SERIAL COMMUNICATION MANUAL

from 2020

REVO PN
REVO PC
REVO DPU SYSTEM

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0011

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1 MODBUS-RTU communication protocol

1.1 Communication Terminals

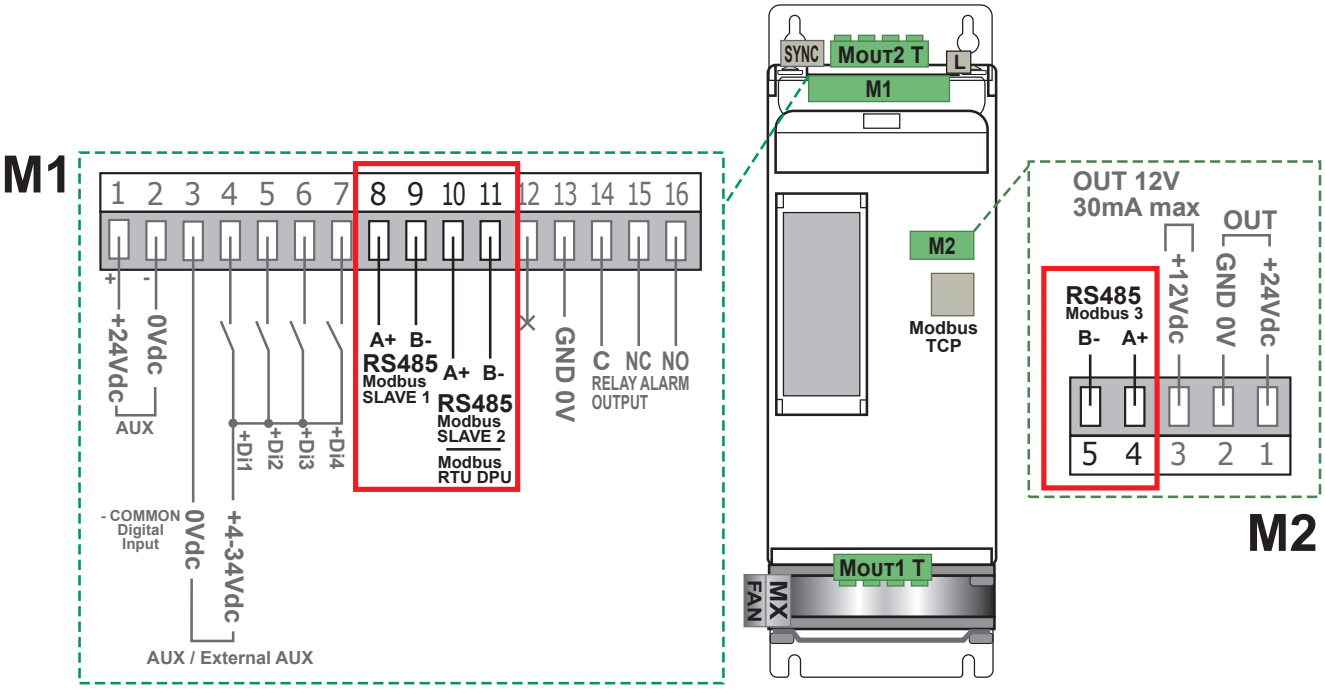
1.1.1 RS485 standard Serial Port

Terminal M1	Description
8	RS485 A+
9	RS485 B-
10	RS485 A+
11	RS485 B-

Terminal M2	Description
4	RS485 A+
5	RS485 B-

Ethernet
Modbus/TCP

Fieldbus
Profibus
Profinet



1.2 MODBUS RTU communication

The serial communication port of the thyristor unit is two-wire RS485 type. This port use an half-duplex system. While a Unit is transmitting the transmission line is activated, otherwise the transmission line is in high impedance.
The serial communication port allows to communicate between the thyristor units and a MASTER device (ex. a computer or a terminal). The cable must be rated for use to data transfer.
The communication is based on the standard industrial MODBUS RTU with the following restrictions:

The Baud rate can be 9600-19200-38400-115200 Baud (Standard 19200).

The following MODBUS functions are supported:

Function	Description
03/04	Read Holding Registers (max 121 reg.)
06	Preset Single Registers
16	Preset Multiple Registers (max 25 reg.)

The unit support the Broadcast messages:
It's possible to send a Broadcast message using the address 0, all the units respond to the message without sending back any reply.

1.2.1 Message Format

The transmission format is a 1 bit start, 8 date bit, and 1 bit stop with no parity verification.
A message for either a Query or a Response is made up of an inter-message gap followed by a sequence of data characters. The inter-message gap is at least 3.5 character times.
The first Byte of each message is always the address of the unit that is a value from 1 to 255 or 0 for the broadcast messages, the second is always the function number, and the rest of the message depends of the function demand.

When a slave receives a message, the unit sends an answer with the same structure but with the information requested.

Each message is followed by CRC (Cyclic Redundancy Check) with two bytes. The CRC identifies the incongruity situations of the message, in this case the receiver ignores the message.
The CRC is calculated in accordance with a formula that implies a recursive division of the data by a polynomial.
The polynomial divisor is:

$$2^{16} + 2^{15} + 2^{2} + 1 \text{ (Hex 18005)}$$

but is modified in two ways:

- Since the bits order are reversed, then the binary pattern is also reversed, and the most significant bit (MSB) is the right-most bit.
- Since interest only the remainder, the right-most bit could be discarded. Therefore, the polynomial divisor has value: Hex A001

Normal bit order:

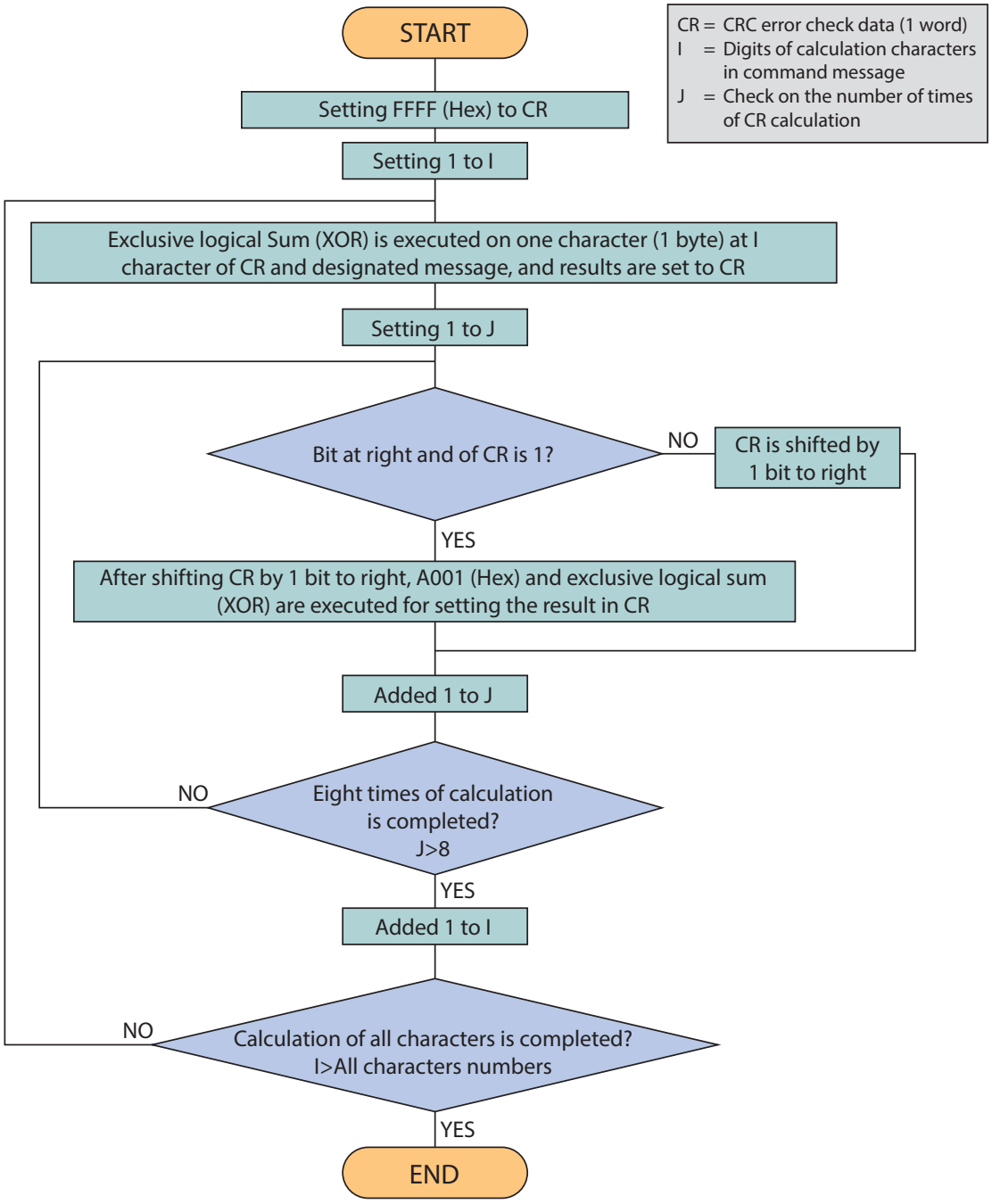
Most significant bit																Least significant bit
	Most significant Byte								Least significant Byte							

Reversed bit order:

Least significant bit																Most significant bit
	Least significant Byte								Most significant Byte							

N.B.: With the reversed bit order, also the CRC16 returns the with the reversed bit order

The following flowchart shows how to organize the CRC 16 bit.



1.2.2 C Language CRC 16 Example

```
static short CRC16 (unsigned char *p_first,unsigned char *p_last)
{
        unsigned int crc=0xffff;
        short j;
        for (;p_first<=p_last;p_first++)
        {
                crc ^= *p_first;
                for(j=8;j>0;j--)
                {
                if(crc & 0x0001)
                        {
                        crc = crc >> 1;
                        crc ^= 0xA001;
                        }
                else
                        {
                        crc = crc >> 1;
                        }
                }
        }
 return (crc);
}
```

1.2.3 Read Holding Registers (function 03/03Hex) - Read InputRegisters (function 04/04Hex)

This function reads the instantaneous values of a specified number of parameters from an address.
The message is composed by 8 Byte:

- one Byte is for the address
- one Byte for the function (03/04Hex)
- two Bytes for the address of the first parameter to read
- two Bytes for the total number of parameters to read (max 121)
- two Bytes for the CRC

Address Unit	Function	Address of the First Parameter		N° of read Parameter		CRC 16	
	3/4 3/4Hex	HI	LO	HI	LO	LO	HI

The answer is an echo of the first two Bytes (address and function), one byte with the number of byte following (CRC excluded), the demanded values and finally two Bytes for the CRC.

