

# Tricom®

## ▶ FUTUR / FUTUR smart



**Energy. Endurance. Performance.**

## ▶ MAXIMUM EFFICIENCY



### You can't get any more efficient than this

With the new TriCOM FUTUR, we introduce the first fully resonant switching HF (High Frequency) charging system in the world.

In principle, HF chargers are "switching power supplies", which means that electronic switches are switched on and off at high frequency (50-100 kHz). All HF chargers currently available today have a switching process that is not "full resonant", but "quasi-resonant" or "hard" which inherently leads to power loss during the switching process.

For the new TriCOM Futur we have developed a state-of-the-art charger that is ahead of its time: A new **SR-Switching**

**Technology** (Soft Resonance) that guarantees very "soft," lossless, high frequency switching (from 50 kHz to 170 kHz) over the entire operating range of a full charging cycle.

This HF technology is new for charging devices and guarantees a maximum efficiency of up to 97%. In addition, a maximum total charging efficiency is achieved in connection with the improved TriCOM Futur charge characteristics.

In multi-module operation, an innovative, intelligent module activation management also optimizes energy consumption even further during partial load operation and increases the service life.

## SR-Switching Technology

## ▶ EASY TOUCH



### Programming with a Touch Display

TriCOM FUTUR resonant frequency Chargers, in addition to the proven “one button” operation, are now available with the new Easy Touch graphic display.

Using the Easy Touch resistive touch screen with its clear and structured menus, you can quickly select between 32 different charging programs for different types of batteries and different battery capacities. You can also switch to a set-up mode menu which allows you to program individual parameters.



# Simple to use



### **Intelligent Charging**

Our overarching design goal, regardless of whether our products are used individually or in a group, is always to conserve natural resources and reduce the environmental impact.

Regardless of whether the new high efficiency TriCOM FUTUR is used in combination with the patented Futur charging process or the charging station is managed with Total E-Control 4.0, the environment as well as the users benefit equally from innovative and energy, time, cost, and resource-saving system solutions.

The »IONIC Mixing« option has been further improved to reduce power consumption by up to 12%. This results in lower water consumption and therefore the maintenance intervals are significantly extended.

# Protect the environment



## ▶ TOTAL CONTROL



### Monitoring and Management System

The new Total E-Control 4.0 wireless monitoring and management system permanently optimizes battery and vehicle usage, and thus saves resources.

The Total E-Control offers the ability to use this proven management system more effectively through an innovative wireless networking capability and it can be selectively expanded using our new monitoring modules.

### Combinable System Modules:

- ▶ **next Battery Guard 4.0** - the proven, intelligent monitoring system with wireless networking.
- ▶ **icon Battery Guard 4.0** - now has a new wireless battery controller.
- ▶ **Central monitoring** - of batteries and chargers (can be configured individually).
- ▶ **NetVision** - remote access to batteries and chargers via the Internet/mobile phone network.
- ▶ **ConVision App** - monitoring and scanning function for tablets and smartphones.

# Wireless

## ▶ KEEP COOL



### **The clean solution**

An innovative, “encapsulated active Cooling” system for the power electronics guarantees a longer service life and saves money as well as resources.

The high efficiency of the TriCOM FUTUR with the new SR-Switching Technology simultaneously minimizes heat losses. For this reason, direct active cooling of the electrical system using a fan is not necessary. The passive convection cooling system prevents dirt and grime from penetrating into the device and thus protects the electronic modules. This increases the service life of the charger and significantly minimizes contamination by water, dust, and acid fumes. This permanently reduces service, replacement parts, and material costs.

# Passive Cool – Active Save

## ▶ QUICK CHECK



### Service-friendly design

The modular system that has proven itself over many years continues in the new TriCOM FUTUR and is further optimized with Quick Check.

Quick Check allows very effective inspection of the charger and allows quick, time-saving servicing.

The status of the charger and possible application errors can be queried very quickly via ConVision, the EasyTouch display, or the USB interface. When service is required, the service technician has quick access to the charger via the front panel and has at a glance a full overview of the status of the charger controller, the power module, and the power phases available. If necessary, the power modules can be swapped quickly and easily using the new plug-in system on the side panel.

The charger can continue to operate in the "In-Service" mode even when fewer modules are installed.

# Service friendly



**NEW**

**State of the art charging systems**

- ▶ **Maximum energy efficiency with a highest efficiency of up to 97% realized through:**
  - A pioneering multi-resonance converter technology »SR-Switching« for charging devices that is one-of-a-kind in the world.
  - An intelligent activation management system for the charging modules when operating under a partial load (3-phase chargers).
  - Significantly reduced standby power consumption.
  - Optimal TriCOM Futur charge profile with IONIC Mixing.
- ▶ **“In-Service” Operation** - chargers will continue to charge with reduced output even after the removal of individual modules.
- ▶ **Encapsulated cooling** - of the power semiconductors using heat sinks to keep dust and grime to a minimum.

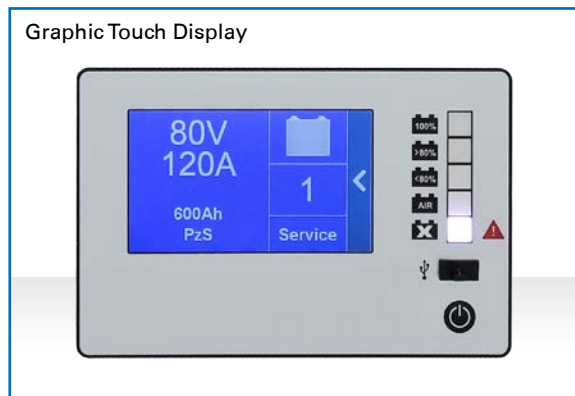
**Suitable Battery Types:**

- ▶ Lead-Acid Batteries (tubular, flat plate, low-maintenance and maintenance-free).
- ▶ Nickel Cadmium batteries.
- ▶ Lithium-Ion Batteries (optionally available with a CAN interface).
- ▶ Programming of further battery types upon request.



