BENNING
World Class Power Solutions

Excellent Technology, Efficiency and Quality

BELATRON modular T2

Reliable E-Mobility charging stations for up to 1000 V

- designed for economical operation at residential homes, customer car parks and motorway services
- charging outputs of 30 – 480 kW DC and 22 kW AC

E-Mobility charging stations – Reliable and versatile

Fig. 1: 180 kW BELATRON modular T2

For every requirement there is a reliable and economical solution

BELATRON modular T2 charging systems cover the entire bandwidth of E-Mobility applications, starting from:

- **Wall-boxes of 30 / 60 kW DC (with option of 22 kW AC)**, e.g. for use in a residential home location or at a company car park,
- using **180 kW DC charging systems (with an option of 22 kW AC)** e.g. for operation in guests' car parks at hotels and restaurants, or in the large-scale car parks of hypermarkets, retailers etc.,
- including **split systems: 480 kW DC (with option of 22 kW AC)** e.g. for quick charging at motorway services.

Smart charging systems combine the maximum of safety and efficiency with a flexible component concept. They also have the advantage of quick installation times and straightforward servicing options in the course of operation.

BELATRON modular T2 – Characteristics

T Serie

- **Flexible component concept**
  - multiple configuration options, e.g. for use in the form of a wall-box, a charging stand or a split system

HPC

- **Quick charging systems**
  - equipped with up to two DC charging connectors with the option of a 22 kW AC Type 2 connector

≤1000 V

- **Charging voltages of up to 1000 V**
  - can be used for all standard market types of electric vehicle

30-480 kW

- **Modular system architecture**
  - straightforward output scaling from 30 to 480 kW*
  - short servicing & repair times, together with high system availability thanks to modules with hot-swap capability and redundancy characteristics*

IP 54
IP 55

- **Protection types**
  - Protection against dust and water splash

360° Service

- **360° service concept**
  - avoids downtimes and extends systems' service life

