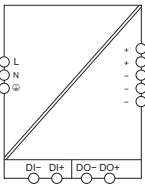


WAGO Pro 2 Power Supplies

DC Power Supply

2787-2147
2787-2147/0000-0030
2787-2147/0000-0070



1 Safety Information

DANGER

Do not work when products are energized!

High voltage can cause electric shock or burns. Disconnect a power sources to the product prior to performing any installation, repair or maintenance work.

DANGER

Live parts are likely to be touched!

The party setting up the product is responsible for providing appropriate touch guards. The installation regulations must be observed for each individual application.

CAUTION

Hot surface!

The surface of the housing heats up during operation. Under special conditions (e.g., in the event of a fault or increased ambient temperature), touching the product may cause burns. Allow the product to cool down before touching it.

NOTICE

Select conductor cross sections as required for current load!

In the event of a fault, the output current of a power supply can be up to 1.5 × I_{OUT}. Only use conductor cross sections designed for this current load.

Note

Only valid in conjunction with the device's manual!

These instructions are only applicable in conjunction with the device's manual! This manual is available on the Internet at www.wago.com. In addition, please observe the information provided on the device's housing.

Note

Observe instructions for disposal!

This product is subject to the provisions of the Waste Electrical and Electronic Equipment Directive. For more information about disposal, please visit www.wago.com.

Please pay close attention to the following:

- The product must only be installed and put into operation by qualified electrical specialists per EN 50110 1/-2 and IEC 60364.
- 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.
- Only install the product in dry, indoor rooms.
- Install the product in an additional housing. This enclosure must:
 - 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.
- Observe permissible temperature range of connecting cables.
- Provide suitable separators and overcurrent protective products on the system side. The isolator must be located near the product where it can be operated. The **OFF** position must be clear ly marked on this isolator.
- Install, operate and maintain the product only in a temperature range of –25 to +50 °C.
- Only use a dry or dampened (water) cloth to clean the product. Do not use cleaning agents, e.g., abrasive cleaner, alcohol, acetone.
- If required, maintain sufficient distance from adjacent parts to avoid interfering with the cooling!
- When integrating the product into your system, the safety of this system is your responsibility as the installer.
- Comply with applicable laws, standards, guidelines, local regulations, accepted technology standards and practices at the time of installation.

This product may only be used as described in this note and in the complete instructions. Use other than this may represent a risk to safe, intended use and will nullify the warranty or guarantee. WAGO Kontakttechnik GmbH & Co. KG is not liable for damage resulting from non-intended or improper use.

2 Technical Data

Table 1: Device	
Dimensions (mm) W × H × L	70 × 130 × 130 (height from upper-edge of 35 rail)
Weight	1450 g

Table 2: Electrical Data	
Input	100 ... 240 V ~ (±10 %); 5.9 ... 2.2 A; 50 ... 60 Hz
Output	24 ... 28 V $\overline{\text{SELV}}$; 20 ... 17.1 A; 480 W
Power Boost	30 A (5 s)

Table 3: Female connector	
Input	0721-0203/0000-0004/0000-9540
Output	0831-3105/0000-0015/0000-9504
Signal	0721-0104/K000-0001

Table 4: Wiring – Dimensions		
Cross section	Input/Signal	0.08 ... 2.5 mm² / AWG 28 ... 12 ¹⁾²⁾ 0.25 ... 1.5 mm² / AWG 20 ... 16 ³⁾ 0.25 ... 2.5 mm² / AWG 20 ... 14 ⁴⁾
	Output	0.50 ... 10 mm² / AWG 20 ... 8 ¹⁾³⁾ 0.50 ... 6.0 mm²
Strip length	Input/Signal Output	8 ... 9 mm / 0.31 ... 0.35 in 13 ... 15 mm / 0.51 ... 0.59 in
Use conductors rated to		≥ +75 °C (surrounding air temperature, operation: ≤ +60 °C) ≥ +90 °C (surrounding air temperature, operation: > +60 °C)

¹⁾ solid ²⁾ fine-stranded ³⁾ with insulated ferrule ⁴⁾ with uninsulated ferrule

Table 5: Ambient Conditions	
Protection Class	I
Degree of protection	IP20
Overvoltage categorie	III (up to 2000 m above sea level); II (> 2000 m above sea level)
Pollution degree	2
Branch circuit breaker for mains circuit ^{*)}	16 A (for USA/Kanada: 15 A)
Surrounding air temperature, operation	During operation: –25 ... +70 °C, Min. temperature when starting the device: –40 °C
Derating (in nominal position) ^{*)}	–1 %/V (> +40 °C and < 100 VAC) –3 %/K (> +55 °C and < 230 VAC) –3 %/K (> +60 °C and ≥ 230 VAC) –5 %/V (U _{out} > 24 VDC)
Surrounding air temperature, storage	–40 ... +85 °C
Relative humidity	5 ... 96 % (non-condensing)
Elevation above sea level	Max. 5000 m
Resistance to harmful gas	Resistant to flowing mixed gas per ISA S71.04, G3 Group A ^{*)}

^{*)} The branch circuit breaker can be used for activation during installation. In this case, the branch circuit breaker must meet all the requirements on this isolator device. If an additional switch is used, it must have the same electrical load capacity as the branch circuit breaker.

