



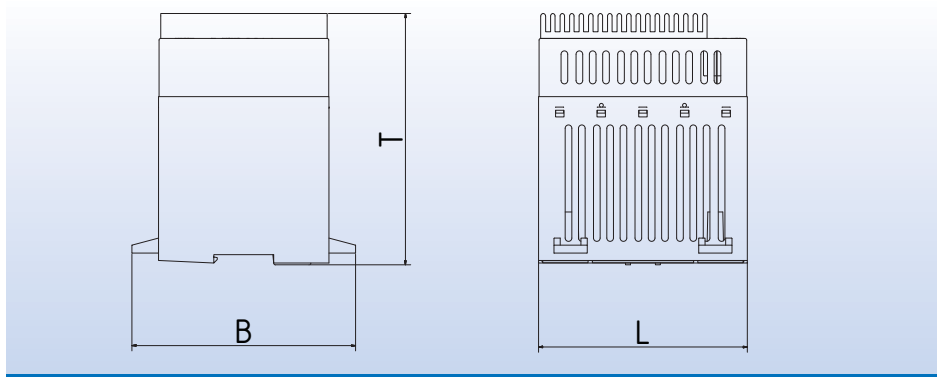
UNINTERRUPTIBLE POWER SUPPLIES

46 | RDCUSV D

47 | RIPCUSV

48 | RDCUSV C

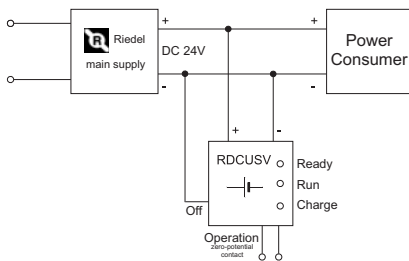
49 | AC frequency converter / AC UPS



DC UPS modules



Fig. RDCUSV 10D



General information:

We have to live with problems in today's electricity networks. They can last as long as 10% of total operating time. Voltage fluctuations and dips occur; in rarer cases even total failures occur, e.g. due to lightning strikes or errors in maintenance work. The corresponding UPS system provides protection from such problems.

In accordance with EN 61131-2 / part 2 (limits for nominal DC voltage at 24VDC) the operating voltage for electronic controls is currently 24VDC (20.4VDC - 28.8VDC eff.). Power supplies must be designed accordingly.

In combination with our DC voltage power supplies we offer DC UPS modules for this. They can be easily connected in parallel on the secondary side and ensure safe protection of your controls and easy handling.

The patented technology of our DC UPS modules eliminates the necessity for switching controllers such as boost converters. EMC problems hence do not arise.

All Riedel DC-USV modules have a compact construction with rechargeable battery inside the enclosure and are easy to install.

The DC UPS modules can be snapped on to DIN EN 60715 support rails. The module is available in versions 24VDC 3A 30sec, 24VDC 10A 30sec, 24VDC 20A 30sec and 24VDC 40A 30sec. Additional versions are available upon request.

They are connected in parallel to the DC voltage output of a 24VDC power supply unit (see block circuit diagram) and the terminal 'OFF' connected to the minus terminal for use.

The 'OFF' connection must be opened during switch-off of the system via the NO auxiliary contact of the main switch for deactivating the UPS module!

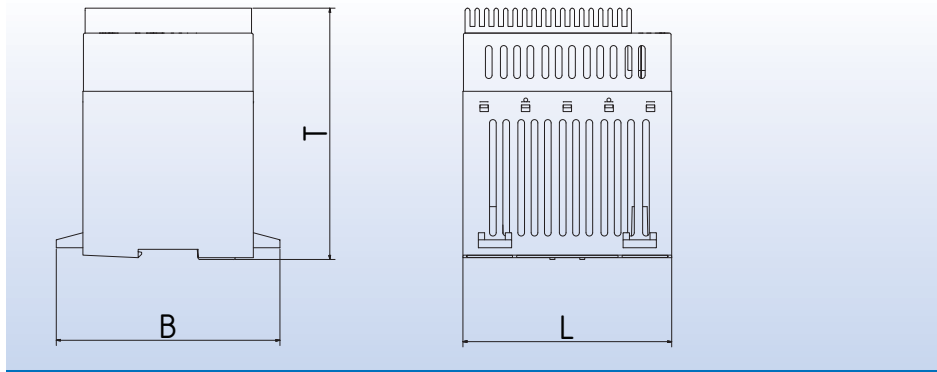
Option

Switch-off of back-up time limit, enabling longer UPS times

Back-up times

	RDCUSV 10D / 16D	RDCUSV 20D	RDCUSV 40D
6min	8.0A	16.0A	25.0A
10min	5.9A	11.0A	16.0A
30min	2.3A	5.0A	7.5A
60min	1.8A	3.0A	4.2A
120min	0.75A	2.0A	2.2A
240min	0.4A	1.0A	1.3A

