

# WAGO I/O System 750

Controller PFC200; 2nd Generation; 2 x ETHERNET, RS-232/-485

750-8212(/xxx-xxx)



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# 1 Provisions

## 1.1 Scope of Applicability

This document applies to the following products:

**750-8212** (PFC200; G2; 2ETH RS)

Controller PFC200; 2nd Generation; 2 x ETHERNET, RS-232/-485

Product Detail Page	<a href="http://www.wago.com/750-8212">http://www.wago.com/750-8212</a>
Version Firmware	04.05.08(27) and higher

**750-8212/025-000** (PFC200; G2; 2ETH RS; T)

Controller PFC200; 2nd Generation; 2 x ETHERNET, RS-232/-485; ext. temperature

Product Detail Page	<a href="http://www.wago.com/750-8212/025-000">http://www.wago.com/750-8212/025-000</a>
Version Firmware	04.05.08(27) and higher

**750-8212/025-001** (PFC200; G2; 2ETH RS; Tele; T)

Controller PFC200; 2nd Generation; 2 x ETHERNET, RS-232/-485; telecontrol technology; ext. temperature

Product Detail Page	<a href="http://www.wago.com/750-8212/025-001">http://www.wago.com/750-8212/025-001</a>
Version Firmware	04.05.08(27) and higher

**750-8212/025-002** (PFC200; G2; 2ETH RS; Tele; T; ECO)

Controller PFC200; 2nd Generation; 2 x ETHERNET, RS-232/-485; telecontrol technology; ext. temperature; ECO

Product Detail Page	<a href="http://www.wago.com/750-8212/025-002">http://www.wago.com/750-8212/025-002</a>
Version Firmware	04.05.08(27) and higher

### Note

#### Note applicable documents!

The complete operating instructions for the products consist of several applicable documents. The products must only be installed and operated in accordance with the complete operating instructions. Knowledge of all applicable documents is required for proper use. Please find all documents and information on the detailed product pages.

#### Applicable documents

##### System Manual I/O System 750/753

- Provisions
- Safety
- Planning
- Transport and Storage
- Assembly and Disassembly


- Conductor Termination
- Decommissioning

 **Function Manual Controller PFC100/200 G2**

- Functions
- Commissioning
- Configuration
- Service

**Additional documents**

 **Manual** to CODESYS V3.5

 **Manual** Migration Guide; Migration from **e!COCKPIT** to CODESYS V3.5

## 2 Overview

The controller is an automation device that can perform PLC control tasks. The controller is suitable for mounting on a DIN-rail and characterized by various interfaces.

The controller can be used for applications in mechanical and systems engineering, in the processing industry and in building technology.

### Note

#### **Additional Information on Use in Telecontrol Technology**

If the controller is used in the manuals “IEC 60870 Solution for Programmable Controllers for Telecontrol Technology, 759-911”, “IEC 61850 Solution for Programmable Controllers for Telecontrol Technology, 759-911” and “DNP3 Solution for Programmable Controllers for Telecontrol Technology, 759-911”. You can find these manuals in the download area on the website <http://www.wago.com>.

All available I/O modules of the WAGO I/O System 750/753 can be connected to the controller. The controller can process any analog and digital signals from the automation environment internally or provide them to other devices through one of the available interfaces.

Automation tasks can be executed in all IEC-61131-3-compatible languages with the CODESYS V3 programming system.

Implementation of task processing in the runtime system is optimized for Linux® with real-time extensions to provide maximal performance for automation tasks. Web visualization is also provided as visualization in addition to the development environment.

For IEC 61131-3 programming in CODESYS applications, the controller provides program and data memory, as well as remanent memory for retain and flag variables, in an integrated NVRAM. The memory sizes are specified in the technical data.

The controller has a slot for a memory card. The memory card can be used to transfer device parameters, boot projects and other files from one controller to another. The memory card can be accessed via FTP as an additional drive.

Two ETHERNET ports and the integrated configurable switch allow wiring in all necessary configurations with a common network and common IP address for both ports, or with two separate networks with a separate IP address for each port.

The physical interfaces (ports) are assigned via logical bridges and can be configured via the WBM, for example.

Both interfaces support:

- 10BASE-T / 100BASE-TX
- Full/half duplex
- Auto-negotiation
- Auto-MDI(X) (automatic uplink and crossover switching)

The following fieldbus interfaces are implemented for exchange of process data:

- Modbus TCP Master/Slave
- Modbus UDP Master/Slave
- Modbus RTU Master/Slave (via RS-232 or RS-485)

In the controller, all input signals from the sensors are combined. After connecting the controller, all I/O modules on the bus node are detected and a local process image is created from these. This process image may include a mixed arrangement of analog (word-by-word data transfer) and digital (bit-by-bit data transfer) I/O modules.

Based on IEC-61131-3 programming, data processing takes place on site in the controller. The logical process results can be output directly to the actuators or transmitted via a connected fieldbus to the higher level controller.

### Note

#### **No direct access from fieldbus to the process image for I/O modules!**

Required data from the local bus process image must be mapped explicitly in the CODESYS program to the data in the fieldbus process image and vice versa! Direct access is not possible!

Fieldbus configuration can be performed with the CODESYS V3 controller configuration.

The Web-Based Management (WBM) is also available for configuration. This system includes various dynamic HTML pages from which, among other things, information about configuration and the status of the controller can be called up. The WBM is already stored in the device and is presented and operated using a Web browser. It is also possible to store individual HTML pages in the implemented file system or to launch programs directly.

In the controller's initial state, the installed firmware is based on Linux®, with special real-time extensions of the RT-Preempt patch. In addition, the following application programs are also installed on the controller, along with a number of different auxiliary programs:

- SNMP server/client
- FTP Server
- FTPS server (only explicit connections)
- SSH server/client
- Web server
- NTP Client
- BootP and DHCP Client
- DHCP Server
- DNS Server
- CODESYS V3 Runtime Environment

# 3 Properties

## 3.1 View

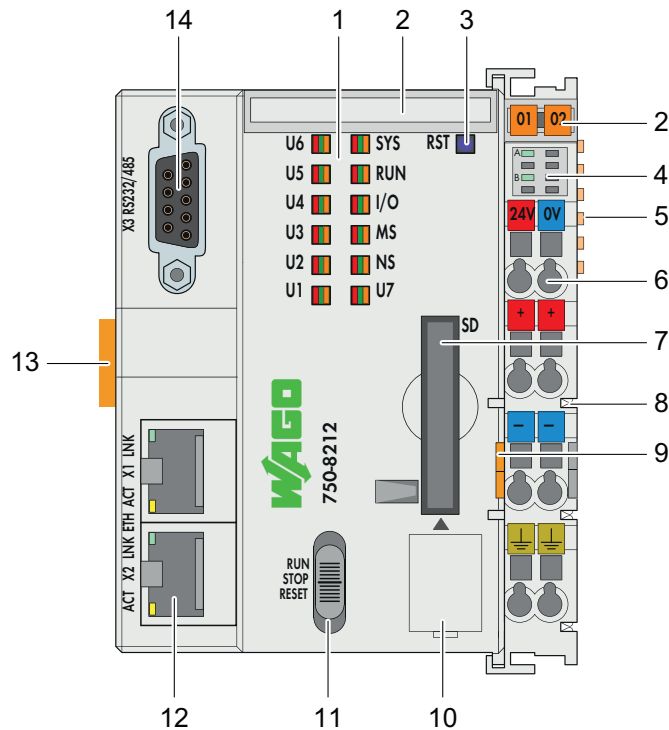


Figure 1: View

1	LED Indicators – System/Fieldbus	<a href="#">System/Fieldbus LED Indicators [▶ 13]</a>
2	Slot for Mini-WSB (optional)	<a href="#">System Manual I/O System 750/753</a>
3	Reset button (in hole)	<a href="#">Reset Button [▶ 15]</a>
4	LED Indicators – Power Supply	<a href="#">LED Indicators – Power Supply [▶ 13]</a>
5	Data contacts	<a href="#">System Manual I/O System 750/753</a>
6	CAGE CLAMP® connections for power supply	<a href="#">Power Supply [▶ 10]</a>
7	Slot for memory card	<a href="#">Memory Card Slot [▶ 12]</a>
8	Power jumper contacts for power supply of down-circuit I/O modules	<a href="#">Power Jumper Contacts/Field Supply [▶ 12]</a>
9	Release tab	<a href="#">System Manual I/O System 750/753</a>
10	Service interface (behind the flap)	<a href="#">Service Interface [▶ 11]</a>
11	Mode selector switch	<a href="#">Mode Selector Switch [▶ 14]</a>
12	ETHERNET connections (RJ45) – X1, X2	<a href="#">Network Interfaces [▶ 10]</a> <a href="#">Network Connection LED Indicators [▶ 13]</a>
13	DIN-rail locking cam	<a href="#">System Manual I/O System 750/753</a>
14	Communication interface – X3	<a href="#">Communication Interface [▶ 11]</a>

### 3.2 Connections

#### 3.2.1 Power Supply

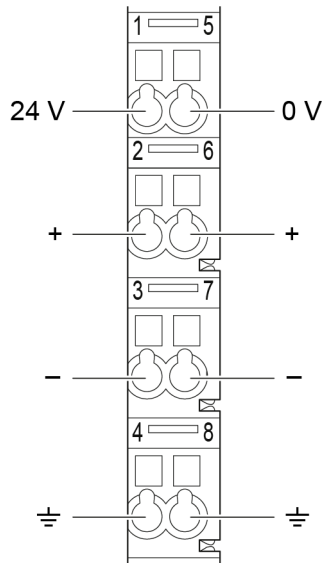


Figure 2: Wiring Interface

Connection	Designation	Description
1	24 V	System power supply voltage: +24 V
2	+	Field supply voltage $U_v$
3	-	Field supply voltage: 0 V
4	Ground	Field supply voltage ground
5	0 V	System power supply voltage: 0 V
6	+	Field supply voltage $U_v$
7	-	Field supply voltage: 0 V
8	Ground	Field supply voltage ground

#### 3.2.2 Network Interfaces

The “X1” and “X2” network interfaces are designed as RJ45 sockets.

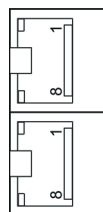


Figure 3: Network Interfaces (RJ45)

Contact	Signal	Description
1	TD+	Transmit data +
2	TD-	Transmit data -
3	RD+	Receive data +
4	NC	Not assigned
5	NC	Not assigned
6	RD-	Receive data -
7	NC	Not assigned

Contact	Signal	Description
8	NC	Not assigned

### 3.2.3 Service Interface

The service interface is designed as a 4-pole male header and is located behind a cover flap.

