Power Supplies

Power Supply Eco 2; 1-phase, 24 VDC, 1.25 A, 30 W

2687-2142

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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.

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We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally protected by trademark or patent.

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Table of Contents

Provisions

This documentation applies to the WAGO Power Supply Eco 2 (2687-2142).

Note

Observe the applicable documentation!

This product must only be installed and operated according to the instructions of the complete Instructions for use. Knowledge of the complete Instructions for use is required for proper use.

1. Carefully read the Product Manual.
2. Before commissioning, follow the instructions in section Safety [▶ 9].

Table 1: Complete instructions for use

Document Type	Contents
Product Manual	Contains all the product-specific information for a product.
Instruction leaflet	Is included with each product. Contains initial information on safe handling of the product.

All the documentation is available at: www.wago.com.

1.1 Intended Use

The product is an open system and is designed for installation in a additional enclosure.

- This product fulfills the requirements of protection type IP20 and is designed for use in dry indoor spaces.
- Operation of the products in Industrial area is permitted.
- 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 terms set forth in the General Business and Contract Conditions for Delivery and Service of WAGO Kontakttechnik GmbH & Co. KG and the terms for software products and products with integrated software stated in the WAGO Software License Contract – both available at www.wago.com – shall apply. 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 products. The installer/operator is responsible for 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 Installation regulations specified by Approvals must be observed. In the event of non-compliance, the products 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

Action Instructions

✓ 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.

Lists

- Lists, first level
  - Lists, second level

Figures

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

Notes

⚠ DANGER

Type and source of hazard

Possible consequences of hazard that also include death or irreversible injury

- Action step to reduce risk

⚠ WARNING

Type and source of hazard

Possible consequences of hazard that also include severe injury

- Action step to reduce risk

⚠ CAUTION

Type and source of hazard

Possible consequences of hazard that include at least slight injury

- Action step to reduce risk

NOTICE

Type and source of malfunction (property damage only)

Possible malfunctions that may restrict the product's scope of functions or ergonomics, but do not lead to foreseeable risks to persons

- Action step to reduce risk

Note

Notes and information

Indicates information, clarifications, recommendations, referrals, etc.

1.3 Legal Information

Intellectual Property

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Third-party trademarks are referred to in the product documentation. The "®" and "™" symbols are omitted hereinafter. The trademarks are listed in the Appendix (**Protected Rights [▶ 34]**).

Subject to Change

The instructions, guidelines, standards, etc., in this manual correspond to state of the art at the time the documentation was created and are not subject to updating service. The installer and operator bear sole responsibility to ensure they are complied with in their currently applicable form. WAGO Kontakttechnik GmbH & Co. KG retains the right to carry out technical changes and improvements of the products and the data, specifications and illustrations of this manual. All claims for change or improvement of products that have already been delivered – excepting change or improvement performed under guarantee agreement – are excluded.

Security

This section contains safety rules that must be followed for hazard-free use of the product.

This section is aimed at the following target groups:
- Planners and installers
- Operators
- Qualified assembly personnel
- Qualified installation personnel (electrical installation, technician network installation etc.)
- Qualified operating personnel
- Qualified service and maintenance personnel

Obey the following safety rules:

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

- High voltage can cause electric shock or burns! Disconnect all power sources from the product before performing any installation, repair or maintenance.
- Make sure the product does not carry any voltage before starting work.

Power Supply

- Connecting impermissible current or frequency values may destroy the product.
- Provide suitable disconnect and overcurrent protection on the system side. The protection device must be located near the product where it can be operated. The **OFF** position must be clearly marked on the protection device.

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.
- Protect the product with an appropriate overcurrent protection device.

Cables

- Only use conductor cross-sections sufficient for the current load.
- Observe permissible temperature range of connecting cables.
- Only clamp one conductor to each connection terminal. If several conductors must be clamped, wire them using an upstream wiring assembly (e.g., WAGO Through Terminal Blocks).

- Use appropriate strain relief.

2.3 Mechanical Safety

- As the installer of the system, you are responsible for ensuring the necessary touch-proof protection. Follow the installation guidelines for the specific application.
- The surrounding air temperature for operation indicated in the technical data applies to the nominal mounting position. Different mounting positions may affect the permissible surrounding air temperature for operation.
- Cooling of the product must not be impaired. Ensure air can flow freely and that the minimum clearances from adjacent products/areas are maintained.
- 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.
- Replace any defective or damaged devices.
- 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 surrounding air temperature permitted for the mounted product.

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.
- Before installation and operation, please read the product documentation thoroughly and carefully. In addition, note the information on the product housing and further information, e.g. at **www.wago.com**/<item number>.
- 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.
- Observe possible different technical specifications for mounting that does not correspond to the specified mounting position.

Properties

3.1 Introduction

The WAGO Power Supplies Eco 2 Series 2687 are switched mode Power supplies with a wide range of uses. They include all important basic functions and are available in different performance classes and widths.

The Power supplies are fitted on a DIN-rail. With their slim design, they are suitable for use both in the control cabinet and in a compact distribution box.

The connection technology is made using the WAGO PCB terminal blocks with levers. These allow for quicker installation, as well as quicker and easier product replacement.

There is a potentiometer on the product for setting the output voltage.

An LED indicates the status of the output voltage (see Section Indicators [▶ 14]).

The Power supplies can withstand a wide variety of environmental conditions, such as input overvoltages or the effects of shocks and vibrations.

The Power supplies meet the standards EN/IEC/UL 61010-2-201.

