PLC – PLC410 Programmable Logic Controller

Power in processing, **flexibility** in programming

PLC410

Driving efficiency and sustainability

WEG
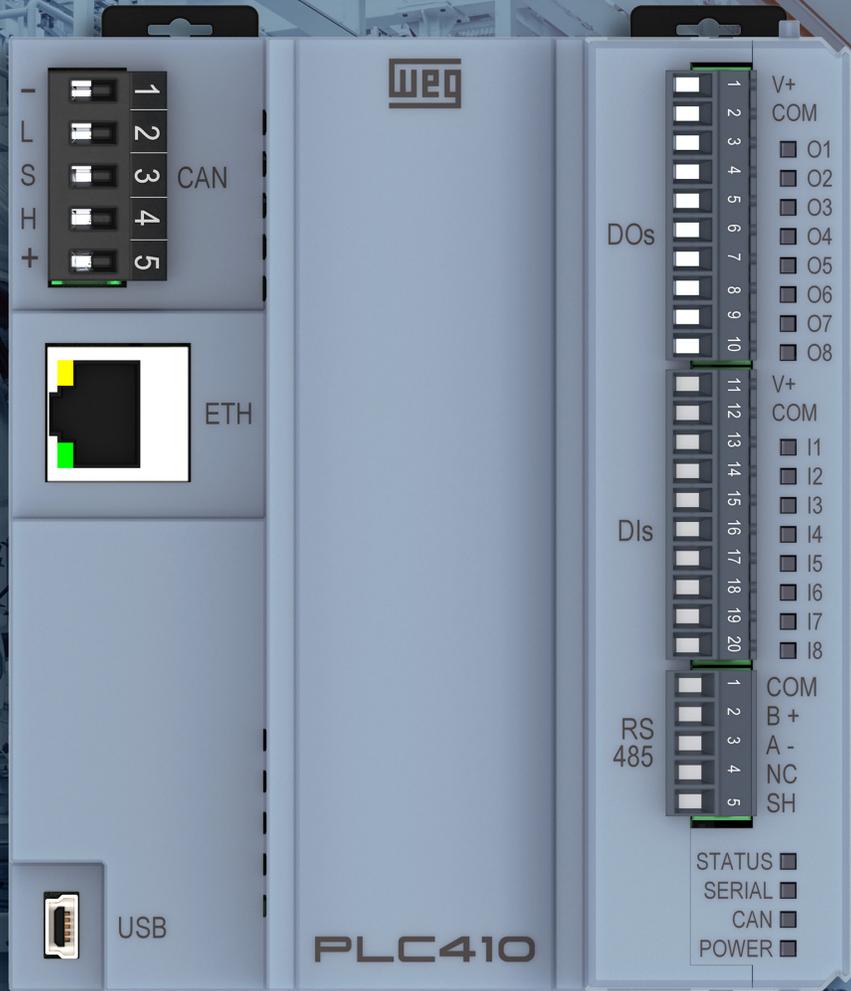
SUMMARY

Power in processing, flexibility in programming

The **PLC410** is a **Medium-sized Programmable Logic Controller**, compact in size, robust in performance and modular in programming. It is a solution that carries WEG's technology and the flexibility of the CODESYS® platform, enabling the development of flexible and efficient solutions. With high-performance hardware, it is possible to perform highly complex tasks, such as timing, counting, basic and advanced math operations, interlocking logic, PID control and much more. All that, at high speed and with maximum operational accuracy.

PROCESS

CONTROL

COMMUNICATION
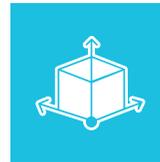
MONITORING

CONNECTIVITY
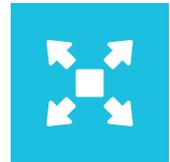
ENGINEERING

Highlights

Develop your solutions on the CODESYS® platform

Get the best performance through powerful hardware

Compact design

Expandable Modular Design

Easily add new Plug & Play expansions

Add up to 8 expansion modules locally

Reuse your programs through the object-oriented programming concept

WEG IoT Ready

The robustness of the CODESYS® platform with WEG's technology

The PLC410 is a high-performance programmable logic controller ideal for complex, medium-sized applications. It is modular, with hardware developed to deliver maximum productivity, excellent memory capacity and the flexibility of the CODESYS® platform.