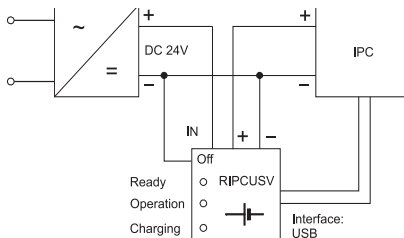
Type	RDCUSV 10D	RDCUSV 16D	RDCUSV 20D	RDCUSV 40D
Maximum current consumption	DC 10A	DC 16A	DC 20A	DC 40A
Back-up time at max. current	factory-set to 30s (other back-up times adjustable via DIP switch)			
Maximum current consumption after deep discharge	1 A		2 A	3 A
Back-up ready for 1 cycle after deep discharge	after 5 min.			
Loading method	IV characteristic curve			
Operating voltage threshold	22VDC or 20.6VDC			
Deep discharge protection	Switch-off threshold: 17VDC			
Battery type	lead acid			
Signal output	potential-free loading up to 24VDC / 500mA			
Ambient temperature	0 - 40°C			
Installation position	any installation position			
Connection type	print terminals			
Connection data	fine-strand max. 2.5mm ²		fine-strand max. 4mm ²	
Installation	support rail mounting (DIN EN 60715), can be mounted in rows with separation distance > 8mm			
Protection class	IP 20			
Protection class	SELV			
Weight in kg	approx. 3.5		approx. 4.4	approx. 6.5
Item number:	22.0 V 20.6 V	0250-0000010D 0251-0000010D	0250-0000016D 0251-0000016D	0250-0000020D 0251-0000020D
Dimensions in mm (L / W / D)	125 / 134 / 153		175 / 155 / 192	200 / 180 / 185



DC UPS modules



Fig. RIPCUSV 10D with USB interface



General information:

To supplement the RDCUSV series we offer the RIPCUSV 10D. These RIPCUSV modules are equipped with a USB interface. It can be combined with a 24VDC-supplied industrial PC (IPC) with a Microsoft Windows NT/2000/XP/Vista/W7 operating system to construct a computer-controlled uninterruptible power supply. The UPS communicates with the IPC via the interface. After the UPS time has elapsed the IPC receives a signal on the basis of which it shuts down the system. As soon as the computer has been shut down this is reported to the UPS which then switches off the supply voltage for the computer. Comprehensive software is included with the unit.

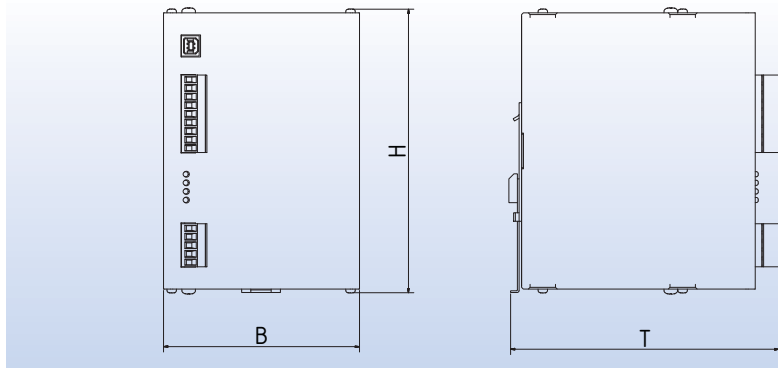
The patented technology of our DC UPS modules eliminates the necessity for switching controllers such as boost converters. EMC problems hence do not arise.

All Riedel IPC UPS modules have a compact construction with rechargeable battery inside the enclosure and are easy to install. The IPC UPS modules can be snapped on to support rails. They are connected to the DC voltage output of a 24VDC power supply unit (see block circuit diagram) and the terminal 'OFF' connected to the minus terminal for use.

The electronics of the module monitors the output voltage and connects the rechargeable battery when the value goes below the preset threshold. The internal rechargeable battery is used as a supply source for the consumer over a defined period of time with a maximum current of 10A which is limited internally. The output voltage is adjusted to the threshold value. For visual indication there are LEDs signalling readiness (green), UPS operation (yellow) and rechargeable battery undervoltage (red).