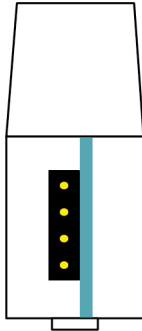


Figure 4: Service Interface (Cover Flap Open)

It is used for communication with “WAGO-I/O-CHECK” and “WAGO Ethernet Settings.”

The connection is made via the WAGO communication cable (see [🔗 Accessories](#) [▶ 221](#)).

### 3.2.4 Communication Interface

The communication interface is designed as a 9-pole SUB-D socket.

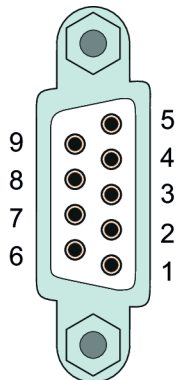


Figure 5: Communication Interface

Table 1: Pin Assignment of Communication Interface

Contact	RS-232 (DCE)		RS-485	
	Signal	Description	Signal	Description
1	NC	Not assigned	NC	Not assigned
2	RxD (out)	Receive Data	NC	Not assigned
3	TxD (in)	Transmit Data	A (Tx/Rx+)	Transmit/receive data +
4	NC	Not assigned	NC	Not assigned
5	FB_GND	Ground	FB_GND	Ground
6	NC	Not assigned	FB_5V	Power supply
7	RTS (in)	Request to Send	NC	Not assigned
8	CTS (out)	Clear to Send	B (Tx/Rx-)	Transmit/receive data -

Contact	RS-232 (DCE)		RS-485	
	Signal	Description	Signal	Description
9	NC	Not assigned	NC	Not assigned
Housing	Shield	Shield	Shield	Shield

### 3.3 Power Jumper Contacts/Field Supply

The self-cleaning power jumper contacts on the housing side have a spring-contact design.

The field supply voltage is passed on to downstream I/O modules via these contacts.

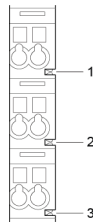


Figure 6: Power Jumper Contacts

Contact	Type	Function
1	Spring contact	Potential transmission ( $U_V$ ) for field supply
2	Spring contact	Potential transmission (0 V) for field supply
3	Spring contact	Potential transmission (ground) for field supply

### 3.4 Memory Card Slot

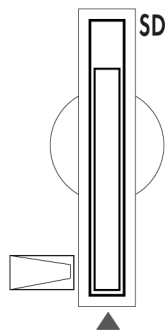


Figure 7: Memory Card Slot

The slot for the SD memory card is located on the front of the housing. The memory card is locked in the housing with a push-push mechanism. Inserting and removing the memory card is described in the section [Inserting and Removing a Memory Card \[▶ 28\]!](#) The memory card is protected by a cover flap. The cover flap is sealable.

### 3.5 Indicators

#### 3.5.1 LED Indicators – Power Supply

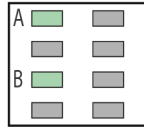


Figure 8: LED Indicators – Power Supply

Designation	Color	Description
A	Green/off	Status of system power supply voltage
B	Green/off	Status of field-side power supply voltage

The meanings of the indicated states are described in [🔗 Diagnostics via LED Indicators – Power Supply \[▶ 24\]](#).

#### 3.5.2 System/Fieldbus LED Indicators

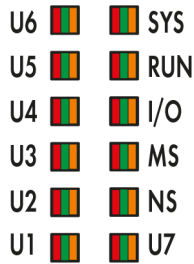


Figure 9: System/Fieldbus LED Indicators

Designation	Color	Description
SYS	Red/green/orange/off	System status
RUN	Red/green/orange/off	PLC program status
I/O	Red/green/orange/off	Local bus status
MS	Red/green/orange/off	Module status
NS	Red/green/orange/off	No function
U7 .. U1	Red/green/orange/off	User LED, programmable using function blocks from the WAGO libraries for LED control

The meanings of the indicated states are described in [🔗 Diagnostics via LED Indicators – System/Fieldbus \[▶ 24\]](#).

#### 3.5.3 Network Connection LED Indicators

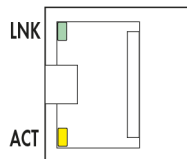


Figure 10: Network Connection LED Indicators

Designation	Color	Description
LNK	Green/yellow/off	ETHERNET connection status

Designation	Color	Description
ACT	Yellow/off	ETHERNET data exchange

The meanings of the indicated states are described in [🔗 Diagnostics via LED Indicators – Network Connections \[▶ 27\]](#).

### 3.5.4 Memory Card Slot LED Indicators

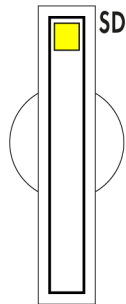


Figure 11: Memory Card Slot LED Indicator

Designation	Color	Description
SD	Yellow/off	Memory card status

The meanings of the indicated states are described in [🔗 Diagnostics via LED Indicators – Memory Card Slot \[▶ 27\]](#).

## 3.6 Control Elements

### 3.6.1 Mode Selector Switch



Figure 12: Mode Selector Switch

The operating mode switch has the following functions:

Table 2: Mode Selector Switch

Pos.	Actuation	Function
RUN	Latching	<b>Normal operation</b> CODESYS V3 applications are running
STOP	Latching	<b>Stop</b> All CODESYS V3 applications have stopped
RESET	Spring-return	Warmstart Reset or Coldstart Reset (depending on how long it is actuated)

Other functions can also be triggered with the reset button.

### 3.6.2 Reset Button

#### RST

Figure 13: Reset Button

The reset button is installed within a recess to prevent accidental operation. It is a short-travel button with a low actuating force of 1.1 ... 2.1 N (110 ... 210 gf). The button can be pressed with suitable object (e.g., a pen).

You can use the reset button to trigger various functions depending on the position of the mode selector switch:

- Temporarily set fixed IP addresses
- Perform a software reset (restart)
- Reset settings

### 3.7 Schematic Circuit Diagram

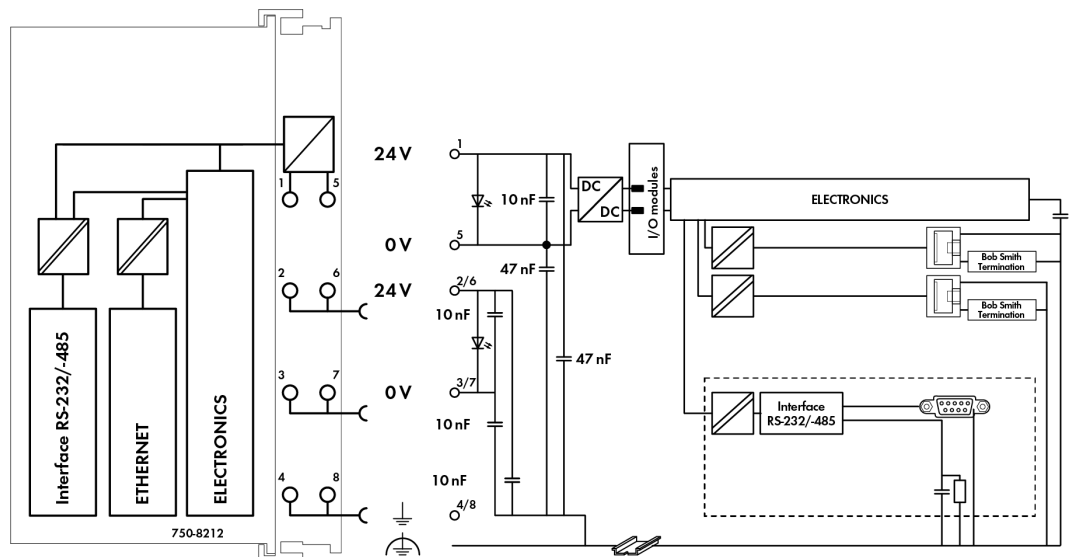


Figure 14: Schematic Circuit Diagram

# 4 Functions

## 4.1 Function Overview

### System Functions

- Product and system status
- Real-time clock
- Data backup
- Memory card function
- CODESYS V3 runtime environment

### Hardware Functions

- Mode selector switch/reset button
- Communication Interface
- Service Interface

### Configuration Functions

- Web-based Management (WBM)

### Network Functions

- Network configuration
- Network security
- Network services

### Cloud Connectivity

### Fieldbus Functions

- BACnet
- OPC UA

### Diagnostic Functions

- Diagnostics via Indicators
- Diagnostics via WBM

## 4.2 WBM Page Overview and Access Rights

The WBM pages require the access rights listed in the table below. Users with lower privileges may not be able to access the pages or may only be able to view them.

Table 3: WBM Page Overview and Access Rights

Tab	Navigation	WBM Page Title	User
Information	Device Status	Device Status	user
	Vendor Information	Vendor Information	user
	PLC Runtime	PLC Runtime Information	user
	Legal Information		
	WAGO Licenses	WAGO Software License Agreement	user

Tab	Navigation	WBM Page Title	User
Configuration	Open Source Licenses	Open Source Licenses	user
	WBM Licenses	WBM Third Party License Information	user
	Trademarks Information	Trademarks Information	
	WBM Version	WBM Version Info	user
	PLC Runtime	PLC Runtime Configuration	user
	Networking		
	TCP/IP Configuration	TCP/IP Configuration	user
	Ethernet Configuration	Ethernet Configuration	user
	Host/Domain Name	Configuration of Host and Domain Name	user
	Routing	Routing	user
	STP/RSTP	Spanning Tree Protocol	user
	Clock	Clock Settings	user
	Administration		
	Serial Interface	Configuration of RS232/RS485 Serial Interface	admin
	Service Interface	Configuration of Service Interface	admin
	Create Image	Create bootable Image	admin
	Package Server		
	Firmware Backup	Firmware Backup	admin
	Firmware Restore	Firmware Restore	admin
	Active System	Active System	admin
	Mass Storage	Mass Storage	admin
	Software Uploads	Software Uploads	admin
	Ports and Services		
	Network Services	Configuration of Network Services	admin
	NTP Client	Configuration of NTP Client	admin
	PLC Runtime Services	PLC Runtime Services	admin
	SSH	SSH Server Settings	admin
DHCP Server	DHCP Server Configuration	admin	
DNS	Configuration of DNS Server	admin	
Cloud Connectivity			
Status	Overview	admin	
Connection 1	Configuration	admin	
Connection 2	Configuration	admin	
SNMP			
General Configuration	Configuration of general SNMP parameters	admin	
SNMP v1/v2c	Configuration of SNMP v1/v2c Parameters	admin	
SNMP v3	Configuration of SNMP v3 Parameters	admin	
Commissioning	Commissioning Settings	admin	
Docker	Docker Settings	admin	
Users	WBM User Configuration	admin	
Fieldbus	OPC UA	OPC UA Configuration	admin
BACnet			
Status	BACnet Status	admin	
Configuration	BACnet Configuration	admin	
Data Link	BACnet Data Link	admin	
Storage Location	BACnet Storage Location	admin	

Tab	Navigation	WBM Page Title	User
Security	Open VPN/IPsec	OpenVPN / IPsec Configuration	admin
	Firewall		
	General Configuration	General Firewall Configuration	admin
	Interface Configuration	Interface Configuration	admin
	MAC Address Filter	Configuration of MAC address filter	admin
	User Filter	Configuration of User Filter	admin
	Certificates	Certificates	admin
	Boot Mode	Boot Mode Configuration	admin
	TLS	Security Settings	admin
	Integrity	Advanced Intrusion Detection Environment (AIDE)	admin
WAGO Device Access	WAGO Device Access	admin	
Diagnostic	Log Message	Log Message Viewer	user
	Download	Download	admin
	Network Capture	Network Capture	admin

# 5 Planning

This section provides helpful information for planing the use of the product in a node.

