

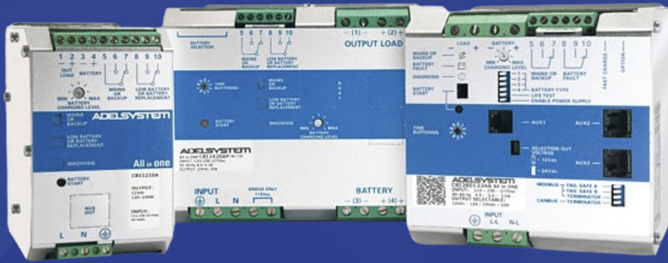


ELECTRICAL COMPONENTS

ADELSYSTEM

DC-UPS Power Continuity Solutions

- Power supply
- Back-up
- Battery charger
- Monitoring & Control



DC-UPS Power Continuity Solutions

ADEL System's DC-UPS series provides a compact, “All-in-one solution” to your power management needs. These devices combine several functions into a compact unit: power supply, power backup (UPS), battery charger and battery care module.

DC-UPS devices automatically distribute power between load and battery. If the system is disconnected from the main power source, the battery will supply power until the battery voltage reaches the minimum recommended voltage per cell, depending on the battery type. This prevents lead-acid batteries from reaching a sulfated state, or deep discharge for other battery types, while ensuring power to the load for as long as possible.

DC-UPS devices automatically detect the battery's condition and choose the appropriate charging mode. The diagnostics system will continuously monitor the charging progress and indicate faults using the LED light or the status contacts.

Features and Specifications:

- Power supply, back-up (UPS), battery charger and battery care modules in one compact device
- Three charging modes (recovery, boost and float/trickle) and adjustable charging current
- **Output:** 12VDC, 24VDC and 48VDC
- **Power Boost:** 2x Nominal Current for 4 minutes and 3x Nominal Current for 4 seconds
- Suitable for most common battery types
 - Lead-acid: VRLA, AGM, Gel
 - Ni-Cd
 - Li-Ion, Lithium polymer
- High charging current: charge up to 200 Ah batteries
- Battery and fault diagnostics /output protection: disconnection, polarity, short circuit, overload, battery sulfation / deep discharge
 - Included LED indicator
 - Contacts for external signal (remote monitoring)
- **Input:** 90-305VAC
- **Material (housing):** Aluminium
- **Ingress Protection:** IP20
- **Mounting:** DIN Rail
- **Approvals:** cURus (UL 60950-1); #E353188



Power Continuity

DC-UPS:

- POWER SUPPLY
- BATTERY CHARGER
- BACK UP MODULE

Double Output, Optimized Power Management

Thanks to the DC-UPS units, it will be possible to smart-manage the available power. Power will be automatically allocated between load and battery.

Supplying power to the load is the always the priority; it is not necessary to double the power. Power available for the battery will go to the load if the load requires it.

Output Load:
12, 24, 48

Power Boost:
In x 2 Continuous
In x 3 max 4 sec.

In Power Boost mode the maximum current on the load output is the 2 times the rated current ($2 \times I_n$) in continuous operation and 3 times the rated current ($3 \times I_n$) for max. 4 seconds.

Output load

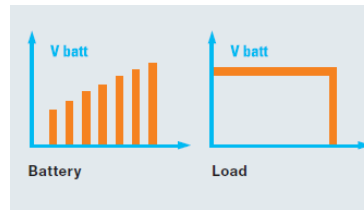
In	In		
2 In	In	I batt	> 4 min.
3 In	In	I batt	I batt max. 4 sec.

SMART BATTERY MANAGEMENT

Load output will not be affected by battery conditions

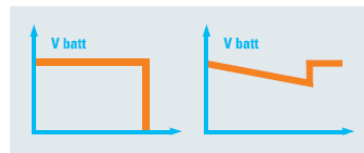
DC-UPS devices ensure continuous power supply to the load even in conditions of completely discharged batteries. The automatic multi-stage operation optimizes and adapts to the battery status.

DC-UPS devices can recharge and re-condition deeply discharged batteries even when their voltage is close to zero, enabling recharge and complete recovery of flat batteries.



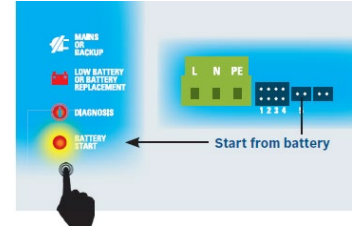
AVOID DEEP BATTERY DISCHARGE

In case of mains failure, the battery will supply the load until battery voltage reaches 1.5 Vpc (Volt per cell). Below this level the device automatically switches off to prevent deep discharge and battery damage.



