Grid and System Protection Relay

RE - NA003.COM-M64

Art. Nr.: 2700200H

SOFTWARE MANUAL

for SW: 02.15.02h

Subject to modifications and errors

CLIMATE NEUTRAL
PRODUCT
certified by Fokus Zukunft

Inhalt

1   General interface information

Attention to the write process: The EEPROM, which allows the system to write on the NA003.COM is only warrantied with maximum 300.000 writing steps or maximum 10 years, after this amount of writing steps the NA003.COM writing progress can not be ensured.

2   Modbus Register Adresses
See in appendix.

3   Revision History

Revision	Date	Author	Modification
002	2023-03-27	HOH	Change menue structure, import all Modbus addresses overview, give examples on how to use Modbus Poll with instances.
001	2022-12-01	SUW	Additional modifiable parameter types on Modbus (RS485) Improvement modify parameter set on Modbus (RS485)
000	2022-10-27	SUW	First Draft

4   Use cases Modbus Interfaces with Modbus Poll ©
If you do no have your own Modbus System, we recommend using Modbus Poll for write and read values of the NA003.COM manually.

4.1.1   Getting Modbus Interface with Modbus Poll started

TELE recommend using our Modbus Poll Files, available on our Website to download www.tele-online.com

If starting the program without our preconfigured Modbus Poll Files, it should look like this:
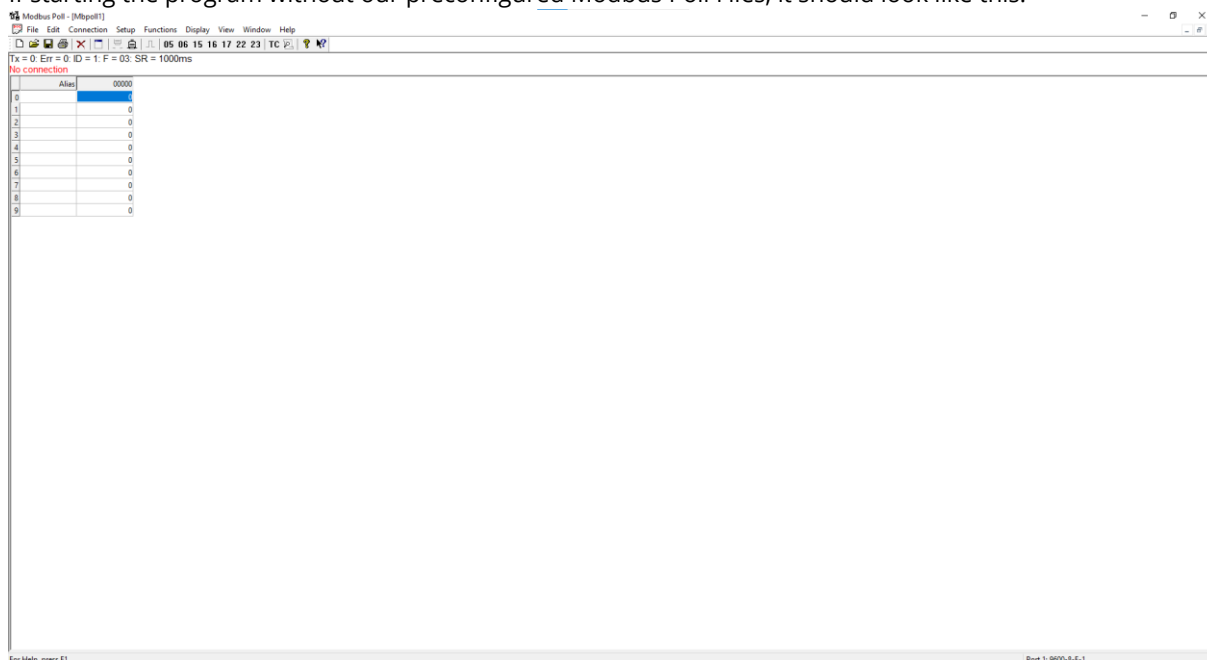
First try to connect the Modbus Master device, in this case a PC with the slave device NA003.COM:
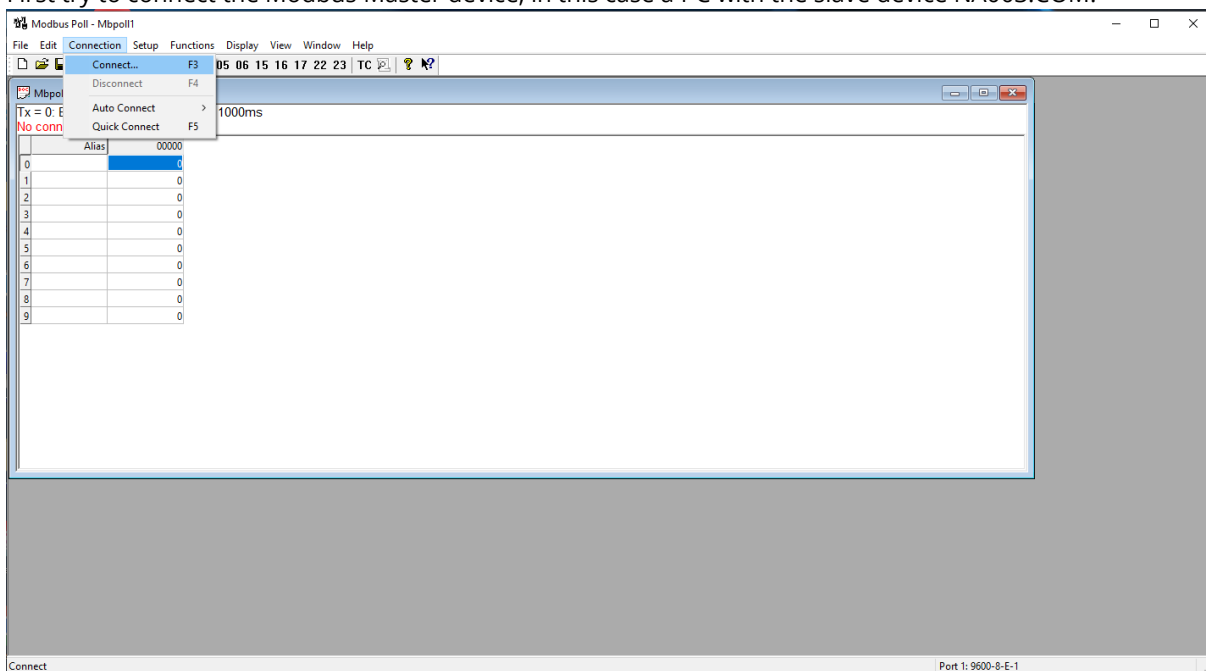
If Modbus Poll is not already licensed, get a key and insert it:

SW: 02.15.02g / 2023-04-25
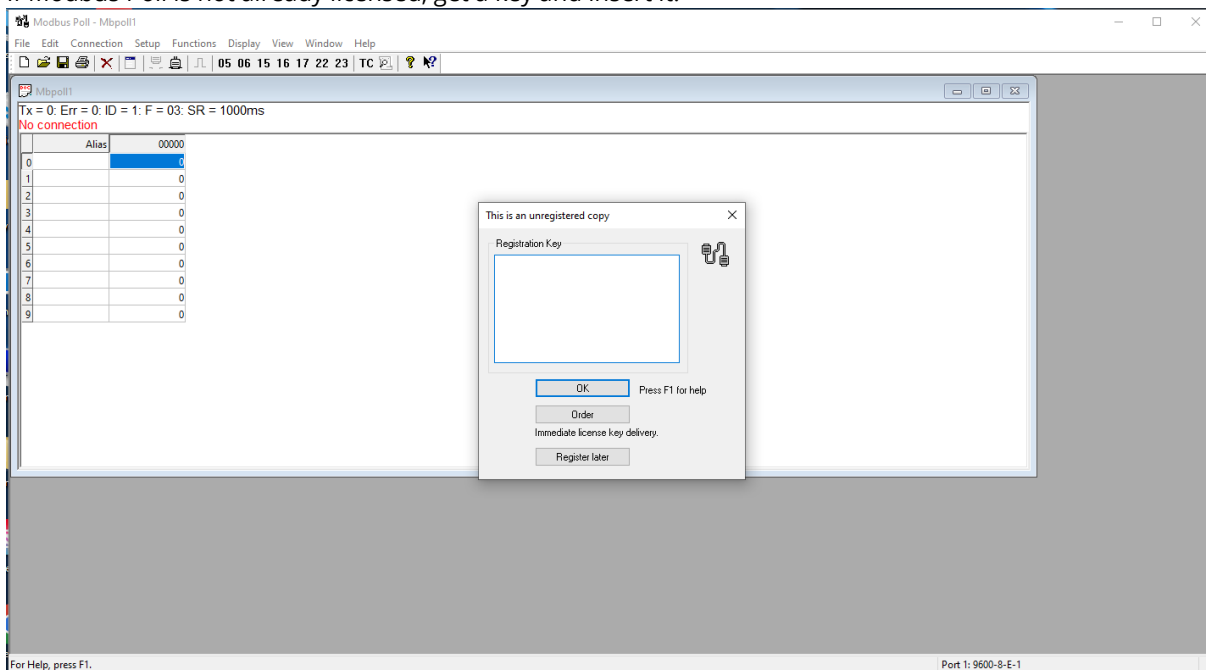
The take the default settings of the Connection Setup NA003.COM:
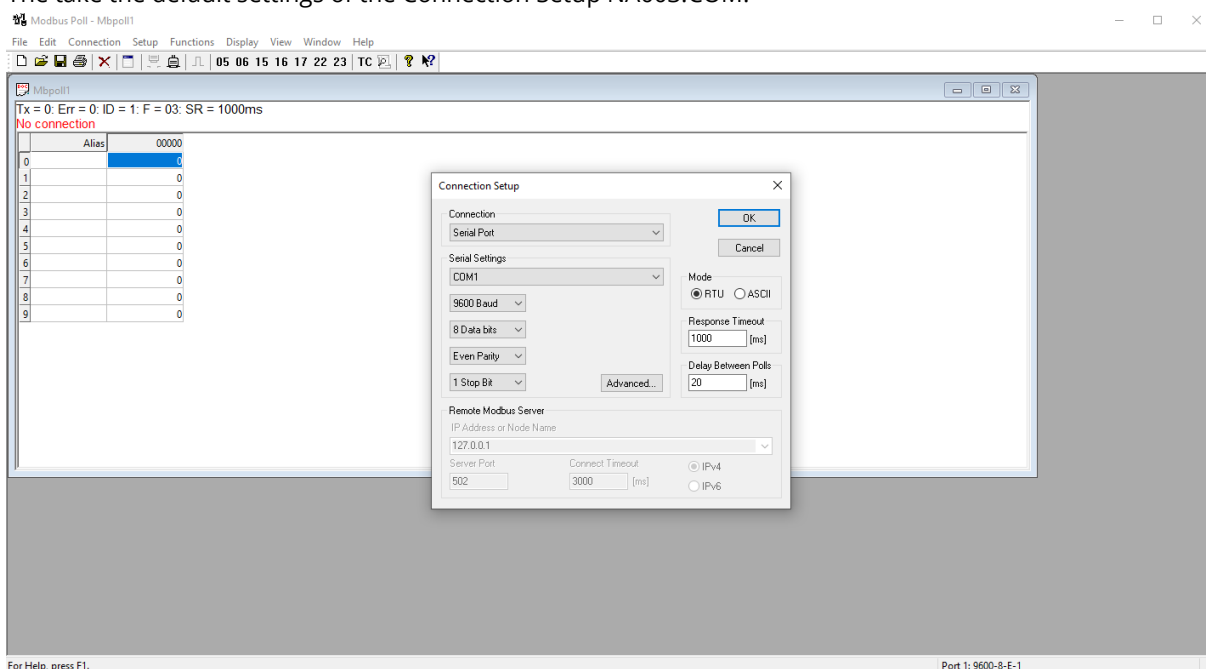
Change to these recommended default settings:

SW: 02.15.02g / 2023-04-25
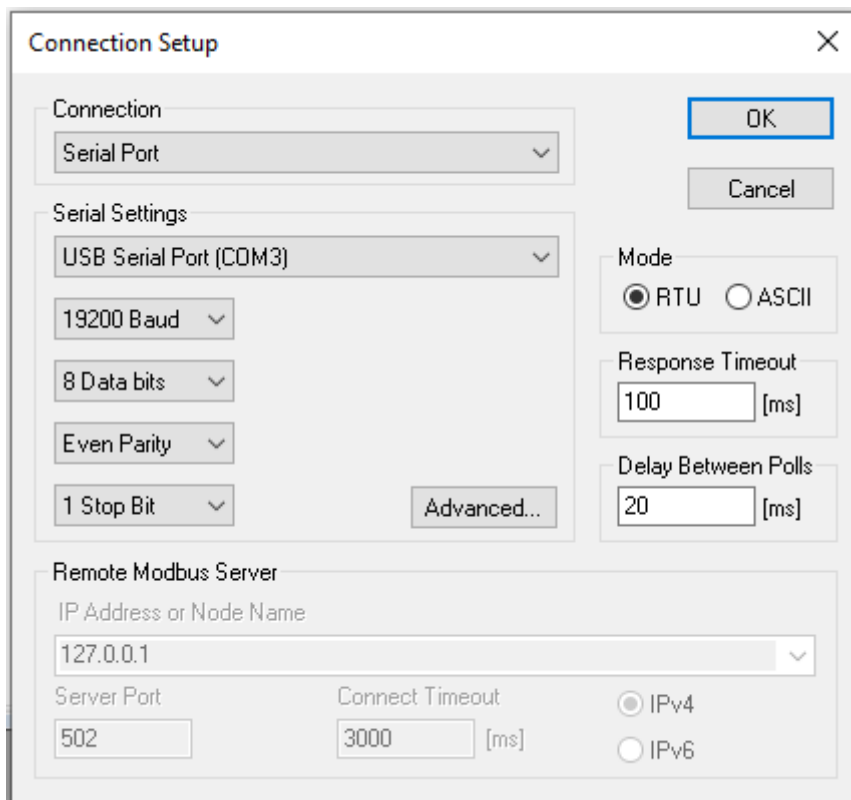
If nothing is preconfigured, it will respond like this:
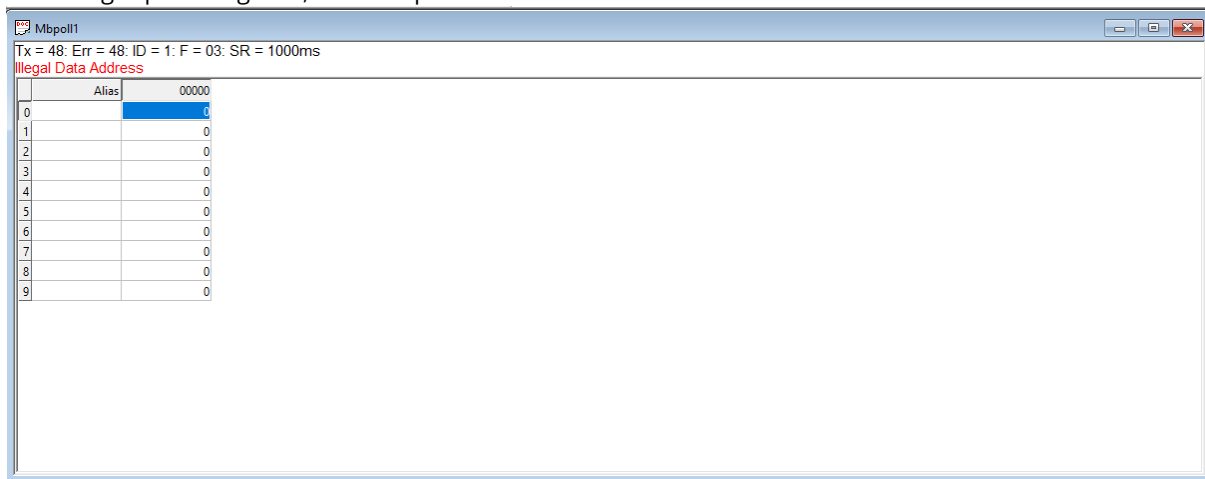
Therefore you must change adresses:
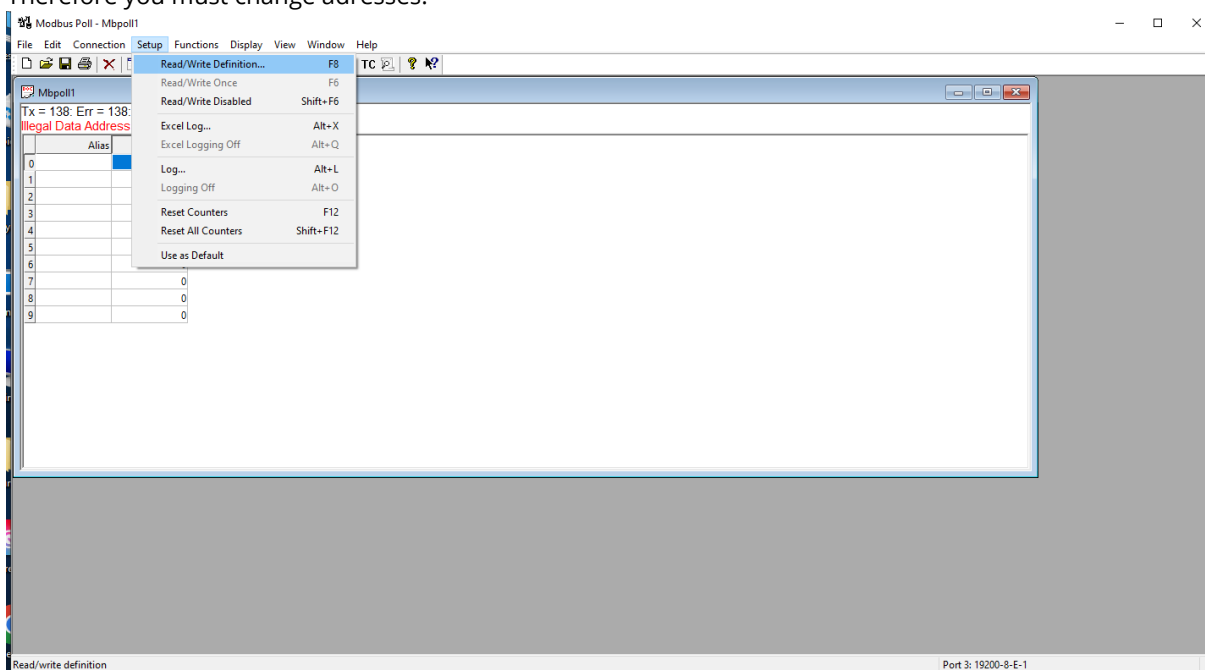
Then, if nothing is preconfigured:

SW: 02.15.02g / 2023-04-25
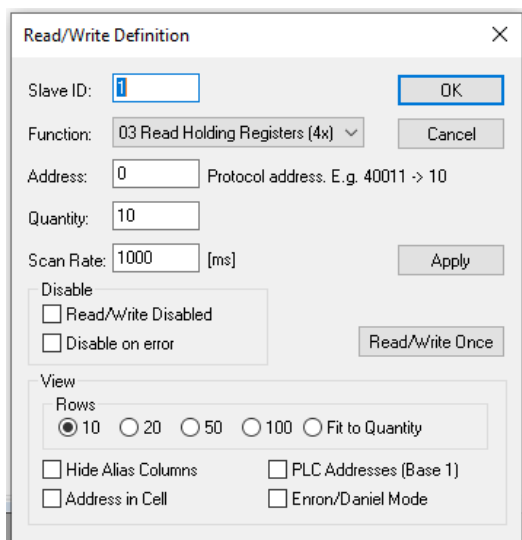
Change to the adress you want to read out:
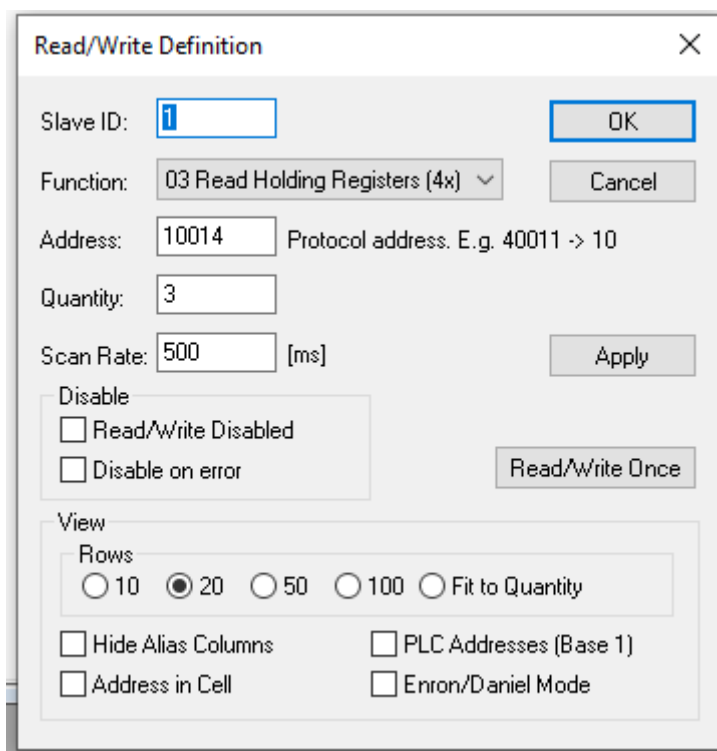
There you can see first values in the Columns. In this case row 11,13,14 show already the values of the voltage that is measured by the NA003.COM.

Still if nothing is preconfigured, the frequency window might me shown a "wrong" value, that can be changed to "unsigned" -> right click in the marked window -> Format -> Unsigned (you can change all entries also to what you want to see: decimal signed/unsigned, Hexadezimal, Binary)
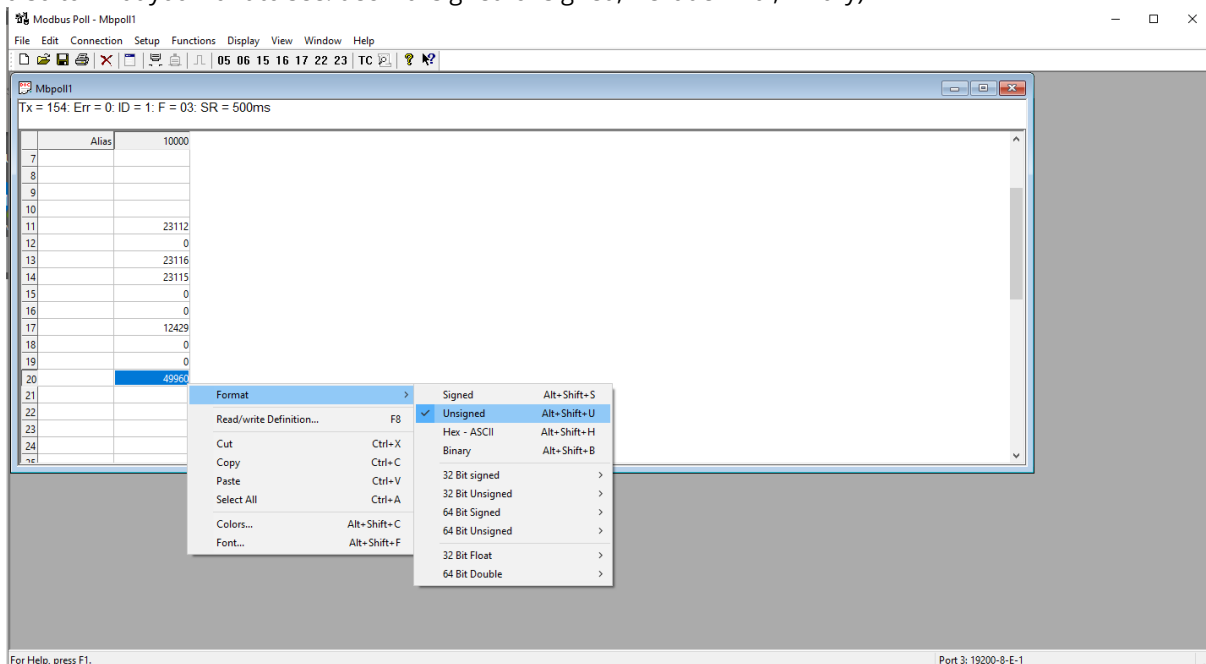
As already mentioned, TELE highly recommend using your preconfigured Modbus Poll files, where all is predefined.

5 Show Modbus mode on Modbus (RS-485)

So all the parameters, which can be set on the NA003.COM manually, you can read and write in the Modbus Adresses 50901-50904.

Be careful: in this case, changing the address will make a restart of the NA003.COM necessary, because otherwise the preconfigured addresses with your connected RS485 standard would not recognize the ModbusRTU.
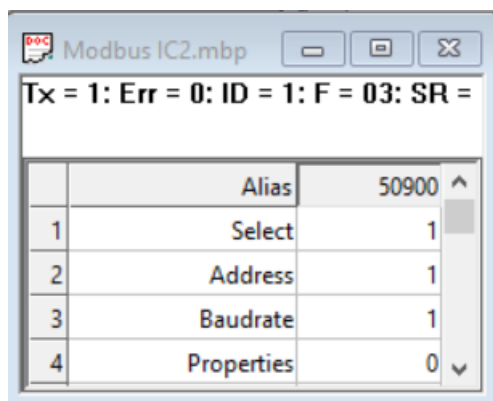
Register description:

Address	Alias	Valid values
50901	Select	0 = off 1 = on (default)
50902	Address	Modbus slave individual address 1 – 247 (1 = default)
50903	Baudrate	0 = 9600 1 = 19200 (default)
50904	Properties	0 = 8E1; 8 data bits, even parity, 1 stop bit (default) 1 = 8O1; 8 data bits, odd parity, 1 stop bit 2 = 8N2; 8 data bits, no parity, 2 stop bit 3 = 8N1; 8 data bits, no parity, 1 stop bit **(NOT conform)**

Valid function codes:
❖ 03 (0x03) Read Holding Registers

6   Modify Modbus mode on Modbus (RS-485)

Register description: see Show Modbus mode on Modbus (RS-485)

Valid fuction codes:
❖   06 (0x06) Write Single Register

Always keep in mind, the Auto-Logout will be active after 15s. After the 15s you must request the system again.

Example: modify Properties to 8N2

Error Handling:

Reason	Reaction
Value is out of range	Modbus exception 04 – Server device failure

Example: modify Baudrate to "3"
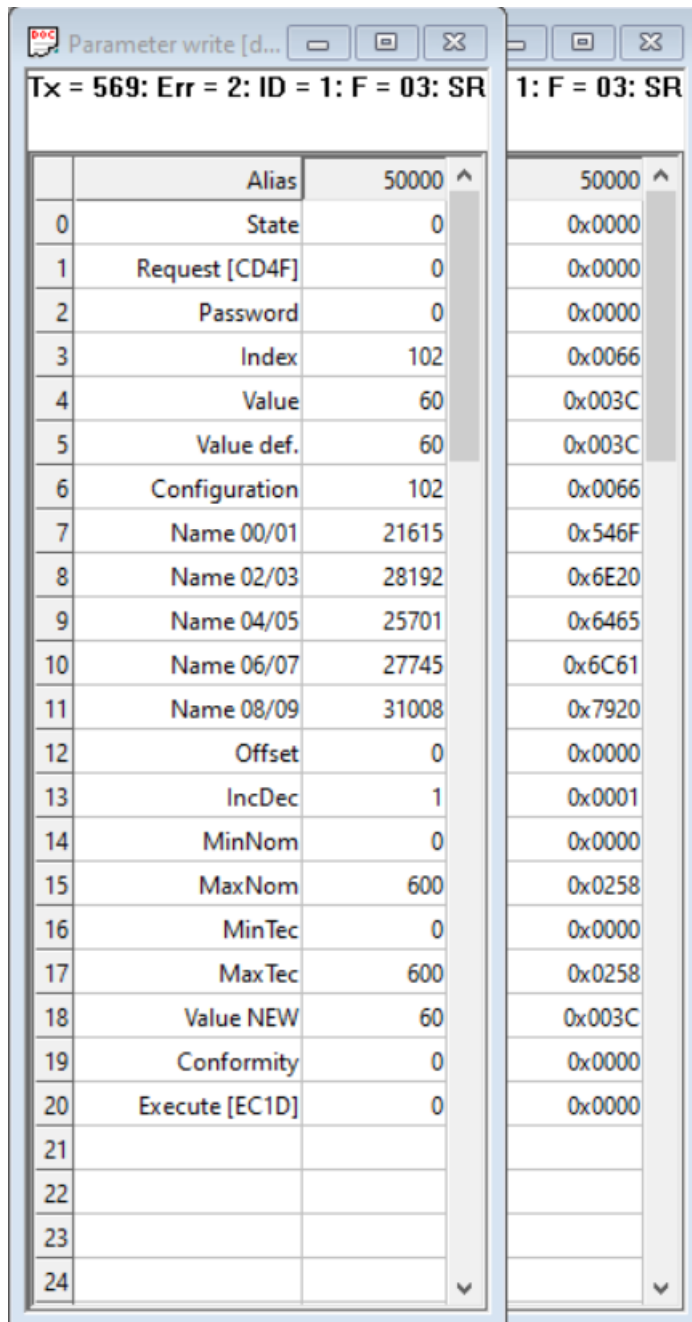
7   Modify parameter on Modbus (RS-485)

Standard "OPEN SETUP" – ID: 9006 is selected.

