USER MANUAL R-32DIDO-P R-32DIDO

MULTIPROTOCOL INDUSTRIAL ETHERNET I/O MODULE



SENECA S.r.I. Via Austria 26 – 35127 – Z.I. - PADOVA (PD) - ITALY Tel. +39.049.8705355 – 8705355 Fax +39 049.8706287 www.seneca.it

CE

ORIGINAL INSTRUCTIONS



Introduction

The content of this documentation refers to products and technologies described in it.

All technical data contained in the document may be changed without notice.

The content of this documentation is subject to periodic review.

To use the product safely and effectively, read the following instructions carefully before use.

The product must be used only for the use for which it was designed and manufactured: any other use is under the full responsibility of the user.

Installation, programming and set-up are allowed only to authorized, physically and intellectually suitable operators.

Set-up must be performed only after correct installation and the user must follow all the operations described in the installation manual carefully.

Seneca is not responsible for failures, breakages and accidents caused by ignorance or failure to apply the stated requirements.

Seneca is not responsible for any unauthorized modifications.

Seneca reserves the right to modify the device, for any commercial or construction requirement, without the obligation to promptly update the reference manuals.

No liability for the contents of this document can be accepted.

Use the concepts, examples and other content at your own risk.

There may be errors and inaccuracies in this document that could damage your system, so proceed with caution, the author(s) will not take responsibility for it.

Technical specifications are subject to change without notice.

CONTACT US	
Technical support	supporto@seneca.it
Product information	commerciale@seneca.it

This document is the property of SENECA srl. Copies and reproduction are prohibited unless authorised.



Document revisions

DATE	REVISION	NOTES	AUTHOR
19/10/2021	0	First revision	MM
09/02/2022	2	Write Multiple Coil" function added to the list of supported functions (chap. 8.1)	MM
09/02/2022	3	Removed references to channels 33 to 64	AZ



TABLE OF CONTENTS

1.	INTRODUCTION	6
1.1.	DESCRIPTION	7
1.2.	COMMUNICATION PORT SPECIFICATIONS	8
2.	CONNECTION OF THE DEVICES TO A NETWORK (ONLY R-32DIDO MODEL)	9
2.1.	CONNECTION OF THE DEVICE TO A NETWORK	9
2.2.	USING EASY SETUP 2 TO CONFIGURE DEVICES	9
3.	I/O COPY USING THE PEER TO PEER FUNCTION WITHOUT WIRING (ONLY	R-
320	NDO MODEL)	.11
4	MODBUS PASSTHROUGH (ONLY R-32DIDO MODEL)	.12
т.		
5.	WEBSERVER (ONLY R-32DIDO MODEL)	.13
5.1.		13
5.2.		14 1/
5	2.1. SET OF SECTION SECTION	14
5.	2.3. SETUP COUNTERS SECTION	17
5.	2.4. P2P CONFIGURATION	18
5.	2.4.1. P2P CLIENT SECTION	19
5.	2.4.2. P2P SERVER SECTION	21
5.	2.4.3. P2P CONFIGURATION EXAMPLE	22
5.3 E 2	2.4.4. P2P EXECUTION TIME	23
5.5.		23
6.	USB CONNECTION (R-32DIDO MODEL ONLY)	.24
7.	RESETTING THE DEVICE TO FACTORY CONFIGURATION	.24
8.	SUPPORTED MODBUS COMMUNICATION PROTOCOLS (MODEL R-32DI	DO
ON	LY)	.25
8.1.	SUPPORTED MODBUS FUNCTION CODES	25
9_	MODBUS REGISTER TABLE (R-32DIDO MODEL ONLY)	.26
9.1.	R-32DIDO: MODBUS 4X HOLDING REGISTERS TABLE (FUNCTION CODE 3)	26
9.2.	R-32DIDO: TABLE OF MODBUS REGISTERS 0x COIL STATUS (FUNCTION CODE 1)	34
9.3.	R-32DIDO: TABLE OF MODBUS REGISTERS 1x INPUT STATUS (FUNCTION CODE 2)	35
10.	SEARCH AND MODIFICATION OF THE DEVICE IP WITH SENECA DISCOVE	RY
TO	OL	.36

Page 4



11. I	PROFINET IO (R-32DIDO-P MODEL ONLY)	
11.1. \$	STEP BY STEP CREATION OF A PROJECT WITH SIEMENS PLC (TIA PORTAL 16)	
11.1.1.	INSTALLING THE GSD FILE	
11.1.2.	INSERTION OF THE SIEMENS PLC IN THE PROJECT	
11.1.3.	INSERTION OF THE PROFINET SENECA IO	
11.1.4.	CONFIGURATION OF THE PARAMETERS OF THE SENECA IO	45
11.1.5.	COMPILATION AND SENDING OF THE PROJECT TO THE SIEMENS PLC	45
11.1.6.	READING AND WRITING OF THE SENECA IO FROM TIA PORTAL	47

Page 5



1. INTRODUCTION

ATTENTION!

This user manual extends the information from the installation manual to the configuration of the device. Use the installation manual for more information.

ATTENTION!

In any case, SENECA s.r.l. or its suppliers will not be responsible for the loss of data/revenue or consequential or incidental damages due to negligence or bad/improper management of the device, even if SENECA is well aware of these possible damages.

SENECA, its subsidiaries, affiliates, group companies, suppliers and distributors do not guarantee that the functions fully meet the customer's expectations or that the device, firmware and software should have no errors or operate continuously.



1.1. **DESCRIPTION**

The R series is based on devices equipped with two Ethernet switch ports that allow a chain connection to the next Ethernet device (daisy chain), so expensive industrial Ethernet switches are not required and wiring is simplified.

The hardware present in the devices allows the internal switch to work even if the device is faulty or not powered for up to 4 days (LAN function with bypass in case of failure).

Another important function is the possibility of copying inputs on remote outputs of R series products without the aid of a master device (peer 2 peer function) (only for R-32DIDO version).

Model	Description	Communication protocols
R-32DIDO	Remote Ethernet I/O with 2 Ethernet ports and 32 digital Inputs/outputs 32 counters (32 bit, Max frequency 50 Hz)	Modbus TCP-IP Modbus RTU Seneca P2P I/O Mirror with broadcast (UDP based)
R-32DIDO-P	Remote Ethernet I/O with 2 Ethernet ports and 32 digital Inputs/outputs	Profinet IO



1.2. COMMUNICATION PORT SPECIFICATIONS

ETHERNET COMMUNICATION PORTS	
Number	2
Туре	100 Mbits
Configuration	Switch

RS485 COMMUNICATION PORTS (ONLY R-32DIDO MODEL)	
Number	1
Baudrate	From 1200 to 115200 bit/s configurable
Parity, Data bit, Stop bit	Configurable
Protocol	Can be configured between
	Modbus RTU Slave or
	Modbus TCP-IP to Modbus RTU passtrough

USB COMMUNICATION PORT (ONLY R-32DIDO MODEL)	
Number	1
Communication parameters	115200 bit/s, 8 bits, No parity, 1 stop bit, station address 1
Protocol	Modbus RTU Slave

R-32DIDO COMMUNICATION PROTOCOL	S SUPPORTED
Modbus RTU	From RS485 and USB port
Modbus TCP-IP	From Ethernet 1 and 2
Seneca IO Mirror	From Ethernet 1 and 2

R-32DIDO-P COMMUNICATION PROTOCO	LS SUPPORTED
Profinet IO	From Ethernet 1 and 2



2. CONNECTION OF THE DEVICES TO A NETWORK (ONLY R-32DIDO MODEL)

2.1. CONNECTION OF THE DEVICE TO A NETWORK

The factory configuration of the IP address is:

Static address: 192.168.90.101

Therefore, multiple devices must not be inserted on the same network with the same static IP. If you want to connect multiple devices on the same network, you need to change the IP address configuration using the Easy Setup 2 software.

ATTENTION!

DO NOT CONNECT 2 OR MORE FACTORY-CONFIGURED DEVICES ON THE SAME NETWORK, OR THE ETHERNET INTERFACE WILL NOT WORK (192.168.90.101 IP ADDRESS CONFLICT)

If the addressing mode with DHCP is activated and an IP address is not received within 1 minute, the device will set an IP address with a fixed error:

169.254.x.y

Where x.y are the last two values of the MAC ADDRESS. This way it is possible to install more I/O of the R series and then configure the IP with the Easy Setup 2 software even on networks without a DHCP server.

2.2. USING EASY SETUP 2 TO CONFIGURE DEVICES

The Easy Setup 2 software allows:

- Configuring R series devices via the USB port
- Searching and configuring Seneca R-series devices on an Ethernet network

In the case of a first installation we recommend following these steps:

- 1) Install the Easy Setup 2 software
- 2) Power and connect the device to the PC via the USB port

😫 New		×
New project based on Ethernet connection New project based on Serial connection		
	ОК	Cancel



Select Name Address R-16DI-8DO COM12	Mac	P	ing Ver	sion
R-16DI-8DO COM12				
			997.	1025

3) Configure the device with the IP address and the desired configuration

New Open Save	Salva come Read all	Sand all	S SENEC
Type: SERIAL Scan	SERIAL COM12		
SENECA Studio Project	R-16DI-8DO	Defa	ut Test Read Send
R-16DI-SDO 8-1601-SDO	R-16DI-8DO		Version - Mac -
	Setup 1 Setup 2 Clien	t Rule Server Rule	
	Ethernet		
		Enable SENECA Discovery Protocol Enable DHCP Address	
	IP	192.168.90.101	
	MASK	255.255.255.0	
	Gateway	192.168.90.1	
	Modbus TCP-IP/F	Peer To Peer/Passthrough	
	TCP Port	502	
	Station Address	1	
	Timeout (s)	60	
		☑ Enable Modbus TCP to Modbus RTU Passthrough	
	Peer To Peer Port	50026	

4) Install the device

If many devices are installed using the USB port:

- 1) Power and connect the device to the PC via the USB port
- 2) Configure the automatic address via DHCP from the search window
- 3) Install all the devices in the network
- 4) If there is no DHCP server in the network, after 1 minute the devices will set a fail IP address (see chapter 2.1)
- 5) Wait for all the device STS LEDs to be on steady.
- 6) At this point, using Easy Setup 2, create a new Ethernet project and find all the devices with the "search" button, then reconfigure the devices with the most appropriate work addresses.

