

Industrial Motors
Commercial &
Appliance Motors
**Automation &
Systems**
Energy
Transmission &
Distribution
Coatings

RTDW – Microprocessor-Based Digital Rectifier

Guaranteed safety
and control



Driving efficiency and sustainability





Guaranteed safety and control

The RTDW Three-Phase Rectifier is a **robust DC power supply solution**, designed to ensure **safety, stability, and high availability in industrial processes and mission-critical applications**. Featuring a fully digital architecture and double-conversion topology, it provides precise voltage control, continuous supervision, and advanced protection for all system elements.

Its key differentiator is the **microcontroller-based technology**, enabling features such as parallel operation with redundancy, thermal compensation, LVD protection, and intelligent diagnostics via HMI and Modbus-RTU. Ideal for substations, telecommunications, automation, critical infrastructure, and continuous processes, the RTDW ensures reliable power wherever uninterrupted operation is essential.

Key benefits

- Continuous and stable power supply, with fully digital control
- Advanced protection: LVD, dedicated monitoring and ground fault detection
- High reliability with integrated parallel operation and redundancy
- Automatic thermal management, extending battery service life
- Intuitive monitoring through graphical HMI and Modbus-RTU communication
- Efficient battery operation with automatic and manual charging modes
- Simplified installation and easy maintenance with dedicated modules and organized access

Features

- Fully digital control with double conversion
- UCQ, UDQ, or direct output operation
- Integrated LVD protection
- Dedicated voltage monitoring
- Modbus-RTU communication
- Graphical HMI with intuitive navigation
- Parallel operation with redundancy
- Automatic battery charging modes



Typical application



Substations
and electrical
systems



Industrial
automation



Continuous
processes



Telecommunications



Control centers
and critical
infrastructure



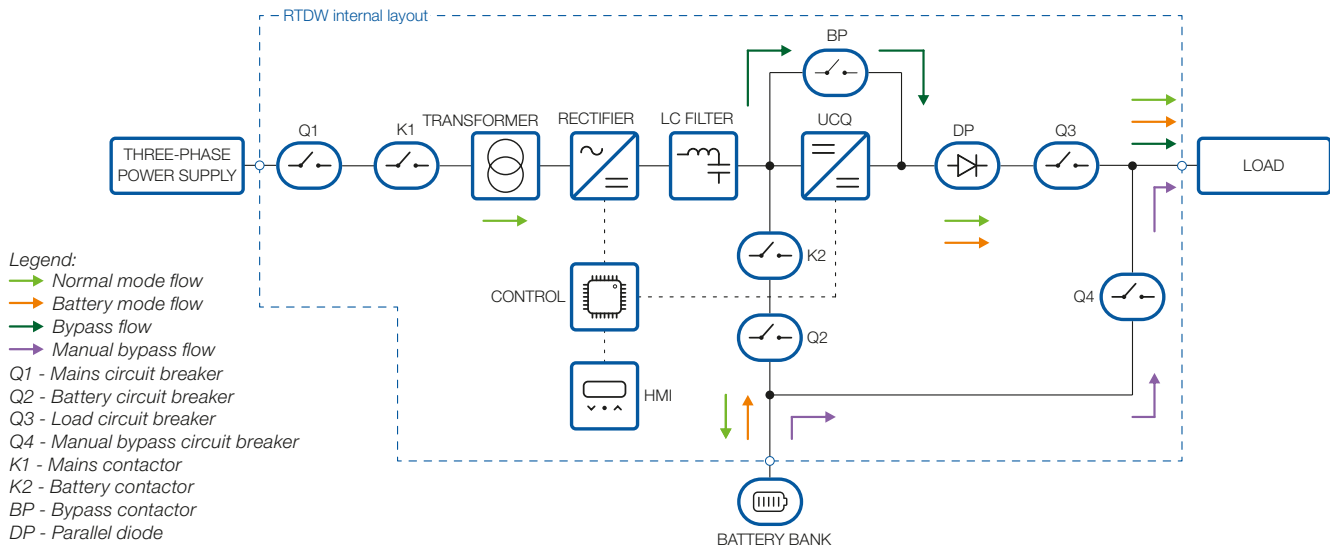
Auxiliary power
supply systems in
industrial plants



