WAGO Power Supplies and WAGO System Modules

NEW
WAGO POWER SUPPLIES
Pro 2

Contents

WAGO Power Supplies

Pro 2

Applications with high output demands call for professional power supplies capable of handling power peaks reliably. WAGO's Pro 2 Power Supplies are ideally suited to such installations.

Classic

WAGO's Classic Power Supplies are the exceptionally robust power supplies that offer optional TopBoost integration. Their wide input voltage range and an extensive list of international approvals allow them to be used in a wide variety of applications.

Eco

Many basic applications only require 12 or 24 VDC. This is where WAGO's Eco Power Supplies excel as an economical solution.

Compact

The small, high-performance power supplies in DIN-rail-mount housings are available with output voltages of 5, 12, 18 and 24 VDC, as well as nominal output currents up to 6.5 A.

WAGO System Modules

UPS

Consisting of a 24 V UPS charger and controller with one or more connected battery modules, WAGO's Uninterruptible Power Supplies reliably power an application for several hours.

Capacitive Buffer Modules

In addition to reliably ensuring trouble-free machine and system operation – even through brief power failures – WAGO's Capacitive Buffer Modules offer the power reserves that may be required for starting heavy motors or triggering a fuse.

Redundancy Modules

WAGO's Redundancy Modules are ideal for reliably increasing power supply availability. These modules decouple two parallel-connected power supplies and are suitable for applications where an electrical load must be reliably supplied – even in the event of a power supply failure.

Electronic Circuit Breakers

WAGO's compact ECBs provide reliable protection against overload and short circuit. Their slim design offers high channel density, saving valuable control cabinet space.

WAGO POWER SUPPLIES PRO 2

Class-Leading Product Features of the WAGO Power Supplies Pro 2:

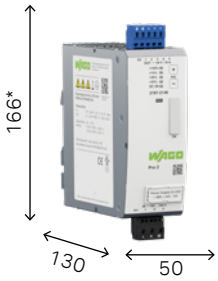
- Intelligent power management that supplies 150% power for 5 s, or up to 600% output power for 15 ms in the event of short circuits
- High level of resistance to adverse environmental influences: Heat, cold and elevation have little impact on performance
- Pioneering communication capabilities that keep you informed about all important status information and data – ready for Industry 4.0
- Easy planning and installation thanks to compact dimensions and 2D/3D data in the most important formats

Power supplies are the heart of a control cabinet's DC power supply. Therefore, they must meet particularly strict requirements on reliability, efficiency and installation size. However, increasing networking and digitalization also require new features, such as configuration options for adapting to the corresponding application and providing service and operating data, in order to implement the digital twin over many years of operation.

Our answer to these more demanding requirements is the WAGO Power Supply Pro 2 – the heart of the control cabinet, which transforms today's challenges into tomorrow's possibilities.

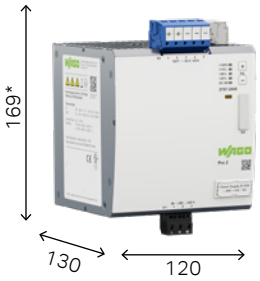
1-Phase; Input: 90 … 264 VAC or 180 … 264 VAC (2787-2448)
24 VDC

2787-2144
5 A



2787-2146
10 A

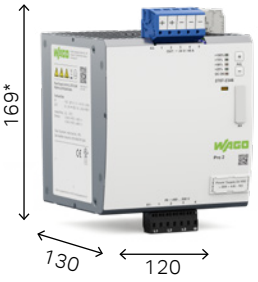
2787-2147
20 A



2787-2448
40 A

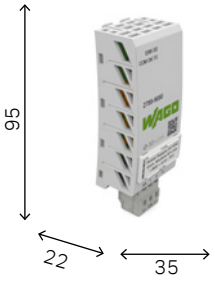
3-Phase; Input: 340 … 550 VAC
24 VDC

2787-2347
20 A



2787-2348
40 A

IO-Link Communication Module



2789-9080

*with connectors; 130 mm without connectors

Communication

WAGO's pluggable IO-Link Communication Module allows continuous fieldbus communication, provides data such as the actual output current and voltage and can also be configured or put in standby mode remotely.

Ready for digitalization thanks to modular fieldbus communication

Continuous overview of all the data and values of your system's power supply

Greater system uptime thanks to early warning and predictive maintenance

Configuration

WAGO's new Interface Configuration Software offers both local/remote configuration and parameter setting, allowing the power supplies to be quickly and easily tailored to all system requirements. The configuration function can be used to configure the power supply as an ECB. In case of an overcurrent, the output can be reactivated by the digital input – saving space and money for an external ECB, while protecting downstream devices.

The power supply can be customized to **virtually any application** via **configuration options**.

The configurable circuit breaker functionality **lowers costs and space requirements** while **increasing safety**.

Load Management

Rapidly switching capacitive loads and high start-up currents are no problem, thanks to 150% output power (PowerBoost) for five seconds. Output current up to 600% for 15 ms provides reserves for rapid, reliable tripping of miniature circuit breakers. The ability to allow a specified output current to be exceeded for a configurable amount of time allows the Pro 2 Power Supply to work like a single-channel ECB.

Fast and reliable tripping of miniature circuit breakers **thanks to temporary output currents** of up to 600%

Quick charging of capacitors and **fast switching** of contactors thanks to output currents of up to 150% for five seconds

Output configuration, e.g., as an electronic circuit breaker

600 %

150 % **Temporary Power-Boost in the event of load peaks**

100 % **Normal power consumption**

75 %

50 %

25 %

Efficiency

Up to 96.3% efficiency* in a wide load range is the key to energy cost savings, reduced power losses and lower demand for control cabinet cooling. The CO_2 footprint is also dramatically reduced. WAGO's Pro 2 Power Supply can be permanently connected to the PLC via the communication module or a digital signal, enabling switch off of the power supply output via a signal and use of the standby mode for energy savings.

Lower CO_2 emissions/energy costs with up to 96.3% efficiency*

Energy cost savings via standby mode activation

*measured on 2787-2448

96.3 %

Robust Design

WAGO's Pro 2 Power Supplies can be started and operated from −40°C to +70°C, allowing significant cost savings by reducing the need for control cabinet air conditioning. Featuring low derating capability above 60°C, the Pro 2 units deliver nearly full output power at 70°C. Furthermore, their highly robust design provides reliable operation in high-vibration and shock-prone applications. The power supplies can be operated in altitudes up to 5000 m, requiring no derating below 2000 m ASL.

A wide temperature range opens up many application possibilities.

−40 … +70 °C

The Pro 2 units easily withstand **shocks, vibrations and the harsh conditions of high-altitude operation**.

Overvoltage category III up to 2000 m provides **greater operational reliability**.

Design

WAGO's Pro 2 Power Supplies require less space in the control cabinet and less distance from other components, which helps minimize cooling costs. 2D/3D data is available for the devices via CADENAS PARTcommunity, EPLAN Makros and Smart Designer support. The connectors and clamping units are labeled in accordance with EN 81346-2 for sophisticated marking of individual connection points.

ELECTRICAL ENGINEERING

Compact design and high efficiency reduce space requirements and **improve control cabinet cooling**.

The digital twin simplifies E-CAD implementation while **reducing time and costs**.

Device and connection points are labeled in accordance with **EN 81346-2**.

Reliability

MTBF > 1,000,000 hours (more than 114 years) and long service lives of the components used mean lower maintenance costs compared to other power supplies. Furthermore, WAGO's PRO 2 Power Supplies offer higher output currents at 70°C, so downsizing the power supply saves money and space in high-temperature applications. Because they fulfill the requirements of overvoltage category III, the devices can also withstand transients of 4 kV and above.

The MTBF value and component service lives promise an **extensive service life** for the WAGO PRO 2 Power Supplies.

Derating is first required for temperatures above 60°C, allowing **high output power capability even in high-temperature applications**.

Active power factor correction and overvoltage category III

MTBF: 1.000.000 h

Installation

Spring pressure connection technology guarantees highly secure, maintenance-free and fast connections, significantly reducing costs. WAGO's pluggable connectors enable both pre-assembled wiring and fast installation, providing additional cost reductions. The front-panel interface allows fast and easy parameterization, while an LED bar chart intuitively indicates the current load. Marking in accordance with EN 81346-2 for clear connection point identification prevents wiring errors.

Push-in CAGE CLAMP® Connectors **save wiring and installation time**.

Configuration via interface software offers **greater flexibility and clarity during installation**.

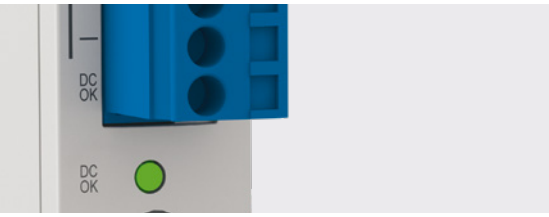
Both LED bar chart and device/connection point labeling **simplify system commissioning**.

