

FILON FUTUR

IEB
Industrie Elektronik Brilon

WE GET ELECTRICITY INTO SHAPE®

HIGH FREQUENCY CHARGING SYSTEMS





STATE OF THE ART HF-CHARGING SYSTEMS OF THE HIGHEST QUALITY



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XL

Charging voltage	12V, 24V, 36V or 48V	12V, 24V, 36V or 48V	24V, 36V, 48V or 80V	24V, 36V, 48V or 80V
Max. rated output	450 W	1,5 kW	3,3 kW	22 kW

- High-efficiency phase shifter technology (h to 94 %) with modular design
- Patented Futur charging technology – for optimal charging efficiency and smooth charge – with the intelligent Futur charging curve
- Very high degree of flexibility and dynamic charging curve programming (max. of 16 charging curves)
- Comprehensive charging data management of the charging history - with 128 charging cycles and efficient data readout option (ConVision)
- Flexible wall mounting and charger installation (with many different charger base options)

Suitable battery types

- Lead batteries – low maintenance (PzS, PzB, GiS) and no maintenance (PzV, GiV, AGM,...)
- Nickel-cadmium batteries
- Li-ion batteries
- Additional battery types programmable upon request

Guaranteed quality

IEB HF charging systems comply with the EN standards for EMC and electrical safety.
The company IEB is certified in accordance with DIN EN ISO 9001:2000.

Futur charging technology – intelligent and flexible

- Patented Futur charging process for a highly efficient and very smooth battery charge
- Ideal, very low ripple DC charging current
- Automatic adjusting to age, temperature, and loading status of battery
- Deep discharge soft-start function starting at 0.5 V per cell (equivalent to 1/4 of the nominal battery voltage)

Environmentally sound and cost saving – with high energy efficiency

- High system efficiency up to 94 %
- Innovative combination of the latest HF power electronics with highly efficient IEB charging technology
- Reduces energy consumption by up to 20 % compared with conventional charging systems

Very easy to use and operate – flexible, safe, and reliable

- Comprehensive charging and malfunction indication with 5 high-power LEDs and blue backlight graphical display
- Comprehensive safety functions with the IEB safety system and effective performance control (incl. temperature, performance and time management)
- Comprehensive internal charging data and malfunction management
- Charging history can be read out and analyzed for the last 128 charging cycles using the ConVision service module
- Modular system design with draw out power units

Innovative technologies – universally applicable

- For all lead, nickel-cadmium, and Li-ion batteries
- Quick and easy charging curve programming
- Optional power/voltage switching
- Wide-range use possible (voltage: 95V – 265V)
- Battery Management options (BMS and BMC)
- Programmable service charge curves (de-sulphation, forming, or mixing acid)
- **NEW** Filon Futur *Expert* with menu-guided parameter setting for voltage, current, capacity, battery type, charging time



CHARGER SPECIFICATION

FILON FUTUR[®] Characteristics

Charging voltages:	12V, 24V, 36V or 48V
Max. rated output:	0,4 kW
Mains voltages:	207 - 253V 50/60Hz - also 100-120V and 100-253V optional
Protection category:	IP 21 higher protection categories up to IP 54 on request
Protection class:	II

S	Cabinet	Width	Height	Depth
	HF 90	177	69	112

FILON FUTUR[®] Options

• ConVision	The compact programming and analysis package for mobile service applications, consisting of service module and software
• Protection category IP44-IP54	With special cabinets for IP44-IP54 protection
• On-Board	Customizable, individual implementations (incl. drive-off protection)
• Temperature compensation	Temperature-controlled charge, e.g. for cold store applications
• Pulse charge	Ionic electrolyte circulation for reducing charge time by up to 2 h and for very smooth and energy saving charging
• Remote LED indicator	As LED control panel or DUO LED (up to 2 m)

