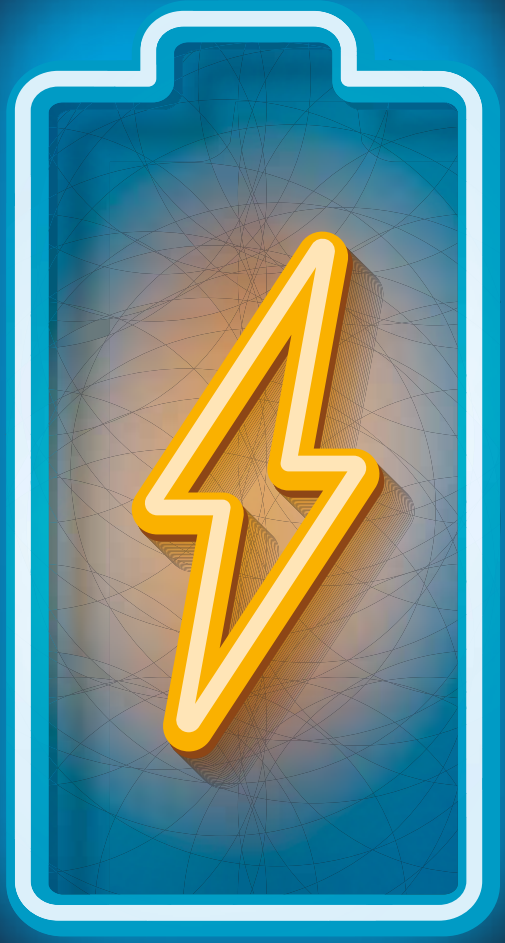
GENERAL CATALOGUE

Reserve Power Solution

JANUARY 2021



FIAMM

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FIAMM ENERGY TECHNOLOGY

ABOUT US

FIAMM Energy Technology, whose core business is the production and distribution of starter batteries for vehicles and industrial batteries, was established as a result of the separation of the business of lead batteries for automotive and industrial applications from FIAMM Group.

FIAMM Energy Technology has more than 1,000 highly qualified employees who operate and find solutions in sales and production offices all over the world. We believe that each person is the most important resource: this is why we value as much as possible the abilities and talents of every individual.

1942

Establishment of FIAMM (Fabbrica Italiana Accumulatori Motocarri Montecchio, i.e. Italian Factory of Tricar atteries in Montecchio).
The production focuses on electric traction and automotive starter batteries

1950

FIAMM attends motor shows together with the major car manufacturers.
A FIAMM battery is fitted in the Ferrari that wins the Mille Miglia race in 1950. The first OE supply for a major brand is for Innocenti's Lambretta.

1970

In the spare parts market, batteries for motorbikes begin to be produced in addition to those for cars and lorries. FIAMM becomes the original equipment supplier for the most important European car manufacturers. In the stationary battery sector, the company can boast major operators such as SIP and Enel among its customers.

1980

FIAMM starts exporting stationary batteries to the USA and enters the two main European markets with FIAMM Germany and FIAMM France. It continues to present itself in the world of sports in Rally, F1, Formula Indy, Paris Dakar and Offshore.

The Company appoints a new generation of professional management.

1990

Opening of new plants abroad, acquisition of multiple battery distributors across Europe and significant investments in technology.

2000

Hitachi Chemical acquires the 51% of the shares of FIAMM Energy Technology S.p.A.

2017

Showa Denko acquires 100% of Hitachi Chemical's shares which from October 1st changesits name to Showa Denko Materials Co.

2020

RESERVE POWER SOLUTION

RESERVE POWER SOLUTIONS

FIAMM Reserve Power Solutions is an internationally recognised leader in the development and supply of a wide range of industrial batteries and energy storage systems. We design and manufacture backup power solutions to guarantee the continuity of the energy supply to the critical applications when the main power is cut off. We are proud to supply many of the world's leading companies for telecommunications,data centres, railways, power plants, petrochemical plants and energy storage from renewable sources.

Our success has been established over more than seventy years. We diversify our offer thanks to our in-depth technical knowledge and understanding of how products are used in the different applications.

Batteries and energy storage solutions are a key part of the global transition from fossil fuels to a cleaner and renewable energy. We are working with our partners and customers for the development of next generation solutions that will meet the vital requirements for the future of our planet.

LEAD ACID BATTERIES COLOR CODE

- SSLA
- AGM
- GEL
- VENT

Renewable Energy

Light Traction

Leisure

Security System Emerg. Lighting

DESIGN LIFE

FG

FGC

FGH

FGL

FLB

FIT

SLA

RES

FHC

SMG S

LM S

UPS & Data Centre

Utilities & Industry

Oil & Gas

Railway

Telecom

FG

FGH

FGHL

FLB

FIT

SLA

SD-SDH

SMG

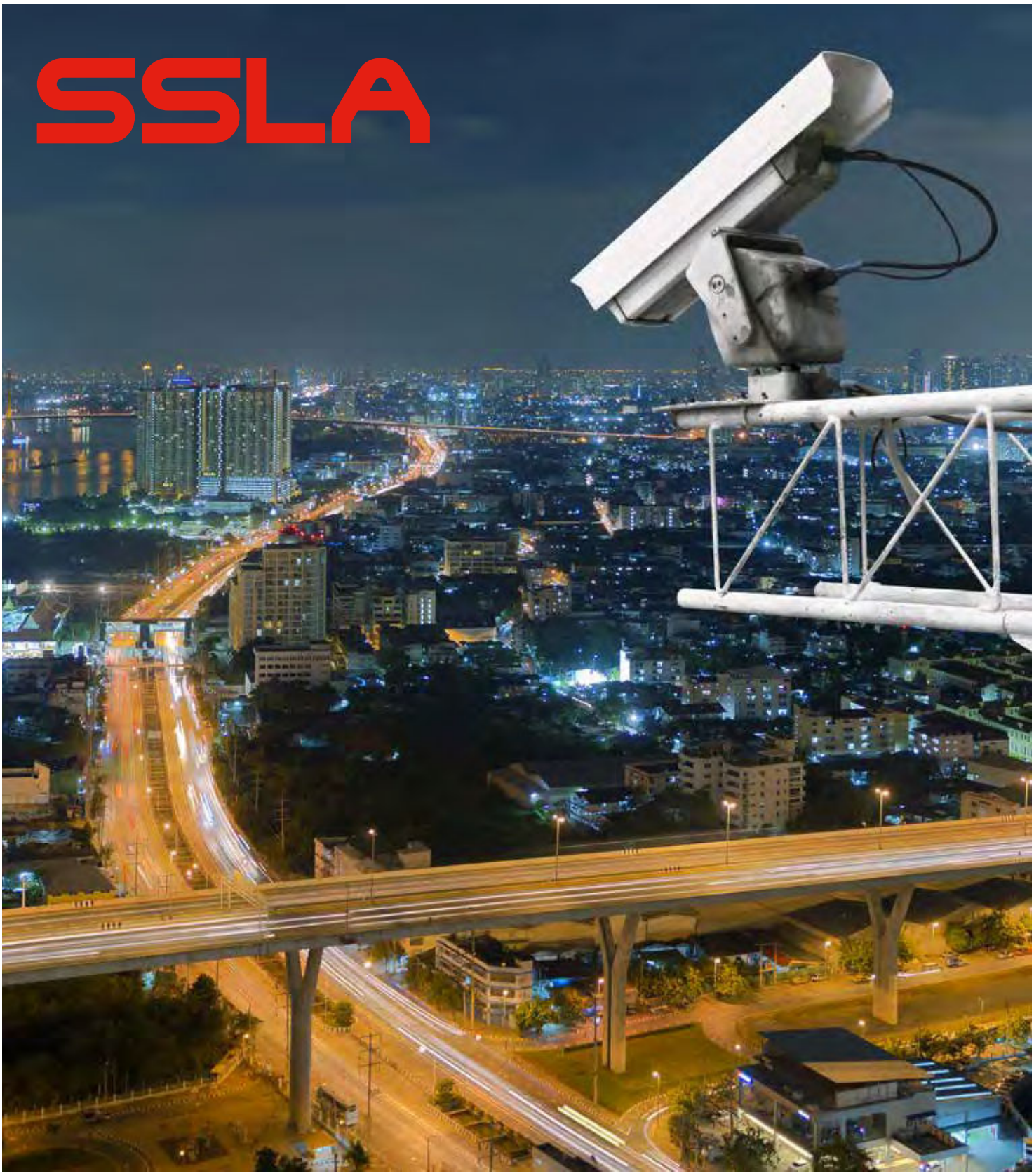
LM

FHC

FHT

SGL-SGH

SSLA



SSLA Battery Range

FIAMM

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THE SSLA BATTERY RANGE HAS BEEN DESIGNED TO COVER A WIDE RANGE OF APPLICATIONS. THE FOOTPRINT OF BATTERIES IS ALSO IDEAL FOR CRITICAL INSTALLATIONS. CONNECTION IS SIMPLE ON SMALLER MODELS SIZES THANKS TO THE EASY 'FAST-ON' TERMINALS.

THE FIAMM SSLA RANGE HAS FOUR DIFFERENT PRODUCT FAMILIES. EACH ONE IS SPECIFICALLY DESIGNED TO OPTIMISE THE BEST SOLUTION FOR THE APPLICATION.

FG DESIGNED TO MEET MEDIUM TO LONG DISCHARGE RATES AND WITH A DESIGN LIFE OF 5 YEARS. THE RANGE IS AVAILABLE IN 6V OR 12V BLOCKS WITH A CAPACITY RANGE OF 1.2 - 70AH.

FGH DESIGNED FOR MAXIMUM PERFORMANCE IN CRITICAL POWER APPLICATIONS SUCH AS UPS. THE RANGE IS AVAILABLE IN 12V BLOCKS WITH A CAPACITY RANGE OF 5 - 18AH.

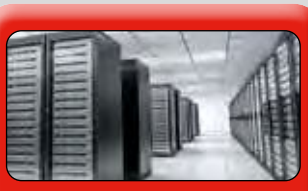
FGHL CLASSIFIED "LONG LIFE" ACCORDING EUROBAT INDUSTRY STANDARD, WHICH MEANS 10 YEARS DESIGN LIFE. THE RANGE IS AVAILABLE WITH A CAPACITY RANGE OF 5 - 12AH.

FGC AN IDEAL SOLUTION FOR CYCLIC APPLICATIONS WITH A DESIGN LIFE OF 5 YEARS. RANGE IS AVAILABLE FROM 12 - 42AH.

THESE PRODUCTS ARE DESIGNED TO GIVE A WIDE RANGE OF SOLUTIONS TO ALL APPLICATIONS AND OFFER UNSURPASSED PROVEN RELIABILITY, COMPLIANT WITH THE HIGHEST RECOGNISED INTERNATIONAL STANDARDS. SSLA USES VRLA TECHNOLOGY WITH 99% INTERNAL RECOMBINATION EFFICIENCY, IS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS FLOAT-LIFE. SSLA RANGE IS NON-HAZARDOUS FOR AIR/SEA/RAIL/ROAD TRANSPORTATION AND IS 100% RECYCLABLE. SSLA HAS A SELF-DISCHARGE RATE LESS THAN 2% PER MONTH, GUARANTEEING LONG SHELF-LIFE.

*SSLA (SMALL SEALED LEAD ACID) ARE BATTERIES WITH CAPACITY (AH) TILL MAX 24AH. THE FIAMM SSLA FIAMM RANGE CONTAINS SOME SIZES THAT EXCEED THIS LIMIT. HOWEVER SOME SIZES ARE OF A LARGER CAPACITY DUE TO APPLICATIONS.

MAIN APPLICATIONS:



UPS

SECURITY SYSTEMS AND EMERGENCY LIGHTING

LIGHT TRACTION

LEISURE

SPECIFICATIONS

Special lead calcium tin alloy grid, designed to resist corrosion and provide short recharge time

VRLA AGM technology using low resistance high microporous fiberglass separators

Leak resistant post seal, faston, flag and threaded female, terminals with high conductivity and maximum torque resistance

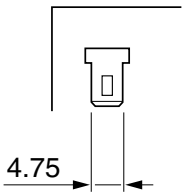
One-way safety relief valves allow gas to escape and prevent the ingress of oxygen

ABS plastic (for FGHL range flame retardant ABS plastic to IEC 707 FV0 and UL94 FV0 - LOI greater than 28%)

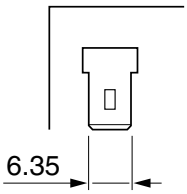
Installation in any orientation (excluding permanently inverted)

TERMINALS TYPE

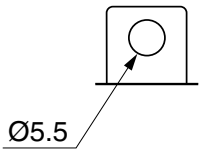
Faston 4.8



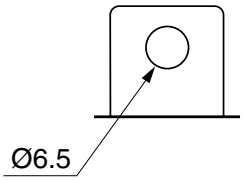
Faston 6.3



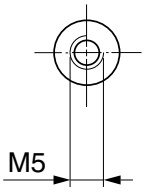
Flag Ø 5.5



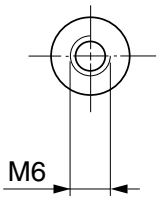
Flag Ø 6.5



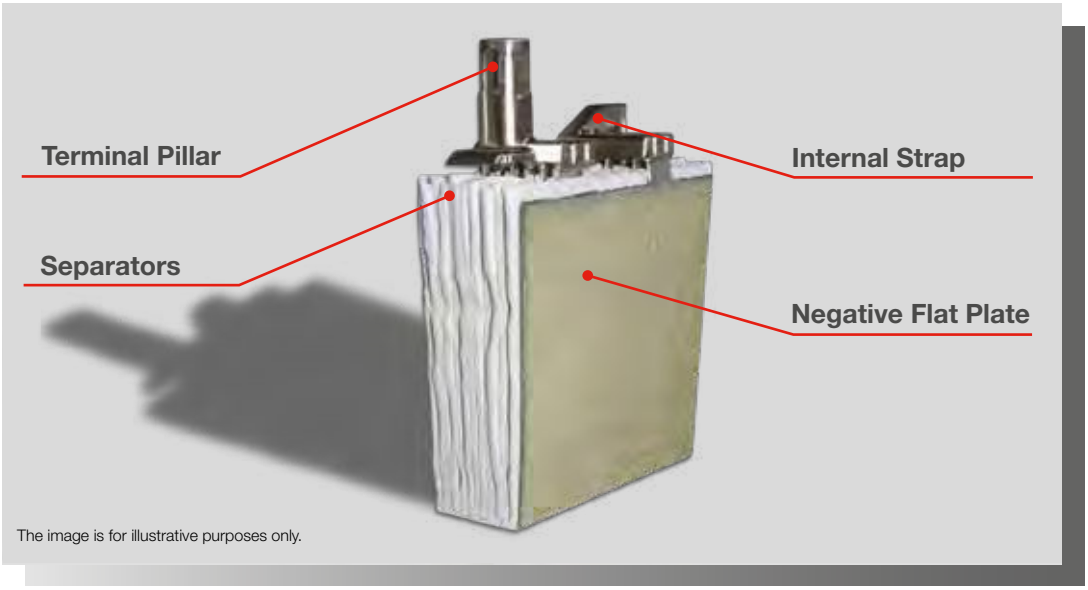
Round M5



Round M6



TECHNOLOGY



FIAMM SSLA RANGE USE AGM (ABSORBED GLASS MAT) TECHNOLOGY. THE ELECTROLYTE IS ABSORBED IN FIBERGLASS SEPARATORS WITH 99% INTERNAL GAS RECOMBINATION EFFICIENCY. BLOCS ARE GRANTS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS WHOLE LIFE. LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

FG

BATTERY TYPE	VDS*	NOMINAL VOLTAGE (V)	CAPACITY (Ah) 20 H to 1.75 VPC at 25°C	NOMINAL DIMENSIONS (mm) Length	Width	Height	Height (terminal)	TYPICAL WEIGHT (kg)	TERMINAL TYPE
FG 10121		6	1.2	97	24	51	58	0.28	Faston 4.8
FG 10301		6	3.0	134	33	60	66	0.60	Faston 4.8
FG 10381		6	3.8	66	33	119	125	0.61	Faston 4.8
FG 10451		6	4.5	70	47	101	106	0.72	Faston 4.8
FG 10721		6	7.2	150	34	94	100	1.2	Faston 4.8
FG 11201	•	6	12	151	50	93	99	1.8	Faston 4.8
FG 11202	•	6	12	151	50	93	99	1.8	Faston 6.3
FG 20121	•	12	1.2	97	48	51	57	0.54	Faston 4.8
FG 20121A		12	1.2	97	43	51	58	0.52	Faston 4.8
FG 20201	•	12	2.0	178	35	60	65	0.80	Faston 4.8
FG 20271		12	2.7	79	56	99	105	1.1	Faston 4.8
FG 20341		12	3.4	134	65	60	66	1.3	Faston 4.8
FG 20451		12	4.5	90	70	101	107	1.5	Faston 4.8
FG 20721	•	12	7.2	151	65	95	100	2.3	Faston 4.8
FG 20722	•	12	7.2	151	65	95	100	2.3	Faston 6.3
FG 21201	•	12	12	151	98	95	100	3.7	Faston 4.8
FG 21202	•	12	12	151	98	95	100	3.7	Faston 6.3
FG 21803	•	12	18	181	76	167	163	5.6	Flag Ø5.5
FG 22703	•	12	27	166	175	125	123	8.2	Flag Ø5.5
FG 24204	•	12	42	197	165	170	168	13.5	Flag Ø6.5
FG 26504	•	12	65	348	167	177	175	21.0	Flag Ø6.5

* Model available also with VDS

FGC

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY (Ah) 20 H to 1.75 VPC at 25°C	NOMINAL DIMENSIONS (mm) Length	Width	Height	Height (terminal)	TYPICAL WEIGHT (kg)	TERMINAL TYPE
FGC 21202	12	12	151	98	95	100	4.0	Faston 6.3
FGC 21803	12	18	181	76	167	163	6.3	Flag Ø5.5
FGC 22705	12	27	166	175	125	116	9.3	Round M5
FGC 23505	12	35	197	130	159	157	11.1	Round M5
FGC 24207	12	42	197	165	171	153	13.4	Round M6

FGH

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY (Ah)	NOMINAL DIMENSIONS (mm)				TYPICAL WEIGHT (kg)	TERMINAL TYPE
		20 H to 1.75 VPC at 25°C	Length	Width	Height	Height (terminal)		
12 FGH 23 slim	12	5.0	151	51	95	100	1.9	Faston 4.8
12 FGH 23	12	5.0	90	70	101	107	1.8	Faston 6.3
12 FGH 36	12	9.0	151	65	95	100	2.7	Faston 6.3
12 FGH 50	12	12	151	98	95	100	3.8	Faston 6.3
12 FGH 65	12	18	181	76	167	165	5.6	Flag Ø5.5

FGHL

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY (Ah)	NOMINAL DIMENSIONS (mm)				TYPICAL WEIGHT (kg)	TERMINAL TYPE
		20 H to 1.75 VPC at 25°C	Length	Width	Height	Height (terminal)		
12 FGHL 22	12	5.0	90	70	101	107	1.9	Faston 6.3
12 FGHL 28	12	7.2	151	65	95	100	2.6	Faston 6.3
12 FGHL 34	12	8.4	151	65	95	100	2.7	Faston 6.3
12 FGHL 48	12	12	151	98	95	100	4.0	Faston 6.3

ELECTRICAL CHARACTERISTICS

Float Voltage: 2.25-2.30 V/cell at 25°C
Boost Voltage for cyclic use: 2.40-2.50 V/cell at 25°C
Float Voltage Compensation with Temperature: -2.5 mV/cell/°C
Self-Discharge at 25°C: <2%/month

STANDARDS

IEC 60896 Part 21 - VRLA methods of testing
IEC 60896 Part 22 - VRLA requirements
Eurobat “3-5 years standard commercial” for FG FGH FGC and “10-12 years long life” for FGHL
UL Recognized

