

Programmable Logic Controller

PLC410

User Manual



User Manual

PLC410

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SUMMARY OF THE REVISIONS

The information below describes the revisions made to this manual.

Version	Overhaul	Description
-	R00	First edition.

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1 SAFETY INSTRUCTIONS

This manual contains the information necessary for the correct use of the frequency inverter PLC410.

It was developed to be used by people with proper technical training or qualification to operate this kind of equipment.

This manual contains all the functions of the PLC410, but it is not intended to explain every possible application of the PLC410. WEG will not take any liabilities for applications not described in this manual.

This product is neither intended for applications whose purpose is to ensure physical integrity and/or life of people, nor for any other application in which a fault of the PLC410 may create a situation of risk to the physical integrity and/or life of people. The designer who uses the PLC410 must provide ways to ensure the safety of the installation even in case of a failure of the Programmable Logic Controller.

1.1 SAFETY WARNINGS IN THE MANUAL

The following safety warnings are used in this manual:

**DANGER!**

Failure to comply with the procedures recommended in this warning may lead to death, serious injuries and considerable material damages.

**ATTENTION!**

Failure to comply with the procedures recommended in this warning may cause material damages.

**NOTE!**

The text aims at providing important information for the full understanding and proper operation of the product.

1.2 SAFETY WARNINGS ON THE PRODUCT

The following symbols are attached to the product as safety warnings:



Mandatory connection to the protective ground (PE).

1.3 PRELIMINARY RECOMMENDATIONS

**DANGER!**

Only qualified personnel, familiar with the PLC410 and related equipment, must plan or perform the installation, operation and maintenance of this device. Such personnel must follow the safety instructions described in this manual and/or defined by local standards.

Failure to comply with the safety instructions may result in death, serious injury and/or equipment damage.

**NOTE!**

For the purposes of this manual, qualified personnel are those trained and able to:

1. Install, ground, power up and operate the PLC410 in accordance with this manual and the safety legal procedures in force.
2. Use the protective equipment in accordance with the relevant standards.
3. Provide first aid.

**ATTENTION!**

Electronic boards have components sensitive to electrostatic discharges. Do not touch directly the component parts or connectors. If necessary, first touch the grounded metallic frame or use a proper grounding strap.

**NOTE!**

Read the whole user manual before installing or operating the PLC410.

2 GENERAL INFORMATION

2.1 ABOUT THE MANUAL

This manual contains the main technical characteristics, functionalities and installation and operation instructions of the PLC410. Product functions and details may change slightly due to product development and updates.

For detailed information on parameter settings, functions and accessories, refer to the manuals and application notes available on WEG's website www.weg.net and the CODESYS software online help available at help.codesys.com.

2.2 TERMS AND DEFINITIONS USED IN THE MANUAL

°C: degree Celsius.

A: ampere.

CAN: controller area network - type of communication network.

CODESYS: PLC410 programming software.

CPU: central processing unit.

GB: gigabyte = 10^9 bytes.

GHz: gigahertz = 10^9 hertz.

I/Os: inputs/outputs.

kHz: kilohertz = 1000 hertz.

mA: milliampere = 0.001 ampere.

FLASH Memory: non-volatile memory that can be electrically written and erased.

MHz: megahertz = 10^6 hertz.

min: minute.

ms: millisecond = 0.001 seconds.

RTD: resistance temperature detector.

s: second.

USB: universal serial bus - type of serial communication interface designed to work according to the "Plug and Play" concept.

V: volts.

Web page: web page used to access information related to the PLC410, set the date and time, manage the FTP server, view the states of the digital inputs and outputs, perform a factory reset, update the product firmware, among other functions.

Ω: ohms.

2.3 ABOUT THE PLC410

The PLC410 Programmable Logic Controller is a device developed to solve medium and large applications. It has high processing speed due to its CPU composed of a Dual-core ARM Cortex-A7 processor running at 400 MHz, a Real-Time ARM Cortex-M4 coprocessor running at 200 MHz, 256 MB RAM and 4 GB Flash memory.

It has 8 digital outputs, 3 of which have PWM functionality up to 300 kHz, and 8 digital inputs, 4 of which can operate up to 150 kHz.

Ethernet, CAN, RS485 serial, USB device and Micro SD Card ports are available as communication interfaces.

Built-in supercapacitors are used for the Real Time Clock (RTC) and for saving retentive data to flash memory during Power Off, eliminating the need for batteries.

The PLC410 allows the connection of expansion boards for digital, analog, thermocouple, PT100, PT1000, load cell, relay and other inputs and outputs, making the applications more flexible. It has plug-in connectors and can be mounted on a DIN 35 rail or directly on the panel.

The PLC410 is programmed via CODESYS software, widely used in the industrial environment, allowing the use of numerous applications and functions already developed on the market, as well as the import of applications from other products.

Figure 2.1 on page 2-2 shows the PLC410 and the description of the communication interfaces, connections and LED indicators.

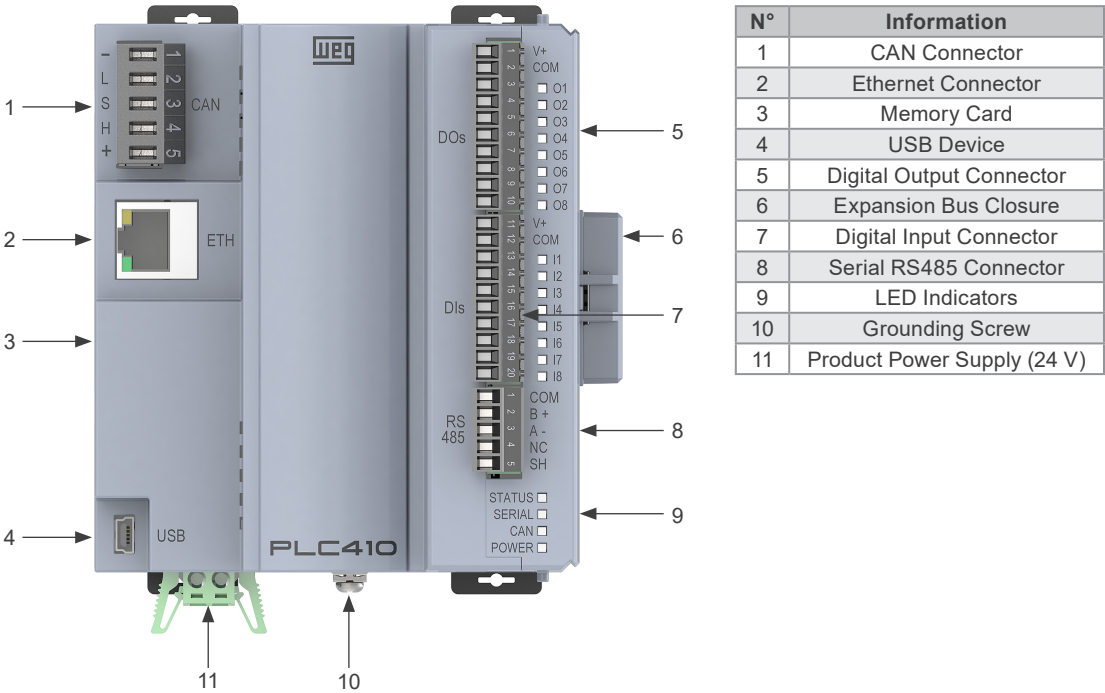


Figure 2.1: O PLC410

2.4 MEMORY AREAS

The PLC410 has a large memory area available to the user. The memory usage of an application can be viewed through the CODESYS at **View > View memory usage**.

The PLC410 memory is divided according to the table below.

Memory	PLC410	Information
Area 0 (DATA)	4 MB	Stores all local and global data (variables, function blocks, instances etc.).
Area 1 (CODE)	8 MB	Stores all codes generated by the application and also the constant data.
Area 2 (RETAIN)	64 kB	Stores retain-type variables (keeps the value after the controller reboot).
Area 3 (PERSISTENT)	16 kB	Stores persistent-type variables (keeps the value after reboot and after download when their layout remains identical).

2.5 INTERFACES, DIGITAL INPUTS AND OUTPUTS

The table below contains the number of communication interfaces and digital inputs and outputs of the PLC410.

