Via monte Nero, 40/B – 21049 TRADATE (VA) ITALY Phone: +39 (0)331841070 - e-mail:datexel@datexel.it - www.datexel.it

User Guide
DAT 8148
MODBUS TCP/IP SERVER MODULE – 16 DIGITAL INPUT

GENERAL DESCRIPTION

All of the data shared by a device communicating by Modbus TCP/IP protocol are mapped in tables, at each data is associated a proper address.
Each data can be of two types:
- “REGISTER”, data of 2 bytes size (word of 16 bits) that can be associated to analogue input or output, variables, set-point, etc...
- “COIL”, data of 1 single bit that can be associated to digital input or output or to a logic state.

A register could contain the image (mirror) of more coils; in example the 16 digital inputs of a device could be read or written as bit (singularly) addressing the coil related to each input or can be read or written as a single word addressing the associated register wherein each bit corresponds to a coil.
In the Modbus protocol, registers and coils are divided as per the following groups of addresses:
0xxxx and 1xxxx = Coils (bit)
3xxxx and 4xxxx = Registers (word)
When reading functions are performed, use the tables indicated below to address the registers .
It is possible to access to the internal registers of the device by direct command Modbus TCP/IP or by the integrated web server.
The configuration of the module can be performed entirely from the web interface (see the section "Integrated Web Server Structure").
In order to simplify the search for the device on the network, it is possible to use the *“Search device”* software which can be downloaded from the website *www.datexel.it* in the *“Software & Driver”* section.
For correct installation of the device, refer to the technical data sheet of the product which can be downloaded from the website *www.datexel.it*
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SUPPORTED MODBUS FUNCTIONS

Modbus Function Code	Modbus Function	Description	Maximum Reading/Writing
01	Read Coil Status	Reading multiple Coils (bank 0xxxx)	128 coils
02	Read Input Status	Reading multiple Coils (bank 1xxxx)	128 coils
03	Read Holding Register	Reading multiple registers (bank 4xxxx)	64 registers
04	Read Input Register	Reading multiple registers (bank 3xxxx)	64 registers
05	Write Single Coil	Writing Single Coil	1 coil
06	Write Single Register	Writing Single Register	1 register
15 (0x0F)	Write Multiple Coils	Writing Multiple Coils	32 coils
16 (0x10)	Write Multiple Registers	Writing Multiple Registers	32 registers

REGISTERS STRUCTURE

The internal registers of Modbus devices are mainly represented in two formats: ***Unsigned Integer*** or ***Signed Integer***. In the signed registers (Signed Integer), the most significant bit represents the sign of the contained value therefore the values represented are between ±32767 while in the unsigned ones (Unsigned Integer) the values represented are between 0 and 65535. Therefore, in the case where Signed Integer registers are read and the value is greater than 32767, it is necessary subtract 65536 from the read value to obtain the true signed value.
The registers have the following 16-bit structure (WORD):

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Descr	MSB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LSB
Byte	HB (1 byte)								LB (1 byte)							

Legenda:
MSB → Most Significant Bit
LSB → Least Significant Bit
HB → High Byte
LB → Low Byte

MODBUS REGISTERS MAPPING

Modbus Register (base 1)	Modbus Register (base 0)	Description	Register Type/Format	Access	Storage
40002	1	Firmware[0]	-	RO	FW
40003	2	Firmware[1]	-	RO	FW
40004	3	Reserved	-	-	-
40005	4	Reserved	-	-	-
40007	6	Unit ID	16-bit, Unsigned	R/W	EEPROM
40011	10	System Flags	16-bit, Unsigned	R/W	EEPROM/RAM
40013	12	Watchdog Timer	16-bit, Unsigned	R/W	EEPROM
40032	31	Digital Inputs	16-bit, Unsigned	RO	RAM
40033	32	Digital Inputs Rise Latch	16-bit, Unsigned	R/W	RAM
40034	33	Digital Inputs Fall Latch	16-bit, Unsigned	R/W	RAM
40035	34	Frequency Digital Input 0	16-bit, Unsigned	RO	RAM
40036	35	Frequency Digital Input 1	16-bit, Unsigned	RO	RAM
40037	36	Frequency Digital Input 2	16-bit, Unsigned	RO	RAM
40038	37	Frequency Digital Input 3	16-bit, Unsigned	RO	RAM
40039	**38**	**32 bit Counter Input 0**	**32-bit, Unsigned Long**	**R/W**	**RAM**
40041	**40**	**32 bit Counter Input 1**	**32-bit, Unsigned Long**	**R/W**	**RAM**
40043	**42**	**32 bit Counter Input 2**	**32-bit, Unsigned Long**	**R/W**	**RAM**
40045	**44**	**32 bit Counter Input 3**	**32-bit, Unsigned Long**	**R/W**	**RAM**
41225	1224	Min Pulse Duration (Debouncing)	16-bit, Unsigned	R/W	EEPROM

COILS MAPPING

Modbus Coil (base 1)	Modbus Coil (base 0)	Description	Register Type/Format	Access	Storage
00161	160	Watch-dog Enable	1-bit	R/W	EEPROM
00162	161	Watch-dog Event	1-bit	R/W	RAM
00163	162	Power-Up Event	1-bit	R/W	RAM
00505	504	Digital Input 0	1-bit	RO	RAM
00506	505	Digital Input 1	1-bit	RO	RAM
00507	506	Digital Input 2	1-bit	RO	RAM
00508	507	Digital Input 3	1-bit	RO	RAM
00509	508	Digital Input 4	1-bit	RO	RAM
00510	509	Digital Input 5	1-bit	RO	RAM
00511	510	Digital Input 6	1-bit	RO	RAM
00512	511	Digital Input 7	1-bit	RO	RAM
00497	496	Digital Input 8	1-bit	RO	RAM
00498	497	Digital Input 9	1-bit	RO	RAM
00499	498	Digital Input 10	1-bit	RO	RAM
00500	499	Digital Input 11	1-bit	RO	RAM
00501	500	Digital Input 12	1-bit	RO	RAM
00502	501	Digital Input 13	1-bit	RO	RAM