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
FG 10121	1,02	0,58	0,26	0,18	0,13	0,10
FG 10301	2,63	1,60	0,68	0,44	0,33	0,25
FG 10381	3,33	2,03	0,86	0,56	0,41	0,32
FG 10451	3,82	2,19	0,96	0,66	0,49	0,38
FG 10721	7,34	4,33	1,66	1,08	0,80	0,62
FG 11201	10,6	6,44	2,77	1,81	1,34	1,03
FG 11202	10,6	6,44	2,77	1,81	1,34	1,03
FG 20121	1,02	0,58	0,26	0,18	0,13	0,10
FG 20121A	1,02	0,58	0,26	0,18	0,13	0,10
FG 20201	1,86	1,09	0,46	0,30	0,22	0,17
FG 20271	2,52	1,45	0,59	0,39	0,28	0,22
FG 20341	2,98	1,81	0,77	0,50	0,37	0,28
FG 20451	3,82	2,19	0,96	0,66	0,49	0,38
FG 20721	7,34	4,33	1,66	1,08	0,80	0,62
FG 20722	8,22	4,59	1,66	1,08	0,80	0,62
FG 21201	10,6	6,44	2,77	1,81	1,34	1,03
FG 21202	10,6	6,44	2,77	1,81	1,34	1,03
FG 21803	16,3	9,91	4,27	2,82	2,07	1,56
FG 22703	22,7	13,7	5,87	3,90	2,88	2,20
FG 24204	40,4	23,4	9,54	6,40	4,70	3,58
FG 26504	66,5	39,2	16,2	10,6	7,80	5,93
12 FGH 23 slim	17,8	11,7	7,13	4,98	4,31	3,86
12 FGH 23	17,0	11,0	6,66	4,78	4,17	3,77
12 FGH 36		17,1	10,3	7,34	6,18	5,41
12 FGH 50	35,7	23,1	14,2	9,99	8,68	7,80
12 FGH 65		25,8	16,0	11,8	10,4	9,48
12 FGHL 22	5,67	3,18	1,28	0,84	0,62	0,48
12 FGHL 28	7,80	4,18	1,72	1,17	0,87	0,67
12 FGHL 34	9,71	5,51	2,17	1,37	1,00	0,75
12 FGHL 48	12,6	6,56	2,48	1,58	1,26	1,04
FGC 21202	10,8	6,60	2,85	1,88	1,38	1,04
FGC 21803						
FGC 22705	26,5	15,6	6,39	4,13	3,00	2,25
FGC 23505	34,4	20,2	8,28	5,35	3,89	2,92
FGC 24207	41,2	24,3	9,94	6,42	4,67	3,50

Constant Power discharge curves (W)

End of discharge voltage: 1.67 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
FG 10121	6,34	4,64	3,56	2,10	1,25	0,56
FG 10301	14,2	10,3	8,29	5,51	3,44	1,44
FG 10381	18,0	13,0	10,5	6,98	4,36	1,82
FG 10451	23,8	17,4	13,4	7,88	4,69	2,11
FG 10721	44,7	31,0	23,8	14,7	8,85	3,60
FG 11201	62,0	45,3	35,8	22,5	13,8	6,00
FG 11202	62,0	45,3	35,8	22,5	13,8	6,00
FG 20121	6,34	4,64	3,56	2,10	1,25	0,56
FG 20121A	6,34	4,64	3,56	2,10	1,25	0,56
FG 20201	7,50	5,91	4,80	3,07	1,81	0,73
FG 20271	10,5	8,13	6,54	4,17	2,45	0,99
FG 20341	16,1	11,6	9,39	6,25	3,90	1,63
FG 20451	23,8	17,4	13,4	7,88	4,69	2,11
FG 20721	44,7	31,0	23,8	14,7	8,85	3,60
FG 20722	49,7	36,3	28,3	16,6	9,32	3,61
FG 21201	62,0	45,3	35,8	22,5	13,8	6,00
FG 21202	62,0	45,3	35,8	22,5	13,8	6,00
FG 21803	96,0	66,8	51,6	32,5	20,2	8,82
FG 22703	145	106	84,1	53,6	32,0	13,2
FG 24204	240	171	133	85,1	49,9	20,0
FG 26504	364	275	218	138	81,6	33,8
12 FGH 23 slim	86,4	60,9	53,7	41,0	26,5	15,2
12 FGH 23	84,1	58,3	51,5	38,9	24,5	14,1
12 FGH 36			67,2		35,8	21,3
12 FGH 50	162	121	106	81,7	52,3	30,1
12 FGH 65			107		57,1	35,3
12 FGHL 22	38,3	27,3	20,8	12,5	7,31	3,01
12 FGHL 28	41,8	33,7	27,7	16,8	8,88	3,63
12 FGHL 34	75,7	47,8	35,6	20,7	11,8	4,49
12 FGHL 48	80,4	56,4	42,9	25,5	13,5	5,25
FGC 21202	64,0	44,5	34,4	21,7	13,5	5,88
FGC 21803	106	73,9	56,6	34,9	21,0	8,99
FGC 22705	161	111	85,6	53,0	31,8	13,2
FGC 23505	208	144	111	68,7	41,3	17,1
FGC 24207	250	173	133	82,4	49,5	20,5

FGL Battery Range

FIAMM

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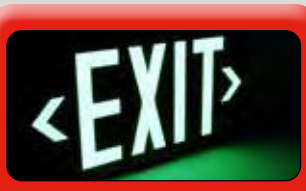
THE FGL RANGE IS DESIGNED TO SATISFY A WIDE RANGE OF APPLICATIONS REQUIRING HIGH LEVEL OF SECURITY AND RELIABILITY.

FGL BATTERIES OFFER GOOD PERFORMANCE WITH ANY DISCHARGE PROFILE. FGL BLOCS CAN BE INSTALLED IN CABINETS OR RACKS. FGL USES PROVEN VRLA TECHNOLOGY WITH 99% INTERNAL RECOMBINATION EFFICIENCY, IS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS FLOAT-LIFE. FGL RANGE IS NON-HAZARDOUS FOR AIR/SEA/RAIL/ROAD TRANSPORTATION AND IS 100% RECYCLABLE. FGL HAS A SELF-DISCHARGE RATE LESS THAN 2% PER MONTH, GUARANTEEING LONG SHELF-LIFE.

MAIN APPLICATIONS:



SECURITY SYSTEMS AND EMERGENCY LIGHTING

RENEWABLE ENERGY

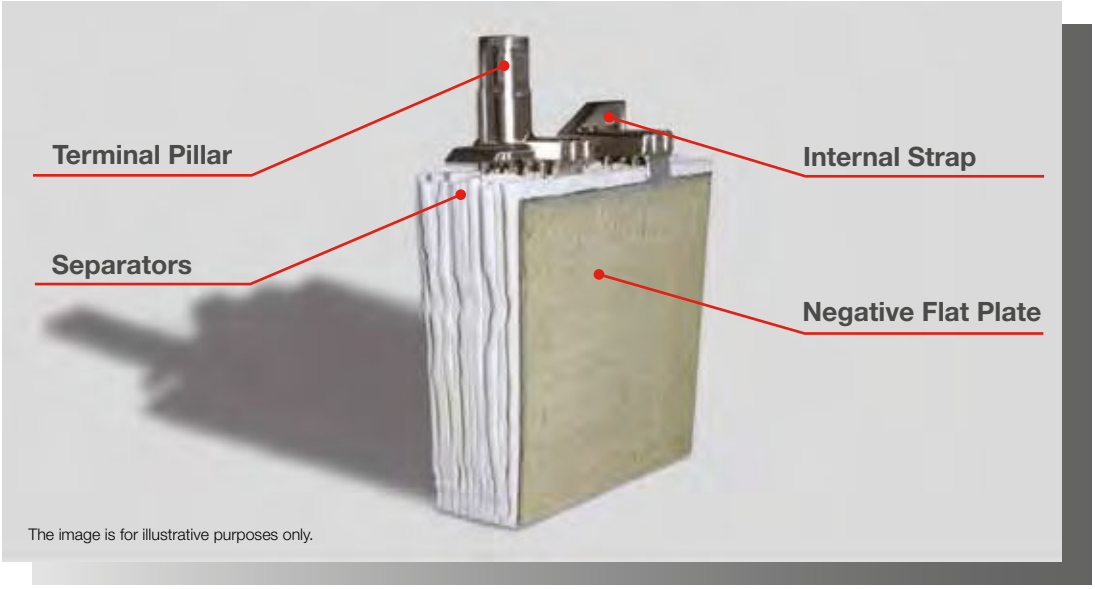
LIGHT TRACTION

LEISURE

SPECIFICATIONS

Special lead calcium tin alloy grid, designed to resist corrosion and provide short recharge time
VRLA AGM technology using low resistance high microporous fiberglass separators
Leak resistant post seal, threaded female M5/M6/M8 terminals with high conductivity and maximum torque resistance
One-way safety relief valves allow gas to escape and prevent the ingress of oxygen. Flame arrestors prevent sparks or flames entering the battery
ABS plastics designed for superior mechanical strength
Heat sealed box to lid weld for superior integrity
Installation in any orientation (excluding permanently inverted)

TECHNOLOGY



FIAMM FGL RANGE USE AGM (ABSORBED GLASS MAT) TECHNOLOGY. THE ELECTROLYTE IS ABSORBED IN FIBERGLASS SEPARATORS WITH 99% INTERNAL GAS RECOMBINATION EFFICIENCY. BLOCS ARE GRANTS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS WHOLE LIFE. LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY (Ah) 20 hrs to 1.75 VPC at 25°C	NOMINAL DIMENSIONS (mm) Length	Width	Height	Terminal Height	TYPICAL WEIGHT (kg)
12FGL17*	12	17	181	76	167	157	6.0
12FGL27	12	27	166	175	125	117	8.8
12FGL33	12	33	196	130	159	163	11
12FGL42	12	42	197	166	173	163	14
12FGL55	12	55	230	140	207	212	17
12FGL70	12	70	268	174	190	194	20
12FGL70/L	12	70	348	167	177	161	21
12FGL80	12	80	260	168	209	214	23
12FGL100	12	100	330	172	215	222	31
12FGL120	12	120	407	173	220	225	37
12FGL150	12	150	483	170	240	239	46
12FGL210	12	205	522	239	218	223	62

*Plastic are V0 grade flame retardant

ELECTRICAL CHARACTERISTICS

Float Voltage: 2.26 V/cell at 25°C
Boost Voltage: 2.35 V/cell
Float Voltage Compensation with Temperature: -2.5 mV/cell/°C
Self-Discharge at 25°C: <2%/month

STANDARDS

IEC 60896 Part 21 - VRLA methods of testing
IEC 60896 Part 22 - VRLA requirements
Eurobat “10-12 years LONG LIFE”
UL Recognized (except 12FGL17)

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FGL17	22,9	12,5	7,89	5,72	5,24	4,92
12FGL27	36,3	19,8	12,5	9,08	8,32	7,81
12FGL33	44,4	24,2	15,3	11,1	10,2	9,54
12FGL42	56,8	30,9	19,3	13,8	12,7	11,9
12FGL55	73,7	40,9	25,7	18,3	16,8	15,7
12FGL70	91,8	51,0	32,4	23,2	21,2	20,0
12FGL70/L	90,0	50,1	31,7	22,7	20,8	19,6
12FGL80	107	60,2	38,0	27,3	25,0	23,4
12FGL100	137	75,1	47,6	34,2	31,2	29,2
12FGL120	165	90,2	57,1	41,0	37,5	35,1
12FGL150	198	112	71,2	51,3	46,8	43,8
12FGL210	267	150	96,1	70,1	63,9	59,9

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FGL17	21,3	11,8	7,61	5,55	5,09	4,78
12FGL27	33,9	18,7	12,1	8,81	8,08	7,59
12FGL33	41,4	22,9	14,8	10,8	9,87	9,27
12FGL42	53,2	29,3	18,5	13,3	12,2	11,5
12FGL55	70,1	39,5	25,0	17,9	16,4	15,3
12FGL70	87,4	49,3	31,5	22,6	20,7	19,5
12FGL70/L	85,6	48,5	30,8	22,2	20,3	19,1
12FGL80	102	58,3	37,0	26,8	24,4	22,9
12FGL100	130	72,8	46,4	33,5	30,6	28,6
12FGL120	158	87,4	55,6	40,2	36,7	34,3
12FGL150	189	108	69,4	50,2	45,8	42,9
12FGL210	253	144	93,7	68,6	62,6	58,6

Constant Current discharge curves (A)

End of discharge voltage: 1.85 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FGL17	18,4	10,3	6,74	4,99	4,59	4,32
12FGL27	29,3	16,4	10,7	7,93	7,29	6,86
12FGL33	35,8	20,0	13,1	9,69	8,91	8,39
12FGL42	47,1	26,7	17,1	12,5	11,4	10,7
12FGL55	61,0	35,5	22,9	16,7	15,2	14,3
12FGL70	74,8	45,0	29,2	21,3	19,6	18,4
12FGL70/L	71,0	42,7	27,8	20,4	18,7	17,6
12FGL80	84,2	51,0	33,3	24,5	22,4	21,0
12FGL100	108	64,3	41,9	30,6	28,0	26,2
12FGL120	131	77,1	50,2	36,7	33,6	31,4
12FGL150	155	92,9	61,4	45,3	41,5	38,9
12FGL210	218	130	85,7	63,3	57,9	54,3

Constant Power discharge curves (W)

End of discharge voltage: 1.65 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FGL17	111	93,6	68,1	44,6	25,2	15,9
12FGL27	176	149	108	70,9	40,1	25,3
12FGL33	215	182	132	86,7	49,0	31,0
12FGL42	274	243	171	111	62,6	38,8
12FGL55	365	282	216	145	82,5	51,5
12FGL70	446	337	263	181	103	64,9
12FGL70/L	457	330	258	178	101	63,6
12FGL80	510	435	326	218	121	75,1
12FGL100	629	552	415	279	152	93,9
12FGL120	783	696	513	338	182	113
12FGL150	979	813	604	404	225	141
12FGL210	1327	1104	819	542	301	190

Constant Power discharge curves (W)

End of discharge voltage: 1.67 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FGL17	109	91,6	67,1	44,3	25,1	15,9
12FGL27	173	146	107	70,4	39,8	25,2
12FGL33	211	178	130	86,1	48,6	30,8
12FGL42	269	238	169	110	62,2	38,6
12FGL55	358	275	212	144	81,9	51,1
12FGL70	439	329	259	180	102	64,6
12FGL70/L	449	322	254	176	100	63,3
12FGL80	502	427	323	216	121	74,9
12FGL100	622	542	411	277	151	93,7
12FGL120	769	684	508	335	181	112
12FGL150	961	799	599	402	225	140
12FGL210	1303	1084	810	539	300	190

Constant Power discharge curves (W)

End of discharge voltage: 1.70 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FGL17	106	88,7	65,7	43,9	24,8	15,7
12FGL27	168	141	104	69,7	39,3	24,9
12FGL33	206	172	128	85,2	48,1	30,5
12FGL42	262	230	166	109	61,5	38,3
12FGL55	347	264	206	142	80,9	50,7
12FGL70	429	316	252	177	102	64,1
12FGL70/L	436	310	247	174	99,6	62,8
12FGL80	490	416	319	214	120	74,7
12FGL100	613	528	406	274	150	93,4
12FGL120	748	665	501	332	180	112
12FGL150	935	777	591	398	223	140
12FGL210	1268	1055	796	535	298	189

FLB Battery Range

FIAMM

FIAMM.COM

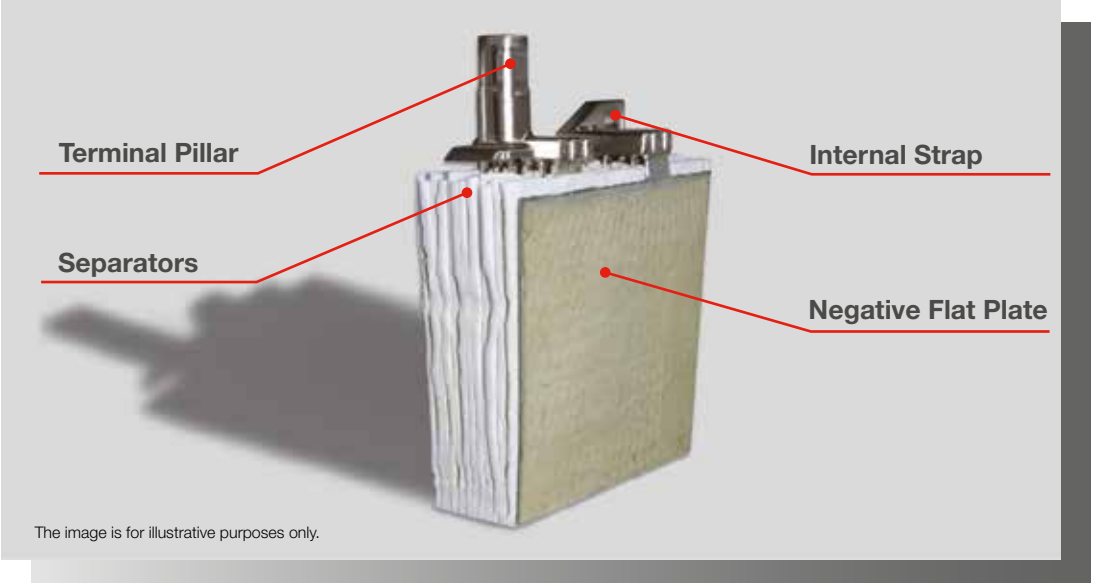
FIAMM FLB RANGE OF VALVE REGULATED BATTERIES HAS BEEN DESIGNED TO DELIVER THE HIGHEST PERFORMANCES WHILE COMBINING EXCELLENT RELIABILITY AND FLOAT LIFE.

FLB HIGH ENERGY DENSITY ALLOWS COMPACT BATTERY LAYOUT AND FOOTPRINTS, THIS REDUCING THE INSTALLATION SPACE. FLB BLOCS CAN BE INSTALLED IN CABINETS OR RACKS. FLB USES PROVEN VRLA TECHNOLOGY WITH 99% INTERNAL RECOMBINATION EFFICIENCY, IS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS FLOAT-LIFE. FLB RANGE IS NON-HAZARDOUS FOR AIR/SEA/RAIL/ROAD TRANSPORTATION AND IS 100% RECYCLABLE. FLB HAS A SELF-DISCHARGE RATE LESS THAN 2% PER MONTH, GUARANTEEING LONG SHELF-LIFE.