In case of many devices using the Ethernet port:

- 1) Power and connect the first device to the PC via the Ethernet port
- 2) Perform the search
- 3) Change the address of the device with IP 192.168.90.101 from the search window
- 4) Connect the second device in Daisy Chain, search and return to step 2) until all devices are configured

The search software included in Easy Setup 2 works at Ethernet Layer 2 level (through the Seneca Discovery protocol) and it is therefore not necessary to have an Ethernet configuration compatible with the device you are looking for to change its IP. For the general configuration of the device it is necessary to have compatible configuration.



3. I/O COPY USING THE PEER TO PEER FUNCTION WITHOUT WIRING (ONLY R-32DIDO MODEL)

The "R" series devices can be used to copy and update in real time an input channel on a remote output channel without the aid of a master controller.

For example, a digital input can be copied to a remote digital output device:



Note that no controller is required because the communication is managed directly by the R series devices. It is possible to make a more sophisticated connection, for example it is possible to copy the inputs to different R-series remote devices (from Device 1 Input 1 to Device 2 Output1, Device 1 Input 2 to Device 3 Output 1 etc ...)

It is also possible to copy an input to an output of multiple remote devices:



Each R-series device can send and receive a maximum of 32 inputs.

For further information, see chapter 5.2.4.



4. MODBUS PASSTHROUGH (ONLY R-32DIDO MODEL)

Thanks to the Modbus Passthrough function it is possible to extend the amount of I/O available in the device via the RS485 port and the Modbus RTU slave protocol, for example by using the Seneca Z-PC series products. In this mode the RS485 port stops working as Modbus RTU slave and the device becomes a Modbus TCP-IP gateway to Modbus RTU serial:



Each Modbus TCP-IP request with station address other than that of the R series device is converted into a serial packet on the RS485 and, in the case of a reply, it is turned over to TCP-IP.

Therefore, it is no longer necessary to purchase gateways to extend the I/O number or to connect already available Modbus RTU I/O.



5. WEBSERVER (ONLY R-32DIDO MODEL)

5.1. ACCESS TO THE WEB SERVER

Access to the web server takes place using a web browser and entering the IP address of the device. To find out the IP address of the device, use the "search" function of the "Easy Setup 2" software (see chapter 10).

On first access the user name and password will be requested. The default values are:

User Name: admin Password: admin

ATTENTION!

AFTER THE FIRST ACCESS CHANGE USER NAME AND PASSWORD IN ORDER TO PREVENT ACCESS TO THE DEVICE TO UNAUTHORIZED PEOPLE.



IF THE PARAMETERS TO ACCESS THE WEB SERVER HAVE BEEN LOST, IT IS NECESSARY TO RESET THE FACTORY-SET CONFIGURATION (SEE CHAPTER 7)



5.2. **DEVICE CONFIGURATION**

To configure the device, access the web server and select the section you are interested in.

After a modification to the configuration has been made, the changes must be confirmed with the "**APPLY**" button and the device will restart autonomously.

The *Reboot* button reboots the device (not necessary in the event of a configuration change).

The *Default* button returns all the page parameters to the default settings.

5.2.1. SETUP SECTION

DHCP (ETH) (default: Disabled)

Sets the DHCP client to get an IP address automatically.

IP ADDRESS STATIC (ETH) (default: 192.168.90.101)

Sets the device static address. Careful not to enter devices with the same IP address into the same network.

IP MASK STATIC (ETH) (default: 255.255.255.0)

Sets the mask for the IP network.

GATEWAY ADDRESS STATIC (ETH) (default: 192.168.90.1)

Sets the gateway address.

PROTECT CONFIGURATION (default: Disabled)

Allows you to enable or disable password protection for reading and writing the configuration (including the IP address) using the Easy Setup 2 software or Seneca Discovery Tool. The password is the same one that allows accessing the web server.

ATTENTION!

IF THE CONFIGURATION PROTECTION IS ENABLED IT WILL BE IMPOSSIBLE TO READ/WRITE THE CONFIGURATION OF THE DEVICE WITHOUT KNOWING THE PASSWORD. IN THE EVENT OF LOSING THE PASSWORD IT WILL BE POSSIBLE TO RETURN THE DEVICE TO THE

FACTORY CONFIGURATION (SEE CHAPTER 7)

MODBUS SERVER PORT (ETH) (default: 502)

Sets the communication port for the Modbus TCP-IP server.

MODBUS SERVER STATION ADDRESS (ETH) (default: 1)

Active only if Modbus Passthrough is also active, it sets the station address of the modbus TCP-IP server.



ATTENTION!

THE MODBUS SERVER WILL ANSWER ANY STATION ADDRESS ONLY IF THE MODBUS PASSTHROUGH MODE IS DISABLED.

MODBUS PASSTHROUGH (ETH) (default: disabled)

Sets the conversion mode from Modbus TCP-IP to Modbus RTU serial (see chapter 4).

MODBUS TCP-IP CONNECTION TIMEOUT [sec] (ETH) (default: 60)

Sets the TCP-IP connection timeout for the Modbus TCP-IP server and Passthrough modes.

P2P SERVER PORT (default: 50026)

Sets the communication port for the P2P server.

WEB SERVER USER NAME (default: admin)

Sets the user name to access the web server.

CONFIGURATION/WEB SERVER PASSWORD (default: admin)

Sets the password to access the web server and to read/write the configuration (if enabled).

WEB SERVER PORT (default: 80)

Sets the communication port for the web server.

BAUDRATE MODBUS RTU (SER) (default: 38400 baud)

Sets the baud rate for the RS485 communication port.

DATA MODBUS RTU (SER) (default: 8 bit)

Sets the number of bits for the RS485 communication port.

PARITY MODBUS RTU (SER) (default: None)

Sets the parity for the RS485 communication port.

STOP BIT MODBUS RTU (SER) (default: 1 bit)

Sets the number of stop bits for the RS485 communication port.

MODBUS PASSTHROUGH SERIAL TIMEOUT (default: 100ms)

Active only if passthrough mode is activated, sets the maximum waiting time before sending a new packet from TCP-IP to the serial port. It must be set according to the longest response time of all the devices present on the RS485 serial port.



THE USB PORT CONFIGURATION PARAMETERS CANNOT BE MODIFIED AND ARE BAUDRATE:

115200 DATA: 8 BIT PARITY: NONE STOP BIT: 1 MODBUS RTU PROTOCOL



5.2.2. DIGITAL I/O SETUP SECTION

This section allows the configuration of the digital I/Os present in the device.

DIGITAL I/O MODE (default Input)

Selects whether the selected input will work as an input or output.

DIGITAL INPUT NORMALLY HIGH/LOW (default Normally Low)

If selected as digital input, it configures whether the input is normally high or low.

DIGITAL OUTPUT NORMALLY STATE (default Normally Open)

If selected as digital output, it configures whether the output is normally open or closed.

DIGITAL OUTPUT WATCHDOG (default Disabled)

If selected as digital output, it sets the output watchdog mode.

If "Disabled", it disables the watchdog function for the selected output.

If "Enabled on Modbus Communication" the output goes into "Watchdog state" if there has been no generic Modbus communication within the set time.

If "Enabled on Modbus Digital Output Writing" the output goes into "Watchdog state" if there has been no writing of the output within the set time.

DIGITAL OUTPUT WATCHDOG STATE (default Open)

Sets the value that the digital output must adopt if the watchdog has been triggered.

DIGITAL OUTPUT WATCHDOG TIMEOUT [s] (default 100s)

Represents the watchdog time of the digital output in seconds.

5.2.3. SETUP COUNTERS SECTION

COUNTERS FILTER [ms] (default 0)

Sets the value in [ms] for filtering all the counters connected to the inputs.



5.2.4. **P2P CONFIGURATION**

In the P2P Client section it is possible to define which local events to send to one or more remote devices. This way it is possible to send the status of the inputs to the remote outputs and obtain the input-output replication without wiring. It is also possible to send the same input to several outputs simultaneously.

In the P2P Server section it is instead possible to define which inputs must be copied to the outputs.

The "*Disable all rules*" button places all the rules in a disabled status (default). The "*APPLY*" button allows you to confirm and then save the set rules in the non-volatile memory.



5.2.4.1. P2P CLIENT SECTION

Status	P2P (Client Page	e Rules: send Loc	al event to remote s	erver			
Setup		disable all rules	automatic configuration					APPLY
Setup2 Input Test	En.	Rule Nr.	Loc.Ch.	Remote.lp Use 255.255.255.255 for send to all devices	Rem.Port	En.	Tick (mS)	
Output Test	Dis. 🔻	1	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
P2P Client	Dis. V	2	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	3	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
P2P Server	Dis. V	4	Di_1 ▼	255.255.255.255	50026	Only Timed v	1000	
	Dis. V	5	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	6	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	7	Di_1 ▼	255.255.255.255	50026	Only Timed	1000	
	Dis. V	8	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	9	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	10	Di_1 ▼	255.255.255.255	50026	Only Timed v	1000	
	Dis. 🔻	11	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	12	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	13	Di_1 ▼	255.255.255.255	50026	Only Timed	1000	
	Dis. V	14	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	15	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	16	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	17	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	18	Di_1 ▼	255.255.255.255	50026	Only Timed 🔻	1000	
	Dis. V	19	Di_1 ▼	255.255.255.255	50026	Only Timed v	1000	
	Dis. V	20	Di_1 •	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	21	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	22	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	23	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	24	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. V	25	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	
	Dis. 🔻	26	Di_1 ▼	255.255.255.255	50026	Only Timed 🔻	1000	
	Dis. V	27	Di_1 ▼	255.255.255.255	50026	Only Timed 🔻	1000	
	Dis. V	28	Di_1 ▼	255.255.255.255	50026	Only Timed 🔻	1000	
	Dis. V	29	Di_1 ▼	255.255.255.255	50026	Only Timed •	1000	
	Dis. V	30	Di_1 ▼	255.255.255.255	50026	Only Timed 🔻	1000	
	Dis. V	31	Di_1 ▼	255.255.255.255	50026	Only Timed 🔻	1000	
	Dis. 🔻	32	Di_1 ▼	255.255.255.255	50026	Only Timed V	1000	

The "*Automatic configuration*" button allows you to prepare the rules for sending all the inputs available in the device in use.

En.

Selects whether the copy rule is active or not.

Loc. Ch.

Selects the status of which channel should be sent to the remote device(s).

Remote IP

Selects the IP address of the remote device to which the status of that input channel is to be sent. If the channel has to be sent simultaneously to all the devices (broadcast), enter the broadcast address

(255.255.255.255) as the IP address.

Remote Port



Selects the communication port for sending the status of the inputs. It must coincide with the **P2P SERVER PORT** parameter of the remote device.

