With the CB Battery Charger Line, Altech offers a highly reliable battery management solution. Operating at single phase Input Voltages of 115-230-277 VAC, the devices supply an Output of 12VDC and up to 35A or 24VDC and up to 20A.

Equipped with microcontrollers, the CB line offers fully automated multi-stage charging that will expand the battery's life significantly. Several diagnostic and monitoring features ensure easy handling and a high amount of transparency during daily operation.

Altech’s CB line battery chargers are based on the switching technology which allows much higher efficiency as well as smaller and lighter devices. Additionally, several standard safety and protection features ensure safe installation and operation.

Specifications:

**CB-Line Single Phase Battery Charger 12VDC**
- Nominal Input Voltage: 115-230-277VAC
- Output Voltage: 12VDC
- Output Current: 3, 6, 10, 35A
- Adjustable Charging Current: 20%-100% of Output Current
- Working temperature: -25°C to 70°C

**CB-Line Single Phase Battery Charger 24VDC**
- Nominal Input Voltage: 115-230-277VAC
- Output Voltage: 24VDC
- Output Current: 3, 5, 10, 20A
- Adjustable Charging Current: 20%-100% of Output Current
- Working temperature: -25°C to 70°C
No. 5: Charging Level Current:

The current through the battery compensates for the internal resistance of the battery. Battery manufacturers offer different charging currents depending on the type of battery and the state of the battery. It is important to check the battery manufacturer's recommendations for the correct charging current.

No. 6: Charge Mode:

The device offers three charge modes: float, charge, and trickle charge. These modes are selected based on the battery type and its state of charge.

Steady State:

The device is in steady state when no changes in the voltage or current are detected during a predefined period of time. This state indicates that the battery is fully charged or in a stable condition.

Over-charge protection:

If the charging current exceeds the predefined limit, the device will switch to over-charge protection mode to prevent over-charging the battery.

Under-charge protection:

If the charging current falls below the minimum limit, the device will switch to under-charge protection mode to prevent under-charging the battery.

Deep discharge protection:

If the battery voltage falls below a predefined threshold, the device will switch to deep discharge protection mode to prevent the battery from being damaged.

Thermal management:

The device includes thermal management features to ensure safe and efficient operation. These features include temperature sensors, overheating protection, and cooling fans.

Polarity protection:

The device is equipped with polarity protection to prevent damage caused by reversing the battery terminals.

Protection features:

The device is equipped with various protection features to ensure the safety of the battery and the device itself. These features include over-voltage, over-current, and short-circuit protection.

Output power connections:

The device provides multiple output power connections, including AC and DC outputs. The AC output is available through a power outlet, while the DC output is available through a power connector.

Battery connection:

The device is designed to be compatible with a wide range of battery types, including lead-acid, lithium-ion, and nickel-cadmium. The battery is connected through a power connector, and the device automatically detects the battery type and adjusts the charging parameters accordingly.

Diagnosis of battery and device:

The device includes built-in diagnostic features to monitor the battery and device performance. These features include real-time voltage and current monitoring, temperature monitoring, and fault detection.

Location:

The device is designed to be mounted in a standard 19-inch rack. It is equipped with mounting brackets and can be easily installed in a rack or on a wall.
For better efficiency of the system, filter relay Mains/Back up with a delay of at least 5 seconds before giving alarm.

Charging Curve

Via Luigi Barchi 9/B – Reggio Emilia 42124 – Italy

Automatic multi-stage operation and real-time diagnostic allows fast recharge and recovery of deeply discharged batteries. The device is equipped with an automatic and fast battery stimulation circuit with algorithms of evaluation of the detected parameter, is able to recognize sulphated batteries or batteries with a short-circuited element.

Battery Test: Automatic. Every 60 sec. check battery connection. Every 220 minute in trickle charge, make the test of battery stimulation circuit. For CB24xx use only CB/BBM (2 pin). The battery is recharged after the test. At the end of charge, the LED is turned off and the device goes to trickle mode. At the end of charge, the battery efficiency is determined with the help of the battery stimulation circuit, and the fault is signaled with relay commutation and diagnostic LED blinking.

No. 6: Charging Level Current:

07 Battery voltage connections:
Appropriate voltage check to prevent connection of wrong battery types, more or less than the nominal voltage.

End of Charge check:
Battery is considered charged when either 1) the voltage does not change for at least 30 minutes or 2) the charger reaches the end of charge setting (Vmin).