SPECIFICATIONS

Special lead calcium tin alloy grid, designed to resist corrosion and provide short recharge time
VRLA AGM technology using low resistance high microporous fiberglass separators
Leak resistant post seal, threaded female M5/M6/M8 terminals with high conductivity and maximum torque resistance
One-way safety relief valves allow gas to escape and prevent the ingress of oxygen. Flame arrestors prevent sparks or flames entering the battery
Flame retardant ABS plastic to IEC 707 FV0 and UL94 FV0 (LOI greater than 28%)
Heat sealed box to lid weld for superior integrity
Installation in any orientation (excluding permanently inverted)

TECHNOLOGY



FIAMM FLB RANGE USE AGM (ABSORBED GLASS MAT) TECHNOLOGY. THE ELECTROLYTE IS ABSORBED IN FIBERGLASS SEPARATORS WITH 99% INTERNAL GAS RECOMBINATION EFFICIENCY. BLOCS ARE DESIGNED TO BE NON-SPILL ABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS WHOLE LIFE. LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

BATTERY TYPE	NOMINAL VOLTAGE (V)	POWER (W/cell)	CAPACITY (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	DIMENSIONS (mm)			TYPICAL WEIGHT (kg)
		15 min to 1.67 VPC at 25°C	20 hrs to 1.75 VPC at 25°C	IEC 60896 21-22	IEC 60896 21-22	Length	Width	Height	
12 FLB 100 P	12	103	26	900	12.0	166	175	126	8.5
12 FLB 150 P	12	156	40	1200	10.5	198	166	170	14
12 FLB 200 P	12	204	55	1400	6.0	230	140	212	17
12 FLB 250 P	12	257	70	2100	6.3	260	168	214	24
12 FLB 300 P	12	311	80	2600	4.7	261	174	217	26
12 FLB 350 P	12	374	95	3100	4.0	302	174	217	30
12 FLB 400 P	12	415	105	3400	3.6	341	174	217	34
12 FLB 450 P	12	477	120	3900	3.2	379	174	217	38
12 FLB 540 P	12	540	150	3660	3.4	338	174	277	49
12 FLB 550 P *	12	552	160	3200	3.9	531	110	314	53
12 FLB 700 P *	12	710	210	4510	2.8	558	126	321	61

ELECTRICAL CHARACTERISTICS

Float Voltage: 2.26 V/cell at 25°C
Boost Voltage: 2.40 V/cell
Float Voltage Compensation with Temperature: -2.5 mV/cell/°C
Self-Discharge at 25°C: <2%/month

STANDARDS

IEC 60896 Part 21 - VRLA methods of testing
IEC 60896 Part 22 - VRLA requirements
BS6334 / UL 94 V0 / IEC 707 FV0
Eurobat “10/12 years LONG LIFE” for top terminal models
* Eurobat “>12 years VERY LONG LIFE” for front terminal models

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12 FLB 100 P	30,8	17,7	6,44	4,12	2,75	2,31
12 FLB 150 P	44,7	25,2	9,90	6,34	4,24	3,55
12 FLB 200 P	58,4	34,3	13,6	8,72	5,82	4,89
12 FLB 250 P	71,3	40,5	17,0	11,1	7,41	6,22
12 FLB 300 P	89,7	52,8	20,1	12,8	8,30	6,80
12 FLB 350 P	107	62,7	23,8	15,1	9,86	8,08
12 FLB 400 P	118	69,3	26,3	16,7	10,9	8,93
12 FLB 450 P	135	79,2	30,1	19,1	12,5	10,2
12 FLB 540 P	156	87,7	34,4	21,9	15,9	13,3
12 FLB 550 P	158	92,1	36,5	23,4	16,9	14,2
12 FLB 700 P	221	128	52,6	34,1	22,6	18,6

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12 FLB 100 P	29,8	17,5	6,28	4,05	2,73	2,27
12 FLB 150 P	43,7	24,6	9,65	6,24	4,20	3,50
12 FLB 200 P	54,1	31,9	13,3	8,58	5,77	4,81
12 FLB 250 P	67,4	38,8	16,8	10,9	7,34	6,12
12 FLB 300 P	81,3	50,2	19,5	12,5	8,17	6,69
12 FLB 350 P	96,5	59,6	23,1	14,8	9,70	7,95
12 FLB 400 P	107	65,8	25,6	16,4	10,7	8,78
12 FLB 450 P	122	75,2	29,2	18,7	12,3	10,0
12 FLB 540 P	147	83,5	33,5	21,6	15,7	13,1
12 FLB 550 P	145	89,1	35,7	23,0	16,8	14,0
12 FLB 700 P	208	123	50,5	32,9	21,9	18,2

Constant Current discharge curves (A)

End of discharge voltage: 1.85 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12 FLB 100 P	25,2	14,9	5,72	3,72	2,55	2,12
12 FLB 150 P	39,7	23,2	8,80	5,72	3,92	3,26
12 FLB 200 P	50,1	29,6	12,1	7,86	5,39	4,48
12 FLB 250 P	61,5	36,4	16,0	10,3	6,86	5,70
12 FLB 300 P	71,5	45,8	18,3	11,7	7,70	6,24
12 FLB 350 P	84,9	54,4	21,7	13,8	9,14	7,41
12 FLB 400 P	93,9	60,1	24,0	15,3	10,1	8,19
12 FLB 450 P	107	68,7	27,4	17,5	11,6	9,35
12 FLB 540 P	128	77,0	31,2	20,1	14,7	12,2
12 FLB 550 P	132	82,1	33,3	21,4	15,7	13,0
12 FLB 700 P	197	117	47,8	30,5	20,3	16,8

Constant Power discharge curves (W)

End of discharge voltage: 1.65 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12 FLB 100 P	188	127	103	65,5	37,4	13,5
12 FLB 150 P	291	204	157	94,3	53,5	20,7
12 FLB 200 P	360	259	207	126	73,8	28,5
12 FLB 250 P	497	342	259	153	87,0	35,4
12 FLB 300 P	573	404	314	188	107	38,8
12 FLB 350 P	688	485	377	226	128	46,6
12 FLB 400 P	764	538	419	251	142	51,8
12 FLB 450 P	879	619	482	288	164	59,5
12 FLB 540 P	927	697	552	334	189	71,9
12 FLB 550 P	915	685	561	353	201	76,5
12 FLB 700 P	1069	874	718	473	274	111

Constant Power discharge curves (W)

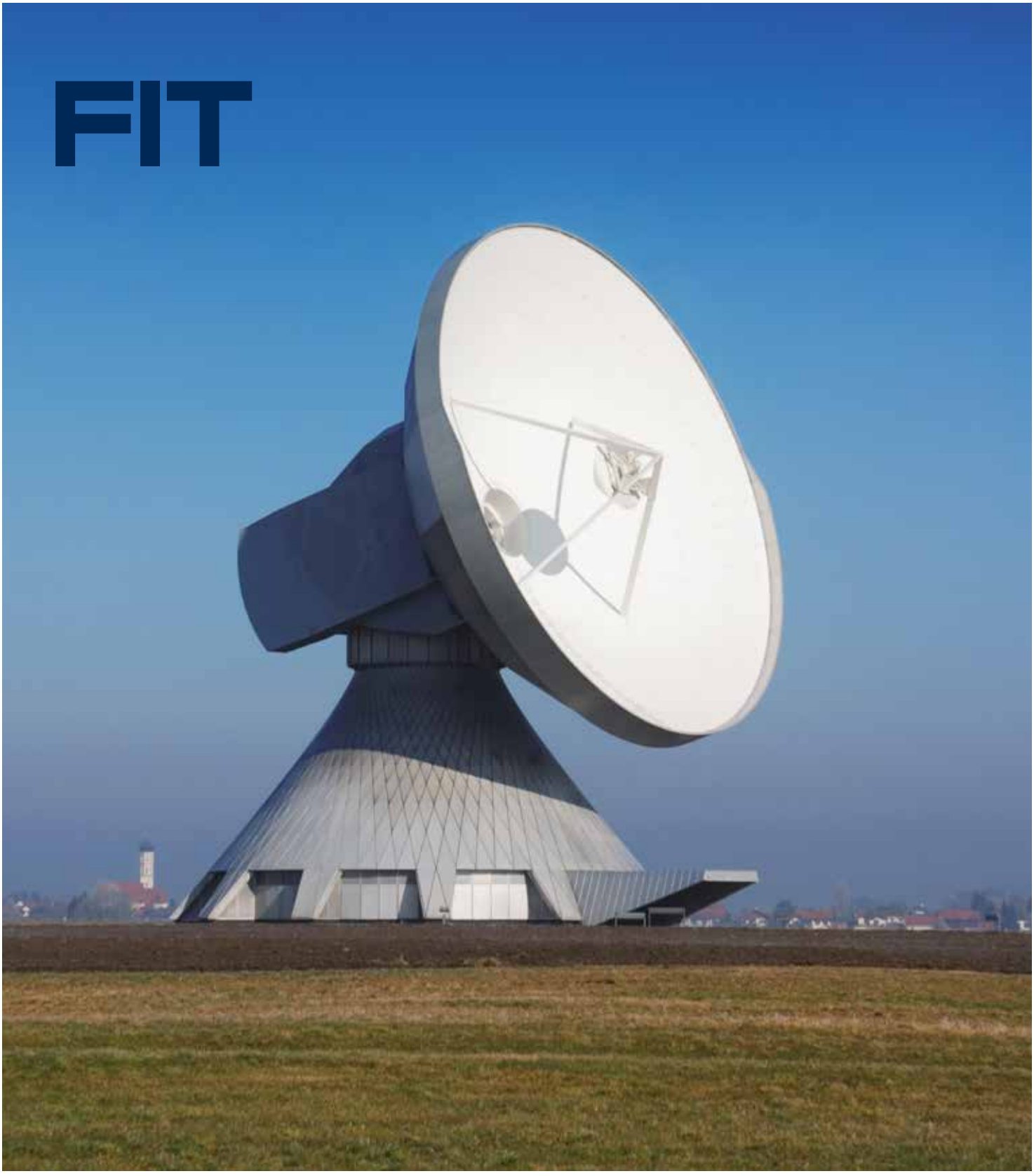
End of discharge voltage: 1.67 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12 FLB 100 P	186	126	103	65,4	37,4	13,4
12 FLB 150 P	286	201	156	93,9	53,4	20,7
12 FLB 200 P	354	256	204	125	73,4	28,4
12 FLB 250 P	489	339	257	152	86,8	35,3
12 FLB 300 P	557	397	311	186	106	38,8
12 FLB 350 P	669	477	374	224	128	46,5
12 FLB 400 P	743	530	415	248	142	51,7
12 FLB 450 P	855	609	477	286	163	59,4
12 FLB 540 P	919	692	549	332	188	71,8
12 FLB 550 P	894	673	552	349	199	76,2
12 FLB 700 P	1056	866	712	471	273	111

Constant Power discharge curves (W)

End of discharge voltage: 1.70 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12 FLB 100 P	183	124	102	65,3	37,3	13,4
12 FLB 150 P	278	198	154	93,2	53,1	20,6
12 FLB 200 P	345	252	201	123	72,8	28,3
12 FLB 250 P	477	334	253	151	86,4	35,3
12 FLB 300 P	534	387	307	184	106	38,6
12 FLB 350 P	640	465	368	221	127	46,4
12 FLB 400 P	711	516	409	245	141	51,5
12 FLB 450 P	818	594	471	282	162	59,3
12 FLB 540 P	907	684	543	330	187	71,6
12 FLB 550 P	863	655	538	342	197	75,9
12 FLB 700 P	1038	853	702	468	272	110



FIT Battery Range

FIAMM

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FIAMM FIT RANGE OF VALVE REGULATED BATTERIES HAS BEEN DESIGNED FOR HIGH RELIABILITY AND SAFETY FRONT TERMINAL TELECOM INSTALLATIONS.

FIT BATTERY RANGE HAS FRONT TERMINAL DESIGN IDEAL FOR INSTALLATION ON CABINET 19" AND 23"; IT ALLOWS EASY ACCESS FOR MAINTENANCE REDUCING THE INSTALLATION FOOTPRINT AND MAXIMISING THE ENERGY DENSITY. FIT USES PROVEN VRLA TECHNOLOGY WITH 99% INTERNAL RECOMBINATION EFFICIENCY, IS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS FLOAT-LIFE. FIT RANGE IS COMPLIANT WITH THE HIGHEST RECOGNISED INTERNATIONAL STANDARDS, NON-HAZARDOUS FOR AIR/SEA/RAIL/ROAD TRANSPORTATION AND IS 100% RECYCLABLE. FIT HAS A SELF-DISCHARGE RATE LESS THAN 2% PER MONTH, GUARANTEEING LONG SHELF-LIFE.

MAIN APPLICATIONS:


TELECOMMUNICATION


INDUSTRIAL UPS


UTILITIES AND INDUSTRY

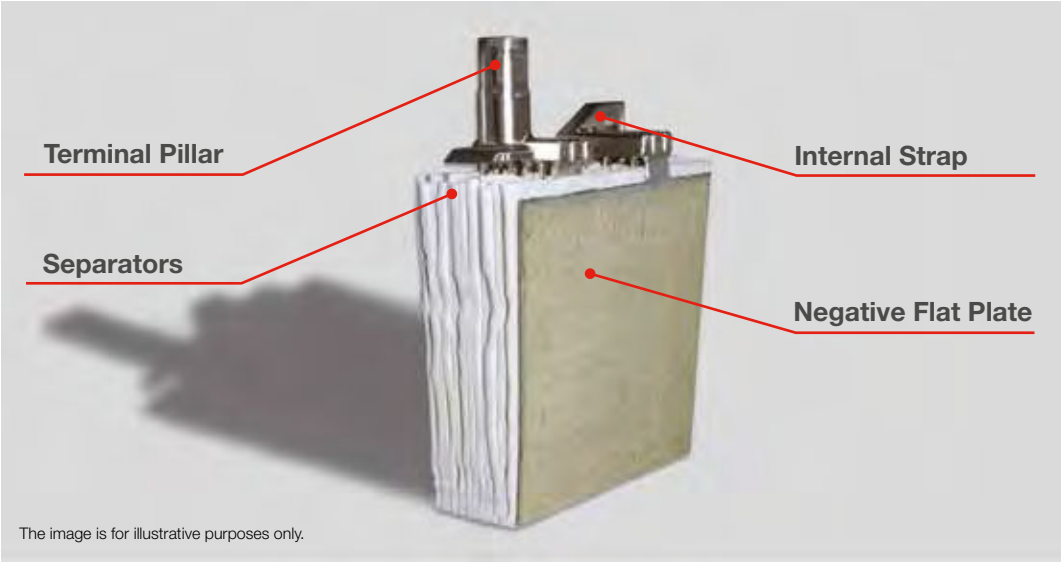

RAILWAYS


OIL & GAS

SPECIFICATIONS

Special lead calcium tin alloy grid, designed to resist corrosion and provide short recharge time
VRLA AGM technology using low resistance high microporous fiberglass separators
Leak resistant post seal, threaded female M6/M8 terminals with high conductivity and maximum torque resistance
One-way safety relief valves allow gas to escape and prevent the ingress of oxygen and flame arrestors prevent sparks or flames entering the battery
Flame retardant ABS plastic to IEC 707 FV0 and UL94 FV0 (LOI greater than 28%)
Installation in any orientation (excluding permanently inverted)

TECHNOLOGY



FIAMM FIT RANGE USE AGM (ABSORBED GLASS MAT) TECHNOLOGY. THE ELECTROLYTE IS ABSORBED IN FIBERGLASS SEPARATORS WITH 99% INTERNAL GAS RECOMBINATION EFFICIENCY. BLOCS ARE GRANTS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS WHOLE LIFE. LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	NOMINAL DIMENSIONS (mm)			TYPICAL WEIGHT (kg)
		10 H to 1.8 VPC at 20°C	IEC 60896 21-22	IEC 60896 21-22	Length	Width	Height	
12FIT40	12	40	1000	8.0	105	280	198	13
12FIT60	12	60	1500	7.0	105	280	260	18
12FIT101	12	101	2750	4.6	108	395	275	33
12FIT100/23	12	100	2780	4.5	126	558	230	39
12FIT131	12	130	2150	5.9	126	558	282	46
12FIT150	12	150	2950	4.1	126	558	282	49
12FIT151	12	150	2600	4.8	110	531	314	49
12FIT180	12	180	3060	4.0	126	558	321	57
12FIT201	12	195	3800	3.3	126	558	321	61

ELECTRICAL CHARACTERISTICS

Float Voltage: 2.27 V/cell at 20°C
Boost Voltage: 2.40 V/cell
Float Voltage Compensation with Temperature: -2.5 mV/cell/°C
Self-Discharge at 20°C: <2%/month

STANDARDS

IEC 60896 Part 21 - VRLA methods of testing
IEC 60896 Part 22 - VRLA requirements
BS633 / UL 94 V0 / IEC 707 FV0
Eurobat “>12 years VERY LONG LIFE”
UL Recognized

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FIT40	48,4	28,3	10,8	6,99	4,83	4,04
12FIT60	72,6	42,4	16,2	10,5	7,24	6,07
12FIT101	111	66,7	26,4	17,6	12,1	10,1
12FIT100/23	107	63,6	26,6	17,9	12,3	10,1
12FIT131	139	82,6	34,5	23,3	16,0	13,2
12FIT150	160	95,3	39,9	26,9	18,5	15,2
12FIT151	156	93,6	40,7	26,9	18,3	15,2
12FIT180	192	114	47,8	32,2	22,2	18,2
12FIT201	202	122	52,8	34,9	23,8	19,7

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FIT40	45,5	27,0	10,5	6,90	4,76	4,00
12FIT60	68,3	40,5	15,7	10,3	7,14	6,00
12FIT101	104	63,3	25,3	17,3	12,0	10,1
12FIT100/23	98,0	60,0	26,0	17,7	12,2	10,0
12FIT131	127	78,0	33,8	23,0	15,8	13,0
12FIT150	147	90,0	39,0	26,5	18,3	15,0
12FIT151	142	89,1	39,3	26,3	18,1	15,0
12FIT180	176	108	46,7	31,8	21,9	18,0
12FIT201	185	116	51,1	34,3	23,5	19,5

Constant Current discharge curves (A)

End of discharge voltage: 1.85 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FIT40	40,9	25,2	9,68	6,43	4,43	3,67
12FIT60	61,3	37,8	14,5	9,64	6,64	5,51
12FIT101	92,4	57,6	24,1	16,1	11,1	9,18
12FIT100/23	88,4	54,8	23,9	16,4	11,3	9,18
12FIT131	115	71,2	31,1	21,3	14,7	11,9
12FIT150	133	82,2	35,9	24,6	16,9	13,8
12FIT151	131	80,2	36,1	24,4	16,8	13,8
12FIT180	159	98,6	43,1	29,5	20,3	16,5
12FIT201	171	104	47,0	31,7	21,8	17,9

Constant Power discharge curves (W)

End of discharge voltage: 1.65 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FIT40	225	193	155	98,5	58,2	22,3
12FIT60	337	290	232	148	87,2	33,4
12FIT101	489	432	353	232	139	53,6
12FIT100/23	433	384	321	216	132	52,3
12FIT131	563	499	417	281	171	67,9
12FIT150	650	576	482	324	197	78,4
12FIT151	644	571	477	321	195	77,6
12FIT180	780	692	578	389	237	94,1
12FIT201	845	749	626	421	256	102

Constant Power discharge curves (W)

End of discharge voltage: 1.67 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FIT40	223	192	154	98,1	57,9	22,2
12FIT60	335	288	231	147	86,9	33,3
12FIT101	477	423	348	230	139	53,4
12FIT100/23	429	380	317	214	131	52,1
12FIT131	557	493	413	278	170	67,7
12FIT150	643	569	476	321	197	78,2
12FIT151	637	564	471	318	195	77,4
12FIT180	772	683	571	385	236	93,8
12FIT201	836	740	619	417	256	102

Constant Power discharge curves (W)

End of discharge voltage: 1.70 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FIT40	221	191	153	97,5	57,5	22,1
12FIT60	331	286	229	146	86,3	33,2
12FIT101	461	409	340	228	138	53,2
12FIT100/23	422	372	312	211	130	51,9
12FIT131	549	484	405	274	170	67,5
12FIT150	633	559	467	316	196	77,8
12FIT151	627	553	463	313	194	77,1
12FIT180	759	670	561	380	235	93,4
12FIT201	823	726	608	411	254	101

FHT Battery Range

FIAMM

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FIAMM FHT RANGE HAS BEEN DESIGN TO WITHSTAND HARSH ENVIRONMENTAL CONDITIONS. SPECIAL GRID ALLOY AND SUPERIOR GRIDS DESIGN GRANT 7 YEARS DESIGN LIFE AT 35°C.

FHT RANGE HAS FRONT TERMINAL DESIGN IDEAL FOR INSTALLATION ON CABINET 19" AND 23"; IT ALLOWS EASY ACCESS FOR MAINTENANCE REDUCING THE INSTALLATION FOOTPRINT AND MAXIMIZING THE ENERGY DENSITY. FHT USES PROVEN VRLA TECHNOLOGY WITH 99% INTERNAL RECOMBINATION EFFICIENCY, IS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS FLOAT-LIFE. FHT RANGE IS COMPLIANT WITH THE HIGHEST RECOGNISED INTERNATIONAL STANDARD, IT IS NON-HAZARDOUS FOR AIR/SEA/RAIL/ROAD TRANSPORTATION AND IT IS 100% RECYCLABLE. FHT HAS A SELF-DISCHARGE RATE LESS THAN 2% PER MONTH, GUARANTEEING LONG SHELF-LIFE.