## SYSTEM FEATURES

- ▶ **SR-Switching HF (High Frequency) charging system** - High system efficiency of up to 97%.
- ▶ **ECO Energy** - Charging with the highest possible energy efficiency - Intelligent solution for wireless networking – Save resources using an easy-to-install battery monitor.
- ▶ **Graphic Touch Display** - Intuitive operation via a 4.3" multilingual touch screen with a real-time clock and time zone setting.
- ▶ **Plug & Play** - fully automatic with dynamic adjustments based on the battery's age, temperature and state of charge.
- ▶ **Service Messages** - accurate display of all maintenance needs and faults.
- ▶ **Total E-Control 4.0** - wireless monitoring and management system permanently optimizes battery usage and the vehicle management system and thus saves resources.
- ▶ **Quick Check** - quick and easy inspection of the charger using ConVision, USB interface and the touch screen display.
- ▶ **Standard USB interface** - for communication with data media: Update the firmware, Read out the charge history, Activate additional functions and control access to the charger settings.
- ▶ **Ease of Service** - Modular design of the charger with an innovative plug-in technology and a cabinet concept that includes access from the side.
- ▶ **ConVision App** - concise programming and analysis system, stores the last 512 charge events in real time, optimal analysis of your fleet, exact failure mode incident control, provides ability to make battery/charger decisions without additional effort.
- ▶ **Electrical Standards** - TriCOM Futur Chargers comply with all European standards for EMC and electrical safety.
- ▶ **Options: Temperature sensor, Battery Management Counter, IONIC Mixing, Remote control** - high flexibility, ideal for customization and makes economic sense.





