

AHEAD IN E-MOBILITY

EV CHARGING SOLUTIONS

Ratio
ELECTRIC



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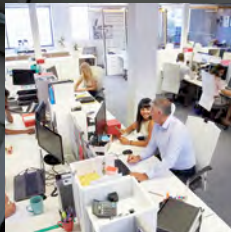
Ratio Electric develops, produces and sells electrical power connection and distribution systems. Our company is based in Holland and active throughout Europe. During half a century we gathered a huge amount of experience that is used to meet the latest demands in our markets. We maintain a tradition in innovation with reliable and affordable products. These products are delivered to OEM's or distributed by specialized electrical wholesale companies, covering the following areas:



We put all our energy
in making **durable products**
that enable you to
save energy

E-MOBILITY

Ratio Electric provides high quality AC connection and charging systems for electric and plug-in hybrid vehicles. All these products like (portable) charge stations, cables and sockets match the latest European standards.



INDUSTRY & OFFICE

We are an industry-leading manufacturer of power cords, cord sets, power strips, power plugs, power connectors and other power components. In tailor made solutions we can meet the highest demands.



ICT

We are at home in Datacenters. Our modular solutions for power management in 19-inch data racks contain a complete range of power distribution units (PDU's) as well as power cords.



MARINE

Our Shore Power connection system is the standard all over Europe. The MP16/32 boat inlets and cables are stylish and safe. Every marine product is designed to be practical and able to withstand the rigors of life at sea. That's why fleets of customers rely on our solutions.

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All reports and predictions about the use of Electric Vehicles (EV's) indicate the same upward trend. Yet many countries cannot keep pace with the growing demand for charge capacity while most EV-users further prefer to charge their vehicles at home or at the office. This creates a major demand for privately installed charging equipment. Ratio Electric complies to such demand by developing a wide range of reliable products for plug-in hybrid or full electrical vehicles.

DISCHARGE THE ENVIRONMENT, SAVE ENERGY

The number of electric cars, scooters and other electric vehicles is growing fast. Electric driving will result in cleaner air, a more silent city, less waste of energy and a decreasing dependency of fossil fuel.

These values match with our company goals where 'people' and 'planet' will benefit before profit. We control the complete lifecycle of a product in order to optimize the eco design.



EXCEEDING EXPECTATIONS: PROVEN PRODUCTS, CERTIFIED QUALITY

All of our robust products are functionally designed to withstand any harsh environment.

During development and production we rely on fifty years of experience. Our knowledge of techniques and methods is state of the art. It applies both to the hardware components and communication between chargers and vehicles.

There is also independent testing and proof of the quality of our products and processes. All our EV charging systems comply to the IEC 61851 standard. Individual components such as plugs, connectors and sockets are compliant with the IEC 62196 standard and carry DEKRA (KEMA) approvals.

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*Flexible charging solutions
at home and at work*

The Home Box is designed for easy installation in both indoor and outdoor private carparks. These high quality EV chargers are capable to safely charge all the electric vehicles available on the market according to mode 3. Through vertical production integration these Home Box series offer an optimal cost/performance rating.

Features

- Stylish and robust design.
- Easy installation and integrated cable holder.
- Just plug in to start charging.
- Adjustable charging power.
- Many options available.

Choose for fixed cable or outlet socket

The Home Box with conveniently integrated cable allows for an easy struggle free operation. Just take off the plug and plug in your car. The cable can be straight or coiled for an even easier operation. The Home Box with outlet socket offers the most flexibility as it can be used for cars with Type 1 as well as Type 2 inlets.



