# NBi Station

TURN-KEY SOLUTION

MAXIMUM FLEXIBILITY

USER-FRIENDLY INTERFACE

SMART POWER BALANCE

BUS PLUS READY

BACK-OFFICE INTEGRATION OCPP 1.6

## HEAVY VEHICLES CHARGING SOLUTIONS

NBi Station offers a complete flexible turn-key solution with its successful and revolutionary outdoor design based on our more than 30 years of experience in the manufacture of power electronics. NBi Station consists of a central power station which supplies energy to DC charging posts or pantographs. Specially designed with a modular concept, the central power station can reach up to 1200 kW, combining DC posts up to 350 kW and pantographs up to 600 kW. It is the ideal solution to optimize the CAPEX and OPEX of the charging infrastructure. NBi Station is the best solution for bus stations, depots and motorways, applications with high rotation of vehicles and where it is required a simple, fast and safe charging experience.

# TURN-KEY SOLUTION

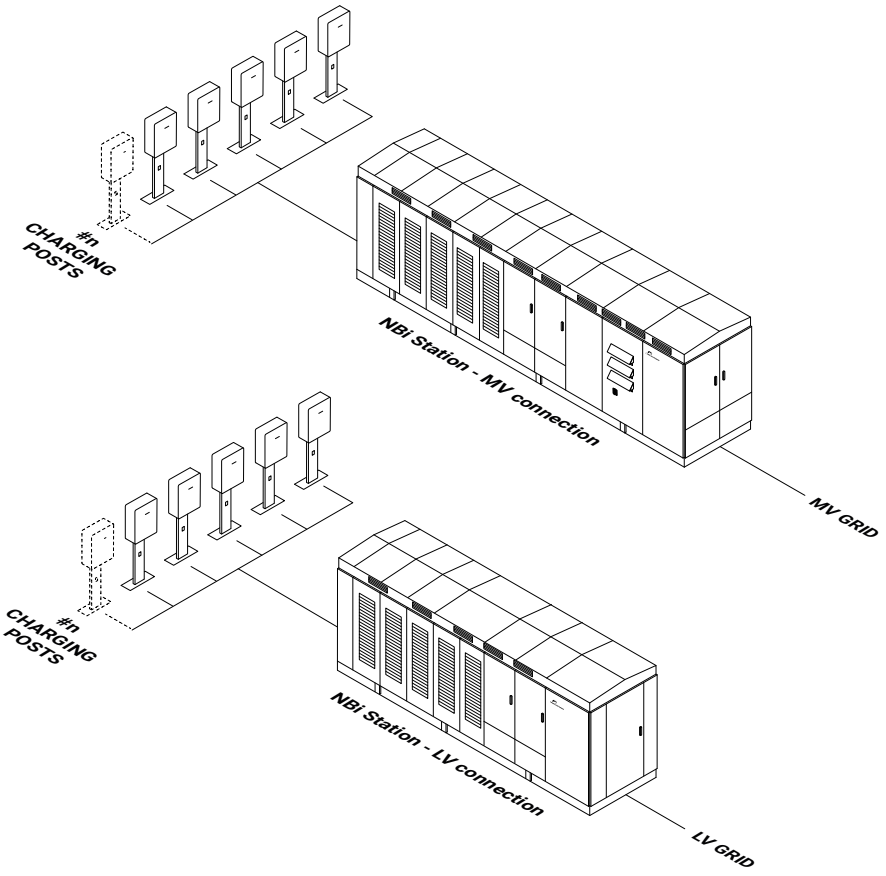
**NBi Station reduces site design, simplifies the installation and significantly reduces connection costs and resources needed.**

NBi Station consists of a central power station which supplies energy to charging posts, designed for an easy interaction with the electric vehicle drivers and following the current standards of user safety.

Being expandable over time, the central power station, has been developed to be able to increase the charging power, offering a solution which can grow with the electric vehicles market demand and the batteries technologies. It can be a low voltage or a medium voltage station.