3.2 View

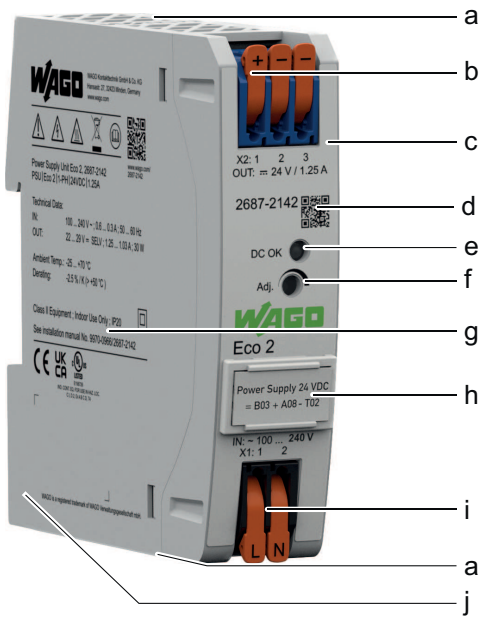


Figure 1: View

Table 2: Legend for “View” Figure

Position	Comment	Details
a	Ventilation openings	-
b	Output X2 (+ − −)	Connections [▶ 13]
c	Front side	-
d	QR code	-
e	LED indicator	Indicators [▶ 14]

Position	Comment	Details
f	Potentiometer for setting the output voltage between 22 … 29 VDC	Control elements [▶ 14]
g	Type plate	Type plate [▶ 12]
h	Marker carrier	Accessories [▶ 34]
i	Input X1 (L N)	Connections [▶ 13]
j	Latch for mounting to /removal from DIN rail	-

3.3 Type plate

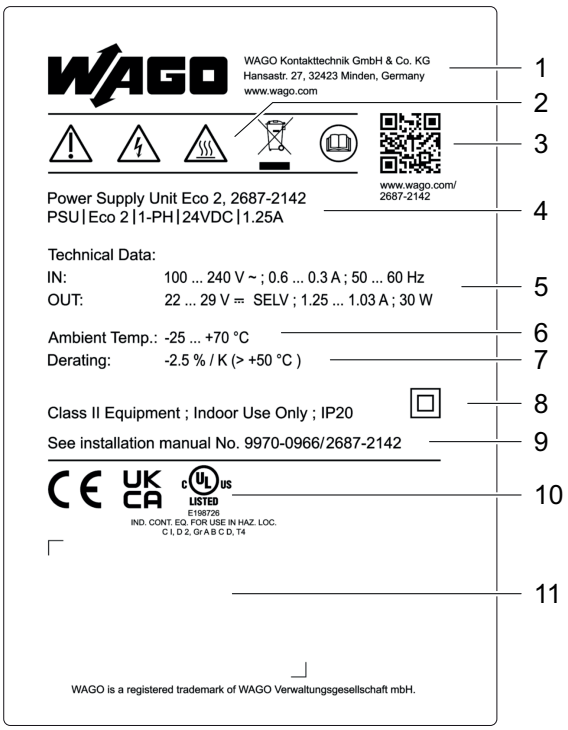


Figure 2: Type plate

Table 3: Legend for Figure "Type Plate"

Position	Comment	Details
1	Company logo and address	-
2	Warning notice symbols	Security [▶ 9]
3	QR link with link to website	-
4	Product name and order number	-
5	Input and output data	Technical data [▶ 14]
6	Surrounding air temperature	Environment requirements [▶ 19]
7	Derating information	Derating [▶ 31]
8	Additional technical data	Technical data [▶ 14]
9	Information on the instruction leaflet	-
10	Field for guidelines, approvals and standards	Approvals [▶ 21]
11	Label with product-specific information	-

3.4 Connections

3.4.1 Connectors

The supply lines are connected on the input and output side using the WAGO PCB terminal blocks with levers:

- Input side: 2-pole
- Output side: 3-pole

Note the maximum permissible connection cross-sections of the power cables (see **Technical data [▶ 14]**).

Check the associated operating voltage before connecting the equipment (see).

Additional information on the connection technology is available in Section **Connect [▶ 27]**.

3.4.2 Terminations – Input Side

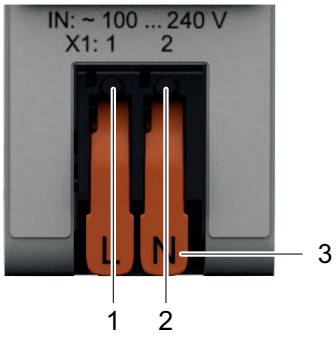


Figure 3: Terminations – Input Side

Table 4: Legend for the “Terminations – Input Side” Figure

Position	Description
1	Termination “L” for input voltage
2	Termination “N” for input voltage
3	Lever

3.4.3 Terminations – Output Side

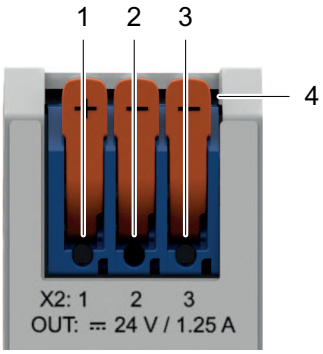


Figure 4: Terminations – Output Side

Table 5: Legend for the “Terminations – Output Side” Figure

Position	Description
1	Termination 1 “+” for output voltage
2	Termination 1 “-” for output voltage

Position	Description
3	Termination 2 “-” for output voltage
4	Lever

3.5 Indicators

The indicators are located on the front of the product.

The “DC OK” LED indicates the status of the output voltage U_{OUT}.

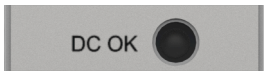


Figure 5: “DC OK” LED

Table 6: Legend for “LED, DC OK” Figure

LED	Description	State	Explanation
DC OK	Green	ON	Output voltage ≥ 18.5 V

3.6 Control elements

3.6.1 Potentiometers

A potentiometer [Adj.] is provided on the front of the product for setting or adjusting the output voltage.

Figure 6: Potentiometer

The potentiometer can be used to set the output voltage between 22 … 29 VDC.

3.7 Technical data

3.7.1 Product

Table 7: Technical Data – Product

Property	Value
Width	25 mm
Height	100 mm
Depth	97 mm
Depth from upper edge of DIN rail	90 mm
Weight	170 g
Protection type	IP20

Figure 7: Dimensions

Table 8: Technical Data – Clearances

Mounting Directions	Front side	Clearance from					
		Front	Back	Top	Bottom	Left	Right
Vertical	Front	70 mm	-	70 mm	70 mm	6 mm	6 mm
Horizontal	Top	70 mm	70 mm	70 mm	-	20 mm	20 mm
Horizontal	Bottom	70 mm	70 mm	-	70 mm	20 mm	20 mm

Note

Observe mounting position!

The following electrical data refers to the nominal mounting position (see **Mounting Positions [▶ 24]**).

