USER MANUAL

ZE-4DI-2AI-2DO

ZE-2AI

Z-4DI-2AI-2DO

Mixed I/O modules, multiport and multiprotocol

Modbus RTU / ModbusTCP-IP

SENECA s.r.l.

Via Austria, 26 – 35127 – PADOVA – ITALY

Tel. +39.049.8705355 – 8705359 Fax. +39.049.8706287

Web site: www.seneca.it

Technical assistance: supporto@seneca.it (IT), support@seneca.it (Other)

Commercial reference: commerciale@seneca.it (IT), sales@seneca.it (Other)

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Date	Revision	Notes
20/02/2013	1	Added: CGI commands for Webserver
27/05/2013	2	Complete review
07/06/2013	3	Fixed errors on chapter "ACCESSING THE ZE-2AI OR ZE-4AI-2AI-2DO FROM INTERNET"
07/09/2015	4	Used write single register modbus command for sending commands (from firmware SW002579)

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Seneca
ZE-4DI-2AI-2DO/ZE-2AI/Z-4DI-2AI-2DO

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1. Introduction

Models ZE-4DI-2AI-2DO / ZE-2AI / Z-4DI-2AI-2DO are multi protocol and Mixed I/O modules. All models have a double RS485 serial port for Modbus RTU protocol, the ZE models support also the Modbus TCP-IP protocol by the Ethernet 10-100 Mbit port. The USB port can be used also with communication port supporting the Modbus RTU protocol.
NR 2 independent analog inputs are available in all models (configuring into 0-30V or 0-20 mA), 4 digital inputs, NR 4 32 bits totalizers, NR 4 32 bits counters and NR 2 digital relays outputs are also available for models ZE-4DI-2AI-2DO and Z-4DI-2AI-2DO.

A powerful Webserver is also available for configuration and real time values view.

1.1. Features

- NR.4 counters @ 32 bit, max 5 kHz (not volatile FERAM, no needed battery) (only Z-4DI2AI2DO, ZE-4DI2AI2DO)
- NR.4 totalizers @ 32 bit, max 5 kHz (not volatile FERAM, no needed battery) (only Z-4DI2AI2DO, ZE-4DI2AI2DO)
- Ethernet port (10-100 Mbit / s) (only ZE-2AI, ZE-4DI2AI2DO)
- Multiprotocol support: Server Modbus TCP-IP protocol by the fast ethernet communication port (only ZE-2AI, ZE-4DI2AI2DO) and Modbus RTU port for the 2 RS485 ports.
- Up to 4 client Modbus TCP-IP supported (only ZE-2AI, ZE-4DI2AI2DO)
- Embedded Webserver with CGI support (only ZE-2AI, ZE-4DI2AI2DO)
- Configurable by Webserver (only ZE-2AI, ZE-4DI2AI2DO) or by USB (Easy setup software)
- Replica of the Modbus registers on TCP-IP protocol (NR.1 Ethernet port only ZE-2AI, ZE-4DI2AI2DO), Modbus RTU (NR.2 RS485 independent ports and the USB port)
- Baud rate for Modbus RTU: 1200 baud up to 115200 baud
- Configuration of two analog inputs: voltage or current, 16 bits ADC resolution
- Configuration of four digital inputs: NPN or PNP (only Z-4DI2AI2DO, ZE-4DI2AI2DO)
- Configuration of two relay outputs: fail management if there is no Modbus communication
- 1500 Vac galvanic isolation between power supply and communication
- NR 2 Output Relays (max 2A) (Only Z-4DI2AI2DO, ZE-4DI2AI2DO)
- Quick installation on DIN 46277 rail
- Removable screw terminals with section of 2.5 mm2
- Firmware update by USB port

1.2. General Specification

GENERAL SPECIFICATIONS	
Power supply	19.. 28 Vac (50..60 Hz), 11.. 40Vdc
maximum power consumption	4,5 W
Isolation	1500 Vac
ETHERNET (not for Z-4DI-2AI-2DO)	
Ethernet	10 - 100 Mbit/s
Protocol	Modbus TCP-IP
Max connection lenght	100 m
Connection	RJ 45 on frontal
RS485 COMMUNICATION PORTS	
Number	2
Port #1	IDC10 connector (Modbus RTU slave port)
Port #2	Screw terminals 10-11-12 (Modbus RTU slave port)

Baudrate	1200..115200 configurable
DIGITAL INPUTS (not for ZE-2AI)	
Number of channels	4
Input type	PNP, NPN
Voltage supply	12 Vdc
Current supply	20 mA
Max frequency	5 kHz
Current consumption	3 mA
DIGITAL OUTPUTS (not for ZE-2AI)	
Number of channels	2
Input type	Relay, free contact (SPDT)
Max voltage	250 Vac
Max current	2 A
ANALOG INPUTS	
Number of channels	2
Input type	mA/ Vdc, configurable; 16 bit
Voltage / current input	0..30 Vdc / 0..20 mA, accuracy 0,1% of the end scale
Input protection	Yes, 40 Vdc or 25 mA
Sampling time	Configurable, from 1 to 300 ms
ENVIRONMENTAL CONDITIONS	
Temperature	-20 °C.. +70 °C
Humidity	30 ..90% a 40 °C no condensing
Storage temperature	-25..+85 °C
BOX	
Dimensions	100 x 35 x 111 mm (100 X 17.5 X 111 mm for ZE-2AI)
Box; protection degree	Black, PA6, IP20
CONNECTORS	
	IDC 10 for Seneca bus Removable terminals, pitch 5,08 mm Mini-B USB Ethernet RJ45 **(no for Z-4DI-2AI-2DO)**
STANDARDS	
EN 61000-6-4/ 2007	Emission, industrial environmental
EN 61000-6-2/ 2005	Immunity, industrial environmental
EN 61010-1/ 2001	Safety

1.3. Models comparison

MODEL	*NR 4 DIGITAL INPUTS WITH COUNTERS*	*NR 2 ANALOG INPUTS*	*NR 2 DIGITAL OUTPUT RELAYS*	*NR 1 ETHERNET 10-100 Mb*	*NR 2 RS485*	*USB PORT*
ZE-2AI	NO	YES	NO	YES	YES	YES
ZE-4DI-2AI-2DO	YES	YES	YES	YES	YES	YES
Z-4DI-2AI-2DO	YES	YES	YES	NO	YES	YES

MODEL	*MODBUS RTU SLAVE PROTOCOL*	*MODBUS TCP-IP SERVER PROTOCOL*	*EMBEDDED WEBSERVER*
ZE-2AI	YES	YES	YES
ZE-4DI-2AI-2DO	YES	YES	YES
Z-4DI-2AI-2DO	YES	NO	NO

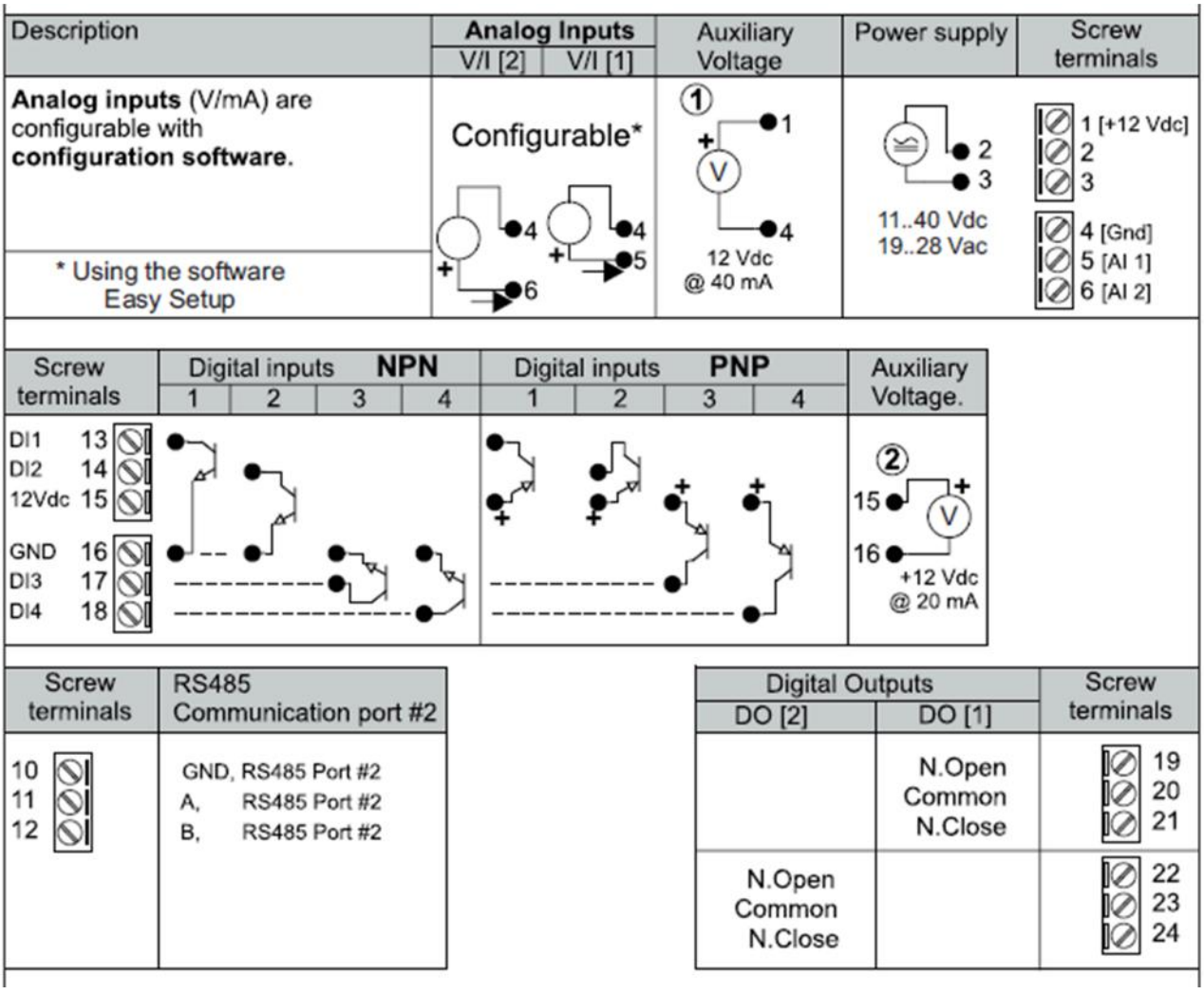
2. Electrical Connections

CAUTION!

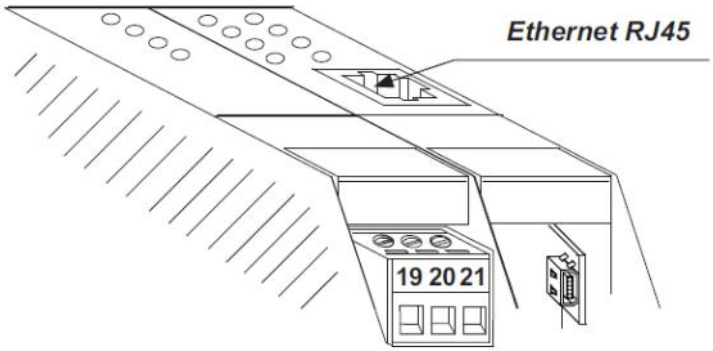
Not All Connectors are available for all the models (see chapter 8).