The central power station according to the client's needs can integrate the following medium voltage components:

· MV switchgear.
· MV transformer.
· Metering supervision equipment.
· Customizable user cabinet with an independent electric circuit for the client's needs.

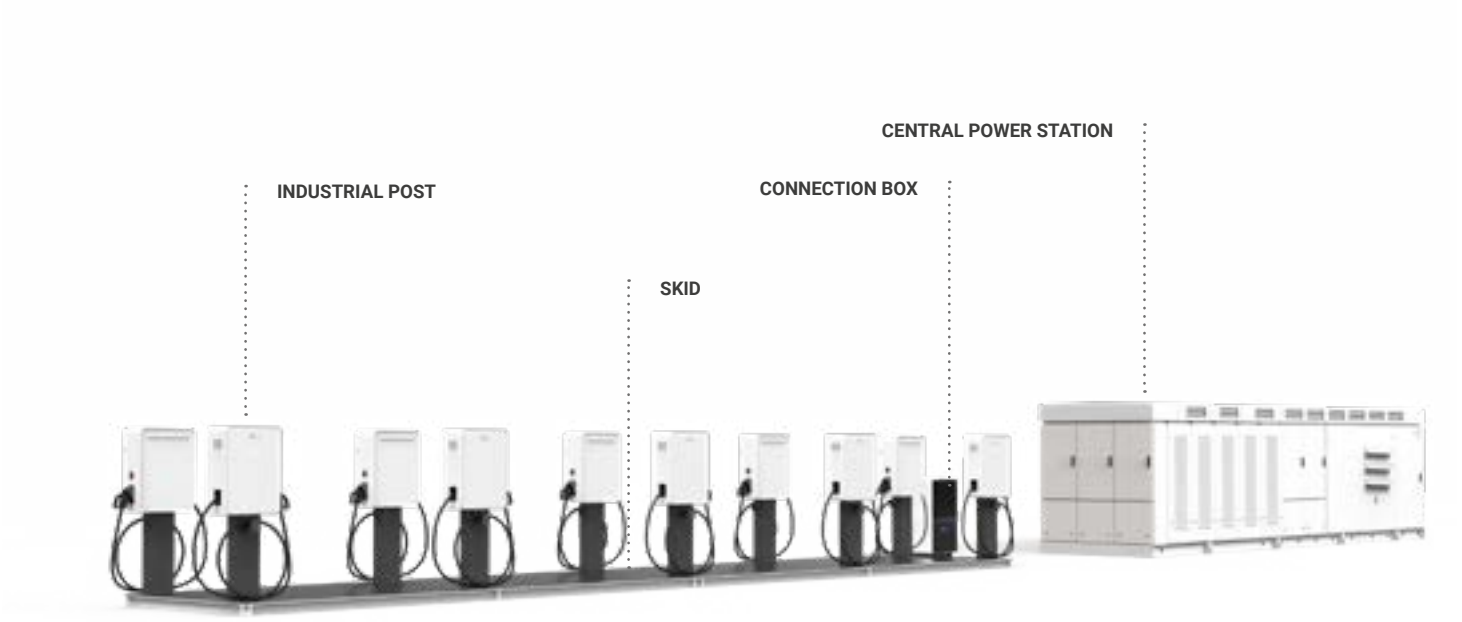


**Speed up your charging installation with a flexible turn-key platform**

Depending on the output power required, the client can choose a wide number of charging posts to fit any project and to configure the best layout. The skid solution, which is based on an outdoor platform made of high resistance galvanized steel with a non-slip surface, offers a plug and play solution. In the skid, all posts are wired and a connection box is included to connect to the central power station.

**Field replaceable power stages**

Following a modular philosophy, NBi Station is composed of FRUs (Field Replaceable Units), designed to be easily replaceable on site without the need of advanced technical service personnel, providing a safe, reliable and fast Plug&Play assembly system. In the event of a fault, the faulty module is taken off-line and its power is distributed evenly among the remaining functioning FRUs. It is a solution to be easily upgraded for the next EV generation and the most reliable charger in the market.