No. 12: Battery Management Configurations

The device is equipped with an internal fuse. If the internal fuse is activated, it is most probable that the battery is short-circuited. In this case, the device switches off in case of ambient temperature above 70°C or thermal overload. The devices are protected for operation in the worst-case conditions: in this situation the device automatically shuts down the output and automatically restarts when the temperature inside falls.

Electrical Safety:
Assembling device: UL508, IEC/EN 60950 (VDE 0805) and EN 50178 (VDE 0160). Installation according: IEC/EN 60950. Immunity: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5.

Standards and Certifications

CBxxyy is certified to UL508, CSA 22.2 No. 15 (C22.2 No. 15), EN 60950-1 and EN 50178-1: Double or single isolation.

The CBxxyy is the first device worldwide with rail mounting. The device is certified in accordance with EN 50178-1: rail is a form of connection for the power supply.

Diagnostic Type Choice
Check for accidental disconnection of the battery cables:

Battery not connected:
- LED off
- Recovery Charge
- Full

Test of quality wire connections:
- Battery stimulation circuit: it is possible to check the quality wire connections of the battery:
- Standard test: use the battery stimulation circuit
- Quality test: use the battery stimulation circuit.

Battery in Open Circuit or Scale:
- Voltage: 12 V
- Battery stimulation circuit: it is possible to check the quality wire connections of the battery:
- Standard test: use the battery stimulation circuit
- Quality test: use the battery stimulation circuit.

Battery with bad terminals:
- Battery stimulation circuit: it is possible to check the quality wire connections of the battery:
- Standard test: use the battery stimulation circuit
- Quality test: use the battery stimulation circuit.

End of Charge check:
Battery is considered discharged when either 1) the voltage does not change for at least 30 minutes or 2) the charger reaches the end of charge setting (Vmin).

Diagnosis of Battery and Device

The device is equipped with an automatic and fast battery stimulation circuit, with algorithms of evaluation of the detected parameters, is able to recognize sulphated batteries or batteries with a short-circuited element.

Battery Test: Automatic. Every 60 sec. check battery connection. Every 220 minute in trickle charge, make the test of battery stimulation circuit. For CB24xx use only CB/BBM (2 pin). If the internal fuse is activated, it is most probable that the battery is short-circuited. In this case, the device automatically shuts down the output and automatically restarts when the temperature inside falls.

Thermal behavior:
The range of operating temperature is from 0°C to 40°C. The output current must not exceed 2.5 A. At 25°C the temperature of the CBxxyy output current will be 50% of the input.
General Description

Automatic multi-stage operation and real-time diagnostic allows fast recharge and recovery of deep-discharged batteries. The Battery Care philosophy is based on algorithms that implement rapid and automatic charging, battery charge monitoring during time, fault battery recognition and real-time diagnostic. Safety during installation and operation is ensured through a timely recognition of battery faults such as, elements in short circuit, accidental reverse polarity and after sell. Each device is suited for all battery types, jumper selection sets a predefined curve for: Open Lead Element in Short Circuit 3 Blink/pause, Bad battery; Internal impedance Bad or Bad battery wire 7 Blink/pause, Life test not possible; Parallel mode on Slave Device 12 Blink/pause, Automatic diagnostic of battery status. Charging curve inversion polarity: Deep discharge: The connection is made by the screw type 2.5 mm² or 4.0 mm² (CB2420A – CB1235A) terminal blocks. Use only the CB2420A and CB1235A it is provided of CAN2.0A connection.

