



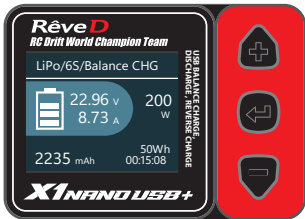
X



USB BALANCE CHARGE, DISCHARGE,
REVERSE CHARGE

X1NANO USB+

Instruction Manual



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Thank you for purchasing the "X1 NANO USB +." This unit delivers outstanding performance—up to 240 W with DC input and up to 126 W via USB Type-C PD. It supports a wide range of battery chemistries, including LiPo, LiFe, Li-ion, LiHV, NiMH, NiCd, and Pb (lead-acid), and it can also function as a digital power supply. With PD 3.1 input, charging becomes even more convenient, enabling flexible and efficient charging when used with a high-output PD charger.

With the new reverse-charging feature, the unit can perform high-power discharging at up to 100 W for batteries that require discharge. In addition, it can draw energy from a battery to charge external devices—such as smartphones and PCs—via the USB Type-C port.

High-performance charging : Up to 240 W DC output and up to 126 W via USB PD 3.1

Reverse charging : Up to 100 W discharge capability; can charge other devices

User-friendly design : Intuitive user interface

Multiple languages : English, and other languages

Before using this product for the first time, please read the instruction manual, important notices, and safety precautions carefully to ensure safe operation.

Getting to know X1 NANO USB +

① LCD Display

② +/Up Button

Increase the value or scroll through the menus/options.

③ Enter Button

Confirm or terminate the current program, enter Charge Settings, and perform other actions.

④ -/Down Button

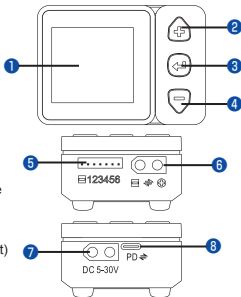
Decrease the value or scroll through the menus/options.

⑤ Balance Port

⑥ Main Port (XT60 Charge/Discharge Port)

⑦ XT60 DC Input (XT60, 5.0 - 30.0V/12A)

⑧ USB-C Port (PD3.0/3.1)



Specifications



Specification	Options	Description
Input Voltage	DC	5 ~ 30V
	PD3.0/3.1	5 ~ 28V
Input Current	DC	12A ($\pm 1A$)
	PD	5A ($\pm 1A$)
Charge Power	DC input	Max. 240W ($\pm 10\%$)
	PD input	Max. 126W ($\pm 10\%$)
Working Mode	LiPo/LiFe/Lilon/LiHV	Balance Charge, Charge, Discharge, Reverse Charge, Storage
	NiMH/NiCd	Charge, Re-Peak, Reverse Charge
	PB	Normal, AGM Charge, Cold Charge, Reverse Charge
Battery Type/ Cells	LiPo/LiFe/Lilon/LiHV	1S ~ 6S
	NiMH/NiCd	2S ~ 15S
	PB	3S/6S/12S
Charge Current	LiPo/LiFe/Lilon/LiHV	0.3A ~ 2A ($\pm 0.2A$) 2.1A ~ 10A ($\pm 10\%$)
	NiMH/NiCd	
	PB	

Specification	Options	Description
Discharge (Both the main port and balance port must be connected for discharging)	Battery Types Supporting Balance Port Discharge	LiPo/LiFe/Lilon/LiHV
	Discharge current	Max. 0.6A(±0.2A)
	Discharge voltage	LiPo: 3.0V-3.4V/cell (default: 3.3V)
		Lilon: 2.9V-3.3V/cell (default 3.2V)
		LiFe 2.6V-3.0V/cell (default 2.9V)
		LiHV 3.1V-3.5V/cell (default 3.4V)
Reverse Charge (Supports PD 3.0 reverse charging)	Reverse Charging Power	Max. 100W (±10%)
	NIXX battery reverse charging power	Cutoff Voltage < 7.5V, Reverse Charging Power: Max. 18W
		Cutoff Voltage < 9V, Reverse Charging Power: Max. 27W
		Cutoff Voltage < 10.5V, Reverse Charging Power: Max. 36W
		Cutoff Voltage < 12V, Reverse Charging Power: Max. 45W
	LIXX/Pb battery reverse charging power	Cutoff Voltage < 13.5V, Reverse Charging Power: Max. 60W
		Cutoff Voltage ≥ 13.5V, Reverse Charging Power: Max. 100W
		Below a cutoff voltage of 8.7V, reverse charging power: Max. 60W
		Cut-off voltage greater than or equal to 8.7V, reverse charging power: Max. 100W