## 5.1 Requirements for Wiring and Accessories

### 5.1.1 Overcurrent Protection

The controller has no internal overcurrent protection.

For each power supply to the controller, appropriate overcurrent protection must be implemented externally, e.g., via fuses.

Without overcurrent protection, the controller electronics can be damaged.

If you implement overcurrent protection for the power supply via external fuses, use the following fuses:

Table 4: Protection of the Power Supply

24 V Input Voltage	Suitable Fuse
System power supply	Max. 2 A, slow; min. 30 VDC
Field supply	max. 10 A; min. 30 VDC

Additional information, e.g., on the type of power supply (SELV/PELV), can be found in [System Manual I/O System 750/753](#).

### 5.1.2 Using the Network Interfaces

As delivered, all ports are assigned to Bridge1. The “Configuration mode” is set to “DHCP.”

#### One common network with one common IP address for both ports

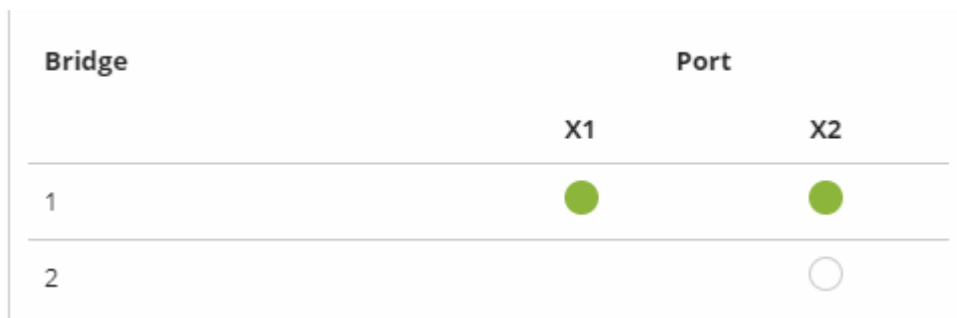


Figure 15: 1 bridge with 2 ports

Table 5: Assignment of MAC IDs and IP addresses for 1 bridge with 2 ports

Bridge	MAC ID	IP Addr.	Port	MAC ID	Port	MAC ID
1	01	1	X1	02	X2	03

**Two separate networks where each port has its own IP address**

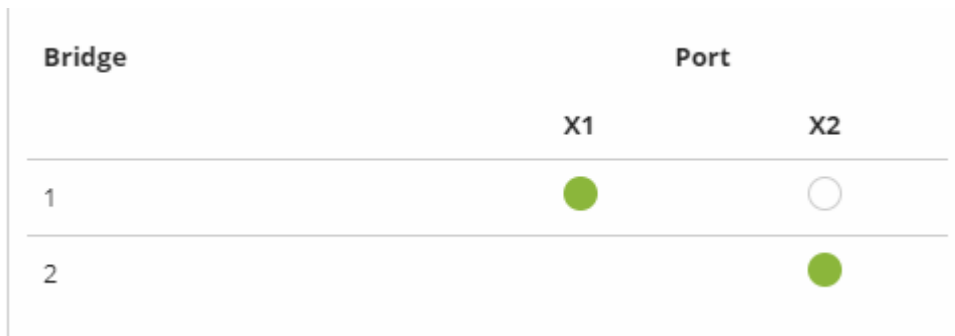


Figure 16: 2 bridges with 1/1 ports

Table 6: MAC ID and IP address assignment for 2 bridges with 1/1 ports

Bridge	MAC ID	IP Addr.	Port	MAC ID	Port	MAC ID
1	01	1	X1	01		
2	02	2			X2	02

**5.1.3 Using the Communication Interface**

**! NOTICE**

**Incorrect parameterization can damage the communication partners!**

The voltage levels for RS-232 and RS-485 are not compatible! If the controller’s interfaces differ from the communication partners’ (RS-232 <> RS-485 or RS-485 <> RS-232), this may damage the communication partner’s interface. Therefore, always ensure that the controller’s interface matches its communication partners’ when configuring these items!

**5.1.3.1 Use as an RS-232 Interface**

Depending on the device type, DTE (Data Terminal Equipment, e.g., PC) or DCE (Data Communication Equipment, e.g., PFC, modem), the RS-232 signals have different data directions.

Table 7: Function of RS-232 Signals for DTE/DCE

Contact	Signal	Data Direction	
		DTE	DCE
2	RxD	Input	Output
3	TxD	Output	Input
5	FB_GND	---	---
7	RTS	Output	Input
8	CTS	Input	Output

For a DTE-to-DCE connection, the signals are connected directly (1-to-1).

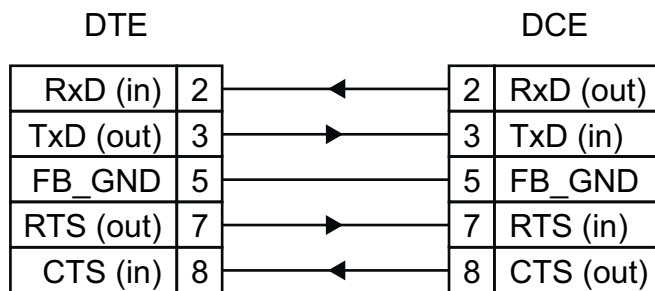


Figure 17: Termination with DTE-DCE Connection (1-to-1)

For a DCE-to-DCE connection, the signal connections are crossed.

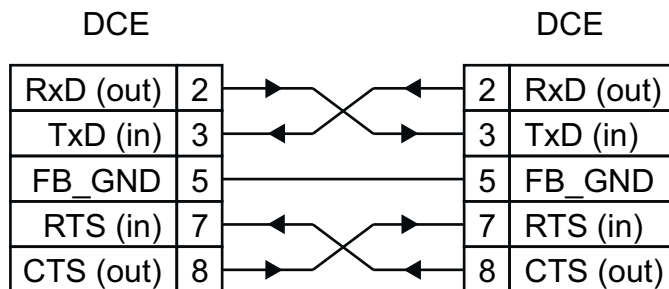


Figure 18: Termination with DCE-DCE Connection (Cross-Over)

### 5.1.3.2 Use as an RS-485 Interface

To minimize reflection at the end of the line, the RS-485 line must be connected at both ends with a line terminator. If required, one pull-up/pull-down resistor may be used. These resistors ensure a defined level on the bus when no subscriber is active, i.e., when all subscribers are in “Tri-state.”

**Note**

**Attention — bus termination!**

The RS-485 bus must be terminated at both ends! No more than two terminations per bus segment may be used! Terminations may not be used in stub and branch lines! Drop cables must be kept as short as possible! Operation without proper termination of the RS-485 network may result in transmission errors.

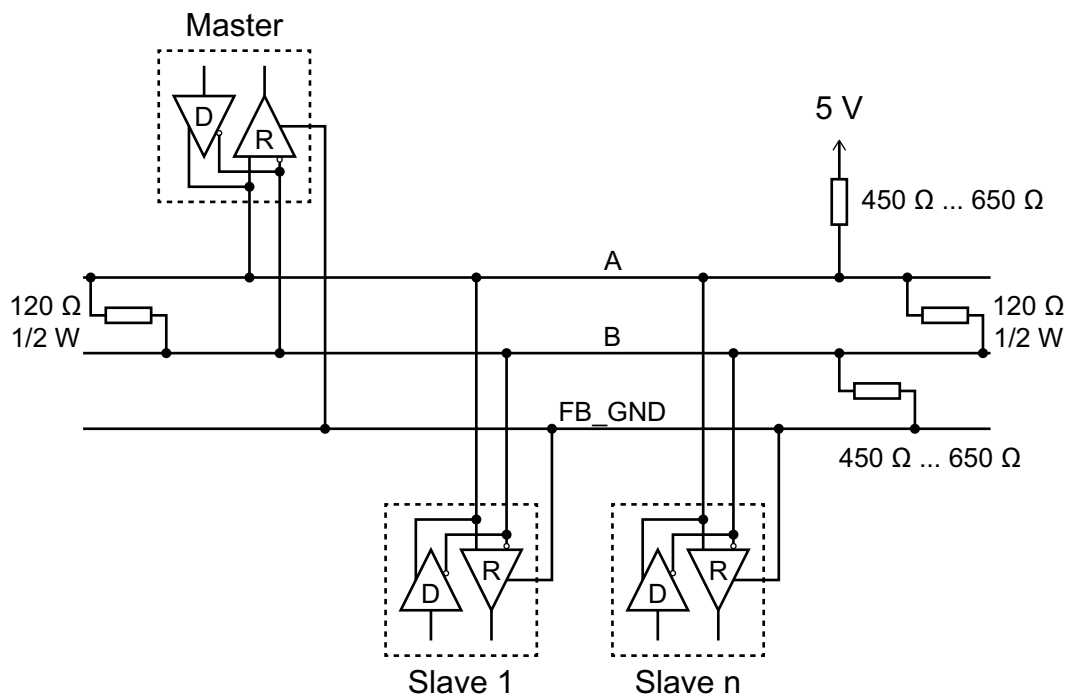


Figure 19: RS-485 Bus Termination

**Note**

**Transmission errors in the event of inappropriate RS-485 configuration!**

For baud rates lower than 115200 baud, configure the RS-485 interface with two stop bits and parity enabled (even or odd) to avoid transmission errors.