Modbus Coil (base 1)	Modbus Coil (base 0)	Description	Register Type/Format	Access	Storage
00503	502	Digital Input 14	1-bit	RO	RAM
00504	503	Digital Input 15	1-bit	RO	RAM
00521	520	Rise Latch Input 0	1-bit	R/W	RAM
00522	521	Rise Latch Input 1	1-bit	R/W	RAM
00523	522	Rise Latch Input 2	1-bit	R/W	RAM
00524	523	Rise Latch Input 3	1-bit	R/W	RAM
00525	524	Rise Latch Input 4	1-bit	R/W	RAM
00526	525	Rise Latch Input 5	1-bit	R/W	RAM
00527	526	Rise Latch Input 6	1-bit	R/W	RAM
00528	527	Rise Latch Input 7	1-bit	R/W	RAM
00513	512	Rise Latch Input 8	1-bit	R/W	RAM
00514	513	Rise Latch Input 9	1-bit	R/W	RAM
00515	514	Rise Latch Input 10	1-bit	R/W	RAM
00516	515	Rise Latch Input 11	1-bit	R/W	RAM
00517	516	Rise Latch Input 12	1-bit	R/W	RAM
00518	517	Rise Latch Input 13	1-bit	R/W	RAM
00519	518	Rise Latch Input 14	1-bit	R/W	RAM
00520	519	Rise Latch Input 15	1-bit	R/W	RAM
00537	536	Fall Latch Input 0	1-bit	R/W	RAM
00538	537	Fall Latch Input 1	1-bit	R/W	RAM
00539	538	Fall Latch Input 2	1-bit	R/W	RAM
00540	539	Fall Latch Input 3	1-bit	R/W	RAM
00541	540	Fall Latch Input 4	1-bit	R/W	RAM
00542	541	Fall Latch Input 5	1-bit	R/W	RAM
00543	542	Fall Latch Input 6	1-bit	R/W	RAM
00544	543	Fall Latch Input 7	1-bit	R/W	RAM
00529	528	Fall Latch Input 8	1-bit	R/W	RAM
00530	529	Fall Latch Input 9	1-bit	R/W	RAM
00531	530	Fall Latch Input 10	1-bit	R/W	RAM
00532	531	Fall Latch Input 11	1-bit	R/W	RAM
00533	532	Fall Latch Input 12	1-bit	R/W	RAM
00534	533	Fall Latch Input 13	1-bit	R/W	RAM
00535	534	Fall Latch Input 14	1-bit	R/W	RAM
00536	535	Fall Latch Input 15	1-bit	R/W	RAM

NOTES:

1. Registers and coils marked as RO in the column *'Access'* are Read Only registers.
2. Registers and coils marked as R/W in the column *'Access'* are Read and Write registers.
3. Registers and coils marked EEPROM in the column *'Storage'* are stored in the non-volatile memory then they retain their value permanently in case of a power failure.
   Attention: these registers / coils must not be written continuously because the EEPROM could be irreparably damaged.
4. For the devices of DAT8000 series, the group of data 0xxxx is the mirror of the group 1xxxx, the group of data 3xxxx is the mirror of the group 4xxxx, therefore the first register could be addressed either as 30002 (with function 04) or 40002 (with function 03).
5. FW → fixed by firmware. The value is defined in the firmware.
   EEPROM → the value is permanently stored in a non-volatile memory (see note 3).
   RAM → the value is stored in a volatile memory. In the absence of power supply, the stored value is resetted.

40002 / 40003: FIRMWARE
Two read-only registers, containing the firmware version.
Firmware version: 8200 and later

40007: UNIT ID
Contains the MODBUS address of the device; the values allowed are from 1 to 255 decimal.
This data is necessary for the correct addressing of the device into the Modbus network and must follow the IP address.
-Default value: 1 Decimal (01 Hex). INIT value: 245 Decimal (F5 Hex).

40011: SYSTEM FLAGS
Contains the enable bits and system events of the device. The following parameters are configurable:

Watchdog Event Enable:this bit allows enabling the Watchdog event (0 = Watchdog disabled, 1 = Watchdog enabled). If active and the module does not receive commands for the time specified in register 40013 "Watchdog timer", the green PWR LED flashes and the status of the outputs is automatically set as indicated in the lower part of the relative *"PowerUp / Safe"* register (40012), to avoid damage to the system in case of danger.
The “Wathcdog Event” bit must be reset manually when the Watchdog event has occurred.
The “Watchdog Event Enable” bit resides in eeprom therefore, in case of power failure, it maintains its status.
Note: the “Safe” registers and the enable of the watchdog reside in the eeprom, therefore they must not be written continuously or at each cycle of the master because it could cause serious damage to the eeprom of the device.

Watchdog Event: if this bit is set as 1 indicates that the Watchdog condition has happened (0 = Normal condition; 1 = alarm condition)

PowerUp Event: this bit is forced to 1 at each power on and indicates that the device has been switched off or reset. With the setting of this bit as 0 and checking its state, it is possible to know if a reset of the device has occurred (0 = reset not occurred; 1 = reset occurred).
This bit must be reset manually.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Coil						163	162	161								
Descr						Power-up Event	Watchdog Event	Watchdog Event Enable								

40013: WATCHDOG TIMER
Contains the value of the Watchdog timer, in seconds. If the Watchdog is enabled and the device doesn’t receive a command before this timer expires, the Watchdog bit will be set to 1 (see the description of “System Flags”).
- Default value: 10 (10 sec.)

40032: DIGITAL INPUTS
This register shows the condition of the digital inputs (0 = OFF; 1 = ON).
The same inputs can also be read using the specific functions of reading coils (01-02) referring to the section in the coils table of which this register is a mirror; it is possible to read at the same time all of the bits of this register without implementing the coils' specific functions.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
In #	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

40033: DIGITAL INPUTS RISE LATCH
The bits of this register are used to indicate than an event of change of logic state from 0 to 1 (rise latch) has occured of digital input. The latch event shows for each digital input the single change of state and is not updated by the system. In case it is necessary monitoring this parameter continuously, the single bit or the group of bits must be reset to 0 after the rising edge has occured.
It is also possible to read and drive the bits using the specific functions of reading and force coils (01-02-05-15) referring to the coils table of which this register is a mirror. It is possible to read and write at the same time all of the bits of this register without implementing the coils' specific functions.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Latch	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

40034: DIGITAL INPUTS FALL LATCH
The bits of this register are used to indicate than an event of change of logic state from 1 to 0 (fall latch) has occurred of digital input. The latch event shows for each digital input the single change of state and is not updated by the system. In case it is necessary monitoring this parameter continuously, the single bit or the group of bits must be reset to 0 after the falling edge has occured.
It is also possible to read and drive the bits using the specific functions of reading and force coils (01-02-05-15) referring to the coils table of which this register is a mirror. It is possible to read and write at the same time all of the bits of this register without implementing the coils' specific functions.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Latch	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

40035: FREQUENCY DIGITAL INPUT 0
This register shows the measure of frequency related to the digital input channel 0. The value, expressed in hundredths of Hertz, is an *Unsigned Integer 16 bit* format. The maximum value of frequency measurable is 300.00 Hz.

40036: FREQUENCY DIGITAL INPUT 1
This register shows the measure of frequency related to the digital input channel 1. The value, expressed in hundredths of Hertz, is an *Unsigned Integer 16 bit* format. The maximum value of frequency measurable is 300.00 Hz.