Main Characteristics

- Voltage: ± 115 – ± 205 Vdc
- Output Charging 25 Vdc: ± 10 – ± 20 A
- 12 V: ± 10 A
- Battery Types: Open Lead Acid, Bridge Lead Acid Lead (SLA/CN), Gel Battery
- Automatic, intelligent, of battery charge monitoring during time, fault battery recognition and real-time diagnostic, faults are signalized with relay commutation and diagnosis led blinking. Signal output protocol for shock-damaged or damaged equipment
- Protection degree IP20 - DIN rail; Space saving facility outside the power supply, via which can be switched to idle. Danger of fatal Injury!
- The current adjustment goes from 10% ÷ 100% of In. Set the maximum charging current between 10% and 20% of the battery capacity.
- The connection is made by the screw type 2.5 mm² or 4.0 mm² (CB2420A – CB1235A) terminal blocks. Use only the CB2420A and CB1235A it is provided of CAN2.0A connection.
- The system, through a series of algorithms, continuously tests the internal impedance status, avoids any possible risk of damages and grants also a permanent, reliable and safe connection of the battery to the power supply. The system, through a series of algorithms, continuously tests the internal impedance status, avoids any possible risk of damages and grants also a permanent, reliable and safe connection of the battery to the power supply.
- General end-of-charge timeout set to 16 hours. Trickle charge current is regulated at 10% of max current. Battery Care philosophy is based on algorithms that implement rapid and automatic charging, battery charge monitoring during time, fault battery recognition and real-time diagnostic. Safety during installation and operation is ensured through a timely recognition of battery faults such as, elements in short circuit, accidental reverse polarity and after sell. Each device is suited for all battery types, jumper selection sets a predefined curve for: Open Lead Element in Short Circuit 3 Blink/pause, Bad battery; Internal impedance Bad or Bad battery wire 7 Blink/pause, Life test not possible; Parallel mode on Slave Device 12 Blink/pause, Automatic diagnostic of battery status. Charging curve inversion polarity: Deep discharge: The connection is made by the screw type 2.5 mm² or 4.0 mm² (CB2420A – CB1235A) terminal blocks. Use only the CB2420A and CB1235A it is provided of CAN2.0A connection.
For better efficiency of the system, filter relay Mains/Back up with a delay of at least 5 seconds before giving alarm.

### Charging Curve

- **Via Luigi Barchi 9/B – Reggio Emilia 42124 – Italy**

### Main Characteristics

- **Vcc: 110 – 220 Vdc**
- **Output Charging**: 20 Vdc: 5A – 10A – 20A
- **Battery Types**: Open Lead Acid, Lead Gel, Ni-Cd, Ni-Mh
- **Automatic, reprogrammable charging curve**, standard current battery Life Test Function Battery, Charge, and Discharge Technologies.
- **Three charging levels**: Boost, Trickle, and Fast Charge.
- **Overcharge protection**: against short circuit, Over Load, and inverted polarity connection.

### Operation and Display Element:

- **No. 5: Input AC Port pin. L – N**: 5, 6, 7, 8, 9, 10
- **No. 2: Mains/Back Up: Input Mains On/Off**: Contact: 5, 6, 7
- **No. 1: Low Battery, Fault connections systems, Battery replacement**: Contact: 8, 9, 10

### Jumper Position

- **Trickle/Float charge**: 5 Blink/pause
- **Open Lead connection**: 2 Blink/pause
- **Sealed Lead Low Voltage**: 9 Blink/pause
- **Sealed Lead High Voltage**: Not available
- **Battery Test**: Automatic. Every 60 sec. check battery connection. Every 220 minute in trickle charge, make the test of element in short circuit.

### Output Power connections:

- **Normal connection**:
  - **Input Power connections**: AC (Life test not possible; Parallel mode on Slave Device 12 Blink/pause)

### Battery Care philosophy

- The Battery Care philosophy is based on algorithms that implement rapid and automatic charging, battery charge optimization during time, batch batteries recovery and real time diagnostic during installation and operation. The type of charging is optimum during time, flat batteries recovery and real time diagnostic during installation and operation.

### Protection Features

- On the primary side, the device is equipped with an internal fuse. If the internal fuse is activated, it is not possible to recharge the battery. On the secondary side, the device is equipped with an over current protection. In case of deep discharge, the unit disconnects the battery when a minimum voltage level is reached.

### Standards and Certification

- **IEC/EN 60335-2-29 Battery chargers**
- **EN60950 / UL1950**
- **Electrical safety EN54-4 Fire Detection and fire alarm systems**
- **89/336/EEC EMC Directive**
- **2006/95/EC (Low Voltage)**
- **DIN41773 (Charging cycle)**
- **Emission: IEC 61000-6-4; Immunity: IEC 61000-6-2. CE.**

### Rail Mounting

- All models have a metal support and vertical or horizontal (15 mm) to the power supply, in order to guarantee suitable air circulation. Depending on the ambient temperature and load of the device, the temperature of the heating section becomes very high.
### General Description

LED Battery Control State LED Diagnosis

- **Main Characteristics**
  - **Cycle Preparation**: 110 – 230 Vac
  - **Output Charging**: 28 Vac – 12 A – 20 A
  - **Input AC**: Single-phase 115 – 230 Vac

- **Description of components** may impair suitability for outdoor. Division 2.

- **Battery Life test ON**: 10% and 20% of the battery capacity.

