13. Category General

13.1. Small Business Offer

13.1.1. Purpose (What can it be used for? What can it not be used for?)

The program is part of category 8 – general. How can we divide up between good and bad projects? Maybe projects or sites can be in lovely or unlovely places. Maybe projects or processes can be interesting or uninteresting. Maybe tasks can be easy or hard. Maybe work can even be fun or not. Maybe whatever, but anyhow if a project, which is beside other things done for commercial or even profitable purposes and at the end the project is not profitable at all, it can be evaluated as a bad project. One thing that is mandatory for each project is a proper calculation of the offer. Therefore it is important that all positions are considered and well sophisticated. All positions have to be evaluated in detail and especially down-to-earth.

The program provides the minimum required calculations and validations for a proper small business offer. This does not mean that all relevant points are included if the table is filled completely, but it means in reverse that for sure not all points are included if the table is not filled completely.

In general there are minimum five different positions to be taken into consideration regarding a proper project calculation. These are basic costs, traveling expenses, costs for material and machines, man-hours and extra expenses. In the following the different positions are described. The terms are also explained using examples.

Position 1:
basic costs

The first position considers the basic costs, which exist for every type of project. In case if there are no extra basic costs to be considered, there will be the basic costs which are required for providing the scope of work at all. Generally this is considered as an approximate percentage by the final estimated profit.

Position 2:
traveling expenses

The second position considers the travelling expenses. Be aware that travelling expenses can also occur for a project on that is mainly worked in the office. It is not too rare that recurrent external meetings take place at the office of the customer or on site with the customer for example.

Position 3:
material / machines

The third position considers the costs for material and machines. The prices for the material should be determined exactly and in detail. Be aware that also small parts and compounds can cause high costs in sum. An incorrect estimation due to an improper material selection at the beginning can finally cause a multiple of the planned costs. In case if bigger machines have to be provided, be aware that they need maintenance services regularly. The corresponding costs have to be considered.

Position 4:
man-hours

The position number four is the man-hours. Depending on the branch and the project this can be the position with the highest effort. Especially these costs have to be evaluated in detail and down-to-earth. In the first the required man-hours should be estimated by personnel, which is familiar with the works! There is a huge risk of an underestimation of the works, if the planning is done by personnel, which has not done this job in practice on its own, before. By the way, also an overestimation of the works is possible due to this, even if this occurs rarely. Beside this the several and special circumstances on site should be taken into consideration as exactly and as far as possible. Many circumstances can lead to an extended working time.

The terms are explained using examples:
On some sites there are registration procedures taking place daily. On some sites there are checks for entering and leaving the site. On some sites there are procedures for the announcement of works. On some sites there are areas, which are restricted time by time, so that a continuous working is not possible.

Position 5:
extra expenses

The last position considers the extra expenses, which exist for every type of project. In case if there are no special costs to be considered, there will be the extra costs which are required for providing the scope of work at all. Generally this is considered as an approximate percentage by the final estimated profit.

For each position there is a *CheckBox* provided. By this the single position can be activated or deactivated. Only activated positions are included in the calculations. Each position consists of one or more rows. A row has the following elements: amount, designation and information, price, currency per unit and finally the costs. Into the fields for designation and information the user can enter a short description of the corresponding item. The amount is multiplied by the price and results the costs for each row. It is obvious that the entries should be in coherence with the selected units. There is a sum-up of the single rows for each position and also a final sum-up of all positions that are activated. At the end the taxes as percentage of the total sum-up are added on top in order to display the total sum that is relevant for the offer.

Of course it is also possible to divide up one project by special field or department into several different calculations (e.g. basic engineering, design calculations, mechanics, electrics, software programming or project management). The values for different calculations can be stored and restored easily. For small business offers according to short term operations this is usually not required. In general the program was designed to get a quick overview about the costs for this kind of jobs, but it can be also used for bigger projects and the corresponding cross checks regarding costs and expenses.

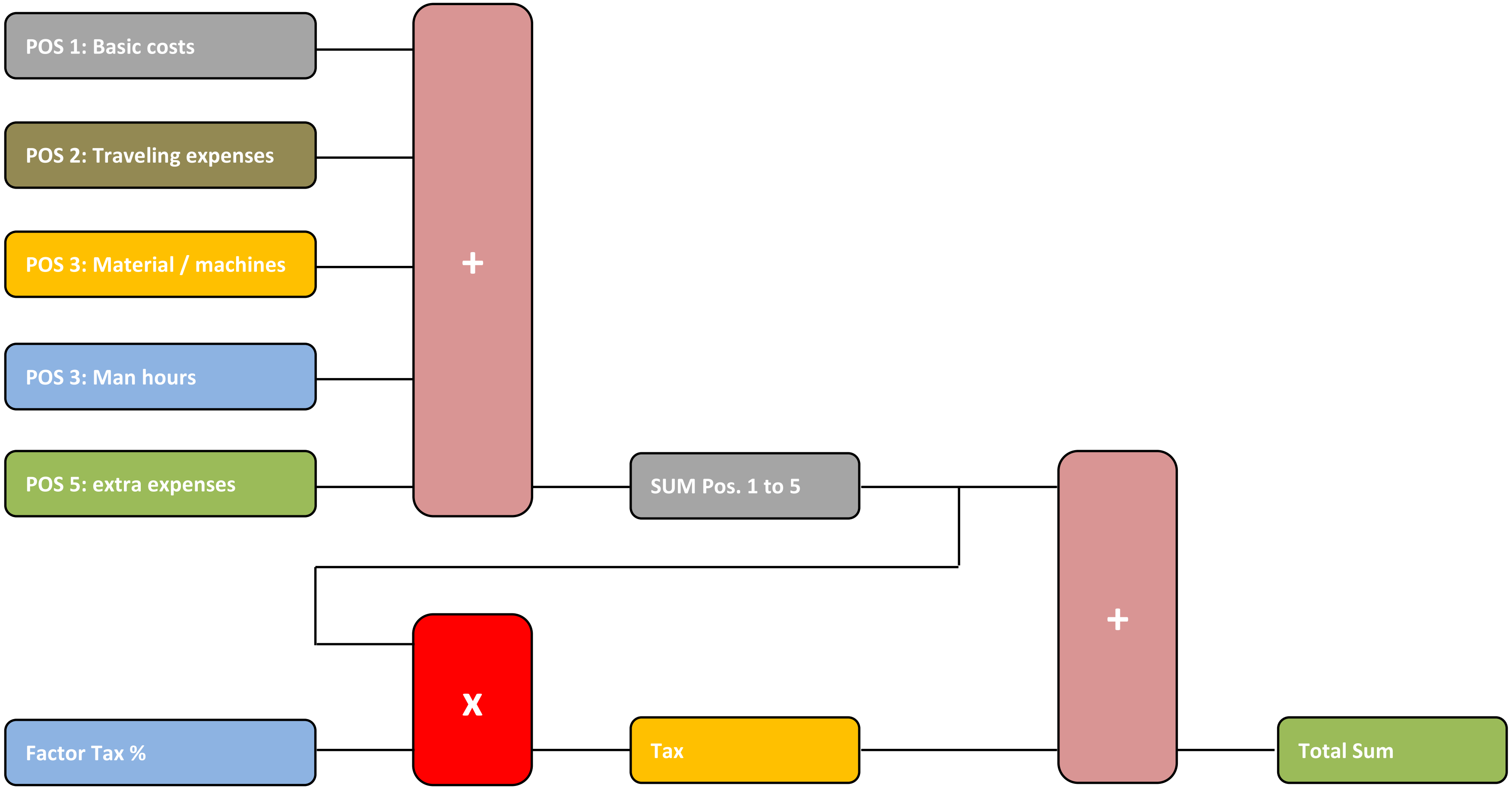


Figure 206: sketch small business offer

13.1.2. Variables (What are the input and output values? What are their limits?)

spec. Amount

It is the specified amount for the corresponding item. The item can be designated as a textual description. The amount is multiplied by the price, so that the costs are calculated for each item.

The variable type is Input.
The variable has no unit [-].
The minimum limit is 0.
The maximum limit is 999999.
The replacement value is 100.
The number of digits is 5.

Costs

The costs are calculated for each item by multiplying the amount and the price. The unit is a currency. For the currency there is a selection of different currencies by land provided. A currency conversion is not provided!

The variable type is Input.
The unit is the currency depending on the selected land [XXX].
The minimum limit is 0.1.
The maximum limit is 99999.
The replacement value is 200.
The number of digits is 15.

Price

It is the price for the single unit of the corresponding item. The unit is a currency. For the currency there is a selection of different currencies by land provided. A currency conversion is not provided!

The variable type is Input.
The unit is the currency depending on the selected land [XXX].
The minimum limit is 0.
The maximum limit is 9999999999.
The replacement value is 100.
The number of digits is 10.

Sum Pos. (1 to 5)

It is the sum of the costs for the corresponding position (Pos. 1 to 5). The sum for a position can only be considered, if it is activated by the *CheckBox* left side from the position. For the currency there is a selection of different currencies by land provided. A currency conversion is not provided!

The variable type is Output.
The unit is the currency depending on the selected land [XXX].
There is no defined minimum limit for output variables.
There is no defined maximum limit for output variables.
There is no defined replacement value for output variables.
There is no defined number of digits for output variables.

Sum-Up

It is the sum-up of the costs for all the activated positions excluding the taxes. The sum for a position can only be considered, if it is activated by the *CheckBox* left side from the position. For the currency there is a selection of different currencies by land provided. A currency conversion is not provided!

The variable type is Output.
The unit is the currency depending on the selected land [XXX].
There is no defined minimum limit for output variables.
There is no defined maximum limit for output variables.
There is no defined replacement value for output variables.
There is no defined number of digits for output variables.

Tax

It is the costs for the taxes. The sum-up of all position costs is multiplied by the factor for the taxes and divided by hundred. The costs for the taxes have to be added to the sum-up of all position costs to get the total costs. For the currency there is a selection of different currencies by land provided. A currency conversion is not provided!

The variable type is Output.
The unit is the currency depending on the selected land.
There is no defined minimum limit for output variables.
There is no defined maximum limit for output variables.
There is no defined replacement value for output variables.
There is no defined number of digits for output variables.

factor Tax

It is the factor that has to be considered for the taxes. The sum-up of all position costs is multiplied by the factor for the taxes and divided by hundred. The costs for the taxes have to be added to the sum-up of all position costs to get the total costs.

The variable type is Input.
The unit is percent [%].
The minimum limit is 0.1.
The maximum limit is 99.9.
The replacement value is 19.
The number of digits is 10.

Total Sum

It is the final sum-up of the costs for all the activated positions including the taxes. The sum for a position can only be considered, if it is activated by the *CheckBox* left side from the position. For the currency there is a selection of different currencies by land provided. A currency conversion is not provided!

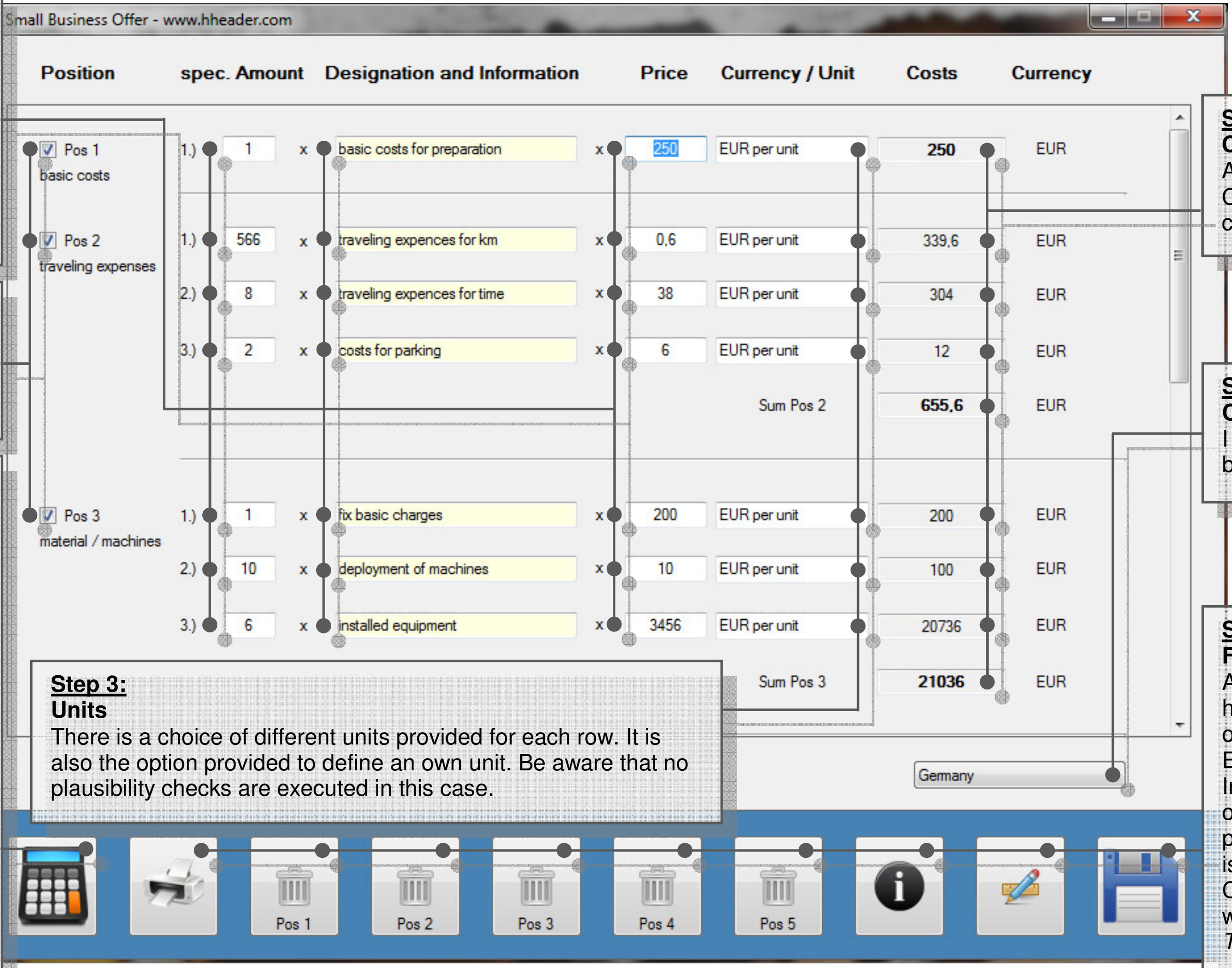
The variable type is Output.
The unit is the currency depending on the selected land [XXX].
There is no defined minimum limit for output variables.
There is no defined maximum limit for output variables.
There is no defined replacement value for output variables.
There is no defined number of digits for output variables.