# TriCOM® FUTUR Charger Models

Type of Charger	Charging times depending on capacity C5 in Ah						Mains connection			Weight in kg	Type of Cabinet
	PzS				PzV	GIV	AC	Plug	kVA		
	6,5 - 7,5 h EUW 5,5 - 6,5 h	7,5 - 8,5 h EUW 6,5 - 7,5 h	8,5 - 10,0 h EUW 7,5 - 9,0 h	10,0 - 14,0 h EUW 9,0 - 12,0 h	12,0 - 14,0 h	11,0 - 14,0 h					
E 24 / 40	200 - 250	250 - 320	320 - 400	400 - 500	267 - 333	222 - 334	E 230	Schuko	1,3	12	RF 450
E 24 / 45	225 - 282	281 - 360	360 - 450	450 - 562,5	300 - 375	250 - 376	E 230	Schuko	1,4	12	RF 450
E 24 / 50	250 - 313	313 - 400	400 - 500	500 - 625	334 - 417	278 - 417	E 230	Schuko	1,6	12	RF 450
E 24 / 60	300 - 375	375 - 480	480 - 600	600 - 750	400 - 500	334 - 501	E 230	Schuko	1,9	12	RF 450
E 24 / 65	325 - 406	406 - 520	520 - 650	650 - 812,5	434 - 542	361 - 542	E 230	Schuko	2,1	12	RF 450
E 24 / 70	350 - 438	438 - 560	560 - 700	700 - 875	467 - 584	389 - 584	E 230	Schuko	2,2	12	RF 450
E 24 / 75	375 - 469	469 - 600	600 - 750	750 - 937,5	500 - 625	417 - 626	E 230	Schuko	2,4	12	RF 450
E 24 / 80	400 - 500	500 - 640	640 - 800	800 - 1000	534 - 667	445 - 668	E 230	Schuko	2,5	12	RF 450
E 24 / 90	450 - 563	563 - 720	720 - 900	900 - 1125	600 - 750	500 - 751	E 230	Schuko	2,8	12	RF 450
E 24 / 100	500 - 625	625 - 800	800 - 1000	1000 - 1250	667 - 834	556 - 835	E 230	Schuko	3,2	12	RF 450
Z 24 / 110	550 - 687	688 - 880	880 - 1100	1100 - 1375	734 - 917	612 - 918	Z 400	CEE 16	3,5	30	RF 550
Z 24 / 120	600 - 750	750 - 960	960 - 1200	1200 - 1500	801 - 1000	668 - 1001	Z 400	CEE 16	3,8	30	RF 550
Z 24 / 130	650 - 812	813 - 1040	1040 - 1300	1300 - 1625	867 - 1084	723 - 1085	Z 400	CEE 16	4,1	30	RF 550
Z 24 / 140	700 - 875	875 - 1120	1120 - 1400	1400 - 1750	934 - 1167	779 - 1168	Z 400	CEE 16	4,4	30	RF 550
Z 24 / 150	750 - 937	938 - 1200	1200 - 1500	1500 - 1875	1001 - 1250	834 - 1252	Z 400	CEE 16	4,7	30	RF 550
Z 24 / 160	800 - 1000	1000 - 1280	1280 - 1600	1600 - 2000	1068 - 1334	890 - 1335	Z 400	CEE 16	5,1	30	RF 550
Z 24 / 170	850 - 1062	1063 - 1360	1360 - 1700	1700 - 2125	1134 - 1417	946 - 1419	Z 400	CEE 16	5,4	30	RF 550
Z 24 / 180	900 - 1125	1125 - 1440	1440 - 1800	1800 - 2250	1201 - 1500	1001 - 1502	Z 400	CEE 16	5,7	30	RF 550
Z 24 / 190	950 - 1187	1188 - 1520	1520 - 1900	1900 - 2375	1268 - 1584	1057 - 1586	Z 400	CEE 16	6,0	30	RF 550
Z 24 / 200	1000 - 1249	1250 - 1600	1600 - 2000	2000 - 2500	1334 - 1667	1113 - 1669	Z 400	CEE 16	6,3	30	RF 550
Z 24 / 210	1050 - 1312	1313 - 1680	1680 - 2100	2100 - 2625	1401 - 1751	1168 - 1752	Z 400	CEE 16	6,6	30	RF 550
Z 24 / 220	1100 - 1374	1375 - 1760	1760 - 2200	2200 - 2750	1468 - 1834	1224 - 1836	Z 400	CEE 16	5,8	30	RF 550
Z 24 / 230	1150 - 1437	1438 - 1840	1840 - 2300	2300 - 2875	1535 - 1917	1279 - 1919	Z 400	CEE 16	6,1	30	RF 550
Z 24 / 240	1200 - 1499	1500 - 1920	1920 - 2400	2400 - 3000	1601 - 2001	1335 - 2003	Z 400	CEE 16	6,4	30	RF 550
D 24 / 250	1250 - 1562	1563 - 2000	2000 - 2500	2500 - 3125	1668 - 2084	1391 - 2086	D 400	CEE 16	7,9	37	RF 550
D 24 / 260	1300 - 1624	1625 - 2080	2080 - 2600	2600 - 3250	1735 - 2167	1446 - 2170	D 400	CEE 16	8,2	37	RF 550
D 24 / 270	1350 - 1687	1688 - 2160	2160 - 2700	2700 - 3375	1801 - 2251	1502 - 2253	D 400	CEE 16	8,5	37	RF 550
D 24 / 280	1400 - 1749	1750 - 2240	2240 - 2800	2800 - 3500	1868 - 2334	1558 - 2337	D 400	CEE 16	8,8	37	RF 550
D 24 / 290	1450 - 1812	1813 - 2320	2320 - 2900	2900 - 3625	1935 - 2417	1613 - 2420	D 400	CEE 16	9,2	37	RF 550
D 24 / 300	1500 - 1874	1875 - 2400	2400 - 3000	3000 - 3750	2002 - 2501	1669 - 2504	D 400	CEE 16	9,5	37	RF 550
E 36 / 30	150 - 188	188 - 240	240 - 300	300 - 375	200 - 250	167 - 250	E 230	Schuko	1,4	12	RF 450
E 36 / 35	175 - 219	219 - 280	280 - 350	350 - 437,5	234 - 292	195 - 292	E 230	Schuko	1,6	12	RF 450
E 36 / 40	200 - 250	250 - 320	320 - 400	400 - 500	267 - 333	223 - 334	E 230	Schuko	1,9	12	RF 450
E 36 / 45	225 - 282	281 - 360	360 - 450	450 - 562,5	300 - 375	250 - 376	E 230	Schuko	2,1	12	RF 450
E 36 / 50	250 - 313	313 - 400	400 - 500	500 - 625	334 - 417	278 - 417	E 230	Schuko	2,3	12	RF 450
E 36 / 60	300 - 375	375 - 480	480 - 600	600 - 750	400 - 500	334 - 501	E 230	Schuko	2,8	12	RF 450
E 36 / 65	325 - 406	406 - 520	520 - 650	650 - 812,5	434 - 542	362 - 542	E 230	Schuko	3,0	12	RF 450
Z 36 / 70	350 - 438	438 - 560	560 - 700	700 - 875	467 - 584	389 - 584	Z 400	CEE 16	3,3	30	RF 550
Z 36 / 75	375 - 469	469 - 600	600 - 750	750 - 937,5	500 - 625	417 - 626	Z 400	CEE 16	3,5	30	RF 550
Z 36 / 80	400 - 500	500 - 640	640 - 800	800 - 1000	534 - 667	445 - 668	Z 400	CEE 16	3,7	30	RF 550
Z 36 / 90	450 - 563	563 - 720	720 - 900	900 - 1125	600 - 750	501 - 751	Z 400	CEE 16	4,2	30	RF 550
Z 36 / 100	500 - 625	625 - 800	800 - 1000	1000 - 1250	667 - 834	556 - 835	Z 400	CEE 16	4,7	30	RF 550
Z 36 / 110	550 - 687	688 - 880	880 - 1100	1100 - 1375	734 - 917	612 - 918	Z 400	CEE 16	5,1	30	RF 550
Z 36 / 120	600 - 750	750 - 960	960 - 1200	1200 - 1500	801 - 1000	668 - 1001	Z 400	CEE 16	5,6	30	RF 550
Z 36 / 130	650 - 812	813 - 1040	1040 - 1300	1300 - 1625	867 - 1084	723 - 1085	Z 400	CEE 16	6,1	30	RF 550
D 36 / 140	700 - 875	875 - 1120	1120 - 1400	1400 - 1750	934 - 1167	779 - 1168	D 400	CEE 16	6,5	37	RF 550
D 36 / 150	750 - 937	938 - 1200	1200 - 1500	1500 - 1875	1001 - 1250	834 - 1252	D 400	CEE 16	7,0	37	RF 550
D 36 / 160	800 - 1000	1000 - 1280	1280 - 1600	1600 - 2000	1068 - 1334	890 - 1335	D 400	CEE 16	7,5	37	RF 550
D 36 / 170	850 - 1062	1063 - 1360	1360 - 1700	1700 - 2125	1134 - 1417	946 - 1419	D 400	CEE 16	7,9	37	RF 550
D 36 / 180	900 - 1125	1125 - 1440	1440 - 1800	1800 - 2250	1201 - 1500	1001 - 1502	D 400	CEE 16	8,4	37	RF 550
D 36 / 190	950 - 1187	1188 - 1520	1520 - 1900	1900 - 2375	1268 - 1584	1057 - 1586	D 400	CEE 16	8,9	37	RF 550

