Gantner instruments

e.commander

Instruction Manual

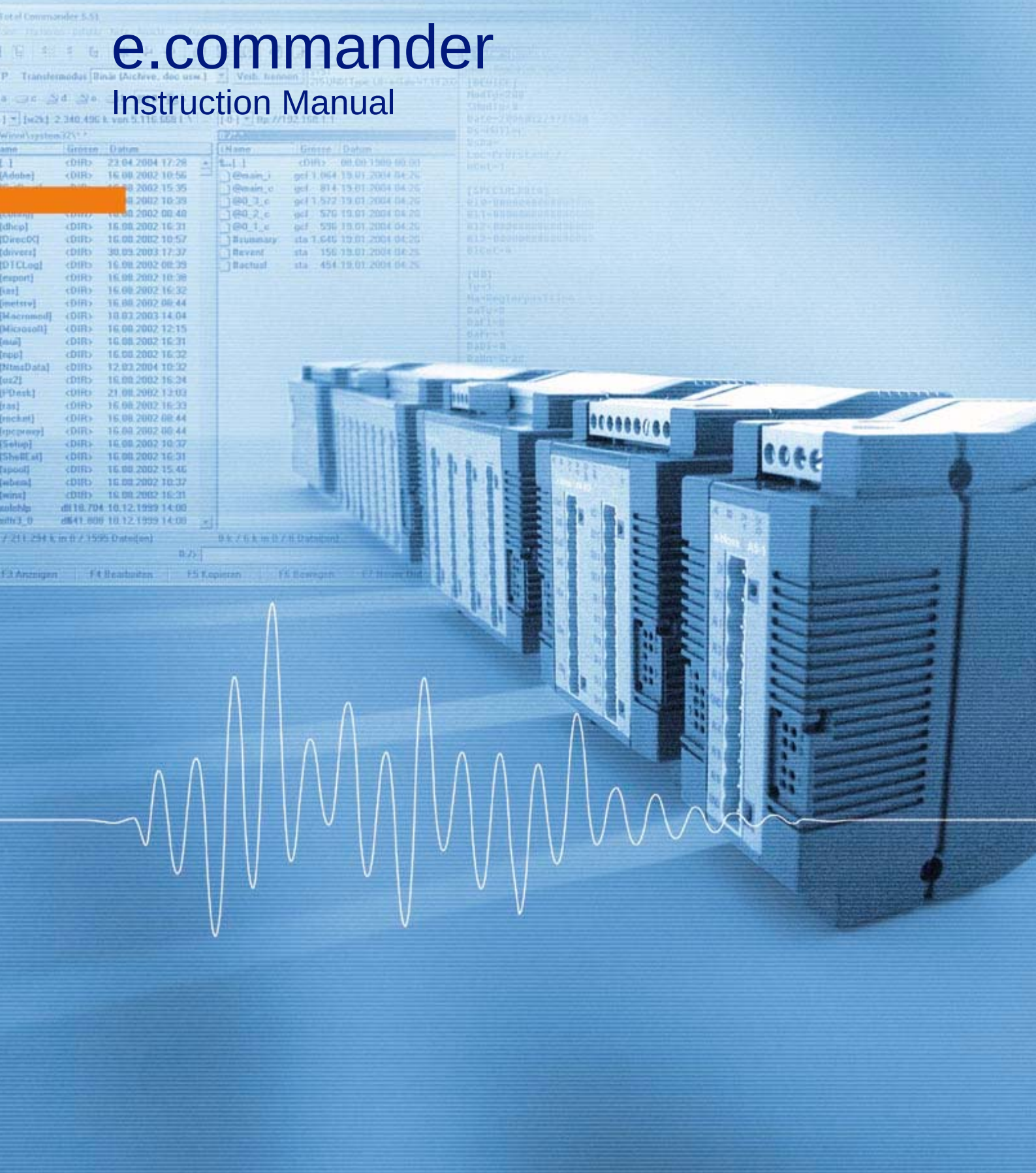


TABLE OF CONTENTS

1. ABOUT THIS MANUAL

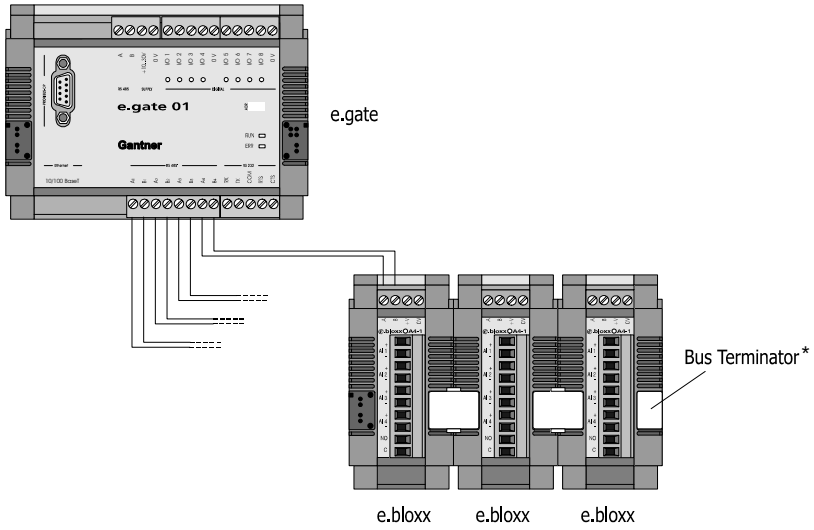
This manual describes the handling of the e.commander Software for configuration of an e.bloxx system with an e.gate or e.pac. This software package is a comfortable tool to configure such a system either in the online or offline mode. Several features are available to run this package and a data base for configuration files is included as well.

The following information can be found in this manual:
- Description of the e.commander
- Installation description
- Description of the different types of functionality

2. SOFTWARE DESCRIPTION

2.1. Overview

The e.bloxx modules have been developed for the industrial and experimental testing technology, especially for the multi-channel measurement of electrical signals of thermal or mechanical data at test beds and test sites.



Picture 2.1 *– e.bloxx system for test bed applications*

For test application several numbers of analog and digital inputs and outputs are required. For all these signals we provide different kind of modules which will be connected to an e.gate/e.pac which is the interface between all the sensor signals via the e.bloxx modules and an automation system to speed up the data transmission and to define testing procedures. Depending on the requirements for such a testing application the e.bloxx modules as well as the e.gate/e.pac itself have to be configured. This configuration can be done with the e.commander in a very comfortable way.

The e.commander works like an FTP-Client, so data transferis realized by block transfer. Only during this transfer the working mode is ONLINE. So the software e.commander is not an ONLINE tool. Just within function the “READ ONLINE VALUES” the communication is ONLINE. This type of working allows the user to use another FTP-Client to configure the measuring system All files in the e.gate/e.pac are readable and writable e.g. by Total Commander.

The e.commander software itself has included the e.bloxx configuration software ICP100 and the visualization tool Green Eye Writer. The advantage is that all the e.bloxx modules can be configured in the same way as without the e.commander, all your experience of configuration can be used further on.

With a licensed version of the e.commander you can work with the ICP100 directly without the necessity to start the e.commander, this software package is licensed together with the e.commander, no additional license code will be required. This procedure is similar with the Green Eye Writer.

Attention: A license code just for the e.commander (without ICP100 or Green Eye Writer) is not available!

3. INSTALLATION OF THE SOFTWARE

3.1. System Requirements

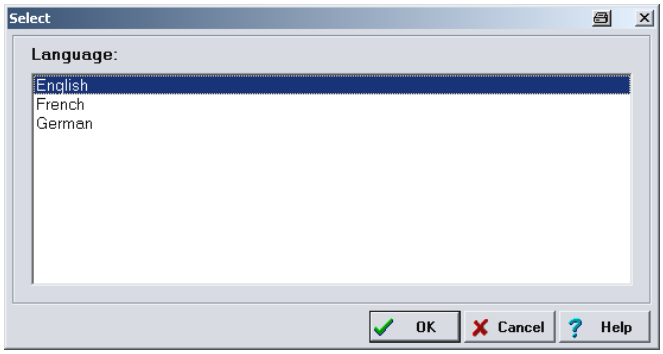
Windows 98 or higher
Min. 20MB of free disc space to store all projects and history data
Connected Ethernet Interface

3.2. First steps of using

After starting the SETUP the software packages e.commander, ICP 100 and Green-Eye-Writer as well as some tools will be installed. At the end of the installation process, a readme.txt file is offered to inform you about the modification between the versions.

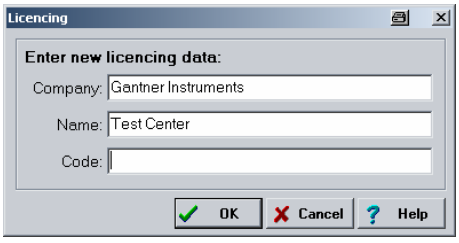
The program will be installed into the program file Gantner instruments/e.commander resp. ICP 100.

The first time you start the e.commander, you will get a request to select the language for the e.commander as well as for the ICP 100.



After all these settings had been done you will get the information that the demo version had been started and a license code will be required to run the software with full functionality.

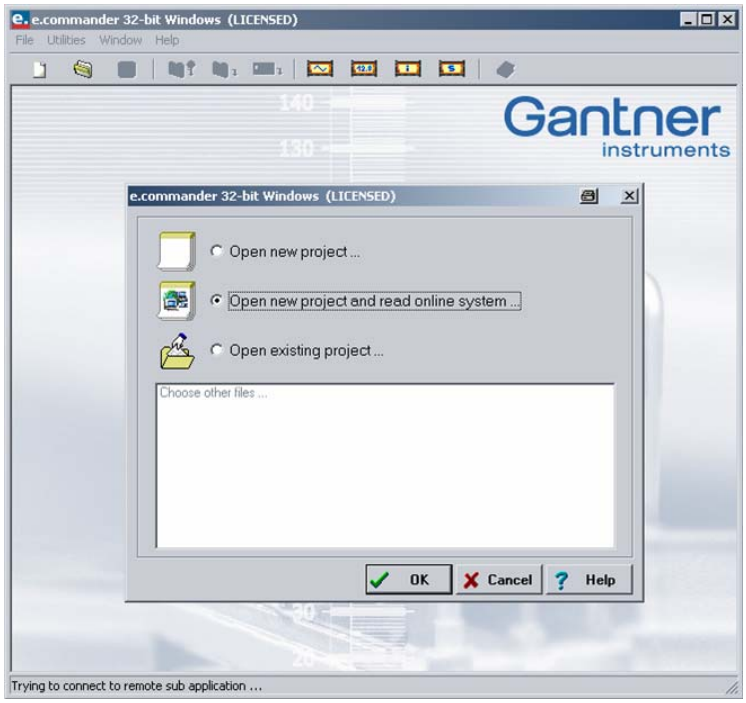
Therefore please click the “License” button to enter your license number completely (Company, Name, Code):



The next time you start the software you will get to the working platform automatically.

4. START OPTIONS

4.1. Start Up



When starting the software there are three possibilities to work with:

- Open new project
- Open new project and read online system
- Open existing project

Usually this software package works in the offline mode on the local PC or laptop. Only for data transmission it is being switched to the online mode and data are being transferred via the FTP interface of the e.gate/e.pac.

After starting the program the 3 possibilities can be selected using the menu *File* (*New Project, Open Project*) or click the right mouse button in the worksheet (*Add Online Concentrators…*) for "*Open new project read online system…*".

Attention: In case a non actual firmware in the e.gate/e.pac a hint will be shown during the communication with the instrument. We recommend downloading the latest firmware to provide the full functionality (see 7.1. Firmware Update).

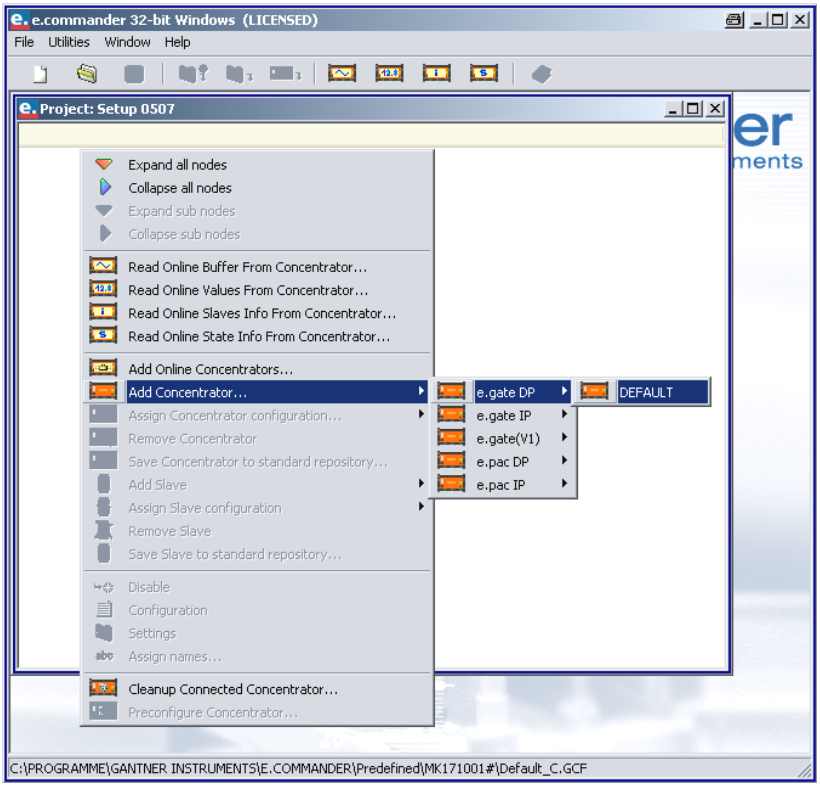
4.2. Open New Project

With "Open new project" a new project will be defined and it is being configured in the offline mode. First of all a project name has to be defined.