Especially developed for industrial automation, with open interfaces and several native functions, it also has an online platform for free download of functions (Codesys Store). The CODESYS® development platform is free and based on the IEC 61131-3 programming standard, which offers integrated solutions for developing, configuring and simulating efficient, fast and flexible applications that simplify commissioning and daily tasks.

Perform complex tasks with high performance processing

Mounting bracket latch

Expansion Port Cover
Isolates the contacts from the external environment, increasing the connection's durability.

CAN connector
Isolated, own internal power supply.

Ethernet ports
EtherNet/IP, EtherCAT, Modbus TCP, PROFINET, MQTT and OPC-UA. It allows integration and simultaneous communication with the main industrial communication networks.

Contact between expansions

Expansion modules connection
A full selection of I/O modules, interchangeable across the entire portfolio series.

MicroSD card slot
Maximum capacity up to 2 TB.

Quick connectors
Power, inputs and outputs.

LEDs
Visual status indication.

Mini USB device port
Easy firmware update, programming and monitoring via PC.

RS485 connector
Modbus RTU.

Perform complex tasks with high performance processing

Developed to be a high-performance, mid-sized controller with built-in IIoT resources, the PLC410 allows you to obtain maximum results from your applications, optimizing time and increasing your productive and operational efficiency. Flexibility is another unique feature of this solution, enabling numerous protocols available in a single product, without the need for additional communication modules.

Features

Integrated connectivity and IIoT

Native IIoT protocols and services:

- Web Client SL
- MQTT Client SL
- Mail Service SL
- SMS Service SL
- SNMP Service SL
- Supported SNMP Versions
- SNTP Service SL
- AWS IoT Core Client SL
- Azure IoT Hub Client SL
- JSON Web Token SL
- Web Socket Client SL

Industrial ports and protocols

1x Ethernet Port 10/100 Mbits (EtherNet/IP-Scanner/ Adapter, Modbus TCP Client/Server and EtherCAT-Client), 1x CAN Port (CANopen-Master) and 1x RS485 (Modbus RTU Master/ Slave). Allows integration to the main industrial communication networks.

MicroSD card slot

Maximum capacity up to 2 TB.

Mini USB device port

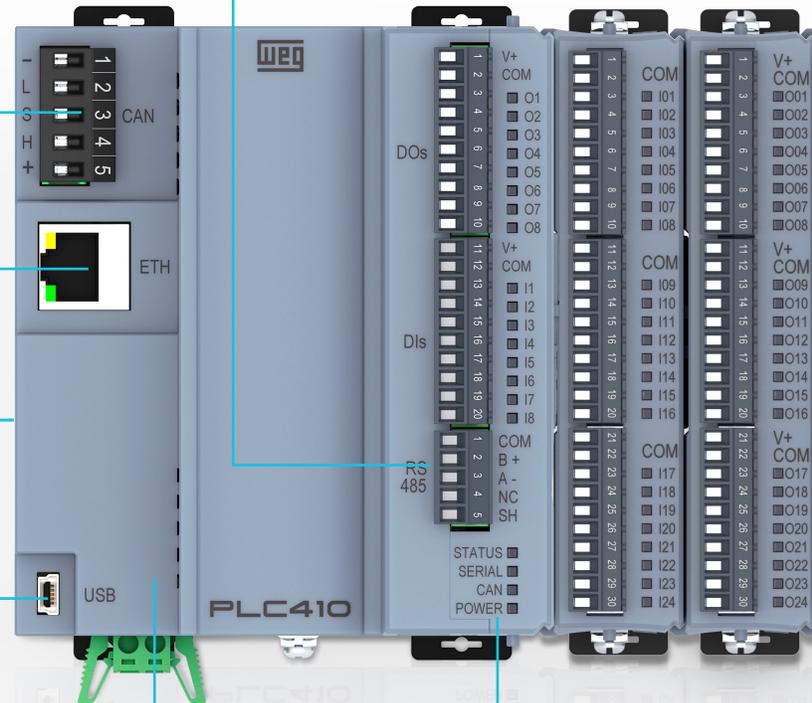1x mini USB Device Port for programming and monitoring via PC.

Hardware and software in harmony

CODESYS® solution development platform, greater operational stability and smart tools.

Status LEDs
Visual status indication.

Have more flexibility to develop your automation

The PLC410 Programmable Controller was developed on a platform that allows the interchangeability of the MOD expansion modules used in the RUW200 lines and in the PLC500 line. That provides high flexibility and synergy between our product line, all of which following the Plug & Play concept.