CHARGER SELECTION TABLE

Output Voltage	Charger Type	Nominal Current [A]	Charging Curve/Charging Time/Battery Capacity K _{sh} [Ah]						Current [A]	Cabinet	Weight [kg]	Type No.
			IULa	IULa	IULa	IULa	IULa (GiV)	IULa (PzV)				
		Wet ¹ -Batt. Wet ¹ -Futur Wet ¹ -EUW GiV; PzV	7,5-8,5 h 6,5-7,5 h ² 5,5-6,5 h -	8,5-9,5 h 7,5-8,5 h ² 6,5-7,5 h -	9,5-11 h 8,5-10 h ² 7,5-9 h -	11-14 h 10-14 h 9-12 h -	- - - 11-14 h	- - - 12-14 h				
12 V	E 230 G 12 / 2 B65-FP	2	10 - 12	13 - 16	16 - 20	20 - 25	12 - 17	14 - 17	0,15	HF 90	1,5	52102
	E 230 G 12 / 3 B65-FP	3	15 - 18	19 - 24	24 - 30	30 - 37	17 - 25	20 - 25	0,23	HF 90	1,5	52103
	E 230 G 12 / 4 B65-FP	4	20 - 25	25 - 32	32 - 40	40 - 50	23 - 33	27 - 33	0,3	HF 90	1,5	52104
	E 230 G 12 / 5 B65-FP	5	25 - 31	32 - 40	40 - 50	50 - 62	28 - 42	34 - 42	0,3	HF 90	1,5	52105
	E 230 G 12 / 6 B65-FP	6	30 - 37	38 - 48	48 - 60	60 - 75	34 - 50	40 - 50	0,4	HF 90	1,5	52106
	E 230 G 12 / 8 B65-FP	8	40 - 50	50 - 64	64 - 80	80 - 100	45 - 67	54 - 67	0,6	HF 90	1,5	52108
	E 230 G 12 / 10 B65-FP	10	50 - 62	63 - 80	80 - 100	100 - 125	56 - 83	67 - 83	0,7	HF 90	1,5	52110
	E 230 G 12 / 12 B65-FP	12	60 - 75	75 - 96	96 - 120	120 - 150	67 - 100	80 - 100	0,8	HF 90	1,5	52112
	E 230 G 12 / 13 B65-FP	13	65 - 81	82 - 104	104 - 130	130 - 162	73 - 108	87 - 108	1,1	HF 90	1,5	52113
	E 230 G 12 / 15 B65-FP	15	75 - 93	94 - 120	120 - 150	150 - 187	83 - 125	100 - 125	1,2	HF 90	1,5	52115
24 V	E 230 G 24 / 3 B65-FP	3	15 - 18	19 - 24	24 - 30	30 - 37	17 - 25	20 - 25	0,44	HF 90	1,5	52203
	E 230 G 24 / 4 B65-FP	4	20 - 25	25 - 32	32 - 40	40 - 50	23 - 33	27 - 33	0,58	HF 90	1,5	52204
	E 230 G 24 / 5 B65-FP	5	25 - 31	32 - 40	40 - 50	50 - 62	28 - 42	34 - 42	0,72	HF 90	1,5	52205
	E 230 G 24 / 6 B65-FP	6	30 - 37	38 - 48	48 - 60	60 - 75	34 - 50	40 - 50	0,8	HF 90	1,5	52206
	E 230 G 24 / 8 B65-FP	8	40 - 50	50 - 64	64 - 80	80 - 100	45 - 67	54 - 67	1,1	HF 90	1,5	52208
	E 230 G 24 / 10 B65-FP	10	50 - 62	63 - 80	80 - 100	100 - 125	56 - 83	67 - 83	1,4	HF 90	1,5	52210
	E 230 G 24 / 12 B65-FP	12	60 - 75	75 - 96	96 - 120	120 - 150	67 - 100	80 - 100	1,7	HF 90	1,5	52212
	E 230 G 24 / 13 B65-FP	13	65 - 81	82 - 104	104 - 130	130 - 162	73 - 108	87 - 108	1,9	HF 90	1,5	52213
	E 230 G 24 / 15 B65-FP	15	75 - 93	94 - 120	120 - 150	150 - 187	83 - 125	100 - 125	2,2	HF 90	1,5	52215
36 V	E 230 G 36 / 4 B65-FP	4	20 - 25	25 - 32	32 - 40	40 - 50	23 - 33	27 - 33	0,9	HF 90	1,5	52304
	E 230 G 36 / 6 B65-FP	6	30 - 37	38 - 48	48 - 60	60 - 75	34 - 50	40 - 50	1,3	HF 90	1,5	52306
	E 230 G 36 / 8 B65-FP	8	40 - 50	50 - 64	64 - 80	80 - 100	45 - 67	54 - 67	1,8	HF 90	1,5	52308
48 V	E 230 G 48 / 4 B65-FP	4	20 - 25	25 - 32	32 - 40	40 - 50	23 - 33	27 - 33	1,2	HF 90	1,5	52404
	E 230 G 48 / 6 B65-FP	6	30 - 37	38 - 48	48 - 60	60 - 75	34 - 50	40 - 50	1,7	HF 90	1,5	52406
	E 230 G 48 / 8 B65-FP	8	40 - 50	50 - 64	64 - 80	80 - 100	45 - 67	54 - 67	2,3	HF 90	1,5	52408

¹PzS, PzB, GiS, CSM, etc. ²pulse/ionic mixing



CHARGER SPECIFICATION

FILON FUTUR^M Characteristics

Charging voltages: 12V, 24V, 36V or 48V
Max. rated output: 1,5 kW
Mains voltages: 207 - 253V 50/60Hz - also 100-120V and 100-253V optional
Protection category: IP 21 higher protection categories up to IP 54 on request
Protection class: I