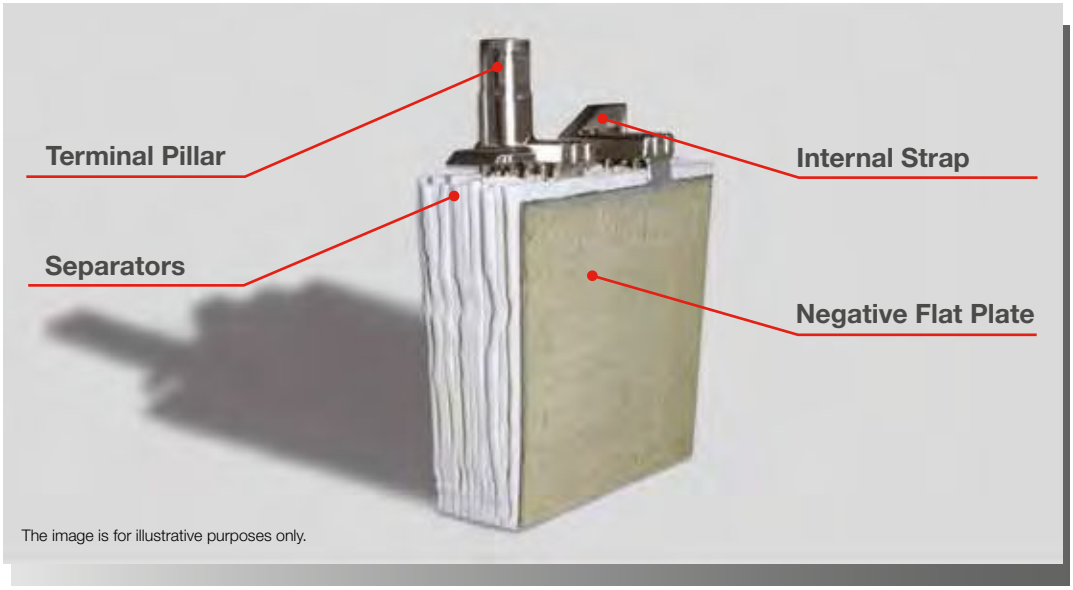
MAIN APPLICATIONS:

TELECOMMUNICATION

SPECIFICATIONS

Superior alloy grid, designed to resist corrosion and provide short recharge time
VRLA AGM technology using advanced low resistance microfiber-glass separator for unsurpassed cyclic characteristics
Leak resistant post seal, threaded female M8 terminals with high conductivity and maximum torque resistance
One-way safety relief valves allow gas to escape and prevent the ingress of oxygen and flame arrestors prevent sparks or flames entering the battery
Flame retardant ABS-PC plastic to IEC 707 and UL94 FV0 (LOI greater than 28%) to guarantee superior thermal stability
Installation in any orientation (excluding permanently inverted)

TECHNOLOGY



FIAMM FHT RANGE USE AGM (ABSORBED GLASS MAT) TECHNOLOGY. THE ELECTROLYTE IS ABSORBED IN FIBERGLASS SEPARATORS WITH 99% INTERNAL GAS RECOMBINATION EFFICIENCY. BLOCS ARE GRANTS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS WHOLE LIFE. LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	NOMINAL DIMENSIONS (mm)			TYPICAL WEIGHT (kg)
		10 H to 1.8 VPC at 20°C	IEC 60896 21-22	IEC 60896 21-22	Length	Width	Height	
12FHT101	12	95	2745	4.7	108	395	275	34
12FHT151	12	150	2595	4.9	110	531	314	50
12FHT181	12	180	3057	4.1	126	558	321	58

ELECTRICAL CHARACTERISTICS

Float Voltage: 2.23 V/cell at 35°C
Boost Voltage: 2.40 V/cell
Float Voltage Compensation with Temperature: -2.5 mV/cell/°C
Self-Discharge at 20°C: <2%/month

STANDARDS

IEC 60896 Part 21 - VRLA methods of testing
IEC 60896 Part 22 - VRLA requirements
BS 6290 Part 4 - specifications for VRLA classification
BS633 / UL 94 V0 / IEC 707 FV0
Eurobat “>12 years VERY LONG LIFE”

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FHT101	105	63,4	25,1	16,7	11,5	9,61
12FHT151	156	93,6	40,7	26,9	18,3	15,2
12FHT181	192	114	47,8	32,2	22,2	18,2

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FHT101	98,5	60,2	24,1	16,4	11,4	9,60
12FHT151	142	89,1	39,3	26,3	18,1	15,0
12FHT181	176	108	46,7	31,8	21,9	18,0

Constant Current discharge curves (A)

End of discharge voltage: 1.85 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FHT101	87,8	54,7	22,9	15,3	10,5	8,72
12FHT151	131	80,2	36,1	24,4	16,8	13,8
12FHT181	159	98,6	43,1	29,5	20,3	16,5

Constant Power discharge curves (W)

End of discharge voltage: 1.65 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FHT101	464	410	335	220	132	50,9
12FHT151	644	571	477	321	195	77,6
12FHT181	780	692	578	389	237	94,1

Constant Power discharge curves (W)

End of discharge voltage: 1.67 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FHT101	454	401	330	219	132	50,7
12FHT151	637	564	471	318	195	77,4
12FHT181	772	683	571	385	236	93,8

Constant Power discharge curves (W)

End of discharge voltage: 1.70 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FHT101	438	389	323	216	131	50,5
12FHT151	627	553	463	313	194	77,1
12FHT181	759	670	561	380	235	93,4

FHC Battery Range

FIAMM

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FIAMM FHC IS SPECIALLY DESIGNED TO MEET THE HIGH CYCLIC APPLICATIONS REQUIREMENTS. THE BATTERY HAS BEEN PURPOSED DEVELOPED FOR DEMANDING APPLICATIONS WHERE THE PRODUCT CAN BE SUBJECT TO FREQUENT DEEP OR PARTIAL DISCHARGES. IN STANDARD BATTERIES SUCH USAGE CAN SHORTEN THE LIFE. THE FIAMM FHC RANGE HAS BEEN DESIGNED TO OVERCOME THIS PROBLEM AND INCREASE LIFE.

THE FIAMM FHC RANGE IS FRONT TERMINAL DESIGNED FOR EASY INSTALLATION AND IS IDEAL FOR USE IN 19" AND 23" CABINET. IT ALLOWS FOR EASY ACCESS FOR MAINTENANCE, REDUCING THE INSTALLATION FOOTPRINT AND MAXIMIZING THE CYCLIC ABILITY. FHC USES FIAMM'S PROVEN VRLA TECHNOLOGY WHICH HAS A 99% INTERNAL RECOMBINATION EFFICIENCY, IS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING-UP OF ELECTROLYTE DURING ITS FLOAT-LIFE.

THE FHC RANGE IS COMPLIANT WITH THE HIGHEST RECOGNISED INTERNATIONAL STANDARDS, AND IS NON-HAZARDOUS FOR AIR/SEA/RAIL/ROAD TRANSPORTATION. IT IS ALSO 100% RECYCLABLE AND HAS A SELF-DISCHARGE RATE OF LESS THAN 2% PER MONTH: GUARANTEEING LONG SHELF-LIFE.

MAIN APPLICATIONS:


TELECOMMUNICATION

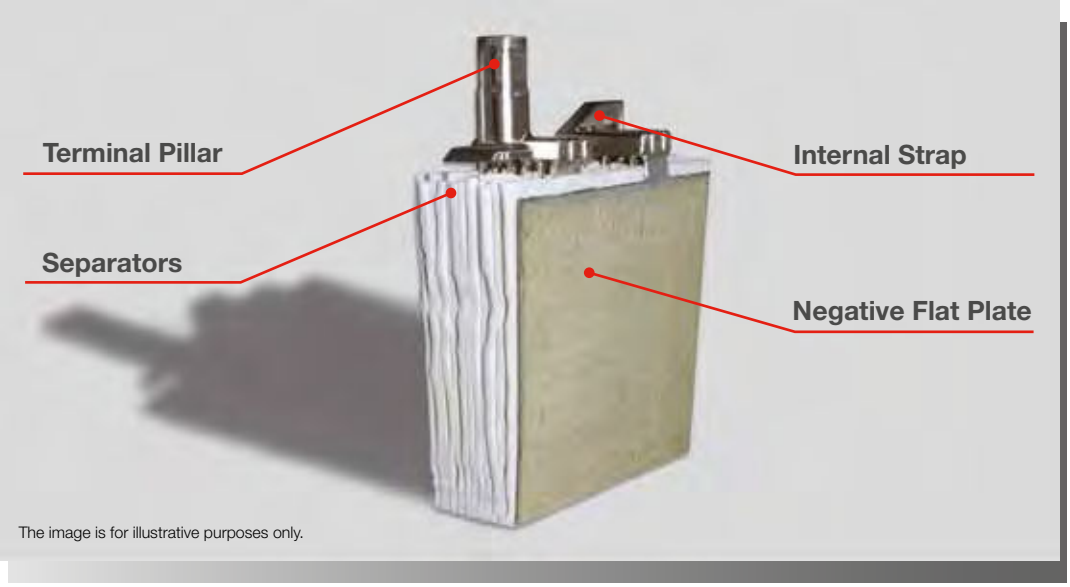

RENEWABLE ENERGY


RAILWAYS

SPECIFICATIONS

Unsurpassed cyclic characteristics due to the ultra-thin microfiber glass separator
Short recharge times as result of a special grid alloy, designed to resist corrosion
Consistent charging current due to advanced active material formulation which minimizes plate sulphation
Leak resistant post seal, threaded female M8 terminals with high conductivity and maximum torque resistance
VRLA AGM technology thanks to one-way safety relief valves: gas to escape and prevent the ingress of oxygen
Flame retardant ABS-PC plastic to IEC 707 FV0 and UL94 FV0 (LOI greater than 28%) Lid is provided flame arrestors prevent sparks or flames entering the battery
Installation in vertical or side orientation (side positioning is recommended for high cyclic usage)

TECHNOLOGY



FIAMM FHC RANGE USE AGM (ABSORBED GLASS MAT) TECHNOLOGY. THE ELECTROLYTE IS ABSORBED IN FIBERGLASS SEPARATORS WITH 99% INTERNAL GAS RECOMBINATION EFFICIENCY. BLOCS ARE GRANTS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS WHOLE LIFE. LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	NOMINAL DIMENSIONS (mm)			TYPICAL WEIGHT (kg)
		10 H to 1.8 VPC at 20°C	IEC 60896 21-22	IEC 60896 21-22	Length	Width	Height	
12FHC95	12	95	2550	4.8	108	395	275	34
12FHC145	12	145	2590	4.8	110	531	314	50
12FHC175	12	175	2900	4.3	126	558	321	59

ELECTRICAL CHARACTERISTICS

Float Voltage: 2.26 V/cell at 25°C
Boost Voltage: 2.40 V/cell
Float Voltage Compensation with Temperature: -2.5 mV/cell/°C
Self-Discharge at 20°C: <2%/month

STANDARDS

IEC 60896 Part 21 - VRLA methods of testing
IEC 60896 Part 22 - VRLA requirements
BS6334 / UL 94 V0 / IEC 707 FV0
Eurobat “>12 years VERY LONG LIFE”

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FHC95	107	63,1	25,0	11,5	9,66	9,61
12FHC145	155	92,1	38,5	17,9	14,7	14,7
12FHC175	187	111	46,5	21,6	17,7	17,7

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FHC95	98,5	59,5	24,1	11,4	9,60	9,60
12FHC145	142	87,0	37,7	17,7	14,5	14,5
12FHC175	172	105	45,4	21,3	17,5	17,5

Constant Current discharge curves (A)

End of discharge voltage: 1.85 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12FHC95	87,8	54,7	22,9	10,5	8,72	8,72
12FHC145	128	79,5	34,7	16,4	13,4	13,3
12FHC175	155	95,9	41,9	19,8	16,2	16,1

Constant Power discharge curves (W)

End of discharge voltage: 1.65 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FHC95	163	94,7	39,2	17,0	14,5	44,8
12FHC145	315	191	75,9	34,3	29,5	64,8
12FHC175	380	230	91,6	41,4	35,6	78,2

Constant Power discharge curves (W)

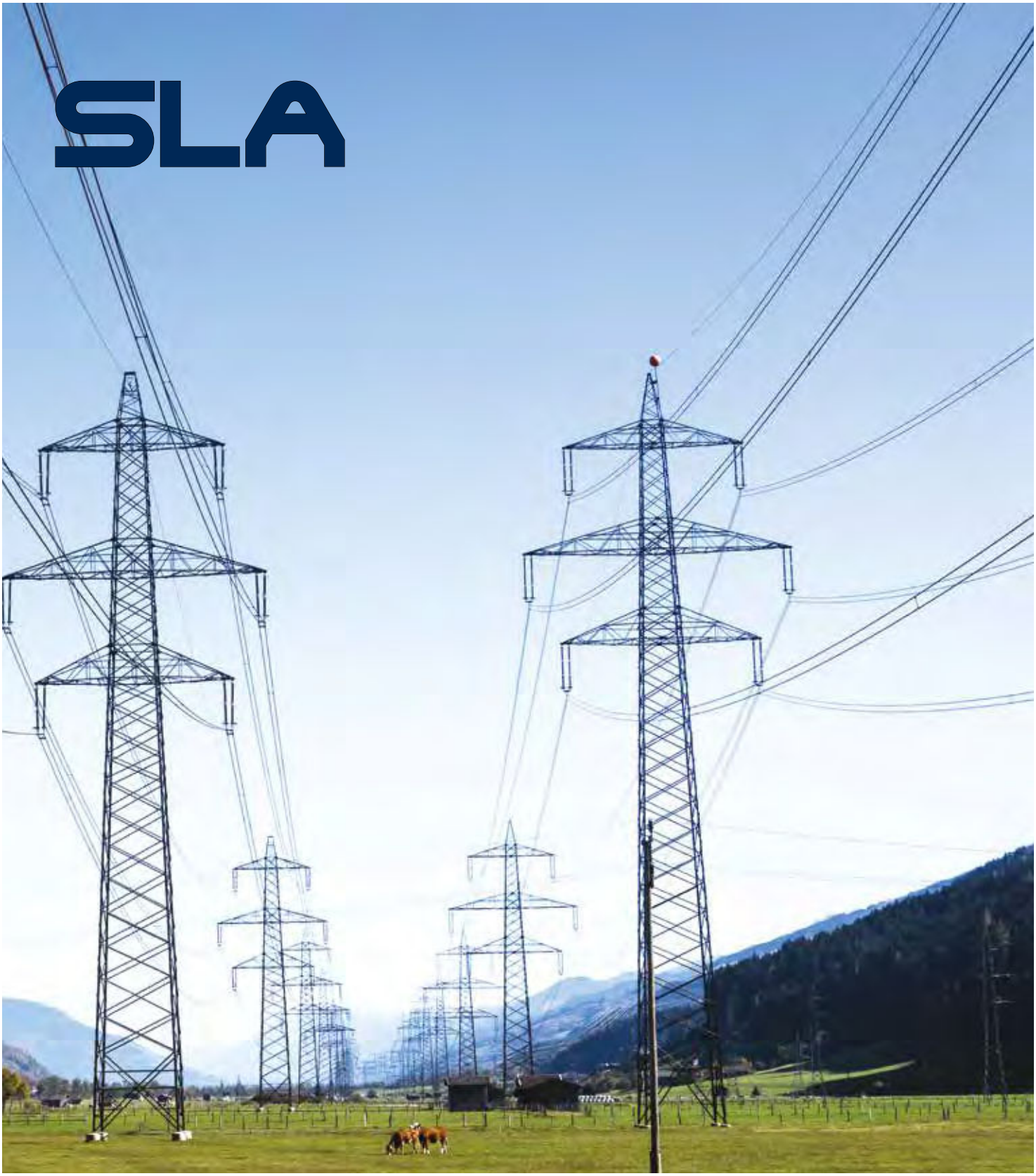
End of discharge voltage: 1.67 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FHC95	162	94,3	39,1	17,0	14,4	44,8
12FHC145	313	190	75,8	34,3	29,4	64,8
12FHC175	377	229	91,4	41,3	35,5	78,2

Constant Power discharge curves (W)

End of discharge voltage: 1.70 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12FHC95	161	93,8	39,0	17,0	14,4	44,8
12FHC145	310	189	75,5	34,2	29,4	64,8
12FHC175	374	228	91,2	41,3	35,4	78,1



SLA Battery Range

FIAMM

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FIAMM SLA RANGE OF VALVE REGULATED BATTERIES HAS BEEN DESIGNED FOR APPLICATIONS DEMANDING THE HIGHEST LEVEL OF RELIABILITY AND SECURITY.

FIAMM HIGH INTEGRITY SLA RANGE HAS BEEN DESIGNED FOR THE MOST CRITICAL APPLICATIONS, OFFERING UNSURPASSED PROVEN RELIABILITY, COMPLIANT WITH THE HIGHEST RECOGNISED INTERNATIONAL STANDARDS. SLA USES VRLA TECHNOLOGY WITH 99% INTERNAL RECOMBINATION EFFICIENCY, IS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS FLOAT- LIFE. SLA RANGE IS NON-HAZARDOUS FOR AIR/SEA/RAIL/ROAD TRANSPORTATION AND IS 100% RECYCLABLE. SLA HAS A SELF-DISCHARGE RATE LESS THAN 2% PER MONTH, GUARANTEEING LONG SHELF-LIFE.

MAIN APPLICATIONS:


TELECOMMUNICATION


UPS & DATA CENTER


UTILITIES & INDUSTRY

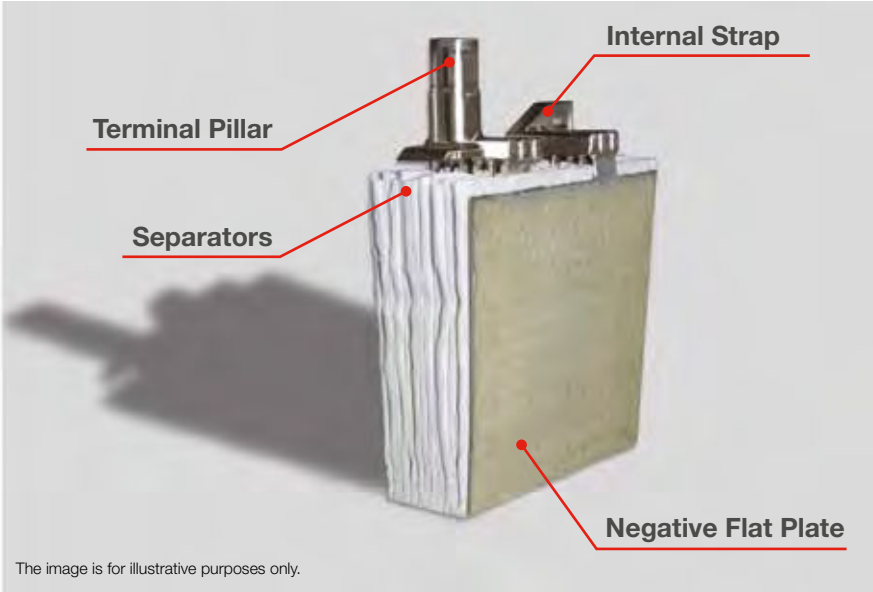

RAILWAYS


OIL & GAS

SPECIFICATIONS

Special lead calcium tin alloy grid is designed to meet the demanding requirements of telecom and power generation markets
VRLA AGM technology using low resistance high microporous fiberglass separators
Leak resistant post seal, threaded female M6/M8/M10 terminals with high conductivity and maximum torque resistance
One-way safety relief valves allow gas to escape and prevent the ingress of oxygen. Flame arrestors prevent sparks or flames entering the battery
Flame retardant ABS plastic to IEC 707 FV0 and UL94 FV0 (LOI greater than 28%)
Thick walled plastics designed for superior mechanical strength
Heat sealed box to lid weld for superior integrity
Installation in any orientation (excluding permanently inverted)

TECHNOLOGY



The image is for illustrative purposes only.

