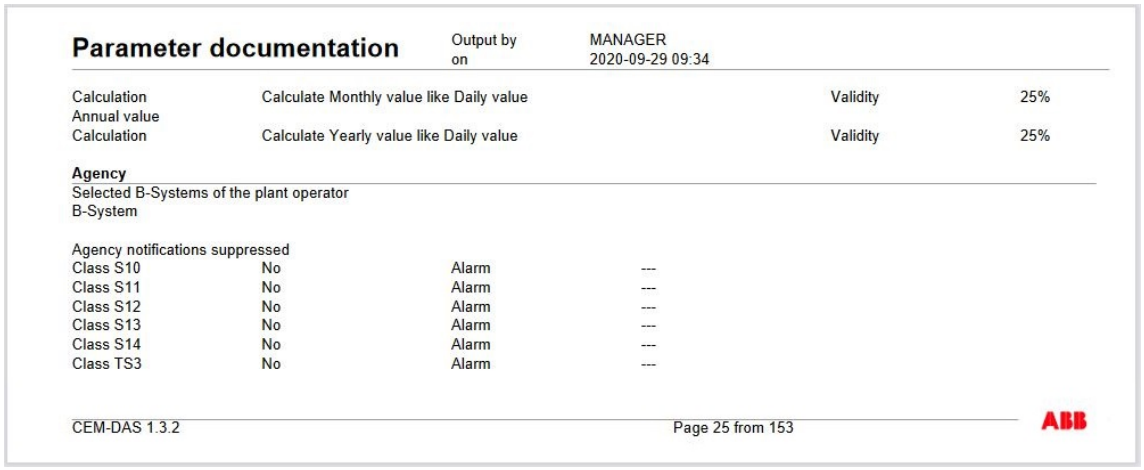
Figure 97: Parameter Documentation: Plant

Parameter documentation

Output by MANAGER
on 2020-09-29 09:25

Operator	ABB IED	Revision 2	Not yet released		
AKB	L 1	Designation	Line 1		
ID	2	Revision	2020-05-20 15:40		
MKB	CO	Unit	mg/m?		
Designation	Carbon monoxide	KKS	---		
Averaging time	30 min	Format	2		
Pollutant	yes	Rounding	yes		
Lower measuring range	0	Upper measuring range	300		
DAA					
System	DAA	Port-ID	14		
1st Measuring range	Characteristic	A + B*x + C*x*x			
A	0	B	1	C	0
Category	analog Inputs	Plant	Line 1	Source	CO
Standardization	Plant Reference plant	Entity Reference entity	Constant/ Substitute value Reference value		
Oxygen O2	Line 1 <Constant>	Oxygen ---	8 11	O2 dilution permitted	
Humidity	Line 1 <Constant>	Humidity ---	0 0		
Operation signals	Category %Criterion	Plant Verify value	Source Operating mode	for STA Set	
Out of order	binary Entities 100	Line 1 No	OMN off ---	No Classification in S99 out of order, Invalid	
Processing					
Processing	IED chapter IV Plants for waste incineration				
Daily report	No (automated print out)				
Messages suppressed					
Short-term emission limit value	Yes	Invalid	Yes		
Substitute value	Yes	Failure	Yes		
Maintenance	Yes	No monitoring	Yes		
		Start-up/Shut-down	Yes		
Calibration excursion	Yes	Calibration function	Yes		
GPU Outage Current	Yes	GPU Outage Year	Yes		
GPU Outage 12 Month	Yes	GPU Outage Limit value	Yes		
Start-up operation	Yes				
Daily emission limit value	Yes	Daily value invalid	Yes	Daily availability	Yes
Mass flow for emission load					
Entity	Flow	Calculation	From short-term averages - O2 standardized values		
Unit	kg	Factor	0.000001		
Short-term averages					
Validate	Percentage until DLV	Uncertainty	10%		
Short-term emission limit value top (SELVt)					
Value	100	Entity	---		
Daily criterion	---	Yearly criterion	100		
24h criterion	---				
SELV (B)	---	Yearly criterion (B)	97		
Daily averages					
Calculation	Average, all valid Short-Term Averages (STA)			Validity	0%
10 days rule					
Verify	yes				
max. STA	5 in maintenance / failure	max. days	10 in maintenance / failure		
Daily emission limit value top (DELVt)					
Value	50	Entity	---		
Yearly criterion	0	Check 24h	No		
Monthly and Annual values					
Monthly value					
Calculation	Monthly average from valid daily averages				
Annual value					
Calculation	Annual average from valid daily averages				

Figure 98: Parameter Documentation: Entity (1/2)



Parameter documentation

Output by MANAGER
on 2020-09-29 09:34

Calculation Annual value	Calculate Monthly value like Daily value	Validity	25%
Calculation	Calculate Yearly value like Daily value	Validity	25%

Agency

Selected B-Systems of the plant operator
B-System

Agency notifications suppressed

Class S10	No	Alarm	---
Class S11	No	Alarm	---
Class S12	No	Alarm	---
Class S13	No	Alarm	---
Class S14	No	Alarm	---
Class TS3	No	Alarm	---

CEM-DAS 1.3.2 Page 25 from 153

Figure 99: Parameter Documentation: Entity (2/2) (not with IED and MCERTS)

4.4.5 Systems

4.4.5.1 CEM-DAS system components

“Systems“ means CEM-DAS and its parts which refer to input and output of data. Inputs are made by DAA-Controller which pre-process the data. The output after classification in CEM-DAS can be made by daily, monthly and yearly reports and the EFÜ system (B-System, G-System). Furthermore there are special systems with plant operator specific tasks which are described in the additional documentation.

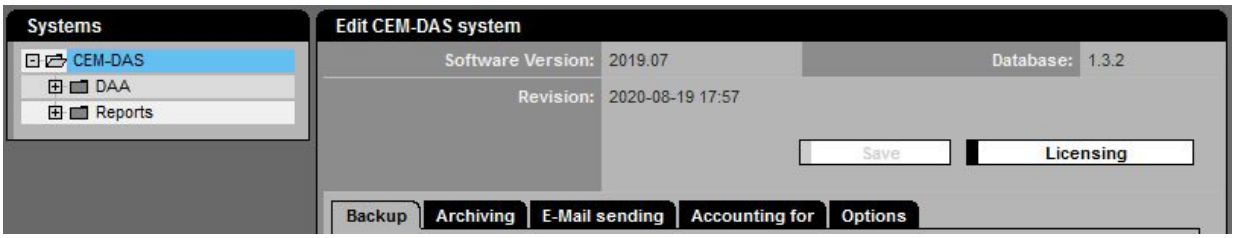


Figure 100: CEM-DAS system components

Lettering	Explanation
Systems	
CEM-DAS	CEM-DAS itself is the overall system. In this system important tasks are configured which concern the total system as for example data backups, Email messages, transfer of entities to new derived entities. Subsystems of CEM-DAS are:
DAA-Controller	Here the detailed (communication-) parameter of a DAA-Controller are defined which was set up in “parameterization/entities”.
B-System	Operator system (for emission remote transmission)
G-System	Agency system (for emission remote transmission)
Reports	Agency report, overview report, messages and short-term average lists
Special system	Here you can find different special functions mostly for customer specific applications. For parameterization of these special solutions the belonging documentation is needed in which further settings for this special function are described.
Edit CEM-DAS	
Software Version	Version number of the CEM-DAS programs
Database	Version number of the CEM-DAS database
Revision	Date and time of the last change in parameterization
Save	Saves the present settings
Licensing	Switch to “Administration / Licensing” (see 4.5.6)

4.4.5.1.1 Edit CEM-DAS, tab Backup

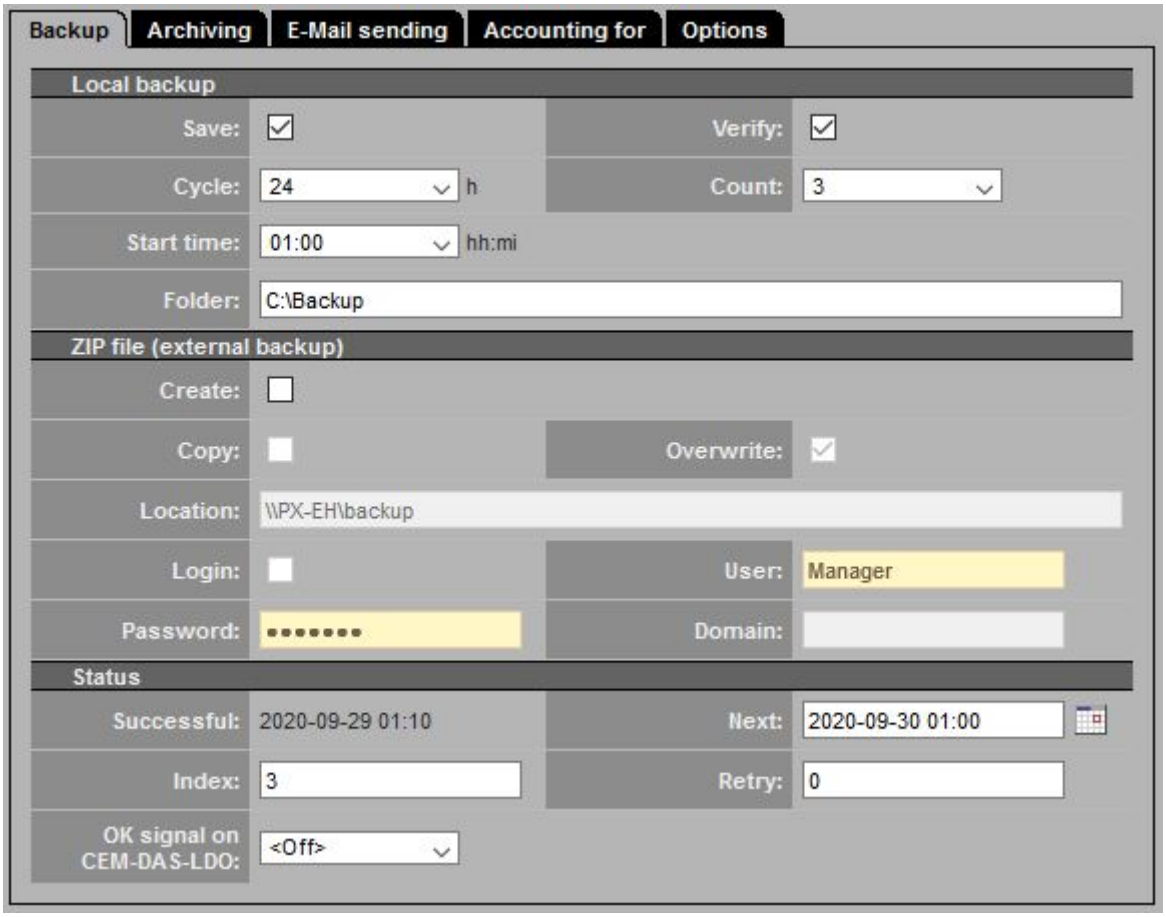


Figure 101: Settings for data backup

Lettering	Explanation
Backup	
Local backup	
Save	Marks if local backup shall be made The backup will be made in the file under “directory” (see below). The backup files will be stored in directories with the names “SNAPnnn1“ …. “SNAP9999“. These directories have all data which are necessary to recreate CEM-DAS in case of failure. In general 3 to 6 (SNAP0001…SNAP0006) directories with these files exist whereby in particular the .DMP data files are important. These files contain the short-term averages, parameters … and the minute values of the database. Also the file startup.ini must be in the directory because this file contains all CEM-DAS start information.
Verify	Marks if the database shall be verified for integrity before storing. Failures will be displayed in the system messages. .
Cycle	Storage cycle for backup. Backup can be made every 24 hours (standard or every 12 hours.
Count	Number of storage files SNAPnnnn. After the last of these files was created the next backup will overwrite the oldest file.
Start time	Time for start of verification and storage
Folder	Local directory for the storage files. Standard directory for storage is D:\Backup if there is the standard configuration for CEM-DAS. Network or USB is not suitable.

Lettering	Explanation
Zip file (external Storage)	
Create	Mark, if a ZIP compressed storage file shall be created from the contents of the SNAPnnnn directories. The ZIP file will also be saved in the storage file SNAPnnnn.
Copy	Mark, if a ZIP file saved in the storage file shall be copied in another file (see below)
Overwrite	Mark if a ZIP file shall be overwritten by a newer file so that the external storage contains always just the last SNAPnnnn file as a ZIP file. If “overwrite“ is not marked CEM-DAS will create a ZIP file for each SNAPnnnn directory and overwrites them as set in the local storage.
Location	external storage place for the ZIP files
Login	Enable user login
User	User for the external storage
Password	User password
Domain	Domain for login
Status	
Successful	Date and time of the last successful storage
Next	Date and time of the next storage to be performed
Index	Sequence number nnnn of the last used SNAP directory
Retry	Number of retries of storage, e.g. if during storage start the target directory was not available
OK signal on UMOF-LDO	The success of a storage can be signalized on a logical digital output. The output is made by DAA-Controller (see /7/).

4.4.5.1.2 Edit CEM-DAS, tab Archiving

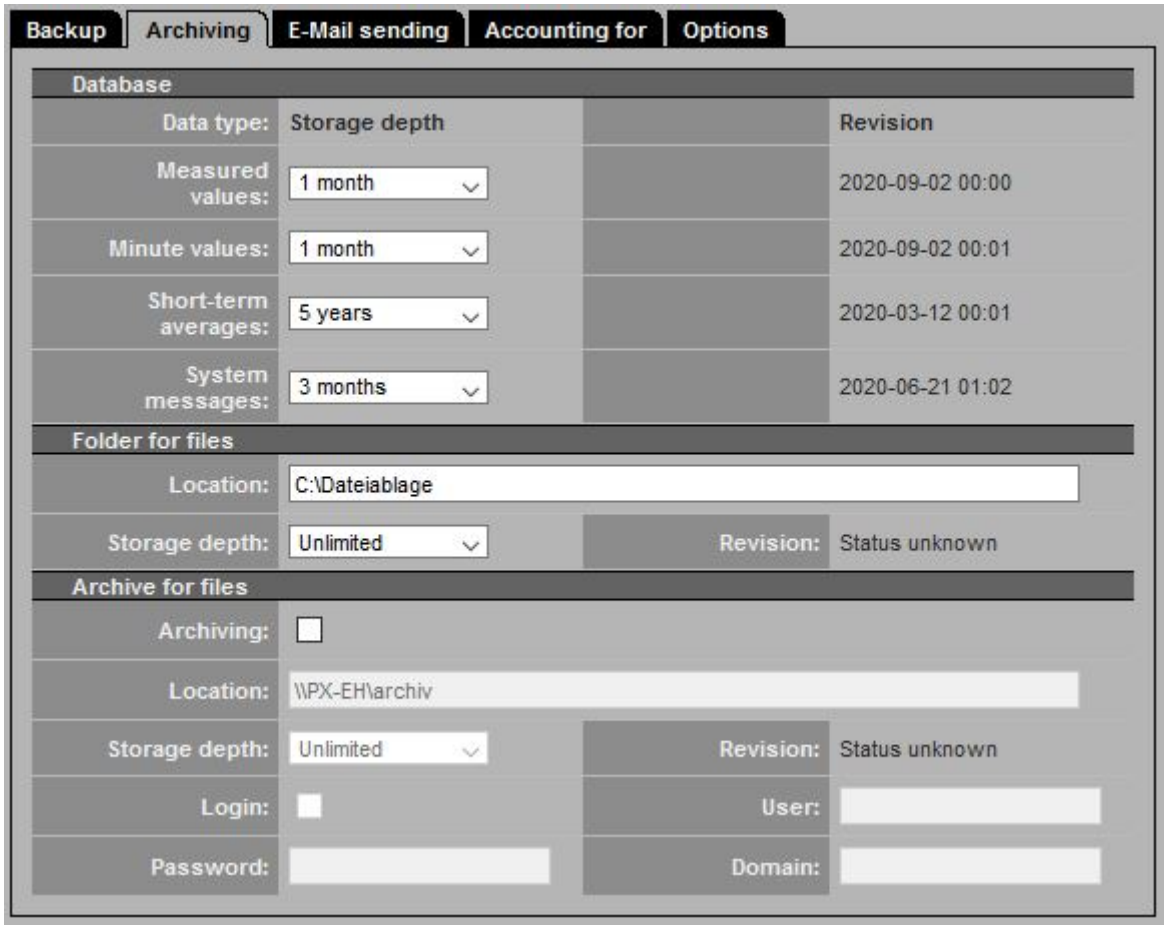


Figure 102: Settings of Archiving

Lettering	Explanation	
Archiving		
Database		
Data type	Measured values	According to Bundeseinheitlicher (/4/) Richtlinie archiving of measured values has to be made for at least 5 years. Yet, because of the large amount of data the memory depth in the database should not be too long. Before archiving the measured values are available in the raw value files. These files are saved DAA-Controller specifically in the data storage and will never be deleted automatically. A description of how to display the measured values can be given on request.
	1-minute average	Archiving of minute values is not mandatory. Therefore the memory depth should be appropriate.
	Short-term averages	According to /4/ short-term averages must be archived at least for 5 years. So 5 years or “unlimited“ must be entered here.
	System messages	System messages (no classification messages!) are “outdating“, therefore a shorter time than “unlimited“ can be chosen.
Storage depth	Duration time of storage for different data types.	
Revision	Date and time of the oldest values / messages	
Folder for files		
Location	Directory for the data which shall be archived	
Storage depth	Duration time of storage before the archived data will be overwritten. Here “unlimited“ should be entered as standard.	
Revision	Here the date/time of the oldest files in the file storage will be displayed. If no files exist “status unknown“ will be displayed.	
Archive for files		
Archiving	Mark if the data which shall be archived shall also be stored external	
Location	Directory for the data which shall be archived external	
Storage depth	Duration time of storage before the external archived data will be overwritten. Here “unlimited“ should be entered as standard.	
Revision	Here the date/time of the oldest files in the external file storage will be displayed. If no files exist “status unknown“ will be dis-	

Lettering	Explanation
	played.
Login	Enable user login
User	User for the external storage
Password	User password
Domain	Domain for login

4.4.5.1.3 Edit CEM-DAS, tab E-Mail sending

All printouts (lists, reports, messages) can also be sent by e-mail. The recipient must be registered in CEM-DAS as user with e-mail address. Depending on the local e-mail installation it might be necessary to register in the e-mail server before sending the e-mail.

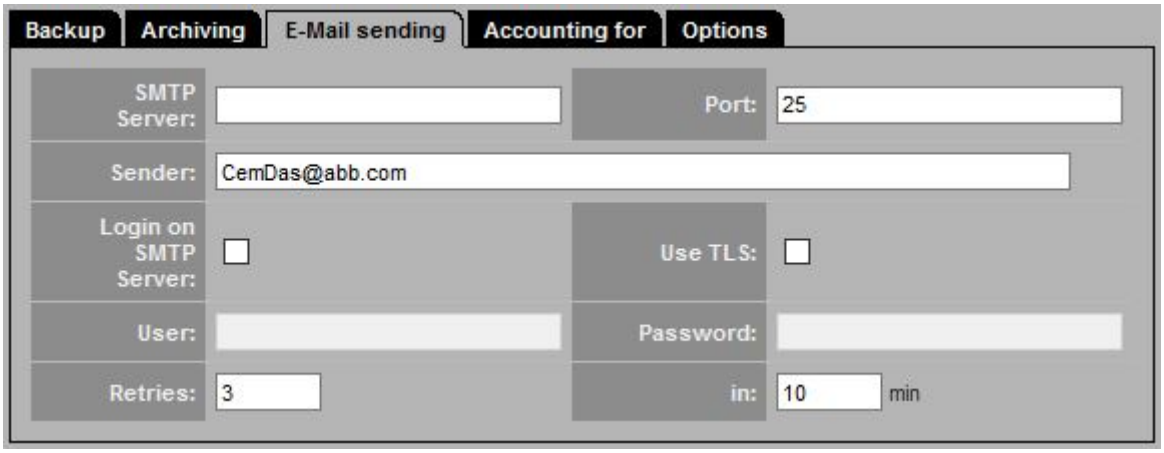


Figure 103: Settings for e-mail sending

Lettering	Explanation
e-mail sending	
SMTP Server	Name or IP address of the e-Mail (SMTP) server
Port	Port number of the e-mail (SMTP) servers (standard: 25)
Sender	e-mail address of the sender
Logon to SMTP Server	Mark if a logon to the e-mail server is necessary
User	Name of user if necessary
Password	Password if necessary
Repeat	Number of repeats in case of unsuccessful e-mail sending.
After	Time between 2 repeats

4.4.5.1.4 Edit CEM-DAS, tab Accounting

In CEM-DAS derived entities can be defined. After import of the DAA-Controller data the accounting is made according to the defined formulas and dependencies. The status of accounting can be controlled any time.

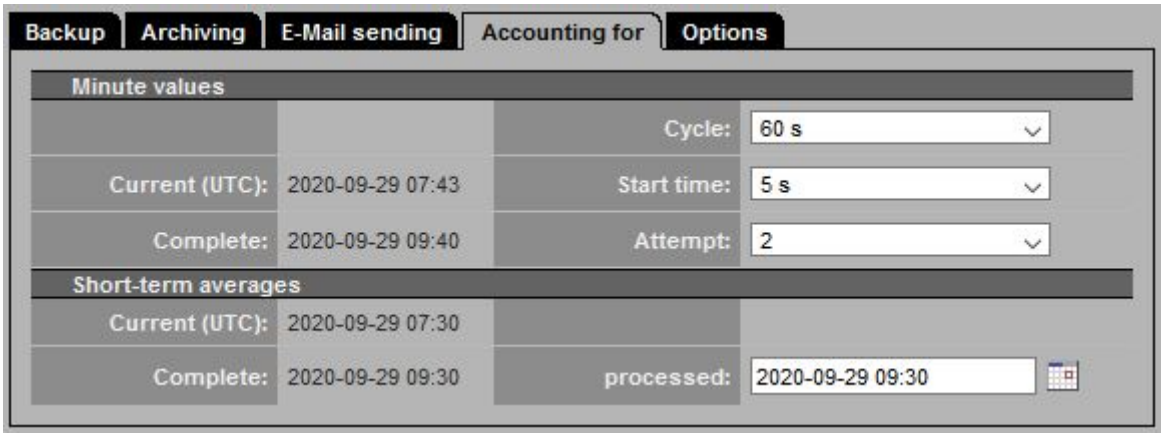


Figure 104: Status of accounting

Lettering	Explanation
Accounting	
Minute values	
Cycle	Calculation cycle of the minute values from the derived entities; equals the cycle with which the minute values are calculated in DAA-Controller.
Current (UTC)	Current time of the last processing of minute values. Internal timer for creation of new minute values which still must be calculated
Start time	Start time of accounting. Caused by transmission of all minute values of the connected systems the start time of accounting appears time delayed.
Complete	Last time where all connected systems delivered data for accounting minute values
Attempt	Number of attempts to receive complete accounted minute values. If this cannot be achieved in the present cycle the minute value is missing and “Complete“ can only be updated in the next cycle.
Short-term averages	
Current (UTC)	Current time of the last transmission of short-term averages. Internal timer for creation of new short-term averages which still must be calculated.
Complete	Last time where all connected systems delivered data for accounting short-term averages
Processed	Present state of processing the short-term averages. Because short-term averages can be delivered later the present state of processing might lie in the past but should come closer and closer to the time “complete”. Here also a time in the past can be entered or selected by the date-time picker. If this time in future is in “complete” it will be set back automatically.

4.4.5.1.5 Edit CEM-DAS, tab Options

Here a variety of options can be activated which are documented separately. These options are for special tasks and can be activated.