3.7.2 Input

Table 9: Technical Data – AC Input

Property		Value
Nominal input voltage		1 × 100 … 240 VAC
Input Voltage Range		90 ... 264 VAC
Input frequency		47 … 63 Hz, 0 Hz
Grounding systems		TN, TT and IT networks
Input current (typ.)[1]	110 VAC	0.6 A
	230 VAC	0.3 A
Power factor (typ.)[1)]		> 0.5

[1)] *At nominal load*

Table 10: Technical Data – CC Input

Property		Value
Nominal input voltage [1)]		90 … 300 VDC
Input Voltage Range		90 … 300 VDC (< 110 VDC derating required 1.5 %/V)
Input current (typ.)[2]	110 VDC	≤ 0.35 A
	220 VDC	≤ 0.2 A

[1)] *An external DC fuse must be used with DC supply (see **Accessories [▶ 34]**).*
[2)] *At nominal load*

Table 11: Technical Data – Inrush Current

Property		Value
Inrush current (typ.) [1)2)]	230 VAC	≤ 10 A (after 1 ms)

[1)] Cold start, at room temperature of 25 °C
[2)] After 1 ms at nominal load

Table 12: Technical Data – Mains Failure Buffering Time

Property		Value
Mains failure buffering time, typ.[1)]	110 VAC	≥ 15 ms
	230 VAC	≥ 120 ms
Holding time, typ.[1)]	110 VAC	≥ 20 ms
	230 VAC	≥ 120 ms

[1)] At nominal load

Table 13: Technical Data – Input Side Connection

Property		Value
Connection Technology		2604 Series (see Appendix [▶ 34])
Cross-section	Solid	0.2 … 4 mm² / 24 … 12 AWG
	Fine-stranded	0.2 … 4 mm² / 24 … 12 AWG
	Insulated ferrule with plastic collar	0.25 … 2.5 mm²
	Ferrule without plastic collar	0.25 … 2.5 mm²
Strip length		9 … 11 mm / 0.35 … 0.43 inch

3.7.3 Output

Table 14: Technical Data – Output

Property		Value
Nominal output voltage		24 VDC (at 90 … 264 VAC), SELV
Output voltage range		22 … 29 VDC
Factory settings		24 VDC; ±1 %
Output current		1.25 A (at 100 … 240 VAC)
Output Power		30 W (at 100 … 240 VAC)
Power factor [1)]		> 0.5
Capacitive load (max.) [1)]	110 VAC	9,000 µF
	230 VAC	10,000 µF
Capacitive load (max.) [2)]	110 VAC	9,000 µF
	230 VAC	11,000 µF
Voltage variation		±1 % (at 100 … 240 VAC)
Derating of output power		For high surrounding air temperatures, see
Line regulation[1)]		±0.5 %
Load regulation [3)]		±1 %
Residual ripple/noise		≤ 30 mV (peak-to-peak, at 230 VAC)
Overload behavior [4)]		Constant power up to 125 %
		Shutdown and automatic restart in the event of a short circuit [5)]
Switch-on delay [6)]	110 VAC	< 1100 ms [1)]
	230 VAC	< 1100 ms [1)]

[1)] At nominal load
[2)] At 50 % nominal load
[3)] 0 % / 100 % load step
[4)] See “Overload Behavior” Figure

Property	Value

[5] *See "Hiccup Mode" Figure; t_{on} = 35 ms / t_{off} = 310 ms*
[6] *See "Switch-on Time" Figure*