40037: FREQUENCY DIGITAL INPUT 2
This register shows the measure of frequency related to the digital input channel 2. The value, expressed in hundredths of Hertz, is an *Unsigned Integer 16 bit* format. The maximum value of frequency measurable is 300.00 Hz.

40038: FREQUENCY DIGITAL INPUT 3
This register shows the measure of frequency related to the digital input channel 3. The value, expressed in hundredths of Hertz, is an *Unsigned Integer 16 bit* format. The maximum value of frequency measurable is 300.00 Hz.

40039-40 (LO-HI): 32 BIT COUNTER DIGITAL INPUT 0
This couple of registers shows the measure of the digital counter related to the input channel 0. The value is incremented at each change of level from 0 to 1 of the input channel. The type of register is an *Unsigned Long 32 bit*.
It is possible to reset the value by direct writing. At each power-on of the device the value is set to 0.
Note: This register is **not** retentive. When the device is turned off, the value contained in this register is lost.

40041-42 (LO-HI): 32 BIT COUNTER DIGITAL INPUT 1
This couple of registers shows the measure of the digital counter related to the input channel 1. The value is incremented at each change of level from 0 to 1 of the input channel. The type of register is an *Unsigned Long 32 bit*.
It is possible to reset the value by direct writing. At each power-on of the device the value is set to 0.
Note: This register is **not** retentive. When the device is turned off, the value contained in this register is lost.

40043-44 (LO-HI): 32 BIT COUNTER DIGITAL INPUT 2
This couple of registers shows the measure of the digital counter related to the input channel 2. The value is incremented at each change of level from 0 to 1 of the input channel. The type of register is an *Unsigned Long 32 bit*.
It is possible to reset the value by direct writing. At each power-on of the device the value is set to 0.
Note: This register is **not** retentive. When the device is turned off, the value contained in this register is lost.

40045-46 (LO-HI): 32 BIT COUNTER DIGITAL INPUT 3
This couple of registers shows the measure of the digital counter related to the input channel 3. The value is incremented at each change of level from 0 to 1 of the input channel. The type of register is an *Unsigned Long 32 bit*.
It is possible to reset the value by direct writing. At each power-on of the device the value is set to 0.
Note: This register is **not** retentive. When the device is turned off, the value contained in this register is lost.

41225: MINIMUM DURATION PULSE (DEBOUNCING)
The *Minimum Acceptable Pulse Duration* is set in this register so that the change of state or the counting of the counters is detected.
This function is only available for the first 4 digital inputs, i.e. those equipped with pulse counters.
By setting this parameter, all pulses or spikes with a duration shorter than this value are *"filtered"/ ignored*. This allows, for example, to filter the spikes during the opening or closing of a mechanical contact (flow meters, liter counters, etc.) and therefore to have a "*clean*" counting in the pulse counter.
The value that can be set are expressed as milliseconds (ms).
The values must be between 0 and 254 ms.
The value 255 forces the minimum pulse duration to 50ms.

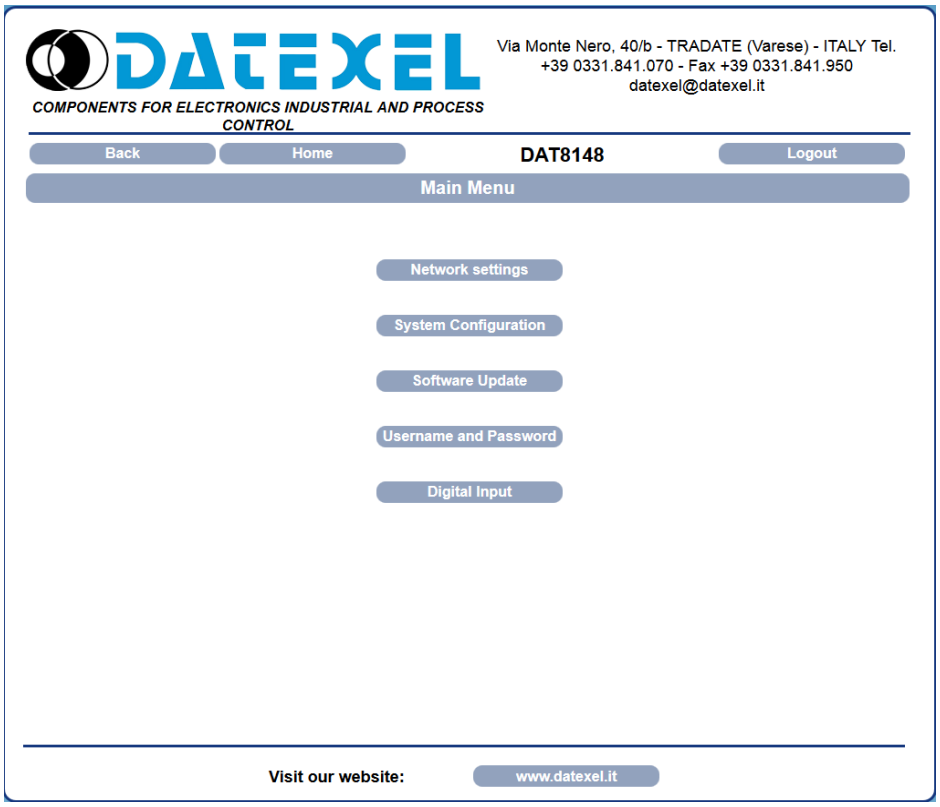
EXAMPLE:
If the value that is entered is 10ms, all pulses with duration less than 10ms are filtered / ignored.

WEBSERVER STRUCTURE

To access the server, run the web browser and edit in the *address bar* the device IP address (default IP address: 192.168.1.100).
It will appear the following window. Depending on the Web browser used some icons and/or writings may have little variation of shape and colour.
The web browser supported are: *Chrome, Firefox, Opera, Internet Explorer and Edge*.
If necessary, it is possible to connect to the *Datexel web site* to download the data-sheet and the user guide of the device in use clicking on the button "www.datexel.it" in the bottom part of the window.