Address Unit	Function	N° of Byte	First Parameter Value			Last parameter value		CRC16	
	3/4 3/4Hex	2 - 32	HI	LO		HI	LO	LO	HI

1.2.4 Preset Multiple Registers (function 16/10Hex)

This function could write maximum 25 parameters for each message. The message is composed by:

- one Byte for the address
- one Byte for the function (10 Hex)
- two Bytes for first parameter address to write
- two Bytes for the N° of parameters
- one Byte with the number of following Bytes
- values to write, two Bytes for the CRC:

Address Unit	Function	Address of the First Parameter		N° of the parameter		N° of Byte	Value to Write		→
	16 10Hex	HI	LO	HI	LO	2	HI	LO	→

→	First Value to Write			Last Value to Write		CRC 16	
→	HI	LO		HI	LO	LO	HI

The answer is an echo of the first two Byte (address and function), two Byte for first written parameter, two Byte with the N° of parameters, fixed to 1 (0001 Hex), two Byte for the CRC.

Address Unit	Function	Address of the First Parameter		N° of the parameter		Value to Write	
	16 10Hex	HI	LO	0	1	HI	LO

1.2.5 Preset single register (function 06/06Hex)

This function writes a single Modbus parameter. The message is composed by 8 Bytes:

- one Byte for the address,
- one Byte for the function (6 Hex),
- two Bytes for the parameter address to write
- two Bytes for the value to write
- two Bytes for the CRC

Address Unit	Function	Address of the First Parameter		N° of the parameter		Value to Write	
	6 6Hex	HI	LO	HI	LO	LO	HI

The normal response is a complete echo of the received message.

1.2.6 Error and exception responses

If a message contains an altered character, if fails the CRC, or if the received message contains a syntax error (for example the number of the byte or of the words is not correct), then the unit will ignore the message.

If the received message is correct but contains a not valid value, the unit will send an answer of exception (5 bytes):

Address Unit	Function	Error Code	CRC 16	
			LO	HI

The byte with the function number, represent the function number of the message that has caused the error with the first Bit set to 1 (ex. the function 3 becomes 0x83) The error code could be one of the followings:

Error Code	Name	Cause
1	ILLEGAL FUNCTION	Function not supported
2	ILLEGAL DATA ADDRESS	Address out of range
4	FAILURE IN ASSOCIATED DEVICE	Too Many parameter request

1.3 Address Configuration

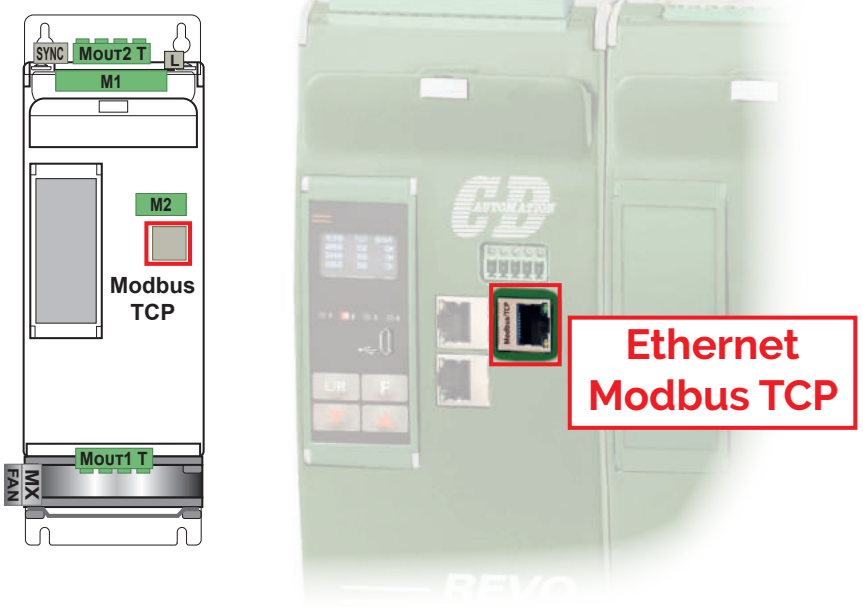
The thyristor unit is assigned a unique device address by the user in the range 1 (default) to 247 using the parameter P115 in the Hardware menu. This address is used to recognise Modbus Queries intended for this instrument.
The thyristor unit does not respond to modbus queries that don't have the same assigned address.

1.4 Modbus TCP

1.4.1 General description

The thyristor unit permit a data exchange via Modbus/TCP to an external device (HMI or PLC).

1.4.2 Modbus/TCP Connection



1.6 Parameter List

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
1	0	100,0	1	%	yes	Set Point Ch1
2	0	100,0	1	%	yes	Set Point Ch2
3	0	100,0	1	%	yes	Set Point Ch3
4	0	100,0	1	%	yes	Set Point Ch4
5	0	100,0	1	%	yes	Set Point Ch5
6	0	100,0	1	%	yes	Set Point Ch6
7	0	100,0	1	%	yes	Set Point Ch7
8	0	100,0	1	%	yes	Set Point Ch8
9	0	100,0	1	%	yes	Set Point Ch9
10	0	100,0	1	%	yes	Set Point Ch10
11	0	100,0	1	%	yes	Set Point Ch11
12	0	100,0	1	%	yes	Set Point Ch12
13	0	100,0	1	%	yes	Set Point Ch13
14	0	100,0	1	%	yes	Set Point Ch14
15	0	100,0	1	%	yes	Set Point Ch15
16	0	100,0	1	%	yes	Set Point Ch16
17	0	100,0	1	%	yes	Set Point Ch17
18	0	100,0	1	%	yes	Set Point Ch18
19	0	100,0	1	%	yes	Set Point Ch19
20	0	100,0	1	%	yes	Set Point Ch20
21	0	100,0	1	%	yes	Set Point Ch21
22	0	100,0	1	%	yes	Set Point Ch22
23	0	100,0	1	%	yes	Set Point Ch23
24	0	100,0	1	%	yes	Set Point Ch24
25	-	-	-	-	-	Not used
26	0	100,0	1	%	No	Output Ch1
27	0	100,0	1	%	No	Output Ch2
28	0	100,0	1	%	No	Output Ch3
29	0	100,0	1	%	No	Output Ch4
30	0	100,0	1	%	No	Output Ch5
31	0	100,0	1	%	No	Output Ch6
32	0	100,0	1	%	No	Output Ch7
33	0	100,0	1	%	No	Output Ch8
34	0	100,0	1	%	No	Output Ch9
35	0	100,0	1	%	No	Output Ch10
36	0	100,0	1	%	No	Output Ch11

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
37	0	100,0	1	%	No	Output Ch12
38	0	100,0	1	%	No	Output Ch13
39	0	100,0	1	%	No	Output Ch14
40	0	100,0	1	%	No	Output Ch15
41	0	100,0	1	%	No	Output Ch16
42	0	100,0	1	%	No	Output Ch17
43	0	100,0	1	%	No	Output Ch18
44	0	100,0	1	%	No	Output Ch19
45	0	100,0	1	%	No	Output Ch20
46	0	100,0	1	%	No	Output Ch21
47	0	100,0	1	%	No	Output Ch22
48	0	100,0	1	%	No	Output Ch23
49	0	100,0	1	%	No	Output Ch24
50	-	-	-	-	-	Not used
51	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch1
52	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch2
53	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch3
54	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch4
55	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch5
56	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch6
57	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch7
58	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch8
59	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch9
60	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch10
61	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch11
62	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch12
63	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch13
64	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch14
65	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch15
66	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch16
67	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch17
68	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch18
69	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch19
70	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch20
71	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch21
72	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch22
73	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch23
74	0	6553,5	RPC: 2 / RPN: 3	kW	No	Power Ch24

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
75	-	-	-	-	-	Not used
76	0	6553.5	1	A	No	Current Ch1
77	0	6553.5	1	A	No	Current Ch2
78	0	6553.5	1	A	No	Current Ch3
79	0	6553.5	1	A	No	Current Ch4
80	0	6553.5	1	A	No	Current Ch5
81	0	6553.5	1	A	No	Current Ch6
82	0	6553.5	1	A	No	Current Ch7
83	0	6553.5	1	A	No	Current Ch8
84	0	6553.5	1	A	No	Current Ch9
85	0	6553.5	1	A	No	Current Ch10
86	0	6553.5	1	A	No	Current Ch11
87	0	6553.5	1	A	No	Current Ch12
88	0	6553.5	1	A	No	Current Ch13
89	0	6553.5	1	A	No	Current Ch14
90	0	6553.5	1	A	No	Current Ch15
91	0	6553.5	1	A	No	Current Ch16
92	0	6553.5	1	A	No	Current Ch17
93	0	6553.5	1	A	No	Current Ch18
94	0	6553.5	1	A	No	Current Ch19
95	0	6553.5	1	A	No	Current Ch20
96	0	6553.5	1	A	No	Current Ch21
97	0	6553.5	1	A	No	Current Ch22
98	0	6553.5	1	A	No	Current Ch23
99	0	6553.5	1	A	No	Current Ch24
100	-	-	-	-	-	Not used
101	0	6553.5	1	A	No	Voltage Ch1
102	0	6553.5	1	A	No	Voltage Ch2
103	0	6553.5	1	A	No	Voltage Ch3
104	0	6553.5	1	A	No	Voltage Ch4
105	0	6553.5	1	A	No	Voltage Ch5
106	0	6553.5	1	A	No	Voltage Ch6
107	0	6553.5	1	A	No	Voltage Ch7
108	0	6553.5	1	A	No	Voltage Ch8
109	0	6553.5	1	A	No	Voltage Ch9
110	0	6553.5	1	A	No	Voltage Ch10
111	0	6553.5	1	A	No	Voltage Ch11
112	0	6553.5	1	A	No	Voltage Ch12

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
113	0	6553.5	1	A	No	Voltage Ch13
114	0	6553.5	1	A	No	Voltage Ch14
115	0	6553.5	1	A	No	Voltage Ch15
116	0	6553.5	1	A	No	Voltage Ch16
117	0	6553.5	1	A	No	Voltage Ch17
118	0	6553.5	1	A	No	Voltage Ch18
119	0	6553.5	1	A	No	Voltage Ch19
120	0	6553.5	1	A	No	Voltage Ch20
121	0	6553.5	1	A	No	Voltage Ch21
122	0	6553.5	1	A	No	Voltage Ch22
123	0	6553.5	1	A	No	Voltage Ch23
124	0	6553.5	1	A	No	Voltage Ch24
125	-	-	-	-	-	Not used
126	0	65535	0	V	Yes	Operative Load Voltage Ch1
127	0	65535	0	V	Yes	Operative Load Voltage Ch2
128	0	65535	0	V	Yes	Operative Load Voltage Ch3
129	0	65535	0	V	Yes	Operative Load Voltage Ch4
130	0	65535	0	V	Yes	Operative Load Voltage Ch5
131	0	65535	0	V	Yes	Operative Load Voltage Ch6
132	0	65535	0	V	Yes	Operative Load Voltage Ch7
133	0	65535	0	V	Yes	Operative Load Voltage Ch8
134	0	65535	0	V	Yes	Operative Load Voltage Ch9
135	0	65535	0	V	Yes	Operative Load Voltage Ch10
136	0	65535	0	V	Yes	Operative Load Voltage Ch11
137	0	65535	0	V	Yes	Operative Load Voltage Ch12
138	0	65535	0	V	Yes	Operative Load Voltage Ch13
139	0	65535	0	V	Yes	Operative Load Voltage Ch14
140	0	65535	0	V	Yes	Operative Load Voltage Ch15
141	0	65535	0	V	Yes	Operative Load Voltage Ch16
142	0	65535	0	V	Yes	Operative Load Voltage Ch17
143	0	65535	0	V	Yes	Operative Load Voltage Ch18
144	0	65535	0	V	Yes	Operative Load Voltage Ch19
145	0	65535	0	V	Yes	Operative Load Voltage Ch20
146	0	65535	0	V	Yes	Operative Load Voltage Ch21
147	0	65535	0	V	Yes	Operative Load Voltage Ch22
148	0	65535	0	V	Yes	Operative Load Voltage Ch23
149	0	65535	0	V	Yes	Operative Load Voltage Ch24
150	-	-	-	-	-	Not used

