centiel

continuous power availability

CumulusPower™

Taking **power availability**
to the next level ...

The company and People

CENTIEL is a Swiss-based technology innovation company with a highly experienced team of designers, who have developed the first 3 phase-modular fault-tolerant UPS-system. With our passion and commitment for innovative design, product quality and customer care, we are keeping in pace with the growing availability challenges in data centers and other mission-critical applications.

To increase our competitive advantage we cultivate an open minded and direct managerial style, a lean organizational structure, and quick decision making processes. The greatest respect for each other, a strong feeling of solidarity among our workforce and our management enable us to quickly transform new ideas into the most advanced products and solutions.

We are customer oriented and our goal is to exceed our customer's expectations during the entire life-cycle of our power protection systems.
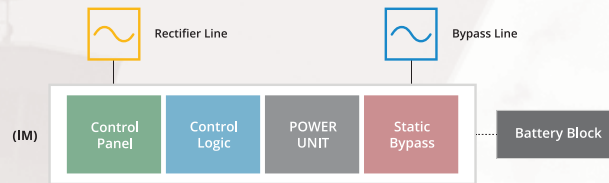
The Technology

Thanks to our extensive failure analysis research and experience with data centers and other critical environments, our power protection solutions have reached the highest levels of availability to reduce downtime risk, costly errors, and increase energy efficiency. To eliminate risks that may cause computer downtime of business-critical applications, CENTIEL has developed a new series of modular fault-tolerant 3phase

UPS-systems called CumulusPower™ (CP). Unlike traditional multi-module systems, the CumulusPower™ technology combines a unique Intelligent Module Technology (IMT), with a fault-tolerant parallel architecture, called Distributed Active-Redundant Architecture (DARA), thereby fulfilling the highest availability and reliability requirements.

Intelligent Module (IM)

Thanks to our long experience in module-design, the CumulusPower™ modules are equipped with all hardware (power circuits) and all software (intelligence and monitoring) functions, making them fully independent and capable of safely isolating from the multi-module system whenever an internal fault occurs.

In that case the rest of the modules will continue to provide protected power to the critical load without interruptions. The integration of hardware and software in each module allowed us to eliminate all risky single points of failure that could compromise the power of the critical application.

Distributed Active-Redundant Architecture (DARA)

The Distributed Active-Redundant Architecture of the CumulusPower™ product line was designed to respond to the highest availability requirements, through the implementation of the "democratic" majority load transfer decision-making in an event of a critical failure, and a correct management of the load sharing to avoid crosscurrents between the modules. The communication between the logic circuits of the modules is accomplished by means of a fault-tolerant communication BUS.

In an event of a critical failure, every module will decide, by means of its logic circuit, whether the load should remain on the inverter or be transferred to the bypass. The load transfer will be conducted depending on the decision made by the majority of the modules. In order to avoid crosscurrents between the modules, a master-slave load sharing technique is adopted. The first module is the master, which provides the load value to be shared by the rest of the modules (slaves). If the master fails, the next module will automatically become the leading master.
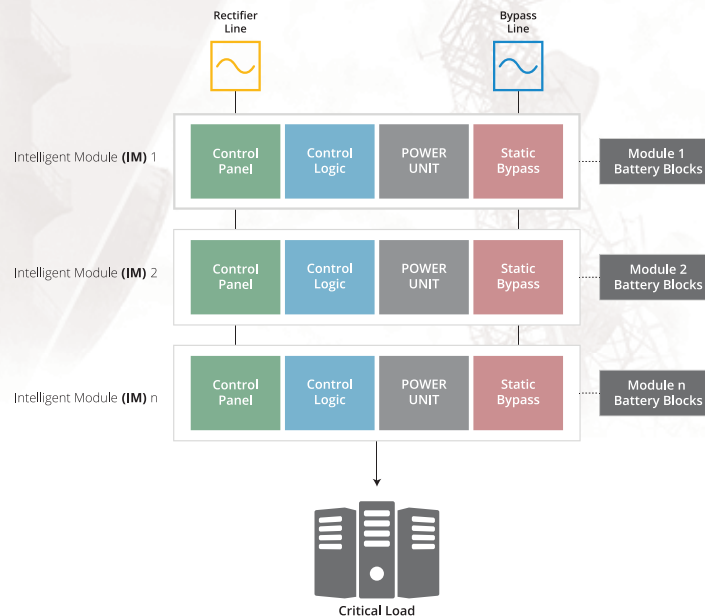
⌐ Products

Centiel's product line CumulusPower™ is the latest generation of fault-tolerant modular UPS solutions. CumulusPower™ intelligent modules can be connected in parallel configurations to provide redundancy or to increase the system's total capacity. The CumulusPower™ comes in three module sizes IM10 (10kW) , IM20 (20kW) and IM50 (50kW). The IM10 and IM20 modules are of the same physical size and can be fitted in four different Racks CP40-IB, CP-80-IB, CP120-EB and CP200EB (IB=Internal Battery and EB=External Battery), whereas the module IM50 can be fitted in a CP250-EB Rack. In addition up to 6 x Racks CP250-EB can operate in parallel configuration to build a system with a maximum power of 1.5 MVA.