Complete line of expansions
The same expansion boards used in the RUW200 remote units and PLC500 can be used in the PLC410.

Expansion boards with numerous possibilities:
- Thermocouple (J, K and T)
- RTD (Pt100 and Pt1000)
- Load cell
- Relay output
- Digital inputs and outputs
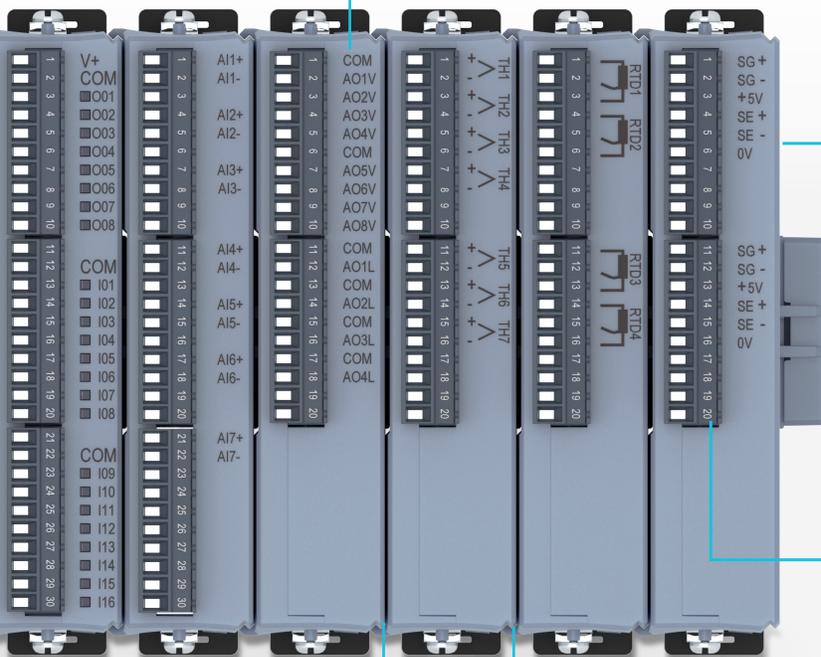- Analog inputs and outputs

Expansion port cover
Isolates the contacts from the external environment, increasing the connection's durability.