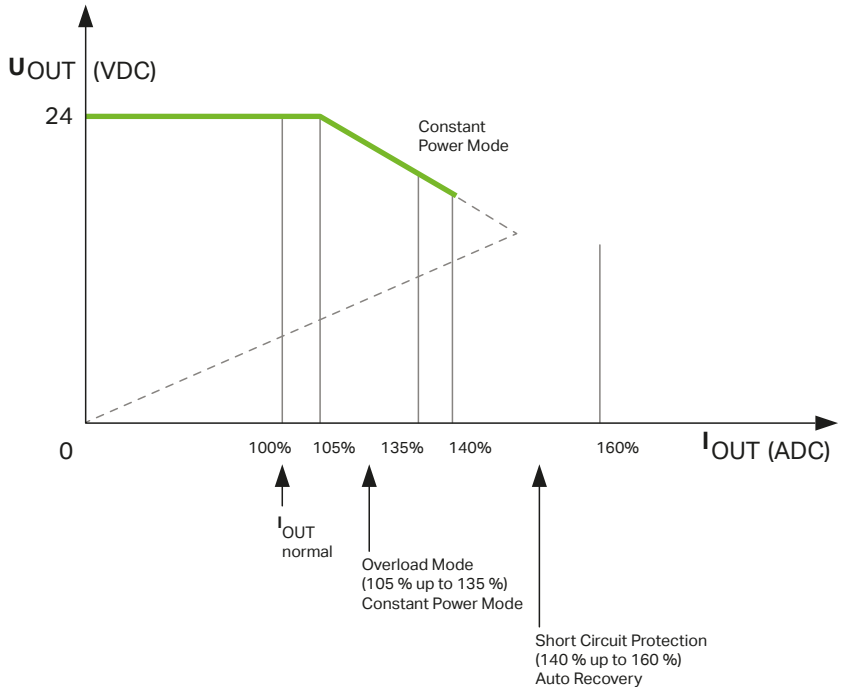


Figure 8: Overload Behavior

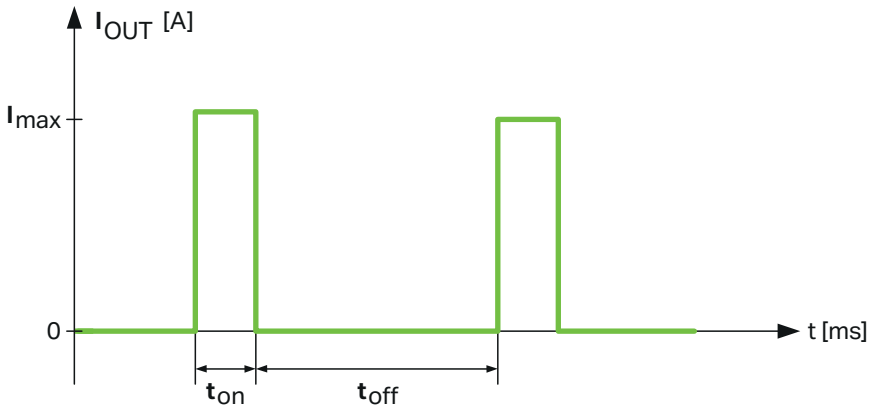


Figure 9: Hiccup Mode

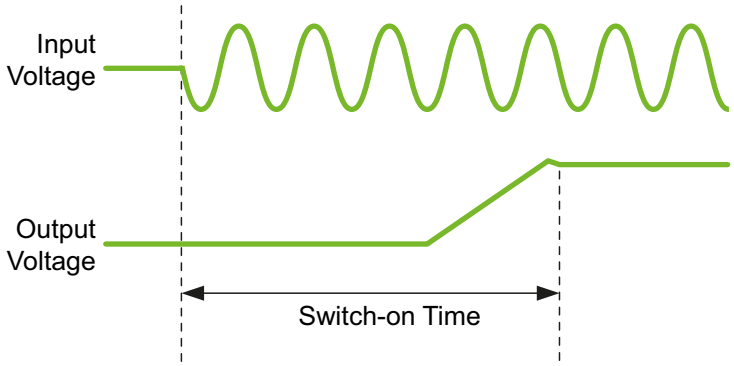


Figure 10: Turn-on Time

Table 15: Technical Data – Output Side Connection

Property		Value
Connection Technology		2604 Series (see Appendix [▶ 34])
Cross-section	Solid	0.2 … 4 mm² / 24 … 12 AWG
	Fine-stranded	0.2 … 4 mm² / 24 … 12 AWG
	Insulated ferrule with plastic collar	0.25 … 2.5 mm²
	Ferrule without plastic collar	0.25 … 2.5 mm²
Strip length		9 … 11 mm / 0.35 … 0.43 inch
Required tools		Type 1 (see Accessories [▶ 34])

3.7.4 Efficiency/Power Loss

Table 16: Technical Data – Efficiency/Power Loss

Property		Value
Efficiency (typ.) [1)]	110 VAC	87.5 %
	230 VAC	88 %
Power loss (typ.)[1]	110 VAC	< 0.3 W (110 VAC, no load), ≤ 4.6W (110 VAC, nominal load)
	230 VAC	< 0.2 W (230 VAC, no load), ≤ 4.3 W (230 VAC, nominal load)