# MAXIMUM FLEXIBILITY

**Power Electronics has a wide range of high power chargers up to 1000 V, designed to serve long-range electric vehicles. NBi Station is compatible with industrial posts and automatic pantograph based charging solutions.**

Suitable with any application that requires an efficient solution, maximum flexibility and availability for high rotation electric vehicles fleets. Power Electronis charging stations are compatible with current and future heavy electric vehicles, buses and electric trucks.

**NBi Station + industrial post**

Compatible with the most extended DC connectors (CCS and CHAdeMO). Industrial charging posts are the most cost effective solution for depot charging infrastructure and industrial areas.

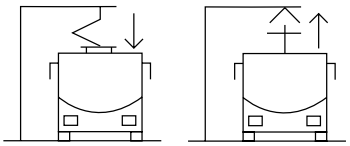
**NBi Station + pantograph**

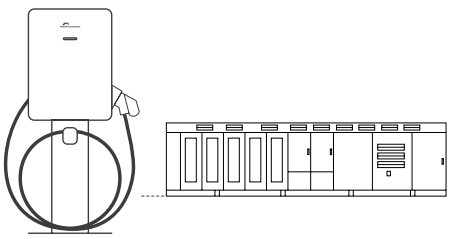
Compatible with multiple pantograph manufacturers, "bottom-up" and "top-down". Wireless communication with the electric vehicle according to ISO/IEC 15118 (OPPCharge compatible) and IEC 61851-23 (CCS) to speed up charging processes and to avoid wasting valuable bus operating time.

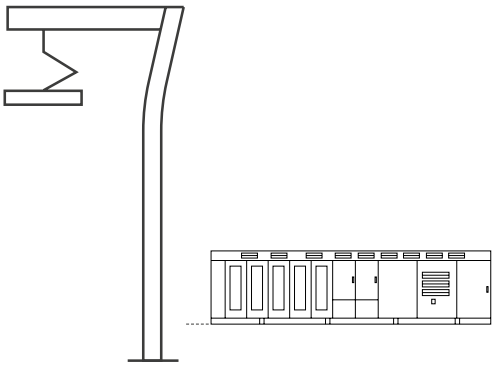
DC CONNECTOR
**CCS-1**

DC CONNECTOR
**CHAdeMO**

DC CONNECTOR
**CCS-2**







# USER-FRIENDLY INTERFACE

**Intuitive experience**

Power Electronics posts integrate a status indicator so that the drivers can easily identify its availability. It provides drivers a fast, safe and simple interaction.

**Payment and authentication system**

Every charging post is compatible with the most extended payment and authentication systems, offering the most useful solutions in the market for an easy interaction with the customer.

**RFID**

Drivers can launch a charging session by tapping their RFID card.

**Credit / debit card**

Compatibility with contact-less (NFC) solutions, letting drivers initiate the charging process by simply tapping their credit / debit card.

**Smartphone**

Compatible with the most extended apps in the market. These apps for EV drivers are able to start a charging session, reserve a post at any time, or simply manage their historical charging sessions.

