XTRA-N SERIES
New MPPT Solar Charge Controller

The XTRA-N series integrate the latest design philosophy, as the main part which is the solar charge controller can carry different display units(XDB1/XDS1/XDS2). The limitation function of the charging power and current and reducing charging power function automatic improve the stability which works even connecting oversize PV modules and in high temperature. Meanwhile, it adopts the water-proof design with the IP32 class, and increase the professional protection chip for the communication port, further improving the reliability and meeting the different application requirements.

Improving the MPPT control algorithm further, XTRA N series can minimize the maximum power point loss rate and loss time, quickly track the maximum power point of the PV array and obtain the maximum energy from solar modules under any conditions; and can increase the ratio of energy utilization in the solar system by 10%-30% compared with a PWM charging method.

With the adaptive three-stage charging mode based on a digital control circuit, XTRA N series controllers can effectively prolong the life-cycle of batteries, significantly improve the system performance and support all-around electronic protection functions, including overcharging and over discharging protection to minimize damages to components of the system caused by incorrect installation or system failure at the utmost, and effectively ensure safer and more reliable operation of the solar power supply system for a longer service time. This modular solar controller can be widely used for different applications, e.g., Communication base stations, household systems, and field monitoring, etc.
Product naming rule

XTRA      1      2      10     N       XDS2

Display unit (XDB1/XDS1/XDS2)
Common Negative system
Max.PV open circuit voltage 100V
System voltage: 12/24VDC
Charge/discharge current: 1-10A  2-20A  3-30A  4-40A
Product series name

12V/24V,10A

Product Features

- Optional LCD display units (XDB1/XDS1/XDS2)
- Full-load operation without any drop in capacity within the range of working environment temperature
- Dustproof and waterproof design with IP32 class
- International famous brands of ST and IR's components of high quality and low failure rate are used, which can ensure the product’s service life
- The communication port adopts professional protection chip, which can provide 5VDC power supply, and has over-current and short-circuit protection.
- Advanced MPPT technology, with efficiency no less than 99.5%
- Advanced MPPT control algorithm to minimize the maximum power point loss rate and loss time
- High quality components, perfecting system performance, with maximum conversion efficiency of 98%
- Ultra-fast tracking speed and guaranteed tracking efficiency
- Accurate recognition and tracking of multiple-peaks maximum power point
- Automatic limitation of the charging power and current
- Wide MPP operating voltage range
- Compatible with lead-acid and lithium-ion batteries
- Battery temperature compensation function
- Real-time energy statistics function
- Overheating power reduction function
- Multiple load work modes
- With RS-485 communication bus interface and Modbus communication protocol, it is available to meet various communication requirements in different situations.
- Monitor and set the parameters via mobile phone APP or PC software
- Extensive electronic protection
Module Introduction

- PV Over Current
- Night Reverse Charging
- Battery Over Discharge
- Load Short Circuit
- TVS High Voltage Transients
- PV Short Circuit
- Battery Reverse Polarity
- Battery Overheating
- Load Overload
- PV Reverse Polarity
- Battery Over Voltage
- Lithium Battery Low Temperature
- Controller Overheating

Accessories

Remote Meter (MT50)
Set the controller parameter via the LCD display

Bluetooth adapter (Box-BLE-01)
with 2m communication cable (for the controller with RS485 port)

Data logger (eLOG01)
Real-time parameter recording of the product through the RS485 communication mode

WIFI adapter (eBox-WIFI-01)
with 2m communication cable (for the controller with RS485 port)

Remote temperature sensor RTS300R47K3.81A (3m)

Communication cable CC-USB-RS485-150U-22AWG
USB to RS485 PC communication cable (1.5m)

OTG cable (OTG-12CM)
Connect the controller to mobile APP
### Electrical Parameters