1) At nominal load

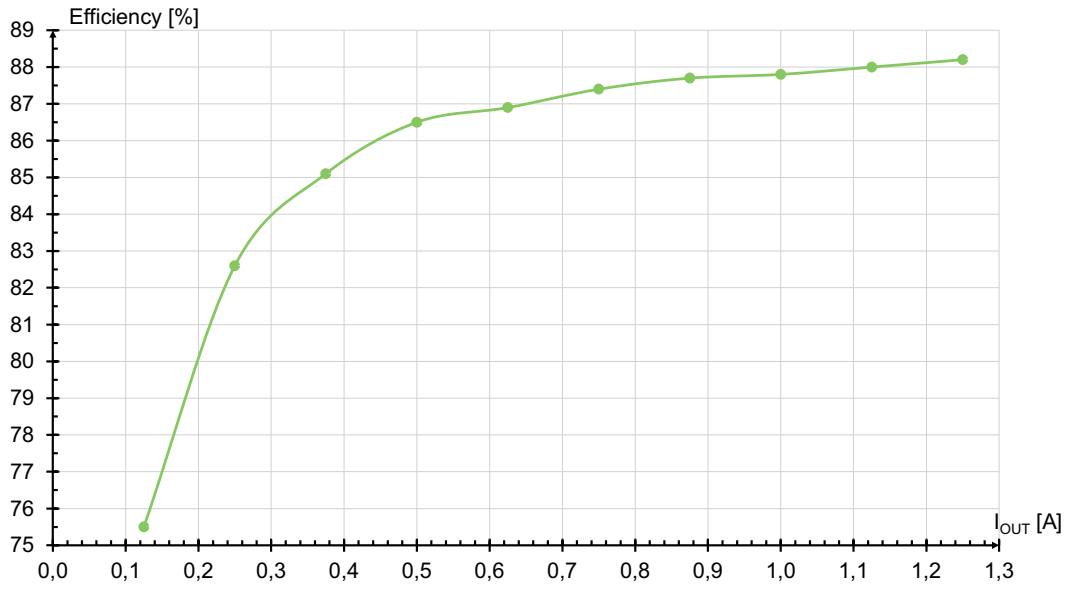


Figure 11: Efficiency at 230 VAC

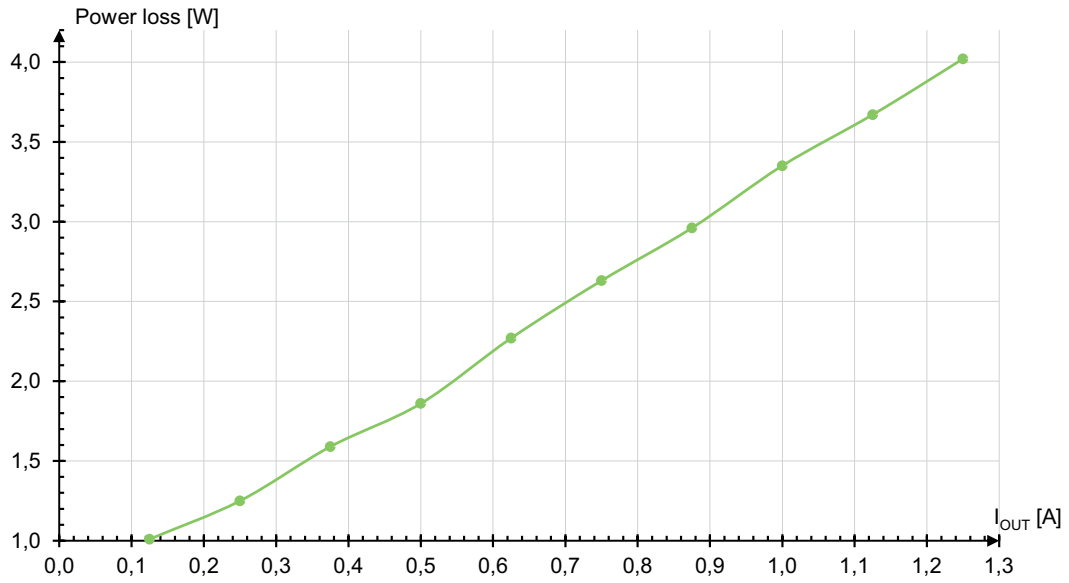


Figure 12: Power loss at 230 VAC

3.7.5 MTBF/Lifespan

Table 17: Technical Data – MTBF/Lifespan

Property	T_{amb}	Value
MTBF (IEC 61709)	25 °C	> 1,000,000 h

3.7.6 Environment requirements

Table 18: Technical Data – Environmental Conditions

Property	Value
Surrounding air temperature, operation	−25 … 70 °C (starts at -40 °C; type-tested for ≥ 120 VAC)
Derating (temperature dependent, > 50 °C)	−2.5 %/K [1) 2)]
Relative humidity	5 … 96 % (no condensation permissible)
Surrounding air temperature, storage	−40 … +85 °C
Relative humidity, storage (without condensation)	5 … 96 % (no condensation permissible)

Property	Value
Temperature coefficient	≤ ±0.005 %/K
Derating (operating altitude) [2)]	-
Elevation above sea level, max.	5000 m
Overvoltage category	III (≤ 2000 m a. s.l.) II (> 2000 m a. s.l.)
Vibration according to IEC 60068-2-6	5 Hz ≤ f ≤ 8.4 Hz: 3.5 mm , 8.4 Hz ≤ f ≤ 150 Hz: 1g
Shock according to IEC 60068-2-27	15 g, 11 ms, 3 shocks per axis (18 shocks in total)
Pollution degree according to IEC/EN 60664-1	2
Climatic category	3K3 (per EN 60721)
LABS freedom [3)]	Yes
RoHS II / Reach	Yes

[1)] See Figure, see also Derating.
[2)] Surrounding temperature, operation > 50 °C
[3)] LABS = Paint-wetting impairment substances
The materials used in manufacturing do not contain any substances harmful to the wetting properties of lacquers..

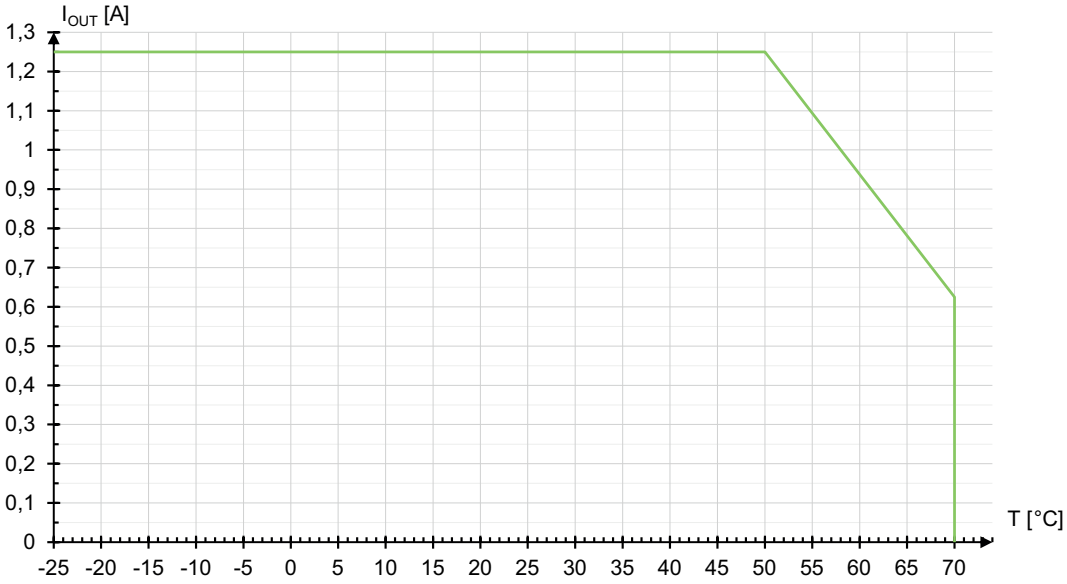


Figure 13: Derating surrounding air temperature

3.7.7 Product Protection

Table 19: Technical Data – Product Protection

Property	Value
Internal input fuse[1)]	T 1 A / 250 VAC
Transient suppression at input	Varistor
Overload protection at output	Load limited to max. 125 % of the nominal load
Overvoltage protection at output, max.[2)]	≤ 35 VDC (in the event of a fault)
Feedback voltage, max.[3)]	Yes, max. 35 VDC
Protection type	IP20
Ingress protection against foreign objects	> 5 mm
Overtemperature protection[4)]	Yes
Short circuit protection [4)]	Yes

[1)] Used only as an AC fuse. An external DC fuse must be used with DC supply (see Accessories).
[2)] Internal limitation via a second control loop, deactivation of power supply, automatic restart
[3)] The user must ensure that the voltage is not exceeded for power feedback.
[4)] Shutdown, automatic restart

3.7.8 Safety

Table 20: Technical Data – Safety

Property	Value
Safety transformer	According to EN 61558-2-16
Input and output insulation, per EN 62368-1	SELV/PELV
Protection class, with protective wire connection per EN/UL 61010-2-201	II
Leakage current, max. [1]	≤ 0.25 mA
Insulation resistance, input to output, min. [2]	> 100 MΩ / 500 VDC
Dielectric strength (input – output) [3]	3.51 kVAC

[1] *For power at 230 VAC*
[2] *at 25 °C and 75 % RH*
[3] *Type testing / 60 s*

3.8 Guidelines, approvals and standards

3.8.1 Approvals

The following approvals have been granted for the product:

Table 21: Approvals

Logo		Standard
	CE Conformity Marking	
	UL listed	UL 61010-1 UL 61010-2-201
SEMI F47	(For U_in ≥ 180 VAC)	

Note

More information on approvals

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

3.8.2 Standards

The product meets the following standards:

Table 22: Standards: 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, 3 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 23: Standards: EMC – Immunity to Interference

Standard	Title
EN IEC 61204-3	Low-Voltage Switch Mode Power Supplies – Part 3: Electromagnetic Compatibility (EMC)
EN IEC 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
EN 61000-4-8	Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test
EN 61000-4-11	Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests

Table 24: Standards: EMC – Emission of Interference

Standard	Title
EN IEC 61204-3	Low-Voltage Switch Mode Power Supplies – Part 3: Electromagnetic Compatibility (EMC)
EN 61000-6-3	Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments

To comply with the EMC emission standard, the cable length of the DC output should not exceed 30 m.

