Communication Modules

WAGO Communication Module Modbus RTU

2789-9015

Product manual | Version 1.1.0

WAGO GmbH & Co. KG
Hansastraße 27
D - 32423 Minden
Phone: +49 571/887 – 0
Fax: +49 571/887 – 844169
E-Mail: ✉ **info@wago.com**
Internet: **www.wago.com**

Technical Support
Phone: +49 571/887 – 44555
Fax: +49 571/887 – 844555
E-Mail: ✉ **support@wago.com**

Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

E-Mail: ✉ **documentation@wago.com**

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Table of Contents

Provisions

This document applies to the following product:

2789-9015 (Modbus RTU Communication Module)

Product detail page	www.wago.com/2789-9015

The product must only be installed and operated in accordance with the operating instructions. Knowledge of the operating instructions is required for proper use. You can find all documents and information on the detailed product page.

Additional document

- Product Manual of the Pro 2 Power Supply used

1.1 Intended Use

The 2789 Series Modbus RTU Communication Module is used for communication with a Modbus RTU fieldbus environment and is plugged into a subordinate WAGO Power Supply Pro 2.

The product is an open type device and is designed for installation in an additional enclosure.

- This product is intended for installation in automation technology systems.
- The product is designed for use in dry indoor rooms.
- Operation of the products in industrial area is permitted.
- The product meets the EMC requirements for the residential, office and commercial area as well as small business, if the product used complies with the required emissions of interference (emission limits).
- Operation of the product in other application areas is only permitted when corresponding approvals and labeling are present.

Improper Use

Improper use of the product is not permitted. Improper use occurs especially in the following cases:

- Non-observance of the intended use
- Use without protective measures in an environment in which moisture, salt water, salt spray mist, dust, corrosive fumes, gases, direct sunlight or ionizing radiation can occur
- Use of the product in areas with special risk that require continuous fault-free operation and in which failure of or operation of the product can result in an imminent risk to life, limb or health or cause serious damage to property or the environment (such as the operation of nuclear power plants, weapons systems, aircraft and motor vehicles)

Warranty and Liability

The provisions of the latest WAGO General Terms and Conditions of Deliveries and Services (GTC) apply as well as the Software License Terms for Standard Software (SW-License) applicable to software products und software embedded in WAGO hardware products, both available at: www.wago.com.

In particular, the warranty is void if:

- The product is improperly used.
- The deficiency (hardware and software configurations) is due to special instructions.
- Modifications to the hardware or software have been made by the user or third parties that are not described in this documentation and that has contributed to the fault.

Individual agreements always have priority.

Obligations of Installers/Operators

The installers and operators bear responsibility for the safety of an installation or a system assembled with the product. The installer/operator is responsible for the proper installation and safety of the system. All laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation, and the instructions in the the products' Instructions for Use, must be complied with. In addition, the installment requirements for licensing must be observed. In the event of non-compliance, the product may not be operated within the scope of the approval.

1.2 Typographical Conventions

Number Notation

100	Decimals: Normal notation
0x64	Hexadecimals: C-notation
'100'	Binary: In single quotation marks
'0110.0100'	Nibbles separated by a period

Text Formatting

italic	Names of paths or files
bold	Menu items, entry or selection fields, emphasis
`Code`	Sections of program code
>	Selection of a menu point from a menu
"Value"	Value entries
[F5]	Identification of buttons or keys

Cross References / Links

	Cross references/links to a topic in a document
	Cross references / links to a separate document
	Cross references / links to a website
	Cross references / links to an email address

Sequence of Action

✓ This symbol identifies a precondition.

1. Action step
2. Action step

   ⇨ This symbol identifies an intermediate result.

⇨ This symbol identifies the result of an action.

- Individual action step

Lists

- Lists, first level
  - Lists, second level

Figures

Figures in this documentation are for better understanding and may differ from the actual product design.

Warning Messages

⚠ DANGER

Type and source of hazard

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

- Action step to reduce risk

⚠ WARNING

Type and source of hazard

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

- Action step to reduce risk

⚠ CAUTION

Type and source of hazard

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

- Action step to reduce risk

NOTICE

Type and source of malfunction (property damage only)

Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

- Action step to reduce risk

Information Notices

ⓘ Note

Information

Indicates information, clarifications, recommendations, referrals, etc.

Safety

2.1 General Safety Rules

- This documentation is part of the product. Therefore, retain the documentation during the entire service life of the product. Pass on the documentation to any subsequent user of the product. In addition, ensure that any supplement to this documentation is included, if necessary.
- The product must only be installed and put into operation by qualified electrical specialists per EN 50110-1/-2 and IEC 60364.
- Comply with the laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation.

2.2 Electrical Safety

- Make sure the product does not carry any voltage before starting work.