Interface	Quantity
Gigabit Ethernet	1
CAN	1
USB Device	1
Isolated Serial RS485	1
Total Digital Inputs	8
Fast Digital Inputs	4
Total Digital Outputs	8
Fast Digital Outputs	3

2.6 PROTOCOLS

The table below contains the existing protocols and their respective functions. Protocols marked as "Future" will be available in the next updates.

Protocol	Function	Interface		
		ETH	CAN	RS485
	Server	Yes		
	Client	Yes		
	Master			Yes
	Slave			Yes
	Master		Yes	
	Slave		Future	
	Scanner	Yes		
	Adapter	Yes		
	Master	Yes		
	Slave			
	Publisher	Yes		
	Subscriber	Yes		

2.7 RECEIVING AND STORAGE

The PLC410 is supplied packed in a cardboard box. At the receipt of the product, check that:

- The identification label of the PLC410 corresponds to the purchased model.
- Damages occurred during transportation.

If any problem is detected, report it to the Carrier immediately.

If the PLC410 is not installed soon, store it in a clean and dry location (temperature between -25 °C and 60 °C) with a cover to prevent dust accumulation inside the Programmable Logic Controller.

2.8 PACKAGE CONTENT

- PLC410 with plug-in connectors.
- Installation, configuration and operation quick guide.
- Grounding plate.
- Closure of the communication busbar.

3 MECHANICAL INSTALLATION

The directions and suggestions must be followed aiming at the safety of people and the correct operation of the equipment.

3.1 MOUNTING

The PLC410 and its accessories can be installed on a 35 mm DIN rail, as shown in [Figure 3.1 on page 3-1](#). In order to do so, proceed as follows:

- a) Move the 4 latches away.
- b) Fit the controller on the DIN rail.
- c) Close the 4 latches again.

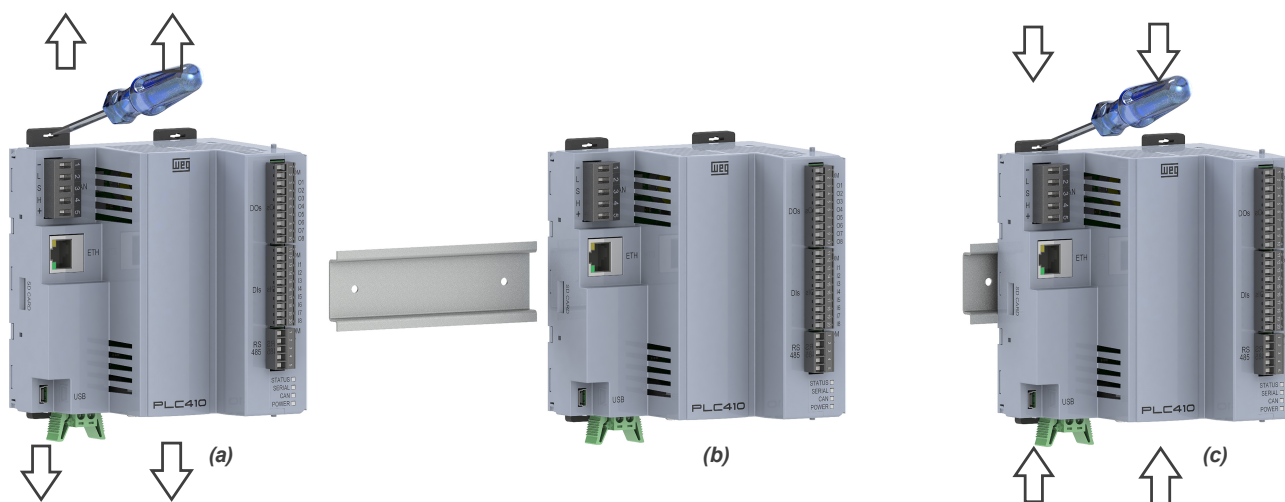


Figure 3.1: Mechanical mounting on DIN rail

In addition to the DIN rail, the PLC410 can also be mounted directly to the panel using M3 screws, as shown in [Figure 3.2 on page 3-1](#), in order to do so:

- a) Move the 4 latches away.
- b) Screw the controller to the panel.

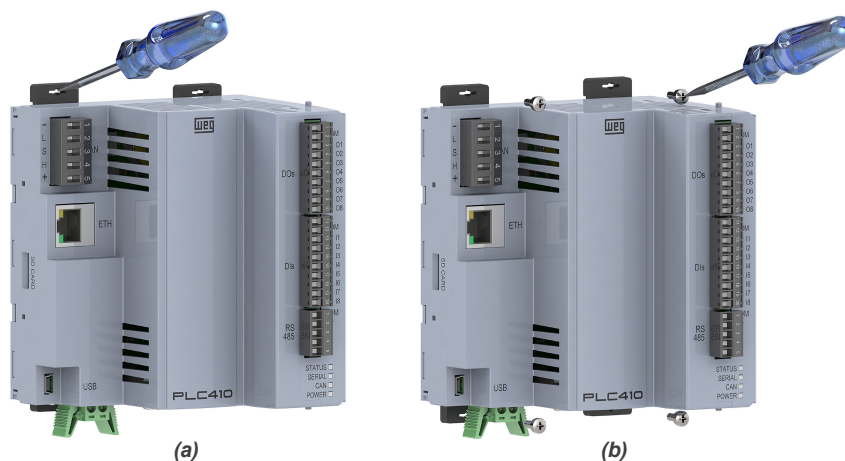


Figure 3.2: Mounting directly to the panel

3.2 DIMENSIONS

3.2.1 Dimensions of the PLC410

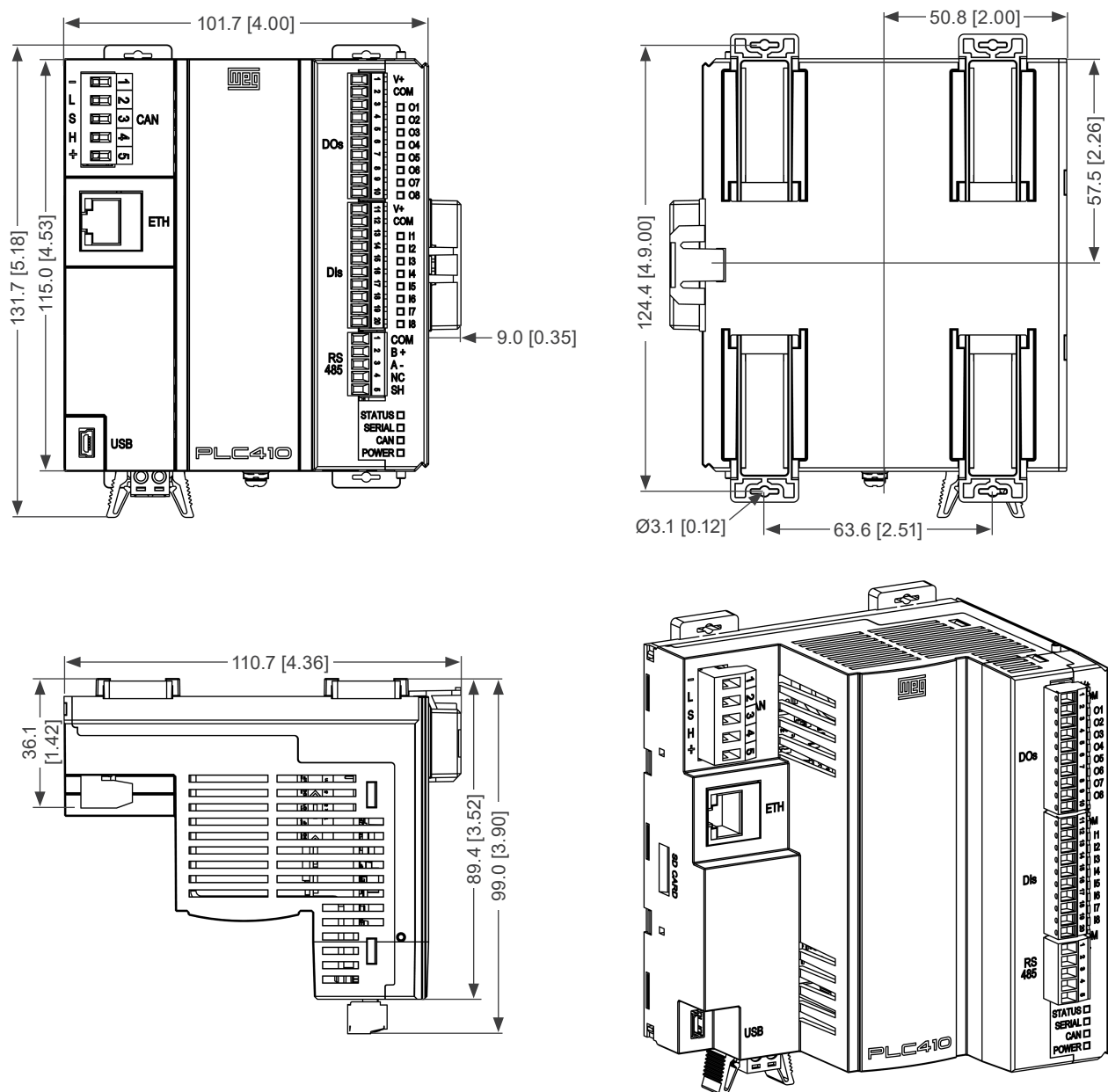


Figure 3.3: PLC410 dimensions in mm [in]