<table>
<thead>
<tr>
<th>Item</th>
<th>XTRA 1206N</th>
<th>XTRA 2206N</th>
<th>XTRA 1210N</th>
<th>XTRA 2210N</th>
<th>XTRA 3210N</th>
<th>XTRA 4210N</th>
</tr>
</thead>
<tbody>
<tr>
<td>System nominal voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12/24VDC Auto</td>
<td></td>
</tr>
<tr>
<td>Rated charge current</td>
<td>10A</td>
<td>20A</td>
<td>10A</td>
<td>20A</td>
<td>30A</td>
<td>40A</td>
</tr>
<tr>
<td>Rated discharge current</td>
<td>10A</td>
<td>20A</td>
<td>10A</td>
<td>20A</td>
<td>30A</td>
<td>40A</td>
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<tr>
<td>Battery voltage range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 ~ 32V</td>
<td></td>
</tr>
<tr>
<td>Max. PV open circuit voltage</td>
<td>60V$^\oplus$</td>
<td>46V$^\oplus$</td>
<td></td>
<td></td>
<td>100V$^\oplus$</td>
<td>92V$^\oplus$</td>
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<tr>
<td>MPP voltage range</td>
<td>(Battery voltage +2V) ~ 36V</td>
<td>(Battery voltage +2V) ~ 72V</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Max. PV input power</td>
<td>130W/12V 260W/24V</td>
<td>260W/12V 520W/24V</td>
<td>130W/12V 260W/24V</td>
<td>260W/12V 520W/24V</td>
<td>390W/12V 780W/24V</td>
<td>520W/12V 1040W/24V</td>
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<tr>
<td>Self-consumption</td>
<td>≤12mA</td>
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<td>Discharge circuit voltage drop</td>
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<td></td>
<td></td>
<td></td>
<td>≤0.23V</td>
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</tr>
<tr>
<td>Temperature compensate coefficient$^\circ$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-3mV/$^\circ$/2V (Default)</td>
<td></td>
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<tr>
<td>Grounding</td>
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<td></td>
<td></td>
<td>Common negative</td>
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<tr>
<td>RS485 interface</td>
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<td></td>
<td>5VDC/100mA</td>
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</tr>
<tr>
<td>USB interface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60S (Default)</td>
<td></td>
</tr>
</tbody>
</table>

① When a lead-acid battery is used, the controller hasn’t the low temperature protection.
② At minimum operating environment temperature
③ At 25°C environment temperature
④ When a lithium-ion battery is used, the system voltage can’t be identified automatically.

### Environmental Parameters

<table>
<thead>
<tr>
<th>Working environment temperature (100% input and output)</th>
<th>-25℃ ~ +50℃ (LCD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage temperature range</td>
<td>-30℃ ~ +50℃ (No LCD)</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>≤95%, N.C.</td>
</tr>
<tr>
<td>Enclosure</td>
<td>IP32★</td>
</tr>
</tbody>
</table>

◆ The controller can full load working in the working environment temperature, When the internal temperature is 81℃, the reducing power charging mode is turned on. Refer to P31.
★ 3-Dustproof: It can prevent any solid foreign objects with the diameter larger than 2.5mm from invading;
2-Waterproof: When tilted for 15°, it still can prevent any water droplets from immersing.
### Mechanical Parameters

<table>
<thead>
<tr>
<th>Item</th>
<th>XTRA1206N XTRA1210N</th>
<th>XTRA2206N XTRA2210N</th>
<th>XTRA3210N</th>
<th>XTRA4210N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension</td>
<td>175×143×48mm</td>
<td>217×158×56.5mm</td>
<td>230×165×63mm</td>
<td>255×185×67.8mm</td>
</tr>
<tr>
<td>Mounting dimension</td>
<td>140×134mm</td>
<td>180×149mm</td>
<td>180×159mm</td>
<td>200×176mm</td>
</tr>
<tr>
<td>Mounting hole size</td>
<td></td>
<td></td>
<td>Φ5mm</td>
<td></td>
</tr>
<tr>
<td>Terminal</td>
<td>12AWG(4mm²)</td>
<td>6AWG(16mm²)</td>
<td>6AWG(16mm²)</td>
<td>6AWG(16mm²)</td>
</tr>
<tr>
<td>Recommended cable</td>
<td>12AWG(4mm²)</td>
<td>10AWG(6mm²)</td>
<td>8AWG(10mm²)</td>
<td>6AWG(16mm²)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.57kg</td>
<td>0.96kg</td>
<td>1.31kg</td>
<td>1.67kg</td>
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</tbody>
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