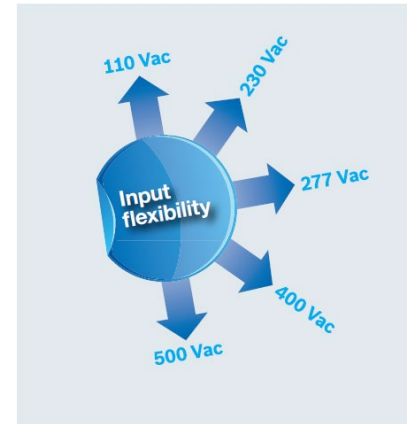
START FROM BATTERY WITHOUT MAIN

If you want to restart the system while the mains is off, a battery restart function is available, via RTCONN cable connections, or via pushbutton in the front panel.



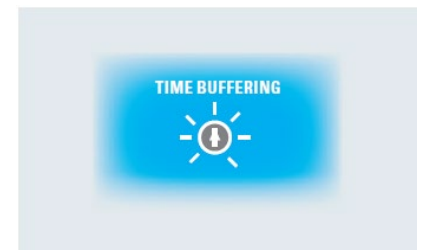
WIDE INPUT VOLTAGE RANGE

Flexibility is given also by the wide range input voltage. The range of the devices accept input voltage 110 - 230 - 277 - 400 - 500 VAC.



TIME BUFFERING

Time buffering is enabled when in back-up mode. Buffering time setting is possible by operating the rotary switch on the front panel.



Connection and Interoperability

ADEL System’s ‘ADELBus’ enables the easy connection of all components.

ADELBus is a single communication protocol based on MODbus-RTU or CANbus technology depending on the application field, allowing you to communicate with all ADEL System devices and to develop an independent system for electrical continuity. Monitoring and control of all parameters in the system can be done locally or remotely.

ADEL System allows you to implement simple yet sophisticated monitoring and control for your energy system and opens your mind to new ways to approach your applications.

Features:

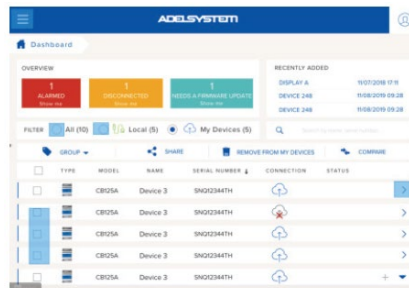
- More efficiency for the battery thanks to continuous control over time
- More monitoring features in the main connection modes: input, output load, battery
- **Event logging:** number of battery charging cycles, charge cycles completed, aborted charge cycles, Ah charged, charging time, total number of transitions stand-by /back-up etc.
- **Event Management:** checking the load output, shutdown management of PCs (UPS function), RESET management of a generic equipment
- **Flexibility of usage:** customization of the entire battery charging curve, battery type setting, setting boost voltage, absorption, float, etc... configuration as Batteries Charger, Enabling power supply function

ADELView System

A comprehensive software suite for remote monitoring and management of ADEL System devices connected in an ADELBus network.

- **ADELView System** is a PC-based software developed to monitor parameters in real-time. A simple and intuitive user interface allows monitoring of battery parameters, load output, temperature sensor, mains presence and all alarm and diagnostic flags. All features are displayed on a single screen
- **ADELView app**, application for tablet, you can visualize in real time data stored on your own device
- **ADELView Cloud**, a suite available to all customers. Its main function as Data Logger for all parameters coming from the connected devices
- **ADELView Config:** interface that allows application engineers to configure the system, customize battery charging curve, set alarm thresholds, configure parameters, Demo for customers

All software is available for download from the ADEL System web page.



ADELView Graphic

The DPY351 is versatile multifunction display that allows monitoring, configuring, and managing the ADEL System devices connected in an ADELBus network. It is equipped with a bright, wide angle 3.5” TFT screen for optimum visibility in any operating condition.

The user interface is clear, intuitive and allows for easy configuring and managing of connected devices.

Through the Ethernet interface, it is possible to remotely manage the ADELBus network with a PC or mobile device. The DPY351 can act as a gateway that implements standard protocols such as Modbus TCP/IP and SNMP.