Grounding/Protection/Fuses

- When handling the product, please ensure that environmental factors (personnel, work space and packaging) are properly equalized. Do not touch any conducting parts.

Cables

- To minimize interference (e.g., by electromagnetic interference), maintain a spatial separation between control, signal and data lines and the power supply lines.
- The specified conductor cross-sections refer exclusively to the mechanical connection capacity of the clamping points. Always use connecting cables designed for the maximum current load.
- Additional heat can be produced at the clamping point by high currents and inherent heat generated by the product. Plan a higher tenmperature range for the conductors, or reduce inherent heat by selecting larger conductor cross-sections.
- Use appropriate strain relief.

2.3 Mechanical Safety

- Before startup, please check the product for any damage that may have occurred during shipping. Do not put the product into operation in the event of mechanical damage.
- Do not open the product housing.
- The product is an open-type device and is designed for installation in an additional enclosure, which supplies the following safety aspects:
  - Restrict access to authorized personnel and may only be opened with tools.
  - Ensure the required pollution degree in the vicinity of the system.
  - Offer adequate protection against direct or indirect contact.
  - Offer adequate protection against UV irradiation.
  - Prevent fire from spreading outside of the enclosure.
  - Guarantee mechanical stability.

2.4 Thermal Safety

- The surface of the housing heats up during operation. Under special conditions (e.g., in the event of a fault or increased surrounding air temperature), touching the product may cause burns. Allow the product to cool down before touching it.
- The temperature inside the additional enclosure must not exceed the ambient temperature permitted for the mounted product.
- Cooling of the product must not be impaired. Ensure air can flow freely and that the minimum clearances from adjacent products/areas are maintained.

2.5 Indirect Safety

- Only use a dry or cloth or a clothed dampened with water to clean the product. Do not use cleaning agents, e.g., abrasive cleaners, alcohols or acetone.
- Clean tools and materials are imperative for handling the product.
- The product contains no parts that can be serviced by the user. Always have all service, maintenance and repair work performed by specialists authorized by WAGO.
- Replace any defective or damaged devices.

Properties

3.1 Introduction

With the Modbus RTU Communication Module a Modbus RTU fieldbus environment can be connected to a subordinate product [1]. The Modbus RTU Communication Module functions as a gateway. Communication between the Modbus RTU Communication Module and Modbus RTU fieldbus environment occurs via RS-485.

The Modbus RTU Communication Module can be used in a fieldbus network or in a peer-to-peer connection. For bus connections, stations that are not powered can also be wired. They do not interrupt the existing bus connection.

[1] For example, on a WAGO Power Supply Pro 2, firmware version 01.03.07 or higher.

3.2 View

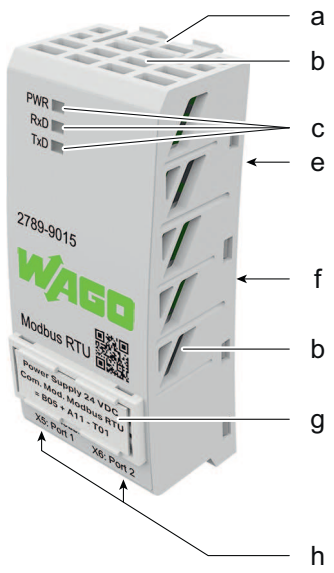

Figure 1: View

a	Locking tab	
b	Ventilation openings	
c	Optical Status Indicator	Indicators [▶ 14]
e	Communication interface	
f	Type label	Type label [▶ 12]
g	Marker carrier	Accessories [▶ 32]
h	RJ-45 interface (X5)/(X6)	RJ-45 Interfaces [▶ 13]

3.3 Type label

The product's type plate contains the following information:

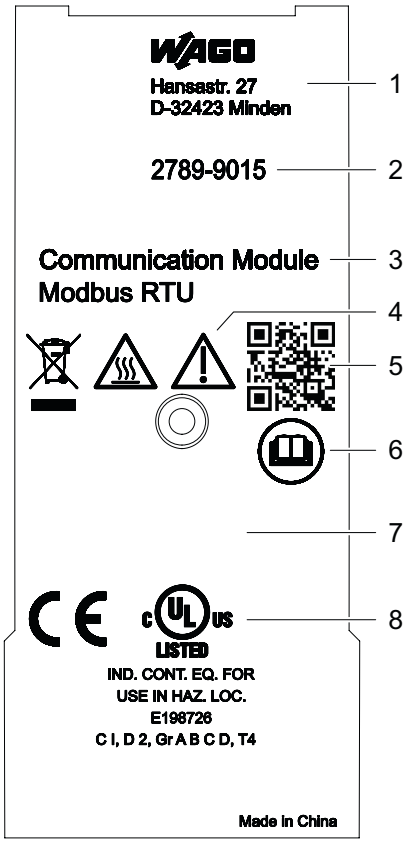

Figure 2: Type label

Position	Comment	Details
1	Company logo and address	
2	Item Number	
3	Product name	
4	Warning notice symbols	Typographical Conventions [▶ 6]
5	QR link with link to website	
6	Reference to product documentation	
7	Product-specific information	Product-specific information [▶ 13]
8	Box for approvals	Approvals [▶ 15]

