MENNEKES®
Solutions

The solution for Europe:
Type 2 charging socket with or without shutter

The charging socket
for the Europe plug.
Now also
with shutter.

Europe needs a standardised charging connection for electric vehicles.

One standard.
Three systems.

As IEC 62196-2 permits three systems world-wide, countries or regions should decide on one of these systems if possible.

Three systems world-wide

Around the world, three different charging systems are standardised for the connection of electric vehicles in IEC 62196-2. They are not compatible with each other.
Generally, all three standard systems meet the high safety requirements for the consumer.
The voltage is only added when the system has recognised that the plugs are completely inserted at the vehicle and infrastructure side, that the plugs are locked and that the connection of the protective earth conductor is correct. If one of these conditions is not met, charging will not start.
This comprehensive safety system makes additional mechanical protective devices for the contacts – such as protection against contact beyond finger safety – unnecessary.

Standardised solution for Europe

One factor of success to enforce electric mobility is a simple and uniform charging of electric vehicles across Europe. This requires the definition of a consistent system for the charging connection across Europe. Only this allows electric mobility without borders across Europe for the consumer.
Type 1 from Japan is only designed for single-phase operation and offers limited options for three-phase European mains grids. Therefore, type 1 will be used only for a short time in Europe.
The European market can only use types 2 and 3. They are completely different in their design.
Type 2 has a single plug geometry for all charging capacities from single to three-phase.
Type 3 is available in three different geometries, depending on charging capacity and number of phases.
Type 2 has no additional protection mechanism, while type 3 has a shutter system.
Type 2 is also used as basic system for the Combined Charging System (AC + DC), which is actually under preparation in the IEC standard.

Systems standardised in IEC 62196-2

Type 1	Type 2	Type 3
		
One geometry	One geometry	Three different geometries
Charging output up to 7.4 kW Charging current up to 32A Single-phase	Charging output up to 43.5 kW Charging current up to 63A Single- to three-phase	Charging output up to 43.5 kW Charging current up to 63A Single, two and three-phase
Not relevant for the European market, since type 1 offers too few options for the three-phase European mains.	Due to the convincing it is the choice of most European countries, the ACEA, many energy providers and organisations.	Preferred by France because of the additional touch protection by a shutter.

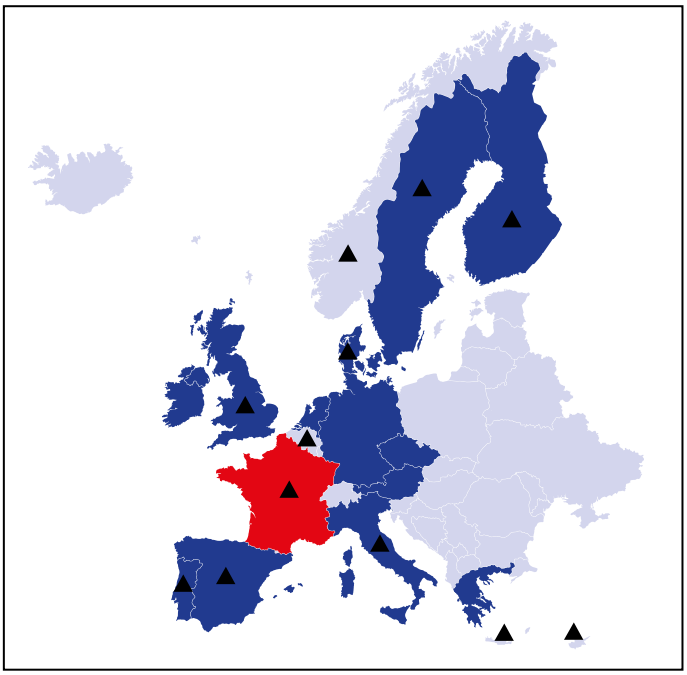
Europe prefers type 2

Type 2
is considered the
„de facto standard"

Majority for type 2

Most European countries have already chosen type 2 due to the convincing benefits. Therefore, it is already called the „Europe plug".