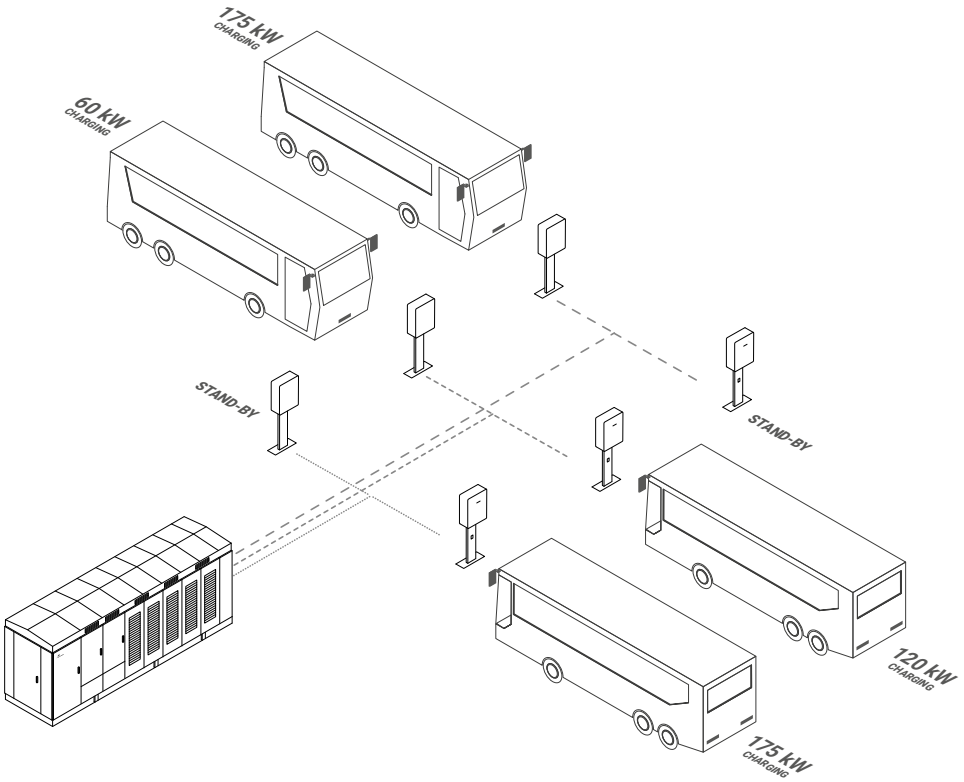
# SMART POWER BALANCE

## SMART POWER BALANCE TECHNOLOGY

**NBi Station allows the optimization of the use of the charging point and dynamic balancing of power depending on the vehicle to be charged.**

### EXAMPLE CONFIGURATION

NBi Station NBSK0500S
Six charging posts of 175 kW



**Power Balance**

Power Electronics has developed the most advanced functionality for power balancing in vehicle fleet management.

NBi Station includes an advanced DC Smart Power Balance technology that allows for charging at different power levels matching all EV needs.

# BUS PLUS READY

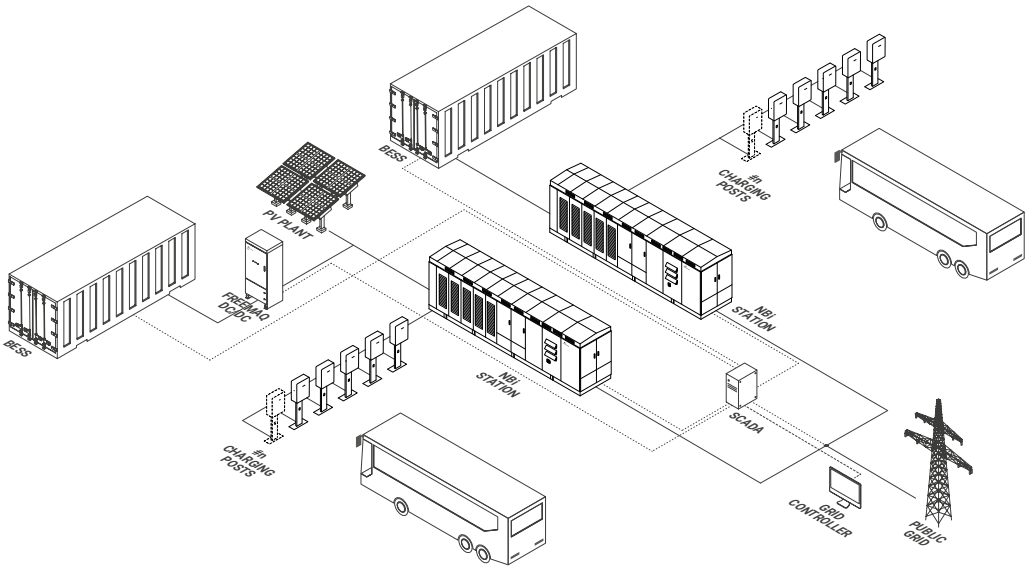
**Our wide experience in the renewable energy sector, designing and manufacturing solar inverters, allows us to offer an integral solution.**