	Cabinet	Width	Height	Depth
	HF 180	260	164	93
	HF 190	260	164	113

FILON FUTUR^M Options

- ConVision

The compact programming and analysis package for mobile service applications, consisting of service module and software
- Protection category IP44-IP54

With special cabinets for IP44-IP54 protection
- On-Board

Customizable, individual implementations (incl. drive-off protection)
- Temperature compensation

Temperature-controlled charge, e.g. for cold store applications
- EUW*

Electrolyte circulation for reducing charge time by up to 2.5 h
- Pulse charge

Ionic electrolyte circulation for reducing charge time by up to 2 h and for very smooth and energy saving charging
- Graphical display blue backlight*

Detailed indication of charging settings, charging progress, and warning and malfunction messages, remote display available upon request
- Battery Management System* (BMS)

The central IEB monitoring system, ideal for battery charging stations
- Battery Management Counter* (BMC)

External, two-digit counter (up to 99), starts counting automatically after charging is finished
- Control column*

External indicator light to signal charging status, visible at a distance
- Remote LED indicator

As LED control panel or DUO LED (up to 2 m)

CHARGER SELECTION TABLE

Output Voltage	Charger Type	Nominal Current [A]	Charging Curve / Charging Time / Battery Capacity K _B [Ah]						Current	Cabinet	Weight	Type
			IUIa	IUIa	IUIa	IUIa	IUIa (GiV)	IUIa (PzV)				
		Wet ¹ -Batt. Wet ¹ -Futur Wet ¹ -EUW GiV; PzV	7,5-8,5 h 6,5-7,5 h ² 5,5-6,5 h -	8,5-9,5 h 7,5-8,5 h ² 6,5-7,5 h -	9,5-11 h 8,5-10 h ² 7,5-9 h -	11-14 h 10-14 h 9-12 h -	- - - 11-14 h	- - - 12-14 h	[A]		[kg]	No.
12 V	E 230 G 12 / 6 B50-FP	6	30 - 37	37 - 48	48 - 60	60 - 75	33 - 50	40 - 50	0,5	HF 180	3	76006
	E 230 G 12 / 8 B50-FP	8	40 - 50	50 - 64	64 - 80	80 - 100	44 - 67	54 - 67	0,6	HF 180	3	76008
	E 230 G 12 / 10 B50-FP	10	50 - 62	63 - 80	80 - 100	100 - 125	56 - 83	67 - 83	0,7	HF 180	3	76010
	E 230 G 12 / 12 B50-FP	12	60 - 75	75 - 96	96 - 120	120 - 150	67 - 100	80 - 100	0,9	HF 180	3	76012
	E 230 G 12 / 15 B50-FP	15	75 - 93	94 - 120	120 - 150	150 - 187	83 - 125	100 - 125	1,1	HF 180	3	76015
	E 230 G 12 / 20 B50-FP	20	100 - 125	125 - 160	160 - 200	200 - 250	111 - 167	133 - 167	1,4	HF 180	3	76020
	E 230 G 12 / 25(22) B50-FP	25(22)	125 - 156	157 - 200	200 - 250	250 - 312	139 - 208	167 - 208	1,7(1,6)	HF 180	3	76025
	E 230 G 12 / 30 B50-FP	30	150 - 187	188 - 240	240 - 300	300 - 375	167 - 250	200 - 250	2,1	HF 180	3	76030
	E 230 G 12 / 35 B50-FP	35	175 - 218	219 - 280	280 - 350	350 - 437	194 - 292	233 - 292	2,4	HF 180	3	76035
	E 230 G 12 / 40 B50-FP	40	200 - 250	250 - 320	320 - 400	400 - 500	222 - 333	267 - 333	2,8	HF 180	3	76040
E 230 G 12 / 50(45) B50-FP	50(45)	250 - 312	313 - 400	400 - 500	500 - 625	278 - 417	333 - 417	3,5(3,1)	HF 180	3	76050	
24 V												
	E 230 G 24 / 6 B50-FP	6	30 - 37	37 - 48	48 - 60	60 - 75	33 - 50	40 - 50	0,9	HF 180	3	76106