** from 60 kW upwards*

BELATRON modular T2 charging systems for all current types of electric vehicle

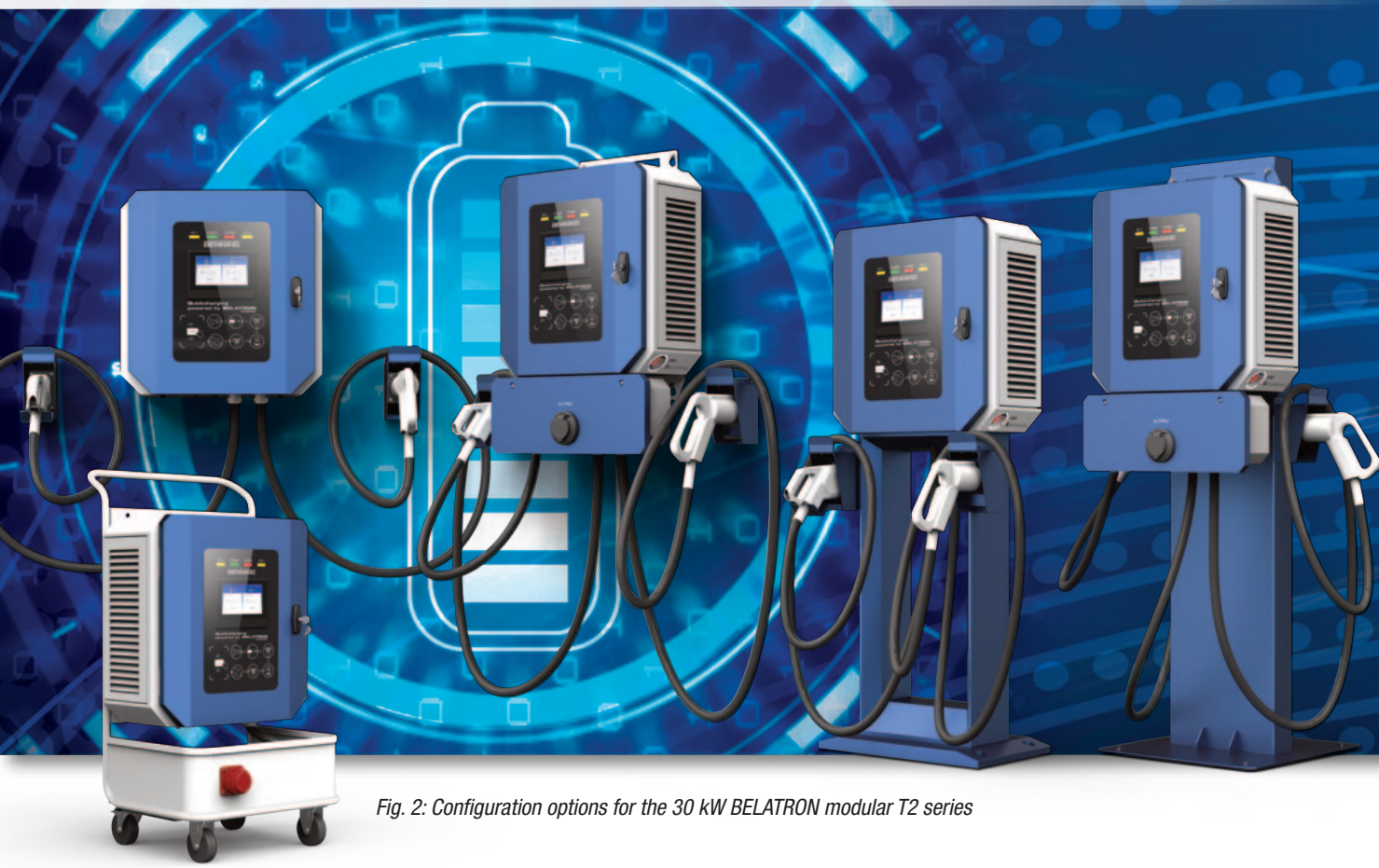


Fig. 2: Configuration options for the 30 kW BELATRON modular T2 series

30 kW BELATRON modular T2 charging system Configurable for high efficiency and flexibility

The flexible component concept in this design series provides for a wide range of options. Depending on preference, you can select a range of different installation variants, output characteristics and charging connectors, such as CCS2, CHAdeMO and the option of AC Typ 2.

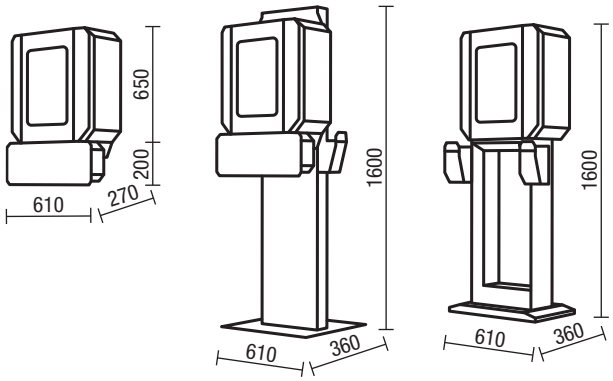
All BELATRON modular T2 charging systems are based on the same 30 kW output module. This module is designed for a voltage range of up to 1000 V and ensures a constant charge rate (refer Fig. 6). It operates with high efficiency, giving up to 96 % efficiency (refer Fig. 4).

30 kW BELATRON modular T2 Safe, flexible and economical

The BELATRON modular T2 (30 kW) casing, configured as a wall-box, is designed for outdoor applications (IP 54) and comes with a highly efficient 30 kW output module. There is the choice of wall-mounted installation or as a stand-alone system. It is also obtainable as a mobile charger, e.g. for the maximum of versatility when used in workshops or vehicle depots.
An additional AC charger unit can be aquired as an option.

30 kW type – particular characteristics:

- constant 30 kW DC @ 150 - 1000 V
- option of 22 kW AC
- IP 54 protection type
- OCPP 1.6 J
- available (optional) as a mobile charging unit for workshop businesses



All dimensions are in millimetres.

Fig. 3: As an option, the Type 60 kW BELATRON modular T2 can be obtained configured for wall mounting or as a stand-alone system

60 kW BELATRON modular T2 charging system
High availability via redundant configuration

As a rule, BELATRON modular T2 charging systems are conceived with an output upwards of 60 kW in a modular design with redundancy characteristics. Consequently, even if one output section fails, they can still be operated (albeit at a reduced charging power) by relying on the remaining 30 kW output module until such time as it is possible to repair the unit. The BELATRON modular T2 (60 kW) – having constant DC charging power of 60 kW – is ideal for use in car parks attached to:

- **Hotels and restaurants**
- **Commercial companies and shops**
- **Customer car parks in general**

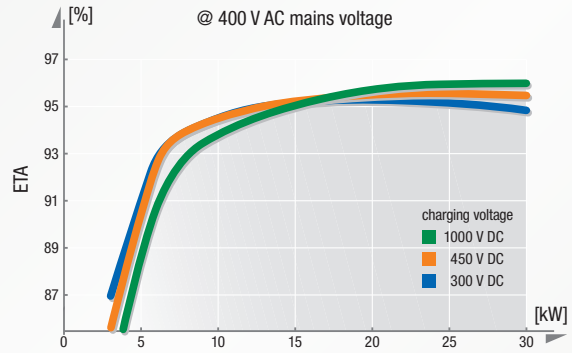
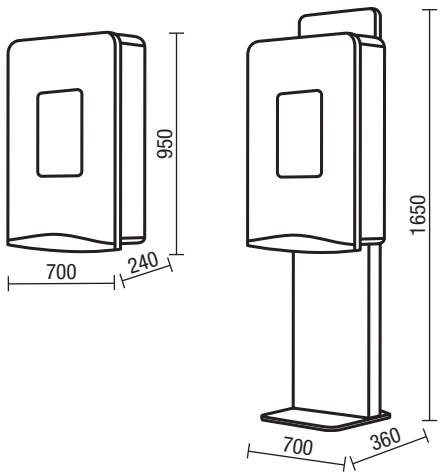