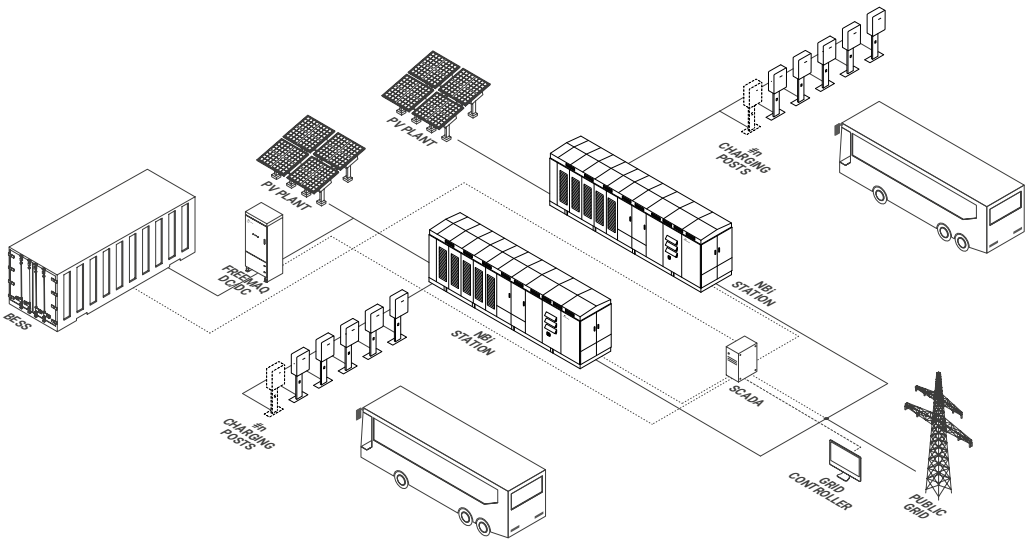
## NBi STATION IS ABLE TO TAKE ADVANTAGE OF AN ENDLESS ENERGY SOURCE, THE SUN

NBi Station allows the EV charging from different power sources: photovoltaic field, battery system and utility grid.

Adding a Freemaq DC/DC converter allows to store the photovoltaic excesses in the battery system. Stored energy can be exported to the grid when the price is higher, maximizing the revenues of the charging business.

In addition, the battery system allows to attenuate the intermittent nature of renewable energy sources offering a continuous charging system.