	E 230 G 24 / 8 B50-FP	8	40 - 50	50 - 64	64 - 80	80 - 100	44 - 67	54 - 67	1,2	HF 180	3	76108
	E 230 G 24 / 10 B50-FP	10	50 - 62	63 - 80	80 - 100	100 - 125	56 - 83	67 - 83	1,4	HF 180	3	76110
	E 230 G 24 / 12 B50-FP	12	60 - 75	75 - 96	96 - 120	120 - 150	67 - 100	80 - 100	1,7	HF 180	3	76112
	E 230 G 24 / 15 B50-FP	15	75 - 93	94 - 120	120 - 150	150 - 187	83 - 125	100 - 125	2,1	HF 180	3	76115
	E 230 G 24 / 20 B50-FP	20	100 - 125	125 - 160	160 - 200	200 - 250	111 - 167	133 - 167	2,8	HF 180	3	76120
	E 230 G 24 / 25(22) B50-FP	25(22)	125 - 156	157 - 200	200 - 250	250 - 312	139 - 208	167 - 208	3,5(3,1)	HF 180	3	76125
	E 230 G 24 / 30 B50-FP	30	150 - 187	188 - 240	240 - 300	300 - 375	167 - 250	200 - 250	4,2	HF 180	3	76130
	E 230 G 24 / 35 B50-FP	35	175 - 218	219 - 280	280 - 350	350 - 437	194 - 292	233 - 292	4,9	HF 190	3,5	76135
E 230 G 24 / 40 B50-FP	40	200 - 250	250 - 320	320 - 400	400 - 500	222 - 333	267 - 333	5,6	HF 190	3,5	76140	
E 230 G 24 / 50(45) B50-FP	50(45)	250 - 312	313 - 400	400 - 500	500 - 625	278 - 417	333 - 417	7,0(6,3)	HF 190	3,5	76150	
36 V												
	E 230 G 36 / 10 B50-FP	10	50 - 62	63 - 80	80 - 100	100 - 125	56 - 83	67 - 83	2,1	HF 180	3	76310
	E 230 G 36 / 12 B50-FP	12	60 - 75	75 - 96	96 - 120	120 - 150	67 - 100	80 - 100	2,6	HF 180	3	76312
	E 230 G 36 / 15 B50-FP	15	75 - 93	94 - 120	120 - 150	150 - 187	83 - 125	100 - 125	3,2	HF 180	3	76315
	E 230 G 36 / 20 B50-FP	20	100 - 125	125 - 160	160 - 200	200 - 250	111 - 167	133 - 167	4,2	HF 180	3	76320
	E 230 G 36 / 25(22) B50-FP	25(22)	125 - 156	157 - 200	200 - 250	250 - 312	139 - 208	167 - 208	5,2(4,6)	HF 190	3,5	76325
	E 230 G 36 / 30 B50-FP	30	150 - 187	188 - 240	240 - 300	300 - 375	167 - 250	200 - 250	6,3	HF 190	3,5	76330
	E 230 G 36 / 35 B50-FP	35	175 - 218	219 - 280	280 - 350	350 - 437	194 - 292	233 - 292	7,3	HF 190	3,5	76335
E 230 G 36 / 40 B50-FP	40	200 - 250	250 - 320	320 - 400	400 - 500	222 - 333	267 - 333	8,3	HF 190	3,5	76340	
48 V												
	E 230 G 48 / 10 B50-FP	10	50 - 62	63 - 80	80 - 100	100 - 125	56 - 83	67 - 83	2,7	HF 180	3	76510
	E 230 G 48 / 12 B50-FP	12	60 - 75	75 - 96	96 - 120	120 - 150	67 - 100	80 - 100	3,5	HF 180	3	76512
	E 230 G 48 / 15 B50-FP	15	75 - 93	94 - 120	120 - 150	150 - 187	83 - 125	100 - 125	4,2	HF 180	3	76515
	E 230 G 48 / 20 B50-FP	20	100 - 125	125 - 160	160 - 200	200 - 250	111 - 167	133 - 167	5,6	HF 190	3,5	76520
	E 230 G 48 / 25(22) B50-FP	25(22)	125 - 156	157 - 200	200 - 250	250 - 312	139 - 208	167 - 208	7,0(6,3)	HF 190	3,5	76525
E 230 G 48 / 30 B50-FP	30	150 - 187	188 - 240	240 - 300	300 - 375	167 - 250	200 - 250	8,3	HF 190	3,5	76530	

*Only possible with cabinet HF 450

¹PzS, PzB, GiS, CSM, etc. ²pulse/ionic mixing



CHARGER SPECIFICATION

FILON FUTUR^L Characteristics

Charging voltages: 24V, 36V, 48V or 80V
Max. rated output: 3,3 kW
Mains voltages: 207 - 253V 50/60Hz - also 100-120V and 100-253V optional
Protection category: IP 21 higher protection categories up to IP 54 on request
Protection class: I