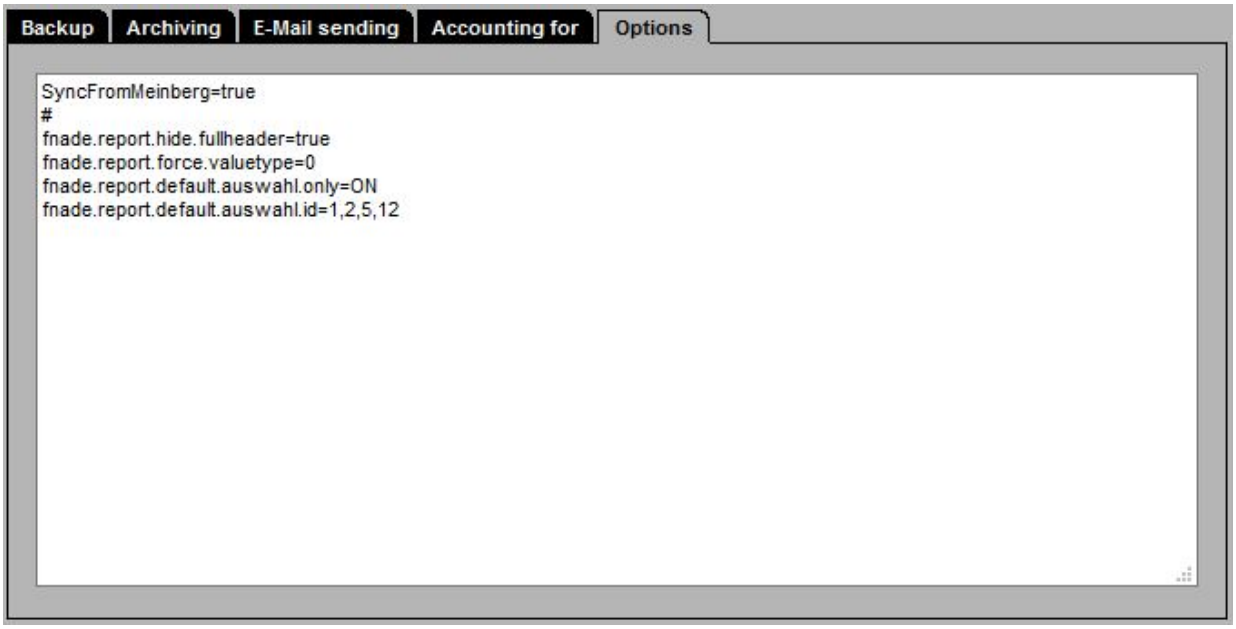


Figure 105: CEM-DAS system options

4.4.5.2 DAA-Controller

4.4.5.2.1 List of DAA-Controller systems

When “DAA-Controller“ is selected an overview of the available DAA-Controller and their current status is displayed.
Below the category “DAA-Controller” all configured DAA-Controller are listed and can be selected by a click on the corresponding symbol.

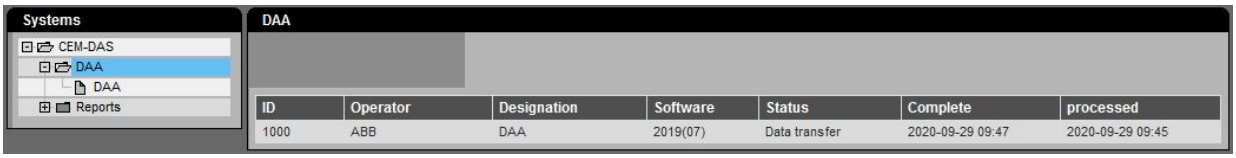


Figure 106: List of DAA-Controller systems

Lettering	Explanation
DAA-Controller	
PDF	List of DAA-Controller systems in PDF format
TXT	List of DAA-Controller systems in Text format
ID	System ID of DAA-Controller
Operator	Short designation of operator
Designation	Here the plant designation from parameterization of DAA-Controller has to be entered for information
Software	Software version of DAA-Controller
Status	Information about the status of communication: No communication Data transfer = Parameter and values are transferred by DAA-Controller. Changes of parameterization in DAA-Controller lead to an automatic transfer of the new parameters and storage in the database (normal state). Only parameter surveillance = only transfer of parameters from DAA-Controller. Herewith you can create a list of entities in CEM-DAS when connecting a DAA-Controller the first time.
Complete	Point of time until the short-term averages of all DAA-Controller systems were available for import. If e.g. the connection to a DAA-Controller was disrupted this time stays “frozen“ until the connection to that DAA-Controller is re-established. After that this point of time will be counted up with each missing short-term average until the current time is reached. Status = unknown: No processing yet
Processed	Time of progress of processing (classification, limit value surveillance, message creation) the short-term averages. Normally this point of time should show the present time. If the start of processing was set back the time will count up until the current time is reached. Status = unknown: No processing yet

4.4.5.2.2 Edit DAA-Controller, tab Status

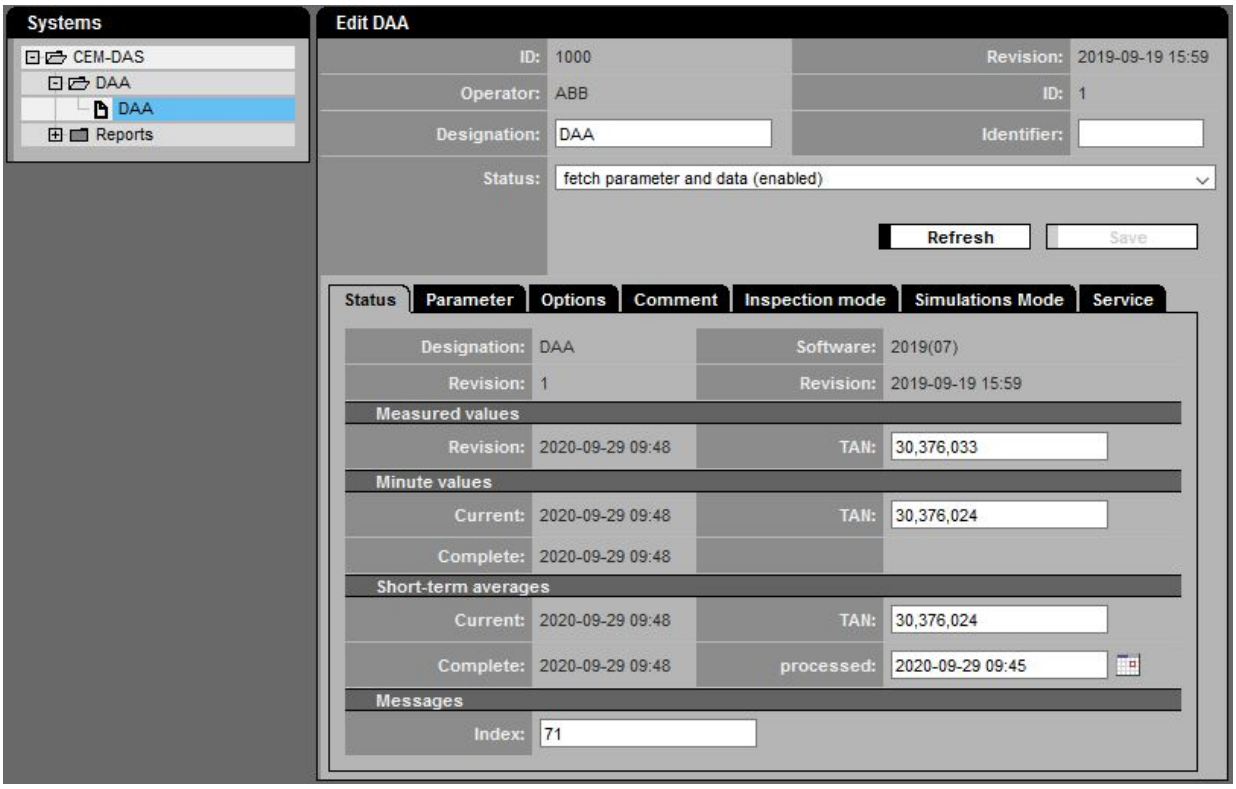


Figure 107: Status of a DAA-Controller system

Lettering	Explanation
Edit DAA-Controller	
ID	Identifier of the DAA-Controller-Systems in CEM-DAS
Revision	Status of parameterization (CEM-DAS formula)
Operator	Name of the operator
ID	Identifier of the operator of DAA-Controller in CEM-DAS
Designation	Designation of the DAA-Controller
Identifier	DAA-Controller communication ID from the DAA-Controller system parameters
Status	Setting of the status of communication: No communication (disabled) = no data transfer from DAA-Controller Only parameter monitoring (no data) = only transfer of DAA-Controller parameters. As soon as CEM-DAS notices that new DAA-Controller parameters were loaded in DAA-Controller these will be automatically transferred back to CEM-DAS and stored in the database. Herewith the list of entities in CEM-DAS can be created when connecting a DAA-Controller the first time. Fetch parameter an data (enabled) = Transfer of all necessary data from DAA-Controller (standard)
Refresh	Re-reading of formula data from the database
Save	Saves the formula data in the database
Status	
Designation	Designation of the DAA-Controller from the DAA-Controller System parameters
Software	Software status of DAA-Controller
Revision	Revision status of the DAA-Controller parameters ⚠ - is displayed if a not released revision was loaded in DAA-Controller7
Revision	Date of the parameter status of DAA-Controller ⚠ - is displayed if in CEM-DAS is a newer revision than in DAA-Controller7

Lettering	Explanation
Measured values	
Revision	Date / time of the last value transfer
TAN	Internal counter of DAA-Controller, which is used to control the data transmission and the delivery of missing data
Minute values	
Current	Date and time of the last minute value transmission
TAN	See above
Complete	until this point the minute values are completely transferred
Short-term averages	
Current	Date and time of the last transmission of short-term averages
TAN	See above
Complete	Until this point the short-term averages are complete
processed	Last completed processing of short-term averages. Here CEM-DAS shows the time until which the data were completely processed. To force a re-processing this value can be set back to an earlier time.
Messages	
Index	Here CEM-DAS shows the number of the last generated message in DAA-Controller

4.4.5.2.3 Edit DAA-Controller, tab Parameter

With these parameters the physical connector parameters from DAA-Controller to CEM-DAS and the parameter for synchronization and the volume of data transfer are created.

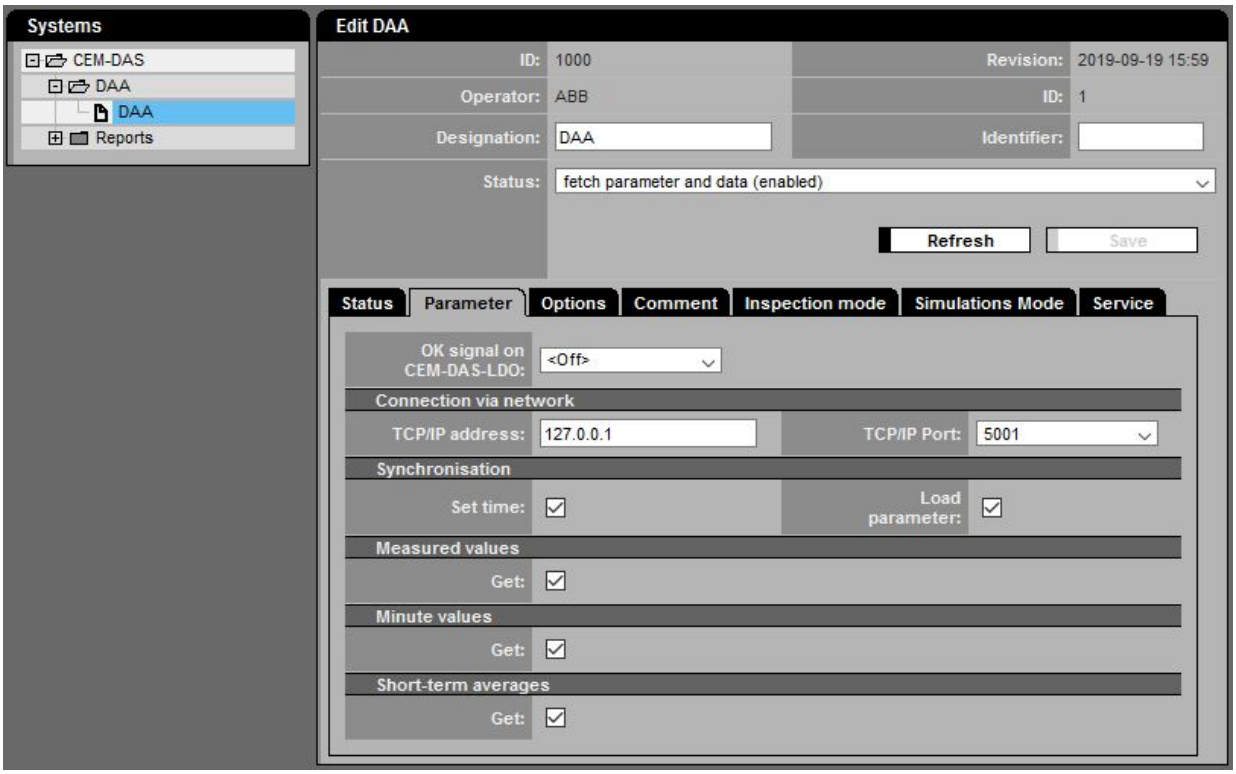


Figure 108: Connector parameter of a DAA-Controller system

Lettering	Explanation
DAA-Controller editing	
Parameter	
OK signal on UMOF-LDO:	A successful data transfer can be signaled on a logical digital output. The output is made via DAA-Controller (see /7/).
Connection via network	
TCP/IP address	IP address of DAA-Controller in format xxx.xxx.xxx.xxx No leading zeros are accepted! (correct is e.g. 10.173.2.19)
TCP/IP Port	TCP port for access to DAA-Controller. Standard: 5001
Synchronisation	
Set time	Mark if CEM-DAS shall synchronize the clock of DAA-Controller With its own time. Standard ☑
Load parameter	Mark if changed DAA-Controller parameter shall be loaded after release. Standard ☑
Measured value	
Get	Mark if 5s measured values shall be fetched from DAA-Controller, standard ☑
Minute value	
Get	Mark if the minute values shall be fetched from DAA-Controller. Standard ☑
Short-term averages	
Get	Mark if short-term averages shall be fetched from DAA-Controller. Standard ☑

4.4.5.2.4 Edit DAA-Controller, tab Options

At present no options are defined.

4.4.5.2.5 Edit DAA-Controller, tab Comment

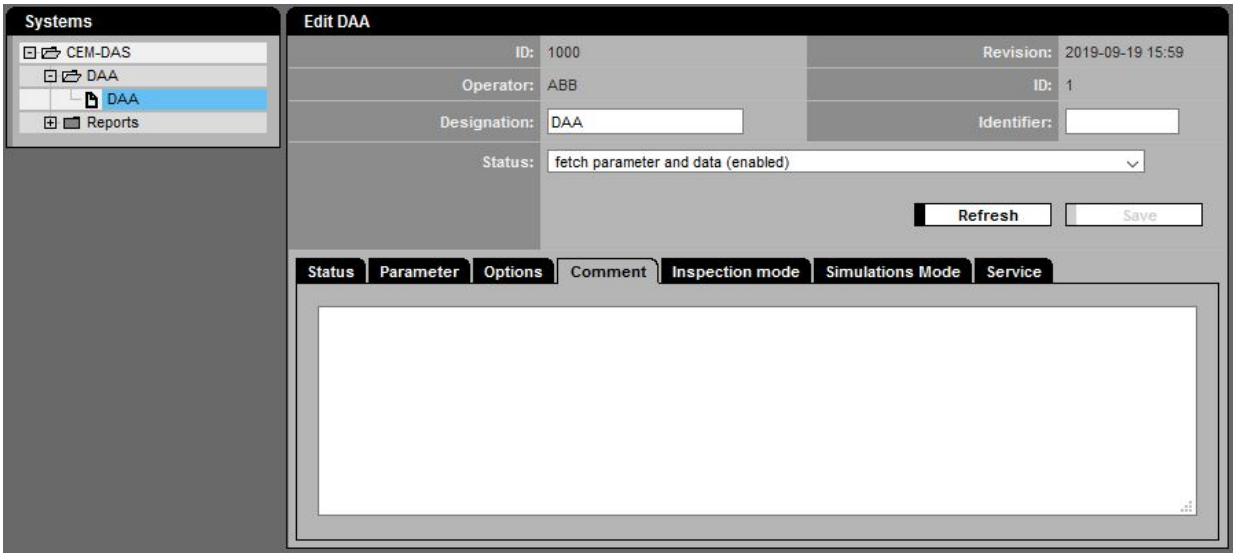


Figure 109: Tab comment for DAA-Controller

Lettering	Explanation
Comment	
none	Any Text

4.4.5.2.6 Edit DAA-Controller, tab Inspection Mode

The principle function of the inspection mode is that for accelerated accounting inspection for selected entities in minute interval (usually 1 minute) a value is classified and the belonging status is created. In compact form the result is output as PDF or as text file. At 24:00 h of the present day the in minute interval classified values will be deleted and the normal classification with short-term averages will be performed. During inspection mode the short-term averages are classified in maintenance.

DAA-Controller
During inspection modus bars for minute values are displayed in the bar graphic and marked with the identifier T. For all other data types no bars are displayed but the text “Maintenance” with the identifier **T** will be output.

Inspection Mode for DAA-Controller

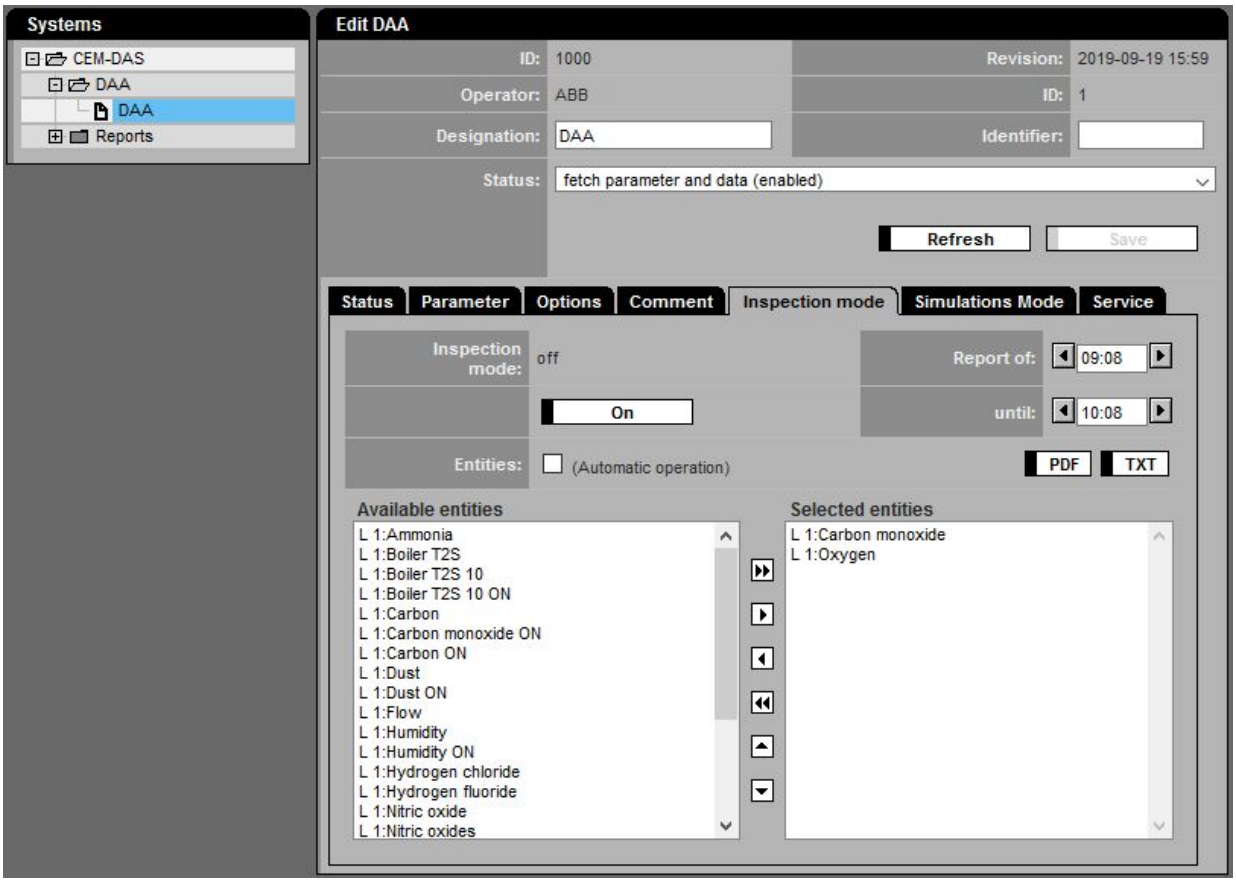


Figure 110: Inspection Mode for DAA-Controller when the inspection mode is off

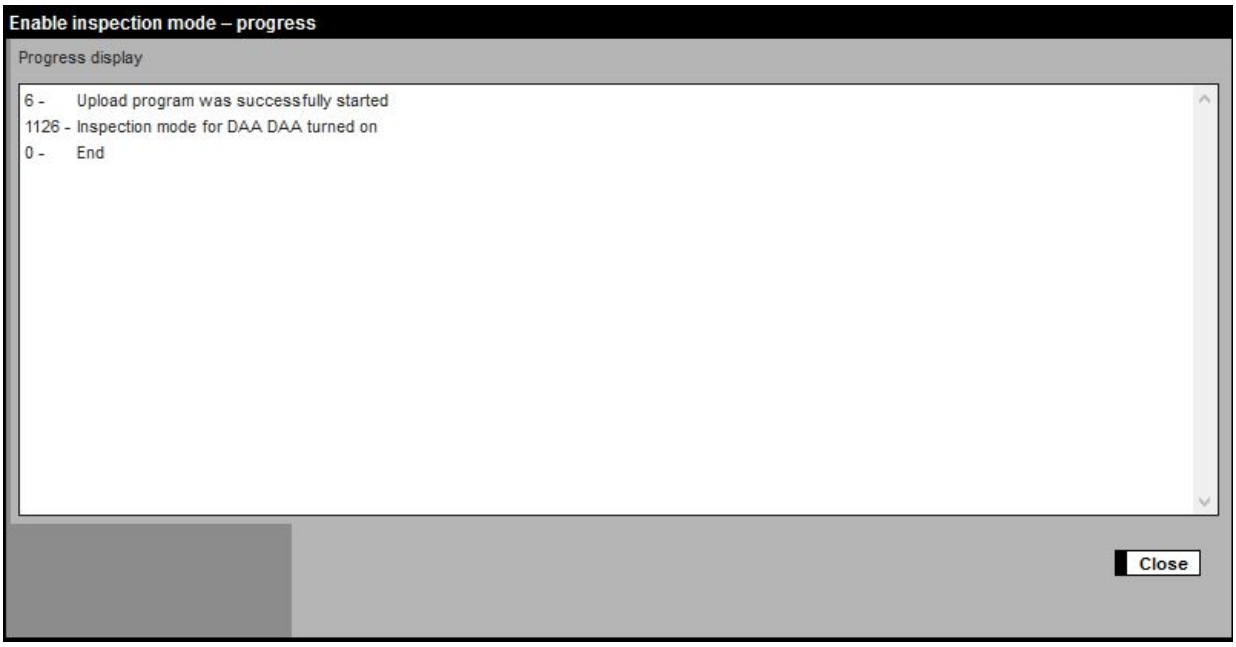
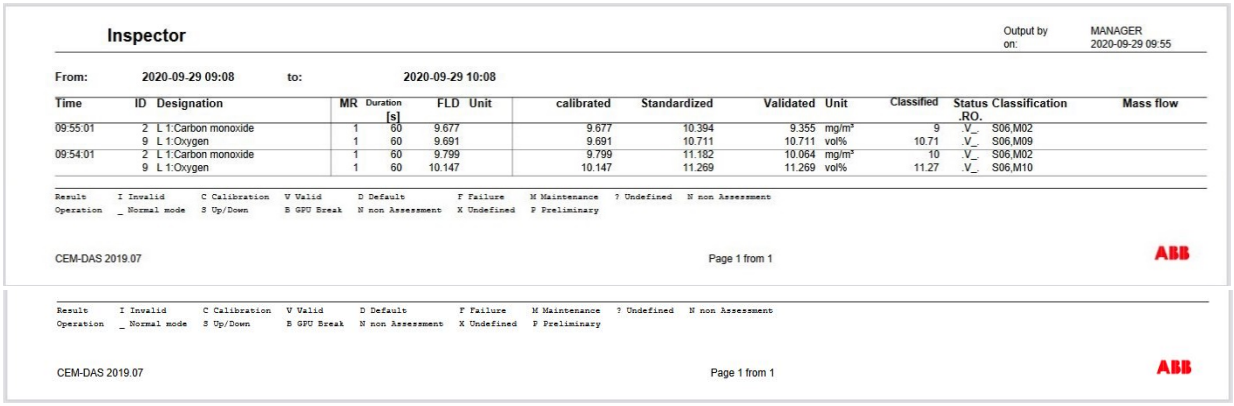


Figure 111: Progress display after clicking On

Lettering	Explanation
Edit DAA-Controller	
Inspection Mode	
Inspection mode	Display of the current condition of the inspection mode: "On" - Inspection mode is active "Off" - Inspection mode is not active. **Note:** If the inspection mode is not switched off after calculation it runs until 24:00 h of the present day and will be set back at 00:00 h of the following day. The use of the inspection mode is regulated by the user rights. The right "Inspection mode permitted" has to be assigned to a member of the user group in order for him to user this tool. A user of the manager group can always use the inspection mode.
On / OFF	Button to activate /de-activate the inspection mode. The inspection mode can only be activated if the list "available entities" contains entries. After a click on On / Off analog to a window (Figure 111) which shows the progress pops up. Failures during activating / de-activating the inspection mode will be displayed in this window.
Update	Button for updating the inspection mode. Update will only be displayed if the inspection mode is activated. Update will only be active if the list "selected entities" was changed. After a click on Update a window pops up analog to Figure 111. Failures during updating will be displayed in this window.
Report of  	Time for the output of txt or PDF of the Inspector report. The time cyclically carries on and by standard will be set on the present time – 45 min. The time can be changed manually or by the buttons  and  . - back for 1 Minute - forward for 1 Minute
until  	Until time for the txt or PDV output of the inspector report. The time cyclically carries on and will be standardized set on the present time + 15min. The time can be changed manually or by the buttons  and  . - back for 1 Minute - forward for 1 Minute

Lettering	Explanation
Entities: ☐ (automatically in operation)	Select this option to force that the entities selected for inspection mode will be calculated in operation independent of the set status signals.
PDF	Output of the inspector report for the time range selected under “Output from” “until” as pdf file.
TXT	Output of the inspector report for the time range selected under “Output from” “until” as txt file.
Available entities	List of entities which are available for the inspection mode of the present DAA-Controller systems
⏩ ▶ ◀ ⏪ ▲ ▼	Select entities for the inspection mode, delete and change the order
Selected entities	List of entities which are available for the inspection mode of the present DAA-Controller system. After leaving the window “editing DAA-Controller7” the selected entities can be saved so that they will be available for processing during the next inspection mode. As an alternative the selected entities can be saved in the window “editing DAA-Controller7“ by a click on the button “Save“.