En

Selects operation in "Only Timed" or "Timed+Event" mode.

In "Only Timed" mode, the status of the inputs is sent on each "tick [ms]" and then refreshed continuously (cyclic sending).

In the "Timed+Event" mode, the status of the inputs is sent to a digital event (change of status).

Tick [ms]

Sets the cyclical sending time of the input status.

ATTENTION!

IN CASE OF ENABLED WATCHDOG OF DIGITAL OUTPUTS THE RULE'S TICK TIME MUST BE LOWER THAN THE WATCHDOG TIMEOUT SET

ATTENTION!

IT IS ALSO POSSIBLE TO COPY SOME I/O OF THE SAME DEVICE (FOR EXAMPLE, COPY THE I01 INPUT TO D01) BY ENTERING THE IP OF THE DEVICE AS REMOTE IP



5.2.4.2. P2P SERVER SECTION

Status	P2P S	2P Server Page Rules: receive Remote event from client						
Setup		disable all rules	automatic configuration			APPLY		
Setup2 Input Test	En.	Rule Nr.	Rem.Ch.	Remote.lp Use 255.255.255.255 for receive from all devices	Loc.Ch.			
Output Test	Ena. 🔻	1	Di_1 ▼	255.255.255.255	Do_1 ▼			
DOD OF 1	Ena. 🔻	2	Di_2 ▼	255.255.255.255	Do_2 ▼			
P2P Client	Ena. 🔻	3	Di_3 ▼	255.255.255.255	Do_3 ▼			
P2P Server	Ena. 🔻	4	Di_4 ▼	255.255.255.255	Do_4 ▼			
	Ena. 🔻	5	Di_5 ▼	255.255.255.255	Do_5 ▼			
	Ena. 🔻	6	Di_6 ▼	255.255.255.255	Do_6 ▼			
	Ena. 🔻	7	Di_7 ▼	255.255.255.255	Do_7 ▼			
	Ena. 🔻	8	Di_8 ▼	255.255.255.255	Do_8 ▼			
	Dis. V	9	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	10	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	11	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	12	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	13	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	14	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	15	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	16	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	17	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	18	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	19	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	20	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	21	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	22	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	23	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	24	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	25	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	26	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	27	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	28	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	29	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. T	30	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. T	31	Di_1 ▼	255.255.255.255	Do_1 ▼			
	Dis. V	32	Di_1 ▼	255.255.255.255	Do_1 ▼			

The "*Automatic configuration*" button allows you to prepare the rules to receive all the inputs on the outputs of the device in use.

En.

Selects whether the copy rule is active or not.

Rem. Ch.

Selects the status of which remote channel should be received by the local device.

Remote IP

Selects the IP address of the remote device from which to receive the input status.

If the channel must be received simultaneously by all the devices (broadcast), enter the broadcast address (255.255.255.255) as the IP address.

Loc. Ch.

Selects the copy destination of the remote input value.



ATTENTION!

IT IS ALSO POSSIBLE TO COPY SOME I/O OF THE SAME DEVICE (FOR EXAMPLE, COPY THE I01 INPUT TO D01) BY ENTERING THE IP OF THE DEVICE AS REMOTE IP. HOWEVER, THE ETHERNET PORT MUST BE CORRECTLY CONNECTED.

5.2.4.3. P2P CONFIGURATION EXAMPLE

In the following example we have No.2 devices and we want to copy the status of digital input 1 of the first to the digital output of the second.

The IP address of Device 1 is 192.168.1.10

The IP address of Device 2 is 192.168.1.11

Let's move to device 1 with IP address 192.168.1.10 and select the sending of digital input 1 to the remote address 192.168.1.11 of device 2 this way:

DEVICE 1

En.	Rule Nr.	Loc.Ch.	Remote.lp Use 255.255.255.255 for send to all devices	Rem.Port	En.	Tick (mS)
Ena. 🔻	1	Di_1 ▼	192.168.1.11	50026	Timed+Event ▼	1000

Now let's move on to device 2 and first configure the P2P server communication port on 50026:

Otatus	Setup page(1/2):		
Status			
Setup		CURRENT	UPDATED
Setup2	DHCP (ETH)	Enabled	Enabled •
· · · ·	DISCOVERY PROTOCOL(ETH)	Enabled	Enabled <
Input Test	MODBUS SERVER PORT (ETH)	502	502
Output Test	MODBUS SERVER STATION ADDRESS (ETH)	20	20
output rest	MODBUS PASSTHROUGH (ETH)	Enabled	Enabled •
P2P Client	MODBUS SERVER/PASSTHROUGH T.OUT(sec) (ETH)	60	60
P2P Server	P2P SERVER PORT (ETH)	50026	50026
	WEBSERVER USER NAME	admin	admin
			1

And we now configure the P2P server, the channel to be received from 192.168.1.10 is Di_1 and must be copied to Do_1:

DEVICE 2



En.	Rule Nr.	Rem.Ch.	Remote.lp Use 255.255.255.255 for receive from all devices	Loc.Ch.
Ena. 🔻	1	Di_1 ▼	192.168.1.10	Do_1 ▼

With this configuration, each time digital input 1 of device 1 (192.168.1.10) changes status, a packet will be sent to device 2 (192.168.1.11) which will copy it to digital output 1.

After 1 second, the same packet will be sent cyclically.

5.2.4.4. P2P EXECUTION TIME

The switching time depends on the client device model and the server device model in addition to the congestion of the ethernet network.

For example, for the R-16DI8DO model, the switching time of the remote digital output as a response to an incoming event into another R-16DI8DO is about 20 ms (daisy chain connection of 2 devices, 1 set rule).

As regards the analogue models, the refresh time of the digital inputs/outputs and analogue inputs typical of the device must also be considered.

5.3. FW/CONFIGURATION UPDATE SECTION

The "Configure" section allows you to save or open a complete configuration of the device.

The "Firmware" section allows you to update the device firmware in order to obtain new functions.

ATTENTION!

NOT TO DAMAGE THE DEVICE DO NOT REMOVE THE POWER SUPPLY DURING THE FIRMWARE UPDATE OPERATION.





6. USB CONNECTION (R-32DIDO MODEL ONLY)

The front USB port allows a simple connection using the Modbus RTU slave protocol, the communication parameters for the USB port cannot be modified:

Baud rate: 115200 Address of the Modbus RTU station: 1 Data Bit: 8 Stop bit: 1

Drivers for Windows PC can be downloaded from the device's web page. The drivers are anyway present in the installation of the "Easy Setup 2" software.

7. RESETTING THE DEVICE TO FACTORY CONFIGURATION

It is possible to reset the device to the factory configuration using the following procedure:

- 1) Remove the device back cover
- 2) With the device off, set dip switch SW3 dip 1 and 2 to ON
- 3) Power up the device and wait 10 seconds
- 4) Turn off the device
- 5) With the device off, set dip switch SW3 dip 1 and 2 to OFF
- 6) Power up the device
- 7) The device has now been reset to the factory configuration



SENECA[®]

8. SUPPORTED MODBUS COMMUNICATION PROTOCOLS (MODEL R-32DIDO ONLY)

The Modbus communication protocols supported are:

- Modbus RTU Slave (from the RS485 and USB ports)
- Modbus TCP-IP Server (from Ethernet ports) 8 clients max

For more information on these protocols, see the website: <u>http://www.modbus.org/specs.php</u>.

8.1. SUPPORTED MODBUS FUNCTION CODES

(function 5)

The following Modbus functions are supported:

- Read Holding Register (function 3)
- Read Coil Status (function 1)
- Write Coil
- Write Multiple Coil (function 15)
- Write Single Register (function 6)
- Write Multiple Registers (function 16)



All 32-bit values are contained in 2 consecutive registers

ATTENTION!

Any registers with RW* (in flash memory) can be written up to 10000 times The PLC/Master Modbus programmer must not exceed this limit



9. MODBUS REGISTER TABLE (R-32DIDO MODEL ONLY)

The following abbreviations are used in the register tables:

MS = More significant
LS = Less significant
MSW = 16 most significant bits
LSW = 16 least significant bits
RO = Register in read-only
RW = Read/write register
RW * = Register in reading and writing contained in flash memory, writable a maximum of 10000 times.
Unsigned 16 bit = unsigned integer register, can take values from 0 to 65535
Signed 16 bit = signed integer register can take values from -32768 to +32767
Float 32 bits = Single-precision floating point register with 32 bits (IEEE 754)
https://en.wikipedia.org/wiki/IEEE_754
BIT = Boolean registry, can be 0 (false) or 1 (true)

9.1. R-32DIDO: MODBUS 4X HOLDING REGISTERS TABLE

ADDRES S (4x)	OFFSET (4x)	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ
40001	0	MACHINE-ID	-	Device identification	RO	UNSIGNED 16 BIT
40002	1	FW REVISION (Maior/Minor)	-	Fw Revision	RO	UNSIGNED 16 BIT
40003	2	FW REVISION (Fix/Build)	-	Fw Revision	RO	UNSIGNED 16 BIT
40004	3	FW CODE	-	Fw Code	RO	UNSIGNED 16 BIT
40005	4	RESERVED	-	-	RO	UNSIGNED 16 BIT
40006	5	RESERVED	-	-	RO	UNSIGNED 16 BIT
40007	6	BOARD-ID	-	Hw Revision	RO	UNSIGNED 16 BIT
40008	7	BOOT REVISION (Maior/Minor)	-	Bootloader Revision	RO	UNSIGNED 16 BIT
40009	8	BOOT REVISION (Fix/Build)	-	Bootloader Revision	RO	UNSIGNED 16 BIT
40010	9	RESERVED	-	-	RO	UNSIGNED 16 BIT
40011	10	RESERVED	-	-	RO	UNSIGNED 16 BIT



ADDRES S (4x)	OFFSET (4x)	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ
40012	11	RESERVED	-	-	RO	UNSIGNED 16 BIT
40013	12	COMMAND_AUX _3H	-	Aux Command Register	RW	UNSIGNED 16 BIT
40014	13	COMMAND_AUX _3L	-	Aux Command Register	RW	UNSIGNED 16 BIT
40015	14	COMMAND_AUX 2	-	Aux Command Register	RW	UNSIGNED 16 BIT
40016	15	COMMAND_AUX 1	-	Aux Command Register	RW	UNSIGNED 16 BIT
40017	16	COMMAND	-	Aux Command Register	RW	UNSIGNED 16 BIT
40018	17	STATUS	-	Device Status	RW	UNSIGNED 16 BIT
40019	18	RESERVED	-	-	RW	UNSIGNED 16 BIT
40020	19	RESERVED	-	-	RW	UNSIGNED 16 BIT
40021	20	DIGITAL I/O	161	Digital IO Value [Channel 161]	RW	UNSIGNED 16 BIT
40022	21	DIGITAL I/O	3217	Digital IO Value [Channel 3217]	RW	UNSIGNED 16 BIT