DIMENSIONS AND SPECIFICATIONS

Charging system:
IEC 61851 Mode 3

Power input:
Single phase
or 3 phase,
230-400V AC, 16A
and 32A

Power output:
3,7kW, 7,4kW, 11kW, 22kW

Adjustable Charge current:
16A: 10, 14 & 16A,
32A: 16, 24 & 32A

Housing:
PC/ABS

Dimensions:
400mm x 250mm x 105mm

Weight:
4 kg

Enclosure rating:
IP54

Operating temperature:
-25 C to +40 C

Marking:
CE

EV HOME CHARGERS FIXED CABLE - TYPE 2 CONNECTOR

P/N	Energy Rating	Description
35328	3,7 KW	EV Charge station 16A T2 5 m
35336	3,7 KW	EV Charge station 16A T2 Coiled
35339	7,4 KW	EV Charge station 32A T2 5 m
35342	7,4 KW	EV Charge station 32A T2 Coiled
35350	11 KW	EV Charge station 3x16A T2 5 m
35355	11 KW	EV Charge station 3x16A T2 Coiled
35351	22 KW	EV Charge station 3x32A T2 5 m
35356	22 KW	EV Charge station 3x32A T2 Coiled


EV HOME CHARGERS FIXED CABLE - TYPE 2 CONNECTOR AND KWH METER

P/N	Energy Rating	Description
35328W	3,7 KW	EV Charge station 16A T2 5 m + kWh Meter
35336W	3,7 KW	EV Charge station 16A T2 Coiled + kWh Meter
35339W	7,4 KW	EV Charge station 32A T2 5 m + kWh Meter
35342W	7,4 KW	EV Charge station 32A T2 Coiled + kWh Meter
35350W	11 KW	EV Charge station 3x16A T2 5 m + kWh Meter
35355W	11 KW	EV Charge station 3x16A T2 Coiled + kWh Meter
35351W	22 KW	EV Charge station 3x32A T2 5 m + kWh Meter
35356W	22 KW	EV Charge station 3x32A T2 Coiled + kWh Meter


EV HOME BOX EV HOME CHARGERS FIXED CABLE - TYPE 1 CONNECTOR

P/N	Energy Rating	Description
35329	3,7 KW	EV Charge station 16A T1 5 m
35330	3,7 KW	EV Charge station 16A T1 Coiled
35338	7,4 KW	EV Charge station 32A T1 5 m
35341	7,4 KW	EV Charge station 32A T1 Coiled



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Charge

Chargers

EV HOME CHARGERS FIXED CABLE - TYPE 1 CONNECTOR AND KWH METER

P/N	Energy Rating	Description
35329W	3,7 KW	EV Charge station 16A T1 5 m + kWh meter
35330W	3,7 KW	EV Charge station 16A T1 Coiled + kWh meter
35338W	7,4 KW	EV Charge station 32A T1 5 m + kWh meter
35341W	7,4 KW	EV Charge station 32A T1 Coiled + kWh meter



kWh Meter

EV HOME CHARGERS WITH TYPE 2 OUTLET

P/N	Energy Rating	Description
35345	3,7 KW	EV Charge station 16A T2 outlet
35346	7,4 KW	EV Charge station 32A T2 outlet
35347	11 KW	EV Charge station 3 x 16A T2 outlet
35348	22 KW	EV Charge station 3 x 32A T2 outlet



EV HOME CHARGERS WITH TYPE 2 OUTLET AND KWH METER

P/N	Energy Rating	Description
35345W	3,7 KW	EV Charge station 16A T2 outlet + kWh meter
35346W	7,4 KW	EV Charge station 32A T2 outlet + kWh meter

OPTIONAL ACCESSORIES

KEY SWITCH



RCD TYPE B



CONSOLE



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Equipped with smart Tesla charge port opening button

Our proven Home Box EV Charging Station is now available with a smart Tesla charge port opening button. When button is pressed, the charge port will open automatically. No need to use your car key or to unlock at the center console. When charging is completed or in case you choose to interrupt charging, while car key nearby, just press the button again to release the connector from the charge port.



STRAIGHT CABLE 5M

P/N	POWER	RATING
39001	3,7kW	16A / 230V
39002	7,4kW	32A / 230V
39003	11kW	16A / 400V
39004	22 kW	32A / 400V



COILED CABLE

P/N	POWER	RATING
39011	3,7kW	16A / 230V
39012	7,4kW	32A / 230V
39013	11kW	16A / 400V
39014	22 kW	32A / 400V

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Stylish EVita charging stations are developed and manufactured in Holland. All materials are highest quality. Every detail from the robust solid aluminium frame to the reliable communication electronics is built to last.



