

FLB



FLB Battery Range

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Reserve
Power Solutions

F IAMM FLB RANGE OF VALVE REGULATED BATTERIES HAS BEEN DESIGNED TO DELIVER THE HIGHEST PERFORMANCES WHILST COMBINING EXCELLENT RELIABILITY AND FLOAT-LIFE.

FLB HIGH ENERGY DENSITY ALLOWS COMPACT BATTERY LAYOUT AND FOOTPRINTS, THUS 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.



MAIN APPLICATIONS:



SPECIFICATIONS

High purity lead calcium tin grid plates, 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.

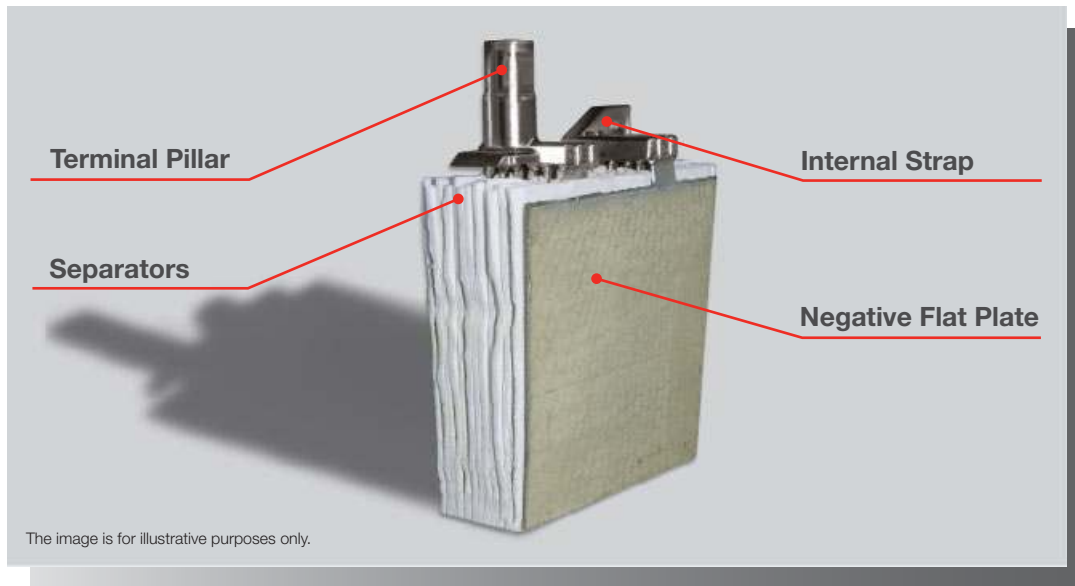
Flame arrestors prevent sparks or flames entering the battery

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 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)	POWER (W) 15 min to 1.67 VPC at 25°C	CAPACITY (Ah) 20 hrs to 1.75 VPC at 25°C	SHORT CIRCUIT CURRENT (A) IEC 60896 21-22	INTERNAL RESISTANCE (mOhm) IEC 60896 21-22	DIMENSIONS (mm)			WEIGHT (kg)
						Length	Width	Height	
12 FLB 100 P	12	103	26	768	16.4	166	175	125	9.4
12 FLB 150 P	12	156	40	1320	9.4	197	165	170	14
12 FLB 200 P	12	204	55	1550	8.3	229	138	212	19
12 FLB 250 P	12	257	70	2590	5.1	272	166	195	22
12 FLB 300 P	12	311	80	2600	4.7	261	174	218	27
12 FLB 350 P	12	374	95	3100	4.0	302	174	218	30
12 FLB 400 P	12	415	105	3400	3.6	341	174	218	34
12 FLB 450 P	12	477	120	3900	3.2	379	174	218	38
12 FLB 540 P	12	540	150	3660	3.4	338	174	277.5	45
12 FLB 700 P	12	710	210	4510	2.8	558	126	320	61
12 FLB 800 P	12	792	200	5530	2.3	500	226	235	64
6 FLB 800 P	6	792	200	5000	1.3	321	177	227	34

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

BS 6290 Part 4 - specifications for VRLA classification

Eurobat "10/12 years LONG LIFE"

CERTIFICATIONS

ISO 9001
Quality Management System

ISO 14001
Environmental Management System

OHSAS 18001
Workplace Safety & Health

ACCESSORIES

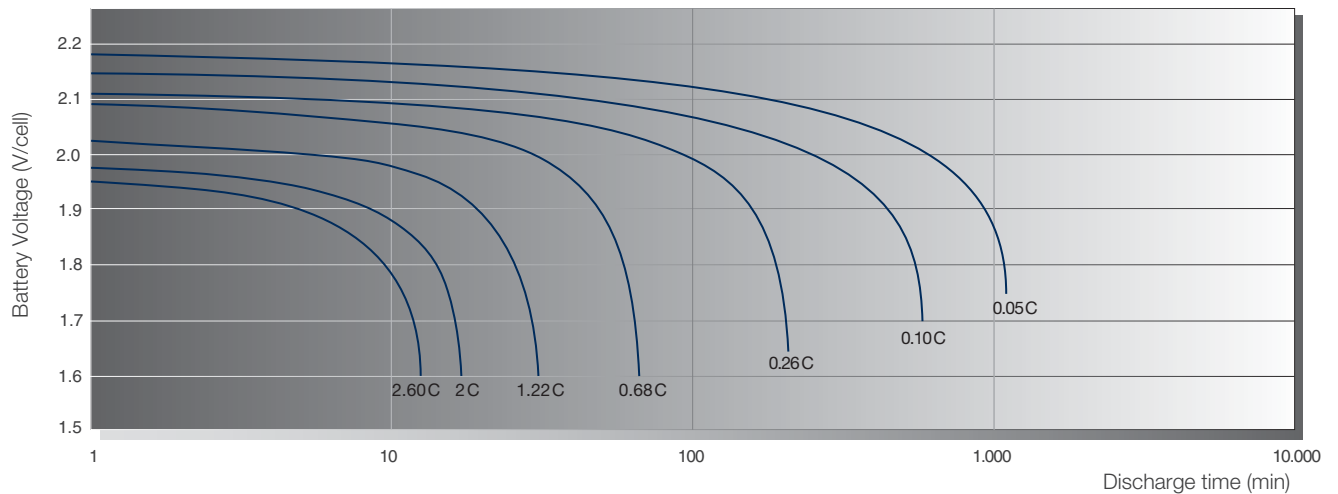
RVS
(remote venting system) for IP rated applications which require remote gassing (except for 12FLB150P - 200P)