ADDRES S (4x)	OFFEST (4x)	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ	
40101	100	COUNTER MSW DIN	1	CHANNEL COUNTER	RW	UNSIGNED	
40102	101	COUNTER LSW DIN	L	VALUE	RW	32 BIT	
40103	102	COUNTER MSW DIN	2	CHANNEL COUNTER	RW	UNSIGNED	
40104	103	COUNTER LSW DIN		VALUE	RW	32 BIT	
40105	104	COUNTER MSW DIN		2	CHANNEL COUNTER	RW	UNSIGNED
40106	105	COUNTER LSW DIN	5	VALUE	RW	32 BIT	
40107	106	COUNTER MSW DIN	4	CHANNEL COUNTER	RW	UNSIGNED	
40108	107	COUNTER LSW DIN		VALUE	RW	32 BIT	
40109	108	COUNTER MSW DIN	5	CHANNEL COUNTER VALUE	RW	UNSIGNED 32 BIT	



ADDRES S (4x)	OFFEST (4x)	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ
40110	109	COUNTER LSW DIN			RW	
40111	110	COUNTER MSW DIN	6	CHANNEL COUNTER	RW	UNSIGNED
40112	111	COUNTER LSW DIN	6	VALUE	RW	32 BIT
40113	112	COUNTER MSW DIN	_	CHANNEL COUNTER	RW	UNSIGNED
40114	113	COUNTER LSW DIN	/	VALUE	RW	32 BIT
40115	114	COUNTER MSW DIN	0	CHANNEL COUNTER	RW	UNSIGNED
40116	115	COUNTER LSW DIN	8	VALUE	RW	32 BIT
40117	116	COUNTER MSW DIN	0	CHANNEL COUNTER	RW	UNSIGNED
40118	117	COUNTER LSW DIN	9	VALUE	RW	32 BIT
40119	118	COUNTER MSW DIN	- 10	CHANNEL COUNTER VALUE	RW	UNSIGNED 32 BIT
40120	119	COUNTER LSW DIN			RW	
40121	120	COUNTER MSW DIN	11	CHANNEL COUNTER	RW	UNSIGNED
40122	121	COUNTER LSW DIN	11	VALUE	RW	32 BIT
40123	122	COUNTER MSW DIN	10	CHANNEL COUNTER	RW	UNSIGNED
40124	123	COUNTER LSW DIN	12	VALUE	RW	32 BIT
40125	124	COUNTER MSW DIN	12	CHANNEL COUNTER	RW	UNSIGNED
40126	125	COUNTER LSW DIN	15	VALUE	RW	32 BIT
40127	126	COUNTER MSW DIN	14	CHANNEL COUNTER	RW	UNSIGNED
40128	127	COUNTER LSW DIN	14	VALUE	RW	32 BIT
40129	128	COUNTER MSW DIN	15	CHANNEL COUNTER	RW	UNSIGNED
40130	129	COUNTER LSW DIN	51	VALUE	RW	32 BIT
40131	130	COUNTER MSW DIN	16	CHANNEL COUNTER	RW	UNSIGNED
40132	131	COUNTER LSW DIN	10	VALUE	RW	32 BIT

Doc: MI-00576-2-EN Page 28



ADDRES S (4x)	OFFEST (4x)	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ
40133	132	COUNTER MSW DIN		CHANNEL COUNTER	RW	UNSIGNED
40134	133	COUNTER LSW DIN	17	VALUE	RW	32 BIT
40135	134	COUNTER MSW DIN	18	CHANNEL COUNTER	RW	UNSIGNED
40136	135	COUNTER LSW DIN	10	VALUE	RW	32 BIT
40137	136	COUNTER MSW DIN	19	CHANNEL COUNTER	RW	UNSIGNED
40138	137	COUNTER LSW DIN		VALUE	RW	32 BIT
40139	138	COUNTER MSW DIN	20	CHANNEL COUNTER	RW	UNSIGNED
40140	139	COUNTER LSW DIN		VALUE	RW	32 BIT
40141	140	COUNTER MSW DIN	21	CHANNEL COUNTER	RW	UNSIGNED
40142	141	COUNTER LSW DIN		VALUE	RW	32 BIT
40143	142	COUNTER MSW DIN	22	CHANNEL COUNTER	RW	UNSIGNED
40144	143	COUNTER LSW DIN		VALUE	RW	32 BIT
40145	144	COUNTER MSW DIN	23	CHANNEL COUNTER	RW	UNSIGNED
40146	145	COUNTER LSW DIN	23	VALUE	RW	32 BIT
40147	146	COUNTER MSW DIN	24	CHANNEL COUNTER	RW	UNSIGNED
40148	147	COUNTER LSW DIN	27	VALUE	RW	32 BIT
40149	148	COUNTER MSW DIN	25	CHANNEL COUNTER	RW	UNSIGNED
40150	149	COUNTER LSW DIN	25	VALUE	RW	32 BIT
40151	150	COUNTER MSW DIN	26	CHANNEL COUNTER	RW	UNSIGNED
40152	151	COUNTER LSW DIN	20	VALUE	RW	32 BIT
40153	152	COUNTER MSW DIN	27	CHANNEL COUNTER	RW	UNSIGNED
40154	153	COUNTER LSW DIN	21	VALUE	RW	32 BIT
40155	154	COUNTER MSW DIN	28	CHANNEL COUNTER VALUE	RW	UNSIGNED 32 BIT

www.seneca.it

Doc: MI-00576-2-EN Page 29



ADDRES S (4x)	OFFEST (4x)	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ	
40156	155	COUNTER LSW			RW		
40157	156	DIN		CHANNEL COUNTER	RW	UNSIGNED	
		COUNTER LSW	29	VALUE		32 BIT	
40158	157	DIN			RW		
40150	150	COUNTER MSW					
40159	130	DIN	30	CHANNEL COUNTER		UNSIGNED	
40160	159	COUNTER LSW	50	VALUE	R\//	32 BIT	
40100	155	DIN					
40161	160	COUNTER MSW			RW		
		DIN	31	CHANNEL COUNTER		UNSIGNED	
40162	161	COUNTER LSW		VALUE	RW	32 BIT	
40163	162				RW		
			32			32 RIT	
40164	163	DIN		VALUE	RW	52 011	
40165	164	4			RW		
40166	0166 165 PERIO		1	PERIOD [ms]	RW	FLOAT 32 BIT	
40167	166				RW/		
40168	167	PERIOD	2	PERIOD [ms]	RW/	FLOAT 32 BIT	
10169	168				R\//		
40105	169	PERIOD	3	3	PERIOD [ms]	R\//	FLOAT 32 BIT
40170	170						
40171	170	PERIOD	4	PERIOD [ms]		FLOAT 32 BIT	
40172	171						
40173	172	PERIOD	5	5 PERIOD [ms]			FLOAT 32 BIT
40174	173						
40175	174	PERIOD	6	PERIOD [ms]		FLOAT 32 BIT	
40170	175						
40177	170	PERIOD	7	PERIOD [ms]		FLOAT 32 BIT	
40170	170						
40179	178	PERIOD	8	PERIOD [ms]	RW	FLOAT 32 BIT	
40181	180				RW/		
40182	181	PERIOD	9	PERIOD [ms]	RW/	FLOAT 32 BIT	
10102	192						
40105	102	PERIOD	10	PERIOD [ms]		FLOAT 32 BIT	
40104	103						
40105	104	PERIOD	11	PERIOD [ms]		FLOAT 32 BIT	
40107	100						
40187	186	PERIOD	12	PERIOD [ms]	KW	FLOAT 32 BIT	
40188	187		_		RW		

Doc: MI-00576-2-EN



ADDRES S (4x)	OFFEST (4x)	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ
40189	188				RW	
40190	189	PERIOD	13	PERIOD [ms]	RW	FLOAT 32 BIT
40191	190	252102			RW	
40192	191	PERIOD	14	PERIOD [ms]	RW	FLOAT 32 BIT
40193	192	DEDIOD	4.5		RW	
40194	193	PERIOD	15	PERIOD [ms]	RW	FLOAT 32 BIT
40195	194		16		RW	
40196	195	PERIOD	10	PERIOD [ms]	RW	FLUAT 32 BIT
40197	196		17		RW	
40198	197	PERIOD	17		RW	FLOAT 52 BIT
40199	198		10		RW	
40200	199	PERIOD	10		RW	FLOAT 52 BIT
40201	200	PERIOD	19	PERIOD [ms]	RW	ΕΙ ΟΔΤ 32 ΒΙΤ
40202	02 201 PERIOD		15		RW	TEORT 32 BIT
40203	202	PERIOD	20	PERIOD [ms]	RW	ΕΙ ΟΔΤ 32 ΒΙΤ
40204	203		20		RW	TEORT 32 DIT
40205	204	PERIOD	21	PERIOD [ms]	RW	FLOAT 32 BIT
40206	0206 205				RW	
40207	0207 206 PERIOD	22	PERIOD [ms]	RW	FLOAT 32 BIT	
40208	207				RW	
40209	208	PERIOD	23	PERIOD [ms]	RW	FLOAT 32 BIT
40210	209	_			RW	
40211	210	PERIOD	24	PERIOD [ms]	RW	FLOAT 32 BIT
40212	211				RW	
40213	212	PERIOD	25	PERIOD [ms]	RW	FLOAT 32 BIT
40214	213				RW	
40215	214	PERIOD	26	PERIOD [ms]	RW	FLOAT 32 BIT
40216	215				RW	
40217	216	PERIOD	27	PERIOD [ms]	RW	FLOAT 32 BIT
40218	217				RW	
40219	218	PERIOD	28	PERIOD [ms]	RVV	FLOAT 32 BIT
40220	219				RW	
40221	220	PERIOD	29	PERIOD [ms]		FLOAT 32 BIT
40222	221					
40225	222	PERIOD	30	PERIOD [ms]		FLOAT 32 BIT
40224	225				R\A/	
40225	224	PERIOD	31	PERIOD [ms]	R\A/	FLOAT 32 BIT
40220	225				R\W/	
40228	227	PERIOD	32	PERIOD [ms]	RW	FLOAT 32 BIT