WAGO
POWER SUPPLIES
CLASSIC

Robust Power Supplies – Optionally
with Integrated TopBoost

Communicative

- Green LED indicates output voltage availability
- Remote monitoring via DC OK signal or potential-free DC OK contact
- Easy commissioning and maintenance
- Quickly provide system information or machine status



Integrated TopBoost*

- Multiply the nominal current
- Fast and reliable triggering of the secondary-side fusing via circuit breakers or melting fuses in the event of a short circuit and overload

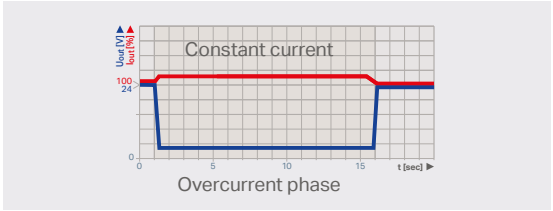
*only for 787-1622,-1628, -1631 ... -1638, -1640 ... -1644

Device Marking

- Marking field for fast and securely attached device identification
- Support WAGO's WMB Multi Marking System (5 mm pin spacing)
- Support WAGO Marking Strips (11 mm wide)

High Load-Carrying Capacity

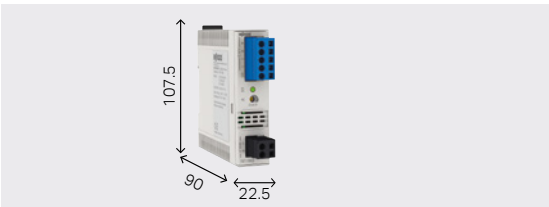
- Constant current characteristic under overload conditions
- 110% output current with a lowered output voltage – even during a short circuit
- High capacitive loads can be reliably started



Constant current
Overcurrent phase

Slim Design

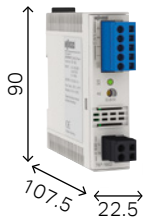
- Enclosure width has been reduced by up to 45% compared to previous Classic Power Supplies
- Save valuable cabinet space



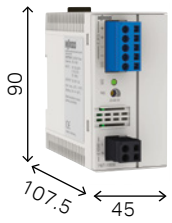
WAGO Power Supplies Classic

Robust Power Supplies – Optionally with Integrated TopBoost

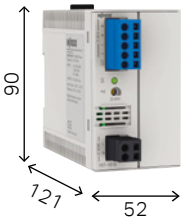
1-Phase; Input: 85 … 264 VAC
24 VDC



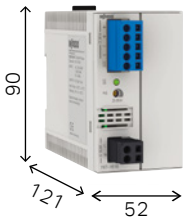
787-1602
1 A



787-1606
2 A



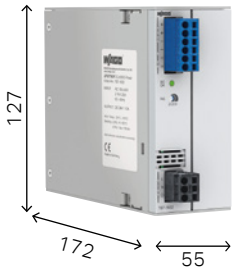
787-1616/0000-1000
3.8 A NEC Cl. 2



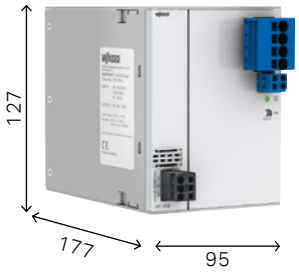
787-1616*
4 A

1-Phase; Input: 85 … 264 VAC
24 VDC

787-1622
5 A

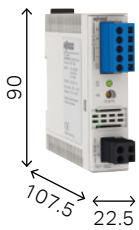


787-1632*
10 A



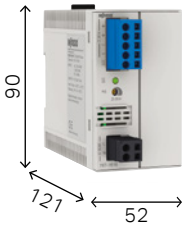
787-1634*
20 A

1-Phase; Input: 85 … 264 VAC
12 VDC

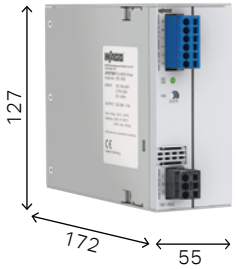


787-1601
2 A

787-1611
4 A



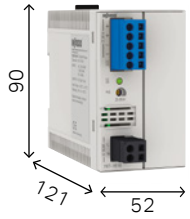
787-1621
7 A



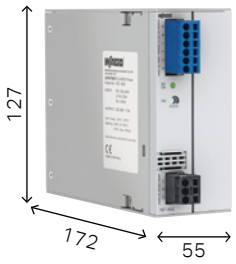
787-1631
15 A

*optionally available as .../0000-0070 with protective coating

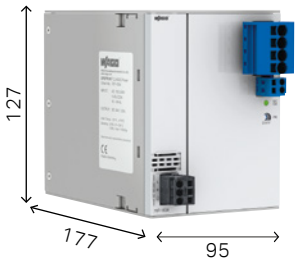
1-Phase; Input: 85 … 264 VAC
48 VDC



787-1623
2 A



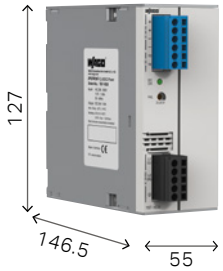
787-1633
5 A



787-1635*
10 A

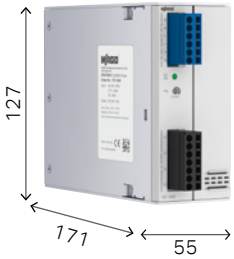
2-Phase; Input: 180 … 550 VAC
24 VDC

787-1628
5 A

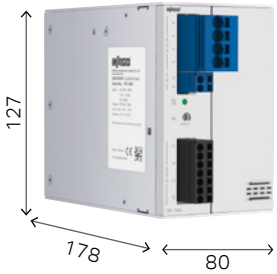


787-1638
10 A

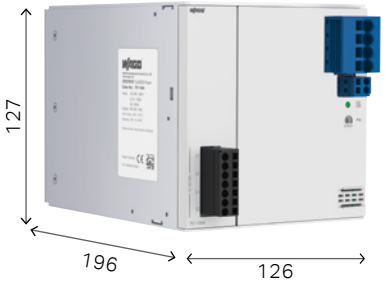
3-Phase; Input: 320 … 575 VAC
24 VDC



787-1640
10 A



787-1642
20 A



787-1644
40 A

WAGO POWER SUPPLIES

ECO

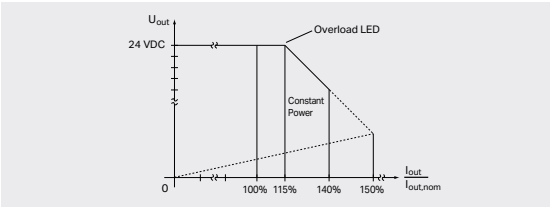
Economical Power Supplies for Standard Applications

Overload LED
Constant power

High Load-Carrying Capacity

- Overload warning from 1.15 times the nominal output current*
- Overload of up to 1.4 times the nominal current with a lowered output voltage (constant power)*
- Output shutdown in case of a low-resistance short circuit; also includes automatic restart

*except for 787-17xx



Status Monitoring

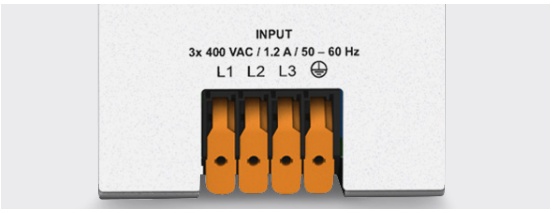
- Potential-isolated NO contact signal, via bounce-free optocoupler* or PhotoMOS**
- Indicates whether an output voltage or an overload is present
- Ideal for remote monitoring

*only for 787-734 ... -740
**only for 787-2742, -2744

Fast Wiring

- Convenient, tool-free wiring thanks to lever-actuated terminal strips*
- Integrated test slot simplifies testing by eliminating conductor removal

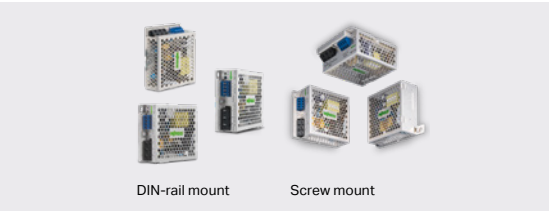
*only for 787-734 ... -740, -2742, -2744



Versatile Mounting Options

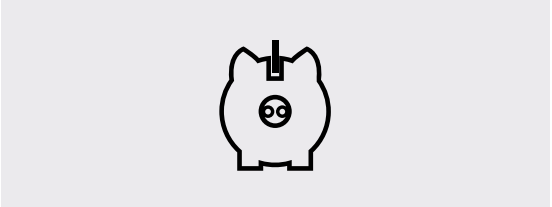
- Flexible mounting via DIN-rail adapter*
- Flexible installation via screw-mount clips*

*only for 787-17xx



Highly Economical

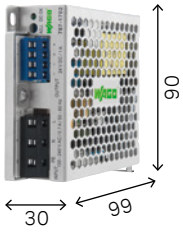
- Triple the savings thanks to low purchase costs, easy installation and maintenance-free operation
- Budget-friendly for basic applications



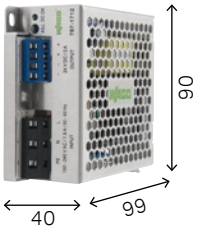
WAGO Power Supplies Eco

Economical Power Supplies for Standard Applications

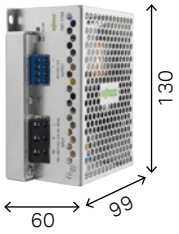
1-Phase; Input: 85 … 264 VAC
24 VDC



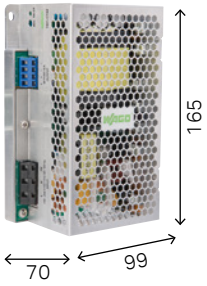
787-1702
1.25 A



787-1712
2.5 A



787-1722
5 A

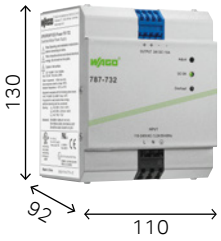


787-1732
10 A

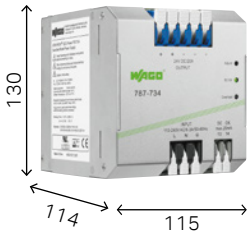
1-Phase; Input: 85 … 264 VAC
24 VDC

787-712
2.5 A

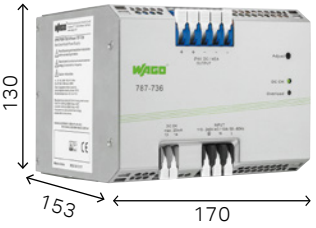
787-722
5 A



787-732
10 A

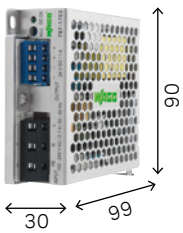


787-734
20 A

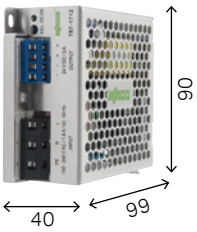


787-736
40 A

1-Phase; Input: 85 … 264 VAC
12 VDC



787-1701
2 A



787-1711
4 A

787-1721
8 A

3-Phase; Input: 360 … 460 VAC
24 VDC

787-738
6.25 A

787-740
10 A

3-Phase; Input 340 … 575 VAC
24 VDC

787-2742
20 A

787-2744
40 A

WAGO
POWER SUPPLIES
COMPACT

Compact, High-Performance Power Supplies

Easy to Connect

- CAGE CLAMP® Connection Technology – vibration-proof, fast, maintenance-free
- Pre-assembly via pluggable *picoMAX*® Connection Technology*