Some countries have already declared themselves in favour of type 2, even if they have not yet developed any infrastructure for electric mobility.
According to the Eurelectric position paper released in March 2012, they consider type 2 to be the „de facto standard" for Europe.
Other countries which have not yet started any activities towards electric mobility are still waiting for the vote of the European Committee before making a decision.



Decisions for type 2 Decisions for type 3
No decisions yet
▲ Countries with shutter requirements for household sockets

Current situation according to Eurelectric Position Paper March 2012

Differentiation of household sockets and charging sockets

IEC Charging systems do not require a shutter due to implemented communication and safety devices. In some European countries the national standards for household plugs and sockets require IP XXD shutter. And this requirement is often transfered to charging systems, even if the charging systems are placed in public areas.
This differentiation increases the complexity to offer one charging system for Europe in total.

In response to the practice in these countries, MENNEKES has developed an add-on for type 2.
This has resulted in a modular system that permits equipping type 2 sockets with a shutter.
In countries without these requirements, the shutter is simply left away. Therefore, type 2 is a solution for all of Europe, meeting the requirements for higher robustness as well as increased protection against contact of electrical parts.

The solution for Europe:

Europe-wide standard compliance.

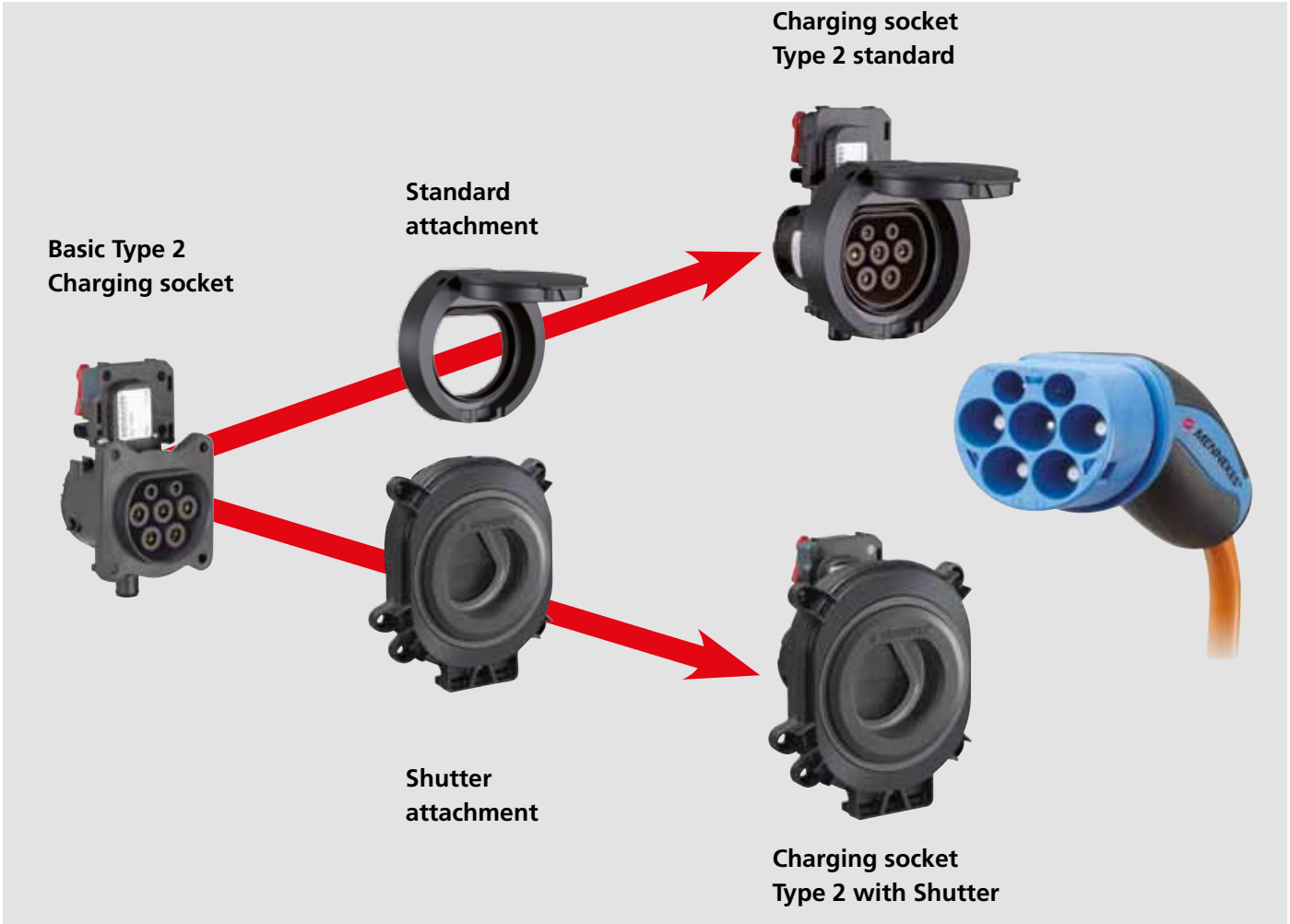
Depending on the country, the requirements for charging couplers in the private area may be different from those in the public area.