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
151	0	6553.5	1	kW	Yes	Operative Load Power Ch1
152	0	6553.5	1	kW	Yes	Operative Load Power Ch2
153	0	6553.5	1	kW	Yes	Operative Load Power Ch3
154	0	6553.5	1	kW	Yes	Operative Load Power Ch4
155	0	6553.5	1	kW	Yes	Operative Load Power Ch5
156	0	6553.5	1	kW	Yes	Operative Load Power Ch6
157	0	6553.5	1	kW	Yes	Operative Load Power Ch7
158	0	6553.5	1	kW	Yes	Operative Load Power Ch8
159	0	6553.5	1	kW	Yes	Operative Load Power Ch9
160	0	6553.5	1	kW	Yes	Operative Load Power Ch10
161	0	6553.5	1	kW	Yes	Operative Load Power Ch11
162	0	6553.5	1	kW	Yes	Operative Load Power Ch12
163	0	6553.5	1	kW	Yes	Operative Load Power Ch13
164	0	6553.5	1	kW	Yes	Operative Load Power Ch14
165	0	6553.5	1	kW	Yes	Operative Load Power Ch15
166	0	6553.5	1	kW	Yes	Operative Load Power Ch16
167	0	6553.5	1	kW	Yes	Operative Load Power Ch17
168	0	6553.5	1	kW	Yes	Operative Load Power Ch18
169	0	6553.5	1	kW	Yes	Operative Load Power Ch19
170	0	6553.5	1	kW	Yes	Operative Load Power Ch20
171	0	6553.5	1	kW	Yes	Operative Load Power Ch21
172	0	6553.5	1	kW	Yes	Operative Load Power Ch22
173	0	6553.5	1	kW	Yes	Operative Load Power Ch23
174	0	6553.5	1	kW	Yes	Operative Load Power Ch24
175	-	-	-	-	-	Not used

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
176						Command Table Ch1
177						Command Table Ch2
178						Command Table Ch3
179						Command Table Ch4
180						Command Table Ch5
181						Command Table Ch6
182						Command Table Ch7
183						Command Table Ch8
184						Command Table Ch9
185						Command Table Ch10
186						Command Table Ch11
187						Command Table Ch12
188						Command Table Ch13
189						Command Table Ch14
190						Command Table Ch15
191						Command Table Ch16
192						Command Table Ch17
193						Command Table Ch18
194						Command Table Ch19
195						Command Table Ch20
196						Command Table Ch21
197						Command Table Ch22
198						Command Table Ch23
199						Command Table Ch24
200	-	-	-	-	-	Not used

Command table

bit	
0	Enable/Disable (0=Disabled, 1=Enabled)

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
201						Status Table Ch1
202						Status Table Ch2
203						Status Table Ch3
204						Status Table Ch4
205						Status Table Ch5
206						Status Table Ch6
207						Status Table Ch7
208						Status Table Ch8
209						Status Table Ch9
210						Status Table Ch10
211						Status Table Ch11
212						Status Table Ch12
213						Status Table Ch13
214						Status Table Ch14
215						Status Table Ch15
216						Status Table Ch16
217						Status Table Ch17
218						Status Table Ch18
219						Status Table Ch19
220						Status Table Ch20
221						Status Table Ch21
222						Status Table Ch22
223						Status Table Ch23
224						Status Table Ch24
225	-	-	-	-	-	Not used

Status table

bit	
0	HB ALARM (0=Ok, 1=in Alarm)
1	SC ALARM (0=Ok, 1=in Alarm)

No

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
226						Feed Back Ch1
227						Feed Back Ch2
228						Feed Back Ch3
229						Feed Back Ch4
230						Feed Back Ch5
231						Feed Back Ch6
232						Feed Back Ch7
233						Feed Back Ch8
234						Feed Back Ch9
235						Feed Back Ch10
236						Feed Back Ch11
237						Feed Back Ch12
238						Feed Back Ch13
239						Feed Back Ch14
240						Feed Back Ch15
241						Feed Back Ch16
242						Feed Back Ch17
243						Feed Back Ch18
244						Feed Back Ch19
245						Feed Back Ch20
246						Feed Back Ch21
247						Feed Back Ch22
248						Feed Back Ch23
249						Feed Back Ch24
250	-	-	-	-	-	Not used
251	0	6553.5	1	kW	Yes	Power Limit Stage 1
252	0	6553.5	1	kW	Yes	Power Limit Stage 2 (not for DPU system)
253	0	6553.5	1	kW	Yes	Power Limit Stage 3 (not for DPU system)
254	0	6553.5	1	kW	Yes	Power Limit Total
255					No	Status Table Stage 1
256					No	Status Table Stage 2 (not for DPU system)
257					No	Status Table Stage 3 (not for DPU system)
258	0	6553.5	1	°C	No	Temp. Stage 1
259	0	6553.5	1	°C	No	Temp. Stage 2 (not for DPU system)
260	0	6553.5	1	°C	No	Temp. Stage 3 (not for DPU system)

FEEDBACK 226 - 250

Val	
0	NONE
1	V
2	V2
3	P(VxI)
4	I
5	I2

Status table per Stage

bit	
0	Power Limit (0=Ok ,1=In alarm)
1	Temp Alarm (0=Ok ,1=In alarm)
2	Line Loss (0=Ok ,1=In alarm)

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
261	0	6553.5	1	V	No	Line Voltage Stage 1
262	0	6553.5	1	V	No	Line Voltage Stage 2 (not for DPU system)
263	0	6553.5	1	V	No	Line Voltage Stage 3 (not for DPU system)
264	0	655.35	2	Hz	No	Frequency stage 1
265	0	655.35	2	Hz	No	Frequency stage 2 (not for DPU system)
266	0	655.35	2	Hz	No	Frequency stage 3 (not for DPU system)
267	0	6553.5	1	Ohm	No	Load Resistance Ch1
268	0	6553.5	1	Ohm	No	Load Resistance Ch2
269	0	6553.5	1	Ohm	No	Load Resistance Ch3
270	0	6553.5	1	Ohm	No	Load Resistance Ch4
271	0	6553.5	1	Ohm	No	Load Resistance Ch5
272	0	6553.5	1	Ohm	No	Load Resistance Ch6
273	0	6553.5	1	Ohm	No	Load Resistance Ch7
274	0	6553.5	1	Ohm	No	Load Resistance Ch8
275	0	6553.5	1	Ohm	No	Load Resistance Ch9
276	0	6553.5	1	Ohm	No	Load Resistance Ch10
277	0	6553.5	1	Ohm	No	Load Resistance Ch11
278	0	6553.5	1	Ohm	No	Load Resistance Ch12
279	0	6553.5	1	Ohm	No	Load Resistance Ch13
280	0	6553.5	1	Ohm	No	Load Resistance Ch14
281	0	6553.5	1	Ohm	No	Load Resistance Ch15
282	0	6553.5	1	Ohm	No	Load Resistance Ch16
283	0	6553.5	1	Ohm	No	Load Resistance Ch17
284	0	6553.5	1	Ohm	No	Load Resistance Ch18
285	0	6553.5	1	Ohm	No	Load Resistance Ch19
286	0	6553.5	1	Ohm	No	Load Resistance Ch20
287	0	6553.5	1	Ohm	No	Load Resistance Ch21
288	0	6553.5	1	Ohm	No	Load Resistance Ch22
289	0	6553.5	1	Ohm	No	Load Resistance Ch23
290	0	6553.5	1	Ohm	No	Load Resistance Ch24
291	0	6553.5	1	Ohm	No	Nominal Resistance Ch1
292	0	6553.5	1	Ohm	No	Nominal Resistance Ch2
293	0	6553.5	1	Ohm	No	Nominal Resistance Ch3
294	0	6553.5	1	Ohm	No	Nominal Resistance Ch4
295	0	6553.5	1	Ohm	No	Nominal Resistance Ch5
296	0	6553.5	1	Ohm	No	Nominal Resistance Ch6
297	0	6553.5	1	Ohm	No	Nominal Resistance Ch7
298	0	6553.5	1	Ohm	No	Nominal Resistance Ch8

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
299	0	6553.5	1	Ohm	No	Nominal Resistance Ch9
300	0	6553.5	1	Ohm	No	Nominal Resistance Ch10
301	0	6553.5	1	Ohm	No	Nominal Resistance Ch11
302	0	6553.5	1	Ohm	No	Nominal Resistance Ch12
303	0	6553.5	1	Ohm	No	Nominal Resistance Ch13
304	0	6553.5	1	Ohm	No	Nominal Resistance Ch14
305	0	6553.5	1	Ohm	No	Nominal Resistance Ch15
306	0	6553.5	1	Ohm	No	Nominal Resistance Ch16
307	0	6553.5	1	Ohm	No	Nominal Resistance Ch17
308	0	6553.5	1	Ohm	No	Nominal Resistance Ch18
309	0	6553.5	1	Ohm	No	Nominal Resistance Ch19
310	0	6553.5	1	Ohm	No	Nominal Resistance Ch20
311	0	6553.5	1	Ohm	No	Nominal Resistance Ch21
312	0	6553.5	1	Ohm	No	Nominal Resistance Ch22
313	0	6553.5	1	Ohm	No	Nominal Resistance Ch23
314	0	6553.5	1	Ohm	No	Nominal Resistance Ch24
315	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch1
316	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch2
317	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch3
318	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch4
319	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch5
320	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch6
321	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch7
322	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch8
323	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch9
324	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch10
325	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch11
326	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch12
327	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch13
328	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch14
329	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch15
330	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch16
331	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch17
332	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch18
333	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch19
334	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch20
335	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch21
336	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch22