- **Operating and Display Element**:
  - **No. 1: Input AC Port**: Input AC Port (24Vdc, 12Vdc) for CB24yy and CB12yy.
  - **No. 2: Battery Connection Port**: Battery Connection Port (24Vdc, 12Vdc). It is possible to set the max recharging current for the batteries by trimer (Charging Level).
  - **Battery Life test ON**: All modules must have a minimum vertical and horizontal distance of 10 cm to this power supply in order to guarantee sufficient auto convection. Depending on the ambient temperature and load of the device, the temperature of the housing can become very high!

- **Battery Care**
  - The battery care philosophy is based on algorithms that implement exact and automatic charging, battery charge optimization during time. Fast-battery recovery and test long-term temperature and system optimization during time. Battery charging current and real-time diagnosis through 'blinking code' signals.

- **Output Protection**: The output protection is achieved by detailed algorithms that guarantee battery reliability in time by continuously testing the internal impedance status, avoids any possible risk of damages and grants also a permanent, reliable and safe connection of the battery to the power supply. The system, through a battery stimulation circuit with algorithms of evaluation of the detected parameter, is able to recognize sulphated batteries or batteries with a short-circuited element. Battery Test: Automatic. Every 60 sec. check battery connection. Every 220 minute in trickle charge, make the test of battery stimulating. CBxxyy detects if the battery is not connected. CBxxyy detects accidental disconnection of the battery cables: CBxxyy detects if the battery is not connected. CBxxyy detects if the battery is not connected.

- **Schematic Diagram**: The schematic diagram of the system through the 'blinking code' signal.

### Charging Curve

- **Multiple configurations and real-time diagnosis shows fast recharge and recovery of deep discharging is the feature of the CBxxyy. Simple type of the CBxxyy is switching technology.**

- **Compensation Reactrices in temperature**
  - The CBxxyy varies the voltage of battery charging in the case of high and low temperature. The CBxxyy shows the value of voltage charging current and voltage charging voltage.

- **Protection Features**
  - The device is equipped with an internal fuse. In case of fuse is activated, it is most probable to the user that the fuse is not suitable for the device or the device is overloaded.

### Operational and Display Element:

- **No. 15: Input AC Port**: N: 12Vdc (Input AC Port) for CB12yy; 24Vdc (Input AC Port) for CB24yy. The Pin 1,2,3,4: Mains Input Vac OFF. Pin 5,6,7: No. 3: Battery Connection Port. Pin 8,9,10: Low Battery, Fault connections systems, Battery replacement. Pin 11: Auxiliary Output "Aux 2". Pin 12: Battery Life test ON.

### Technical Specifications

- **Input:**
  - Single-phase 115 – 230 Vac
  - Single-phase 115 – 230 Vac
  - Single-phase 115 – 230 Vac

- **Output:**
  - 24Vdc, 12Vdc
  - 24Vdc, 12Vdc
  - 24Vdc, 12Vdc

- **Input Protection:**
  - Over current: 10 A
  - Low Voltage: 9 V
  - Over Voltage: 30 V

- **Output Protection:**
  - Over current: 10 A
  - Low Voltage: 9 V
  - Over Voltage: 30 V

- **Battery Life test ON:**
  - 10% and 20% of the battery capacity.

- **Environmental Conditions:**
  - Temperature: 0°C - 50°C
  - Humidity: 0% - 95% (non-condensing)
  - Altitude: 0 - 2000 m

- **Certifications:**
  - CE
  - UL
  - UL 248-11
  - UL 60950-1
  - IEC 62305-1
  - IEC 61000-6-2

- **Standards and Certification:**
  - EN50131-6-6
  - EN60950-1
  - EN61000-6-2
  - CE

### Conclusion

- The CBxxyy will not be a system of vertical and horizontal distance of 15 cm to the power supply, in order to guarantee sufficient auto convection. Depending on the ambient temperature and load of the device, the temperature of the housing can become very high!
We are certain that it will give the utmost satisfaction and be a notable help on the job.

Main Characteristics

- **Input Voltage:** 110V – 220Vac
- **Output Charging:** 28Vdc – 10 – 20 A
- **AC Charge:** 70 – 260Vac, 50 – 60 Hz
- **DC Charging:** 12Vdc, 70 – 260Vac, 50 – 60 Hz
- **Rated Capacity:** 12Vdc 10  – 35 A
- **CAN bus error** = 11 Blink/pause
- **Life test not possible:** 12 Blink/pause
- **Bad battery wire connection:** 12 Blink/pause

Switching technology– Protected against short circuit, Over Load and inverted

Completely automatic, all devices are suitable to charge most batteries types thank to User Selectable charging polarity

Adding other charging curves connecting the device to a portable PC. Caution: Switch off the system before Setting the jumper.

