

## User Guide – MODBUS TCP/IP protocol Firmware Version : 8300

# SS 8014

### PRELIMINARY 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.

### REGISTERS TABLE

Register Position	Description	Access
40002	Firmware [0]	RO
40003	Firmware [1]	RO
40004	Name [0]	R/W
40005	Name [1]	R/W
40007	Node ID	R/W
40011	System Flags	R/W
40013	Watchdog timer	R/W
40031	Input type Ch 0	R/W
40032	Input type Ch 1	R/W
40033	Input type Ch 2	R/W
40034	Input type Ch 3	R/W
40036	Break status	RO
40041	Analog Input (0) - Ch0	RO
40042	Analog Input (1) - Ch1	RO
40043	Analog Input (2) - Ch2	RO
40044	Analog Input (3) - Ch3	RO

### COILS TABLE

(*)Coil (Hex)	(*)Coil (Dec)	Description	Access
0x00A1	00161	Watch-dog Enable	R/W
0x00A2	00162	Watch-dog Event	R/W
0x00A3	00163	Power-Up Event	R/W

### SUPPORTED MODBUS FUNCTION CODES

Function	Description
01	Read Coil Status (0xxxx)
02	Read Inputs Status (1xxxx)
03	Read Holding Registers (4xxxx)
04	Read Inputs Registers (3xxxx)
05	Force Single Coil
06	Preset Single Register
15 (0F)	Force Multiple Coil
16 (10)	Preset Multiple Registers

#### NOTES:

Registers and coils marked as RO in the column 'Access' are Read Only registers.

Registers and coils marked as R/W in the column 'Access' are Read and Write registers.

For the devices of SS8000 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).

The maximum number of coils that can be read through Modbus functions 01 and 02 (see "Supported modbus functions codes") are: **128**

The maximum number of registers that can be read through Modbus functions 03 and 04 (see "Supported modbus functions codes") are: **64**

The maximum number of registers that can be written by Modbus function 16 (see "Supported modbus functions codes") are: **64**

The maximum number of coils that can be written by Modbus function 15 (see "Supported modbus functions codes") are: **64**



#### 40036 : BREAK STATUS

When the sensor connected to a channel is in break condition (for the breaking of the sensor, for the disconnected cable or for the over-temperature), the bit corresponding to the channel is set to 1.

Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Input	-	-	-	-	-	-	-	-	-	#3	-	#2	-	#1	-	#0
Descr.	Break input #3 Break input #2 Break input #1 Break input #0															

#### 40041 : ANALOG INPUT #0 40042 : ANALOG INPUT #1 40043 : ANALOG INPUT #2 40044 : ANALOG INPUT #3

These registers return the measure of each channel , converted to engineering units. The values are expressed in ohm for the Res 2000 ohm input, decimal of ohm for Res 500 ohm input, decimal of % for the potentiometer input and decimal of °C for the RTD input.

The format is an integer number of 16 bit with sign.

#### Examples of reading:

- Input set as **RTD**  
Value read on the register: 246 → 24,6 °C
- Input set as **Potenziometer**  
Value read on the register: 40 → 40% of nominal value of the potentiometer connected
- Input set as **Res 2000 ohm**  
Value read on the register 1256 → 1256 Ω
- Input set as **Res 500 ohm**  
Value read on the register 1352 → 135,2 Ω

## WEB SERVER STRUCTURE

To access the server, run the Web browser and edit in the Address Bar the IP address of the device. It will appear the following window. Depending on the Web browser used some icons and and/or writings may have little variation of shape and colour. If necessary, it is possible to connect to the Sielco Sistemi web site to download the data-sheet and the user guide of the device in use clicking on the button "www.sielcosistemi.com" the bottom part of the window.



The screenshot shows the login interface for the SIELCO SISTEMI IOLOG-DATA ACQUISITION SYSTEM. At the top left is the SIELCO SISTEMI logo. To its right, the text "IOLOG-DATA ACQUISITION SYSTEM" is displayed. Below the logo and title, a horizontal line separates the header from the main content. In the center, there is a prompt: "Enter Username and Password then press LOGIN". Below this prompt is a login form with two input fields: "Username" and "Password". A blue "LOGIN" button is positioned below the password field. At the bottom of the page, there is a footer with the text "Visit our website:" followed by a button containing the URL "www.sielcosistemi.com".

Write Username and Password. If the default settings are in use the parameters to access are:

Username: *admin*; Password: *admin*

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.



The screenshot shows the main menu of the SIELCO SISTEMI IOLOG-DATA ACQUISITION SYSTEM. At the top left is the SIELCO SISTEMI logo. To its right, the text "IOLOG-DATA ACQUISITION SYSTEM" is displayed. Below the logo and title, a horizontal line separates the header from the main content. In the center, there are three buttons: "Back", "Home", and "Logout". Below these buttons is a "Select Language" button. Below the "Select Language" button is a dropdown menu showing "ENGLISH" and an "OK" button. Below the dropdown menu is a banner image showing several electronic modules and a laptop displaying a software interface. At the bottom of the page, there is a footer with the text "Visit our website:" followed by a button containing the URL "www.sielcosistemi.com".

To access the page "*Main Menu*" of the device, select the language by the combobox and click the button "OK". The following window will appear.