For more info please refer to the Installation manual.

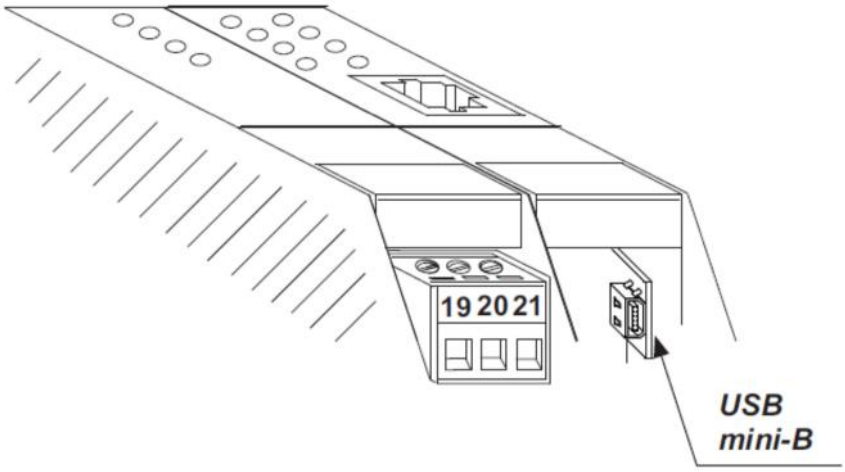
2.1. Terminal Positions



Note: before to insert the cable into RJ45 connector, remove the protection rubber:

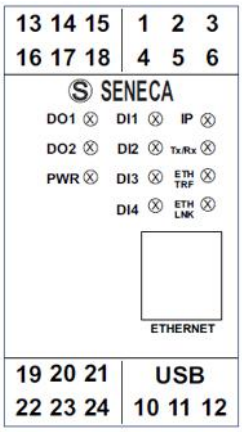


USB port with mini-B plug-in for a PC connection:



3. DEBUG LEDs

Not all leds are available on all models, for more info refer to chapter 8:



LED	STATE	MEANING
IP (GREEN)	Fixed	Module is power on, in configuration without DHCP and ethernet port is connected to the network
IP (GREEN)	Blinking (quick)	Module is power on, in configuration with DHCP and ethernet port is connected to the network
IP (GREEN)	Blinking (slow)	Module is power on and ethernet port is not connected to the network
Tx/Rx (RED)	Blinking	Data transmission and receiving through at least one Modbus port: port 1 RTU, port 2 RTU
ETH TRF (GREEN)	Blinking	Data transmission on Ethernet port
ETH LNK (YELLOW)	Fixed	Ethernet port is connected
DI1, DI2, DI3, DI4 (REDs)	ON / OFF	Status of digital input 1, 2, 3, 4
DO1, DO2 (REDs)	ON / OFF	Status of relay output 1, 2
PWR (GREEN)	Fixed	The module is power on
PWR (GREEN)	Blinking	Outputs in fail (there is no Modbus communication)

4. Analog Inputs

All models include 2 Analog Inputs (16 bits resolution) configurable into current mode or voltage mode.

The sampling time is configurable from 1 ms to 300 ms, a moving average filter is also available for better measure stabilization, the user can select the acquisitions number that enter into the filter.

4.1. Scaling an Analog Measure

The measure value in mV or uA is stored on registers AIN1 and AIN2, a scale measure it's also available.

The scaled measure it's stored on AIN1 ENG and AIN2 ENG registers.

For scaling a measure 4 registers are used: AIN Start Scale, AIN Stop scale, AIN ENG. Start scale and AIN ENG. Stop scale.

For example we want to scale a 4-20mA input into a 0-10000 value:

Start Scale must be 4 mA

Stop Scale must be 20 mA

Start Scale eng. must be 0

Stop Scale eng. must be 10000

The pure ADC value it's stored into the AIN ADC register.

4.2. Analog Measure update time

The acquisition speed it's configurable from 5ms to 300ms, The Faster the acquisition speed, the less precise the measure.

The measure update time is then related to the Acquisition speed and the moving average filter by this formula:

$$T_{update} = (T_{acqusition} \times NR\_samples_{moving\ average})$$

So for example if the Acquisition speed is 10ms, and NR_samples is 10 a new value is available every 100ms.

The maximum speed is obtained by setting Acquisition speed to 1ms and NR_samples to 1, a new value is available every 1ms.

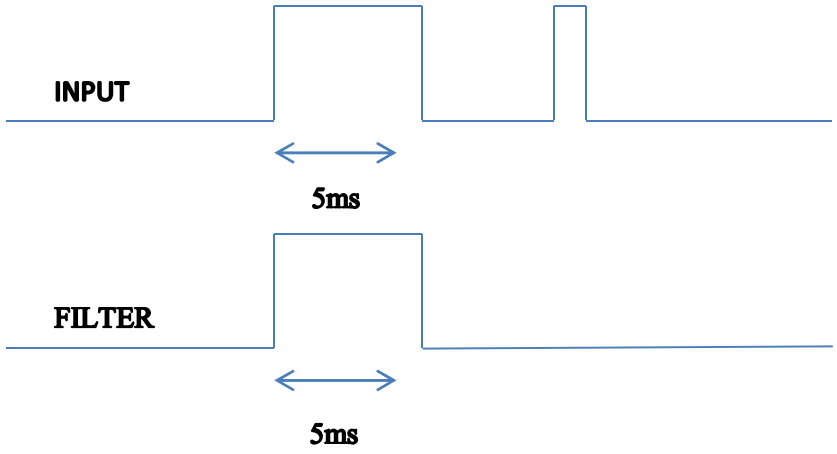
5. Digital Inputs (only ZE-4DI-2AI-2DO and Z-4DI-2AI-2DO)

4 Digital inputs are available, the inputs can be configured in PNP (the input will close to +12V) or NPN (the input will close to GND) mode.

5.1. Digital Inputs filter

A filter can be used for noisy inputs, the filter value limit the maximum input frequency.

For example using a filter of 5ms:



The maximum frequency can be obtained by the formula:

$$f_{max}[Hz] = \frac{500}{Filter_{time}[ms]}$$

Note that the maximum frequency it's limited to 5 KHz.

6. Totalizers (only ZE-4DI-2AI-2DO and Z-4DI-2AI-2DO)

ZE-4DI-2AI-2DO and Z-4DI-2AI-2DO include 4 32 bits totalizers. The maximum frequency is 5 KHz, the input filter (see chapter 13) can be used for limit the input frequency. The Totalizer values are stored into a not volatile memory so the power can switched off without changing the Totalizer values.

6.1. Totalizers overflow

The totalizer overflow it's at 4294967295 (hexadecimal value 0xFFFFFFFF), so another pulse will put the value to 0.

7. Counters (only ZE-4DI-2AI-2DO and Z-4DI-2AI-2DO)

ZE-4DI-2AI-2DO and Z-4DI-2AI-2DO include 4 32 bits counters. The maximum frequency is 5 KHz, the input filter (see chapter 13) can be used for limit the input frequency. The Counter values are stored into a not volatile memory so the power can switched off without changing the Counter values.

7.1. Counters overflow

The totalizer overflow it's at 4294967295 (hexadecimal value 0xFFFFFFFF), so another pulse will put the value to 0.

8. Digital Outputs (only ZE-4DI-2AI-2DO and Z-4DI-2AI-2DO)

Two Digital Outputs can be set by Modbus register and by Webserver (only ZE-4DI-2AI-2DO).
The digital outputs are made by two relays (max 2A output).

8.1. Digital Outputs fail mode

The Digital Outputs support the standard Seneca out fail mod e: if there isn't a Modbus RTU/TCP-IP communication for a configured time, the Outputs are set to a safe values.

The idea behind this police is that the absence of communication means that something is wrong and therefore the outputs must be set to the fail state.

9. RS485 and USB Serial Communication

All the models features two serial communications RS485 ports, also the USB port can be used for communication purpose.

The RS485 ports and USB port can work all at the same time and are independent.

The protocol supported for both ports is the Modbus RTU slave, for more information about this protocol please refer to Modbus specification website:

http://www.modbus.org/specs.php

The default configuration for RS485 ports #1 and #2 is:

- Modbus station address: 1
- baud rate: 38400 baud
- parity: none
- data bit: 8
- stop bit: 1

The configuration for USB port is fixed and not configurable:

- Modbus station address: 1
- baud rate: 115200 baud
- parity: none
- data bit: 8
- stop bit: 1

For using the USB Port you must install the USB driver first (see chapter 15)

10. Ethernet communication (only ZE-2AI and ZE-4DI-2AI-2DO)

The ZE models include a fast Ethernet port (10-100Mbit), the TCP-IP integrated protocol supports:

-Static IP address or DHCP

-Gateway support

-Modbus TCP-IP server protocol (support up to 4 Modbus TCP-IP client at the same time)

-Webserver (with user / password protection)

The default configuration for the Ethernet port is:

- Static Ip address 192.168.90.101
- Modbus station address: 1
- Modbus TCP-IP client 1 port 502
- Modbus TCP-IP client 2 port 503
- Modbus TCP-IP client 3 port 504
- Modbus TCP-IP client 4 port 505

WARNING!

BEFORE CONNECT A ZE MODULE BE SURE THAT THE IP ADDRESS 192.168.90.101 IT'S NOT USED BY ANOTHER ETHERNET DEVICE.

10.1. Static IP address and DHCP

The default IP address is the static 192.168.90.101, it's also possible to obtain an IP and a Gateway address from a DHCP server. Typically a DHCP server it's always active into a Router (a range of address are reserved for the internal DHCP server).

Using a DHCP can create problem for a connection with ZE module because the IP can change without notice (after a timeout).

11. Modbus RTU and Modbus TCP-IP registers map

All registers are “Holding register” (Read Modbus function 3) with the convention that the first register is the 40001 address.

The following Modbus functions are supported:

Read Single Modbus Register (function 3)

Write Single Modbus Register (function 6)

Write Multiple Modbus Registers (function 16)

Read/write Coil status and Input status read are supported too.

All values in 32bits are stored into 2 consecutive registers, for example:

Totalizer 1 in unsigned 32 bits is stored into registers 40016 and 40017, the Most significant word is the register 40016, the less significant word is the 40017.