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	6,5 - 7,5 h EUW 5,5 - 6,5 h	7,5 - 8,5 h EUW 6,5 - 7,5 h	8,5 - 10,0 h EUW 7,5 - 9,0 h	10,0 - 14,0 h EUW 9,0 - 12,0 h	12,0 - 14,0 h	11,0 - 14,0 h					
D 36 / 200	1000 - 1249	1250 - 1600	1600 - 2000	2000 - 2500	1334 - 1667	1113 - 1669	D 400	CEE 32	9,3	45	RF 560
D 36 / 210	1050 - 1312	1313 - 1680	1680 - 2100	2100 - 2625	1401 - 1751	1168 - 1752	D 400	CEE 32	9,8	45	RF 560
D 36 / 220	1100 - 1374	1375 - 1760	1760 - 2200	2200 - 2750	1468 - 1834	1224 - 1836	D 400	CEE 32	10,3	45	RF 560
D 36 / 230	1150 - 1437	1438 - 1840	1840 - 2300	2300 - 2875	1535 - 1917	1279 - 1919	D 400	CEE 32	10,7	45	RF 560
D 36 / 240	1200 - 1499	1500 - 1920	1920 - 2400	2400 - 3000	1601 - 2001	1335 - 2003	D 400	CEE 32	11,2	45	RF 560
D 36 / 250	1250 - 1562	1563 - 2000	2000 - 2500	2500 - 3125	1668 - 2084	1391 - 2086	D 400	CEE 32	11,7	45	RF 560
D 36 / 260	1300 - 1624	1625 - 2080	2080 - 2600	2600 - 3250	1735 - 2167	1446 - 2170	D 400	CEE 32	12,2	45	RF 560
D 36 / 270	1350 - 1687	1688 - 2160	2160 - 2700	2700 - 3375	1801 - 2251	1502 - 2253	D 400	CEE 32	12,6	65	RF 650
D 36 / 280	1400 - 1749	1750 - 2240	2240 - 2800	2800 - 3500	1868 - 2334	1558 - 2337	D 400	CEE 32	13,1	65	RF 650
D 36 / 290	1450 - 1812	1813 - 2320	2320 - 2900	2900 - 3625	1935 - 2417	1613 - 2420	D 400	CEE 32	13,6	65	RF 650
D 36 / 300	1500 - 1874	1875 - 2400	2400 - 3000	3000 - 3750	2002 - 2501	1669 - 2504	D 400	CEE 32	14,0	65	RF 650
E 48 / 35	175 - 219	219 - 280	280 - 350	350 - 437,5	234 - 292	195 - 292	E 230	Schuko	2,2	12	RF 450
E 48 / 40	200 - 250	250 - 320	320 - 400	400 - 500	267 - 333	223 - 334	E 230	Schuko	2,5	12	RF 450
E 48 / 45	225 - 282	282 - 360	360 - 450	450 - 562,5	300 - 375	250 - 376	E 230	Schuko	2,8	12	RF 450
E 48 / 50	250 - 313	313 - 400	400 - 500	500 - 625	334 - 417	278 - 417	E 230	Schuko	3,1	12	RF 450
E 48 / 55	275 - 344	344 - 440	440 - 550	550 - 687,5	367 - 458	306 - 459	E 230	Schuko	3,4	12	RF 450
Z 48 / 60	300 - 375	375 - 480	480 - 600	600 - 750	400 - 500	334 - 501	Z 400	CEE 16	3,7	30	RF 550
Z 48 / 65	325 - 406	406 - 520	520 - 650	650 - 812,5	434 - 542	362 - 542	Z 400	CEE 16	4,0	30	RF 550
Z 48 / 70	350 - 438	438 - 560	560 - 700	700 - 875	467 - 584	389 - 584	Z 400	CEE 16	4,3	30	RF 550
Z 48 / 75	375 - 469	469 - 600	600 - 750	750 - 937,5	500 - 625	417 - 626	Z 400	CEE 16	4,6	30	RF 550
Z 48 / 80	400 - 500	500 - 640	640 - 800	800 - 1000	534 - 667	445 - 668	Z 400	CEE 16	5,0	30	RF 550
Z 48 / 90	450 - 563	563 - 720	720 - 900	900 - 1125	600 - 750	501 - 751	Z 400	CEE 16	5,6	30	RF 550
Z 48 / 100	500 - 625	625 - 800	800 - 1000	1000 - 1250	667 - 834	556 - 835	Z 400	CEE 16	6,2	30	RF 550
Z 48 / 110	550 - 687	688 - 880	880 - 1100	1100 - 1375	734 - 917	612 - 918	Z 400	CEE 16	6,8	30	RF 550
Z 48 / 120	600 - 750	750 - 960	960 - 1200	1200 - 1500	801 - 1000	668 - 1001	Z 400	CEE 16	6,2	30	RF 550
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D 48 / 140	700 - 875	875 - 1120	1120 - 1400	1400 - 1750	934 - 1167	779 - 1168	D 400	CEE 16	8,7	37	RF 550
D 48 / 150	750 - 937	938 - 1200	1200 - 1500	1500 - 1875	1001 - 1250	834 - 1252	D 400	CEE 16	9,3	37	RF 550
D 48 / 160	800 - 1000	1000 - 1280	1280 - 1600	1600 - 2000	1068 - 1334	890 - 1335	D 400	CEE 16	9,9	37	RF 550
D 48 / 170	850 - 1062	1063 - 1360	1360 - 1700	1700 - 2125	1134 - 1417	946 - 1419	D 400	CEE 16	8,8	37	RF 550
D 48 / 180	900 - 1125	1125 - 1440	1440 - 1800	1800 - 2250	1201 - 1500	1001 - 1502	D 400	CEE 16	9,3	37	RF 550
D 48 / 190	950 - 1187	1188 - 1520	1520 - 1900	1900 - 2375	1268 - 1584	1057 - 1586	D 400	CEE 16	9,8	37	RF 550
D 48 / 200	1000 - 1249	1250 - 1600	1600 - 2000	2000 - 2500	1334 - 1667	1113 - 1669	D 400	CEE 32	10,4	45	RF 560
D 48 / 210	1050 - 1312	1313 - 1680	1680 - 2100	2100 - 2625	1401 - 1751	1168 - 1752	D 400	CEE 32	13,0	45	RF 560
D 48 / 220	1100 - 1374	1375 - 1760	1760 - 2200	2200 - 2750	1468 - 1834	1224 - 1836	D 400	CEE 32	13,6	45	RF 560
D 48 / 230	1150 - 1437	1438 - 1840	1840 - 2300	2300 - 2875	1535 - 1917	1279 - 1919	D 400	CEE 32	14,2	45	RF 560
D 48 / 240	1200 - 1499	1500 - 1920	1920 - 2400	2400 - 3000	1601 - 2001	1335 - 2003	D 400	CEE 32	12,4	45	RF 560
D 48 / 250	1250 - 1562	1563 - 2000	2000 - 2500	2500 - 3125	1668 - 2084	1391 - 2086	D 400	CEE 32	12,9	45	RF 560
D 48 / 260	1300 - 1624	1625 - 2080	2080 - 2600	2600 - 3250	1735 - 2167	1446 - 2170	D 400	CEE 32	13,5	45	RF 560
D 48 / 270	1350 - 1687	1688 - 2160	2160 - 2700	2700 - 3375	1801 - 2251	1502 - 2253	D 400	CEE 32	16,7	65	RF 650
D 48 / 280	1400 - 1749	1750 - 2240	2240 - 2800	2800 - 3500	1868 - 2334	1558 - 2337	D 400	CEE 32	14,5	65	RF 650
D 48 / 290	1450 - 1812	1813 - 2320	2320 - 2900	2900 - 3625	1935 - 2417	1613 - 2420	D 400	CEE 32	15,0	65	RF 650
D 48 / 300	1500 - 1874	1875 - 2400	2400 - 3000	3000 - 3750	2002 - 2501	1669 - 2504	D 400	CEE 32	15,5	65	RF 650

