



DEWETRON



DEWE-POWERBOX-11

TECHNICAL REFERENCE MANUAL



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Look forward to the easy handling and the flexible and modular use of your DEWETRON product and draw upon more than 25 years of DEWETRON expertise in measurement engineering.



ISO9001



CUSTOMIZED



MODULAR



COMPETENT



COMMITTED



APPROVED

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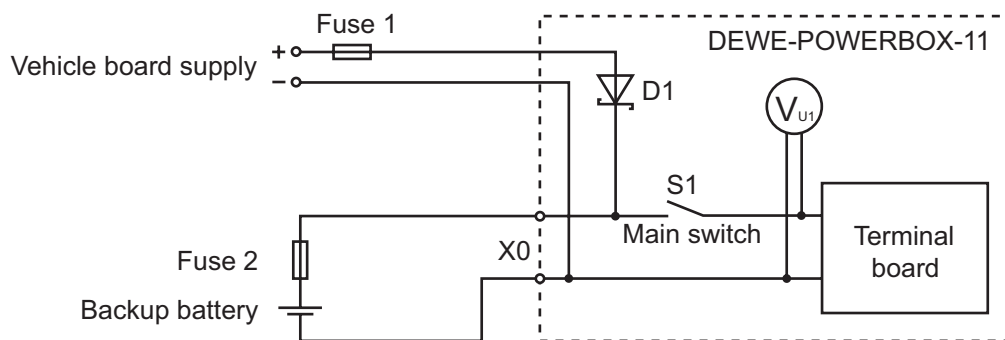
DEWE-POWERBOX-11

- > Power distributor for automotive applications
- > Optional backup battery connector for cold start
- > 11 output connectors for several consumer loads
- > High output current design
- > 12 V_{DC} or 24 V_{DC} board supply
- > Indication of supply voltage level



The DEWE-POWERBOX-11 allows to supply multiple consumer loads out of the vehicle board supply with a total power consumption of up to 600 W. The main problem of supplying high power consumption loads out of the typical 12 V_{DC} board supply is the high current (50 A load for 600 W at 12 V_{DC}) which causes voltage drop through the supply lines. The usage of a high flexible 10 mm² cable for the main supply line minimizes the potential drop across the cable. For checking the supply voltage, the voltmeter U1 measures the level directly at the terminal board. The measurement range is from 8 to 40 V.

In addition to this one high current connector for a backup battery is installed. As backup battery a standard lead accumulator with the same voltage level as the board supply should be used. The positive supply input of this backup battery is connected with a diode to the positive supply of the vehicle board supply. This guaranties that all electrical loads connected to the DEWE-POWERBOX-11 are supplied through the backup battery, if the vehicle board supply breaks down for example during start of the engine. The current will not flow from the backup battery to board supply because of an installed diode. Due to the voltage drop at the diode of approximately 0.3 V at 30 A load, the supply voltage level of all electrical loads connected to the DEWE-POWERBOX-11 is 0.3 V lower than the input voltage level. Some applications need the full voltage. In this case connect the vehicle board supply to X0 instead of the backup battery to bypass the diode and get the full output voltage. Please don't forget to isolate the ends of the main supply line in this configuration.

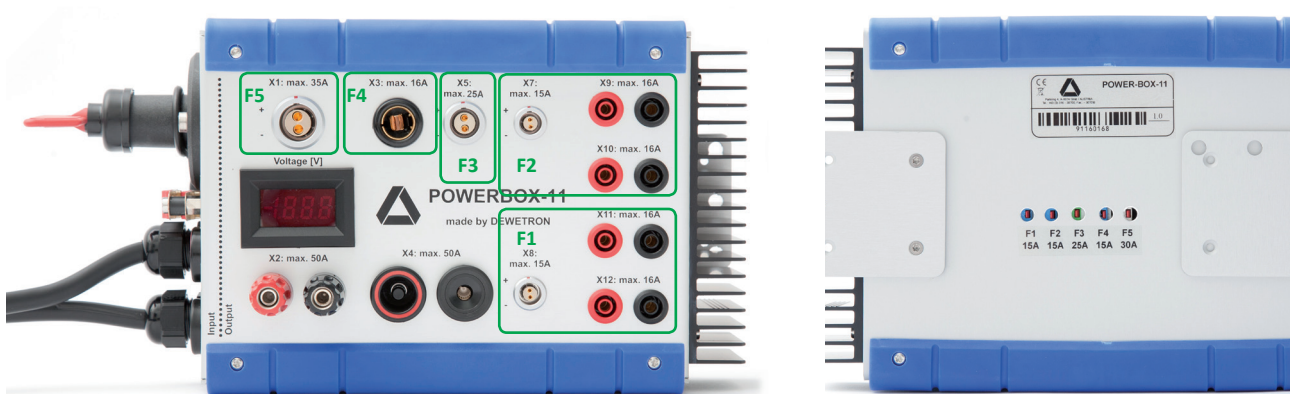


Note: Backup batterie voltage level has to be the same as the vehicle board supply!