3.2.2 Accessory Dimensions

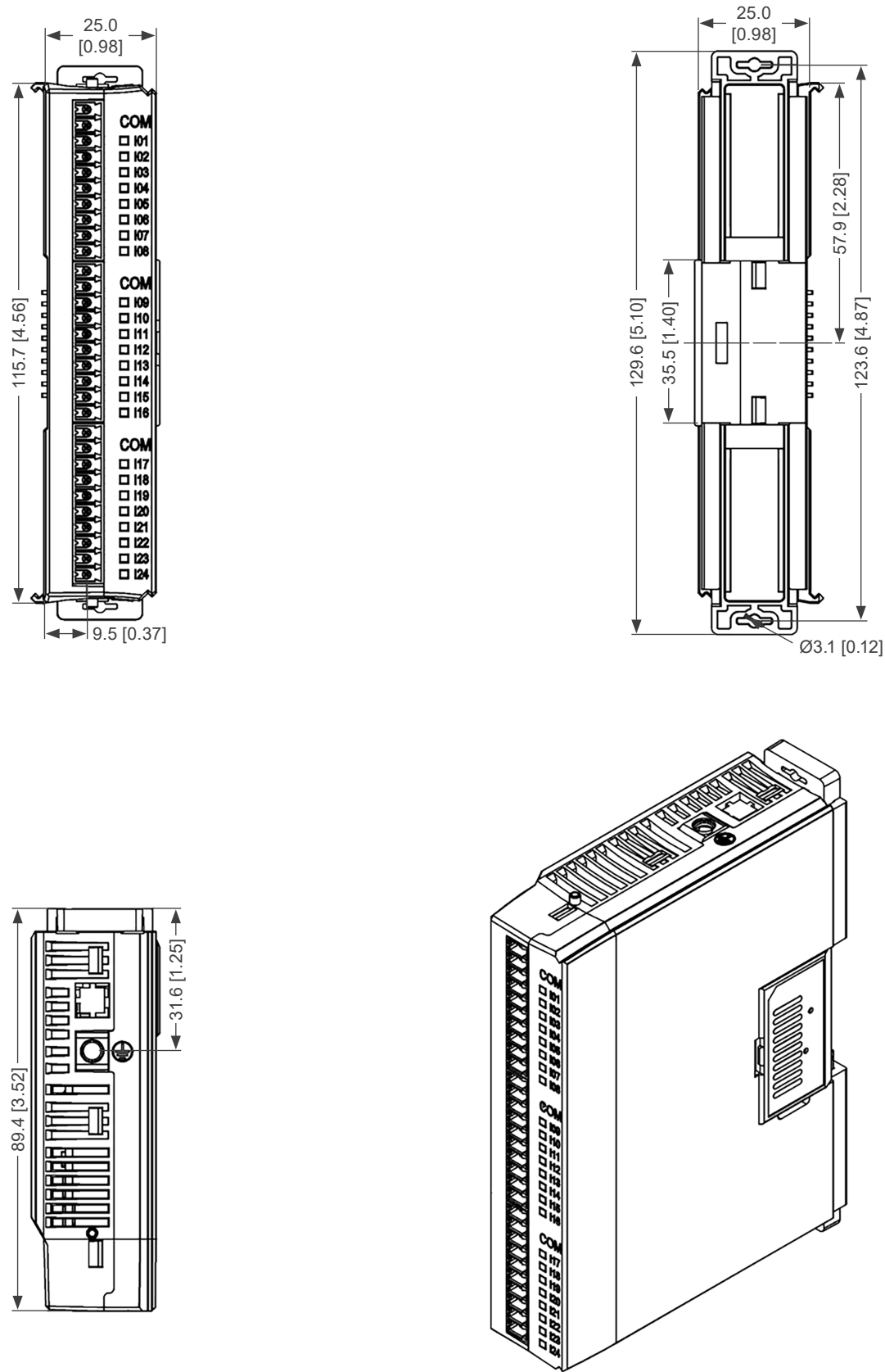


Figure 3.4: Accessory dimensions in mm [in]

3.3 CONNECTING THE ACCESSORIES

The accessories must be inserted in the direction of the image below. Before adding a new accessory, the closure of the modules must be removed and then reinstalled after the accessory is connected.

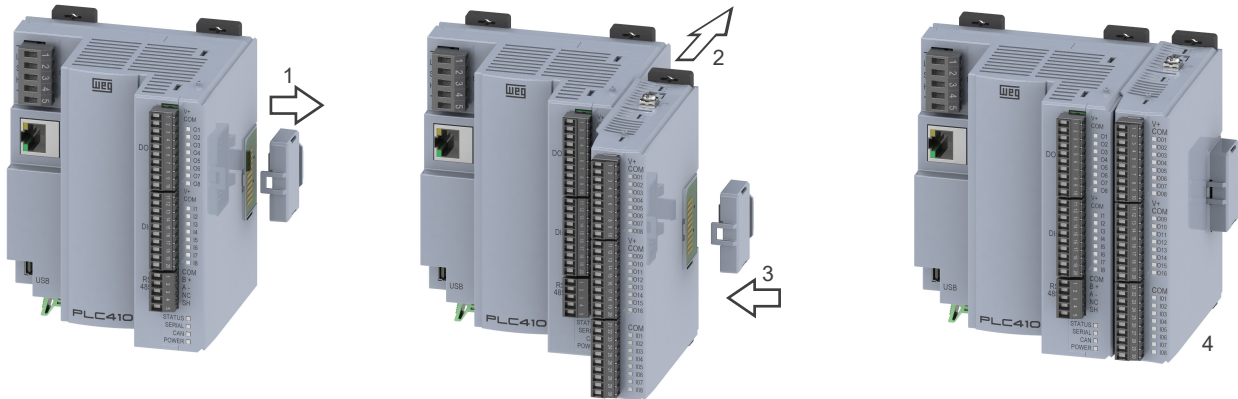


Figure 3.5: Connection of the accessories

Connecting the closure of the PLC410 communication busbar is essential for its operation.

To install the closure correctly, first fit the part highlighted in red (1), then, with a small rotation movement, fit part 2 that is close to the rail or panel.



ATTENTION!

Accessories must be installed or removed with the PLC410 de-energized to avoid burning components and to allow them to be identified.

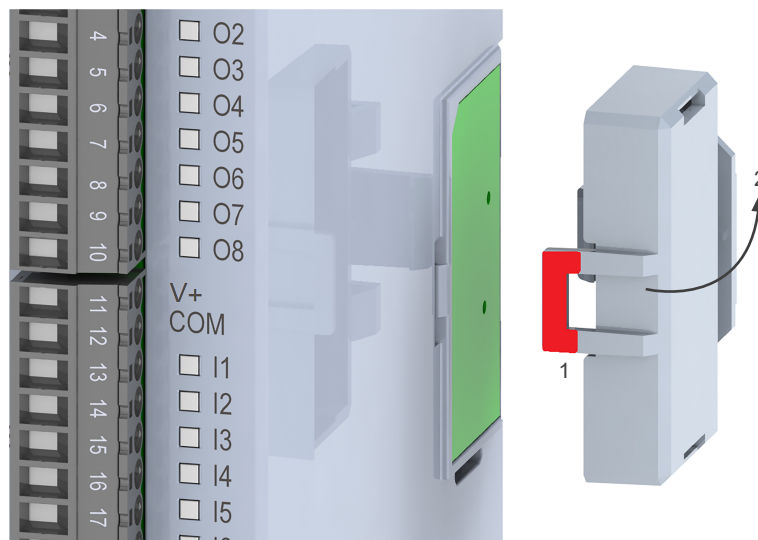


Figure 3.6: Closure fitting

4 ELECTRICAL INSTALLATION

4.1 POWER SUPPLY

The PLC410 must be powered by an external 24 V dc power supply with a current capacity of at least 2 A. The minimum supply voltage is 20.4 V, and the maximum is 28.8 V.