Type of Cabinet	Width	Height	Depth
RF450	430 mm	275 mm	125 mm
RF550	430 mm	415 mm	355 mm
RF560	430 mm	510 mm	355 mm
RF650	430 mm	740 mm	355 mm



# TriCOM® FUTUR Charger Models

Type of Charger	Charging times depending on capacity C5 in Ah						Mains connection			Weight in kg	Type of Cabinet
	PzS				PzV	GIV	AC	Plug	kVA		
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E 72 / 10	50 - 63	63 - 80	80 - 100	100 - 125	67 - 83	56 - 83	E 230	Schuko	0,9	12	RF 450
E 72 / 15	75 - 94	94 - 120	120 - 150	150 - 187,5	100 - 125	83 - 125	E 230	Schuko	1,4	12	RF 450
E 72 / 20	100 - 125	125 - 160	160 - 200	200 - 250	133 - 167	111 - 167	E 230	Schuko	1,8	12	RF 450
E 72 / 25	125 - 157	156 - 200	200 - 250	250 - 312,5	167 - 208	139 - 209	E 230	Schuko	2,3	12	RF 450
E 72 / 30	150 - 188	188 - 240	240 - 300	300 - 375	200 - 250	167 - 250	E 230	Schuko	2,8	12	RF 450
E 72 / 35	175 - 219	219 - 280	280 - 350	350 - 437,5	234 - 292	195 - 292	E 230	Schuko	3,2	12	RF 450
Z 72 / 40	200 - 250	250 - 320	320 - 400	400 - 500	267 - 333	223 - 334	Z 400	CEE 16	3,7	30	RF 550
Z 72 / 45	225 - 282	281 - 360	360 - 450	450 - 562,5	300 - 375	250 - 376	Z 400	CEE 16	4,1	30	RF 550
Z 72 / 50	250 - 313	313 - 400	400 - 500	500 - 625	334 - 417	278 - 417	Z 400	CEE 16	4,6	30	RF 550
Z 72 / 60	300 - 375	375 - 480	480 - 600	600 - 750	400 - 500	334 - 501	Z 400	CEE 16	5,5	30	RF 550
Z 72 / 65	325 - 406	406 - 520	520 - 650	650 - 812,5	434 - 542	362 - 542	Z 400	CEE 16	6,0	30	RF 550
Z 72 / 70	350 - 438	438 - 560	560 - 700	700 - 875	467 - 584	389 - 584	Z 400	CEE 16	6,5	30	RF 550
Z 72 / 80	400 - 500	500 - 640	640 - 800	800 - 1000	534 - 667	445 - 668	Z 400	CEE 16	6,2	30	RF 550
D 72 / 80	400 - 500	500 - 640	640 - 800	800 - 1000	534 - 667	445 - 668	D 400	CEE 16	7,4	37	RF 550
D 72 / 90	450 - 563	563 - 720	720 - 900	900 - 1125	600 - 750	501 - 751	D 400	CEE 16	8,3	37	RF 550
D 72 / 100	500 - 625	625 - 800	800 - 1000	1000 - 1250	667 - 834	556 - 835	D 400	CEE 16	9,2	37	RF 550
D 72 / 110	550 - 687	688 - 880	880 - 1100	1100 - 1375	734 - 917	612 - 918	D 400	CEE 16	10,1	37	RF 550
D 72 / 120	600 - 750	750 - 960	960 - 1200	1200 - 1500	801 - 1000	668 - 1001	D 400	CEE 16	9,2	37	RF 550
D 72 / 130	650 - 812	813 - 1040	1040 - 1300	1300 - 1625	867 - 1084	723 - 1085	D 400	CEE 32	12,0	45	RF 560
D 72 / 140	700 - 875	875 - 1120	1120 - 1400	1400 - 1750	934 - 1167	779 - 1168	D 400	CEE 32	12,9	45	RF 560
D 72 / 150	750 - 937	938 - 1200	1200 - 1500	1500 - 1875	1001 - 1250	834 - 1252	D 400	CEE 32	11,6	45	RF 560
D 72 / 160	800 - 1000	1000 - 1280	1280 - 1600	1600 - 2000	1068 - 1334	890 - 1335	D 400	CEE 32	12,3	45	RF 560
D 72 / 170	850 - 1062	1063 - 1360	1360 - 1700	1700 - 2125	1134 - 1417	946 - 1419	D 400	CEE 32	15,7	65	RF 650
D 72 / 180	900 - 1125	1125 - 1440	1440 - 1800	1800 - 2250	1201 - 1500	1001 - 1502	D 400	CEE 32	16,6	65	RF 650
D 72 / 190	950 - 1187	1188 - 1520	1520 - 1900	1900 - 2375	1268 - 1584	1057 - 1586	D 400	CEE 32	14,6	65	RF 650
D 72 / 200	1000 - 1249	1250 - 1600	1600 - 2000	2000 - 2500	1334 - 1667	1113 - 1669	D 400	CEE 32	15,4	65	RF 650
D 72 / 210	1050 - 1312	1313 - 1680	1680 - 2100	2100 - 2625	1401 - 1751	1168 - 1752	D 400	CEE 32	19,4	72	RF 650
D 72 / 220	1100 - 1374	1375 - 1760	1760 - 2200	2200 - 2750	1468 - 1834	1224 - 1836	D 400	CEE 32	20,3	72	RF 650
D 72 / 230	1150 - 1437	1438 - 1840	1840 - 2300	2300 - 2875	1535 - 1917	1279 - 1919	D 400	CEE 32	17,7	72	RF 650
D 72 / 240	1200 - 1499	1500 - 1920	1920 - 2400	2400 - 3000	1601 - 2001	1335 - 2003	D 400	CEE 32	18,5	72	RF 650
D 72 / 250	1250 - 1562	1563 - 2000	2000 - 2500	2500 - 3125	1668 - 2084	1391 - 2086	D 400	CEE 63	23,1	80	RF 750
D 72 / 260	1300 - 1624	1625 - 2080	2080 - 2600	2600 - 3250	1735 - 2167	1446 - 2170	D 400	CEE 63	20,0	80	RF 750
D 72 / 270	1350 - 1687	1688 - 2160	2160 - 2700	2700 - 3375	1801 - 2251	1502 - 2253	D 400	CEE 63	20,8	80	RF 750
D 72 / 280	1400 - 1749	1750 - 2240	2240 - 2800	2800 - 3500	1868 - 2334	1558 - 2337	D 400	CEE 63	21,6	80	RF 750
D 72 / 290	1450 - 1812	1813 - 2320	2320 - 2900	2900 - 3625	1935 - 2417	1613 - 2420	D 400	CEE 63	26,7	88	RF 950
D 72 / 300	1500 - 1874	1875 - 2400	2400 - 3000	3000 - 3750	2002 - 2501	1669 - 2504	D 400	CEE 63	23,1	88	RF 950