Inspector

Output by on: MANAGER 2020-09-29 09:55

From: 2020-09-29 09:08 to: 2020-09-29 10:08

Time	ID	Designation	MR	Duration [s]	FLD	Unit	calibrated	Standardized	Validated	Unit	Classified	Status .RO.	Classification	Mass flow
09:55:01	2	L 1:Carbon monoxide	1	60	9.677		9.677	10.394	9.355	mg/m³	9	.V_	S06,M02	
	9	L 1:Oxygen	1	60	9.691		9.691	10.711	10.711	vol%	10.71	.V_	S06,M09	
09:54:01	2	L 1:Carbon monoxide	1	60	9.799		9.799	11.182	10.064	mg/m³	10	.V_	S06,M02	
	9	L 1:Oxygen	1	60	10.147		10.147	11.269	11.269	vol%	11.27	.V_	S06,M10	

Result I Invalid C Calibration V Valid D Default F Failure M Maintenance ? Undefined N non Assessment
Operation _ Normal mode S Up/Down B GPU Break N non Assessment X Undefined P Preliminary

CEM-DAS 2019.07 Page 1 from 1 ABB

Result I Invalid C Calibration V Valid D Default F Failure M Maintenance ? Undefined N non Assessment
Operation _ Normal mode S Up/Down B GPU Break N non Assessment X Undefined P Preliminary

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Figure 112: Example of a PDF output of the inspector report

4.4.5.2.7 Edit DAA-Controller, tab Simulation Mode

With the simulation mode you can simulate analog inputs/outputs and binary inputs/outputs depending on your user rights. Via user rights either just the simulation of inputs or outputs or both can be assigned. A manager always has any right to simulate inputs and outputs.

In connection with the inspection mode flows and status signals can be set for accounting independent of the acquisition of the measuring devices. For example the simulation mode enables accounting without the setting of test flows. As soon as a flow is simulated on an input the existing flow value will be deleted and the simulated flow will be used instead.

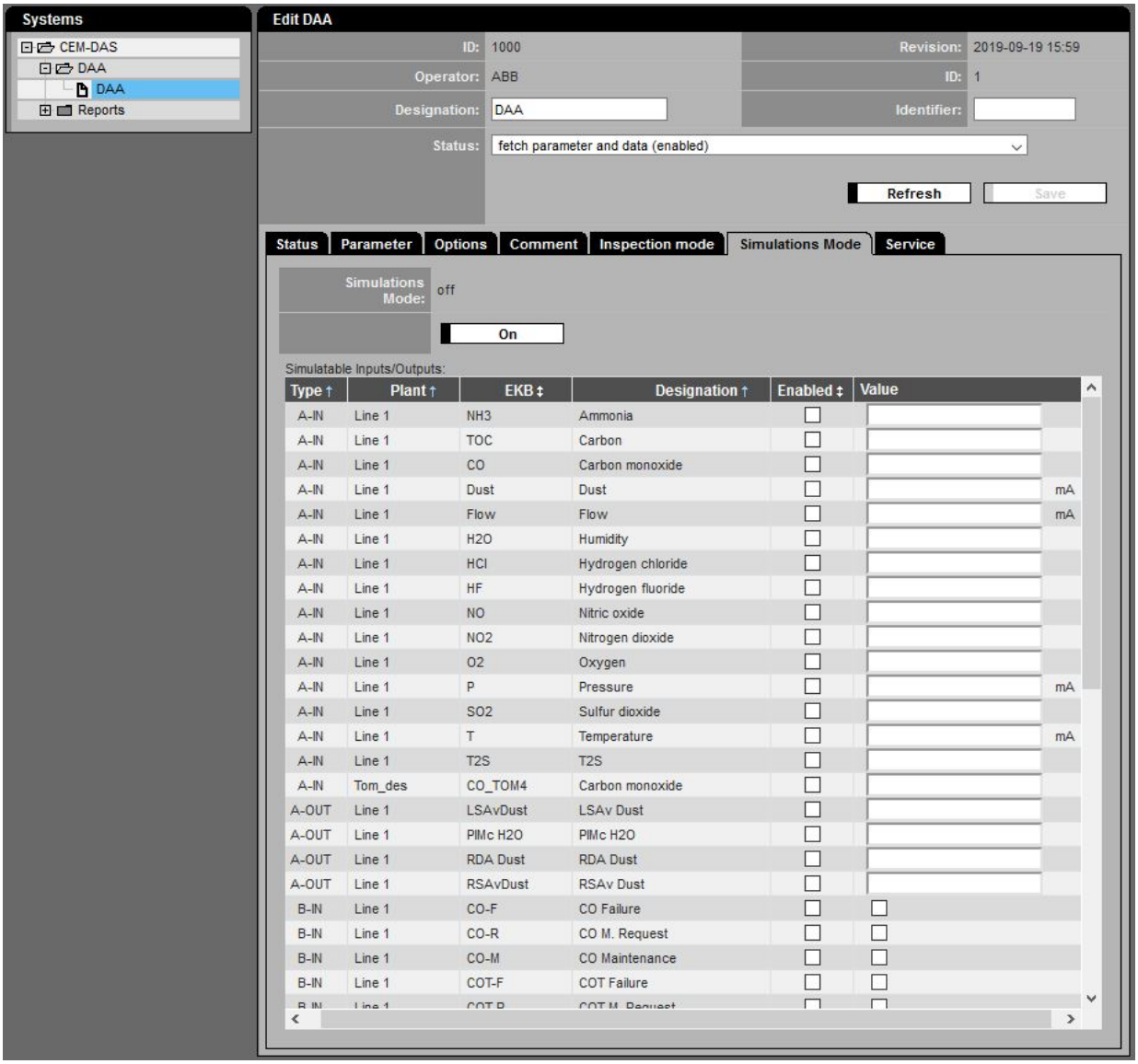


Figure 113: Tab Simulation Mode

Lettering	Explanation
Edit DAA-Controller	
Simulation Mode	
Simulation Mode	Display of the current condition of the simulation mode: “On“ - Simulation mode is active. “Off“ - Simulation mode is not active.
on / off	Button to activate or de-activate the simulation mode. After a click on On / Off analog to Figure 111 a window pops up which shows the progress. If failures occur during activating / de-activating it will be displayed in this window.
Update	Button for updating the simulation mode. Update will only be displayed if the simulation mode is activated. After a click on Update a window pops up analog to Figure 111. Failures during updating will be displayed in this window.
Simulatable Inputs and Outputs	
Columns: Type, Plant, EKB, Designation, Active	On these columns a filter can be set: Standards: • No filter • Sort for type, plant, designation • A click on the column heading opens a window in which sorting and a filter for the selected column can be set. • The standards will be restored with the next login of the user.
Type	Here the type of the simulatable IO is displayed. The following types are: • A-IN analog inputs • A-OUT analog outputs • B-IN binary inputs • B-OUT binary outputs
Plant	Display of the plant designation or <only DAA-Controller> of the IO
EKB	Display of the short designation of the IO
Designation	Display of the full designation of the IO
Active	If this button is marked the IO will be simulated with the value given in the column “value“.
Value	Display and entry of the value which shall be simulated
<without lettering>	Display of the plant of the input or output

4.4.5.2.8 Edit DAA-Controller, tab Service

The tab Service is available only for DAA-Controller and the tab is visible only for manager.

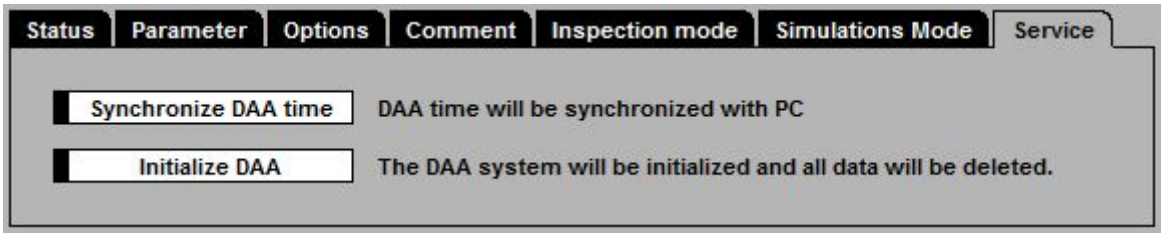


Figure 114: Tab Service

Lettering	Explanation
Edit DAA-Controller	
Service	
Synchronize DAA-Controller time	DAA-Controller date / time is set to PC time
Initialize DAA-Controller	Delete all storage data

4.4.5.3 B-System

4.4.5.3.1 List of B-Systems

In this formula the characteristics of the EFÜ interface will be set on the page of the plant operator (EFÜ-B).

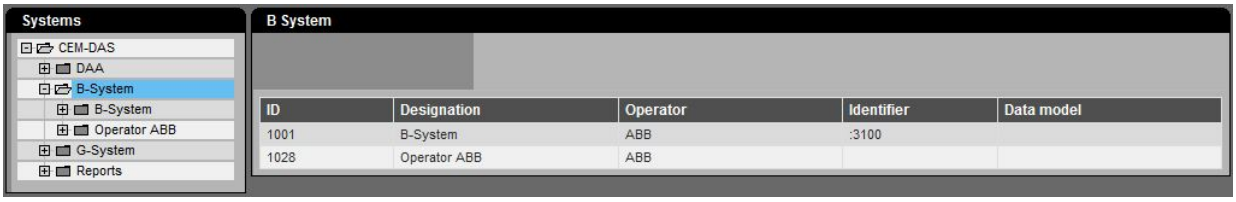


Figure 115: List of B-Systems (not with IED and MCERTS)

Lettering	Explanation
B-System	
ID	ID of the B-System
Designation	Designation of the B-System
Plant operator	Name of the plant operator
Identifier	Identifier from the agency for allocation to the G-System
Data model	Serial number of the data model
PDF	List of the B-Systems in PDF format
TXT	List of the B-Systems in Text format

4.4.5.3.2 Edit B-System, tab Parameter

Data transmission to EFÜ G-System can be made by modem or internet connection.

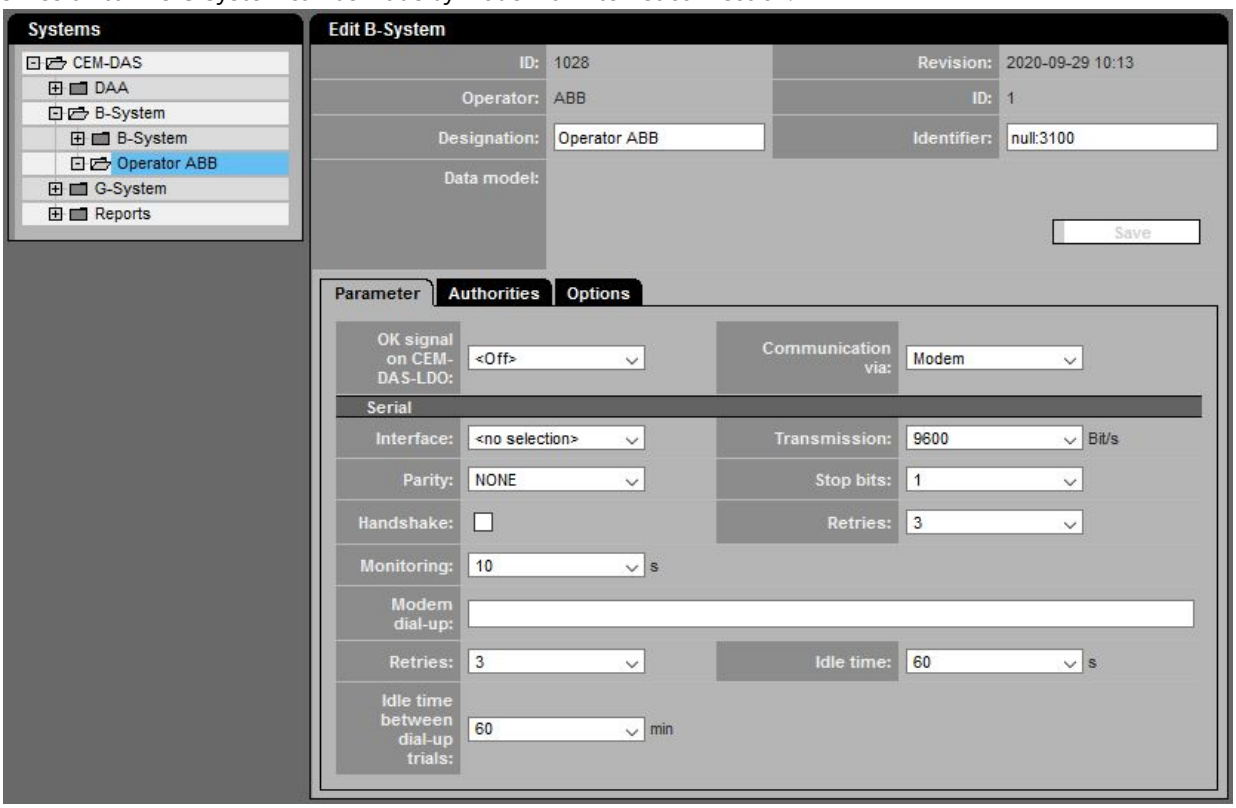


Figure 116: B-System Parameter (Modem)

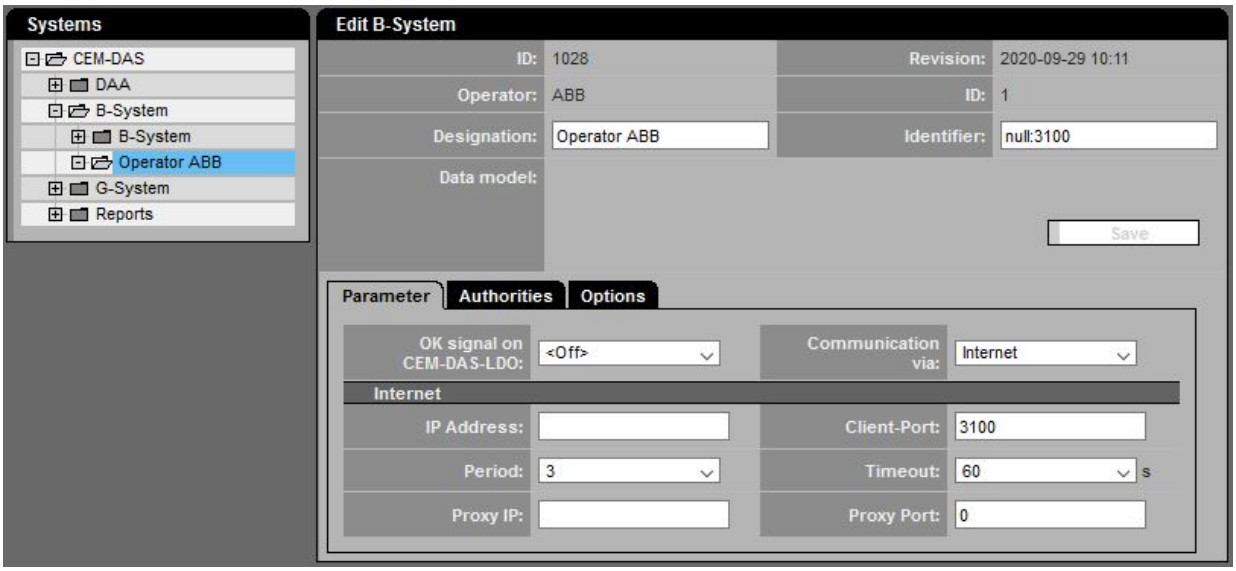


Figure 117: B-System Parameter (Internet)

Lettering	Explanation
Edit B-System	
Parameter	
Save	
ID	ID of the B-System
Revision	Date of the last change in the parameters of the B-System
Operator	Name of the operator of the B-System
ID	ID of the operator of the B-System
Designation	Designation of the B-System
Identifier	Here the identifier of the B-System has to be entered which has to be coordinated with the agency (G-System)
Data model	Serial number of the currently valid data model
OK condition of UMOF-LDO	No. of the logical digital output which was set by a failure
Communication via	Connection: Modem Internet
Serial	
Interface	Selection of the interface, COM1…COM32 or none
Transmission… Bit/s	Transmission rate to the modem of the B-System in Bits/s.
Parity	Parity of the characters during data transfer to the modem of the B-System.Following values are possible: E = Even parity (even number of Bits) O = Odd parity (uneven number of Bits) N = No parity (no monitoring)
Stop bits	Number of stop bits during data transfer to the modem of the B-System. The following values are possible: 1 or 2 (standard = 1)
Handshake	Mark if for data transfer RTS/CTS handshake shall be used. Standard: no Handshake
Retries	Number of repeats in case of failure.
Monitoring	Number of seconds in which no answer is received without starting a new transfer
Modem dial-up	Dial string to dial (“AT-command“)
Retries	Number of repeats, e.g. in case of busy line
Idle time … s	Time until abortion of a not successful dial attempt
Idle time between the dial up trials … min	Waiting time in minutes between two dial attempts
Internet	
IP Address	Fixed IP address of the B-System
Client-Port	port number of the B-System
Period	Period in minutes to check demands from G-System
Timeout	Period of time that will be allowed to G-System response
Proxy IP	IP address of the proxy server (B-System)
Proxy Port	Port number of the proxy server (B-System)

4.4.5.3.3 Edit B-System, tab Authorities

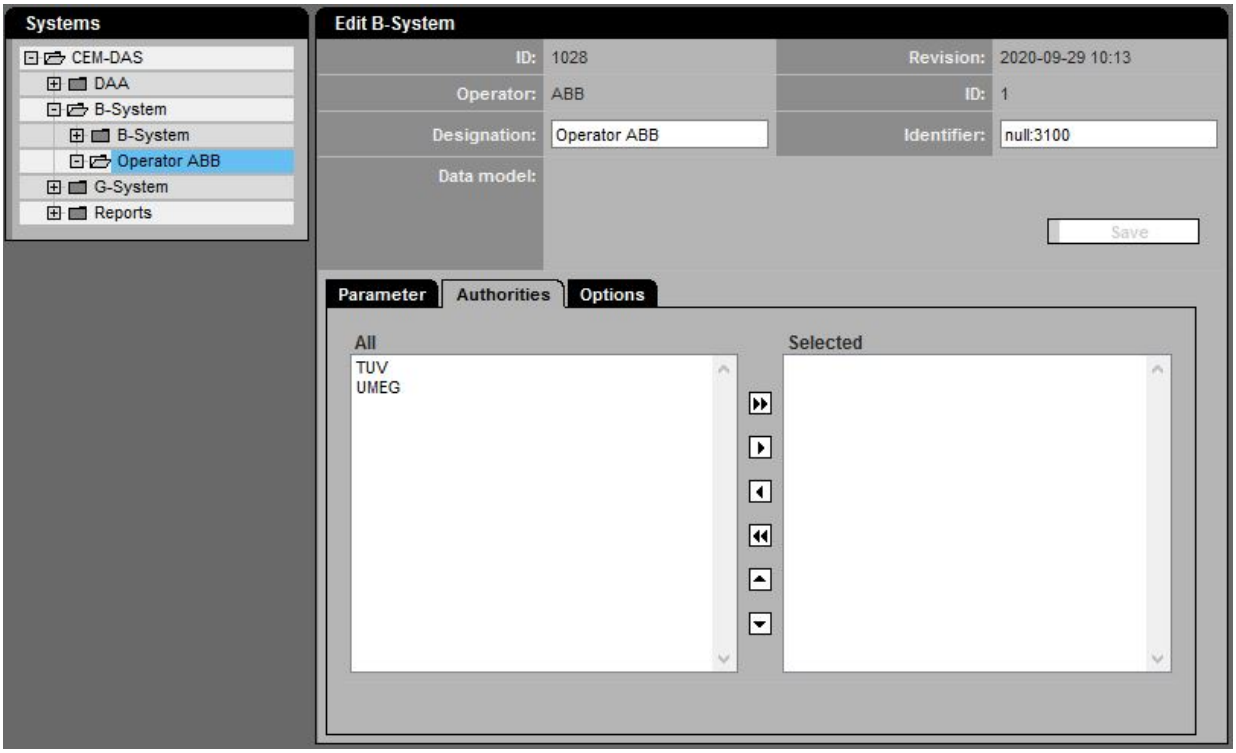


Figure 118: B-System Agencies

Lettering	Explanation
Edit B-System	
Parameter	
All	All available agencies
Selected	Selection of agencies which are connected via EFÜ
	Takeover in the list “selected“ or delete from this list and take over in the list “all“
	Sort the list

4.4.5.3.4 Edit B-G system

In this formular the settings for the assignment of B-G system (see 4.4.5.3.3) can be made.