Quick connectors
Power supply, inputs and outputs.
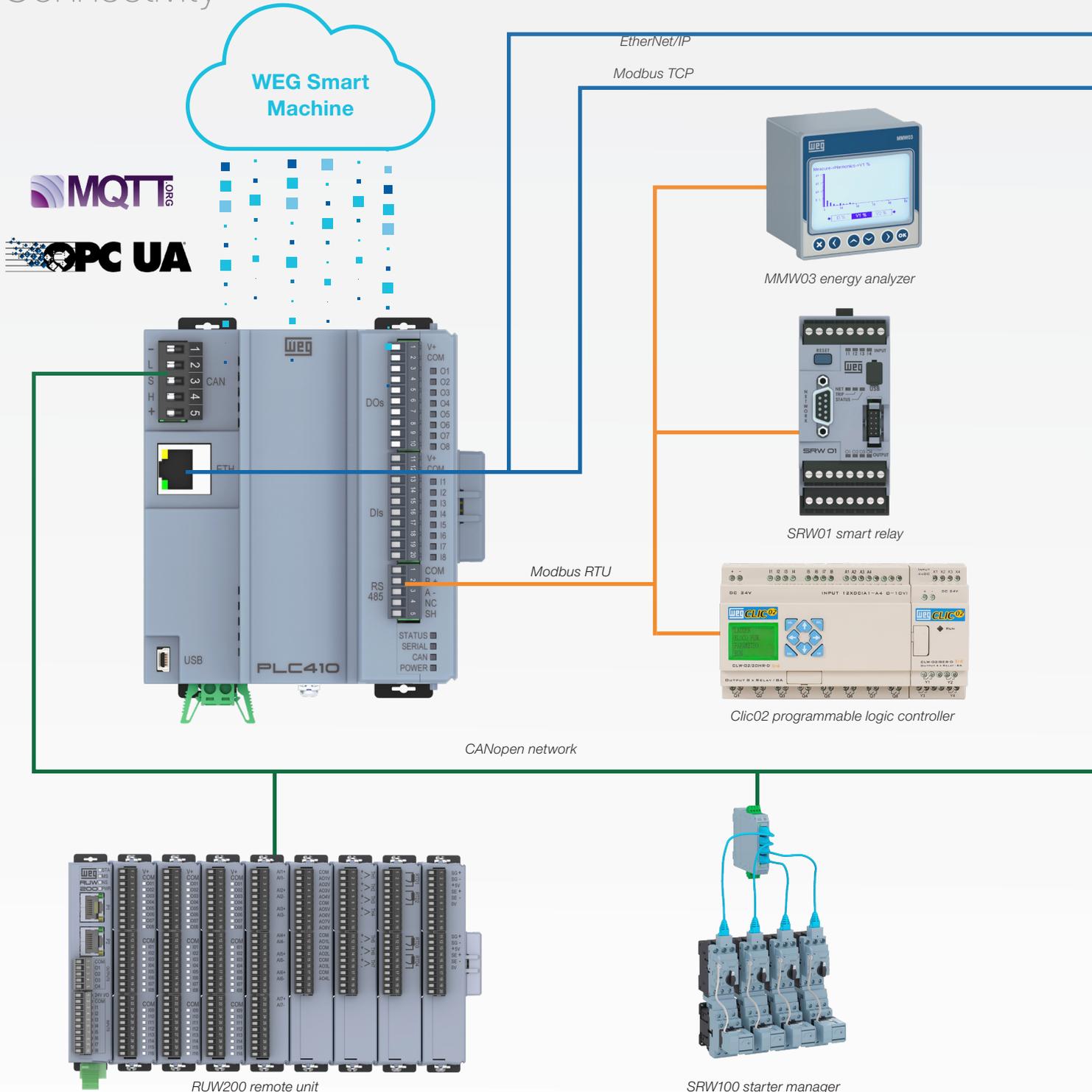
Greater savings with a space-efficient installation
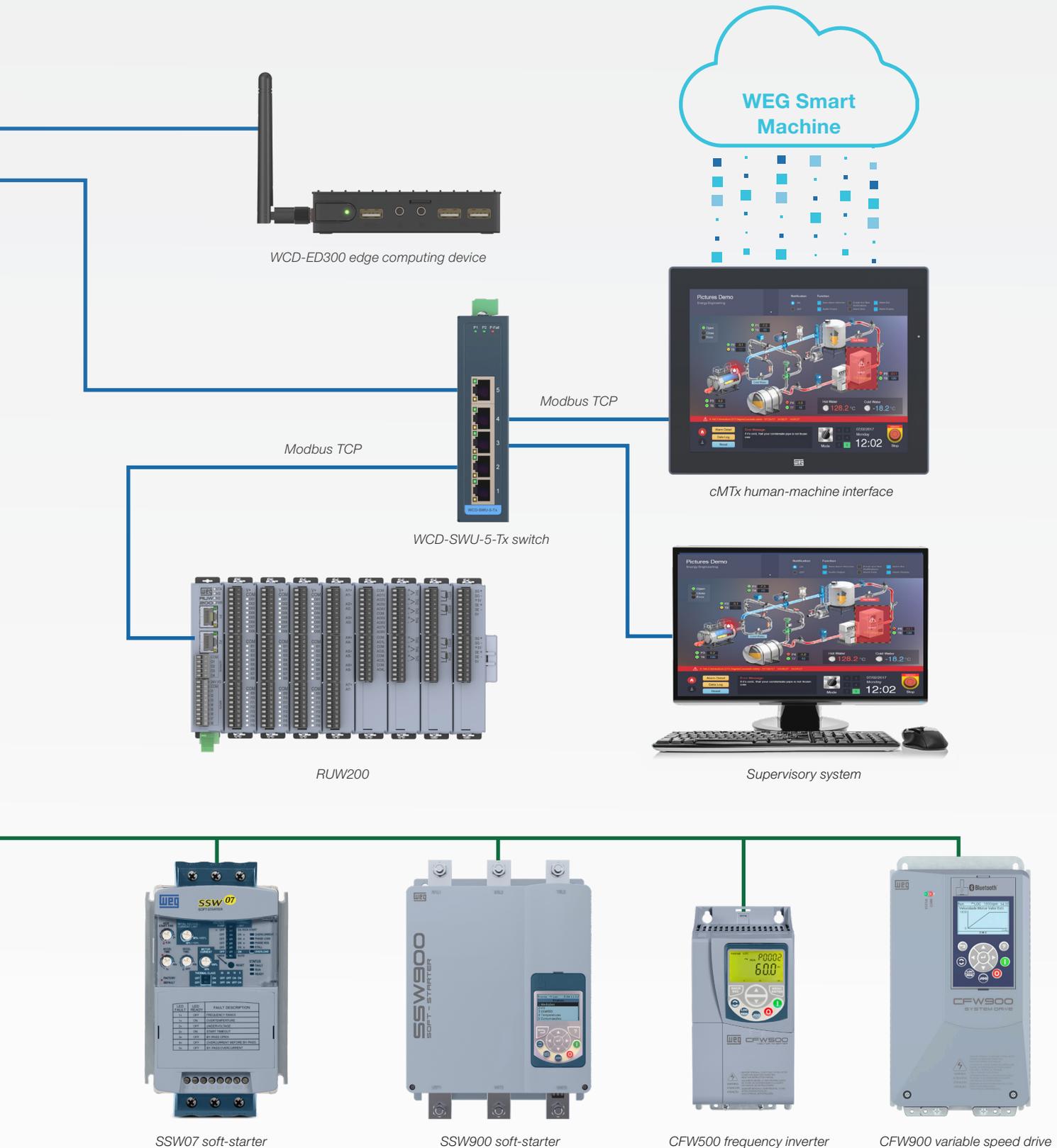Expansion modules less than 1 inch wide.