Table 25: Standards: LVD – Low Voltage Directive

Standard	Title
EN IEC 61010-2-201	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment
EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements

3.8.3 Special Requirements

Observe the following:

- Perform installation according to the local conditions, applicable regulations (e.g., VDE 0100), national accident prevention specifications (e.g., UVV-VBG4 or DGUV Regulation 2) and accepted technical regulations.
- This product is intended for installation in electrical systems or machines and fulfills the requirements of the Low Voltage Directive.

When installing in machines, the following also applies:

- When installing in machines, normal operation must not commence until it is determined that the machine complies with the requirements of the Machinery Directive, EN 60204.
- Commencement of normal operation is allowed only on the condition of compliance with the EMC Directive.
- The manufacturer of the system or machine is responsible for ensuring compliance with the limit values required by EMC legislation.

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 (Technical data [▶ 14]).

Installation and Removal

NOTICE

Avoid electrostatic discharge!

The products are equipped with electronic components that may be destroyed by electrostatic discharge when touched. Please observe the safety precautions against electrostatic discharge per DIN EN 61340-5-1/-3. When handling the products, please ensure that environmental elements (personnel, work space and packaging) are properly grounded.

5.1 Mounting Positions

For proper cooling, mount the product vertically (ventilation slots at the top and bottom, front facing forward).

When mounting with the front up or down, the following values must not be exceeded:

Table 26: Values for Mounting Position – Mounting with Front Panel at Top or Bottom

Product	Output Power	Surrounding Air Temperature
2687-2142	50 %	55 °C

Note

Observe minimum clearances!

To avoid malfunctions, maintain the required minimum clearances (see Technical data [▶ 14])!

The product can be mounted on a DIN-35 rail.

5.2 DIN-35 Rail

The DIN rail is located in the center of the vertical axis (see Technical data [▶ 14]).

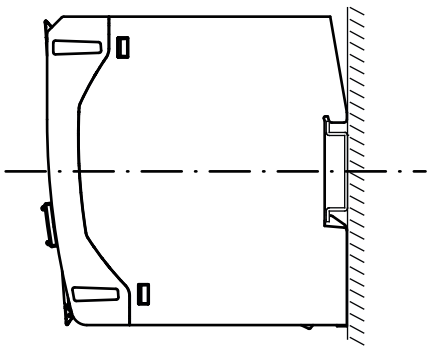


Figure 14: Position of the DIN Rail

The distances from the central axis of the DIN rail to the top and bottom are 50 mm.

Mounting on the DIN Rail

Mount the product per EN 60715 by snapping it onto the DIN rail without any tools.

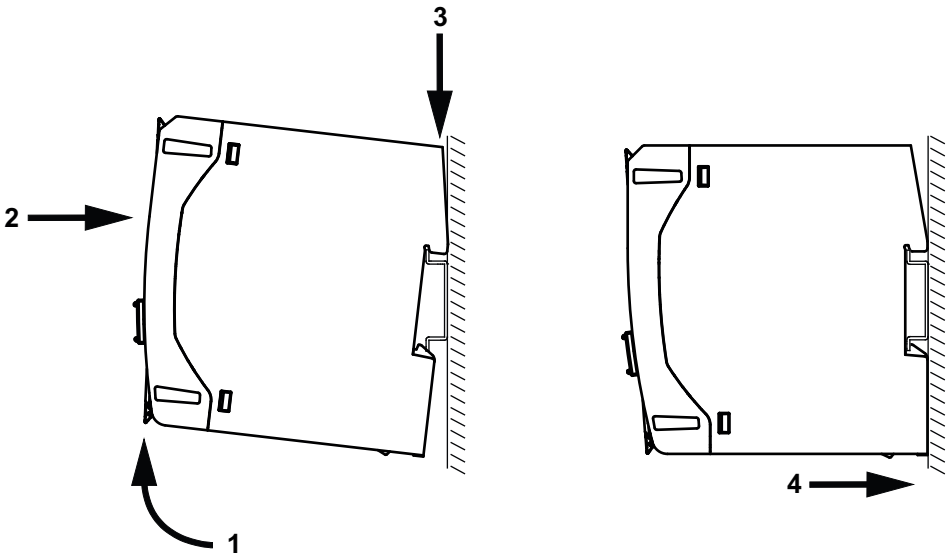


Figure 15: Mounting the Product on the DIN rail

1. Tilt the product slightly.
2. Place the product, with its DIN rail guide, on the top edge of the DIN rail.
3. Press the product onto the DIN rail.
4. Press the product against the bottom fastener until you hear it lock into place.
   ⇨ If the product does not lock into place automatically, pull down the DIN rail mounting/removal latch with a screwdriver or operating tool while pressing the product onto the bottom fastener.
5. Gently shake the product to ensure that it is correctly locked into place.
6. To ensure secure fastening on the DIN rail, fit end clips on either side of the product (with a block arrangement: on either side of the product).

Removing from the DIN Rail

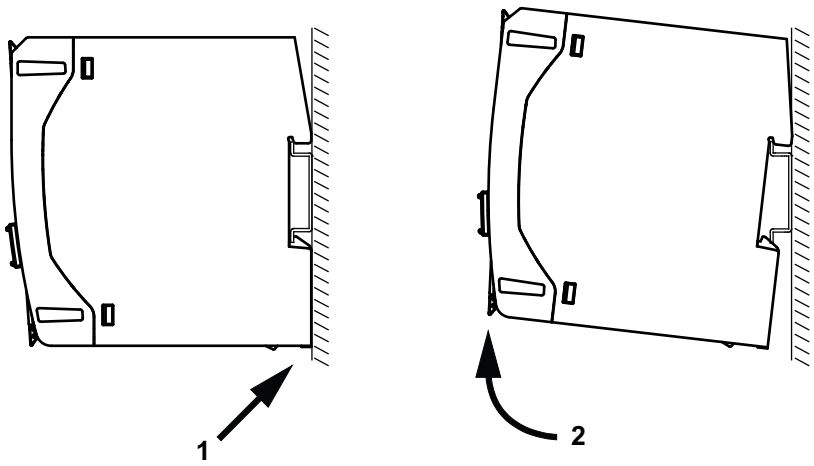


Figure 16: Removing the Product from the DIN Rail

1. To remove the product, pull down the DIN rail mount/removal latch.
   ⇨ Use a screwdriver or an operating tool.
   ⇨ The product is now unlocked.
2. Tilt the forward forward and unhook it from the DIN rail.