*Powerful Dutch Design
Simply Charging*

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A luxurious wood finish can add an extra distinctive look to your EVita Charging Station.

DESIGN FOR THE SENSES.
The Charging Station with conveniently integrated coiled cable allows for an easy struggle free operation. Just take off the plug and plug in your car!

EVITA ALUMINUM FINISH



P/N	Power	Rating
38001	3,7kW	16A/230V
38002	7,4kW	32A/230V
38003	11kW	16A/400V
38004	22 kW	32A/400V

EVITA WOOD FINISH



P/N	Power	Rating
38011	3,7kW	16A/230V
38012	7,4kW	32A/230V
38013	11kW	16A/400V
38014	22 kW	32A/400V

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Charging from a standard outlet with maximum safety

INTEGRATED FAILURE DETECTION AND POWER PROTECTION

The IEC 61851 standard prescribes that a charging cable must have an In-cable Control and Protection Device (IC-CPD) when charging from a standard socket. This IC-CPD is integrated in the cable of our portable chargers. It limits the maximum charging power and safeguards from earthing failures in the power supply. When problems are detected the system will shut itself down.

Simple prevention of overpower

The charging power can be lowered easily by pushing a button on the side of the IC-CPD. This prevents overpower of the electrical installation.

Automatic restart after shutdown due to power failures

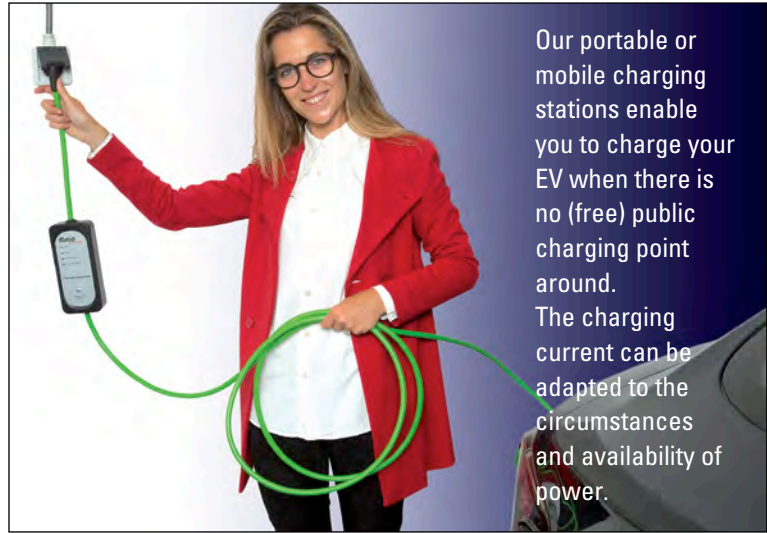
Ratio Electric's mobile chargers are not just equipped with all safety requirements. They also provide a function that automatically restarts the system when the IC-CPD is turned off after a power supply failure.

Just in case there will be no unpleasant surprises when you want to drive off.

Weather and shock proof charger housing

The housing of the mobile chargers are:

- Weatherproof (IP55).
- Impact resistant (500N run-over test).
- Robust and compact (see specs).



Our portable or mobile charging stations enable you to charge your EV when there is no (free) public charging point around. The charging current can be adapted to the circumstances and availability of power.



For your safety

- Housing of thermoplastic material (220 x 100 x 40 mm).
- Operating temperature from -30 to +50 C.
- Residual current breaker: 30mA, type A.
- Overcurrent protection.
- Under and overvoltage protection.
- Earth wire detection.
- Auto restart function.
- Adjustable current.