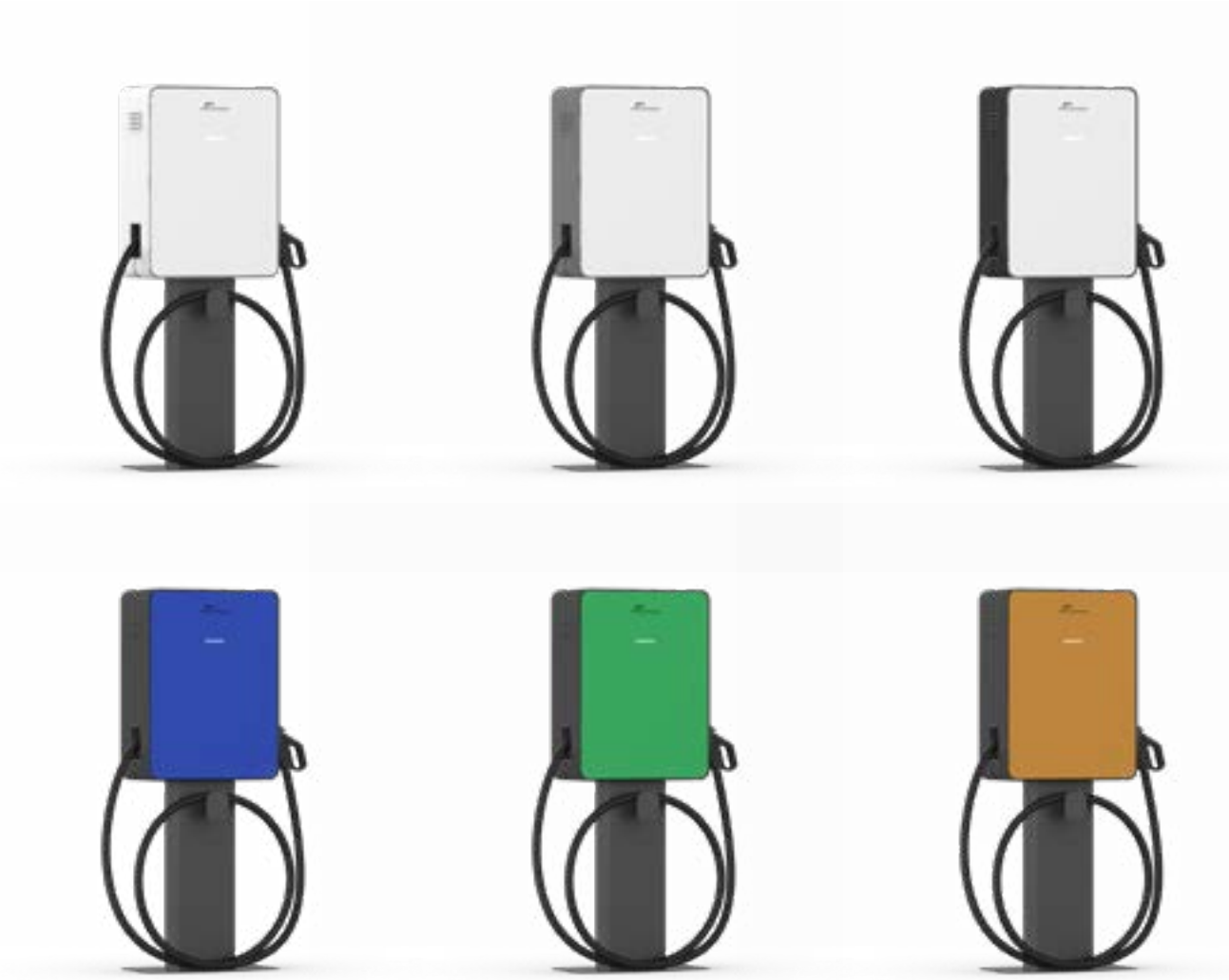



# SMART AND CUSTOMIZABLE DESIGN

## EXACTLY THE WAY YOU WANT

**Customizable external enclosures**
Power Electronics offers customizable external enclosures for the central power station and the posts. The colour can be modified or logos and advertising can be added.

## EXAMPLES OF POST CUSTOMIZATIONS



## EXAMPLES OF POWER STATION CUSTOMIZATIONS

### NBS

### NBSK

Consult with Power Electronics for other options and colours.