See also

- Typographical Conventions [▶ 7]

3.4 Product-specific information

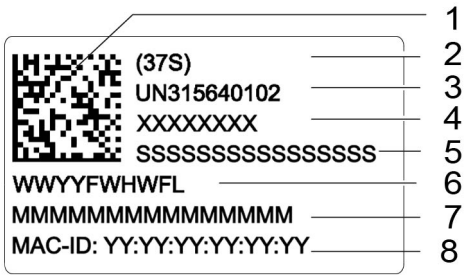

Figure 3: Product-specific information

Position	Comment	Details
1	2D data matrix code	Contains the information for positions 2 … 5
2	Key number	Fixed information (37S)
3	ID number per D-U-N-S®	Fixed information (WAGO Minden)
4	WAGO item number or internal SAP number	Product-specific
5	Consecutive number	Product-specific
6	Production date and revision	• Production date • Revision index (FW HW FL)
7	Internal manufacturer product number	Product-specific
8	Media Access Control Identifier	Product-specific

Table 1: Revision index structure

Software index	Hardware index	Boot loader index
FW	HW	FL

3.5 Connections

3.5.1 RJ-45 Interfaces

The connection to ETHERNET-based fieldbuses is established via two RJ45 connectors (see figure “RJ45 Interface, X5/X6”), also called “Western plugs,” which are connected to the fieldbus controller via an integrated switch.

The integrated switch works in store-and-forward mode and supports 10/100 Mbit/s transmission speeds, as well as full and half-duplex transmission modes, for each port.

The RJ45 sockets are wired in accordance with the specifications for 100BASE-TX.

The ETHERNET standard stipulates a twisted pair cable of at least Category 5e as a connecting cable. S/UTP (Screened Unshielded Twisted Pair) and STP (Shielded Twisted Pair) type cables with a maximum segment length of 100 m can be used.

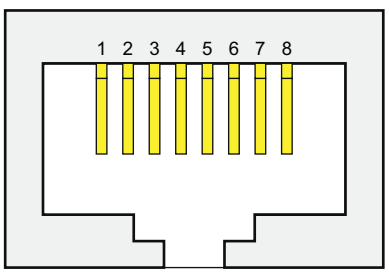

Figure 4: RJ45 Interface, X5/X6

Pin	Description
1	TD +
2	TD −
3	RD +
4	–
5	–
6	RD −
7	–
8	–
The pin assignments for RJ45 connectors are specified in the EIA/TIA 568 standard. TD: Transmit Data. RD: Receive Data.	

3.6 Indicators

The product has a visual status indicator. This indicator consists of three LEDs.

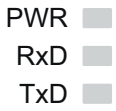

Figure 5: Optical Status Indicator

Table 2: Operating Status Indication

Indicator		Operating Mode		
		Ready for operation	Communication active Status: Query received	Communication active Status: Response sent
PWR		Steady	Steady	Steady
RxD		Off	Flashes once (per telegram)	Off
TxD		Off	Off	Flashes once (per telegram)

3.7 Technical data

3.7.1 Product

Table 3: Technical Data – Product

Property	Value
Width	35 mm
Height	80 mm
Depth	22 mm
Weight	35 g
Degree of protection	IP20

3.7.2 Power Loss

Table 4: Technical Data – Power Loss

Property	Value
Power loss (max.)	0.22 W

3.7.3 Communication

Table 5: Technical Data – Communication

Property	Value
Communication protocol	Modbus RTU
Interface	RJ-45 interface
Physical interface	RS-485 interface
Cable length	≤ 1200 m (depending on baud rate)
Transmission medium	Twisted pair, shielded
Type of conductors used	≥ +75°C / +167°F (ambient air temperature: ≤ +60°C / 140°F) ≥ +90°C / 194°F (ambient air temperature: > +60°C / 140°F)
Baud rate	4800 … 115200 Baud
Maximum voltage (RJ-45 interface)	−7 … +12 V (SELV)
Maximum number of bus subscribers	247

3.7.4 Environmental Conditions

Table 6: Technical Data – Environmental Conditions

Property	Value
Test voltage (communication interface / RJ-45 interface)	1 kVAC, 50 Hz, 1 min.
Type of insulation	Functional insulation
Ambient temperature, operation	−40 … +70 °C
Ambient temperature, storage	−40 … +85 °C
Relative humidity	5 … 95 % (no condensation)
Elevation above sea level, max.	5000 m
Pollution degree according to IEC/EN 60664-1	2
Protection class	III
Degree of protection [1)]	IP20

[1)] *The underlyingWAGO Power Supply Pro 2.*

3.8 Guidelines, approvals and standards

3.8.1 Guidelines

An EU “Declaration of Conformity” and CE marking exist for the product.