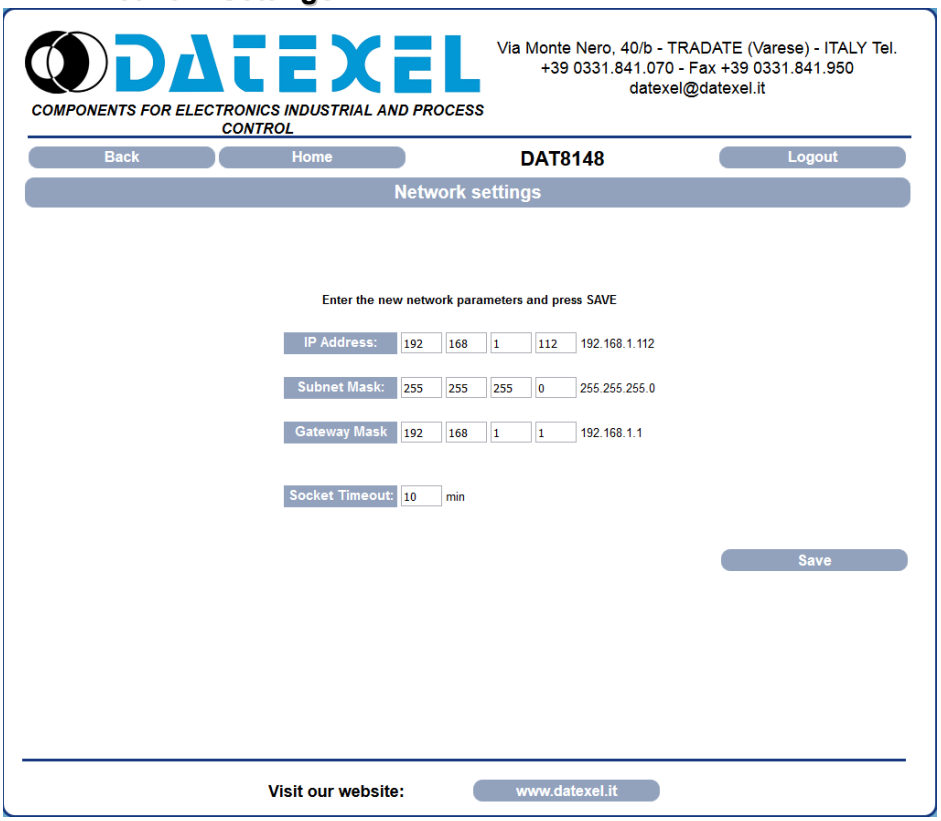
Write Username and Password. If the default settings are in use the parameters to access are:
Username: ***Fact_user***
Password: ***Fact_pwd***
Click on the button *Login* to access to the Home page of the device; it will appear as follows.
In all the web pages, on the top part of the window there are the buttons:
"*Page Back*" to go back to the page previously visualized; "*Home*" to return to the main page; "*Logout*" to quit and get back to the Login page.

To access the page with the menus of configuration of the device select the language and click the button "OK".
The following window will appear.



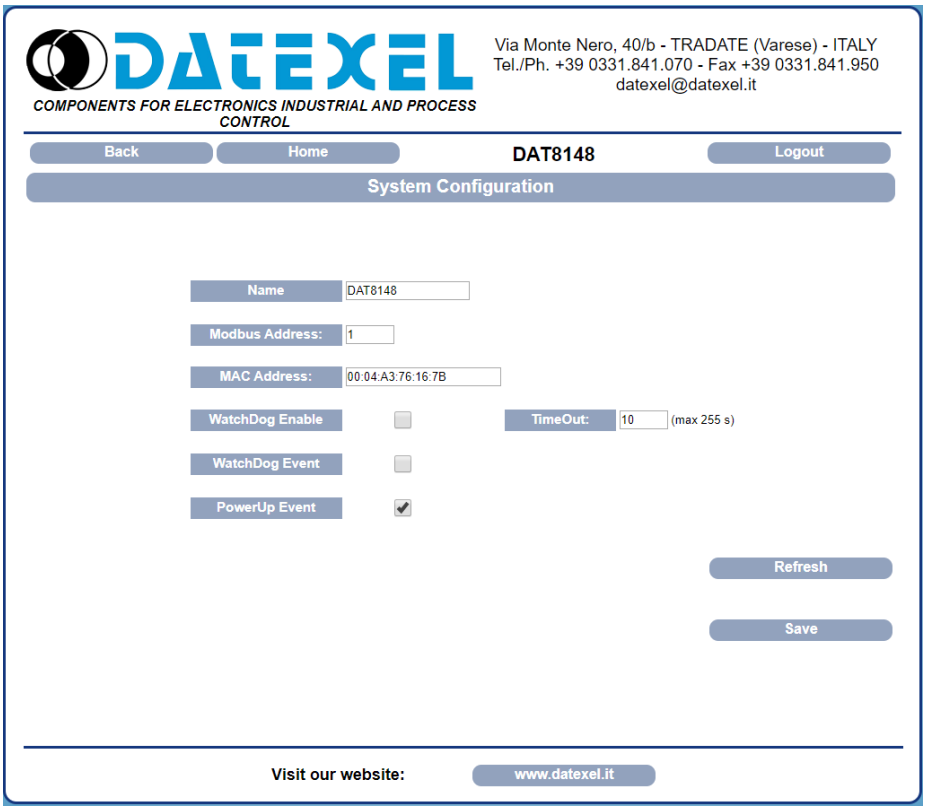
By this page it is possible to access the internal parameters of configuration of the device. If the mouse pointer is moved on the button related to a specific menu, it will appear a green tool tip that will help the user with the selection of menus that are the following:
Network Settings: allows to set the Ethernet communication parameters.
System Configuration: allows to set the system configuration parameters.
Software Update: allows to execute, if necessary a software update.
User and Password: allows to set the access data used in the Login page.
Digital Input: allows to visualize the parameters related to the digital inputs.
In the next sections there is the description of the menus.

Network Settings



IP Address: allows to visualize and set the unique IP address of the device in the network in use.
Subnet Mask: allows to set the parameter of the Subnet Mask in order to determine the local network of the device.
Gateway: allows to set the parameter of Gateway Mask for the correct addressing of the device.
Socket Timeout: when there is no data transmission, this parameter indicates the time that must elapse before Modbus TCP sockets (port 502) are closed.
Click "*Save*" to apply and store the modified parameters. Wait for the reset of the device and access to it via the new parameters set.

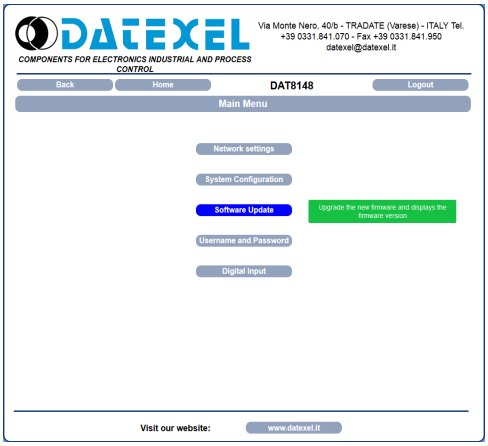
System Configuration



Name: allows to visualize and set the parameter NetBios Name of the device; this parameter, composed by max 15 alphanumeric characters, is visualized beside the IP address in the software *"Search Device";* it can also be used in the software that implement the use of this data.
Modbus Address: allows to visualize the modbus address of the device; this parameter is forced to 245 in INIT condition.
Watchdog Enable (ref. Reg "System Flags"): this flag allows to enable the Watchdog event (0 = WatchDog disabled, 1 = WatchDog enabled).
Timeout (ref. Reg "WatchDog timer"): allows to set the value, expressed as step of 1 second, of the WatchDog timer .
Watchdog Event (ref. Reg "System Flags"): this flag is used to signal that the Watchdog condition is happened (0 = Normal condition; 1 = Alarm condition).
Power-up Event (ref. Reg "System Flags"): this flag is forced to 1 at each power-on and indicates that the device has been switched-off or a reset has occurred. (0 = reset not happened; 1 = reset happened).