13.1.3. Operation (How can it be used? How to proceed?)

Step 4:
Fill the Input-*TextBoxes*
I enter the values for the input variables. I should respect the variable limits and take care that the entered values are numeric.

Step 2:
Consider position
I can select if the corresponding position is considered or not.

Step 5:
Calculate result
After I entered the input values I can calculate the result. Before the calculation starts, all the input values are checked by an internal routine. Whenever entered values decrease the corresponding min limits or increase the corresponding max limits or are not numeric there will be a message according to the fault. The values will be corrected automatically by the internal routine.



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Position		spec. Amount		Designation and Information		Price	Currency / Unit	Costs	Currency
☑ Pos 1 basic costs	1.)	1	x	basic costs for preparation	x	250	EUR per unit	250	EUR
☑ Pos 2 traveling expenses	1.)	566	x	traveling expences for km	x	0,6	EUR per unit	339,6	EUR
	2.)	8	x	traveling expences for time	x	38	EUR per unit	304	EUR
	3.)	2	x	costs for parking	x	6	EUR per unit	12	EUR
							Sum Pos 2	655,6	EUR
☑ Pos 3 material / machines	1.)	1	x	fix basic charges	x	200	EUR per unit	200	EUR
	2.)	10	x	deployment of machines	x	10	EUR per unit	100	EUR
	3.)	6	x	installed equipment	x	3456	EUR per unit	20736	EUR
							Sum Pos 3	21036	EUR

Germany

Step 3:
Units
There is a choice of different units provided for each row. It is also the option provided to define an own unit. Be aware that no plausibility checks are executed in this case.

Step 6:
Check result
After clicking the Calculate-Button I can check the result.

Step 1:
Currency by land
I can select the currency by land (status 2015).

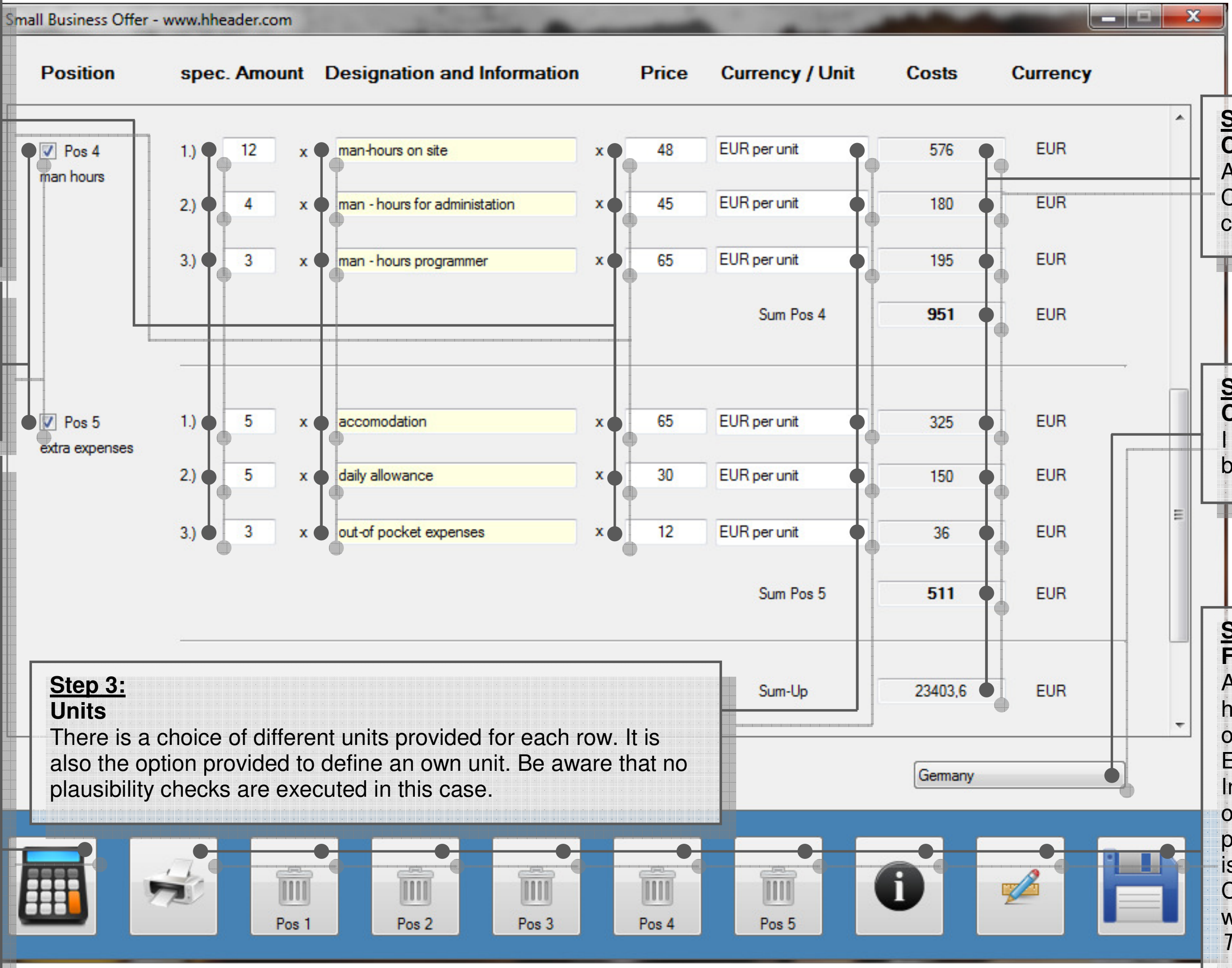
Step 7:
Further actions
After the calculation I can have the following options: Print Data, Erase Data, Program Information, Notes, Save or Restore Values. While printing a new calculation is done automatically. Clicking the Erase-Button will empty all the *TextBoxes* at once.

Figure 207: form small business offer – Pos1 to Pos3

Step 4:
Fill the Input-*TextBoxes*
I enter the values for the input variables. I should respect the variable limits and take care that the entered values are numeric.

Step 2:
Consider position
I can select if the corresponding position is considered or not.

Step 5:
Calculate result
After I entered the input values I can calculate the result. Before the calculation starts, all the input values are checked by an internal routine. Whenever entered values decrease the corresponding min limits or increase the corresponding max limits or are not numeric there will be a message according to the fault. The values will be corrected automatically by the internal routine.



Small Business Offer - www.hheader.com

Position		spec. Amount		Designation and Information		Price	Currency / Unit	Costs	Currency
☑ Pos 4 man hours	1.)	12	x	man-hours on site	x	48	EUR per unit	576	EUR
	2.)	4	x	man - hours for administation	x	45	EUR per unit	180	EUR
	3.)	3	x	man - hours programmer	x	65	EUR per unit	195	EUR
							Sum Pos 4	951	EUR
☑ Pos 5 extra expenses	1.)	5	x	accomodation	x	65	EUR per unit	325	EUR
	2.)	5	x	daily allowance	x	30	EUR per unit	150	EUR
	3.)	3	x	out-of pocket expenses	x	12	EUR per unit	36	EUR
							Sum Pos 5	511	EUR
							Sum-Up	23403,6	EUR

Germany

Step 3:
Units
There is a choice of different units provided for each row. It is also the option provided to define an own unit. Be aware that no plausibility checks are executed in this case.

Step 6:
Check result
After clicking the Calculate-Button I can check the result.

Step 1:
Currency by land
I can select the currency by land (status 2015).

Step 7:
Further actions
After the calculation I can have the following options: Print Data, Erase Data, Program Information, Notes, Save or Restore Values. While printing a new calculation is done automatically. Clicking the Erase-Button will empty all the *TextBoxes* at once.

Figure 208: form small business offer – Pos 4 and Pos 5

13.2. Commissioning Protocol

13.2.1. Purpose (What can it be used for? What can it not be used for?)

The program is part of category 8 – general. I/O-Checks and the functional checks for the installed equipment on site have to be carried out carefully and accurately. This includes also a complete and thoroughly done documentation of the mentioned checks. Plants with hundreds of different equipment compounds are not too rare. Often there is one protocol for each equipment compound requested according to the contract. To do this one by one manually means a big effort regarding work and time. The program provides the required functions to finish a proper documentation of the commissioning checks with a high grade of automation in order to minimize time and work. For building up a tool like this the following questions are be important.

Which information or documents are available anyway in the field of plant engineering?
For each project in the field of plant engineering there should be an equipment list for aggregates, valves and measurements. This can be the source for the required data. The idea is to select information from the equipment list for aggregates, valves and measurements and to transfer it into a defined table which is the data base for generating the commissioning protocols. Therefore it is mandatory to define a table with a fixed design regarding the columns of the table with the corresponding data content.

What types of equipment compounds could be installed?
In general there are aggregates, valves and measurements installed in almost every case. Very often there are also auxiliaries and miscellaneous equipment installed.

Which information is required for a complete commissioning protocol respectively the documentation of functional equipment checks?
The information is divided up into four parts: the site and project information, information about the equipment component, information about the company and the personnel that carried out the commissioning works and finally the criteria for the functional checks.

The first category should answer the following questions: What is the name of the project? Where is the site?

The second category should answer the following questions: What kind of component is in the focus (aggregate, valve, measurement, auxiliaries or miscellaneous equipment)? Where is it installed? What is the function or the purpose? What is the equipment number? What is the designation? Which subtype of component is it? What are the relevant technical data?

The third category should answer the following questions: What is the name of the company that is assigned to carry out the commissioning works? Who (person) carried out the commissioning checks? When did the checks take place? Usually the protocol is confirmed or acknowledged, which is indicated by a sign or a signature.

The last category should answer the following questions: What are the criteria for proper functional checks and checks for the installation setup?
For each type of equipment component (aggregate, valve, measurement, auxiliaries or miscellaneous equipment) different criteria for the functional checks are important. The program provides several items, which are predefined for each component. These items are editable and can be adapted to the actual use case and the special circumstances on site by the user. Afterwards the items can be saved and restored again. Saving and restoring the items has to be done separately for each equipment type by preselecting the corresponding *RadioButton*. So for each equipment type there are separate files. The predefined items cannot get lost, because they appear with every new loading of the form.

The first step while using this program is to verify if the predefined items for the functional checks are relevant for the installed equipment that is in focus for the commissioning. This has to be done for the different equipment components (aggregates, valves, measurements, auxiliaries and miscellaneous equipment). Be aware that the items are relevant for all the components that belong to the same equipment type. What can be done if there are special components beside the main components with special test criteria, that are not conform with the remaining components? This case can be handled by simply starting a new cycle with new criteria after printing the main components in the first cycle.

Anyhow after verifying the items for the functional checks for all equipment component types and before the commissioning protocols can be generated the source file has to be prepared. Hereby the following preconditions are mandatory. The source file has to be a Microsoft Excel-File. Microsoft Excel has to be installed on the computer where the *hheader* Calculation Tool is running. The source file has a fix design regarding the columns of the table. The mapping of the data related to the columns is as follows: Site / Project (A), Component (B), Location (C), Sign / Number (D), Designation (E), Manufacturer (F), Voltage (G), Current (H), Frequency (I), Power Rate (J), Pressure (K), Flow Rate (L), Company (M), Name (N), Date (O), Sign / Signature (P). The arrangement of the columns respectively the data is fixed and cannot be changed. Additional information in other columns will not be considered. There is usually an equipment list prepared for each project in the field of plant engineering. The required data can be copied from the equipment list and pasted into the source file. Afterwards the file has to be stored. Regarding the name of the source file there are no requirements to consider.

For generating the commissioning protocols the prepared and stored source file must be selected via the open file dialog. The program will determine the actual number of relevant datasets. The relevant data must be in rows continuous one below the other. The reading will be interrupted by the appearance of the first blank row or by reaching the defined limit for the datasets. This fact can also be used intended by the user in order to generate the protocols batch-wise for example. Further there are *CheckBoxes* provided for the equipment types in the lower part on the right side of the form. If a *CheckBox* is checked, the corresponding equipment type will be included in case if its row number is below the defined number of datasets. If a *CheckBox* is not checked, the corresponding equipment type will not be included.

By clicking the print button the commissioning protocols will be generated and printed for the included equipment components.