**5.1.4 Using the Memory Card**

Use of a memory card is optional. A memory card is not included with delivery and must be ordered separately (see [Accessories](#) ▶ 22).

Only use memory cards available from and recommended by WAGO, as these are specified for industrial applications under adverse environmental conditions and for use in this device. Compatibility with other commercially available memory cards cannot be guaranteed.

**5.1.5 Accessories**

Table 8: Recommended Accessories

Item No.	Item Description
<b>Communication Cable</b>	
750-923	Configuration Cable; USB connection; 2.5 mm long
750-923/000-001	Configuration Cable; USB connection; 5 mm long
<b>Memory Cards</b>	
758-879/000-001	SD Memory Card; SLC NAND, 2 GB; temperature: -40 ... 90 °C
758-879/000-2108	SD Memory Card; pSLC-NAND; 8 GB Temperature range: -40 ... +90 °C

## 5.2 CODESYS V3 Compatibility

Table 9: Compatibility Overview

Device Description	Firmware*	Compiler	Visualization Profile
6.0.0.15	10.01.04(23)	3.5.17.30	CODESYS V3.5 SP17 Patch 3
6.1.0.16	13.02.04(24)	3.5.18.10	CODESYS Visualization 4.1.1.0
6.1.1.11	03.03.04 (25)	3.5.18.50	CODESYS Visualization 4.2.0.0
6.2.0.xx	04.04.xx (26)	3.5.19.20	CODESYS Visualization 4.4.0.0
x.x.x.xx	05.04.xx (27)	x.x.x.x	CODESYS Visualization x.x.x.x

**\* Notes on firmware versions:**

- Not every new firmware contains a new version of the runtime environment, which is why the compiler version and visualization profile may remain unchanged.
- As a general rule, the compatibility also extends to hotfix and patch versions of the firmware, assuming only the bugfix point of the firmware version is different (example: "FW:01.02.xx(03)").

# 6 Diagnostics

## 6.1 Diagnostics via Indicators

### 6.1.1 Diagnostics via LED Indicators – Power Supply

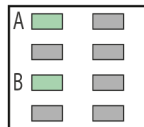


Figure 20: LED Indicators – Power Supply

The “A” (system power supply) LED indicates the following diagnostics:

Table 10: Diagnostics LED – System Power Supply

Status	Explanation	Remedy
Green	24 V system power supply present	--
Off	No 24 V system power supply present	1. Turn the power supply on. 2. Check the power supply.

The “B” (field supply) LED indicates the following diagnostics:

Table 11: Diagnostics LED – Field Supply

Status	Explanation	Remedy
Green	24 V field power supply present	--
Off	No 24 V field power supply present	1. Turn the power supply on. 2. Check the power supply.

### 6.1.2 Diagnostics via LED Indicators – System/Fieldbus

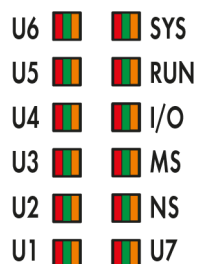


Figure 21: System/Fieldbus LED Indicators

The “SYS” LED indicates the following diagnostics:

Table 12: “SYS” Diagnostic LED

Status	Explanation	Remedy
Green	Ready for operation; system start completed without errors	---
Orange	Device startup/boot process in progress and RST button not pressed	---
Orange, flashing	“Fix IP Address” mode; temporary setting until next reboot	1. Connect to the device via the default address (192.168.1.17). 2. Restart the device to restore the original value setting.

Status	Explanation	Remedy
Green/red, flashing	Firmware update mode	---
Red, flashing	No license, evaluation period has expired	The libraries or device functions in question are ??? shown. 1. Activate the associated licenses immediately. 2. Alternatively, remove the libraries or device functions from your application.
Red/orange, flashing	No license, evaluation period not yet expired	The libraries or device functions in question are shown ???. 1. Activate the associated licenses before the trial period expires. 2. Alternatively, remove the libraries or device functions from your application.  The device has unrestricted functionality until the evaluation period ends. Once the evaluation period ends, it is no longer possible to start the device without activating the corresponding licenses.

The "RUN" LED displays the PLC program status with the following diagnostics:

Table 13: "RUN" Diagnostic LED

Status	Explanation	Remedy
Green	Applications loaded and all have status "RUN"	---
Green, flashing	No application and no boot project loaded	<ul style="list-style-type: none"> <li>Load an application or boot project.</li> </ul>
Red	Applications loaded and all have status "STOP"	<ul style="list-style-type: none"> <li>Set the mode selector switch to "RUN" to start the application.</li> </ul>
Green/red, flashing	At least one application with status "RUN" and status "STOP"	<ul style="list-style-type: none"> <li>Start the stopped application.</li> </ul>
Red, goes out briefly once	Warm start reset completed	---
Red, goes out longer once	Cold start reset completed	---
Red, flashing	At least one application after exception (e.g., memory access error) in the "STOP" status	<ol style="list-style-type: none"> <li>Restart the application by resetting via the mode selector switch or in the associated IDE.</li> <li>If the application cannot be started, restart the controller.</li> <li>Contact WAGO Support if the error occurs again.</li> </ol>
Orange/green, flashing	Load above threshold value 1	<ul style="list-style-type: none"> <li>Try to reduce the load on the system:</li> <li>Change the CODESYS program.</li> <li>Terminate any fieldbus communication that is not essential or reconfigure the fieldbuses.</li> <li>Remove any non-critical tasks from the RT area.</li> <li>Select a longer cycle time for IEC tasks.</li> </ul>

Status	Explanation	Remedy
Orange	Runtime system in debug state (breakpoint, step mode, individual cycle)	<ol style="list-style-type: none"> <li>Resume the application in the associated IDE with step mode or start. If applicable, remove breakpoints.</li> <li>If the connection has been interrupted, set the mode selector switch to "STOP" and then back to "RUN" to enable the application to continue.</li> </ol>
Off	No runtime system loaded	<ul style="list-style-type: none"> <li>Activate a runtime system, e.g., via the WBM.</li> </ul>

The "I/O" LED indicates the following diagnostics:

Table 14: "I/O" Diagnostic LED

Status	Explanation	Remedy
Green	Data cycle on the local bus, normal operating status.	---
Orange, flashing	Startup phase; the local bus is being initialized. The startup phase is indicated by rapid flashing for about 1 ... 2 seconds.	<ul style="list-style-type: none"> <li>Wait until initialization has completed.</li> </ul>
Red	A hardware fault is present.	<ul style="list-style-type: none"> <li>Contact WAGO Support.</li> </ul>
Red, flashing (2 Hz)	An error is present which it may be possible to eliminate.	<ol style="list-style-type: none"> <li>First, try to eliminate the error by switching the device (power supply) off and then back on.</li> <li>Check the entire node structure for any errors.</li> <li>If you cannot eliminate the error, contact WAGO Support.</li> </ol>
Red, flashing (flashing sequence)	There is a local bus error.	<p>An explanation of the flashing sequence can be found in section "Diagnostics via Flashing Sequences."</p> <ul style="list-style-type: none"> <li>Follow the instructions described there.</li> </ul>
Off	A library was not loaded, or a library function was not called.	<ul style="list-style-type: none"> <li>Restart the device. If you cannot eliminate the error, contact WAGO Support.</li> </ul>

The "MS" LED indicates the following diagnostics:

Table 15: "MS" Diagnostic LED

Status	Explanation	Remedy
Off	No error	---
Red, flashing (flashing sequence)	There is a configuration error.	<p>An explanation of the flashing sequence can be found in section "Diagnostics via Flashing Sequences."</p> <ul style="list-style-type: none"> <li>Follow the instructions described there.</li> </ul>

### 6.1.3 Diagnostics via LED Indicators – Network Connections

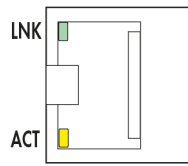


Figure 22: Network Connection LED Indicators

The “LNK” LED displays ETHERNET connection status with the following diagnostics:

Table 16: “LNK” Diagnostic LED

Status	Explanation	Remedy
Off	Data transmission rate: 10 Mbit/s	---
Green	Data transmission rate: 100 Mbit/s	---

The “ACT” LED displays ETHERNET communications status with the following diagnostics:

Table 17: “ACT” diagnostic LED

Status	Explanation	Remedy
OFF	There is no network communication.	<ul style="list-style-type: none"> <li>If necessary, check the network connections and network settings.</li> </ul>
Yellow, flashing	There is network communication.	---

### 6.1.4 Diagnostics via LED Indicator – Memory Card Slot

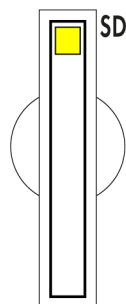


Figure 23: Memory Card Slot LED Indicator

The LED for the memory card slot displays the memory card status with the following diagnostics:

Table 18: Memory Card Slot Diagnostic LED

Status	Explanation	Remedy
Off	No read or write access to the memory card	---
Flashing yellow	Read or write access to the memory card	---
Yellow, steady	Read or write access to the memory card	---

# 7 Service

## 7.1 Inserting and Removing a Memory Card

### Inserting a Memory Card

1. Use an operating tool or screwdriver to open the transparent cover flap by folding it upwards. An error indicates where to apply the tool.
2. Hold the memory card as depicted in the figure below, with the contacts visible on the right and the diagonal edge upwards.
3. Insert the memory card into the slot provided for it in this position.
4. Push the memory card all the way in. When you let go, the memory card will move back a little and then snap in place (a push-push mechanism).
5. Push the cover flap back in by folding it downwards until it snaps in.
6. You can seal the closed flap through the hole in the enclosure next to the flap.

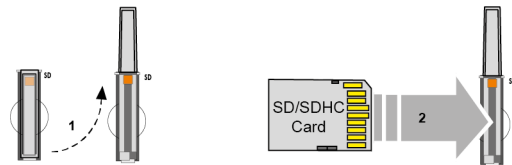


Figure 24: Inserting a Memory Card

### Removing a Memory Card

1. Remove any seal.
2. Use an operating tool or screwdriver to open the transparent cover flap by folding it upwards. An error indicates where to apply the tool.
3. To remove the memory card, you must first push it slightly into the slot (a push-push mechanism). This releases the mechanical locking mechanism.
4. As soon as you let go of the memory card, the spring pushes the memory card out a bit.
5. Remove the memory card.
6. Push the cover flap back in by folding it downwards until it snaps in.