INTELLIGENT MODULE
IM10-20

INTELLIGENT MODULE
IM50

RACK
CP200

RACK
CP250

Racks	
The **IM10/IM20** racks come in 4 sizes.	The **IM50** racks come in 1 size.
CP40-IB: Up to 2 modules and internal battery.	**CP250-EB** can accommodate up to 5 x IM50 (50kW) modules (vertical scaling) to build a redundant configuration 4+1 with a maximum power of 250kW.
CP80-IB: Up to 4 modules and internal battery.	
CP120-EB: Up to 6 modules and external battery.	In addition, the Rack **CP250-EB** can be extended to 1.5 MW by horizontally paralleling up to 6 racks.
CP200-EB: Up to 10 modules, to build a parallel redundant configuration 9+1, with a maximum power of 200kW per rack.	

Have special requirements or application?
Let us know, we'll fit your design.

Features and Benefits

Availability is the major concern of data center managers, followed by cost of ownership and serviceability. CumulusPower™ was designed to address precisely these concerns. The long experience of the technical staff in the design of fault-tolerant modular 3-phase

UPS-solutions is the best guarantee of reaching highest availability levels at lowest cost. In the following table we have summarized some of the outstanding features and benefits of the CumulusPower™ product line.

Continuous Power Availability

Fault-tolerant, Distributed Active Redundant Architecture (DARA) without single points of failure, thanks to:

- ⊘ Fully independent and self-isolating intelligent modules, containing individual power unit, intelligence (CPU and communication logic), static bypass, control display and battery. In the unlikely event of failure event, modules can be swapped without transferring the load to raw mains
- ⊘ Redundant communication BUS between intelligent modules
- ⊘ Majority decision-making of all individual module-logics for the load transfer in case of critical events
- ⊘ Cyclic battery self-test during normal operation without disconnection of rectifier input voltage
- ⊘ Fully redundant static bypass
- ⊘ Designed to minimize human error

Total Cost of Ownership

- ⊘ Low losses: High double conversion efficiency, up to 96.7%
- ⊘ Small footprint: High power density 412kW/m^2
- ⊘ Input THD < 3%
- ⊘ Unity power factor (kVA = kW)
- ⊘ Pay as you grow (vertical and horizontal scalability)

Serviceability and safety

Simple fault clearance with tool-less replaceable, hot-swappable modules (low MTTR):

- ⊘ Fully independent and self-isolating intelligent modules with all protections against human error
- ⊘ Ease of troubleshooting with iPhone or Android
- ⊘ 24/7 remote monitoring
- ⊘ Back-feed protection for service engineering safety embedded as standard
- ⊘ Every module is equipped with isolating switchgear

Technical Specifications

Model	CP040-IB	CP080-IB	CP120-EB	CP200-EB	CP250-EB
General Data					
System power range [kVA/kW]	10-200				50-1,500
Nominal power per module [kVA/kW]	10/20				50
Nominal power per frame [kVA/kW]	40	80	120	200	250
Number of modules	1-2	1-4	1-6	1-10	1-30
Topology/Technology	Online double conversion/DARA (Distributed Active-redundant Architecture)				
Input					
Mains — Input Wiring	3Ph+N+PE				
Mains — Rated Voltage	380/400/415Vac				
Mains — Voltage Range	For loads <100% (−20%, +15%), <80% (−26%, +15%), <60% (−35%, +15%)				
Mains — Input Frequency	40-70 Hz				
Mains — Total Harmonic Distortion	THDi<3% for linear load, THDi<5% for nonlinear load				
Mains — Input Power Factor	0.99				
Bypass — Input Wiring	3Ph+N+PE				
Bypass — Rated Voltage	380/400/415 Vac				
Bypass — Input Frequency	50/60±6 Hz				
Battery — Rated Voltage	360-480 Vdc (the number of batteries can be selected)				
Battery — Internal/External	Internal		External		External
Battery — Type	Lead-Acid/NiCad				
Battery — Blocks [LA]/Cells[NicAd]	30-50/210				
Battery — Charger (Amp/module)	20				40
Output					
Inverter — Output Wiring	3Ph+N+PE				
Inverter — Voltage	380/400/415 Vac±1%				
Inverter — Frequency	Tracking the bypass input (Online Mode); 50/60 Hz±0.1% (Battery Mode)				
Inverter — Waveform	Sine wave (THDv＜2% for linear load; THDv<3% for non-linear load)				
Inverter — Output Power Factor	1				
Inverter — **Efficiency** (module/frame)	**97% / 96.7%**				
Inverter — Overload Capacity	Inverter: 110% overload for 60 min; 125% overload for 10 min; 150% overload for 1 min Bypass: 135% overload for long term; <1000% overload for 100ms				
Inverter — Short circuit capability	3 x IN				
Bypass — **Efficiency**	**99.1%**				
Bypass — Short circuit capability	TBC				
Environment					
Operating Temperature	0-40ºC (No power derating)				
Storage Temperature	-40-70ºC				
Relative Humidity	0%-95% (No condensing)				
Maximum Operating Altitude	1000 m. Above 1000 m, derating 1% for each additional 100 m				
Audible Noise	＜65dB				
Others					
Height×Width×Depth(mm)	1,980x510x795	1,980x740x795	1,980x510x795	1,980x740x795	1,980x740x820
Weight	TBC				
Certifications	EN/IEC 62040-1; EN/IEC 62040-2; EN/IEC 62040-3; CE; RoHS				
Communications	*Basic:* RS485, RS232, 2 Dry Input. *Pro:* Basic + Dry contacts, Ethernet, Bluetooth				

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