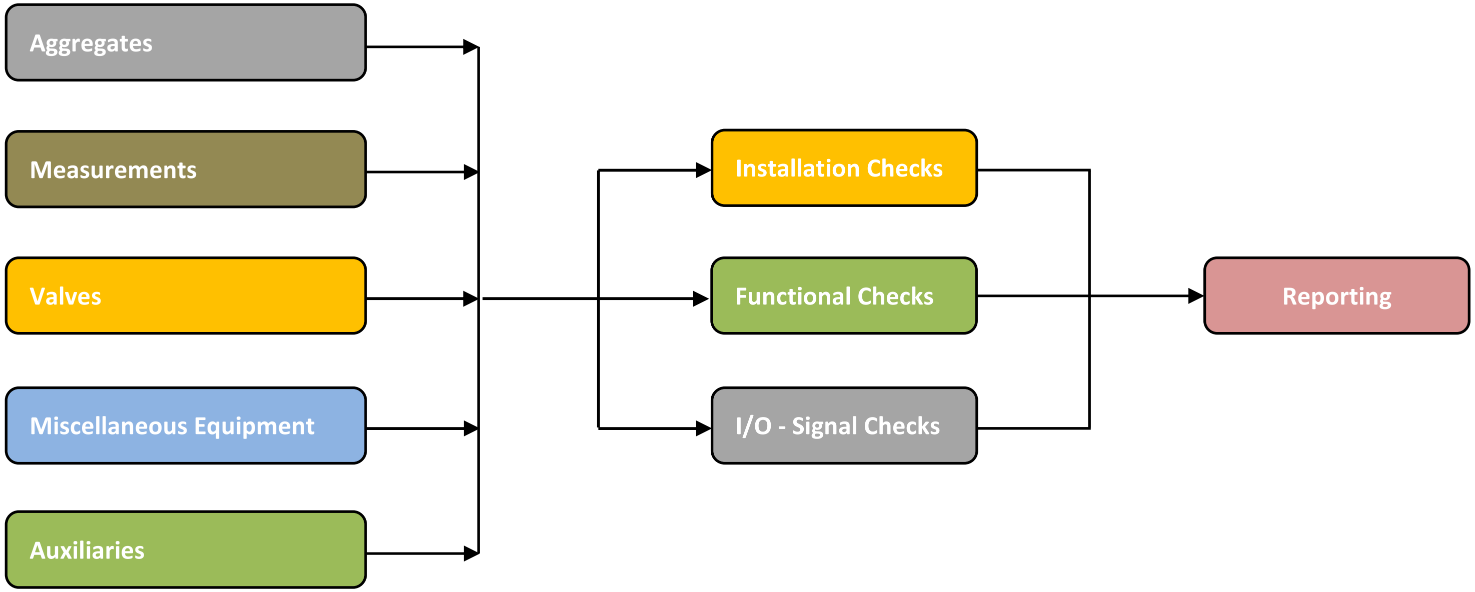


Figure 209: sketch commissioning protocol

Predefined test criteria for aggregates

The following test criteria are predefined for the functional commissioning checks of the aggregates.

1.) Installation Set-Up OK

2.) Coupling and alignment checked

3.) Electrical Wiring OK

4.) Local instruments installed

5.) Direction of rotation OK

6.) Operation and functional checks done

7.) Performance checked

8.) MCB tested

9.) Documentation available

10.) Label available

The predefined test criteria can be changed and stored in a file according to the actual belongs on site.

Prepared test criteria for valves

The following test criteria are predefined for the functional commissioning checks of the valves.

1.) Installation Set-Up OK

2.) Electrical Wiring OK

3.) Manual operation checks done

4.) Control end-positions (mechanically, electrically only if applicable)

5.) General function check done

6.) Energy supply (voltage / pressurized air) checked

7.) Documentation available

8.) Label available

9.)

10.)

The predefined test criteria can be changed and stored in a file according to the actual belongs on site.

Predefined test criteria for measurements

The following test criteria are predefined for the functional commissioning checks of the measurements.

1.) Installation Set-Up OK

2.) Electrical Wiring OK

3.) Calibration OK

4.) Zero-point checked

5.) Measuring and indicating range checked

6.) Energy supply (voltage / pressurized air) checked

7.) General function check done

8.) Documentation available

9.) Label available

10.)

The predefined test criteria can be changed and stored in a file according to the actual belongs on site.

Predefined test criteria for auxiliaries

The following test criteria are predefined for the functional commissioning checks of the auxiliaries.

1.) Installation Set-Up OK

2.) Electrical Wiring OK

3.) General function check done

4.) Operation and functional checks done

5.) Performance checked

6.) Documentation available

7.) Label available

8.)

9.)

10.)

The predefined test criteria can be changed and stored in a file according to the actual belongs on site.

Predefined test criteria for miscellaneous equipment

The following test criteria are predefined for the functional commissioning checks of the miscellaneous equipment.

1.) Installation Set-Up OK
2.) Electrical Wiring OK
3.) General function check done
4.) Operation and functional checks done
5.) Performance checked
6.) Documentation available
7.) Label available
8.)
9.)
10.)

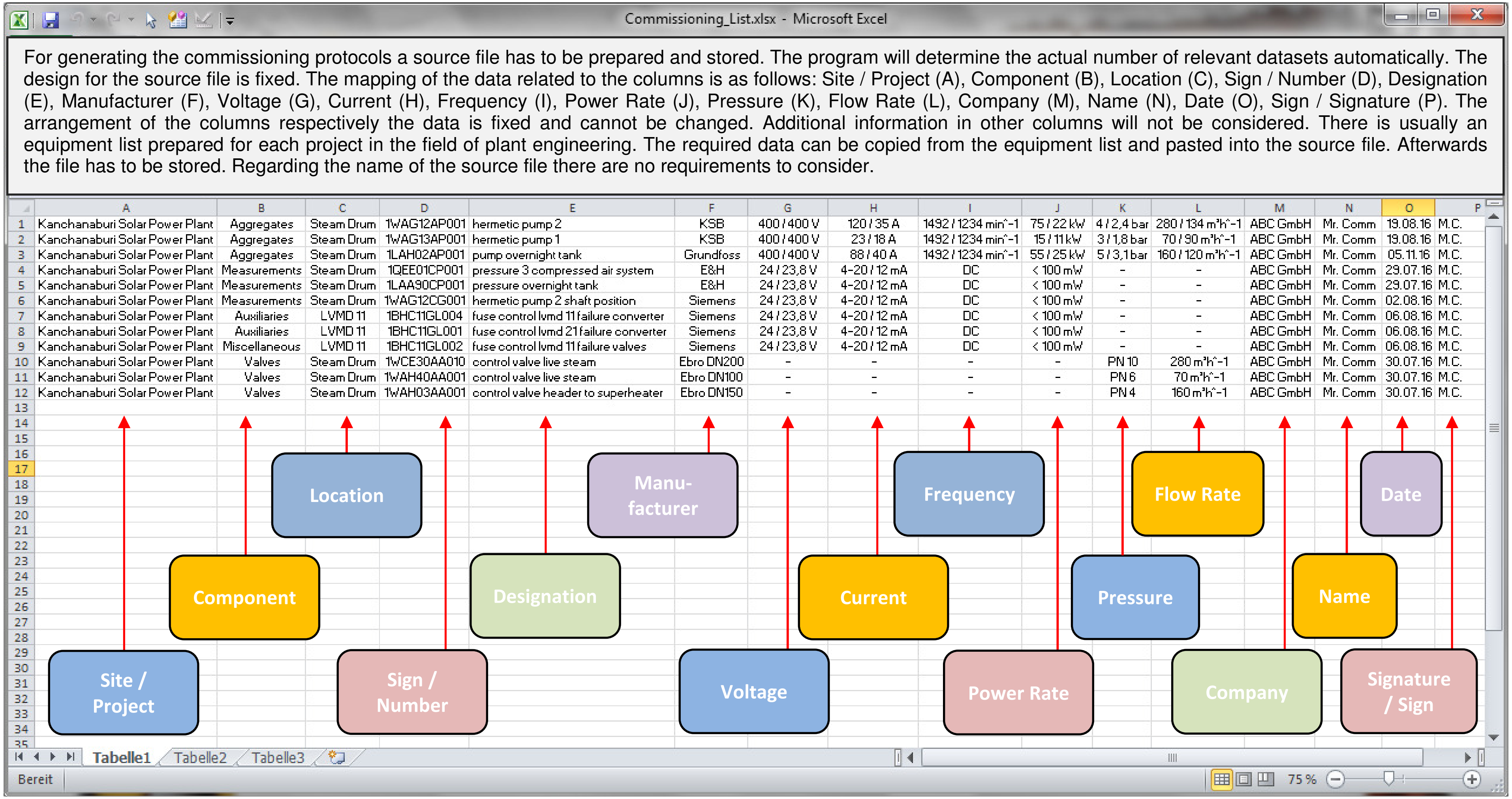
The predefined test criteria can be changed and stored in a file according to the actual belongs on site.

Fix defined information for the installed equipment

The following information is defined as a fix minimum required data for the installed equipment.

- Site / Project
- Component
- Location
- Sign / Number
- Designation
- Manufacturer
- Voltage
- Current
- Frequency
- Power Rate
- Pressure
- Flow Rate
- Company
- Name
- Date
- Sign / Signature

The fixed test criteria cannot be changed and stored in a file according to the actual belongs on site.



For generating the commissioning protocols a source file has to be prepared and stored. The program will determine the actual number of relevant datasets automatically. The design for the source file is fixed. The mapping of the data related to the columns is as follows: Site / Project (A), Component (B), Location (C), Sign / Number (D), Designation (E), Manufacturer (F), Voltage (G), Current (H), Frequency (I), Power Rate (J), Pressure (K), Flow Rate (L), Company (M), Name (N), Date (O), Sign / Signature (P). The arrangement of the columns respectively the data is fixed and cannot be changed. Additional information in other columns will not be considered. There is usually an equipment list prepared for each project in the field of plant engineering. The required data can be copied from the equipment list and pasted into the source file. Afterwards the file has to be stored. Regarding the name of the source file there are no requirements to consider.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Kanchanaburi Solar Power Plant	Aggregates	Steam Drum	1WAG12AP001	hermetic pump 2	KSB	400 / 400 V	120 / 35 A	1492 / 1234 min^-1	75 / 22 kW	4 / 2,4 bar	280 / 134 m^{3}h^-1	ABC GmbH	Mr. Comm	19.08.16	M.C.
2	Kanchanaburi Solar Power Plant	Aggregates	Steam Drum	1WAG13AP001	hermetic pump 1	KSB	400 / 400 V	23 / 18 A	1492 / 1234 min^-1	15 / 11 kW	3 / 1,8 bar	70 / 90 m^{3}h^-1	ABC GmbH	Mr. Comm	19.08.16	M.C.
3	Kanchanaburi Solar Power Plant	Aggregates	Steam Drum	1LAH02AP001	pump overnight tank	Grundfoss	400 / 400 V	88 / 40 A	1492 / 1234 min^-1	55 / 25 kW	5 / 3,1 bar	160 / 120 m^{3}h^-1	ABC GmbH	Mr. Comm	05.11.16	M.C.
4	Kanchanaburi Solar Power Plant	Measurements	Steam Drum	1QEE01CP001	pressure 3 compressed air system	E&H	24 / 23,8 V	4-20 / 12 mA	DC	< 100 mW	-	-	ABC GmbH	Mr. Comm	29.07.16	M.C.
5	Kanchanaburi Solar Power Plant	Measurements	Steam Drum	1LAA90CP001	pressure overnight tank	E&H	24 / 23,8 V	4-20 / 12 mA	DC	< 100 mW	-	-	ABC GmbH	Mr. Comm	29.07.16	M.C.
6	Kanchanaburi Solar Power Plant	Measurements	Steam Drum	1WAG12CG001	hermetic pump 2 shaft position	Siemens	24 / 23,8 V	4-20 / 12 mA	DC	< 100 mW	-	-	ABC GmbH	Mr. Comm	02.08.16	M.C.
7	Kanchanaburi Solar Power Plant	Auxiliaries	LVMD 11	1BHC11GL004	fuse control lvmd 11 failure converter	Siemens	24 / 23,8 V	4-20 / 12 mA	DC	< 100 mW	-	-	ABC GmbH	Mr. Comm	06.08.16	M.C.
8	Kanchanaburi Solar Power Plant	Auxiliaries	LVMD 11	1BHC11GL001	fuse control lvmd 21 failure converter	Siemens	24 / 23,8 V	4-20 / 12 mA	DC	< 100 mW	-	-	ABC GmbH	Mr. Comm	06.08.16	M.C.
9	Kanchanaburi Solar Power Plant	Miscellaneous	LVMD 11	1BHC11GL002	fuse control lvmd 11 failure valves	Siemens	24 / 23,8 V	4-20 / 12 mA	DC	< 100 mW	-	-	ABC GmbH	Mr. Comm	06.08.16	M.C.
10	Kanchanaburi Solar Power Plant	Valves	Steam Drum	1WCE30AA010	control valve live steam	Ebro DN200	-	-	-	-	PN 10	280 m^{3}h^-1	ABC GmbH	Mr. Comm	30.07.16	M.C.
11	Kanchanaburi Solar Power Plant	Valves	Steam Drum	1WAH40AA001	control valve live steam	Ebro DN100	-	-	-	-	PN 6	70 m^{3}h^-1	ABC GmbH	Mr. Comm	30.07.16	M.C.
12	Kanchanaburi Solar Power Plant	Valves	Steam Drum	1WAH03AA001	control valve header to superheater	Ebro DN150	-	-	-	-	PN 4	160 m^{3}h^-1	ABC GmbH	Mr. Comm	30.07.16	M.C.