FIAMM SLA RANGE USE AGM (ABSORBED GLASS MAT) TECHNOLOGY. THE ELECTROLYTE IS ABSORBED IN FIBERGLASS SEPARATORS WITH 99% INTERNAL GAS RECOMBINATION EFFICIENCY. BLOCS ARE GRANTS NON-SPILLABLE AND MAINTENANCE FREE THEREFORE REQUIRES NO TOPPING UP OF ELECTROLYTE DURING ITS WHOLE LIFE. LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY AT 20°C (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	DIMENSIONS (mm)			TYPICAL WEIGHT (kg)
		10 HRS TO 1.8 VPC	IEC 60896 21-22	IEC 60896 21-22	Length	Width	Height	
12 SLA 50 L	12	50	1550	8.3	261	174	217	21
12 SLA 80 L	12	80	2144	6.0	302	174	217	29
12 SLA 110 L	12	110	3000	4.2	379	174	217	37
6 SLA 130 L	6	130	4200	1.55	208	174	245	23
6 SLA 180 L	6	180	4000	1.56	308	174	219	30
6 SLA 200 L	6	200	4600	1.35	308	174	245	36
2 SLA 260 L	2	260	3400	0.63	208	174	219	16
2 SLA 340 L	2	340	7900	0.25	208	174	219	21
2 SLA 430 L	2	430	9300	0.19	208	174	245	25
2 SLA 540 L	2	540	10600	0.20	308	174	219	31
2 SLA 620 L	2	620	14500	0.14	308	174	245	36
2 SLA 800**	2	820	9700	0.206	254	210	495	59
2 SLA 1000**	2	1025	12000	0.165	254	210	495	72
2 SLA 1500**	2	1500	16000	0.125	275	210	660	105
2 SLA 2000**	2	2000	20000	0.102	368	218	660	137

** this cell must be installed horizontally

ELECTRICAL CHARACTERISTICS

Float Voltage: 2.27 V/cell at 20°C
Boost Voltage: 2.40 V/cell
Float Voltage Compensation with Temperature: -2.5 mV/cell/°C
Self-Discharge at 20°C: <2%/month

STANDARDS

IEC 60896 Part 21 - VRLA methods of testing
IEC 60896 Part 22 - VRLA requirements
Telcordia GR-4228 - VRLA battery string certification
BS 6334 / UL 94 V0 / IEC 707 FV0 materials flammability
Bellcore TR-NWT-000766 - VRLA battery generic requirements
Eurobat “>12 years VERY LONG LIFE”

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
12 SLA 50 L	53,1	31,7	13,1	8,76	6,09	5,05
12 SLA 80 L	84,9	50,6	21,0	14,0	9,75	8,08
12 SLA 110 L	117	69,6	28,9	19,3	13,4	11,1
6 SLA 130 L	151	88,3	34,7	23,0	15,9	13,1
6 SLA 180 L	212	122	50,3	32,7	22,0	18,2
6 SLA 200 L	233	136	53,5	35,3	24,4	20,2
2 SLA 260 L	307	177	72,7	47,3	31,7	26,3
2 SLA 340 L	401	231	95,1	61,8	41,5	34,4
2 SLA 430 L	500	292	115	76,0	52,5	43,5
2 SLA 540 L	637	367	151	98,2	65,9	54,6
2 SLA 620 L	721	421	166	110	75,7	62,7
2 SLA 800	770	499	227	152	102	84,2
2 SLA 1000	963	623	283	191	128	105
2 SLA 1500	1080	767	378	260	183	151
2 SLA 2000	1440	1023	504	346	244	202

Constant Power discharge curves (W)

End of discharge voltage: 1.65 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
12 SLA 50 L	315	225	174	109	63,6	26,1
12 SLA 80 L	505	360	279	174	102	41,8
12 SLA 110 L	694	495	384	239	140	57,4
6 SLA 130 L	1021	796	659	421	247	101
6 SLA 180 L	906	808	716	478	275	105
6 SLA 200 L	1475	1150	952	608	357	145
2 SLA 260 L	1929	1504	1245	796	467	190
2 SLA 340 L	1948	1737	1539	1028	592	226
2 SLA 430 L	3064	2388	1978	1264	741	302
2 SLA 540 L	2548	2272	2013	1344	774	307
2 SLA 620 L						
2 SLA 800	2291	2162	1988	1432	909	417
2 SLA 1000	2864	2702	2485	1790	1137	522
2 SLA 1500	3208	2921	2647	2037	1402	702
2 SLA 2000	4278	3894	3529	2716	1869	936

SMG Battery Range

FIAMM

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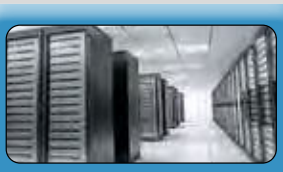
THE FIAMM SMG TUBULAR GEL RANGE IS DESIGNED FOR APPLICATIONS WHERE PERFORMANCE AND OPERATING CONDITIONS ARE CRITICAL. THEY ARE MAINTENANCE-FREE AND COMBINE THE BENEFITS OF A GELLED ELECTROLYTE WHICH PROVIDES LONGER LIFE AND A WIDER TEMPERATURE OPERATING RANGE.

THE SMG RANGE IS MADE UP OF 2V CELLS AND 12V BLOCKS. THE 2V CELLS CONFORM TO INTERNATIONAL OPZV STANDARDS DIN40742 NORM. THE RANGE IS CONSTRUCTED TO PROVIDE A HIGH LEVEL OF ROBUSTNESS AND IS DESIGNED FOR APPLICATIONS WHERE CHARGE-DISCHARGE CYCLES HAVE TO BE GUARANTEED WITH RELIABILITY. THE RANGE IS MAINTENANCE-FREE WITH A LOW SELF-DISCHARGE CHARACTERISTIC FOR PERIODS WHEN BATTERIES MAY BE STORED OR OFF FLOAT CHARGE. THE SMG 2V CELL RANGE CAN BE INSTALLED HORIZONTALLY IN DEDICATED RACKS SAVING VALUABLE SPACE. THE RANGE IS FULLY ECO-FRIENDLY WITH ALL COMPONENTS BEING FULLY RECYCLABLE. 12V FRONT TERMINAL DESIGN PERMITS AN EASY INSTALLATION.

MAIN APPLICATIONS:

TELECOMMUNICATION



INDUSTRIAL UPS

UTILITIES AND INDUSTRY

RAILWAYS

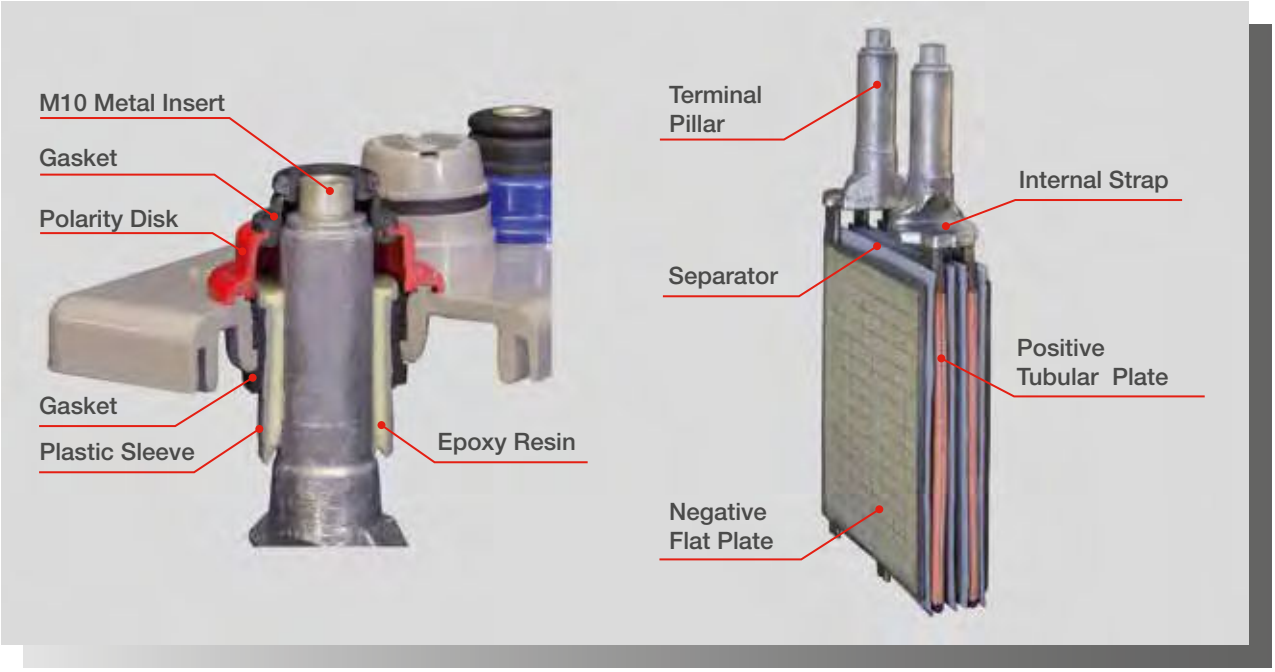
OIL & GAS

RENEWABLE ENERGY

SPECIFICATIONS

The positive tubular grid is composed of a special alloy (Pb-Sn-Ca) which is die-cast to guarantee high corrosion resistance
The electrolyte is immobilized into GEL structure due to a special silica binding addition
Separators have extremely high porosity and provides very low internal resistance
ABS cases flame retardant and classified to UL94 V0 with LOI >28% standard for 12V and available on request for 2V cells
The vent plug comprises an exhaust valve and porous flameproof disc for a superior safety
The metallic threaded insert on terminals ensure the highest conductivity and provides maximum torque retention and easy installation
The connecting bolt is fully insulated but with probe hole on the top to grant electrical measurements (2V only)

TECHNOLOGY



THE UNIQUE FIAMM TERMINAL DESIGN OF THE 2V CELL PERMITS PILLAR GROWTH DURING CELL LIFE WITHOUT LEAKAGE. THIS FEATURES AVOID MECHANICAL STRESS ON THE LID OF THE CELL.

THE GEL ELECTROLYTE STRUCTURE SLOWS THE DRYING OUT OF THE CELL ENSURING AN 18 YEAR DESIGN LIFE FOR 2V CELLS AND 15 YEARS FOR 12V BATTERIES.
LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

BATTERY TYPE	REFERENCE OPzV DIN 40742	NOMINAL CAPACITY (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	NOMINAL DIMENSION (mm)			TYPICAL WEIGHT (kg)
		10H to 1.8VPC at 20°C	IEC 60896 21-22	IEC 60896 21-22	Lenght	Width	Height	
SMG 220	4 OPzV 200	220	2700	0.74	103	206	407	19.0
SMG 275	5 OPzV 250	275	3520	0.592	124	206	407	23.0
SMG 330	6 OPzV 300	330	4100	0.493	145	206	407	26.6
SMG 380	5 OPzV 350	380	3350	0.607	124	206	523	30.0
SMG 460	6 OPzV 420	460	3990	0.502	145	206	523	33.3
SMG 530	7 OPzV 490	530	4640	0.436	166	206	523	39.0
SMG 720	6 OPzV 600	720	6220	0.321	145	206	698	48.5
SMG 960	8 OPzV 800	960	7120	0.284	210	191	700	64.6
SMG 1200	10 OPzV 1000	1200	8820	0.227	210	233	700	80.4
SMG 1440	12 OPzV 1200	1440	10530	0.19	210	275	700	95.1
SMG 1680	12 OPzV 1500	1680	11730	0.17	210	275	849	112
SMG 2005	14 OPzV 1750	2000	13900	0.14	212	399	826	135
SMG 2250	16 OPzV 2000	2250	15810	0.13	212	399	826	151
SMG 2520	18 OPzV 2250	2520	17700	0.11	212	487	826	171
SMG 2800	20 OPzV 2500	2800	20050	0.10	212	487	826	189
SMG 3080	22 OPzV 2750	3080	22055	0.09	212	576	826	208
SMG 3350	24 OPzV 3000	3350	23490	0.09	212	576	826	226
SMG 3640	26 OPzV 3250	3640	25000	0.08	212	576	826	240
12 SMG 100	-	100	1500	7.8	126	558	270	44
12 SMG 130	-	130	1470	8.6	126	558	321	54

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
SMG 220	138	105	53,6	36,5	26,2	22,1
SMG 275	173	131	67,0	45,6	32,8	27,6
SMG 330	208	157	80,3	54,7	39,4	33,1
SMG 380	239	181	92,5	63,0	45,3	38,1
SMG 460	289	219	112	76,3	54,9	46,1
SMG 530	333	253	129	87,9	63,2	53,2
SMG 720	376	288	160	113	84,0	72,0
SMG 960	502	384	214	151	112	96,0
SMG 1200	627	481	267	189	140	120
SMG 1440	753	577	321	227	168	144
SMG 1680	784	644	374	265	196	168
SMG 2005	936	769	447	316	234	201
SMG 2250	1050	863	501	354	262	225
SMG 2520	1176	966	561	397	294	252
SMG 2800	1307	1074	624	441	327	280
SMG 3080	1437	1181	686	485	359	308
SMG 3350	1563	1285	746	528	391	335
SMG 3640	1699	1396	811	573	424	364
12 SMG 100	94,0	60,5	26,1	17,5	12,4	10,3
12 SMG 130	122	78,6	33,9	22,8	16,2	13,4

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
SMG 220	119	93,3	49,7	34,0	24,4	20,8
SMG 275	149	117	62,1	42,5	30,4	26,0
SMG 330	178	140	74,5	51,0	36,5	31,2
SMG 380	205	161	85,8	58,7	42,1	35,9
SMG 460	249	195	104	71,1	50,9	43,5
SMG 530	286	225	120	81,9	58,7	50,1
SMG 720	271	234	144	102	76,2	66,9
SMG 960	361	312	192	136	102	89,2
SMG 1200	451	390	240	171	127	112
SMG 1440	541	468	288	205	152	134
SMG 1680	613	522	336	239	178	156
SMG 2005	731	623	401	285	212	186
SMG 2250	820	699	450	320	238	209
SMG 2520	919	783	504	358	267	234
SMG 2800	1021	870	560	398	296	260
SMG 3080	1123	957	616	438	326	286
SMG 3350	1221	1041	670	476	355	311
SMG 3640	1327	1132	728	517	385	338
12 SMG 100	84,8	56,7	25,3	17,0	12,2	10,1
12 SMG 130	110	73,7	32,8	22,1	15,8	13,1

Constant Power discharge curves (W)

End of discharge voltage: 1.65 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
SMG 220	433	394	359	294	220	107
SMG 275	541	493	448	367	274	133
SMG 330	650	591	538	441	329	160
SMG 380	748	681	619	507	379	184
SMG 460	905	824	750	614	459	223
SMG 530	1043	949	864	708	529	257
SMG 720	1263	1193	1117	903	669	335
SMG 960	1684	1590	1489	1204	892	446
SMG 1200	2105	1988	1861	1505	1115	558
SMG 1440	2526	2386	2234	1806	1338	669
SMG 1680	2234	2195	2119	1824	1418	775
SMG 2005	2666	2620	2528	2177	1692	925
SMG 2250	2992	2940	2837	2443	1899	1038
SMG 2520	3351	3293	3178	2736	2126	1162
SMG 2800	3723	3659	3531	3040	2363	1291
SMG 3080	4096	4024	3884	3344	2599	1420
SMG 3350	4455	4377	4225	3637	2827	1545
SMG 3640	4840	4756	4590	3952	3071	1679
12 SMG 100	297	273	249	189	123	52,2
12 SMG 130	348	324	296	233	157	67,9

Constant Power discharge curves (W)

End of discharge voltage: 1.70 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
SMG 220	428	389	356	291	219	107
SMG 275	535	486	445	364	273	133
SMG 330	642	584	534	437	328	160
SMG 380	740	672	615	503	378	184
SMG 460	895	814	744	609	457	223
SMG 530	1032	937	857	702	527	257
SMG 720	1220	1163	1092	884	658	333
SMG 960	1627	1551	1456	1179	877	444
SMG 1200	2034	1939	1820	1474	1096	555
SMG 1440	2440	2327	2184	1769	1315	666
SMG 1680	2205	2165	2090	1804	1407	771
SMG 2005	2631	2584	2494	2153	1679	921
SMG 2250	2953	2900	2799	2416	1884	1033
SMG 2520	3307	3248	3135	2706	2110	1157
SMG 2800	3674	3609	3483	3006	2345	1286
SMG 3080	4042	3970	3831	3307	2579	1414
SMG 3350	4396	4318	4167	3597	2805	1538
SMG 3640	4777	4692	4528	3908	3048	1671
12 SMG 100	288	266	243	186	122	51,9
12 SMG 130	338	315	289	228	155	67,4

LM Battery Range

FIAMM

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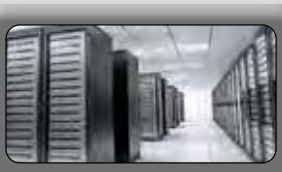
THE LM BATTERY SERIES IS AN OPZS VENTED RANGE DESIGNED BY FIAMM TO MEET DIN 40736 SPECIFICATIONS.

ALL PRODUCTS HAVE BEEN DESIGNED TO PROVIDE USERS WITH A HIGHLY ROBUST PRODUCT FAMILY. THE RANGE HAS BEEN DEVELOPED FOR APPLICATIONS WHERE DISCHARGE CYCLES NEED TO BE OF THE HIGHEST LEVELS OF RELIABILITY. AS RESULT OF THIS THE RANGE EXCEEDS THE SPECIFICATION STANDARDS LAID DOWN BY THE DIN STANDARD. THIS PERFORMANCE IS THE RESULT OF A LOW ANTIMONY ALLOY PLATE WHICH PROVIDES VERY LOW WATER CONSUMPTION OVER THE LIFE OF THE PRODUCT. UNDER NORMAL FLOAT OPERATING CONDITIONS BATTERIES REQUIRE TOPPING-UP ONCE EVERY THREE YEARS. FURTHERMORE THE DESIGN HAS BEEN OPTIMIZED TO LOWER SELF-DISCHARGE DURING STORAGE. ALL OF THESE OUTSTANDING FEATURES ADD UP TO A LONGER LIFE PRODUCT WITH LOWER MAINTENANCE COSTS. LIKE ALL FIAMM LEAD-ACID BATTERIES THE LM RANGE IS ECO-FRIENDLY AND FULLY RECYCLABLE.

MAIN APPLICATIONS:

TELECOMMUNICATION



INDUSTRIAL UPS

UTILITIES AND INDUSTRY

RAILWAYS

OIL & GAS

SPECIFICATIONS

The positive tubular grid is composed of a special alloy (Pb-Sb) which is die-cast to guarantee high corrosion resistance and low water consumption (1 topping up in 3 years in float conditions)

Electrolyte: sulphuric acid electrolyte with specific gravity of 1.24kg/l at 20°C

Separators have high porosity and provide very low internal resistance

Robust design thanks to high mechanical polymers properties; box made of SAN and with an ABS lid

The vent plug is made of porous flameproof material for a superior safety

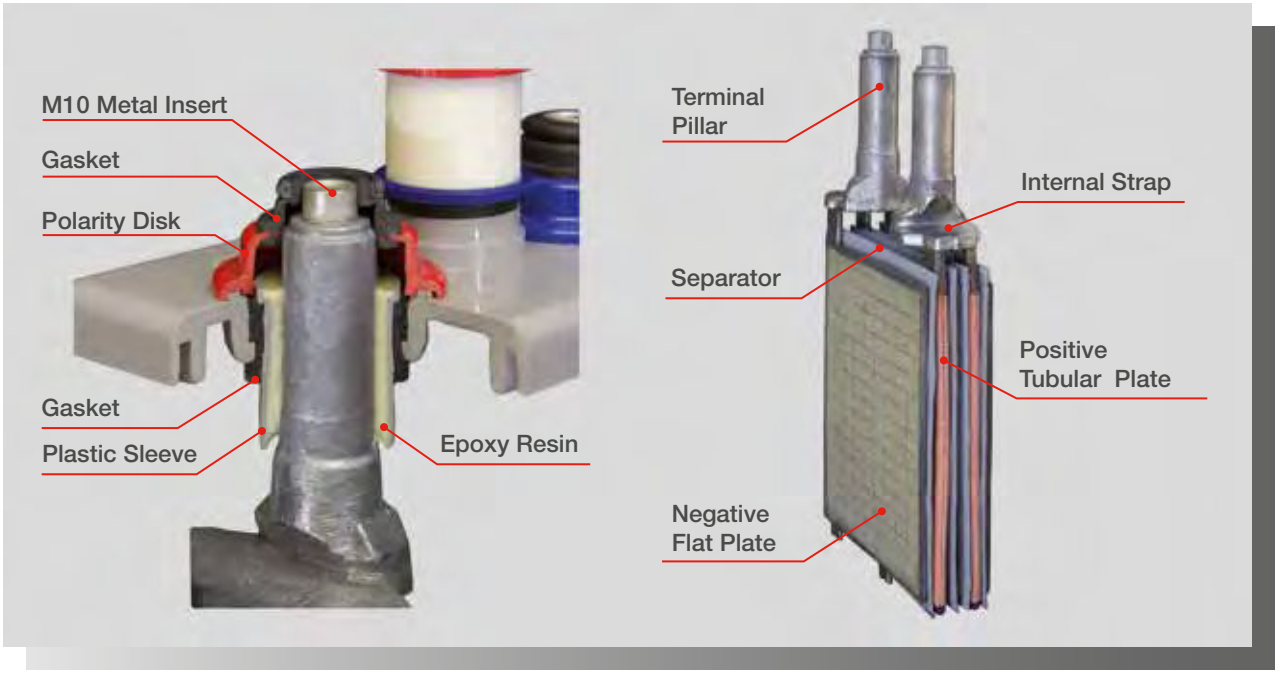
A long shelf life of up to six months is possible without recharge (<2% discharge per month)

The metallic threaded insert on terminals ensures the highest conductivity and provides maximum torque retention and easy installation

Flexible connections ensure a safe link between terminals

The connecting bolt is fully insulated but with probe hole on the top to grant electrical measurements

TECHNOLOGY



THE UNIQUE FIAMM TERMINAL DESIGN PERMITS PILLAR GROWTH DURING CELL LIFE WITHOUT LEAKAGE. THIS FEATURES AVOID MECHANICAL STRESS ON THE LID OF THE CELL.