Type of Charger	Charging times depending on capacity C5 in Ah						Mains connection			Weight in kg	Type of Cabinet
	PzS				PzV	GIV	AC	Plug	kVA		
	6,5 - 7,5 h EUW 5,5 - 6,5 h	7,5 - 8,5 h EUW 6,5 - 7,5 h	8,5 - 10,0 h EUW 7,5 - 9,0 h	10,0 - 14,0 h EUW 9,0 - 12,0 h	12,0 - 14,0 h	11,0 - 14,0 h					
E 80 / 10	50 - 63	63 - 80	80 - 100	100 - 125	67 - 83	56 - 83	E 230	Schuko	1,0	12	RF 450
E 80 / 15	75 - 94	94 - 120	120 - 150	150 - 187,5	100 - 125	83 - 125	E 230	Schuko	1,5	12	RF 450
E 80 / 20	100 - 125	125 - 160	160 - 200	200 - 250	133 - 167	111 - 167	E 230	Schuko	2,0	12	RF 450
E 80 / 25	125 - 157	156 - 200	200 - 250	250 - 312,5	167 - 208	139 - 208	E 230	Schuko	2,6	12	RF 450
E 80 / 30	150 - 188	188 - 240	240 - 300	300 - 375	200 - 250	167 - 250	E 230	Schuko	3,1	12	RF 450
Z 80 / 35	175 - 219	219 - 280	280 - 350	350 - 437,5	234 - 292	195 - 292	Z 400	CEE 16	3,6	30	RF 550
Z 80 / 40	200 - 250	250 - 320	320 - 400	400 - 500	267 - 333	223 - 334	Z 400	CEE 16	4,1	30	RF 550
Z 80 / 45	225 - 282	281 - 360	360 - 450	450 - 562,5	300 - 375	250 - 376	Z 400	CEE 16	4,6	30	RF 550
Z 80 / 50	250 - 313	313 - 400	400 - 500	500 - 625	334 - 417	278 - 417	Z 400	CEE 16	5,1	30	RF 550
Z 80 / 60	300 - 375	375 - 480	480 - 600	600 - 750	400 - 500	334 - 501	Z 400	CEE 16	6,1	30	RF 550
Z 80 / 65	325 - 406	406 - 520	520 - 650	650 - 812,5	434 - 542	362 - 542	Z 400	CEE 16	6,7	30	RF 550
Z 80 / 70	350 - 438	438 - 560	560 - 700	700 - 875	467 - 584	389 - 584	Z 400	CEE 16	6,0	30	RF 550
Z 80 / 80	400 - 500	500 - 640	640 - 800	800 - 1000	534 - 667	445 - 668	Z 400	CEE 16	6,8	30	RF 550
D 80 / 80	400 - 500	500 - 640	640 - 800	800 - 1000	534 - 667	445 - 668	D 400	CEE 16	8,2	37	RF 550
D 80 / 90	450 - 563	563 - 720	720 - 900	900 - 1125	600 - 750	501 - 751	D 400	CEE 16	9,2	37	RF 550
D 80 / 100	500 - 625	625 - 800	800 - 1000	1000 - 1250	667 - 834	556 - 835	D 400	CEE 16	10,2	37	RF 550
D 80 / 110	550 - 687	688 - 880	880 - 1100	1100 - 1375	734 - 917	612 - 918	D 400	CEE 16	9,4	37	RF 550
D 80 / 120	600 - 750	750 - 960	960 - 1200	1200 - 1500	801 - 1000	668 - 1001	D 400	CEE 16	10,3	37	RF 550
D 80 / 130	650 - 812	813 - 1040	1040 - 1300	1300 - 1625	867 - 1084	723 - 1085	D 400	CEE 32	13,3	45	RF 560
D 80 / 140	700 - 875	875 - 1120	1120 - 1400	1400 - 1750	934 - 1167	779 - 1168	D 400	CEE 32	12,0	45	RF 560
D 80 / 150	750 - 937	938 - 1200	1200 - 1500	1500 - 1875	1001 - 1250	834 - 1252	D 400	CEE 32	12,8	45	RF 560
D 80 / 160	800 - 1000	1000 - 1280	1280 - 1600	1600 - 2000	1068 - 1334	890 - 1335	D 400	CEE 32	13,7	45	RF 560
D 80 / 170	850 - 1062	1063 - 1360	1360 - 1700	1700 - 2125	1134 - 1417	946 - 1419	D 400	CEE 32	14,5	65	RF 650
D 80 / 180	900 - 1125	1125 - 1440	1440 - 1800	1800 - 2250	1201 - 1500	1001 - 1502	D 400	CEE 32	15,4	65	RF 650
D 80 / 190	950 - 1187	1188 - 1520	1520 - 1900	1900 - 2375	1268 - 1584	1057 - 1586	D 400	CEE 32	16,2	65	RF 650
D 80 / 200	1000 - 1249	1250 - 1600	1600 - 2000	2000 - 2500	1334 - 1667	1113 - 1669	D 400	CEE 32	17,1	72	RF 650
D 80 / 210	1050 - 1312	1313 - 1680	1680 - 2100	2100 - 2625	1401 - 1751	1168 - 1752	D 400	CEE 32	17,9	72	RF 650
D 80 / 220	1100 - 1374	1375 - 1760	1760 - 2200	2200 - 2750	1468 - 1834	1224 - 1836	D 400	CEE 32	18,8	72	RF 650
D 80 / 230	1150 - 1437	1438 - 1840	1840 - 2300	2300 - 2875	1535 - 1917	1279 - 1919	D 400	CEE 32	19,3	72	RF 650
D 80 / 240	1200 - 1499	1500 - 1920	1920 - 2400	2400 - 3000	1601 - 2001	1335 - 2003	D 400	CEE 32	20,5	72	RF 650
D 80 / 250	1250 - 1562	1563 - 2000	2000 - 2500	2500 - 3125	1668 - 2084	1391 - 2086	D 400	CEE 63	21,4	80	RF 750
D 80 / 260	1300 - 1624	1625 - 2080	2080 - 2600	2600 - 3250	1735 - 2167	1446 - 2170	D 400	CEE 63	22,2	80	RF 750
D 80 / 270	1350 - 1687	1688 - 2160	2160 - 2700	2700 - 3375	1801 - 2251	1502 - 2253	D 400	CEE 63	23,1	80	RF 750
D 80 / 280	1400 - 1749	1750 - 2240	2240 - 2800	2800 - 3500	1868 - 2334	1558 - 2337	D 400	CEE 63	23,9	80	RF 750
D 80 / 290	1450 - 1812	1813 - 2320	2320 - 2900	2900 - 3625	1935 - 2417	1613 - 2420	D 400	CEE 63	24,8	88	RF 950
D 80 / 300	1500 - 1874	1875 - 2400	2400 - 3000	3000 - 3750	2002 - 2501	1669 - 2504	D 400	CEE 63	25,6	88	RF 950