In France, for example, touch protection according to IP XXD is required for charging sockets in the private area. Therefore, France prefers type 3.
National requirements must not influence the European standard.
It would be unacceptable for the consumer if charging of electric vehicles required different charging cables or adapters.

The solution for Europe

MENNEKES has found a solution for this dilemma and developed a type 2 socket with shutter that offers extended contact protection according to IP XXD. This makes it possible to use the best solution across Europe even where the installation practices require a shutter solution.
In the public area, charging sockets according to IP XXB

meet the legal and standardised requirements anyway. The consumer can charge his vehicle anywhere in Europe with a single charging cable and there is nothing to inhibit electric mobility without borders.



Type 2 with or without shutter

The right charging socket for any need.

Type 2 meets the wishes of all market participants all over Europe.

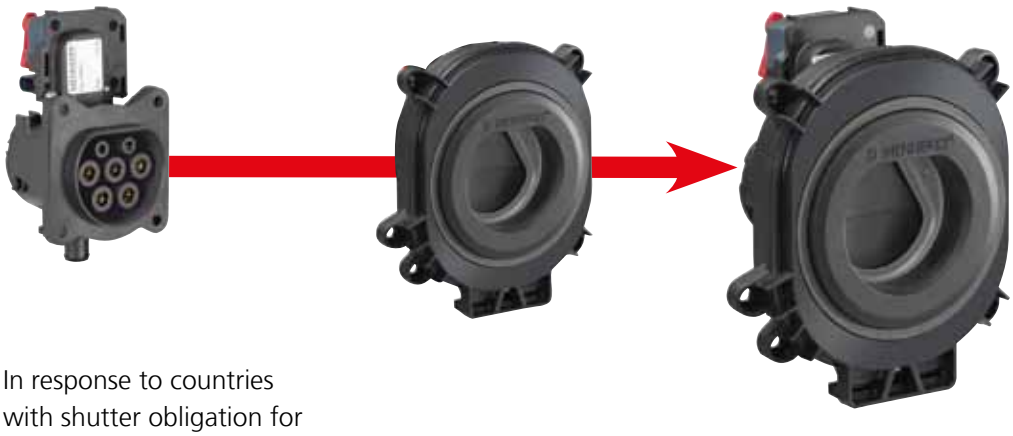
MENNEKES thus offers a solution for all of Europe based on type 2, meeting the demands of all market participants. Type 2 sockets with or without shutter meet the demands for increased robustness as well as increased protection against contact of electrical parts.

