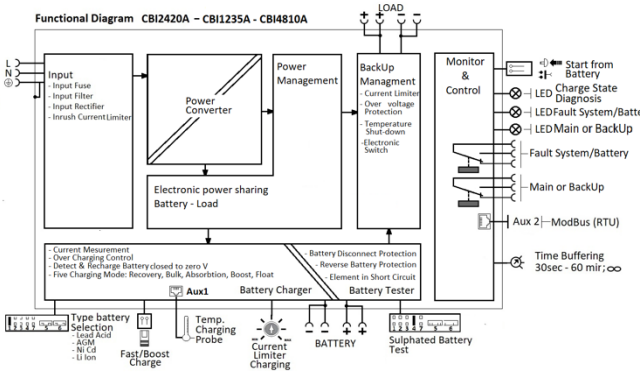
CBI4810A ALL In One



Input: Single-phase 115 - 277 Vac; 600W
Output Load: power supply 48 Vdc; 12.5 A
Output Battery: charging 48 Vdc; 12.5 A
Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd, Ni-MH, Li-Ion
Automatic diagnostic of battery status.
Charging curve IUoU, constant voltage and constant current Battery Life Test function (Battery Care)
Switching technology Four charging levels: Recovery, Bulk, Absorption, Boost, and Float
Protected against short circuit and inverted Batt. polarity
Signal output (contact free) for discharged or damaged battery
Signal output (contact free) for Mains or Back-Up
Modbus RTU for all parameter, Battery and System
Protection degree IP20 - DIN rail; Space saving

Technical features

Thanks to the All In One units (DC-UPS), it will be possible to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority of the unit thus it is not necessary to double the power, because also the power going to the battery will go to the load if the load so requires. The maximum available current on the load output is 2 times the value of the device rated current In. We call "Battery Care" the concept base on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Auto-diagnostic system, monitoring battery faults such as, battery Sulfated, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. The continuous monitoring of battery efficiency, reduces battery damage risk and allows a safe operation in permanent connection. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (option). They are programmed for two charging levels, boost and charge, but they can be changed to single charging level by the user. A rugged casing with bracket for DIN rail mounting provides IP20 protection degree. They are extremely compact and cost-effective.



Norms and Certifications

- Approval: UL60950-1 and CAN/CSA C22.2 No. 60950-1-07.
- Compliance: EMC Directive 2014/30/UE and Low voltage Directive 2014/35/UE; EN IEC 62368-1; EN IEC 61000-6-2; EN IEC 61000-6-4. EN54-4 Fire Detection and fire alarm systems and EN12101-10.

Climatic Data

Ambient temperature (operation)	**-25 ÷ +70°C**
De Rating Ta > 50°C	**- 2.5%(In) / °C**
Ambient temperature Storage	**-40 ÷ +85°C**
Humidity at 25 °C no condensation	**95% to 25°C**
Altitude: 0 to 2 000m - 0 to 6 560ft	**No restrictions**
Altitude: 2 000 to 6 000m-6 560 to 20 000ft	**De-rating 5°C/1000m**
Cooling	**Auto convention**

General Data

Insulation voltage (IN/OUT)	**3000 Vac**
Insulation voltage (Input / Earth, PE)	**2000 Vac**
Insulation voltage (Out Load & Battery / Earth, PE)	**500 Vac**
Insulation voltage (Out Load, Battery, Aux2 / Fault System & Main or Back Up terminal)	**500 Vac**
Protection Class (EN/IEC 60529)	**IP20**
Reliability: MTBF IEC 61709	**> 300.000 h**
Pollution Degree Environment	**2**
Connect Terminal Blocks screw Type Signal	**2,5mm(24–14AWG)**
Connect Terminal Blocks screw Type Power	**4 mm (30-10 AWG)**
Protection class (PE Connected)	**I, with PE**
Dimensions (w-h-d)	**150x115x135 mm**
Weight	**1.55 kg approx.**

Input Data

Nominal Input Voltage Vac	**115 – 230 – 277**
Voltage range Vac	**90 – 135:180 – 305**
Power Factor typ. (115 – 230 Vac)	**0.6 – 0.5**
Input Inrush Current Limiter	**0.6 – 0.5**
Inrush Current (Vn – In nom. Load) I2t	**≤ 35 A ≤ 5 msec.**
Frequency	**47 ÷ 63 Hz**
Input Current (115 – 230 Vac)	**9 – 4.5 A**
Internal fuse (not replaceable)	**10 A**
External Fuse (recommended) MCB curve B	**16 A**