To learn more, access or click here.

Increase your productivity with flexibility and high performance

Connectivity

WEG Smart Machine

MQTT.ORG

OPC UA

EtherNet/IP

Modbus TCP

MMW03 energy analyzer

SRW01 smart relay

Modbus RTU

Clic02 programmable logic controller

CANopen network

RUW200 remote unit

SRW100 starter manager

EtherCAT

EtherNet/IP

PROFINET

Modbus TCP - RTU

CANopen

WCD-ED300 edge computing device

WEG Smart Machine

Modbus TCP

cMTx human-machine interface

Modbus TCP

WCD-SWU-5-Tx switch

RUW200

Supervisory system

SSW07 soft-starter

SSW900 soft-starter

CFW500 frequency inverter

CFW900 variable speed drive

EtherCAT.   **EtherNet/IP**   **PROFINET**   **Modbus TCP – RTU**   **CANopen**

In the era of Industry 4.0, where productive flexibility, adaptability, big data and cloud computing are requirements for more efficient and reliable operation, programmable controllers are part of a fundamental ecosystem, where they are responsible for collecting data and sending it to the cloud service.

The PLC410 was developed to be such controller, using the MQTT protocol as factory default, so that the manufacturing plant operation is integrated with operational data, creating operational intelligence.

Main characteristics

- Cloud-based solution: software always up-to-date, enabling updated information in real time, anywhere.
- Optimal use of resources.
- Reduced machine downtime and higher performance.
- Configurable and customizable dashboards and reports, with various graphic and analytical views.
- Monitoring of OEE and creation of KPIs.
- Collection, view and history of process and production data.
- Customizable anomaly alarms, which can be sent by email and SMS.

- Simplified machine location.
- Co-creation of applications.
- Integration with other platforms, such as ERP, MES.
- Creation of new business models for machine manufacturers: opportunity to sell service to end customers.
- Development of predictive maintenance and control strategies (connectivity with WEG Motor Scan).
- Monitoring of machine devices, such as sensors, PLCs, drives and operating interfaces.

For more information about WEG Smart Machine, please contact the Digital & Systems sales team.