Figure 4.1: Power supply

4.2 CONNECTING THE GROUNDING

Use the screw shown in Figure 4.2 on page 4-1 to ground the product.

To connect the ground to the expansions, use the metal plate that comes with the product, as indicated by arrow 1 in Figure 4.2 on page 4-1. To connect the other expansions, use the metal plate indicated by arrow 2 in Figure 4.2 on page 4-1.

For analog expansion modules, it is recommended to use cables with the shield properly connected to the ground-grid.

The shield of analog cables must be grounded using the metallic clamp that comes with the expansion. The grounding of the shield minimizes occasional electromagnetic interferences.

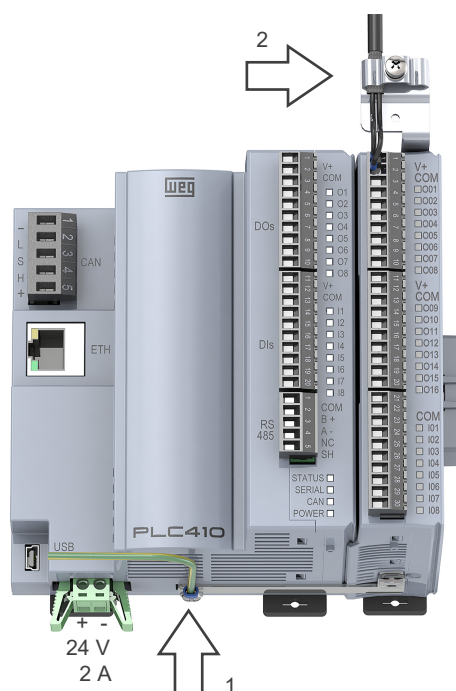


Figure 4.2: Product grounding screw

5 ETHERNET COMMUNICATION INTERFACE

The PLC410 has an ethernet port that can operate at speeds of 10/100 Mbps.

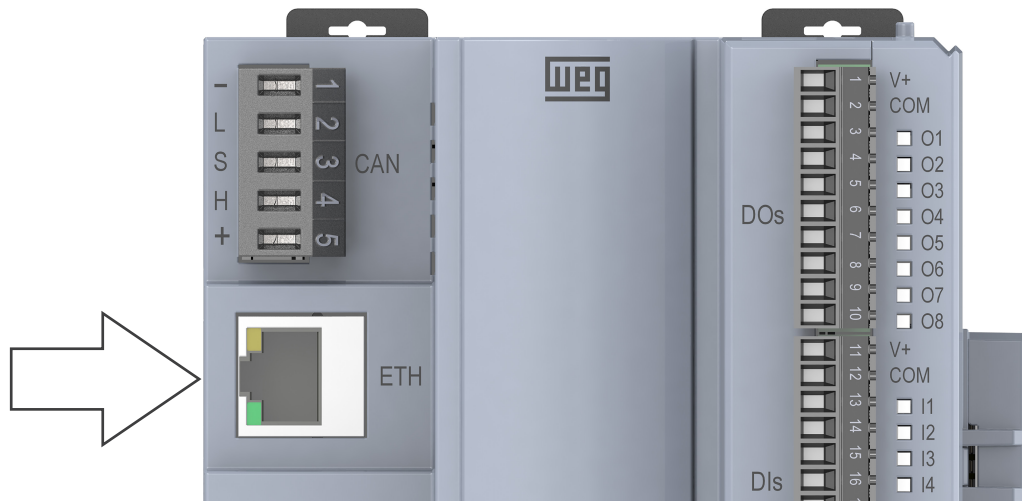


Figure 5.1: Ethernet connector

For the installation, it is recommended to use shielded Ethernet cables specific for industrial environments.

The ETH port default IP is **192.168.1.10**.

Those and other settings can be made via the product Setup via CODESYS; see [Chapter 16 TECHNICAL DATA](#) on page 16-1.

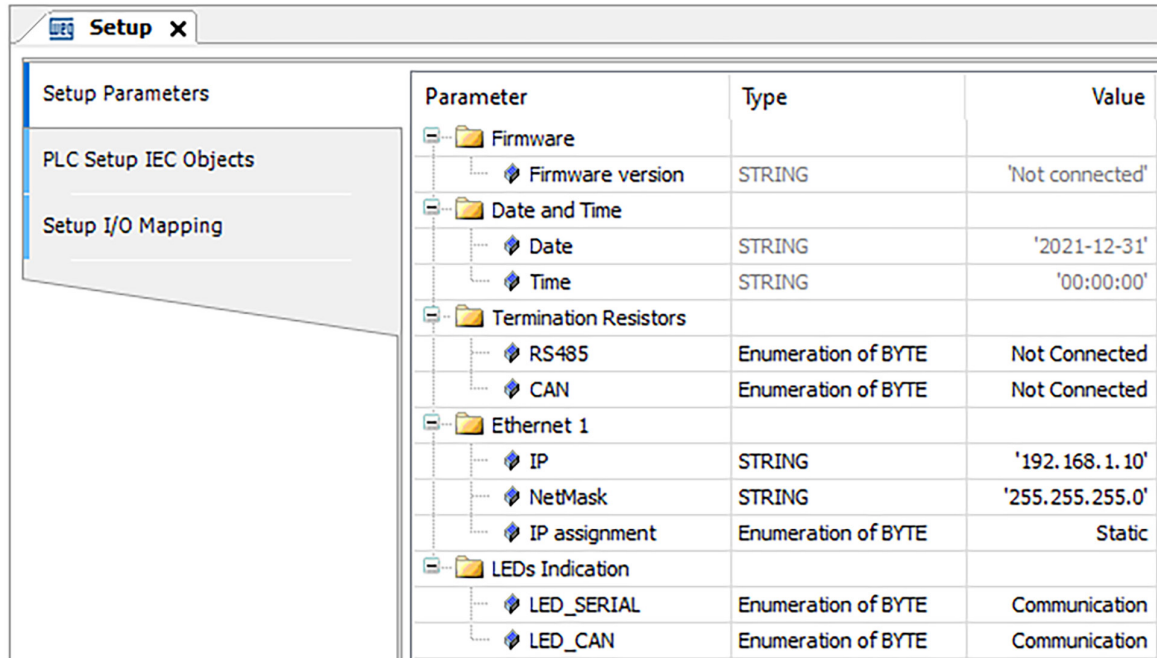


Figure 5.2: Ethernet setup via CODESYS

For further details, see the Application Notes available on WEG's website.

6 CAN COMMUNICATION INTERFACE

The PLC410 interface has an isolated CAN interface with its own internal power supply. The 5-way plug-in connector to connect the Modbus network has the following pinout:

Pin	Name	Lettering	Function
1	COM	-	Common in the CAN network (connected to the negative pole of the CAN network)
2	CAN_L	L	CAN_L communication signal
3	SHIELD	S	Cable Shield
4	CAN_H	H	CAN_H communication signal
5	NC	+	Not connected (it can receive the positive pole of the CAN network)



Figure 6.1: CAN connector

The PLC410 has an internal power supply for the CAN network, so it is not necessary to connect pin 5. Nevertheless, it is recommended that pin 1 (COM) be connected to the master and the other slaves to leave the CAN network at the same voltage reference.

The CAN interface requires 120 Ω termination resistors at the end devices connected to the CAN network. The PLC410 has these resistors internally, which can be connected and disconnected via the CODESYS software setup.

The CANopen Network address and baud rate are set through the programming software.

For further details, see the CANopen Application Note available on WEG's website.

