

# CRS-60

## RAILWAY 50...60W SINGLE OUTPUT DC/DC CONVERTERS

### GENERAL FEATURES:

- High input-output isolation
- Adjustable output voltage
- Remote sensing
- Output voltage presence LED
- Efficiency up to 85%



	12Vin 9,5V ... 15V	24Vin 18V ... 30V	48Vin 36V ... 60V	72Vin 50,4V ... 90V	110Vin 77V ... 144V
5Vout	CRS-60-6731 50W	CRS-60-6735 50W	CRS-60-6739 50W	CRS-60-6743 50W	CRS-60-6747 50W
12Vout	CRS-60-6732 60W	CRS-60-6736 60W	CRS-60-6740 60W	CRS-60-6744 60W	CRS-60-6748 60W
24Vout	CRS-60-6733 60W	CRS-60-6737 60W	CRS-60-6741 60W	CRS-60-6745 60W	CRS-60-6749 60W
48Vout	CRS-60-6734 60W	CRS-60-6738 60W	CRS-60-6742 60W	CRS-60-6746 60W	CRS-60-6750 60W



## INPUT

Input voltage range	See table
Maximum allowed input ripple	5% $V_{in\ nom}$ ( $V_{rms}$ at 100Hz)

## OUTPUT

Output voltage adjustment range	-10% ... +15% $V_o\ nom$ -10% ... +25% $V_o\ nom$ for 12Vout models
Line regulation ( $I_o = nom$ )	< 0,2 %
Load regulation ( $V_{in} = nom$ )	< 0,2 %
Ripple	< 50 mVpp
Noise (BW = 20MHz)	< 100 mVpp
Maximum remote sensing	0,3V / pole

## ENVIRONMENTAL

Storage temperature	-40°C ... 85°C
Operating temperature range at $I_o = 100\%$	-25°C ... 60°C (-40°C ... 60°C, see note-1)
Operating temperature range at $I_o = 50\%$	-25°C ... 80°C (-40°C ... 80°C, see note-1)
Maximum Relative humidity	95% without condensation
MTBF	650.000h @ 40°C according to IEC61709

## EMC

Emission	EN61000-6-3
Immunity	EN61000-6-2

## SAFETY

Safety	EN60950-1, EN62368-1
Dielectric strength Input / Output	3000Vac, 4200Vdc 1min.
Dielectric strength Input / Earth	1500Vac, 2100Vdc 1min.
Dielectric strength Output / Earth	1500Vac, 2100Vdc 1min.

## MECHANICAL

Approximate weight	500g
Dimensions	127 x 84.5 x 40mm

## PROTECTIONS

Against overloads and short-circuits	Current limiting
Against reverse input voltage.	Input fuse
Against input under-voltage.	Under-voltage lock-out
Against Input over-currents	Input fuse

Note-1: The unit can start up and work at an ambient temperature of -40°C with the following restrictions:

- Do not handle the connection terminals below -25°C
- The output ripple can rise up to 150mVpp at -40°C