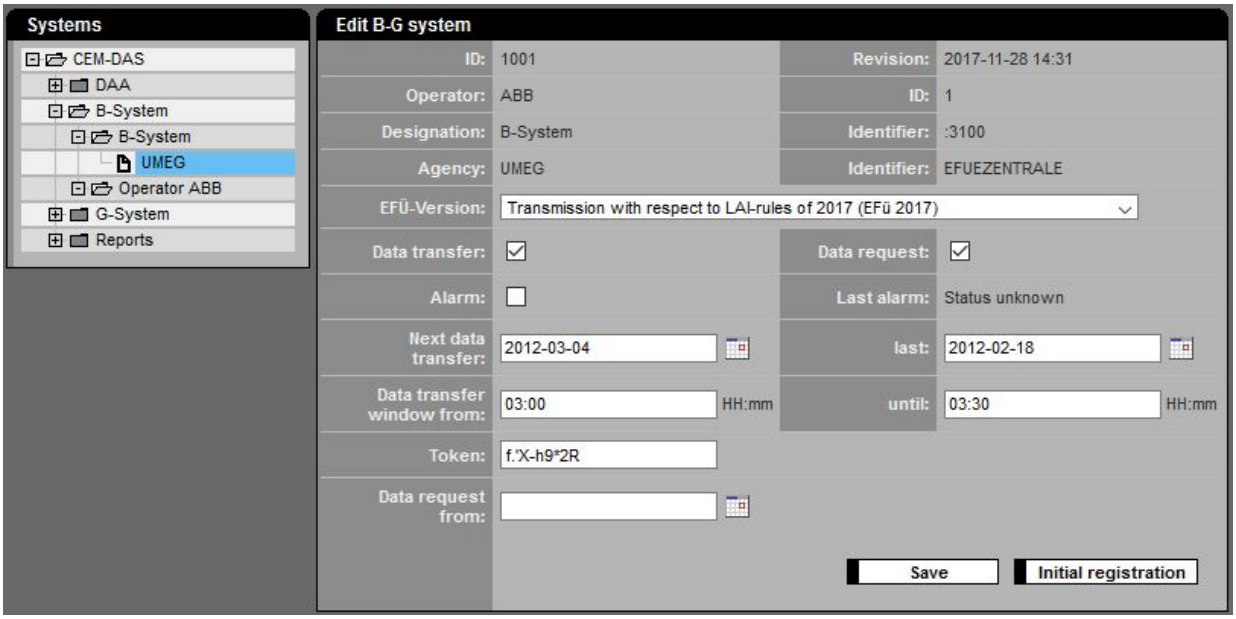


Figure 119: Connection G-System (Modem)

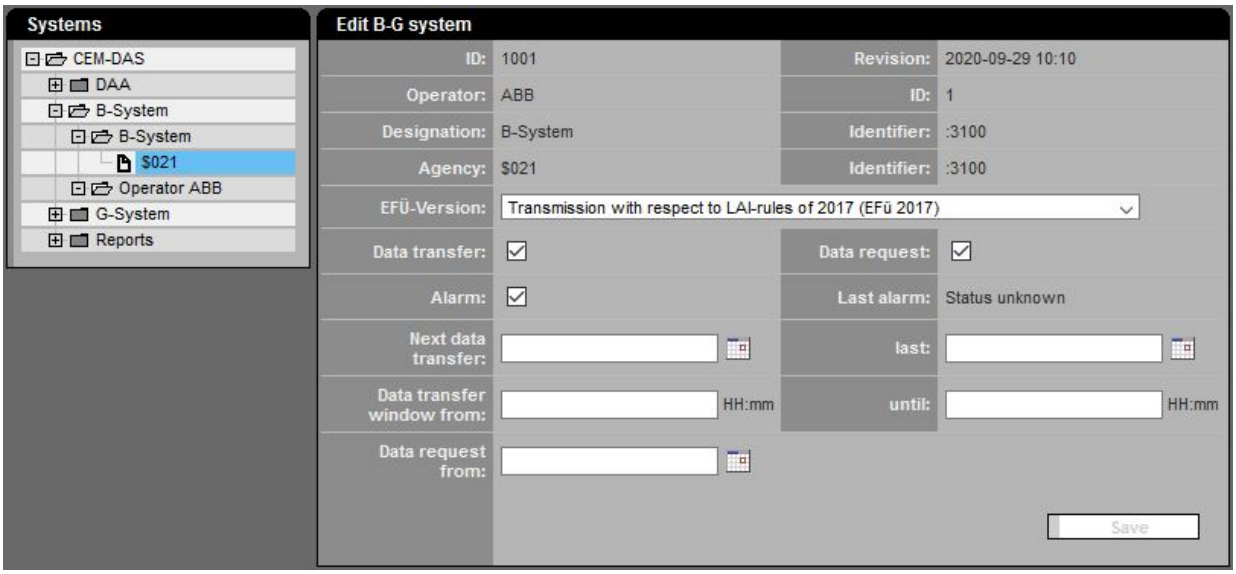


Figure 120: Connection G-System (Internet)

Lettering	Explanation
Edit B-G System	
ID	ID of the B-System
Revision	Date of the last change
Operator	Operator of the B-System
ID	ID of the operator
Designation	Designation of the B-System
Identifier	Identifier of the B-System
Agency	Designation of the G-System
Identifier	Modem: Identifier of the G-System

Lettering	Explanation
EFÜ-Version	Übertragung gemäß EFÜ Standard (see /5/): Transmission with respect to LAI-rules of 2017 (EFÜ 2017), full designation Transmission with respect to LAI-rules of 2017 (EFÜ 2017), short designation (MKB) Transmission with respect to LAI-rules of 2005 (EFÜ 2005), full designation Transmission with respect to LAI-rules of 2005 (EFÜ 2005), short designation (MKB) Transmission with respect to LAI-rules of 1995 (EFÜ 95)
Data transfer	Data transfer is activated to G-System
Data request	Data request from G-System is activated
Alarm	Alerting is activated
Last alarm	Date of last alarm
Next data transfer	Date for next cyclic data transfer to the G-System
Last	Date of the last data transfer to the G-System
Data transfer window from	Modem: period of time for data transmission
Until	Modem: period of time for data transmission
Token	Modem: token for transmission
Data request from	Date of earliest permitted data request
Save	Save data in the database
Initial registration	Modem: start an initial registration to G-System

4.4.5.4 G-System

This formula shows the available G-Systems (agency systems to which a connection via EFÜ can be made). Additionally new G-Systems can be generated.

Figure 121: List of G-Systems

Lettering	Explanation
Systems	
New G-System (Internet)	Generating a new G-Systems with internet connection
New G-System (Modem)	Generating a new G-Systems with modem connection
PDF	List of systems in PDF format
TXT	List of systems in text format
ID	ID of the G-System (is automatically assigned)
Agency	Designation of the G-System
Identifier	Modem: Identifier of the G-System.
Phone number / Address	Modem: Telephone number of the EFÜ G-System

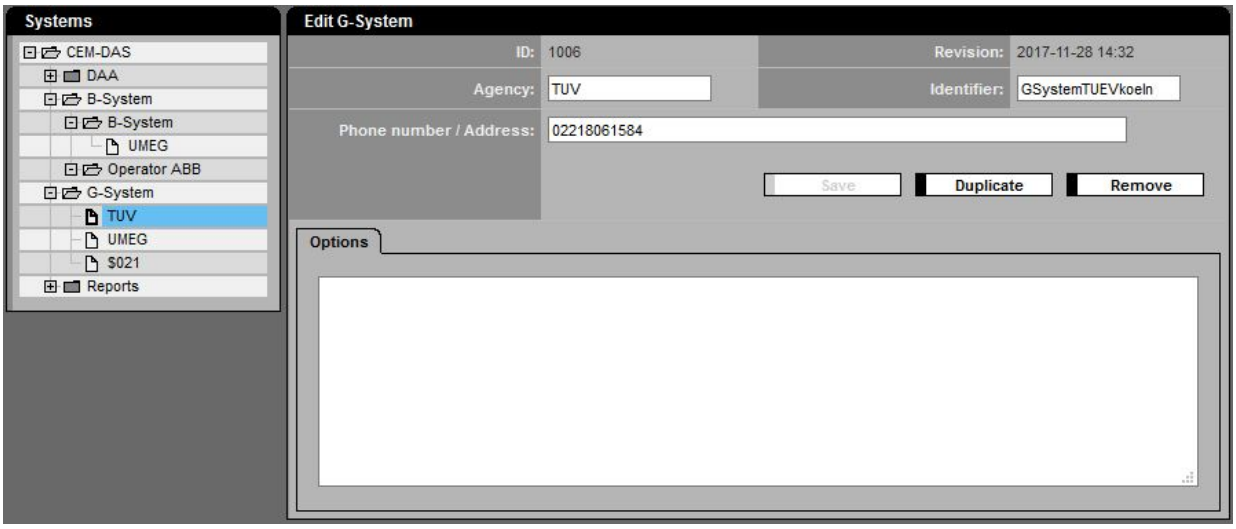


Figure 122: Parameter of a G-System (Modem)

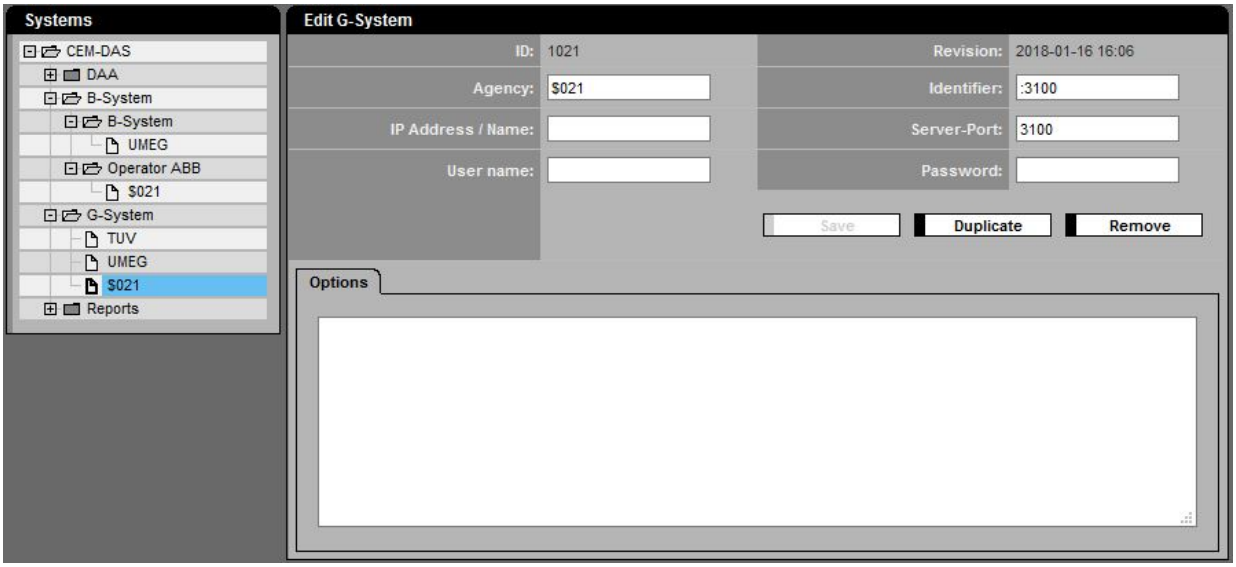


Figure 123: Parameter of a G-System (Internet)

Lettering	Explanation
Edit G-System	
ID	ID of the G-System (is automatically assigned)
Revision	Date of the last change in G-System
Agency	Designation of the G-System
Identifier	Modem: Identifier of the G-System. This value must be coordinated with the agency.
Phone number	Modem: Telephone number of the EFÜ G-System where it can be reached from CEM-DAS. Please use only numbers without blanks
IP Address / Name	Internet: IP address of the G-System
Server-Port	Internet: Port number of the G-System
User name	Internet: user name for authentification at the G-System
Password	Internet: password for authentification at the G-System
Save	Store the G-System parameter in the database
Duplicate	Create a copy of the present G-System
Remove	Delete the present G-System

4.4.5.5 Reports

4.4.5.5.1 General

Reports can be automatically output by CEM-DAS to a local or a network printer if needed. The kind of report, the output time, the printer and various other parameters can be predefined.

4.4.5.5.2 List of reports

In this formula the list of automatically printed reports is displayed. Furthermore here new automatically printed reports can be created.

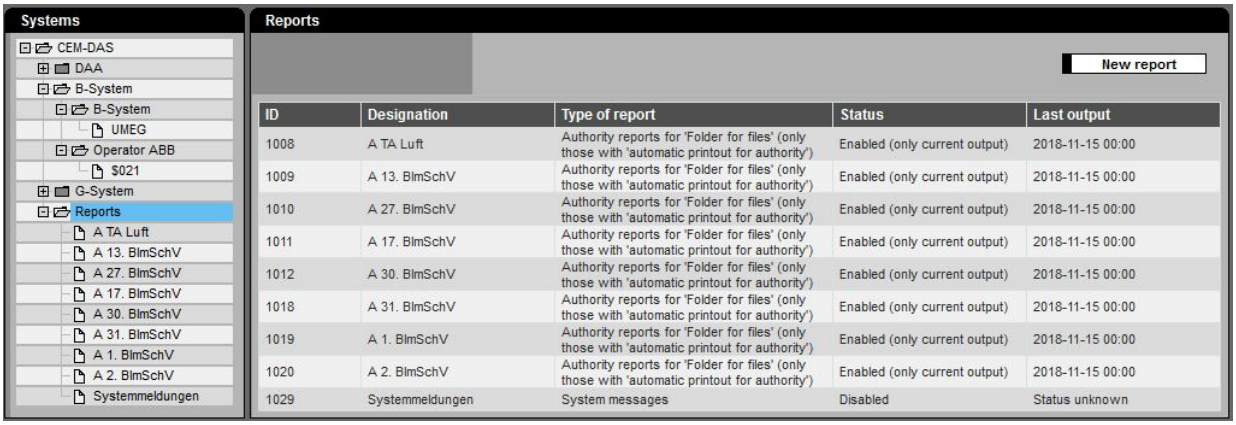


Figure 124: List of automatically printed reports

Lettering	Explanation	
Reports		
New report	Create a new report	
PDF	List of reports in PDF format	
TXT	List of reports in text format	
ID	ID of the report (assigned automatically)	
Designation	Designation of the report	
Type of report	Type of report	
Status	Condition of the report output. The following status are possible:	
	Disabled	No report output. The time of the last output will remain unchanged.
	Disabled (updates date)	No report output but the time of the last output will be increased so the inactive reports will not be printed subsequently when output is activated again.
	Enabled (only current output)	Reports are printed but only latest report, no report from the past
	Enabled (output all)	All reports are printed. If the output was interrupted and the time of the last output was not increased the output of the reports from the past will be repeated after the interruption.
Last output	Date and time of the last report output (storage, printout or email dispatch)	

4.4.5.5.3 Edit reports

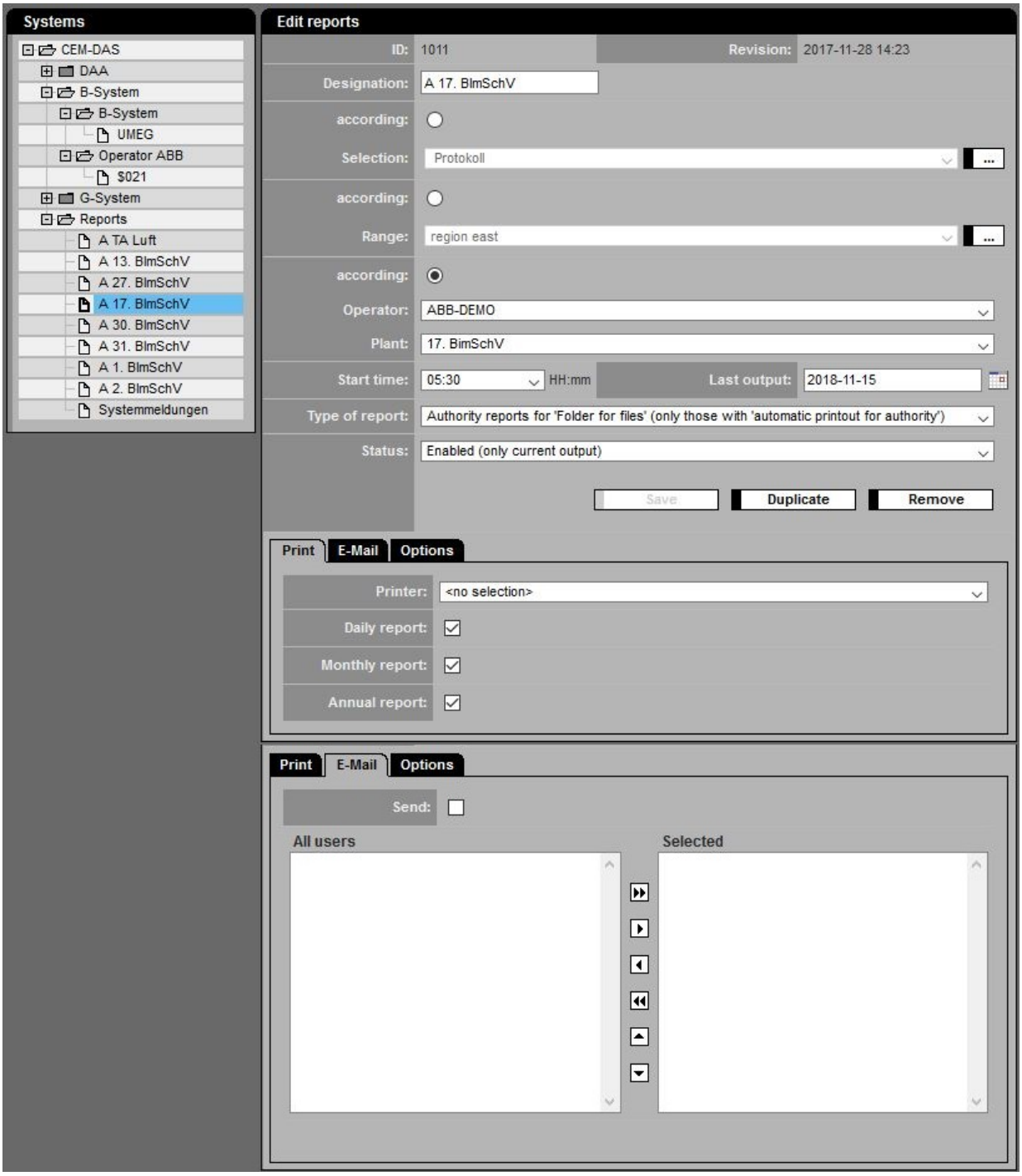
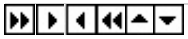


Figure 125: Parameter for printout or email dispatch of the reports

Lettering	Explanation
Edit reports	
ID	ID of the system (automatically generated)
Status	Date and time of the last change
Designation	Designation of the report
According to	Select this option if the report shall be created for all entities of the following selection
Selection	Selection list. Only active if previously the option “according to“ was selected. Selection of entities according to a selection for which the report shall be created
...	Button for jumping directly to the selection for editing

Lettering	Explanation
According to	Select this option if the report shall be created for all entities of the following range
range	List with ranges, only active if the option “according to” was selected previously. Selection of entities according to a range for which a report shall be created.
	Button for jumping directly to the selection for editing
According to	Select this option if the report shall be created for a certain or all entities of the following plant operators
Plant operator	Selection of the name of plant operator to whom the report is assigned
Plant	Selection of the name of the plant to which the report is assigned
Start time	Start time of printout
Last output	Date of the last output of the report. After each printout this date will be updated. By resetting the report will be printed again.
Type of report	Selection of report type
Status	The parameter “Status“ determines if reports should be printed and if report printouts from the past should be made up (see 4.4.5.5.2)
Save	Stores the report definition in the database
Duplicate	Copies the present definition of an automatic report as a template for another report
Delete	Deletes the present report definition
Print	
Printer	Name of the printer (see system control). Even if no printer is selected the marks for daily, monthly or yearly report are still necessary to create the reports.
Daily report	Mark if you want a daily report
Monthly report	Mark if you want a monthly report
Annual report	Mark if you want a yearly report
E-Mail	
Sending 	Mark if the parameterized Email shall be sent. Herewith the Email sending can be activated or de-activated for a certain time.
All user	List of all user without the selected users (see below)
Selected	User selected for E-Mail
	Button to select, delete or change the sorting of users

4.5 Administration

4.5.1 User

With the function “user“ new users can be created and their access rights for part functions of CEM-DAS can be assigned or changed.

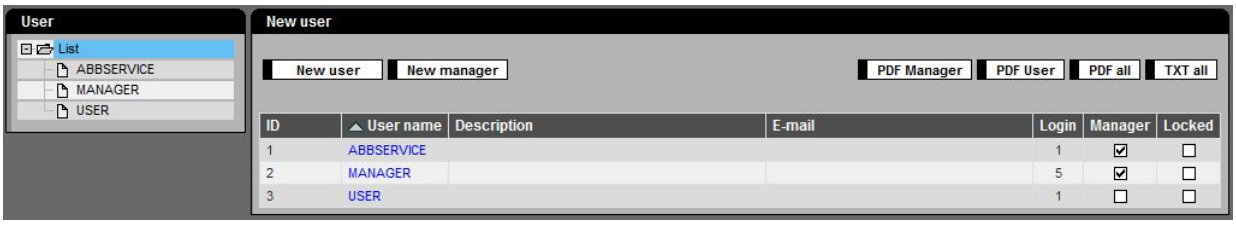


Figure 126: List of users

Lettering	Explanation
User	
	List of existing users which can be selected by mouse click.
New user	
New user	Create a new common user Note: The password of a new user is set to the name in uppercase.
New manager	Create a new user with rights for administration Note: The password of a manager user is set to the name in uppercase.
PDF	Output of the user list as PDF file
TXT	Output of the user list as TXT file
ID	Identifier of a user
User name	Name of the new user, the sorting can be changed by clicking on ▲ ▼
Description	Description e.g. function of the user
E-mail	Email address of a user. This is optional and might be needed if the user shall receive outputs from CEM-DAS by email.
Login	Number of user login
Manager	Shows if the user is a member of the manager group and possesses administrator rights
Locked	The user cannot login, his settings stay valid until reset.

By a click on a user in the list his profile regarding user specific settings, his rights and his belonging to a region will be displayed.