For additional information, visit **www.wago.com**.

3.8.2 Approvals

The following approvals have been granted for the product:

Table 7: Approvals

Logo	Certification Body	Standard
c UL us	Underwriters Laboratories	UL 61010-1
c UL us	Underwriters Laboratories	UL 61010-2-201

Logo	Certification Body	Standard
	Underwriters Laboratories	UL 121201, Class I, Division 2, Groups A B C D, T4

Note

More information on approvals

You can find detailed information on the approvals online at:
www.wago.com/<item number>

3.8.3 Standards

Table 8: Mechanical and Climatic Environmental Conditions

Standard	Test Value
Mechanical Environmental Conditions	
EN 60068-2-6	f = 5 …150 Hz: 1g, 3.5 m
IEC 60068-2-27 shock	15g, 11 ms, 6 shocks per axis and direction, half-sine
EN 61131-2, sec. 4.3	Freefall ≤ 300 mm (packaged in the product packaging)
Climatic Environmental Conditions	
EN 60870-2-2	3K3 (except for low air pressure)

Table 9: EMV – Immunity to Interference

Standard	Title
EN 61000-6-2	Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-4-2	Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test
EN 61000-4-3	Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-4	Part 4-4: Testing and measurement techniques – Electrical fast transient/ burst immunity test
EN 61000-4-5	Part 4-5: Testing and measurement techniques – Surge immunity test
EN 61000-4-6	Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields

Table 10: EMC – Emission of Interference

Standard	Title
EN 61000-6-3	Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments

Fieldbus Description

4.1 Technology

4.1.1 Topology

The RS-485 standard defines a fieldbus line as a "line with a start and an end, which is each terminated with a terminating resistor R_T". The resistance value of this terminating resistor should correspond to the line impedance. Typical values are 100 ... 150 The slaves are connected with a short line to the fieldbus or the fieldbus line is connected directly to the slave and from there to the next slave. A star-shaped wiring is not possible. The number of possible slaves on a field bus depends on the so-called "unit load" of the connected slaves.

4.1.2 Addressing

The slaves have an adjustable address. The address range is between 1 and 247. The address “0” is reserved for broadcasts (messages to all slaves), e.g., “Setting the time” or ”Setting the baud rate”. The addresses from 248 to 255 are reserved. The master does not have its own address.

ⓘ Note

Configure fieldbus subscribers in the same mode!

All connected fieldbus subscribers (slaves and masters) in the network must be configured in the same mode

4.1.3 Manual Addressing of a Subordinate WAGO Power Supply Pro 2

The easiest way to set the address of the subordinate WAGO Power Supply Pro 2 is using the WAGO Interface Configuration software. More information is available in the respective 🕮 **Product Manual** of the 2787 Series.

If no WAGO Interface Configuration software or no WAGO USB Communication Cable is available, the address can also be set manually.

The following requirements must be met in order to assign a WAGO Power Supply Pro 2 address manually:

- The firmware version of the WAGO Power Supply Pro 2 must be at least 01.03.07 or higher.
- The WAGO Power Supply Pro 2 is connected to the corresponding supply voltage.
- The WAGO Power Supply Pro 2 ready for operation.

Signaling

The set address is indicated by the LEDs of the subordinate WAGO Power Supply Pro 2. Each LED can signal two different values.

The following applies to allocating addresses:

- **Address value ≤ 15:** The **Value (Low)** applies.

- **Address value > 15:** The LED display changes every second between the **Value (Low)** and the **Value (High)**. The higher value is indicated by the red LED.

Table 11: Signaling: Value (Low)

LED	Address Value
	switched off
	8
	4
	2
	1

Table 12: Signaling: Value (High)

LED	Address Value
	switched on
	128
	64
	32
	16

Manual Address Assignment

Proceed as follows to set the address manually:

1. Press the **[+]** and **[−]** keys simultaneously for six seconds until the red LED flashes twice in a row.

   ⇨ The address can now be set manually.

2. Set the required address in binary format using the **[+]** and **[−]** keys:
   By pressing the **[+]** key you increase the address value incrementally, by pressing the **[−]** key you decrease the address value incrementally.

   ⇨ The LEDs signal the set address.

3. Press the **[+]** and **[−]** keys buttons simultaneously for six seconds.

   ⇨ The set address is saved.

Example: Entering the address 42

The following is an example of how the address 42 is assigned to the WAGO Power Supply Pro 2:

1. Carry out Step 1 from the Section **Manual Address Assignment [▶ 18]**.
2. Press the **[+]** key until the flashing sequence shown in the following tables occurs.
3. Carry out Step 3 from the Section **Manual Address Assignment [▶ 18]**.