Figure 210: data table for commissioning protocol

13.2.2. Variables (What are the input and output values? What are their limits?)

Begin Data Sets

It is the number of the first data set that should be considered for printing. After selecting the source file the data set reading starts beginning with 1 and going towards 999. This routine is interrupted by the appearance of a blank row. Afterward the number can be adapted. It cannot increase the adjusted limit for the end data sets.

The variable type is Input.
The variable has no unit [-].
The minimum limit is 1.
The maximum limit is set equal to the adjusted end data sets.
The variable has no replacement value.
The number of digits is 3.

Actual Data Set Number

It is the number of the actual data set, which is shown in the form of the commissioning protocol. After loading the base file data, the actual data set number can be adapted. The information of the actual data set number (row number of the file) will be shown in the output *TextBoxes*. The actual data set number cannot increase the adjusted limit for the end data sets.

The variable type is Input.
The variable has no unit [-].
The minimum limit is 1.
The maximum limit is set equal to the adjusted end data sets.
The variable has no replacement value.
The number of digits is 3.

End Data Sets

It is the number of the last data set that should be considered for printing. After selecting the source file the data set reading starts beginning with 1 and going towards 999. This routine is interrupted by the appearance of a blank row. In this case the limit is determined automatically. Afterward the number can be adapted by decreasing the value.

The variable type is Input.
The variable has no unit [-].
The minimum limit is 1.
The maximum limit is 999.
The variable has no replacement value.
The number of digits is 3.

In case if the equipment list has more than 999 rows respectively more than 999 equipment items, this can be handled easily by dividing up the equipment list in different tables or files. This is a general hint also for smaller tables, because it becomes confusing anyhow if too many parts should be handled at the same time.

13.2.3. Operation (How can it be used? How to proceed?)

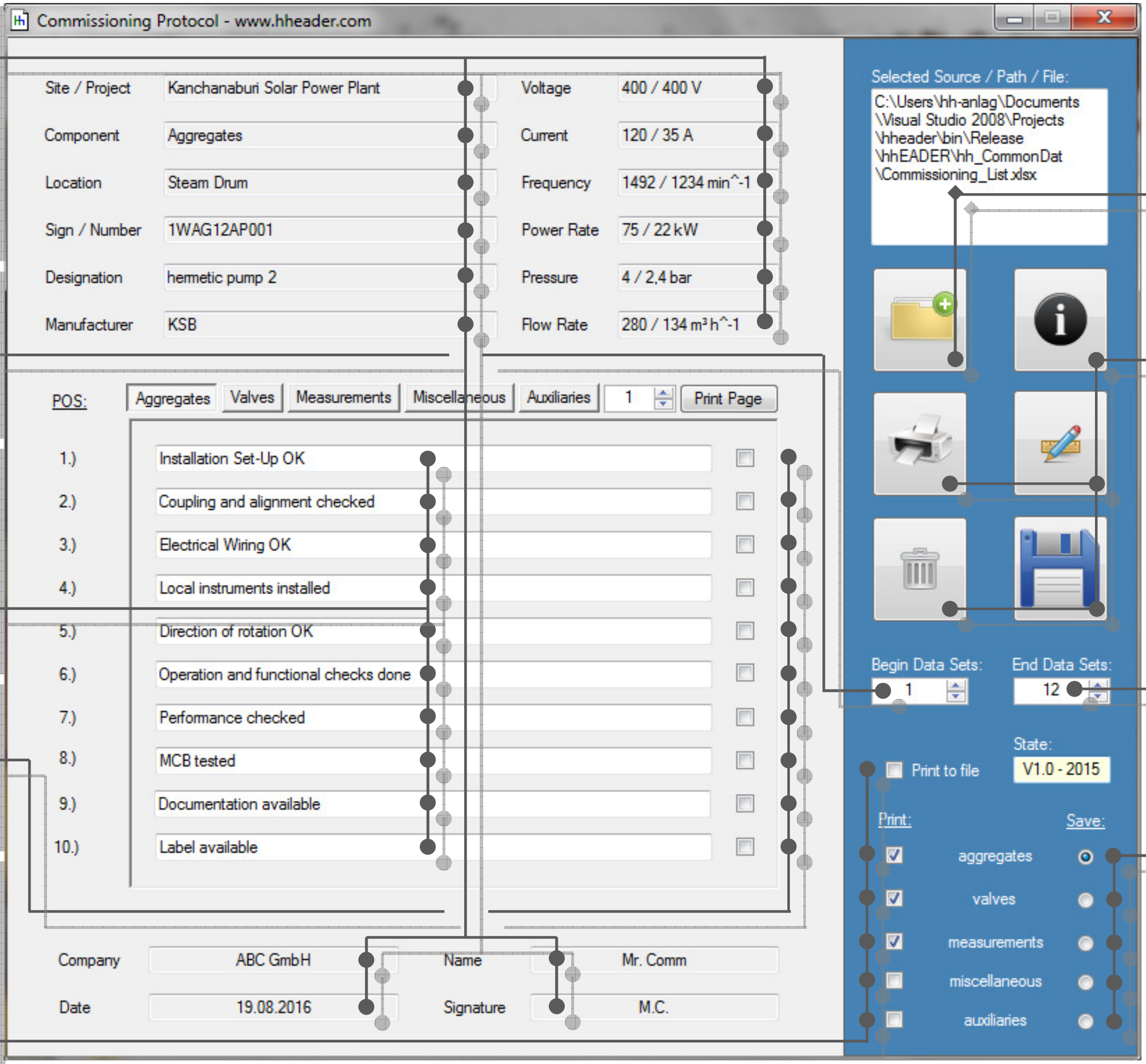
Step 6: (option)
Check entries
I can check the information of the actual data set number (row number of the file). I can print the actual data set (Print Page) by using the appearing button.

Step 5:
Begin Data Sets
I can define the number of the first data set that should be considered for printing.

Step 1:
Change the *TextBoxes*
I can change the single points of the different checklists, if required. A change is relevant for all the printed protocols.

Step 2:
Check the points
The single points can be checked. It is relevant for all the commissioning protocols.

Step 7:
Print options
I can select which categories should be included in the printing. In case if the results should be stored in a file, the corresponding *CheckBox* has to be checked.



Commissioning Protocol - www.hheader.com

Site / Project	Kanchanaburi Solar Power Plant	Voltage	400 / 400 V
Component	Aggregates	Current	120 / 35 A
Location	Steam Drum	Frequency	1492 / 1234 min^-1
Sign / Number	1WAG12AP001	Power Rate	75 / 22 kW
Designation	hermetic pump 2	Pressure	4 / 2,4 bar
Manufacturer	KSB	Flow Rate	280 / 134 m³h^-1

POS: Aggregates | Valves | Measurements | Miscellaneous | Auxiliaries | 1 | Print Page

1.) Installation Set-Up OK □
2.) Coupling and alignment checked □
3.) Electrical Wiring OK □
4.) Local instruments installed □
5.) Direction of rotation OK □
6.) Operation and functional checks done □
7.) Performance checked □
8.) MCB tested □
9.) Documentation available □
10.) Label available □

Company	ABC GmbH	Name	Mr. Comm
Date	19.08.2016	Signature	M.C.

Selected Source / Path / File:
C:\Users\hh-anlag\Documents\Visual Studio 2008\Projects\hheader\bin\Release\hhEADER\hh_CommonDat\Commissioning_List.xlsx

Begin Data Sets: 1
End Data Sets: 12
State: V1.0 - 2015
□ Print to file

Print:		Save:
☑	aggregates	●
☑	valves	○
☑	measurements	○
□	miscellaneous	○
□	auxiliaries	○

Figure 211: form commissioning protocol

Step 4:
Select File
I can select the file that contains the basis data for the commissioning protocol.

Step 9:
Further actions
After the calculation I can have the following options: Print Data, Erase Data, Program Information, Notes, Save or Restore Values. While printing a new calculation is done automatically. Clicking the Erase-Button will empty all the *TextBoxes* at once.

Step 3:
Begin Data Sets
I can define the number of the last data set that should be considered for printing. The number is determined automatically (max. 999).

Step 8:
Select the category for the data storage
Before saving the data I can select the category that should be stored.

13.3. Program Parser

13.3.1. Purpose (What can it be used for? What can it not be used for?)

The program is part of category 8 – general. There are thousands of different calculation programs, but at least they all have the same general structure. A couple of input variables are combined with mathematic operations. This results finally in a result! Thereby the most simple combination is to operate one input variable with another input variable in order to get one result. In case if the target is to develop a general calculation program which is not fixed to anything and has a certain variance, there might be only one way to build it up. This can be by putting several of the mentioned most simple combinations in series. In general there are six different operations possible, where some of them are not that different to each other. An overview is given in the table below.

Addition	$x + n$	Addition is equal to subtraction with a negative number.	$x - (-n)$
Subtraction	$x - n$	Subtraction is equal to addition with a negative number.	$x + (-n)$
Multiplication	$x \cdot n$	Multiplication is equal to division with the reciprocal value of a number.	$x/(1/n)$
Division	x/n	Division is equal to multiplication with the reciprocal value.	$x \cdot (1/n)$
Raise a number to the power of a value	x^n	Raising a number to the power of a value is equal to extract the root of a number with the reciprocal order.	$\sqrt[1/n]{x}$
Root extraction	$\sqrt[n]{x}$	Root extraction is equal to raising a number to the power the reciprocal value of the order of the root.	$x^{1/n}$

Figure 212: table program parser operations

According to the table above three operations (addition, multiplication, raising a number to a power of a value) could be enough to cover the possible combinations. For practical reasons the program provides five operations (addition, subtraction, multiplication, division, raising a number to a power of a value).

For the program the combination of two input variables operated with each other to one result is defined as I/O-Unit. There are up to eight I/O-Units provided for the program calculations. In the following “IDX” is a variable value used for “ID1 to ID8”.

The following properties can be defined for the set-up:

- Program Name,
- Program Author,
- Program Version.

For each I/O-Unit there are two input variables (IDX#IN1 and IDX#IN2) and one output variable (IDX#OUT). The operation for the I/O-Unit can be defined by selection. Regarding this the following items are provided:

- IDX#OUT = IDX#IN1 + IDX#IN2,
- IDX#OUT = IDX#IN1 - IDX#IN2,
- IDX#OUT = IDX#IN1 * IDX#IN2,
- IDX#OUT = IDX#IN1 / IDX#IN2,
- IDX#OUT = IDX#IN1 ^ IDX#IN2.

Beside this each I/O-Unit can be set visible or invisible.

- visible,
- invisible.

For the input variables (IDX#IN1 and IDX#IN2) the following points can be defined:

- Variable Type,
- Designation,
- Start-Value,
- Unit.

Regarding the variable type the following selections are provided:

- Variable,
- Constant,
- IDX#IN1 (with X=1 to 7),
- IDX#IN2 (with X=1 to 7),
- IDX#OUT (with X=1 to 7).

For the output variables (IDX#OUT) the following properties can be defined:

- Number of decimal places (0 to 9),
- Designation,
- Start-Value,
- Unit.

The program name, the author name and the version index can be defined by the user. The entries are only valid, if the program is stored in a file. The file name and the program name are independent from each other. To save a file, the corresponding *RadioButton* has to be preselected in the first. After this the file name can be entered. The file will be stored finally by clicking the GO-Button.

All the used I/O-Units have to be defined one by one. Therefore it is important that the input and output variables are defined regarding the settings mentioned on the previous page. Variable type, designation, start-value and unit have to be defined for the input variables (IDX#IN1 and IDX#IN2). For the variable type in general there are three different kinds possible. One: variables, which means a various value that has to be entered at the beginning of the calculation. Two: constant, which means a constant value, that is equal to the start-value defined for the corresponding I/O-Unit and input (IDX#IN1 and IDX#IN2). Be aware that a constant cannot be changed on the viewer surface. Three: outputs, which means the input variable for the actual I/O-Unit is the output variable (the calculated result) from a residual I/O-Unit. Be aware that there are no plausibility checks provided for the entered designations and units! The start-value should be preset based on a realistic and practical evaluation regarding the defined unit and the expected result dimensions. The corresponding mathematic operation for the two input variables can be selected (addition, subtraction, multiplication, division, raising a number to a power of a value). Decimal places, designation, start-value and unit have to be defined for the output variable (IDX#OUT). The decimal places for the result can be selected from zero to nine (0 to 9). Be aware that there are no plausibility checks provided for the entered designations and units! The start-value should be preset based on a realistic and practical evaluation regarding the defined unit dimensions and the input variables.

Due to the eight provided I/O-Units, realizing calculations with up to eight steps is possible. **After finishing the settings for each I/O-Unit, the Transfer-Button has to be clicked in order to acknowledge the settings!** This has to be done for every I/O-Unit that is supposed to be included in the calculations. The settings are displayed accordingly in the overview on the right side in the lower part of the form.

For planning and building up a calculation program with the Program Parser there is a table provided on the next pages. To ensure a better overview it is recommended to print out the blank table with the blank table and fill the parameters carefully one by one. Finally the parameters can be transferred into the I/O-Units.