Connection

⚠ DANGER

Do not work on products while energized!

- Dangerous electrical voltage can lead to electric shock and burns.
  Disconnect all power sources to the product before performing any installation, repair or maintenance.

⚠ DANGER

Ensure a standard connection!

- To minimize any hazardous situations resulting in personal injury or to avoid failures in your system, the data and power supply lines shall be installed according to standards, with careful attention given to ensuring the correct terminal assignment. Always adhere to the EMC directives applicable to your application.

Note the maximum permissible connection cross-sections of the power cables (see Technical data [▶ 14]).

Check the associated operating voltage before connecting the equipment (see Type plate [▶ 12]).

Use only the recommended tools (see Appendix [▶ 34]).

6.1 Connectors

The supply lines are connected on the input or primary side and on the output or secondary side via the WAGO PCB Terminal Blocks with Push-in CAGE CLAMP® connection and levers of the 2604 Series (see Connections [▶ 13]):

Table 27: Connectors

	Input side	Output Side
WAGO PCB Terminal Block with Lever	2604-1102	2604-1103
Connection	2-pole: “L” and “N”	3-pole: “+”,“–”, “–”

6.1.1 Conductor Termination

The Push-in CAGE CLAMP® connections with levers of the 2604 Series from WAGO are designed for single or finely stranded conductors with and without ferrules.

ⓘ Note

Connect only one conductor per connector!

You must only connect one conductor to each spring clamp connection. Do not connect more than one conductor at a single connection!

If more than one conductor must be routed to one connection, these must be connected in an up-circuit wiring assembly; for example, using WAGO Through Terminal Blocks.

Direct Insertion of Connectors

The following conductors can be inserted directly without tools:

- Fine-stranded conductors with ferrules and plastic collars for all permissible cross-sections
- Fine-stranded conductors with ferrules without plastic collars with a cross-section > 0.5 mm²/AWG 22
- Solid conductors with a cross section > 0.25 mm²/AWG 24

Connecting by Opening the Connector

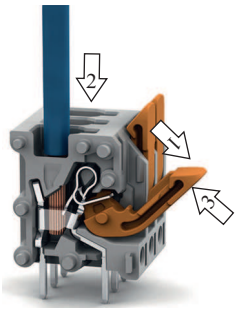


Figure 17: Wiring by Opening the Lever

The wiring requires no tools.

Proceed as follows:

1. Open the connection of the corresponding conductor using the orange-colored lever [1].
2. Insert the stripped conductor into the corresponding connection opening [2].
3. Use the lever to close the connection [3]. This secures the conductor.

Disconnect the Wiring

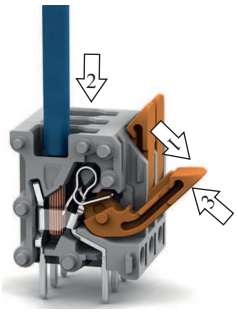


Figure 18: Disconnecting the Wiring

Proceed as follows:

1. Open the connection of the corresponding conductor using the orange-colored lever [1].
2. Remove the conductor from the corresponding connection opening [2].
3. Use the lever to close the connection [3].

Operation

7.1 Setting the Output Voltage via Potentiometer

The potentiometer [Adj.] (see Control elements [▶ 14]) can be used on the front of the product to set the output voltage between 22 … 29 VDC:

- Turning clockwise increases the output voltage.
- Turning counterclockwise decreases the output voltage.

ⓘ Note

The recommended operating tool is: “Operating tool, Phillips PH0, type 1”, Item No. 210-769.

Notes on Operation

8.1 Inrush Current

If several products are connected in parallel and supplied on the input side using the same circuit, higher inrush currents can result. In this case, the use of auxiliary relays, which cause a time delay in startup, is recommended.

The maximum number of products that can be switched on at the same time depends, among other things, on the backup fuse used and the impedance of the supply network.

8.2 Parallel Connection (on the Output Side)

In parallel operation, set the output voltage of the products that will be connected in parallel to precisely the same value, if possible. The resistance of the conductors between the power supply units and the load must be nearly identical. Only connect products of the same type in parallel.

Use external rail-mount terminal blocks when connecting in parallel. A parallel connection directly on the connectors on the secondary side of the product is not allowed.

To decouple the outputs in parallel mode, a suitable redundancy module or diodes in the positive path are recommended. These diodes must be designed for the product's maximum output current.

8.3 Short-Circuit and Overload Behavior

The product's output is electronically protected against overload and short circuits.

The following values apply to the description below:

- I_{OUT} Nominal output current (see Technical data [▶ 14])
- $I_{OUT(IST)}$ Actual output current
- U_{OUT} Output voltage (see Technical data [▶ 14])

The output voltage U_{OUT} is reduced at an output current $I_{OUT(IST)}$ in the range $1.05 \times I_{OUT} < I_{OUT(IST)} < 1.35 \times I_{OUT}$ (see Figure Output Characteristics [▶ 31]).

In the event of a short circuit ($1.4 \times I_{OUT} < I_{OUT(IST)}$) the output voltage U_{OUT} is switched off. The product checks whether the short circuit is still present through cyclical re-activation of the output voltage (Hiccup mode, see also Output [▶ 16]).

After eliminating the overload or short circuit, the product automatically supplies the output voltage as indicated.