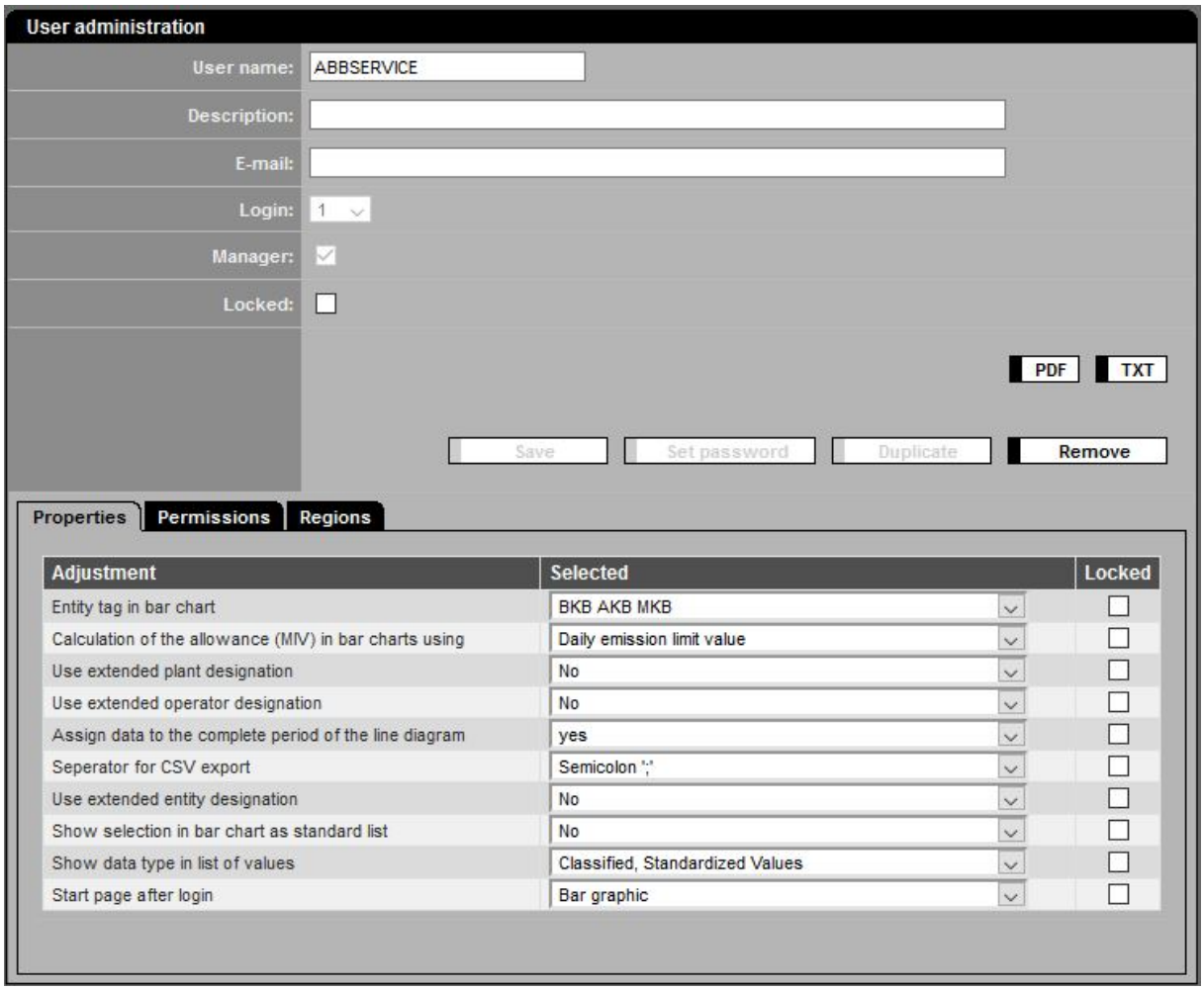


Figure 127: User – Settings

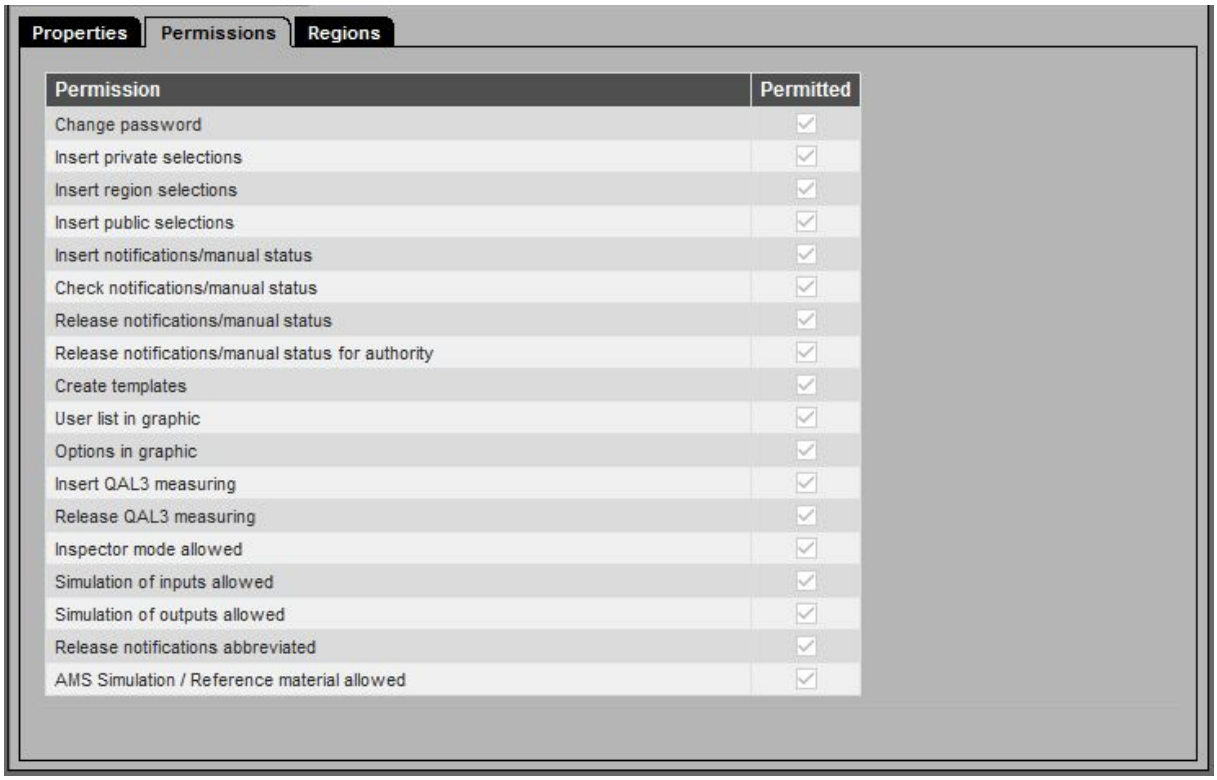


Figure 128: User – Permissions

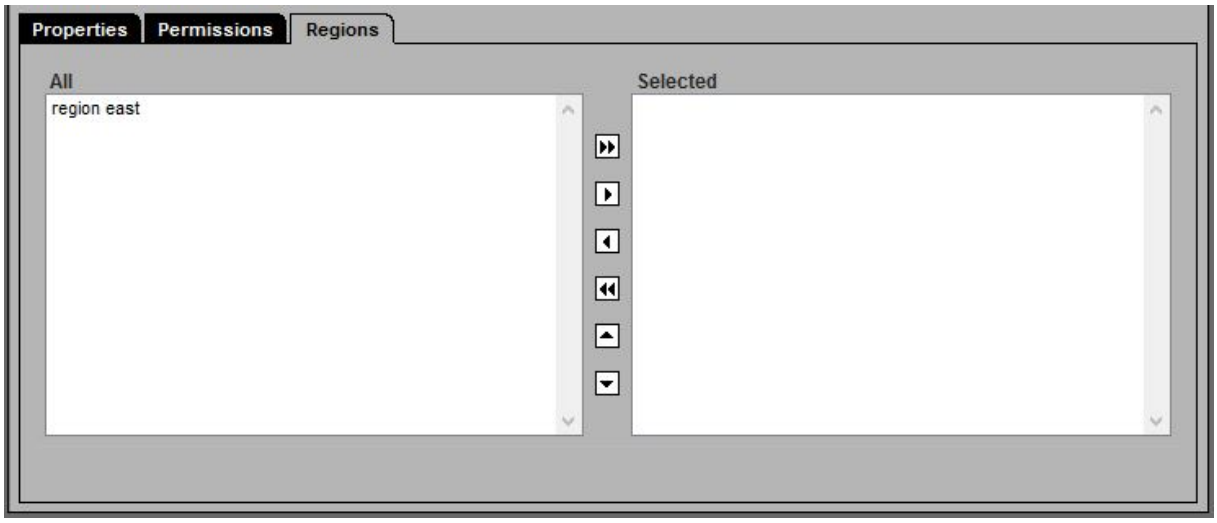


Figure 129: User – Regions

Lettering	Explanation
User administration	
User name	Clear user name For a user name there is no difference between uppercase and lowercase letters. Whereas the password does take them into account.
Description	Description e.g. function
E-mail	E-mail address of the user. The address will be used e.g. to select the recipient in the function “Configuration/Systems/Classification reports/E-mail”.
Login	Number of permitted user login
Manager	Marks if the user is member of the manager group and therefore possesses administrator rights
Locked	The user cannot login. This blocking can be revoked any time without losing the user data.
PDF	Output of all user data of the selected user in PDF format
TXT	Output of all user data of the selected user in TXT format
Save	Stores the changed user data in the database
Set password	The password of the user is the same as his name. The new password is always in capital letters. This is also the same if a new user is created. The user whose password was entered or who was newly created will be asked automatically to change his password after the first login.
Duplicate	Data of the present user are duplicated and a new user with a default name is created
Remove	The present user is deleted

Lettering	Explanation
Properties	
Adjustment	Selection of the user dependent settings of the system, e.g. a certain kind of display in a graphic
Selected	Display of the default of the setting which can be changed here. Either by selection of various possible setting (see "setting") or by activating or rejection of "yes" or "no".
Locked	The selected default of the setting from "setting" and "selected" can be blocked for the user from a manager so that they can´t be changed by the logged in user.
Entity tag in bar chart	Here the lettering of the entity in the graphic can be specified: **BKB AKB MKB**: operator/plant/entity – short designation or **T-Id KKS**: DAA-Controller ID + identification system of the power plant KKS or **T-Id Designation**: DAA-Controller ID + Full designation of the entity Or **Plant MKB**: Plant designation and short designation of entity or **Designation**: Full designation of the entity
Calculation of the allowance (MIV) in bar charts using	Here it can be specified which limit value is more important for emission monitoring in the graphic: - Daily limit value or - Short-term emission limit value or - Calibration / Daily emission limit value The selected value will be used to calculate the allowance. **Standard:** Daily emission limit value
Use extended plant designation	Display of the full plant designation instead of the short unit designation in "line graphic" and "list of values"
Use extended operator designation	Display of the full operator designation instead of the short operator designation in "list of value"
Assign data to the complete period of the line diagram	If **No** for a better overview only the graphs of the selected time range will be displayed
Separator for CSV export	Selection of the separator for CSV files: comma "," or semicolon ";" (fitting to the settings in MS Excel© and the country specific settings of the operating system)
Use extended entity designation	Display of the full entity designation instead of the short designation in "line graphic" and "list of value"
Show selection in bar chart as standard list	If a new selection is selected it will be displayed in the bar graphic as standard
Show data type in list of values	Possible data type selection in "list of values": Classified, Standardized Classified, Standardized, Validated Values, Mass flow ALL STA data types
Graphic as Java Applet	Graphic as Java Applet is used instead of HTML graphic
Start page after login	Bar graphic Messages without notification

Lettering	Explanation
Permissions	
Permission	Designation of the right which is available for the user which is “permitted“(x) or not permitted(_). The following rights can be selected: The user may or may not: - Change password: Change his own password - Insert private selections: create selections for himself - Insert group selections: Create selections for the region - Insert public selections: create selections which are available for all users - Insert notifications/manual status: create a new notification/manual status - Check notifications/manual status: check created notifications/manual status - Release notifications/manual status: Release verified notifications/manual status; these messages cannot be deleted - Release notifications/manual status for authority: With this command a notification/manual status can be set on the status “released for agency“. This has the effect that the message cannot be deleted and will be transferred to the agency. - Create template: The user can create templates (text preservations) e.g. for messages (text preservations) - User list in graphic: In a bar graphic displays defined by the user can be created and displayed - Options in graphic: The user is allowed to make his own settings in the graphics - Insert QAL3 measuring: The user may insert measures in the QAL3 module - Release QAL3 measuring: The user may release QAL 3 measures - Inspector mode allowed: The user may activate the inspection modus (only DAA-Controller) - Simulation of inputs allowed: The user may simulate inputs (only DAA-Controller) - Simulation of outputs allowed: The user may simulate outputs (only DAA-Controller) - Release notifications abbreviated: instead of the normal precedure (step 1: Verify, step 2: Release, step 3: Agency) - AMS Simulation / Referencematerial allowed: the user can handle AMS (only DAA-Controller)
Permitted	Marks if the right is designated
Regions	
All	All regions to which the user can be designated
Selected	Only those regions to which the user is designated

4.5.2 Last Login

In this menu the user`s last logins are displayed.

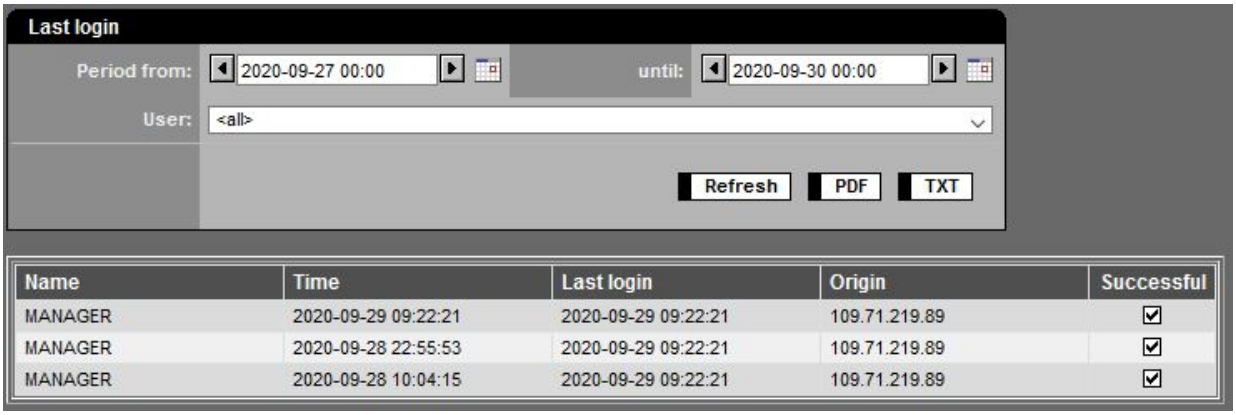


Figure 130: Last Login

Lettering	Explanation
Period from…until	Time period for the list
User	Selection of the user. This selection is available for Manager.
Update	Update the list
PDF	Output the list in PDF format
TXT	Output the list in TXT format
Name	Name of the user
Date	Login time
Last login	Time of last login
Location	IP address of the registered user's computer
Successful	Successful login

Each Manager gets the information of failed logins since last login of the manager.

Information up to 10 unsuccessful attempts

Information exceeding 10 unsuccessful attempts

4.5.3 Modify password

The present password of a logged in user can be changed any time. To do so he must enter his old and new password and confirm the new password.

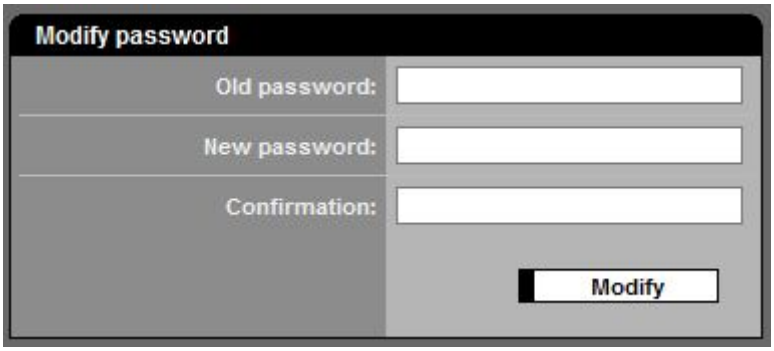


Figure 131: Change password

Lettering	Explanation
Old password	The present password under which the user actually is logged in
New password	New password
Confirmation	Re-entry of the new password
Modify	Confirmation of the previous input

If the wrong password was entered the following message will appear:

4.5.4 System messages

With the function “system messages“ messages are output which concern the operation of the CEM-DAS system and the connected emission PC. These messages will be classified respective to their dependency to a system (part system of CEM-DAS), their importance (level) and a time range.

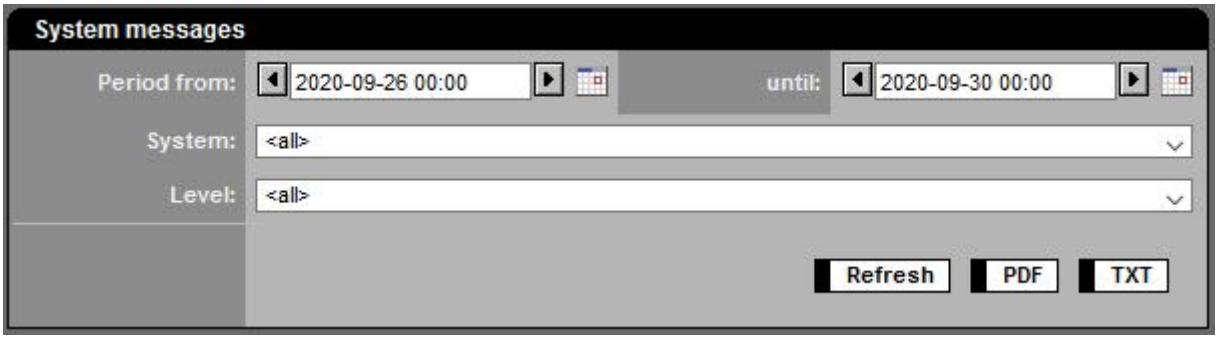


Figure 132: Filter setting for system messages

Lettering	Explanation
Period	Messages in period from … until
System	Filters messages regarding a part system
Level	Filters the message regarding their importance
Refresh	update
PDF	Output in PDF format
TXT	Output in TXT format

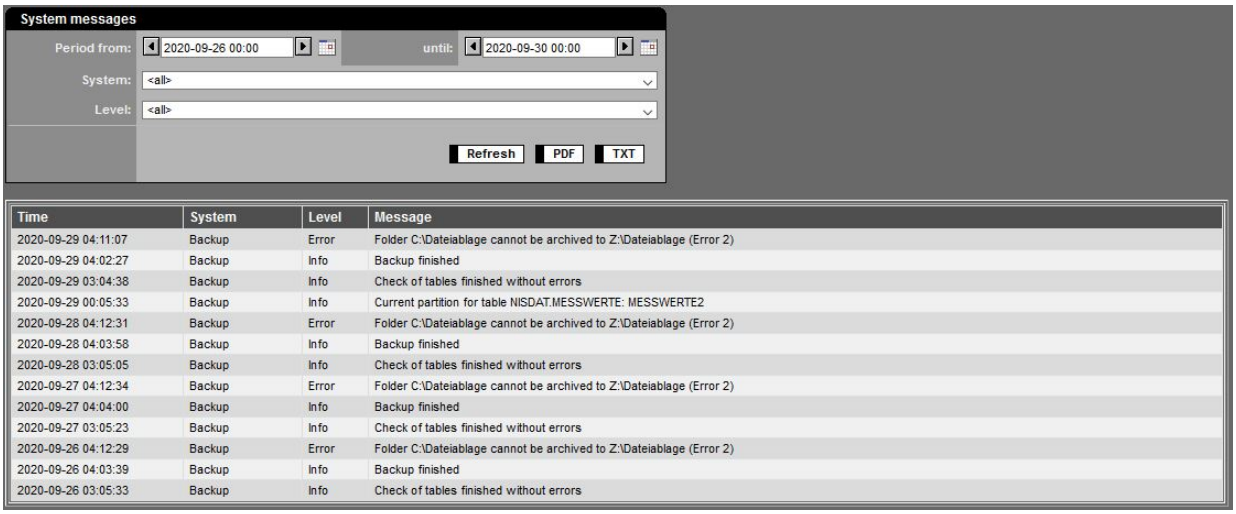


Figure 133: Example for a list with system messages

4.5.5 Regions

With “regions“ a distinction between plants and users can be made. This enables to assign selected plants to the users so that only these plant parts and their entities are visible for the user. This menu is available only for manager. Regions contain a free selectable name to which certain plants and users can be assigned.
After selection from the list the list of regions will be displayed on the right and you have the possibility to create a new region:

Figure 134: List of regions

Lettering	Explanation
New group	Creates a new region with a default name
Name of group	List of all existing regions

The following figures show example for selection of plants or users and their designation to a region:

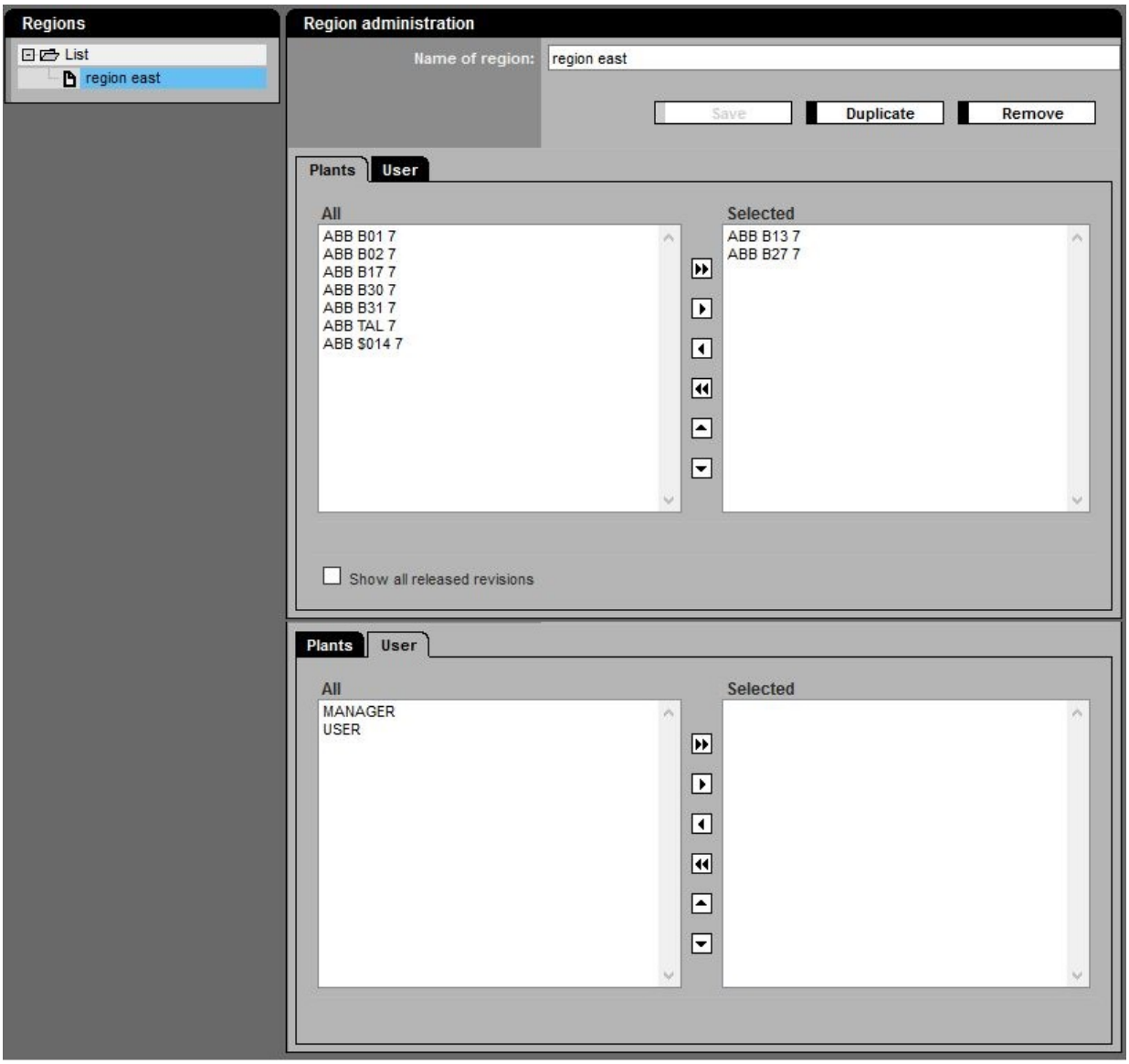


Figure 135: Designation of user or plants to regions

Lettering	Explanation
Region name	Designation of the region
Save	Save the region data in the database
Duplicate	Copies the region data with the possibility to enter a new name and edit this region
Delete	Delete the region
Plants	
All	List of all available plants
Selected	Selection of plants of all available plants. In this area only the entities are displayed which are in the selected plants.
Show all released revisions	The selection list of the plants displays all plants from all released revisions. Otherwise only the plants with the highest revision will be displayed.
User	
All	List of all available user
Selected	Selection of users of all available user. The selected user only “see“ these entities which are assigned to the plants of this region.

4.5.6 Licensing

Licensing of the program is performed via this menu item. In addition, modules that have already been licensed can be activated or deactivated. This menu is available only for manager. For a non-licensed program (Figure 136) a license must be requested via the command “create license request file“. The desired modules as well as the number of users, systems and devices with digital interface can be set in the column “Requested“. The “Request-License.xml“ file is generated by the program and must be saved. As soon as the license file is available it is read in via the command “search“ and the license can be activated.
For a license expansion the same procedure applies.