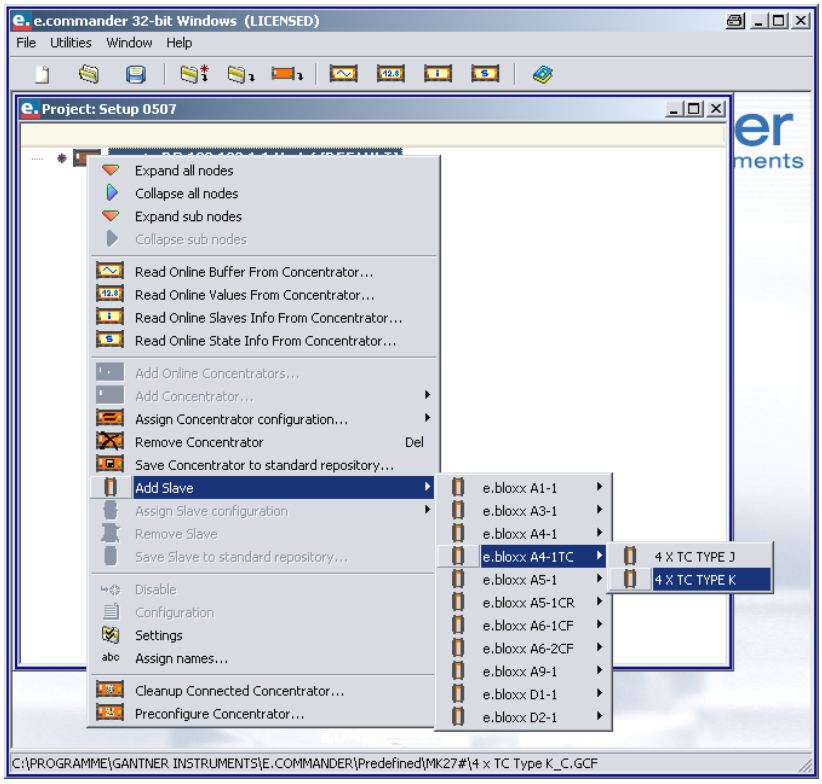
Right afterwards a white screen opens and with clicking the right mouse button in this window a menu opens where you can select "Add Concentrator", "e.gate" or "e.pac" and either a default setting or if already available an existing e.gate/e.pac configuration.

If an e.gate/e.pac already is connected, this information can be read as well by selecting "Add Online Concentrators…". In this case follow the further steps according to chapter 4.3.

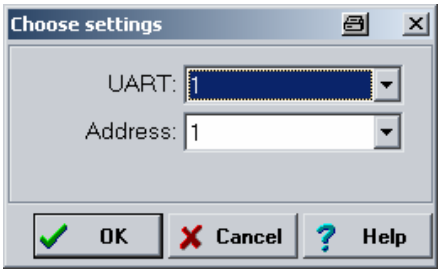
A red star beside the displayed modules shows that the setup is not already downloaded to the e.gate/e.pac.



Now the modules for the new project have to be selected. Once again click the right mouse button on the description of the e.gate/e.pac you have added just before. Move to “Add Slave” and select the required module with one of the predefined configurations



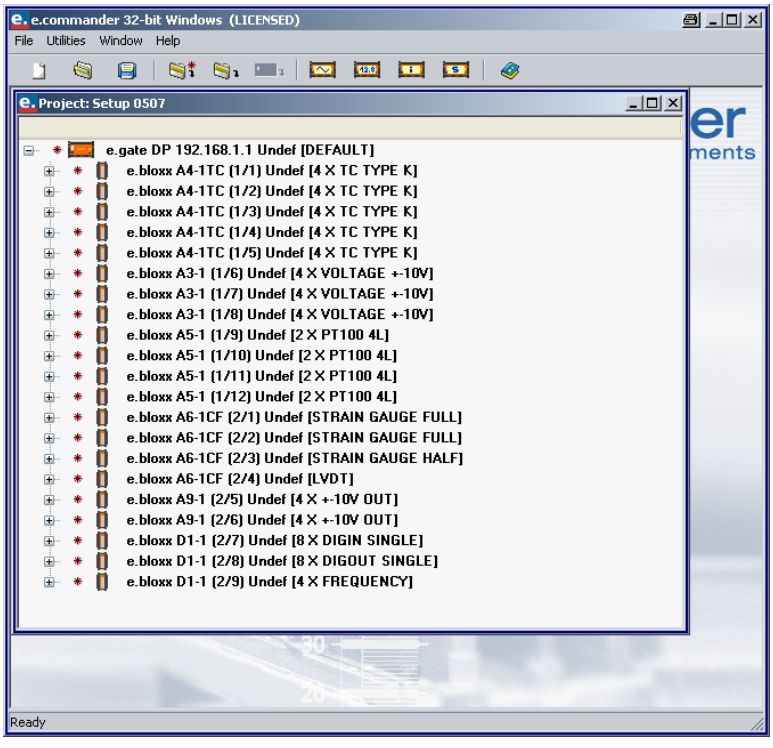
In the following window you have to define the UART of the e.gate/ e.pac where the module has to be connected to and which address the module should have within the UARTs 1 to 4.



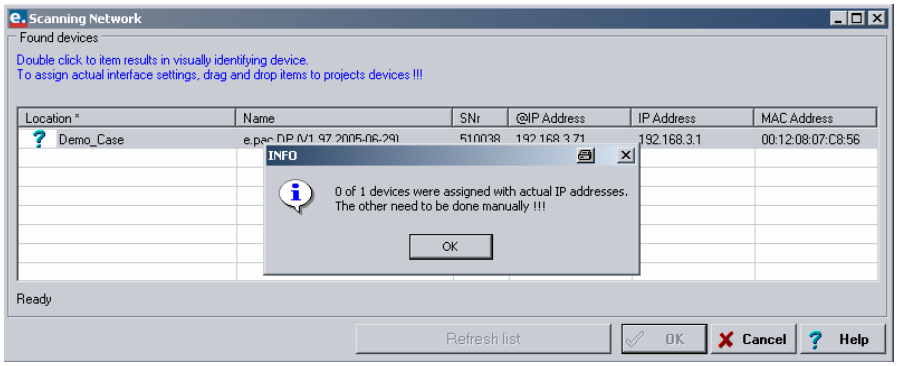
Following this step again and again the system is being built up:

The e.bloxx are listed in the window with its type, UART and address (both in brackets).

Now the module setting is done and the configuration can be downloaded to the e.gate/e.pac. The condition for a successful download is that the connected modules according to the just done setting.



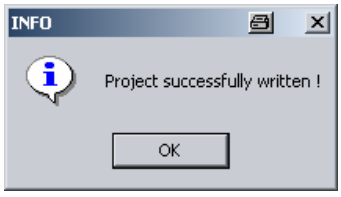
Select the function *Write Project (All)…* in the menu *File* or click the download button. e.gates/e.pacs are found (identified by “IP Address” and “Location”) the assignment is done automatically. Changes can be done by drag and drop of found items to the items inside the project.

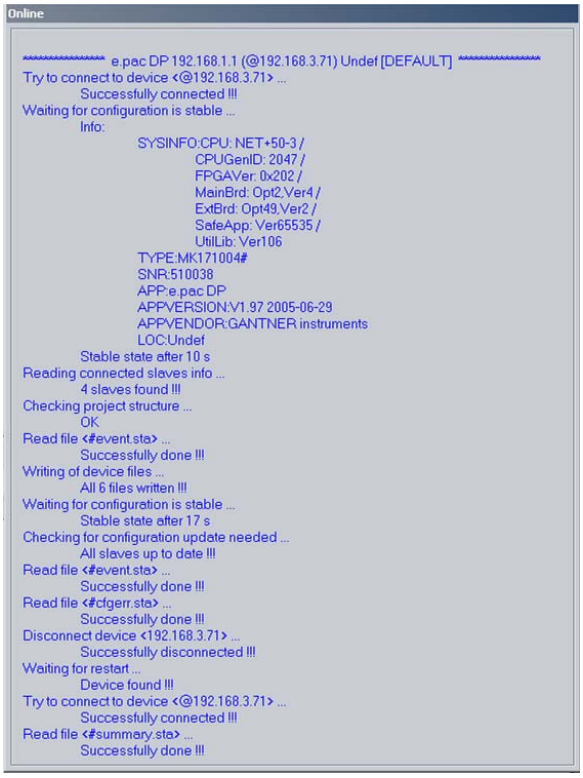


Is the e.gate in a network connected with the PC first time, it is necessary to assign the IP-address manually. The following *Scanning Network* windows will be shown.

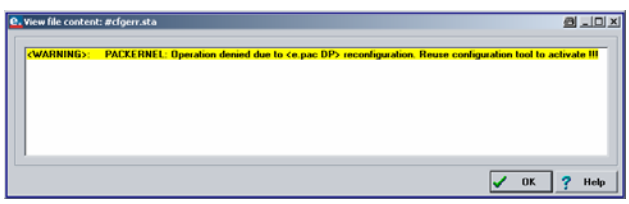
After confirmation the Info-window, drag and drop the e.gate/e.pac with the appended question mark(in the example above called “Demo Case”) to the e.gate/e.pac in the worksheet it correlates with and the IP address will be “updated”. Afterwards the question mark will change to a check mark.

Click *OK* to run the upload. The *Online*-window shows the single steps of the upload. During this procedure the measuring system will be restarted as well. At the end a INFO window shows that the project is written to the e.gate/e.pac successfully.



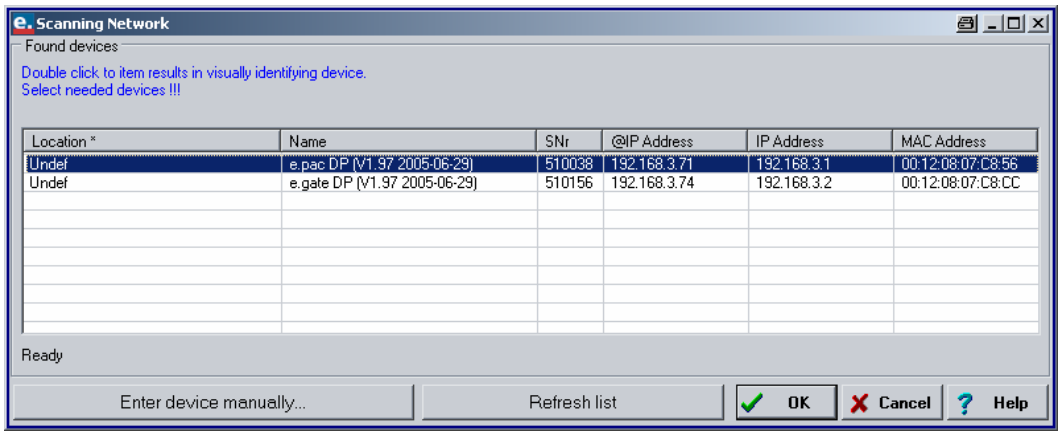


Using the e.pac a hint will explain that the e.pac setup is different from the kernel program (done by e.con).



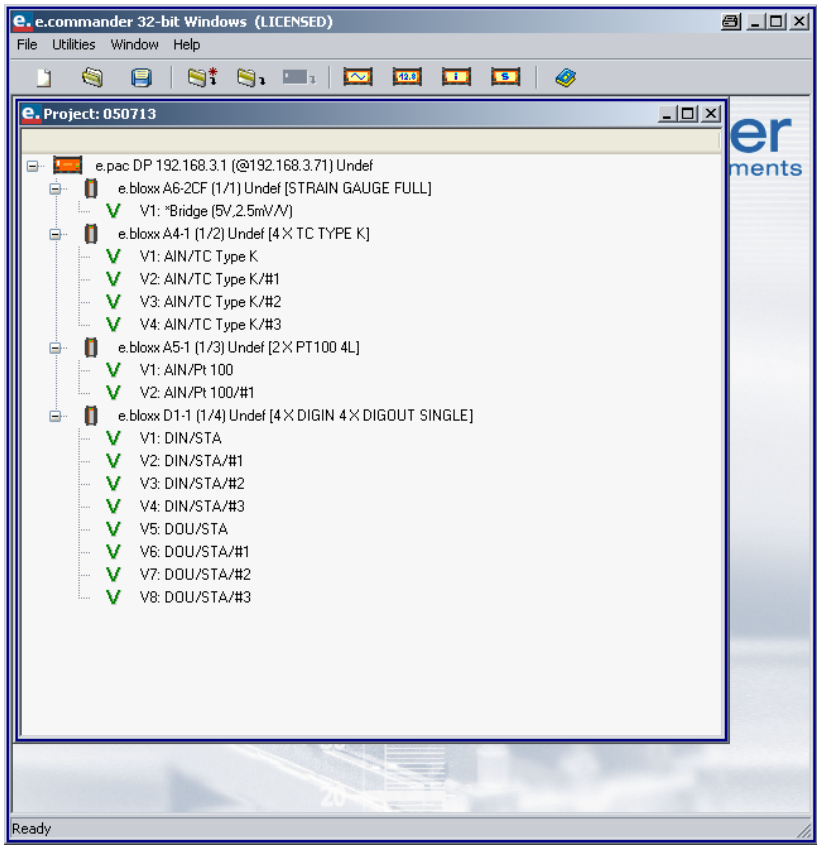
4.3. Open New Project and Read Online System

This “Open new project and read online system” option is being selected as soon as a connected system has to be started or an existing system has to be updated. It is necessary that the measuring system is connected online to the PC. After selecting this option and name a new/selected existing project the network will be scanned for connected e.gate and e.pac modules:



By double clicking one of the e.gates/e.pacs found, makes the red and green LED of the e.gate/e.pac blinking fast for a few seconds. This indicates if this is a system you are going to work with.