Page 31



ADDRES S (4x)	OFFEST (4x)	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ	
40229	228	ED E O LIENIOV			RW		
40230	229	FREQUENCY	1	FREQUENCY [HZ]	RW	FLOAT 32 BIT	
40231	230		2		RW		
40232	231	FREQUENCY	2	FREQUENCY [HZ]	RW	FLOAT 32 BIT	
40233	232		2		RW		
40234	233	FREQUENCY	5		RW	FLUAT 32 BIT	
40235	234		Λ		RW		
40236	235	FREQUENCY	4		RW	FLOAT 52 BIT	
40237	236		5		RW		
40238	237	FREQUENCE	J		RW	FLOAT 52 BIT	
40239	238		6		RW		
40240	239	FREQUENCT	0		RW	FLOAT 52 BIT	
40241	240	ERECUENCY	7		RW		
40242	241 FREQUENCY		,		RW	TLOAT 32 BIT	
40243	242	ERECUENCY	8		RW		
40244	243		0		RW	TLOAT 32 BIT	
40245	244	ERECUENCY	9		RW		
40246	0246 245	TREQUENCI	5		RW	TEORT 32 BIT	
40247	246	EREQUENCY	10		RW	ΕΙ ΟΔΤ 32 ΒΙΤ	
40248	247	FREQUENCY	10		RW		
40249	248	FREQUENCY	11	FREQUENCY [H ₇]	RW	ΕΙ ΩΔΤ 32 ΒΙΤ	
40250	249				RW		
40251	250	FREQUENCY	12	FREQUENCY [H ₇]	RW	FLOAT 32 BIT	
40252	251				RW		
40253	252	FREQUENCY	13	FREQUENCY [Hz]	RW	FLOAT 32 BIT	
40254	253		15		RW		
40255	254	FREQUENCY	14	FREQUENCY [Hz]	RW	FLOAT 32 BIT	
40256	255				RW		
40257	256	FREQUENCY	15	FREQUENCY [Hz]	RW	FLOAT 32 BIT	
40258	257				RW		
40259	258	FREQUENCY	16	FREOUENCY [Hz]	RW	FLOAT 32 BIT	
40260	259				RW		
40261	260	FREQUENCY	17	FREOUENCY [Hz]	RW	FLOAT 32 BIT	
40262	261				RW		
40263	262	FREQUENCY	18	FREQUENCY [Hz]	RW	FLOAT 32 BIT	
40264	263				RW	TLOAT 52 DIT	
40265	264	FREQUENCY	19	FREQUENCY [Hz]	RW	FLOAT 32 BIT	
40266	265				RW		
40267	266	FREQUENCY	20	FREQUENCY [H ₇]	RW	FLOAT 32 BIT	
40268	267				RW	I LOAT 52 DIT	

www.seneca.it

Doc: MI-00576-2-EN Page 32



ADDRES S (4x) ADDRES OFFEST (4x)		REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ	
40269	268		21		RW		
40270	269	FREQUENCY	21		RW	FLUAT 32 BIT	
40271	270		22		RW		
40272	271	FREQUENCY	22		RW	FLUAT 32 BIT	
40273	272		22		RW		
40274	273	FREQUENCY	23		RW	FLUAT 32 BIT	
40275	274		24		RW		
40276	275	FREQUENCY	24		RW	FLUAT 32 BIT	
40277	276	ERECHENCY	25		RW		
40278	277	FREQUENCY	25		RW	FLUAT 52 DIT	
40279	278		26		RW		
40280	279	FREQUENCE	20		RW	FLUAT 52 BIT	
40281	280		77		RW		
40282	281	FREQUENCE	27		RW	FLOAT 52 BIT	
40283	282		20		RW		
40284	283	FREQUENCE	20		RW	FLOAT 52 BIT	
40285	284		20		RW		
40286	285	FREQUENCE	29		RW	FLOAT 52 BIT	
40287	286	ERECHENCY	20		RW		
40288	287	FREQUENCE	50		RW	FLUAT 52 BIT	
40289	288		21		RW		
40290	289	rrequeinci	51		RW	FLUAT 52 BIT	
40291	290		22		RW		
40292	291	FREQUEINCY	52		RW	FLUAT 32 BIT	



9.2. R-32DIDO: TABLE OF MODBUS REGISTERS 0x COIL STATUS

ADDRESS (0x)	ADDRESS (0x) OFFSET	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ
1	0	DIGITAL I/O	1	DIGITAL I/O	RW	BIT
2	1	DIGITAL I/O	2	DIGITAL I/O	RW	BIT
3	2	DIGITAL I/O	3	DIGITAL I/O	RW	BIT
4	3	DIGITAL I/O	4	DIGITAL I/O	RW	BIT
5	4	DIGITAL I/O	5	DIGITAL I/O	RW	BIT
6	5	DIGITAL I/O	6	DIGITAL I/O	RW	BIT
7	6	DIGITAL I/O	7	DIGITAL I/O	RW	BIT
8	7	DIGITAL I/O	8	DIGITAL I/O	RW	BIT
9	8	DIGITAL I/O	9	DIGITAL I/O	RW	BIT
10	9	DIGITAL I/O	10	DIGITAL I/O	RW	BIT
11	10	DIGITAL I/O	11	DIGITAL I/O	RW	BIT
12	11	DIGITAL I/O	12	DIGITAL I/O	RW	BIT
13	12	DIGITAL I/O	13	DIGITAL I/O	RW	BIT
14	13	DIGITAL I/O	14	DIGITAL I/O	RW	BIT
15	14	DIGITAL I/O	15	DIGITAL I/O	RW	BIT
16	15	DIGITAL I/O	16	DIGITAL I/O	RW	BIT
17	16	DIGITAL I/O	17	DIGITAL I/O	RW	BIT
18	17	DIGITAL I/O	18	DIGITAL I/O	RW	BIT
19	18	DIGITAL I/O	19	DIGITAL I/O	RW	BIT
20	19	DIGITAL I/O	20	DIGITAL I/O	RW	BIT
21	20	DIGITAL I/O	21	DIGITAL I/O	RW	BIT
22	21	DIGITAL I/O	22	DIGITAL I/O	RW	BIT
23	22	DIGITAL I/O	23	DIGITAL I/O	RW	BIT
24	23	DIGITAL I/O	24	DIGITAL I/O	RW	BIT
25	24	DIGITAL I/O	25	DIGITAL I/O	RW	BIT
26	25	DIGITAL I/O	26	DIGITAL I/O	RW	BIT
27	26	DIGITAL I/O	27	DIGITAL I/O	RW	BIT
28	27	DIGITAL I/O	28	DIGITAL I/O	RW	BIT
29	28	DIGITAL I/O	29	DIGITAL I/O	RW	BIT
30	29	DIGITAL I/O	30	DIGITAL I/O	RW	BIT
31	30	DIGITAL I/O	31	DIGITAL I/O	RW	BIT
32	31	DIGITAL I/O	32	DIGITAL I/O	RW	BIT



9.3. R-32DIDO: TABLE OF MODBUS REGISTERS 1x INPUT STATUS (FUNCTION CODE 2)

ADDRESS (0x)	ADDRESS (0x) OFFSET	REGISTER	CHANNEL	DESCRIPTION	W/R	ΤΥΡΕ
10001	0	DIGITAL I/O	1	DIGITAL I/O	RW	BIT
10002	1	DIGITAL I/O	2	DIGITAL I/O	RW	BIT
10003	2	DIGITAL I/O	3	DIGITAL I/O	RW	BIT
10004	3	DIGITAL I/O	4	DIGITAL I/O	RW	BIT
10005	4	DIGITAL I/O	5	DIGITAL I/O	RW	BIT
10006	5	DIGITAL I/O	6	DIGITAL I/O	RW	BIT
10007	6	DIGITAL I/O	7	DIGITAL I/O	RW	BIT
10008	7	DIGITAL I/O	8	DIGITAL I/O	RW	BIT
10009	8	DIGITAL I/O	9	DIGITAL I/O	RW	BIT
10010	9	DIGITAL I/O	10	DIGITAL I/O	RW	BIT
10011	10	DIGITAL I/O	11	DIGITAL I/O	RW	BIT
10012	11	DIGITAL I/O	12	DIGITAL I/O	RW	BIT
10013	12	DIGITAL I/O	13	DIGITAL I/O	RW	BIT
10014	13	DIGITAL I/O	14	DIGITAL I/O	RW	BIT
10015	14	DIGITAL I/O	15	DIGITAL I/O	RW	BIT
10016	15	DIGITAL I/O	16	DIGITAL I/O	RW	BIT
10017	16	DIGITAL I/O	17	DIGITAL I/O	RW	BIT
10018	17	DIGITAL I/O	18	DIGITAL I/O	RW	BIT
10019	18	DIGITAL I/O	19	DIGITAL I/O	RW	BIT
10020	19	DIGITAL I/O	20	DIGITAL I/O	RW	BIT
10021	20	DIGITAL I/O	21	DIGITAL I/O	RW	BIT
10022	21	DIGITAL I/O	22	DIGITAL I/O	RW	BIT
10023	22	DIGITAL I/O	23	DIGITAL I/O	RW	BIT
10024	23	DIGITAL I/O	24	DIGITAL I/O	RW	BIT
10025	24	DIGITAL I/O	25	DIGITAL I/O	RW	BIT
10026	25	DIGITAL I/O	26	DIGITAL I/O	RW	BIT
10027	26	DIGITAL I/O	27	DIGITAL I/O	RW	BIT
10028	27	DIGITAL I/O	28	DIGITAL I/O	RW	BIT
10029	28	DIGITAL I/O	29	DIGITAL I/O	RW	BIT
10030	29	DIGITAL I/O	30	DIGITAL I/O	RW	BIT
10031	30	DIGITAL I/O	31	DIGITAL I/O	RW	BIT
10032	31	DIGITAL I/O	32	DIGITAL I/O	RW	BIT



10. SEARCH AND MODIFICATION OF THE DEVICE IP WITH SENECA DISCOVERY TOOL

The search and modification of a device can be performed directly in the Easy Setup 2 software. If Seneca devices that are not part of the R series are also used, it is more convenient to set the addresses with a single software.

When in the R series device the STS LED is on steady, it is possible to obtain the IP address which has been set using the "Seneca Discovery" tool too.