Specifications

Versions	PLC410
Power supply	24 V$_{DC}$ (V min.: 20.4 V$_{DC}$ / V max.: 28.8 V$_{DC}$)
	Power supply: minimum recommended capacity 2 A
	CPU consumption in normal operation: 75 mA (without accessories and without active communication networks). This value may vary due to the CPU mounting plus expansion boards.
Processor	Dual Core @400 MHz + coprocessor @200 MHz
Scan cycle time · 100 thousand instructions	Total time: 1.6ms
Per instruction	0.0162 µs
Memory · RAM	256 MB
Flash	4 GB
Data	4 MB
Code	8 MB
Retentive	64 kB
Persistent	16 kB
Maximum instruction capacity	Approximately 6 million simple instructions
Digital inputs	8 DI x PNP
	Fast inputs: DI1 to DI4 - 150 kHz per channel
	Maximum input voltage 28.8 V
	High level: Vin ≥10 V$_{DC}$
	Low level: Vin ≤5 V$_{DC}$
	Consumption @ 24 V$_{DC}$: 2.1 mA
	Insulation voltage: 500 V
	Max. number of DIs via expansion boards: 200 points + remote units via Fieldbus
Digital outputs	8 DO (DO1...DO3 – Push-Pull / DO4...DO8 – PNP)
	Recommended voltage V+: 24 V$_{DC}$
	Maximum voltage V+: 28.8 V$_{DC}$
	Maximum frequency of PWM outputs (DO1, DO2 and DO3): 300 kHz
	Maximum current of outputs DO1...DO3: 100 mA/output
	Maximum current of outputs DO4...DO8: 500 mA/output
	Max. number of DOs via expansion boards: 200 points + remote units via Fieldbus
Communication ports · Serial CAN	CANopen (master) Maximum number of slaves: 126
Serial RS485	Modbus RTU (master/slave) Maximum number of slaves: 246
Ethernet	1x 10/100 Mbps ports (RJ45) - Modbus TCP (master/slave) - EtherCAT (master-slave) EtherNet/IP (scanner-adapter) - PROFINET (controller-device) - MQTT (publish-subscribe) - OPC-UA
Mini USB device	Program transfer and monitoring by emulating an Ethernet port
USB host	USB 2.0 (use with a flash drive)
MicroSD card	Max.: 2 TB (optional accessory: 8 GB card code: 16352814)
Maximum number of expansion boards	8[1]
Software	CODESYS® (V 3.5 SP19 or later – free)
Cloud solutions	WEG Smart Machine - WEGnology
Programming language	LD (ladder) – ST (structured text) – IL (instruction list) - SFC (sequential function chart) – FBD (function block diagram)
Operating temperature	0 °C ~ 50 °C (32 °F ~ 122 °F)
Storage temperature	-25 °C ~ 60 °C (-13 °F ~ 140 °F)
Protection rating	IP20
Pollution degree	2 (according to EN 50178 and UL 508C), with non-conductive pollution.
Altitude	1,000 m (3,300 ft). Above 1,000 m up to 4,000 m (3,300 ft to 13,200 ft), the output current must be derated by 1% for every 100 m (328 ft)
Mounting	On DIN rail or on panel with screws
Certifications	UL / CE / UKCA
Dimensions (H x W x D)	131.7 x 110.7 x 99 mm (5.18 x 4.35 x 3.89 in)
Weight	0.350 kg (0.771 lbs)

Notes: 1) For further information on mounting limitations, refer to the product user manual (chapter 13 - Expansion Modules).
2) MicroSD card not included.

Dimensions

Dimension reference	A	B	C	D	E	F	G	H	I
Dimension in mm (in)	101.7 (4)	115 (4.53)	110.7 (4.36)	20.6 (0.81)	84.7 (3.33)	35.8 (1.41)	115 (4.53)	101.7 (4)	89.5 (3.52)
Fixing screw	M3 Ø 3.1 (0.122)								
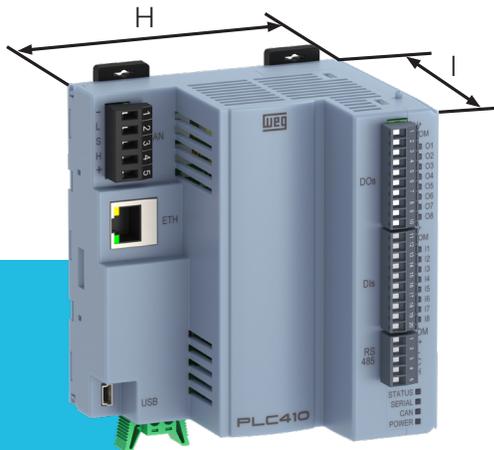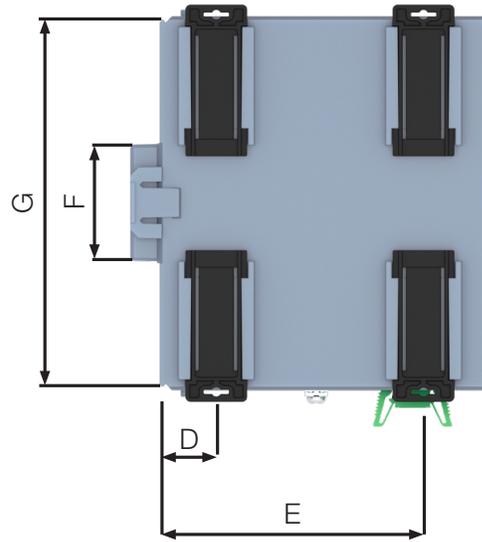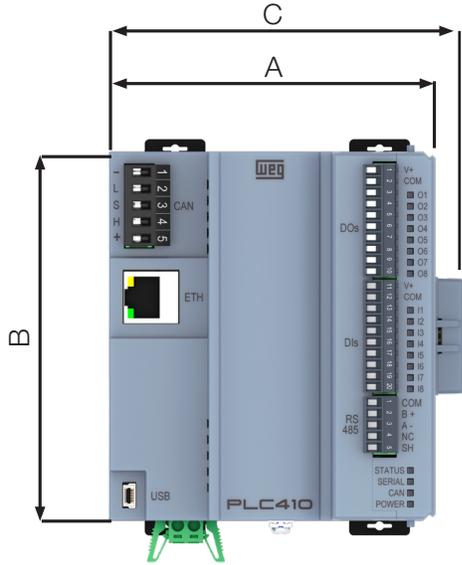
Simple and quick expansion module installation