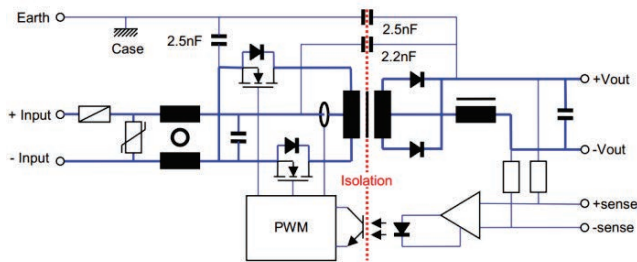
## ORDERING CODES

Part Number	Power [W]	Input [V]	Input range [V]	Output [V]	Output current [A]	Efficiency [%]
CRS-60-6731	50	12	9,5 - 15	5	10	77
CRS-60-6732	60	12	9,5 - 15	12	5	78
CRS-60-6733	60	12	9,5 - 15	24	2,5	80
CRS-60-6734	60	12	9,5 - 15	48	1,25	82
CRS-60-6735	50	24	18 - 30	5	10	78
CRS-60-6736	60	24	18 - 30	12	5	83
CRS-60-6737	60	24	18 - 30	24	2,5	84
CRS-60-6738	60	24	18 - 30	48	1,25	85
CRS-60-6739	50	48	36 - 60	5	10	79
CRS-60-6740	60	48	36 - 60	12	5	84
CRS-60-6741	60	48	36 - 60	24	2,5	85
CRS-60-6742	60	48	36 - 60	48	1,25	85
CRS-60-6743	50	72	50,4 - 90	5	10	79
CRS-60-6744	60	72	50,4 - 90	12	5	84
CRS-60-6745	60	72	50,4 - 90	24	2,5	85
CRS-60-6746	60	72	50,4 - 90	48	1,25	85
CRS-60-6747	50	110	77 - 144	5	10	80
CRS-60-6748	60	110	77 - 144	12	5	85
CRS-60-6749	60	110	77 - 144	24	2,5	85
CRS-60-6750	60	110	77 - 144	48	1,25	85

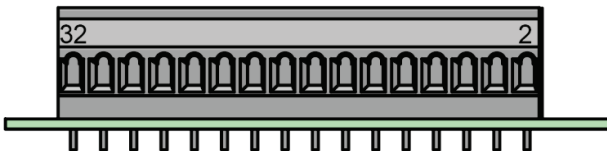
Accessories must be ordered in a separated order line



## BLOCKS DIAGRAM

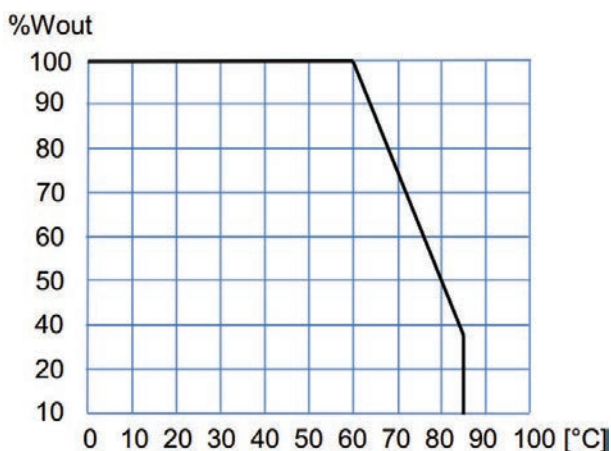


## CONNECTIONS



CONNECTION	Terminal
+Vin	8,10
-Vin	2,4,6
Earth	16
+Vout	26,28,30
-Vout	20,22,24
+Sense	32
-Sense	18

## POWER DERATING vs AMBIENT TEMP.



## DESCRIPTION

The CRS-60 series consists of PWM DC-DC converters, with a galvanic isolation between input and output. The converters operate at a fixed switching frequency and use push-pull converter topology.

Voltage feedback is performed by transferring the error signal from the output to the primary side through an optocoupler, where the PWM circuit changes the pulse width as required to keep the voltage output stable.

For maximum regulation, the remote sensing terminals can be connected to the load. This will allow a power cable voltage drop of up to 0.3 V on each cable to be offset.

The device is protected against overload and short-circuit by means of a current limiting circuit.

The device is also protected against reverse polarity input voltage, and the input fuse blows if an improper connection is made.

When a converter input undervoltage condition occurs, the converter is disabled, thus preventing the battery from becoming totally discharged.

## INSTALLATION

Connection: Spring clamp terminal strip

The product can be mounted in several ways:

- On a chassis by means of the 4 holes.
- In DIN rail adding the clip accessory **NP-9135**

## START-UP

Perform connection as per the table. Use of remote sensing is not absolutely necessary, but if this is required, use of a coaxial or a twisted-pair cable is recommended.

**WARNING: If the load is connected to the tabs of remote sensing (+/-S) and the connection from the output to this load is missing the remote sensing function could make unusable due to the acting of the internal fuse of protection.**

If power levels close to the maximum output are required, make sure the assembly enhances cooling by natural convection and the card is placed in vertical position.