*only for 787-11xx, 787-12xx

DIN-Rail Built-In Installation

- Housing design per EN 43880, for installation in small distribution boards or meter panels

Versatile Mounting Options

- Easy mounting on DIN-rail
- Flexible installation via screw-mount clips also possible*

*only for 787-12xx

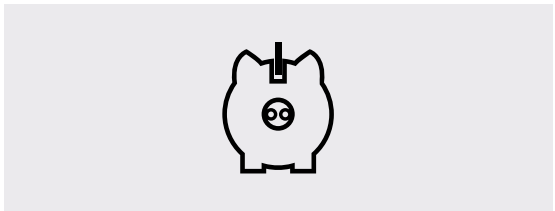
Overhead Mounting

- Any type of mounting position is possible at reduced output power.
- Units can even be mounted overhead, e.g., in ceiling-mounted distribution boxes.
- Improved cooling due to removable front plate*

*only for 787-1202, -1212

Highly Economical

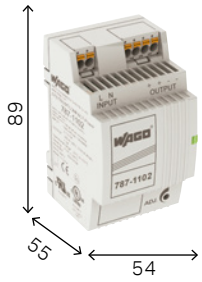
- Triple the savings thanks to low purchase costs, easy installation and maintenance-free operation
- Budget-friendly for basic applications



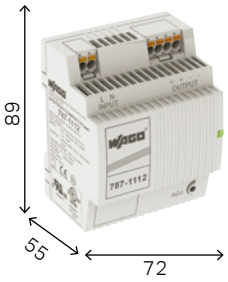
WAGO Power Supplies Compact

Compact, High-Performance Power Supplies

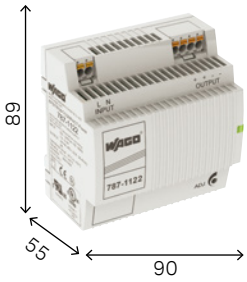
1-Phase; Input: 85 … 264 VAC
24 VDC; with *picoMAX*®



787-1102
1.3 A

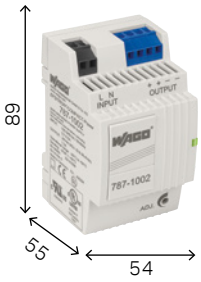


787-1112
2.5 A

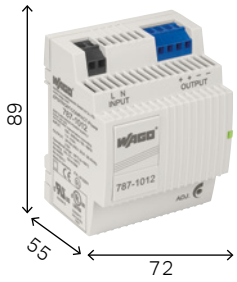


787-1122
4 A

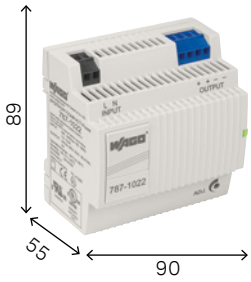
1-Phase; Input: 85 … 264 VAC
24 VDC



787-1002
1.3 A

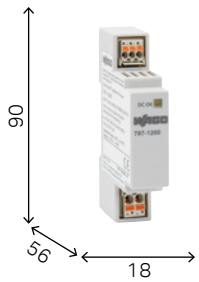


787-1012
2.5 A

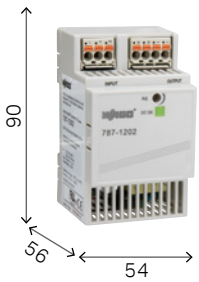


787-1022
4 A

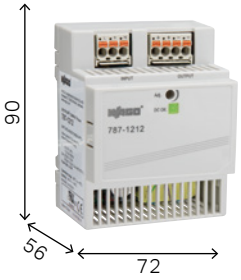
1-Phase; Input: 90 … 264 VAC
24 VDC; with *picoMAX*®



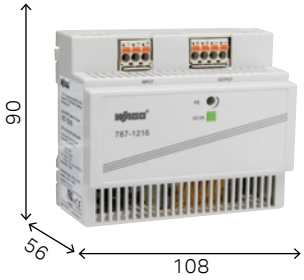
787-1200
0.5 A



787-1202
1.3 A

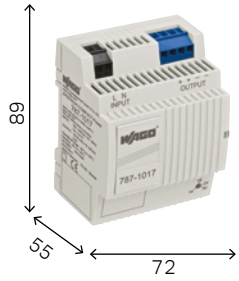


787-1212
2.5 A



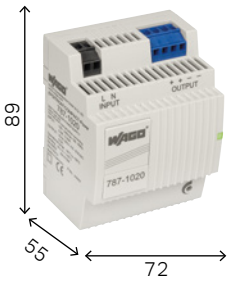
787-1216
4.2 A

1-Phase; Input: 85 … 264 VAC
18 VDC



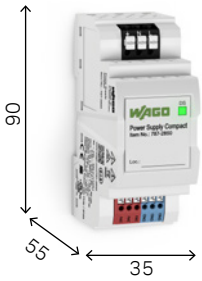
787-1017
2.5 A

1-Phase; Input: 85 … 264 VAC
5 VDC



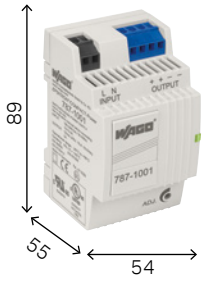
787-1020
5.5 A

1-Phase; Input 100 … 264 VAC
24 VDC; with tool-free Push-in CAGE CLAMP® termination

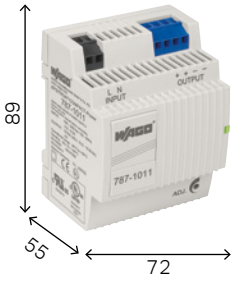


787-2850
1.25 A

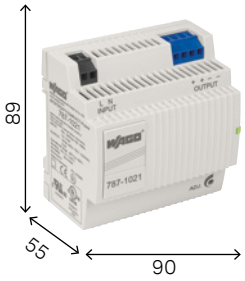
1-Phase; Input: 85 … 264 VAC
12 VDC



787-1001
2 A

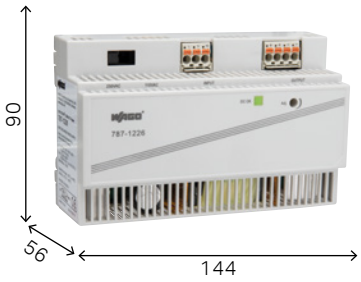


787-1011
4 A



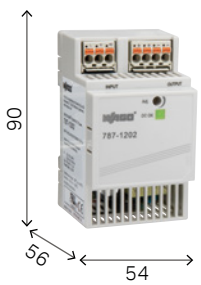
787-1021
6.5 A

1-Phase; Input: 90 … 264 VAC
24 VDC; with *picoMAX*®

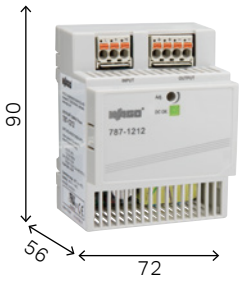


787-1226
6 A

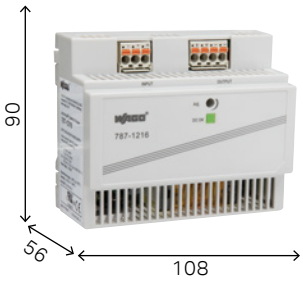
1-Phase; Input: 85 … 264 VAC
12 VDC



787-1201
2.5 A



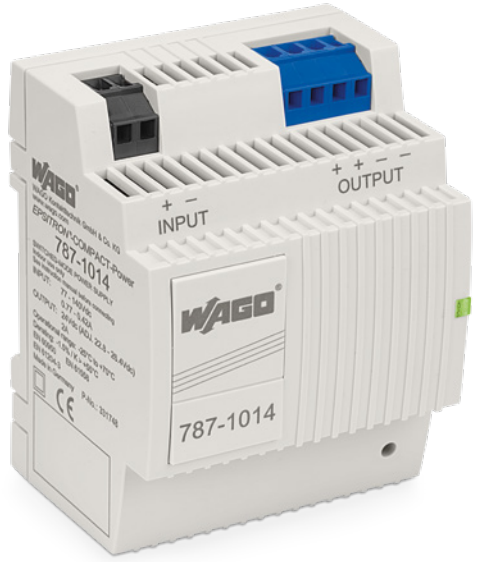
787-1211
5 A

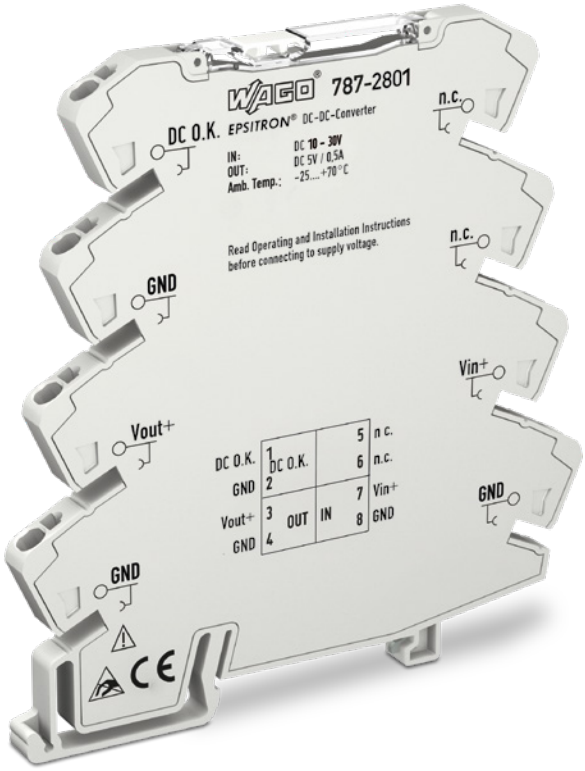


787-1221
8 A

WAGO
DC/DC CONVERTERS

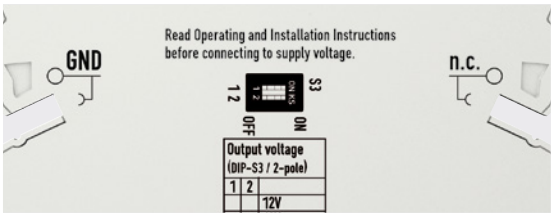
Dependable Power Supply for Specialty Voltages





A Device for a Wide Variety of Applications

- Output voltage of the DC/DC Converter (787-2810) set via built-in DIP switch



Communicative

- Green LED indicates output voltage availability
- Remote monitoring via DC OK
- Easy commissioning and maintenance