The whole setup will be read and the configuration is shown in the worksheet.



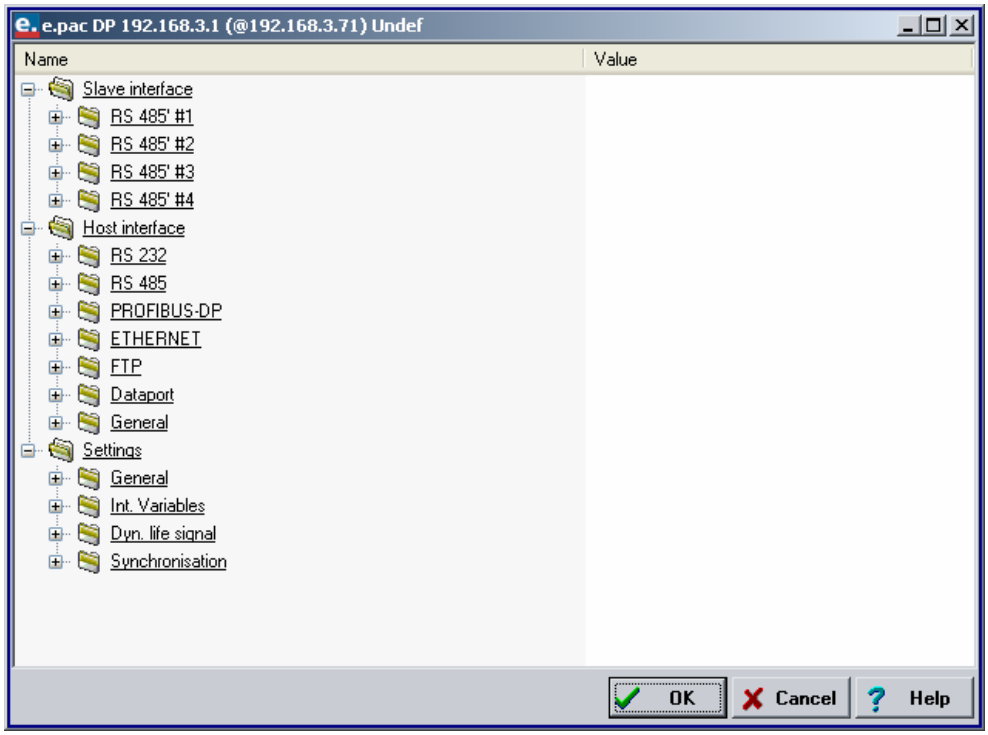
4.4. Open Existing Project

The handling is similar to chapter 4.3. but no online connection had been established to read an actual system configuration. Therefore you have to take care that the system where you download a new configuration to has the correct number / type of modules and settings.

5. SETTINGS

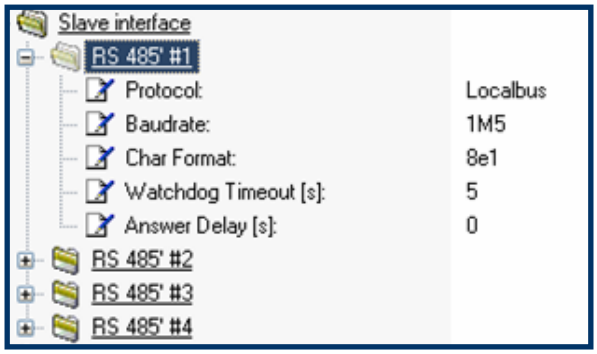
By clicking the right mouse button on an e.gate or e.pac symbol the context menu offers the function *Settings.* The following window provides the selection for the setup of the

- Slave interfaces
- Host interfaces
- Settings of the module



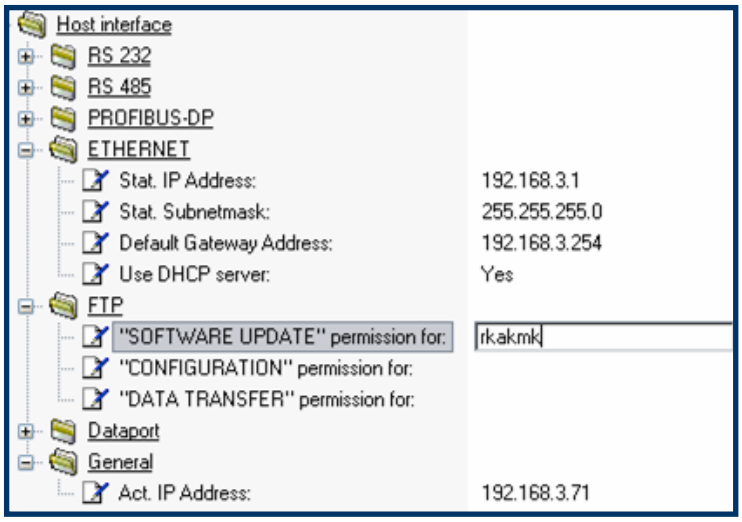
5.1. Slave Interfaces

The e.gate/e.pac provides 4 slave interfaces for the connection of the e.bloxx modules. In the following these interfaces are indicated as UART1…UART4. The settings like baud rate and delay time are selectable. The protocol is fixed to Localbus, 8e1. This setup will overwrite the setups in the module to ensure a communication.



5.2. Host Interfaces

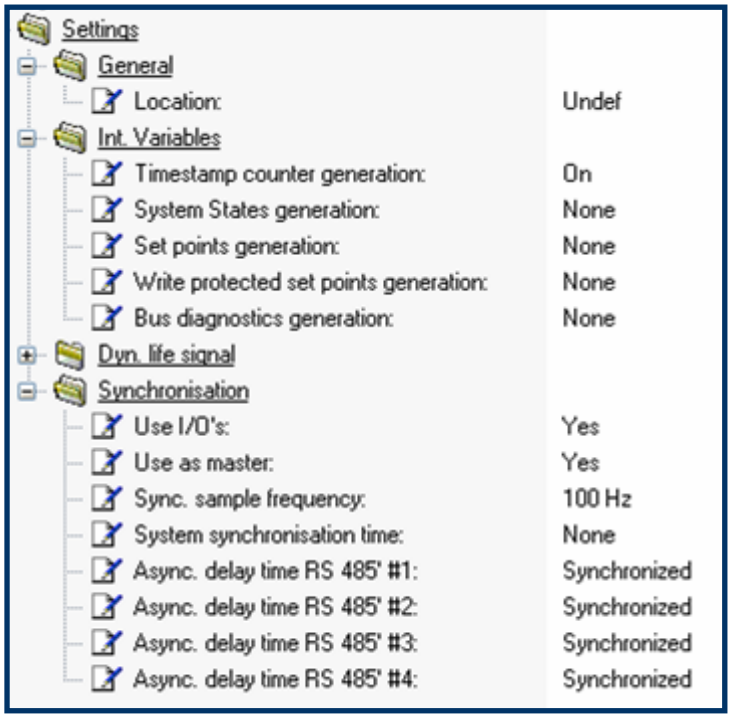
To connect the e.gate/e.pac to a host there are several interfaces available. The most important interfaces are Profibus-DP and Ethernet. These settings are done in this menu.



By using DHCP it is necessary that the Static IP Address and the Default Gateway Address fit together. The actual dynamic IP address can be displayed in the *General* selection.

Within the function *FTP* a password protection can be activated. It is necessary to work without or with all 3 passwords. In case of forgotten passwords please contact Gantner Instruments at office@gantner-instruments.com

5.3. Settings



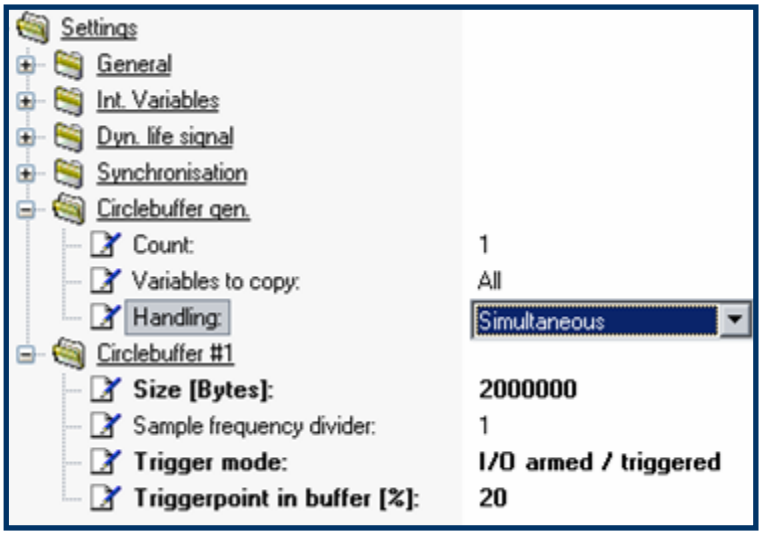
To define the e.gate/e.pac configuration the menu *Setting* has to be selected.

It is possible to name the module (location of the module), to dfine internal variables, a dynamic life signal (watchdog), to synchronize the UARTs and e.gates/e.pacs (if there are several units being used within one system).

If the slave interfaces are synchronized, a jitter between the measurements of only 20 µs is possible. Even the maximum sample rate for a whole system can be set. With the *Statistic - Check* function (chapter 9.1) it is possible to check whether the selected rate is possible in the defines setup and format.

The menu *Settings* differs between an e.gate and an e.pac.

Using the e.pac it is possible to define 100 set points (read/write) and 100 protected set points (read only). This function will be used to read and write parameter and measurements used/generated in an e.con application. The circle buffer will not be handled in the e.commander. Only the e.con is able to define and configure the buffer for 5 archives with 1 MByte for measurements each.



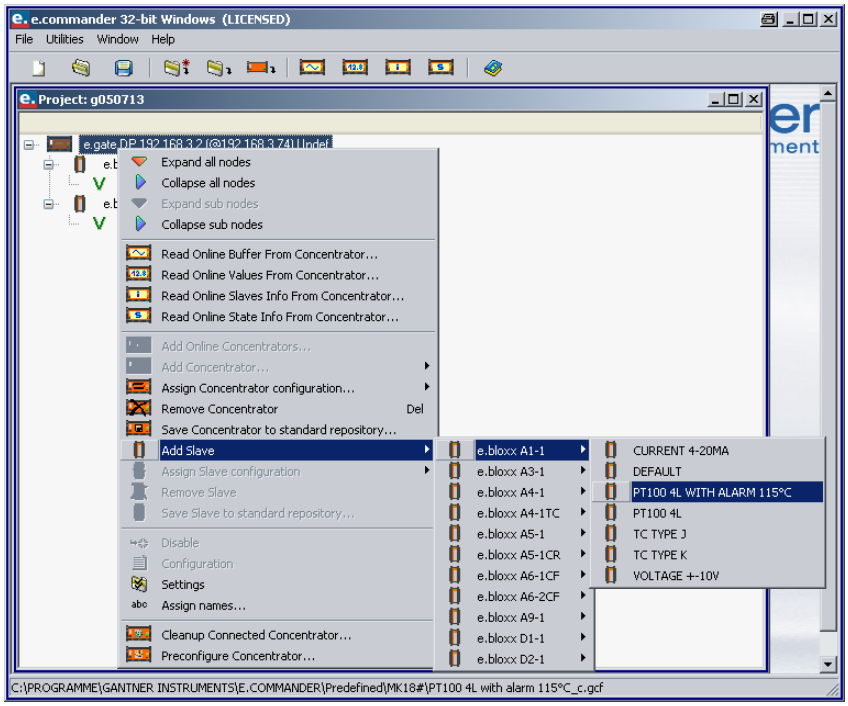
Using the e.gate the buffer management can be done by the function *Settings*.

Settings like the number of buffers (1 or 2), variables to be stored, simultaneous or sequential storing can be defined. Buffer size, sample divider (e.g. a fast and a slow buffer), trigger mode and trigger position (pre-trigger) will be defined as well.

6. TEMPLATES AND MODULE CONFIGURATION

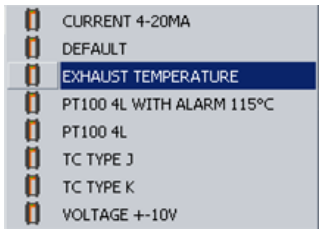
6.1. Using Templates

As a default the e.commander offers the most usual module setups as templates for the e.gate/e.pac and all slave modules. For the modules the context menu *Add Slave* (right mouse button on e.gate/e.pac) can be used, for the e.gate/e.pac the context menu *Add Concentrator* (right mouse button in a free space of the worksheet) is relevant.