THE LM RANGE HAS A DESIGN LIFE IS 20 YEARS DUE TO HIGH RELIABILITY AND COMPONENTS MANUFACTURE PROCESS.
ALL LM MODELS ARE AVAILABLE IN A DRY CHARGE VERSION.

BATTERY TYPE	REFERENCE OPzS DIN 40736	NOMINAL CAPACITY (Ah) 10H to 1.8VPC at 20°C	SHORT CIRCUIT CURRENT (A) IEC 60896-11	INTERNAL RESISTANCE (mOhm) IEC 60896-11	NOMINAL DIMENSION (mm)			ELECTROLYTE QUANTITY (liters)	TYPICAL WEIGHT (with electrolyte) (kg)
					Lenght	Width	Height		
LM 100	2 OPzS 100	108	1250	1.824	103	206	420	4.2	14.1
LM 150	3 OPzS 150	162	1875	1.216	103	206	420	3.8	15.8
LM 200	4 OPzS 200	216	2380	0.840	103	206	420	3.6	17.4
LM 250	5 OPzS 250	270	2700	0.730	124	206	420	4.7	21.2
LM 300	6 OPzS 300	324	3240	0.608	145	206	420	5.4	24.8
LM 350	5 OPzS 350	390	3150	0.628	124	206	536	6.3	28.4
LM 420	6 OPzS 420	468	3780	0.524	145	206	536	7.2	32.7
LM 490	7 OPzS 490	546	4410	0.449	166	206	536	8.3	37.6
LM 600	6 OPzS 600	630	4560	0.447	145	206	711	12.2	44.9
LM 700	7 OPzS 700	735	5320	0.383	210	191	711	15.0	58.8
LM 800	8 OPzS 800	840	6100	0.335	210	191	711	12.9	62.2
LM 900	9 OPzS 900	945	6840	0.298	210	233	711	22.0	71.5
LM 1000	10 OPzS 1000	1050	7600	0.268	210	233	711	17.7	74.9
LM 1200	12 OPzS 1200	1260	9120	0.223	210	275	711	22.1	89.2
LM 1500	12 OPzS 1500	1570	10200	0.200	210	275	861	26.7	110
LM 1750	14 OPzS 1750	1840	11900	0.171	212	399	837	35.5	142
LM 1875	15 OPzS 1875	1970	12750	0.160	212	399	837	34.0	147
LM 2000	16 OPzS 2000	2100	13600	0.150	212	399	837	38.3	151
LM 2250	18 OPzS 2250	2360	15300	0.133	212	487	837	43.6	181
LM 2500	20 OPzS 2500	2620	17000	0.120	212	487	837	48.4	188
LM 3000	24 OPzS 3000	3150	20400	0.100	212	576	837	52.6	222
LM 3500	28 OPzS 3500	3500	23800	0.086	212	576	837	55.2	248

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
LM 100	67,9	49,4	26,1	18,3	12,9	10,8
LM 150	102	74,1	39,2	27,5	19,4	16,2
LM 200	136	98,8	52,2	36,6	25,8	21,6
LM 250	170	124	65,3	45,8	32,3	27,0
LM 300	204	148	78,3	54,9	38,7	32,4
LM 350	223	173	92,4	65,1	46,4	39,0
LM 420	268	207	111	78,1	55,7	46,8
LM 490	313	242	129	91,1	64,9	54,6
LM 600	320	262	151	107	75,2	63,0
LM 700	373	306	177	125	87,7	73,5
LM 800	426	350	202	143	100	84,0
LM 900	480	393	227	161	113	94,5
LM 1000	533	437	252	179	125	105
LM 1200	640	525	303	214	150	126
LM 1500	796	645	371	267	189	157
LM 1750	933	756	435	313	221	184
LM 1875	999	809	466	335	237	197
LM 2000	1065	863	497	357	253	210
LM 2250	1197	970	558	402	284	236
LM 2500	1329	1077	619	446	315	262
LM 3000	1598	1294	745	536	379	315
LM 3500	1775	1438	828	596	421	350

Constant Current discharge curves (A)

End of discharge voltage: 1.75 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
LM 100	55,0	42,3	23,8	17,0	12,2	10,3
LM 150	82,5	63,5	35,7	25,5	18,3	15,4
LM 200	110	84,6	47,6	34,0	24,4	20,5
LM 250	138	106	59,5	42,5	30,5	25,7
LM 300	165	127	71,4	51,0	36,6	30,8
LM 350	172	140	80,5	57,8	39,9	32,9
LM 420	207	168	96,6	69,3	47,9	39,5
LM 490	241	196	113	80,9	55,9	46,1
LM 600	248	213	133	98,4	70,8	58,8
LM 700	289	248	155	115	82,6	68,6
LM 800	330	283	177	131	94,4	78,4
LM 900	371	319	199	148	106	88,2
LM 1000	413	354	221	164	118	98,0
LM 1200	495	425	266	197	142	118
LM 1500	642	546	328	239	171	145
LM 1750	753	640	384	281	200	170
LM 1875	806	686	411	301	214	182
LM 2000	859	731	438	320	228	194
LM 2250	965	821	493	360	256	218
LM 2500	1072	912	547	400	285	242
LM 3000	1288	1096	658	481	342	291
LM 3500	1431	1218	731	534	380	324

Constant Power discharge curves (W)

End of discharge voltage: 1.65 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
LM 100	257	242	221	166	114	54,1
LM 150	386	364	332	248	170	81,1
LM 200	514	485	443	331	227	108
LM 250	643	606	554	414	284	135
LM 300	771	727	664	497	341	162
LM 350	777	743	692	550	394	188
LM 420	933	892	830	659	473	226
LM 490	1088	1040	968	769	552	264
LM 600	1150	1098	1026	832	627	316
LM 700	1342	1281	1198	970	732	369
LM 800	1534	1464	1369	1109	836	422
LM 900	1725	1647	1540	1247	941	474
LM 1000	1917	1830	1711	1386	1045	527
LM 1200	2300	2196	2053	1663	1254	632
LM 1500	2382	2294	2205	1929	1510	772
LM 1750	2791	2688	2584	2261	1770	905
LM 1875	2989	2878	2766	2421	1895	969
LM 2000	3186	3068	2949	2581	2020	1033
LM 2250	3580	3448	3314	2900	2270	1161
LM 2500	3975	3828	3679	3220	2520	1288
LM 3000	4779	4602	4423	3871	3030	1549
LM 3500	5310	5113	4915	4301	3367	1721

Constant Power discharge curves (W)

End of discharge voltage: 1.70 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
LM 100	249	231	210	161	112	54,0
LM 150	373	347	315	241	167	81,1
LM 200	497	462	420	322	223	108
LM 250	621	578	525	402	279	135
LM 300	746	694	630	482	335	162
LM 350	725	692	646	528	387	187
LM 420	870	830	775	634	464	225
LM 490	1015	969	904	739	541	262
LM 600	1066	1010	944	789	609	315
LM 700	1243	1178	1102	920	710	367
LM 800	1421	1346	1259	1052	812	420
LM 900	1599	1515	1417	1183	913	472
LM 1000	1776	1683	1574	1315	1015	524
LM 1200	2132	2020	1889	1578	1218	629
LM 1500	2209	2128	2049	1820	1464	765
LM 1750	2589	2494	2402	2133	1716	897
LM 1875	2772	2670	2571	2284	1837	960
LM 2000	2955	2847	2741	2435	1958	1024
LM 2250	3321	3199	3080	2736	2201	1151
LM 2500	3687	3552	3420	3038	2443	1277
LM 3000	4433	4270	4112	3652	2937	1536
LM 3500	4925	4744	4569	4058	3263	1706

SD–SDH

SD-SDH Battery Range

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THE SD-SDH RANGE IS IS THE PERFECT CHOICE WHEN APPLICATION REQUIRES HIGH POWER IN A SHORT PERIOD OF TIME.

THE RANGE IS CONSTRUCTED TO PROVIDE A HIGH LEVEL OF ROBUSTNESS AND DESIGNED FOR APPLICATIONS WHERE HIGH ENERGY PEAKS ARE NEEDED IN A SHORT TIMEFRAME. DUE TO A SPECIAL LOW ANTIMONY PLATES DESIGN THE RANGE OFFERS USERS THE BENEFIT OF LOW MAINTENANCE RESULT IN IMPROVED OPERATING COSTS. BATTERIES NEED TOPPING-UP ONCE EVERY THREE YEARS UNDER NORMAL OPERATING CONDITIONS. FURTHERMORE THE DESIGN IS OPTIMIZED TO OFFER VERY LOW SELF-DISCHARGE FOR LONG STORAGE PERIOD WITHOUT A REFRESHING CHARGE. LIKE ALL FIAMM LEAD-ACID BATTERIES THE SD SDH RANGE IS ECO-FRIENDLY AND FULLY RECYCLABLE.

MAIN APPLICATIONS:


INDUSTRIAL UPS

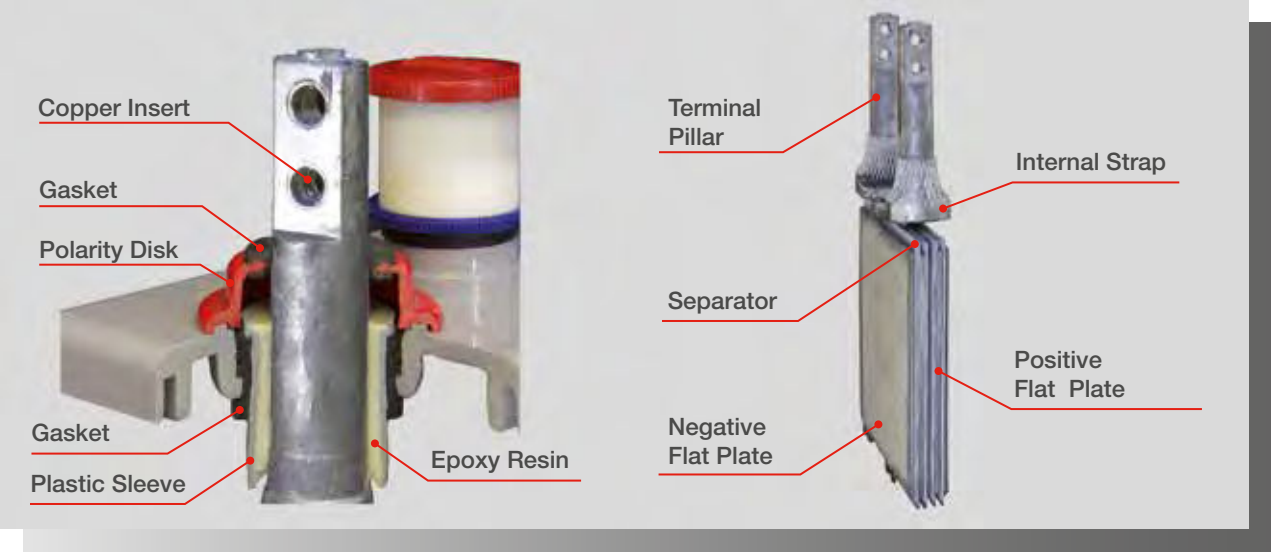

UTILITIES AND INDUSTRY


OIL & GAS

SPECIFICATIONS

The flat plates design provides a larger active surface area; the result is maximum performance with a high rate discharge
Electrolyte: sulphuric acid electrolyte with specific gravity of 1.27 kg/l at 20°C
Low internal resistance due to high porosity sepatators
Robust box construction made of SAN with a flame retardant ABS lid
Flameproof vent plugs made of porous materials for superior safety
Long shelf life of up to six months is possible without recharge (<2% discharge per month)
Flat post is designed for high contact area with rigid connection
Rigid copper connections to allow higher currents

TECHNOLOGY



THE UNIQUE FIAMM TERMINAL DESIGN PERMITS PILLAR GROWTH DURING CELL LIFE WITHOUT LEAKAGE. THE SD-SDH RANGE HAS A DESIGN LIFE IS 15 YEARS DUE TO HIGH RELIABILITY AND COMPONENTS MANUFACTURE PROCESS.

LOW SELF-DISCHARGE ALLOWS UP TO 6 MONTHS WITHOUT RECHARGE IN OPEN CIRCUIT CONDITION. ALL SD-SDH MODELS ARE AVAILABLE IN A DRY CHARGE VERSION.

CELL TYPE	NOMINAL CAPACITY (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	NOMINAL DIMENSION (mm)			ELECTROLYTE QUANTITY (liters)	TYPICAL WEIGHT (with electrolyte) (kg)
	10H to 1.8VPC at 20°C	IEC 60896-11	IEC 60896-11	Lenght	Width	Height		
SD 5	80	1280	1.625	103	206	423	4.4	13.8
SD 7	120	1920	1.083	103	206	423	4.0	15.5
SD 9	160	2560	0.813	124	206	423	5.2	17.5
SD 11	200	3200	0.650	124	206	423	4.8	20.5
SD 13	240	3840	0.542	145	206	423	6.0	23.5
SD 15	280	4480	0.464	145	206	423	6.0	26.3
SD 17	320	5120	0.406	187	206	423	8.0	29.5
SD 19	360	5760	0.361	187	206	423	7.7	30.6
SD 21	400	6400	0.325	187	206	423	7.6	32.0
SD 23	440	7040	0.295	187	206	423	7.4	35.0
SDH 13	480	4800	0.438	145	206	710	10.9	43.9
SDH 15	560	5600	0.375	145	206	710	10.5	46.7
SDH 17	640	6400	0.330	210	191	710	15.2	57.0
SDH 19	720	7200	0.292	210	191	710	14.4	59.5
SDH 21	800	8000	0.263	210	191	710	14.4	66.8
SDH 23	880	8800	0.239	210	233	710	18.4	71.0
SDH 25	960	9600	0.219	210	233	710	17.6	78.8
SDH 27	1040	10400	0.202	210	233	710	16.8	76.0
SDH 29	1120	11200	0.188	210	275	710	20.8	92.6
SDH 31	1200	12000	0.175	210	275	710	20.4	95.4
SDH 33	1280	12800	0.164	210	275	710	20.0	98.2
SDH 35	1360	13600	0.154	210	275	710	19.6	101
SDH 37	1440	14400	0.146	218	368	687	36.8	117
SDH 39	1520	15200	0.138	218	368	687	34.8	121
SDH 41	1600	16000	0.131	218	368	687	33.1	124
SDH 43	1680	16800	0.125	218	368	687	30.8	128
SDH 45	1760	17600	0.119	218	368	687	29.2	131
SDH 47	1840	18400	0.114	218	368	687	24.8	135
SDH 49	1920	19200	0.109	218	368	687	27.1	138
SDH 51	2000	20000	0.105	218	448	687	36.0	150
SDH 53	2080	20800	0.101	218	448	687	35.2	152
SDH 55	2160	21600	0.097	218	448	687	33.6	157
SDH 57	2240	22400	0.094	218	448	687	32.8	161
SDH 59	2320	23200	0.091	218	448	687	31.5	164

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

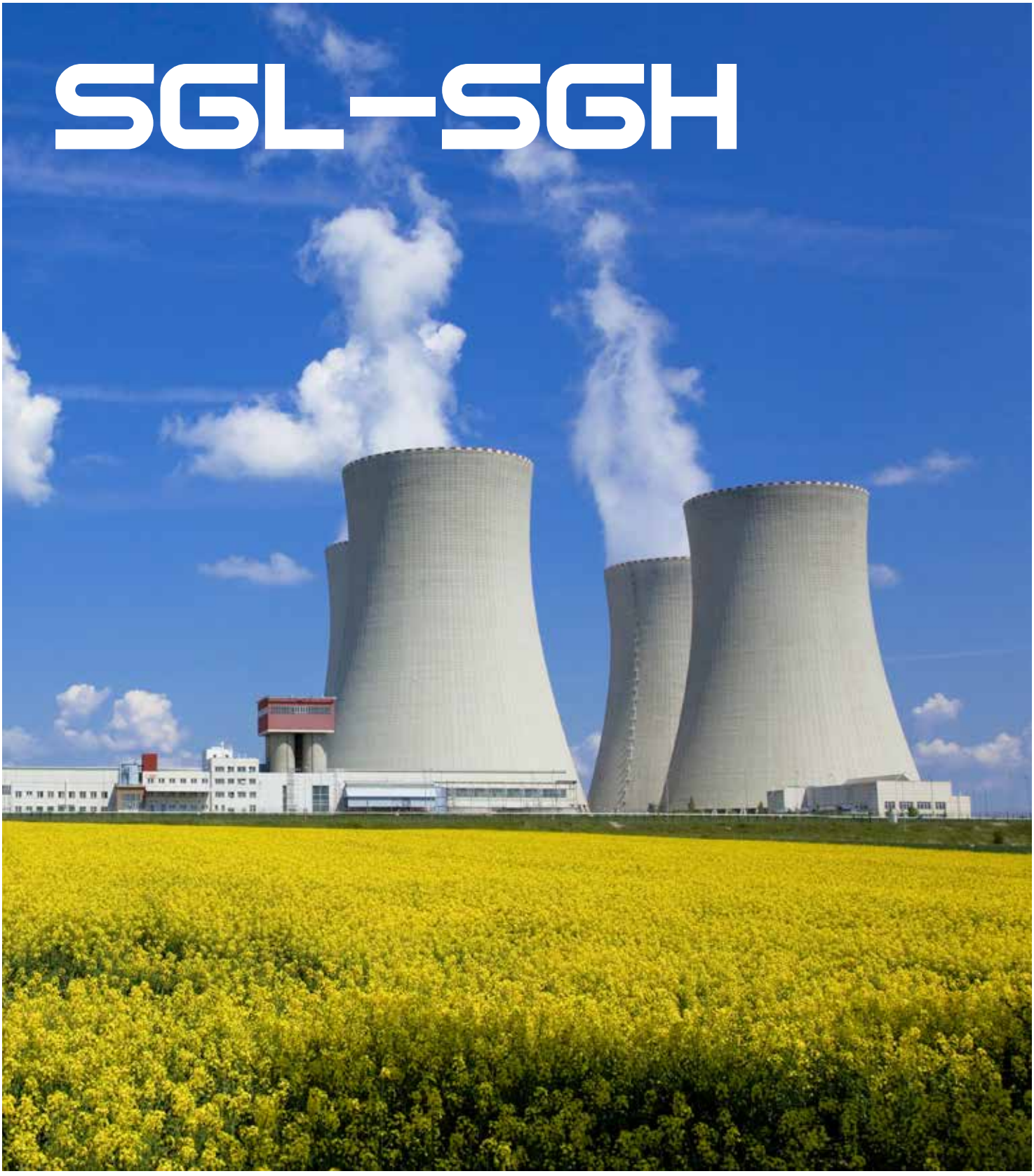
Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
SD 5	57,7	39,4	19,6	13,7	9,81	8,33
SD 7	86,5	59,1	29,4	20,6	14,7	12,5
SD 9	115	78,8	39,2	27,4	19,6	16,7
SD 11	144	98,5	49,0	34,3	24,5	20,8
SD 13	173	118	58,8	41,2	29,4	25,0
SD 15	202	138	68,6	48,0	34,3	29,1
SD 17	231	158	78,5	54,9	39,2	33,3
SD 19	260	177	88,3	61,7	44,1	37,5
SD 21	288	197	98,1	68,6	49,1	41,6
SD 23	317	217	108	75,5	54,0	45,8
SDH 13	338	253	122	81,6	57,1	49,3
SDH 15	394	296	143	95,1	66,6	57,5
SDH 17	450	338	163	109	76,1	65,7
SDH 19	507	380	183	122	85,6	73,9
SDH 21	563	422	204	136	95,1	82,1
SDH 23	619	465	224	150	105	90,3
SDH 25	676	507	245	163	114	98,5
SDH 27	732	549	265	177	124	107
SDH 29	788	591	285	190	133	115
SDH 31	845	633	306	204	143	123
SDH 33	901	676	326	217	152	131
SDH 35	957	718	347	231	162	140
SDH 37	1014	760	367	245	171	148
SDH 39	1070	802	387	258	181	156
SDH 41	1126	845	408	272	190	164
SDH 43	1183	887	428	285	200	172
SDH 45	1239	929	449	299	209	181
SDH 47	1247	929	467	317	219	189
SDH 49	1301	969	487	331	229	197
SDH 51	1356	1010	507	345	239	205
SDH 53	1410	1050	528	358	248	213
SDH 55	1464	1090	548	372	258	222
SDH 57	1518	1131	568	386	267	230
SDH 59	1572	1171	588	400	277	238