The software can be downloaded from:

https://www.seneca.it/en/linee-di-prodotto/software/easy/sdd

Pressing the "search" button starts the search for all Seneca devices present in the network even if with IP addresses not compatible with the current PC configuration:

*	IP	Mode	MAC	Ping	Name	Hostname	Firmware	CRC	Commands	
₿	192.168.86.95	DHCP	00:A7:C5:F1:11:92	2 ms	R-16DI-8DO	192.168.86.95	997.1014	OK	Assign	
Ð	192.168.90.199	STATIC	C8:F9	Different Subnet	Z-KEY	192.168.90.199	126.0	OK	Assign	
9	192.168.85.8	STATIC	C8:F9	4 ms	Z-KEY	10000	119.0	OK	Assign	
9	192.168.85.106	STATIC	C8:F9	4 ms	Z-PASS2-S	2	2940.343	ОК	Assign	
•	192.168.84.156	STATIC	00:22	2 ms	Cloud BOX	1 6	7800.112	OK		
)	192.168.85.198	STATIC	C8:F9	2 ms	Z-PASS2-S	2	2940.335	OK	Assign	
)	192.168.84.192	STATIC	C8:F9	2 ms	Z-TWS4	2	2940.331	OK	Assign	
)	192.168.85.7	STATIC	C8:F9	2 ms	Z-PASS2		3900.240	ОК	Assign	
)	192.168.85.200	STATIC	C8:F9	3 ms	Z-TWS4	2	2940.220	OK		
)	192.168.85.69	STATIC	00:50	2 ms	Cloud BOX		7800.200	OK		
)	192.168.84.155	STATIC	00:22	2 ms	Cloud BOX	c sca	7800.111	ОК		
)	192.168.85.103	STATIC	C8:F9	2 ms	Z-PASS2	1 3	3900.250	OK	Assign	
)	192.168.100.101	DHCP	C8:F9	Different Subnet	Z-PASS2	192.168.100.101	3900.240	ОК	Assign	

It is now possible to change the address by pressing the "Assign" button:



Assign IP	×
	IP
Static IP	192.168.86.95
Netmask	Gateway
255.255.255.0	192.168.86.1
Assign	Cancel

The software works at layer 2 level and it is therefore not necessary to have an Ethernet configuration compatible with the device you are looking for.

ALL RIGHTS RESERVED. NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT PRIOR PERMISSION.



11. PROFINET IO (R-32DIDO-P MODEL ONLY)

Type of protocol: Class A Device, Cyclic Real-time (RT) and Acyclic Data

The device has been tested using the following PLCs: SIEMENS S7 1200 and 1500 (Tia Portal 16) CODESYS Runtime 3.5 (Codesys 3.5)

11.1. STEP BY STEP CREATION OF A PROJECT WITH SIEMENS PLC (TIA PORTAL 16)

Creating a new project:

JI	Siemens - C:\Users\Laborato	orio iot\Docum	ents\Automatio	n\Test	Pri\Test	Pri		
F	nogetto Modifica Visualizza	Inserisci Onli	ne Strumenti	Tool	Finestra	2 2	Collega opline	a Inte
ľ	Apri Migrazione progetto	Ctrl+O				4BT 2	Collega online	Jar Inte
l,	Chiudi Elimina progetto	Ctrl+W Ctrl+E		•				
ľ	Salva Salva con nome Archivia	Ctrl+5 Ctrl+Maiusc+S		1				
E	Server di progetti	•						
	T Card Reader/memoria USB File della memory card	> >						
E	Avvia controllo di base della co	erenza						
	C:\Users\Laboratorio_iot\Docun C:\Users\Laboratorio_iot\Docun	nen\Test_Prj n\Progetto2						

11.1.1. INSTALLING THE GSD FILE

Install the GSD file of the Seneca product:

Siemens - C:\Users\Laboratorio_iot\Documents	\Automation\Test_Prj\Test_Prj
Progetto Modifica Visualizza Inserisci Online	Strumenti Tool Finestra ? Y Impostazioni nline Martine Interrompi collegamento
Navigazione del progetto	Support package
Dispositivi	Gestisci file di descrizione dispositivo Avvia Automation License Manager
▼ 🔄 Test_Prj	Biblioteche globali
Aggiungi nuovo dispositivo Dispositivi & Reti Dispositivi & Reti Dispositivi non raggruppati Dispositivi non raggruppati Dispositivi non raggruppati Dispositivi oltre i limiti del PLC	

Point to the directory where the file is and press OK, then the list of GSD files in the folder will appear:



G	Gestione file di descrizione dispositivo X							
	GSD installati	GSD nel proge	tto					
	Percorso di origin C:\Users\Laboratorio_iot\Desktop\TEST_PROFINET							
	Contenuto del per	rcorso importato						
	🗹 File		Versione	Lingua	Stato	Informazioni		
	GSDML-V2.2-SEN	ECA-R16DI8DO-2	V2.2	Inglese	Non ancora installato			
						_		
						_		
						_		
						_		
						_		
	<					>		
					Cancella	Annulla		

Click on "install".

11.1.2. INSERTION OF THE SIEMENS PLC IN THE PROJECT

Now insert the Siemens PLC (in our example a SIEMATIC S7 1200), click on "Add new device ...":

Vîŝ	Siemens - C:\Users\Laboratorio_iot\Documents\Automation\Test_Prj\Test_Prj	
Pr	Progetto Modifica Visualizza Inserisci Online Strumenti Tool Finestra ?	
E	📑 🔁 🖬 Salva progetto 🚦 🐰 🗎 👔 🗙 🏷 ± 💜 ± 🖥 🛄 🖬 🖉 Collega online	🖉 Interromp
	Navigazione del progetto	
	Dispositivi	
	▼ 📑 Test_Prj	
via	🗳 Aggiungi nuovo dispositivo	
₹.	📩 Dispositivi & Reti	
	🕨 🔛 Dispositivi non raggruppati	
	🕨 📷 Impostazioni Security	
	Funzioni oltre i limiti del PLC	
	🕨 🙀 Dati comuni	
	🗕 🕨 🛅 Informazioni sul documento	
	🕨 词 Lingue & Risorse	
	🕨 🔚 Accessi online	
	🕨 ি Card Reader/memoria USB	



iungi nuovo disp medispesitive:	ositivo	-		
C 1		_		
<u></u>				
		^	Dispositivo:	
	SIMATIC \$7-1200			
	🛨 📊 CPU			1 ¹⁰ 21.45
Controllori	CPU 1211C AC/DC/Rly			-
	CPU 1211C DC/DC/DC			•
	CPU 1211C DC/DC/Rly			
	CPU 1212C AC/DC/Rly			0.0.12120000000
	- Ten CPU 1212C DC/DC/DC		NO IT - IT- I-	
_	6ES7 212-1AD30-0XB0		N° di articolo:	6ES7 212-TAE40-0XB0
HMI	6ES7 212-1AE31-0XB0		Versione:	V4.3
	6ES7 212-1AE40-0XB0			
	CPU 1212C DC/DC/Rly		Descrizione:	
	CPU 1214C AC/DC/Rly		Memoria di lav	oro 75KB; alimentazione DC24V
	CPU 1214C DC/DC/DC		con DI8 x DC24	V SINK/SOURCE, DQ6 x DC24V e
_	CPU 1214C DC/DC/Rly		signal board di	igitale) e 4 uscite a impulsi on
Sistemi PC	CPU 1215C AC/DC/Rly		board; signal b	oard di ampliamento degli I/O on
	CPU 1215C DC/DC/DC		board; fino a 3 seriale; fino a 3	moduli per la comunicazione 2 unità di ingressi/uscite per
	CPU 1215C DC/DC/Rly		ampliamento	degli I/O; interfaccia di
	CPU 1217C DC/DC/DC		programmazio	ne PROFINET, comunicazione HMI

Confirm and the PLC will be added to the rack:

avigazione del progetto	Ш (lest_Prj → PLC_1[C	PU 121	2C DC/I	DCIDC												
Dispositivi																🚽 Vista	topologica 🛛 🚠 Vis
	📃 🖬	PLC_1 [CPU 1212C	1	•		: 🖌 🗄	1 💷 🔍 ±				Vis	ta generale dispositivi					
										^		Modulo	Porto	Indirizzo I	Indirizzo O	Tino	NT di articolo
Test_Prj													103				
Aggiungi nuovo dispositivo										=			102				
💼 Dispositivi & Reti													101				
PLC_1 [CPU 1212C DC/DC/DC]						×						▼ PLC 1	1			CPU 1212C DC/DC/DC	6ES7 212-18E40-0XB0
Configurazione dispositivi												DI 8/DO 6 1	11	0	0	DI 8/00 6	0237 212 1/1240 0/100
🕵 Online & Diagnostica			- ×					_				412.1	1.2	64 67		417	
🕨 🔙 Blocchi di programma			103	102	101		1	2	3				1.2	0407			
Oggetti tecnologici		Telaio di montagg										HCC 1	1.16	1000 10		HCC.	
🕨 📾 Sorgenti esterne						5104045						HSC 2	1.17	1004 10		HEC	
🕨 🚂 Variabili PLC												1150_2	1.10	1009.10		HEC	
Tipi di dati PLC						10						HSC 4	1 10	1012 10		HSC	
Tabella di controllo e di forzamento						1	10.00	ā			-	HSC F	1.20	101210		HSC	
Backup online											•	HSC 6	1.20	1020 10		HEC	
Traces						111						hise_b	1.21	102010	1000 10	Concentrate di Internati (
🕨 📴 Dati proxy dei dispositivi						-						Pulse 2	1 22		100010	Generatore di impulsi (
Informazioni sul programma		i i							1			Pulse 2	1.24		1004 10	Generatore di impulsi (
Elenchi di testi di segnalazione PLC												Pulse_5	1.34		100410	Generatore di impulsi (
Moduli locali												Fuise_4	1 55		100610	Generatore di Impuisi (••
Dispositivi non raggruppati												 Interfaccia PROFINEI_1 	1			Intenaccia reorine i	
Impostazioni Security													-				
Funzioni oltre i limiti del PLC													2				
Dati comuni																	
Informazioni sul documento																	
Lingue & Risorse																	
Accessi online		< III			>	100%		• -		- 1	1						
Card Reader/memoria USB			_	_								a.	_	_	_		