With *Assign Slave Configuration* (selectable when clicking the right mouse button on an e.bloxx module) an existing configuration can be assigned to the selected module. As soon as one module configuration changes the module is marked with a red star in front of the module. When having finished the reconfiguration of the system you can download the new configuration to the system either by clicking the  button to update the whole system or by clicking the button with the red star in the symbol only the modules are updated where you have changed the configuration. Both functions are available in the menu *File.*

As soon as a new configuration is sent to the e.gate/e.pac – e.bloxx system a history file will be created and the red star in front of the changed modules will disappear.



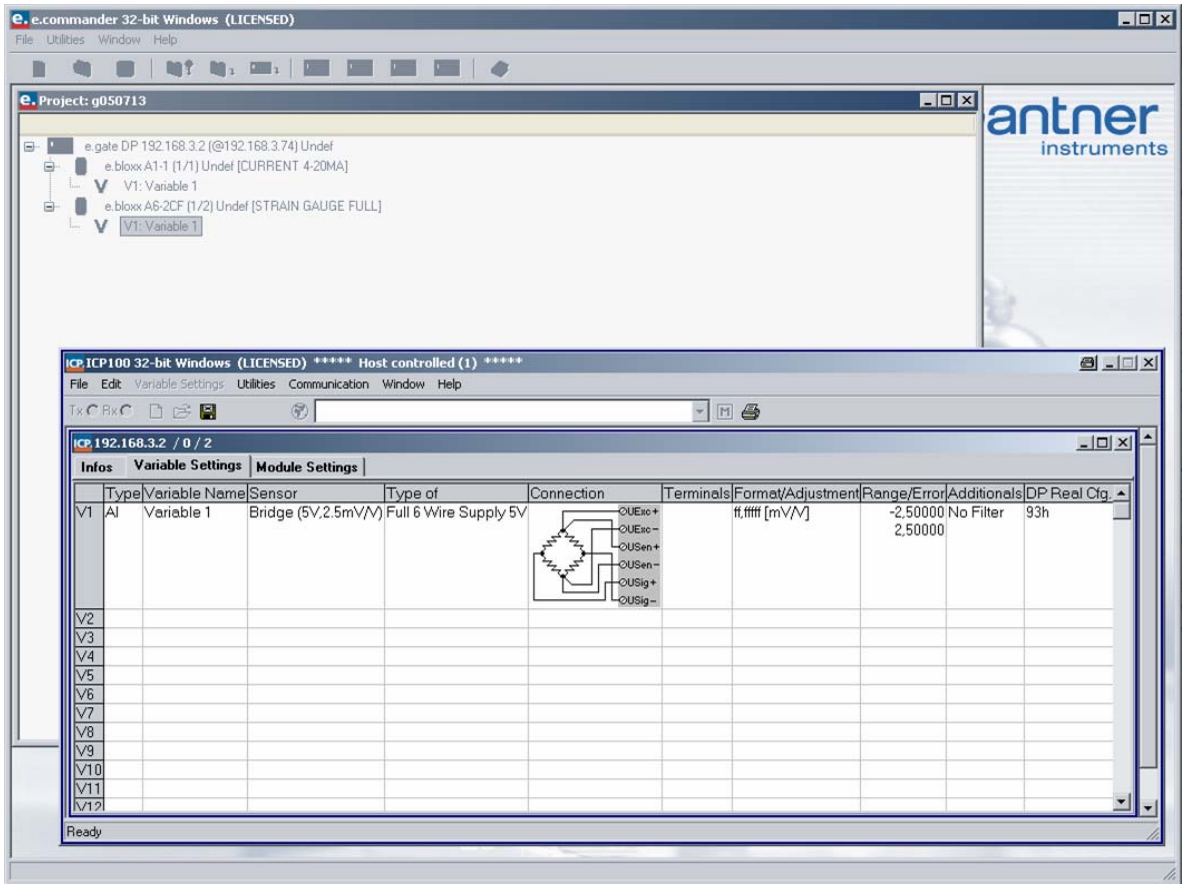
A new configuration of the e.gate/e.pac or the e.bloxx can be stored in a data base so that this configuration can be used for additional systems of the same kind or if some configurations of the e.bloxx are often used. To store these configuration files to the data base click the right mouse button either on the e.gate/e.pac symbol in the system tree, select *Save Concentrator to Standard Repository* and define the name for this e.gate/e.pac configuration or click the right mouse button on the e.bloxx symbol in the system tree, select *Save Slave to Standard Repository* and define a name for this type of configuration as well (e.g. Exhaust Temperature). The templates are stored in the file *Gantner instruments - e.commander - Predefined - MKxx* and can be deleted, copied etc.

This way all configurations are available for different projects and this procedure save a lot of time in setting up a complex test bed application system.

6.2. Module configuration using ICP 100

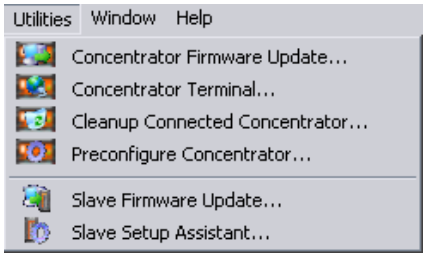
For the configuration of each connected measurement and I/O module the software ICP 100 is implemented in the e.commander. By clicking on a module or a variable of a module, which configuration has to be changed the ICP 100 configuration software starts automatically - as soon as you start the e.commander the ICP 100 will run in the background as well - so there is no need to start this software package separately.

The module configuration can be done as indicated in the ICP 100 manual. After the configuration the changing is not valid before downloading into the e.gate/e.pac.



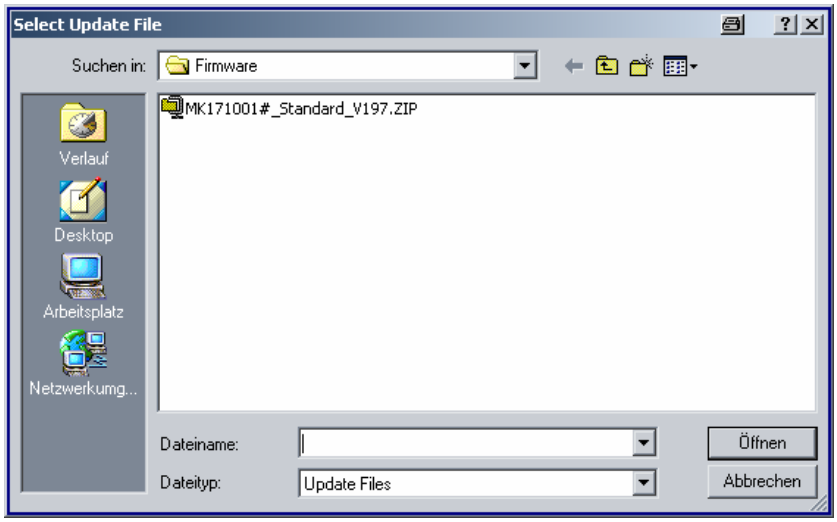
7. UTILITIES

The menu Utilities offers some very helpful functionality and tools to work with the product family e.bloxx.



7.1. Concentrator Firmware Update

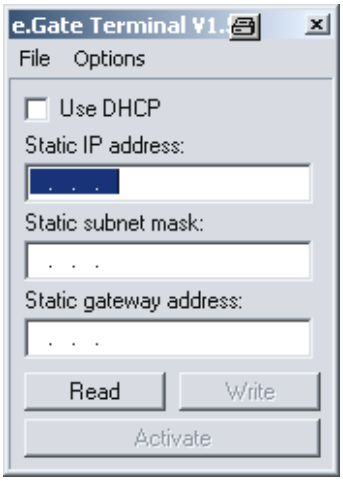
To make sure that the latest functionality is available we recommend downloading the latest firmware into the module. This version is available within the e.commander and the download can be started by selecting the menu *Concentrator Firmware Update…* After the network scan select the latest version from the firmware directory.



Attention: It is mandatory that the connection between the PC and the e.gate/e.pac will not be interrupted during the loading process. The process will take approx. 3 minutes; a new start of the system will be done automatically.

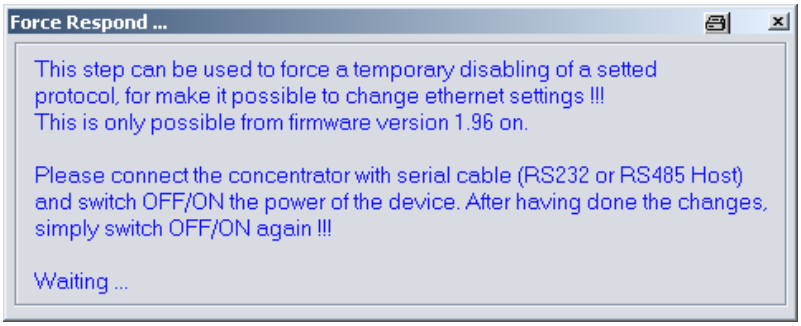
7.2. Concentrator Terminal

The default IP address of the e.gate/e.pac is default set to 195.168.1.18, DHCP active. If you want to connect the e.gate/e.pac to the company´s network, the IP-address has to be changed. Therefore the RS232 port of the e.gate/e.pac has to be connected to a COM-Port of the PC (via the included cable). Now select *Concentrator Terminal…* in the *Utilities* Menu and the terminal program will start. When not using the e.commander to change the IP-address you can do this with the "e.gate Terminal" program as well.



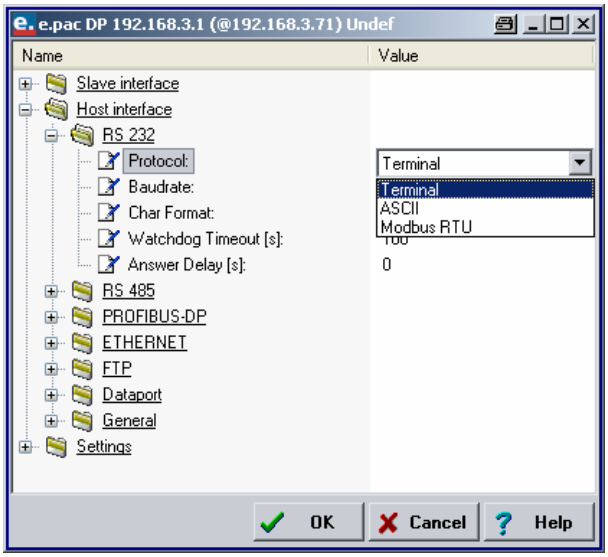
With *Read* the actual IP-address is read and will be changed to the IP-address of the network. Selecting *Write* this new IP-address is being sent to the e.gate and with *Activate* the e.gate/e.pac reboots with the new IP-address.

As the RS232 interface can talk in ASCII and Modbus protocol as well it might be possible that you do not have access via the Terminal program. In that case select **Options** and *Force Respond…* in the Terminal program. The following message will be provided:

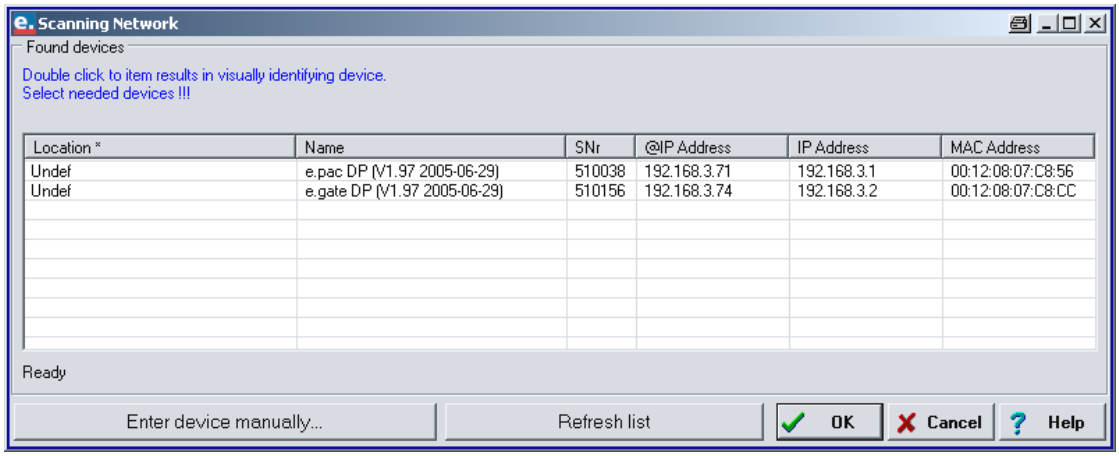


This functionality makes the e.gate/e.pac start with the Terminal protocol temporarily just for setting the IP address. After the new IP-address is sent to the e.gate/e.pac and you selected *Activate* the previous protocol for the RS232 interface will be set.

Remark:
To change the protocol of the RS232 interface select the e.gate/ e.pac in the system tree, mark the e.gate/e.pac and click the right mouse button. Via *Settings* and *Host interface* you will get to the section where the protocol can be selected:



As soon as *Open new project and read online system* is being selected the net is being searched for all connected e.gates/e.pacs and the following window opens:



By double clicking one of the e.gates/e.pacs found, makes the red and green LED of the e.gate/e.pac blinking fast for a few seconds. This indicates if this is the system you are going to work with.