	Cabinet	Width	Height	Depth
	HF 450	430	260	115
	HF 450 EU	610	260	115

FILON FUTUR^L Options

- **NEW** Filon Futur *Expert* Allows individual programming of the charging parameters such as charge voltage, battery type, capacity, charge current, and charge time
- ConVision The compact programming and analysis package for mobile service applications, consisting of service module and software
- Protection category IP44 - IP54 With special cabinets for IP44 - IP54 protection
- On-Board Customizable, individual implementations (incl. drive-off protection)
- Temperature compensation Temperature-controlled charge, e.g. for cold store applications
- EUW Electrolyte circulation for reducing charge time by up to 2.5 h
- Pulse charge Ionic electrolyte circulation for reducing charge time by up to 2 h and for very smooth and energy saving charging
- Graphical display blue backlight Detailed indication of charging settings, charging progress, and warning and malfunction messages, remote display available upon request
- Battery Management System (BMS) The central IEB monitoring system, ideal for battery charging stations
- Battery Management Counter (BMC) External, two-digit counter (up to 99), starts counting automatically after charging is finished
- Control column External indicator light to signal charging status, visible at a distance

CHARGER SELECTION TABLE

Output Voltage	Charger Type	Nominal Current [A]	Charging Curve / Charging Time / Battery Capacity K _{ch} [Ah]						Current [A]	Cabinet	Weight [kg]	Type No.
			IULa	IULa	IULa	IULa	IULa (GiV)	IULa (PzV)				
		Wet ¹ -Batt. Wet ¹ -Futur Wet ¹ -EUW GiV; PzV	7,5-8,5 h 6,5-7,5 h ² 5,5-6,5 h -	8,5-9,5 h 7,5-8,5 h ² 6,5-7,5 h -	9,5-11 h 8,5-10 h ² 7,5-9 h -	11-14 h 10-14 h 9-12 h -	- - - 11-14 h	- - - 12-14 h				
24 V	E 230 G 24 / 40 B25-FP	40	200 - 250	250 - 320	320 - 400	400 - 500	222 - 333	267 - 333	5,8	HF 450	10	75140
	E 230 G 24 / 45 B25-FP	45	225 - 281	282 - 360	360 - 450	450 - 562	250 - 375	300 - 375	6,5	HF 450	10	75145
	E 230 G 24 / 50 B25-FP	50	250 - 312	313 - 400	400 - 500	500 - 625	278 - 417	333 - 417	7,2	HF 450	10	75150
	E 230 G 24 / 60 B25-FP	60	300 - 375	375 - 480	480 - 600	600 - 750	333 - 500	400 - 500	8,7	HF 450	10	75160
	E 230 G 24 / 65 B25-FP	65	325 - 406	407 - 520	520 - 650	650 - 812	362 - 543	434 - 542	9,4	HF 450	10	75165
	E 230 G 24 / 70 B25-FP	70	350 - 437	438 - 560	560 - 700	700 - 875	389 - 583	467 - 583	10,1	HF 450	10	75170
	E 230 G 24 / 75 B25-FP	75	375 - 468	469 - 600	600 - 750	750 - 937	416 - 625	500 - 625	10,9	HF 450	10	75175
	E 230 G 24 / 80 B25-FP	80	400 - 500	500 - 640	640 - 800	800 - 1000	444 - 667	533 - 667	11,6	HF 450	10	75180
	E 230 G 24 / 90 B25-FP	90	450 - 562	563 - 720	720 - 900	900 - 1125	500 - 750	600 - 750	13	HF 450	10	75190
	E 230 G 24 / 100 B25-FP	100	500 - 625	625 - 800	800 - 1000	1000-1250	556 - 833	667 - 833	14,5	HF 450	10	75200
	E 230 G 24 / 110 B25-FP	110	550 - 687	688 - 880	880 - 1100	1100-1375	611 - 916	733 - 916	13,4	HF 450	10	75210
	E 230 G 24 / 120 B25-FP	120	600 - 750	750 - 960	960 - 1200	1200-1500	667 - 1000	800 - 1000	14,6	HF 450	10	75220
36 V	E 230 G 36 / 30 B25-FP	30	150 - 187	188 - 240	240 - 300	300 - 375	167 - 250	200 - 250	6,4	HF 450	10	75330
	E 230 G 36 / 35 B25-FP	35	175 - 218	219 - 280	280 - 350	350 - 437	194 - 292	233 - 292	7,5	HF 450	10	75335
	E 230 G 36 / 40 B25-FP	40	200 - 250	250 - 320	320 - 400	400 - 500	222 - 333	267 - 333	8,6	HF 450	10	75340
	E 230 G 36 / 45 B25-FP	45	225 - 281	282 - 360	360 - 450	450 - 562	250 - 375	300 - 375	9,7	HF 450	10	75345
	E 230 G 36 / 50 B25-FP	50	250 - 312	313 - 400	400 - 500	500 - 625	278 - 417	333 - 417	10,7	HF 450	10	75350
	E 230 G 36 / 60 B25-FP	60	300 - 375	375 - 480	480 - 600	600 - 750	333 - 500	400 - 500	12,9	HF 450	10	75360
	E 230 G 36 / 65 B25-FP	65	325 - 406	407 - 520	520 - 650	650 - 812	362 - 543	434 - 542	13,9	HF 450	10	75365
	E 230 G 36 / 70 B25-FP	70	350 - 437	438 - 560	560 - 700	700 - 875	389 - 583	467 - 583	15	HF 450	10	75370
	E 230 G 36 / 75 B25-FP	75	375 - 468	469 - 600	600 - 750	750 - 937	416 - 625	500 - 625	13,5	HF 450	10	75375
	E 230 G 36 / 80 B25-FP	80	400 - 500	500 - 640	640 - 800	800 - 1000	444 - 667	533 - 667	14,4	HF 450	10	75380
48 V	E 230 G 48 / 35 B25-FP	35	175 - 218	219 - 280	280 - 350	350 - 437	194 - 292	233 - 292	9,9	HF 450	10	75535
	E 230 G 48 / 40 B25-FP	40	200 - 250	250 - 320	320 - 400	400 - 500	222 - 333	267 - 333	11,4	HF 450	10	75540
	E 230 G 48 / 45 B25-FP	45	225 - 281	282 - 360	360 - 450	450 - 562	250 - 375	300 - 375	12,8	HF 450	10	75545
	E 230 G 48 / 50 B25-FP	50	250 - 312	313 - 400	400 - 500	500 - 625	278 - 417	333 - 417	14,2	HF 450	10	75550
	E 230 G 48 / 55 B25-FP	55	275 - 343	344 - 440	440 - 550	550 - 687	306 - 459	367 - 458	13,1	HF 450	10	75555
	E 230 G 48 / 60 B25-FP	60	300 - 375	375 - 480	480 - 600	600 - 750	333 - 500	400 - 500	14,3	HF 450	10	75560
	E 230 G 48 / 65 B25-FP	65	325 - 406	407 - 520	520 - 650	650 - 812	362 - 543	434 - 542	15,4	HF 450	10	75365
80 V	E 230 G 80 / 10 B25-FP	10	50 - 62	63 - 80	80 - 100	100 - 125	56 - 83	67 - 83	4,7	HF 450	10	75810
	E 230 G 80 / 12 B25-FP	12	60 - 75	75 - 96	96 - 120	120 - 150	67 - 100	80 - 100	5,6	HF 450	10	75812
	E 230 G 80 / 15 B25-FP	15	75 - 93	94 - 120	120 - 150	150 - 187	83 - 125	100 - 125	7	HF 450	10	75815
	E 230 G 80 / 20 B25-FP	20	100 - 125	125 - 160	160 - 200	200 - 250	111 - 167	133 - 167	9,4	HF 450	10	75820
	E 230 G 80 / 25 B25-FP	25	125 - 156	157 - 200	200 - 250	250 - 312	139 - 208	167 - 208	11,7	HF 450	10	75825
	E 230 G 80 / 30 B25-FP	30	150 - 187	188 - 240	240 - 300	300 - 375	167 - 250	200 - 250	14,1	HF 450	10	75830
	E 230 G 80 / 35 B25-FP	35	175 - 218	219 - 280	280 - 350	350 - 437	194 - 292	233 - 292	13,7	HF 450	10	75835
	E 230 G 80 / 40 B25-FP	40	200 - 250	250 - 320	320 - 400	400 - 500	222 - 333	267 - 333	15,7	HF 450	10	75840