7 RS485 COMMUNICATION INTERFACE

Isolated, multipoint serial interface intended for network communication. It operates as master or slave in the Modbus RTU protocol.

The 5-way plug-in connector to connect the Modbus network has the following pinout:

Pin	Name	Function
1	COM	RS485 common
2	B +	B + communication signal
3	A -	A - communication signal
4	NC	Not connected
5	SHIELD	Cable shield

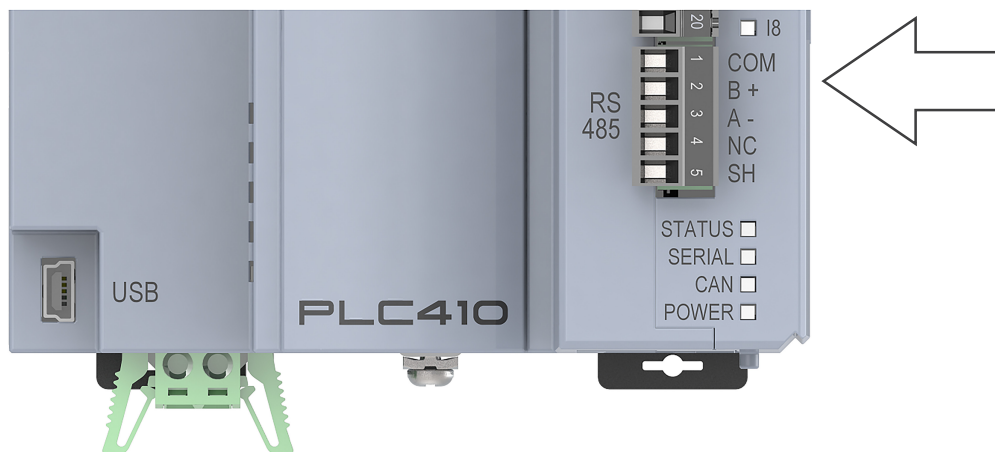


Figure 7.1: RS485 connector

The RS485 serial communication address, baud rate and bytes are set via the product programming software. Built-in termination resistors can also be added to the RS485 network through the CODESYS Setup.

For further details, see the Modbus RTU Application Note available on WEG's website.

8 USB DEVICE INTERFACE

The PLC410 has a Mini USB port (USB) that emulates an Ethernet port exclusive for programming, parameter setting and product monitoring through a computer. The IP address of this port is fixed: **192.168.234.234**.

As this is a non-isolated interface, it must not be used for the PLC410 operation; it must only be used for configuration at start-up.

The cable used for this connection must be a shielded mini USB type B, limited to 3 meters in length. Cables without shield may cause communication errors.

To access this interface, proceed as follows:

- 1) Connect the mini USB cable to the USB port and to the computer.
- 2) Install the USB Ethernet RNDIS Driver.
- 3) In the IPV4 Protocol properties, set the IP as static, within the same network (e.g.: **192.168.234.100**) as shown in [Figure 8.1 on page 8-1](#).

By doing so, the PLC410 will be ready to be accessed through the CODESYS.

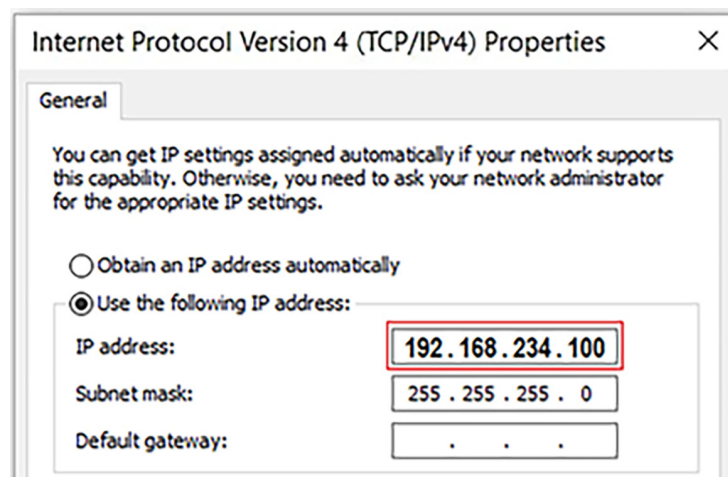


Figure 8.1: Properties of the USB device emulating an ethernet port



ATTENTION!

The PLC410 and the computer must be at the same ground potential. It is recommended to use laptops (portable) instead of desktop computers.



Figure 8.2: USB device connector

9 SD CARD

The PLC410 allows saving data, creating recipes, LOGs, saving charts and other files in an SD memory card. The files can be created and accessed via the Codesys app using the path '\$\$SDcard\$\$.

E.g.: to access the file "myfile.txt" in the folder "myfolder", use the path '\$\$SDcard\$/myfolder/myfile.txt'.



Figure 9.1: SD Card

10 LED INDICATORS

The PLC410 has LEDs to indicate the status of the controller, communication networks and digital inputs and outputs, as shown in the figure:

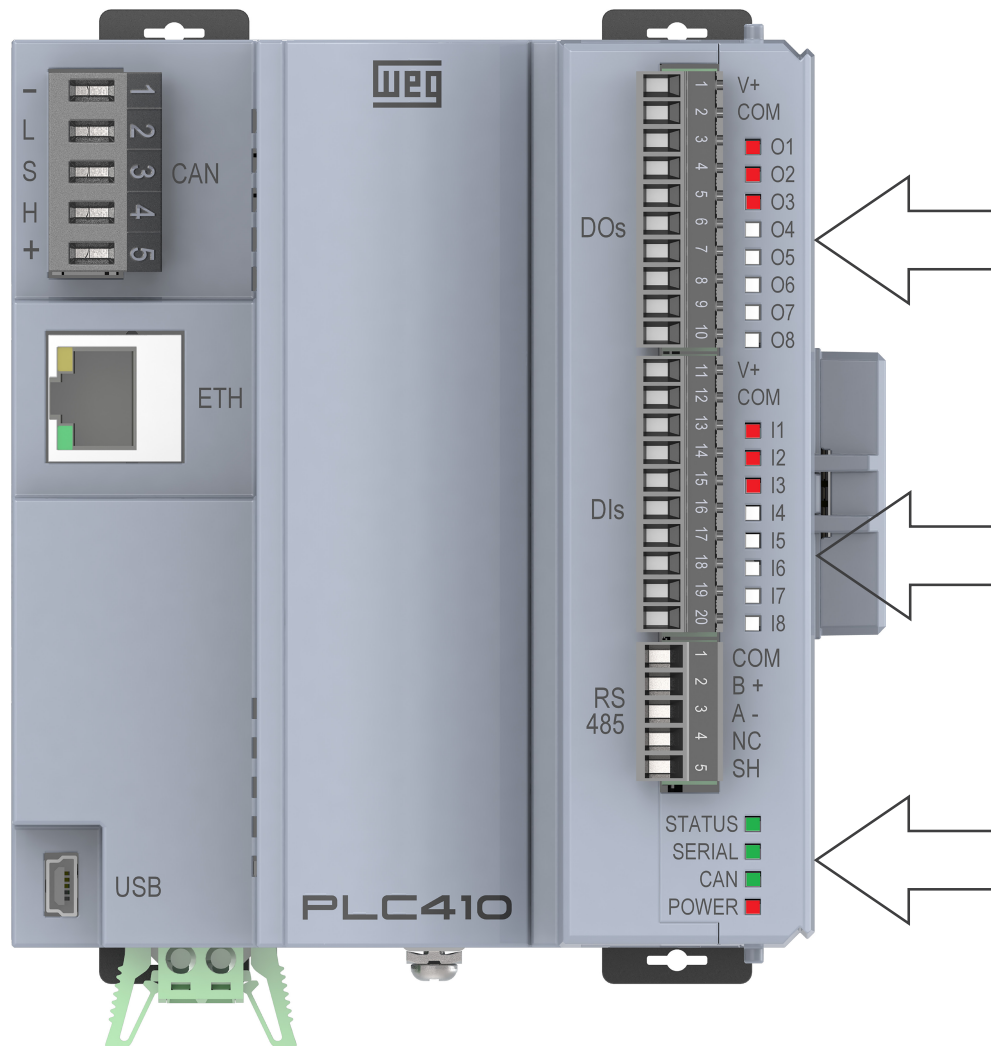


Figure 10.1: LEDs

10.1 STATUS LED

Indicates the controller application status, as shown in the table:

LED	Description
GREEN	Application running
RED	Application stopped
OFF	No application

10.2 SERIAL LED

Bicolor LED that indicates the status of the Serial RS485 communication. Check the Modbus RTU Application Note, available on WEG's website.