Specification	Options	Description
Balance Current	LiPo/LiFe/Lilon/LiHV	Max. 600mA
Working Environment	Temperature	0°C/32°F ~ 40°C/104°F
	Humidity	5% ~ 75%
Storage Environment	Temperature	-10°C/14°F ~ 70°C/158°F
	Humidity	-5% ~ 75%
Size		70*50*31mm
Weight		82g

Warning



This product is not intended for use by individuals with reduced physical, sensory, or cognitive abilities, or by those lacking experience and knowledge with batteries, unless under the supervision or guidance of a responsible person.

Failure to use this product properly and follow the warnings below may result in malfunction, electrical issues, overheating, fire, and could lead to injury or property damage.

Important : When connected to a computer or other devices via USB-C, do not connect the XT60 with DC input at the same time. Doing so may cause serious damage to your computer or connected devices!

-  Never leave charging batteries unattended during use.
-  Never charge batteries overnight.
-  Never attempt to charge dead, damaged, or wet battery packs.
-  Never attempt to charge a battery pack containing different types of batteries.
-  Never charge batteries in extremely hot or cold places or place in direct sunlight.
-  Never charge a battery if the cable has been pinched or shorted.
-  Never connect the charger if the power cord has been pinched or shorted.
-  Never attempt to dismantle the charger or use a damaged charger.
-  Never attach your charger to both a PD and a DC power source at the same time.
-  Always use the charger with the correct charging and discharging program.
-  Always use only rechargeable batteries designed for use with this type of charger.
-  Never use the charger on car seats, carpets, or similar surfaces.
-  Always operate the charger away from flammable and explosive materials.

Standard Battery Parameters



	LiPo	Lilon	LiFe	LiHV	NiMH	NiCd	PB
Nominal Voltage	3.7V/cell	3.6V/cell	3.3V/cell	3.8V/cell	1.2V/cell	1.2V/cell	2.0V/cell
Charge Voltage	4.15V~ 4.25V/cell	4.05V~ 4.25V/cell	3.58V~ 3.70V/cell	4.25V~ 4.50V/cell	—	—	2.30V~ 2.75V/cell
Storage Voltage	3.75V~ 3.90V/cell	3.70V~ 3.85V/cell	3.25V~ 3.40V/cell	3.85V~ 3.95V/cell	—	—	—
Allowable fast charge current	≤ 1C	≤ 1C	≤ 1C	≤ 1C	≤ 1C	≤ 1C	≤ 0.4C
Discharge Voltage	3.0~ 3.4V/cell	2.9~ 3.3V/cell	2.6~ 3.0V/cell	3.1~ 3.5V/cell	—	—	—

Select the correct operating procedure based on the battery's specifications.
Incorrect settings could cause the battery to overheat, catch fire, or even explode.

USB-C PD Cable Specifications



by Power Delivery Version, Power Rating

PD Ver.	Max Power Rating	USBType	Use Case
PD 2.0	60W (20V/3A)	USB-C 2.0	Basic charging for phones, tablets
PD 3.0	100W (20V/5A)	USB-C 3.1 Gen 1 & 2	Laptops, tablets, faster data needs
PD 3.1	140W (28V/5A, EPR)	USB-C 4	High-power laptops, monitors
PD 3.1 (EPR)	240W (48V/5A, EPR)	USB-C 4, EPR-rated	Heavy-duty devices, high-performance laptops

Key Differences

PD 2.0: Introduced the basic power profiles, supporting up to 60W with USB-C 2.0 cables.