Table 13: Example: Entering the address 42; Value (Low)

LED	Address Value
	switched off
	8
	4
	2
	1

Table 14: Example: Entering the address 42; Value (High)

LED	Address Value
	switched on
	128
	64
	32
	16

The term “flashing sequence” means that the values are output one after the other via the LEDs every second. The **Value (Low)** is output first; then the **Value (High)**.

The address 42 results from adding the green LEDs: 2+8+32=42.

4.1.4 Cables

Cable Type

Use shielded conductors only. The shielding must lie on both sides.

Cable Length

The total length of the bus cable must not exceed 1200 m. This value depends on the baud rate. The length is measured from one end to the other. Any drop cables that may be present must be added to the total line length.

Line Termination

To guarantee faultless data transfer on all cables, the cables should be self-contained. Terminating resistors, among other things, are suitable for this.

A Modbus Master usually has a switchable termination resistor.

A Modbus Slave normally does not have a built-in termination resistor. If possible, use an external termination resistor (see Section **Accessories [▶ 32]**).

ⓘ Note

Positioning the Termination Resistor

Always position a termination resistor at the beginning or end of the bus cable!

Use a maximum of 2 termination resistors in networks without repeaters!

Note the following points when positioning termination resistors:
- Where are the nodes spatially positioned?
- Where are the repeaters spatially positioned?
- Where is the PC positioned?
- Where is the beginning of the cable, where is the end of the cable?
- What are the total cable lengths?

4.2 Communication Module

4.2.1 Function Codes

The Modbus specification defines various function codes (FCs). The following three function codes are supported by all products in the WAGO Power Supply Pro 2 Series:

Table 15: Function Codes

FC	Name	Description
FC3	Read Holding Register	Reads the parameters from the product
FC4	Read Input Register	Reads the measured values from the product
FC16	Write Multiple Register	Writes the parameters to the product

4.2.2 Exception Codes

Exception codes per the Modbus specification ("frame exceptions"):

Table 16: Exception Codes

Code	Name	Description
0x01	Illegal Function	Function not supported
0x02	Illegal Data Address	Parameter not available at this address
0x03	Illegal Data Value	Parameter length invalid; structure error, CRC error

User-defined Exception Codes ("parameter xception"):

Table 17: User-defined Exception Codes

Code	Time	Description
0x9B	PAR_READONLY	Write to parameter "read only"
0xA8	VAL_OUTOF_RNG	Value out of range
0xAD	FUNC_NOTAVAIL	Write invalid value to command parameter.
0xAE	FUNC_NOTAVAIL_ TEMP	Command not possible due to current command status (e.g., during block parameterization that is not closed; other commands are rejected).
0xB8	PAR_SETINVALID	Parameter single access: Parameter value inconsistent with other parameter values.
0xB9	PAR_SETINCONSIST	Block parameterization: Parameter set inconsistent.
0xD0	PASS_PROTECTION_ACTIVE	No parameter access; password protection enabled.

4.3 Module Parameters

4.3.1 General Module Parameters

The Modbus RTU Communication Module uses the following general parameters of a subordinate WAGO Power Supply Pro 2. These parameters can be read and written using the function codes FC3 and FC16.

Cross-device Identification

Table 18: General Module Parameters: Device Identification

Address		Zugriff	Data type	Description
Dec.	Hex.			
2		read only	UINT32	Article number of the module

Address		Zugriff	Data type	Description
Dec.	Hex.			
4		read only	UINT32	Article number extension
8	0x008	read only	UINT32	Consecutive number ("High Word")
10	0x00A	read only	UINT32	Consecutive number ("Low Word")
12	0x00C	read only	UINT16	Firmware version (major)
13	0x00D	read only	UINT16	Firmware version (minor)
14	0x00E	read only	UINT16	Firmware version (bug fix)
15	0x00F	read only	UINT16	Hardware version
20	0x014	read only	CHAR[32]	Article description
36	0x024	read/write	CHAR[32]	Device name
52	0x034	read/write	CHAR[32]	Customer information (1)
68	0x044	read/write	CHAR[32]	Customer information (2)
84	0x054	write only	CHAR[8] BigEndian	Password
92	0x05C	read/write	UINT16	Password level

„Password“ Parameter

ⓘ Note

The device must be locked manually!

After the lower-level device is unlocked, it is not automatically relocked. The device lock must be performed manually.

The parameter is used in big-endian format. Only ASCII characters may be used (e.g., for password “*123*,” a message with the following hexadecimal values must be sent: 31 32 33.)

„Password protection level“ Parameter

The “Password Level” parameter controls the behavior of the lower-level device in terms of password protection. There are four password levels:

- Password level 0 (value 0): No parameters are password protected
- Password level 1 (value 1): All parameters are write-protected
- Password level 2 (value 2): All parameters are read- and write-protected
- Password level 3 (value 3): All parameters are read- and write-protected In addition, process data outputs (e.g., “Switch product on and off” or “Activate digital output”) are write-protected.