Socket type 2 without shutter for most European countries

Socket type 2 meets the requirements to protection against contact IP XXB and fully meets the IEC 62196-2. It can be individually installed in charging stations.

With hinged lids splash water and dust protection IP 54 is achieved.

Socket type 2 with shutter allows for country-specific features



In response to countries with shutter obligation for household sockets, MENNEKES has developed a type 2 socket with shutter. Charging sockets type 2 with or without shutter are compatible without limitations and can be used with the same charging cable. Beyond the general benefits of type 2 plugs and sockets, the charging socket type 2 with shutter has the following benefits:

- Protection against contact of electrical parts purs. to IP XXD (protection against entry of wire with Ø > 1 mm) and splash water protection IP 44
- Compatible with all type 2 charging plugs according to IEC 62196-2
- One-hand operation
- Shutter closes automatically when the plug is pulled

System benefits of type 2 charging couplers

Type 2 is objectively the best solution.

BdEW, VDA, VDE and ZVEI have compared type 2 and type 3. The clear result: Type 2 is the best solution for Europe. The system looks at both the infrastructure and the vehicle side in its entirety.

Holistic

Type 2 plugs and sockets are used both on the infrastructure and the vehicle side. They are equally preferred by car manufacturers and electric utilities.

Optimised design

Doing without moving parts increases customer benefit, endurance limit and maintenance-freeness of the charging plug. The high demands of the automotive industry to quality and durability of their products, and thus the customers' expectations, are met in full.

Safe charging

Redundant safeguarding on several levels warrants highest safety. All contacts of a type 2 plug or connector are voltage-free when not plugged in.
Voltage is only released when several conditions are met at the same time.

Practice-oriented

Type 2 plugs and sockets are suitable for use in the cold North just as in the hot South. The robust plugs and connectors do not need any moving parts that may be blocked by ice or dust. The damage risk is minimised. Even running over the plug with a vehicle is no risk.

Future-proof

Type 2 copes with all relevant performance classes around the world: from single-phase AC in the private home to high-performance three-phase connections with 63A. Type 2 is also the basis for the Combined Charging System for DC charging.

Supporters of type 2

- In a position paper released on May 4th, 2012, the European Automobile Manufacturers' Association ACEA recommends type 2 as standard for Europe.
- In their joint position paper released on November 15th, 2010, **BdEW, VDA, VDE** and **ZVEI** consider type 2 the only suitable solution for Europe.
- Likewise, **EURELECTRIC** (Union of the Electricity Industry) demands a uniform European solution for all public and private charging spots in its position paper dated March 2012.

Product range
Charging sockets type 2 for mode-3 charging

				 NEW!
	Type 2	**Type 2 with protective cap**	**Type 2 with hinged lid**	**Type 2 with shutter**
Mains voltage	1p / N / PE / 50Hz 230V AC 3p / N / PE / 50Hz 400V AC	1p / N / PE / 50Hz 230V AC 3p / N / PE / 50Hz 400V AC	1p / N / PE / 50Hz 230V AC 3p / N / PE / 50Hz 400V AC	1p / N / PE / 50Hz 230V AC 3p / N / PE / 50Hz 400V AC
Charging capacity max. / Amperage max.	22 kW / 32A	22 kW / 32A	22 kW / 32A	22 kW / 32A
Splash water protection	IP 44 Only in connection with separate mechanics in the charging station	IP 44	IP 54	IP 44
Mechanical touch protection	IP XX**B**	IP XX**B**	IP XX**B**	IP XX**D**
Certification	VDE Tested in connection with assembly ring 30010 or 30012	VDE Tested	VDE Tested	VDE inspection underway
Connection Option Energy contacts L1, L2, L3, N, PE Signal contacts CP, PP	2,5 - 6,0 mm² 0,75 - 2,5 mm²	2,5 - 6,0 mm² 0,75 - 2,5 mm²	2,5 - 6,0 mm² 0,75 - 2,5 mm²	2,5 - 6,0 mm² 0,75 - 2,5 mm²
Interlocking actuator	■	■	■	■
Ambient temperature	-25°C to +40°C Ø not for more than 24h above 35°C	-25°C to +40°C Ø not for more than 24h above 35°C	-25°C to +40°C Ø not for more than 24h above 35°C	-25°C to +40°C Ø not for more than 24h above 35°C
Storage temperature	-25°C to +40°C	-25°C to +40°C	-25°C to +40°C	-25°C to +40°C
Relative humidity	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing
Water drain	■	■	■	■
Dimensions H x W x D mm	129,3 x 73 x 80	129,3 x 100 x 80	129,3 x 100 x 80	158,3 x 117 x 109,5
Available as of	immediately	immediately	immediately	4th quarter 2012
Part number	**31016**	**31024**	**31023**	**31038**