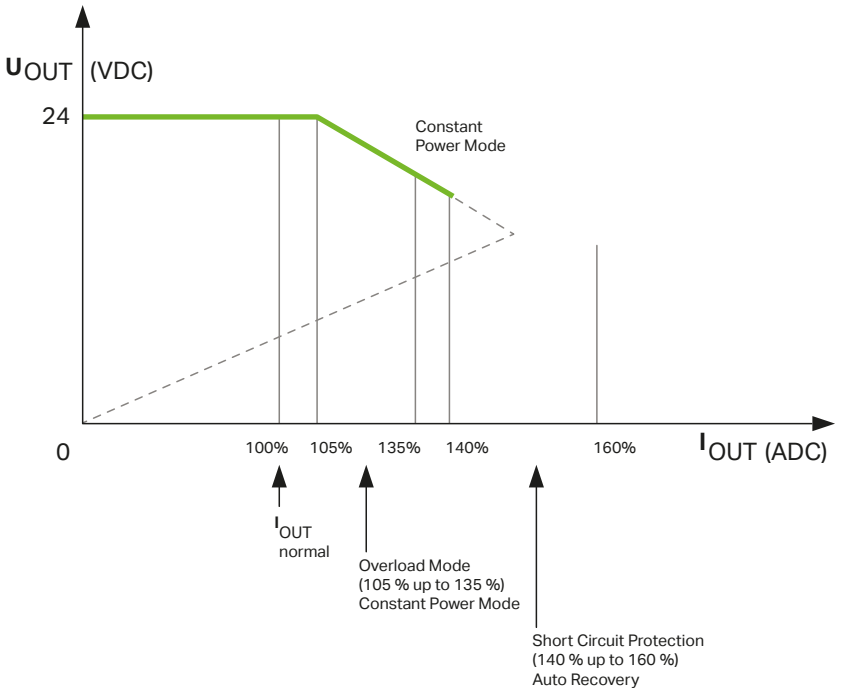


Figure 19: Output Characteristics

Table 28: Legend for the "Output Characteristics" Figure

Position	Explanation
1	$I_{OUT(IST)}$ normal
2	Overload mode ($1.05 \times I_{OUT} < I_{OUT(IST)} < 1.35 \times I_{OUT}$); constant power mode
3	Short circuit protection ($1.4 \times I_{OUT} < I_{OUT(IST)}$); Hiccup mode

8.4 Derating

The maximum load is dependent on the surrounding air temperature and the input voltage.

8.4.1 Derating (Temperature-Dependent)

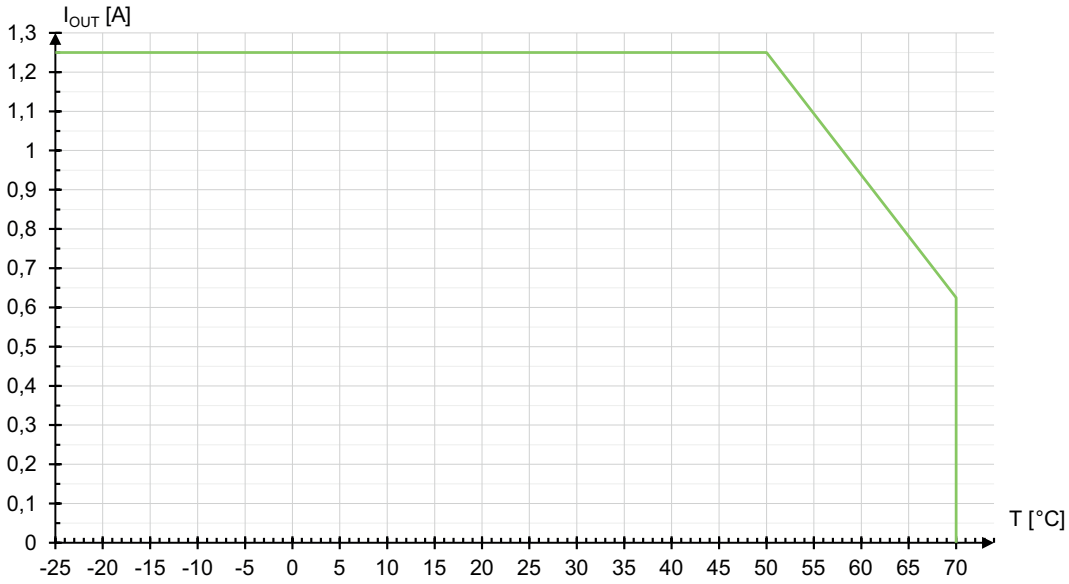


Figure 20: Temperature curve

8.5 Maintenance

The product requires no special maintenance; however it must be protected (as per the protection class) against dust accumulation, moisture, radiation and aggressive chemicals.

Permitted repairs are limited to the measures listed in these operating instructions.

Should a fault occur nonetheless, return the product to WAGO for repair. Provide the following information:

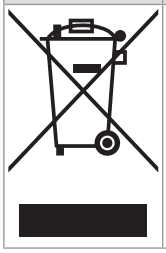
- Type of fault
- Circumstances (operating conditions, input wiring)
- Your suspicion about the fault's cause
- Previous instances of unusual incidents etc.

The convenient, standardized and therefore faster RMA process is available for returns and reports of defects. The corresponding report form for returns and reports of defects is available at **https://www.wago.com/us/ruecksendungen-reklamationen**.

Decommissioning

9.1 Entsorgung und Recycling

Table 29: WEEE Mark

Logo	Description
	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 national and local regulations for the disposal of batteries, packaging and electrical and electronic equipment.
- Clear any data stored on electrical and electronic equipment.
- Remove any batteries or memory cards installed in electrical and electronic equipment.
- Dispose of all types of packaging to ensure a high level of recovery, reuse and recycling.
- Have electrical and electronic equipment sent to a local collection point.
- The guidelines 2006/66/EG, PPWD 2018/852/EU and WEEE 2012/19/EU apply throughout Europe. National directives and laws may vary.

Appendix

10.1 Accessories

Details on accessories are available online at www.wago.com.

The following accessories are available for the product:

Accessories – Tools

Table 30: Accessories – Tools

Description	Designation	Item number
Operating tool for setting the potentiometer	Screwdriver PH0	210-769

Accessories – Other

Table 31: Accessories – Other

Description	Item number
Fuse terminal blocks for cylindrical fuses [1] 10 × 38 mm	811 Series

[1] *Cylindrical fuses are not offered by WAGO.*

Accessories – Marking

Table 32: Accessories – Marking

Description	Item Number
Marker carrier	2787-1233
Marking System	2009-0110
WMB Multi Marking System	2009-0115
	2009-0115/0000-0002

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List of Tables

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