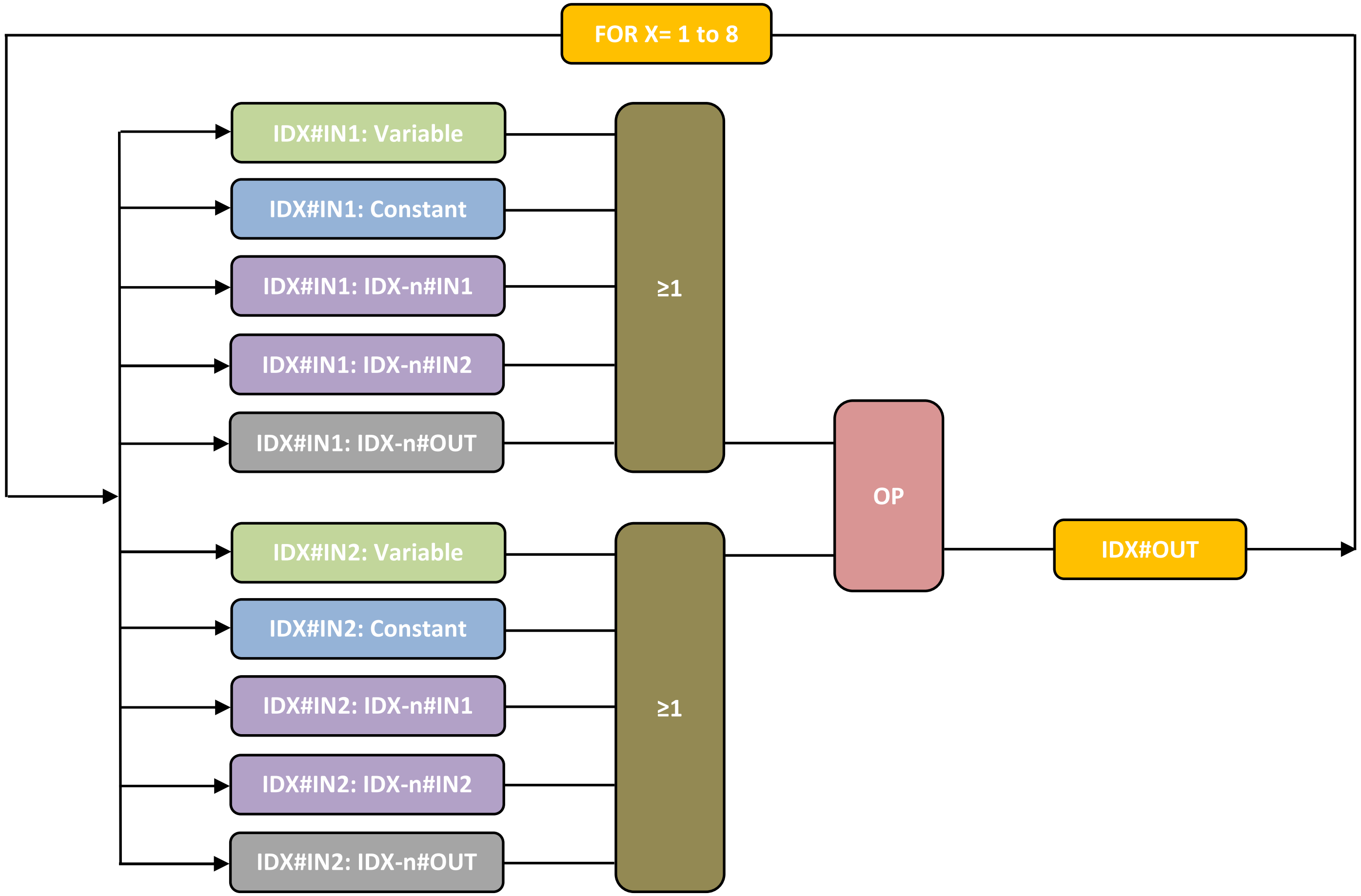


Figure 213: sketch program parser

Program:		**Author:**		**Version:**	

ID1	**I / O’s**	**VAR**	**OP.**	**Designation**	**Value**	**Unit**
	ID1#IN1					
	ID1#IN2					
	ID1#OUT		=			

ID2	**I / O’s**	**VAR**	**OP.**	**Designation**	**Value**	**Unit**
	ID2#IN1					
	ID2#IN2					
	ID2#OUT		=			

ID3	**I / O’s**	**VAR**	**OP.**	**Designation**	**Value**	**Unit**
	ID3#IN1					
	ID3#IN2					
	ID3#OUT		=			

ID4	**I / O’s**	**VAR**	**OP.**	**Designation**	**Value**	**Unit**
	ID4#IN1					
	ID4#IN2					
	ID4#OUT		=			

ID5	**I / O’s**	**VAR**	**OP.**	**Designation**	**Value**	**Unit**
	ID5#IN1					
	ID5#IN2					
	ID5#OUT		=			

ID6	**I / O’s**	**VAR**	**OP.**	**Designation**	**Value**	**Unit**
	ID6#IN1					
	ID6#IN2					
	ID6#OUT		=			

ID7	**I / O’s**	**VAR**	**OP.**	**Designation**	**Value**	**Unit**
	ID7#IN1					
	ID7#IN2					
	ID7#OUT		=			

ID8	**I / O’s**	**VAR**	**OP.**	**Designation**	**Value**	**Unit**
	ID8#IN1					
	ID8#IN2					
	ID8#OUT		=			

Figure 214: table program parser for fill in

13.3.2. Variables (What are the input and output values? What are their limits?)

<u>IDX#IN1 (with X= 1 to 8)</u>

It is the input variable number one for the corresponding operation block. Each operation block, which is identifiable at its ID-number (X= 1 to 8), consist of three variables: IDX#IN1, IDX#IN2 and IDX#OUT. Therefore the two inputs are combined by a mathematic operation and result in the output field. The single operation blocks can be interconnected by defining the input or output of a previous calculated operation block as one of the inputs of the corresponding actual operation block. So that at least a calculation with maximum eight steps is possible.

The variable type is Input.
The unit can be user defined.
The minimum limit can be user defined.
The maximum limit can be user defined.
The replacement value can be user defined.
The number of digits is 10.

<u>IDX#IN2 (with X= 1 to 8)</u>

It is the input variable number two for the corresponding operation block. Each operation block, which is identifiable at its ID-number (X= 1 to 8), consist of three variables: IDX#IN1, IDX#IN2 and IDX#OUT. Therefore the two inputs are combined by a mathematic operation and result in the output field. The single operation blocks can be interconnected by defining the input or output of a previous calculated operation block as one of the inputs of the corresponding actual operation block. So that at least a calculation with maximum eight steps is possible.

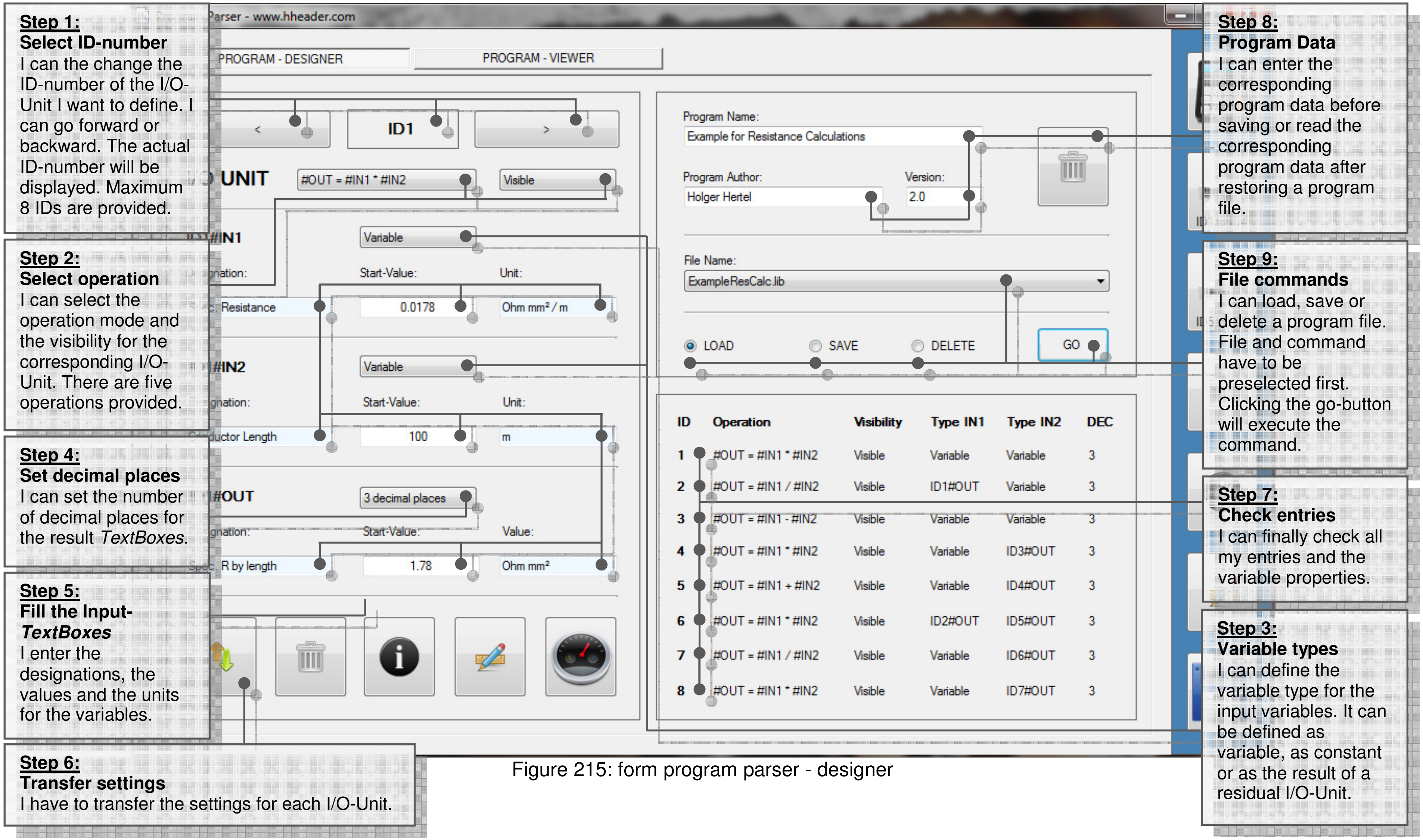
The variable type is Input.
The unit can be user defined.
The minimum limit can be user defined.
The maximum limit can be user defined.
The replacement value can be user defined.
The number of digits is 10.

IDX#OUT (with X= 1 to 8)

It is output variable for the corresponding operation block. Each operation block, which is identifiable at its ID-number (X= 1 to 8), consist of three variables: IDX#IN1, IDX#IN2 and IDX#OUT. Therefore the two inputs are combined by a mathematic operation and result in the output field. The single operation blocks can be interconnected by defining the input or output of a previous calculated operation block as one of the inputs of the corresponding actual operation block. So that at least a calculation with maximum eight steps is possible.

The variable type is Output.
The unit can be user defined.
The minimum limit can be user defined.
The maximum limit can be user defined.
The replacement value can be user defined.
The number of digits is 10.

13.3.3. Operation (How can it be used? How to proceed?)



#OUT = #IN1 * #IN2 | Visible

ID1#IN1 | Variable

Designation:	Start-Value:	Unit:
Spec. Resistance	0.0178	Ohm mm² / m

ID1#IN2 | Variable

Designation:	Start-Value:	Unit:
Conductor Length	100	m

ID1#OUT | 3 decimal places

Designation:	Start-Value:	Value:
Spec. R by length	1.78	Ohm mm²

Program Name: Example for Resistance Calculations

Program Author: Holger Hertel

Version: 2.0

File Name: ExampleResCalc.lib

● LOAD ○ SAVE ○ DELETE

ID	Operation	Visibility	Type IN1	Type IN2	DEC
1	#OUT = #IN1 * #IN2	Visible	Variable	Variable	3
2	#OUT = #IN1 / #IN2	Visible	ID1#OUT	Variable	3
3	#OUT = #IN1 - #IN2	Visible	Variable	Variable	3
4	#OUT = #IN1 * #IN2	Visible	Variable	ID3#OUT	3
5	#OUT = #IN1 + #IN2	Visible	Variable	ID4#OUT	3
6	#OUT = #IN1 * #IN2	Visible	ID2#OUT	ID5#OUT	3
7	#OUT = #IN1 / #IN2	Visible	Variable	ID6#OUT	3
8	#OUT = #IN1 * #IN2	Visible	Variable	ID7#OUT	3

Step 1:
Select ID-number
I can the change the ID-number of the I/O-Unit I want to define. I can go forward or backward. The actual ID-number will be displayed. Maximum 8 IDs are provided.

Step 2:
Select operation
I can select the operation mode and the visibility for the corresponding I/O-Unit. There are five operations provided.

Step 3:
Variable types
I can define the variable type for the input variables. It can be defined as variable, as constant or as the result of a residual I/O-Unit.

Step 4:
Set decimal places
I can set the number of decimal places for the result *TextBoxes*.

Step 5:
Fill the Input-*TextBoxes*
I enter the designations, the values and the units for the variables.

Step 6:
Transfer settings
I have to transfer the settings for each I/O-Unit.

Step 7:
Check entries
I can finally check all my entries and the variable properties.

Step 8:
Program Data
I can enter the corresponding program data before saving or read the corresponding program data after restoring a program file.

Step 9:
File commands
I can load, save or delete a program file. File and command have to be preselected first. Clicking the go-button will execute the command.