Now click on the PLC and select Profinet interface -> Ethernet addresses





Test Pri N DLC 1 [C	DII 101									
rest_Prj V PLC_T (C	PUTZI	2000	DUDCJ							
								- 1		
PLC_1 [CPU 12120]	•	- E	1 🛋 🖽	🔟 🔍 ±				Vista	generale dispo
						_		^	- 1	Modulo
	103	102	101		1	2	3	=		
Telaio di montagg				STATAS	10070 (1000					
										▼ PLC_1
				10	010.002					DI 8/DQ
				·					•	AL2_1
										HEC 1
									•	HSC_1
					_	_				HSC_2
			_							HSC_3
										HSC 5
		1								HSC 6
										Pulse 1
	-									Pulse 2
: III				100%		-	_8	- 🗊	<	
	CIDCIE	1								
	CDCL									
Generale Vari	abile IC		ostanti	i di sister	na les	1				
 Generale 		^	ndirizzi F	themet						
Informazioni sul pr	ogetto									
Informazione catal	ogo		Interfa	accia coll	egata a					
Identification & Ma	inten		1							
Somme di controlle	0				Sottorete	Non c	ollegata	in rete		
Canada						Inse	risci nu	ova sotte	orete	
Indivizzi Ethornot	r									
Sincronizzazione d	ell'ora		Protoc	ollo IP						
Modo di funzionam	ento					~				
Opzioni avanzate						💿 Imp	oosta ind	firizzo IP	nel proge	tto
Accesso al server y	veb	=					Indir	izzo IP:	192 . 1	58.0.1
DI 8/DO 6		-					Masc	hera di		
AI 2							sot	torete:	255 . 2	55.255.0
Contatori veloci (HSC)		-				Util	izza rout	ter		
	107									

Set the IP you want (in this case 192.168.90.44) and the PLC subnet:



ALL RIGHTS RESERVED. NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT PRIOR PERMISSION.

www.seneca.it

Page 41



Move on to the network view:

Totally	Integrated Autom P -
Vista topologica 🛛 🔓 Vista di rete	P –
🚏 Vista topologica 🛛 🔓 Vista di rete	Vista dispos
🖥 Vista topologica 🛛 🔓 Vista di rete	Vista dispos
ti Comunicazione IO VPN	TeleControl
Indirizzo nella so Sotto	te Sistema mi
0 station	
01	Comunicazione 10 VPP Indirazo nella so. Sonto az ococococ

11.1.3. INSERTION OF THE PROFINET SENECA IO

On the right, select "Hardware Catalogue" and then under "Additional Field Device" -> PROFINET IO -> I/O -> Seneca R-Series-> Header module (in the example an R-16DI-8DO device is shown):

Catalogo hardware	Þ	Γ						
Opzioni		E						
		្រ						
Y Catalogo	_	B						
	ut l							
		lar						
Filtro Profilo: <tutti></tutti>	<u>I</u>	Ma						
Im Rileva e controlla	^	6						
Im Penteria decentrata								
Annarecchiature da campo		ų,						
Ulteriori apparecchiature da campo		5						
Interiori dispositivi Ethernet								
PROFINET IO								
Drives								
Encoders								
🕨 🧊 Gateway								
√ 10		07						
Advantech Co., Ltd.	Advantech Co., Ltd.							
LAUMAS Elettronica Srl								
▶ 📺 rt-labs								
👻 🧊 Seneca S.R.L.		5						
Seneca R-series Devices		bio						
Modulo		teo						
▼ Modulo di intestazione		che						
Ethernet I/O								
Siemens AG	~							
	-							
Dispositivo:	~							
R- Ethernet I/O								
N° di articolo: R-	=							
Versione: (GSDML-V2.2 -SENECA-R -20200729.XML)								
Descrizione:								
R-1 IO module								



Drag the device to the network view:

nline Strumenti Tool Finestr	tra ?				Т	otally Integ	grated Au
K •) ± (⊻ •⊡ Ш Ш Ш Ш	 Collega online (a) Interrompi collegamento online (a) [] [] [] [] Dispositivi & Reti 						
				🚽 Vista topolo	gica 🛛 📥 Vista	di rete 📳	Y Vista d
🔲 🖬 💦 Collega	a in rete 👖 Collegamenti 🛛 Collegamento HM 💌 🕎 🖫 🖽 🛄	0, ± 📑	Vista generale di rete	Collegamenti Comun	cazione IO	VPN Te	leContro
		=	Dispositivo	Tipo S7-1200 station	Indirizzo nella so	Sottorete	Sister
PLC 1			▶ PLC_1	CPU 1212C DC/DC/DC			
CPU 1212	2C R- Eth DP-NORM		GSD device_1	GSD device			-
[РNЛЕ_1	Non assegnato			K- Ethemet IIO			
to							
<	>	100%		111			
				🔍 Proprietà	1 Informazioni	🖁 Diagr	nostica
Genera	واد						

Now associate it to the PLC by clicking with the left mouse on "Not assigned" and then select the PLC:



Click twice on the Seneca device and configure the IP address here too (for example 192.168.90.48):



1111	▶ 100%
R-Etherne	t I/O]
Generale Variabile IO	Costanti di sistema Testi
Generale Informazioni sul catalogo	Indirizzi Ethernet
Interfaccia PROFINET [X1]	Interfaccia collegata a
Generale	, ,
Indirizzi Ethernet	Sottorete: PN/IE_1
 Opzioni avanzate 	Inserisci nuova sottorete
Opzioni dell'interfaccia	
 Impostazioni Realtime 	Protocollo IP
Ciclo IO	
▼ Port 1 [X1 P1]	Indirizzo IP: 192 . 168 . 90 . 48
Generale	Maschera di sottorete: 255 255 255 0
Collegamento porta	
Opzioni delle porte	Sincronizza le impostazioni di router co
Fort 2 [X1 P2] Conorala	Utilizza router
Generale Collega monto porta	Indirizzo del router: 0 . 0 . 0 . 0
Collegamento porta	

In Profinet the devices are identified by their name, so right click on the Seneca device and select "Assign device name"

-	DP-NORM		▼ r ▶ PNHO _1	
		Sostituisci dispositivo		
		Scrivi nome dispositivo nella Augio Degice Tool in corro	micro memory card	
		M =		
	1 4000	X laglia	Ctrl+X	
	3 100%	Copia	Ctri+C	
Etherne	t I/O]		Cu+v	
Variabile IO	Costanti di sistema Te	X Elimina	Canc	
	1	🚝 Vai alla vista topologica		
sul catalogo	Indirizzi Ethernet	📥 Vai alla vista di rete		
FINET [X1]	Interfaccia collegata a	Compila	•	
		Carica nel dispositivo	•	
rnet	Sottore	💋 Collega online	Ctrl+K	
zate		Interrompi collegamento onli	ine Ctrl+M	
ell'interfaccia		U Online & Diagnostica	Ctrl+D	
ioni Realtime	Destas alla 10	Assegna nome al dispositivo		
)	Protocolio IP	Aggiorna e visualizza operani	di forzati	
P1]	to divisor	Riferimenti incrociati	F11	
le	Indinzzo	🕺 Informazioni sui riferimenti in	crociati Maiusc+F11	
mento porta	Maschera di sottore	Visualizza catalogo	Ctrl+Maiusc+C	
i delle porte		- Esporta etichette di siglatura	ner moduli	oller
P2]		- coporto cochette or sigiatora	per mount.	
ale		🔍 Proprietà	Alt+Invio	
amento porta				
i delle porte				

Scan the network with "Update list" and set (if necessary) the device name with "Assign name".



11.1.4. CONFIGURATION OF THE PARAMETERS OF THE SENECA IO

It is also possible to directly configure the device IO without any external software. To configure the device, click on the IO so that the "Unit parameters" appear:

Test_Prj → Dispositivi non rag	gruppati ▶ r	et I/O]								- 6
							6	Vista topologica	🛔 Vista di rete	📑 Vista disposit
r R-Etherne	- 🗉 🗹 🍊 🗄 🗎 🍳 ±		Vista generale dispositivi							
		_	Y Modulo	Telaio	Posto	Indirizzo I	Indirizzo Q	Tipo	N* di articolo	Firmware
		_	PN-IO	0	0 0 X1			Ethern	R-16DI-8DO	FW REV 2xx
				0	1	12	1	16DI-8DO		
			- Nome							
_			Nome del							
	_		nome può essere							
	DP-NORM	-	le proprie esigenze.							
(II	> 100%		<							
16DI-8DO_1 [16DI-8DO]							9	Proprietà 🚺 Inform	nazioni 🛛 🔀 D	iagnostica 👘
Generale Variabile IO	Costanti di sistema Testi									
• Generale	Parametri dell'unità									
Informazione catalogo Ingressi										
 Parametri dell'unità 	Set Digital Inputs Filter Delay [ms]		/							
Set Digital Inputs Filter D Set All Digital Inputs NPN/PNP	Set Digital Inputs Filter Delay [ms]	/								
Enable Digital Outputs Fa	Set Digital Inputs Filter Delay	K								
Set Digital Outputs Fault Ti	Imsi: U		_							
Set Digital Output Normal	Set All Digital Inputs NPN/PNP									
Guasto all'unità	Set All Digital Inputs NPN/PNP									
indirizzi di IrO	Cat All Disital Issues MEM/RMD. PMP									
,										1
	Enable Digital Outputs Fault Timeout									
	Enable Digital Outputs Fault Timeout									
	C Foabl	Digital Outputs	Fault Timeout							
	0.000									
	Set Digital Outputs Fault Timeout [s]									
	Set Digital Outputs Fault Timeout [s]									
	Set Digital Outputs Fault									

At the next start, the PLC will send the desired configuration to the device.