ⓘ Note

Set the password first!

When parameterizing the password, the parameter “Password” must be set first, afterwards the parameter “Password Protection Level” must be configured.

Table 19: General Device Parameters – "Password Level" Parameter

Password level	Parameter: Write Protection	Parameter: Read Protection	Process Data: Write Protection	Process Data: Read Protection
0	No	No	No	No
1	Yes	No	No	No
2	Yes	Yes	No	No
3	Yes	Yes	Yes	No

Modbus

Table 20: General module parameters: Modbus

Address		Access	Data type	Description
Dec.	Hex.			
122	007A	read/write	UINT16	Device address
124	007C	read/write	UINT32	Baud rate This parameter can be used to set the baud rate. The following options are available: • 4800 Baud • 9600 Baud • 19200 Baud • 38400 Baud • 57600 Baud • 115200 Baud
126	007E	read/write	UINT16	Databits; returns a value of 1.
127	007F	read/write	UINT16	Stopbits The following options are available: **Value** / **Stopbit** 0 / 1 1 / 0.5 2 / 2.5 3 / 3.5
128	0080	read/write	UINT16	Parity The following options are available: • 0: Off • 1: Even • 2: Uneven
129	0081	read/write	UINT16	Response delay
130	0082	read/write	UINT16	Data format The following options are available: • 0: BigEndian (B0, B1, B2, B3) • 1: MiddleEndian (B2, B3, B0, B1) • 2: LittleEndian (B3, B2, B1, B0)

4.3.2 Specific Module Parameters of the WAGO Power Supply Pro 2

The Modbus RTU Communication Module uses the following general parameters of a subordinate WAGO Power Supply Pro 2. These parameters can be read and written using the function codes FC3 and FC16.

Output

Table 21: Specific module parameters of the Power Supply Pro 2: Output

Address		Access	Data Type	Description
Dec.	Hex.			
136	0088	read/write	UINT16	Output voltage (unit: mV)
137	0089	read/write	UINT16	Warning threshold (unit: mA)

Address		Access	Data Type	Description	
Dec.	Hex.				
138	008A	read/write	UINT16	Bit 0	Output On
				Bit 1	“Active droop” parallel mode
				Bit 2	Overload limit active
				Bit 3	Enable switching the DC output on and off via cyclic process data
				Bit 4	reserved
				Bit 5	reserved
				Bit 6 [1)]	Constant current
				Bit 7 [1)]	Constant current (latching mode)
				Bit 8 [1)]	Hiccup mode
				Bit 9 [1)]	Electronic circuit breaker
				Bit 10	reserved
				Bit 11	reserved
				Bit 12	Latching after thermal overload
				Bit 13	Power Boost
				Bit 14	Top Boost
				Bit 15	reserved
139	008B	read/write	UINT16	Switch-on delay (unit: ms)	

[1)] These bits are mutually interlocked.

Electronic Circuit Breaker

Table 22: Specific module parameters of the Power Supply Pro 2: Electronic circuit breaker

Address		Access	Data Type	Description
Dec.	Hex.			
148	0094	read/write	UINT16	Trip current (unit: mA)
149	0095	read/write	UINT16	Trip delay (unit: ms)

Digital input

Table 23: Specific module parameters of the Power Supply Pro 2: Digital input

Address		Access	Data Type	Description	
Dec.	Hex.				
168	00A8	read/write	UINT16	Bit 0	Power supply standby on/off
				Bit 1	reserved
				Bit 2	reserved
				Bit 3	reserved
				Bit 4	reserved
				Bit 5	reserved
				Bit 6	reserved
				Bit 7	reserved
				Bit 8	reserved
				Bit 9	reserved
				Bit 10 [1)]	Inversion
				Bit 11 [1)]	Function triggered by low-high transition
				Bit 12 [1)]	Function triggered by high-low transition
				Bit 13	reserved
				Bit 14	reserved
				Bit 15	reserved

Address		Access	Data Type	Description	
Dec.	Hex.				