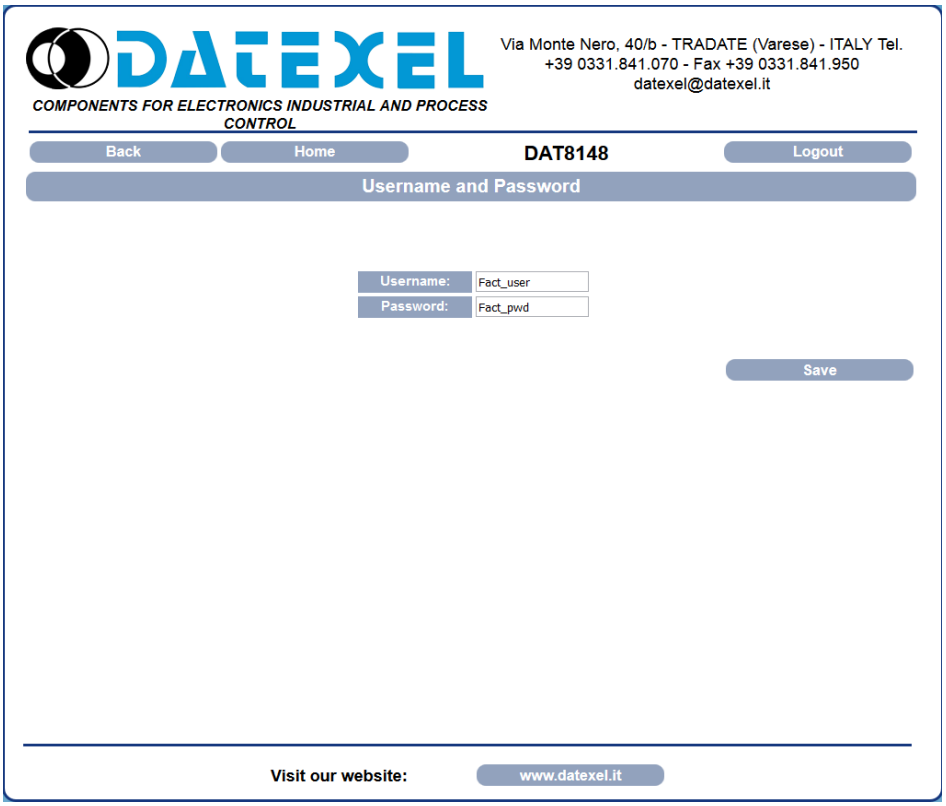
Click "*Save"* to apply and store the modified parameters.To read the parameters from the device click the button "*Refresh*".

Software Update



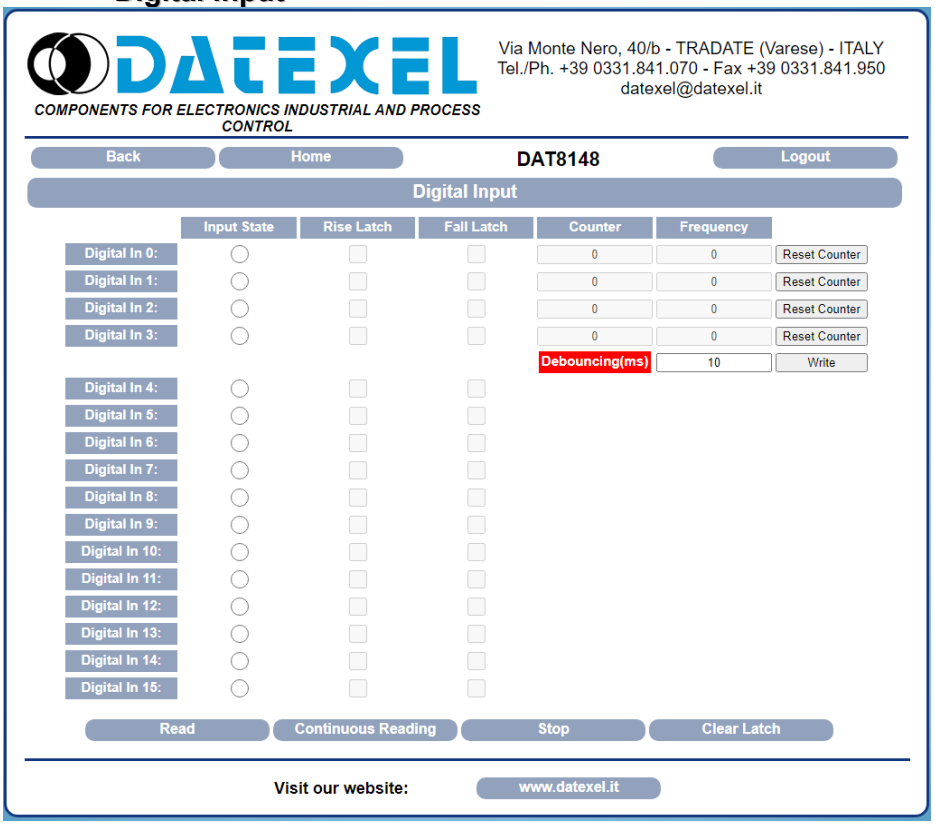
This section allows to update the versions of the firmware or web server and is used in case of necessity. To execute the update click on the button "*Upgrade*"; the system will open a pop-up window where to insert the credentials to proceed with the update. Contact the Technical Assistance service for information about the procedure to follow.
The parameter "*Actual Firmware*" shows the firmware version loaded on the device.
The parameter "*WebPage Version*" shows the version of the web-based user interface loaded on the device.

User and Password



This section allows to set user name and password to access to the Webserver of the device.
Username: allows to set and visualize the user name of the device. Default *"Fact_user"*.
Password: allows to set and visualize the password of the device. Default *"Fact_pwd"*.
Click "*Save*" to apply and store the modified parameters.

Digital Input



The first 4 digital inputs, in addition to being linked to pulse counters and frequency meters, are equipped with ***"Debouncing"*** which allows you to filter the inputs signal, for example, from a mechanical counter connected to one of the first 4 digital inputs.
The value entered is expressed in milliseconds and represents the minimum acceptable pulse duration.