From the Display you can manage all connected devices allowing:

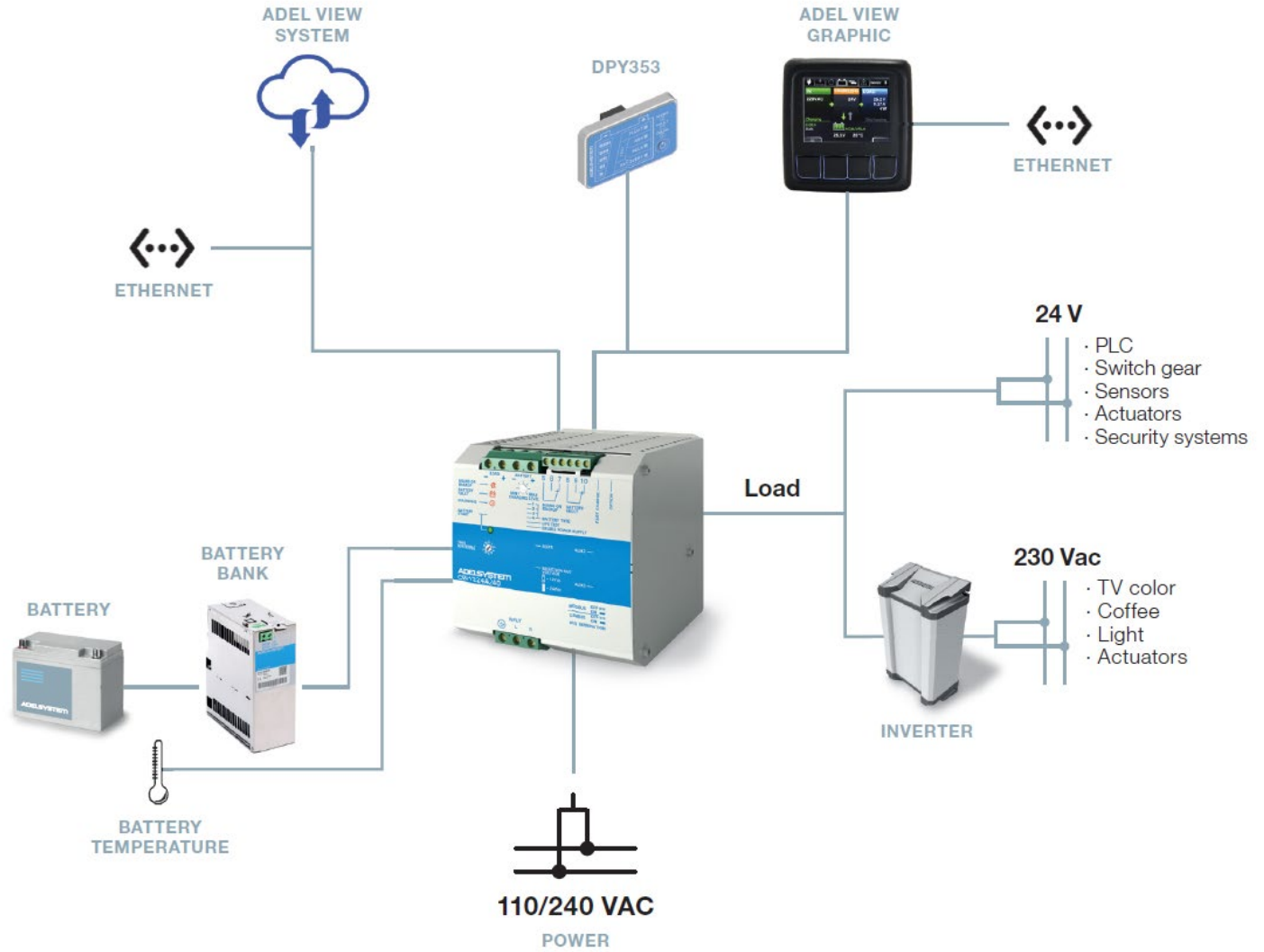
- Monitoring
- Configuration
- Alarms management
- programmed actions

Battery Bank

No matter how large or small the capacity of the battery storage needed in the system, ADEL System DC-UPS devices allow simple and effective integration. ADEL System is a pioneer in the development of automatic charging and monitoring the battery. Thanks to Adel Battery Care technology, every battery will be maintained and will last longer.

Continuous battery monitoring notifies users of proactive battery replacement conditions, and improves system reliability.

For compact and optimized integration, ADEL System offers VRLA battery modules and enclosures series.



Temperature Compensated Charging

By installing the battery temperature probe 'RJ Temp', the charge voltage is automatically adjusted to the battery temperature. When the battery temperature is low, the charge voltage increases. Conversely, when battery temperature is high, charge voltage is decreased. Over-charging and gassing are thus prevented.

This will extend battery life (ADEL's Philosophy of Battery Care).

ADELSYSTEM

ADELSYSTEM network, interconnect all Devices in Canbus and Modbus.

Load

All DC-UPS devices' mission is to always keep the load supplied. The Load Output is the source of power for the whole electric system and has been designed to perform this duty under the most critical conditions, no matter if during standby or back-up modes.