[1] *These bits are mutually interlocked.*

Digital Output

Table 24: Specific module parameters of the Power Supply Pro 2: Digital output

Address		Access	Data Type	Description	
Dec.	Hex.				
176	00B0	read/write	UINT16	Bit 0	DC O.K.
				Bit 1	Load current warning level exceeded
				Bit 2	Electronic circuit breaker tripped
				Bit 3	Power supply switched off (latched)
				Bit 4	Digital output via process data/communication
				Bit 5	Digital output on
				Bit 6	reserved
				Bit 7	reserved
				Bit 8	reserved
				Bit 9	reserved
				Bit 10	Inversion
				Bit 11	reserved
				Bit 12	reserved
				Bit 13	reserved
				Bit 14	reserved
				Bit 15	reserved

System

Table 25: Specific module parameters of the Power Supply Pro 2: System

Address		Access	Data Type	Description	
Dec.	Hex.				
189	00BD	read/write	UINT16	Bit 0 [1]	Restore previous status
				Bit 1 [1]	DC output remains switched off
				Bit 2 [1]	DC output to be switched on
				Bit 3	Switch-on delay active
				Bit 4	reserved
				Bit 5	reserved
				Bit 6	Activate key lock
				Bit 7	Disable reset to factory settings
				Bit 8	reserved
				Bit 9	reserved
				Bit 10	reserved
				Bit 11	reserved
				Bit 12	reserved
				Bit 13	reserved
				Bit 14	reserved
				Bit 15	reserved

[1] *These bits are mutually interlocked.*

4.4 Messages and Events

4.4.1 Events and Measured Values for WAGO Power Supply Pro 2

The product outputs the WAGO-specific events and measured values listed below. These events and measured values can be read via function codes FC3 and FC4.

Process Output Data

Table 26: Events and Measured Values – Process Input Data

Address				Data type	Description
FC3		FC4			
Dec.	Hex.	Dec.	Hex.		
1280	0x0500	0	0x0000	UNIT16	Output voltage (unit: mV)
1281	0x0501	1	0x0001	UNIT16	Output current (unit: mA)

Status Messages

Table 27: Events and Measured Values – Status Messages

Address				Data type	Description	
FC3		FC4				
Dec.	Hex.	Dec.	Hex.			
1282	0x0502	2	0x0002	UNIT16	Bit 0	Status DC OK
					Bit 1	Overtemperature
					Bit 2	No output voltage
					Bit 3	Short circuit at output
					Bit 4	Status at digital input

Warnings

Table 28: Events and Measured Values – Warnings

Address				Data type	Description	
FC3		FC4				
Dec.	Hex.	Dec.	Hex.			
1283	0x0503	3	0x0003	UNIT16	Bit 0	Undervoltage at output
					Bit 1	Overvoltage at output
					Bit 2	Overload
					Bit 3	Configurable overload threshold exceeded.
					Bit 4	Configurable operating hours reached.
					Bit 5	TopBoost output
					Bit 6	PowerBoost output
					Bit 7	Higher device temperature
					Bit 8	Reserve

Error

Table 29: Events and Measured Values – Error

Address				Data type	Description	
FC3		FC4				
Dec.	Hex.	Dec.	Hex.			
1284	0x0504	4	0x0004	UNIT16	Bit 0	Overtemperature, device switched off

Address				Data type	Description	
FC3		FC4				
Dec.	Hex.	Dec.	Hex.			
					Bit 1	No Output voltage
					Bit 2	Short circuit at output
					Bit 3	Circuit breaker tripped

Power/Energy

Table 30: Events and Measured Values – Power/Energy

Address				Data type	Description
FC3		FC4			
Dec.	Hex.	Dec.	Hex.		
1286	0x0506	6	0x0006	UNIT32	Output power (unit: W)
1288	0x0508	8	0x0008	UNIT32	Output level of the previous second (unit: Ws)
1290	0x050A	10	0x000A	UNIT32	Output level of the previous minute (unit: Ws)
1292	0x050C	12	0x000C	UNIT32	Output level of the previous hour (unit: Wh)

Transport and Storage

The original packaging offers optimal protection during transport and storage.

- Store the product in suitable packaging, preferably the original packaging.
- Only transport the product in suitable containers/packaging.
- Make sure the product contacts are not contaminated or damaged during packing or unpacking.
- Observe the specified ambient climatic conditions for transport and storage.

Installation and Removal

NOTICE

Do not cover the ventilation openings!

Covered ventilation openings can lead to overheating of the product.

- Keep all ventilation openings clear!

The letters shown in parentheses refer to positions in figure “View” in View [▶ 11].

Note

Mounting positions

The nominal mounting position is (see also figure “View” in View [▶ 11]): front side facing forwards, marking legible, bottom ventilation openings (b) facing upwards and downwards

Mounting

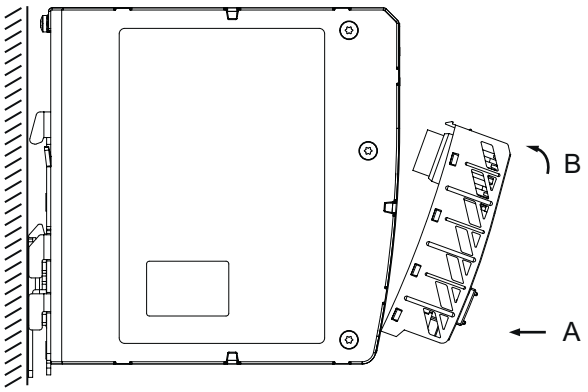

Figure 6: Mounting

Install the product by snapping it onto the WAGO Power Supply Pro 2 (see figure “Installation”):

1. Remove the cap from the communication interface on the WAGO Power Supply Pro 2.
2. Keep the cap in a safe place so that you can cover the communication interface again when this interface is not required.
3. Remove the mounted marker carrier from the WAGO Power Supply Pro 2.
4. Insert the product with the lower latches into the lower mounting slots of the WAGO Power Supply Pro 2 [A].
5. Slide the product toward the communication interface [B] until the top latches latch into the top mounting slots.
6. Verify that the product is snapped on properly.