Can Be Commoned with 857/2857 Series

- Full commoning of the supply voltage thanks to shared profile between the 787-28xx DC/DC Converters and the 857/2857 Series Relays and Signal Conditioners

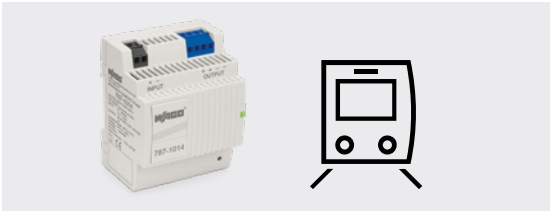
The Industry's Most Compact

- "True" 6.0 mm (0.23 inch) width maximizes panel space

Suitable for Railway Applications per EN 50155

- Wide DC input voltage range
- Wide temperature range
- Protective coating

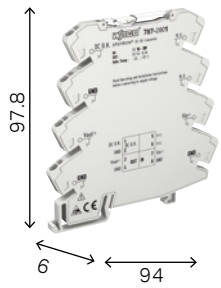
*only 787-1014 & 787-101x/0072-0000



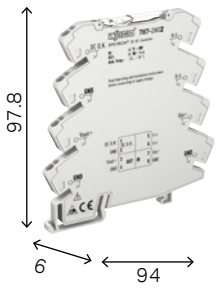
WAGO DC/DC Converters

Dependable Power Supply for Specialty Voltages

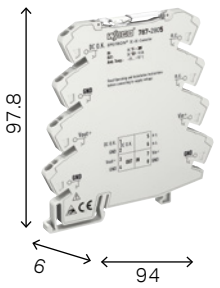
Input: 24 VDC



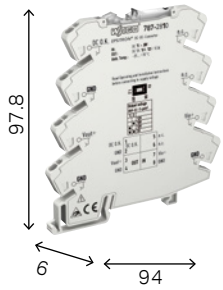
787-2801
5 VDC
0.5 A



787-2802
10 VDC
0.5 A

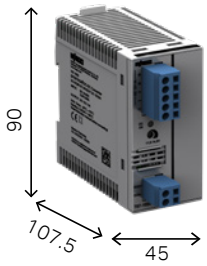


787-2805
12 VDC
0.5 A



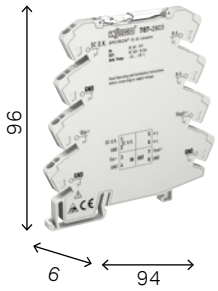
787-2810
5/10/12 VDC; adjustable
0.5 A

Input: 24 VDC



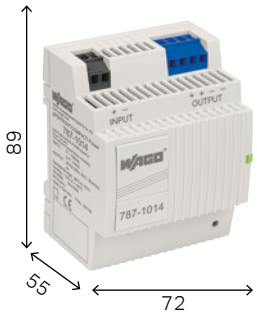
787-1650
12 VDC*
4 A

Input: 48 VDC

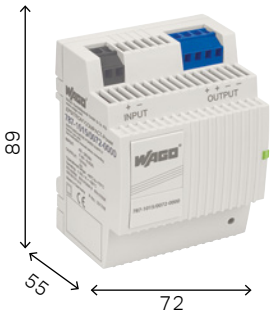


787-2803
24 VDC
0.5 A

Input: 72 VDC

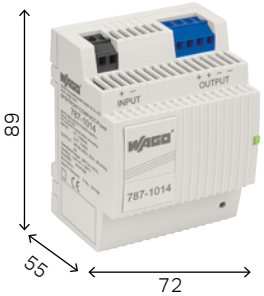


787-1014/0072-0000
24 VDC
2 A



787-1015/0072-0000
12 VDC
4 A

Input: 110 VDC



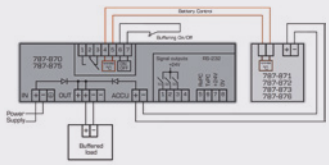
787-1014
24 VDC
2 A

WAGO UNINTERRUPTIBLE POWER SUPPLIES

Reliable Compensation – Even for Longer Power Outages

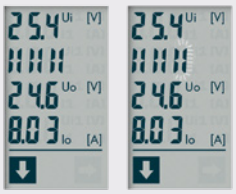
Battery Control Technology

- Allows continuous data exchange between intelligent Battery Modules (787-87x) and a UPS Charger/Controller
- Automatically detects a connected Battery Module (787-87x)
- Maximized battery life via temperature-controlled battery management



Display with Charge Level Indication

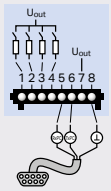
- Indicates actual current and voltage values
- Bar chart displays the charge level of connected batteries
- Integrated fault memory



RS-232 Serial Interface

- Free download* of the Configuration and Visualization Software (759-870)
- Free download of function blocks for visualization on standard PLC systems
- Serial Communication Cable (787-890 or -892) available as an accessory

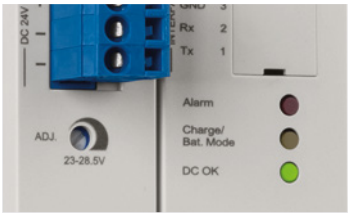
***www.wago.com**



787-890

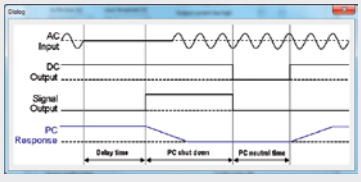
Diagnostics, Monitoring, Configuration

- LEDs display operating status, warnings and errors
- Signal outputs can be processed as a digital signal in a PLC
- Potential-free signal contacts
- Parameter setting via on-unit buttons or rotary switch
- Visualization or configuration via RS-232 serial interface



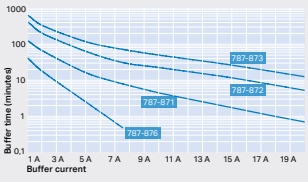
IPC Mode

- Function for the controlled shutdown of controllers and PCs
- Shutdown signal transmitted to controller through UPS
- Adjustable wait time and dead times



Buffer Time

- Based on battery capacity and discharge current
- Several battery modules available with capacities from 0.8–12 Ah (up to 26 Ah upon request)
- Parallel connection of up to three battery modules of the same type increases buffer time – any lead battery modules can be connected (see pages 42/43)



Buffer time (minutes)
Buffered current

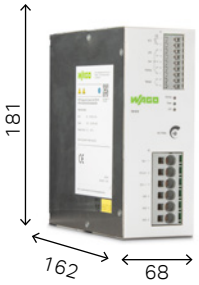
WAGO Uninterruptible Power Supplies (UPS)

Robust Power Supplies – Optionally with Integrated TopBoost

UPS Chargers and Controllers 24 VDC

787-870
10 A

787-875
20 A

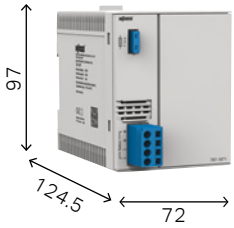


787-915
40 A

Power Supply with Integrated UPS Charger and Controller 24 VDC

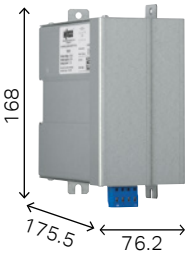
787-1675
5 A

Lead-Acid AGM Battery Modules 24 VDC



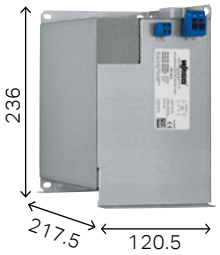
787-1671
0.8 Ah

787-876
1.2 Ah



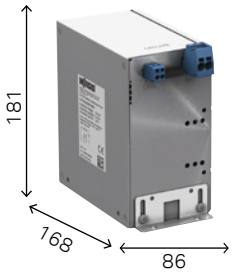
787-871
3.2 Ah

787-872
7 Ah

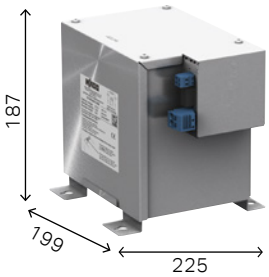


787-873
12 Ah

Pure Lead Battery Modules 24 VDC



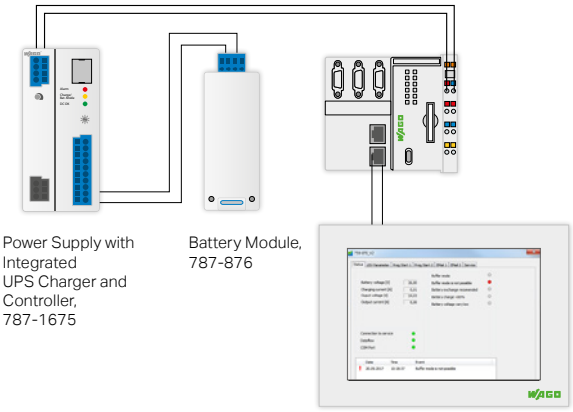
787-878/0000-2500
2.5 Ah



787-878/0001-3000
13 Ah

Solutions

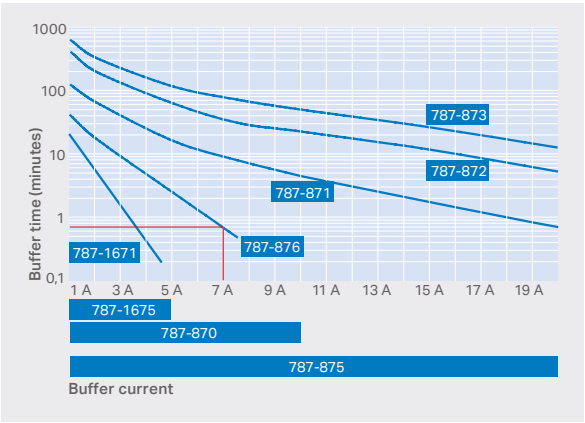
Reliable Supply of Automation Systems – Even During Power Failure