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**EV PORTABLE CHARGERS SCHUKO - TYPE 1/2
MAX. RATING 10A/230V**

P/N	Wall plug	Car plug	Cable length
31310	Schuko	Type 1	5 m
31310-10M	Schuko	Type 1	10 m
31320	Schuko	Type 2	5 m
31320-10M	Schuko	Type 2	10 m



SINGLE PHASE

**EV PORTABLE CHARGERS CEE - TYPE 1/2
MAX. RATING 16A/230V**

P/N	Wall plug	Car plug	Cable length
31313	CEE	Type 1	5 m
31313-10M	CEE	Type 1	10 m
31323	CEE	Type 2	5 m
31323-10M	CEE	Type 2	10 m



SINGLE PHASE

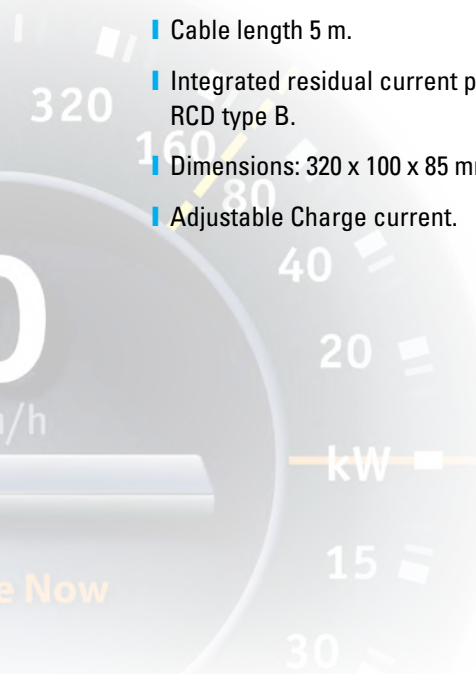
PORTABLE CHARGER 16A & 32A/400V 3-PHASE

P/N	Wall plug	Car plug	Max. Rating
35324	CEE	Type 2	16A/400V
35325	CEE	Type 2	32A/400V

- Cable length 5 m.
- Integrated residual current protection RCD type B.
- Dimensions: 320 x 100 x 85 mm.
- Adjustable Charge current.



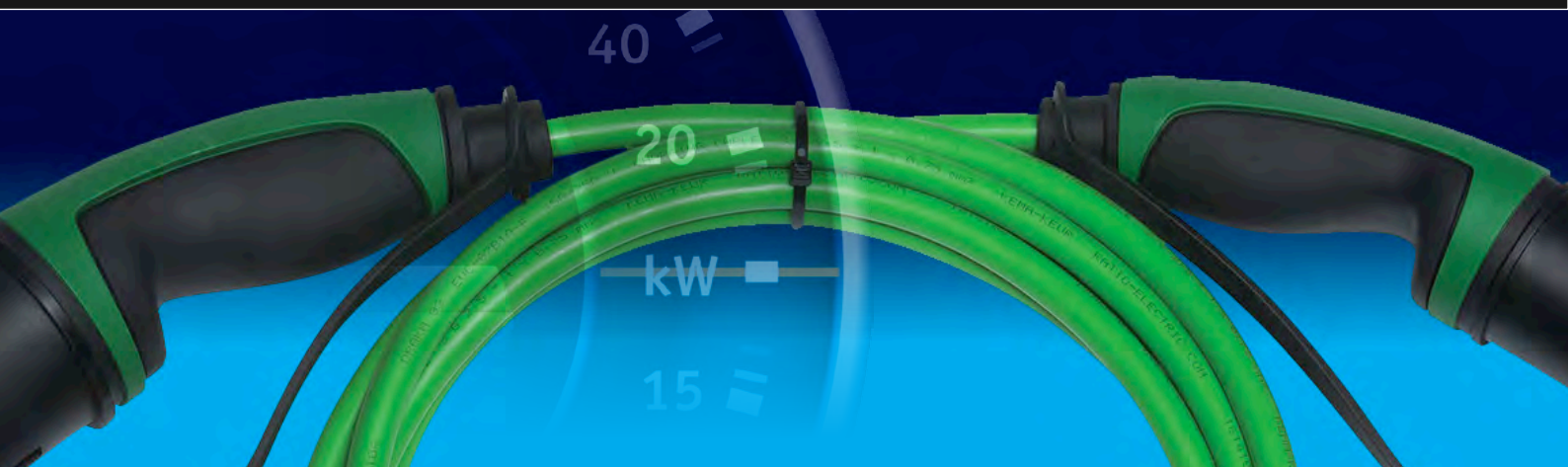
3 - PHASE



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Whatever type of car or distance between the charging station and your car, Ratio Electric always offers you the most suitable cables.