This section allows to visualize the state of the digital inputs and the latchs. Each row is related to each input. To execute a single reading click the button "*Read*", To execute a continuous reading click the button "*Continuos Reading*". To stop the reading click the button "*Stop*". The columns are divided as follows.
Input State (ref. Reg "Digital Inputs"): indicates the state of each digital input. The indicator will be filled (red) when the digital input's state is 1 (ON).
Rise Latch (ref. Reg "Digital Inputs Rise Latch"): signals the change of digital input from 0 to 1 (rising edge)
Fall Latch (ref. Reg "Digital Inputs Fall Latch"): signals the change of digital input from 1 to 0 (falling edge).
The reporting is made for a single change of state. To reset all latch press the button "*Clear Latch*".
Counter (ref. Registers "32 bit Counter Digital Input"): indicates the current value of the counter register associated with each input.
Frequency (ref. Registers "Frequency Digital Input"): indicates the current value of the frequency register associated with each input.
The "*Reset Counter*" button allows you to reset the counter register associated to the digital input.

USE OF THE FUNCTION "INIT"

All of the devices of DAT8000 series are equipped with the INIT modality. This is a procedure to access to the device if the network parameters are unknown. In this case it is possible to set the new network parameters in order to access the device using a browser and to proceed with its configuration.

IP Address: XXX.XXX.XXX.XXX (assigned by DHCP if enabled)
192.168.1.174 (if DHCP disabled, verify that the IP is not in use)
Modbus address: 245

By these information it is possible to access the device in INIT modality to set and check its configuration.
To work in INIT follow the procedure:
- Switch-off the device;
- Connect the terminal INIT to terminal -V as shown in the technical datasheet of the device;
- Power-on the device;
- Install and run the software *"Search Device";*
- By the software, search the device on the network and connect to it (refer to the software User Guide);
- Set the new network parameters;

When the user finishes to work in INIT:
- Switch-off the device;
- Disconnect INIT connection;
- Power-on the device and connect to it by the new parameters configurated using a browser;

Note: if the DHCP is disabled and the device is in INIT mode, the IP address is 192.168.1.174. In order to connect to the device, the PC and the device must be in the same network.

WATCHDOG

The devices of the DAT8000 series are equipped with the Watchdog timer. When enabled, if there is not communication between the device and the master for such time, in alarm condition the values of the outputs are automatically set as defined on the lower 8 bits in the register "PowerUp/Safe". This is the condition to which the outputs must be set when the system actives an alarm condition in order to guarantee the safety condition. The safe value could be different from the value of the outputs in working condition so the user, after the reset, has to resend the command to set the output ports. During this alarm condition the green led PWR on the front of the device blinks and the coil "*Watchdog Event*" is forced to 1. To exit from the alarm condition, send any command to the device and reset the coil "*Watchdog Event*".
Note: the "Safe" registers and the enable of the watchdog reside in the eeprom, therefore they must not be written continuously or at each cycle of the master because it could cause serious damage to the eeprom of the device.

FUNCTION BUTTON “P”

In case it is necessary to set the default parameters of the device, with device powered and not in INIT condition, push the button “P” located on the front for at least 5 seconds.
The green led PWR will switch-off, the yellow led STS will become orange and the reset of the device will occur.
When the reset procedure is finished, both the leds will be set back to the default condition and the following parameters will be loaded:

Ethernet:
- IP Address: 192.168.1.100
- Subnet Mask: 255.255.255.0
- Gateway Mask: 192.168.1.1

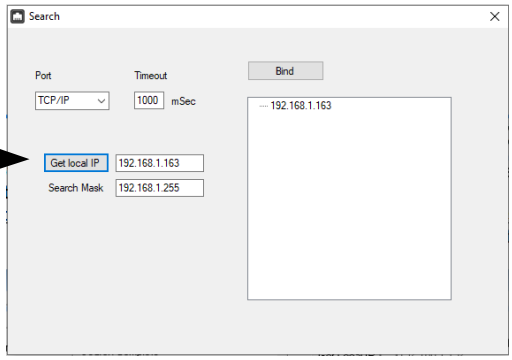
Login:
- ***Username:*** Fact_user
- ***Password:*** Fact_pwd

Modbus:
Address: 1

SEARCH A DEVICE AND EDIT NETWORK PARAMETERS USING "SEARCH DEVICE" SOFTWARE

The devices of DAT8000 series are provided with default IP address: 192.168.1.100, modbus address 1.
The PC could work with multiple subnets.
In order to connect with the device, the PC and the device of DAT8000 series must be in the same network.(*)
It is possible to visualize the PC's IP address running the software “*Search Device”* clicking the button “Get Local IP” (Pict. 1)

Pict. 1

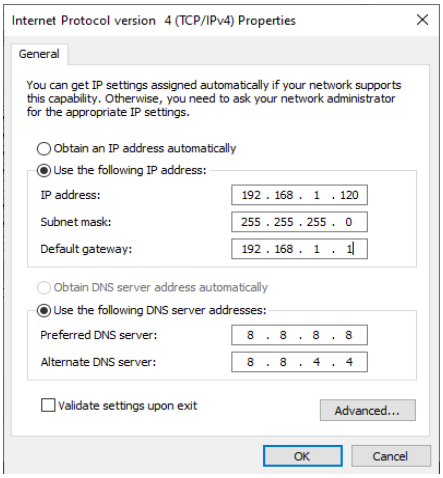


1) Select the correct network (if present in the list) and click on *"Bind"*.
2) Click on "Search" button to search device in the selected network.
3) After searching, the IP address of the device will appear followed by the NetBios Name.
   Make sure that the IP identified is used in the network which the device is connected to.
4) Select the IP, click the right mouse button and choose *"Connect / Set Device"*.
5) After connecting to the device, all the network parameters can be set through the configuration window.

Note: *after changing the IP address of the Datexel device, it will not appear in the search results in the "Search Device". It will be necessary to change the PC network parameters again to display the device again in the search results.*

(*) If the PC belongs to a different subnet from the default one expected for the device, it is necessary to change the IP of the Personal Computer.
To do this, open the *"Network and Sharing Center"* section of the operating system in use, go to the IPV4 network properties window of the PC (Pict. 2) and configure the network parameters compatible with the default IP of the device (see section *"Examples for Windows configurations"*).
After having appropriately changed the IP of the PC, perform steps 1) to 5) to change the IP of the device.