Fig. 4: Efficiency of 30 kW BELATRON modular output module

60 kW type – particular characteristics:

- **constant 60 kW DC @ 150 - 1000 V**
- **option of 22 kW AC**
- **IP 55 protection type**
- **OCPP 1.6 J**



All dimensions are in millimetres.

Fig. 5: 180 kW BELATRON modular T2

180 kW BELATRON modular T2 charging system

The operation of the BELATRON modular T2 (180 kW) can be scaled to any desired output of between 60 kW and 180 kW, in steps of 30 kW. There is also the option of future expansion (pay as you grow).
This system is particularly suitable – with its constant DC charging power of up to 180 kW – for:

- **Car parks with varying densities of user frequency and Short stay times, such as in the customer car parks belonging to hypermarkets, discount stores, furniture shops or shopping malls**

180 kW type – particular characteristics:

- **constant 180 kW DC @ 150 - 1000 V**
- **option of 22 kW AC**
- **IP 55 protection type**
- **OCPP 1.6 J**

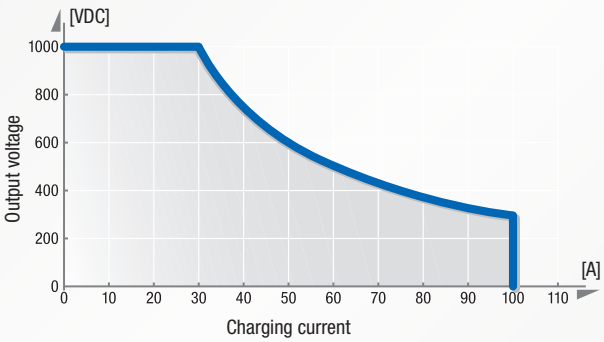
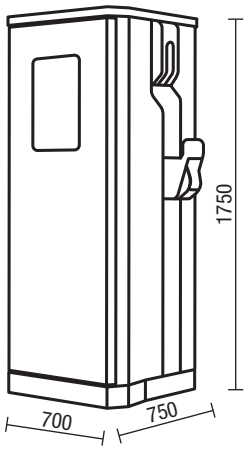


Fig. 6: The 30 kW BELATRON modular T2 output module excels in offering a constant charge power.



All dimensions are in millimetres.

Fig. 7: 480 kW BELATRON modular T2 Split system, power block with 3 charging stands

480 kW BELATRON modular T2
Split system with a small installation footprint

If the available installation space for charging systems is at a premium, then the BELATRON modular T2 Split system (480 kW) series is an ideal option.

The space taken up at the installation site can be reduced considerably by configuring units from this series as a split system.

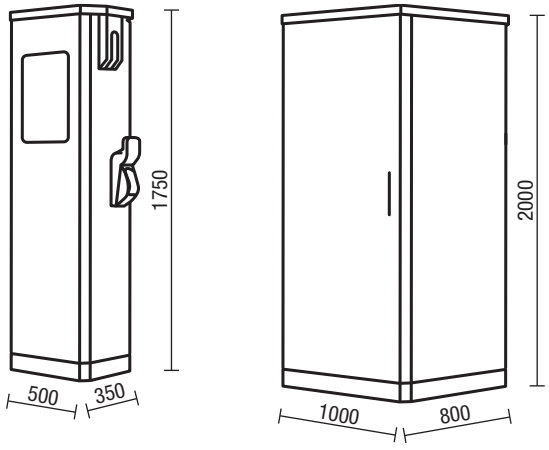
The split system consists of 3 small split charging stands each with a maximum of three charging points (2× DC, 1× AC) and a decentralised control cabinet. This will house up to 16 modules each with its own output of 30 kW, delivering constant output of as much as 480 kW DC.

The split system is designed for space saving applications in car parks and other facilities such as:

- **Filling stations and motorway services**
- **Hypermarkets, discount stores and shopping malls**
- **Bus depots**

480 kW type – particular characteristics:

- constant 480 kW DC @ 150 - 1000 V
- option of 22 kW AC
- Enclosures and / or charging stands, IP 55
- Power block, protection type IP 54
- OCPP 1.6 J



All dimensions are in millimetres.