Battery

You can recharge and monitor the most common battery types:

- Lead acid (VRLA, AGM)
- Lead gel
- Ni-Cd
- Li-Ion and Li-polymer

Inverter

Used when AC power is required. ADELSYSTEM DC-UPSs can connect inverters rated up to 1500W.

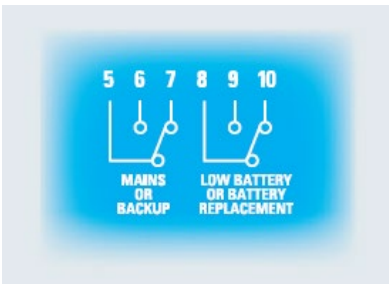
Connections & Monitoring

MONITOR SIGNALS

Clear definition of each system operation, via LED indicators and status relay contacts:

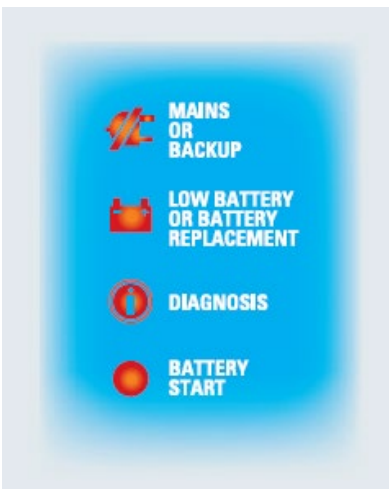
Contact Port signals. Galvanic Insulated

- Main or back-up conditions
- Battery or system fault
- Flat battery



Display Signals by LED

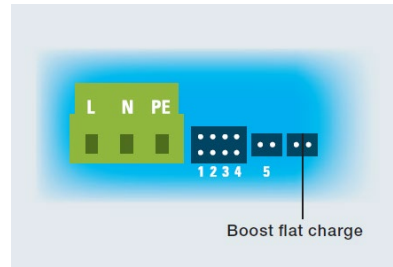
- Input Main On Off
- Battery Fault
- Low battery (capacity less than 30%)
- Type of Battery charge mode
- Help through "blinking code"



DRIVER COMMAND

Remote link for selection of Float/Boost charging

Via RTCONN remote connections cable it is possible to drive the devices from Float to Bulk. It is also possible to permanently put a jumper for Boost - Bulk Charging.



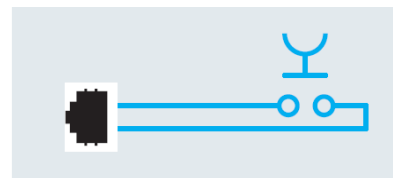
ACCESSORIES

All DC-UPS units can be made available with the following options by Rj45 or Rj11 connector:

Temperature sensor Probe, for ambient temperature compensation charging.

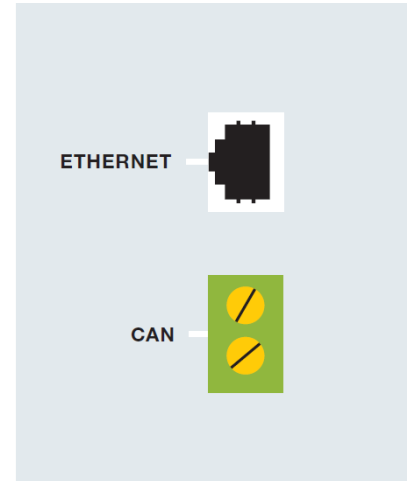


Battery Start UP cable



AUXILIARY OUTPUT "AUX 2 AND AUX 3"

Auxiliary Input-Output gateway ADELBus. Interconnect all Devices in Canbus and Modbus and Ethernet. Standard protocols for Ethernet connection such as Modbus TCP/IP and SNMP.



Battery Care

All DC-UPS devices will automatically charge, using suitable factory pre-set charging curves, the most common battery types:

- Lead acid (VRLA, AGM)
- Lead gel
- Ni-Cd
- Li-Ion and Li-polymer

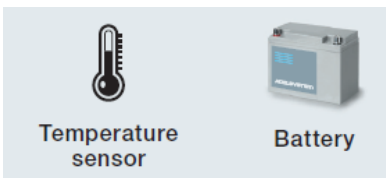
DC-UPS devices can be customized for the application requirements.

The Battery Care concept is based on algorithms that assist to implement rapid, automatic charging curves and detect battery and system failure in real-time. Battery faults such as sulfated battery, short circuit, reverse polarity, can be easily detected, identified, and removed.

The DC-UPS series meet the highest standards of quality and insure high reliability, with MTBF values up to 300,000 hours.