Power Supply with Integrated UPS Charger and Controller, 787-1675

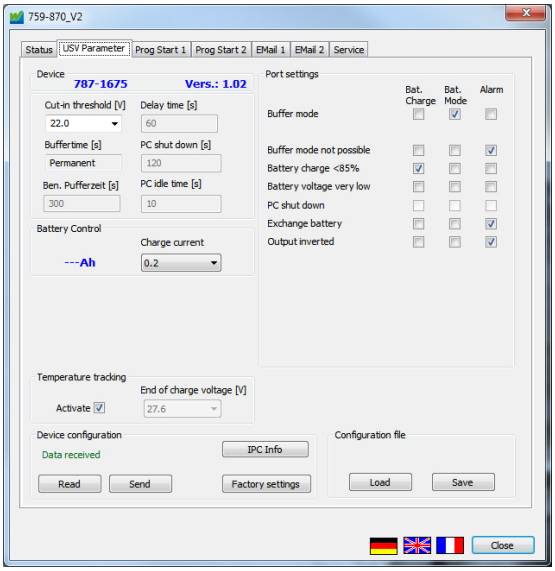
Battery Module, 787-876

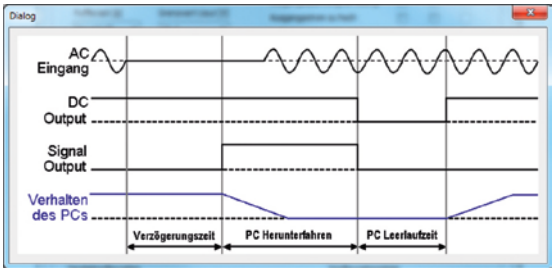
Buffer Time vs. Load Current



Different buffer times/currents can be achieved depending on the battery module selected. The example above shows a 7 A load current provided for approximately 30 seconds by a 787-870 UPS Charger/Controller (10 A) and 787-876 Battery Module.

Controlled System Shutdown via UPS Shutdown Function





WAGO's UPS units can be conveniently configured using the free 759-870 Configuration Software. Values for the input voltage, battery data, output voltage and current, as well as error statuses, are displayed in the software.

In addition to easily connecting to a notebook, the UPS units can be connected to the WAGO I/O System or another control system via RS-232 serial interface. Free function blocks allow easy monitoring of the UPS input and output data.

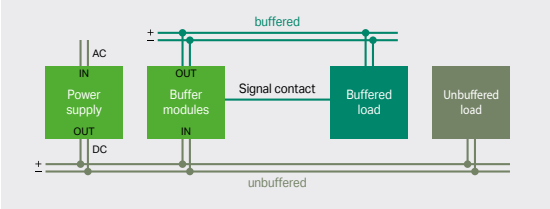
WAGO CAPACITIVE BUFFER MODULES

Short-Term Power Reserves for Power Outages and Load Variations

c UL us LISTED

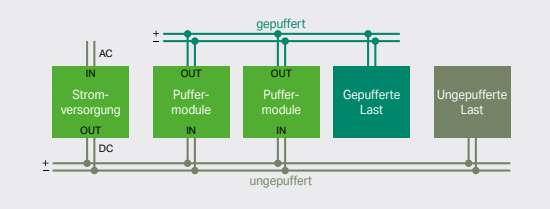
Decoupled Output

- Integrated diode
- Buffered and unbuffered loads can be decoupled.



Parallel Connection Possible

- Multiple buffer modules can be parallel-connected to increase buffer time or load current.



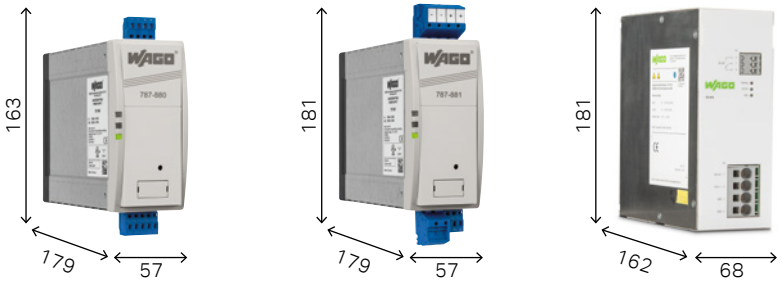
Signaling

- Three LEDs (green/yellow/red) indicate the current operating status.
- A potential-free signal contact indicates the charge level.

Maintenance-Free

- Regular replacement of the modules not necessary thanks to the long life of the integrated gold caps

Capacitive Buffer Modules
24 VDC



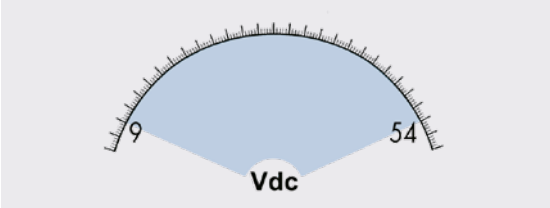
787-880	787-881	787-916
10 A/0.06 ... 7.2 s	20 A/0.17 ... 16.5 s	40 A/0.3 ... 6.6 s

WAGO
REDUNDANCY MODULES

Reliably Increasing
Power Supply Availability

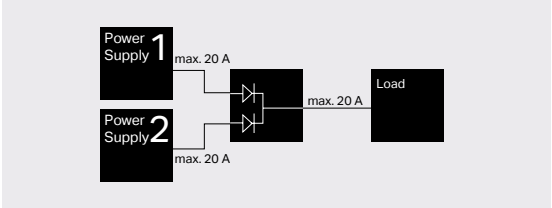
Highly Versatile

- Diode Redundancy Modules (787-783 and -785) can be used for 12 V, 15 V, 24 V, or 48 V power supplies thanks to their wide voltage range.



High Overload Capability

- Power diodes in each input path feature a high overload capacity and are also suitable for power supplies with TopBoost or PowerBoost.
- Output currents up to 76 A thanks to parallel connection of the input paths



Signaling

- Three LEDs indicate the presence of an input or output voltage.
- A potential-free signal contact optionally indicates a power supply failure on the input.
  (only for 787-885 and -886)

Low Power Dissipation

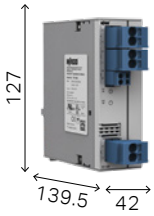
- Low power dissipation via active-switching MOSFETs*
- Includes MOSFET function monitoring*

*only for 787-1685

Redundancy Modules

Input: 2 x 24 VDC / 2 x 20 A

787-885
24 VDC / max. 20/40 A



787-1685* (MOSFET Redundancy Module)
24 VDC / 40 A (max.)

Input: 2 x 48 VDC / 2 x 20 A

787-886
48 VDC / max. 20/40 A

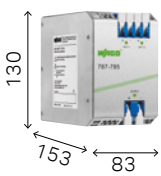
*optionally available as .../0000-0070 with protective coating

Input: 2 x 9 ... 54 VDC / 2 x 12.5 A (max.)

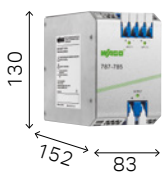
787-783
9 ... 54 VDC /
max. 12.5/25 A

787-783/000-040
9 ... 54 VDC /
max. 12.5 A

Input: 2 x 9 ... 54 VDC / 2 x 40 A (max.)



787-785
9 ... 54 VDC /
max. 40/76 A



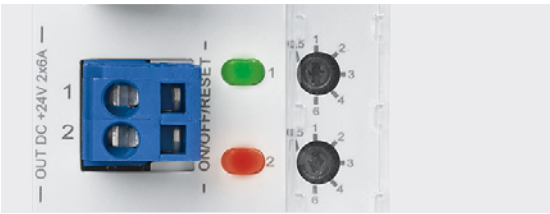
787-785/0000-0040
9 ... 54 VDC /
max. 40/76 A

WAGO ELECTRONIC CIRCUIT BREAKERS

Compact and Precise ECBs for DC Circuits

Intuitive Status Indication

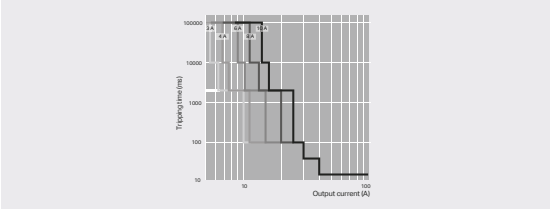
- Each output channel has backlit buttons for switching on/off, as well as status acknowledgement.
- Integrated, multi-color LEDs indicate the operating status of each channel.



Trip Characteristics

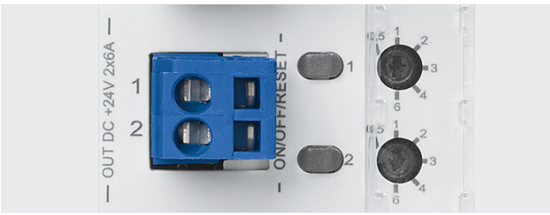
- Reliable and precise disconnection in case of overcurrent or short circuit
- Nominal currents can be set separately for each channel in 1 A increments.
- Tripping time can be configured in defined increments.
- Optional, active short circuit current limitation to 1.7 times the nominal current prevents a voltage drop in other current paths.

*only for 787-166x/xxxx-1xxx



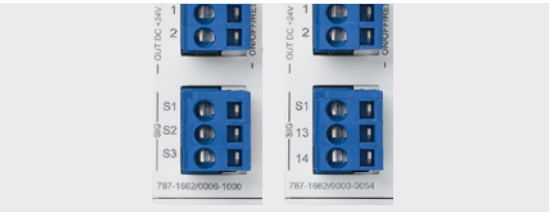
Rotary Switch

- Nominal current can be individually adjusted for each channel.
- The setting is visible, even when no voltage is applied.
- Transparent cover can be sealed and marked.



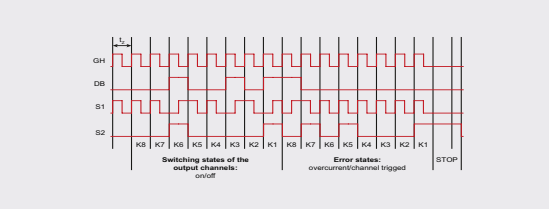
Communication 1.0

- Remote digital input S1 resets all tripped channels.
- Digital output S3 transmits a simple group message indicating whether one of the channels was tripped by an overcurrent.
- Optional isolated signal contact 13/14 as group signal



Communication 2.0

- Remote digital input (S1) switches certain channels on and off via pulse sequence.
- Digital output S2 transmits the current status (on/off/tripped/overcurrent) of each individual channel.
- Optional transmission of input voltage and output/nominal current value for each channel



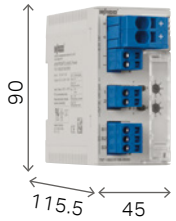
Communication 3.0

- IO-Link interface
- Read both the status and nominal current setting, as well as actual voltage/current values per channel.
- Set the nominal current, as well as switch on/off and reset individual channels.