AHK Kabel EVC Z5 G 6.00 + 3 x 0.50 450/750 v en 50620 <VDE-REG F079>



AHK Kabel EVC Z5 G 6.00 + 3 x 0.50 450/750

VDE approval complies with IEC 50620.

F079>

QUALITY CABLE

- PUR cable suitable for outdoor use and resistant to oil, dust and water.
- Halogen free, low smoke.

- Flexible at low temperatures and able to withstand mechanical impacts.
- KEMA approval.

- Halogen free, flame retardant.
- Cable complies with new EV standard EN 50620.
- Cable in both green or black.



QUALITY PLUGS

- Type 2 moulded plugs and connectors with crimped contacts, DEKRA approval.
- Type 1 and type 3 assembly type connectors.
- Moulded plugs DEKRA approval complies with IEC 62196-2.



MOULDED PLUGS

Ratio Electric type 2 connectors are injection moulded. This ensures a watertight and tamperproof construction. A mould-in LED light indicates if power is available.

The connectors are moulded in 3 steps (3K):

After the wires are plugged into the housing, the basic moulding form covers all wires and components. Soft grip black moulding. Green shell moulding.

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TYPE 2 - 2, 1 FASE 16A (GREEN)

P/N	Description	Length
31240	Charging cable type 2 to 2 M-F 16A	4 m
31242	Charging cable type 2 to 2 M-F 16A	6 m
31241	Charging cable type 2 to 2 M-F 16A	8 m

TYPE 2 - 2, 1 FASE 32A (GREEN)

P/N	Description	Length
31250	Charging cable type 2 to 2 M-F 32A	4 m
31252	Charging cable type 2 to 2 M-F 32A	6 m
31251	Charging cable type 2 to 2 M-F 32A	8 m

TYPE 2 - 2, 3 FASE 16A (GREEN)

P/N	Description	Length
31280	Charging cable type 2 to 2 M-F 3x16A	4 m
31282	Charging cable type 2 to 2 M-F 3x16A	6 m
31281	Charging cable type 2 to 2 M-F 3x16A	8 m

TYPE 2 - 2, 3 FASE 32A (GREEN)

P/N	Description	Length
31290	Charging cable type 2 to 2 M-F 3x32A	4 m
31292	Charging cable type 2 to 2 M-F 3x32A	6 m
31291	Charging cable type 2 to 2 M-F 3x32A	8 m



TYPE 2 - 2, 1 FASE 16A (BLACK)

P/N	Description	Length
31240B	Charging cable type 2 to 2 M-F 16A	4 m
31242B	Charging cable type 2 to 2 M-F 16A	6 m
31241B	Charging cable type 2 to 2 M-F 16A	8 m

TYPE 2 - 2, 1 FASE 32A (BLACK)

P/N	Description	Length
31250B	Charging cable type 2 to 2 M-F 32A	4 m
31252B	Charging cable type 2 to 2 M-F 32A	6 m
31251B	Charging cable type 2 to 2 M-F 32A	8 m

TYPE 2 - 2, 3 FASE 16A (BLACK)

P/N	Description	Length
31280B	Charging cable type 2 to 2 M-F 3x16A	4 m
31282B	Charging cable type 2 to 2 M-F 3x16A	6 m
31281B	Charging cable type 2 to 2 M-F 3x16A	8 m

TYPE 2 - 2, 3 FASE 32A (BLACK)

P/N	Description	Length
31290B	Charging cable type 2 to 2 M-F 3x32A	4 m
31292B	Charging cable type 2 to 2 M-F 3x32A	6 m
31291B	Charging cable type 2 to 2 M-F 3x32A	8 m

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TYPE 2 - 2, COILED (GREEN)