10.3 CAN LED

Bicolor LED that indicates the status of the CAN communication interface. Check the CANopen Application Note, available on WEG's website.

10.4 POWER LED

Red LED that indicates that the PLC410 is energized.

10.5 DIGITAL INPUT LEDS

LEDs I1 to I8 represent, respectively, digital inputs DI1 to DI8.

Digital input LEDs light up in red when the input is energized.

10.6 DIGITAL OUTPUT LEDS

LEDs O1 to O8 represent, respectively, outputs DO1 to DO8. On the PLC410, the digital output LEDs light up in red whenever the digital output is active.

11 DIGITAL OUTPUTS

The PLC410 has 8 isolated digital outputs. The digital output circuit must be powered externally by a 24 V power supply connected to pins 1 (V+) and 2 (COM) of the DOs connector, as shown in [Figure 11.1 on page 11-1](#) below.

Digital outputs DO1, DO2 and DO3 are push-pull, that is, they activate the load connected to both V+ and COM. These 3 outputs can be used as regular digital outputs or as independent PWM, with variable duty cycle from 0 to 100% at up to 300 kHz. The current capacity of each is 100 mA.

Digital outputs DO4, DO5, DO6, DO7 and DO8 are PNP, that is, they activate the load connected to the COM and can supply a current of up to 500 mA each.

The table below shows the name and function of each connector pins of the digital outputs. For this connector, use AWG 30-16 cables.

LED	Description	Function 1	Function 2
1	V+	Power positive of the outputs	
2	COM	Negative or common of the outputs	
3	DO1	Digital output 1	PWM 1 (300 kHz)
4	DO2	Digital output 2	PWM 2 (300 kHz)
5	DO3	Digital output 3	PWM 3 (300 kHz)
6	DO4	Digital output 4	
7	DO5	Digital output 5	
8	DO6	Digital output 6	
9	DO7	Digital output 7	
10	DO8	Digital output 8	

The example of [Figure 11.1 on page 11-1 \(a\)](#) shows two loads connected to DO1 in push-pull configuration, that is, when L1 is powered, L2 is not, and vice versa. Other seven loads are connected to outputs DO2 to DO8, which, when activated, apply V+ to the loads and indicate through the respective red LED. In this case, only outputs DO1, DO3 and DO5 are enabled. Na [Figure 11.1 on page 11-1 \(b\)](#) shows the 3 PWM outputs enabled.

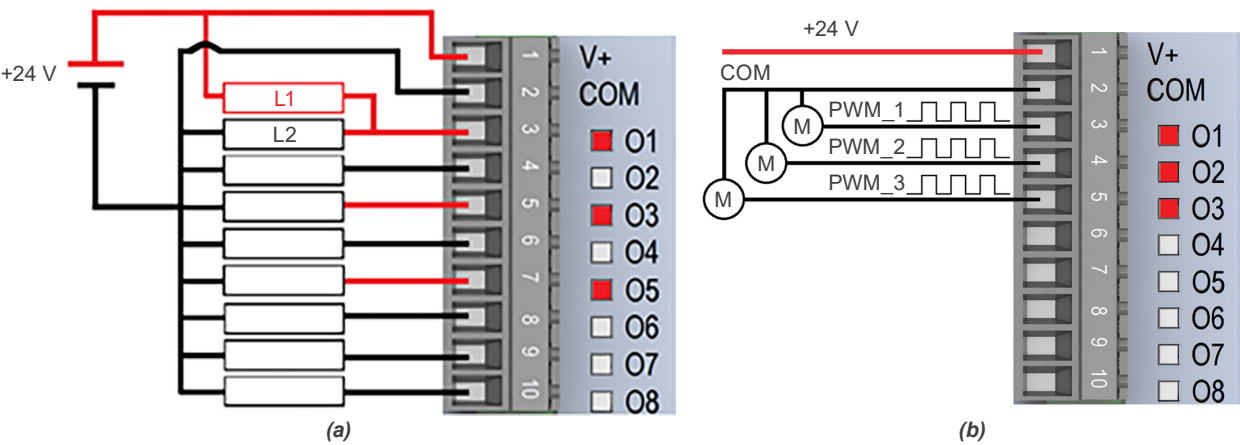


Figure 11.1: (a) and (b) PLC410 digital and PWM outputs

12 DIGITAL INPUTS

The PLC410 has 8 isolated digital inputs that must be excited by a 24 V source. The circuit of the digital inputs must be powered externally by a 24 V power supply connected to pins 11 (V+) and 12 (COM) of the DIs connector, according to [Figure 12.1 on page 12-1](#) below.

The levels for enabling the inputs are from 10 to 28.8 V for high level and below 3 V for low level.

Inputs DI1, DI2, DI3 and DI4 are fast and can be used for counting pulses or reading quadrature encoder. To this end, configure the function of each input in the setup via CODESYS and use the available blocks.

For these connectors, use AWG 30-16 cables. The table below displays the name and function of each Digital Input connector pins.

Pin	Name	Function 1	Function 2	Function 3
11	V+	Power positive of the inputs		
12	COM	Negative or common of the digital inputs		
13	DI1	Digital Input 1	Pulse Quadrature A (enc 1)	Pulse Input (enc 1)
14	DI2	Digital Input 2	Pulse Quadrature B (enc 1)	Pulse Direction (enc 1)
15	DI3	Digital Input 3	Pulse Quadrature A (enc 2)	Pulse Input (enc 2)
16	DI4	Digital Input 4	Pulse Quadrature B (enc 2)	Pulse Direction (enc 2)
17	DI5	Digital Input 5		
18	DI6	Digital Input 6		
19	DI7	Digital Input 7		
20	DI8	Digital Input 8		

The example of [Figure 12.1 on page 12-1](#) shows Digital Inputs DI1, DI3 and DI5 activated through the positive terminal of the source (PNP).

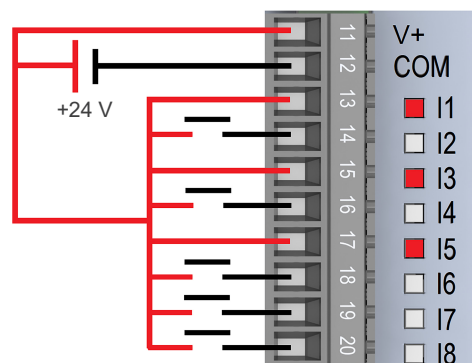


Figure 12.1: PLC410 Digital inputs

The example of [Figure 12.2 on page 12-1 \(a\)](#), shows the connection of two encoders in quadrature and [Figure 12.2 on page 12-1 \(b\)](#), shows the connection of two pulse and direction inputs.

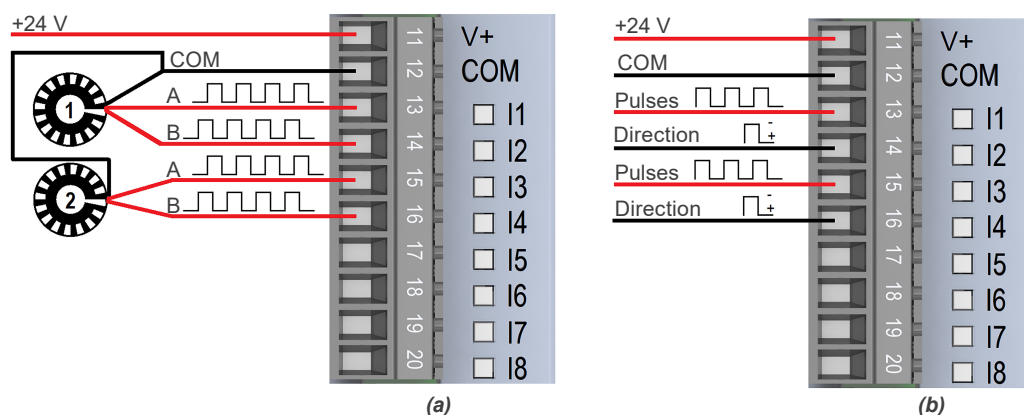


Figure 12.2: (a) and (b) Wiring of fast inputs for encoder and pulse

13 EXPANSION BOARDS

The PLC410 has a bus that allows connecting up to 8 expansion boards, as shown in the image:



Figure 13.1: PLC410 with eight expansion boards

The user fast and easily incorporates the expansion boards to the PLC410 through the plug and play concept. When the PLC410 is powered up, the electronic circuit identifies the number of connected expansions, the model and the firmware version of each one. They also receive an address according to their position so that it is possible to access them through the communication bus.