MAIN SYSTEM

Fuses

Please note that Fuse 1 and Fuse 2 are installed to protect the main power and the backup battery cable. The 50 ampere fuse will not protect the cable from the DEWE-POWERBOX-11 to the external electrical loads connected regarding overload. We recommend to use cables with cross-section area higher than 1.5 mm², which are also protected against short cut – the fuse will blow before the cable or the connector will be destroyed. The outputs of the DEWE-POWERBOX-11 are protected by resettable fuses which are easy accessible at the rear panel of the box. The picture below will show the different fuses used to protect the outputs:



Fuse	Output connector	Max. load
F1	X8, X11, X12	15 A
F2	X7, X9, X10	15 A
F3	X5	25 A
F4	X3	15 A
F5	X1	30 A

Note: Replace the fuses only with fuses of the same voltage, current rating and type!
Fuse F1..F5 are not user replaceable.

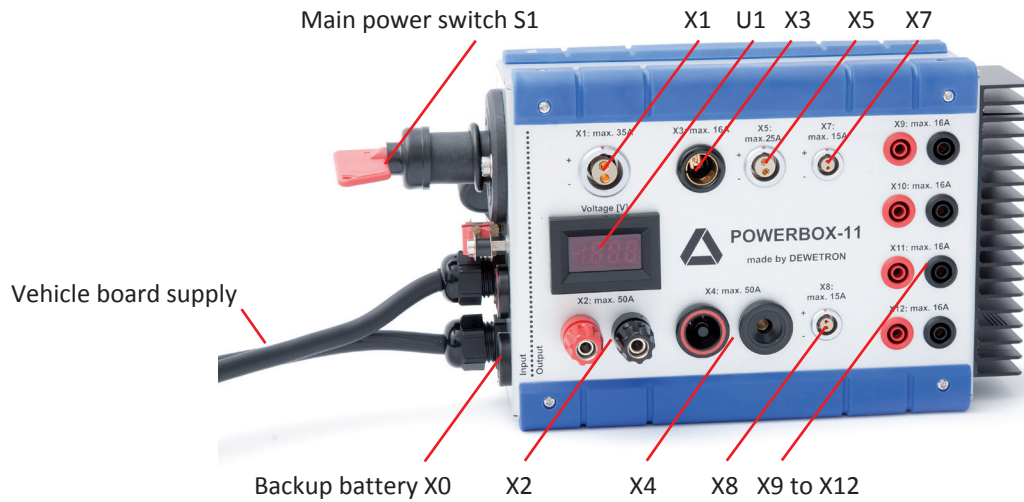
GND-Supply

The DEWE-POWERBOX-11 is shipped with a 5 m cable for the main supply. Although the high cross-section area of 10 mm² the voltage dropout at 30 A load will be around 0.3 V. This is usual not a problem at the positive supply line. Since this voltage drop is also at the negative supply line ground loops may occur depending on the ground concept of the connected load. To avoid this, it is recommended to split the main supply cable. The cable for the minus input should be shorten and connected to a suitable screw direct at the vehicle chassis.

One additional solution is to connect the minus input of the backup battery directly to the vehicle chassis for getting a very low ohm ground connection.

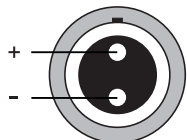
This is not needed if the POWERBOX is connected to DEWE-2010, DEWE-3020, DEWE-4010 or DEWE-5000 because of the galvanic isolation of the supply voltage.

Connectors

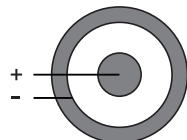


The following table gives you an overview of the used connectors and maximum current. Also the absolute limits of other used components are described.

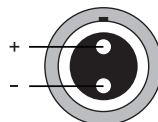
Device no.	Max. current	Producer and type number
X0:	50 A	Multi-Contact, ID-S6ARNS, ID-B6ARNS
X1:	35 A	Lemo, EGG.3B.302
X2:	50 A	Hirschmann, PKNI10B
X3:	15 A	Pro-Car, 57607000
X4:	50 A	Multi-Contact, ID-S6ARNS, ID-B6ARNS
X5:	25 A	Lemo, EGG.2B.302
X7, X8:	15 A	Lemo, EGG.1B.302
X9 to X12:	15 A	Multi-Contact, SLB-4F
Fuse 1:	50 A	Pudenz, BF1-50A
Fuse 2:	50 A	Pudenz, BF1-50A
D1:	120 A / 40 V	International Rectifier, 120CNQ045
S1:	100 A	RS, 0-605-00
U1:	-	Datel, DMS-20PC-1-DCM



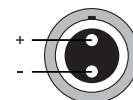
2-pin female LEMO
EGG.3B.302 (X1)



2-pin Pro-Car power
supply
(X3)



2-pin female LEMO
EGG.2B.302
(X5)



2-pin female LEMO
EGG.1B.302
(X7, X8)



MAIN SYSTEM

Notes