SINGLE OUTPUT DC-DC TELE-POWERING CONVERTERS

ASB SERIES

Overview

Single output DC/DC converters, in PWM switching technology. Particularly developed for cellular repeaters and radio-base wireless applications where is required the contemporary presence of radio-frequency, DC power and remote supervising signal on the same coaxial cable. The DC/DC converter provides to insert on the cable a stabilized DC voltage coming from a lead acid battery, a radiofrequency signal in the frequency range from 400 to 2000 MHz and a base band FSK 132 kHz surveillance carrier.

As an example, the radiofrequency field covering of a railway tunnel is provided whit the use of a radiating cable and some line amplifiers: at the entrance of the tunnel the radiofrequency, coming from an antenna and one or more band selective amplifiers, is injected in parallel with DC current and FSK carrier. Along the radiating cable, the RF power losses are compensated by the line amplifiers, supplied by the superimposed DC power and supervised by the FSK carrier.

Electrical characteristics

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

Input voltage	48/60 Vdc
Admitted tolerance	±20%
Peak superimposed ripple	less than 10% Vdc
Output voltage	50/70/110 Vdc
Warranted tolerances	
Line variations	±1%
Load variations	±1%
AC superimposed ripple	less than 0,5% RMS
Overvoltages rejection	more than 40 dB
Short circuit current	120% I nominal
Efficiency	more than 85%
Sustain time	40 mS with output voltage to -10%
Single unit MTBF	ab. 250.000 hours
Redundance	Available with a second unit

Output DC power

The product range includes the following models as a function of the output powers.

Model	Output power
ASB280	280 Watt
ASB560	560 Watt
ASB840	840 Watt

RF and FSK carrier chacteristics

RF Impedance	50 ohm
RF Frequency range	400 - 2000 MHz
RF Input power	< 50 W (47 dBm)
RF Insertion loss	< 0,3 dB
RF Flatness	< 0,3 dB
RF Return loss	< -20 dB
Input RF connector	SMA Female
FSK Frequency	132 kHz
FSK level	< 3 V Rms
FSK connector	2 x SLA
Output mixed connector	7/16 Female

Accessories

A wide range of accessories is available to equal the converters to the more complex applications and specifications.

The ones foreseen in normal production are the following.

Input magnetothermic breaker
Input by-pass breaker
Redundant connection diode
Trimmable low output voltage relay
Output overvoltage protection

Mechanical characteristics

The mechanical construction is 19 inches Rack type according to DIN41612 standards, with anodized aluminium structure and front side in black or natural color. The height units and modularity are a function of the supplied power. The overall dimensions are the following.

Model	Units x width	Depth
ASB280	2 x 84TE	400mm
ASB560	3 x 84TE	400mm
ASB840	4 x 84TE	400mm

Ambient compatibility

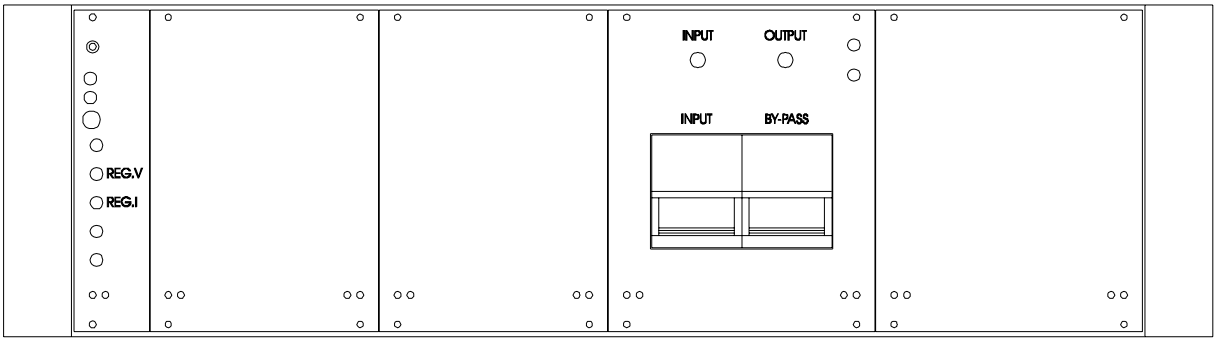
The converters are submitted to typical or production tests to warrant the ambient compatibility. The fundamental tests are the following (* identifies typical tests).

***Vibrations**	5 $m.s^{-2}$ - 0,032mm
***Storage temperature**	from -40 to 70 °C
***Working temperature**	from -20 to 55 °C
***Injected harmonics**	less than 10%
1,2/50 μs pulse withstand	2 kVp
Dielectric strenght	2 kV RMS
Insulation resistance	100 MΩ at 500 Vcc
Damped oscillatory waves	1 kVp at 1MHz
CE mark ref. standards	EN50081-2/50082-2

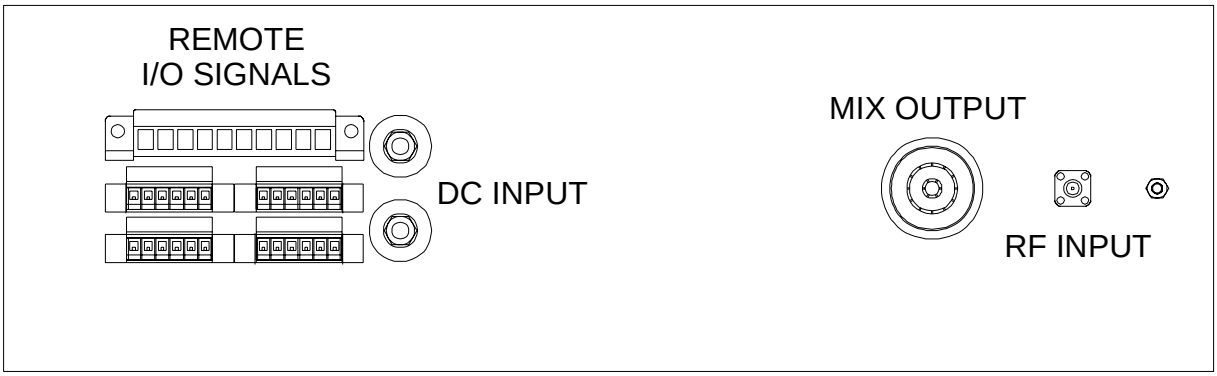
Product range

Model	Input voltage 2=48 6=60	Input breaker	By-pass breaker	Low output volatge relay	Overvoltage protection	FSK Modem	**Output voltage**	**Output current**
ASB280-2	2/6	I1	I3	R6	P1	T1	50	5,6
ASB280-6	2/6	I1	I3	R6	P1	T1	70	4
ASB280-3	2/6	I1	I3	R6	P1	T1	110	2,5
ASB560-2	2/6	I1	I3	R6	P1	T1	50	11,2
ASB560-6	2/6	I1	I3	R6	P1	T1	70	8
ASB560-3	2/6	I1	I3	R6	P1	T1	110	5
ASB840-2	2/6	I1	I3	R6	P1	T1	50	16,8
ASB840-6	2/6	I1	I3	R6	P1	T1	70	12
ASB840-3	2/6	I1	I3	R6	P1	T1	110	7,6

Mechanical dimensions



ASB560-3 Front View



ASB560-3 Rear View