Battery Type

<table>
<thead>
<tr>
<th>Jumper Position</th>
<th>Trickle/Float charge</th>
<th>Fast/Bulk charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>NiCd – NiMh (1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Temperature sensor, for ambient temperature charging compensation. With this it is possible to active the setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd and Ni-Mh (option). They guarantees charging in depending of the temperature:

- 2.5% per °C. Max 70°C
- At the temperature of 70°C the output current will be 50% of In.

The equipment does not require any calibration during duty. But batteries may alter and new diagnostic signals may appear. For this reason it is advisable to use the Blink Code of Diagnosis Led.

No. 15 Auxiliary Output

A 4 A Amp/Dc 12V is provided to activate label to fit the controller.

A temperature sensor for ambient temperature charging compensation is available and is included in the device. The temperature sensor, for ambient temperature charging compensation it is possible to activate charging compensation curves corresponding to the ambient temperature.

Battery Core

The Battery Core is a low cost alternative to automatic charging. Battery Core improves charging efficiency, while also recovering and reconditioning batteries. It is particularly useful for small installations and power supplies where the alternating current may fluctuate, leading to incorrect charging rates.

Battery in Open Circuit or Sulphated:

If the battery is out of service for a long period of time, it is important to keep the battery in its charging mode. This will ensure that the battery remains fully charged and in good condition. Failure to do so can result in a decrease in the battery's performance and a shorter lifespan.

Test of battery voltage connections:

- 0.2 – 2.5 0.2 – 2.5 24 – 14 0.5 – 0.6 Nm 7 mm All types
- 4.0 6.0 30 – 10 0.8 – 1.0 Nm 7 mm

| Connection for external display to remote N° 3 led of the internal display: |
|-----------------|-----------------|
| Port N°2 - Led N°6 Mains/Back-Up Port N°1 - Led N°7 Fault | |
| - led off | - led off |
| - led On | - led On |
| - led On (2) | - led On |
| ■ | ■ |
| ■ | ■ |
| ■ | ■ |
| ■ | ■ |

Charging Curve

Automatic multipulse charging and real time diagnosis shows bad recharge and recovery of deep discharged batteries. Each device is suitable to charge most battery types. The type of charging is selected by means of a switch located on the equipment.

No. 2 Battery Management

Two independent control circuits: Battery 1 and Battery 2. The type of charging is selected by means of a switch located on the equipment.

Diagnosis Options

Complementary multipulse charging and real time diagnosis shows bad recharge and recovery of deep discharged batteries. Each device is suitable to charge most battery types. The type of charging is selected by means of a switch located on the equipment.

With this it is possible to set the two charging parameters to the battery by means of DJ80/500E connection.

CB Type

The CBs are made up of a basic set of functions that can be expanded by means of different modules. These modules are easy to install and use, and can be connected to the CB by means of a dedicated cable. This allows for a high degree of flexibility and customization.

CBxxyy–The CBs are made up of a basic set of functions that can be expanded by means of different modules. These modules are easy to install and use, and can be connected to the CB by means of a dedicated cable. This allows for a high degree of flexibility and customization.

CB2420A and CB1235 – It is provided of CAN2.0A connection.

Compensation Reaches to temperature

For SIZE 1, 2 CBxxyy- CAD/LED (modul)

Connecting to CAD/Auxiliary (output the code K70E0 or supplied optionally) the CB will vary the voltage of battery according to temperature. This is useful for 24Vdc system to keep the battery voltage always in the range tolerated by the device.

Protection Features

On the primary side, the device is equipped with an internal fuse. If the fuse fuse is activated, it is not possible to power the device. Caution: Switch off the system before connecting the module.

On the secondary side, the device is equipped with an internal fuse. If the fuse fuse is activated, it is not possible to power the device. Caution: Switch off the system before connecting the module.