REMARK: modifying only possible for connection mode, functional safety, operational mode, thresholds, times, contacts!   NOT for parameter set, nominal voltage, password!

	Alias	50000 ^	50000 ^
0	State	0	0x0000
1	Request [CD4F]	0	0x0000
2	Password	0	0x0000
3	Index	102	0x0066
4	Value	60	0x003C
5	Value def.	60	0x003C
6	Configuration	102	0x0066
7	Name 00/01	21615	0x546F
8	Name 02/03	28192	0x6E20
9	Name 04/05	25701	0x6465
10	Name 06/07	27745	0x6C61
11	Name 08/09	31008	0x7920
12	Offset	0	0x0000
13	IncDec	1	0x0001
14	MinNom	0	0x0000
15	MaxNom	600	0x0258
16	MinTec	0	0x0000
17	MaxTec	600	0x0258
18	Value NEW	60	0x003C
19	Conformity	0	0x0000
20	Execute [EC1D]	0	0x0000
21			
22			
23			
24			

Parameter write [d...] Tx = 569: Err = 2: ID = 1: F = 03: SR   1: F = 03: SR

Register description:

Address	Alias	R/W	Comment
50000	State	R	State Bit0 Request code is accepted Bit1 Password is accepted ONLY when bit0 and bit1 are set modifying is permitted
50001	Request	R/W	Request code When request code is not accepted read data is 0
50002	Password	R/W	Password When password is not accepted read data is 0
50003	Index	R/W	Index of the parameter requested to modify, according to display (HMI) 102 means "Turn-on delay"
50004	Value	R	Actual value in standard
50005	Value def.	R	Default value in standard
50006	Configuration	R	Configuration Bit1 Parameter is visible Bit2 Parameter is changeable Bit3 Modifying parameter in conformity range let the standard in default ONLY when bit1 an bit2 are set modifying parameter is permitted. All other bits for internal use.
50007 – 50011	Name	R	Name "Ton delay"
50012	Offset	R	ONLY for internal use.
50013	IncDec	R	Possible increment / decrement on display (HMI)
50014	MinNom	R	Conformity range min
50015	MaxNom	R	Conformity range max
50016	MinTec	R	Possible range min
50017	MaxTec	R	Possible range max
50018	Value NEW	R/W	New value in standard
50019	Conformity	R	Conformity of the new value 0 new value is default 1 new value is within conformity range 2 new value is beyond conformity range, within possible range 255 new value is NOT ALLOWED, beyond possible range
50020	Execute	W	Execute code
		R	Execute state 0 Modify is executed 1 Execute code is not accepted 2 Modifying is not permitted (see State) 3 Parameter is not modifiable (see Configuration) 4 New value is beyond allowed range (see Conformity)

Valid fuction codes:
- ❖ 03 (0x03) Read Holding Registers
- ❖ 06 (0x06) Write Single Register

7.1   Example: modify Parameter "Turn-on delay" to 5s

General setup:

Standard "OPEN SETUP" – ID: 9006 is selected
Password is modified to "0204"

7.1.1   Request modify parameter

	Alias	50000				50000	
0	State	1				0x0001	
1	Request [CD4F]	52559				0xCD4F	
2	Password	0				0x0000	

0	State	3		0x0003
1	Request [CD4F]	52559		0xCD4F
2	Password	204		0x00CC

7.1.2   Modify parameter

3	Index	102	0x0066
4	Value	40	0x0028
5	Value def.	60	0x003C
6	Configuration	102	0x0066
7	Name 00/01	21615	0x546F
8	Name 02/03	28192	0x6E20
9	Name 04/05	25701	0x6465
10	Name 06/07	27745	0x6C61
11	Name 08/09	31008	0x7920
12	Offset	0	0x0000
13	IncDec	1	0x0001
14	MinNom	0	0x0000
15	MaxNom	600	0x0258
16	MinTec	0	0x0000
17	MaxTec	600	0x0258
18	Value NEW	40	0x0028
19	Conformity	1	0x0001
	Alias	30100	
2	OnDel	40	

Write Single Register ✕

Slave ID: `1`   [Send]

Address: `50003`   [Cancel]

Value: `102`

Result
N/A
☑ Close dialog on "Response ok"

Use Function
◉ 06: Write single register
○ 16: Write multiple registers

Write Single Register ✕

Slave ID: `1`   [Send]

Address: `50018`   [Cancel]

Value: `5`

Result
N/A
☑ Close dialog on "Response ok"

Use Function
◉ 06: Write single register
○ 16: Write multiple registers

18	Value NEW	5	0x0005
19	Conformity	1	0x0001

3	Index	102	0x0066
4	Value	5	0x0005
5	Value def.	60	0x003C
6	Configuration	102	0x0066
7	Name 00/01	21615	0x546F
8	Name 02/03	28192	0x6E20
9	Name 04/05	25701	0x6465
10	Name 06/07	27745	0x6C61
11	Name 08/09	31008	0x7920
12	Offset	0	0x0000
13	IncDec	1	0x0001
14	MinNom	0	0x0000
15	MaxNom	600	0x0258
16	MinTec	0	0x0000
17	MaxTec	600	0x0258
18	Value NEW	5	0x0005
19	Conformity	1	0x0001
20	Execute [EC1D]	0	0x0000
	Alias	30100	
2	OnDel	5	

Write Single Register

Slave ID: 1 — Send
Address: 50020 — Cancel
Value (HEX): EC1D

Result
N/A
☑ Close dialog on "Response ok"

Use Function
◉ 06: Write single register
○ 16: Write multiple registers

7.1.3 Return in normal operation

Write Single Register

Slave ID: 1 — Send
Address: 50001 — Cancel
Value: 0

Result
N/A
☑ Close dialog on "Response ok"

Use Function
◉ 06: Write single register
○ 16: Write multiple registers

Always keep in minde, the Auto-Logout will be active after 15s. After the 15s you must re-request the system.

8 Modify parameter set on Modbus (RS-485)

	Alias	50000		50000
0	State	0		0x0000
1	Request [CD4F]	0		0x0000
2	Password	0		0x0000
3	Index	1		0x0001
4	Value	39		0x0027
5	Value def.	9006		0x232E
6	Configuration	142		0x008E
7	Name 00/01	20304		0x4F50
8	Name 02/03	17742		0x454E
9	Name 04/05	8275		0x2053
10	Name 06/07	17748		0x4554
11	Name 08/09	21840		0x5550
12	Offset	8224		0x2020
13	IncDec	8224		0x2020
14	MinNom	8224		0x2020
15	MaxNom	8224		0x2020
16	MinTec	8224		0x2020
17	MaxTec	0		0x0000
18	Value NEW	39		0x0027
19	Conformity	0		0x0000
20	Execute [EC1D]	0		0x0000
21				
22				
23				
24				

Parameter write [d...]
Tx = 31199: Err = 18: ID = 1: F = 03: ID = 1: F = 03:

Register description: alternative meaning to common parameter

Address	Alias	R/W	Alternative meaning
50000	State	R	State Bit0 Request code is accepted Bit1 Password is accepted ONLY when bit0 and bit1 are set modifying is permitted
50001	Request	R/W	Request code When request code is not accepted read data is 0
50002	Password	R/W	Password When password is not accepted read data is 0
50003	Index	R/W	Index of the parameter requested to modify, according to display (HMI) 1 means parameter set
50004	Value	R	Slot number of the actual parameter set
50005	Value def.	R	Identification of the new parameter set
50006	Configuration	R	Configuration Bit1 Parameter is visible Bit2 Parameter is changeable Bit3 Modifying parameter in conformity range let the standard in default ONLY when bit1 an bit2 are set modifying parameter is permitted. All other bits for internal use.
50007 – 50017	Name	R	Name of the new parameter set "OPEN SETUP "
50018	Value NEW	R/W	Slot number of the new parameter set
50019	Conformity	R	Conformity of the new parameter set 0 new value is default 255 new parameter set is NOT ALLOWED
50020	Execute	W	Execute code
		R	Execute state 0 Modify is executed 1 Execute code is not accepted 2 Modifying is not permitted (see State) 3 Parameter is not modifiable (see Configuration) 4 New parameter set is not allowed

REMARK: request modify and return in normal operation similar to common parameter!

Valid fuction codes:
- ❖ 03 (0x03) Read Holding Registers
- ❖ 06 (0x06) Write Single Register

8.1 Example modify parameter set to 510 – "G98/1/2: 2018" (slot #23)

Write Single Register

Slave ID:	1
Address:	50003
Value:	1

Result
N/A
☑ Close dialog on "Response ok"

Use Function
◉ 06: Write single register
○ 16: Write multiple registers

	Alias	50000		50000
3	Index	1		0x0001
4	Value	39		0x0027
5	Value def.	9006		0x232E
6	Configuration	142		0x008E
7	Name 00/01	20304		0x4F50
8	Name 02/03	17742		0x454E
9	Name 04/05	8275		0x2053
10	Name 06/07	17748		0x4554
11	Name 08/09	21840		0x5550
12	Offset	8224		0x2020
13	IncDec	8224		0x2020
14	MinNom	8224		0x2020
15	MaxNom	8224		0x2020
16	MinTec	8224		0x2020
17	MaxTec	0		0x0000
18	Value NEW	39		0x0027
19	Conformity	0		0x0000

	Alias	00000
70	C40_StdId	9006

	Alias	00000
54	C24_StdId	510

	Alias	50000		50000
3	Index	1		0x0001
4	Value	39		0x0027
5	Value def.	510		0x01FE
6	Configuration	142		0x008E
7	Name 00/01	18233		0x4739
8	Name 02/03	14383		0x382F
9	Name 04/05	12591		0x312F
10	Name 06/07	12858		0x323A
11	Name 08/09	12848		0x3230
12	Offset	12600		0x3138
13	IncDec	8224		0x2020
14	MinNom	8224		0x2020
15	MaxNom	8224		0x2020
16	MinTec	8224		0x2020
17	MaxTec	0		0x0000
18	Value NEW	23		0x0017
19	Conformity	0		0x0000

Write Single Register

Slave ID:	1
Address:	50018
Value:	23

Result
N/A
☑ Close dialog on "Response ok"

Use Function
◉ 06: Write single register
○ 16: Write multiple registers

		Alias	50000	^		50000	^
	3	Index	1			0x0001	
	4	Value	23			0x0017	
	5	Value def.	510			0x01FE	
	6	Configuration	142			0x008E	
	7	Name 00/01	18233			0x4739	
	8	Name 02/03	14383			0x382F	
	9	Name 04/05	12591			0x312F	
	10	Name 06/07	12858			0x323A	
	11	Name 08/09	12848			0x3230	
	12	Offset	12600			0x3138	
	13	IncDec	8224			0x2020	
	14	MinNom	8224			0x2020	
	15	MaxNom	8224			0x2020	
	16	MinTec	8224			0x2020	
	17	MaxTec	0			0x0000	
	18	Value NEW	23			0x0017	
	19	Conformity	0			0x0000	

Write Single Register ✕

Slave ID: `1`   Send

Address: `50020`   Cancel

Value (HEX): `EC1D`

Result
Timeout Error
☑ Close dialog on "Response ok"

Use Function
◉ 06: Write single register
◯ 16: Write multiple registers

REMARK: a valid execution immediately reset the system and start with the new parameter set without the normal Modbus response!