So the 32bits value is obtained by the following relation:

$$Totalizer1 = Reg(40017) + (Reg(40016) \times 2^{16}) = Reg(40017) + (Reg(40016) \times 65536)$$

11.1. Tables abbreviations

In the following tables this abbreviations are used:

“MS” = Most significant
“LS” = Less significant
“MSB” = Most significant Byte
“LSB” = Less significant Byte
“MSW” = Most significant Word (16 bits)
“LSW” = Less significant Word (16 bits)
“R” = Read only register
“RW” = Read and write register
“Unsigned 16 bits” = Unsigned 16 bits register
“Signed 16 bits” = 16 bits register with sign

"Float 32 bits" = Floating point single precision 32 bits (IEEE 754) register
"0x" = Hexadecimal Value

11.2. ZE-4DI-2AI-2DO Modbus TCP-IP and Modbus RTU register addresses

Register Name	Comment	Register Type	R/W	Default value	Modbus Address
Machine ID	Identification Code 0x5100 model ZE-4DI-2AI-2DO	Unsigned 16bits	R	0x5100	40001
FW Code	FW Code revision	Unsigned 16bits	R	-	40002
Status	bit 0=OUTPUT FAIL bit 1=AIN1 underflow bit 2=AIN1 overflow bit 3=AIN1 underflow bit 4=AIN1 overflow bit 15-8= DIP switch 1..8 status	Unsigned 16bits	R	0	40003
AIN1	Analog input 1 Electrical value: mV or uA	Unsigned 16bits	R	0	40004
AIN1 ENG	Analog input 1 Scaled value	Unsigned 16bits	R	0	40005
AIN2	Analog input 2 Electrical value: mV or uA	Unsigned 16bits	R	0	40006
AIN2 ENG	Analog input 2 Scaled value	Unsigned 16bits	R	0	40007
OUTPUTS	Bit 0=OUTPUT1 Bit 1=OUTPUT2	Unsigned 16bits	R/W	0	40008
OUTPUT1	0=OUTPUT NOT EXCITED 1=OUTPUT EXCITED	Unsigned 16bits	R/W	0	40009
OUTPUT2	0=OUTPUT NOT EXCITED 1=OUTPUT EXCITED	Unsigned 16bits	R/W	0	40010
INPUTS	Bit 0=INPUT1 Bit 1=INPUT2 Bit 2=INPUT3 Bit 3=INPUT4	Unsigned 16bits	R	0	40011
INPUT1	0=INPUT LOW 1=INPUT HIGH	Unsigned 16bits	R	0	40012
INPUT2	0=INPUT LOW 1=INPUT HIGH	Unsigned 16bits	R	0	40013
INPUT3	0=INPUT LOW 1=INPUT HIGH	Unsigned 16bits	R	0	40014
INPUT4	0=INPUT LOW 1=INPUT HIGH	Unsigned 16bits	R	0	40014
TOTALIZER 1	Totalizer 1	Unsigned 32 bits	R/W	0	40016 (MS) 40017

					(LS)
TOTALIZER 2	Totalizer 2	Unsigned 32 bits	R/W	0	40018 (MS) 40019 (LS)
TOTALIZER 3	Totalizer 3	Unsigned 32 bits	R/W	0	40020 (MS) 40021 (LS)
TOTALIZER 4	Totalizer 4	Unsigned 32 bits	R/W	0	40022 (MS) 40023 (LS)
COUNTER 1	Counter 1	Unsigned 32 bits	R/W	0	40024 (MS) 40025 (LS)
COUNTER 2	Counter 2	Unsigned 32 bits	R/W	0	40026 (MS) 40027 (LS)
COUNTER 3	Counter 3	Unsigned 32 bits	R/W	0	40028 (MS) 40029 (LS)
COUNTER 4	Counter 4	Unsigned 32 bits	R/W	0	40030 (MS) 40031 (LS)
IP ADDR. 0	Actual IP address, 1st number	Unsigned 16 bits	R	192	40032
IP ADDR. 1	Actual IP address, 2nd number	Unsigned 16 bits	R	168	40033
IP ADDR. 2	Actual IP address, 3rd number	Unsigned 16 bits	R	90	40034
IP ADDR. 3	Actual IP address, 4th number	Unsigned 16 bits	R	101	40035
IP MASK 0	Actual IP mask, 1st number	Unsigned 16 bits	R	255	40036
IP MASK 1	Actual IP mask, 2nd number	Unsigned 16 bits	R	255	40037
IP MASK 2	Actual IP mask, 3rd number	Unsigned 16 bits	R	255	40038
IP MASK 3	Actual IP mask, 4th number	Unsigned 16 bits	R	255	40039
IP GATEWAY 0	Actual IP gateway, 1st number	Unsigned 16 bits	R	192	40040
IP GATEWAY 1	Actual IP gateway, 2nd number	Unsigned 16 bits	R	168	40041
IP GATEWAY 2	Actual IP gateway , 3rd number	Unsigned 16 bits	R	90	40042
IP GATEWAY 3	Actual IP gateway , 4th number	Unsigned 16 bits	R	1	40043
MAC ADDR.0	MAC address, 1st number (hexadecimal interpretation)	Unsigned 16 bits	R	-	40044

MAC ADDR.1	MAC address, 2nd number (hexadecimal interpretation)	Unsigned 16 bits	R	-	40045
MAC ADDR.2	MAC address, 3rd number (hexadecimal interpretation)	Unsigned 16 bits	R	-	40046
AIN1 ADC	Analog input 1 ADC value	Unsigned 16 bits	R	0	40047
AIN2 ADC	Analog input 2 ADC value	Unsigned 16 bits	R	0	40048
AIN INPUT SPEED	Analog input speed. Measure unit is ms	Unsigned 16 bits	R/W	10	40101
AIN1 FILTER	Number of samples for the filter (moving average filter)	Unsigned 16 bits	R/W	32	40102
AIN1 TYPE	Analog input 1 mode 0=mA 1=mV	Unsigned 16 bits	R/W	1	40103
AIN1 START SCALE	Start scale (electrical) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	0	40104
AIN1 STOP SCALE	Stop scale (electrical) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40105
AIN1 ENG. START SCALE	Start scale (engineering) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	0	40106
AIN1 ENG. STOP SCALE	Stop scale (engineering) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40107
AIN2 FILTER	Number of samples for the Analog 2 filter (moving average filter)	Unsigned 16 bits	R/W	32	40108
AIN2 TYPE	Analog input 2 mode 0=mA 1=mV	Unsigned 16 bits	R/W	1	40109
AIN2 START SCALE	Start scale (electrical) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	0	40110
AIN2 STOP SCALE	Stop scale (electrical) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40111
AIN2 ENG. START SCALE	Start scale (engineering) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	0	40112
AIN2 ENG. STOP SCALE	Stop scale (engineering) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40113
DIN1 FILTER	Digital input 1 filter in ms	Unsigned 16 bits	R/W	100	40114
DIN2 FILTER	Digital input 2 filter in ms	Unsigned 16 bits	R/W	100	40115
DIN3 FILTER	Digital input 3 filter in ms	Unsigned 16 bits	R/W	100	40116
DIN4 FILTER	Digital input 4 filter in ms	Unsigned 16 bits	R/W	100	40117
DIN NPN/PNP	Digital input type: 0=NPN, 1=PNP	Unsigned 16 bits	R/W	0	40118

DOUT FAIL MODE	Digital output fail mode: 0=disabled 1=enabled (fail condition: if there is no Modbus communication through all Modbus port for a time greater than «timeout start fail»)	Unsigned 16 bits	R/W	0	40119
DOUT FAIL TMO	Timeout start fail for digital outputs (in seconds)	Unsigned 16 bits	R/W	1	40120
DOUT1 FAIL VALUE	Digital output1 value in fail case.	Unsigned 16 bits	R/W	0	40121
DOUT2 FAIL VALUE	Digital output2 value in fail case.	Unsigned 16 bits	R/W	0	40122
IP DHCP	0=Ethernet IP is static 1=Ethernet IP is acquired from a DHCP server	Unsigned 16 bits	R/W	0	40123
IP ADDRESS 0-1	Most significant byte=IP address 0 (if static) Less significant byte=IP address 1 (if static)	Unsigned 16 bits	R/W	192.168	40124
IP ADDRESS 2-3	Most significant byte=IP address 2 (if static). Less significant byte=IP address 3 (if static)	Unsigned 16 bits	R/W	90.101	40125
IP MASK 0-1	Most significant byte=IP mask 0 (if static) Less significant byte=IP mask 1 (if static)	Unsigned 16 bits	R/W	255.255	40126
IP MASK 2-3	Most significant byte=IP mask 2 (if static) Less significant byte=IP mask 3 (if static)	Unsigned 16 bits	R/W	255.0	40127
IP GATEWAY 0-1	Most significant byte=IP gateway 0 (if static). Less significant byte=IP gateway 1 (if static).	Unsigned 16 bits	R/W	192.168	40128
IP GATEWAY 2-3	Most significant byte=IP gateway 2 (if static). Less significant byte=IP gateway 3 (if static).	Unsigned 16 bits	R/W	90.1	40129
TCP/IP PORT 1	Port of TCP/IP client 1	Unsigned 16 bits	R/W	502	40130
TCP/IP TMO 1	Timeout of TCP/IP port 1 (in ms)	Unsigned 16 bits	R/W	100	40131
TCP/IP ADDR 1	Modbus address for TCP/IP port 1 (MSB)	Unsigned 16 bits	R/W	1	40132
485#1 BAUDRATE	Baudrate value for RS485 port 1 (baudrate /10, so write 3840 for 38400 baud etc…)	Unsigned 16 bits	R/W	3840	40133
485#1 PARITY / STOP BITS	PARITY=MSB (0=no parity, 1=odd, 2=even) STOP BITS=LSB (0=1 stop bit, 1=2 stop bits)	Unsigned 16 bits	R/W	None 1 stop bit	40134
485#1 TIMEOUT	Timeout of RS485 port 1 in ms	Unsigned 16 bits	R/W	100	40135

485#2 BAUDRATE	Baudrate value for RS485 port 2 (baudrate /10, so write 3840 for 38400 baud etc…)	Unsigned 16 bits	R/W	3840	40136
485#2 PARITY / STOP BITS	PARITY=MSB (0=no parity, 1=odd, 2=even) STOP BITS=LSB (0=1 stop bit, 1=2 stop bits)	Unsigned 16 bits	R/W	None 1 stop bit	40137
485#2 TIMEOUT	Timeout of RS485 port 2 in ms	Unsigned 16 bits	R/W	100	40138
485#1 ADDR 485#2 ADDR	MODBUS ADDR. 485#1=MSB MODBUS ADDR. 485#2=LSB	Unsigned 16 bits	R/W	0x0101	40139
TCP/IP PORT 2	Port of TCP/IP client 2	Unsigned 16 bits	R/W	503	40901
TCP/IP TMO 2	Timeout of TCP/IP port 2 (in ms)	Unsigned 16 bits	R/W	100	40902
TCP/IP ADDR 2	Modbus address for TCP/IP port 2 (MSB)	Unsigned 16 bits	R/W	1	40903
TCP/IP PORT 3	Port of TCP/IP client 3	Unsigned 16 bits	R/W	504	40904
TCP/IP TMO 3	Timeout of TCP/IP port 3 (in ms)	Unsigned 16 bits	R/W	100	40905
TCP/IP ADDR 3	Modbus address for TCP/IP port 3 (MSB)	Unsigned 16 bits	R/W	1	40906
TCP/IP PORT 4	Port of TCP/IP client 4	Unsigned 16 bits	R/W	505	40907
TCP/IP TMO 4	Timeout of TCP/IP port 4 (in ms)	Unsigned 16 bits	R/W	100	40908
TCP/IP ADDR 4	Modbus address for TCP/IP port 4 (MSB)	Unsigned 16 bits	R/W	1	40909
WEBSERVER PORT	Webserver Port	Unsigned 16 bits	R/W	80	40951
COMMAND	Command Register	Unsigned 16 bits	R/W	0	41001
COMMAND AUX1	Auxiliary 1 Command Register	Unsigned 16 bits	R/W	0	41002
COMMAND AUX2	Auxiliary 2 Command Register	Unsigned 16 bits	R/W	0	41003

The Command register (address 41001) allows to perform commands.