# 8 Appendix





## 8.1 Technical Data, Approvals, Guidelines and Standards

### Note

#### Subject to changes!

Please also observe the further product documentation! You can generate the current datasheet at any time at: [www.wago.com](https://www.wago.com) /<item number>.

#### See also

-  Data Sheet 750-8212 [▶ 30]
-  Data Sheet 750-8212/025-000 [▶ 34]
-  Data Sheet 750-8212/025-001 [▶ 38]
-  Data Sheet 750-8212/025-002 [▶ 42]



The PFC200 Controller is a compact PLC for the modular WAGO I/O System. Besides network and fieldbus interfaces, the controller supports all digital, analog and specialty modules found within the 750/753 Series.

Two ETHERNET interfaces and an integrated switch enable line topology wiring.

An integrated Webservice provides user configuration options, while displaying PFC200 status information.

Besides the processing industry and building automation, typical applications for the PFC200 include standard machinery and equipment control (e.g., packaging, bottling and manufacturing systems, as well as textile, metal and wood processing machines).

Programming per IEC 61131-3

- Programmable with CODESYS V3.5 from Firmware Release 23, WAGO-I/O-PRO V2.3 or **e!COCKPIT** up to Firmware Release 22
- Direct connection of WAGO's I/O modules
- 2 x ETHERNET (configurable), RS-232/-485
- Linux operating system with RT-Preempt patch
- Configuration via CODESYS, **e!COCKPIT** or Web-Based Management user interface
- Maintenance-free

### Technical data

Communications	Modbus TCP master/slave Modbus (UDP), WagoAppPlcModbus Library Modbus (RTU), WagoAppPlcModbus Library ETHERNET EtherNet/IP™ Adapter (slave) EtherNet/IP™ Scanner EtherCAT® Master OPC UA Server/Client OPC UA Pub/Sub (can be installed later) MQTT RS-232 serial interface RS-485 interface BACnet/IP, <b>requires an additional license</b> Telecontrol protocols, <b>requires an additional license</b>
ETHERNET protocols	DHCP DNS NTP FTP FTPS SNMP HTTP HTTPS SSH
Telecontrol protocols	IEC 60870 (additional license as slave or master) IEC 61850 (additional license as Client or Server) DNP3 (additional license as Slave or Master)
Visualization	Web-Visu
Operating system	Real-time Linux (with RT-Preempt patch)
CPU	Cortex A8; 1 GHz
Programming languages per IEC 61131-3	Instruction List (IL) Ladder Diagram (LD) Function Block Diagram (FBD) Continuous Function Chart (CFC) Structured Text (ST) Sequential Function Chart (SFC)
Programming environment	CODESYS V3.5, Firmware Release 23 or higher <b>e!COCKPIT</b> (based on CODESYS V3) up to Firmware Release 22 WAGO-I/O-PRO V2.3 (based on CODESYS V2.3), up to Firmware Release 22
Configuration options	CODESYS V3 <b>e!COCKPIT</b> WAGO-I/O-CHECK Web-Based Management <b>e!RUNTIME</b> library CODESYS Library
Baud rate (communication/fieldbus 1)	10/100 Mbit/s
Transmission rate	ETHERNET: 10/100 Mbit/s
Transmission medium (communication/fieldbus)	ETHERNET: Twisted pair S-UTP; 100 Ω; Cat. 5; 100 m maximum cable length
Main memory (RAM)	512 MB
Internal memory (flash)	4096 MB

### Technical data

Non-volatile hardware memory	128 KB
Program memory	CODESYS V2: 16 MB; CODESYS V3: 32 MB
Data memory	CODESYS V2: 64 MB; CODESYS V3: 128 MB
Non-volatile software memory	128 KB 128 KB
Type of memory card	SD and SDHC up to 32 GB (all guaranteed properties only valid with WAGO's memory card)
Memory Card Slot	Push-push mechanism; cover lid (sealable)
Number of modules per node (max.)	250
Number of modules without a bus extension (max.)	64
Input and output process image (internal) max.	1000 words/1000 words
Input and output process image (Modbus®) max.	CODESYS V2: 1000 words/1000 words; CODESYS V3: 32000 words/32000 words
Indicators	LED (SYS, RUN, I/O, U1 ... U7) red/green/orange: Status of system, program, local data bus, status programmable by user (can be used via CODESYS library); LED (A, B) green: Status of system power supply, field supply
Supply voltage (system)	24 VDC (-25 ... +30 %); via pluggable connector (CAGE CLAMP® connection)
Input current (typ.) at nominal load (24 V)	550 mA
Total current (system supply)	1700 mA
Supply voltage (field)	24 VDC (-25 ... +30 %); via power jumper contacts
Current carrying capacity (power jumper contacts)	10 A
Number of outgoing power jumper contacts	3
Isolation	500 V system/field

### Connection data

Connection technology: communication/fieldbus	Modbus (TCP, UDP): 2 x RJ-45; Modbus RTU: 1 x D-sub 9 socket; RS-232 serial interface: 1 x D-sub 9 socket; RS-485 interface: 1 x D-sub 9 socket
Connection technology: system supply	2 x CAGE CLAMP®
Connection technology: field supply	6 x CAGE CLAMP®
Connection type 1	System/field supply
Solid conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inches
Connection technology: device configuration	1 x Male connector; 4-pole

### Physical data

Width	78.6 mm / 3.094 inches
Height	100 mm / 3.937 inches
Depth	71.9 mm / 2.831 inches
Depth from upper-edge of DIN-rail	64.7 mm / 2.547 inches

### Mechanical data

Weight	214.8 g
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE

### Environmental requirements

Ambient temperature (operation)	0 ... +55 °C
Ambient temperature (storage)	-25 ... +85 °C
Protection type	IP20
Pollution degree	2 per IEC 61131-2
Operating altitude	without temperature derating: 0 ... 2000 m; with temperature derating: 2000 ... 5000 m (0.5 K/100 m); 5000 m (max.)
Relative humidity (without condensation)	95 %
Mounting position	Horizontal left, horizontal right, horizontal up, horizontal down, vertical top and vertical bottom
Mounting type	DIN-35 rail
Vibration resistance	4g per IEC 60068-2-6
Shock resistance	15g per IEC 60068-2-27
EMC immunity to interference	per EN 61000-6-2, marine applications
EMC emission of interference	per EN 61000-6-3, marine applications
Exposure to pollutants	per IEC 60068-2-42 and IEC 60068-2-43
Fire load	2.551 MJ
Permissible H <sub>2</sub> S contaminant concentration at a relative humidity 75 %	10 ppm
Permissible SO <sub>2</sub> contaminant concentration at a relative humidity 75 %	25 ppm

### Environmental Product Compliance

CAS-No.	1303-86-2 1317-36-8 693-98-1 7439-92-1 79-94-7
REACH Candidate List Substance	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol 2-methylimidazole Diboron trioxide Lead Lead monoxide Perfluorobutane sulfonic acid (PFBS) and its salts
RoHS Compliance Status	Compliant, With Exemption
RoHS Exemption	6(c) 7(a) 7(c)-I 7(c)-II
SCIP notification number (Austria)	cdb3fb17-40de-4401-b69f-a4eba7617a35
SCIP notification number (Belgium)	9df949dc-8215-49fb-bc3d-b8138adf3d54
SCIP notification number (Bulgaria)	5e2cc238-0b57-44f5-841a-914b9a9106db
SCIP notification number (Czech Republic)	6f2ec62b-b1d7-41fd-bd08-53f1f066579b
SCIP notification number (Denmark)	dda30b2f-13b4-4ba2-8217-5f0911ac8064
SCIP notification number (Finland)	bfb94d6c-4452-4dc4-98bf-4cf30aeedaf9
SCIP notification number (France)	db8dc1da-3777-4580-86fe-b255678ad3e9
SCIP notification number (Germany)	cdb9d8e9-1c7c-4cb5-82a9-d1a354436f8c
SCIP notification number (Hungary)	f8f5a668-40a0-464c-b631-0b54aaa609d9
SCIP notification number (Italy)	3e3ff0a4-e76c-467a-a261-16166081f0f4
SCIP notification number (Netherlands)	610f023d-547b-4525-a177-7f59d1b13f66
SCIP notification number (Poland)	03c368e7-1dea-4f72-9fd1-9476580f0177
SCIP notification number (Romania)	37a892a9-87c6-421a-9519-f669f4cd6102
SCIP notification number (Sweden)	88ce2c4e-8c0c-411c-a562-f03f7e9471cd

## Approvals / Certificates

## General approvals



Approval	Standard	Certificate Name
EAC GZO Almaty Standart	TP TC 020/2011	EAC CoC 03083
KC National Radio Research Agency	Article 58-2, Clause 3	MSIP-REM-W43-PFC750
UL Underwriters Laboratories Inc. (ORDINARY LOCATIONS)	-	E175199

## Declarations of conformity and manufacturer's declarations

Approval	Standard	Certificate Name
EU-Declaration of Conformity WAGO GmbH & Co. KG	-	-
UK-Declaration of Conformity WAGO GmbH & Co. KG	-	-

## Approvals for marine applications



Approval	Standard	Certificate Name
ABS American Bureau of Shipping	-	22-2219060
BSH Bundesamt fuer Seeschifffahrt und Hydrographie	-	1104
BV Bureau Veritas S.A.	Rules for class. of Steel Ships	66711/A0
DNV DNV GL SE	DNV-CG-0339, Aug. 2021	TAA0000194
KR Korean Register of Shipping	-	KR HMB05880-AC001
LR Lloyds Register EMEA	-	LR22180952TA
PRS Polski Rejestr Statków	-	TE/1101/880590/23
RINA RINA Germany GmbH	-	ELE343521XG001

## Approvals for hazardous areas



Approval	Standard	Certificate Name
ATEX TUEV Nord Cert GmbH	EN 60079-0	TUEV14ATEX148929X (II 3 G Ex ec IIC T4 Gc)
CCCEX CQST/CNEx	CNCA-C23-01	2020312310000213 (Ex ec IIC T4 Gc)
IECEX TUEV Nord Cert GmbH	IEC 60079-0	IECEX TUN 14.0035 X (Ex ec IIC T4 Gc)
INMETRO TUV Rheinland do Brasil Ltda.	IEC 60079-0	TUV 12.1297 X
KTL Korea Testing Laboratory	KOSHA Article 34, IEC60079-0	21-KA4BO-0557X
UKEx WAGO GmbH & Co. KG	EN 60079-0	UKCA_WA GO22UKEX003X_ec
UL Underwriters Laboratories Inc. (HAZARDOUS LOCATIONS)	UL 121201	E198726

Subject to changes. Please also observe the further product documentation!