Figure 215: form program parser - designer

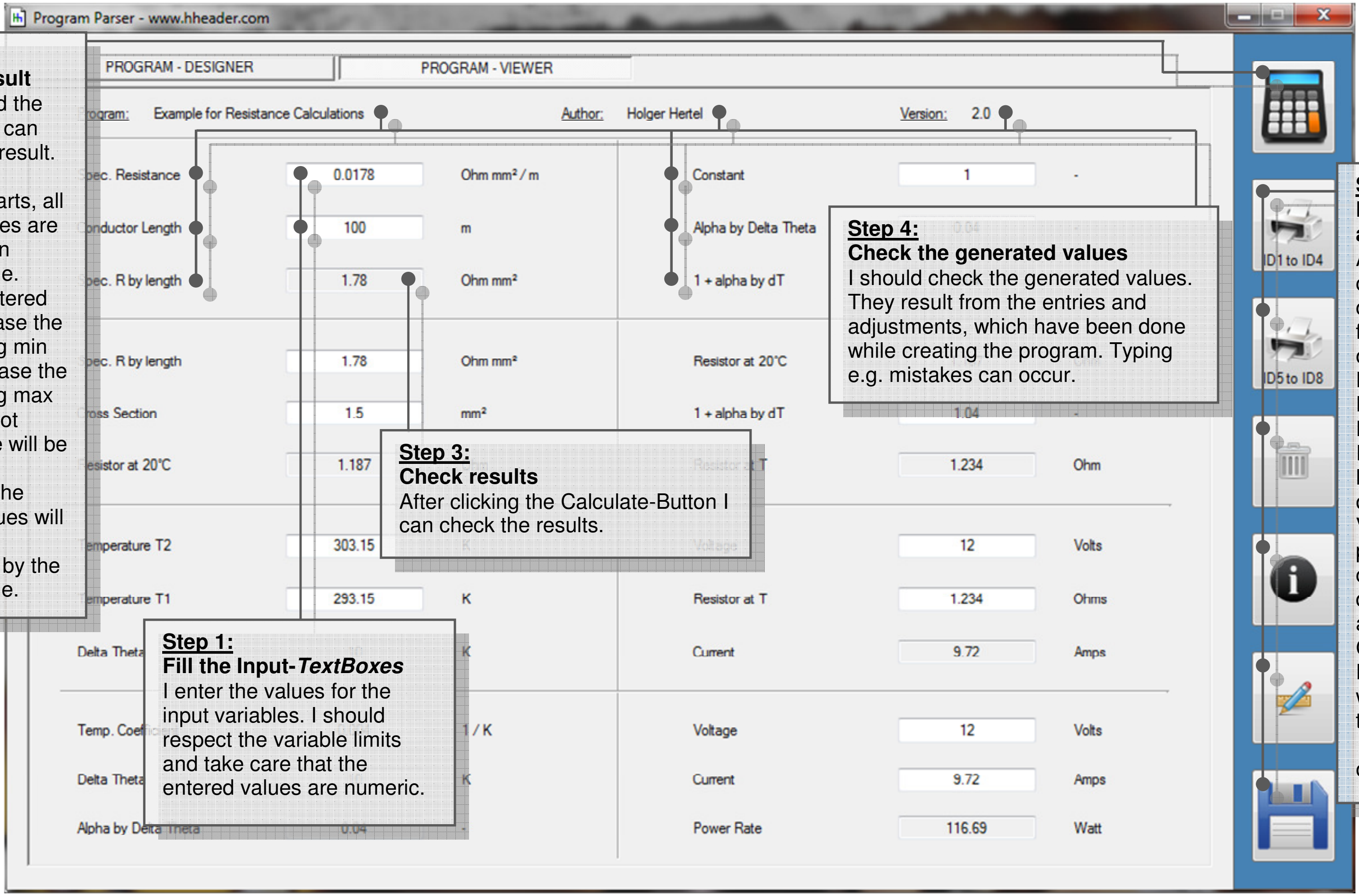


Figure 216: form program parser - viewer

Program Parser - www.hheader.com

PROGRAM - DESIGNER | PROGRAM - VIEWER

ogram: Example for Resistance Calculations   Author: Holger Hertel   Version: 2.0

pec. Resistance	0.0178	Ohm mm² / m	Constant	1	-
nductor Length	100	m	Alpha by Delta Theta	0.04	
pec. R by length	1.78	Ohm mm²	1 + alpha by dT		
pec. R by length	1.78	Ohm mm²	Resistor at 20°C		
oss Section	1.5	mm²	1 + alpha by dT	1.04	-
esistor at 20°C	1.187		Resistor at T	1.234	Ohm
emperature T2	303.15	K	Voltage	12	Volts
emperature T1	293.15	K	Resistor at T	1.234	Ohms
Delta Theta		K	Current	9.72	Amps
Temp. Coeffici		1 / K	Voltage	12	Volts
Delta Theta		K	Current	9.72	Amps
Alpha by Delta Theta	0.04	-	Power Rate	116.69	Watt

Step 1:
Fill the Input-*TextBoxes*
I enter the values for the input variables. I should respect the variable limits and take care that the entered values are numeric.

Step 2:
Calculate result
After I entered the input values I can calculate the result. Before the calculation starts, all the input values are checked by an internal routine. Whenever entered values decrease the corresponding min limits or increase the corresponding max limits or are not numeric there will be a message according to the fault. The values will be corrected automatically by the internal routine.

Step 3:
Check results
After clicking the Calculate-Button I can check the results.

Step 4:
Check the generated values
I should check the generated values. They result from the entries and adjustments, which have been done while creating the program. Typing e.g. mistakes can occur.

Step 5:
Further actions
After the calculation I can have the following options: Print Data, Erase Data, Program Information, Notes, Save or Restore Values. While printing a new calculation is done automatically. Clicking the Erase-Button will empty all the *TextBoxes* at once.

13.4. IP-Address

13.4.1. Purpose (What can it be used for? What can it not be used for?)

The program is part of category 8 – general. Commissioning engineers, software engineers and PLC-programmers working for different projects on different sites know the problem. On every site there are different networks with different IP-Addresses for the Programmable Logic Controllers (PLC), the Human-Machine-Interfaces (HMI) and the systems for Supervisory Control and Data Acquisition (SCADA). Usually on site there are also predefined IP-Addresses for the programming devices that could be connected for programming purposes. Of course also the settings for the Subnet and the Gateway have to be considered.

Usually the corresponding required settings and adjustments have to be done manually in the control panel settings for the network adapters. Therefore the following steps are required:

- open then control panel,
- open network and internet,
- open network connections,
- select the relevant network adapter,
- select the adapter properties,
- show the TCP/IPv4-settings,
- enter the actual relevant IP-Address,
- enter the actual relevant Subnet,
- enter the actual relevant Gateway,
- acknowledge the settings.

This is not too difficult, but it has to be done every time again, when arriving on another site.

The program provides the same possibilities for the TCP/IPv4 settings as via the control panel. The settings have to be done once manually and can be restored automatically later. Therefore the following steps are required:

- open *hheader*,
- select the category “General”,
- open the program “IP-Address”,
- enter the project name,
- enter the adapter name,
- enter the actual relevant IP-Address,
- enter the actual relevant Subnet,
- enter the actual relevant Gateway,
- acknowledge the settings,
- save the settings (option).

This is not too difficult and it has to be done only once for every site. Afterwards the stored settings can be easily restored.

In the following the required steps are compared again. On the left side the usually required steps (10) are shown and on the right side the steps (5) that are required after saving the settings are shown.

Usually the corresponding required settings and adjustments have to be done manually in the control panel settings for the network adapters. Therefore the following steps are required:

- open the control panel,
- open network and internet,
- open network connections,
- select the relevant network adapter,
- select the adapter properties,
- show the TCP/IPv4-settings,
- enter the actual relevant IP-Address,
- enter the actual relevant Subnet,
- enter the actual relevant Gateway,
- acknowledge the settings.

The program provides the same possibilities for the TCP/IPv4 settings as via the control panel. After the settings are stored once, they can be restored anytime again. Therefore the following steps are required:

- open *hheader*,
- select the category “General”,
- open the program “IP-Address”,
- restore the settings (option),
- acknowledge the settings.

The program has two major advantages. One: after saving the settings for a site, they can be restored easily with fewer steps and without the requirement to enter the address data again. Two: the required data are directly available in the stored files and do not need to be picked out of handwritten notes.

It is important that the windows for the adapters in the control panel of the operating system are closed while carrying out the changes of the IP-settings via the hheader-software!

On the following page a sketch displaying the general internal program routine is provided. Later on the variables are described and the further instructions for the settings are given.

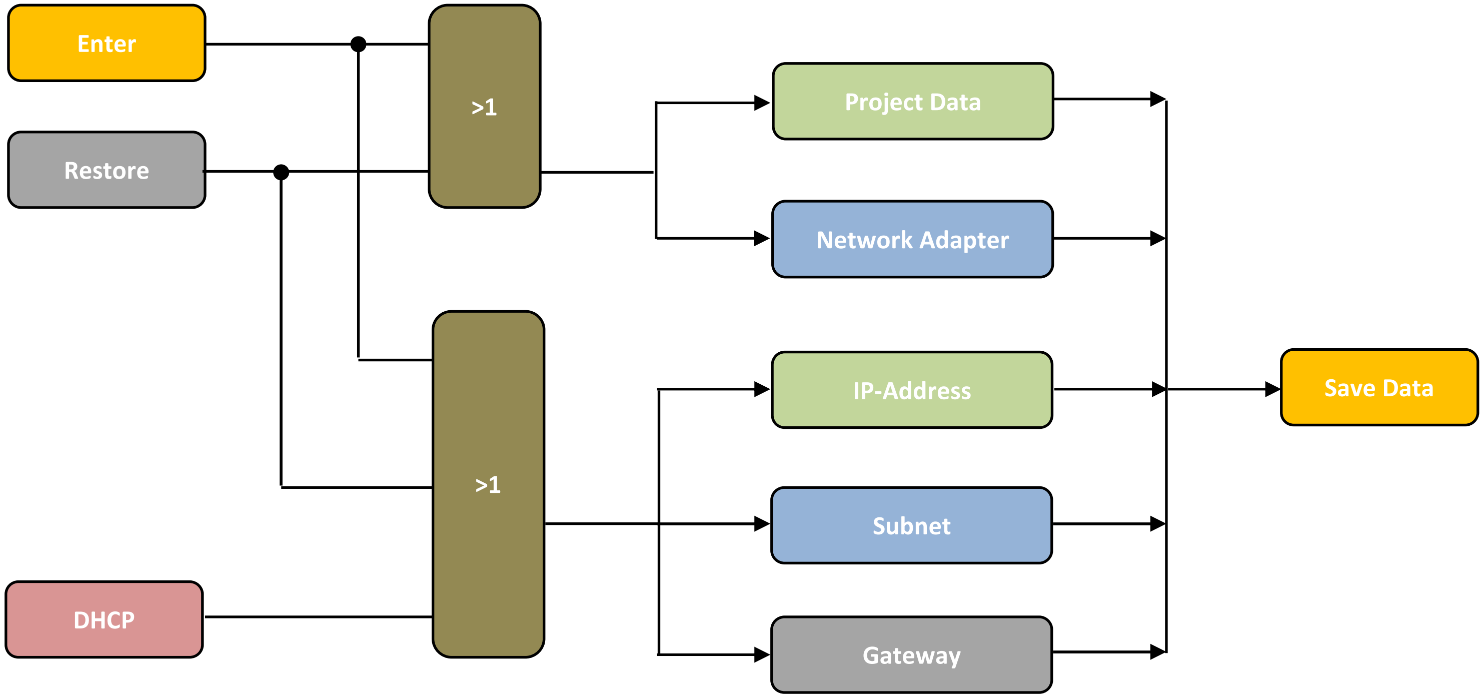


Figure 217: sketch IP-Address

13.4.2. Variables (What are the input and output values? What are their limits?)

Project

A project name or a site name or any other information (for example the PLC-name) can be entered in order to have an explicit mapping. 45 characters are possible.

Adapter

It is the name of the adapter. The name has to be exactly according to the designation as given in the network settings of windows control panel. 45 characters are possible.

IP-Address

It is the IP-Address that is read or set for the actual defined network adapter. The IP-Address consists of four number blocks with three numbers for each block.

The variable type is Input.
The variable has no unit [-].
The minimum limit is 000.000.000.000.
The maximum limit is 255.255.255.255.
The variable has no replacement value.
The number of digits is 3.

Gateway

It is the Gateway that is read or set for the actual defined network adapter. The IP-Address consists of four number blocks with three numbers for each block.

The variable type is Input.
The variable has no unit [-].
The minimum limit is 000.000.000.000.
The maximum limit is 255.255.255.255.
The variable has no replacement value.
The number of digits is 3.

Subnet

It is the Subnet that is read or set for the actual defined network adapter. The IP-Address consists of four number blocks with three numbers for each block.

The variable type is Input.
The variable has no unit [-].
The minimum limit is 000.000.000.000.
The maximum limit is 255.255.255.255.
The variable has no replacement value.
The number of digits is 3.