11.1.5. COMPILATION AND SENDING OF THE PROJECT TO THE SIEMENS PLC

Now that the devices are configured, all that remains is to compile and send the configuration to the PLC. The first icon compiles while the second sends the project:

Vî₀	Sieme	ns - C:\Us	ers\Laborato	orio_iot\Do	cuments	Automatio	n\Test_	_Prj\Test	_Prj	
Pr	ogetto	Modifica	Visualizza	Inserisci	Online	Strumenti	Tool	Finestr	a ?	
B	i 🖻 🖪	🚽 Salva pro	getto 昌	Х 🗈 🗈	XS	1± 🖓 🗄		lî 🖳	🖪 💋	Colleg
	Navig	azione de	el progetto				Com	oila	Disp	ositivi
	Dis	oositivi]	COMP	ILE				SEN	D

Before sending the project to the PLC, you are asked to select the ethernet interface and start the search, in order to select the PLC and press "Load".





icamento avanzato			_				_
	Nodi di accesso confi	igurati di "PLC_1"					
	Dispositivo	Tipo di dispositivo	Posto c	Tipo di interfa	a Indirizzo	Sott	orete
	PLC_1	CPU 1212C DC/D	1 X1	PN/IE	192.168.90.44	PN/I	E_1
\sim		The solid interaction of	cloc.				
		lipo di internaccia P	G/PC:	PN/IE			
		Interfaccia P	G/PC:	Broadcom N	etLink (TM) Gigabit Eth	nernet	- 🦁 🧧
	Collegamento o	con l'interfaccia/la sotto	orete:	PN/IE_1			- 💎
		1° gate	eway:				- 💎
	Selezionare il sistema	a di destinazione:			Visualizza tutti i nod	i compatibil	i s
	Dispositivo	Tipo di dispositivo	Tipo di	interfaccia Inc	dirizzo	Disposit	ivo di des
····	plc_1 🔪	\$7-1200	PN/IE	19	192.168.90.44		
· =	-	-	PN/IE	In	dirizzo di accesso	-	
E .							
🔲 LED lampeogia		\sim			~		
					\sim		
						Av	via ricerca
nformazioni sullo stato o	nline:				📃 Visualizza solo me	essaggi di e	rrore
🚺 Dispositivo accessibi	le trovato r16di8do						1
🚹 Ricerca terminata. So	ono stati trovati 1 nodi (compatibili su 3 nodi a	ccessibili.				
Richiamo informazior	ni sui dispositivi in cors	0					
3 Scansione e richiesta	a informazioni concluse	e. È stato rilevato 1 prol	olema.	_			`
					<u> </u>	a	Annulla

Once the project has been sent, RUN the PLC:

ompi collegamento online 🖁		* 🗄	Sfoglia proget
ti ▶ r16di8do [R-16Di-8DC) Etl <mark>Avvia</mark>	CPU	

And go ON-Line so as to check if there are any errors:

ti 1	Tool	Finest	ra?		
		16 😐	BT	ダ Collega online	🖉 Interrompi collegamento online 🛛 🏭 🚺 🔀 🚍
	Te	st_Prj	► D	ispositivi non ra	gg appati 🕨 r16di8do [R-16DI-8DO Ethernet I/O]

If everything is correct you will get a green icon next to the Seneca device:



Navigazione del progetto	
Dispositivi	
💌 🛅 Test_Prj	
💣 Aggiungi nuovo dispositivo 📃 🔪	
🛗 Dispositivi & Reti	
▼ [] PLC_1 [CPU 1212C DC/DC/DC]	
🔢 Configurazione dispositivi	
🖫 Online & Diagnostica	
🕨 🔙 Blocchi di programma	
🕨 🚂 Oggetti tecnologici	
🕨 🔚 Sorgenti esterne	1
🕨 🔁 Variabili PLC	
Tipi di dati PLC	
🕨 🌉 Tabella di controllo e di forzamento	
Backup online	
Traces	
Dati proxy dei dispositivi	
📴 Informazioni sul programma	
🛅 Elenchi di testi di segnalazione PLC	
Moduli locali	
Periferia decentrata	
Dispositivi non raggruppati	\bigcirc
▼ 📺 r [R- Ethernet I/O]	
Configurazione dispositivi	
😟 Online & Diagnostica	
r [R-] Ethernet I/O]	
16DI-8DO_1	
Impostazioni Security	\smile
Europia Control C	
Generation in the summation	
Imormazioni sul documento	
 Log Lingue & Risorse Accessionaling 	
Accessionine	-

11.1.6. READING AND WRITING OF THE SENECA IO FROM TIA PORTAL

It is also possible to read and write the Seneca IO (for debugging purposes) directly from the TIA portal. Define the PLC tags directly in the "standard tag table":

									_	_	_		
٧i	Ma Siemens - C:\Users\Laboratorio_iot\Documents\Automation\Test_Prj\Test_Prj												
F	Progetto Modifica Visualizza Inserisci Online Strumenti Tool Finestra ?												
	😚 🍋 Salva propetto 🔍 🗶 🖆 🖀 X 🛸 🕈 🖓 🐮 🕼 🔛 🔛 🌌 Galega online 🧭 Interrompi collegamento online 🖧 🖪 🖪 🗶 🚽 🔲 Salva propetto .												
_	Navingtion del prosto												
	Navigazione dei progetto		Test_P		c DODODCJ	• Variabili	PLC / Tab	della delle va	riabili s	tandard	[20]		
	Dispositivi												
			2	· 🖻 난 🚏 🛍									
Ē	í l		Tab	oella delle variabili sta	ndard								
e	🔻 🗋 Test_Prj	^		Nome	Тір	o di dati	Indirizzo	Ritenz	Acces	Scrivi	Visibil	Commento	
2i	💣 Aggiungi nuovo dispositivo		1	<aggiungi></aggiungi>					 Image: A start of the start of	 Image: A start of the start of			
Ě	n Dispositivi & Reti												
	 Digital PLC_1 [CPU 1212C DC/DC/DC] 												
8	Configurazione dispositivi												
ų s	🖳 Online & Diagnostica												
	🕨 🔙 Blocchi di programma												
	Oggetti tecnologici	-											
	🕨 🔚 Sorgenti esterne												
	🔻 📜 Variabili PLC												
	a Mostra tutte le variabili												
	🚔 Aggiungi nuova tabella delle variabili												
	💥 Tabella delle variabili standard [36] 🛌												
	🕨 🕨 Tipi di dati PLC												
	🔻 🥅 Tabella di controllo e di forzamento												
	🚔 Aggiungi nuova tabella di controllo	N											
	Tabella di forzamento									_	_		

Page 47



Now let's add the variables related to the IO, the addresses are shown here:

Vist	ta g	jenerale dispositivi							
Y		Modulo	Telaio	Posto	Indirizzo I	Indirizz	Тіро	N° di articolo	Fi
		 r32didop 	0	0			R-32DIDO-P Ethern	R-32DIDO-P	F١
		PN-IO	0	0 X1			r32didop		
		32DIDO	0	1	14	14	32DIDO		

So:

Bytes I1 to I4 contain the inputs (bit 0 is IO1, bit 1 is IO2 etc ...)

Bytes Q1 to Q4 contain the outputs (bit 0 is IO1, bit 1 is IO2 etc ...), obviously only the outputs are writable.



Below is the default mapping of available IOs:

INPUT/OUTPUT	DEFAULT ADDRESS IO CONFIGURED AS AN INPUT	DEFAULT ADDRESS IO CONFIGURED AS AN OUTPUT
I01	l1.0	Q1.0
IO2	l1.1	Q1.1
IO3	l1.2	Q1.2
IO4	l1.3	Q1.3
IO5	11.4	Q1.4
IO6	l1.5	Q1.5
107	l1.6	Q1.6
IO8	l1.7	Q1.7
IO9	12.0	Q2.0
IO10	l2.1	Q2.1
IO11	12.2	Q2.2
IO12	12.3	Q2.3
IO13	12.4	Q2.4
IO14	12.5	Q2.5
IO15	12.6	Q2.6
IO16	12.7	Q2.7
IO17	13.0	Q3.0
IO18	l3.1	Q3.1
IO19	13.2	Q3.2
IO20	13.3	Q3.3
IO21	13.4	Q3.4
IO22	13.5	Q3.5
IO23	13.6	Q3.6
IO24	13.7	Q3.7
IO25	I4.0	Q4.0
IO26	I4.1	Q4.1
IO27	14.2	Q4.2
IO28	14.3	Q4.3
IO29	14.4	Q4.4
IO30	14.5	Q4.5
IO31	14.6	Q4.6
IO32	14.7	Q4.7

So if, for example, I need 16 inputs and 16 outputs, I can use the Booleans from I1.0 to I2.7 for the inputs (which will therefore be found in the IO1 ... IO16) and the Booleans from Q3.0 to Q4.7 for the outputs (which will then be found in the IO17 ... IO32).



ATTENTION!

An IO configured as an input cannot be controlled as an output. An IO configured as an output cannot be read as an input.

Always following our example (16 inputs and 16 outputs) we define the 16 inputs and 16 outputs in the standard variables table:

Pro	getto_	R32DIDO 🕨 PLC_	1 [CPU 1211C DC	C/DC/DC] 🕨 Tabe	lla di controllo e	di forzamento 🔸	Tabella
<i>.</i> **	🥐 u	🛔 🕪 🌆 🖉 1	27 ⁰⁰ 0 00 1				
	i	Nome	Indirizzo	Formato visualizz	Valore di controllo	Valore di comando	9
		"IN1"	%I1.0	Bool	TRUE		
2		"IN2"	%11.1	Bool	TRUE		
		"IN3"	%11.2	Bool	TRUE		
		"IN4"	%I1.3	Bool	TRUE		
		"IN5"	%11.4	Bool	FALSE		
		"IN6"	%I1.5	Bool	FALSE		
		"IN7"	%I1.6	Bool	FALSE		
		"IN8"	%11.7	Bool	FALSE		
		"IN9"	%12.0	Bool	TRUE		
0		"IN10"	%I2.1	Bool	FALSE		
1		"IN11"	%12.2	Bool	FALSE		
2		"IN12"	%12.3	Bool	FALSE		
3		"IN13"	%12.4	Bool	FALSE		
4		"IN14"	%12.5	Bool	FALSE		
5		"IN15"	%I2.6	Bool	FALSE		
6		"IN16"	%12.7	Bool	FALSE		
7		"OUT17"	%Q3.0	Bool 💌			
8		"OUT18"	%Q3.1	Bool			
9		"OUT19"	%Q3.2	Bool			
0		"OUT20"	%Q3.3	Bool			
1		"OUT21"	%Q3.4	Bool			
2		"OUT22"	%Q3.5	Bool			
3		"OUT23"	%Q3.6	Bool			
4		"OUT24"	%Q3.7	Bool			
5		"OUT25"	%Q4.0	Bool			
6		"OUT26"	%Q4.1	Bool			
7		"OUT27"	%Q4.2	Bool			
8		"OUT28"	%Q4.3	Bool			
9		"OUT29"	%Q4.4	Bool			
0		"OUT30"	%Q4.5	Bool			
1		"OUT31"	%Q4.6	Bool			
2		"OUT32"	%Q4.7	Bool			
3			<aggiungi></aggiungi>				

Now compile, send the project and go online with the PLC.

Once online, press the glasses icon to update the status of the variables.



Pro	getto_	_R8A18D	IDO_000)	PLC_1 [CPU	1212C DC/DC/DC]	Tabella di con	trollo e di forzam	ento 🕨	Tabella d
ý	ر 🦈	vä 🛃	lo 🕫 %	27 😰 î					
	i	Nome	- Ir	ndirizzo	Formato visualizz	Valore di controllo	Valore di comando	9	Commer

Under the "Control value" column you can read the I/O value in real time.

To control the outputs, it is necessary to enter "TRUE" or "FALSE" in the "Command value" column and then press the icon with the lightning bolt to order the writing. Note the status of the LED relating to the commanded output.

In the "Control value" column, the status of the outputs is also read in real time.