7.3. Cleanup Connected Concentrator

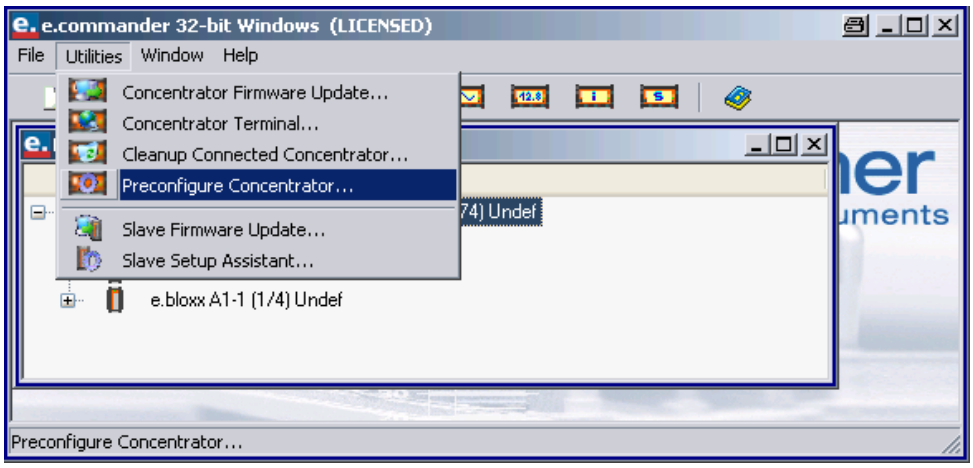
This is a very useful functionality if an e.gate/e.pac which had already been used in a system is being transferred to a different system. Usually the e.gate/e.pac is connected to a system and the *Open new project and read online system* functionality will be selected. When doing so the e.commander detects a difference in the online system and the configuration in the e.gate/e.pac. The modules defined in the e.gate/e.pac which cannot be identified in the same structure in the online system will be shown in the system tree as inactive modules (light gray color). Then you have to delete these modules from the tree, save the new configuration and re-read the online system. This takes a lot of time. With the functionality *Cleanup Connected Concentrator* from the menu *Utilities* all existing slave configurations in the e.gate/e.pac are being deleted and when reading the online system only the existing slave modules will be detected and shown.

Important: After using this functionality you have to do one of the two following actions:

- read the online system
- write the actual configuration to the e.gate/e.pac

7.4. Preconfigure Concentrator

This functionality is being used e.g. when downloading an existing project into a default e.gate/e.pac. The e.gate/e.pac has to be defined in the tree, afterwards select the e.gate/e.pac and select the preconfigure section.



This way data are just being sent to the e.gate/e.pac and NOT to the modules of the system! Therefore there is no check if the configuration is correct or if it contains errors.

Source of error: The consistency of data is not adhering. In worst case there can be 2 different configurations:

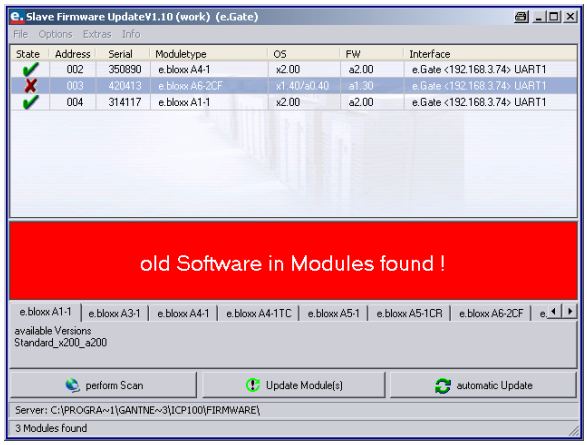
- configuration in the e.commander/e.gate/e.pac
- configuration in the connected e.bloxx modules

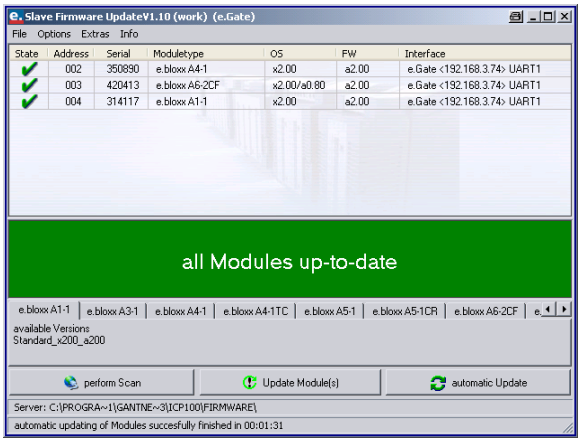
To be sure that the system works fine, always the online system has to be read afterwards!

7.5. Slaves Firmware Update

With this function it is possible to download the latest firmware versions into the slave modules. After starting the slave firmware update a window will open where at first a net scan can be selected. After the scan and the selection of the concentrator the connected slaves and the actual firmware is shown. Is not the latest firmware into the modules a red field will indicate it. In case the modules contains the latest versions the field is green.

Attention: Are there modules used with a firmware version lower than 2.00 at Settings (Command Options) no check button should be set. Are all modules at a firmware state 2.00 or higher the check button *use "Scan for Serialno."* should be selected. The update will be faster with this selection and more possibilities are offered.





The update can be started either with the button *Update Module(s)* - the selected modules wil be updated - or by clicking on *Automatic Update* - the modules with a not latest version will be updated. After the update a green field will be shown.

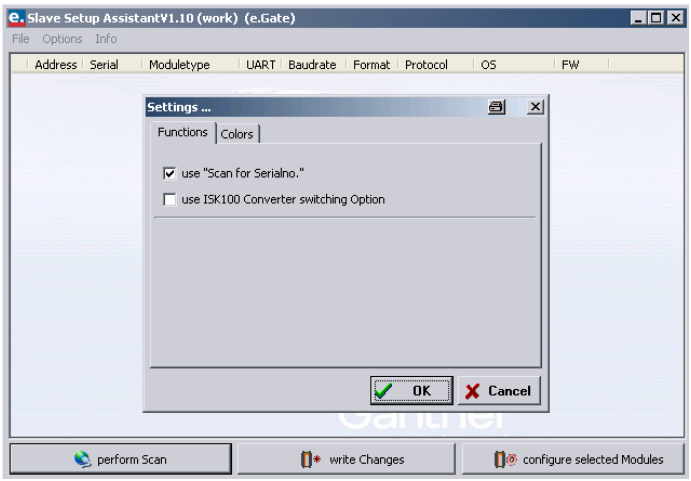
The directory where the update files are stored is shown in the line *Server:…*, are the files stored in a different directory the command *Extras - Set new Firmware Directory* can be used to browse the system. The registers of all modules show the *available Version*.

7.6. Slaves Setup Assistant

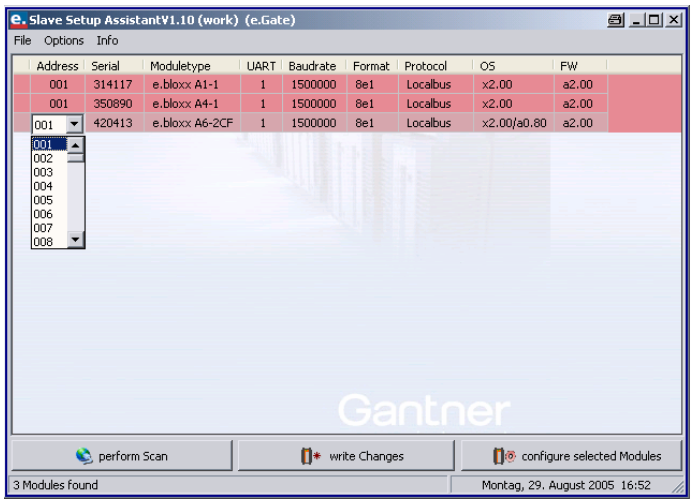
e.bloxx modules delivered from stock have as default the address 01 and a baud rate of 1500000 bps. The function *Slave Setup Assistant* offers a comfortable way to set the address, the baud rate, the selected UART ect. without presetting via the serial interface of the modules. All modules with the address 01 can be connected to the UARTs of the concentrator and the scan can be done for unique serial numbers.

This function is available for modules firmware version 2.00 or higher.

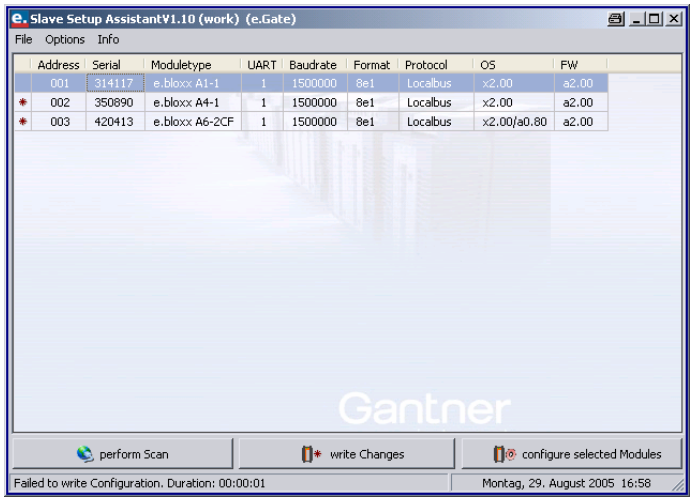
After starting the e.commander the start of the Slave Setup Assistant has to be done. At first the command Options - Settings and Communication Settings has to be done (*Scan for Serialno.*).



After a scan the Assistant will show all connected modules in the following way:



By clicking on a module parameter the configuration (Address, UART, baud rate) can be changed. Further a module configuration file (PRO-file) can be selected by the button *configure selected modules*. After all changing is done it could be written into the modules. The red star indicates that a changing in this module is made.

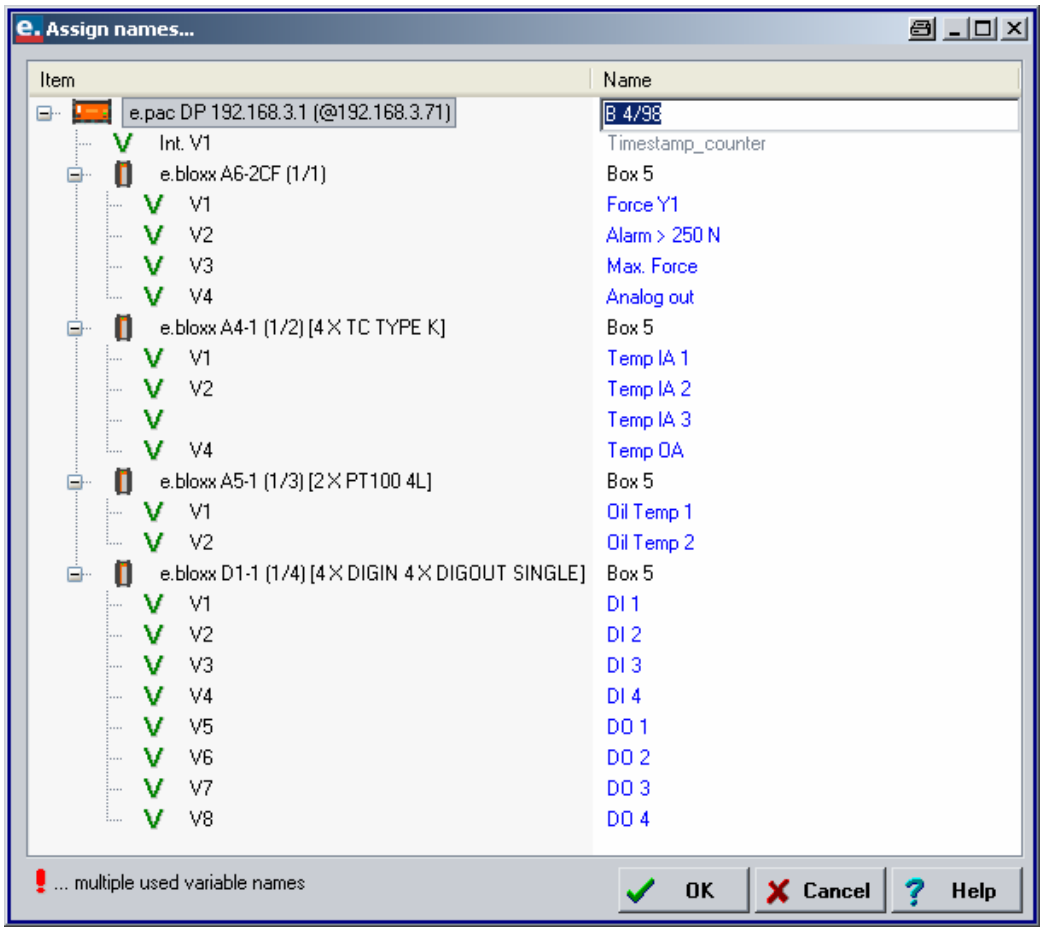


When closing the Assistant the hint reminds that the configuration in the modules differs from the configuration in the e.commander. So it is necessary to *Add Online Concentrators…* or to write the project 

8. ASSIGN NAMES OF THE MEASUREMENTS AND VARIABLES

All variables being used in a system can be assigned with names. In a standard configuration they are called at each module Variable1, Variable2,… To get a better overview on a system it is worth to change these names to e.g. Force, Temperature,… just depending on the application. In case of several equal combinations in a system the variable names in the different module can be the same.