Current addresses can be found at: [www.wago.com](http://www.wago.com)

# Data Sheet | Item Number: 750-8212/025-000

Controller PFC200; 2nd Generation; 2 x ETHERNET, RS-232/-485; Ext. Temperature

<https://www.wago.com/750-8212/025-000>



The PFC200 Controller is a compact PLC for the modular WAGO I/O System. Besides network and fieldbus interfaces, the controller supports all digital, analog and specialty modules found within the 750/753 Series.

Two ETHERNET interfaces and an integrated switch enable line topology wiring.

An integrated Webservice provides user configuration options, while displaying PFC200 status information.

Besides the processing industry and building automation, typical applications for the PFC200 include standard machinery and equipment control (e.g., packaging, bottling and manufacturing systems, as well as textile, metal and wood processing machines).

Programming per IEC 61131-3

- Programmable with CODESYS V3.5 from Firmware Release 23, WAGO-I/O-PRO V2.3 or **e!COCKPIT** up to Firmware Release 22
- Direct connection of WAGO's I/O modules
- 2 x ETHERNET (configurable), RS-232/-485
- Linux operating system with RT-Preempt patch
- Configuration via CODESYS, **e!COCKPIT** or Web-Based Management user interface
- Maintenance-free

## Technical data

Communications	Modbus TCP master/slave Modbus (UDP), WagoAppPlcModbus Library Modbus (RTU), WagoAppPlcModbus Library ETHERNET EtherNet/IP™ Adapter (slave) EtherNet/IP™ Scanner EtherCAT® Master OPC UA Server/Client OPC UA Pub/Sub (can be installed later) MQTT RS-232 serial interface RS-485 interface BACnet/IP, <b>requires an additional license</b> Telecontrol protocols, <b>requires an additional license</b>
ETHERNET protocols	DHCP DNS NTP FTP FTPS SNMP HTTP HTTPS SSH
Telecontrol protocols	IEC 60870 (additional license as slave or master) IEC 61850 (additional license as Client or Server) DNP3 (additional license as Slave or Master)
Visualization	Web-Visu
Operating system	Real-time Linux (with RT-Preempt patch)
CPU	Cortex A8; 1 GHz
Programming languages per IEC 61131-3	Instruction List (IL) Ladder Diagram (LD) Function Block Diagram (FBD) Continuous Function Chart (CFC) Structured Text (ST) Sequential Function Chart (SFC)
Programming environment	CODESYS V3.5, Firmware Release 23 or higher <b>e!COCKPIT</b> (based on CODESYS V3) up to Firmware Release 22 WAGO-I/O-PRO V2.3 (based on CODESYS V2.3), up to Firmware Release 22
Configuration options	CODESYS V3 <b>e!COCKPIT</b> WAGO-I/O-CHECK Web-Based Management <b>e!RUNTIME</b> library CODESYS Library
Baud rate (communication/fieldbus 1)	10/100 Mbit/s
Transmission rate	ETHERNET: 10/100 Mbit/s
Transmission medium (communication/fieldbus)	ETHERNET: Twisted pair S-UTP; 100 Ω; Cat. 5; 100 m maximum cable length
Main memory (RAM)	512 MB
Internal memory (flash)	4096 MB

### Technical data

Non-volatile hardware memory	128 KB
Program memory	CODESYS V2: 16 MB; CODESYS V3: 32 MB
Data memory	CODESYS V2: 64 MB; CODESYS V3: 128 MB
Non-volatile software memory	128 KB 128 KB
Type of memory card	SD and SDHC up to 32 GB (all guaranteed properties only valid with WAGO's memory card)
Memory Card Slot	Push-push mechanism; cover lid (sealable)
Number of modules per node (max.)	250
Number of modules without a bus extension (max.)	64
Input and output process image (internal) max.	1000 words/1000 words
Input and output process image (Modbus®) max.	CODESYS V2: 1000 words/1000 words; CODESYS V3: 32000 words/32000 words
Indicators	LED (SYS, RUN, I/O, U1 ... U7) red/green/orange: Status of system, program, local data bus, status programmable by user (can be used via CODESYS library); LED (A, B) green: Status of system power supply, field supply
Supply voltage (system)	24 VDC (-25 ... +30 %); via pluggable connector (CAGE CLAMP® connection)
Input current (typ.) at nominal load (24 V)	550 mA
Total current (system supply)	1700 mA
Supply voltage (field)	24 VDC (-25 ... +30 %); via power jumper contacts
Current carrying capacity (power jumper contacts)	10 A
Number of outgoing power jumper contacts	3
Isolation	500 V system/field

### Connection data

Connection technology: communication/fieldbus	Modbus (TCP, UDP): 2 x RJ-45; Modbus RTU: 1 x D-sub 9 socket; RS-232 serial interface: 1 x D-sub 9 socket; RS-485 interface: 1 x D-sub 9 socket
Connection technology: system supply	2 x CAGE CLAMP®
Connection technology: field supply	6 x CAGE CLAMP®
Connection type 1	System/field supply
Solid conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inches
Connection technology: device configuration	1 x Male connector; 4-pole

### Physical data

Width	78.6 mm / 3.094 inches
Height	100 mm / 3.937 inches
Depth	71.9 mm / 2.831 inches
Depth from upper-edge of DIN-rail	64.7 mm / 2.547 inches

### Mechanical data

Weight	214.6 g
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE

### Environmental requirements

Ambient temperature (operation)	-20 ... +60 °C
Ambient temperature (storage)	-40 ... +85 °C
Protection type	IP20
Pollution degree	2 per IEC 61131-2
Operating altitude	without temperature derating: 0 ... 2000 m; with temperature derating: 2000 ... 5000 m (0.5 K/100 m); 5000 m (max.)
Relative humidity (without condensation)	95 %
Relative humidity (with condensation)	Short-term condensation per Class 3K6/IEC EN 60721-3-3 and E-DIN 40046-721-3, accounting for a temperature range of -20 to +60 °C (except for wind-driven precipitation, water and ice formation)
Mounting position	Horizontal left, horizontal right, horizontal up, horizontal down, vertical top and vertical bottom
Mounting type	DIN-35 rail
Vibration resistance	4g per IEC 60068-2-6
Shock resistance	15g per IEC 60068-2-27
EMC immunity to interference	per EN 61000-6-2, marine applications
EMC emission of interference	per EN 61000-6-3, marine applications
Exposure to pollutants	per IEC 60068-2-42 and IEC 60068-2-43
Fire load	2.549 MJ
Permissible H <sub>2</sub> S contaminant concentration at a relative humidity 75 %	10 ppm
Permissible SO <sub>2</sub> contaminant concentration at a relative humidity 75 %	25 ppm

### Environmental Product Compliance

CAS-No.	1303-86-2 1317-36-8 693-98-1 7439-92-1 79-94-7
REACH Candidate List Substance	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol 2-methylimidazole Diboron trioxide Lead Lead monoxide Perfluorobutane sulfonic acid (PFBS) and its salts
RoHS Compliance Status	Compliant, With Exemption
RoHS Exemption	6(c) 7(a) 7(c)-I 7(c)-II
SCIP notification number (Austria)	e59ec4d4-49d5-4035-aead-616577f7a77e
SCIP notification number (Belgium)	24205725-596b-4559-9bd7-c46b3fba7f52
SCIP notification number (Bulgaria)	5ccce6ac-8091-4822-ba1d-0b491185320c
SCIP notification number (Czech Republic)	9138d14f-77cf-4bdf-b039-0ed193c027b3
SCIP notification number (Denmark)	67e16f09-2af4-491f-b791-66825d0d4057
SCIP notification number (Finland)	61f6f1a5-eca9-4ff1-9630-4b8b26ff2209
SCIP notification number (France)	c780b94e-eed3-4e59-96fb-f2cb9c553498
SCIP notification number (Germany)	ddb28799-6137-48ca-b7df-948dd029501c
SCIP notification number (Hungary)	a7959b90-4616-4dff-861b-f451aa72248a
SCIP notification number (Italy)	b9ba2eca-771d-440b-a4f4-ed7c7bc25ef7
SCIP notification number (Netherlands)	a31d4d9a-3faa-46cd-8683-290b61a4375a
SCIP notification number (Poland)	9934551f-8632-44cb-a7e3-08900e076198
SCIP notification number (Romania)	8c37d3c6-6db5-4a34-bfa9-729d506507b4
SCIP notification number (Sweden)	24191a11-efd7-4793-af44-836a2a7726f6

## Approvals / Certificates

## General approvals



Approval	Standard	Certificate Name
EAC GZO Almaty Standart	TP TC 020/2011	EAC CoC 03083
KC National Radio Research Agency	Article 58-2, Clause 3	MSIP-REM-W43-PFC750
UL Underwriters Laboratories Inc. (ORDINARY LOCATIONS)	-	E175199

## Declarations of conformity and manufacturer's declarations

Approval	Standard	Certificate Name
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EU-Declaration of Conformity  
WAGO GmbH & Co. KG

## Approvals for marine applications



Approval	Standard	Certificate Name
ABS American Bureau of Shipping	-	22-2227356-PDA
BSH Bundesamt fuer Seeschifffahrt und Hydrographie	-	1104
DNV DNV Germany GmbH	DNV-CG-0339, Aug. 2021	TAA00001J4
PRS Polski Rejestr Statków	-	TE/1102/880590/23

## Approvals for hazardous areas



Approval	Standard	Certificate Name
ATEX TUEV Nord Cert GmbH	EN 60079-0	TUEV14ATEX148929X (II 3 G Ex ec IIC T4 Gc)
CCCEX CQST/CNEx	CNCA-C23-01	2020312310000213 (Ex ec IIC T4 Gc)
IECEX TUEV Nord Cert GmbH	IEC 60079-0	IECEX TUN 14.0035 X (Ex ec IIC T4 Gc)
INMETRO TUV Rheinland do Brasil Ltda.	IEC 60079-0	TUV 12.1297 X
UKEx WAGO GmbH & Co. KG	EN 60079-0	UKCA_WA GO22UKEX003X_ec
UL Underwriters Laboratories Inc. (HAZARDOUS LOCATIONS)	UL 121201	E198726

## Data Sheet | Item Number: 750-8212/025-001

Controller PFC200; 2nd Generation; 2 x ETHERNET, RS-232/-485; Telecontrol technology; Ext. Temperature

<https://www.wago.com/750-8212/025-001>



The PFC200 Controller is a compact PLC for the modular WAGO I/O System. Besides network and fieldbus interfaces, the controller supports all digital, analog and specialty modules found within the 750/753 Series.