TEMPERATURE COMPENSATION

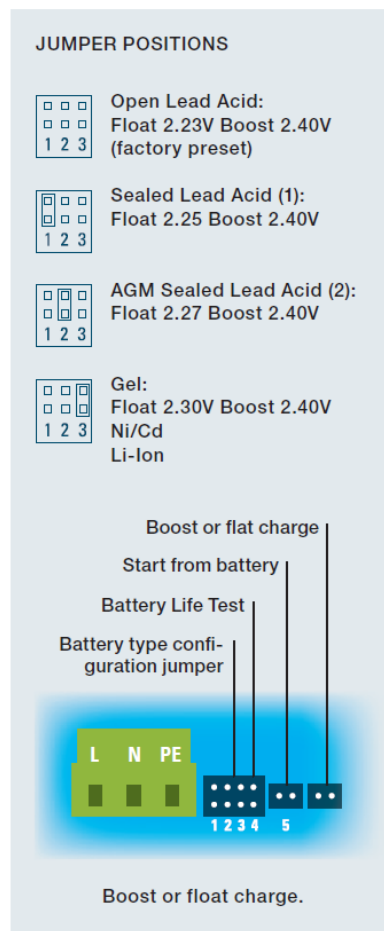
In special applications such as fire fighting equipment, the temperature compensation charging function will adapt the charging curve to account for the temperature fluctuations. A temperature probe is required.



ONE DEVICE FOR ALL BATTERY TYPES

The DC-UPS series is suitable to charge most types of batteries thanks to user selectable charging curves, they can charge open lead acid, sealed lead acid, Gel, Ni-Cd, Ni-MH, and Li-Ion batteries. It is possible to change or add other charging curves by updating the DC-UPS.

The charging mode is then completely automated.

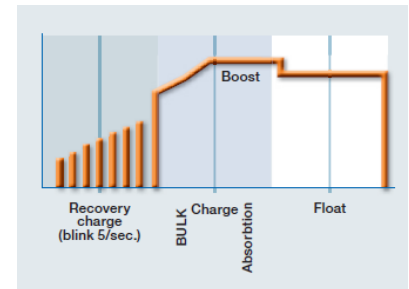


MULTI-STAGE CHARGING FOUR CHARGING MODES

Automatic multi-stage operation and real-time diagnostic allow fast recharge and recovery of deeply discharged batteries, adding value and reliability to the system.

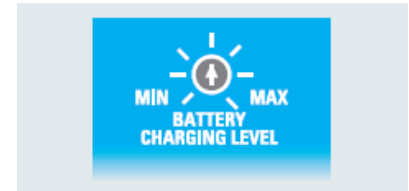
DC-UPS devices provide voltage stabilized and current stabilized IUoU charging, in automatic modes, identified by a flashing code in a LED:

- **Recovery** (recharge batteries with voltage close to zero)
- **Boost** (Bulk charging)
- **Absorption**
- **Float** (trickle)



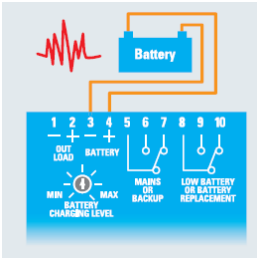
ADJUSTABLE MAXIMUM BATTERY CHARGING CURRENT

The maximum battery charging current can be set from 10% to 100% of the device rated value.



Battery Life Test

This test guarantees battery reliability over time by continuously testing the internal resistance. It minimizes possible risk of damage and allows a permanent, reliable and safe connection of the battery to the power supply. The system can recognize sulfated batteries or short circuited cell.



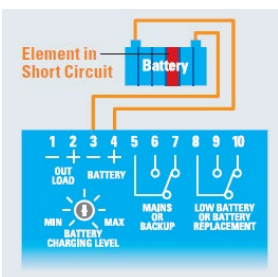
Diagnostic Checks

All DC-UPS devices feature an LED flashing sequence code allows to distinguish among various possible faults.



DC-UPS devices continuously test and detect for these conditions, and take the appropriate action:

- Accidental disconnection
- Battery in Open Circuit or Sulfated
- Reverse Polarity
- Battery voltage connections
- End of Charge
- Battery Cells in short circuit



Maximum Safety and Protection

DC-UPS devices are designed to provide safe operation and long battery life.

The following protections are standard features:

- Outputs protected against short circuit and overload
- Outputs in conformity to SELV and PELV conditions
- Protection against deep battery discharge
- Protection against reverse polarity connection
- Detection of batteries' voltage

All protections have automatic reset. No fuse is required.