- Function:
- Output voltage stabilised in case of grid failure (20.6VDC)
 - Adjustable boot time bridging (2-5min.)
 - Adjustable UPS time (1s to 60min), afterwards signal to IPC via **USB interface** or RS232
 - Switch-off of UPS by signal from computer; automatic switch-off after an adjustable waiting time (30s to 10min)
 - Short circuit-proof
 - Automatic switch-off in following cases:
 - Rechargeable battery undervoltage (17VDC)
 - Automatic charging
 - IV characteristic curve
 - Daily test of rechargeable batteries (automatic) and notification in case of defects.
 - Software offers possibility of automatic script execution
 - Extensive software log function

Type	RIPCUSV 10D
Input voltage	DC 22V ... DC 31.0V
Maximum current consumption	DC 10A
Back-up time	minimum 10min. at 5A
Maximum current consumption after deep discharge	1 A
Back-up ready for 1 cycle after deep discharge	after 5 min.
Loading method	IV characteristic curve
Deep discharge protection	Switch-off threshold: 17VDC
Battery type	lead acid
Signal output	potential-free loading up to 24VDC / 50mA
Ambient temperature	0 - 40°C
Installation position	any installation position
Connection type	print terminals
Connection data	fine-strand max. 2.5mm ²
Installation	support rail mounting (DIN EN 60715), can be mounted in rows with separation distance > 8mm
Protection class	IP 20
Protection class	I
Weight in kg	approx. 2.4
Item number:	0254-0000010D
Dimensions in mm (L / W / D)	125 / 134 / 153



DC UPS modules



Power supply with ultracapacitor back-up

General information:

The RDCuSV C series DC back-up module has an ultracapacitor as an energy storage device inside the enclosure. This capacitor is charged during normal operation by an external regulated DC power supply unit. If the DC supply is interrupted the energy of the ultracapacitors is released in a controlled manner. The load is fed from the back-up module until it has been completely discharged. The back-up time is dependent upon the state of charge of the capacitor and the load current.

The back-up module has the following features:

- long-life ultracapacitors for maintenance-free operation
- Microcontroller-assisted charging and discharging of ultracapacitors
- Parameterisation via uSB interface
- Operational and state of charge monitoring via potential-free contacts and LEDs

Type	RDCUSV 3C1	RDCUSV 5C5	RDCUSV 10C10	RDCUSV 20C8
Nominal input voltage	DC 24V ± 10%	DC 12/24V ± 12.5%		DC 24V ± 10%
Min. charging voltage	DC 23.7V	DC 11.9/23.9V		DC 23.4V
Rated input current	3A	5A	10A	20A
max. switch-on current	-	35A / 2ms		-
Output voltage in back-up mode	DC 23.0V ± 2%	DC 23.2V ± 2%		-
Output current	DC 3A	DC 5A	DC 10A	DC 20A
Limiting current monitoring	-	DC 5.3A ± 0.1A	DC 10.3A ± 0.1A	-
Switch-off if limit exceeded	-	after 1.5sec.		-
current limitation	-	1,05 ... 12 x OI nominal		-
Efficiency	-	> 90%		-
Energy content	1kJ	5kJ	10kJ	8kJ
Back-up time	dependent upon load			
Protection class	IP20			
Storage temperature	-20 ... +60°C	-40 ... +60°C		-
Operating temperature	-20 ... +60°C	-40 ... +60°C		-
Input fuse	4AT (internal)	15A (internal)		25A (internal)
Output fuse	3.15AT (external)	15A (internal), 10AT (external)		25A (internal), 20AT (external)
Capacitor circuit fuse	-	25A (internal)		30A (internal)
LED display:	Operation IV o.k. Uc >	green LED lights up if system voltage available green LED lights up if external supply available green LED lights up if energy in capacitor > 80%		
LED display:	green LED goes out if: energy in capacitor 30% LED blinks slowly (0.8Hz): during charging, until 80% of capacitor energy reached LED blinks rapidly (3.2 Hz): if capacitor discharged	Error	red LED lights up if	- overvoltage on internal capacitor - over- or undervoltage on IV terminal - overcurrent on output
Relay outputs	potential-free relay contact, NO 30VDC / 0.5A	potential-free relay contact, NO 30VDC / 0.5A grid / mains, NO 30VDC / 0.5A Uc / Vcap </>, NO 30VDC / 0.5A error, changeover 30VDC / 0.5A		
USB communication	-	for parameterisation and for operation with shutdown software for PC		
shutdown terminal (emergency stop)	-	abort of UPS operation, potential-free switching input switching level: DC 24V (DC 6-45V)		
Standards and regulations	EN 50178 / EN 60950			
Connection, input/output	spring terminals, 1mm ²	spring terminals, 2.5mm ²		plug-in terminals, 4mm ²
Connection, C extension	spring terminals, 1mm ²	-	-	plug-in terminals, 4mm ²
Connection, signalling terminals	-	spring terminals, 1mm ²	-	plug-in terminals, 1.5mm ²
Item no:	0246-000003C1	0246-000005C5	0246-00010C10	0246-000020C8
Dimensions (H/W/D)	95 x 60 x 125mm	165 x 130 x 145mm	165 x 114 x 145mm	192 x 84 x 192mm
Weight	0.8kg	2.0kg	2.5kg	2.9kg