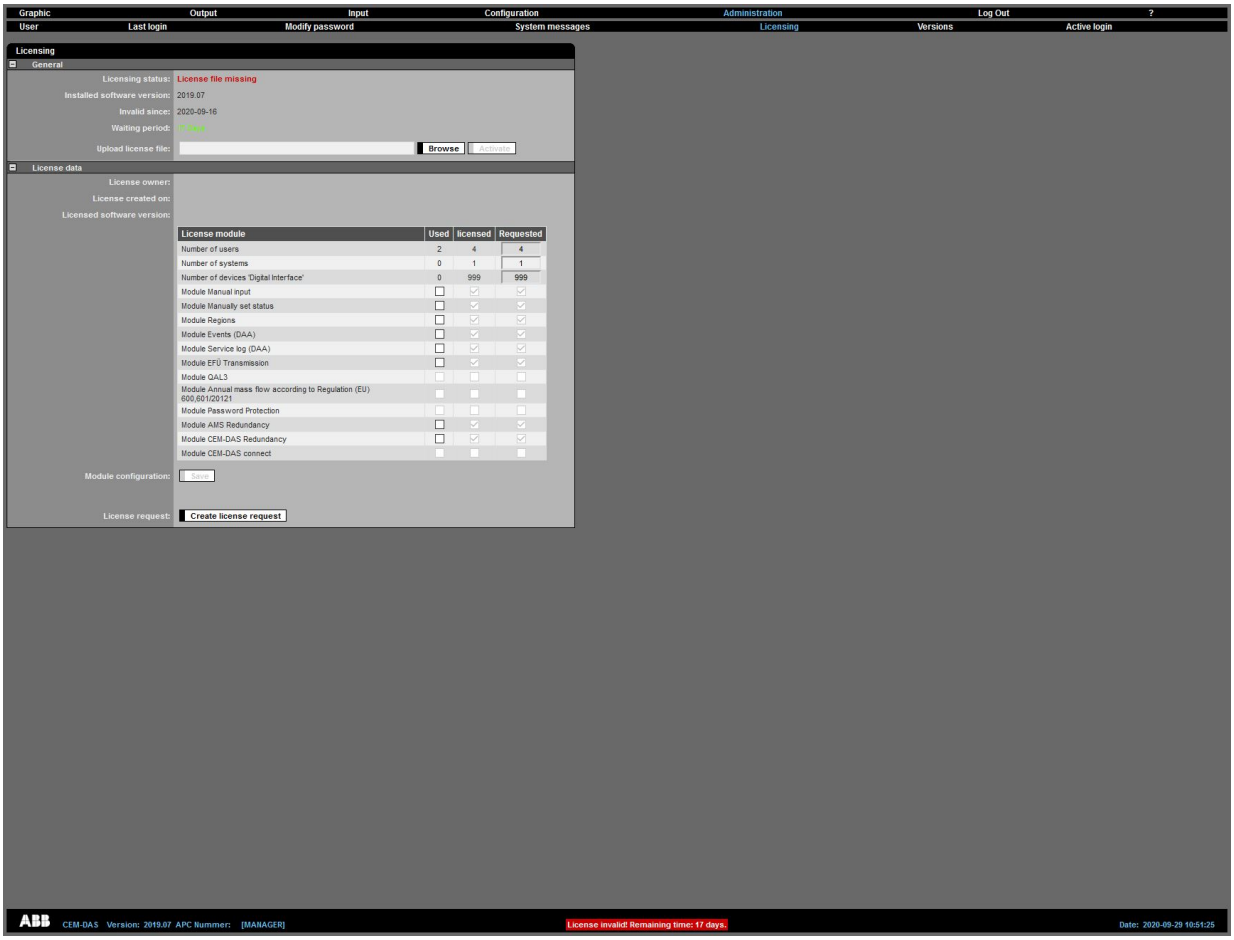


Figure 136: Licensing of the program

After successful licensing the licensed modules can be activated.

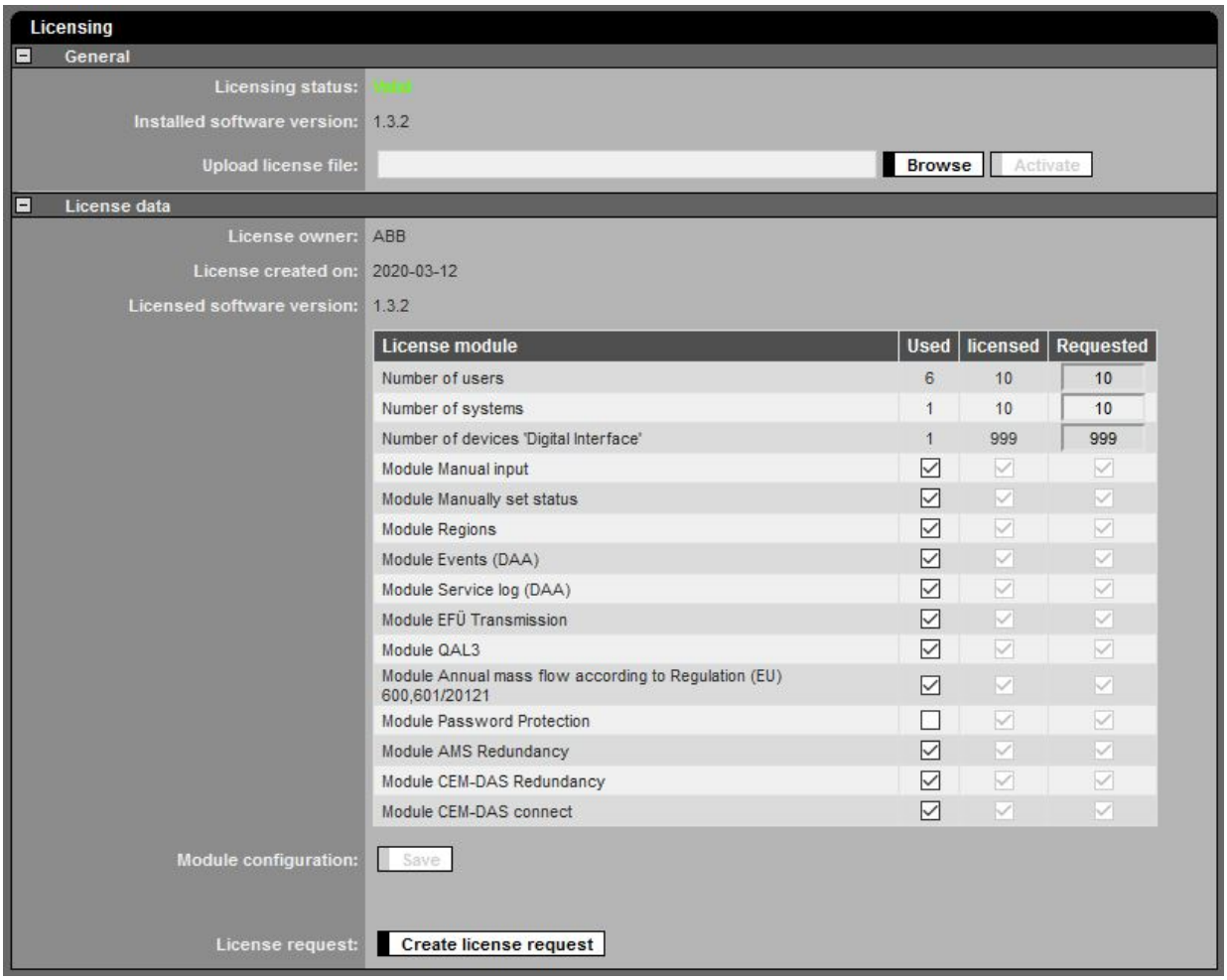


Figure 137: Configuration of modules

Lettering	Explanation
General	
Licensing status	Valid or license file missing or license file obsolete
Installed software version	Current software version
Upload license file	Storage location of license file
Browse	Search storage location of license file
Activate	Activates the license file
License data	
License owner	License created for respective owner
License created on	Manufactoring date
Licensed software version	License created for respective version
License modul	License component
Number of users	The number of users is specified in the list of users (see 4.5.1). The number of users results from the number of unlocked users taking into account the permitted user logins.
Number of systems	This value shows how many DAA-Controller systems are licensed and can be set. Used in last revision.
Number of devices “Digital Interface“	This value shows how many devices can be set as a digital interface. Used in last revision.

Lettering	Explanation
License Module	License for module available: • Manual input (see 4.3.4) • Manually set status (see 4.3.2) • Regions (see 4.5.5) • Events (see 4.2.3) • Service log (see 4.2.6) • EFÜ Transmission (*) (see 4.5.6.1) • Special systems (*) (see 4.4.5.1) • QAL3 (*) (siehe 4.2.5) • Plant overview (*) (see /10/) • Annual mass flow (*) (see /11/) • Password Protection (*) (see 4.5.6.2) • Module Java Applet for Graphic (*) These modules are not available in a “SmallEdition“ (see /1/).
Used	Here it can be set whether or not the module is shown. No data or parameters are deleted when deactivating the module.
Licensed	Indication of module licence
Requested	Setting for the desired license file. Upon request, this setting is saved in the license request file.
Save	Saves the changes
Create license request	Setting for the desired license file. Upon request, this setting is saved in the license request file.

4.5.6.1 Module: EFÜ Transmission

If “EFÜ Transmission” is deactivated there are no more displays, inputs and reports from EFÜ (B-System, G-System).

4.5.6.2 Module: Password Protection

After activating “password protection” the next login requests for a new password. The password must comply with the following policies:

- Minimum length: 10 (adjustable)
- Uppercase, lowercase, numbers, special characters must included
- Remaining valid for 90 days (adjustable)
- The last 12 (adjustable) password must be different

4.5.7 Versions

In the menu “Versions” the history of software versions is shown for CEM-DAS and DAA-Controller. This menu is available only for manager.

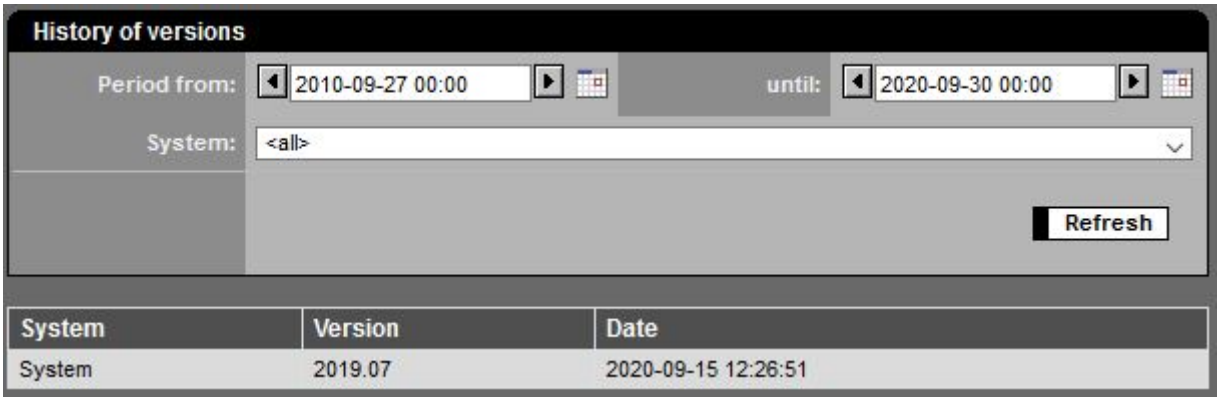


Figure 138: Versions of software

Lettering	Explanation
Period from … until	Time period for the list
System	Selection for the system: • CEM-DAS (designation: System) or • DAA-Controller
Refresh	Update the list
Version	Version of shown system: • CEM-DAS, certified: 7.m.n • DAA-Controller, certified: 7.m(n) • CEM-DAS, not certified: year.month • DAA-Controller, not certified: year(month)
Date	Date of installation

4.5.8 Active login

The menu “Active Login“ allows to display all currently logged in users of CEM-DAS. This view is only available for CEM-DAS managers. The manager can log out users.

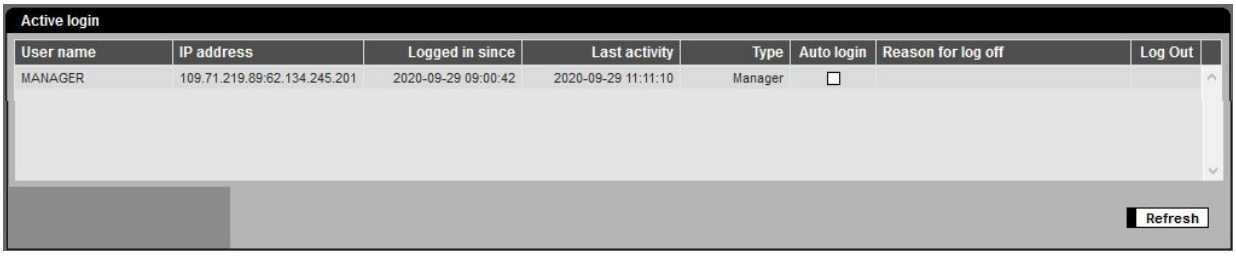


Figure 139: Active Login

Designation	Description
User name	Name of registered user
IP Address	IP address of the registered user’s computer
Logged in since	Time of initial log-in of the user
Last activity	Time of last activity
Type	Manager or user
Autologin	User is automatically logged in
Reason for log off	Information to the user after log out
Log off	This command logs out the user. After that, the log out reason is shown to the user.
Refresh	Display is refreshed.

4.6 Logout

The function logout finishes the connection with CEM-DAS and at the same time the Login menu for a new login will be displayed.

5 Related documents

No.	Document no.	Title
/1/	TD/CEM-DAS-EN	CEM-DAS System manual
/2/	—	Dreizehnte Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes (Verordnung über Großfeuerungs-, Gasturbinen- und Verbrennungsmotoranlagen - 13. BImSchV) Ausfertigungsdatum: 02.05.2013 "Verordnung über Großfeuerungs-, Gasturbinen- und Verbrennungsmotoranlagen vom 2. Mai 2013 (BGBl. I S. 1021, 1023)" Letzte Änderung vom 19.12.2017 (BGBl.I S. 4007)
/3/	—	Siebzehnte Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes (Verordnung über die Verbrennung und die Mitverbrennung von Abfällen - 17. BImSchV) Ausfertigungsdatum: 02.05.2013 "Verordnung über die Verbrennung und die Mitverbrennung von Abfällen vom 2. Mai 2013 (BGBl. I S. 1021, 1044, 3254)"
/4/	—	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit: Bundeseinheitliche Praxis bei der Überwachung der Emissionen – RdSchr. d. BMUB vom 23.01.2017 IG I 2-45053/5 (GMBl 2017, Nr 13/14, S. 234)
/5/	—	Emissionsfernübertragung Schnittstellendefinition Überarbeitete Fassung des Beschlusses des LAI vom 28.09.2005 Stand April 2017
/6/	—	Wolfgang Poppitz, Sächsisches Landesamt für Umwelt, Landwirtschaft und Geologie; Dr. Hans-Joachim Hummel, Umweltbundesamt; Dr. Detlef Wagner, Landesamt für Naturschutz, Umwelt und Verbraucherschutz NRW; Jürgen Kassens, Landesanstalt für Umwelt, Messungen und Naturschutz BW: Kontinuierliche Emissionsüberwachung, Statuskennung und Klassierung, 20.11.2017 ergänzte/ berichtigte Arbeitsfassung, Stand 18.06.2018
/7/	TD/DAA-EN	DAA System manual
/8/	TD/CEM-DAS-DI-EN	CEM-DAS Digital interface manual
/9/	TD/CEM-DAS-QAL3-EN	CEM-DAS QAL3 module manual
/10/		CEM-DAS Plant Overview In progress
/11/		CEM-DAS Annual Mass Flow In progress
/12/	—	DIN EN 14181 Stationary Source Emissions English version EN 14181:2014
/13/	—	Industrieemissionsrichtlinie 2010/75/EU Industrial Emissions Directive (IED)
/14/	—	CEM-DAS Glossary

Annexes

Annex 1: DAA-Controller Formula editor

Annex 2: Mixed and multi-fuel firing

Annex 3: Bit status of the measured values and minute values

Annex 4: Installation according to MCERTS

6 Annex 1: DAA-Controller Formula editor

In a DAA-Controller formula new values can be calculated with the aid of references, functions, constants and operands.

References are values from DAA-Controller inputs or entities. In the formula they are displayed in square brackets. The structure is the following:

Inputs [category:input:data type]
Entities [category:plant:entity:data type].

If the DAA-Controller entity is not assigned to any plant this reference becomes obsolete.

Constants are any decimal numbers or integer numbers.

Integer numbers 123 or 6
Decimal numbers 12,45 or 0,023

Operators are the following figures. Their priority in execution is shown in column 5 an 6. The priority can be changed by brackets "(" and ")".

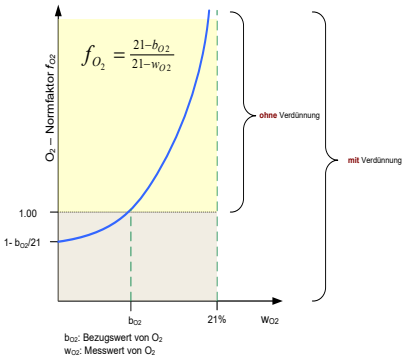
Operators Analog	**Designation**	**Operators Logical**	**Designation**	**Operator**	**Priority**
-	sign	!	not	(), f(), []	bracketing, function, reference
+	sign	&	and	+, -, !	Unitary signs Operators
**	power	|	or	**	Exponent
*	multiplication	^	XOR	*, /	Multiplication, division
/	division	>	smaller than	+, -	Addition, Subtraction
+	addition	<	Larger than	<,<=, >,>=,=,!=	Comparative operator
-	Subtraction	=	equal	&	Logical And
#	or-Addition	>=	Less or equal	|, ^,#	Logical Or, XOR, Or-Addition
		<=	Greater or equal		
		!=	unequal		

Functions are used for calculation of expressions which can´t be calculated with operators.
After inserting a function from the selection list the arguments must be replaced by constants, references, functions or expressions. The pair of brackets "[ ]" in the list of arguments of a function shows arguments which can be left out.

The following functions can be selected:

Function	Syntax
Logarithm of the basis 10	Log10(A) A = Expression of which the logarithm shall be calculated.
If .. then decision	If(B;T[;F;I]) B = Expression to be checked for TRUE, FALSE or INVALID Example: Bº[AIN:COK1:MW] > 20 means if the measured value (MW) of the analog input entity (AIN) COK1 is larger than 20mA then B=TRUE(T). Otherwise it is B=FALSE(F). If the expression cannot be checked because components are invalid, e.g. during maintenance or failure, the expression has the value INVALID(I). T = Result of the function, if B TRUE Example: Tº999 means if the checked expression B=True the result of the function is the decimal value 999. But again also any expression can be shown. F = Result of the function if B FALSE Example: Fº[AIN:COK1:MW] e.g.: Fº[AIN:COK1:MW], this means that if the analog input flow is smaller than 20mA the function will show this result. But again also any expression can be shown. I = Result of the function, if B INVALID Example: Iº12 means that if the expression B is not valid and can´t be checked the function will get the default value 12mA If F and/or I are not given an invalid = will be used instead.
Minimum value	Min(A1;A2;…) A series of expressions A1, A2, … will be evaluated. The smallest valid value is the result of the function. If all arguments are invalid the function will have the result 0 with the status “invalid”.
Maximum value	Max(A1;A2;…) A series of expressions A1, A2, … will be evaluated. The largest valid value is the result of the function. If all arguments are invalid the function will have the result 0 with the status “invalid”.
First valid value	First(A1;A2;…) A series of expressions A1, A2, … will be evaluated. The first valid value is the result of the function. If all arguments are invalid the function will have the result 0 with the status “invalid”.
Firing range for two component firing	Firing range 2(B1;B2;V1;...) See 7.1
Firing range for three component firing	Firing range3(B1;B2;B3;V1[;V2;V3]) See 7.2

Function	Syntax
Normalization factor O2 without dilution	NormO2(O2;O2-Bz[;ERS;ERS-Bz]) O2: O2-measured value (wO2) ERS: O2-default value O2-Bz: O2-reference value (bO2) ERS-Bz: O2-default reference value NormO(): normalization factor (fO2) without dilution The normalization of pollutant concentrations cnormiert will be calculated as follows $c_{normalized} = c_{raw} \cdot f_{O_2} \cdot f_T \cdot f_P \cdot f_H$ With the normalization factor for O2: $f_{O_2} = Min\left(1; \frac{21-b_{O2}}{21-w_{O2}}\right)$
Normalization factor O2 With dilution	NormO2V(O2;O2-Bz[;ERS;ERS-Bz]) O2: O2-mesured value (wO2) ERS: O2-default value O2-Bz: O2-reference value (bO2) ERS-Bz: O2-default reference value NormOV():Normalization factor (fO2) with dilution With the normalization factor for O2: $f_{O_2} = \frac{21-b_{O2}}{21-w_{O2}}$
Normalization factor pressure	NormP(P;P-Bz[;ERS;ERS-Bz]) P: pressure measured value (wP) ERS: pressure default value P-Bz: pressure reference value (bP,1013,25 hPa) ERS-Bz: pressure default reference value NormP(): Normalization factor (fP) $f_P = \frac{b_P}{w_p}$ with
Normalization factor temperature	NormT(T;T-Bz[;ERS;ERS-Bz]) T: T-measured value (wT) ERS: T-default value P-Bz: T-reference value(bT, 0°C) ERS-Bz: T-default reference value NormT(): Normalization factor (fT) $f_T = \frac{273+w_T}{273+b_T}$



Function	Syntax
Normalization factor humidity	NormF(F;F-Bz[;ERS;ERS-Bz]) H: humidity – measured value (wH) ERS: humidity – default value P-Bz: humidity – reference value (bH,0%) ERS-Bz: humidity – default reference value NormF(): Normalization factor (fF) $f_F = \frac{100 - b_H}{100 - w_H}$
Always TRUE	true() delivers always the logical value TRUE.
Always FALSE	false() delivers always the logical value FALSE.

7 Annex 2: Mixed and multi-fuel firing

7.1 Two component mixed firing

Two components firing uses two fuels with different limit values in any mixing ration. According to regulations the mixing ration can be grouped in only a few mixing ranges. DAA-Controller uses at maximum 4 ranges called firing ranges FB1, FB2, FB3 und FB4. So for the two component mixed firing the following diagram can be drawn:

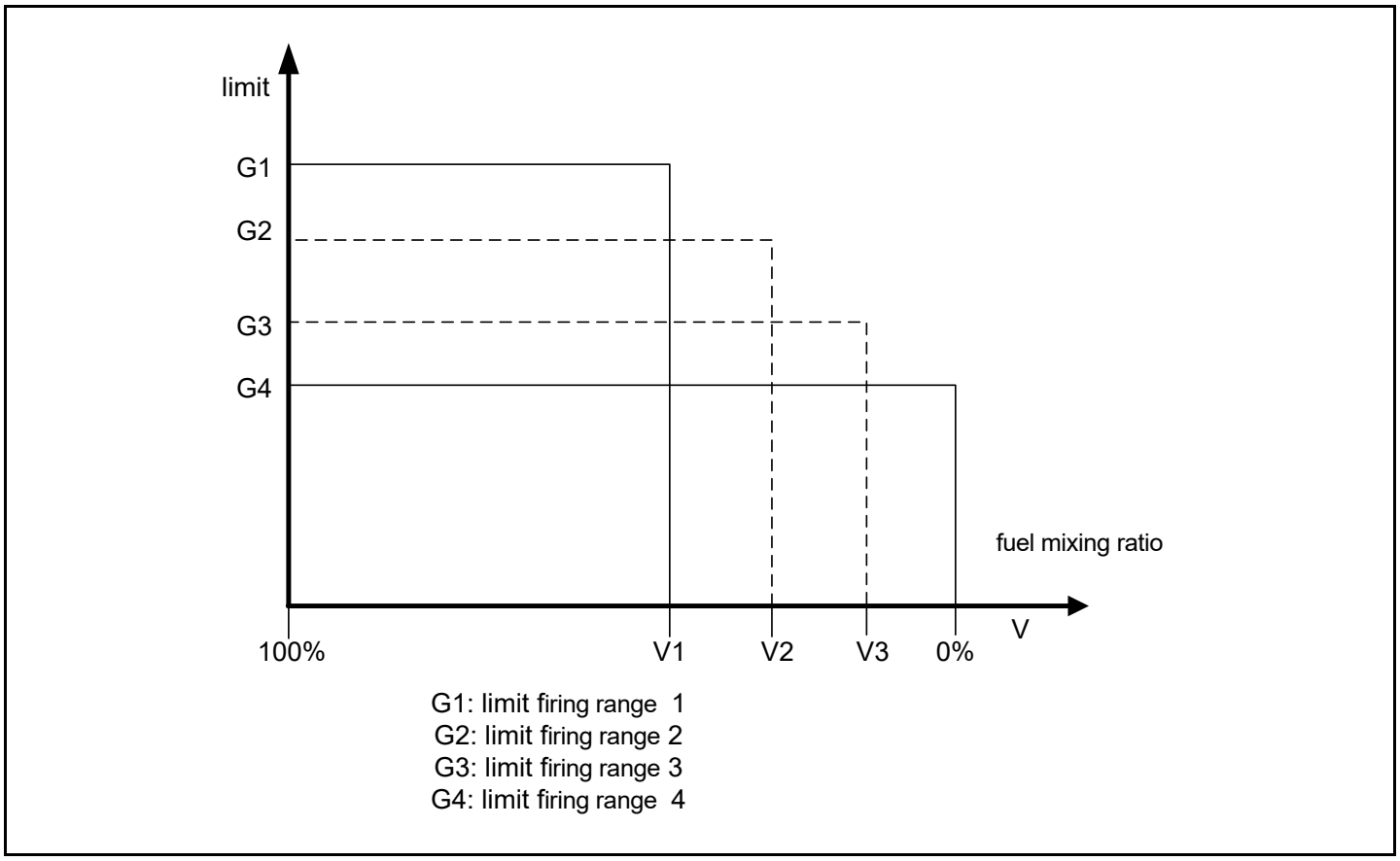


Figure 140: Two component mixed firing

V1 = Fuel mixing ratio at the limit between firing range 1 and 2
V2 = Fuel mixing ratio at the limit between firing range 2 and 3
V3 = Fuel mixing ratio at the limit between firing range 3 and 4

The present fuel mixing ratio V is calculated as follows:

$$V = \frac{B\,1}{B} \bullet 100\,\% = \frac{Feuerleistung\ Brennstoff\ 1}{Gesamtfeuerleistung} \bullet 100\,\%$$

W with the additional condition:

B= B1 + B2

B= total fire power
B1= fire power fuel 1
B2= fire power fuel 2

In DAA-Controller is a formula function “Firing range2“, which calculates the current firing range FB from the fuel mixing ration V and the ratios V1, V2 and V3.