Robust Construction and Easy Installation

- **Materials** (housing): aluminium
- **Mounting**: DIN rail
- **Ingress protection**: IP20

Approvals / Certifications

- Safety EN IEC 62368-1:2014/AC:2015
- Emission: IEC 61000-6-3
- Immunity: IEC 61000-6- 2; EN60950/UL60950-1
- Electrical Safety EN54-4 Fire Detection and Alarm Systems EMC Directive
- **DIN41773** (Charging Cycle) CE
- **cURus** (UL 60950-1); #E353188

Technology

The DC-UPS range is based on four key elements:

Switching technology

ADELSYSTEM has 25 years of experience in design of stabilized switching power supplies. A power supply/battery charger unit based on this technology is extremely efficient.

Back-up module and Battery Care

Unlike most other industrial UPS units, ADEL CBI DC-UPS devices are equipped with ADEL System's advanced algorithms that control the charging process and enable several monitoring functions.

Power Management

The Power Management Module 'PMM' is the built-in algorithm that manages the automatic power sharing across Power Supply, Battery and Load. It also monitors overload and short-circuit conditions. The PMM's goal is to maintain the best possible power solution to the load.

Accessories

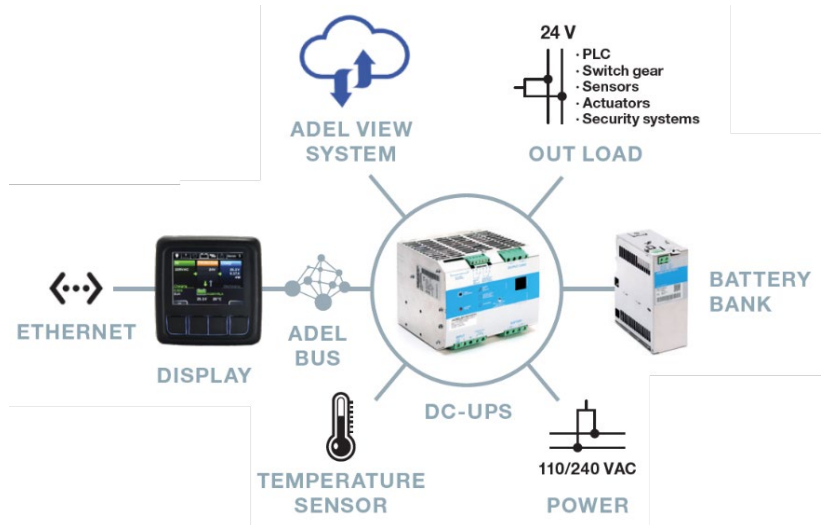
Battery Enclosures - Enclosures for small VRLA Battery Modules 24VDC



Model	BTH1.2VRLA	BTH3.4VRLA	BTH7.2VRLA	BTH12VRLA
MOUNTS ON/IN	DIN Rail	DIN Rail	DIN Rail	Panel
INPUT	1.2Ah	3.4Ah	7.2Ah	12Ah
BATTERIES	24VDC (2x1.2 Ah)	24VDC (2x3.4 Ah)	24VDC (2x7.2 Ah)	24VDC (2x12 Ah)

*Information subject to change without notice
VRLA battery modules with enclosures are available - consult ITC*

Adel View Graphic - DPY351



The DPY351 is versatile multifunction display that allows monitoring, configuring and managing the Adel System devices connected in an ADELBus network. It is equipped with a bright, wide angle 3.5" TFT screen for optimum visibility in any operating condition.

The user interface is clear, intuitive and allows for easy configuring and managing of connected devices.

Through the Ethernet interface, it is possible to remotely manage the ADELBus network with a PC or mobile device. The DPY351 can act as a gateway that implements standard protocols such as Modbus TCP/IP and SNMP.

ADEL View DPY351 Functions:

Monitoring:

- Event logging: number of battery charging cycles, charge cycles completed, aborted charge cycles, Ah charged, charging time, total number of transitions stand-by /back-up etc.
- Status of Charging Battery

Alarms and Recorder management:

- Setting Alarm threshold
- Receive messages from other devices
- Event Record

Configuration:

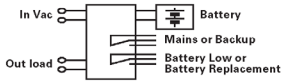
- Charging curve
- Battery type
- Adjust/limit charging current
- Enabling power supply function
- Timer

Events program - programmed actions

- Coordinated action among devices
- Program Event to other device to change the type of charging curve
- Checking the load output, shutdown management reset

DC-Ups

12-24 Vdc	12 Vdc				
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Input (Volt) 115-230-277 Vac
Frequency 47- 63 Hz