ATTENTION!

Accessories must be installed or removed with the PLC410 de-energized to avoid burning components and to allow them to be identified.

13.1 AVAILABLE MODELS

The table below describes in brief each expansion available for the PLC410. For further details, see the manual for each accessory.

Model	Characteristic
MOD1.00 - 24DIs	24 bidirectional digital inputs.
MOD1.10 - 24DOs	24 isolated digital outputs 24 V/500 mA.
MOD1.20 - 16DO/8DI	16 isolated 24 V/500 mA digital outputs and 8 bidirectional digital inputs.
MOD1.30 - 08DO/16DI	8 isolated 24 V/500 mA digital outputs and 16 bidirectional digital inputs.
MOD2.00 - 7AI	7 voltage or current analog inputs.
MOD3.00 - 8AO	8 voltage analog outputs 0 to 10 V and 4 current analog outputs 0 to 20 mA.
MOD4.00 - 7TH	7 inputs for type J, K and T thermocouples.
MOD5.00 - 4RTD	4 inputs for PT100 and PT1000 thermistors.
MOD6.00 - 2SG	2 load cell inputs.
MOD7.00 - 6RE	6 relay outputs.
MOD8.00 - SCW	4 smart starters.

13.2 ACCESSORY LIMIT

The PLC410 allows coupling up to 8 expansion modules. However, there is a 300 mA limitation on the +/-15 V source that powers part of the circuit of some expansions.

To find out how many accessories can be coupled, use the table below with the current consumption values of each module:

Model	Consumption
MOD1	0 mA
MOD2	40 mA
MOD3	150 mA
MOD4	0 mA
MOD5	0 mA
MOD6	30 mA
MOD7	50 mA
MOD8	0 mA

13.2.1 Configuration and Consumption Examples

Ex1: $1 \times \text{MOD3} + 1 \times \text{MOD2} + 4 \times \text{MOD1} = 1 \times 150 + 1 \times 40 + 4 \times 0 = 190 \text{ mA}$ (OK).

Ex2: $2 \times \text{MOD3} + 4 \times \text{MOD1} + 2 \times \text{MOD5} = 2 \times 150 + 4 \times 0 + 2 \times 0 = 300 \text{ mA}$ (OK).

Ex3: $2 \times \text{MOD3} + 4 \times \text{MOD1} + 1 \times \text{MOD7} = 2 \times 150 + 3 \times 0 + 1 \times 50 = 350 \text{ mA}$ (**Current limit exceeded**).

Ex4: $1 \times \text{MOD3} + 4 \times \text{MOD1} + 4 \times \text{MOD5} = 1 \times 150 + 4 \times 0 + 4 \times 0 = 150 \text{ mA}$ (**Accessories limit exceeded**).

**NOTE!**

The sum of consumption cannot exceed 300 mA, and the maximum number of accessories is 8. The CODESYS programming software will generate an error if this limit is exceeded.

14 CODESYS PROGRAMMING SOFTWARE

The PLC410 is programmed through the CODESYS V3.5.19 software (or above), available for download on CODESYS's website. This programming tool is widely used in the industrial environment for various automation types, from simple to more complex logics, such as robotics and motion control, while also being employed in industry 4.0.

A multitude of ready blocks and functions are available to CODESYS through libraries that can be added to the project. In addition, logics developed for other controllers can be imported and adapted to be used in the PLC410.

The programming languages defined in IEC 61131-3 are available in the CODESYS development interface and can be used in the same application. They are:

- LD Ladder language.
- ST Structured Text.
- SFC Sequential Function Chart.
- FBD Function Block Diagram.
- CFC Continuous Function Chart.

The CFC graphic language is not described in IEC 61131-3, but it can be understood as a block diagram with free positioning, where the programmer can position the blocks and make data connections using the mouse with drag and drop functions.

For further details about CODESYS, visit: **www.codesys.com**.

14.1 FIRST STEPS

- 1) Download the updated version of the **CODESYS** software and install it.
- 2) Download the latest version of the WEG product package for CODESYS (WEG package) on **WEG's** website and install it.
- 3) Connect the PLC410 to the computer using the ethernet port or the USB port. The computer must be configured on the same network as the connection. For further details on these connections, see the respective chapter.
- 4) Open CODESYS and create a new project in **File > New Project**. Select **Standard Project**, define the name, the location where it will be saved and press **OK**. In the new window, select the Device **PLC410 (WEG)** and the desired programming language, as shown in [Figure 14.1 on page 14-2](#).

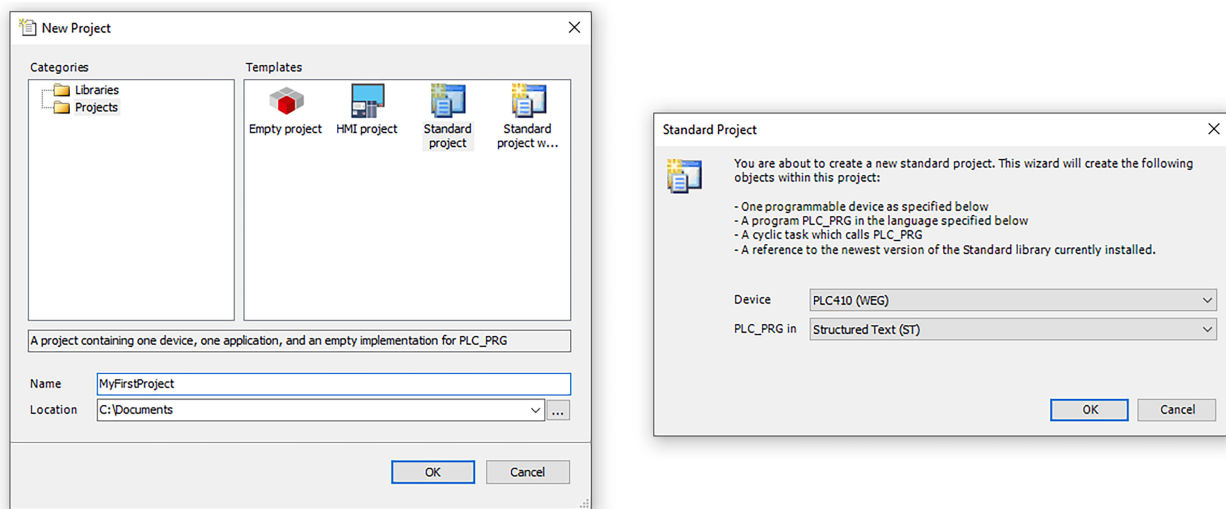


Figure 14.1: Creating a new project

- 5) To connect to the PLC410, double-click on **Device (PLC410)**. The **Communication Settings** tab will open. Click on **Scan Network** and then on **PLC410**, as shown in [Figure 14.2 on page 14-2](#).