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
337	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch23
338	0	6553.5	1	Ohm	No	H.B. Limit Resistance Ch24
1001	0	100	0	x10ms	Yes	Number of cycle (Es: 50 x 10ms = 50ms)
1002	**Optimization 1002** val 0 Full 1 Native 2 First				Yes	Optimization
1003	**Firing** val 0 Half cycle 1 Single cycle				Yes	Firing
1004	**Optimization Stage 1004** val 0 Global 1 Single stage				Yes	Optimization stage
1005	**Presence of Stage and Output** bit 0 Slave 1 present (0=not present, 1=present) 1 Slave 2 present (0=not present, 1=present) 2 Slave 3 present (0=not present, 1=present) 3 Slave 4 present (0=not present, 1=present) 4 Slave 5 present (0=not present, 1=present) 5 Slave 6 present (0=not present, 1=present) 6 Slave 7 present (0=not present, 1=present) 7 Slave 8 present (0=not present, 1=present) 8 Stage present (0=not present, 1=present) 9 Lost Connection (0=Ok, 1=In alarm)				No	Outputs Presence stage 1
1006					No	Outputs Presence status stage 2 (not for DPU system)
1007					No	Outputs Presence status stage 3 (not for DPU system)

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
1008	**Model 1008** val 11 REVO PN 12 REVO PC				No	Model
1009	0	65535	0	-	No	Version (es. X.YY.Z - X major, Y minor, Z internal)
1010	0	65535	0	-	No	Release (es. XX.YY XX year YY week)
1011	0	65535	0	-	No	Internal use
1012	0	65535	0	-	No	Version Stage 1 (es. X.YY.Z - X major, Y minor, Z internal)
1013	0	65535	0	-	No	Version Stage 2 (not for DPU system) (es. X.YY.Z - X major, Y minor, Z internal)
1014	0	65535	0	-	No	Version Stage 3 (not for DPU system) (es. X.YY.Z - X major, Y minor, Z internal)
1015	0	65535	0	-	No	Release Stage 1 (es. XX.YY - XX year YY week)
1016	0	65535	0	-	No	Release Stage 2 (not for DPU system) (es. XX.YY - XX year YY week)
1017	0	65535	0	-	No	Release Stage3 (not for DPU system) (es. XX.YY - XX year YY week)
1018	0	65535	0	-	No	Internal use
1019	0	100,0	1	%	Yes	H.B. sense
1020	0	6553,5	1	X10ms	Yes	Alarm delay
1021	**Alarms Enable 1021** bit 0 HB alarm (0=Disable, 1=Enable) 1 SC alarm (0=Disable, 1=Enable				Yes	Alarm Enable
1022	**Relay Functions** val 0 HB alarm (0=ok, 1=In alarm) 1 SC alarm (0=ok, 1=In alarm) 2 WD (0=ok, 1=In alarm)				Yes	Relay Function
1023	0	243	0	-	Yes	Modbus address Com1
1024	0	243	0	-	Yes	Modbus address Com2 (not for DPU system)
1025	0	243	0	-	Yes	Modbus address Com3

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
1026	**Modbus BaudRate** val 960 = 9600 1920 = 19200 3840 = 38400 5760 = 57600 11520 = 115200				Yes	Baudrate Com1
1027					Yes	Baudrate Com2 (not for DPU system)
1028					Yes	Baudrate Com3
1029	**COM RW - COM RW RAM** bit 0 MB1 (1 RW - 0 R) 1 MB2 (1 RW - 0 R) 2 MB3 (1 RW - 0 R) 3 MB ETH (1 RW - 0 R) 4 FIELD (1 RW - 0 R)				Yes	Channel Writing Enable Saved in eprom
1030					Yes	Channel Writing Enable runtime
1031	0	65535	0	-	no	Modbus/TCP - MAC Address
1032	0	65535	0	-	no	Modbus/TCP - MAC Address
1033	0	65535	0	-	no	Modbus/TCP - MAC Address
1034	0	65535	0	-	no	Modbus/TCP - MAC Address
1035	0	65535	0	-	no	Modbus/TCP - MAC Address
1036	0	65535	0	-	no	Modbus/TCP - MAC Address
1037	0	255	0	-	Yes	Modbus/TCP – IP Address
1038	0	255	0	-	Yes	Modbus/TCP – IP Address
1039	0	255	0	-	Yes	Modbus/TCP – IP Address
1040	0	255	0	-	Yes	Modbus/TCP – IP Address
1041	0	255	0	-	Yes	Modbus/TCP – Subnet Mask
1042	0	255	0	-	Yes	Modbus/TCP – Subnet Mask
1043	0	255	0	-	Yes	Modbus/TCP – Subnet Mask
1044	0	255	0	-	Yes	Modbus/TCP – Subnet Mask
1045	0	255	0	-	Yes	Modbus/TCP – Gateway
1046	0	255	0	-	Yes	Modbus/TCP – Gateway
1047	0	255	0	-	Yes	Modbus/TCP – Gateway
1048	0	255	0	-	Yes	Modbus/TCP – Gateway
1049	0	65535	1	Vdc	No	Auxiliary power supply
1050	0	65535	1	Vdc	No	Logic power supply
1051	0	65535	1	°C	No	Main board Temperature
1052	0					Internal use
1053	0					Internal use
1054	0					Internal use

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
1055	0	65535	0	sec	Yes	Modbus Watchdog Timeout (0 = general disabled)
1056	**COM WD Enable/Status Table** bit 0 MB1 (0=Disable, 1=Enable) 1 MB2 (0=Disable, 1=Enable) 2 MB3 (0=Disable, 1=Enable) 3 MB ETH (0=Disable, 1=Enable) 4 FIELD BUS (0=Disable, 1=Enable)				Yes	Watchdog channel enable
1057	**COM WD Enable/Status Table** bit 0 MB1 (0=Disable, 1=Enable) 1 MB2 (0=Disable, 1=Enable) 2 MB3 (0=Disable, 1=Enable) 3 MB ETH (0=Disable, 1=Enable) 4 FIELD BUS (0=Disable, 1=Enable)				No	Watchdog channel status
1058	0	1300	1	°C	No	Thermal alarm setpoint
1059	**Digital Input Function** val 0 Not Used 1 Enable				Yes	Digital input 1 Configuration
1060					No	Digital input 2 Configuration
1061					No	Digital input 3 Configuration
1062					No	Digital input 4 Configuration
1063	**Digital Status (1063)** bit 0 IN1 (0=Open, 1=Closed) 1 IN2 (0=Open, 1=Closed) 2 IN3 (0=Open, 1=Closed) 3 IN4 (0=Open, 1=Closed) 4 RELAY (0=Open, 1=Closed)				No	Digital input/Output status
1064	**Global Options (1064)** bit 0 Power Limit Enable (0=Disable, 1=Enable)				Yes	Global Options
1065	2	255	0	Cycle	Yes	Number of Burst

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
...						
2001	0	65535	0	-	Yes	KP PID Ch1
2002	0	65535	0	-	Yes	KP PID Ch2
2003	0	65535	0	-	Yes	KP PID Ch3
2004	0	65535	0	-	Yes	KP PID Ch4
2005	0	65535	0	-	Yes	KP PID Ch5
2006	0	65535	0	-	Yes	KP PID Ch6
2007	0	65535	0	-	Yes	KP PID Ch7
2008	0	65535	0	-	Yes	KP PID Ch8
2009	0	65535	0	-	Yes	KP PID Ch9
2010	0	65535	0	-	Yes	KP PID Ch10
2011	0	65535	0	-	Yes	KP PID Ch11
2012	0	65535	0	-	Yes	KP PID Ch12
2013	0	65535	0	-	Yes	KP PID Ch13
2014	0	65535	0	-	Yes	KP PID Ch14
2015	0	65535	0	-	Yes	KP PID Ch15
2016	0	65535	0	-	Yes	KP PID Ch16
2017	0	65535	0	-	Yes	KP PID Ch17
2018	0	65535	0	-	Yes	KP PID Ch18
2019	0	65535	0	-	Yes	KP PID Ch19
2020	0	65535	0	-	Yes	KP PID Ch20
2021	0	65535	0	-	Yes	KP PID Ch21
2022	0	65535	0	-	Yes	KP PID Ch22
2023	0	65535	0	-	Yes	KP PID Ch23
2024	0	65535	0	-	Yes	KP PID Ch24
2025	0	65535	0	-	Yes	KP PID Power limit stage 1
2026	0	65535	0	-	Yes	KP PID Power limit stage 2 (not for DPU system)
2027	0	65535	0	-	Yes	KP PID Power limit stage 3 (not for DPU system)
2028						Not used
2029	0	65535	0	-	Yes	KI PID Ch1
2030	0	65535	0	-	Yes	KI PID Ch2
2031	0	65535	0	-	Yes	KI PID Ch3
2032	0	65535	0	-	Yes	KI PID Ch4
2033	0	65535	0	-	Yes	KI PID Ch5
2034	0	65535	0	-	Yes	KI PID Ch6
2035	0	65535	0	-	Yes	KI PID Ch7
2036	0	65535	0	-	Yes	KI PID Ch8

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
2037	0	65535	0	-	Yes	KI PID Ch9
2038	0	65535	0	-	Yes	KI PID Ch10
2039	0	65535	0	-	Yes	KI PID Ch11
2040	0	65535	0	-	Yes	KI PID Ch12
2041	0	65535	0	-	Yes	KI PID Ch13
2042	0	65535	0	-	Yes	KI PID Ch14
2043	0	65535	0	-	Yes	KI PID Ch15
2044	0	65535	0	-	Yes	KI PID Ch16
2045	0	65535	0	-	Yes	KI PID Ch17
2046	0	65535	0	-	Yes	KI PID Ch18
2047	0	65535	0	-	Yes	KI PID Ch19
2048	0	65535	0	-	Yes	KI PID Ch20
2049	0	65535	0	-	Yes	KI PID Ch21
2050	0	65535	0	-	Yes	KI PID Ch22
2051	0	65535	0	-	Yes	KI PID Ch23
2052	0	65535	0	-	Yes	KI PID Ch24
2053	0	65535	0	-	Yes	KI PID Power limit stage 1
2054	0	65535	0	-	Yes	KI PID Power limit stage 2 (not for DPU system)
2055	0	65535	0	-	Yes	KI PID Power limit stage 3 (not for DPU system)
...						
3000	0	255	0	-	Yes	Profibus Address
3001	**FieldBus Type** bit 0 Not used 1 PROFINET 2 ETHERNET IP 3 Not used 4 Not used 5 Not used 6 ERROR (0=ok, 1=In Error) 7 FIELD BUS PRESENT AND READY (0=fieldbus problem, 1=ok)				No	Fieldbus type
3002						
3003						
3004						
3005					No	Profinet Fieldbus Name
3006						
3007						

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
3008						
3009						
3010						
3011						
3012						
3013						
3014						
3015						
3016						
3017						
3018						
3019						
3020						
3021						
3022						
3023						
3024						
3025						
3026						
3027					No	Profinet Fieldbus Name
3028						
3029						
3030						
3031						
3032						
3033						
3034						
3035						
3036						
3037						
3038						
3039						
3040						
3041						
3042						
3043						
3044						