^{*)} If more than one of these criteria apply, the individual deratings should be added.

^{*)} Only applies to 2787-2147/0000-0070

3 Standards and Approvals

Electrical safety and EMC (electromagnetic compatibility) is provided through the equipment configuration in accordance with the cited standards.

Table 6: Standards and Approvals	
Standards	EN 61010-1, EN 61010-2-201 IEC 61010-1, IEC 61010-2-201
EMC	EN IEC 61204-3 EN IEC 61000-6-2; EN 61000-6-3
	Ordinary Location: UL 61010-1; UL 61010-2-201; E-File: E255817 Hazardous Location: UL 121201, Class I, Division 2, Groups A B C D, T4; E-File: E198726 ^{*)}
	Shipbuilding: DNV GL: CG-0339 ^{*)}

^{*)} Only applies to 2787-2147/0000-0030

3.1 Installation Notes for UL Hazardous Locations

WARNING

Risk of explosion!

This product is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.

Exchanging any component may impair suitability for Class I, Division 2.

Only disconnect the product when the voltage is switched off or if the area is not potentially explosive.

3.2 Installation Instructions for DNV GL (only applies to 2787-2147/0000-0030)

The following instructions apply for installation for DNV GL:

- Mount the product on a 35 rail (210-197 or 210-118).
- Place an end bracket on the left and right of the product (249-117).

4 View

Table 7: View		
	No.	Assignment
a	a	Ventilation openings
b	b	Signal (X3) Pin assignment: (1): DI– (2): DI+ (3): DO– (4): DO+
c	c	Output (X2) Pin assignment: (1): + (2): + (3): – (4): – (5): –
d	d	Screw for overvoltage protection (output)
e	e	Optical status indication (see section "Display Elements")
f	f	Push buttons (see section "Operating Elements")
g	g	Communication interface
h	h	Type plate
i	i	Marker carriers
j	j	Screw for overvoltage protection (input)
k	k	Input (X1) Pin assignment: (1): L (2): N (3): Ⓞ
l	l	Latch for mounting on/removal from a rail

5 Mounting/Removal

NOTICE

Avoid electrostatic discharge!

The devices 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 devices to good grounding of the environment (persons, job and packing).

NOTICE

Do not cover the ventilation openings!

To ensure adequate air circulation, the ventilation openings must be kept clear. Keep at least 50 mm from the ventilation openings to adjacent surfaces.

5.1 Mounting position

- Nominal mounting position (see also depiction under "View"): Front, marking legible, top and bottom ventilation openings.
- Device must not be operated without air gap. If adjacent device is equivalent under full load the air gap has to be at least 12 mm. If adjacent device does not generate heat the air gap has to be at least 6 mm.

5.2 35 Rail

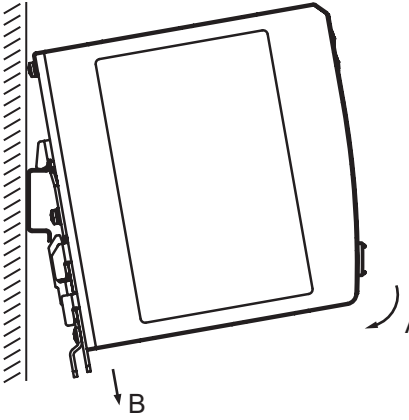


Figure 1: Mounting

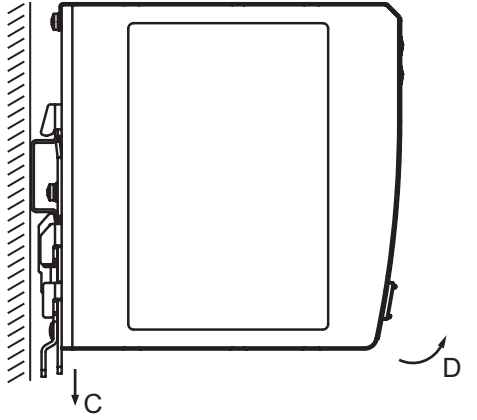


Figure 2: Removal

5.2.1 Installation to the Rail

Install the device by snapping it into the rail according to EN 60715 (see figure "Mounting"):

- Place the device with its rail guide on the top edge of the rail.
- Press the device onto the rail [A] while simultaneously pulling on the latch (I) [B] until it locks into place.
- To ensure secure fastening on the rail, fit end clips on either side of the device (e.g., Order No. 249-197).

5.2.2 Removal from the Rail

- To remove (see Figure "Removal"), pull down the latch (I) [C]. Use a screwdriver or an operating tool for this.
- Slide the device out at the lower edge of the rail.

6 Wiring

Perform wiring of the device using an operating tool.

DANGER

Dangerous electrical voltage!

You could receive an electric shock if the female connectors are inserted incorrectly! Never remove the reverse voltage protection from the female connectors under any circumstances, and only insert the female connectors into the connections provided for them!