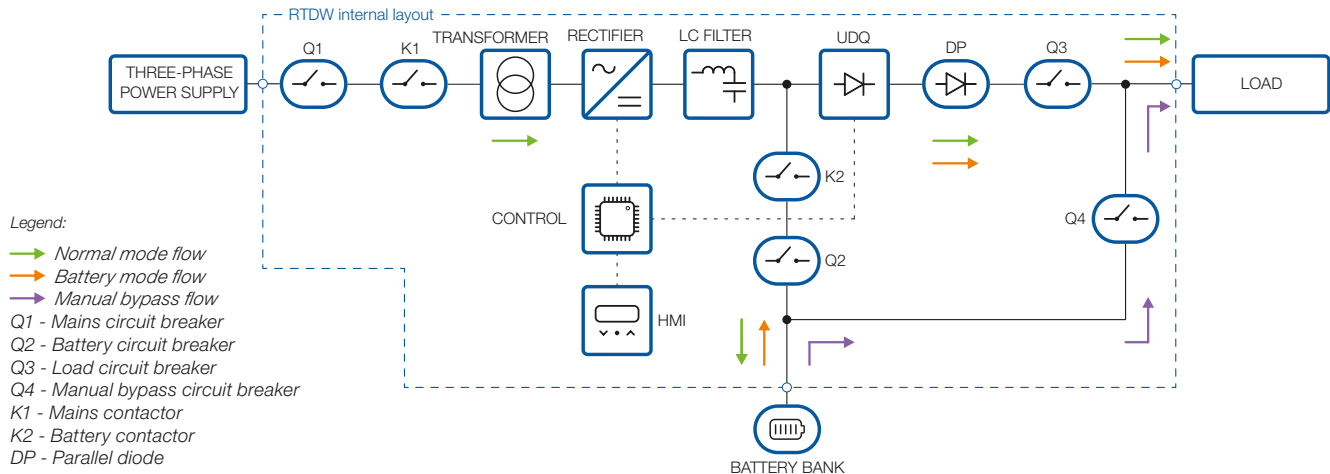
Equipment
requiring stable
DC power

Block diagram

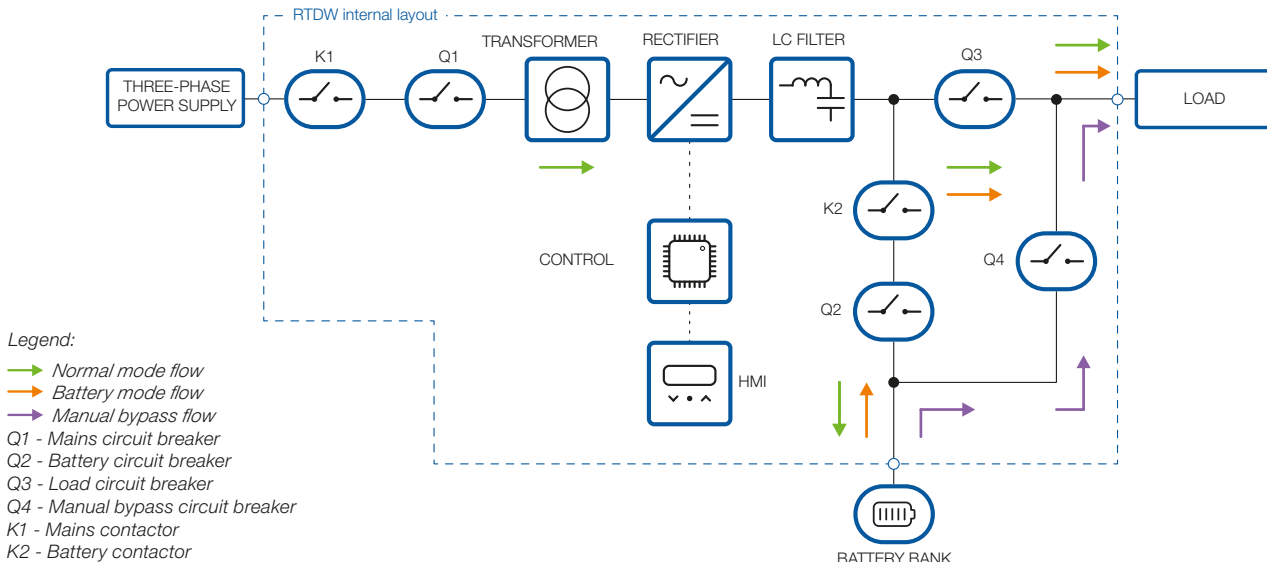
General rectifier schematic – UCQ model



General rectifier schematic – UDAQ model



General rectifier schematic – direct output model



Highlights

Block diagram

- Safety: multiple protection levels
- Reliability: redundant operation
- Efficiency: automatic adjustment to load conditions
- Intelligence: dedicated reading and supervision
- Availability: designed for critical environments

Available models

The RTDW is available in different configurations to meet small-, medium-, and large-scale application requirements. The product line includes voltage and current options that allow selection of the ideal model according to system consumption, load type, and battery bank configuration.