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
3045						
3046						
3047						
3048						
3049						
3050						
3051						
3052						
3053					No	Profinet Fieldbus Name
3054						
3055						
3056						
3057						
3058						
3059						
3060						
3061						
3062	0	65535	0	sec	Yes	Fieldbus Watchdog
3063	0	65535	0	-	No	Fieldbus IP Address
3064	0	65535	0	-	No	Fieldbus IP Address
3065	0	65535	0	-	No	Fieldbus IP Address
3066	0	65535	0	-	No	Fieldbus IP Address
3067	0	65535	0	-	No	Fieldbus Subnet mask
3068	0	65535	0	-	No	Fieldbus Subnet mask
3069	0	65535	0	-	No	Fieldbus Subnet mask
3070	0	65535	0	-	No	Fieldbus Subnet mask
3071	0	65535	0	-	No	Fieldbus Gateway
3072	0	65535	0	-	No	Fieldbus Gateway
3073	0	65535	0	-	No	Fieldbus Gateway
3074	0	65535	0	-	No	Fieldbus Gateway

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
3075	**Field IP Options** bit 0 USE IP 1 USE MASK 2 USE GW 3 ENABLE BOOTP (SEE P83 NETIC) 4 DHCP 5 6 7 FIELDBUS present and ready				Yes	Fieldbus Options
...						
4000	0	255	0	-	Yes	Modbus Master – Address to link Ch1
4001	0	255	0	-	Yes	Modbus Master – Address to link Ch2
4002	0	255	0	-	Yes	Modbus Master – Address to link Ch3
4003	0	255	0	-	Yes	Modbus Master – Address to link Ch4
4004	0	255	0	-	Yes	Modbus Master – Address to link Ch5
4005	0	255	0	-	Yes	Modbus Master – Address to link Ch6
4006	0	255	0	-	Yes	Modbus Master – Address to link Ch7
4007	0	255	0	-	Yes	Modbus Master – Address to link Ch8
4008	0	255	0	-	Yes	Modbus Master – Address to link Ch9
4009	0	255	0	-	Yes	Modbus Master – Address to link Ch10
4010	0	255	0	-	Yes	Modbus Master – Address to link Ch11
4011	0	255	0	-	Yes	Modbus Master – Address to link Ch12
4012	0	255	0	-	Yes	Modbus Master – Address to link Ch13
4013	0	255	0	-	Yes	Modbus Master – Address to link Ch14
4014	0	255	0	-	Yes	Modbus Master – Address to link Ch15
4015	0	255	0	-	Yes	Modbus Master – Address to link Ch16
4016	0	255	0	-	Yes	Modbus Master – Address to link Ch17
4017	0	255	0	-	Yes	Modbus Master – Address to link Ch18
4018	0	255	0	-	Yes	Modbus Master – Address to link Ch19
4019	0	255	0	-	Yes	Modbus Master – Address to link Ch20
4020	0	255	0	-	Yes	Modbus Master – Address to link Ch21
4021	0	255	0	-	Yes	Modbus Master – Address to link Ch22
4022	0	255	0	-	Yes	Modbus Master – Address to link Ch23
4023	0	255	0	-	Yes	Modbus Master – Address to link Ch24
4024	0	255	0	-	Yes	Modbus Master – Parameter to link Ch1
4025	0	255	0	-	Yes	Modbus Master – Parameter to link Ch2
4026	0	255	0	-	Yes	Modbus Master – Parameter to link Ch3

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
4027	0	255	0	-	Yes	Modbus Master – Parameter to link Ch4
4028	0	255	0	-	Yes	Modbus Master – Parameter to link Ch5
4029	0	255	0	-	Yes	Modbus Master – Parameter to link Ch6
4030	0	255	0	-	Yes	Modbus Master – Parameter to link Ch7
4031	0	255	0	-	Yes	Modbus Master – Parameter to link Ch8
4032	0	255	0	-	Yes	Modbus Master – Parameter to link Ch9
4033	0	255	0	-	Yes	Modbus Master – Parameter to link Ch10
4034	0	255	0	-	Yes	Modbus Master – Parameter to link Ch11
4035	0	255	0	-	Yes	Modbus Master – Parameter to link Ch12
4036	0	255	0	-	Yes	Modbus Master – Parameter to link Ch13
4037	0	255	0	-	Yes	Modbus Master – Parameter to link Ch14
4038	0	255	0	-	Yes	Modbus Master – Parameter to link Ch15
4039	0	255	0	-	Yes	Modbus Master – Parameter to link Ch16
4040	0	255	0	-	Yes	Modbus Master – Parameter to link Ch17
4041	0	255	0	-	Yes	Modbus Master – Parameter to link Ch18
4042	0	255	0	-	Yes	Modbus Master – Parameter to link Ch19
4043	0	255	0	-	Yes	Modbus Master – Parameter to link Ch20
4044	0	255	0	-	Yes	Modbus Master – Parameter to link Ch21
4045	0	255	0	-	Yes	Modbus Master – Parameter to link Ch22
4046	0	255	0	-	Yes	Modbus Master – Parameter to link Ch23
4047	0	255	0	-	Yes	Modbus Master – Parameter to link Ch24
4048	0	65535	0	-	Yes	Modbus Master – Rescale Ch1
4049	0	65535	0	-	Yes	Modbus Master – Rescale Ch2
4050	0	65535	0	-	Yes	Modbus Master – Rescale Ch3
4051	0	65535	0	-	Yes	Modbus Master – Rescale Ch4
4052	0	65535	0	-	Yes	Modbus Master – Rescale Ch5
4053	0	65535	0	-	Yes	Modbus Master – Rescale Ch6
4054	0	65535	0	-	Yes	Modbus Master – Rescale Ch7
4055	0	65535	0	-	Yes	Modbus Master – Rescale Ch8
4056	0	65535	0	-	Yes	Modbus Master – Rescale Ch9
4057	0	65535	0	-	Yes	Modbus Master – Rescale Ch10
4058	0	65535	0	-	Yes	Modbus Master – Rescale Ch11
4059	0	65535	0	-	Yes	Modbus Master – Rescale Ch12
4060	0	65535	0	-	Yes	Modbus Master – Rescale Ch13
4061	0	65535	0	-	Yes	Modbus Master – Rescale Ch14
4062	0	65535	0	-	Yes	Modbus Master – Rescale Ch15
4063	0	65535	0	-	Yes	Modbus Master – Rescale Ch16
4064	0	65535	0	-	Yes	Modbus Master – Rescale Ch17

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
4065	0	65535	0	-	Yes	Modbus Master – Rescale Ch18
4066	0	65535	0	-	Yes	Modbus Master – Rescale Ch19
4067	0	65535	0	-	Yes	Modbus Master – Rescale Ch20
4068	0	65535	0	-	Yes	Modbus Master – Rescale Ch21
4069	0	65535	0	-	Yes	Modbus Master – Rescale Ch22
4070	0	65535	0	-	Yes	Modbus Master – Rescale Ch23
4071	0	65535	0	-	Yes	Modbus Master – Rescale Ch24
4072	**MB Master Options** bit 0: Enable (0=Disable, 1=Enable)				Yes	Modbus Master – Option
4073	**Field IP Options** bit 0: Slave Add1 (0=ok, 1=In Error) bit 1: Slave Add2 (0=ok, 1=In Error) bit 2: Slave Add3 (0=ok, 1=In Error) bit 3: Slave Add4 (0=ok, 1=In Error) bit 4: Slave Add5 (0=ok, 1=In Error) bit 5: Slave Add6 (0=ok, 1=In Error) bit 6: Slave Add7 (0=ok, 1=In Error) bit 7: Slave Add8 (0=ok, 1=In Error) bit 8: Slave Add9 (0=ok, 1=In Error) bit 9: Slave Add10 (0=ok, 1=In Error) bit 10: Slave Add11 (0=ok, 1=In Error) bit 11: Slave Add12 (0=ok, 1=In Error) bit 12: Slave Add13 (0=ok, 1=In Error) bit 13: Slave Add14 (0=ok, 1=In Error) bit 14: Slave Add15 (0=ok, 1=In Error) bit 15: Slave Add16 (0=ok, 1=In Error)				No	Modbus Master –Communication error Address 1-16

Par	Min	Max	Dec Point RPC / RPN	UM	Write Enable	Description
4074	**Field IP Options** bit 0 Slave Add17 (0=ok, 1=In Error) 1 Slave Add18 (0=ok, 1=In Error) 2 Slave Add19 (0=ok, 1=In Error) 3 Slave Add20 (0=ok, 1=In Error) 4 Slave Add21 (0=ok, 1=In Error) 5 Slave Add22 (0=ok, 1=In Error) 6 Slave Add23 (0=ok, 1=In Error) 7 Slave Add24 (0=ok, 1=In Error)				No	Modbus Master –Communication error Address 17-24

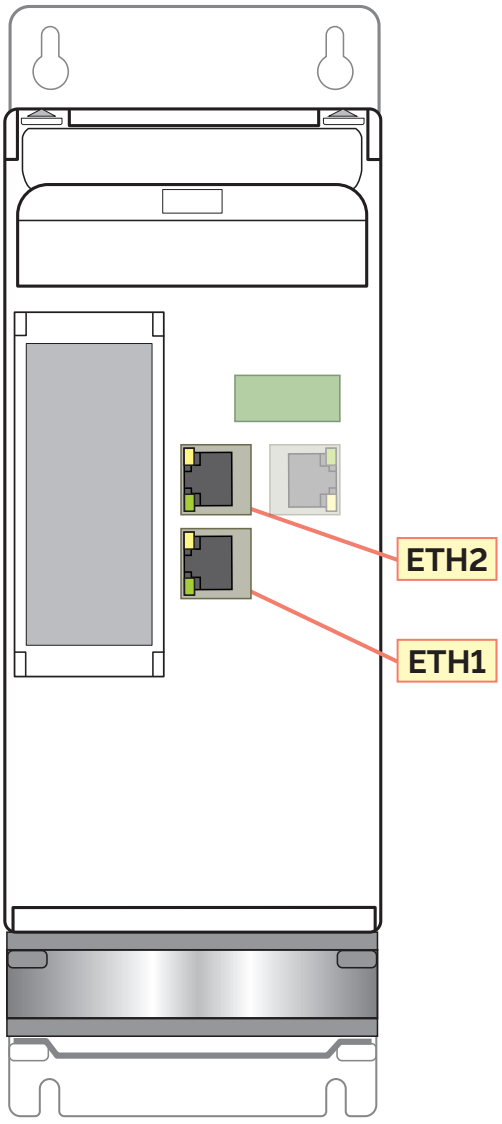
2 Fieldbus

2.1 Profinet

2.1.1 General description

The thyristor unit permit a data exchange via PROFINET-IO Siemens protocol.