MODEL	CBI2801224A	CBI123A	CBI6012A	CBI126A	CBI1210A	CBI1235A	
OUTPUT	12/24Vdc 15/10A 280W	12Vdc 3A 36W	12Vdc 5A 60W	12Vdc 6A 72W	12Vdc 10A 120W	12Vdc 35A 420W	
OUTPUT DATA	Output Vdc / IN	12Vdc 15A 24Vdc 10A	12Vdc - 3A	12Vdc - 5A	12Vdc - 6A	12Vdc - 10A	12Vdc - 35A
	Efficiency (50% of In)	> 91%	≥ 90%	> 90%	≥ 90%	≥ 90%	> 91%
LOAD OUTPUT	Output voltage (at In) Vdc	10 - 14.4Vdc (15.5Vdc Ni-Cd) 22 - 28.8Vdc (31Vdc for Ni-Cd)	10 - 14.4Vdc (17Vdc Ni-Cd)				
	Continuous current (without battery) Iload = In	15A 12Vdc 10A 24Vdc	3A	5A	6A	10A	35A
	Max continuous current (with battery) Iload = In + Ibatt	30A 12Vdc 20A 24Vdc	6A	10A	12A	20A	70A
	Max current Output Load: (Main Input) Iload (4sec.)	max. 45A 12Vdc 30A 24Vdc	9A max	15A	18A max	30A max	105A max
	Max current Output Load: (Back Up) Iload (4sec.)	max. 30A 12Vdc 20A 24Vdc	6A max	10A	12A max	20A max	70A max
	Start from Battery only, without main	✓	✓	✓	✓	✓	✓
Time Buffering	✓	✓ ²	✓	✓ ²	✓ ²	✓	
BATTERY OUTPUT	Fast Charge - Boost Charge	14.4Vdc / 28.8Vdc (2.4V/Cell)	14.4Vdc (2.4V/Cell); Nicd 1.5V/cell				
	Max. Time Boost/Fast charge (Typ. at IN)	15h	15h	15h	15h	15h	15h
	Max. Time Bulk charge (Typ. at IN)	15h	15h	15h	15h	15h	15h
	Floater Charge: Depend on Battery type (V cell)	2.23 V/cell Open Lead, 2.25 V/cell Sealed					
	Recovery Charge	2-10V / 2-20V	2-9V	2-9V	2-9V	2-9V	2-9V
	Charging Current Limiting IN (Iadj)	10 ÷ 100% / Ibatt	20 ÷ 100% / Ibatt	20 ÷ 100% / Ibatt	20 ÷ 100% / Ibatt	20 ÷ 100% / Ibatt	10 ÷ 100% / Ibatt
SIGNAL OUTPUT (RELAY)	Remote Input Control (AMP Type connector)	Bulk / Float	Bulk / Float	Bulk / Float	Bulk / Float	Bulk / Float	Bulk / Float
	Charging Curve						
	Main or Backup Power	✓	✓	✓	✓	✓	✓
Low Battery / Device Fault	✓	✓	✓	✓	✓	✓	
AUXILIARY OUTPUT	UPS Enabling	✓	✗	✓	✗	✗	✗
	Communication Protocol	Modbus RTU	✗	Ethernet / Can	✗	✗	Modbus RTU
CLIMATIC DATA	Ambient Temperature operation						
	De rating T ^a > (In)						
	Ambient Temperature Storage						
	Humidity at 25 °C						
GENERAL DATA	Cooling						
	Isolation Voltage (IN / OUT)	3000Vac	3000Vac	3000Vac	3000Vac	3000Vac	3000Vac
	Isolation Voltage (IN / PE)	1605Vac	1605Vac	1605Vac	1605Vac	1605Vac	1605Vac
	Isolation Voltage (OUT / PE)	500Vac	500Vac	500Vac	500Vac	500Vac	500Vac
	Protection Class (EN/IEC 60529)	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
	Reliability (MTBF IEC 61709)	> 300 000 h	> 300 000 h	> 300 000 h	> 300 000 h	> 300 000 h	> 300 000 h
	Dimension (w-h-d)	110x115x135	65x115x135	70x91x57	65x115x135	65x115x135	150x115x135
	Safety Standard Approval	CE	CE	CE	CE	CE	CE
OPTIONAL	ADEL View Graphic (Display 2.7")	✓	✗	✓	✗	✗	✓
	ADEL View Graphic (Display 3.5")	✓	✗	✓	✗	✗	✓
	ADEL View System (Sw for PC; Cloud)	✓	✓	✓	✓	✓	✓
	Battery temp. compensation Probe RjTemp; 2 m length	✓	✓	✓	✓	✓	✓

(1) Options to be defined by Order/S (ex: CBIXXA/S), Push Button not available
 (2) Yes if required by order / TB1/TB2/TB3..
 (3) UL60950