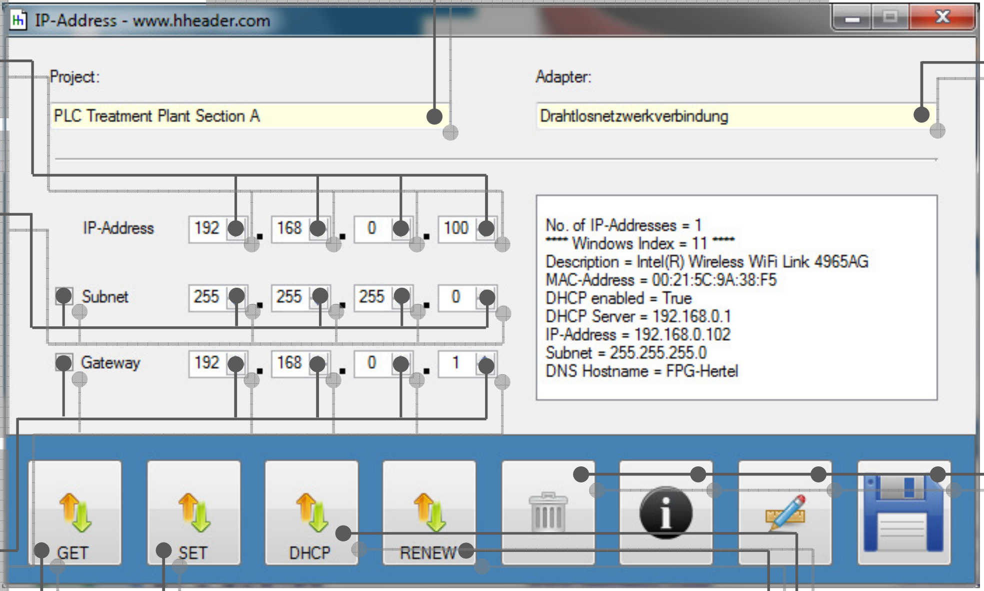
13.4.3. Operation (How can it be used? How to proceed?)

Step 3:
Adjust the IP-Address
I can adjust the IP-Address via the provided numeric fields. The numbers can be adjusted by the up and down buttons or they can be entered directly via the keypad.

Step 4:
Adjust the Subnet
I can adjust the subnet via the provided numeric fields. The numbers can be adjusted by the up and down buttons or they can be entered directly via the keypad. The subnet is only valid for the set command, if the *CheckBox* is activated.

Step 5:
Adjust the Gateway
I can adjust the gateway via the provided numeric fields. The numbers can be adjusted by the up and down buttons or they can be entered directly via the keypad. The gateway is only valid for the set command, if the *CheckBox* is activated.

Step 1:
Fill in the project name
I can enter a name for the project, the site or the PLC.



IP-Address - www.hheader.com

Project: PLC Treatment Plant Section A

Adapter: Drahtlosnetzwerkverbindung

IP-Address 192 . 168 . 0 . 100

□ Subnet 255 . 255 . 255 . 0

□ Gateway 192 . 168 . 0 . 1

```
No. of IP-Addresses = 1
**** Windows Index = 11 ****
Description = Intel(R) Wireless WiFi Link 4965AG
MAC-Address = 00:21:5C:9A:38:F5
DHCP enabled = True
DHCP Server = 192.168.0.1
IP-Address = 192.168.0.102
Subnet = 255.255.255.0
DNS Hostname = FPG-Hertel
```

Figure 218: form IP-Address

Step 2:
Fill in the adapter name
I can enter the name of the adapter. The name has to be exactly according to the designation as given in the network settings of windows control panel.

Step 10:
Further actions
After the calculation I can have the following options: Erase Data, Program Information, Notes, Save or Restore Values. While printing a new calculation is done automatically. Clicking the Erase-Button will empty all the *TextBoxes* at once. An option for printing is not provided, because it is assumed to be not required.

Step 6:
Get data
I can get the actual relevant data for the entered network adapter. The actual data will be displayed.

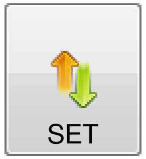
Step 7:
Set data
I can set the actual relevant data for the entered network adapter. Subnet and Gateway have to be enabled.

Step 9:
Renew
I can renew the connection. Therefore the following steps are done: ipconfig/release, ipconfig/renew, ipconfig/flushDNS.

Step 8:
Activate DHCP-server
I can return to the dynamic IP-Address, which is set automatically by the DHCP-sever. The button activates the DHCP-server.

This program is at least working with different NETSH-Commands witch are executed in a shell command line. This is called by the internal program routine.

GET-Button:
Clicking the SET-Button will get the following adapter information: Index, Description, MAC-Address, DHCP enabled (=True or False) DHCP Server, IP-Address, Subnet, DNS Hostname. This function is not executed by any shell command line.



SET-Button:
Clicking the SET-Button will set the adjusted IP-Address, the Subnet (if activated) and the Gateway (if activated). The IP-Address is set to a static address. The DHCP-Server will be disabled. The following shell command line will be executed.

```
netsh interface ipv4 set address name="[ADAPTERNAME]" static [IP-ADDRESS] [SUBNET] [GATEWAY] (syntax)
netsh interface ipv4 set address name="Drahtlosnetzwerkverbindung" static 192.168.0.100 255.255.255.0 192.168.0.1 (e.g.)
```

DHCP-Button:
Clicking the DHCP-Button will activate the DHCP-Server. The IP-Address is dynamic and set by the DHCP-Server. The DHCP-Server will be enabled. The following shell command line will be executed.

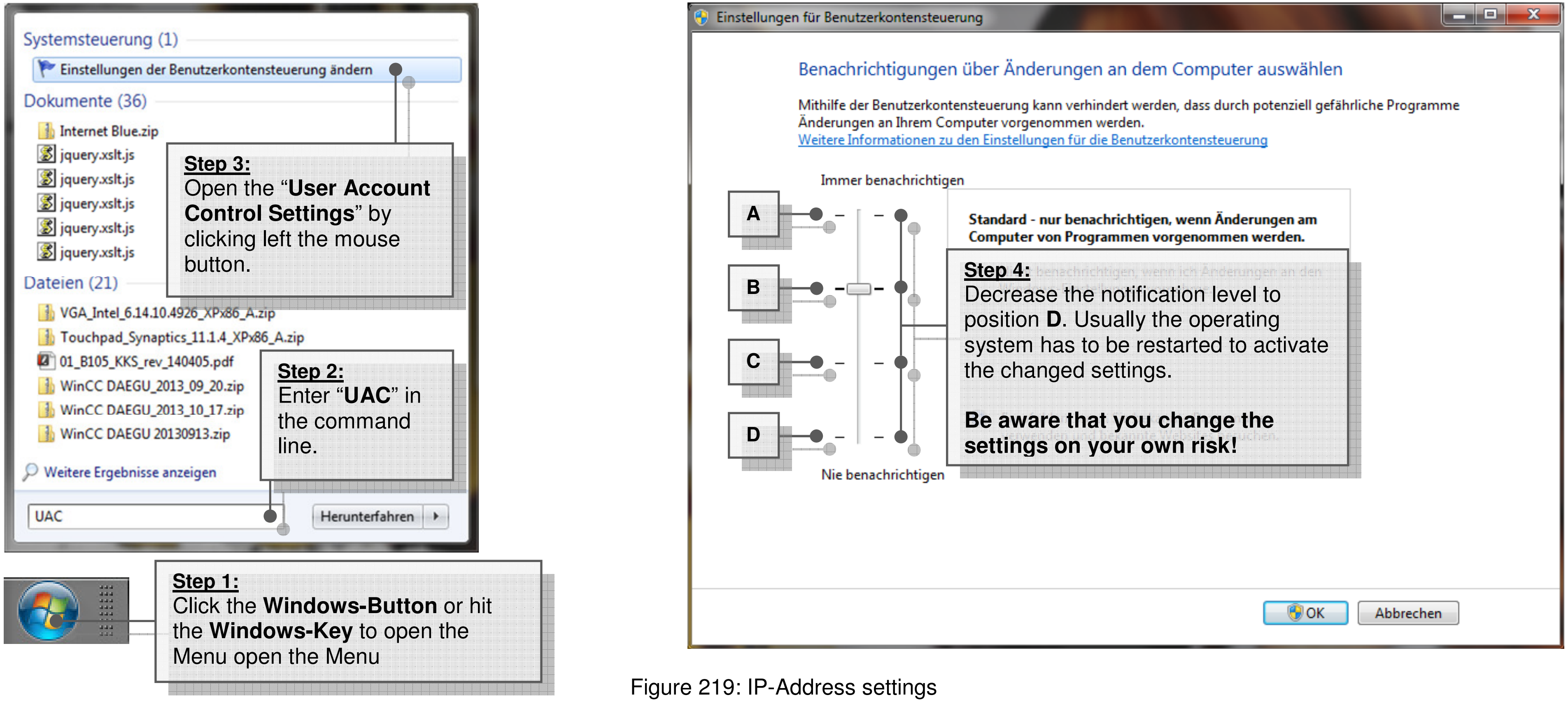
```
netsh interface ipv4 set address name="[ADAPTERNAME]" DHCP (syntax)
netsh interface ipv4 set address name="Drahtlosnetzwerkverbindung" DHCP (e.g.)
```

RENEW-Button:
Clicking the RENEW-Button will renew the IP-Address. The IP-Address is dynamic and set by the DHCP-Server. The DHCP-Server has to be enabled. This function is not working with a static IP-Address. The following shell command lines will be executed.

```
ipconfig /release “[ADAPTERNAME]" (syntax); ipconfig /release “Drahtlosnetzwerkverbindung" (e.g.)
ipconfig /renew “[ADAPTERNAME]" (syntax); ipconfig /renew "Drahtlosnetzwerkverbindung" (e.g.)
ipconfig /flushdns (syntax); ipconfig /flushdns (e.g.)
```

Required rights and settings

Regarding the use of this program there are three requirements mandatory. One: the user has to be locked in the operating system with “**Admin rights**”. Two: the “**User Account Control Settings**” need to be operated with a decreased notification level. Three: the **NETSH-Commands** need to be installed and activated on the operating system. To change the notification adjustments the user can proceed as follows. Step 1: click the Windows-Button or hit the Windows-Key to open the Menu (refer to picture below on the left). Step 2: enter “**UAC**” in the command line. Step 3: open the “**User Account Control Settings**” by clicking the left mouse button. Step 4: decrease the notification level to position **D** (refer to picture below on the right).



Systemsteuerung (1)

Einstellungen der Benutzerkontensteuerung ändern

Dokumente (36)

Internet Blue.zip
jquery.xslt.js
jquery.xslt.js
jquery.xslt.js
jquery.xslt.js
jquery.xslt.js

Dateien (21)

VGA_Intel_6.14.10.4926_XPx86_A.zip
Touchpad_Synaptics_11.1.4_XPx86_A.zip
01_B105_KKS_rev_140405.pdf
WinCC DAEGU_2013_09_20.zip
WinCC DAEGU_2013_10_17.zip
WinCC DAEGU 20130913.zip

Weitere Ergebnisse anzeigen

UAC

Step 3:
Open the “**User Account Control Settings**” by clicking left the mouse button.

Step 2:
Enter “**UAC**” in the command line.

Step 1:
Click the **Windows-Button** or hit the **Windows-Key** to open the Menu open the Menu

Einstellungen für Benutzerkontensteuerung

Benachrichtigungen über Änderungen an dem Computer auswählen

Mithilfe der Benutzerkontensteuerung kann verhindert werden, dass durch potenziell gefährliche Programme Änderungen an Ihrem Computer vorgenommen werden.
Weitere Informationen zu den Einstellungen für die Benutzerkontensteuerung

Immer benachrichtigen

Standard - nur benachrichtigen, wenn Änderungen am Computer von Programmen vorgenommen werden.

Nie benachrichtigen

Step 4:
Decrease the notification level to position **D**. Usually the operating system has to be restarted to activate the changed settings.

Be aware that you change the settings on your own risk!

Figure 219: IP-Address settings

13.5. Randomize

13.5.1. Purpose (What can it be used for? What can it not be used for?)

The program is part of category 8 – general. Randomness can be defined as an event that happens either without any transparent causal reasons or the causal reasons are known, but the moment of the happening is not measurable or predictable.

Thinking about this there are some questions that can occur. Is randomness real? Does it really happen without causal reasons? Is the moment of the happening really not predictable? Or do we only have not enough information to see the obvious coming?

The program calculates random numbers in between the given minimum and maximum limits. The limits are adjustable. The minimum limit is -32000 and the maximum limit is 32000. There are seven rows provided like this. Additional there are two rows with less possibilities. One can have two (yes, no) and the other one can have three (yes, maybe, no) possible results. So in total there are nine rows. For each row there is a *CheckBox* provided. By this the single rows can be activated or deactivated. Only activated rows are included in the calculations. Each row consists of one *TextBox* provided for a user defined designation and either a *TextBox* or indications for displaying the random results. For the first seven rows there are two numeric fields to enter the minimum and maximum limits.

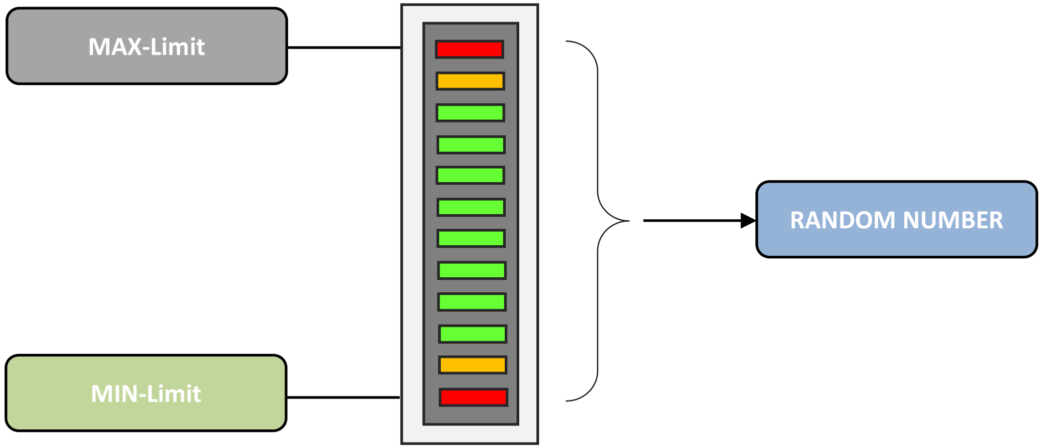


Figure 220: sketch randomize

13.5.2. Variables (What are the input and output values? What are their limits?)

min-limit

It is the minimum limit for the range of the randomize number. The randomize number is determined by random as a natural number which is in between the min-limit and the max-limit.