PD 3.0: Increased power to 100W and added faster charging protocols, typically requiring USB-C 3.1 cables for optimal performance.

PD 3.1 (Standard Power Range, SPR): Boosts power to 140W and supports USB-C 4, making it suitable for newer laptops with higher power needs.

PD 3.1 (Extended Power Range, EPR): Expands power capabilities to 240W, requiring specialized cables and primarily used for high-power-demand devices.



Important PD cables and PD products to use



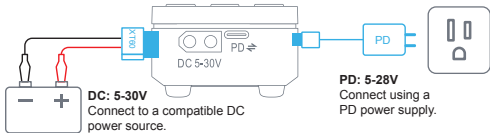
- For optimal performance and your safety, please use a PD-rated cable of 140W or higher. Lower-rated cables may limit charging speed and could lead to overheating or damage.
- This charger requires a third-party PD power source. Recommended to use reputable brands! Replace the PD power source if compatibility issues arise!

Power and Battery Connection



1. Connecting to a Power Source

The X1 NANO USB + supports two DC input methods with the following input voltages:



2. Connecting the Battery



WARNING!

To avoid short circuits, always power the charger first via the DC or PD port on the left, then connect the battery to the Charge Port on the right. When disconnecting, reverse the sequence.

Lithium Battery Connection with Balance Adapter

- For safety reasons, it is highly recommended to charge Lithium batteries (LiPo, Li-ion, LiFe, and LiHV) using **Balance CHG mode**, unless the battery lacks a balance wire.
- Ensure that the balance wire is connected to the charger, with the black wire aligned with the negative marking. **Check the polarity to ensure correct connection!**



Lithium Battery Connection with Balance Adapter



Battery operation list (LiPo/LiFe/Lilon/LiHV)



This table shows the capabilities of the X1 NANO USB+ depending on the battery type.

Battery Type	Working Mode	Description
LiPo Lilon LiFe LiHV	Balance CHG	To charge the lithium battery in balance mode to ensure each cell's voltage is balanced. The balance lead must be connected.
	Charge	To charge the lithium battery without requiring a balance lead connection.
	Reverse CHG	To transfer the battery's energy through the Type-C interface to charge your other devices.
	Discharge	To discharge the lithium battery to a specific value, which can be set before discharging.
	Storage	This mode is to store the battery via charging or discharging its voltage to a specific storage value.

Battery operation list (NiMH/NiCd/PB)

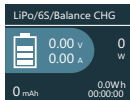


Battery Type	Working Mode	Description
NiMH NiCd	Charge	To charge the NiMH/NiCd battery based on the selected charging rate.
	Re-Peak	To charge the battery twice in a row automatically, which is useful for ensuring the battery is fully charged.
	Reverse CHG	To transfer the battery's energy through the Type-C interface to charge your other devices.
PB	Normal	To charge the Pb battery based on the charging rate selected.
	AGM Charge	To charge the AGM battery based on the charging rate selected.
	Cold Charge	To charge the Pb battery under a low temperature based on the charging rate selected.
	Reverse CHG	To transfer the battery's energy through the Type-C interface to charge your other devices.

Lithium Battery Program(LiPo/LiFe/LiIon/LiHV)

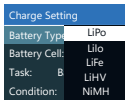


The following is a flowchart for configuring the program.



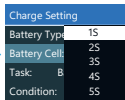
Enter Charge Setting

Press  to enter Charge Setting;



Select Battery Type

Press  to call out the Battery Type menu, and select your preferred lithium battery type.



Set Battery Cells

Call out the Battery Cell menu, and select the battery cells correspondingly.



Do not connect the battery before turning on the charger!

Charge Setting	
Battery	Banalance CHG
Battery	Charge
	Storage
Task:	Discharge
Condition	Reverse CHG



Charge Setting	
Condition:	4.18V
	4.19V
Charge Curr	♥ 4.20V
Start	4.21V
Back	4.22V



Charge Setting	
Condition:	9.6A
	9.7A
Charge Curr	9.8A
Start	9.9A
Back	10.0A



Select Task

Call out the Task menu, and select your desired working mode.