24 Vdc **48 Vdc**



CBI6024A

CBI243A

CBI245A

CBI2410A

CBI2420A

CBI485A

CBI4810A

24Vdc 2.5A 60W	24Vdc 3A 72W	24Vdc 5A 120W	24Vdc 10A 240W	24Vdc 20A 500W	48Vdc 5A 240W	48Vdc 10A 500W
24Vdc - 2.5A	24Vdc - 3A	24Vdc - 5A	24Vdc - 10A	24Vdc - 20A	48Vdc - 5A	48Vdc - 10A
> 90%	≥ 90%	≥ 90%	≥ 83%	> 91%	≥ 83%	> 90%
22 - 28.8Vdc (31Vdc Ni-Cd)				44 - 57.6Vdc (62Vdc Ni-Cd)		
2,5A	3A	5A	10A	20A	5A	10A
5A	6A	10A	20A	40A	10A	20A
7.5A max	9A max	15A max	30A max	60A max	15A max	30A max
5A max	6A max	10A max	20A max	40A max	10A max	20A max
✓	✓	✓	✓ ¹	✓	✓ ¹	✓
✓	✓ ²	✓ ²	✓ ²	✓	✓ ²	✓
28.8Vdc (2.4V/Cell); Nicd 1.5V/cell				57.6Vdc (2.4V/Cell); Nicd 1.5V/cell		
15h	15h	15h	15h	15h	15h	15h
15h	15h	15h	15h	15h	15h	15h
Lead, 2.27 V/cell Sealed Lead, 2.3 V/cell gel; NiCd 1.5V/cell (10 elem.) Float (Imax 10%)						
2-24V	2-24V	2-24V	2-24V	2-24V	2-24V	2-24V
20÷100% / lbatt	20÷100% / lbatt	20÷100% / lbatt	20÷100% / lbatt	10÷100% / lbatt	20÷100% / lbatt	10÷100% / lbatt
Bulk / Float	Bulk / Float	Bulk / Float	Bulk / Float	Bulk / Float	Bulk / Float	Bulk /
IUoU, Automatic, 4 stage						
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
✓	✗	✗	✗	✗	✗	✗
Ethernet / Can	✗	✗	✗	Modbus RTU	✗	Modbus RTU
-25 ÷ +70°C						
> 50° -2.5%(In) / °C						
-40 ÷ +85°C						
95% to 25°C						
Auto Convection						
3000Vac	3000Vac	3000Vac	3000Vac	3000Vac	3000Vac	3000Vac
1605Vac	1605Vac	1605Vac	1605Vac	1605Vac	1605Vac	1605Vac
500Vac	500Vac	500Vac	500Vac	500Vac	500Vac	500Vac
IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
> 300 000 h	> 300 000 h	> 300 000 h	> 300 000 h	> 300 000 h	> 300 000 h	> 300 000 h
70x91x57	65x115x135	65x115x135	100x115x135	150x115x135	100x115x135	150x115x135
CE	CE	CE	CE	CE	CE	CE
✗	✗	✗	✗	✓	✗	✓
✓	✗	✗	✗	✓	✗	✓
✗	✗	✗	✗	✗	✗	✗
✓	✓	✓	✓	✓	✓	✓

Optional for auxiliary Output: Temp Charging probe 1m or 3m lenght. Remote monitoring Display, Modbus/Can Bus Cable, Paralleling Cable.

ADEL System Product Range



CBI
DC-UPS 'All-in-one'

DC-UPS 'All In One' DC Power Back Up units.

Multi-function devices: power supply, back-up and battery charger in 1 device.



FLEX

DIN rail Switching Power Supplies.

Compact in size, 150% power boost, wide input voltage range 110-230 and 400-500VAC.



D-FLEX

High efficiency low-profile Power Supplies, for low-power and compact control panels.



CB

The best generation of Battery Charger. 4 levels of charge with auto-diagnosis system.

One product for all battery types.



SW - Low Input Voltage

Extremely compact switching power supplies.

Input: 24 VAC; 24 - 48 VDC
Output: 5 - 12 - 24 - 48 VDC
Watt: 25 - 460



DC/DC Converter

DC to DC converter, step Up and Step down. Input - Output isolated, low voltage.

With or without DIN Rail.



Interface Modules

Wide range of passive interfaces units for Input and Output connections, for PLC and CNC machine



Battery Bank

Power Storage Devices, for connection to DC Ups Products.

Battery size:
1.2 - 3 - 7.2 - 12 Ah, 24 VDC



Auxiliary Module

Decoupling modules for redundancy applications or decoupling power sources. Electronic fuses for overload output control, up to 4 channels.



SFP Safety Power

Fire prevention System. Available as a fully enclosed device conforming with EN54.4 or as a component.



ADELview Graphic

The DPY351 is versatile multifunction display that allows monitoring, configuring and managing the Adel System devices connected in an ADELBus network.



ADELView System

Software suite for remote monitoring and management of devices connected in an ADELBus network.