Note that the following numeric commands are written in hexadecimal format!

- **to save EEPROM configuration**, write 0x0001 on reg. 41001

- **to reset the device**, write 0x0005 on reg. 41001

- **to load factory default**, write 0x0006 on reg. 41001

- **to clear totalizer 1**, write 0x0007 on reg. 41001

- **to clear totalizer 2**, write 0x0008 on reg. 41001

- **to clear totalizer 3**, write 0x0009 on reg. 41001

- **to clear totalizer 4**, write 0x000A on reg. 41001

- **to clear counter 1**, write 0x000B on reg. 41001

- **to clear counter 2**, write 0x000C

- **to clear counter 3**, write 0x000D

- **to clear counter 4**, write 0x000E

- **to set a 32 bits-value in the totalizer 1**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x000F on reg. 41001.

- **to set a 32 bit-value in the totalizer 2**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0010 on reg. 41001.

- **to set a 32 bit-value in the totalizer 3**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0011 on reg. 41001.

- **to set a 32 bit-value in the totalizer 4**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0012 on reg. 41001.

- **to set a 32 bit-value in the counter 1**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0013 on reg. 41001.

- **to set a 32 bit-value in the counter 2**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0014 on reg. 41001.

- **to set a 32 bit-value in the counter 3**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0015 on reg. 41001.

- **to set a 32 bit-value in the counter 4**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0016 on reg. 41001.

11.3. ZE-2AI Modbus TCP-IP and Modbus RTU register addresses

Register Name	Comment	Register Type	R/W	Default value	Modbus Address
Machine ID	Identification Code 0x5200: ZE-2AI	Unsigned 16bits	R	0x5200	40001
FW Code	FW Code revision	Unsigned 16bits	R	-	40002
Status	bit 0=OUTPUT FAIL	Unsigned 16bits	R	0	40003

	bit 1=AIN1 underflow bit 2=AIN1 overflow bit 3=AIN1 underflow bit 4=AIN1 overflow bit 15-8= DIP switch 1..8 status				
AIN1	Analog input 1 Electrical value: mV or uA	Unsigned 16bits	R	0	40004
AIN1 ENG	Analog input 1 Scaled value	Unsigned 16bits	R	0	40005
AIN2	Analog input 2 Electrical value: mV or uA	Unsigned 16bits	R	0	40006
AIN2 ENG	Analog input 2 Scaled value	Unsigned 16bits	R	0	40007
IP ADDR. 0	Actual IP address, 1st number	Unsigned 16 bits	R	192	40032
IP ADDR. 1	Actual IP address, 2nd number	Unsigned 16 bits	R	168	40033
IP ADDR. 2	Actual IP address, 3rd number	Unsigned 16 bits	R	90	40034
IP ADDR. 3	Actual IP address, 4th number	Unsigned 16 bits	R	101	40035
IP MASK 0	Actual IP mask, 1st number	Unsigned 16 bits	R	255	40036
IP MASK 1	Actual IP mask, 2nd number	Unsigned 16 bits	R	255	40037
IP MASK 2	Actual IP mask, 3rd number	Unsigned 16 bits	R	255	40038
IP MASK 3	Actual IP mask, 4th number	Unsigned 16 bits	R	255	40039
IP GATEWAY 0	Actual IP gateway, 1st number	Unsigned 16 bits	R	192	40040
IP GATEWAY 1	Actual IP gateway, 2nd number	Unsigned 16 bits	R	168	40041
IP GATEWAY 2	Actual IP gateway , 3rd number	Unsigned 16 bits	R	90	40042
IP GATEWAY 3	Actual IP gateway , 4th number	Unsigned 16 bits	R	1	40043
MAC ADDR.0	MAC address, 1st number (hexadecimal interpretation)	Unsigned 16 bits	R	-	40044
MAC ADDR.1	MAC address, 2nd number (hexadecimal interpretation)	Unsigned 16 bits	R	-	40045
MAC ADDR.2	MAC address, 3rd number (hexadecimal interpretation)	Unsigned 16 bits	R	-	40046
AIN1 ADC	Analog input 1 ADC value	Unsigned 16 bits	R	0	40047
AIN2 ADC	Analog input 2 ADC value	Unsigned 16 bits	R	0	40048
AIN INPUT SPEED	Analog input speed. Measure unit is ms	Unsigned 16 bits	R/W	10	40101
AIN1 FILTER	Number of samples for the filter (moving average filter)	Unsigned 16 bits	R/W	32	40102
AIN1 TYPE	Analog input 1 mode 0=mA	Unsigned 16 bits	R/W	1	40103

	1=mV				
AIN1 START SCALE	Start scale (electrical) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	0	40104
AIN1 STOP SCALE	Stop scale (electrical) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40105
AIN1 ENG. START SCALE	Start scale (engineering) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	0	40106
AIN1 ENG. STOP SCALE	Stop scale (engineering) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40107
AIN2 FILTER	Number of samples for the Analog 2 filter (moving average filter)	Unsigned 16 bits	R/W	32	40108
AIN2 TYPE	Analog input 2 mode 0=mA 1=mV	Unsigned 16 bits	R/W	1	40109
AIN2 START SCALE	Start scale (electrical) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	0	40110
AIN2 STOP SCALE	Stop scale (electrical) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40111
AIN2 ENG. START SCALE	Start scale (engineering) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	0	40112
AIN2 ENG. STOP SCALE	Stop scale (engineering) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40113
IP DHCP	0=Ethernet IP is static 1=Ethernet IP is acquired from a DHCP server	Unsigned 16 bits	R/W	0	40123
IP ADDRESS 0-1	Most significant byte=IP address 0 (if static) Less significant byte=IP address 1 (if static)	Unsigned 16 bits	R/W	192.168	40124
IP ADDRESS 2-3	Most significant byte=IP address 2 (if static). Less significant byte=IP address 3 (if static)	Unsigned 16 bits	R/W	90.101	40125
IP MASK 0-1	Most significant byte=IP mask 0 (if static) Less significant byte=IP mask 1 (if static)	Unsigned 16 bits	R/W	255.255	40126
IP MASK 2-3	Most significant byte=IP mask 2 (if static) Less significant byte=IP mask 3 (if static)	Unsigned 16 bits	R/W	255.0	40127
IP GATEWAY 0-1	Most significant byte=IP gateway 0 (if static). Less significant byte=IP gateway 1 (if static).	Unsigned 16 bits	R/W	192.168	40128
IP GATEWAY 2-3	Most significant byte=IP gateway 2 (if static). Less significant byte=IP gateway 3 (if static).	Unsigned 16 bits	R/W	90.1	40129
TCP/IP PORT 1	Port of TCP/IP client 1	Unsigned 16 bits	R/W	502	40130

TCP/IP TMO 1	Timeout of TCP/IP port 1 (in ms)	Unsigned 16 bits	R/W	100	40131
TCP/IP ADDR 1	Modbus address for TCP/IP port 1 (MSB)	Unsigned 16 bits	R/W	1	40132
485#1 BAUDRATE	Baudrate value for RS485 port 1 (baudrate /10, so write 3840 for 38400 baud etc…)	Unsigned 16 bits	R/W	3840	40133
485#1 PARITY / STOP BITS	PARITY=MSB (0=no parity, 1=odd, 2=even) STOP BITS=LSB (0=1 stop bit, 1=2 stop bits)	Unsigned 16 bits	R/W	None 1 stop bit	40134
485#1 TIMEOUT	Timeout of RS485 port 1 in ms	Unsigned 16 bits	R/W	100	40135
485#2 BAUDRATE	Baudrate value for RS485 port 2 (baudrate /10, so write 3840 for 38400 baud etc…)	Unsigned 16 bits	R/W	3840	40136
485#2 PARITY / STOP BITS	PARITY=MSB (0=no parity, 1=odd, 2=even) STOP BITS=LSB (0=1 stop bit, 1=2 stop bits)	Unsigned 16 bits	R/W	None 1 stop bit	40137
485#2 TIMEOUT	Timeout of RS485 port 2 in ms	Unsigned 16 bits	R/W	100	40138
485#1 ADDR ***485#2 ADDR***	MODBUS ADDR. 485#1=MSB MODBUS ADDR. 485#2=LSB	Unsigned 16 bits	R/W	0x0101	40139
TCP/IP PORT 2	Port of TCP/IP client 2	Unsigned 16 bits	R/W	503	40901
TCP/IP TMO 2	Timeout of TCP/IP port 2 (in ms)	Unsigned 16 bits	R/W	100	40902
TCP/IP ADDR 2	Modbus address for TCP/IP port 2 (MSB)	Unsigned 16 bits	R/W	1	40903
TCP/IP PORT 3	Port of TCP/IP client 3	Unsigned 16 bits	R/W	504	40904
TCP/IP TMO 3	Timeout of TCP/IP port 3 (in ms)	Unsigned 16 bits	R/W	100	40905
TCP/IP ADDR 3	Modbus address for TCP/IP port 3 (MSB)	Unsigned 16 bits	R/W	1	40906
TCP/IP PORT 4	Port of TCP/IP client 4	Unsigned 16 bits	R/W	505	40907
TCP/IP TMO 4	Timeout of TCP/IP port 4 (in ms)	Unsigned 16 bits	R/W	100	40908
TCP/IP ADDR 4	Modbus address for TCP/IP port 4 (MSB)	Unsigned 16 bits	R/W	1	40909
WEBSERVER PORT	Webserver Port	Unsigned 16 bits	R/W	80	40951
COMMAND	Command Register	Unsigned 16 bits	R/W	0	41001
COMMAND AUX1	Auxiliary 1 Command Register	Unsigned 16 bits	R/W	0	41002
COMMAND AUX2	Auxiliary 2 Command Register	Unsigned 16 bits	R/W	0	41003

The Command register (address 41001) allows to perform commands.

Note that the following numeric commands are written in hexadecimal format!

