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**Modbus TCP/IP server
4 isolated channels for mA
and Volt input**

User Guide – MODBUS TCP/IP protocol
Firmware Version : 8400

SS 8015

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 (1-0)	R/W
40032	Input type Ch 1 (3-2)	R/W
40033	Input type Ch 2 (5-4)	R/W
40034	Input type Ch 3 (7-6)	R/W
40041	Analog Input (0) - mA	RO
40042	Analog Input (1) - V	RO
40043	Analog Input (2) - mA	RO
40044	Analog Input (3) - V	RO
40045	Analog Input (4) - mA	RO
40046	Analog Input (5) - V	RO
40047	Analog Input (6) - mA	RO
40048	Analog Input (7) - V	RO

CH0 (40041, 40042)
CH1 (40043, 40044)
CH2 (40045, 40046)
CH3 (40047, 40048)

COILS TABLE

(*)Coil (Hex)	(*)Coil (Dec)	Description	Access
0x0092	00146	Watch-dog Enable	R/W
0x0093	00147	Watch-dog Event	R/W
0x0094	00148	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**

DESCRIPTION MODBUS REGISTERS

40002 / 40003 : FIRMWARE
Field of 2 read only registers ; contains the firmware identifier provided by the manufactured.
- Default value: 8400 (hex)

40004 / 40005 : NAME
Field of 2 read/write registers (4 bytes or 4 ASCII characters) available for the user, it can contain the name of the device or an abbreviation that identifies its function inside the plant. Each one of the 4 bytes could be written by values from 0 to 255, ASCII characters included.
The default value of this field contains the identifier of the device expressed in ASCII characters.
- Default value: "8015" (ASCII).

40007 : NODE ID
Contains the MODBUS address of the device; the values allowed are from 1 to 245 decimal.
This data is necessary for the correct addressing of the device into the Modbus net and must follow the IP address.
- Default value: Dec: 1, Hex: 01 INIT: Dec 245, Hex : F5.

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

Watchdog Event Enable: this bit allows to enable the Watchdog Event (0 = Watchdog disabled, 1 = Watchdog enabled). If this bit is active and the device doesn't receive commands for the time specified in the register 40013 "Watchdog timer", the PWR green led blinks.
If this function is required must be implemented at the power-on of the device; the bit must be reset manually when the Watchdog event is occurred.
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	09	08	07	06	05	04	03	02	01	00
Coil	-	-	-	-	-	163	162	161	-	-	-	-	-	-	-	-
Descr																

Watchdog Event enabling
Watchdog Event
Power-up Event

40013 : WATCHDOG TIMER
Contains the value of the WatchDog timer, expressed in step of 1 second. If the WatchDog is enabled and the device doesn't receive commands in a time lower or equal to the value of the one expressed in this register the WatchDog will be activated (see description register "System Flags").
- Default value: 10 (10 sec.)

40031: INPUT TYPE Ch 0
This register shows the input types that have been configured (see *"Input Type Table"* on side).
In this device the configuration of input types is fixed: **Input # 1 → Volt; Input # 0 → mA.**
To disable input simply write 0 on the part relating to the input that you want to disable.
- Default: (0203 Hex)

Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Descr.			Input Type #1								Input Type #0					

INPUT TYPE TABLE

Input	Value (Hex)	Value (Dec)
Disabilitato	00h	0
Volt	02h	2
mA	03h	3

40032: INPUT TYPE Ch 1
This register shows the input types that have been configured (see *"Input Type Table"* on side).
In this device the configuration of input types is fixed: **Input # 3 → Volt; Input # 2 → mA.**
To disable input simply write 0 on the part relating to the input that you want to disable.
- Default: (0203 Hex)

Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Descr.			Input Type #3								Input Type #2					

INPUT TYPE TABLE

Input	Value (Hex)	Value (Dec)
Disabilitato	00h	0
Volt	02h	2
mA	03h	3

40033: INPUT TYPE Ch 2
This register shows the input types that have been configured (see *"Input Type Table"* on side).
In this device the configuration of input types is fixed: **Input # 5 → Volt; Input # 4 → mA.**
To disable input simply write 0 on the part relating to the input that you want to disable.
- Default: (0203 Hex)

Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Descr.			Input Type #5								Input Type #4					

INPUT TYPE TABLE

Input	Value (Hex)	Value (Dec)
Disabilitato	00h	0
Volt	02h	2
mA	03h	3

40034: INPUT TYPE Ch 3
This register shows the input types that have been configured (see *"Input Type Table"* on side).
In this device the configuration of input types is fixed: **Input # 7 → Volt; Input # 6 → mA.**
To disable input simply write 0 on the part relating to the input that you want to disable.
- Default: (0203 Hex)

Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Descr.			Input Type #7								Input Type #6					

INPUT TYPE TABLE

Input	Value (Hex)	Value (Dec)
Disabilitato	00h	0
Volt	02h	2
mA	03h	3

40041 : ANALOG INPUT #0 (mA)
40042 : ANALOG INPUT #1 (V)
40043 : ANALOG INPUT #2 (mA)
40044 : ANALOG INPUT #3 (V)
40045 : ANALOG INPUT #4 (mA)
40046 : ANALOG INPUT #5 (V)
40047 : ANALOG INPUT #6 (mA)
40048 : ANALOG INPUT #7 (V)

These registers return the measure of each channel , converted to engineering units .
The values are expressed in mV or uA .
 20000 → 20mA
 10000 → 10V
-20000 → -20mA
-10000 → -10V

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

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/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.

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.

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.