

CONVERTER UNIT WITH ULTRACAPACITORS RESERVE

UCS SERIES

Typology

Not isolated DC / DC converters, in switching technology, with 48 or 110V output, equipped with passive reserve units obtained with ultracapacitors controlled in charging and discharging. Especially designed for use in railway and telecom applications that require high reliability and ability to withstand high disturbances on input side such as those foreseen in the European Standard EN 50155. The ultracapacitors are used to sustain for momentary power failures and to enable the installation in high degree of protection containers (up to IP54). They also allow to obtain, if necessary, reserves up to a few minutes without using electrochemical batteries which emit dangerous gases even in sealed versions.

Electrical Characteristics

The most important characteristics that distinguish this type of units are:

Nominal input voltage	24 or 48 Vdc
Nominal output voltage	48 or 110 V
Static input tolerances	+25% / -30%
Guaranteed out.tolerances	+10% / -30%
Electrical efficiency	better than 88%
Sustain time	from 1 to 6 sec
Ventilation	natural convection
MTBF per unit	about 250.000 h
Output redundancy	with diodes
Power reserve	ultracapacitors

Output power and reserve

The product range includes the following models depending on the power output and reserves in seconds

Model	Power	Energy	Reserve
UCS100-1	100 Watt	100J	1s
UCS100-6	100 Watt	600J	6s
UCS200-1	200 Watt	200J	1s
UCS200-6	200 Watt	1200J	6s
UCS400-1	400 Watt	400J	1s
UCS400-6	400 Watt	2400J	6s
UCS800-1	800 Watt	800J	1s

Accessories

On request are available, from normal production, accessories as listed below

Redundance output diode (DRU)

Output voltage failure relay

Output overvoltage protection

Input overvoltage protection as per RIA12

Output low current protection

Mechanical characteristics

The mechanical construction is made of polyester insulating container or varnished cast aluminium, suitable for installation on metal profiles in free air. The heights and modularity depend on power and stored energy.

Energy	Height x width mm	Depth mm
0-200J	160x160	90
200-600J	260x160	130
600-1200J	360x160	130
1200-2400J	400x250	130
2400-4800J	560x160	130

Standards or specific references

CE marking	EN 61000-4-4
	EN 61000-6-2
	EN 61000-6-4
Safety	Input SELV EN 60950/61493-1
	Output TNV-3 EN 60950/61493-1

Railway references	EN 50155
	EN 50121-3-2
	EN 50121-4
	EN50121- 5
Italian Railway Specs	ST 306158

Environmental compatibility

Each unit is tested, on typical or production, to ensure its environmental compatibility. The following are the most important.

Storage temperature	-40 to 85 °C
Working temperature	-25 to 45 °C (T3)
Temporary (<6 hours)	-25 to 55 °C
Transitory (<10 min)	-25 to 70 °C (##)

at maximum load is possible the intervention of thermal protection without any failures

Shock / vibrations EN 61373	Class 1B
Protection degree	IP54
Dielectric strenght (P+S)/G	1 kV RMS
Insulation resistance	100 MΩ at 500 Vdc

Part of the product range

Model	Reserve (s)	Output voltage 48-110V (2/3)	Input voltage 24-48V (1/2)	Max Power (W)	Red. Diode DRU	Output Failure relay	RIA Protection	Minimum output current protection	Overvoltage protection	Aluminiu container
UCS100	1	2-3	1-2	100	DA	R2	PR	PA	RV	AL
UCS100	6	2-3	1-2	100	DA	R2	PR	PA	RV	AL
UCS200	1	2-3	1-2	200	DA	R2	PR	PA	RV	AL
UCS200	6	2-3	1-2	200	DA	R2	PR <td PA	RV	AL	
UCS400	1	2-3	1-2	400	DA	R2	PR	PA	RV	AL
UCS400	6	2-3	1-2	400	DA	R2	PR	PA	RV	AL
UCS800	1	2-3	1-2	800	DA	R2	PR	PA	RV	AL

Basic system diagram