Connection of the expansion module

Connecting the expansion modules is quick and simple:

1 Remove the module cover.

2 Add the expansion module by sliding it in until it is fully aligned with the back.

3 Attach to cover to the last expansion module.

Specifications

The user easily and quickly installs the expansion boards on the PLC410 through the Plug & 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.

Expansion units

Reference	Internal current consumption[1] (mA)	Inputs					Outputs		
		Bidirectional digital	Voltage or current analog	J, K and T type thermocouple	RTD Pt100/ Pt1000	Load cells	Isolated PNP digital (500 mA)	Voltage (0 – 10 V) or current (0 – 20 mA) analog	Voltage analog (0 – 10 V)
MOD1.00-24DI	0	24	-	-	-	-	-	-	-
MOD1.10-24DO	0	-	-	-	-	-	24	-	-
MOD1.20-16DO8DI	0	8	-	-	-	-	16	-	-
MOD1.30-8DO16DI	0	16	-	-	-	-	8	-	-
MOD2.00-7AI	40	-	7	-	-	-	-	-	-
MOD3.00-8AOVI	150	-	-	-	-	-	-	4	4
MOD4.00-7TH	0	-	-	7	-	-	-	-	-
MOD5.00-4RTD	0	-	-	-	4	-	-	-	-
MOD6.00-2SG	30	-	-	-	-	2	-	-	-

Note: 1) The sum of internal current consumption of MOD modules is limited to 300 mA and with a maximum number of 8 modules per PLC410. If this value is exceeded, an error will be generated in the CODESYS® programming software.

Technical characteristics

General technical characteristics		
Digital inputs	Type	Bidirectional
	Maximum input voltage	+28.8 V
	Voltage levels for detection	High level: Vin ≥ 10 V / Low level: Vin ≤ 3 V
	Consumption	24 V: 10 mA
	Insulation voltage	500 V
Analog inputs	Type	Current or voltage input
	Voltage range	0 to 10 V differential
	Common mode voltage limits	-10 to 10 V
	Current range	0 to 20 mA
	Resolution	24 Bits
Digital outputs	Type	PNP
	Recommended voltage	+24 V
	Maximum voltage	+28 V
	Maximum current per output	500 mA
Current analog outputs	Maximum current	20 mA
	Maximum load	500 Ω
	Resolution	16 Bits
Thermocouple inputs	Type	J, K and T
RTD input	Type	Pt100 and Pt1000 with 2 or three wires[1]
Load cell input	Type	4 or 6 wires
Relay output	Type	Isolated outputs
	Maximum load	7 A - 250 V$_{AC}$, resistive load / 5 A - 30 V$_{DC}$, resistive load
Operating temperature		0 °C to 45 °C
Air relative humidity		Air relative humidity: 5% to 90% non-condensing
Protection rating		IP20
Pollution degree		2 (according to EN 50178 and UL 508C), with non-conductive pollution
Altitude		1,000 m (3,300 ft). Above 1,000 m up to 4,000 m (3,300 ft to 13,200 ft), the output current must be derated by 1% for every 100 m (328 ft) above 1,000 m (3,300 ft)

Note: 1) A three-wire model is required to perform the wire resistance compensation.