P/N	Description	Cable
31244	Charging cable type 2 to 2 M-F 16A	Coiled
31254	Charging cable type 2 to 2 M-F 32A	Coiled
31283	Charging cable type 2 to 2 M-F 3x16A	Coiled
31295	Charging cable type 2 to 2 M-F 3x32A	Coiled



TYPE 2 - 2, COILED (BLACK)

P/N	Description	Cable
31244B	Charging cable type 2 to 2 M-F 16A	Coiled
31254B	Charging cable type 2 to 2 M-F 32A	Coiled
31283B	Charging cable type 2 to 2 M-F 3x16A	Coiled
31295B	Charging cable type 2 to 2 M-F 3x32A	Coiled



TYPE 2 - 1, 1 FASE 16A (GREEN)

P/N	Description	Length
31210	Charging cable type 2 to 1 16A	4 m
31212	Charging cable type 2 to 1 16A	6 m
31211	Charging cable type 2 to 1 16A	8 m



TYPE 2 - 1, 1 FASE 16A (BLACK)

P/N	Description	Length
31210B	Charging cable type 2 to 1 16A	4 m
31212B	Charging cable type 2 to 1 16A	6 m
31211B	Charging cable type 2 to 1 16A	8 m

TYPE 2 - 1, 1 FASE 32A (GREEN)

P/N	Description	Length
31215	Charging cable type 2 to 1 32A	4 m
31217	Charging cable type 2 to 1 32	6 m
31216	Charging cable type 2 to 1 32A	8 m

TYPE 2 - 1, 1 FASE 32A (BLACK)

P/N	Description	Length
31215B	Charging cable type 2 to 1 32A	4 m
31217B	Charging cable type 2 to 1 32	6 m
31216B	Charging cable type 2 to 1 32A	8 m

CABLES COILED

CABLES STRAIGHT



TYPE 2 - 1, COILED (GREEN)

P/N	Description	Cable
31220	Charging cable type 2 to 1 16A	Coiled
31218	Charging cable type 2 to 1 32A	Coiled



TYPE 2 - 1, COILED (BLACK)

P/N	Description	Cable
31220B	Charging cable type 2 to 1 16A	Coiled
31218B	Charging cable type 2 to 1 32A	Coiled



TYPE 2 - OPEN END STRAIGHT (BLACK)

P/N	Description	Length
33116B	EV Cable Type 2 to open end 16A	10 m
33116B-5M	EV Cable Type 2 to open end 16A	5 m
33132B	EV Cable Type 2 to open end 32A	10 m
33132B-5M	EV Cable Type 2 to open end 32A	5 m
33316B	EV Cable Type 2 to open end 3x16A	10 m
33316B-5M	EV Cable Type 2 to open end 3x16A	5 m
33332B	EV Cable Type 2 to open end 3x32A	10 m
33332B-5M	EV Cable Type 2 to open end 3x32A	5 m



TYPE 2 - OPEN END COILED (BLACK)

P/N	Description	Cable
33117B	EV Cable Type 2 to open end 16A	Coiled
33133B	EV Cable Type 2 to open end 32A	Coiled
33317B	EV Cable Type 2 to open end 3x16A	Coiled
33333B	EV Cable Type 2 to open end 3x32A	Coiled



TYPE 1 - OPEN END STRAIGHT (BLACK)

P/N	Description	Length
32116B	EV Cable Type 1 to open end 16A	10 m
32116B-5M	EV Cable Type 1 to open end 16A	5 m
32132B	EV Cable Type 1 to open end 32A	10 m
32132B-5M	EV Cable Type 1 to open end 32A	5 m



TYPE 1 - OPEN END COILED (BLACK)

P/N	Description	Cable
32117B	EV Cable Type 2 to open end 16A	Coiled
32133B	EV Cable Type 2 to open end 32A	Coiled

50 k

CABLES COILED

CABLES OPEN END

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Type 2 outlet socket complies with IEC 62196-2