9   Possible TCP/IP Connection – Configuration via RESI Converter

Note: If you want to connect NA003.COM serial communication with TCP/IP-Network, we recommend the use of the RESI Converter, a device to communicate between TCP/IP and Modbus interface. Here is an introduction how to connect serial Modbus interface with TCP/IP.

1. Disconnect the PC from the local network and connect the PC directly to the converter.
2. Open the Network and Sharing Centre:
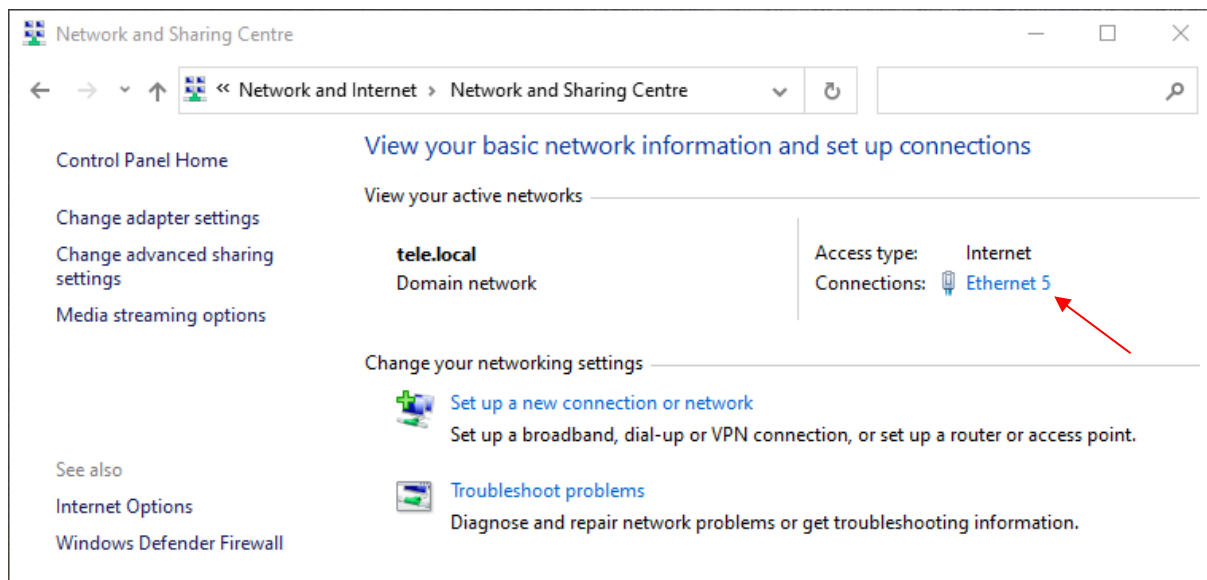
3. Go to Ethernet, then Properties and open IPv4 protocol:
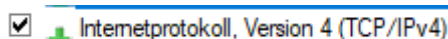
4. The following configuration is required, according to the RESI documentation:

- RESI-1RS485-ETH: IP: 192.168.0.198 Maske: 255.255.255.0 Gateway: 192.168.0.1 Socket: 1024
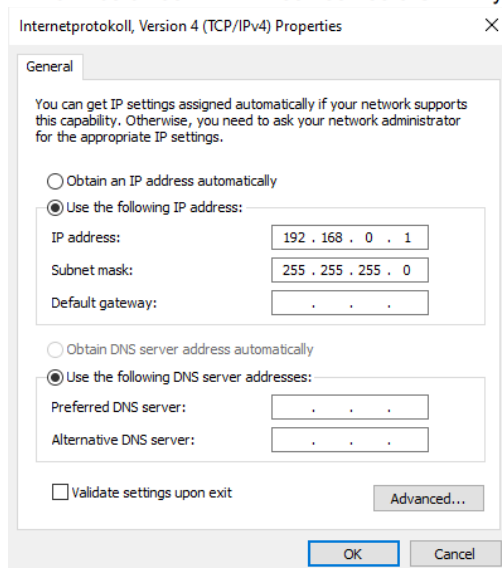
5. Confirm by clicking two times on OK.

6. The next step is to connect to the webserver with 192.168.0.198 (KW: RESI, PW: RESI). Then go to Local IP Config and enter the desired IP address.

7. Press Save and reset the RESI Converter.
8. Restore old IP address of PC.

9.1 Configuring the serial interface on the RESI converter

1. Select the following parameters on the web server of the RESI converter under the TTL1 tab:

After the parameters are selected, click Save at the bottom and then click Restart Module to restart the RESI converter so that the parameters are active.

2. Open Modbus Poll.

3. Under **Connection** click on **Connect…**:
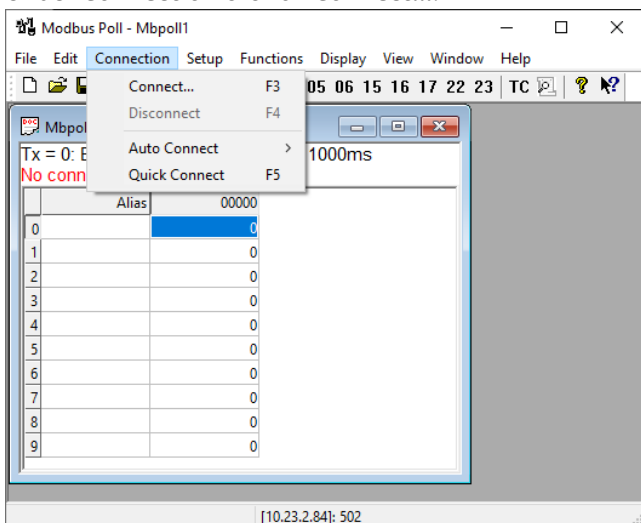
4. Choose **Connection: Modbus RTU/ASCII Over TCP/IP**
Under **IP Address or Node Name** enter the IP address from the RESI-converter
Under **Server Port** enter the **Socket Number**, TELE used 502
Copy the other settings from the picture below and click OK:
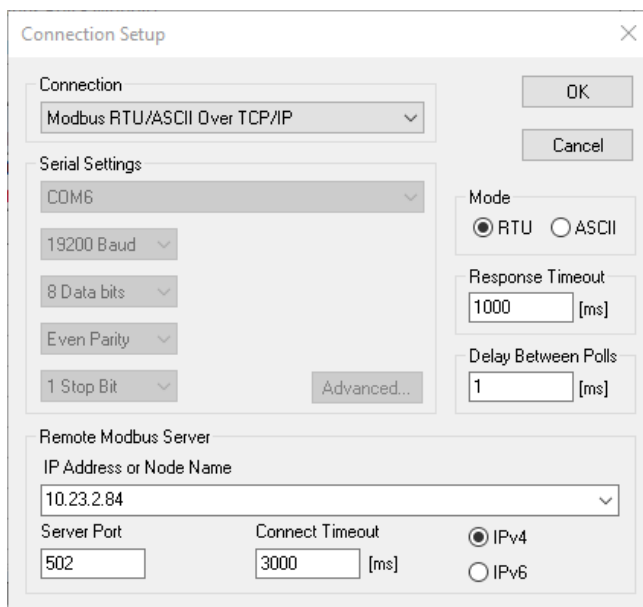
5. Click on **Read/Write Definition...**:
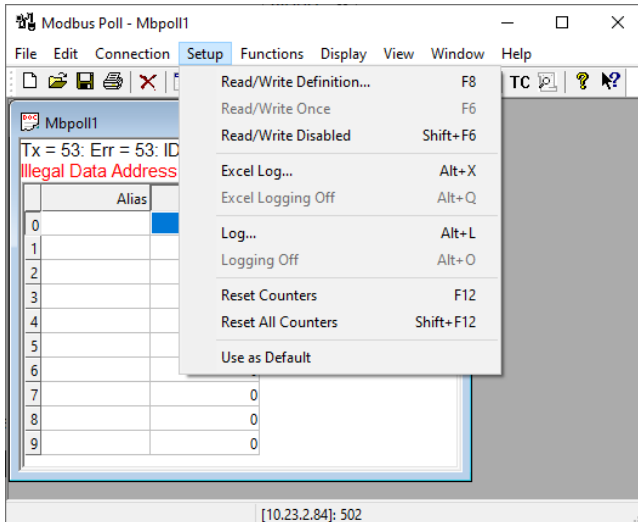
6. Enter the following values and click OK:

SW: 02.15.02g / 2023-04-25
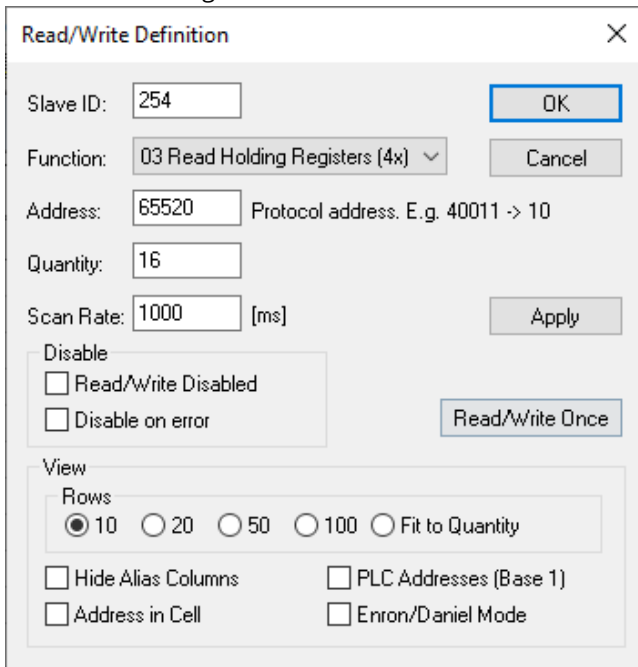
7. Now you should see following table:
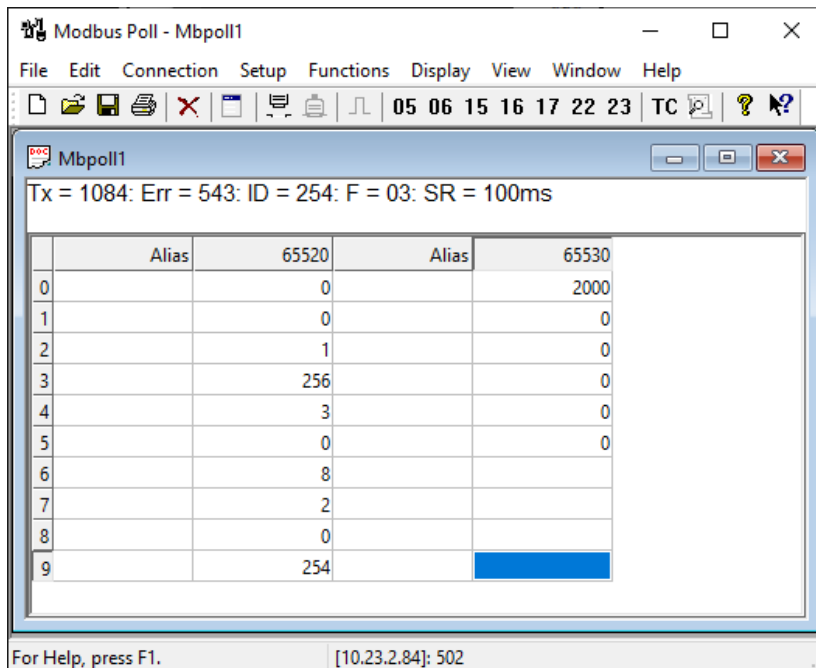
In the table above you can see the configured values of the serial interface, what exactly the values stand for can be found in the RESI manual. However, these values are wrong at the first start-up and must be configured.

8. To do this, first must be entered the configuration mode by double clicking on the 0, in row 5 column 65530, and enter 21321 as the Value and click on Send:

SW: 02.15.02g / 2023-04-25
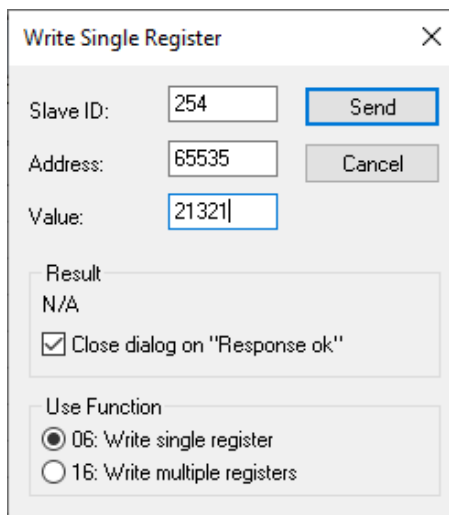
9. Now configuration mode should be available, you can tell because there is now a 1 instead of a 0 in the box.
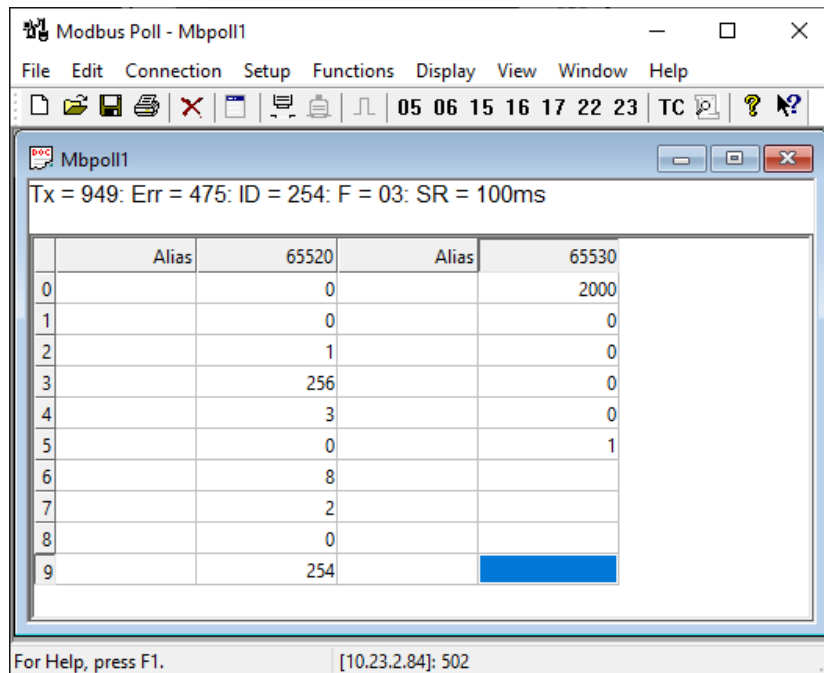
10. Now the correct values must be set for the serial interface. To do this, double-click on the 0, in row 1 column 65520, and enter 57 under Value and click on Send:
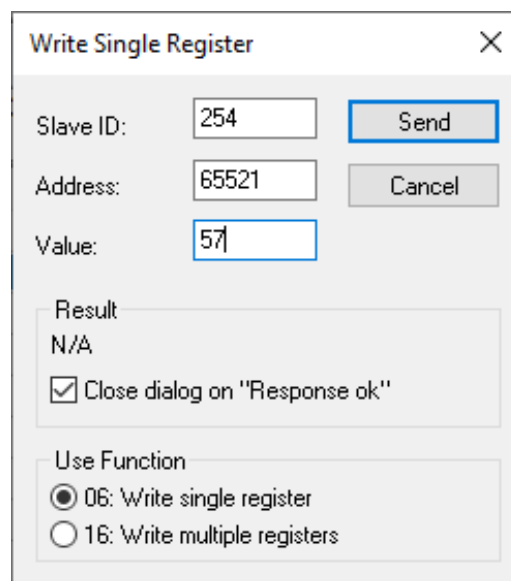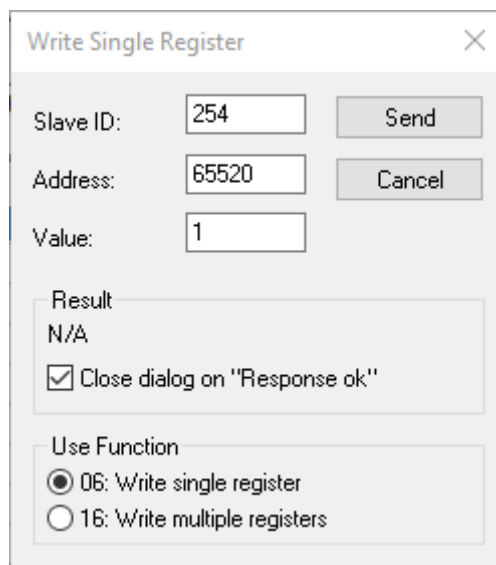
Now the correct values should be inside:
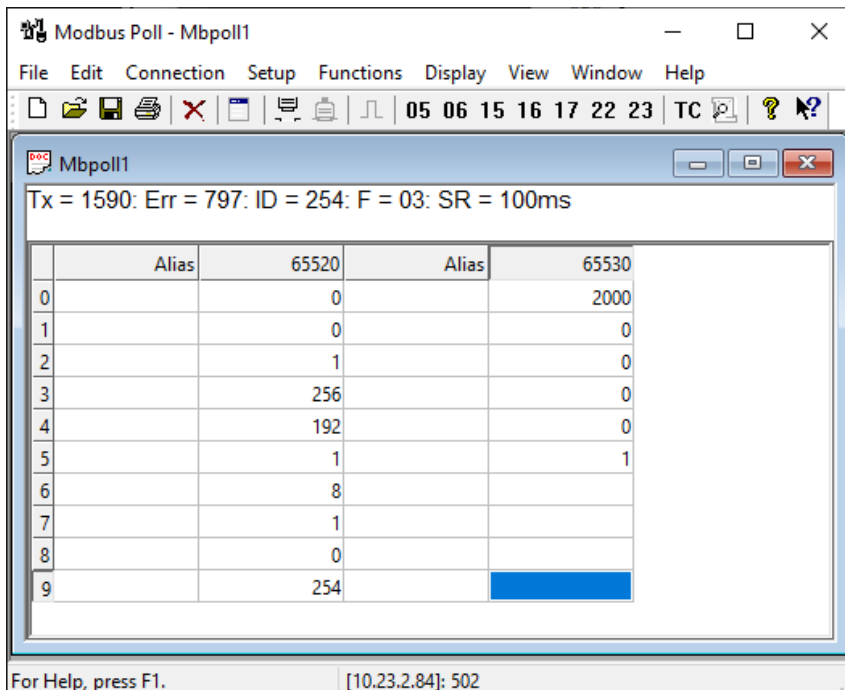
11. The last step is to restart the RESI converter. To do this, go to the web server of the RESI converter under Reboot and click on Restart Module.
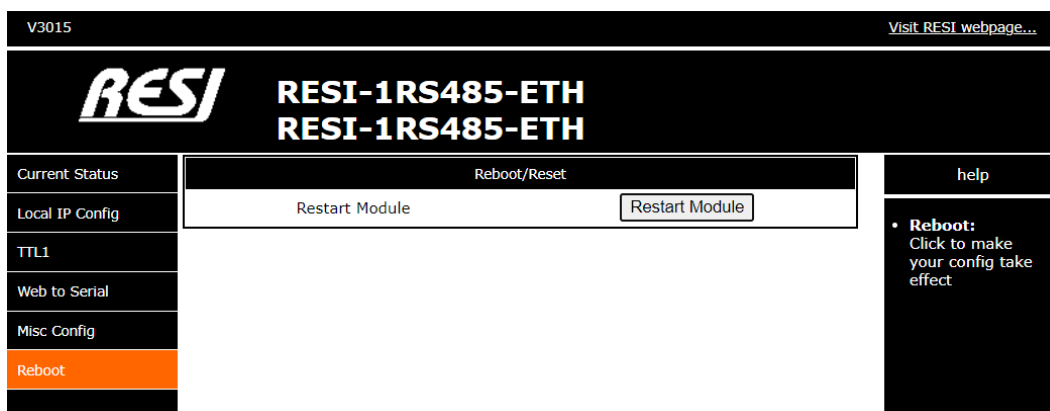
Otherwise, you can also restart the RESI converter by entering a 1 in the box, in row 0 column 65520, and sending it:

Now the correct values should be set and the RESI converter can communicate with the NA-003.

10 Menu structure in general

Menu level 0 — Power Up
Menu level 1 — Measurement Display
Menu level 2 — Error Memory
Menu level 3 — Parameter Display
Menu level 4 — Passwort Request
Menu level 5 — Parameter Change

Power Up →
```
0.001      dflt
 305 VDE 4105:2018
ID:  00000
SW:  01.10.01a
```
5s →

```
1.010      dflt      60
U1  230.0V f 50.00Hz
U2  230.0V
U3  230.0V
```
ENT →

```
1.012      dflt      60
U1  230.0V f 50.00Hz
```
ENT →

```
1.020      dflt      60
U12 400.0V f 50.00Hz
U23 400.0V
U31 400.0V
```
ENT →

```
1.021      dflt      60
U12 400.0V f 50.00Hz
U23 400.0V
U31 400.0V
```
ENT →

```
1.030      dflt      60
U1  230.0V f 50.00Hz
U2  230.0V
U3  230.0V
```
ENT →

```
1.031      dflt      60
U12 400.0V f 50.00Hz
U23 400.0V
U31 400.0V
```
ENT →

```
1.032      dflt      60
U1  230.0V f 50.00Hz
```
ENT →

```
1.040      dflt      60
Toff ---ms
DI1 DI2 DI3 DI4 DI5
 1   1   0   0   0
```
ENT →

```
1.050 Test

          ENT ->
```
ENT / 2s →

```
1.900  Modbus    (*A)
Address:   1
19200 / 8E1
          ENT ->
```

```
1.060  Error            ENT
M: UA UY Û f Δf Δφ C
S: T0123456789ABCDEF    ESC
          ENT ->
```

Menu level 2 — Error Memory
```
2.001 LOG
M: UA UY Û f Δf Δφ C
S: T0123456789ABCDEF
t:    0d  0h 10m 10s
```
+ button / ESC
```
2.002 LOG
M: UA UY Û f Δf Δφ C
S: T0123456789ABCDEF
t:    0d  0h 20m 20s
```
+ button / − button
```
2.050 LOG
M: UA UY Û f Δf Δφ C
S: T0123456789ABCDEF
t:    0d  0h 30m 30s
```
ESC

Menu level 3 — Parameter Display
```
3.001
VDE 4105:2018 <50kW
ID: 305          #13
          PROG ->
```
PROG →
ESC

```
3.xxx
ParameterX
Value
          PROG ->
```
PROG →
ESC

```
3.105      dflt
Code ID
ID:  00000
SW:  01.10.01a
```
+ button / − button

Menu level 4 — Passwort Request
```
4.001
Password
0000
^          ENT ->
```
```
4.002
Password
0000
^          ENT ->
```
```
4.003
Password
0000
^          ENT ->
```
```
4.004
Password
0000
^          ENT ->
```
korrekt
falsch
```
4.005
Password
0000    x
          ENT ->
```
ENT button
ESC button

Menu level 5 — Parameter Change
```
5.001
VDE 4105:2018 <50kW
ID: 305          #13
```
*1
ENT / ESC
```
5.xxx
ParameterX
Value
```
ENT / ESC

Testfunction:
Press „ESC" in any window of menu level 1 or press „ENT" in screen 1.050

Pushbuttons:
+ / − / ENT / ESC / PROG

Remark:
Detailed display
 dflt .. default
 edit .. edited
 ncnf .. non-conform

At menu level 1 in respect of the complete settings.
At level 3 and 5 in respect of the selected parameter.
If a setting changed to state „edit" or „ncfm" it cannot return to „dflt" expected by reloading the configuration.

Remark: The measurement display varies depending on the selected configuration and the selected „Connection" mode (parameter 3.003).

```
Parameter 3.003| Displayed screen
---------------------------------
2-wire        | 1.012/1.032
3-wire        | 1.021/1.031
4-wire (LN)   | 1.010/1.030
4-wire (LN+LL)| 1.010/1.020/1.030
```

Remark:
Measuring errors:
UA .. line to line voltage
UY .. line to neutral voltage
Û .. average voltage
f .. frequency
Δf .. RoCoF
Δφ .. Phase shift
C .. auxiliary contact
      Contactor falsely closed
c .. auxiliary contact
      Contactor falsely opened
System errors:
T .. remote disconnection
0 .. CODEID
1 .. CODEVERS
2 .. CODECRC
3 .. FLASHCRC
4 .. EEPROMCRC
5 .. LOGICVERS
6 .. LOGICCRC
7 .. reserved
8 .. POWER6V
9 .. POWERDIGINP
A .. MEASCOMPAB
B .. PWDINACTIVE
C .. INTERCOM1
D .. reserved
E .. reserved
F .. reserved

(*A) PLEASE NOTE:
See Software Manual for further instructions for Modbus interface

*1
For the first configuration a local standard has to be selected. In this case screen 5.001 cannot be left until a standard has been selected and the selection is confirmed with „ENT".

PLEASE NOTE:
When loading a new configuration (or re-loading the actual) the password is replaced by „0000". If the password is „0000" the password prompt is skipped. If the user forgot the set password, a master password can be requested from the Tele Support team (see contact information at the bottom of this document). Before calling support get and note the device serial number as follows. You can read it on the display screen 0.001 (after powering up), screen 3.105 or on the small side label (left side of the device).
As long as you do not leave level 3 or 5 you do not have to reenter the password. After approximately 2 minutes without operating any pushbutton, the device switches back to menu level 1. Not confirmed changes will be rejected.

VDE 4105: You will be requested to enter a password by default. The factory setting is defined to „4105".

11 Menu Modbus Interface

Menu level 1 Measurement Display		Menu level 3 Parameter Display		Menu level 5 Parameter Change

12 Error Logic:

Bit	ErrorLogic	dec
0	overvoltage LL	1
1	undervoltage LL	2
2	overvoltage LN	4
3	undervoltage LN	8
4	10-min overvoltage	16
5	overfrequency	32
6	underfrequency	64
7	RoCoF (Rate of Change of Frequency)	128
8	phase shift	256
9	Remote shutdown / self-test	512
10	Error System	1024
11	Contactor feedback contact reports closed, although it should be open	2048
12	Contactor feedback contact reports open, although it should be closed (no error, only warning)	4096
13	Error delay running	8192
14	Good delay running	16384
15	master error	32768

SUM = representative error code with includes all
Errors that occur at this time, **for instance**:
Value that is shown in Register 10007:
72
= underfrequency (bit 6) = **64**
+ undervoltage LN (bit 3) = **8**

13 APPENDIX

Modbus Register Table complete:
Read/Writeable MODBUS Registers

Display	Modbus Adress	Description	additional Information					Examples	(R)ead / (W)rite
Leds/Rels	10000	Led/Rel-State	Led/Rel1 1	Led/Rel2 2	Led/Rel3 4			If Led/Rel3 is set, Value will be 4 (error)	**R**
DigInp DI1/2/3/4/5	10001	Digital Inputs	DI1 1	DI2 2	DI3 4	DI4 8	DI5 16	If DI4 and DI5 are set, Value will be 24	**R**
ErrorLogic	10007	FailureLogic						Failure Overvoltage + Underfrequency L1/2/3 N not connected (see tab ErrorLogic)	**R**
GoodCountdown	10008							60seconds	**R**
U12	10011	U Delta						40000 corresponds with 400VAC	**R**
U23	10012	U Delta						40000 corresponds with 400VAC	**R**
U31	10013	U Delta						40000 corresponds with 400VAC	**R**
U1	10014	U Star						23000 corresponds with 230VAC	**R**
U2	10015	U Star						23000 corresponds with 230VAC	**R**
U3	10016	U Star						23000 corresponds with 230VAC	**R**
Uavg1	10017	U Star						23000 corresponds with 230VAC	**R**
Uavg2	10018	U Star						23000 corresponds with 230VAC	**R**
Uavg3	10019	U Star						23000 corresponds with 230VAC	**R**
f	10020	frequency						50000 corresponds with 50Hz	**R**
Parameter-Index SW:	8		last digit of SW-Version displayed					6 stands for "F", 7 for "G" etc.	**R**
Serial Nr.	13								**R**
Device ID:	15		Display shows "12" at PowerOn ("2" for correcture)					Device-ID 1 out of series Nr. 64542	**R**
IndexLogic	18		Display shows "#21" (Slot 0…63)						**R**
StdID	19		Dispay Shows "102 CEI 0-21:2019" (Parameterset)					Standard ID 102 (see next tab Standard ID)	**R**
C01_StdId	31		from Modbus-Adr. **31** to **94** all implemented parametersets are listed					"802" first parameterset in Device	**R**