Dimensions

Expansions

Dimension reference	A	B	C	D	E	F	G	H	I	J
Dimension in mm (in)	115.7 (4.56)	25 (0.98)	19 (0.74)	123.1 (4.84)	19 (0.74)	117.1 (4.61)	35.5 (1.4)	57.9 (2.28)	89.4 (3.52)	31.6 (1.25)
Fixing screw	M3 Ø 3.1 (0.122)									

Notes
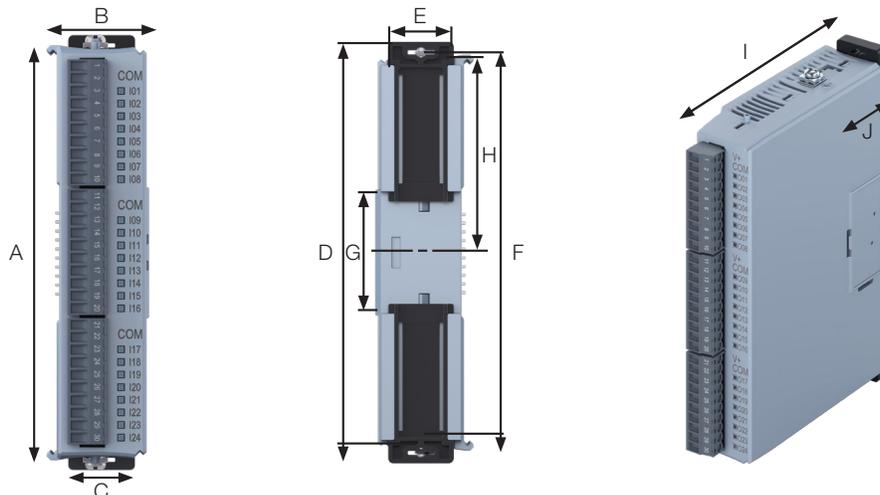
Global presence
is essential, as much
as understanding
your needs.

Global Presence

With more than 47,000 employees worldwide, WEG is one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees the **PLC – PLC410 Programmable Logic Controller** is the right choice for your application and business, assuring safety, efficiency and reliability.
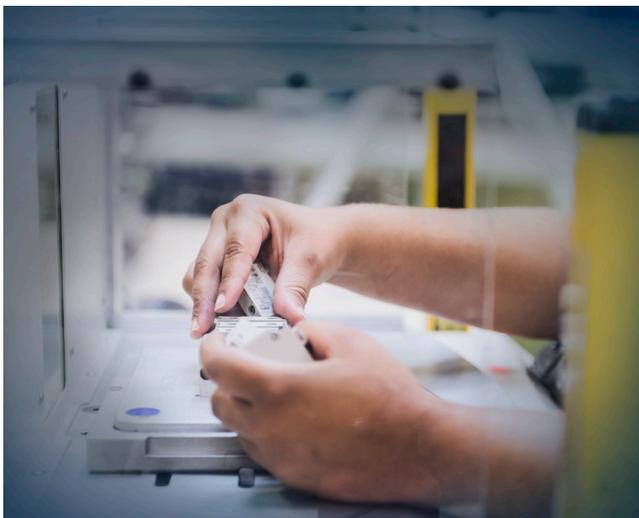
Availability is having a global support network

Partnership is creating solutions that suits your needs

Competitiveness is combining technology and inovation
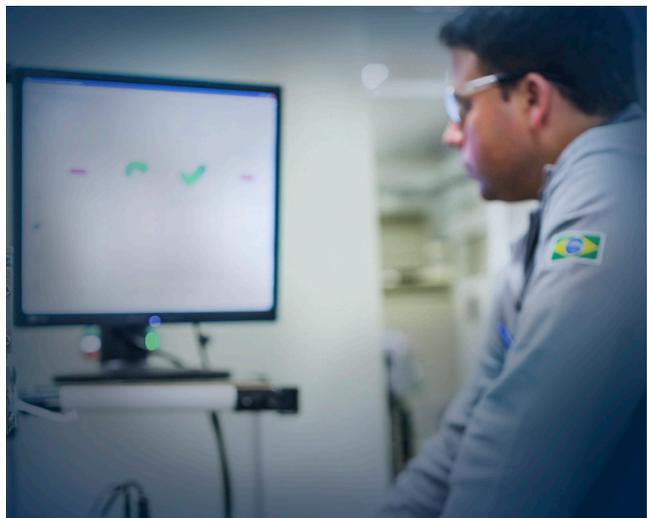
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