Two ETHERNET interfaces and an integrated switch enable line topology wiring.

An integrated Webserver provides user configuration options, while displaying PFC200 status information.

Besides the processing industry and building automation, typical applications for the PFC200 include standard machinery and equipment control (e.g., packaging, bottling and manufacturing systems, as well as textile, metal and wood processing machines).

Programming per IEC 61131-3

- Programmable with CODESYS V3.5 from Firmware Release 23, WAGO-I/O-PRO V2.3 or **e!COCKPIT** up to Firmware Release 22
- Direct connection of WAGO's I/O modules
- 2 x ETHERNET (configurable), RS-232/-485
- Linux operating system with RT-Preempt patch
- Configuration via CODESYS or Web-Based Management user interface
- Maintenance-free

### Technical data

Communications	Modbus TCP master/slave Modbus (UDP), WagoAppPlcModbus Library Modbus (RTU), WagoAppPlcModbus Library ETHERNET EtherNet/IP™ Adapter (slave) EtherNet/IP™ Scanner EtherCAT® Master OPC UA Server/Client OPC UA Pub/Sub (can be installed later) MQTT Telecontrol protocols RS-232 serial interface RS-485 interface BACnet/IP, <b>requires an additional license</b>
ETHERNET protocols	DHCP DNS NTP FTP FTPS SNMP HTTP HTTPS SSH
Telecontrol protocols	IEC 60870 IEC 61850 DNP3
Visualization	Web-Visu
Operating system	Real-time Linux (with RT-Preempt patch)
CPU	Cortex A8; 1 GHz
Programming languages per IEC 61131-3	Instruction List (IL) Ladder Diagram (LD) Function Block Diagram (FBD) Continuous Function Chart (CFC) Structured Text (ST) Sequential Function Chart (SFC)
Programming environment	CODESYS V3.5, Firmware Release 23 or higher <b>e!COCKPIT</b> (based on CODESYS V3) up to Firmware Release 22 WAGO-I/O-PRO V2.3 (based on CODESYS V2.3), up to Firmware Release 22
Configuration options	CODESYS V3 <b>e!COCKPIT</b> WAGO-I/O-CHECK Web-Based Management <b>e!RUNTIME</b> library CODESYS Library
Baud rate (communication/fieldbus 1)	10/100 Mbit/s
Transmission rate	ETHERNET: 10/100 Mbit/s
Transmission medium (communication/fieldbus)	ETHERNET: Twisted pair S-UTP; 100 Ω; Cat. 5; 100 m maximum cable length
Main memory (RAM)	512 MB

### Technical data

Internal memory (flash)	4096 MB
Non-volatile hardware memory	128 KB
Program memory	CODESYS V2: 16 MB; CODESYS V3: 32 MB
Data memory	CODESYS V2: 64 MB; CODESYS V3: 128 MB
Non-volatile software memory	128 KB 128 KB
Type of memory card	SD and SDHC up to 32 GB (all guaranteed properties only valid with WAGO's memory card)
Memory Card Slot	Push-push mechanism; cover lid (sealable)
Number of modules per node (max.)	250
Number of modules without a bus extension (max.)	64
Input and output process image (internal) max.	1000 words/1000 words
Input and output process image (Modbus®) max.	CODESYS V2: 1000 words/1000 words; CODESYS V3: 32000 words/32000 words
Indicators	LED (SYS, RUN, I/O, U1 ... U7) red/green/orange: Status of system, program, local data bus, status programmable by user (can be used via CODESYS library); LED (A, B) green: Status of system power supply, field supply
Supply voltage (system)	24 VDC (-25 ... +30 %); via pluggable connector (CAGE CLAMP® connection)
Input current (typ.) at nominal load (24 V)	550 mA
Total current (system supply)	1700 mA
Supply voltage (field)	24 VDC (-25 ... +30 %); via power jumper contacts
Current carrying capacity (power jumper contacts)	10 A
Number of outgoing power jumper contacts	3
Isolation	500 V system/field

### Connection data

Connection technology: communication/fieldbus	Modbus (TCP, UDP): 2 x RJ-45; Modbus RTU: 1 x D-sub 9 socket; RS-232 serial interface: 1 x D-sub 9 socket; RS-485 interface: 1 x D-sub 9 socket; Telecontrol protocol IEC 60870-5-101/-103: 1 x D-sub 9 socket; Telecontrol protocol IEC 60870-5-104: 1 x RJ-45; Telecontrol protocol IEC 61850: 1 x RJ-45; Telecontrol protocol DNP3: 1 x RJ-45 or D-sub 9 socket
Connection technology: system supply	2 x CAGE CLAMP®
Connection technology: field supply	6 x CAGE CLAMP®
Connection type 1	System/field supply
Solid conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inches
Connection technology: device configuration	1 x Male connector; 4-pole

### Physical data

Width	78.6 mm / 3.094 inches
Height	100 mm / 3.937 inches
Depth	71.9 mm / 2.831 inches
Depth from upper-edge of DIN-rail	64.7 mm / 2.547 inches

### Mechanical data

Weight	219.9 g
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE

### Environmental requirements

Ambient temperature (operation)	-20 ... +60 °C
Ambient temperature (storage)	-40 ... +85 °C
Protection type	IP20
Pollution degree	2 per IEC 61131-2
Operating altitude	without temperature derating: 0 ... 2000 m; with temperature derating: 2000 ... 5000 m (0.5 K/100 m); 5000 m (max.)
Relative humidity (without condensation)	95 %
Relative humidity (with condensation)	Short-term condensation per Class 3K6/IEC EN 60721-3-3 and E-DIN 40046-721-3, accounting for a temperature range of -20 to +60 °C (except for wind-driven precipitation, water and ice formation)
Mounting position	Horizontal left, horizontal right, horizontal up, horizontal down, vertical top and vertical bottom
Mounting type	DIN-35 rail
Vibration resistance	4g per IEC 60068-2-6
Shock resistance	15g per IEC 60068-2-27
EMC immunity to interference	per EN 61000-6-2, marine applications
EMC emission of interference	per EN 61000-6-3, marine applications
Exposure to pollutants	per IEC 60068-2-42 and IEC 60068-2-43
Fire load	2.549 MJ
Permissible H <sub>2</sub> S contaminant concentration at a relative humidity 75 %	10 ppm
Permissible SO <sub>2</sub> contaminant concentration at a relative humidity 75 %	25 ppm

### Environmental Product Compliance

CAS-No.	1303-86-2 1317-36-8 693-98-1 7439-92-1 79-94-7
REACH Candidate List Substance	Diboron trioxide Lead Lead monoxide Perfluorobutane sulfonic acid (PFBS) and its salts 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol 2-methylimidazole
RoHS Compliance Status	Compliant, With Exemption
RoHS Exemption	6(c) 7(a) 7(c)-I 7(c)-II
SCIP notification number (Austria)	33a73aaa-3201-4f06-bf11-19ff1d613c6c
SCIP notification number (Belgium)	ad51e8bf-8bff-416e-9fd9-bf58b9e4f29f
SCIP notification number (Bulgaria)	9efc58d2-6aea-42ed-afa2-939b3a738c15
SCIP notification number (Czech Republic)	3a2ecf12-f45f-4520-9110-0a38a306cd58
SCIP notification number (Denmark)	1c60bcb4-90e6-469a-a9d7-30bd8dcf0241
SCIP notification number (Finland)	c5959470-afaf-422a-bdec-4264d90597ad
SCIP notification number (France)	c71b33d6-8387-47da-90f6-0a07fa0fba67
SCIP notification number (Germany)	4778bbee-f0f1-41c1-8b6f-8eed1c41bc04
SCIP notification number (Hungary)	edffc353-2aa2-4da6-98b1-b080da267f9e
SCIP notification number (Italy)	109688a1-c73e-46f6-aeed-f59a90198b0c
SCIP notification number (Netherlands)	783469d9-425a-42b7-8ce6-2fbe5f1c9dd5
SCIP notification number (Poland)	94d3e0b7-a9d7-4c14-bf25-49f60cc7c600
SCIP notification number (Romania)	23b512ed-7085-4085-8f9b-42710238e5d5
SCIP notification number (Sweden)	35bf4daf-3cb3-4da9-8183-ecf33f4468d9

## Approvals / Certificates

## General approvals



Approval	Standard	Certificate Name
EAC GZO Almaty Standart	TP TC 020/2011	EAC CoC 03083
KC National Radio Research Agency	Article 58-2, Clause 3	MSIP-REM-W43-PFC750
UL Underwriters Laboratories Inc. (ORDINARY LOCATIONS)	-	E175199

## Declarations of conformity and manufacturer's declarations

Approval	Standard	Certificate Name
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EU-Declaration of Conformity  
WAGO GmbH & Co. KG

## Approvals for marine applications



Approval	Standard	Certificate Name
ABS American Bureau of Shipping	-	22-2227356-PDA
BSH Bundesamt fuer Seeschifffahrt und Hydrographie	-	1104
DNV DNV Germany GmbH	IEC 60870-5-104 ed.2	10322241-INC 22-2700
DNV DNV Germany GmbH	DNV-CG-0339, Aug.2021	TAA00001J4
PRS Polski Rejestr Statków	-	TE/1102/880590/23

## Approvals for hazardous areas



Approval	Standard	Certificate Name
ATEX TUEV Nord Cert GmbH	EN 60079-0	TUEV14ATEX148929X (II 3 G Ex ec IIC T4 Gc)
CCCEX CQST/CNEx	CNCA-C23-01	2020312310000213 (Ex ec IIC T4 Gc)
IECEX TUEV Nord Cert GmbH	IEC 60079-0	IECEX TUN 14.0035 X (Ex ec IIC T4 Gc)
INMETRO TUV Rheinland do Brasil Ltda.	IEC 60079-0	TUV 12.1297 X
UKEx WAGO GmbH & Co. KG	EN 60079-0	UKCA_WA GO22UKEX003X_ec
UL Underwriters Laboratories Inc. (HAZARDOUS LOCATIONS)	UL 121201	E198726

Subject to changes. Please also observe the further product documentation!