- **to save EEPROM configuration**, write 0x0001 on reg. 41001

- **to reset the device**, write 0x0005 on reg. 41001

- **to load factory default**, write 0x0006 on reg. 41001

11.4. Z-4DI-2AI-2DO Modbus RTU register addresses

Register Name	Comment	Register Type	R/W	Default value	Modbus Address
Machine ID	Identification Code 0x5000 model Z-4DI-2AI-2DO	Unsigned 16bits	R	0x5100	40001
FW Code	FW Code revision	Unsigned 16bits	R	-	40002
Status	bit 0=OUTPUT FAIL bit 1=AIN1 underflow bit 2=AIN1 overflow bit 3=AIN1 underflow bit 4=AIN1 overflow bit 15-8= DIP switch 1..8 status	Unsigned 16bits	R	0	40003
AIN1	Analog input 1 Electrical value: mV or uA	Unsigned 16bits	R	0	40004
AIN1 ENG	Analog input 1 Scaled value	Unsigned 16bits	R	0	40005
AIN2	Analog input 2 Electrical value: mV or uA	Unsigned 16bits	R	0	40006
AIN2 ENG	Analog input 2 Scaled value	Unsigned 16bits	R	0	40007
OUTPUTS	Bit 0=OUTPUT1 Bit 1=OUTPUT2	Unsigned 16bits	R/W	0	40008
OUTPUT1	0=OUTPUT NOT EXCITED 1=OUTPUT EXCITED	Unsigned 16bits	R/W	0	40009
OUTPUT2	0=OUTPUT NOT EXCITED 1=OUTPUT EXCITED	Unsigned 16bits	R/W	0	40010
INPUTS	Bit 0=INPUT1 Bit 1=INPUT2 Bit 2=INPUT3 Bit 3=INPUT4	Unsigned 16bits	R	0	40011
INPUT1	0=INPUT LOW 1=INPUT HIGH	Unsigned 16bits	R	0	40012
INPUT2	0=INPUT LOW 1=INPUT HIGH	Unsigned 16bits	R	0	40013
INPUT3	0=INPUT LOW 1=INPUT HIGH	Unsigned 16bits	R	0	40014
INPUT4	0=INPUT LOW 1=INPUT HIGH	Unsigned 16bits	R	0	40014
TOTALIZER 1	Totalizer 1	Unsigned 32 bits	R/W	0	40016 (MS) 40017 (LS)
TOTALIZER 2	Totalizer 2	Unsigned 32 bits	R/W	0	40018 (MS) 40019 (LS)
TOTALIZER 3	Totalizer 3	Unsigned 32 bits	R/W	0	40020 (MS) 40021 (LS)

TOTALIZER 4	Totalizer 4	Unsigned 32 bits	R/W	0	40022 (MS) 40023 (LS)
COUNTER 1	Counter 1	Unsigned 32 bits	R/W	0	40024 (MS) 40025 (LS)
COUNTER 2	Counter 2	Unsigned 32 bits	R/W	0	40026 (MS) 40027 (LS)
COUNTER 3	Counter 3	Unsigned 32 bits	R/W	0	40028 (MS) 40029 (LS)
COUNTER 4	Counter 4	Unsigned 32 bits	R/W	0	40030 (MS) 40031 (LS)
AIN1 ADC	Analog input 1 ADC value	Unsigned 16 bits	R	0	40047
AIN2 ADC	Analog input 2 ADC value	Unsigned 16 bits	R	0	40048
AIN INPUT SPEED	Analog input speed. Measure unit is ms	Unsigned 16 bits	R/W	10	40101
AIN1 FILTER	Number of samples for the filter (moving average filter)	Unsigned 16 bits	R/W	32	40102
AIN1 TYPE	Analog input 1 mode 0=mA 1=mV	Unsigned 16 bits	R/W	1	40103
AIN1 START SCALE	Start scale (electrical) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	0	40104
AIN1 STOP SCALE	Stop scale (electrical) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40105
AIN1 ENG. START SCALE	Start scale (engineering) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	0	40106
AIN1 ENG. STOP SCALE	Stop scale (engineering) for analog input 1: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40107
AIN2 FILTER	Number of samples for the Analog 2 filter (moving average filter)	Unsigned 16 bits	R/W	32	40108
AIN2 TYPE	Analog input 2 mode 0=mA 1=mV	Unsigned 16 bits	R/W	1	40109
AIN2 START SCALE	Start scale (electrical) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	0	40110
AIN2 STOP SCALE	Stop scale (electrical) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40111
AIN2 ENG. START SCALE	Start scale (engineering) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	0	40112

AIN2 ENG. STOP SCALE	Stop scale (engineering) for analog input 2: expressed in mV or uA	Unsigned 16 bits	R/W	30000	40113
DIN1 FILTER	Digital input 1 filter in ms	Unsigned 16 bits	R/W	100	40114
DIN2 FILTER	Digital input 2 filter in ms	Unsigned 16 bits	R/W	100	40115
DIN3 FILTER	Digital input 3 filter in ms	Unsigned 16 bits	R/W	100	40116
DIN4 FILTER	Digital input 4 filter in ms	Unsigned 16 bits	R/W	100	40117
DIN NPN/PNP	Digital input type: 0=NPN, 1=PNP	Unsigned 16 bits	R/W	0	40118
DOUT FAIL MODE	Digital output fail mode: 0=disabled 1=enabled (fail condition: if there is no Modbus communication through all Modbus port for a time greater than «timeout start fail»)	Unsigned 16 bits	R/W	0	40119
DOUT FAIL TMO	Timeout start fail for digital outputs (in seconds)	Unsigned 16 bits	R/W	1	40120
DOUT1 FAIL VALUE	Digital output1 value in fail case.	Unsigned 16 bits	R/W	0	40121
DOUT2 FAIL VALUE	Digital output2 value in fail case.	Unsigned 16 bits	R/W	0	40122
485#1 BAUDRATE	Baudrate value for RS485 port 1 (baudrate /10, so write 3840 for 38400 baud etc…)	Unsigned 16 bits	R/W	3840	40133
485#1 PARITY / STOP BITS	PARITY=MSB (0=no parity, 1=odd, 2=even) STOP BITS=LSB (0=1 stop bit, 1=2 stop bits)	Unsigned 16 bits	R/W	None 1 stop bit	40134
485#1 TIMEOUT	Timeout of RS485 port 1 in ms	Unsigned 16 bits	R/W	100	40135
485#2 BAUDRATE	Baudrate value for RS485 port 2 (baudrate /10, so write 3840 for 38400 baud etc…)	Unsigned 16 bits	R/W	3840	40136
485#2 PARITY / STOP BITS	PARITY=MSB (0=no parity, 1=odd, 2=even) STOP BITS=LSB (0=1 stop bit, 1=2 stop bits)	Unsigned 16 bits	R/W	None 1 stop bit	40137
485#2 TIMEOUT	Timeout of RS485 port 2 in ms	Unsigned 16 bits	R/W	100	40138
485#1 ADDR ***485#2 ADDR***	MODBUS ADDR. 485#1=MSB MODBUS ADDR. 485#2=LSB	Unsigned 16 bits	R/W	0x0101	40139
COMMAND	Command Register	Unsigned 16 bits	R/W	0	41001
COMMAND AUX1	Auxiliary 1 Command Register	Unsigned 16 bits	R/W	0	41002

COMMAND AUX2	Auxiliary 2 Command Register	Unsigned 16 bits	R/W	0	41003

The Command register (address 41001) allows to perform commands.

Note that the following numeric commands are written in hexadecimal format!

- **to save EEPROM configuration**, write 0x0001 on reg. 41001

- **to reset the device**, write 0x0005 on reg. 41001

- **to load factory default**, write 0x0006 on reg. 41001

- **to clear totalizer 1**, write 0x0007 on reg. 41001

- **to clear totalizer 2**, write 0x0008 on reg. 41001

- **to clear totalizer 3**, write 0x0009 on reg. 41001

- **to clear totalizer 4**, write 0x000A on reg. 41001

- **to clear counter 1**, write 0x000B on reg. 41001

- **to clear counter 2**, write 0x000C

- **to clear counter 3**, write 0x000D

- **to clear counter 4**, write 0x000E

- **to set a 32 bits-value in the totalizer 1**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x000F on reg. 41001.

- **to set a 32 bit-value in the totalizer 2**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0010 on reg. 41001.

- **to set a 32 bit-value in the totalizer 3**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0011 on reg. 41001.

- **to set a 32 bit-value in the totalizer 4**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0012 on reg. 41001.

- **to set a 32 bit-value in the counter 1**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0013 on reg. 41001.

- **to set a 32 bit-value in the counter 2**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0014 on reg. 41001.

- **to set a 32 bit-value in the counter 3**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0015 on reg. 41001.

- **to set a 32 bit-value in the counter 4**, write this desired value on reg. 41002 (MSW of the 32bits-value)-41003 (LSW of the 32bits-value) and then write 0x0016 on reg. 41001

12. THE WEBSERVER (only ZE-2AI and ZE-4DI-2AI-2DO)

The ZE module include a Webserver for configuring the module or for view the real time values.

The Webserver works with the following browser:

-Internet explorer

-Firefox

-Chrome

-Android

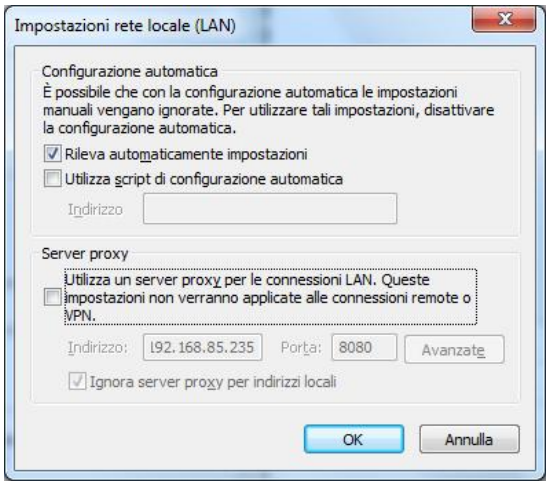
-Iphone/Ipad

The webserver can be protected by a user name and a password.

12.1. LOCAL CONNECTION TO THE ZE WEBSERVER

For connect an Ethernet device to the ZE Webserver you must have the two Ip addresses compatible.

Also you must disable the flag on the proxy server configuration into the browser:



For example if the ZE address is 192.168.90.101 with subnet mask 255.255.255.0 the other device must have the ip starting with 192.168.90, so for example 192.168.90.102 can works.

The ZE Ethernet device support the auto-switching mode so it's possible to connect an Ethernet device point to point without the need of a Router or Switch.

After that, open a browser and type:

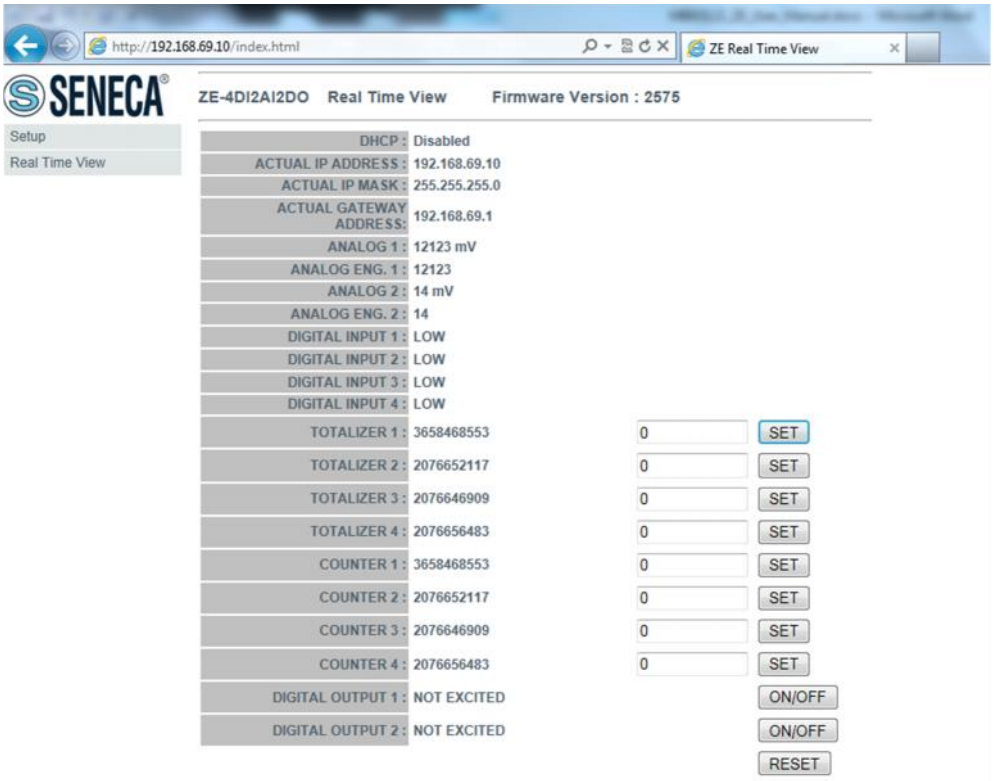
http://192.168.90.101:port

where port it's the port configured for the webserver (default 80), so the default is:

http://192.168.90.101:80

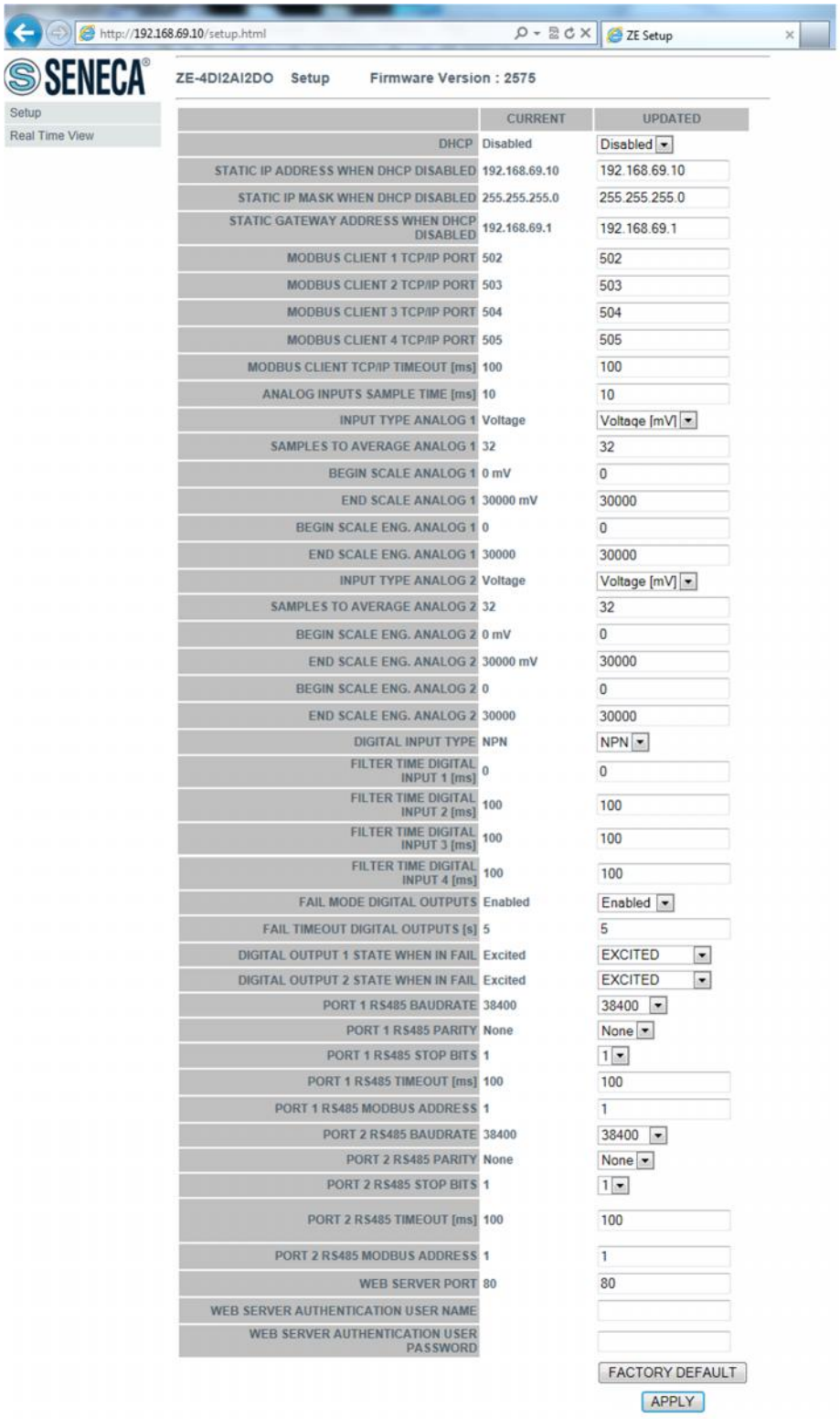
For connect a WiFi device to the ZE Webserver you need a Wifi access point or a WiFi router, in the case of a WiFi Router into the ZE configuration set the Gateway IP equals to the Router IP.

If the ip configuration it's made correctly the webserver appear:



12.2. CONFIGURING THE ZE MODULE WITH THE WEBSERVER

The Webserver can be used for configuring the ZE module, all parameters are visible clicking on “Setup” button to the left of the screen:



On the first column represents the parameter name, the second column (current) it's the current parameter value. The last column (updated) can be used for changing the current configuration.

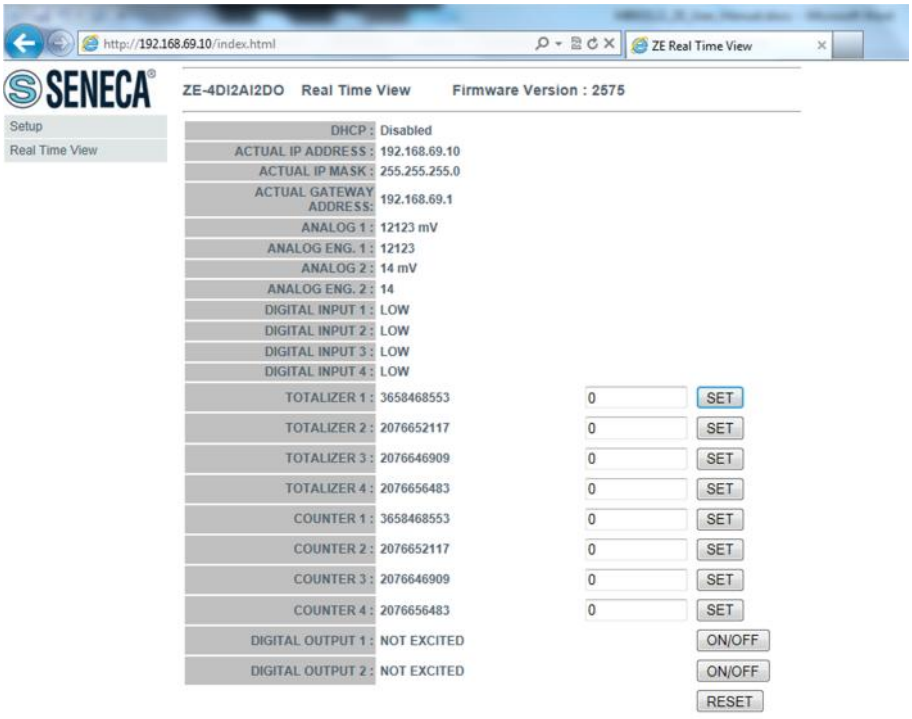
When a configuration it's made you must confirm with "APPLY", then the new configuration became operative.

WARNING!

REMEMBER ALWAYS TO CONFIGURE THE WEBSERVER AUTHENTICATION USER NAME AND PASSWORD FOR RESTRICT THE ACCESS TO THE WEBSERVER. IF YOU LEAVE THE TWO PARAMETERS TEXT BOXES BLANK NO AUTHENTICATION IT'S REQUIRED FOR WEBSERVER ACCESS. FOR SECURITY REASONS ONLY BY WEBSERVER IT'S POSSIBILE TO CHANGE THE AUTHENTICATION PARAMETERS.

12.3. REAL TIME VALUES ON THE WEBSERVER

The Webserver can be used also for view the real time values, the "Real Time view" page can be used also for changing the outputs, the counters and totalizers values:



12.4. CGI (common gateway interface) command in the Webserver

With the webserver it's possible to read variables or write digital output status, counters and totalizers values using CGI (Common Gateway Interface) line commands, that can be written on Web server page.

In the following example, at the http address 192.168.69.70, it is possible to read status of ZE digital inputs (binary: 1111, corresponding to decimal: 15) using the command "/readVar.cgi?dins" after the address.

12.4.1. CGI command for ZE-4DI-2AI-2DO

For CGI reading, use the follow sintax (192.168.90.101 is only the default ZE address):

http: //192.168.90.101 /readVar.cgi?<v1>&<v2>&...<vn>

where <v1>,<v2>,..<vn> can assume the following values:

***dins** : decimal value with bit 0 = din1, bit 1=din2, bit 2=din3, bit 3=din4*
***din1** : decimal value (0/1) depending on the state of digital input 1*
***din2** : decimal value (0/1) depending on the state of digital input 2*
***din3** : decimal value (0/1) depending on the state of digital input 3*
***din4** : decimal value (0/1) depending on the state of digital input 4*
***dout1** : decimal value (0/1) depending on the state of digital output 1*
***dout2** : decimal value (0/1) depending on the state of digital output 2*
***ain1** : decimal value with sign of analog input 1*
***aineng1** : decimal value with sign of engineering analog input 1*
***ain2** : decimal value with sign of analog input 2*

***aineng2** : decimal value with sign of engineering analog input 2*
***status** : decimal value of status modbus register*
***tot1** : decimal value of totalizer 1*
***tot2** : decimal value of totalizer 2*
***tot3** : decimal value of totalizer 3*
***tot4** : decimal value of totalizer 4*
***cnt1** : decimal value of counter 1*
***cnt2** : decimal value of counter 2*
***cnt3** : decimal value of counter 3*
***cnt4** : decimal value of counter 4*

For CGI writing, use the follow sintax (192.168.90.101 is only the default ZE address):

http://192.168.90.101/writeVar.cgi?<v1>=1&<v2>=2&...<vn>=1000

where <v1>,<v2>,..<vn> can assume the following values:

***dout1** : digital output 1 is excited if the numeric value is different of 0*
***dout2** : digital output 2 is excited if the numeric value is different of 0*
***tot1** : decimal value of totalizer 1*
***tot2** : decimal value of totalizer 2*
***tot3** : decimal value of totalizer 3*
***tot4** : decimal value of totalizer 4*
***cnt1** : decimal value of counter 1*
***cnt2** : decimal value of counter 2*
***cnt3** : decimal value of counter 3*
***cnt4** : decimal value of counter 4*

Example: to set digital output 1 to “closed” status, totalizer 1 to “7500” value and counter 3 to “5” value, command will be:

http://192.168.90.101/writeVar.cgi?dout1=1&tot1=7500&cnt3=5

12.4.2. CGI command for ZE-2AI

For CGI reading, use the follow sintax (192.168.90.101 is only the default ZE address):

http: //192.168.90.101 /readVar.cgi?<v1>&<v2>&...<vn>

where <v1>,<v2>,..<vn> can assume the following values:

***ain1** : decimal value with sign of analog input 1*
***aineng1** : decimal value with sign of engineering analog input 1*
***ain2** : decimal value with sign of analog input 2*
***aineng2** : decimal value with sign of engineering analog input 2*

status *: decimal value of status modbus register*

Note: No CGI writing are available.