¹PzS, PzB, GiS, CSM, etc. ²pulse/ionic mixing



CHARGER SPECIFICATION

FILON FUTUR^{XL} Characteristics

Charging voltages: 24V, 36V, 48V or 80V
Max. rated output: 22 kW
Mains voltages: 360 - 440V 50/60Hz
Protection category: IP 21 higher protection categories up to IP 54 on request
Protection class: I

	Cabinet	Width	Height	Depth
	HF 550	420	400	300
	HF 650	420	700	300
	HF 750	420	790	300

FILON FUTUR^{XL} Options

- **NEW** Filon Futur *Expert* Allows individual programming of the charging parameters such as charge voltage, battery type, capacity, charge current, and charge time
- ConVision The compact programming and analysis package for mobile service applications, consisting of service module and software
- Protection category IP44 - IP54 With special cabinets for IP44 - IP54 protection
- On-Board Customizable, individual implementations (incl. drive-off protection)
- Temperature compensation Temperature-controlled charge, e.g. for cold store applications
- EUW Electrolyte circulation for reducing charge time by up to 2.5 h
- Pulse charge Ionic electrolyte circulation for reducing charge time by up to 2 h and for very smooth and energy saving charging
- Graphical display blue backlight Detailed indication of charging settings, charging progress, and warning and malfunction messages, remote display available upon request
- Battery Management System (BMS) The central IEB monitoring system, ideal for battery charging stations
- Battery Management Counter (BMC) External, two-digit counter (up to 99), starts counting automatically after charging is finished
- Control column External indicator light to signal charging status, visible at a distance