AC UPS systems



Fig. Power Vario, DPA UPScale RI, Power Value/Scale, Power Wave (left to right).

General information:

Static converter for 1- and 3-phase grids as problem solver for

- Voltage and frequency adaptation 16 2/3 / 50 / 60Hz out of country or in test field
- Voltage stabilisation to +/- 20% if there are grid voltage fluctuations
- UPS operation with any back-up times

Riedel supplies complete engineering from the problem to the finished new grid including grid adaptation, buffering and grid distribution to your machines or test stations. We offer individualised or modular building block system solutions. Interfaces for your process connection are available and are adapted to your environment.

Type	PowerVario	PowerValue™ 11	PowerValue™ 31
Enclosure / cabinet type	19" or upright unit, multifunctional	upright unit / individual block	
Output power	1-10kVA	7,5-12kVA	7,5-20kVA
Parallel connection possible to	4 modules of 4.5 or 6kVA	-	
Output	220/230/240V single-phase		
Classification according to IEC/EN 62040-3	VFI-SS-111		
Operating mode	on-line / continuous operation		
Energy efficiency	to 92%	to 95%	
Power density per m2	to 3 kVA per HU (19")	to 44kVA/m ²	
Max. weights without batteries dependent upon cabinet type	to 29.7kg	to 204kg	
Battery housing	in UPS enclosure		
Service bypass / revision switch	Option	standard	
Slot for network card	integrated		
Network cards SNMP/ModBus/contacts	Option		
RS-232 interface	standard		
Line reactions THDI	< 6%	< 12%	< 25%, optionally 12%
Reactive current compensation / PFC	standard		
Scalable / extendable (n+1)	Yes	-	
Slide-in modules, can be extended during running operations	only 4-5 and 6kVA	-	

Type	PowerScale	PowerWave 33	DPA UPScale RI™	Conceptpower Modular
Enclosure / cabinet type	upright unit / individual block		Slide-in modules / rack	
Output power	10-40kW	60-300kVA per individual block	10-40kW per rack	80-300kVA per cabinet
Powers of individual slide-in modules	-	-	10/20kW	80/100kVA
Max. power per system rack	-	-	20 or 40kW	300kVA
Max. power per rack with n+1 redundancy	-	-	to 20kW	to 200kVA
Parallel connection possible to	20 systems	10 systems	2 modules	10 modules
Output	380/220; 400/230; 415/240V three-phase			
Classification according to IEC/EN 62040-3	VFI-SS-111			
Operating mode	on-line / continuous operation			
Energy efficiency	to 96.5%	to 95.5%	to 95.5%	to 95%
Power density per m2	to 100kW/m ²	to 363kW/m ²	to 122kW/m ²	to 197kW/m ²
Max. weights without batteries dependent upon cabinet type	to 145kg	from 230kg to 410kg	from 59kg to 136kg	to 700kg
Battery housing	in UPS enclosure	battery cabinet or frame or in UPS enclosure for 60-100kVA	UPS battery cabinet or frame	battery cabinet or frame
Service bypass / revision switch	standard			
Slot for network card	integrated			
Network cards SNMP/ModBus/contacts	Option			
RS-232 interface	standard			
Line reactions THDI	< 3%	< 3.5%	< 3%	< 7-9%
Reactive current compensation / PFC	standard			
Scalable / extendable (n+1)	Yes (horizontal)		Yes (horizontal + vertical)	
Slide-in modules, can be extended during running operations	-		Yes	
central monitoring with Newavewatch™ via TCP/IP, analogue, ISDN or GSM	Option			-