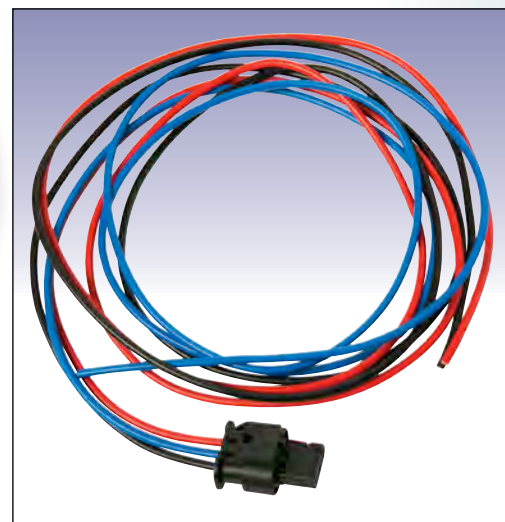
TYPE 2 OUTLET SOCKET

P/N	Description
32000	Outlet socket type 2 with cover
32001	Outlet socket type 2 with full opening cover



LOCKING ACTUATOR

P/N	Description
32110	Actuator



ACTUATOR CONNECTION CABLE

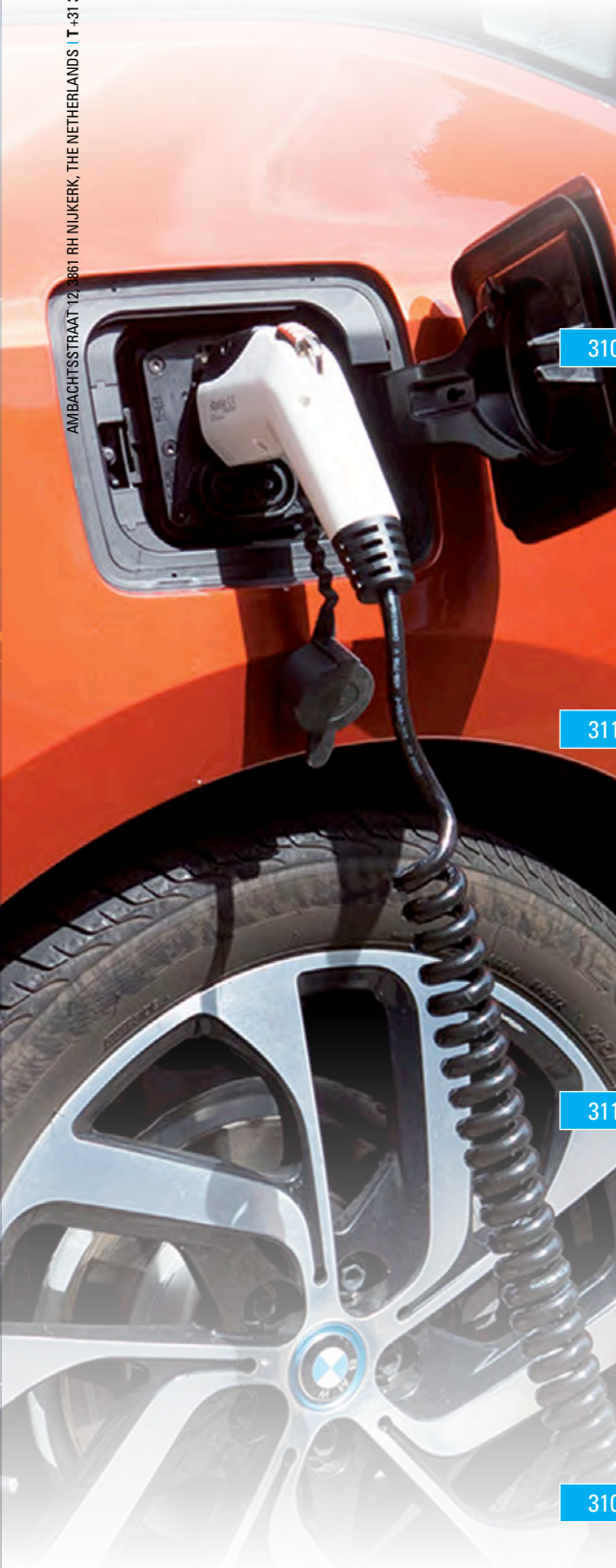
P/N	Description
32120	Actuator cable

Rating: max. 32A/400V AC
Energy: max. 22kW
Connections: Power contacts: L1, L2, L3, N, PE: 6,00 mm²
Data contacts: CP and PP: 0,50 - 0,75 mm²
Temperature: -25 C to + 40 C
Protection: IP 54
Approval: DEKRA
Marking: CE