Type of Cabinet	Width	Height	Depth
RF450	430 mm	275 mm	125 mm
RF550	430 mm	415 mm	355 mm
RF560	430 mm	510 mm	355 mm
RF650	430 mm	740 mm	355 mm
RF750	430 mm	840 mm	355 mm
RF950	430 mm	1015 mm	355 mm

# ▶ **TriCOM<sup>®</sup> FUTUR smart**

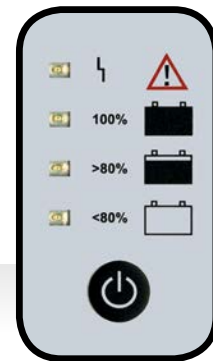
## **SYSTEM FEATURES**

- ▶ **Very high efficiency** - energy costs reduced by up to 20%.
- ▶ **Low residual ripple** - significantly lower heating of the battery during charge.
- ▶ **Greatly reduced volume and weight** - small space requirement, on-board ability.
- ▶ **FUTUR charge curve** - patented charging method for dynamic, particularly "soft" charging - regardless of the battery type, battery age or state of charge.
- ▶ **Status display** - traffic light function with high-performance LEDs (visible from a distance).
- ▶ **ConVision** - compact programming and analysis system, storage of the last 256 charging data sets, optimum analysis possibility for your vehicle fleet, exact error checking in the event of a fault, read-out option without additional work.
- ▶ **Fully automatic charging process** - Plug & Play for all battery states of discharge.
- ▶ **Programmable charge curves** - one device for all battery technologies, optimized setting for each application.
- ▶ **Electrical safety to EN standards** - safe operation in all applications.
- ▶ **Options: Temperature sensor, battery management counter, IONIC Mixing, remote control, electrolyte circulation system** - high flexibility, ideal adaptation possibilities, investment security.