CHARGER SELECTION TABLE

Output Voltage	Charger Type	Nominal Current [A]	Charging Curve/Charging Time/Battery Capacity K _{ch} [Ah]						Current [A]	Cabinet	Weight [kg]	Type No.
			IUIa	IUIa	IUIa	IUIa	IUIa (GiV)	IUIa (PzV)				
		Wet ¹ -Batt. Wet ¹ -Futur Wet ¹ -EUW GiV; PzV	7,5-8,5 h 6,5-7,5 h ² 5,5-6,5 h -	8,5-9,5 h 7,5-8,5 h ² 6,5-7,5 h -	9,5-11 h 8,5-10 h ² 7,5-9 h -	11-14 h 10-14 h 9-12 h -	- - - 11-14 h	- - - 12-14 h				
24 V	Z 400 G 24 / 110 B25-FP	110	550 - 687	688 - 880	880 - 1100	1100-1375	612 - 918	734 - 917	8	HF 550	23	74210
	Z 400 G 24 / 115 B25-FP	115	575 - 718	718 - 920	920 - 1150	1150-1440	638 - 958	766 - 958	8,3	HF 550	23	74215
	Z 400 G 24 / 120 B25-FP	120	600 - 750	750 - 960	960 - 1200	1200-1500	667 - 1000	800 - 1000	8,7	HF 550	23	74220
	Z 400 G 24 / 130 B25-FP	130	650 - 812	813 - 1040	1040-1300	1300-1625	722 - 1083	866 - 1083	9,4	HF 550	23	75230
	Z 400 G 24 / 140 B25-FP	140	700 - 875	875 - 1120	1120-1400	1400-1750	778 - 1167	933 - 1167	10,1	HF 550	23	75240
	Z 400 G 24 / 150 B25-FP	150	750 - 937	938 - 1200	1200-1500	1500-1875	833 - 1250	1000-1250	10,9	HF 550	23	75250
	Z 400 G 24 / 160 B25-FP	160	800 - 1000	1000-1280	1280-1600	1600-2000	889 - 1333	1067-1333	11,6	HF 550	23	75260
	Z 400 G 24 / 170 B25-FP	170	850 - 1062	1063-1360	1360-1700	1700-2125	944 - 1416	1133-1416	12,3	HF 550	23	75270
	Z 400 G 24 / 180 B25-FP	180	900 - 1125	1125-1440	1440-1800	1800-2250	1000-1500	1200-1500	13	HF 550	23	75280
	Z 400 G 24 / 190 B25-FP	190	950 - 1187	1188-1520	1520-1900	1900-2375	1055-1583	1266-1583	13,6	HF 550	23	75290
	Z 400 G 24 / 200 B25-FP	200	1000-1250	1250-1600	1600-2000	2000-2500	1111-1666	1333-1666	14,5	HF 550	23	75300
36 V	Z 400 G 36 / 70 B25-FP	70	350 - 437	438 - 560	560 - 700	700 - 875	389 - 583	467 - 583	7,5	HF 550	23	74370
	Z 400 G 36 / 75 B25-FP	75	375 - 468	469 - 600	600 - 750	750 - 937	416 - 625	500 - 625	8	HF 550	23	74375
	Z 400 G 36 / 80 B25-FP	80	400 - 500	500 - 640	640 - 800	800 - 1000	444 - 667	533 - 667	8,6	HF 550	23	74380
	Z 400 G 36 / 90 B25-FP	90	450 - 562	563 - 720	720 - 900	900 - 1125	500 - 750	600 - 750	9,7	HF 550	23	75390
	Z 400 G 36 / 100 B25-FP	100	500 - 625	625 - 800	800 - 1000	1000-1250	556 - 833	667 - 833	10,7	HF 550	23	75400
	Z 400 G 36 / 110 B25-FP	110	550 - 687	688 - 880	880 - 1100	1100-1375	612 - 918	734 - 917	11,8	HF 550	23	75410
	Z 400 G 36 / 120 B25-FP	120	600 - 750	750 - 960	960 - 1200	1200-1500	667 - 1000	800 - 1000	12,9	HF 550	23	75420
	Z 400 G 36 / 130 B25-FP	130	650 - 812	813 - 1040	1040-1300	1300-1625	722 - 1083	866 - 1083	13,9	HF 550	23	75430
	Z 400 G 36 / 140 B25-FP	140	700 - 875	875 - 1120	1120-1400	1400-1750	778 - 1167	933 - 1167	15	HF 550	23	75440
	Z 400 G 36 / 150 B25-FP	150	750 - 937	938 - 1200	1200-1500	1500-1875	833 - 1250	1000-1250	13,5	HF 550	23	75450