Pict. 2

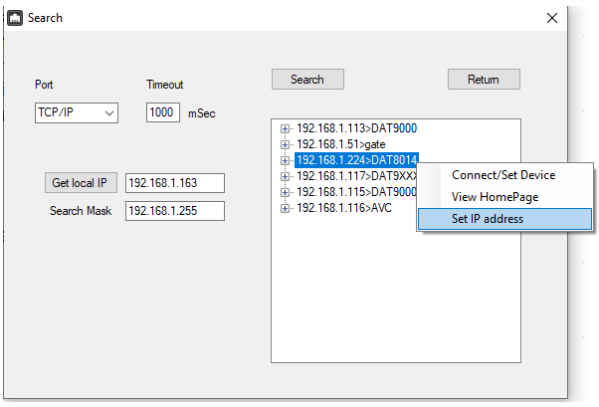


Factory/Default parameters:
IP Address: 192.168.1.100
Modbus address: 1
Subnet Mask: 255.255.255.0
Gateway Mask: 192.168.1.1

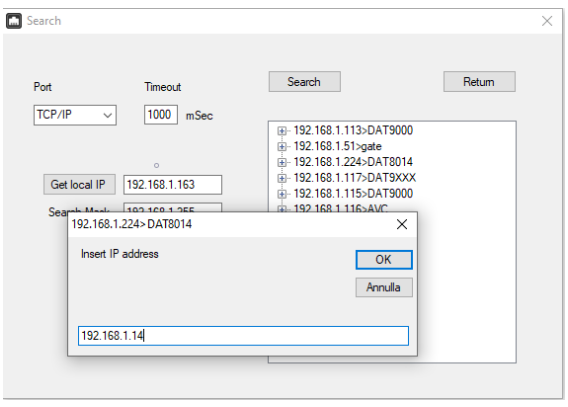
It is possible to set only the IP address (but not the other network parameters) from the *"Search Device"* software by following the procedure:

1) Select the correct network (if present in the list) and click on *"Bind"*.
2) Click on the *"Search"* button to search for the device in the selected network.
3) After searching, the IP address of the device will appear followed by the NetBios Name.
   Make sure that the IP identified is used in the network which the device is connected to.
4) Select the IP, click the right mouse button and select *"Set IP address"* (Pict. 3a).
5) Set the new IP address and press OK (Pict. 3b)

Pict. 3a



Pict. 3b



ADDITIONAL COMMANDS TO IDENTIFY THE NETWORK IN USE

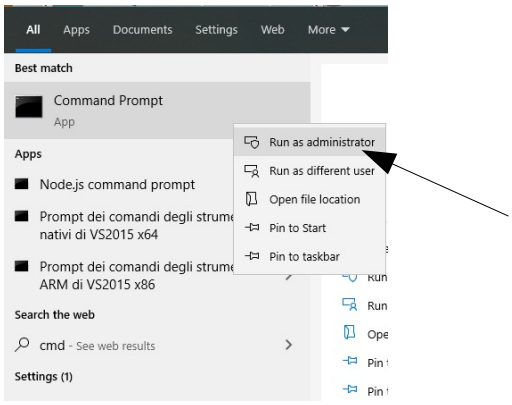
The following additional commands can be used to identify which network the PC is connected to.
To use the following commands, run the Command Prompt (cmd.exe) as Administrator (Pict.1).

"Ipconfig" command
It is possible to display the networks available on the PC by typing this command and pressing Enter.
The system will return a list of all the PC networks (Pict.2). Before trying to establish communication with the device, the user must be sure that he is in the correct subnet.

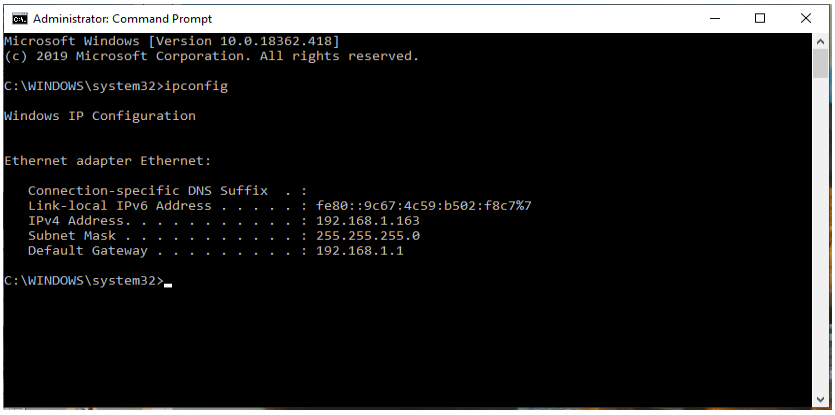
"Ping" command
To verify if a device is connected to the network, you can use the *"ping"* command which is an administration utility for computer networks used to measure the time expressed in milliseconds, used by one or more packets to reach a network device and return origin.
To use the command type the command *"ping"* followed by the IP address of the device and press Enter.
Example:
ping 192.168.1.100

If the device is connected, the system will return the response from the device with the IP address used (Pict.3).
If the system returns the *"Destination host unreacheble"* message, the device is not connected to the network in use.
In this case, it is suggested to check the assignment of the network parameters.