Intuitive and reliable operation (Fig. 8)

BELATRON modular T2 charging systems provide intuitive controls, with a 7" touchscreen. The logical layout of the controls, catering to the user's needs, gives a clear, precise, easy-to-understand display of all of the required charging parameters and settings. If specified, charging procedures can be initiated with parameter-controlled RFID cards (e.g. employee cards or customer cards). Available settings (for charging procedure):

- *Fully-automated charging procedure (no need to enter any settings)*
- *Manually controlled charging procedure (available settings include the charging period, the energy quantity and SOC (=State of Charge))*
- *Priority settings for charging station*

Technical data – BELATRON modular T2

Product type	30 kW BELATRON modular T2	60 kW BELATRON modular T2	180 kW BELATRON modular T2	480 kW BELATRON modular T2
Inputting of AC parameters				
Mains input voltage	3 phases + N + PE, 260 V - 530 V AC (line to line voltage)			
Mains input current	max. 48 A / phase for DC charging + 32 A / phase for AC charging (optional)	max. 96 A / phase for DC charging + 32 A / phase for AC charging	max. 288 A / phase for DC charging + 32 A / phase for AC charging	max. 2 x 431 A / phase for DC charging
Frequency	45 - 65 Hz			
Input power factor	> 0.99			
THD	< 5 %			
Output DC Characteristics				
Output voltage	150 V - 1000 V			
max. Output current per module	100 A @ 150 - 300 V			
max. Charging power per module	30 kW			
max. quantity of modules	1	2	6	16
Scalable charging power	30 kW	30 kW - 60 kW	60 kW - 180 kW	30 kW - 480 kW
Efficiency	> 95 %			
Output AC Characteristics				
optional	1 x 32 A / 22 kW	1 x 32 A / 22 kW	1 x 32 A / 22 kW	3 x 32 A / 22 kW
Ambient conditions				
Ambient temperature	-20 °C – +70 °C (100 % charging power < 50 °C) / reduction in charging power 5 % / K, @ > 50 °C			
Temperature in service / in storage	-40 °C – +75 °C			
Atmospheric humidity	0 - 95 %			
Installation is permissible at	2000 m (elevations above NN)			
Standards				
CCS PLC communication	DIN 70121, ISO 15118			
CHAdeMO	CHAdeMO V1.2	CHAdeMO V1.2	CHAdeMO V1.2	CHAdeMO V1.2 / V2.0
Protection category	IP 54	IP 55	IP 55	IP 54* / IP 55**
EMC / Safety	EN 61000-6-3, EN 61000-6-1, EN 61851-1-2001, EN 61851-21-2001, EN 61851-22-2001			
Functions and interface				
Display / control unit	7'' TFT touch screen LCD display (with no temperature range restrictions) Additional status messages via LED: Working; Fault; Charging			
Activation	7'' TFT touch screen LCD display or RFID (user selects card and / or parameters)			
Communication / Interfaces	LAN connection with 10/100 Mbit Ethernet, option of LTE wireless modem***, Standard OCPP 1.6 J support			
Emergency off	to switch off the AC main power circuit and the DC output circuit			
Protection systems	Overcurrent protection, short-circuit protection, overvoltage protection, low-voltage protection, installation monitoring, reversed polarity protection, overheat protection			
Additional protection	FI Type A for DC charging circuits with option of FI Type B for AC charging circuit			
Configuration				
Quantity of charging connections	2 x DC + 1 x AC (optional)	2 x DC + 1 x AC	2 x DC + 1 x AC	3 x (2 x DC + 1 x AC)
DC charging connections (user-configurable)	CCS or CHAdeMO	CCS or CHAdeMO	CCS or CHAdeMO	CCS or CHAdeMO
Quantity of DC charging connections	2	2	2	6
AC charging connection	22 kW AC Type 2	22 kW AC Type 2	22 kW AC Type 2	22 kW AC Type 2
Quantity of AC charging connections	1	1	1	3
Dimensions (W × H × D) in millimetres				
30 kW + 60 kW wall-box	610 x 650 x 270 ****	700 x 950 x 240	-	-
30 kW + 60 kW wall-box with pedestal	610 x 1600 x 360 ****	700 x 1650 x 360	-	-
180 kW charging stand	-	-	700 x 1750 x 750	-
Control cabinet	-	-	-	1000 x 2000 x 800
Split charging stand	-	-	-	500 x 1750 x 350
Weight				
30 kW + 60 kW wall-box	70 kg incl. Output module	95 kg incl. Output modules	-	-
30 kW + 60 kW wall-box with pedestal	115 kg incl. Output module	150 kg incl. Output modules	-	-
180 kW charging stand	-	-	151 kg excl. Output modules (Output module = 18 kg)	-
Control cabinet	-	-	-	200 kg excl. Output modules (Output module = 18 kg)
Split charging stand	-	-	-	160 kg

** Control cabinet / ** Charging stand / *** must already have been prepared & ready for operation*

Subject to technical changes.

***** excluding optional AC charging connection*

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