## NBi STATION + POSTS

**NBS**

| REFERENCE | | NBS0350<br>NBS0350S | NBS0500<br>NBS0500S | NBS0700<br>NBS0700S | NBS1000<br>NBS1000S |
|---|---|---|---|---|---|
| **DC OUTPUT** | Station maximum power [kW] | 420 | 600 | 840 | 1200 |
| | Charging post power [kW] | 60 / 120 / 175 | | | |
| | Voltage range [V] | 50 - 500 / 150 - 1000 | | | |
| | Available connectors | CCS [1], CHAdeMO | | | |
| **AC INPUT** | Voltage [kV] | 15 / 20 / 25 [2] | | | |
| | Power factor | > 0.99 | | | |
| | Frequency [Hz] | 50 / 60 | | | |
| | Efficiency | 93 % (preliminary) | | | |
| **GENERAL** | Interface | Status LED indicator | | | |
| | | Button to stop charging | | | |
| | | Emergency stop (optional) | | | |
| | | RFID card reader (optional) | | | |
| | Protections | Isolation monitoring | | | |
| | | Over-voltages / under-voltages | | | |
| | | Over-currents / short-circuits | | | |
| | | Over-temperatures | | | |
| | User auxiliary services supply [kW] | 25 (optional) | | | |
| | Cable length [m] [3] | 4 | | | |
| | Cable length [ft] [3] | 13.12 | | | |
| | Degree of protection | NEMA 3R - IP54 / IK10 [4] | | | |
| | Operating temperature | From -25ºC to 50ºC (optionally, from -30ºC to 50ºC) | | | |
| | Relative humidity | 4% - 95% | | | |
| | Maximum altitude (above sea level) | 2000 m; > 2000 m power derating (max. 3000 m) | | | |
| | Enclosure station colour | Grey (RAL 7035) | | | |
| | Post colour (enclosure / foot) | White (RAL 9016 - microtexture painting) / Grey (RAL 7016 - microtexture painting) | | | |
| | Customization | Enclosure | | | |
| | Communications | Ethernet, OCPP 1.6, Wifi, 3G / 4G connectivity | | | |
| | Charging post dimensions (W x D x H) [mm] | 600 x 300 x 800 | | | |
| | Charging post dimensions (W x D x H) [ft] | 2.0 x 1.0 x 2.6 | | | |
| | Other station options | Motorized protection switchgear (remote operation) | | | |

**STANDARD CONFIGURATIONS**

| REFERENCE | SMART POWER BALANCE | POSTS | | |
|---|---|---|---|---|
| | | NBDI060 | NBDI120 | NBDI175 |
| NBS0350 | - | 7 | 3 | 2 |
| NBS0350S | √ | - | 6 | 4 |
| NBS0500 | - | 10 | 5 | 3 |
| NBS0500S | √ | - | 10 | 6 |
| NBS0700 | - | 14 | 7 | 4 |
| NBS0700S | √ | - | 14 | 8 |
| NBS1000 | - | 20 | 10 | 6 |
| NBS1000S | √ | - | 20 | 12 |

[1] CCS-1 for US market. CCS-2 for IEC market.
[2] Consult with Power Electronics.
[3] Optional cable length of 7 m / 22.97 ft.
[4] IK08 for ventilation grilles.

## NBi STATION + PANTOGRAPHS

**NBS**

| REFERENCE | | NBS0350<br>NBS0350S | NBS0500<br>NBS0500S | NBS0700<br>NBS0700S | NBS1000<br>NBS1000S |
|---|---|---|---|---|---|
| **DC OUTPUT** | Station maximum power [kW] | 420 | 600 | 840 | 1200 |
| | Charging power [kW] | 175 / 350 / 450 / 600 | | | |
| | Voltage range [V] | 150 - 1000 | | | |
| **AC INPUT** | Voltage [kV] | 15 / 20 / 25 [1] | | | |
| | Power factor | > 0.99 | | | |
| | Frequency [Hz] | 50 / 60 | | | |
| | Efficiency | 93 % (preliminary) | | | |
| **GENERAL** | Protections | Isolation monitoring | | | |
| | | Over-voltages / under-voltages | | | |
| | | Over-currents / short-circuits | | | |
| | | RCD | | | |
| | | Over-temperatures | | | |
| | User auxiliary services supply [kW] | 25 (optional) | | | |
| | Degree of protection | NEMA 3R - IP54 | | | |
| | Enclosure station colour | Grey (RAL 7035) | | | |
| | Operating temperature | From -25ºC to 50ºC (optionally, from -30ºC to 50ºC) | | | |
| | Relative humidity | 4% - 95% | | | |
| | Maximum altitude (above sea level) | 2000 m; > 2000 m power derating (max. 3000 m) | | | |
| | Communications | Ethernet, OCPP 1.6, Wifi, 3G / 4G connectivity | | | |
| | Other station options | Motorized protection switchgear (remote operation) | | | |