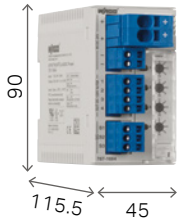
IO-Link

WAGO Electronic Circuit Breakers (ECBs)

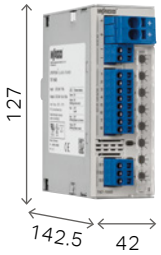
Product Overview



2 channels



4 channels



8 channels

Nominal Voltage [V] DC	Number of Channels	Adjustable Nominal Current	Communica-tion	Active Current Limitation	Special Configuration	Item No.
24	2	2 … 10	M			787-1662
		2 … 10	P		■	787-1662/0000-0054
		3.8 LPS	M	■		787-1662/0004-1000
		0.5 … 6	M	■		787-1662/0006-1000
		1 … 6	M			787-1662/0106-0000
24	4	2 … 10	M			787-1664
		2 … 10	M		■	787-1664/0000-0004
		2 … 10	P		■	787-1664/0000-0054
		1 … 10	I			787-1664/0000-0080
		3.8 LPS	M	■		787-1664/0004-1000
		0.5 … 6	M	■		787-1664/0006-1000
		1 … 6	M			787-1664/0106-0000
		2 … 12	M	■		787-1664/0212-1000
		0.5 … 6	P	■	■	787-1664/0006-1054
24	8	2 … 10	M			787-1668
		2 … 10	M		■	787-1668/0000-0004
		2 … 10	P		■	787-1668/0000-0054
		1 … 10	I			787-1668/0000-0080
		0.5 … 6	M	■		787-1668/0006-1000
		1 … 6	M			787-1668/0106-0000
		0.5 … 6	P	■	■	787-1668/0006-1054
12	4	2 … 10	M			787-1664/0000-0100
48		2 … 10	P			787-1662/0000-0250
	4	2 … 10	M			787-1664/0000-0200
		2 … 10	P			787-1664/0000-0250
	8	2 … 10	M			787-1668/0000-0200
		2 … 10	P			787-1668/0000-0250

S = Signal
P = Potential-free signal
I = IO-Link protocol
M = Manchester protocol

Additional information on ECBs' communication options can be found on pages 44/45.

Model Code Key:

787-xx6a/bbcc-defg

Series

Version

Electronic Circuit Breaker

Number of Channels

Lower Nominal Current (00: 0.5 A; 01: 1 A; 02: 2 A)

Upper Nominal Current (04: 3.8 A; 06: 6 A; 08: 8 A; 12: 12 A)

With (1) or without (0) active current limitation

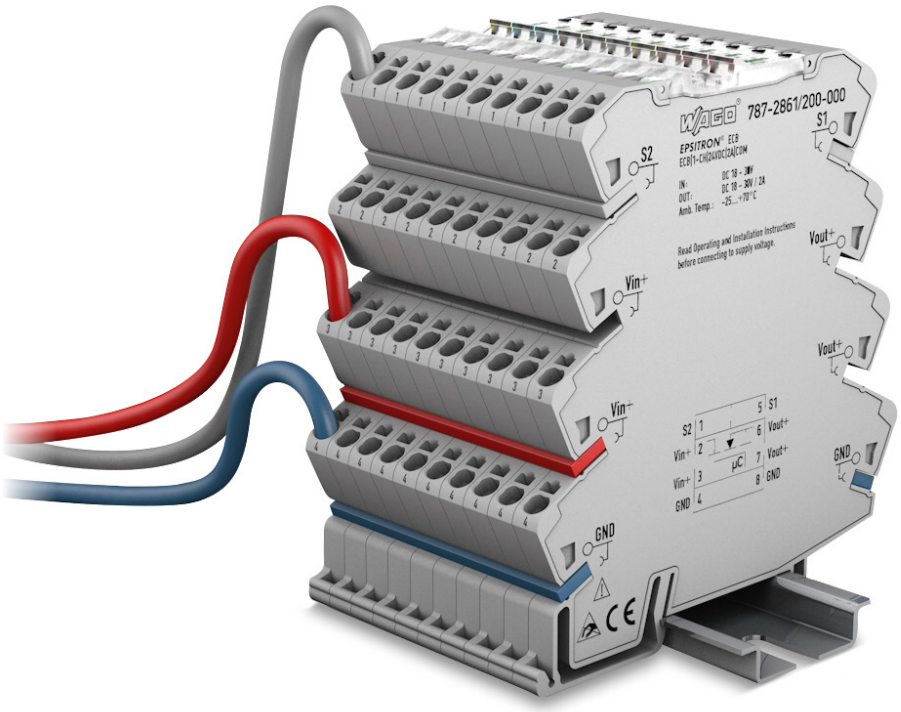
Nominal Voltage (0: 24 VDC; 1: 12 VDC; 2: 48 VDC)

With (5) or without (0) potential-free contact;
(2) Settable single-channel variant;
(5) Communication; (8) IO-Link

Configuration (0: Standard; 4: with group message “tripped” and “switched off;” 5, 6: Customer specification)

WAGO ELECTRONIC CIRCUIT BREAKERS

Compact and Precise ECBs for DC Circuits

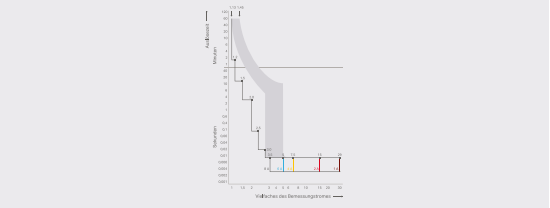


Intuitive Status Indication

- Integrated multi-color LEDs indicate the operating status of each channel.
- Push/slide switch for switching on/off and acknowledgment

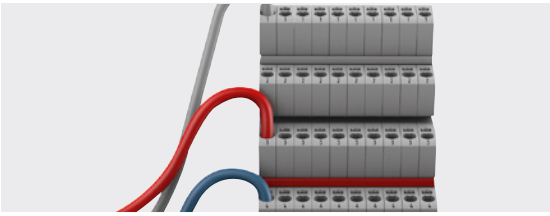
Trip Characteristics

- Reliable, fast and precise disconnection in case of overcurrent or short circuit
- High switch-on capacities > 50,000 µF



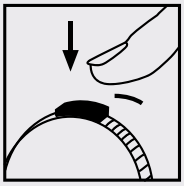
Easy Wiring

- Input potential up to 40 A via double connection
- Signal output can be commoned for up to 30 devices.
- Total reset by commoning the signal inputs

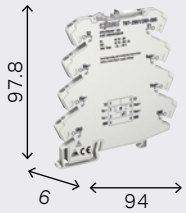


Versatile Configuration Options

- Optional nominal current setting 1 ... 8 A, in 1 A increments
- Seven different configuration options for the digital measurement output



24 VDC – 1 Channel

Electronic Circuit Breaker	Item Number	Nominal Current	Communication	Color Coding
	787-2861/0050-0000	0.5 A	S	
	787-2861/0100-0000	1 A	S	
	787-2861/0200-0000	2 A	S	
	787-2861/0400-0000	4 A	S	
	787-2861/0600-0000	6 A	S	
	787-2861/0800-0000	8 A	S	
	787-2861/0108-0020	1 ... 8 A	S	

Additional information on ECBs' communication options can be found on pages 44/45.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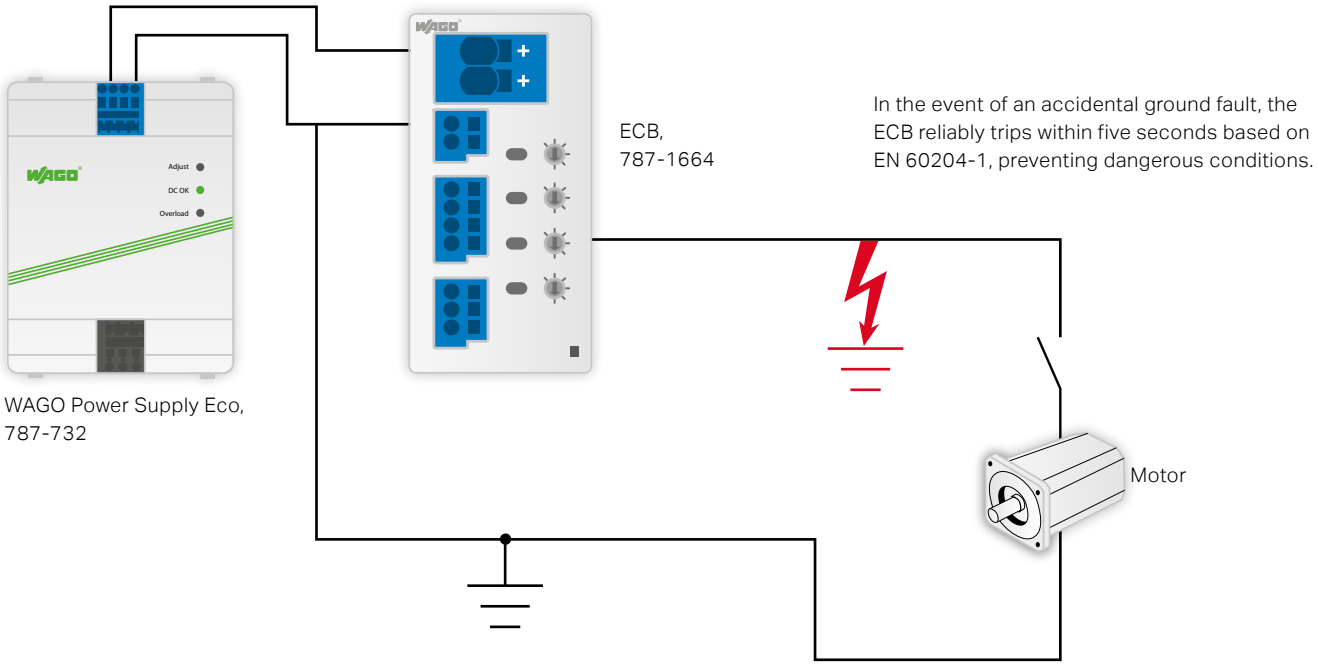
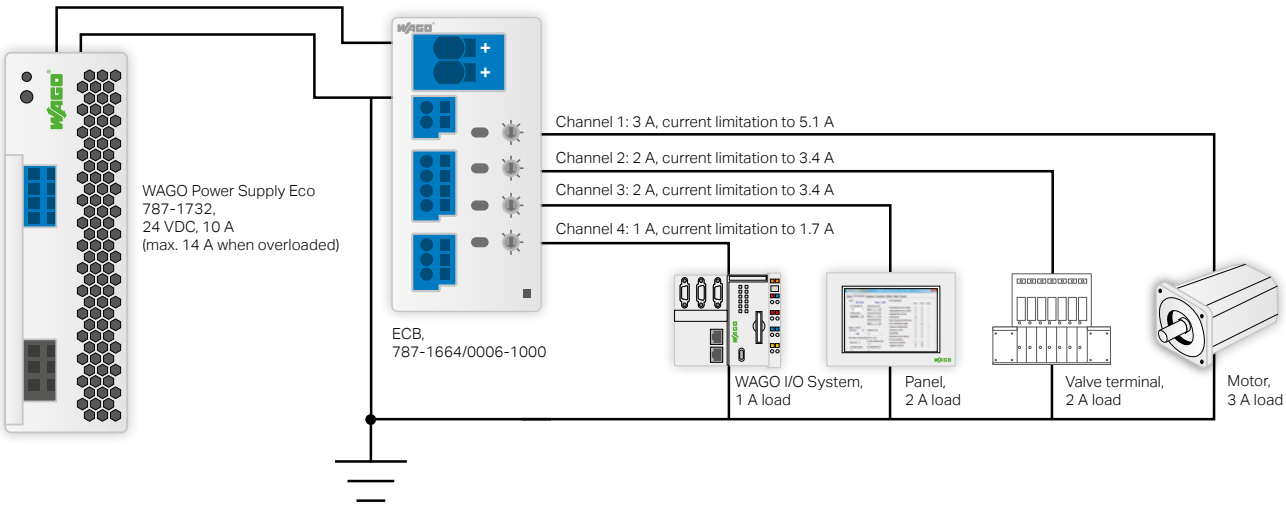
Solutions