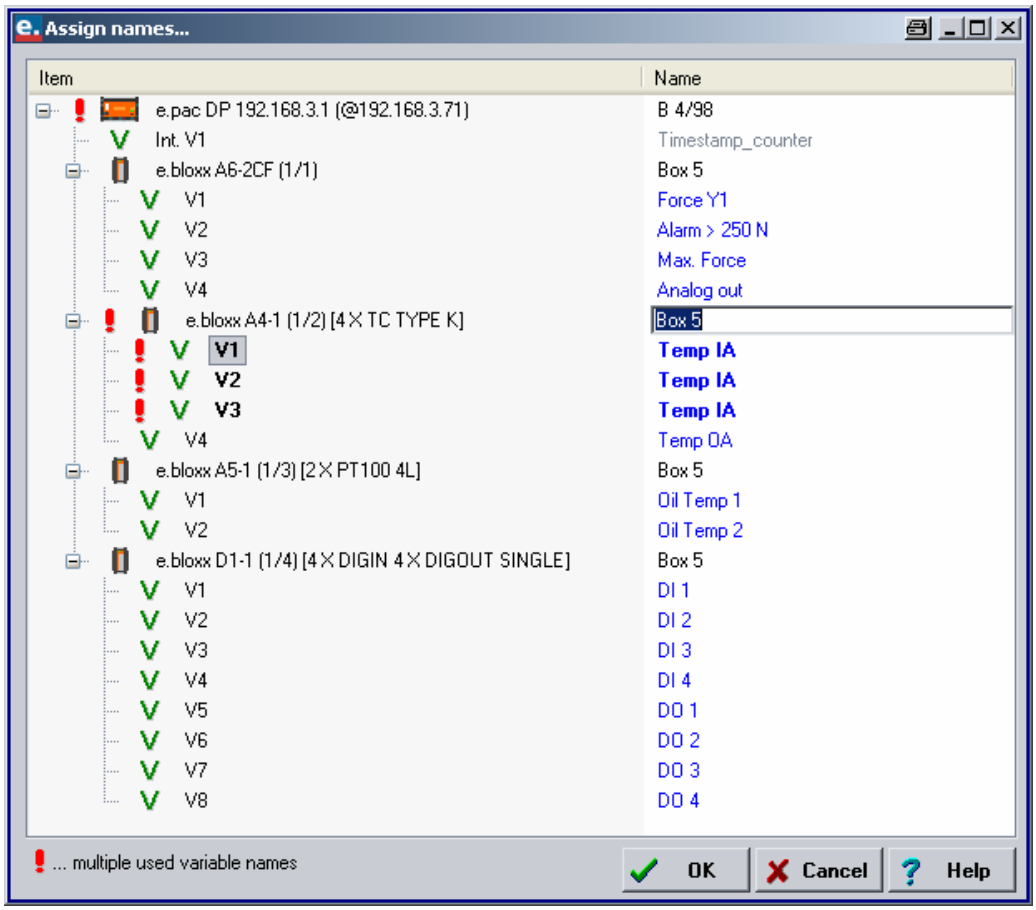
For most software/SCADA packages this is sufficient as they identify the variable by address and channel number. When using an e.pac this is different as the programming tool, the e.con software, refers to the variable name (not address or channel number) and therefore each channel in a system needs a unique name. The system doesn´t accept the same name twice and will show an error window. To check a system for the correct variable names the e.commander software provides a very comfortable tool. Therefore mark the e.gate/e.pac in your system tree, click the right mouse button and select *Assign names*…. Now the following window opens:



In this example each variable has an unique name, the configuration will be fine for programming the e.pac module afterwards. Additionally you will find the “location” of each module which can be defined in the ICP or with this functionality. As these names are not relevant for further programming, the name can be the same, e.g. a project name.

The names of the slave variables (blue and black font) can be changed within this window.

In case there are the same variable names within one e.bloxx module or in different modules, you will get the following information:



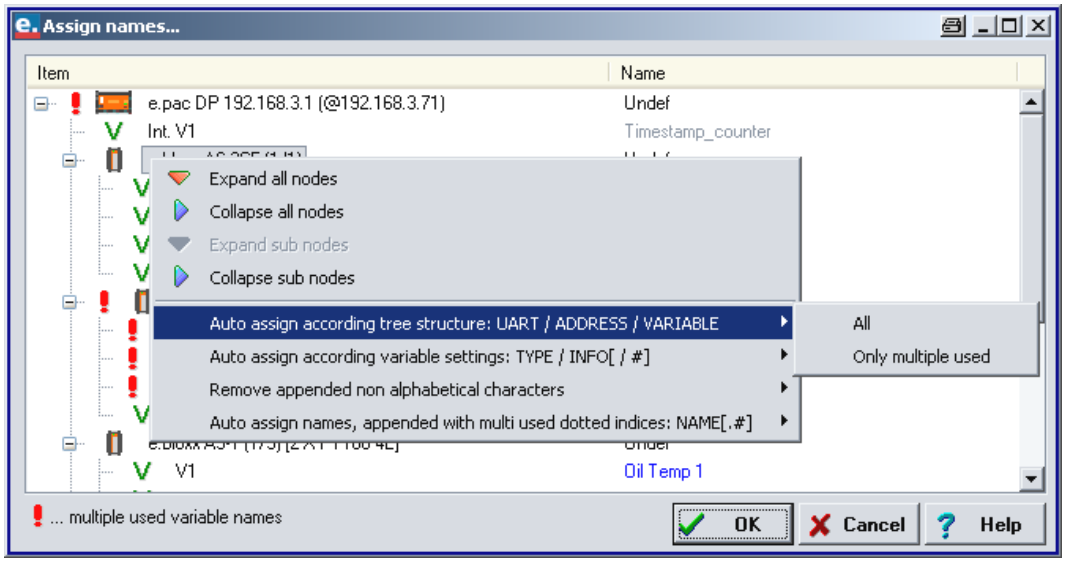
Now all the modules and variables whose variable name are the same are marked with a red **!**
When using an e.gate you will get this information but it has no influence on your system.
But as soon as you change to an e.pac this will be termination condition – the programming tool e.con does not allow equal names in a system! To change the variable names just select the variable name to be changed and type the new name. As soon as you have defined a unique name, the red **!** disappears.

All parts in the hierarchic tree are marked: e.pac - module - variable.

Attention: All names can be changed in here except the variable names of the e.gate/e.pac!

Besides the manual changing there are some automatic algorithms to assign names. If you do not like to change each single variable name in a big system just to work with the e.con software, click the right mouse button in the “assign names…” field and different possibilities are offered.

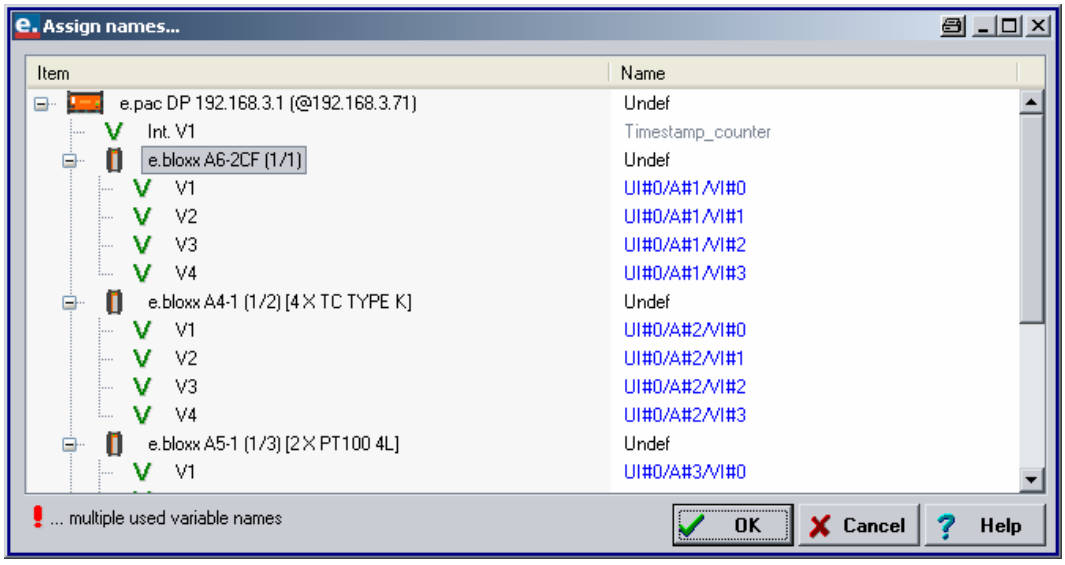
8.1. Assign according the structure



One possibility is to change the variable names according to the tree structure, defined by

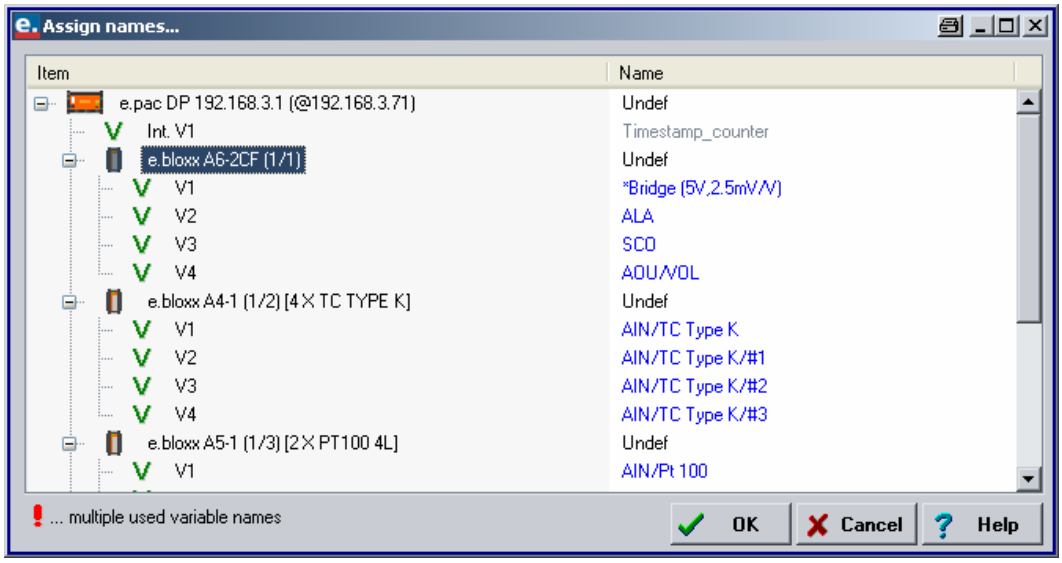
- UART,
- Address
- variable.

This can be done for the whole structure or just for the variable names which are multiple used.
The following picture shows case 1, names for the whole structure:



8.2. Assign according variable settings

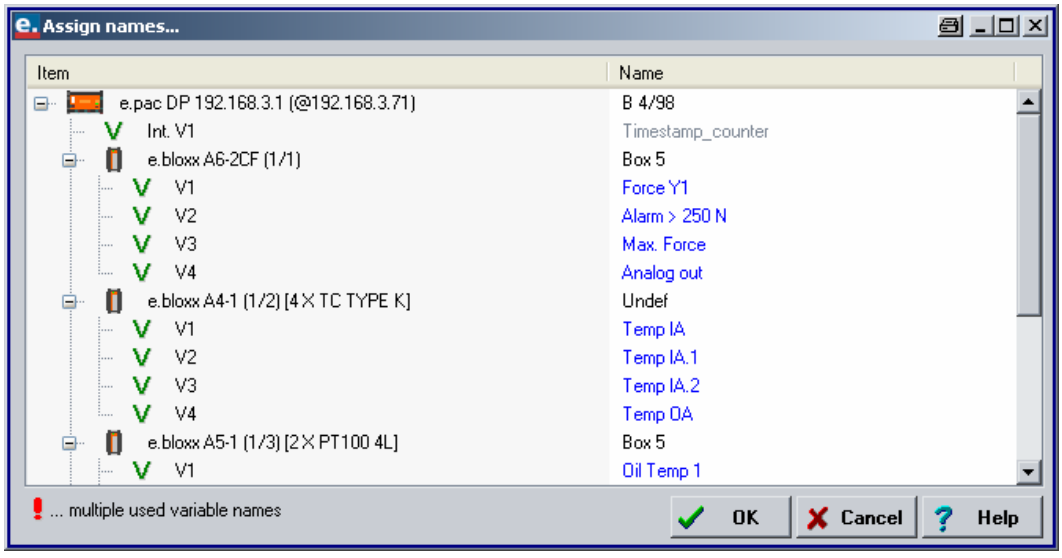
Another possibility is to assign the names according to the variable structure. The names are changed to the type of variable and the sensor type being selected as shown in the picture below: In case that there are some identical names the index #1, #2… will be added.



As mentioned before this can be done for the whole system or just for the variable names multiple used.