Charging socket type 2 in accordance with IEC 62196-2 for protection class IP XXB

Convincing technology.

Charging socket type 2 for protection class IP XXB is available in three designs:

- Socket only
- Socket with hinged lid
- Socket with protective cap

Protection against contact

When installed the charging socket type 2 meets protection degree IP XXB (finger-proof). When not plugged in, all contacts are powered off because of the safety system.
The socket is suitable for outdoor use in combination with the hinged lid, the protective cap or an individual splash water protection used by the customer.

Interlocking actuator

All sockets type 2 have an interlocking actuator to lock the plug during charging.
In connection with the MENNEKES actuator control wire part no. 30537, the MENNEKES type 2 sockets feature an integrated unlocking function in case of a power failure. To trigger the actuator, we recommend the MENNEKES CP-boxes part no. 30509, 30510 or 30511.

Fully compatible

Socket type 2 can be used with any mode 3 charging cable with charging plug type 2 on the infrastructure side. All versions have the same plug and connector geometry.

Four-point attachment

Concealed four-point fixing ensures a secure hold in the enclosure of the charging station and is protected against manipulation from the outside.

Water drain

The socket is splash water protected in connection with the hinged lid (IP 54) or protective cap (IP 44). Any condensation can be drained off by an integrated water drain and optional hoses.

Screw terminals

All contacts are equipped with screw terminals. The terminals were designed based on the know-how MENNEKES has gathered as leading manufacturer of industrial wiring devices.

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Charging socket type 2 in accordance with IEC 62196-2 with shutter for protection class IP XXD

With additional protection against contact of electrical parts.

Charging socket type 2 with shutter is based on the proven charging socket type 2 with an additional shutter module.

Protection against contact

Socket type 2 with shutter complies with protection class IP XXD when installed. It offers additional protection against objects such as wires with a diameter greater than 1 mm.
The socket is suitable for outdoor use.

One-hand operation

Charging plug type 2 is inserted into the grey ring of the socket and turned to the left by about 60 degrees. This causes the shutter to open and the plug can be plugged in completely.
When charging is completed, the plug can simply be pulled out. The shutter closes on its own at once and the contacts are touch-protected again.

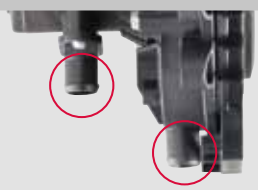
Fully compatible

Socket type 2 can be used with any mode 3 charging cable with charging plug type 2 on the infrastructure side. All versions have the same plug and connector geometry.

Four-point attachment

The socket has a concealed four-point fixing mechanism. It ensures a secure hold in the enclosure of the charging station and is protected against manipulation from the outside.

Water drain



Socket is splash water protected (IP 44). Any condensation can be discharged by integrated water drains and optional hoses both from the socket and from the shutter enclosure.

Shutter solutions

Type 2 can also be used for compact shutter solutions.
The image shows a compact home charging station with charging socket type 2 with shutter and a charging capacity of 3 kW.

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