Output Data (internal power supply)

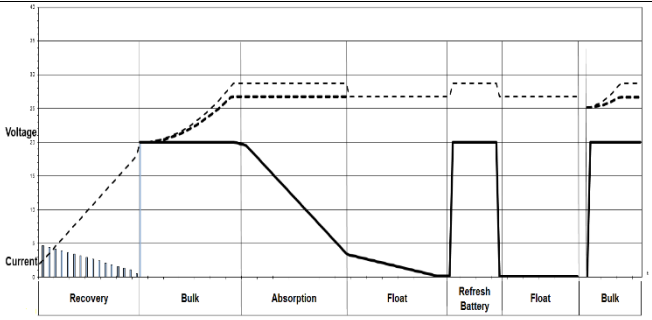
Output Voltage (Vn) / Nominal Current (I_n)	**48 Vdc**
Output Current I_n = Iload	**10 A**
Power boost (4 minutes)	**12.5 A**
Efficiency (at 50% of rated current)	**≥ 91 %**
Ripple and Noise (20 MHz Bandwidth)	**80 mV_{pp} (max)**
Turn-On delay after applying mains voltage	**1 sec. (max)**
Start up with Strong Load (capacitive load)	**Yes, Unlimited**
Dissipation power load max (W)	**54**
Short-circuit protection (max current)	**Yes (38 A)**
Over Load protection (max current)	**Yes (35 A)**
Over Voltage Output protection	**Yes (typ. 72 Vdc)**
Overheating Thermal protection	**Yes**

Load Output

Output voltage Vdc (at I_n)	**44 - 57.6 V (31 Ni-Cd)**
Nominal current I_{load}	**1.1 x I_n A ±5%**
Continuous current (Without battery) $I_{load=}$ I_n	**12.5 A**
Power Boost (Without battery) $I_{load=}$ I_n	**14A (max 30 sec.)**
Continuous current (With battery) $I_{load=}$ I_{n+} I_{batt}	**25 A**
Max. current Output Load (Main) $I_{load\ (4\ sec.)}$	**38 A max.**
Max. current Output Load (Back Up) $I_{load\ (4\ sec.)}$	**25 A max.**
Start From Battery Without Main (Remote Input Control)	**RTCONN (cable) Push Button**
Time Buffering; min (switch output off without main input)	**0.5;2;5;10;15; 20; 30; 45;60;∞**
Threshold alarm Battery almost flat	**44 – 46 Vdc batt**
LVD. (Protections against total Batt. discharge)	**40 – 42 Vdc batt**

Battery Charger

Output Voltage Battery	**Follow the Out Load**
Boost/Fast charge Jumper Config. 25°C (V/cell).	**Lead Acid: 2.4** **NiCd:1.45; Li-ion: 3.65**
Float Charge Jumper Configuration 25°C (V/cell) Jumper Configuration battery type	**Lead Acid: 2.23; 2.25; 2.27;2.3** **NiCd:1.4; Li-ion: 3.45**
Max.Time Boost–Bulk charge (Typ. at IN)	**15 h**
Min.Time Boost–Bulk charge (Typ. at IN)	**1 min.**
Recovery Charge	**6 – 42 Vdc**
Charging current max I_{batt}	**12.5 A ± 5%**
Charging current limiting I_{adj}	**10 ÷ 100 % / I_{bat}**
Quiescent Current max.	**≤ 100 mA**
Charging Curve automatic: IUoU	**5 stage**
Remote Input Control (RTCONN cable)	**Boost / Float**
Battery charge temperature compensated. External probe	**RJTemp 451 or 453** **Aux1**



Battery Tester

Sulfated battery check (SoH)	**Yes Enabling by Jumper "Life Test"**
State of Charge (SoC)	**Yes**
Short circuit Element Detection	**Yes**
Refresh Battery (must enabled Fast Charge)	**Every 288 hours**
Low Battery Capacity warning	**Yes**
Purification Charge	**Yes**
Reverse battery protection	**Yes**

Signal Output (free switch contacts)

Main or Backup Input Power	**Yes**		
Low Battery	**Yes**		
Fault Battery or system	**Yes**		

Type of Signal Output Contact

Dry Contact. Current can be switched (EN60947.4.1): Max: DC1: 30 Vdc 1 A; AC1: 60 Vac 1A (Resistive load) Min: 1mA at 5 Vdc (Min permissive load)

Fault System / Low Battery	**C**	**NC**	**NO**
Main or Back Up	**C**	**NC**	**NO**

Lifetime Expectancy and MTBF

Life Time Expectancy defines the minimum life expectancy of the device in hours of operation. Being a device designed with electrolytic capacitors, the maximum duration is defined at 15 years - 131,400 h. Any value higher than this is to be considered only as a theoretical duration, calculated to be able to compare devices with each other.