Parameters

StdID	30001		Dispay Shows 102 CEI 0-21:2019 (Parameterset)						**R/W**
Meas	30003		**0**: 2-wire	**1**: 3-wire	**2**: 4-wire(LN)	**3**: 4-wire (LN+LL)			**R/W**
Nomvol	30005		Un (nominal) phase to phase					40000: 230V/400V	**R/W**
Errtol	30007		**1**: 2 meas. chan. for functional safety (Rel1/2) **0**: 1 meas. chan.						**R/W**
Mode	30009		only necessary für italy (**0**: definitife/**1**: transitory-mode)						**R/W**

Name	Register	Value			Description	Access
LL_oA_Sel	30010	**1**: protective function activated **0**: OFF			Overvoltage 1 line to line	**R/W**
LL_oA_Off	30011	115%	Un	U_{THR} OFF		**R/W**
LL_oA_On	30012	115%	Un	U_{THR} ON		**R/W**
LL_oA_Del	30013	200	ms	Time OFF		**R/W**
LL_uA_Sel	30014	**1**: protective function activated **0**: OFF			Undervoltage 1 line to line	**R/W**
LL_uA_Off	30015	85%	Un	U_{THR} OFF		**R/W**
LL_uA_On	30016	85%	Un	U_{THR} ON		**R/W**
LL_uA_Del	30017	1500	ms	Time OFF		**R/W**
LN_oA_Sel	30018	**1**: protective function activated **0**: OFF			Overvoltage 1 line to neutral	**R/W**
LN_oA_Off	30019	115%	Un	U_{THR} OFF		**R/W**
LN_oA_On	30020	115%	Un	U_{THR} ON		**R/W**
LN_oA_Del	30021	200	ms	Time OFF		**R/W**
LN_uA_Sel	30022	**1**: protective function activated **0**: OFF			Undervoltage 1 line to neutral	**R/W**
LN_uA_Off	30023	85%	Un	U_{THR} OFF		**R/W**
LN_uA_On	30024	85%	Un	U_{THR} ON		**R/W**
LN_uA_Del	30025	1500	ms	Time OFF		**R/W**
LL_oB_Sel	30026	**1**: protective function activated **0**: OFF			Overvoltage 2 line to line	**R/W**
LL_oB_Off	30027	0%	Un	U_{THR} OFF		**R/W**
LL_oB_On	30028	0%	Un	U_{THR} ON		**R/W**
LL_oB_Del	30029	0	ms	Time OFF		**R/W**
LL_uB_Sel	30030	**1**: protective function activated **0**: OFF			Undervoltage 2 line to line	**R/W**
LL_uB_Off	30031	15%	Un	U_{THR} OFF		**R/W**
LL_uB_On	30032	15%	Un	U_{THR} ON		**R/W**
LL_uB_Del	30033	200	ms	Time OFF		**R/W**
LN_oB_Sel	30034	**1**: protective function activated **0**: OFF			Overvoltage 2 line to neutral	**R/W**
LN_oB_Off	30035	0%	Un	U_{THR} OFF		**R/W**
LN_oB_On	30036	0%	Un	U_{THR} ON		**R/W**
LN_oB_Del	30037	0	ms	Time OFF		**R/W**
LN_uB_Sel	30038	**1**: protective function activated **0**: OFF			Undervoltage 2 line to neutral	**R/W**
LN_uB_Off	30039	15%	Un	U_{THR} OFF		**R/W**
LN_uB_On	30040	15%	Un	U_{THR} ON		**R/W**
LN_uB_Del	30041	200	ms	Time OFF		**R/W**
Uavg_o_Sel	30042	**1**: protective function activated **0**: OFF			10 minutes average overvoltage	**R/W**
Uavg_o_Off	30043	110%	Un	U_{THR} OFF		**R/W**
Uavg_o_On	30044	110%	Un	U_{THR} ON		**R/W**

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Uavg_o_Del	30045		0	ms	Time OFF		R/W
f_oA_Sel	30054		**1**: protective function activated **0**: OFF			Overfrequency 1	R/W
f_oA_Off	30055		51,5	Hz	U$_{THR}$ OFF		R/W
f_oA_On	30056		51,5	Hz	U$_{THR}$ ON		R/W
f_oA_Del	30057		1000	ms	Time OFF		R/W
f_uA_Sel	30058		**1**: protective function activated **0**: OFF			Underfrequency 1	R/W
f_uA_Off	30059		47,5	Hz	U$_{THR}$ OFF		R/W
f_uA_On	30060		47,5	Hz	U$_{THR}$ ON		R/W
f_uA_Del	30061		4000	ms	Time OFF		R/W
f_oB_Sel	30062		**1**: protective function activated **0**: OFF			Overfrequency 2	R/W
f_oB_Off	30063		50,2	Hz	U$_{THR}$ OFF		R/W
f_oB_On	30064		50,2	Hz	U$_{THR}$ ON		R/W
f_oB_Del	30065		100	ms	Time OFF		R/W
f_uB_Sel	30066		**1**: protective function activated **0**: OFF			Underfrequency 2	R/W
f_uB_Off	30067		49,8	Hz	U$_{THR}$ OFF		R/W
f_uB_On	30068		49,8	Hz	U$_{THR}$ ON		R/W
f_uB_Del	30069		100	ms	Time OFF		R/W
f_oC_Sel	30070		**1**: protective function activated **0**: OFF			Overfrequency 3	R/W
f_oC_Off	30071		51,5	Hz	U$_{THR}$ OFF		R/W
f_oC_On	30072		51,5	Hz	U$_{THR}$ ON		R/W
f_oC_Del	30073		100	ms	Time OFF		R/W
f_uC_Sel	30074		**1**: protective function activated **0**: OFF			Underfrequency 3	R/W
f_uC_Off	30075		47,5	Hz	U$_{THR}$ OFF		R/W
f_uC_On	30076		47,5	Hz	U$_{THR}$ ON		R/W
f_uC_Del	30077		100	ms	Time OFF		R/W
f_oR_Sel	30086		**1**: protective function activated **0**: OFF			f random	R/W
f_oR_Off	30087		0,0	Hz	U$_{THR}$ OFF		R/W
f_oR_On	30088		0,0	Hz	U$_{THR}$ ON		R/W
f_oR_Del	30089		0	ms	Time OFF		R/W
ROCOF_Sel	30090		**1**: protective function activated **0**: OFF			Rate Of Change Off frequency	R/W
ROCOF_Off	30091		2,7	Hz/s			R/W
ROCOF_On	30092		2,3	Hz/s			R/W
ROCOF_Del	30093		0	ms	Time OFF		R/W
PShift_Sel	30094		**1**: protective function activated **0**: OFF			Phase Shift	R/W
PShift_Off	30095		12	°			R/W
PShift_On	30096		9	°			R/W

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PShift_Del	30097		0	ms	Time OFF		R/W
Con	30099		**0:** n.o. (normally opened)	**1:** n.c. (normally closed)	**2:** disabled		R/W
Con_Del	30100		500	ms		T contact (monitoring window)	R/W
OnDel	30102		5 sec			Ton delay	R/W
OnDelR_Sel	30103		**1:** Random On Delay ON	**0:** Random On Delay OFF		importand for Germany VDE-AR-N 4105	R/W
OnDelR	30104		99 sec				R/W
DigIn3	30114		**0:** n.o. (normally opened)	**1:** n.c. (normally closed)	**2:** disabled	I3 STOP (R1/2 OFF)	R/W
Uzero_o_Sel	30115		**1**: protective function activated **0**: OFF			important for C10/11 belgium	R/W
Uzero_o_Off	30116		20%	Un	U_{THR} OFF	(activation narrow frequency window)	R/W
Uzero_o_On	30117		15%	Un	U_{THR} ON		R/W
Uzero_o_Del	30118		1500	ms	Time OFF		R/W
Cen_Ures_o_Sel	30119		important for C10/11 belgium (activation narrow frequency window)				R/W
Cen_Ures_o_Off	30120						R/W
Cen_Ures_o_On	30121						R/W
Cen_Ures_o_Del	30122		0				R/W
Cen_LN_u_Sel	30123		important for C10/11 belgium (activation narrow frequency window)				R/W
Cen_LN_u_Off	30124						R/W
Cen_LN_u_On	30125						R/W
Cen_LN_u_Del	30126		0				R/W
State	50000		State Bit0 Request code is accepted Bit1 Password is accepted ONLY when bit0 and bit1 are set modifying is permitted"				R
Request	50001		"Request code When request code is not accepted read data is 0"				R/W
Password	50002		Password When password is not accepted read data is 0				R/W
Index	50003		Index of the parameter requested to modify, according to display (HMI) 102 means "Turn-on delay"				R/W
Value	50004		Actual value in standard				R
Value def.	50005		Default value in standard				R
Configuration	50006		Configuration Bit1 Parameter is visible Bit2 Parameter is changeable Bit3 Modifying parameter in conformity range let the standard in default				R

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			ONLY when bit1 an bit2 are set modifying parameter is permitted. All other bits for internal use.		
Name	50007-50017		Name of the new parameter set "OPEN SETUP"		R
Value NEW	50018		Slot number of the new parameter set		R/W
Conformity	50019		Conformity of the new parameter set 0 new value is default 255 new parameter set is NOT ALLOWED		R
Execute	50020		W: Execute code R: Execute state 0 Modify is executed 1 Execute code is not accepted 2 Modifying is not permitted (see State) 3 Parameter is not modifiable (see Configuration) 4 New parameter set is not allowed		R/W
Modbus On	50901		1: Modbus ON 0: Modbus OFF		R/W
Address	50902		Modbus Slave individual address (1-247) default 1		R/W
Baudrate	50903		Baudrate 0 = 9600 1 = 19200 (default)		R/W
Properties	50904		0: 8E1 (def) 1: 8O1 2: 8N2 3: 8N1 (not conform)		R/W

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