Select Condition

Call out the Condition menu, and adapt the cut-off voltage to the demand.

Select Charge current

Call out the Charge Current menu, and adapt the charge current to the demand.

Charge Setting	
Condition:	4.20V
Charge Current:	10.0A
Start	
Back	



Charge Setting	
Condition:	4.20V
Charge Current:	10.0A
Start	
Back	



LiPo/6S/Balance CHG	
	
22.96 V	200 W
8.73 A	
2235 mAh	50Wh
	00:15:08

Start

Confirm to initiate the program.

Back

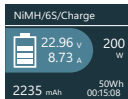
Confirm to step back to the main interface.

Stop

To terminate the current program, press  once.

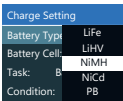
NiMH/NiCd Battery Program

The following is a flowchart for configuring the program.



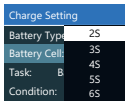
Enter Charge Setting

Press  to enter Charge Setting;



Select Battery Type

Press  to call out the Battery Type menu, and select NiMH or NiCd.



Set Battery Cells

Call out the Battery Cell menu, and select the battery cells correspondingly.



System Setting	
Battery 1	Charge
Battery 2	Re-Peak
Task:	Reverse CHG
Condition	



Charge Setting	
Condition:	-4ΔmV
Charge Curr	-5ΔmV
Start	♥-6ΔmV
Back	-7ΔmV
	-8ΔmV



Charge Setting	
Condition:	9.6A
Charge Curr	9.7A
Start	9.8A
Back	9.9A
	10.0A



Select Task

Call out the Task menu, and select your desired working mode.

Select Condition

Call out the Condition menu, and adapt the cut-off voltage to the demand.

Select Charge current

Call out the Charge Current menu, and adapt the working current to the demand.

Charge Setting	
Condition:	4.20V
Charge Current:	10.0A
Start	
Back	



Charge Setting	
Condition:	4.20V
Charge Current:	10.0A
Start	
Back	



NiMH/6S/Charge	
	22.96 V 200 W
	8.73 A
2235 mAh	50Wh 00:15:08

Start

Confirm to initiate the program.

Back

Confirm to step back to the main interface.

Stop

To terminate the current program, press  once.

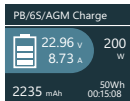


For Re-Peak, you must set the rest times appropriately.

Pb Lead-Acid Battery Program

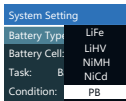


The following is a flowchart for configuring the program.



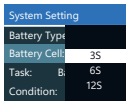
Enter Charge Setting

Press  to enter Charge Setting;



Select Battery Type

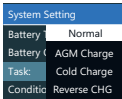
Press  to call out the Battery Type menu, and select Pb.



Set Battery Cells

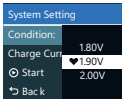
Call out the Battery Cell menu, and select the battery cells correspondingly





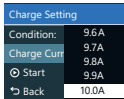
Select Task

Scroll to Task, call out the menu and scroll to select the working mode.



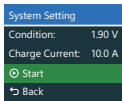
Select Condition

There is no option to change it.



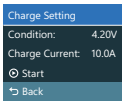
Select Charge current*

Call out the Charge Current menu, and adapt the working current to the demand.



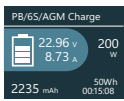
Start

Confirm to initiate the program.



Back

Confirm to step back to the main interface.



Stop

To terminate the current program, press  once.

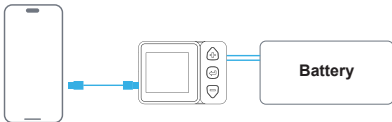
*There is no option to change it for Reverse Charge.

Reverse Charge(LiXX / NiXX)

1. Connect electronic devices (such as power banks, mobile phones, tablets, etc.) via the TYPE-C port.
2. Connect the output terminal to the battery and set the appropriate battery type and number of cells before starting reverse charging.