The parameterization of the entity “firing range calculation” for a two component mix firing requires the information of the following reference entities as arguments in the function “firing range2”:

B1 = entity fire power fuel 1
B2 = entity fire power fuel 2

The total fire power B will be calculated internally.

By the current values of each fire power the current fuel mixing portion V is calculated. By comparing V with the pre-set transitional proportion V1, V2 and V3 the current firing range 1, 2, 3 or 4 is determined. For parameterization of the entity “firing range calculation” the pre-set transitional proportion V1, V2 and V3 will be given in percent as arguments in the function “firing range2”:

Firing range2 (B1; B2; V1; V2; …) whereas: $0\ \% \leq Vn\ldots \leq V2 \leq V1 \leq 100\ \%$

According to regulation V1 i. a. will be set to 50 % which means the firing range 1 includes all mixing ratios where fuel1 has the larger portion ($\geq 50\ \%$).

As standard during outage or failure of the calculation of the fuel mixing ration the firing range 1 will be given as the current firing range. By parameterization of the transitional proportions V1, V2 and V3 the amount of possible firing ranges can be limited, e.g.:

V3= 0 %: only FB1, FB2, FB3 possible
V2 = V3= 0 %: only FB1 and FB2 possible.

During further parameterization of DAA-Controller it should be noted that for each pollutant/firing range combination a separate entity with limit value, characteristic and reference value must be parameterized.

The designation of the entities should contain the respective firing range. The parameter “Firing range” must give the number of the related firing range and the parameter “FMS” (firing range entity) must give the number of the entity “firing range calculation”!

During operation DAA-Controller calculates the respective current firing range from the fuel mixing ration and calculates only entities where their parameterized “firing range” matches the current one. After averaging time the class storages of all entities who`s parameterized “firing range” does not match the determined firing range will be increased by one.

The related limit values and reference values have to be defined for each entity, which means for each firing range combination, by the agency. Where appropriate for each firing range different characteristics can be given in the entity parameterization.

7.2 Three component mixed firing

Three component mixed firing uses three fuels with different limit values in any proportion. According to the regulation the mixing proportion can be summarized in a few mixing ranges. DAA-Controller gives the possibility to divide into maximum 9 ranges which are called FB1 to FB9.

For a three component mixed fuel firing a mixing triangle can be drawn in which the firing ranges can be registered. The related limit values can be imagined as pillars above these ranges. Their height would show the allowable concentration of pollutants. The firing range distribution of DAA-Controller can be seen in the following mixing triangle:

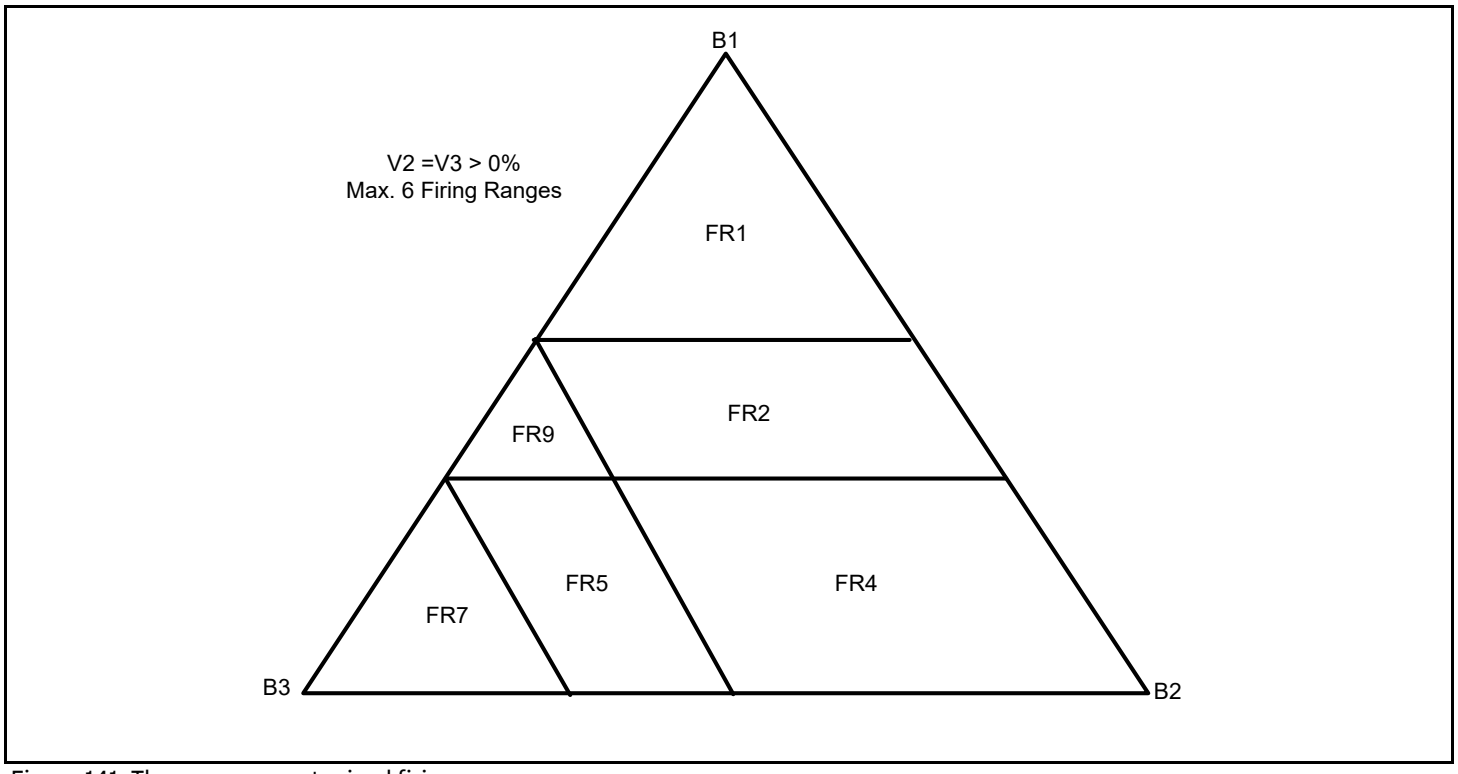


Figure 141: Three component mixed firing

Each connected line B1B2, B2B3 und B1B3 stands for a two component mixed firing with the fuels 1+2, 2+3 und 1+3 who´s mixing ranges are determined by the proportions V1, V2 and V3.
The mixing ratio in a three component mixed firing is clearly stated by a dot within the mixing triangle. Thereby with given values for V1, V2 and V3 a firing range FB1 to FB9 is assigned clearly for each mixing ratio.

Just like a two component mixed firing (see above) an entity “Firing range calculation“ with the formula function “Firing range3(B1; B2; B3; V1; V2; V3)“ has to be parameterized. For that the following reference entities Bi and the respective proportions of the total amount of fuel Vi needs to be given:

B1 = Entity fire power fuel 1, proportion V1
B2 = Entity fire power fuel 2, proportion V2
B3 = Entity fire power fuel 3, proportion V3

With the current values of the respective fire power the current fuel mixing ration is calculated and compared with the ranges determined by V1, V2 and V3 and thus the current firing range 1 to 9 is determined.
For parameterization of the entity “firing range calculation” the values V1, V2 and V3 will be given in percent as arguments in the function “firing range3”:

Firing range3 (B1; B2; B3; V1[; V2; …]) whereas: $0\ \% \leq V3 \leq V2 \leq V1 \leq 100\ \%$

According to regulations V1 usually is set to 50 %. This means the firing range 1 includes all mixed proportions where the portion of fuel 1 is larger (≥ 50 %). As standard during outage or failure of the calculation of the fuel mixing ratio the firing range 1 will be given as the current firing range. By the number of arguments V1, V2 and V3 the amount of possible firing ranges can be limited, e.g.:

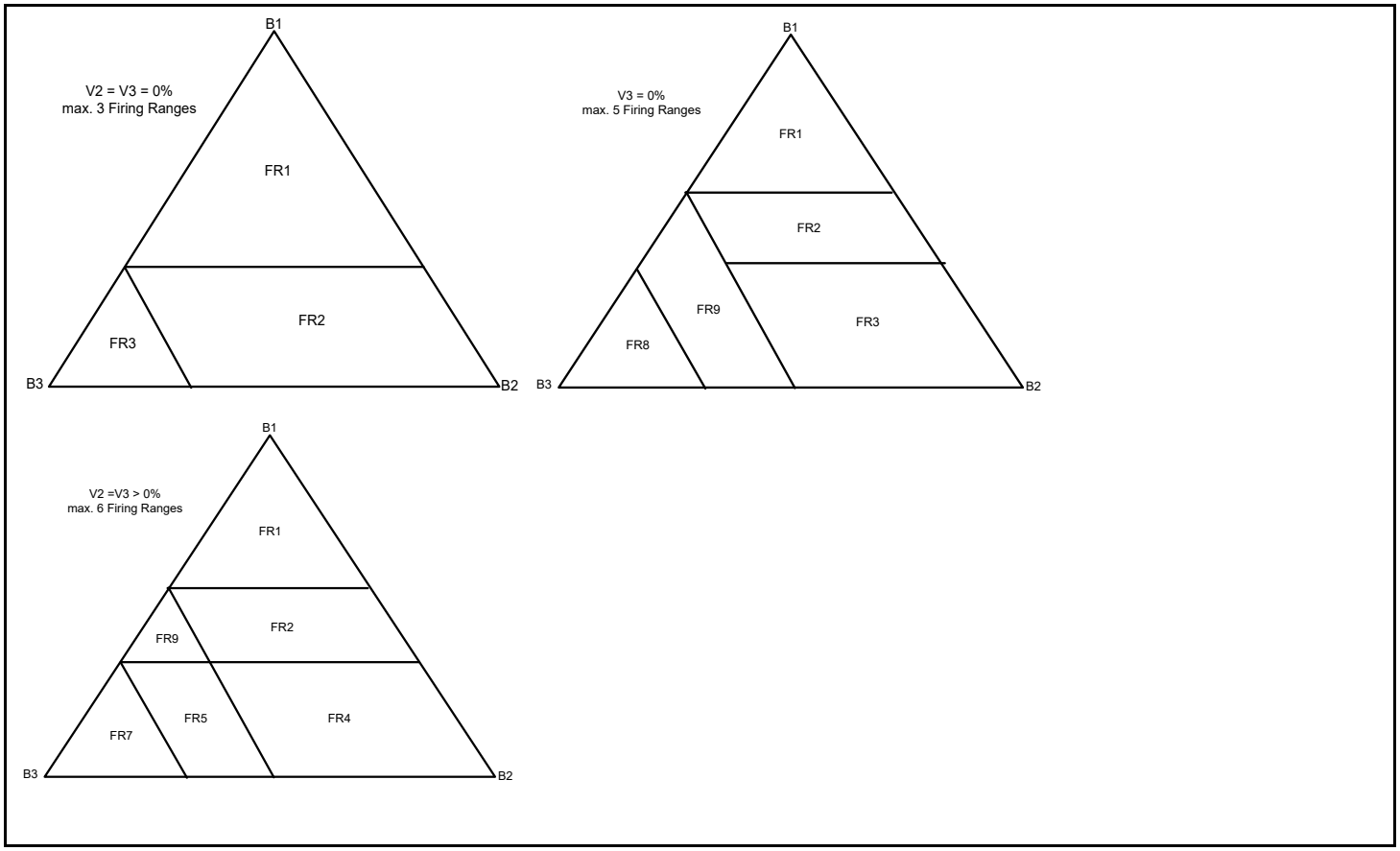


Figure 142: Three component mixed firing (3,5,6 firing ranges)

During further parameterization of DAA-Controller it should be noted that for each pollutant/firing range combination a separate entity with limit value, characteristic and reference value must be parameterized.

In the parameter “Firing range” the number of the related firing range (FB1 to FB9) needs to be given and in the parameter “firing range entity” the respective entity must be selected!

During operation DAA-Controller then calculates the current firing range from the fuel mix ratio and evaluates only those entities who´s parameterized “Firing range” is in accordance with the current one. After averaging time the class storage “out of order” for all entities who´s parameterized “Firing range” does not match the calculated firing range, will be increased by one.
The related limit values and reference values for each entity, that means pollutant/firing range combination, has to be determined by the agency. If appropriate for each firing range different characteristics can be given in the entity parameterization.

The essential parameters of the entity “firing range calculation“ are given below. The example shows a three component mixed firing (coal, oil, gas) with 6 firing ranges. It also shows how the firing power of coal can be calculated from the total firing power.

7.3 Two component mixed firing with sliding limit value

Initial value for calculating the sliding limit value $G_{gleitend}$ are:

$B_{2,portion}$= portion of fuel 2 of the total firing power
G1= limit value for fuel 1
G2= limit value for fuel 2

The following figure shows different possibilities to calculate the sliding limit value:

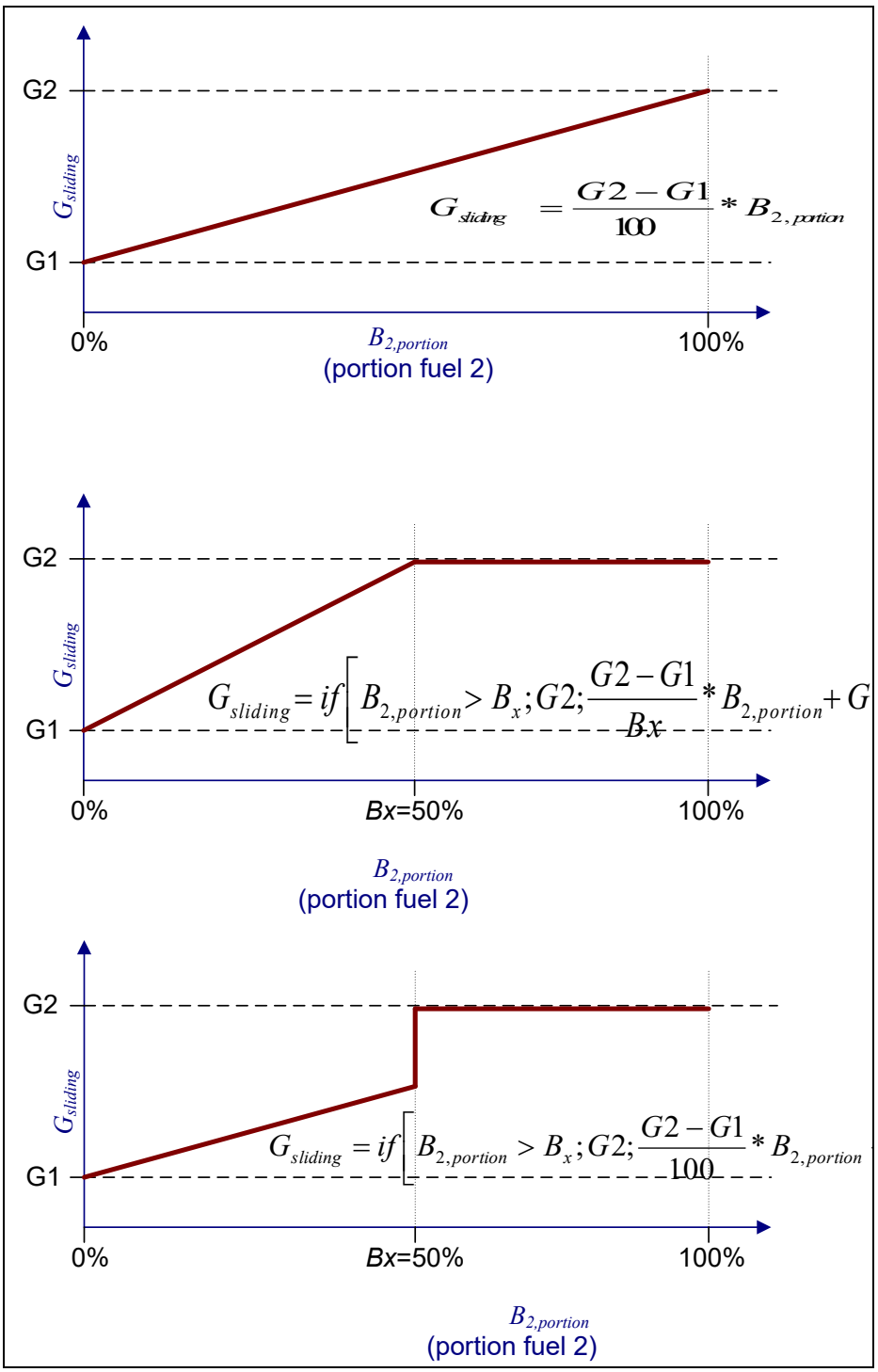


Figure 143: Various solutions for sliding limit values for a two component mixed firing

8 Annex 3: Bit status of the measured values and minute values

Bit status: Wert an Position							
∑[9]	**1**	**∑**	**2**	**∑**	**3**	**∑**	**4**
1	Test mode	1	-Operation	1	Failure	1	Invalid
2	-Monitoring	2	GPU break	2	Maintenance	2	Current
4	Up/Down	4	Up/Down-Op	4	-Evaluate	4	-Plausibility
8	-Measurement	8	Simulation/Default value[10]	8	Inspector/ -Range[11]	8	Extra
1.	**Example:**		`8.21`				
8	-Measurement	.	-	2	Maintenance	1	Invalid
2.	**Example:**		`8..9`				
8	-Measurement	.		.		1	Invalid
						8	Extra
8	-Measurement	.	-	.	-	9	Invalid & Extra
3.	**Example:**		`5B63`				
1	Test mode	4	Up/Down-Op	2	Maintenance	1	Invalid
4	Up/Down	8	Default value	4	-Evaluate	2	Current
5	Up/Down & Test mode	B	Up/Down-Op & Default	6	Maintenance & -Evaluate	3	Invalid & Current

[9] The numbers in this column are to summarized hexadecimal numbers

[10] For minute value: default value
For measured value: simulation

[11] For minute value: out of firing range
For measured value: inspection mode

9 Annex 4: Installation according to MCERTS

9.1 Logging on CEM-DAS

After installation the presentations and processing are carried out in accordance with MCERTS, described hereafter.

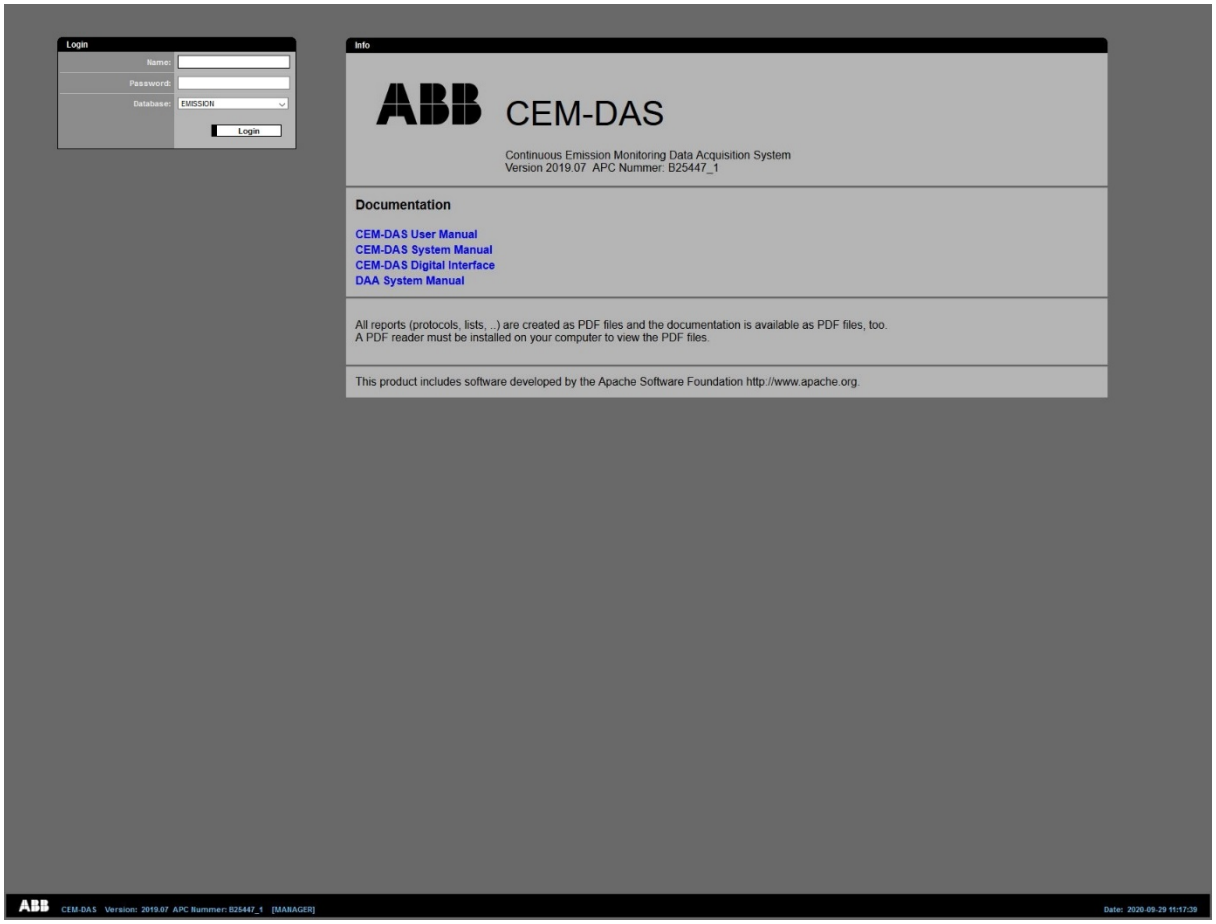


Figure 144: Logging on CEM-DAS (MCERTS)

Figure 144 shows the login page of CEM-DAS of an MCERTS installation. This corresponds in principle to the login page shown in Figure 5. To distinguish the different installations, the MCERTS logo appears in the upper right corner instead of the TÜV logo.

9.2 Configuration

9.2.1 Edit entities, tab processing

The tab “classification” (see 4.4.3.9.3) is replaced by the tab “processing”.