WARNING

Do not insert a tool into the ventilation slots!

Components inside the device may be damaged if the blade of an 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 a screwdriver or an actuation tool, ensure correct positioning between the locking latch and the female connector!

7 Overvoltage Protection

The device is protected against overvoltage. For insulation testing on your electrical equipment, this protection can be removed:

Table 8: Dielectric Testing	
Insulation testing: Suspend protection from a test voltage of:	
Input	Output
> 600 VDC	> 225 VDC
> 420 VAC	> 175 VAC

7.1 Disabling Overvoltage Protection

Input:

Remove the screw (j) on the device side. The overvoltage protection is now disabled.

Output:

Remove the screw (d) on the device side. The overvoltage protection is now disabled.

7.2 Enabling Overvoltage Protection

Input:

Screw the screw (j) back in on the device side. The overvoltage protection is now enabled.

Output:

Screw the screw (d) back in on the device side. The overvoltage protection is now enabled.

8 Operating Elements

The device has two push buttons located on the front side. The functions are explained in the table.

Table 9: Operating Elements		
Button [+]	Button [–]	Function
Switching the Device On and Off Press 3 s simultaneously		Switches the device on or off.
Setting the Output Voltage		
Press 1 ×	–	Increases the output voltage in steps.
Press and hold	–	Increases the output voltage continually.
–	Press 1 ×	Reduces the output voltage in steps.
–	Press and hold	Reduces the output voltage continually.
Resetting the Device to Factory Settings Press 10 s simultaneously		Resets the device to factory settings.

9 Display Elements

The device has an optical status display. This display consists of five LEDs that signal the load/nominal load of the power supply at any given time.

Table 10: Display Elements								
Display	Device is in standby mode	Output deactivated with saving ^{*)}	DC OK/ Output power < 25 %	Operating Status				
				Output power ≥ 25 % ... < 50 %	Output power ≥ 50 % ... < 75 %	Output power ≥ 75 % ... < 100 %	Output power ≥ 100 %	Boosting (5 s signaling)
> 100 %	Off	Flashing (0.5 Hz)	Off	Off	Off	Off	Steady	Flashing (2 Hz)
> 75 %	Off	Off	Off	Off	Off	Steady	Steady	Steady
> 50 %	Off	Off	Off	Off	Steady	Steady	Steady	Steady
> 25 %	Off	Off	Off	Steady	Steady	Steady	Steady	Steady
DC OK	Flashing (0.5 Hz)	Off	Steady	Steady	Steady	Steady	Steady	Steady

^{*)} In the event of overload or excess temperature, or if electronic circuit breaker triggered

10 Diagnostics

Warning and fault statuses are also signaled through the optical status display.

Table 11: Warning and Fault Statuses							
Display	Warning and Fault Statuses						
	Warning		Configurable overload threshold or tripping current of the electronic circuit breaker exceeded	Fault Statuses			
	Output voltage too low	Output voltage too high		Short circuit at output	Excess temperature shutdown ^{1a)}	Internal device fault	Communication interface
> 100 %	Flashing (2 Hz)	Flashing (2 Hz)	Flashing (2 Hz)	Flashing (8 Hz)	Flashing (8 Hz)	Flashing (8 Hz)	Flashing (8 Hz)
> 75 %	Off	Flashing (2 Hz)	Signaling of regular load	Off	Steady	Flashing (8 Hz)	Off
> 50 %	Off	Off		Off	Off	Flashing (8 Hz)	Off
> 25 %	Off	Off		Off	Off	Flashing (8 Hz)	Off
DC OK	Flashing (2 Hz)	Off		Off	Off	Flashing (8 Hz)	Steady

^{1a)} Automatic restart (factory setting)

11 Digital Input/Output

There is a configurable digital signal input and output on the top of the device. The following functions are configured by default:

- Digital signal input (DO+ DO–):** The device can be switched on or off via this input.
0 V: Device is switched on
24 V: Device is switched off
- Digital signal output (DO+ DO–):** DC OK
Output voltage > 90 % of the output voltage setting

Other functions are configurable via the communication interface. Detailed informations can be found in the manual of this device.

12 Communication Interface

The communication interface is beneath the plastic cover. Only remove the cover to use the interface. Keep the cover closed at all other times.

Please note, the WAGO USB communication cable (Article No.: 750-923) must only be used for service purposes and not for continued operation. Communication modules that can be plugged to the front of the device are available for continuous communication. The available modules can be found under www.wago.com.

Detailed information about the communication interface is available in the product manual for this article.

13 Accessories

Details about accessories are given on the internet at www.wago.com.

13.1 Tools

Use only the following tool:

Table 12: Accessories – Tools		
Operating tool with partially insulated shaft	Type 2, (3.5 mm × 0.5 mm) blade	210-720
Operating tool with partially insulated shaft	Type 3, (5.5 mm × 0.8 mm) blade	210-721

13.2 Marking

The device can be marked in the following ways:

Table 13: Accessories – Marking		
Marker carrier	2789-1233	
Marking system	2009-110	
WMB Multi marking system	2009-115	
	2009-115/000-002	