ECBs Prevent Accidental Restart



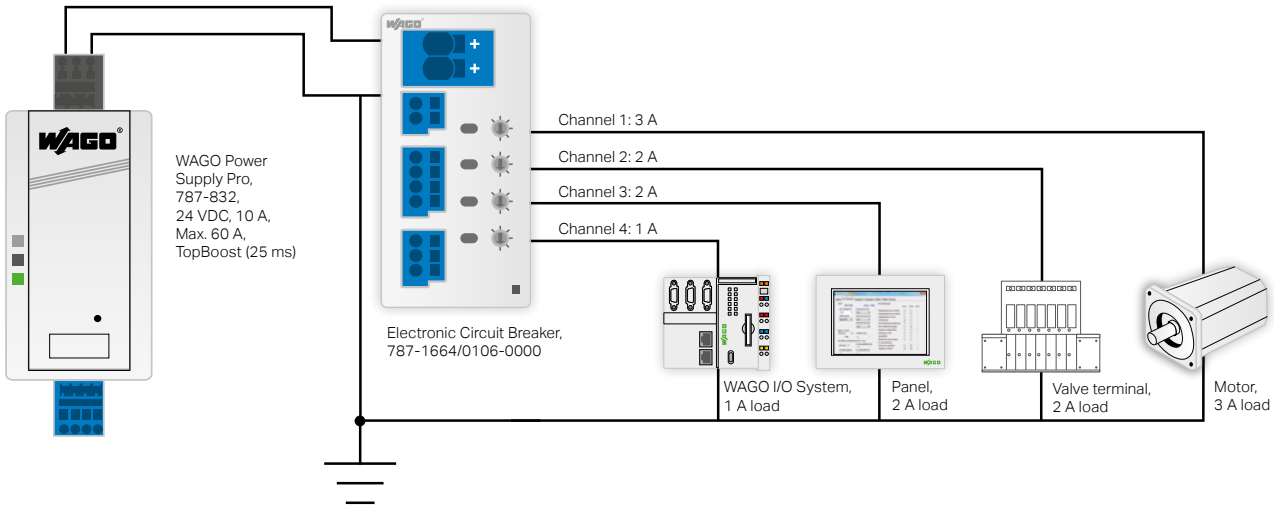
In the event of an accidental ground fault, the ECB reliably trips within five seconds based on EN 60204-1, preventing dangerous conditions.

Power Supply Selection for ECBs with Active Current Limitation



	Channel 1	Channel 2	Channel 3	Channel 4	Σ	Effects
Max. continuous current (no error)	3 A	2 A	2 A	1 A	8 A	• Normal operation
Max. continuous current (error: channel 1)	5.1 A	2 A	2 A	1 A	10.1 A	• Current on channel 1 is limited to 1.7 times the nominal current. • Impedance of the error loop not significant • No voltage drop on channels 2, 3 and 4
Max. continuous current (error: all channels)	5.1 A	3.4 A	3.4 A	1.7 A	13.6 A	• Current per channel is limited to 1.7 times the nominal current. • Impedance of the error loop not significant • Voltage drop on all channels because power supply is overloaded. • Circuit breaker switched off due to undervoltage detection

Power Supply Selection for ECBs without Current Limitation

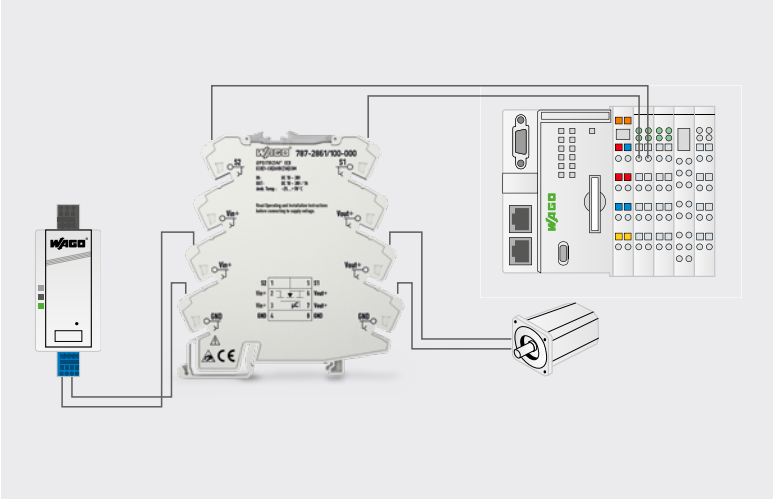


	Channel 1	Channel 2	Channel 3	Channel 4	Σ	Effects
Max. continuous current (no error)	3 A	2 A	2 A	1 A	8 A	• Normal operation
Max. continuous current (error: channel 1)	Max. 55 A available*	2 A	2 A	1 A	60 A (TopBoost)	• Depends on error loop impedance • Short voltage drop possible; trigger time according to characteristic
Max. continuous current (error: all channels)	Current values depend on error loop impedance.				60 A (TopBoost)	• Current is limited by error loop impedance. • Voltage drop on all channels very probable because power supply is overloaded.

*(60 A-2 A-2 A-1 A)

Communication

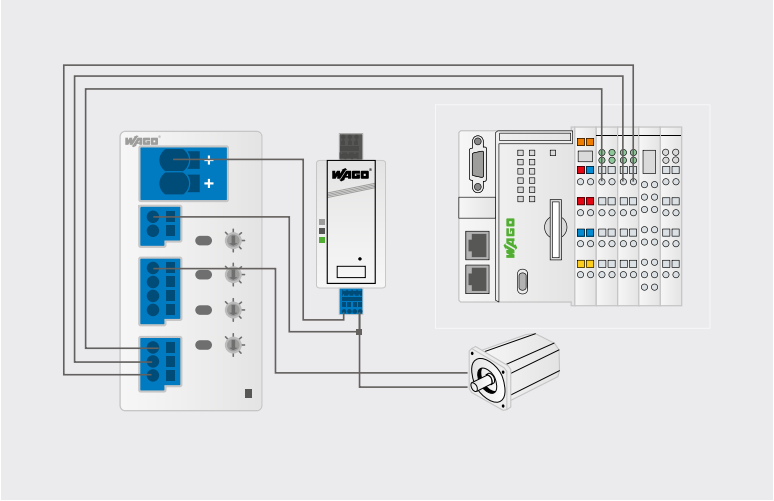
Electronic Circuit Breakers (ECBs)



Communication 1.0
Digital Signaling (S/P)

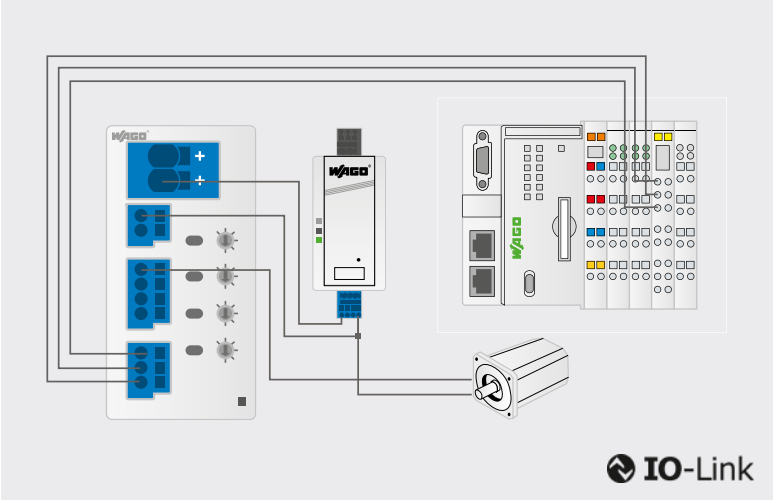
ECBs can be reset via digital control signal. The 787-2861 ECB can also be switched on and off with this control signal.

A digital output signal indicates the status of the channel or the sum of the channels for 787-166x ECBs. For some devices, this signal is potential-free (P).



Communication 2.0
Manchester Protocol (M)

The PLC transmits a coded pulse pattern to control input S1. The ECB synchronizes itself automatically. The current status of all output channels is transmitted back simultaneously via signal output S2. The edge change is interpreted as high or low. For each channel, both status and voltage/current values can be transmitted individually.