Input voltages

- 220 V_{AC}
- 380 V_{AC}
- 440 V_{AC}

Output voltage

- 125 V_{DC}

Certification



Rated currents

- 25 A
- 35 A
- 50 A
- 75 A
- 100 A
- 125 A
- 150 A
- 200 A
- 300 A
- 400 A
- 500 A

Operating modes

- Automatic (default): keeps the battery bank in float mode and performs automatic recharge cycles whenever a discharge is detected
- Manual float: constant voltage defined by the user
- Manual recharge: complete battery bank recharge cycle
- Manual equalization: controlled equalization according to battery specifications
- Fast charge: accelerated recharge with adjustable current limit

Safety and protection

- LVD (battery bank low voltage disconnection)
- Overvoltage/undervoltage protection
- Overcurrent protection
- Positive and negative ground fault detection
- Thermal protection for battery, rectifier, UCQ, and panel
- Redundant supervisory system with automatic bypass activation

Technical specifications

Product data					
Parameter	25 A and 35 A	50 A	75 A and 100 A	125 A to 200 A	300 A to 500 A
Supply voltage ¹⁾	220 / 380 / 440 V _{AC} ±10% ²⁾				
Frequency	60 Hz or 50 Hz ±5%				
Power supply system	Three-phase				
Current imbalance	< 5%				
Efficiency ³⁾	≥85%	≥88%	≥90%		
Filter	Harmonic filter ⁴⁾				
Input current	It can be calculated using the following equation:				$\frac{V_{model} \cdot I_{model}}{FP \cdot \eta \cdot \sqrt{3} \cdot V_{mains}}$
THD (current)	< 40% at 100% of In (< 20% in the 12-pulse model ²⁾)				
Protection / disconnection	Circuit breaker / contactor				
Insulation	> 5 MΩ				
Power factor	≥85% (standard) or ≥92% ²⁾				
Short-circuit capacity	50 kA at 220/380/440 V				
Operating conditions					
Operating duty	Continuous				
Temperature range	0 to 40 °C				
Relative humidity	0 to 95% non-condensing				
Altitude	Up to 1000 m above sea level ⁵⁾				
Ventilation	Forced with fan ⁶⁾				
	Natural ²⁾				
Noise level	65 dBA	70 dBA		75 dBA	65 dBA
Ground fault detection	5 to 75 mA				
Protections					
Circuit breakers	AC mains, battery, load, manual bypass, power supplies, and panel ventilation				
Contactor (standard)	AC mains, pre-charge and battery				
Current limits ⁷⁾	Rectifier output, load, and battery bank ⁸⁾				
Others	Hardware overcurrent and overvoltage protection for the UCQ and rectifier output				
Remote interface					
Standard	USB communication with Modbus-RTU protocol				
	RS485 interface with Modbus-RTU protocol				
	8 normally dry contacts, NO and NC				
	Rating: 10 A / 277 V _{AC} or 7 A / 30 V _{DC}				
	Connection: maximum gauge 2.5 mm²				
Optional	8 additional dry contacts (same as above)				
Frame					
Panel	Self-supporting with floor-mounting structure and lifting eyes				
Painting	Epoxy resin with electrostatic powder application				
Color	RAL 7035				
Protection rating	IP42				
Metal sheet thickness	12 gauge (2.65 mm) base				
	14 gauge (1.90 mm) frame, structure, frame support, side panels, front plate, and mounting plate				
	16 gauge (1.50 mm) frame, side panels, top cover, door vertical reinforcement, and cable tie bracket				
	20 gauge (0.90 mm) rear cover and bottom plate				

Notes: 1) Rectifier in float mode.

2) Other configurations available on request.

3) At rated current.

4) Component responsible for filtering harmonics generated by the RTDW.

5) From 1,000 m to 4,000 m (3,300 ft to 13,200 ft), apply a 1% derating in load current for every 100 m above 1,000 m altitude.

6) For fans installed inside the modules, a ventilation failure alarm will be triggered if the speed falls below 3,000 rpm.

7) When bypass is activated, only the battery and circuit breaker limitations remain enabled.

8) Load current limiting is only available for equipment with UCQ.

Dimensions and weights



Dimensions and current	H (mm)	W (mm)	D (mm)	Weight (kg)	Thermal dissipation (W)
25 A	1,718	600	650	240	551
35 A	1,718	600	650	240	772
50 A	2,118	600	650	240	1,103
75 A	2,118	600	650	320	1,654
100 A	2,118	600	650	320	2,206
125 A	2,118	800	650	450	2,757
150 A	2,118	800	650	480	3,309
200 A	2,118	800	650	500	4,412
300 A	2,118	1,000	850	640	6,618
400 A	2,561	1,200	850	870	8,824
500 A	2,561	1,200	850	930	11,029

Note: the specified dimensions, weight, and heat dissipation values apply only to standard models with UCQ. For models with UDQ, these values tend to be higher, as specified in the project documentation.

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Global presence

is essential, as much
as understanding
your needs.

Global Presence

With more than 49,000 employees worldwide, WEG is one of the largest electric motors, electronic equipment and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our **RTDW – Microprocessor-Based Digital Rectifier** are the right choice for your application and business, assuring safety, efficiency and reliability.



Availability is to have a global support network



Partnership is to create solutions that suits your needs



Competitive edge is to unite technology and innovation



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The values shown are subject to change without prior notice.
The information contained is reference values.