2.1.2 Connection



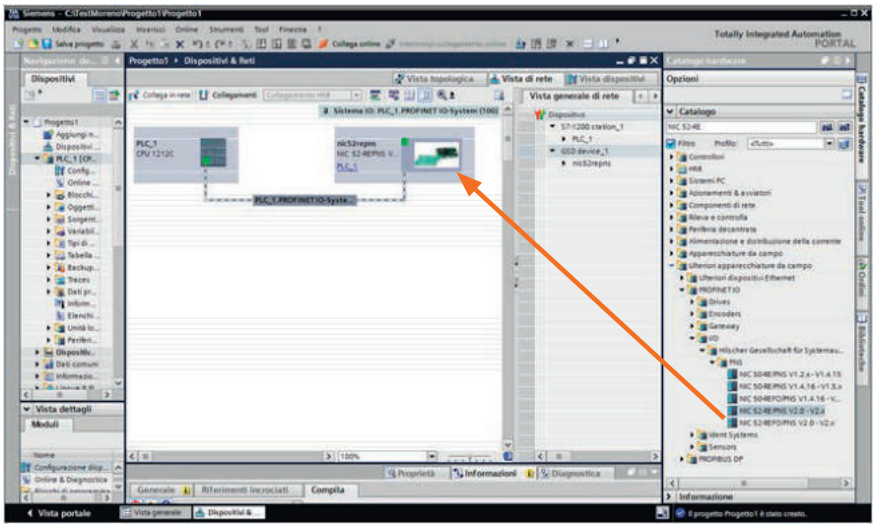
2.1.3. PLC configuration

The thyristor unit permit a data exchange via PROFINET-IO Siemens protocol.

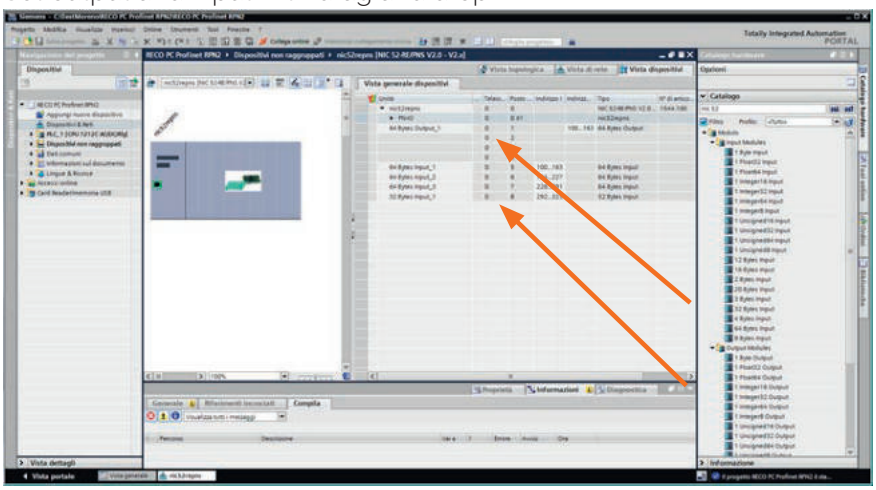
With PROFINET connection is possible read value in cyclic mode.
To do it you need use de GSDML plc configuration file that describe the product, and install in PLC configuration software environment.

If GSD file is not installed, please install it

If installed or after installation will be present (NIC 52-RE/PNS)
The GSDML file is named "GSDML-V2.32-HILSCHER-NIC 5X-RE PNS-20161102.xml"



Set output and Input with drag and drop



NOTE:
The modules must have the right sequence
The data module position and size are important, the positions are:

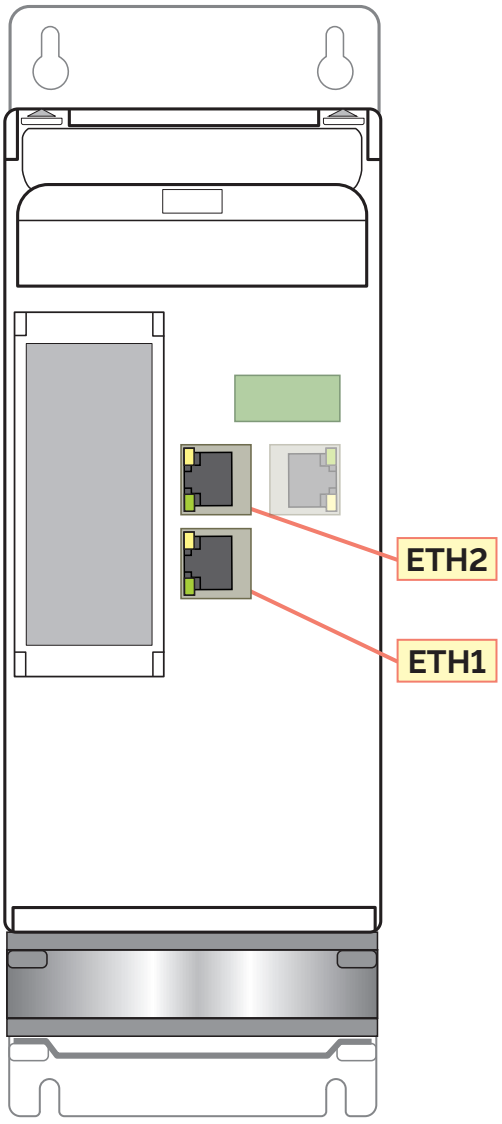
- Position 1: 64 Bytes Output
- Position 2: none
- Position 3: none
- Position 4: none
- Position 5: 64 Bytes Input
- Position 6: 64 Bytes Input
- Position 7: 64 Bytes Input
- Position 8: 32 Bytes Input

2.2 Ethernet IP

2.2.1 General description

The thyristor unit permit a data exchange via PROFINET-IO Siemens protocol.

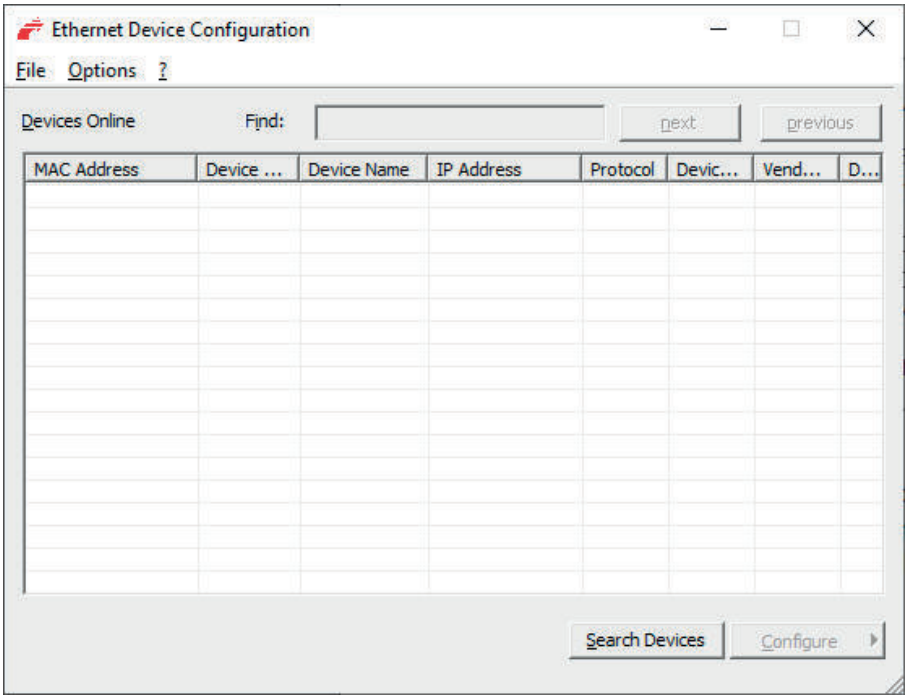
2.2.2 Ethernet IP Connection



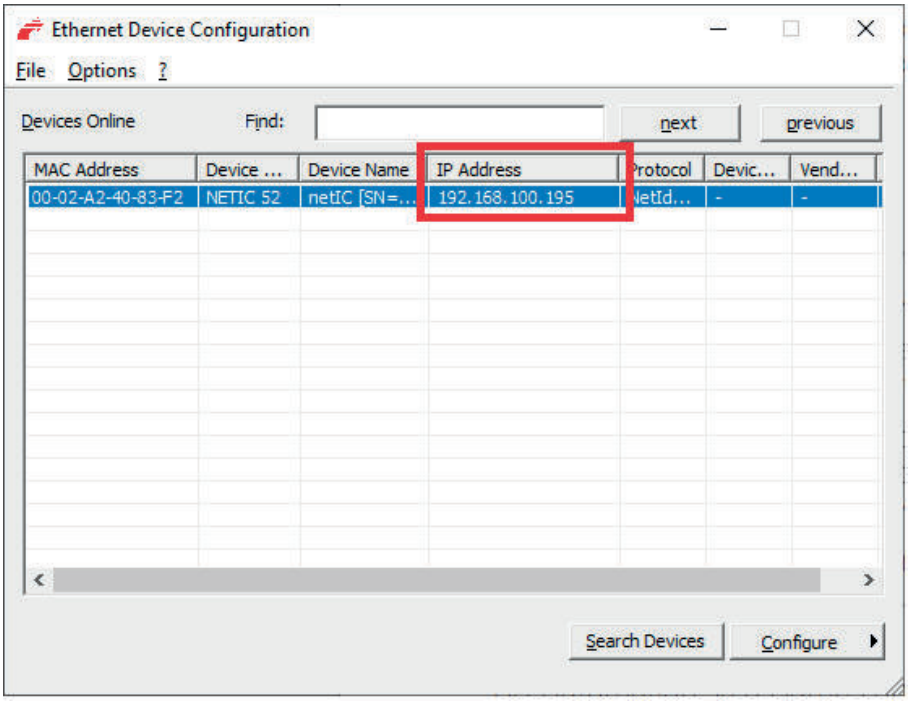
2.2.3 Setting IP Address Procedure

1) If you don't know the IP address search for the instrument on the network, otherwise proceed directly to the next step