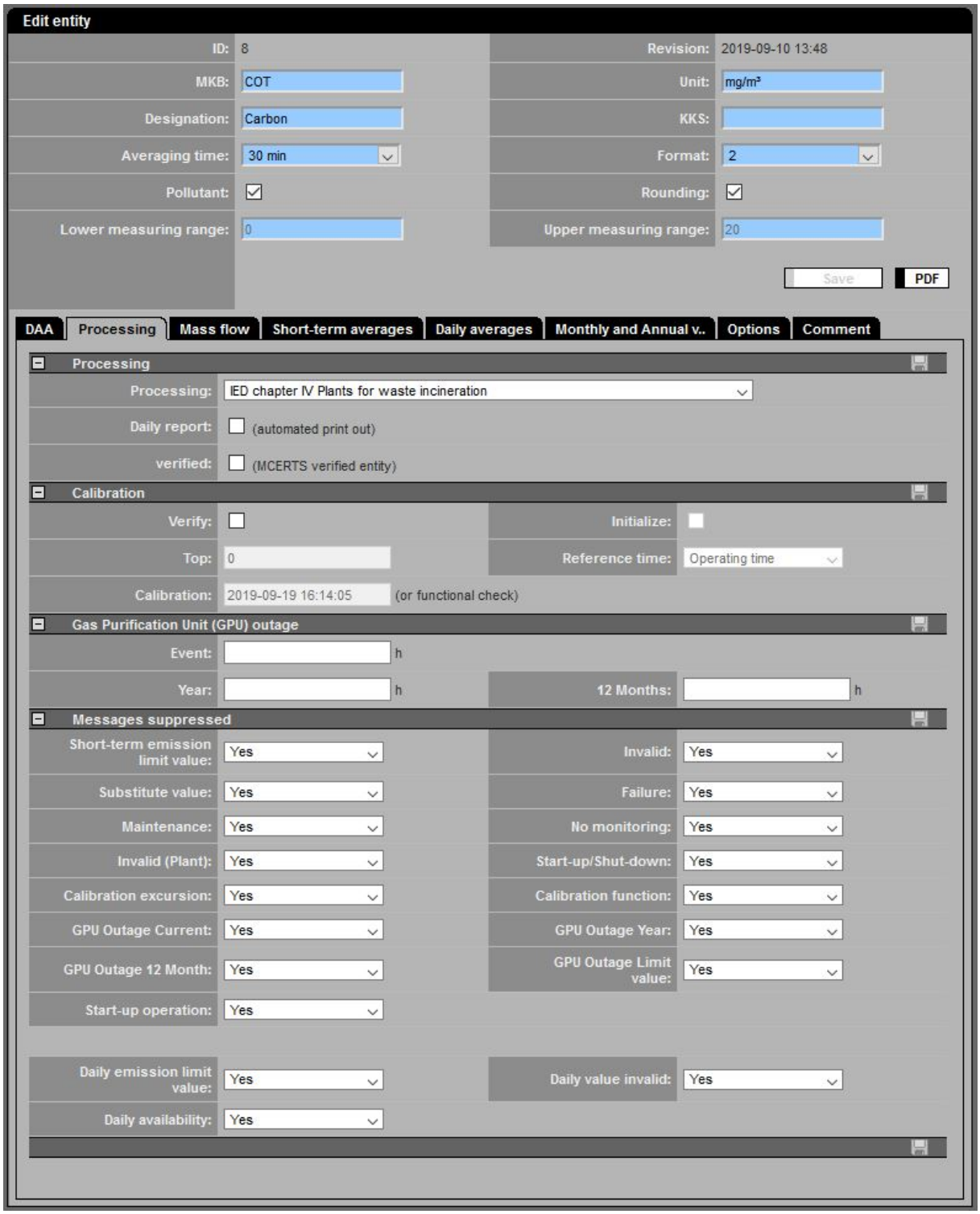


Figure 145: Edit entities, tab processing

Lettering	Explanation
Processing	
Processing	
Processing	Selection of processing: No processing IED General plant IED chapter III combustion plants IED chapter III combustion plants – DSR IED chapter IV Plants for waste incineration IED chapter IV Plants for waste incineration – Minimum temperature IED chapter V Plants with solvents
Daily report (automated print out)	Shows if the entity is in the automatic daily report
verified	see 9.2.5
Calibration	
Verify	Specification if the calibration shall be monitored (see /13/)
Initialize	This will cause that with the release of the revision the calibration excursion and the calibration function will be reset.
Top	Upper limit of the calibration range. This is specified during calibration and has to be taken from the calibration report without changes.
Reference time	Reference time as basis to determine the calibration range violations per week: Time of operation (standard) 168 h rule Calendar week
Calibration (or functional check)	Date of the current calibration. After initializing it will be set on the date of release of the present revision
Gas Pur.Unit outage	
Event [h]	Allowed hours of a continuous period (=event) in which the plant may still operate although the gas purification unit (GPU) fails.
Year [h]	Total hours during a calendar year in which a gas purification unit (GPU) may fail according to /13/ without having to stop operation
12 months [h]	Total hours during a (1) year in which an gas purification unit may fail according to /13/ without having to stop operation
Messages	
Short-term emission limit value	All: message limit value No: no message
Invalid	All: message invalid No: no message
Substitute value	All: message normalization with substitute value No: no message
Failure	All: message failure No: no message
Maintenance	All: message maintenance No: no message
No monitoring	Yes: message no monitoring No: no message
Invalid (Plant)	Yes: message invalid No: no message
Start-up/shut-down	Yes: message startup / shutdown No: no message
Calibration excursion	Yes: message calibration excursion and daily message and initialization message Daily and reset notification: daily message and initialization message No: no message

Lettering	Explanation
Calibration function	Yes: daily and weekly message calibration function and initialization message
	Reset and weekly messages: weekly message calibration function and initialization message
	No: no message
GPU Outage Current	Yes: message GPU shutdown and end GPU shutdown
	Exceeding limit: message GPU shutdown after period of event and end GPU shutdown
	Only end notifications: message end GPU shutdown
	No: no message
GPU Outage Year	Yes: daily message GPU shutdown > 0
	No: no message
GPU Outage 12 Month	Yes: daily message GPU shutdown > 0
	No: no message
GPU Outage Limit value	Yes: message during GPU shutdown with limit violation (special limit value SPELVt)
	No: no message
Daily emission limit value	Yes: message daily limit violation
	No: no message
Daily value invalid	Yes: message daily value invalid
	Only during operation: message daily value invalid during plant in operation
	No: no message
Daily availability	Yes: message daily availability
	No: no message

9.2.2 Edit entities, tab mass flow

The tab “mass flow” (described in 4.4.3.9.4) is reduced to mass flow (Figure 146). The section “Ingredient” is excluded. The explanation remains.

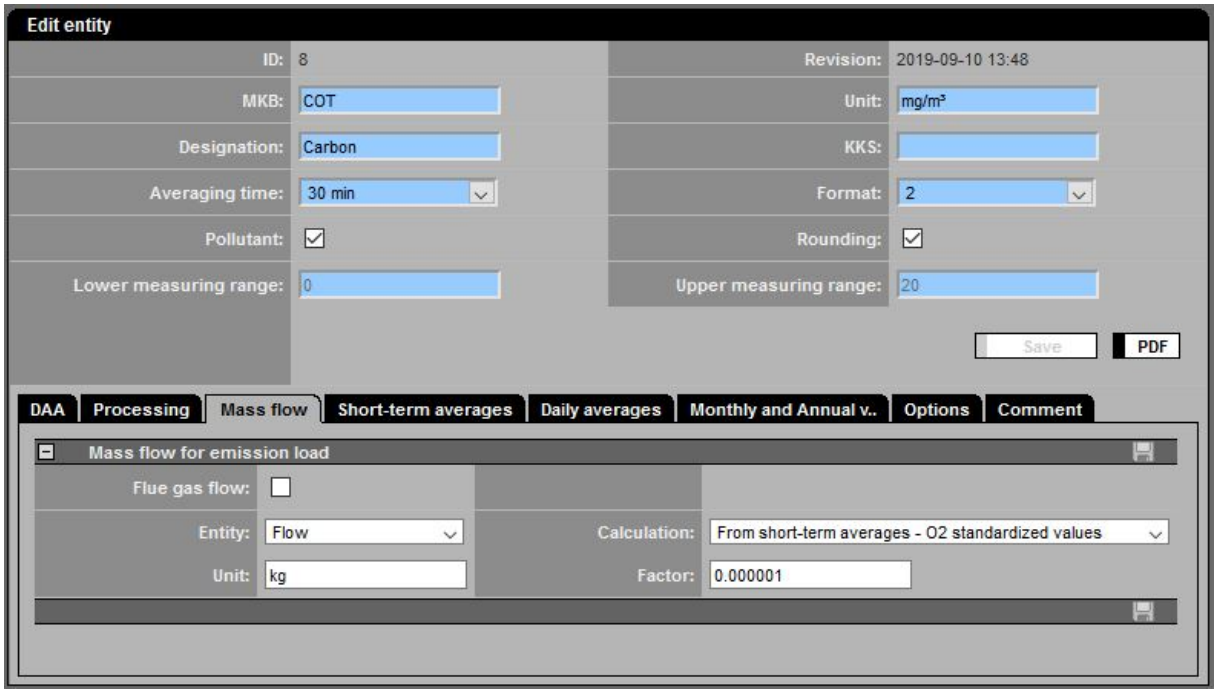


Figure 146: Edit entities, tab mass flow

9.2.3 Edit entities, tab short-term averages

The tab “Short-term averages” (see 4.4.3.9.5) is modified as follows.

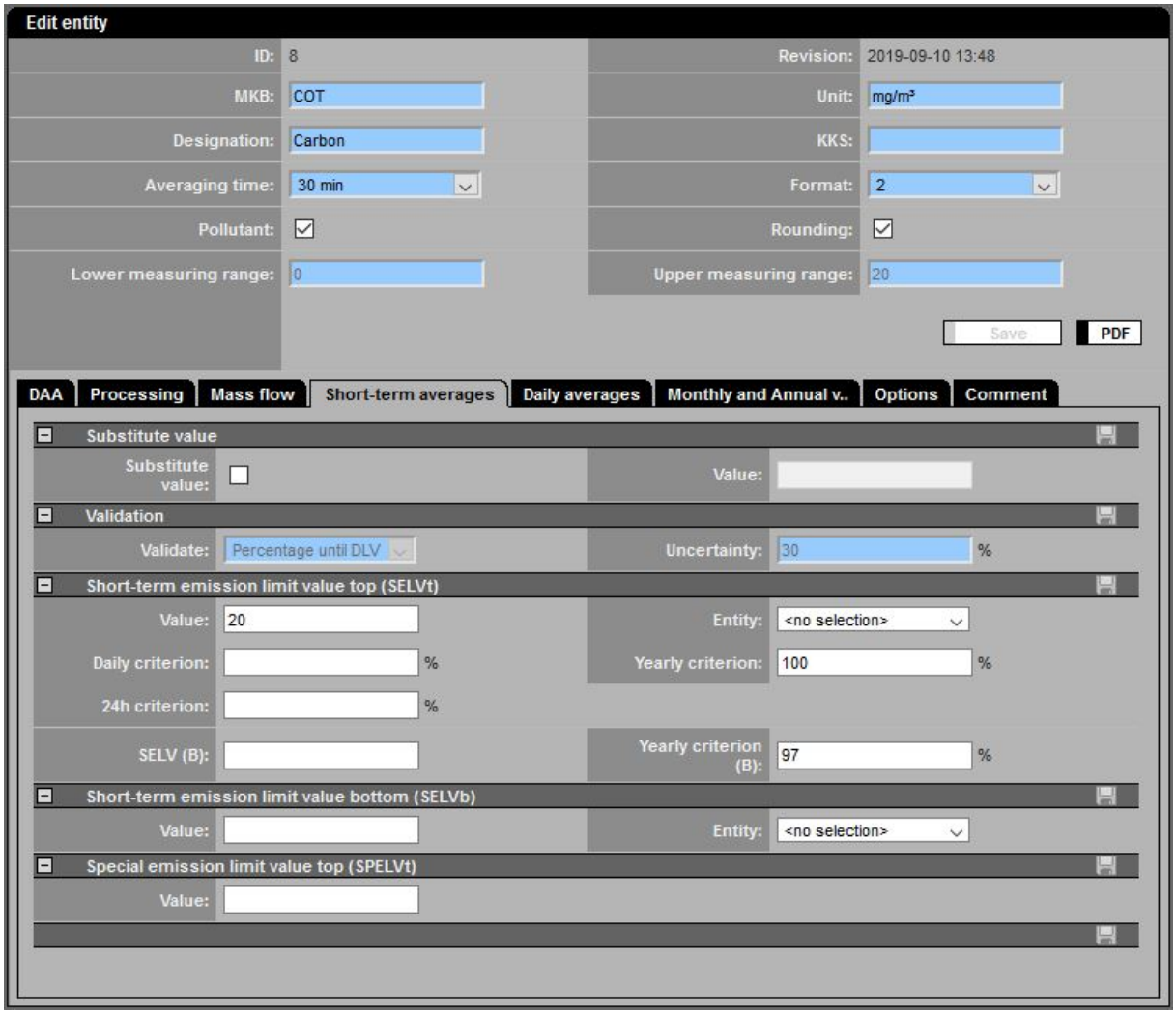
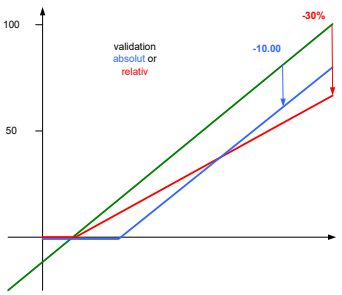


Figure 147: Edit entities, tab short-term averages

Lettering	Explanation
Substitute value	
Substitute value	The present entities has a default value
Value	Default value which is used instead of an invalid value of the present entity. This is only for calculation entities or as reference for calculating a formula
Validation	
Validate 	Select the kind of validation: Constant: from the normalized value the following constant called “uncertainty“ is subtracted. If the result is negative it is set to 0. With %-value: from the normalized value the following percentage called “uncertainty“ is subtracted. If the result is negative it is set to 0.
Uncertainty	Absolut value (constant) or the percentage of the normalized value

Lettering	Explanation
Short-term emission limit value top (SELVt)	
Value	Upper limit, if no entity is selected or this entity is invalid
Entity	Here the entity is selected for a dynamic upper limit
Daily criterion	The daily criterion fixes how many values per day must comply with the short-term emission limit value and may be used for CO. (default: 95%, 0 or empty: no verification)
Yearly criterion	The yearly criterion fixes how many values per year must comply with the short-term emission limit value and may be used for one-hour averages. (default: 95%, 0 or empty: no verification)
24h criterion	The 24h criterion fixes how many values must comply with the short-term emission limit value in the last 24h operation period, checked only in operation (see /13/, Annex VI, Part 8: 1.1(d)(i)). (default: 95%, 0 or empty: no verification)
SELV(B)	Short-term emission limit value (B) for waste incineration plants. The limit value (B) will be marked in grey color in the bar charts.
Yearly criteria (B)	The yearly criterion (B) fixes how many values per year must comply with the limit value (SELV(B)). (default: 95%, 0 or empty: no verification)
Short-term emission limit value bottom (SELVb)	
Value	Lower limit, if no entity is selected or this entity is invalid
Entity	Here the entity is selected for a dynamic lower limit
Special emission limit value top (SPELVt)	
Value	Special emission limit value, e.g. for dust during GPU - outage

9.2.4 Edit entities, tab daily averages

The tab “Daily averages” (see 4.4.3.9.6) is modified with IED license as follows.

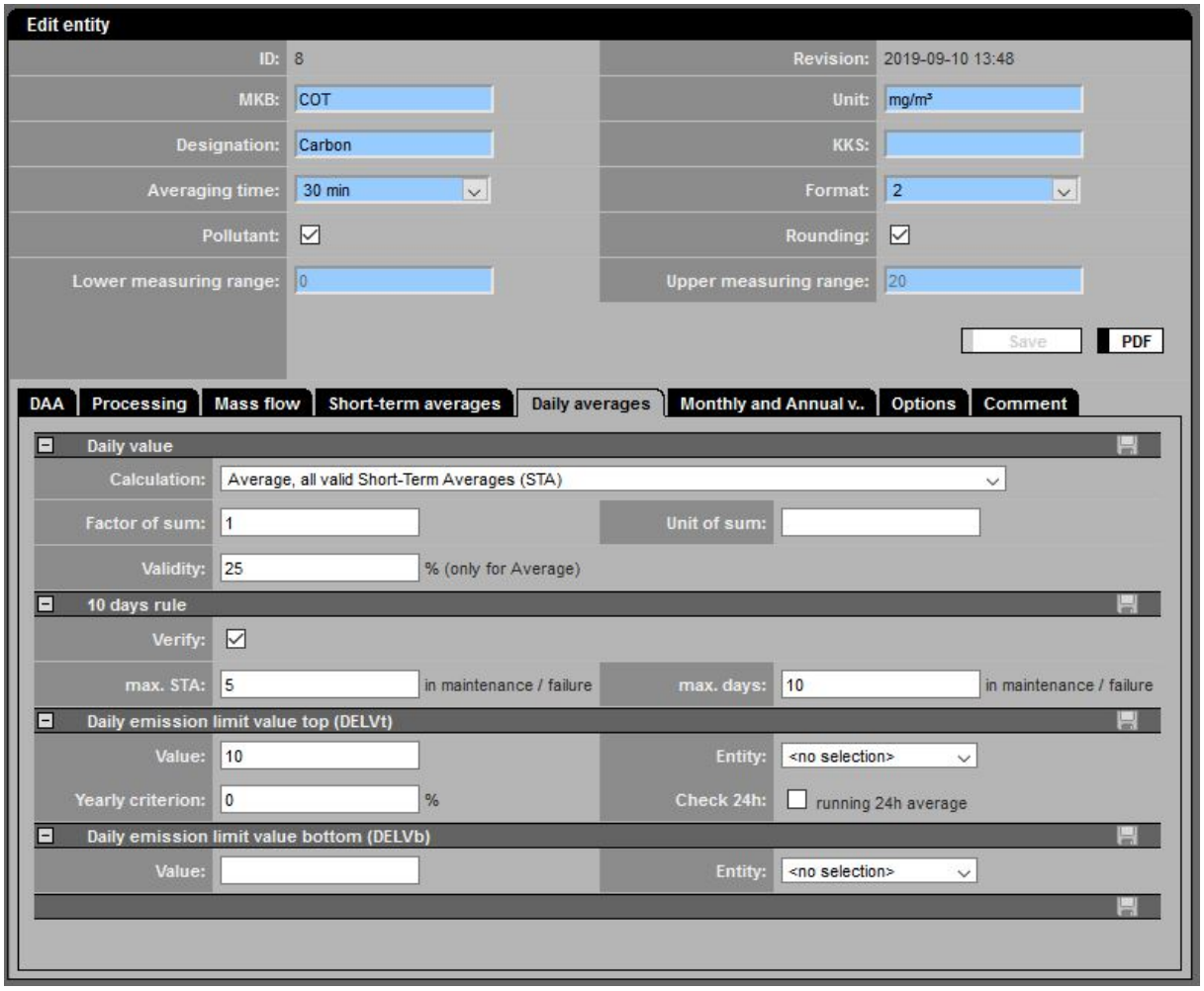


Figure 148: Edit entities, tab daily averages

Lettering	Explanation
Calculation	Selection of calculation rule for the daily values (daily average DAV, day sum DS): No calculation of daily average value: DAV = n.v. and DS = n.v. Average. all valid Short-Term Averages (STA): $DAV = \frac{1}{N} \cdot \sum_{i=1}^{N} STA_{i,v}\ ,\ \ 1 \leq N \leq 48$ Sum/Average, all valid Short-Term Averages (STA): $$DS = \sum_{I=1}^{N} STA_{i,v} \cdot \frac{averaging\ time\ [min]}{60} \cdot f_{sum}\ ,\ \ 1 \leq N \leq 48$$ DAV how with DS, all valid short-term averages. Last valid STA is the DAV: $DAV = STA_{N,v}\ ,\ 1 \leq N \leq 48$ Max valid STA is the DAV: $DAV = Max\ (STA_{1,v}, \ldots, STA_{N,v})\ ,\ \ 1 \leq N \leq 48$ Ionic strength: (e.g. for the average pH value of the day as daily average) $DAV = -log_{10}\ (\frac{1}{N} \cdot \sum_{i=1}^{N} 10^{-STA_{i,v}})\ ,\ \ 1 \leq N \leq 48$ Ionic mass flow: (e.g.. the average pH value of a day weighted with the volumetric flow as daily average value)

Lettering	Explanation
	$$DAV = -log_{10}\left(\frac{1}{\sum_{i=1}^{N} Vol_i}\sum_{i=1}^{N} 10^{-STA_{i,v}\cdot Vol_{i,v}}\right), 1 \le N \le 48$$ Use a formular to calculate the daily value (no STA): Visible only for CEM-DAS entities (formula see 4.4.3.9.11.5). For entities for which only daily values are defined (e.g. rolling daily average [RollDAV]) the calculation is according to the formula. Short-term averages are displayed in the list as empty fields. Use a formular to calculate the daily value (no STA) – Last daily value: Visible only for CEM-DAS calculated entities (formula see 4.4.3.9.11.5). For entities for which only daily values are defined (e.g. weighted annual average [WeightedAav]) the calculation is according to the formula. Short-term averages are displayed as empty fields.
Factor of sum	Standard 1.00, Is used to adapt the daily sum
Unit of sum	Deviating unit of the day sum
Validity %	For daily average values which are calculated from short-term averages: percentage of the necessary valid short-term averages from the total of all possible short-term averages
10 days rule	
Verify	Is marked if the validation of the 10 day rule for this entity is activated
max. STA in maintenance/failure	Maximum of the allowed amount of short-term averages of a day in the state “maintenance“ or “failure“. If the maximum is exceeded the message “10 day rule violation on 1 day” will be displayed. Corresponding messages will be sent for further violations.
max. days in maintenance/failure	Maximum amount N of days in which the N daily rule (10 day rule) may be violated
Daily emission limit value top (DELVt)	
Value	Upper daily emission limit value, if no entity is selected or this entity is invalid
Entity	Entity with the upper daily emission limit value
Yearly criterion	The yearly criterion fixes how many daily values per year must comply with the daily emission limit value and may be used for CO in waste incineration plants.
Check 24h running 24h average	The average of all valid short-term averages taken during any 24h period of operation must comply with upper daily emission limit. (see /13/, Annex VII, Part 8: 1(a) solvent)
Daily emission limit value bottom (DELVb)	
Value	Lower daily emission limit value, if no entity is selected or this entity is invalid
Entity	Entity with the lower daily limit value

9.2.5 MCERTS

MCERTS approved entities can be tagged with “MCERTS verified”.

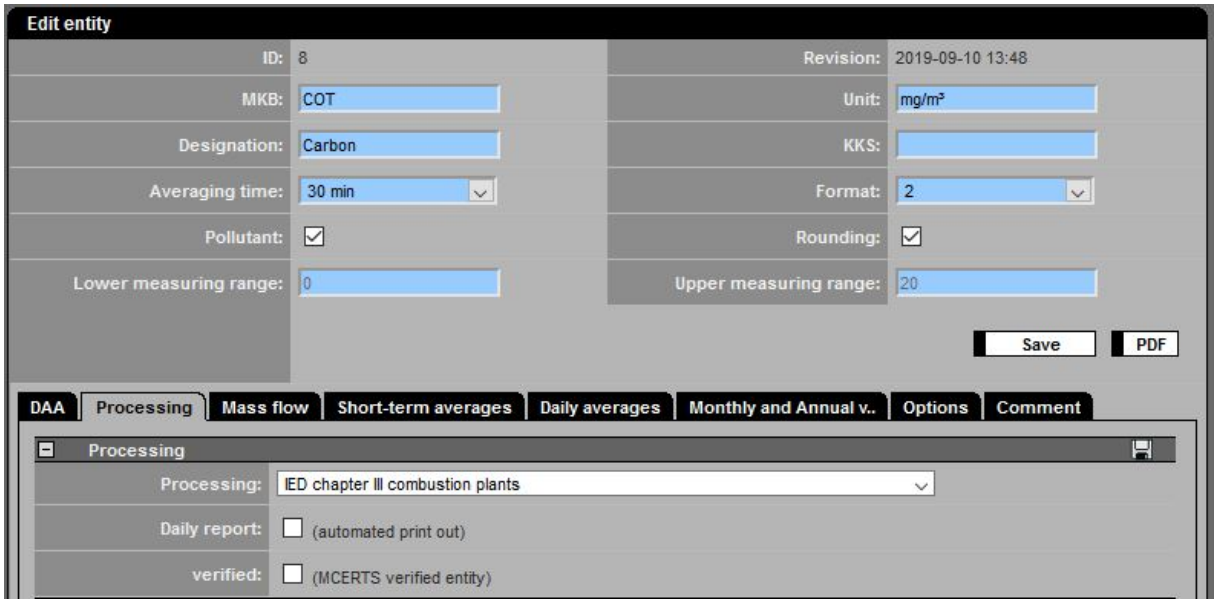


Figure 149: Edit entities, MCERTS verified

Activating the option:

- Verified, MCERTS verified entity

The logo of MCERTS is displayed on the report of the entity in the right upper corner.
The MCERT logo is displayed in the list of values if all entities of the list are verified according to MCERTS.

Notes

Notes

ABB Measurement & Analytics

For your local ABB contact, visit:
www.abb.com/contacts

For more product information, visit:
www.abb.com/analytical

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