Charger  
TriCOM FUTUR smart



Graphic display  
TriCOM FUTUR smart



# TriCOM<sup>®</sup> FUTUR smart Charger Models

Type of Charger	Charging times depending on capacity C5 in Ah						Mains connection			Weight in kg	Type of Cabinet
	PzS				PzV	GIV	AC	Plug	kVA		
	6.5 - 7.5 h	7.5 - 8.5 h	8.5 - 10.0 h	10.0 - 14.0 h	12.0 - 14.0 h	11.0 - 14.0 h					
E 12 / 6	30 - 38	38 - 48	48 - 60	60 - 75	40 - 50	33 - 50	E 230	Schuko	0.104	3.0	HF 180
E 12 / 8	40 - 50	50 - 64	64 - 80	80 - 100	53 - 67	44 - 67	E 230	Schuko	0.139	3.0	HF 180
E 12 / 10	50 - 63	63 - 80	80 - 100	100 - 125	67 - 83	56 - 83	E 230	Schuko	0.173	3.0	HF 180
E 12 / 12	60 - 75	75 - 96	96 - 120	120 - 150	80 - 100	67 - 100	E 230	Schuko	0.208	3.0	HF 180
E 12 / 15	75 - 94	94 - 120	120 - 150	150 - 188	100 - 125	83 - 125	E 230	Schuko	0.260	3.0	HF 180
E 12 / 20	100 - 125	125 - 160	160 - 200	200 - 250	133 - 167	111 - 167	E 230	Schuko	0.347	3.0	HF 180
E 12 / 25	125 - 156	156 - 200	200 - 250	250 - 313	167 - 208	139 - 208	E 230	Schuko	0.433	3.0	HF 180
E 12 / 30	150 - 188	188 - 240	240 - 300	300 - 375	200 - 250	167 - 250	E 230	Schuko	0.520	3.0	HF 180
E 12 / 35	175 - 219	219 - 280	280 - 350	350 - 438	233 - 292	195 - 292	E 230	Schuko	0.607	3.0	HF 180
E 12 / 40	200 - 250	250 - 320	320 - 400	400 - 500	267 - 333	222 - 333	E 230	Schuko	0.693	3.5	HF 190
E 12 / 50	250 - 313	313 - 400	400 - 500	500 - 625	334 - 417	278 - 417	E 230	Schuko	0.867	3.5	HF 190
E 24 / 6	30 - 38	38 - 48	48 - 60	60 - 75	40 - 50	33 - 50	E 230	Schuko	0.200	3.0	HF 180
E 24 / 8	40 - 50	50 - 64	64 - 80	80 - 100	53 - 67	44 - 67	E 230	Schuko	0.267	3.0	HF 180
E 24 / 10	50 - 63	63 - 80	80 - 100	100 - 125	67 - 83	56 - 83	E 230	Schuko	0.333	3.0	HF 180
E 24 / 12	60 - 75	75 - 96	96 - 120	120 - 150	80 - 100	67 - 100	E 230	Schuko	0.400	3.0	HF 180
E 24 / 15	75 - 94	94 - 120	120 - 150	150 - 188	100 - 125	83 - 125	E 230	Schuko	0.500	3.0	HF 180
E 24 / 20	100 - 125	125 - 160	160 - 200	200 - 250	133 - 167	111 - 167	E 230	Schuko	0.667	3.0	HF 180
E 24 / 25	125 - 156	156 - 200	200 - 250	250 - 313	167 - 208	139 - 208	E 230	Schuko	0.833	3.0	HF 180
E 24 / 30	150 - 188	188 - 240	240 - 300	300 - 375	200 - 250	167 - 250	E 230	Schuko	1.000	3.0	HF 180
E 24 / 35	175 - 219	219 - 280	280 - 350	350 - 438	233 - 292	195 - 292	E 230	Schuko	1.167	3.0	HF 180
E 24 / 40	200 - 250	250 - 320	320 - 400	400 - 500	267 - 333	222 - 333	E 230	Schuko	1.333	3.5	HF 190
E 24 / 50	250 - 313	313 - 400	400 - 500	500 - 625	334 - 417	278 - 417	E 230	Schuko	1.667	3.5	HF 190
E 24 / 60	300 - 375	375 - 480	480 - 600	600 - 750	400 - 500	335 - 500	E 230	Schuko	2.000	10	HF 450
E 24 / 65	325 - 407	407 - 520	520 - 650	650 - 812	434 - 542	362 - 543	E 230	Schuko	2.170	10	HF 450
E 24 / 70	350 - 438	438 - 560	560 - 700	700 - 875	467 - 583	389 - 583	E 230	Schuko	2.330	10	HF 450
E 24 / 75	375 - 469	469 - 600	600 - 75	750 - 937	500 - 625	417 - 625	E 230	Schuko	2.500	10	HF 450
E 24 / 80	400 - 500	500 - 640	640 - 800	800 - 1000	534 - 667	445 - 667	E 230	Schuko	2.670	10	HF 450
E 36 / 10	50 - 63	63 - 80	80 - 100	100 - 125	67 - 83	56 - 83	E 230	Schuko	0.493	3.0	HF 180
E 36 / 12	60 - 75	75 - 96	96 - 120	120 - 150	80 - 100	67 - 100	E 230	Schuko	0.592	3.0	HF 180
E 36 / 15	75 - 94	94 - 120	120 - 150	150 - 188	100 - 125	83 - 125	E 230	Schuko	0.740	3.0	HF 180
E 36 / 20	100 - 125	125 - 160	160 - 200	200 - 250	133 - 167	111 - 167	E 230	Schuko	0.987	3.0	HF 180
E 36 / 25	125 - 156	156 - 200	200 - 250	250 - 313	167 - 208	139 - 208	E 230	Schuko	1.233	3.5	HF 190
E 36 / 30	150 - 188	188 - 240	240 - 300	300 - 375	200 - 250	167 - 250	E 230	Schuko	1.480	3.5	HF 190
E 36 / 35	175 - 219	219 - 280	280 - 350	350 - 438	233 - 292	195 - 292	E 230	Schuko	1.727	3.5	HF 190
E 36 / 40	200 - 250	250 - 320	320 - 400	400 - 500	267 - 333	222 - 333	E 230	Schuko	1.973	3.5	HF 190
E 48 / 10	50 - 63	63 - 80	80 - 100	100 - 125	67 - 83	56 - 83	E 230	Schuko	0.653	3.0	HF 180
E 48 / 12	60 - 75	75 - 96	96 - 120	120 - 150	80 - 100	67 - 100	E 230	Schuko	0.784	3.0	HF 180
E 48 / 15	75 - 94	94 - 120	120 - 150	150 - 188	100 - 125	83 - 125	E 230	Schuko	0.980	3.0	HF 180
E 48 / 20	100 - 125	125 - 160	160 - 200	200 - 250	133 - 167	111 - 167	E 230	Schuko	1.307	3.5	HF 190
E 48 / 25	125 - 156	156 - 200	200 - 250	250 - 313	167 - 208	139 - 208	E 230	Schuko	1.633	3.5	HF 190
E 48 / 30	150 - 188	188 - 240	240 - 300	300 - 375	200 - 250	167 - 250	E 230	Schuko	1.960	3.5	HF 190

Type of Cabinet	Width	Height	Depth
HF 180	262 mm	92 mm	164 mm
HF 190	262 mm	112 mm	164 mm
HF 450	430 mm	256 mm	115 mm



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