Current addresses can be found at: [www.wago.com](http://www.wago.com)

## Data Sheet | Item Number: 750-8212/025-002

Controller PFC200; 2nd Generation; 2 x ETHERNET, RS-232/-485; Telecontrol technology; Ext. Temperature; ECO

<https://www.wago.com/750-8212/025-002>



The PFC200 Controller is a compact PLC for the modular WAGO I/O System. Besides network and fieldbus interfaces, the controller supports all digital, analog and specialty modules found within the 750/753 Series.

Two ETHERNET interfaces and an integrated switch enable line topology wiring.

An integrated Webserver provides user configuration options, while displaying PFC200 status information.

Besides the processing industry and building automation, typical applications for the PFC200 include standard machinery and equipment control (e.g., packaging, bottling and manufacturing systems, as well as textile, metal and wood processing machines).

Programming per IEC 61131-3

- Programmable with CODESYS V3.5 from Firmware Release 23, WAGO-I/O-PRO V2.3 or **e!COCKPIT** up to Firmware Release 22
- Direct connection of WAGO's I/O modules
- 2 x ETHERNET (configurable), RS-232/-485
- Linux operating system with RT-Preempt patch
- Configuration via CODESYS or Web-Based Management user interface
- Maintenance-free

### Technical data

Communications	Modbus TCP master/slave Modbus (UDP), WagoAppPlcModbus Library Modbus (RTU), WagoAppPlcModbus Library ETHERNET EtherNet/IP™ Adapter (slave) EtherNet/IP™ Scanner EtherCAT® Master OPC UA Server/Client OPC UA Pub/Sub (can be installed later) MQTT Telecontrol protocols RS-232 serial interface RS-485 interface BACnet/IP, <b>requires an additional license</b>
ETHERNET protocols	DHCP DNS NTP FTP FTPS SNMP HTTP HTTPS SSH
Telecontrol protocols	IEC 60870 IEC 61850 DNP3
Visualization	Web-Visu
Operating system	Real-time Linux (with RT-Preempt patch)
CPU	Cortex A8; 1 GHz
Programming languages per IEC 61131-3	Instruction List (IL) Ladder Diagram (LD) Function Block Diagram (FBD) Continuous Function Chart (CFC) Structured Text (ST) Sequential Function Chart (SFC)
Programming environment	CODESYS V3.5, Firmware Release 23 or higher <b>e!COCKPIT</b> (based on CODESYS V3) up to Firmware Release 22 WAGO-I/O-PRO V2.3 (based on CODESYS V2.3), up to Firmware Release 22
Configuration options	CODESYS V3 <b>e!COCKPIT</b> WAGO-I/O-CHECK Web-Based Management <b>e!RUNTIME</b> library CODESYS Library
Baud rate (communication/fieldbus 1)	10/100 Mbit/s
Transmission rate	ETHERNET: 10/100 Mbit/s
Transmission medium (communication/fieldbus)	ETHERNET: Twisted pair S-UTP; 100 Ω; Cat. 5; 100 m maximum cable length
Main memory (RAM)	512 MB

### Technical data

Internal memory (flash)	4096 MB
Non-volatile hardware memory	128 KB
Program memory	CODESYS V2: 16 MB; CODESYS V3: 32 MB
Data memory	CODESYS V2: 64 MB; CODESYS V3: 128 MB
Non-volatile software memory	128 KB 128 KB
Type of memory card	SD and SDHC up to 32 GB (all guaranteed properties only valid with WAGO's memory card)
Memory Card Slot	Push-push mechanism; cover lid (sealable)
Number of modules per node (max.)	6
Number of modules without a bus extension (max.)	6
Input and output process image (internal) max.	1000 words/1000 words
Input and output process image (Modbus®) max.	CODESYS V2: 1000 words/1000 words; CODESYS V3: 32000 words/32000 words
Indicators	LED (SYS, RUN, I/O, U1 ... U7) red/green/orange: Status of system, program, local data bus, status programmable by user (can be used via CODESYS library); LED (A, B) green: Status of system power supply, field supply
Supply voltage (system)	24 VDC (-25 ... +30 %); via pluggable connector (CAGE CLAMP® connection)
Input current (typ.) at nominal load (24 V)	550 mA
Total current (system supply)	1700 mA
Supply voltage (field)	24 VDC (-25 ... +30 %); via power jumper contacts
Current carrying capacity (power jumper contacts)	10 A
Number of outgoing power jumper contacts	3
Isolation	500 V system/field

### Connection data

Connection technology: communication/fieldbus	Modbus (TCP, UDP): 2 x RJ-45; Modbus RTU: 1 x D-sub 9 socket; RS-232 serial interface: 1 x D-sub 9 socket; RS-485 interface: 1 x D-sub 9 socket; Telecontrol protocol IEC 60870-5-101/-103: 1 x D-sub 9 socket; Telecontrol protocol IEC 60870-5-104: 1 x RJ-45; Telecontrol protocol IEC 61850: 1 x RJ-45; Telecontrol protocol DNP3: 1 x RJ-45 or D-sub 9 socket
Connection technology: system supply	2 x CAGE CLAMP®
Connection technology: field supply	6 x CAGE CLAMP®
Connection type 1	System/field supply
Solid conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inches
Connection technology: device configuration	1 x Male connector; 4-pole

### Physical data

Width	78.6 mm / 3.094 inches
Height	100 mm / 3.937 inches
Depth	71.9 mm / 2.831 inches
Depth from upper-edge of DIN-rail	64.7 mm / 2.547 inches

### Mechanical data

Weight	214 g
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE

Environmental requirements	
Ambient temperature (operation)	-20 ... +60 °C
Ambient temperature (storage)	-40 ... +85 °C
Protection type	IP20
Pollution degree	2 per IEC 61131-2
Operating altitude	without temperature derating: 0 ... 2000 m; with temperature derating: 2000 ... 5000 m (0.5 K/100 m); 5000 m (max.)
Relative humidity (without condensation)	95 %
Relative humidity (with condensation)	Short-term condensation per Class 3K6/IEC EN 60721-3-3 and E-DIN 40046-721-3, accounting for a temperature range of -20 to +60 °C (except for wind-driven precipitation, water and ice formation)
Mounting position	Horizontal left, horizontal right, horizontal up, horizontal down, vertical top and vertical bottom
Mounting type	DIN-35 rail
Vibration resistance	4g per IEC 60068-2-6
Shock resistance	15g per IEC 60068-2-27
EMC immunity to interference	per EN 61000-6-2, marine applications
EMC emission of interference	per EN 61000-6-3, marine applications
Exposure to pollutants	per IEC 60068-2-42 and IEC 60068-2-43
Fire load	2.549 MJ
Permissible H <sub>2</sub> S contaminant concentration at a relative humidity 75 %	10 ppm
Permissible SO <sub>2</sub> contaminant concentration at a relative humidity 75 %	25 ppm

Environmental Product Compliance	
CAS-No.	1303-86-2 1317-36-8 693-98-1 7439-92-1 79-94-7
REACH Candidate List Substance	Diboron trioxide Lead Lead monoxide Perfluorobutane sulfonic acid (PFBS) and its salts 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol 2-methylimidazole
RoHS Compliance Status	Compliant, With Exemption
RoHS Exemption	6(c) 7(a) 7(c)-I 7(c)-II
SCIP notification number (Austria)	b87db705-c6bb-4492-9160-e0b31e1ea94f
SCIP notification number (Belgium)	e320490c-a0db-4176-9031-93f81cec07bd
SCIP notification number (Bulgaria)	bd70db6b-cc26-4ffb-8ffe-94ff6d64fcf4
SCIP notification number (Czech Republic)	bc5f6e11-de48-42e5-be5e-09edd7599d02
SCIP notification number (Denmark)	56ae3d74-2adf-45f4-a7fb-d6f6506f714f
SCIP notification number (Finland)	1db2a651-cfa4-4b82-b6b2-669d07342c20
SCIP notification number (France)	9ae49600-e3c5-4466-845f-9fc70bf0290c
SCIP notification number (Germany)	3d2167dc-fbbc-4ee6-b17e-fba28db48e5a
SCIP notification number (Hungary)	f19cd086-7339-4b5e-8f74-e3d2ef0df9fb
SCIP notification number (Italy)	09c23d09-80e7-422b-b41c-54105f1ba597
SCIP notification number (Netherlands)	62f18751-fc0d-41bb-af3f-34b87fc53e1b
SCIP notification number (Poland)	ec73c1e2-de09-4a86-a825-d9b00392272c
SCIP notification number (Romania)	5b970301-7d90-450d-89d8-b3fc0f64d9a5
SCIP notification number (Sweden)	06bb16fa-477f-4ca2-bda7-7d6586e5c546

## Approvals / Certificates

## General approvals



Approval	Standard	Certificate Name
EAC GZO Almaty Standart	TP TC 020/2011	EAC CoC 03083
KC National Radio Research Agency	Article 58-2, Clause 3	MSIP-REM-W43-PFC750
UL Underwriters Laboratories Inc. (ORDINARY LOCATIONS)	-	E175199

## Declarations of conformity and manufacturer's declarations

Approval	Standard	Certificate Name
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EU-Declaration of Conformity  
WAGO GmbH & Co. KG

## Approvals for marine applications



Approval	Standard	Certificate Name
ABS American Bureau of Shipping	-	22-2227356-PDA
BSH Bundesamt fuer Seeschifffahrt und Hydrographie	-	1104
DNV DNV Germany GmbH	DNV-CG-0339, Aug. 2021	TAA00001J4
PRS Polski Rejestr Statków	-	TE/1102/880590/23

## Approvals for hazardous areas



Approval	Standard	Certificate Name
ATEX TUEV Nord Cert GmbH	EN 60079-0	TUEV14ATEX148929X (II 3 G Ex ec IIC T4 Gc)
CCCEX CQST/CNEx	CNCA-C23-01	2020312310000213 (Ex ec IIC T4 Gc)
IECEX TUEV Nord Cert GmbH	IEC 60079-0	IECEX TUN 14.0035 X (Ex ec IIC T4 Gc)
INMETRO TUV Rheinland do Brasil Ltda.	IEC 60079-0	TUV 12.1297 X
UKEx WAGO GmbH & Co. KG	EN 60079-0	UKCA_WA GO22UKEX003X_ec
UL Underwriters Laboratories Inc. (HAZARDOUS LOCATIONS)	UL 121201	E198726

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