**If several converters need to be connected in parallel, do the following:**

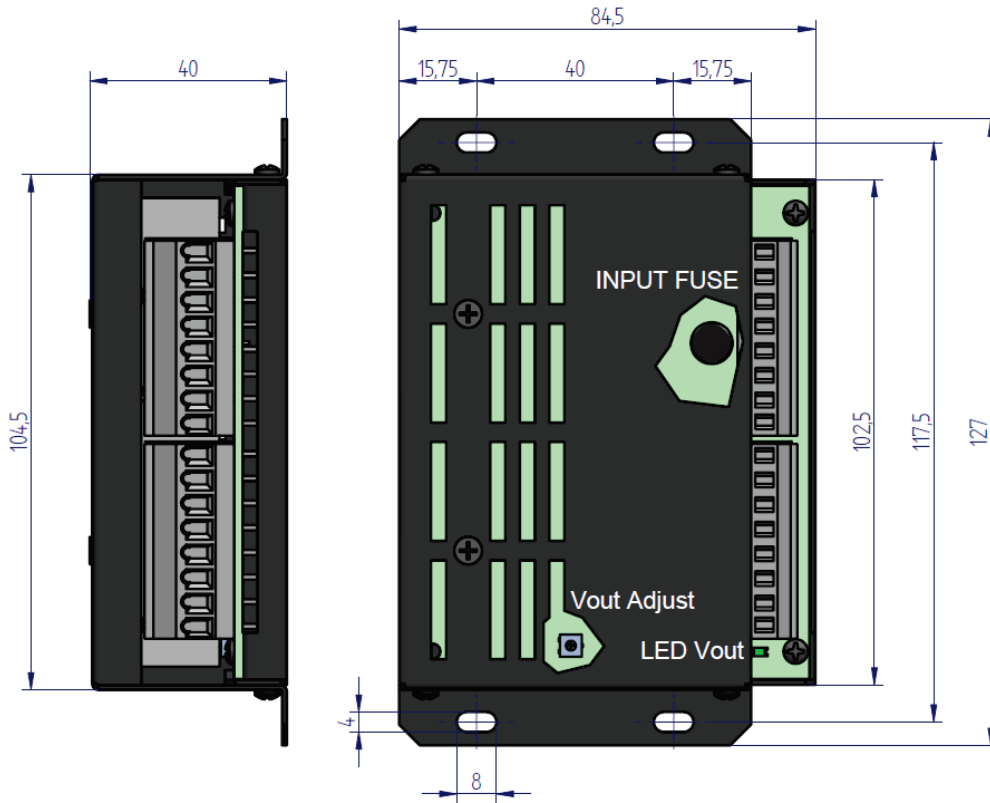
- Set the output voltage for all converters featuring a mutual difference as small as possible.
- Join the load outputs by using cables with a cross-section no greater than the one required and of equal length.
- Do not use remote sensing.

**For safety reasons, the following requirements must be complied with:**

- Provide the equipment with some kind of protective enclosure that complies with the electrical safety directives in effect within the country where the equipment is installed.
- Only replace the fuse with another fuse of the same rating and type, and only after disconnecting the converter from DC power.



## DIMENSIONS



## ACCESSORIES

ACCESSORIES	CODE
Din rail clip	NP-9135
Redundant connection for two units (ORing diodes + alarms contacts)	ACD-15





## CE EU DECLARATION OF CONFORMITY

The undersigned, representing the following:

Manufacturer: PREMIUM, S. A.,  
Address: C/ Dolors Aleu 19-21, 08908 L'Hospitalet de Llobregat, SPAIN

herewith declares that the product:

Type: DC/DC converter  
Models: **CRS-60-6731 ... 6750**

is in conformity with the provisions of the following EU directive(s):

2014/35/EU	Low voltage
2014/30/EU	Electromagnetic compatibility
2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

and that standards and/or technical specifications referenced overleaf have been applied:

EN 60950-1: 2005	Safety. Information technology equipment
EN 62368-1: 2014	Safety. Audio/video, information and communication technology equipment
EN 61000-6-3: 2007	Generic emission standard
EN 61000-6-2: 2005	Generic immunity standard

CE marking year: **2006**

### Notes:

For the fulfillment of this declaration the product must be used only for the aim that has been conceived, considering the limitations established in the instructions manual or datasheet.

L'Hospitalet de Llobregat, 28-08-2019

Jordi Gazo  
Chief Executive Officer

**PREMIUM S.A.** is an ISO9001 and ISO14001  
certified company by **Bureau Veritas**