Removal

NOTICE

Material damage due to hot swapping!

Hot swapping the product leads to increased abrasion of the contacts. Resulting in a shorter product life time.

- Only remove the product when it is switched off.

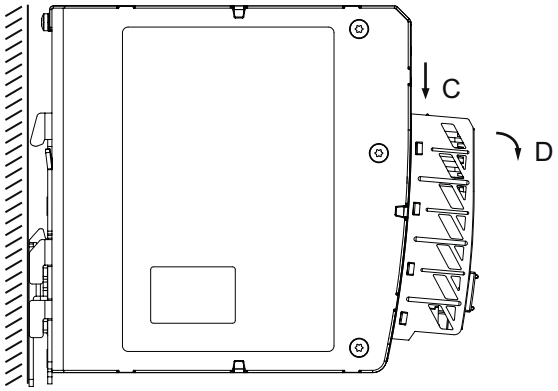

Figure 7: Removal

1. Press the top locking tab (a) of the product [C].
2. Pivot the product to remove it from the WAGO Power Supply Pro 2 [D].

NOTICE

Avoid electrostatic discharge!

The products are equipped with electronic components that you may destroy by electrostatic discharge when you touch. Please observe the safety precautions against electrostatic discharge in accordance with EN 61340-5-1/-3. Pay attention while handling the products to good grounding of the environment (persons, job and packing).

Connection

7.1 Connect

⚠ WARNING

Do not insert the operating tool into the ventilation slots!

Components inside the product may be damaged if the blade of the operating tool enters the ventilation slots. This may lead to serious damage with a risk of injury caused by malfunction, overheating or electric shock!

- When using the operating tool, make sure it is positioned correctly between the locking latch and the female connector!

Wire the product using an operating tool or a suitable screwdriver.

Decommissioning

8.1 Disposal and Recycling

WEEE Mark

Electrical and electronic equipment may not be disposed of with household waste. This also applies to products without this mark.

Electrical and electronic equipment contain materials and substances that can be harmful to the environment and health. Electrical and electronic equipment must be disposed of properly after use. Environmentally friendly disposal benefits health, protects the environment from harmful substances in electrical and electronic equipment and enables sustainable and efficient use of resources.

- Observe the national and local regulations for the disposal of electrical and electronic equipment, lithium-ion batteries, lead–acid batteries and packaging.
- Clear any data stored on electrical and electronic equipment.
- Remove lithium-ion batteries, lead–acid batteries or memory cards that are added to the electrical and electronic equipment.
- Wear appropriate personal protective equipment when removing the lithium-ion batteries/lead–acid batteries.
- Dispose of the removed lithium-ion batteries/lead–acid batteries according to your local waste regulations (e. g. collection boxes at the retail or local collection points).
- Have electrical and electronic equipment sent to a local collection point.
- Dispose of all types of packaging to ensure a high level of recovery, reuse and recycling.
- Transport packages from the B2B area can be taken back free of charge via a return system in accordance with the Packaging Act. Please contact our service provider Interseroh directly. The corresponding certificate can be found at: **corporate-certificates**
- Throughout Europe, Directives 2006/66/EC, 94/62/EC and 2012/19/EU (WEEE) apply. National directives and laws may differ.

Appendix

9.1 Accessories

The following accessories are available for the product:

Accessories – Marking

Table 31: Accessories – Marking

Description	Item Number
Marker Carrier	2789-1233
Marking System	2009-0110
WMB Multi Marking System	2009-0115
	2009-0115/0000-0002

Accessories – Other

Table 32: Accessories – Other

Description	Item Number
RJ-45 Termination Resistor, 120 Ω	2789-9915

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Communication Modules

WAGO Communication Module Modbus RTU

2789-9015

Product manual | Version 1.1.0

WAGO GmbH & Co. KG
Postfach 2880 · D - 32385 Minden
Hansastraße 27 · D - 32423 Minden
✉ **info@wago.com**
www.wago.com

Headquaters	+49 571/887 – 0
Sales	+49 (0) 571/887 – 44 222
Order Service	+49 (0) 571/887 – 44 333
Fax	+49 571/887 – 844169