Communication 3.0
IO-Link (I)

For each channel, both status and voltage/current values can be transmitted individually via IO-Link COM3 interface. The nominal output current can also be configured via this interface if the device's rotary switch is set accordingly.

The IO-Link cyclic communication is much faster than the Manchester protocol.

S = signal
P = potential-free signal
I = IO-Link protocol
M = Manchester protocol

Function blocks for ECB monitoring that use the WAGO I/O System, or different control systems, are available for free.

WAGO's ECBs have digital inputs and outputs that communicate via the Manchester protocol.

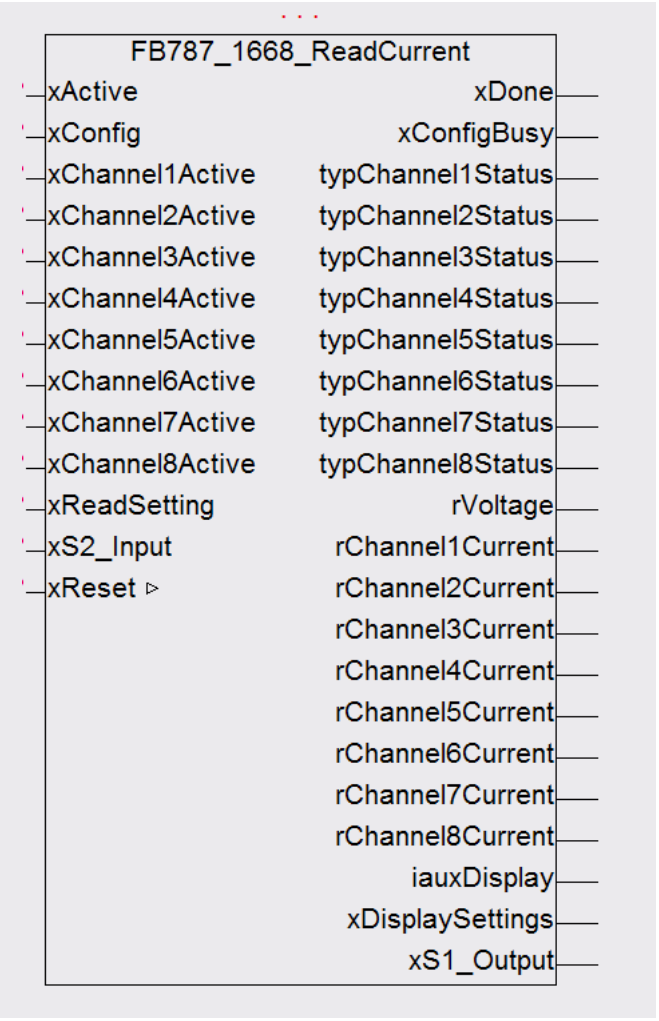
All channels can be diagnosed and switched remotely independently of each other.

Transmission of:

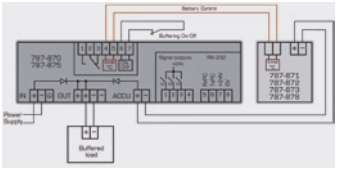
- State per channel
- Current output current (only for 787-166x/xxxx-1xxx and 787-166x/xxxx-xx8x)
- Nominal current setting per channel
- Input voltage
- Power on/off and reset per channel
- Nominal current setting (only for 787-166x/xxxx-xx8x)

Available Function Blocks:

- CODESYS
- Siemens S7/TIA-Portal
- Schneider
- Rockwell
- Mitsubishi (pending)



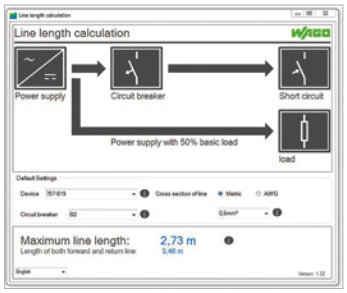
Glossary



Battery Control

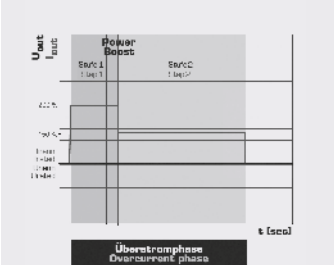
The battery control technology allows data exchange between intelligent battery modules and a UPS charger/controller.

In addition to temperature values, information on type and service life of the connected battery modules is also transmitted to the UPS charger and controller.



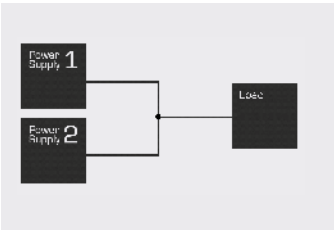
TopBoost

In order for high-speed magnetic circuit breakers to trip, currents that are significantly higher than the rated current are required for 10–12 milliseconds. Both Pro and Pro 2 Power Supplies deliver a multiple of their nominal current for a short time – the faulty circuit can be shut off within milliseconds during a short circuit. This increases uptime of the entire power supply while fulfilling EN 60204-1 requirements regarding grounding in control circuits. Using the free line length calculator available from www.wago.com/epsitron, the designer or planner can check in advance the layout of the line protection based on cable lengths, cable cross-section, characteristics of the protective device and the type of power supply.



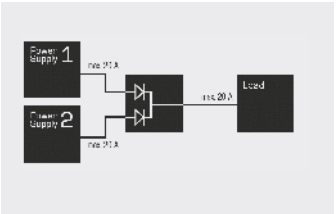
PowerBoost

During start-up or switching of capacitive loads (valve clusters, motors, etc.), there is an increased need for current. However, using conventional power supplies used to always require using a much larger power supply to avoid switching to overload operation or short circuit limitation.
For these cases, WAGO's Pro and Pro 2 Power Supplies offer power reserves and provide significantly higher output current above the nominal current for a few seconds. The availability of the higher output power for a short time ensures reliable operation and eliminates the expensive oversizing of power supplies. This also saves space in the control cabinet and reduces power losses while ensuring optimum efficiency.



Parallel Connection of Power Supplies – for Extra Power

Most WAGO Power Supplies can be connected in parallel on the output side to provide extra power. To achieve load distribution that is as uniform as possible for parallel-connected devices, the output voltage without load must be set as precisely as possible to the same value. Star wiring using external rail-mount terminal blocks is required to ensure that the levels for all power supplies are as similar as possible to the load. Do not connect the power supplies directly via their female connectors. Pro and Pro 2 Power Supplies with differing output power levels may also be connected in parallel. Otherwise, only connect power supplies of the same type in parallel.



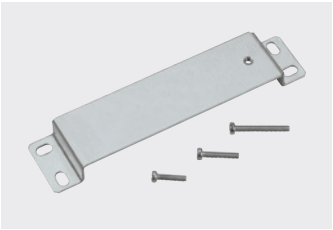
Parallel Connection of Power Supplies – for Increased Power Availability

Parallel connection using decoupling diodes in the respective current path can increase both system uptime and reliability. In normal operation, both units supply the load. If a power supply fails, the intact power supply becomes responsible for completely supplying the load. Of course, the nominal current of each power supply must be higher than the maximum load current that occurs. The redundancy modules feature powerful decoupling diodes that reliably prevent reverse currents. The decoupling diodes ensure 100% redundancy, i.e., even for the rare case of an internal secondary short circuit in the power supply.

Accessories

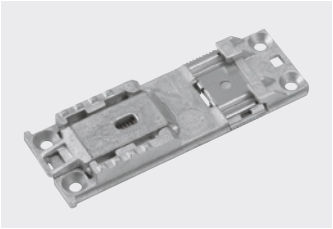
RS-232 Communication Cable (787-890); 1.8 m long
This communication cable is used for configuration and visualization via PC, notebook or PLC. It is suitable for all 787-8xx Series devices equipped with a serial interface.

Connectors: 8-pole female connector (733-108) with strain relief (787-8xx module side) and 9-pole D-sub female connector (PC/PLC side)
RS-232 Communication Cable (787-892); 1.8 m long (not pictured)
Similar to 787-890, but carries a 4-pole female connector (734-104) compatible with 787-1675



Wall-Mount Adapter (787-895); for screw mounting 787-8xx devices on a mounting plate or wall without DIN-35 rail

This wall-mount adapter replaces the rail support of the 787-8xx device. The adapter is secured to the 787-8xx device via provided screws.



DIN-Rail Adapter (787-897); made of zinc die-cast; secures 787-8xx devices to a DIN-35 rail
Mounting this adapter to the device is performed by pressing the adapter into the guide slots of the cooling element via operating tool.

An extremely secure fit ensures reliable operation – even in environments subject to permanent vibrations.
The adapter can also be fastened via four screws (not included) and thus serve as a universal DIN-rail adapter.

Operating Tools; with a partially insulated shaft; ideal for operating terminal blocks
210-719: Operating Tool; with a partially insulated shaft; Type 1; (2.5 x 0.4) mm blade; suitable for 733 and 734 Series Female Connectors
210-720: Operating Tool; with a partially insulated shaft; Type 2; (3.5 x 0.5) mm blade; suitable for 231, 236 and 721 Series Female Connectors

210-721: Operating Tool; with a partially insulated shaft; Type 3; (5.5 x 0.8) mm blade; suitable for 831 Series Female Connectors
210-769: Phillips PH0 Operating Tool; Type 1; PH0 blade; for setting the voltage of the WAGO Power Supplies Compact (787-10xx 787-17xx, 787-7xx)

USB Configuration Cable (750-923); 2.5 m long
This USB configuration cable is used for configuring the Pro 2 Power Supply from a PC with WAGO's G2 Interface Configuration Software, but can also be used for configuring WAGO's

Signal Conditioners or the WAGO I/O System 750/753.
Connection configuration: 4-pole male connector on USB plug (type A), galvanic isolation

Marking Strip (2009-110); on reel; not stretchable; plain; snap-on type; white
50 m long, 11 mm wide; can be marked, e.g., with WAGO Smart Printer thermal transfer printer and WAGO Smart Designer marking software; suitable for all WAGO Pro 2 Power Supplies, WAGO Classic Power Supplies and

ECBs that are provided with a market slot. Also suitable for WAGO TOPJOB® S Rail-Mount Terminal Blocks and 285 Series on type A USB plug; galvanic isolation

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