Note:

1. The reverse charging current is controlled by the connected electronic device, while the charger only supplies the necessary power.
2. The Reverse CHG can only be initiated when both the battery voltage and the total condition voltage* exceed 6V. *Total condition voltage = Battery cells × Condition voltage per cell.
3. An error will occur when initiating reverse charging if a DC power source or non-protocol adapter is connected to the input port.
4. In reverse charging mode, Start cannot be activated if both XT60 input and XT60 output ports are connected.



Voltage Calibration(LiPo/LiFe/Lilon/LiHV)

This feature is intended for advanced users. It allows you to adjust the voltage display values for each cell. You can measure the voltage of each cell in advance using an accurate multimeter or similar device and then set the display to match those values.

1. Connect the 6S battery to the B6neo+, ensuring that you connect to the balance port.
2. On the main page (battery voltage detection page), briefly press the  to enter the cell voltage page.
3. Simultaneously press and hold the  and  to enter the calibration page.
4. Press the  to check the voltage of each cell one by one.
5. Press  to select the desired voltage, and this value will turn blue.
6. Adjust the value using the  or .
7. After calibration, press the  to enter the confirmation option.
8. Press and hold  to save the updated values.

> Battery Meter		V
① 4.05	④ 4.05	
② 4.05	⑤ 4.05	
③ 4.05	⑥ 4.05	
Σ :25.2V	Δ: 8mV	


 >
Long Press

> Calibration		V
Set Vre f		
① 3.152	④ 3.328	
② 3.325	⑤ 3.330	
③ 3.317	⑥ 3.388	
←	< Stop >	⏻

Battery Voltage Meter(LiPo/LiFe/Lilon/LiHV) 1



Cell Voltage		V
① 4.05	④ 4.05	
② 4.05	⑤ 4.05	
③ 4.05	⑥ 4.05	
Σ :25.2V	Δ: 8mV	

Method 1

During the charging process, you can press the  on the main screen to switch back and forth to view the battery voltage values.

LiPo/6S/Balance CHG	
 22.96 V 8.73 A	200 W
2235 mAh	50Wh 00:15:08



> Battery Meter		V
① 4.05	④ 4.05	
② 4.05	⑤ 4.05	
③ 4.05	⑥ 4.05	
Σ :25.2V	Δ: 8mV	

Battery Voltage Meter(LiPo/LiFe/Lilon/LiHV) 2



Method 2

The charger can intuitively detect battery voltage. Simply connect lithium battery's balance connector directly to the charger's balance port, and the charger will automatically power on and display the battery voltage without needing to be manually switched on.



Method 3

1. After connecting the charger to the power supply, press and hold  on the main screen to enter System Settings.
2. Use the   to select Battery Meter, then connect the battery to the charger's balance port.
3. Press  to detect the battery voltage. You can press the  to switch between to view the voltage values of each cell.



 
Long Press



Battery Resistance Meter 1

Batt IR		mΩ
① 13	④ 10	
② 12	⑤ 17	
③ 15	⑥ 16	
Σ:77mΩ		

Method 1

During the charging process, you can press the  on the main screen to switch back and forth to view internal resistance values of each cell.

LiPo/6S/Balace CHG	
	22.96 V 8.73 A
200 W	
2235 mAh	50Wh 00:15:08



Batt IR		mΩ	
① 13	④ 10		
② 12	⑤ 17		
③ 15	⑥ 16		
Σ:77mΩ			

Method 2

1. Connect the charger to the power supply, then press and hold  on the main screen to enter System Settings;
2. Use the to   select Battery Meter, and connect the battery to the charger, ensuring the balance port is connected.
3. Press  to measure the internal resistance of the battery.
4. Press the  to switch between and view the internal resistance values of each cell.