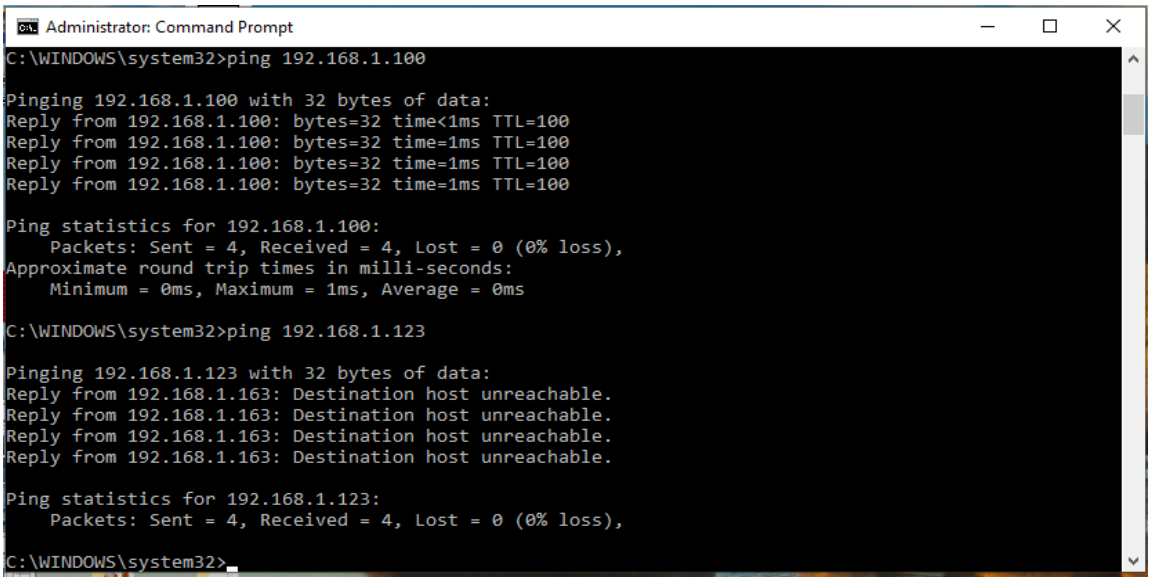
Pict. 1



Pict. 2



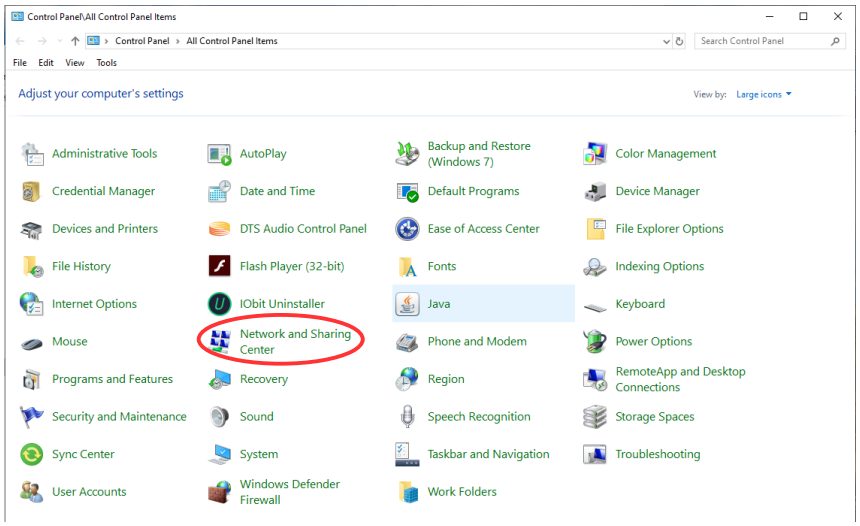
Pict. 3



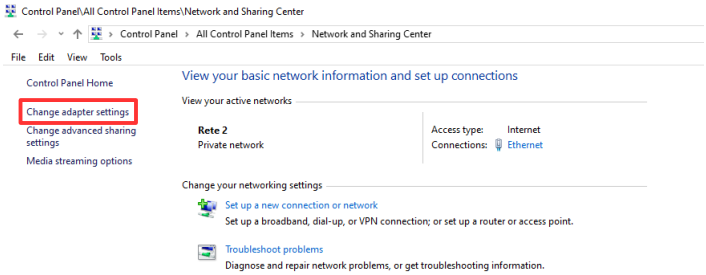
ADDITIONAL COMMANDS TO IDENTIFY THE NETWORK IN USE

This example shows how to change the IP of the Personal Computer (the graphics and the procedure change in relation to the operating system in use) in order to allow the search for the device on the network with the *"Search Device"* software.

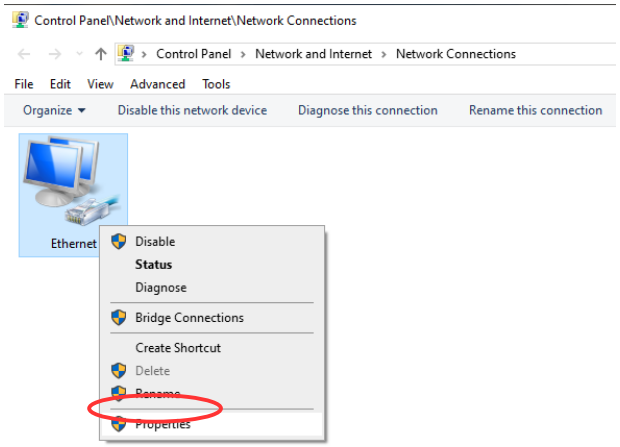
1) Access to Control Panel → *Network and Sharing Center*



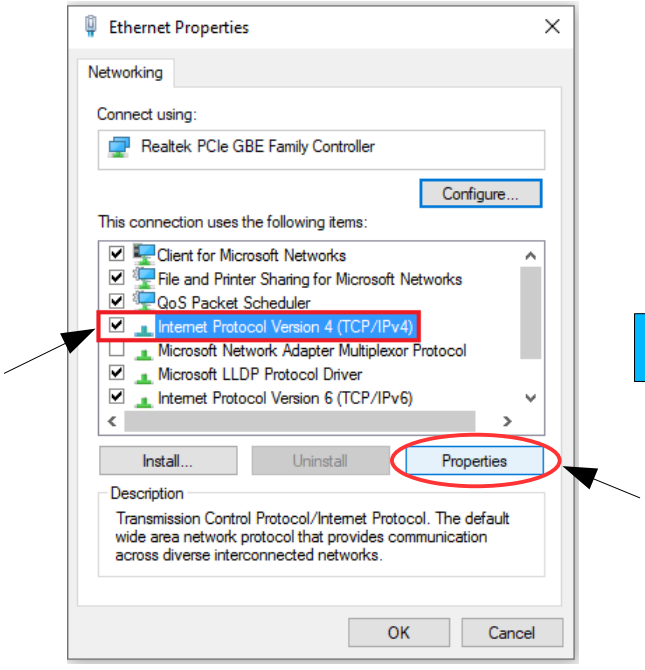
2) Network and Sharing Center → *Change Adapter Settings*

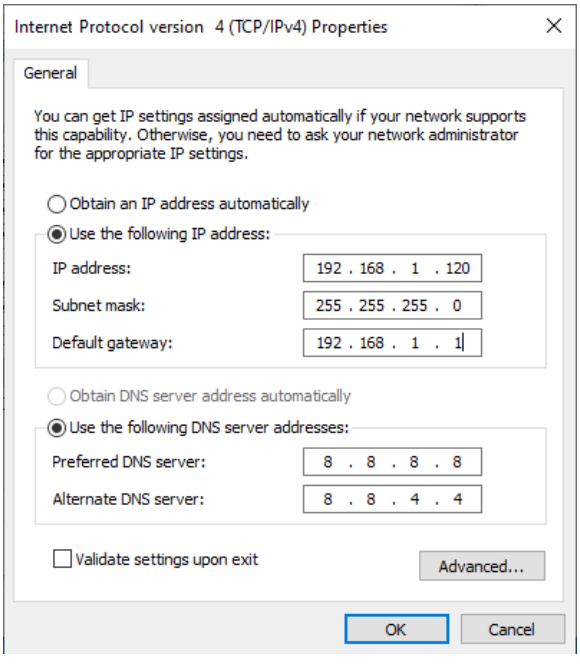


3) Change Adapter Settings → *select the interested network → right click → Properties*



4) Properties → *Internet Protocol version 4 → Properties*





5) Change parameters and click OK.