**STANDARD CONFIGURATIONS**

| REFERENCE | SMART POWER BALANCE | PANTOGRAPHS | | | |
|---|---|---|---|---|---|
| | | 175 kW | 350 kW | 450 kW | 600 kW |
| NBS0350 | - | 2 | 1 | - | - |
| NBS0350S | √ | 4 | 2 | - | - |
| NBS0500 | - | 3 | - | 1 | - |
| NBS0500S | √ | 6 | - | 2 | - |
| NBS0700 | - | 4 | 2 | - | 1 |
| NBS0700S | √ | 8 | 4 | - | 2 |
| NBS1000 | - | 6 | 3 | 2 | - |
| NBS1000S | √ | 12 | 6 | 4 | - |

[1] Consult with Power Electronics.

## NBi STATION + POSTS

**NBSK**

| REFERENCE | | NBSK0350<br>NBSK0350S | NBSK0500<br>NBSK0500S | NBSK0700<br>NBSK0700S | NBSK1000<br>NBSK1000S |
|---|---|---|---|---|---|
| **DC OUTPUT** | Station maximum power [kW] | 420 | 600 | 840 | 1200 |
| | Charging post power [kW] | 60 / 120 / 175 | | | |
| | Voltage range [V] | 50 - 500 / 150 - 1000 | | | |
| | Available connectors | CCS [1], CHAdeMO | | | |
| **AC INPUT** | Voltage [V] | 400 ± 10 % / 480 ± 10 % | | | |
| | Power factor | > 0.99 | | | |
| | Frequency [Hz] | 50 / 60 | | | |
| | Efficiency | 94 % (preliminary) | | | |
| **GENERAL** | Interface | Status LED indicator | | | |
| | | Button to stop charging | | | |
| | | Emergency stop (optional) | | | |
| | | RFID card reader (optional) | | | |
| | Protections | Isolation monitoring | | | |
| | | Over-voltages / under-voltages | | | |
| | | Over-currents / short-circuits | | | |
| | | Over-temperatures | | | |
| | User auxiliary services supply [kW] | 25 (optional) | | | |
| | Cable length [m] [2] | 4 | | | |
| | Cable length [ft] [2] | 13.12 | | | |
| | Degree of protection | NEMA 3R - IP54 / IK10 [3] | | | |
| | Operating temperature | From -25ºC to 50ºC (optionally, from -30ºC to 50ºC) | | | |
| | Relative humidity | 4% - 95% | | | |
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| NBSK0500S | √ | - | 10 | 6 |
| NBSK0700 | - | 14 | 7 | 4 |
| NBSK0700S | √ | - | 14 | 8 |
| NBSK1000 | - | 20 | 10 | 6 |
| NBSK1000S | √ | - | 20 | 12 |

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[3] IK08 for ventilation grilles.

## NBi STATION + PANTOGRAPHS NBSK

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|---|---|---|---|---|---|
| **DC OUTPUT** | Station maximum power [kW] | 420 | 600 | 840 | 1200 |
| | Charging power [kW] | 175 / 350 / 450 / 600 | | | |
| | Voltage range [V] | 150 - 1000 | | | |
| **AC INPUT** | Voltage [V] | 400 ± 10 % / 480 ± 10 % | | | |
| | Power factor | > 0.99 | | | |
| | Frequency [Hz] | 50 / 60 | | | |
| | Efficiency | 94 % (preliminary) | | | |
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| NBSK0350S | √ | 4 | 2 | - | - |
| NBSK0500 | - | 3 | - | 1 | - |
| NBSK0500S | √ | 6 | - | 2 | - |
| NBSK0700 | - | 4 | 2 | - | 1 |
| NBSK0700S | √ | 8 | 4 | - | 2 |
| NBSK1000 | - | 6 | 3 | 2 | - |
| NBSK1000S | √ | 12 | 6 | 4 | - |