The variable Input.
The variable has no unit [-]
The minimum limit is -32000.
The maximum limit is 32000.
The variable has no replacement value.
The number of digits is 5.

result

It is the result which is the determined random number. The randomize number is determined by random as a natural number which is in between the min-limit and the max-limit.

The variable type is Output.
The variable has no unit [-]
There is no defined minimum limit for output variables.
There is no defined maximum limit for output variables.
There is no defined replacement value for output variables.
There is no defined number of digits for output variables.

max-limit

It is the maximum limit for the range of the randomize number. The randomize number is determined by random as a natural number which is in between the min-limit and the max-limit.

The variable Input.
The variable has no unit [-]
The minimum limit is -32000.
The maximum limit is 32000.
The variable has no replacement value.
The number of digits is 5.

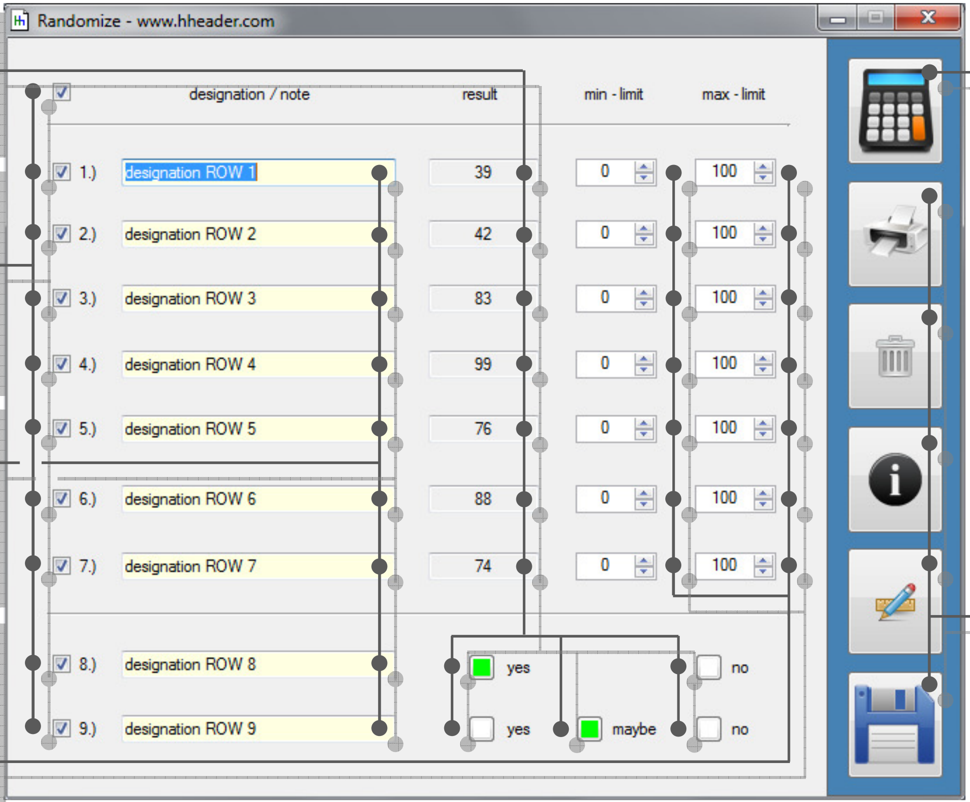
13.5.3. Operation (How can it be used? How to proceed?)

Step 5:
Check results
After clicking the Calculate-Button I can check the results.

Step 1:
Consider position
I can select if the corresponding position is considered or not. Clicking the *CheckBox* in the top will select, respectively unselect all items below at once.

Step 2: (option)
Fill the Input-*TextBoxes*
I can enter designations for the single rows. The variable type is string. There are no plausibility checks provided for the entries.

Step 3:
Set the limits – define the range
I can set the limits for the minimum and maximum values. Thereby the range is defined. The random number will be in between the limits.



Randomize - www.hhheader.com

☑	designation / note	result	min - limit	max - limit
☑ 1.)	designation ROW 1	39	0	100
☑ 2.)	designation ROW 2	42	0	100
☑ 3.)	designation ROW 3	83	0	100
☑ 4.)	designation ROW 4	99	0	100
☑ 5.)	designation ROW 5	76	0	100
☑ 6.)	designation ROW 6	88	0	100
☑ 7.)	designation ROW 7	74	0	100

☑ 8.)	designation ROW 8	🟩 yes		□ no
☑ 9.)	designation ROW 9	□ yes	🟩 maybe	□ no

Figure 221: form randomize

Step 4:
Calculate result
After I entered the input values I can calculate the result. Before the calculation starts, all the input values are checked by an internal routine. Whenever entered values decrease the corresponding min limits or increase the corresponding max limits or are not numeric there will be a message according to the fault. The values will be corrected automatically by the internal routine.

Step 6:
Further actions
After the calculation I can have the following options: Print Data, Erase Data, Program Information, Notes, Save or Restore Values. While printing a new calculation is done automatically. Clicking the Erase-Button will empty all the *TextBoxes* at once.

13.6. Date and Day

13.6.1. Purpose (What can it be used for? What can it not be used for?)

The program is part of category 8 – general. Appointments, dead-lines, targets etc. are usually defined by dates including the day of the month, the month and the year. Often or sometimes it is interesting to know which day of the week and which calendar week belongs to a given date. It is easy to find out, if the given date belongs to the actual year, because calendars for the actual year are available almost everywhere. But what if there is a need to look some years forwards or backwards? Even scrolling the calendar of a personal computer, a lap-top or a notebook years into the future or into the past, is not too comfortable.

The program calculates the day of the week and the calendar week for a given date. There are seven rows provided. For each row there is a *CheckBox* provided. By this the single rows can be activated or deactivated. Only activated rows are included in the calculations. Each row consists of one *ComboBox* to enter the day of the month, one *ComboBox* to enter the month, one numeric field to enter the year and two *TextBoxes* for the resulting day of the week and the resulting calendar week.

The range for the given year is from 0 to 9999. The calculations refer to an internal algorithm. Be aware that historical reforms of the calendar cannot be considered by the algorithm. Further be aware that the max limit for the day of the month will be corrected automatically if the selected value is greater than the max limit value for the selected month.

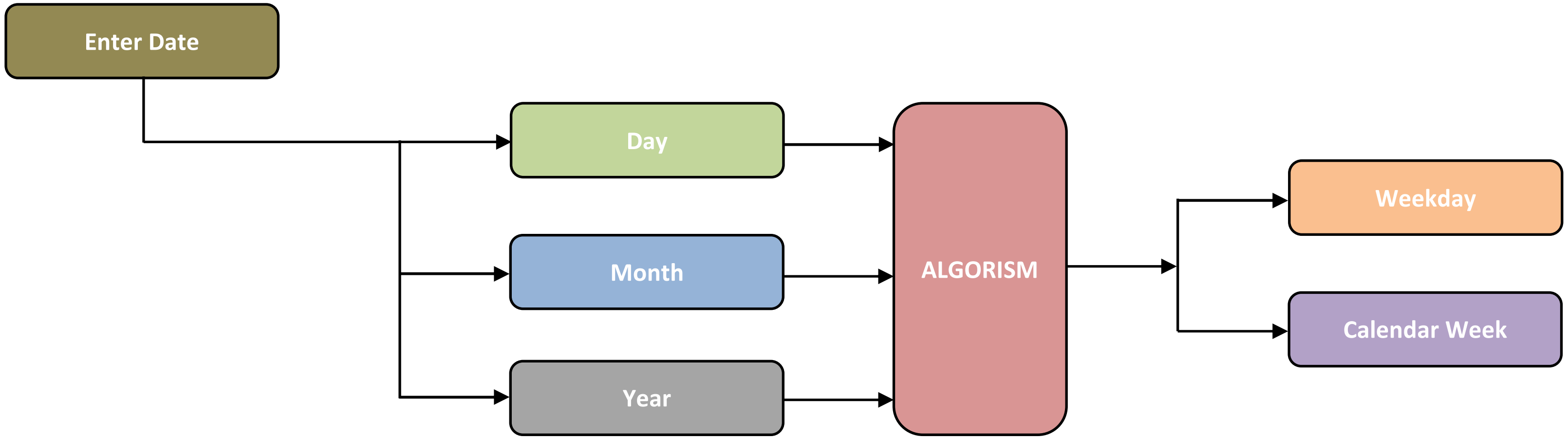


Figure 222: sketch date and day

13.6.2. Variables (What are the input and output values? What are their limits?)

day

It is the day as day of the month by number that is focus for the calculations.

The variable type is Input or Output.
The unit is day [day].
The minimum limit is 1.
The maximum limit is 31.
The variable has no replacement value.
The number of digits is 2.

year

It is the year of the date that is focus for the calculations.

The variable type is Input.
The variable has no unit [-].
The minimum limit is 0.
The maximum limit is 9999.
The variable has no replacement value.
The number of digits is 4.

month

It is the month of the date that is focus for the calculations.

The variable type is Input or Output.
The unit is month [month].
The minimum limit is 1.
The maximum limit is 12.
The variable has no replacement value.
The number of digits is 2.

weekday

It is resulting day of the week that is calculated from the given date.

The variable type is Output.
The variable has no unit [-].
There is no defined minimum limit for output variables.
There is no defined maximum limit for output variables.
There is no defined replacement value for output variables.
There is no defined number of digits for output variables.

week

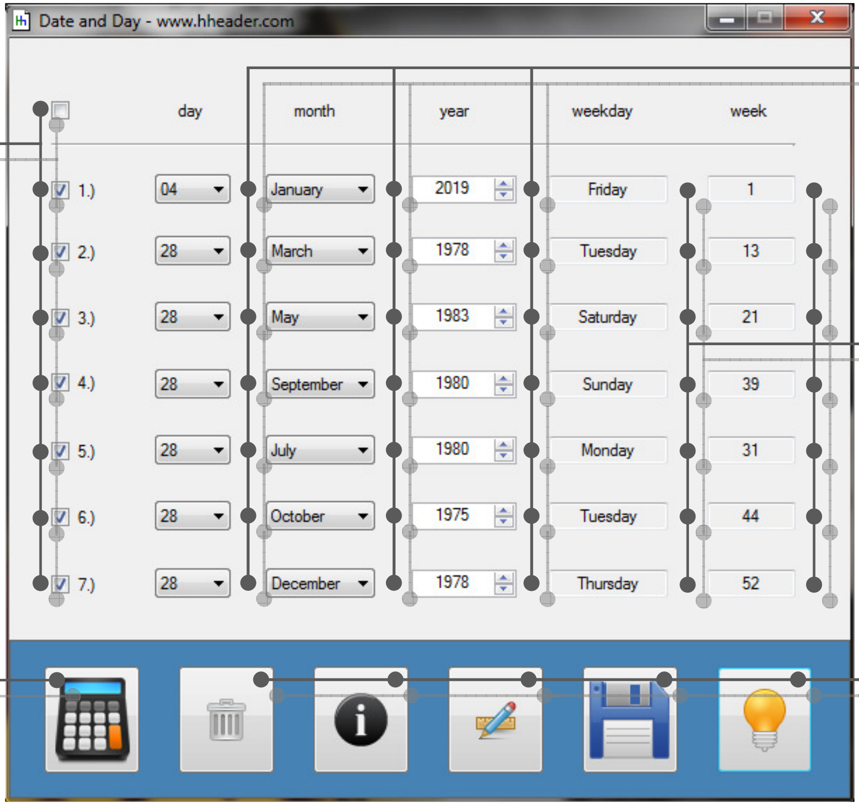
It is the number of the week that results from the given date.

The variable type is Output.
The variable has no unit [-].
There is no defined minimum limit for output variables.
There is no defined maximum limit for output variables.
There is no defined replacement value for output variables.
There is no defined number of digits for output variables.

13.6.3. Operation (How can it be used? How to proceed?)

Step 1:
Enable the rows
I can enable the rows that should be included in the calculation. Clicking the *CheckBox* in the top will select, respectively unselect all items below at once.

Step 3:
Calculate result
After I entered the input values I can calculate the result. Before the calculation starts, all the input values are checked by an internal routine. Whenever entered values decrease the corresponding min limits or increase the corresponding max limits or are not numeric there will be a message according to the fault. The values will be corrected automatically by the internal routine.



Date and Day - www.hheader.com

□	day	month	year	weekday	week
☑ 1.)	04	January	2019	Friday	1
☑ 2.)	28	March	1978	Tuesday	13
☑ 3.)	28	May	1983	Saturday	21
☑ 4.)	28	September	1980	Sunday	39
☑ 5.)	28	July	1980	Monday	31
☑ 6.)	28	October	1975	Tuesday	44
☑ 7.)	28	December	1978	Thursday	52

Figure 223: form date and day

Step 2:
Enter the date
I can enter the date for the single rows. Therefore corresponding *ComboBoxes* for the day and the month are provided. The year can be entered via a numeric field.

Step 4:
Check results
After clicking the Calculate-Button I can check the results.

Step 5:
Further actions
After the calculation I can have the following options: Print Data, Erase Data, Program Information, Notes, Save or Restore Values. While printing a new calculation is done automatically. Clicking the Erase-Button will empty all the *TextBoxes* at once.