8.3. Assign by adding dotted indices for multiple used names

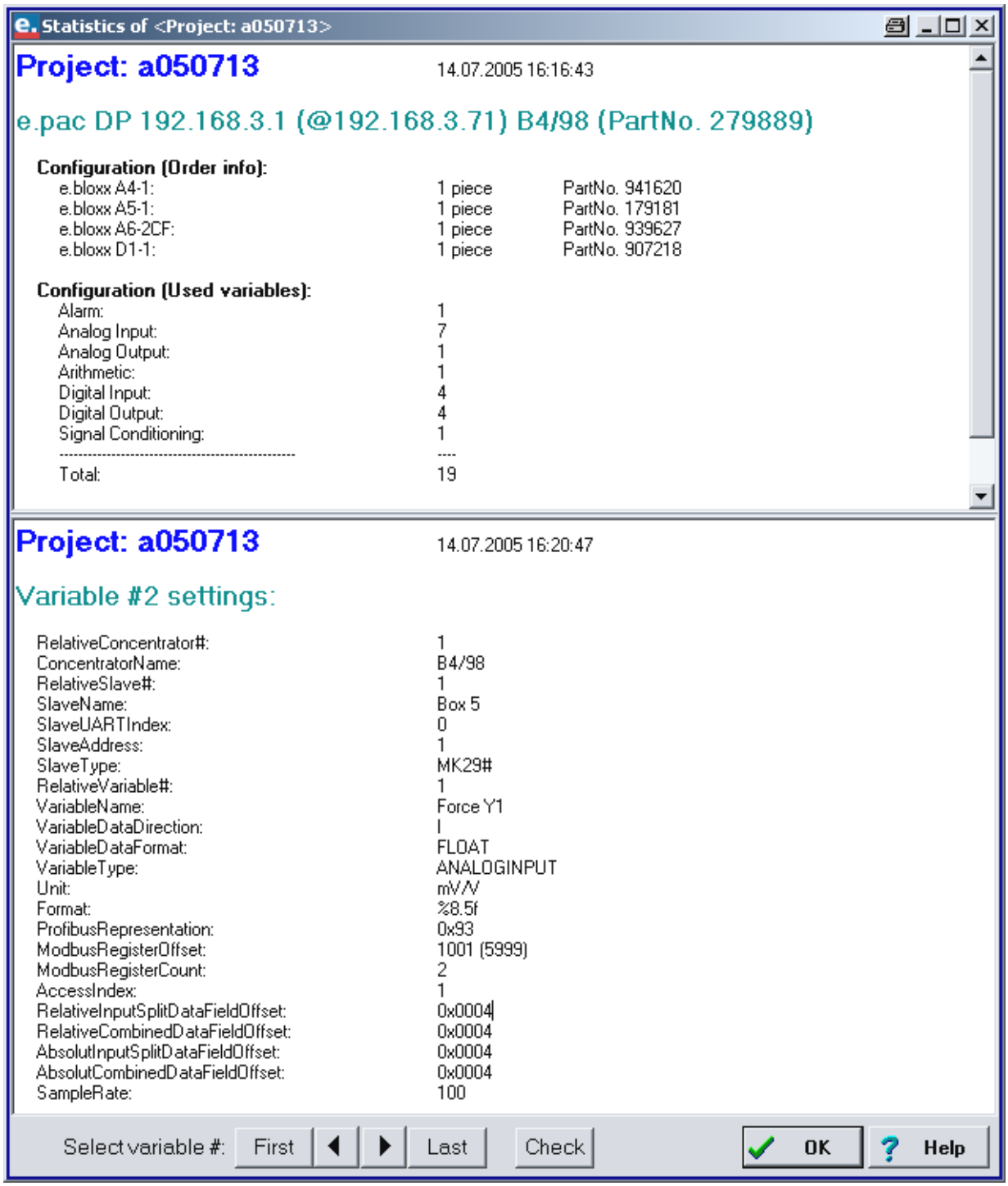
A third type of creating unique variable types is to change the extension of the variable. The first variable will have no index, all others will have an index ".1", ".2" etc. The assigned names will be kept, but the multiple used names get an index.



9. STATISTICS / DIAGNOSTICS

Another very useful tool is the statistics functionality. This feature can be accessed when clicking the button  in the menu bar.

This functionality provides the following information:



The first part of the window shows an overview on the whole project with:

- Project name, date and time
- IP-address, name/location, part number of the e.gate/e.pac
- Type and number of e.bloxx modules connected to the e.gate/epac with its part number(s)
- The number of each type of variable like alarm, analog input, analog output,… being defined for this project.

If there are several e.gate/e.pac in one system, you will find this information for each one.

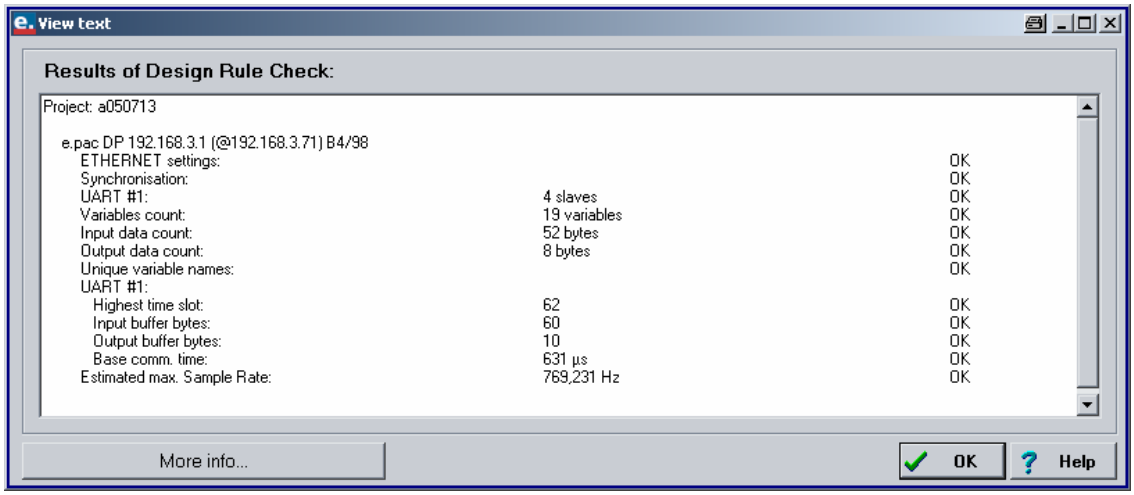
The second part describes all variables being defined in the project with its most important information in the order as they are configured. With the buttons *First*, *Last* and the arrows you can search for the variable you are interested in.

9.1. Design Rule Check

The performance of the system depends on the numbers of channels, number of variables, transfer rate, data format, active interfaces, etc.

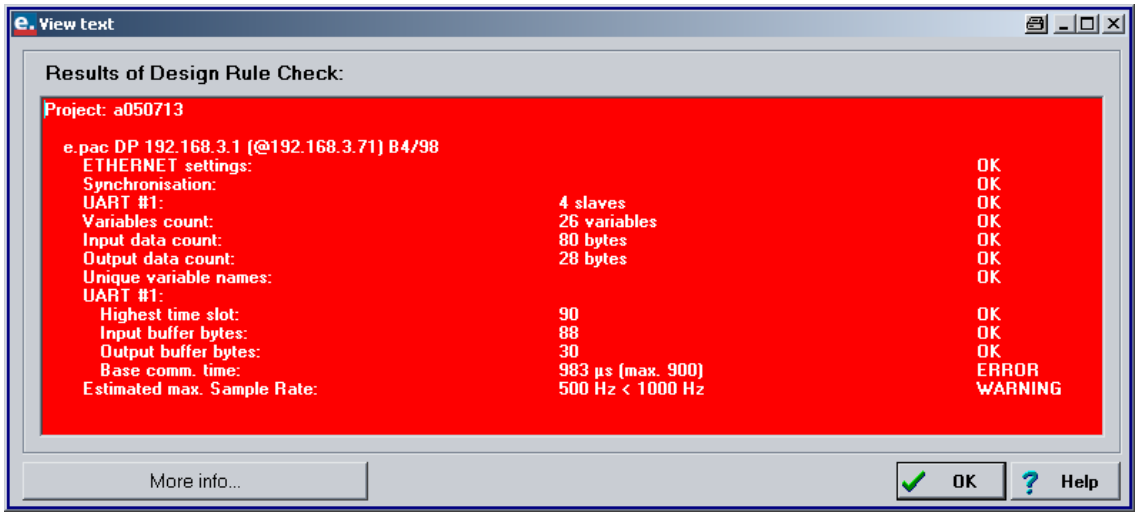
So it is very helpful to check a configuration after the first setup or after having reconfigured the system by clicking the *Check* button. The result of the test will be explained by the background colors

WHITE	Configuration is fine and will run after downloading
RED	Configuration will not run, a download is not possible
YELLOW	It is not definitely possible to say ok or not ok. In this boarder range it is necessary to test the setup. It is possible to download the configuration.



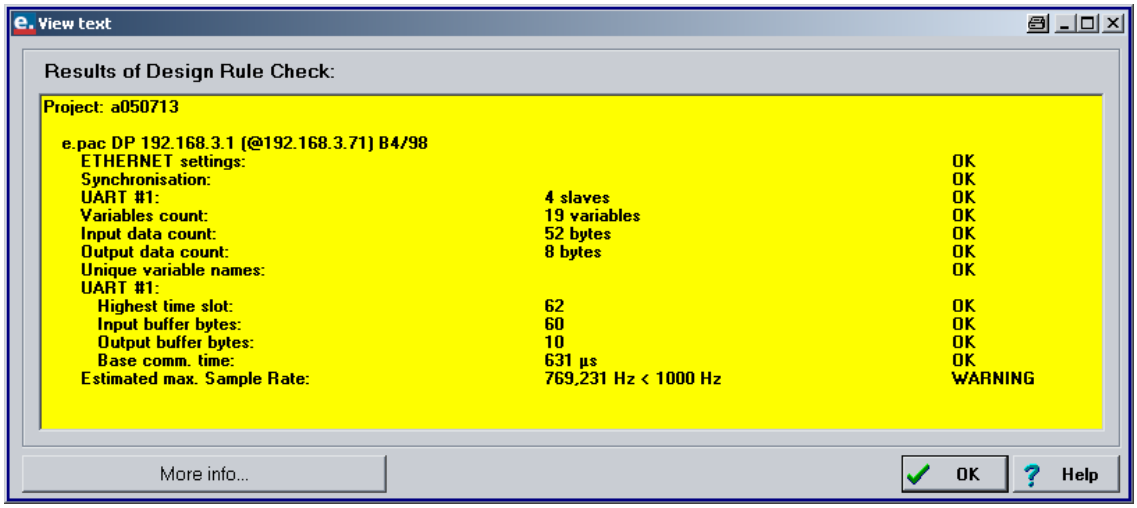
Here you will find a summary of the whole system such as the number of slaves connected to each UART, the number of variables being defined and the corresponding number of bytes. Even the required communication time is being calculated.

The maximum estimated sample rate is shown, e.g. 769,231 Hz. As shown above, the system will be working fine (white background).
In case of an error you will get the information with a red background:



In this example the communication time takes longer than the permitted time (90 % of 1ms). This configuration could not be loaded in the system. The configuration has to be changed, e.g. set a lower sample rate, reduce variables or modules at each UART etc.

Is the check not definitely, the window will appear with a yellow background:



In this case the estimated sample rate is lower than the selected rate but the communication time is in the limits. So it is possible that this application runs with 1000 samples/s - but it is not sure. A “WARNING” status would allow the configuration being sent to the e.gate - but only in case there is no additional “ERROR” in the status list.

In praxis mostly the error state will be generated by

- Connecting too many modules to one UART
- To define too many variables (Att.: difference between Profibus-DP vs. Ethernet)
- Selected sample rate could not be reached

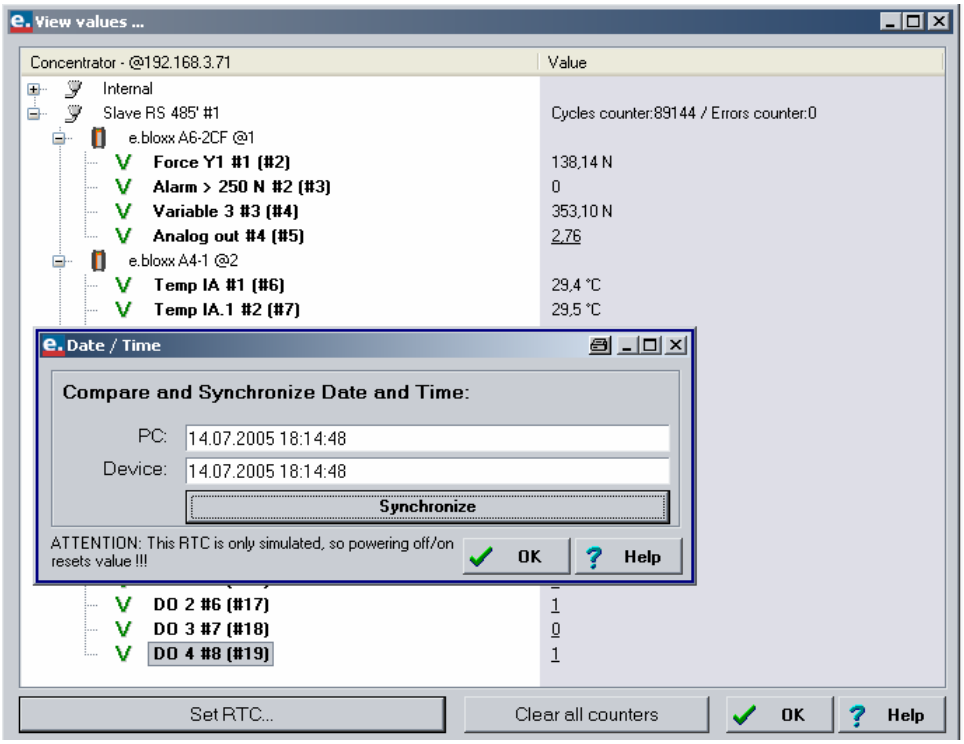
10. ONLINE FEATURES / READ DATA BUFFER

10.1. Read Online Data (Read Online Values From Concentrator)

The e.commander software provides a tool to display online data of connected e.bloxx modules, even setpoints can be written.