LiPo/6S/Balace CHG

 22.96 v 200 W
8.73 A

2235 mAh 50Wh 00:15:08

 >
Long Press

System Setting

Task Parameters >

Preference >

Battery Meter >

User Guide >

 >

Batt IR mΩ

1 13 4 10

2 12 5 17

3 15 6 16

Σ : 77mΩ

Firmware Upgrade

The firmware upgrade uses Hitec's "Hitec Charge Master".

1. Launch **Hitec Charge Master**, which will automatically detect the device.
2. Connect one end of the Type-C cable to the computer.
Do not plug USB-C and XT60/DC simultaneously.
3. If detected, click to check for firmware updates.
4. If a new version is available, the Update button will appear.
5. Click Update and wait for the process to complete.



Scan or Click to Download



WARNIN!

DO NOT power off or exit the program!

The upgrade process takes approximately 5 minutes.

Errors Explained



In case of a fault, the B6neo+ will display an error message indicating issues like connection problems or battery mismatches. Refer to the table below for troubleshooting based on the error code.

Error Message	Explanation
DC In Too Low!	DC input voltage is lower than preset!
DC In Too High!	DC input voltage is higher than preset!
Connection Break!	The battery connection may be broken!
Cell Error	The cells do not match!
Battery Type!	The battery type is wrong!
Overcharge Capacity Limit!	The charged capacity reaches the preset capacity limit!
Over Time Limit!	The program has timed out!
Int.Temp.Too High!	The internal temperature is high!
Over Load!	The charger is overloaded!
Reversed Polarity	The battery's polarity is reversed!
Fully Charged	The battery is already fully charged!
Balance Connection Error!	An error occurred with the balance connection!
Cell Volt Diff.	The voltage difference between each cell is high!

System Settings 1



On the main interface, hold  for seconds to enter System Settings.

Menu	Option	Definition
Task Parameters	Safety Timer	Customize a time period for program protection.
	Max.Capacity	Customize the capacity protection
	Trickle Charge	Enable or disable trickle charge.
	Holding Voltage	Enable or disable holding voltage. When enabled, if the battery voltage drops to a specified value, the charger will automatically charge with a small current.
	Back	The battery type is wrong!
Preference	Language	Select your preferred language.
	Min.Input Voltage	Set the minimum voltage for input protection.
	LCD BackLight	Adjust the screen brightness.
	Volume	Adjust the key and beep volume.
	Completion Signal	Choose the way you'd like to be reminded when the program completes.
	Back	Back to the previous interface.

Menu	Option	Definition
Battery Meter	—	Measure the battery voltage and internal resistance. Press  to exit.
User Guide	—	Check the instruction manual.
Factory Settings	—	Restore to the factory settings.
System Info.	—	Check the current system information. Press  to exit.
Regulatory	—	Check the certification information.
Back	—	Back to the previous interface.

Liability Exclusion

This charger is designed and approved exclusively for use with the types of battery stated in this Instruction Manual. Hitec Multiplex Japan, Inc. accepts no liability of any kind if the charger is used for any purpose other than that stated. We are unable to ensure that you follow the instructions supplied with the charger, and we have no control over the methods you employ for using, operating, and maintaining the device. For this reason, we are obliged to deny all liability for loss, damage, or costs that are incurred due to the incompetent or incorrect use and operation of our products, or which are connected with such operation in any way.

Warranty and Service

We guarantee this product to be free of manufacturing and assembly defects for a period of one year from the time of purchase. The warranty only applies to material or operational defects, which are present at the time of purchase. During that period, we will repair or replace free of service charge for products deemed defective due to those causes. This warranty is not valid for any damage or subsequent damage arising as a result of misuse, modification, or as a result of failure to observe the procedures outlined in this manual.

Note:

1. The warranty service is valid in Japan only.
2. If you need warranty service overseas, please contact your dealer in the first instance, who is responsible for processing guarantee claims overseas. Due to high shipping costs, and complicated custom clearance procedures to send back to Japan, please understand that Hitec Multiplex Japan, Inc. can't provide warranty service to overseas end users directly.



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Hitec Multiplex Japan, Inc.
X1 NANO USB +
Made in China.