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To retrofit or to make custom cables, both Type 1 connectors and Type 2 plugs and connectors can be used. Type 1 connectors have crimped contacts and require special assembly tools. Type 2 plugs and connectors have screwed contacts and require no special assembly tools.

P/N	Type	Max.	Protection class
31000	Type 1 female connector	16/230V	IP44
31001	Type 1 female connector	32/230V	IP44
31100	Type 2 male plug	16/400V	IP44
31105	Type 2 male plug	32/400V	IP44
31101	Type 2 female connector	16/400V	IP44
31106	Type 2 female connector	32/400V	IP44
31020	Type 3 male plug	32/400V	IP44



31000



31100



31101



31020





Complete and enhance your system



ADAPTER CABLE MODE 3 TO MODE 1

P/N	Wall plug	Car connector	Max. Rating
31200	Type 2 male	Schuko	16A/230V
31206	Type 2 male	CEE 16A/230V	16A/230V



PLUGHOLDER

P/N
32201 Dummy type 1



ORGANISER BAG

P/N	Description
32400	Practical organizer bag for cables and/or portable charger.



PLUGHOLDER

P/N
32202 Dummy type 2

CONSOLE

P/N
32411 Pedestal Single
32412 Pedestal Dual



CABLE HOLDER

P/N	Description
32402	Stainless steel cable holder with plugholder type 1.
32404	Stainless steel cable holder with plugholder type 2.

Standards for electric vehicles and charging stations are quite complex and still in development for some areas. The most important standards for EV charging are:

- IEC 61851 Conductive Charging systems, general requirements
- IEC 62196 Plugs, connectors, outlet sockets and vehicle inlets for conductive charging.

IEC 61851 STANDARD

The IEC 61851 standard describes 4 charge modes:

- Mode 1: max. 16A AC 230/400V
- Mode 2: max. 32A AC 230/400V
- Mode 3: max. 63A AC 230/400V
- Mode 4: max. 400A DC 1000V

For charging at home or at work mode 2 and mode 3 are most common. Mode 2 uses a standard domestic or industrial outlet. The charge cable must include an In Cable Control and Protection Device(IC-CPD). Mode 3 uses a dedicated EV outlet.

TAKE A NOTE:

The car type defines the type of plug and maximum charging current. Check with the manufacturer of the car for this information. All modes, except mode 1, require communication between vehicle and charge station. Modes 1, 2 and 3 use a battery charger inside the vehicle. Mode 4 uses an external battery charger that converts the AC in to DC. All modern electric and plug-in hybrid vehicles require communication with the charge station.

IEC 62196 standard

The plug configurations for mode 2 and 3 charging are described in the IEC 62196 standard:

Type 1: based on the US SAE1772 standard. All American and Japanese cars (or other that use their technology) are supplied with this inlet.

Type 2 is the European standard. European car makers will equip their cars with this inlet.

Also infrastructure suppliers (Charging stations) in Europe use this standard for their outlets.

Type 3 is a standard used in France and Italy on the infrastructure side.

It uses shutters on the contacts for extra safety protection.

Type 1



Type 2



Type 3





While the world of electric vehicles is developing rapidly, we would welcome your comments and ideas on any adaptations to our existing products as well as your useful suggestions for possible new products. You may send them to info@ratio.nl

Much obliged,

Hans Snaak
Managing Director
Ratio Electric

Contact

Phone:
+31 33 245 23 60
E-mail:
info@ratio.nl
www.ratio.nl

Postal Address:
Ratio Electric BV
Ambachtsstraat 12
3861 RH Nijkerk
The Netherlands