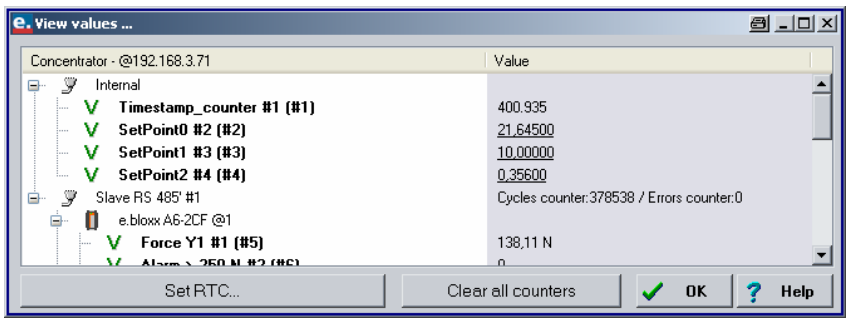
To open the window with the online values please click the symbol  in the menu bar or use the menu *File*. After *Scanning Network* the following window opens (background). Depending on the number of slave interfaces being used with the e.gate/e.pac they will be shown in the left part of the window. To see all the values you have to expand the nodes – the easiest way to do this is to click the right mouse button and select *Expand all nodes*.

The function *Set RTC* can be used to synchronize the software clock of the system (no realtime clock) with the PC clock.



All counters can be reset by pressing *Clear all counters*.

The values next to the variables of the e.bloxx modules indicate the online values. As soon as a value is being underlined, it can be changed (e.g. setpoint). With the e.pac it is possible to define set point variables (see 5.3. Sellings). These set points can be set/read too.

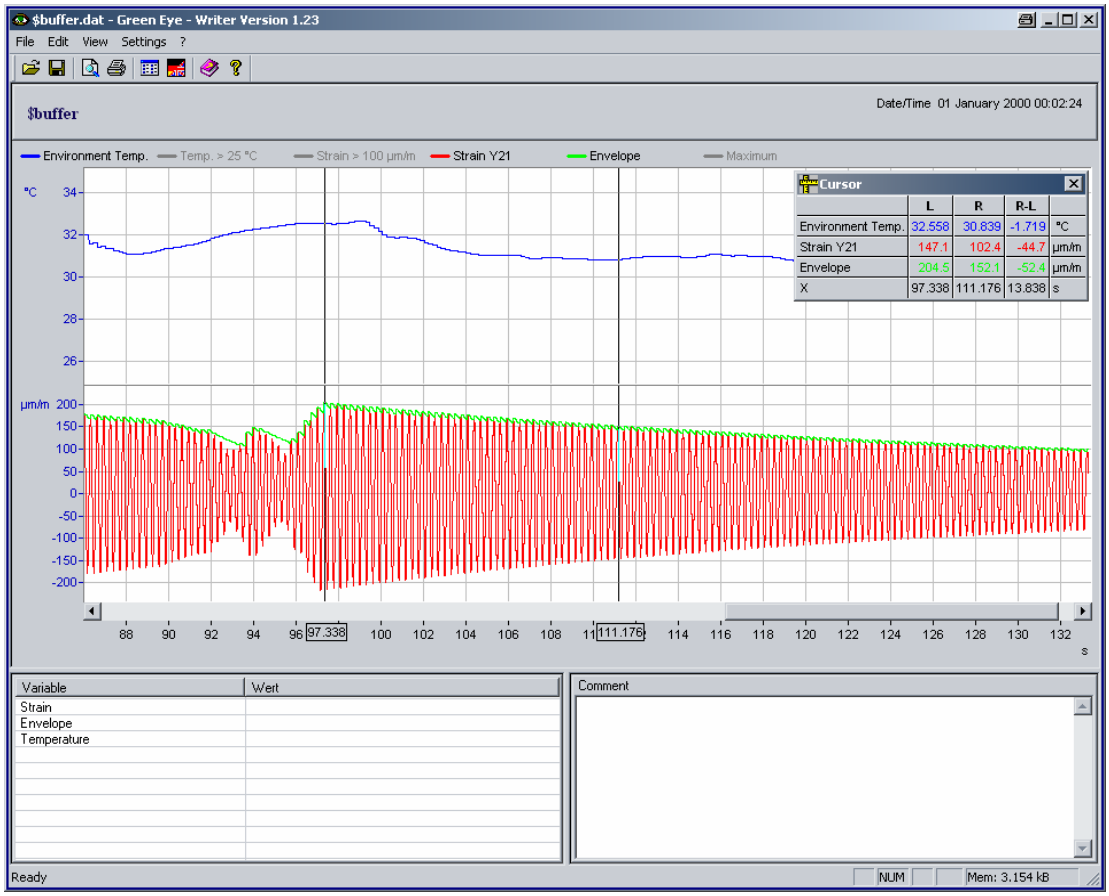


10.2. Read Logged Data (Read Online Buffer from Concentrator)

To read the logged data from the data buffer (configuration see chapter 5.3.), click the symbol  in the menu or selecting the same symbol when clicking the right mouse button on the e.gate/e.pac in the project tree.

Attention: Reading data from the e.gates deletes all measurement data – data can be read only once! Therefore always store data if you need them for further processing!

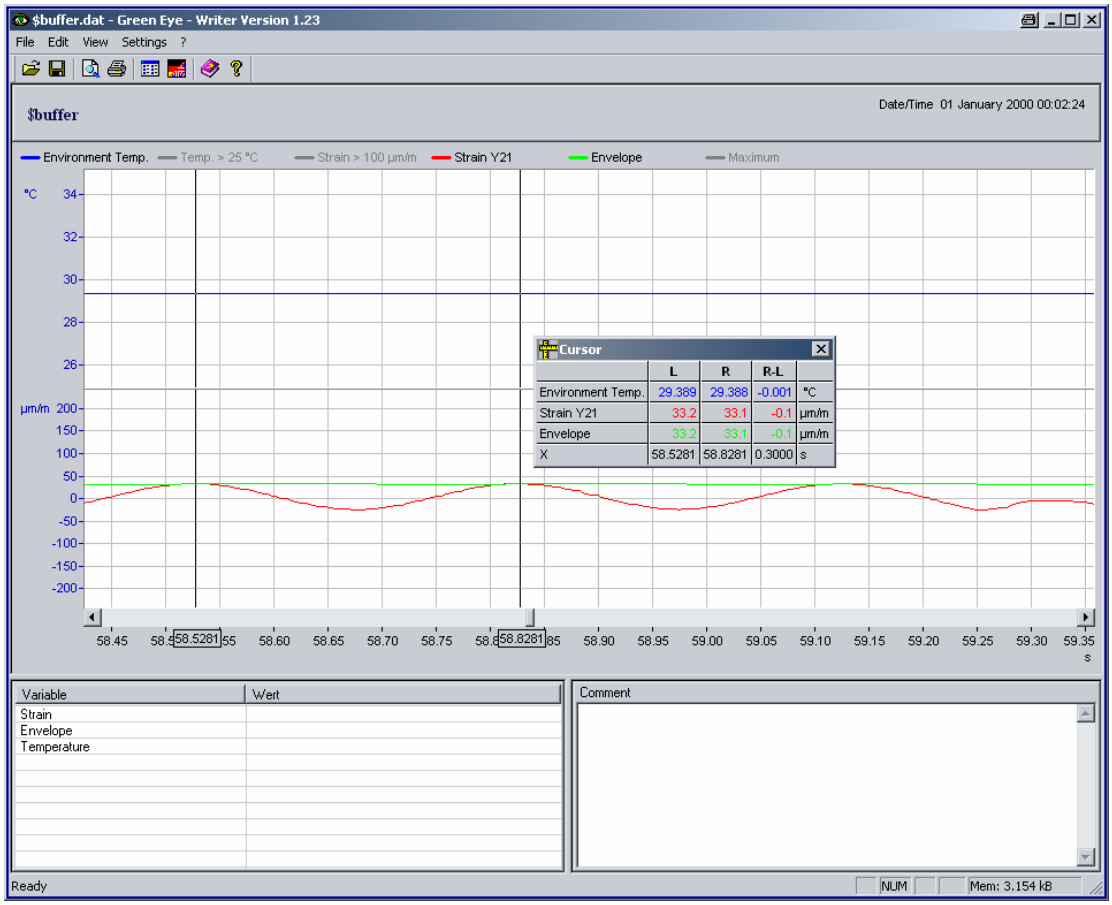
The e.commander software includes another software package called Green Eye Writer. When reading data from the e.gate this software starts automatically and data of the e.gate buffer or the e.pac archives are being visualized:



With a licensed version of the Green Eye Writer you are able to change the display settings and store data as well. An unlicensed version just displays the measurements.

The Green Eye Writer provides helpful features such as difference measurement, zoom function, many scaling and design tools etc. It is possible to start the Green Eye Writer from the e.commander and show the buffer file or to use Green Eye Writer as a separate tool to show a lot of different types of data such as wav files etc.

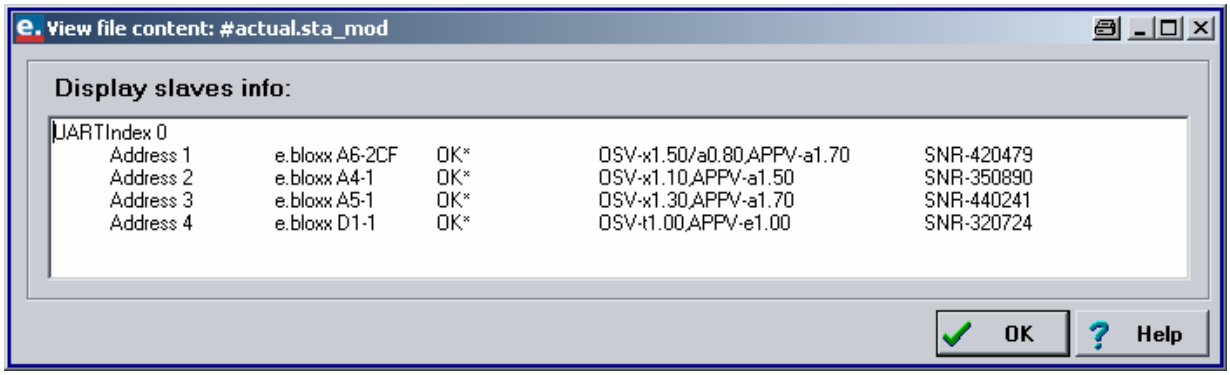
The file, stored with Green Eye Writer can be visualized with the freeware Green Eye Reader, available on our homepage and on our CD. So any person can work with the recorded data for free. Send the data inclusive the Green Eye Reader per e-mail and the addressed person is able to work with these data.



10.3. Online Slaves (Read Online Slaves Info From Concentrator)

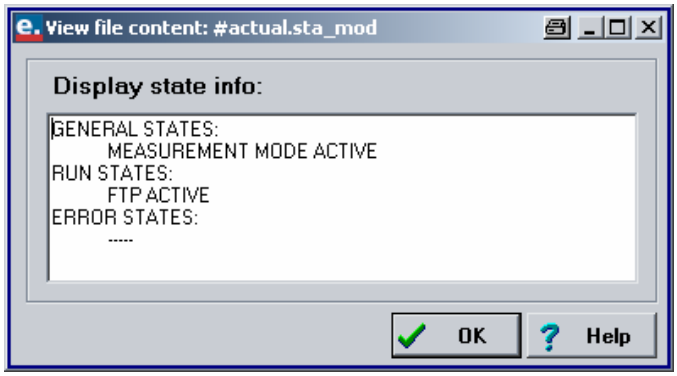
Selecting this functionality either via the *File* menu or with the  button in the menu bar you will get information on e.bloxx modules connected to the e.gate/e.pac. This information is available from the #actual file in the e.gate/e.pac.

The information contains the UART the e.bloxx are connected to (UART Index 0 = UART 1), the firmware version and the serial number. The serial number information is not available with modules with an older firmware version.



10.4. Online State (Read Online State Info From Concentrator)

The information available with this selection (either via the File menu or with the  button in the menu bar) is available from the #actual file in the e.gate/e.pac as well.
The information contains the actual state of the e.gate/e.pac and shows errors if some occurred. This makes it easier to locate the error.



Notice:

Information in this manual are valid from Aug. 29th 2005 until revocation.
Further changes and completion of the manual are reserved and possible without notice.

www.gantner-instruments.com

GANTNER INSTRUMENTS TEST & MEASUREMENT GMBH
Montafonerstraße 8 • A-6780 Schruns/Austria
Tel.: +43 (0)5556-73784-410 • Fax: +43 (0)5556-73784-419
E-Mail: office@gantner-instruments.com