Example: to read analog input 1 value and status register, command will be:

http://192.168.90.101/readVar.cgi?ain2&status

13. ACCESSING THE ZE-2AI OR ZE-4AI-2AI-2DO FROM INTERNET

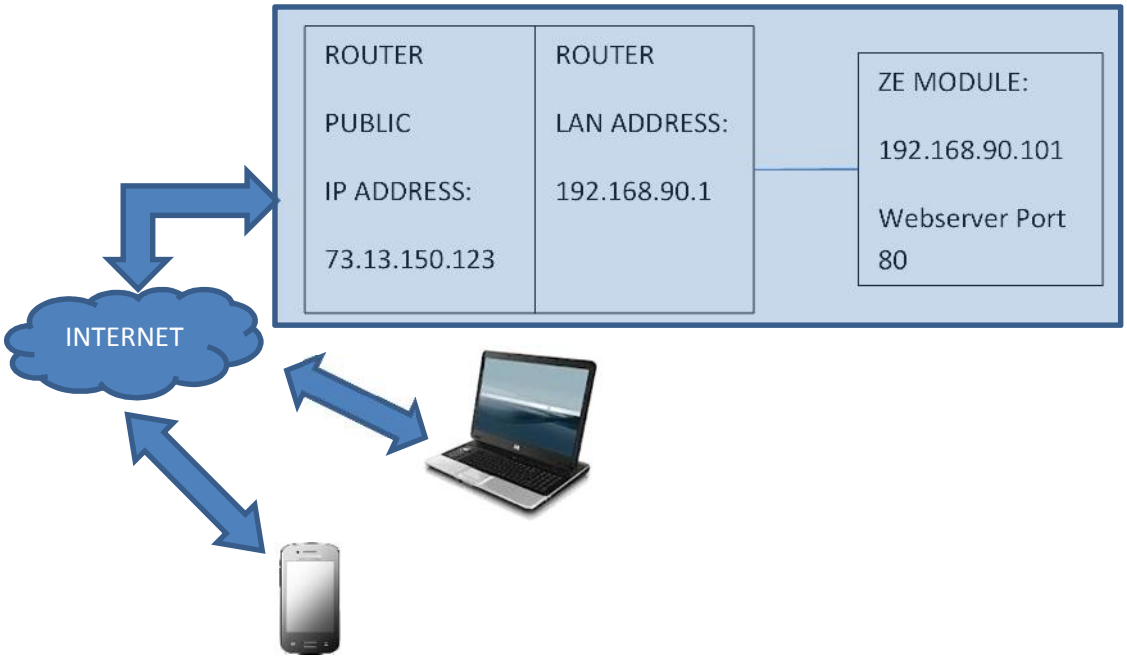
Using a ZE static ip address it's possible to configure the router for accessing a module from internet.

This operation it's known as "Virtual server " or "Port forwarding" refers to your Router documentation for more info.

The Ip address of your internet connection must have a static public ip address, if your public ip address isn't static you can obtain-it by using a Dynamic DNS like Dyndns (http://dyn.com/).

Take a look to this example:

The Router IP address is 192.168.90.1 and the ZE module address is 192.168.90.101 with the Webserver on port 80. The Router Public address is 73.13.150.123.



Now we must open the port 80 on the router and forwarding it to the IP 192.168.90.101:

So the configuration on the router must be:

IP ADDRESS	PRIVATE PORT	PUBLIC PORT	PROTOCOL
192.168.90.101	80	8080	UDP/TCP

With this Virtual Server entry, all Internet traffic on Port 8080 with ip address 73.13.150.123 will be redirected to ZE webserver on port 80 at IP Address 192.168.90.101.

So for accessing to the ZE Webserver using a browser you must enter

http://73.13.150.123:8080

A similar configuration can be used for Modbus TCP-IP access:

IP ADDRESS	PRIVATE PORT	PUBLIC PORT	PROTOCOL
192.168.90.101	502	502	UDP/TCP

14. THE KIT-USB

The KIT-USB can be obtained from Seneca (Can be bought also from the E-commorce Website www.seneca.it)

The kit contain:

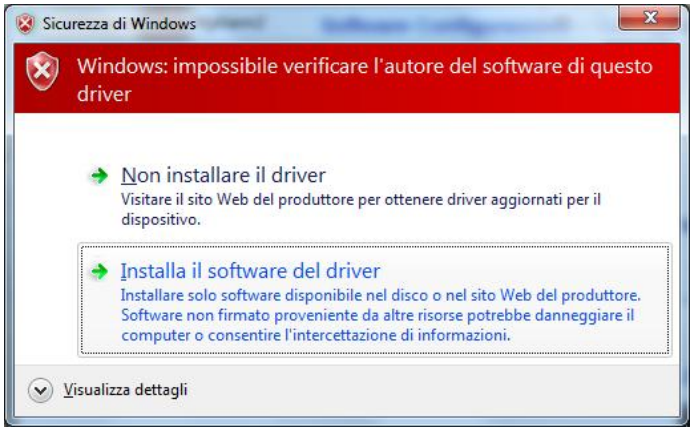
- A CD with the Easy Setup software (that contain the USB drivers)
- A standard mini-B USB Cable

  The Easy Setup software can also be freely downloaded from the website: www.seneca.it

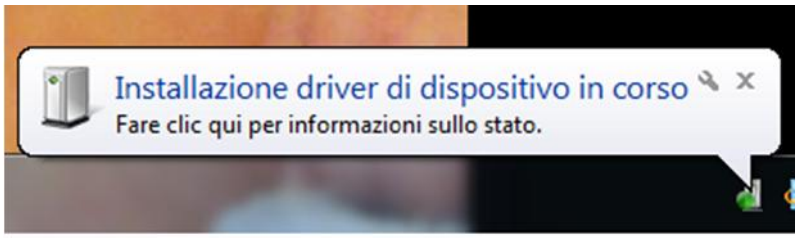
15. WINDOWS USB DRIVERS INSTALLATION

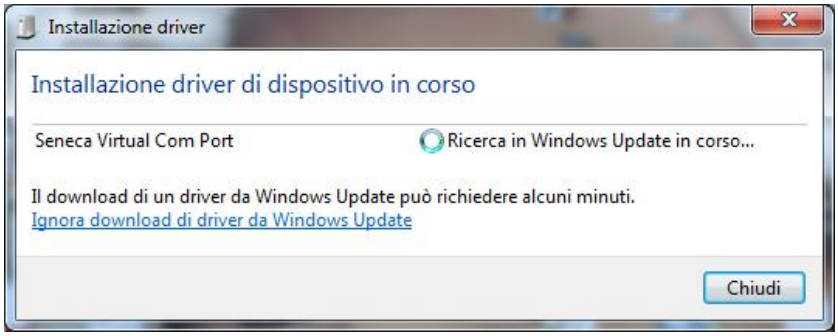
For installing the USB drivers follow this procedure:

- Install the Easy Setup software from the USB KIT CD (see chapter 14) or from the Seneca website (see chapter 16)
- At the end of the installation confirm the USB drivers installation, click on “install the driver software”:

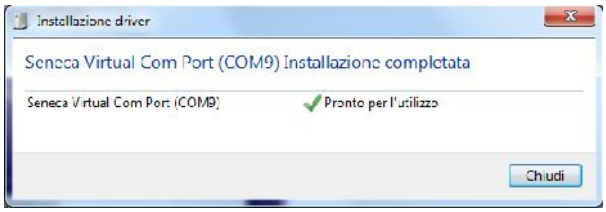


- Power up the ZE-4DI-2AI-2DO/ZE-2AI/ Z-4DI-2AI-2DO and connect the USB to the PC, the new hardware it’s detected:





To speed up the operation, press "ignore download drivers from Windows Update."
After about 2 minutes:

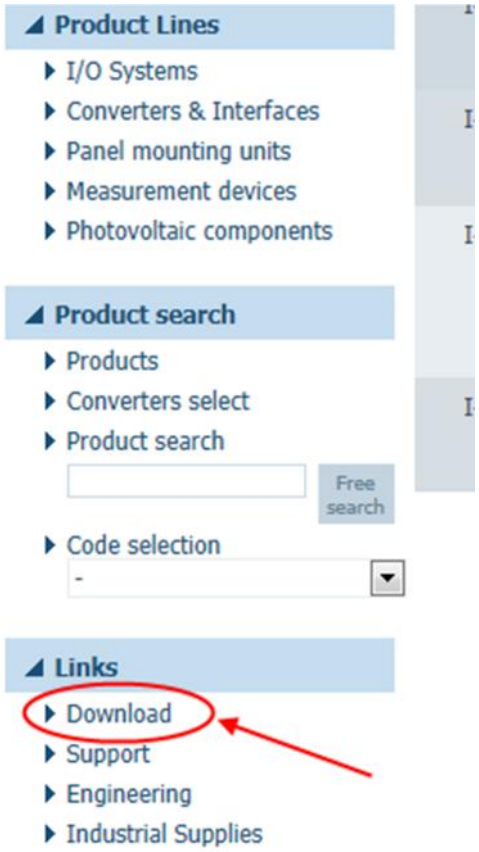


Now the device it’s connected to the PC.

The operation is performed only the first time that you connect the device.

16. EASY SETUP SOFTWARE for Windows

From the Website www.seneca.it can be downloaded free of charge the Easy Setup suite software, select Download from the Links section:



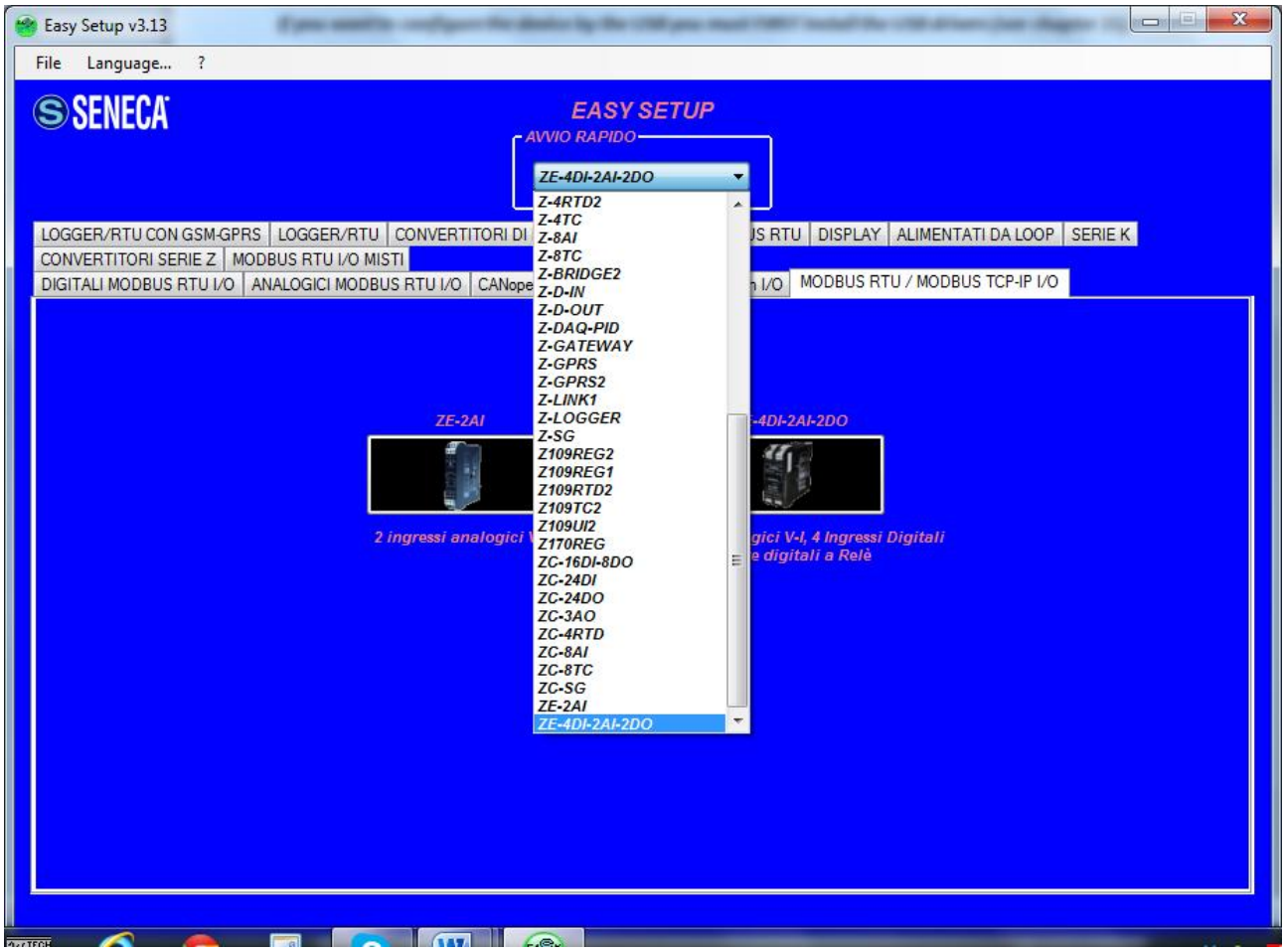
Then download the last Easy Setup version:

Easy Setup works on Windows XP 32/64 bits, Windows Vista 32/64 bits, Windows 7 32/64 bits, Windows 8 32/64 bits.

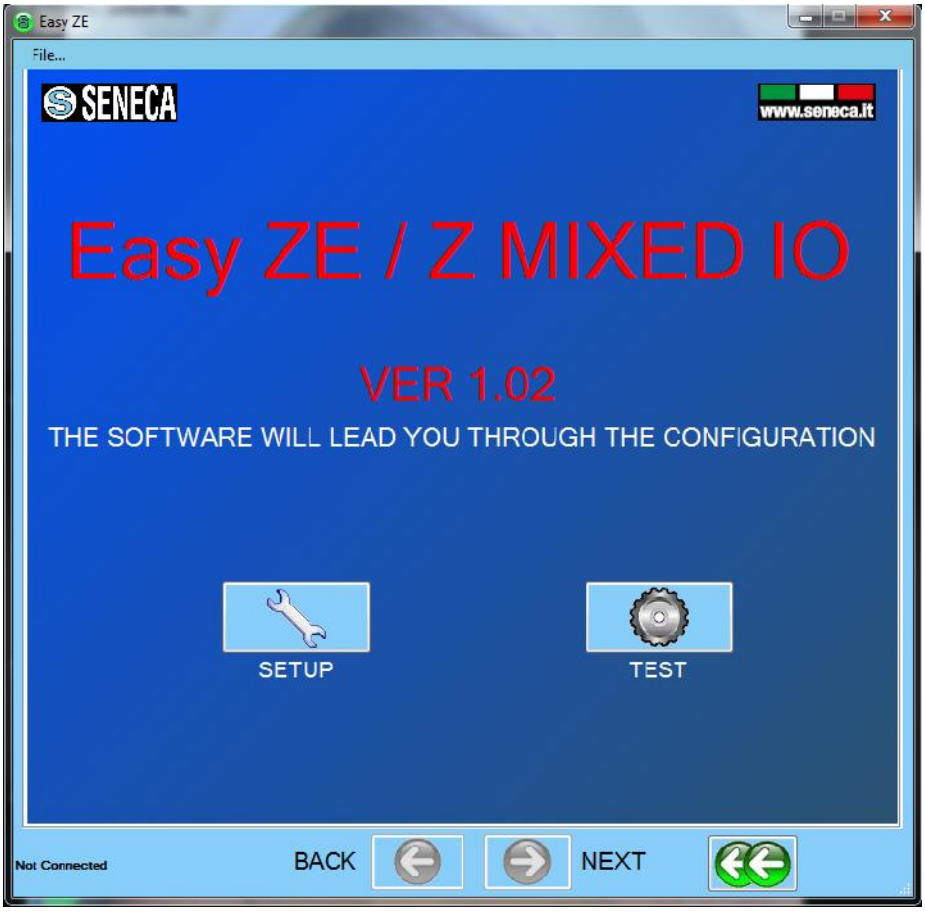
If you want to configure the device by the USB you must FIRST install the USB drivers (see chapter 15).

Extract the zip file and double click on the Setup file for install the software.

From the Quick Start menu select the device model (you can also click on the tab and select the right model from the button).



Now the configuration software “Easy ZE” starts:


Easy ZE
File...
SENECA
www.seneca.it
Easy ZE / Z MIXED IO
VER 1.02
THE SOFTWARE WILL LEAD YOU THROUGH THE CONFIGURATION
SETUP
TEST
Not Connected
BACK
NEXT

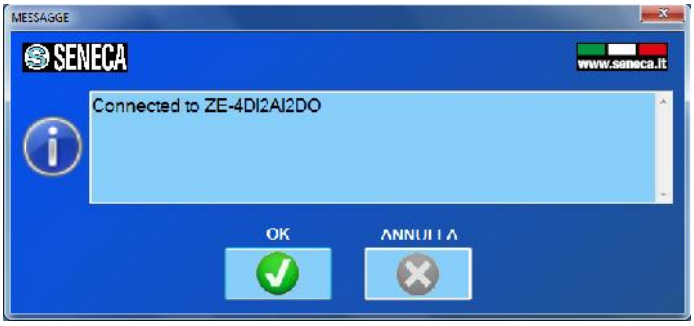
Press “Next”:


Easy ZE
File...
SENECA
www.seneca.it
ZE SERIES MODULE CONNECTIONS
CONNECT THE ZE SERIES MODULE TO THE PC WITH THE USB CABLE
ZE-4DI2AI2DO/ZE-2AI/Z-4DI2AI2DO
PC
SELECT THE SEARCHING STRATEGY
AUTOMATIC SEARCH
OFFLINE
UPDATE SOFTWARE
Not Connected
BACK
NEXT

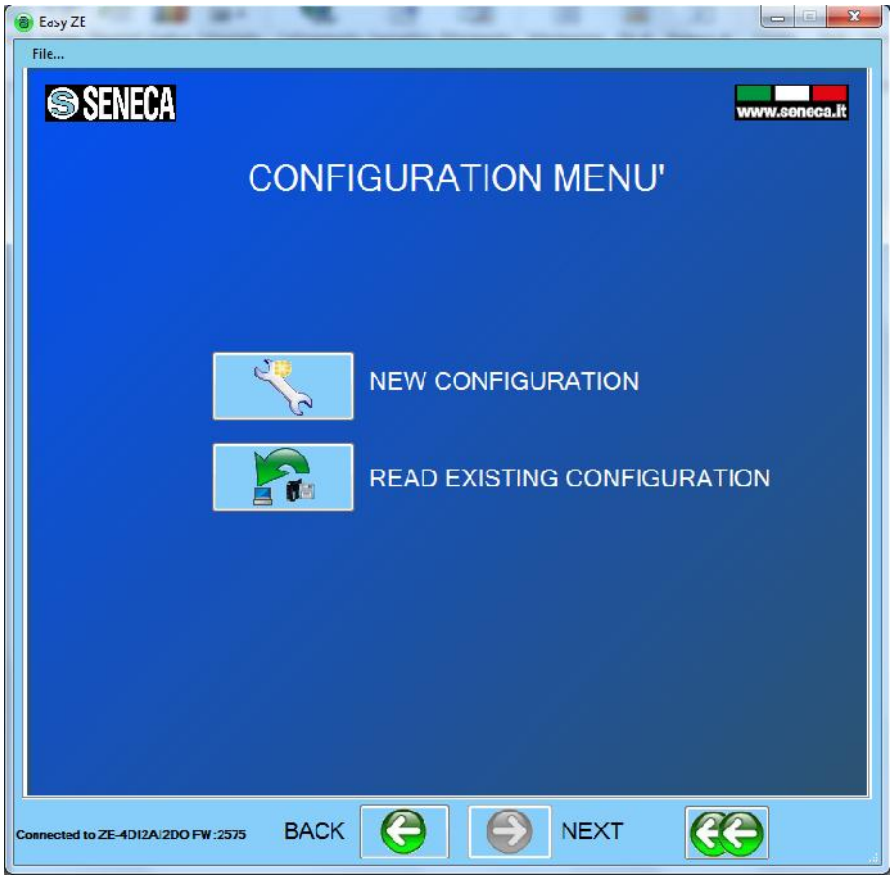
If you have previously installed the USB drivers connect the USB cable to the PC.

Click on “AUTOMATIC SEARCH” for automatic connection to the ZE device.

The software try to connect with all the serial ports until the device will answer for example:



Now the configuration menu will be displayed:



17. Firmware Update

With a new revision of Easy Setup, Seneca can include a new device firmware.

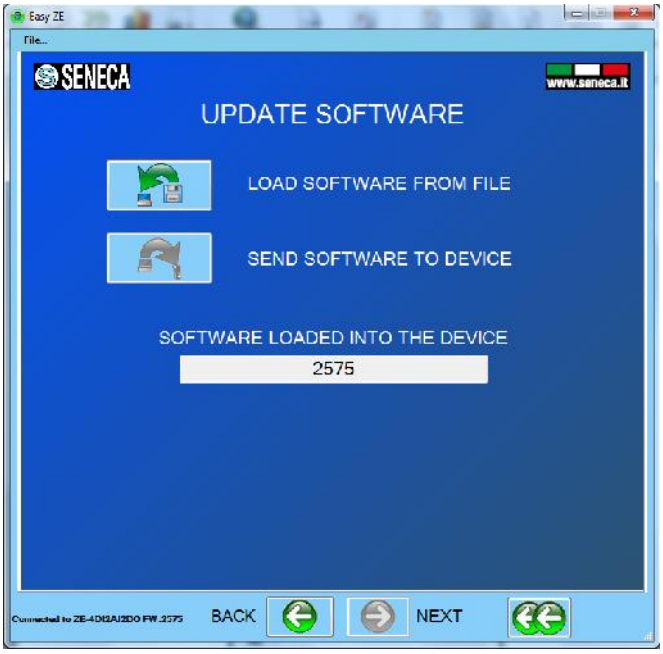
A new firmware update can include new features or bugfix.

WARNING!

When the firmware update it's started don't power down the device until all the procedure it's finished.

Power ON the ZE device and connect it to the PC

On the configuration menu click on "Software update"



Press the "Load software from file", the software will open directly the firmware directory.

If the "new software" revision is newer the "software in the device" revision click on "Send software to the device"

The firmware update takes about 6 minutes.