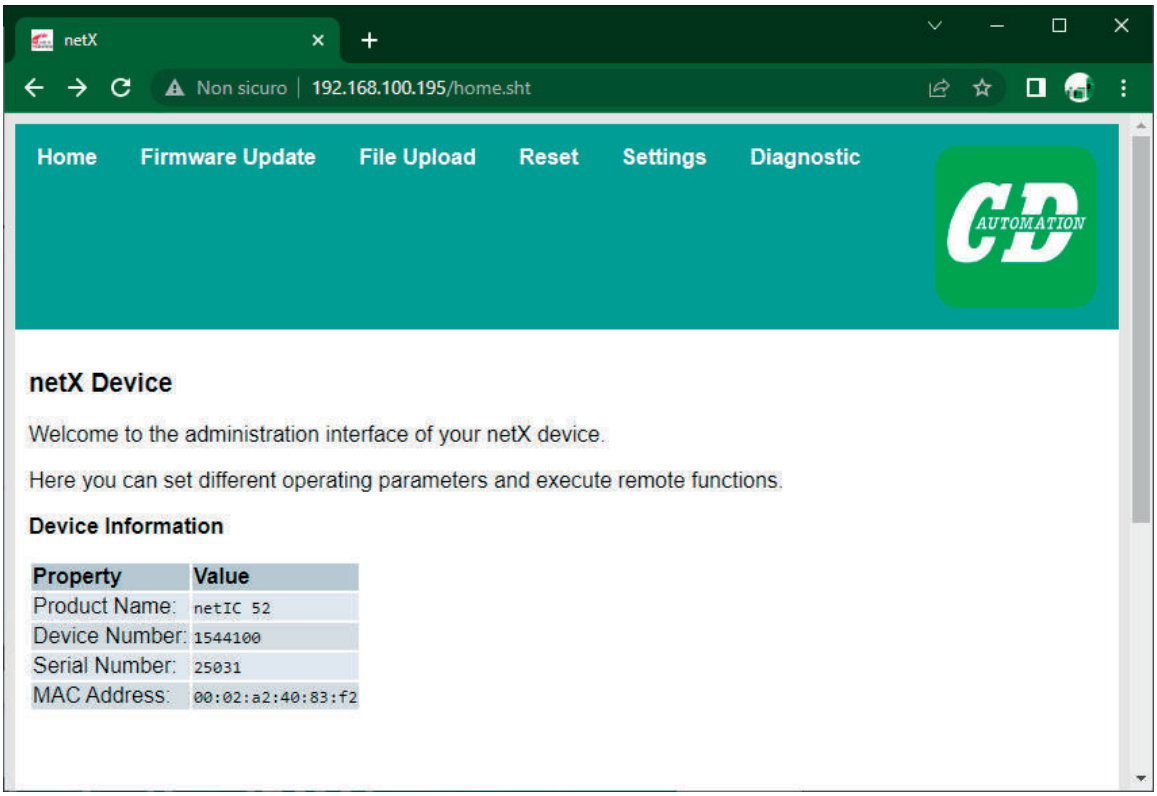
Use "Ethernet Device Configurator" software and click on "search"



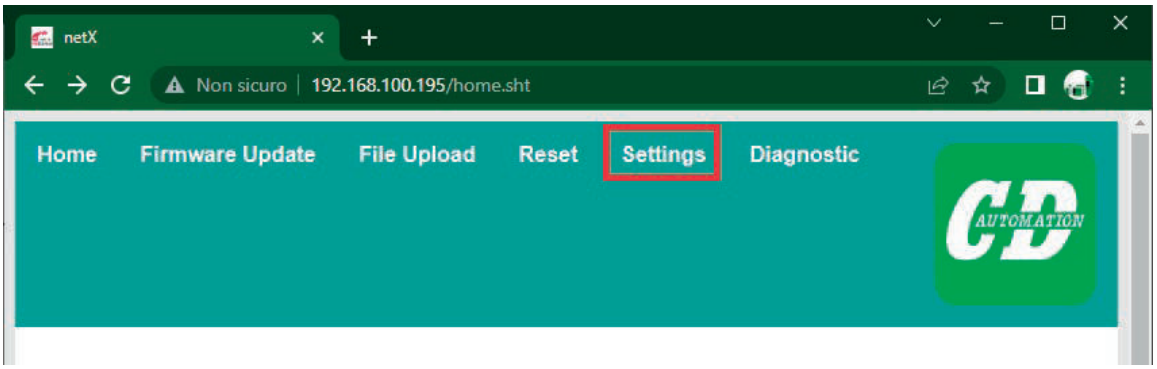
Read the IP address



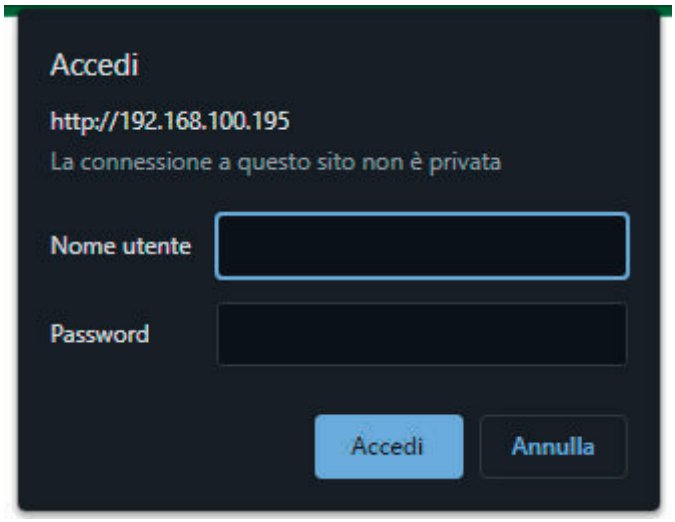
2) Open the browser



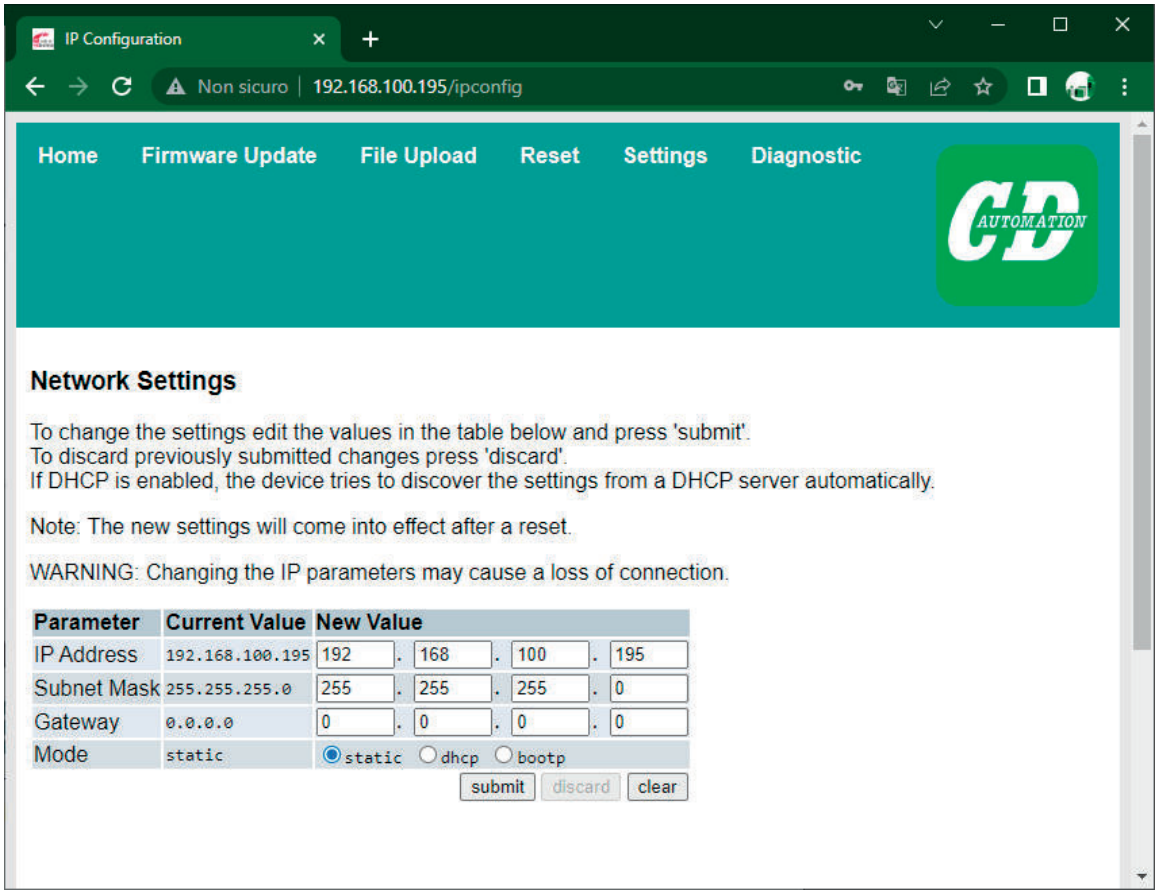
3) Click on "Settings"



4) When log in required
User: ute
Password: ute1



5) The "Setting" page will appear



Fill in the field with the required configuration and click on “submit” button

Remove all USB connection if connected and reboot the unit.

3 Data exchange area

3.1 Data Tables

Offset Byte	The number of bytes from the "0" address to the parameter start address
Offset Word	The number of "Words" offset from the "0" address.
Modbus Add	Modbus/TCP parameter address
Ch	Channel number
Description	Parameter description
MIN	The minimum actual value of the parameter
MAX	The maximum actual value of the parameter
MIN UM	The minimum value translated to its unit of measurement
MAX UM	The maximum value translated to its unit of measurement
UM	Unit of measurement

3.1.1 Read area

Offset Byte	Offset Word	Modbus Addr	Ch	MIN	MAX	MIN UM	MAX UM	UM	Description
0	0			0	65635				Acyclic – Transmission Number
2	1			0 = ok 1 = Func Error 2 =Parameter not exist / Out of range					Acyclic – Error Code
4	2			3= Read 6= Write					Acyclic –Function code executed
6	3			0	65635				Acyclic – Readed or Writed value
8	4		1-16	0 = Disabled 1= Enabled					Enable bit0 = Ch1 ÷ bit15=Ch16
10	5		17-24						Enable bit0 = Ch17 ÷ bit7=Ch24
12	6		1-16	0 = OK 1 = In alarm					HB Alarm bit0 = Ch1 ÷ bit15=Ch16
14	7		17-24						HB Alarm bit0 = Ch17 ÷ bit7=Ch24
16	8		1-16	0 = OK 1 = In alarm					SC Alarm, bit0 = Ch1 ÷ bit15=Ch16
18	9		17-24						SC Alarm, bit0 = Ch17 ÷ bit7=Ch24
20	10		1-16	0 = OK 1 = In alarm					Power Limit bit0 = stage1 bit1 = stage2 bit2 = stage3
22	11		1-16	0 = OK 1 = In alarm					Temp Alarm bit0 = stage1 bit1 = stage2 bit2 = stage3
24	12	51	1	0	65635	0	6563.5	kW	Power Ch1
26	13	52	2	0	65635	0	6563.5	kW	Power Ch2