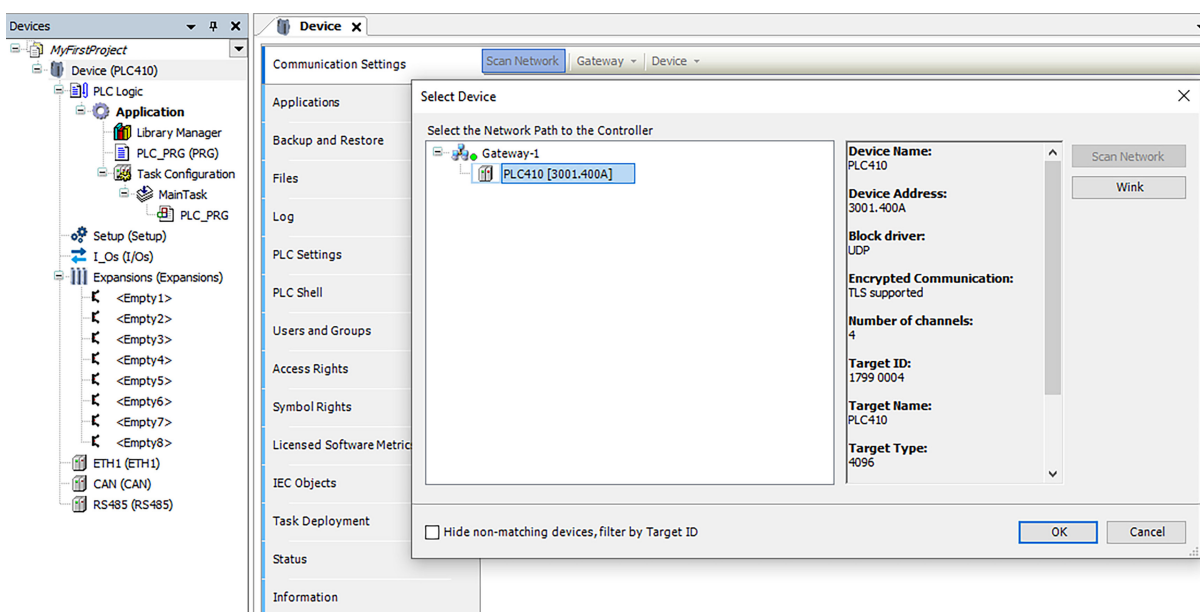


Figure 14.2: Creating a new project

The WEG package version must be compatible with the device current firmware version. Therefore, the two most significant fields of the WEG package version must be the same as those of the product firmware version.

E.g.: The WEG package V1.2.0 and the firmware version 1.2.1 are compatible.

Note: In case of incompatibility when trying to connect to the product, an error message will be displayed. Update the product firmware to a supported version.

- 6) The device will be ready for programming when PLC410 (active) shows along with a green sign just above the device name, as in [Figure 14.3 on page 14-3](#).

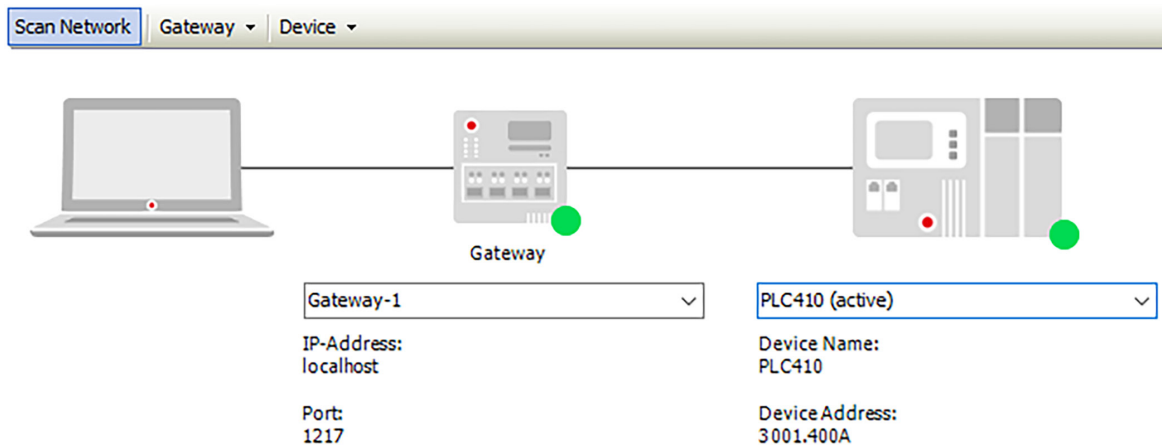


Figure 14.3: Device ready for programming

15 ACCESS VIA WEB PAGE

The PLC410 has a specific web page where you can check product information, set the date and time, manage the FTP server, view the states of the digital inputs and outputs, perform a factory reset, update the product firmware, among others functionalities.

To access the website, proceed as follows:

- 1) Connect the PLC410 to the computer using the ethernet port or the USB port. For further details on these connections, see the respective chapter.
- 2) The table below contains the default IP addresses of the communication ports to access the web page. The Computer must be configured with a static IP within the same network used. E.g.: 192.168.1.10 for ETH.

Connection	Default IP
ETH	192.168.1.10
USB	192.168.234.234

- 3) Open a web browser and enter the corresponding connection IP. The PLC410 web page will open as in [Figure 15.1 on page 15-1](#), and it will show the product login screen. For the first access use "weg" for Username and "weg" for Password.

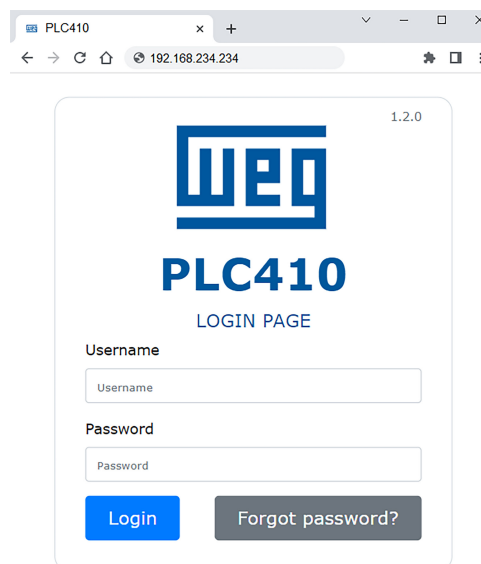


Figure 15.1: PLC410 web page

For further details on the PLC410 website, see the Application Note available on WEG's website.

16 TECHNICAL DATA

Power Supply		Recommended voltage 24 V DC (20.4 V to 28.8 V)
		Recommended power supply: minimum capacity of 2 A
PLC410 Consumption		75 mA (on duty, without accessories, without networks)
Expansion Consumption		Approximately 50 mA
Processor		IMX7 Dual Core @400 MHz + Coprocessor @200 MHz
Linux Kernel		V4.14.98 (with Real Time)
Cycle Time	100 Thousand Instructions	Total Time 1.62 ms
	Per Instruction	16 ns
Memory	RAM	256 MB
	Flash	4 GB
Maximum Instruction Capacity		Approximately 2.5 million simple instructions
Digital Inputs		8 x PNP
		Maximum input voltage of 28.8 V
		Fast inputs: DI1 to DI4 - 150 kHz per channel
		High level: Vin ≥ 10 V
		Low level: Vin ≤ 5 V
		Consumption at 24 V: 2.1 mA
		Insulation voltage: 500 V
		Max. DI number via expansion boards: 200 points
Digital Outputs	Fast DO1, DO2 and DO3	Push-Pull
		Recommended voltage V+: 24 V
		Maximum voltage V+: 28.8 V
		Maximum frequency: 300 kHz
		PWM width: 0.0 % to 100.0 %
	Regular DO4...DO8	Max current: 100 mA/output
		PNP
		Recommended voltage V+: 24 V
		Maximum voltage V+: 28.8 V
		Maximum current of outputs DO4...DO8: 500 mA/output
Communication Ports	Mini USB Device	Program transfer and monitoring (emulates an Ethernet)
	CAN	CANopen (Master)
		Max. number of slaves: 126
	RS485	Modbus RTU (Master/Slave)
		Max. number of slaves: 246
	Ethernet	Port 10/100 (RJ45)
Expansion Boards	SD Card	Up to 2 TB
	Maximum Number	8
	Number of DOs	200
	Number of DIs	200
	Analog Inputs	56
	Thermocouple Inputs	56
	PT100/PT100 Inputs	32
	Load Cells	16 channels (up to 4 in parallel per channel)
Relays	48	
Operating Temperature		0 °C up to 50 °C
Storage Temperature		-25 °C up to 60 °C
Protection Rating		IP20
Pollution Degree		2 (as per EN50178 and UL508C), with non-conductive pollution
Mounting		On DIN rail or on panel with screws
Software		CODESYS® (V3.5 SP19 or above)
Programming Language		LD (Ladder) - ST (Structured Text) - CFC (Continuous Function Chart) - SFC (Flow Diagram) - FBD (Block Diagram)
Certifications		CE
Dimensions		131.7 x 101.7 x 99.0 mm (H x W x D)
Weight		0.350 kg