Constant Power discharge curves (W)

End of discharge voltage: 1.67 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
SD 5	271	225	190	130	84,2	39,4
SD 7	407	337	284	195	126	59,1
SD 9	542	449	379	260	168	78,8
SD 11	678	562	474	325	211	98,5
SD 13	814	674	569	390	253	118
SD 15	949	786	663	455	295	138
SD 17	1085	898	758	520	337	158
SD 19	1221	1011	853	585	379	177
SD 21	1356	1123	948	650	421	197
SD 23	1492	1235	1043	714	463	217
SDH 13	1321	1156	1027	764	521	242
SDH 15	1541	1349	1198	891	608	282
SDH 17	1761	1541	1369	1018	695	323
SDH 19	1982	1734	1540	1146	781	363
SDH 21	2202	1927	1712	1273	868	404
SDH 23	2422	2119	1883	1400	955	444
SDH 25	2642	2312	2054	1527	1042	484
SDH 27	2862	2504	2225	1655	1129	525
SDH 29	3083	2697	2396	1782	1215	565
SDH 31	3303	2890	2567	1909	1302	605
SDH 33	3523	3082	2739	2036	1389	646
SDH 35	3743	3275	2910	2164	1476	686
SDH 37	3963	3468	3081	2291	1563	726
SDH 39	4183	3660	3252	2418	1650	767
SDH 41	4404	3853	3423	2546	1736	807
SDH 43	4624	4046	3594	2673	1823	847
SDH 45	4844	4238	3766	2800	1910	888
SDH 47	4765	4181	3741	2823	1964	922
SDH 49	4972	4363	3904	2946	2050	962
SDH 51	5179	4545	4066	3069	2135	1002
SDH 53	5386	4727	4229	3192	2221	1042
SDH 55	5593	4909	4392	3314	2306	1083
SDH 57	5800	5090	4554	3437	2391	1123
SDH 59	6008	5272	4717	3560	2477	1163

SGL-SGH



SGL-SGH Battery Range

FIAMM

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THE SGL-SGH BATTERY SERIES THE REFERENCE RANGE IN TERMS OF GROE VENTED BATTERIES FOR FIAMM AND DESIGNED TO MEET DIN 40738 NORM.

SGL SGH CELLS DIFFERENTIATE FROM TRADITIONAL FLOODED BATTERIES THROUGH PLANTÉ POSITIVE PURE LEAD PLATE WHICH BRINGS A UNIQUE LAMINATE DESIGN. THE ROBUST DESIGN IS CONSTRUCTED TO PROVIDE A DEEP DISCHARGE AND HIGH RATE PERFORMANCES WITH AN UNSURPASSED DESIGN LIFE OF 25 YEARS. THE PURE LEAD POSITIVE ALLOY PLATE GRANTS A VERY LOW WATER CONSUMPTION THAT MEANS LIMITED MAINTENANCE DURING PRODUCT LIFE (SINGLE TOPPING UP IN 3 YEARS IN FLOAT CONDITIONS); THE DESIGN IS OPTIMIZED TO LIMIT THE SELF-DISCHARGE DURING THE STORAGE PERIOD. THE RANGE IS FULLY ECO-FRIENDLY WITH ALL COMPONENTS BEING FULLY RECYCLABLE.

MAIN APPLICATIONS:


INDUSTRIAL UPS


UTILITIES AND INDUSTRY

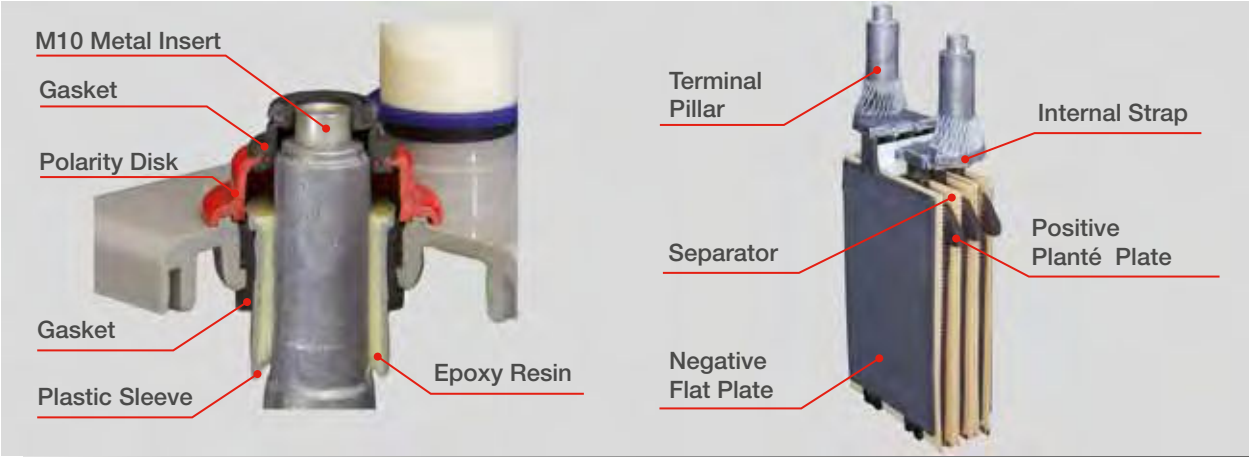

OIL & GAS

SPECIFICATIONS

The positive Planté plate is composed of 99.9% pure lead resulting in low capacity loss during life and excellent corrosion resistance
A complimentary and robust negative flat plate compriding of an armoured grid provides high reliability
Electrolyte: sulphuric acid electrolyte with low specific gravity of 1.22 kg/l at 20°C
Low internal resistant due to high porosity separators material
Transparent SAN box provides an immediate inspection of electrolyte level
The lid is composed of ABS plastic with a handy service hole to permit a quick and easy measurements of the electrolyte density
The vent plug is made of porous flameproof material for a superior safety
A long shelf life of up to six months is possible without recharge (<2% discharge per month)
The metallic threaded insert on terminals ensures the highest conductivity and provides maximum torque retention and easy installation*
Flexible connections ensure a safe link between terminals*
The connecting bolt is fully insulated but with probe hole on the top to grant electrical measurements*

* SGL SGH range is available also with flat pillars. This version uses rigid connection and standard stainless steel screws.

TECHNOLOGY



THE CELL CONSTRUCTION PERMITS PLATE GROWTH DURING CELL LIFE WITHOUT LEAKAGE; IN FACT POSITIVE PLATES ARE SUSPENDED STANDING ON INTERNAL BOX BACKINGS. THIS TECHNICAL FEATURE ALLOWS THE POSITIVE PLATE GROWTH WITHOUT ANY MECHANICAL STRESS ON THE LID FOR ALL PRODUCT LIFE.

THE SGL SGH RANGE DESIGN LIFE IS 25 YEARS THANKS TO HIGH RELIABILITY AND ROBUST COMPONENTS MANUFACTURE. LOW SELF-DISCHARGE ALLOWS TILL 6 MONTHS WITHOUT RECHARGE IN OPEN CIRCUIT CONDITION. ALL SGL SGH MODELS ARE AVAILABLE IN A DRY CHARGE VERSION.

CELL TYPE	REFERENCE DIN 40738	NOMINAL CAPACITY (Ah) 10 H to 1.8VPC at 20°C	SHORT CIRCUIT CURRENT (A) IEC 60896-11	INTERNAL RESISTANCE (mOhm) IEC 60896-11	NOMINAL DIMENSION (mm) Lenght	Width	Height	ELECTROLYTE QUANTITY (liters)	TYPICAL WEIGHT (with electrolyte) (kg)
SGL 7	3 GroE 75	79	1630	1,216	182	153	415	5.4	17.5
SGL 9	4 GroE 100	105	2160	0,915	182	153	415	5.2	19.7
SGL 11	5 GroE 125	131	2700	0,733	182	153	415	5.1	21.9
SGL 13	6 GroE 150	155	3190	0,620	182	153	415	4.9	24.1
SGL 15	7 GroE 175	183	3770	0,525	182	153	415	4.8	26.3
SGL 17	8 GroE 200	209	4300	0,460	182	228	415	7.7	33.2
SGL 19	9 GroE 225	235	4840	0,409	182	228	415	7.5	35.4
SGL 21	10 GroE 250	261	5380	0,368	182	228	415	7.4	37.6
SGL 23	11 GroE 275	287	5910	0,335	182	228	415	7.2	39.8
SGL 25	12 GroE 300	314	6470	0,306	182	228	415	7.0	42.0
SGL 27	13 GroE 325	340	7000	0,283	182	340	415	11.6	52.5
SGL 29	14 GroE 350	366	7540	0,263	182	340	415	11.3	54.6
SGL 31	15 GroE 375	392	8070	0,245	182	340	415	11.1	56.7
SGL 33	16 GroE 400	418	8610	0,230	182	340	415	10.9	58.9
SGL 35	17 GroE 425	444	9150	0,216	182	340	415	10.6	61.0
SGL 37	18 GroE 450	470	9680	0,204	182	340	415	10.3	63.0
SGH 11	5 GroE 500	550	8800	0.236	328	268	607	26.6	96
SGH 13	6 GroE 600	660	10560	0.197	328	268	607	26.4	106
SGH 15	7 GroE 700	770	12320	0.169	328	268	607	26.2	114
SGH 17	8 GroE 800	880	14080	0.148	328	268	607	25.4	123
SGH 19	9 GroE 900	990	15840	0.131	328	268	607	24.6	132
SGH 21	10 GroE 1000	1100	17600	0.118	328	268	607	23.8	141
SGH 23	11 GroE 1100	1210	19360	0.107	328	268	607	23.0	150
SGH 25	12 GroE 1200	1320	21120	0.098	328	348	607	32.0	174
SGH 27	13 GroE 1300	1430	22880	0.091	328	348	607	31.1	182
SGH 29	14 GroE 1400	1540	24640	0.084	328	348	607	30.3	191
SGH 31	15 GroE 1500	1650	26400	0.079	328	348	607	29.5	199
SGH 33	16 GroE 1600	1760	28160	0.074	328	438	607	40.2	225
SGH 35	17 GroE 1700	1870	29920	0.070	328	438	607	39.3	234
SGH 37	18 GroE 1800	1980	31680	0.066	328	438	607	38.5	242
SGH 39	19 GroE 1900	2090	33440	0.062	328	438	607	37.7	251
SGH 41	20 GroE 2000	2200	35200	0.059	328	438	607	36.9	259
SGH 43	21 GroE 2100	2310	36960	0.056	328	529	607	47.5	295
SGH 45	22 GroE 2200	2420	38720	0.054	328	529	607	46.7	303
SGH 47	23 GroE 2300	2530	40480	0.051	328	529	607	45.5	312
SGH 49	24 GroE 2400	2640	42240	0.049	328	529	607	45.1	320
SGH 51	25 GroE 2500	2750	44000	0.047	328	574	607	48.4	337
SGH 53	26 GroE 2600	2860	45760	0.045	328	574	607	47.5	346

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	30 min	1 hour	3 hours	5 hours	8 hours	10 hours
SGL 7	71,0	47,6	22,5	14,3	9,46	7,83
SGL 9	94,7	63,5	30,1	19,0	12,6	10,4
SGL 11	118	79,4	37,6	23,8	15,8	13,1
SGL 13	142	95,3	45,1	28,5	18,9	15,7
SGL 15	166	111	52,6	33,3	22,1	18,3
SGL 17	189	127	60,1	38,0	25,2	20,9
SGL 19	213	143	67,6	42,8	28,4	23,5
SGL 21	237	159	75,1	47,5	31,5	26,1
SGL 23	260	175	82,6	52,3	34,7	28,7
SGL 25	284	191	90,2	57,0	37,9	31,3
SGL 27	308	206	97,7	61,8	41,0	33,9
SGL 29	331	222	105	66,5	44,2	36,5
SGL 31	355	238	113	71,3	47,3	39,2
SGL 33	379	254	120	76,0	50,5	41,8
SGL 35	403	270	128	80,8	53,6	44,4
SGL 37	426	286	135	85,5	56,8	47,0
SGH 11	407	299	143	96,3	65,9	55,0
SGH 13	488	359	172	116	79,0	66,0
SGH 15	570	419	201	135	92,2	77,0
SGH 17	651	478	229	154	105	88,0
SGH 19	733	538	258	173	119	99,0
SGH 21	814	598	287	193	132	110
SGH 23	895	658	315	212	145	121
SGH 25	977	718	344	231	158	132
SGH 27	1058	777	373	250	171	143
SGH 29	1140	837	401	270	184	154
SGH 31	1221	897	430	289	198	165
SGH 33	1302	957	459	308	211	176
SGH 35	1384	1017	487	327	224	187
SGH 37	1465	1076	516	347	237	198
SGH 39	1547	1136	545	366	250	209
SGH 41	1628	1196	573	385	263	220
SGH 43	1709	1256	602	404	277	231
SGH 45	1791	1316	631	424	290	242
SGH 47	1872	1375	659	443	303	253
SGH 49	1954	1435	688	462	316	264
SGH 51	2035	1495	717	482	329	275
SGH 53	2116	1555	745	501	342	286

Constant Power discharge curves (W)

End of discharge voltage: 1.67 V/cell - Temperature: 25°C

Model	5 min	10 min	15 min	30 min	1 hour	3 hours
SGL 7	324	264	227	161	103	44,4
SGL 9	432	352	303	214	137	59,2
SGL 11	540	440	379	268	171	74,0
SGL 13	648	528	455	321	205	88,8
SGL 15	756	616	531	375	239	104
SGL 17	863	704	607	428	273	118
SGL 19	971	792	682	482	308	133
SGL 21	1079	880	758	535	342	148
SGL 23	1187	968	834	589	376	163
SGL 25	1295	1056	910	643	410	178
SGL 27	1403	1144	986	696	444	192
SGL 29	1511	1232	1061	750	478	207
SGL 31	1619	1320	1137	803	513	222
SGL 33	1727	1408	1213	857	547	237
SGL 35	1835	1496	1289	910	581	251
SGL 37	1943	1584	1365	964	615	266
SGH 11	1522	1382	1251	960	653	283
SGH 13	1827	1658	1501	1152	784	339
SGH 15	2131	1935	1751	1344	915	396
SGH 17	2436	2211	2001	1537	1045	452
SGH 19	2740	2487	2251	1729	1176	509
SGH 21	3045	2764	2502	1921	1307	565
SGH 23	3349	3040	2752	2113	1437	622
SGH 25	3654	3316	3002	2305	1568	678
SGH 27	3958	3593	3252	2497	1699	735
SGH 29	4263	3869	3502	2689	1830	791
SGH 31	4567	4145	3752	2881	1960	848
SGH 33	4872	4422	4002	3073	2091	904
SGH 35	5176	4698	4253	3265	2222	961
SGH 37	5481	4974	4503	3457	2352	1017
SGH 39	5785	5251	4753	3649	2483	1074
SGH 41	6090	5527	5003	3841	2614	1130
SGH 43	6394	5804	5253	4033	2744	1187
SGH 45	6698	6080	5503	4225	2875	1243
SGH 47	7003	6356	5754	4417	3006	1300
SGH 49	7307	6633	6004	4610	3136	1356
SGH 51	7612	6909	6254	4802	3267	1413
SGH 53	7916	7185	6504	4994	3398	1469

SMG Solar Battery Range

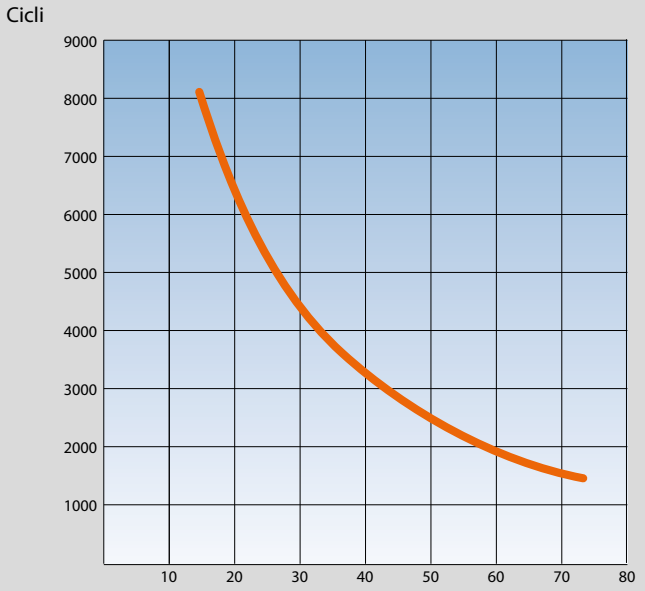
FIAMM

FIAMM.COM

THE FIAMM SMG/S TUBULAR GEL RANGE IS DESIGNED FOR HIGH CYCLIC APPLICATIONS COMBINED WITH RENEWABLE ENERGY SOURCES. THE BATTERIES MAINTENANCE-FREE AND COMBINE THE BENEFITS OF A GELLED ELECTROLYTE WHICH PROVIDES WIDER TEMPERATURE OPERATING RANGE.

THE SMG/S RANGE IS MADE UP OF 2V CELLS DESIGNED WITH POSITIVE ARMORED TUBULAR PLATE AND GEL TECHNOLOGY. IT IS CONSTRUCTED TO PROVIDE A HIGH LEVEL OF ROBUSTNESS AND IS DESIGNED FOR APPLICATIONS WHERE CHARGE-DISCHARGE CYCLES HAVE TO BE GUARANTEED WITH RELIABILITY. THE RANGE IS MAINTENANCE-FREE WITH A LOW SELF-DISCHARGE CHARACTERISTIC FOR PERIODS WHEN BATTERIES MAY BE STORED OR FOR OFF-FLOAT CHARGE. THE SMG/S RANGE CAN BE INSTALLED HORIZONTALLY IN DEDICATED RACKS SAVING VALUABLE SPACE AND IS ECO-FRIENDLY WITH ALL COMPONENTS BEING FULLY RECYCLABLE.