Offset Byte	Offset Word	Modbus Addr	Ch	MIN	MAX	MIN UM	MAX UM	UM	Description
28	14	53	3	0	65635	0	6563.5	kW	Power Ch3
30	15	54	4	0	65635	0	6563.5	kW	Power Ch4
32	16	55	5	0	65635	0	6563.5	kW	Power Ch5
34	17	56	6	0	65635	0	6563.5	kW	Power Ch6
36	18	57	7	0	65635	0	6563.5	kW	Power Ch7
38	19	58	8	0	65635	0	6563.5	kW	Power Ch8
40	20	59	9	0	65635	0	6563.5	kW	Power Ch9
42	21	60	10	0	65635	0	6563.5	kW	Power Ch10
44	22	61	11	0	65635	0	6563.5	kW	Power Ch11
46	23	62	12	0	65635	0	6563.5	kW	Power Ch12
48	24	63	13	0	65635	0	6563.5	kW	Power Ch13
50	25	64	14	0	65635	0	6563.5	kW	Power Ch14
52	26	65	15	0	65635	0	6563.5	kW	Power Ch15
54	27	66	16	0	65635	0	6563.5	kW	Power Ch16
56	28	67	17	0	65635	0	6563.5	kW	Power Ch17
58	29	68	18	0	65635	0	6563.5	kW	Power Ch18
60	30	69	19	0	65635	0	6563.5	kW	Power Ch19
62	31	70	20	0	65635	0	6563.5	kW	Power Ch20
64	32	71	21	0	65635	0	6563.5	kW	Power Ch21
66	33	72	22	0	65635	0	6563.5	kW	Power Ch22
68	34	73	23	0	65635	0	6563.5	kW	Power Ch23
70	35	74	24	0	65635	0	6563.5	kW	Power Ch24
72	36	76	1	0	65635	0	6563.5	A	Current Ch1
74	37	77	2	0	65635	0	6563.5	A	Current Ch2
76	38	78	3	0	65635	0	6563.5	A	Current Ch3
78	39	79	4	0	65635	0	6563.5	A	Current Ch4
80	40	80	5	0	65635	0	6563.5	A	Current Ch5
82	41	81	6	0	65635	0	6563.5	A	Current Ch6
84	42	82	7	0	65635	0	6563.5	A	Current Ch7
86	43	83	8	0	65635	0	6563.5	A	Current Ch8
88	44	84	9	0	65635	0	6563.5	A	Current Ch9
90	45	85	10	0	65635	0	6563.5	A	Current Ch10
92	46	86	11	0	65635	0	6563.5	A	Current Ch11
94	47	87	12	0	65635	0	6563.5	A	Current Ch12
96	48	88	13	0	65635	0	6563.5	A	Current Ch13
98	49	89	14	0	65635	0	6563.5	A	Current Ch14
100	50	90	15	0	65635	0	6563.5	A	Current Ch15
102	51	91	16	0	65635	0	6563.5	A	Current Ch16
104	52	92	17	0	65635	0	6563.5	A	Current Ch17
106	53	93	18	0	65635	0	6563.5	A	Current Ch18
108	54	94	19	0	65635	0	6563.5	A	Current Ch19

Offset Byte	Offset Word	Modbus Addr	Ch	MIN	MAX	MIN UM	MAX UM	UM	Description
110	55	95	20	0	65635	0	6563,5	A	Current Ch20
112	56	96	21	0	65635	0	6563,5	A	Current Ch21
114	57	97	22	0	65635	0	6563,5	A	Current Ch22
116	58	98	23	0	65635	0	6563,5	A	Current Ch23
118	59	99	24	0	65635	0	6563,5	A	Current Ch24
120	60	101	1	0	65635	0	6563,5	V	Voltage Ch1
122	61	102	2	0	65635	0	6563,5	V	Voltage Ch2
124	62	103	3	0	65635	0	6563,5	V	Voltage Ch3
126	63	104	4	0	65635	0	6563,5	V	Voltage Ch4
128	64	105	5	0	65635	0	6563,5	V	Voltage Ch5
130	65	106	6	0	65635	0	6563,5	V	Voltage Ch6
132	66	107	7	0	65635	0	6563,5	V	Voltage Ch7
134	67	108	8	0	65635	0	6563,5	V	Voltage Ch8
136	68	109	9	0	65635	0	6563,5	V	Voltage Ch9
138	69	110	10	0	65635	0	6563,5	V	Voltage Ch10
140	70	111	11	0	65635	0	6563,5	V	Voltage Ch11
142	71	112	12	0	65635	0	6563,5	V	Voltage Ch12
144	72	113	13	0	65635	0	6563,5	V	Voltage Ch13
146	73	114	14	0	65635	0	6563,5	V	Voltage Ch14
148	74	115	15	0	65635	0	6563,5	V	Voltage Ch15
150	75	116	16	0	65635	0	6563,5	V	Voltage Ch16
152	76	117	17	0	65635	0	6563,5	V	Voltage Ch17
154	77	118	18	0	65635	0	6563,5	V	Voltage Ch18
156	78	119	19	0	65635	0	6563,5	V	Voltage Ch19
158	79	120	20	0	65635	0	6563,5	V	Voltage Ch20
160	80	121	21	0	65635	0	6563,5	V	Voltage Ch21
162	81	122	22	0	65635	0	6563,5	V	Voltage Ch22
164	82	123	23	0	65635	0	6563,5	V	Voltage Ch23
166	83	124	24	0	65635	0	6563,5	V	Voltage Ch24
168	84	1	1	0	1000	0	100,0	%	SP Ch1
170	85	2	2	0	1000	0	100,0	%	SP Ch2
172	86	3	3	0	1000	0	100,0	%	SP Ch3
174	87	4	4	0	1000	0	100,0	%	SP Ch4
176	88	5	5	0	1000	0	100,0	%	SP Ch5
178	89	6	6	0	1000	0	100,0	%	SP Ch6
180	90	7	7	0	1000	0	100,0	%	SP Ch7
182	91	8	8	0	1000	0	100,0	%	SP Ch8
184	92	9	9	0	1000	0	100,0	%	SP Ch9
186	93	10	10	0	1000	0	100,0	%	SP Ch10
188	94	11	11	0	1000	0	100,0	%	SP Ch11
190	95	12	12	0	1000	0	100,0	%	SP Ch12

Offset Byte	Offset Word	Modbus Addr	Ch	MIN	MAX	MIN UM	MAX UM	UM	Description
192	96	13	13	0	1000	0	100,0	%	SP Ch13
194	97	14	14	0	1000	0	100,0	%	SP Ch14
196	98	15	15	0	1000	0	100,0	%	SP Ch15
198	99	16	16	0	1000	0	100,0	%	SP Ch16
200	100	17	17	0	1000	0	100,0	%	SP Ch17
202	101	18	18	0	1000	0	100,0	%	SP Ch18
204	102	19	19	0	1000	0	100,0	%	SP Ch19
206	103	20	20	0	1000	0	100,0	%	SP Ch20
208	104	21	21	0	1000	0	100,0	%	SP Ch21
210	105	22	22	0	1000	0	100,0	%	SP Ch22
212	106	23	23	0	1000	0	100,0	%	SP Ch23
214	107	24	24	0	1000	0	100,0	%	SP Ch24
216	108	**Digital Status** bit 0 IN1 (0=Open, 1=Closed) 1 IN2 (0=Open, 1=Closed) 2 IN3 (0=Open, 1=Closed) 3 IN4 (0=Open, 1=Closed) 4 RELAY (0=Open, 1=Closed)							Digital input/Output status
218	109	1009		0	65635	0	6563,5		Version
220	110	1010		0	65635	0	6563,5		Release
222	111	bit 0 Stage 1 Present (0=not present, 1=present) 1 Stage 2 Present (0=not present, 1=present) 2 Stage 3 Present (0=not present, 1=present) 3 Stage 1 Line Loss (0=Ok, 1=In alarm) 4 Stage 2 Line Loss (0=Ok, 1=In alarm) 5 Stage 3 Line Loss (0=Ok, 1=In alarm)							Presence of stage 1 / Stage 2 / Stage 3 Line Loss Stage 1 / Stage 2 / Stage 3

3.1.2 Write area

Offset Byte	Offset Word	Modbus Addr	Ch	MIN	MAX	MIN UM	MAX UM	UM	Description
0	0			0	65635				Transmission number
2	1			3 for read a value 6 for write a value					Function to use
4	2			0	65635				Parameter number to read or write
6	3			0	65635				If function 6 set, is the value to write
8	4		1-16	0 = Disabled 1= Enabled					Enable bit0 = Ch1 ÷ bit15=Ch16
10	5		17-24						Enable bit0 = Ch17 ÷ bit7=Ch24
12	6	1	1	0	1000	0	100,0	%	Digital Set Point Ch1
14	7	2	2	0	1000	0	100,0	%	Digital Set Point Ch2
16	8	3	3	0	1000	0	100,0	%	Digital Set Point Ch3
18	9	4	4	0	1000	0	100,0	%	Digital Set Point Ch4
20	10	5	5	0	1000	0	100,0	%	Digital Set Point Ch5
22	11	6	6	0	1000	0	100,0	%	Digital Set Point Ch6
24	12	7	7	0	1000	0	100,0	%	Digital Set Point Ch7
26	13	8	8	0	1000	0	100,0	%	Digital Set Point Ch8
28	14	9	9	0	1000	0	100,0	%	Digital Set Point Ch9
30	15	10	10	0	1000	0	100,0	%	Digital Set Point Ch10
32	16	11	11	0	1000	0	100,0	%	Digital Set Point Ch11
34	17	12	12	0	1000	0	100,0	%	Digital Set Point Ch12
36	18	13	13	0	1000	0	100,0	%	Digital Set Point Ch13
38	19	14	14	0	1000	0	100,0	%	Digital Set Point Ch14
40	20	15	15	0	1000	0	100,0	%	Digital Set Point Ch15
42	21	16	16	0	1000	0	100,0	%	Digital Set Point Ch16
44	22	17	17	0	1000	0	100,0	%	Digital Set Point Ch17
46	23	18	18	0	1000	0	100,0	%	Digital Set Point Ch18
48	24	19	19	0	1000	0	100,0	%	Digital Set Point Ch19
50	25	20	20	0	1000	0	100,0	%	Digital Set Point Ch20
52	26	21	21	0	1000	0	100,0	%	Digital Set Point Ch21
54	27	22	22	0	1000	0	100,0	%	Digital Set Point Ch22
56	28	23	23	0	1000	0	100,0	%	Digital Set Point Ch23
58	29	24	24	0	1000	0	100,0	%	Digital Set Point Ch23
60	30								Not used
62	31								Not used

3.2 Indirect Actions function

This function is used to read or write a value that is not in programmed in read or write area.
This function are placed in write area from offset byte 0 to offset byte 6

Byte Bus Offset	Word Bus Offset	Min	Max	Description
0	0	0	65635	Acyclic – Transmission number
2	1	3 or 6		Function to use 3 for read a value 6 for write a value
4	2	0	65635	Parameter number to read or write
6	3	0	65635	If function 6 set, is the value to write

And the answers are in the read from offset byte 0 to offset byte 6

Byte Bus Offset	Word Bus Offset	Min	Max	Description
0	0	0	65635	Acyclic – Transmission Number
2	1	0	65635	Acyclic – Error Code
4	2	3 or 6		Acyclic –Function code executed 3 read action executed 6 write action executed
6	3	0	65635	Acyclic – Readed or Writed value

3.2.1 How to write a value

To write a value follow the procedures below:
1) Set Byte offset 2 (Function) to value 6
2) Set Byte offset 4 (Par Number) Modbus Parameter Number
3) Set Byte offset 6 (Value to write)
4) To send the value change the offset 0 (transmission number)

3.2.2 How to read a value

To Read a value follow the procedures below:
1) Set Byte offset 2 (Function) to value 3
2) Set Byte offset 4 (Par Number) Modbus Parameter Number
3) To send the value change the offset 0 (transmission number)

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