Deep discharge: not possible. The output disconnects the battery when a minimum voltage level is reached.
### INPUT DATA

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Range</td>
<td>85 – 264Vac</td>
<td>90 – 264Vac</td>
<td>90 – 240Vac</td>
<td>90 – 264Vac</td>
<td>90 – 264Vac</td>
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<tr>
<td>Input Current</td>
<td>≤ 16 A</td>
<td>≤ 35 A</td>
<td>≤ 16 A</td>
<td>≤ 35 A</td>
<td>≤ 35 A</td>
</tr>
<tr>
<td>Time response</td>
<td>35 A ≤ 5msec</td>
<td>35 A ≤ 5msec</td>
<td>35 A ≤ 5msec</td>
<td>35 A ≤ 5msec</td>
<td>35 A ≤ 5msec</td>
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<tr>
<td>Frequency</td>
<td>47 – 63 Hz ±6%</td>
<td>47 – 63 Hz ±6%</td>
<td>47 – 63 Hz ±6%</td>
<td>47 – 63 Hz ±6%</td>
<td>47 – 63 Hz ±6%</td>
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</table>

### OUTPUT DATA

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</tr>
</thead>
<tbody>
<tr>
<td>Minimum load</td>
<td>≥ 89%</td>
<td>≥ 89%</td>
<td>≥ 91%</td>
<td>≥ 91%</td>
<td>≥ 91%</td>
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<tr>
<td>Short-circuit protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
<tr>
<td>Over Load protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Over Voltage output protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Detection of element in short circuit</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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</table>

### BATTERY CHARGER OUTPUT / USCITA CARICA BATTERIA

<table>
<thead>
<tr>
<th>Boost – Bulk charge (Typ. at IN)</th>
<th>14.4Vdc</th>
<th>28.8Vdc</th>
<th>28.8Vdc</th>
<th>28.8Vdc</th>
<th>28.8Vdc</th>
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<tbody>
<tr>
<td>Min. Time Boost – Bulk charge (Typ. at IN)</td>
<td>15h</td>
<td>15h</td>
<td>15h</td>
<td>15h</td>
<td>15h</td>
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<tr>
<td>Max. Time Boost – Bulk charge (Typ. at IN)</td>
<td>1min.</td>
<td>1min.</td>
<td>1min.</td>
<td>1min.</td>
<td>1min.</td>
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<tr>
<td>Trickle-Float charge (Typ. at IN)</td>
<td>2 – 9Vdc</td>
<td>2 – 18Vdc</td>
<td>2 – 18Vdc</td>
<td>2 – 18Vdc</td>
<td>2 – 18Vdc</td>
</tr>
<tr>
<td>Recovery Charge / Cricca di ricarica</td>
<td>5A ± 5%</td>
<td>10A ± 5%</td>
<td>20A ± 5%</td>
<td>20A ± 5%</td>
<td>20A ± 5%</td>
</tr>
<tr>
<td>Charging current limiting (Iadj)</td>
<td>0.3A</td>
<td>0.3A</td>
<td>0.3A</td>
<td>0.3A</td>
<td>0.3A</td>
</tr>
</tbody>
</table>

### GENERAL DATA

<table>
<thead>
<tr>
<th>Isolation Voltage (IN / OUT)</th>
<th>1605Vac</th>
<th>1605Vac</th>
<th>1605Vac</th>
<th>1605Vac</th>
<th>1605Vac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolation Voltage (IN / PE)</td>
<td>IP 20</td>
<td>IP 20</td>
<td>IP 20</td>
<td>IP 20</td>
<td>IP 20</td>
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<tr>
<td>Isolation Voltage (OUT / PE)</td>
<td>IP 20</td>
<td>IP 20</td>
<td>IP 20</td>
<td>IP 20</td>
<td>IP 20</td>
</tr>
<tr>
<td>Reliability (MTBF IEC 61709)</td>
<td>&gt; 300 000 h</td>
<td>&gt; 300 000 h</td>
<td>&gt; 300 000 h</td>
<td>&gt; 300 000 h</td>
<td>&gt; 300 000 h</td>
</tr>
<tr>
<td>Pollution Degree Environment</td>
<td>2,5mm</td>
<td>4mm</td>
<td>2,5mm</td>
<td>2,5mm</td>
<td>4mm</td>
</tr>
<tr>
<td>Connection Terminal Blocks</td>
<td>65x115x135 mm</td>
<td>150x115x135 mm</td>
<td>65x115x135 mm</td>
<td>100x115x135 mm</td>
<td>150x115x135 mm</td>
</tr>
<tr>
<td>Weight / Peso</td>
<td>0.65 kg approx</td>
<td>1.5 kg approx</td>
<td>0.65 kg approx</td>
<td>0.85 kg approx</td>
<td>1.5 kg approx</td>
</tr>
<tr>
<td>Safety Standard Approval / Conformità ed Approvazioni</td>
<td>CE</td>
<td>CE</td>
<td>CE</td>
<td>CE</td>
<td>CE</td>
</tr>
</tbody>
</table>

### CONNECTION DIAGRAM / SCHEMA DI CONNESSIONE

(1) - Depend on jumper selection