	Z 400 G 36 / 160 B25-FP	160	800 - 1000	1000-1280	1280-1600	1600-2000	889 - 1333	1067-1333	14,4	HF 550	23	75460
	D 400 G 36 / 170 B25-FP	170	850 - 1062	1063-1360	1360-1700	1700-2125	944 - 1416	1133-1416	12,2	HF 550	28	75470
48 V	D 400 G 36 / 180 B25-FP	180	900 - 1125	1125-1440	1440-1800	1800-2250	1000-1500	1200-1500	12,9	HF 550	28	75480
	D 400 G 36 / 190 B25-FP	190	950 - 1187	1188-1520	1520-1900	1900-2375	1055-1583	1266-1583	13,6	HF 550	28	75490
	D 400 G 36 / 200 B25-FP	200	1000-1250	1250-1600	1600-2000	2000-2500	1111-1666	1333-1666	14,3	HF 550	28	75500
	Z 400 G 48 / 60 B25-FP	60	300 - 375	375 - 480	480 - 600	600 - 750	333 - 500	400 - 500	8,5	HF 550	23	74560
	Z 400 G 48 / 65 B25-FP	65	325 - 406	407 - 520	520 - 650	650 - 812	361 - 541	433 - 541	9,2	HF 550	23	74565
	Z 400 G 48 / 70 B25-FP	70	350 - 437	438 - 560	560 - 700	700 - 875	389 - 583	467 - 583	9,9	HF 550	23	75570
	Z 400 G 48 / 80 B25-FP	80	400 - 500	500 - 640	640 - 800	800 - 1000	444 - 667	533 - 667	11,4	HF 550	23	75580
	Z 400 G 48 / 90 B25-FP	90	450 - 562	563 - 720	720 - 900	900 - 1125	500 - 750	600 - 750	12,8	HF 550	23	75590
	Z 400 G 48 / 100 B25-FP	100	500 - 625	625 - 800	800 - 1000	1000-1250	556 - 833	667 - 833	14,2	HF 550	23	75600
	Z 400 G 48 / 110 B25-FP	110	550 - 687	688 - 880	880 - 1100	1100-1375	612 - 918	734 - 917	13,1	HF 550	23	75610
	Z 400 G 48 / 115 B25-FP	115	575 - 718	718 - 920	920 - 1150	1150-1440	638 - 958	766 - 958	13,7	HF 550	23	75615
80 V	Z 400 G 48 / 120 B25-FP	120	600 - 750	750 - 960	960 - 1200	1200-1500	667 - 1000	800 - 1000	14,3	HF 550	23	75620
	D 400 G 48 / 120 B25-FP	120	600 - 750	750 - 960	960 - 1200	1200-1500	667 - 1000	800 - 1000	11,4	HF 550	28	75625
	D 400 G 48 / 130 B25-FP	130	650 - 812	813 - 1040	1040-1300	1300-1625	722 - 1083	866 - 1083	12,3	HF 550	28	75630
	D 400 G 48 / 140 B25-FP	140	700 - 875	875 - 1120	1120-1400	1400-1750	778 - 1167	933 - 1167	13,3	HF 550	28	75640
	D 400 G 48 / 150 B25-FP	150	750 - 937	938 - 1200	1200-1500	1500-1875	833 - 1250	1000-1250	14,2	HF 550	28	75650
	D 400 G 48 / 160 B25-FP	160	800 - 1000	1000-1280	1280-1600	1600-2000	889 - 1333	1067-1333	15,1	HF 550	28	75660
	D 400 G 48 / 170 B25-FP	170	850 - 1062	1063-1360	1360-1700	1700-2125	944 - 1416	1133-1416	13,5	HF 550	28	75670
	D 400 G 48 / 180 B25-FP	180	900 - 1125	1125-1440	1440-1800	1800-2250	1000-1500	1200-1500	14,3	HF 550	28	75680
	Z 400 G 80 / 40 B25-FP	40	200 - 250	250 - 320	320 - 400	400 - 500	222 - 333	267 - 333	9,4	HF 550	23	75840
	Z 400 G 80 / 50 B25-FP	50	250 - 312	313 - 400	400 - 500	500 - 625	278 - 417	333 - 417	11,7	HF 550	23	75850
	Z 400 G 80 / 60 B25-FP	60	300 - 375	375 - 480	480 - 600	600 - 750	333 - 500	400 - 500	14,1	HF 550	23	75860
	D 400 G 80 / 70 B25-FP	70	350 - 437	438 - 560	560 - 700	700 - 875	389 - 583	467 - 583	11	HF 550	28	75870

¹PzS, PzB, GiS, CSM, etc. ²pulse/ionic mixing

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