MAIN APPLICATIONS:



SPECIFICATIONS

The positive tubular grid is composed of a special alloy (Pb-Sn-Ca) which is die-cast to guarantee high corrosion resistance

The electrolyte is immobilized into GEL structure due to a special silica binding addition

Separators have extremely high porosity: this feature allows intense cyclic usage

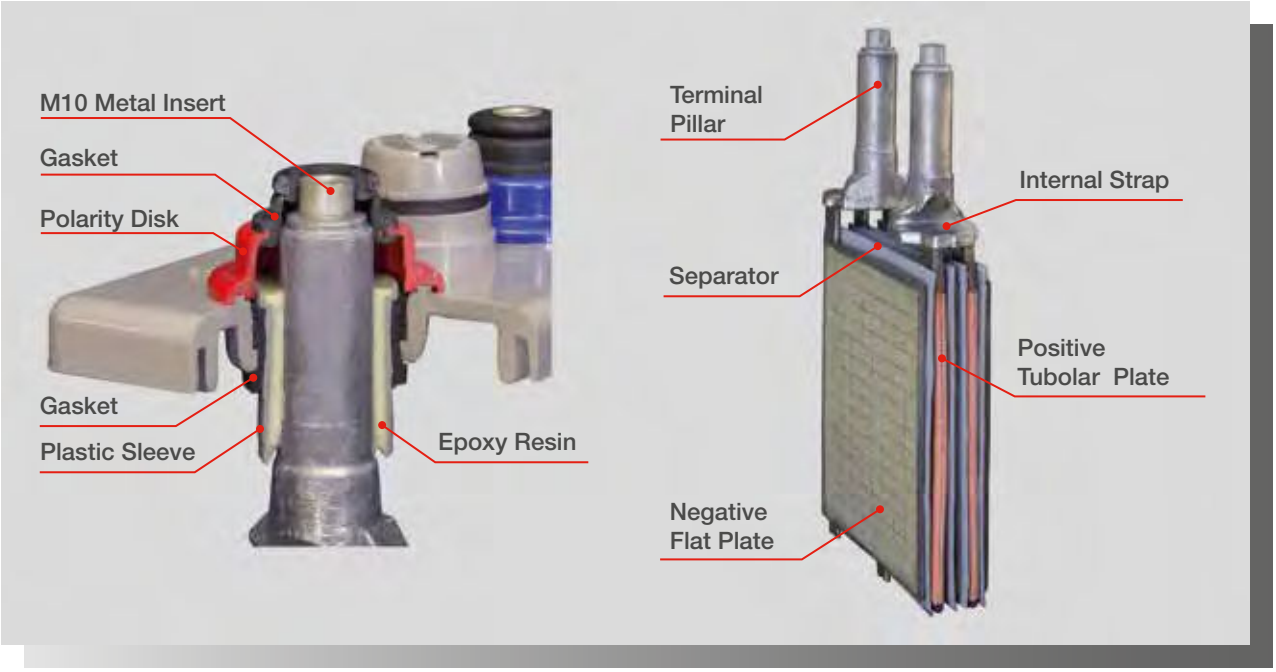
ABS flame retardant case classified to UL94 V0 with LOI >28% available on request

The vent plug comprises an exhaust valve and porous flameproof disc for a superior safety

The metallic threaded insert on terminals ensure the highest conductivity and provides maximum torque retention and easy installation

The connecting bolt is fully insulated but with probe hole on the top to grant electrical measurements

TECHNOLOGY



THE UNIQUE FIAMM TERMINAL DESIGN OF THE 2V CELL PERMITS PILLAR GROWTH DURING CELL LIFE WITHOUT LEAKAGE. THESE FEATURES AVOID MECHANICAL STRESS ON THE LID FOR THE ENTIRE LIFE OF THE CELL.

THE GEL ELECTROLYTE STRUCTURE SLOWS THE DRYING OUT OF THE CELL ENSURING CONSISTENT CYCLIC LIFE.
LOW SELF-DISCHARGE ALLOWS 6 MONTHS SHELF LIFE.

BATTERY TYPE	NOMINAL CAPACITY (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	NOMINAL DIMENSION (mm)			TYPICAL WEIGHT (kg)
	120 H at 1.85 VPC 20°C	IEC 60896 21-22	IEC 60896 21-22	Lenght	Width	Height	
SMG/S 265	265	2800	0.714	103	206	407	19.3
SMG/S 330	330	3650	0.571	124	206	407	23.3
SMG/S 400	400	4250	0.476	145	206	407	27.0
SMG/S 460	460	3560	0.572	124	206	523	30.4
SMG/S 570	570	4200	0.476	145	206	523	33.8
SMG/S 660	660	4950	0.409	166	206	523	39.6
SMG/S 860	860	6200	0.322	145	206	698	49.2
SMG/S 1150	1150	7100	0.285	210	191	700	65.6
SMG/S 1440	1440	8800	0.228	210	233	700	81.6
SMG/S 1720	1720	10500	0.190	210	275	700	96.5
SMG/S 2000	2000	11700	0.170	210	275	849	113
SMG/S 2330	2330	13850	0.135	212	399	826	137
SMG/S 2600	2600	15700	0.128	212	399	826	153
SMG/S 2940	2940	17900	0.108	212	487	826	174
SMG/S 3300	3300	20000	0.102	212	487	826	192
SMG/S 3580	3580	23000	0.100	212	576	826	211
SMG/S 3900	3900	23500	0.086	212	576	826	229
SMG/S 4240	4240	25050	0.078	212	576	826	244

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	12 hours	24 hour	48 hours	72 hours	96 hours	120 hours
SMG/S 265	18,9	9,98	5,19	3,92	3,10	2,28
SMG/S 330	23,6	12,5	6,49	4,90	3,87	2,84
SMG/S 400	28,3	15,0	7,80	5,89	4,65	3,42
SMG/S 460	32,6	17,3	8,98	6,78	5,36	3,94
SMG/S 570	39,5	20,9	10,9	8,20	6,48	4,76
SMG/S 660	45,6	24,1	12,6	9,48	7,49	5,51
SMG/S 860	62,2	33,1	17,2	12,9	10,1	7,36
SMG/S 1150	82,8	44,1	22,9	17,2	13,5	9,80
SMG/S 1440	104	55,2	28,7	21,6	16,9	12,3
SMG/S 1720	124	66,2	34,4	25,9	20,3	14,7
SMG/S 2000	146	77,4	40,2	30,1	23,6	17,0
SMG/S 2330	175	92,4	48,0	36,0	28,1	20,3
SMG/S 2600	196	104	53,8	40,4	31,6	22,8
SMG/S 2940	219	116	60,3	45,2	35,4	25,5
SMG/S 3300	244	129	67,0	50,2	39,3	28,4
SMG/S 3580	268	142	73,7	55,2	43,2	31,2
SMG/S 3900	292	154	80,2	60,1	47,0	34,0
SMG/S 4240	317	168	87,1	65,3	51,1	36,9

Constant Current discharge curves (A)

End of discharge voltage: 1.85 V/cell - Temperature: 20°C

Model	12 hours	24 hour	48 hours	72 hours	96 hours	120 hours
SMG/S 265	17,9	9,37	4,94	3,78	3,03	2,28
SMG/S 330	22,4	11,7	6,17	4,72	3,78	2,84
SMG/S 400	26,9	14,1	7,42	5,68	4,55	3,42
SMG/S 460	31,0	16,2	8,55	6,53	5,23	3,93
SMG/S 570	37,4	19,6	10,3	7,90	6,33	4,76
SMG/S 660	43,3	22,7	12,0	9,14	7,32	5,50
SMG/S 860	58,4	31,7	16,7	12,6	9,98	7,35
SMG/S 1150	77,8	42,3	22,2	16,8	13,3	9,79
SMG/S 1440	97,3	52,9	27,8	21,0	16,6	12,2
SMG/S 1720	117	63,4	33,3	25,2	20,0	14,7
SMG/S 2000	136	74,2	38,9	29,4	23,2	17,0
SMG/S 2330	163	88,5	46,5	35,1	27,7	20,3
SMG/S 2600	182	99,3	52,1	39,3	31,1	22,8
SMG/S 2940	204	111	58,4	44,0	34,8	25,5
SMG/S 3300	227	124	64,9	48,9	38,6	28,3
SMG/S 3580	250	136	71,4	53,8	42,5	31,2
SMG/S 3900	272	148	77,6	58,6	46,2	33,9
SMG/S 4240	295	161	84,3	63,6	50,2	36,8

LM Solar Battery Range

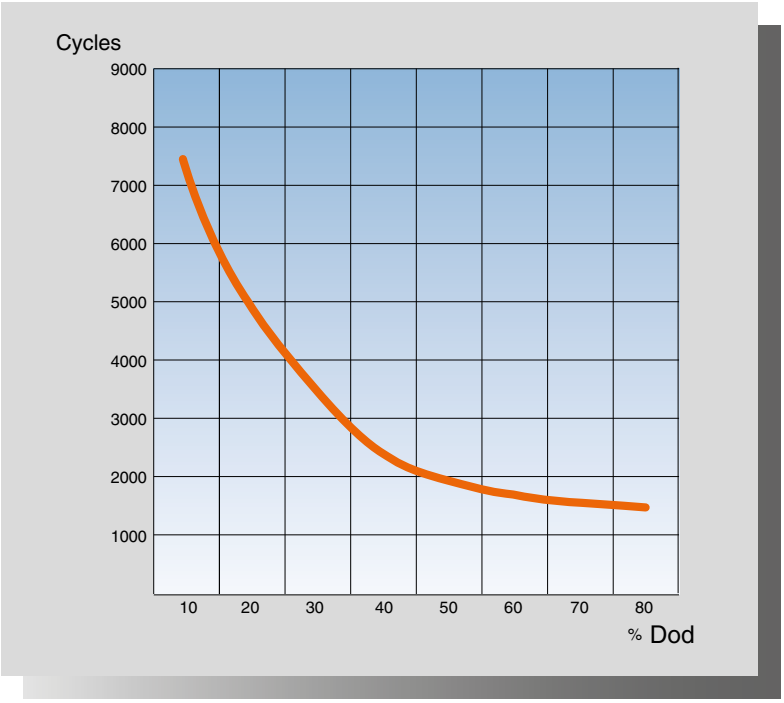
FIAMM

FIAMM.COM

THE LM/S BATTERY SERIES IS A VENTED RANGE DESIGNED BY FIAMM TO MEET THE NEEDS OF STORED ENERGY IN RENEWABLE APPLICATIONS.

ALL PRODUCTS HAVE BEEN DESIGNED TO PROVIDE USERS WITH A HIGHLY ROBUST PRODUCT FAMILY. THE RANGE HAS BEEN DEVELOPED FOR APPLICATIONS WHERE DISCHARGE CYCLES NEED TO BE OF THE HIGHEST LEVELS OF RELIABILITY. HIGH PERFORMANCE IS THE RESULT OF A LOW ANTIMONY ALLOY PLATE WHICH PROVIDES VERY LOW WATER CONSUMPTION OVER THE LIFE OF THE PRODUCT. UNDER NORMAL FLOAT OPERATING CONDITIONS FIAMM BATTERY REQUIRES LOW TOPPING-UP (ONCE EVERY THREE YEARS). FURTHERMORE THE DESIGN HAS BEEN OPTIMIZED TO LOWER SELF-DISCHARGE DURING STORAGE. ALL OF THESE OUTSTANDING FEATURES ADD UP TO A LONGER LIFE PRODUCT WITH LOWER MAINTENANCE COSTS. LIKE ALL FIAMM LEAD-ACID BATTERIES THE LM/S RANGE IS ECO-FRIENDLY AND FULLY RECYCLABLE.

MAIN APPLICATIONS:



SPECIFICATIONS

The positive tubular grid is composed of a special alloy (Pb-Sb) which is die-cast to guarantee high corrosion resistance and low water consumption (1 topping up in 3 years in float conditions)

Electrolyte: sulphuric acid electrolyte with specific gravity of 1.24kg/l at 20°C

Extremely high porosity separators allow intense cyclic usage

Robust design thanks to high mechanical polymers properties; box made of SAN and with an ABS lid

The vent plug is made of porous flameproof material for a superior safety

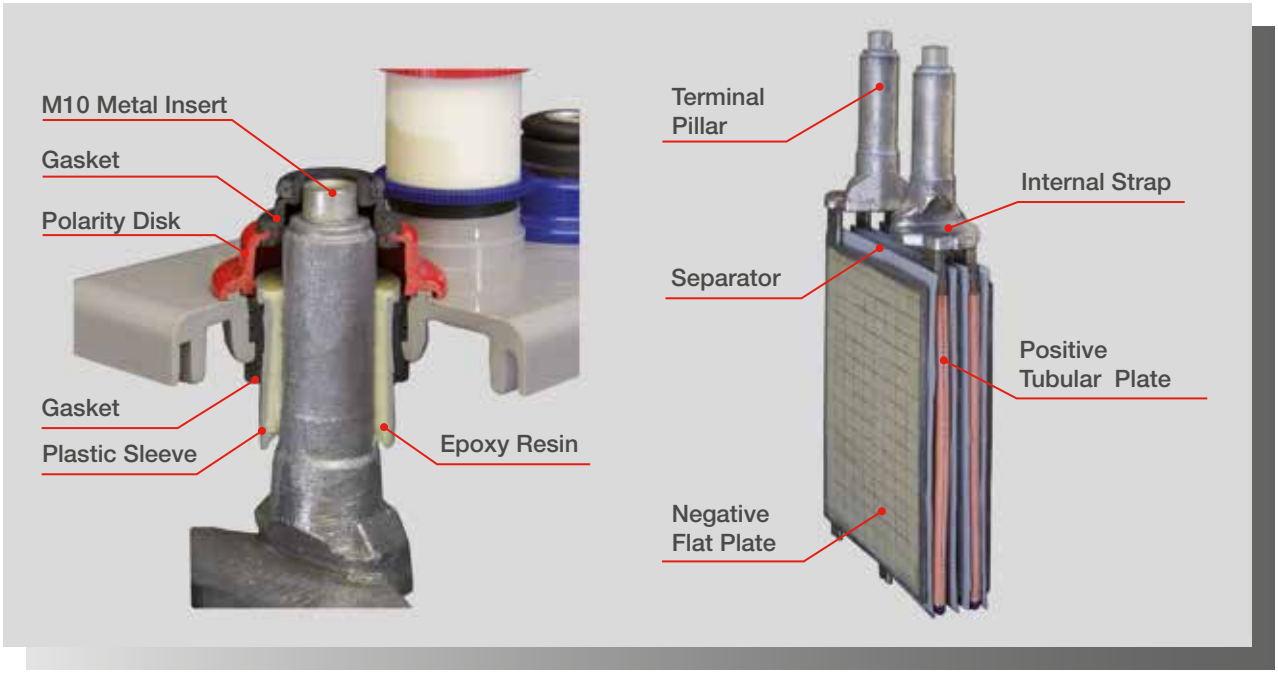
A long shelf life of up to six months is possible without recharge (<2% discharge per month)

The metallic threaded insert on terminals ensures the highest conductivity and provides easy installation and maximum torque retention

Flexible connections ensure a safe & easy link between terminals

The connecting bolt is fully insulated but with probe hole on the top to grant electrical measurements

TECHNOLOGY



THE UNIQUE FIAMM TERMINAL DESIGN PERMITS PILLAR GROWTH DURING CELL LIFE WITHOUT LEAKAGE. THIS FEATURES AVOID MECHANICAL STRESS ON THE LID FOR THE ENTIRE LIFE OF THE CELL.

THE LM/S RANGE BEARS INTENSE CYCLIC USAGE THROUGH HIGH RELIABILITY AND COMPONENTS MANUFACTURE PROCESS.
ALL LM MODELS ARE AVAILABLE IN A DRY CHARGE VERSION.

BATTERY TYPE	NOMINAL CAPACITY (Ah)	SHORT CIRCUIT CURRENT (A)	INTERNAL RESISTANCE (mOhm)	NOMINAL DIMENSION (mm)			ELECTROLYTE QUANTITY (liters)	TYPICAL WEIGHT (with electrolyte) (kg)
	120 H 1.85 VPC 20°C	IEC 60896-11	IEC 60896-11	Lenght	Width	Height		
LM/S 150	150	1220	1.860	103	206	420	4.4	14.3
LM/S 220	220	1840	1.240	103	206	420	4.0	16.0
LM/S 290	290	2330	0.857	103	206	420	3.8	17.7
LM/S 360	360	2650	0.745	124	206	420	5.0	21.5
LM/S 435	435	3170	0.620	145	206	420	5.7	25.2
LM/S 510	510	3090	0.641	124	206	536	6.6	28.8
LM/S 610	610	3700	0.534	145	206	536	7.5	33.2
LM/S 710	710	4320	0.458	166	206	536	8.7	38.2
LM/S 870	870	4470	0.456	145	206	711	12.8	45.5
LM/S 1020	1020	5210	0.391	210	191	711	15.7	59.7
LM/S 1160	1160	5980	0.342	210	191	711	13.5	63.1
LM/S 1310	1310	6700	0.304	210	233	711	23.1	72.6
LM/S 1450	1450	7450	0.273	210	233	711	18.5	76.0
LM/S 1740	1740	8940	0.227	210	275	711	23.2	90.5
LM/S 2200	2200	10000	0.204	210	275	861	27.7	111
LM/S 2550	2550	11660	0.174	214	399	837	36.5	144
LM/S 2750	2750	12490	0.163	214	399	837	35	149
LM/S 2900	2900	13330	0.153	214	399	837	40.2	153
LM/S 3260	3260	14990	0.136	212	487	837	45.8	184
LM/S 3625	3625	16660	0.122	212	487	837	42.4	190
LM/S 4300	4300	19990	0.102	212	576	837	55.3	225
LM/S 5000	5000	23320	0.088	212	576	837	58	252

Constant Current discharge curves (A)

End of discharge voltage: 1.80 V/cell - Temperature: 20°C

Model	12 hours	24 hour	48 hours	72 hours	96 hours	120 hours
LM/S 150	9,94	5,16	3,55	1,94	1,53	1,26
LM/S 220	14,9	7,57	5,21	2,85	2,25	1,85
LM/S 290	19,8	9,98	6,87	3,76	2,96	2,43
LM/S 360	24,7	12,4	8,52	4,66	3,68	3,02
LM/S 435	29,7	15,0	10,3	5,63	4,45	3,65
LM/S 510	35,7	17,6	12,1	6,61	5,21	4,28
LM/S 610	42,8	21,1	14,5	7,90	6,24	5,12
LM/S 710	49,9	24,4	16,8	9,20	7,26	5,96
LM/S 870	57,9	29,9	20,6	11,3	8,89	7,30
LM/S 1020	67,5	35,1	24,2	13,2	10,4	8,56
LM/S 1160	77,2	39,9	27,5	15,0	11,9	9,73
LM/S 1310	86,8	45,1	31,0	17,0	13,4	11,0
LM/S 1450	96,4	49,9	34,3	18,8	14,8	12,2
LM/S 1740	116	59,9	41,2	22,5	17,8	14,6
LM/S 2200	145	75,7	52,1	28,5	22,5	18,5
LM/S 2550	169	87,8	60,4	33,0	26,1	21,4
LM/S 2750	181	94,6	65,1	35,6	28,1	23,1
LM/S 2900	193	99,8	68,7	37,6	29,6	24,3
LM/S 3260	217	112	77,2	42,2	33,3	27,4
LM/S 3625	241	125	85,9	46,9	37,1	30,4
LM/S 4300	289	148	102	55,7	44,0	36,1
LM/S 5000	323	172	118	64,8	51,1	42,0

Constant Current discharge curves (A)

End of discharge voltage: 1.85 V/cell - Temperature: 20°C

Model	12 hours	24 hour	48 hours	72 hours	96 hours	120 hours
LM/S 150	9,48	5,07	3,50	1,93	1,52	1,25
LM/S 220	14,2	7,43	5,13	2,83	2,23	1,83
LM/S 290	18,9	9,80	6,76	3,73	2,94	2,42
LM/S 360	23,6	12,2	8,40	4,63	3,65	3,00
LM/S 435	28,3	14,7	10,1	5,59	4,42	3,63
LM/S 510	31,2	17,0	11,8	6,56	5,18	4,25
LM/S 610	36,6	20,0	13,9	7,85	6,19	5,08
LM/S 710	42,6	23,4	16,3	9,13	7,21	5,92
LM/S 870	54,4	29,4	20,3	11,2	8,83	7,25
LM/S 1020	63,5	34,5	23,8	13,1	10,4	8,50
LM/S 1160	72,5	39,2	27,1	14,9	11,8	9,67
LM/S 1310	81,6	44,3	30,6	16,8	13,3	10,9
LM/S 1450	90,6	49,0	33,8	18,6	14,7	12,1
LM/S 1740	109	58,8	40,6	22,4	17,7	14,5
LM/S 2200	135	74,3	51,3	28,3	22,3	18,3
LM/S 2550	157	86,2	59,5	32,8	25,9	21,3
LM/S 2750	169	92,9	64,1	35,4	27,9	22,9
LM/S 2900	180	98,0	67,6	37,3	29,4	24,2
LM/S 3260	202	110	76,0	41,9	33,1	27,2
LM/S 3625	225	122	84,6	46,6	36,8	30,2
LM/S 4300	269	145	100	55,3	43,7	35,8
LM/S 5000	301	169	117	64,3	50,8	41,7

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