MTBF stands for **M**ean **T**ime **B**etween **F**ailure, which is calculated according to statistical device failures, and indicates reliability of a device. It is the statistical representation of the likelihood of a unit to fail and does not necessarily represent the life of a product.

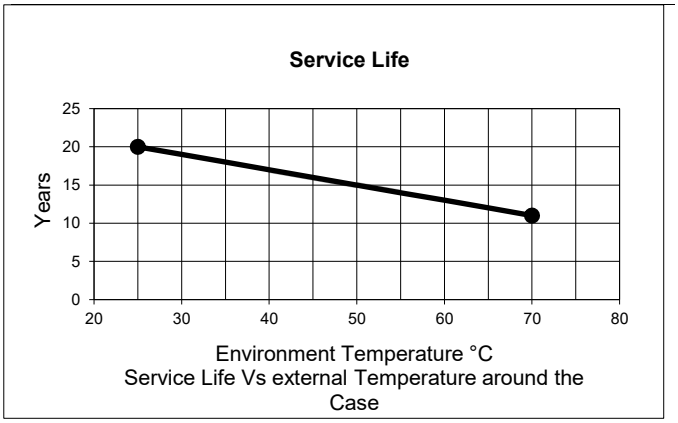
The MTBF figure is a statistical representation of the likelihood of a device to fail. A MTBF figure of e.g. 1 000 000h means that statistically one unit will fail every 100 hours if 10 000 units are installed in the field. However, it can not be determined if the failed unit has been running for 50 000h or only for 100h.

Calculated Lifetime expectancy

Ambient temp.	Out Power	115Vac	230Vac
25°C	48 Vdc – 5 A	425 000h	463 000h
25°C	48 Vdc – 10 A	195 000h	233 000h
40°C	48 Vdc – 5 A	150 000h	158 000h
40°C	48 Vdc – 10 A	69 000h	89 000h

MTBF SN 29500, IEC 61709

Ambient temp.	Out Power	115Vac	230Vac
25°C	48 Vdc – 10 A	786 000h	875 000h
40°C	48 Vdc – 10 A	473 000h	530 000h



Service Life Vs external Temperature around the Case

Parallel Connection

Parallel Connection by the Two device:	**Aux 2**
RJCONN45 (For parallel connection)	**Cable RJ45/RJ45**

Networking: Input / Output (RJ45)

Remote monitoring data Protocol Aux2 for:	**Modbus RTU (RS485)** **DPY351 or DPY353** **RJTemp**

Accuracy Measurement trough ModBus (RTU)

Accuracy on the Input side

Measure of the Main Input voltage at 47- 63Hz; ±25°C; 90 – 305 Vac	**± 1 %** **of Full Scale Vac**

Accuracy on the output side

Measure of the Output voltage Load Side Range: 10 – 60 Vdc	**± 1.5% of Full Scale Vdc Out**
Measure of the Output current Load Side Range: 0 - 40A	**± 1.5% of Full Scale I Out**
Measure of the Output voltage Battery Side Range: 10 - 60V	**± 1.5% of Full Scale Vdc Out**
Measure of the Output current Battery Side Range: 0 - 15A	**± 1.5% of Full Scale I Out**
Temperature Probe Range:-20 – 60°C	**± 2 °C**

Accessory

RTCONN	**Cable Start from battery Length 1m. Jumper 6**
RJTEMP451	**Temperature Probe Length 1m.**
RJTEMP453	**Temperature Probe Length 3m.**
RJCONN45	**Cable RJ45/RJ45 for Parallel Connection or connection to DPY351**
RJ45COUPLER	**RJ45 Three way "Daisy Chain" for Aux 2**
RJUSB280	**Cable RJ45/USB (Aux2) Length 1m for connection to PC.**
RJTB280	**Connector RJ45/Terminal Block 4pin for Aux 2 To RS485 ModBus RTU**
ADELViewsystem	**PC App for: Monitoring, Logging, Configuration, Control, Alarm, of the devices in ADELBus network.**
DPY351	**HMI panel control for: Monitoring, Logging, Configuration, Control, Alarm, of the devices in ADELBus network.**
DPY353	**Display for: Monitoring the Battery state, Battery Charging Section.**