Rack for battery installation
(standard and seismic)

Cabinets for battery installation
(including electrical protections and disconnection)

Battery monitoring systems

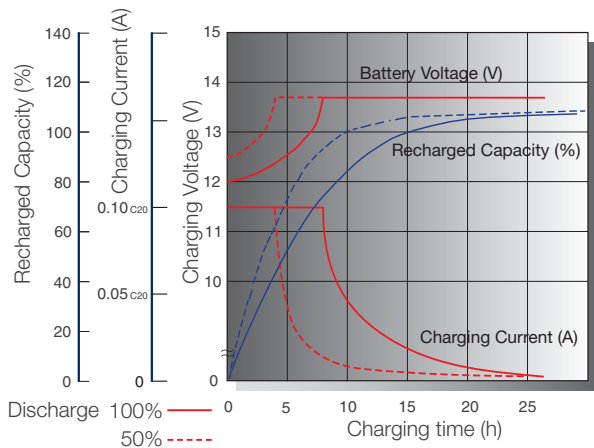
DISCHARGE CURVES at different current / final voltage (at 25°C)



The above discharge curves are typical. For more detailed information please see the specific product sheets.

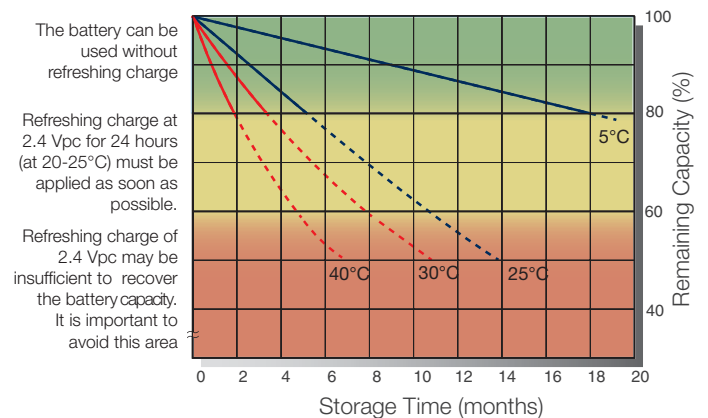
TYPICAL CHARGE CURVES

Battery Voltage and Charge Time for Standby Use (at 25°C)



STORAGE

Capacity loss during storage at various temperatures



FIAMM S.p.A.
Viale Europa, 75 - 36075 Montecchio Maggiore (VI) - ITALY
TEL +39 0444 709311 - Fax +39 0444 694178

e-mail: info.standby@fiamm.com
www.fiamm.com
f [fiamm.batteries](https://www.facebook.com/fiamm.batteries)
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FLB RANGE - CONSTANT POWER DISCHARGE DATA

Watt per cell to 1.60 VPC (at 25 °C)																	
TYPE	5	10	15	20	25	30	45	60	90	120	180	240	300	360	480	600	1200
12 FLB 100	196	131	104	87.1	74.9	66.0	47.8	37.6	25.6	19.9	13.5	10.4	8.62	7.30	5.74	4.85	2.65
12 FLB 150	300	207	159	130	109	95.0	68.7	53.8	36.8	28.9	20.8	16.1	13.3	11.2	8.82	7.46	4.07
12 FLB 200	371	261	209	170	145	127	93.0	74.2	50.1	38.8	28.6	22.1	18.2	15.4	12.1	10.3	5.60
12 FLB 250	515	350	263	212	178	154	110	88.0	61.9	49.6	35.6	27.8	23.2	19.8	15.4	13.0	7.13
12 FLB 300	588	408	316	259	219	189	136	107	73.6	57.7	39.0	30.1	24.9	21.0	16.5	14.0	7.63
12 FLB 350	705	489	380	311	263	227	163	129	88.3	69.2	46.8	36.1	29.8	25.3	19.9	16.8	9.16
12 FLB 400	783	543	422	345	292	253	181	143	98.1	76.9	52.0	40.1	33.2	28.1	22.1	18.6	10.2
12 FLB 450	901	625	485	397	336	290	208	165	113	88.4	59.8	46.2	38.1	32.3	25.4	21.4	11.7
12 FLB 540	902	666	534	441	383	335	244	191	131	103	72.3	55.6	45.8	39.2	33.1	28.0	15.3
12 FLB 700	959	888	750	609	520	453	334	273	200	166	124	94.4	77.2	65.4	51.3	43.8	23.9

Watt per cell to 1.65 VPC (at 25 °C)																	
Time (min.)	5	10	15	20	25	30	45	60	90	120	180	240	300	360	480	600	1200
12 FLB 100	188	127	103	86.3	74.2	65.5	47.5	37.4	25.4	19.7	13.5	10.4	8.59	7.28	5.73	4.83	2.64
12 FLB 150	291	204	157	128	108	94.3	68.5	53.5	36.6	28.6	20.7	16.0	13.2	11.2	8.81	7.43	4.06
12 FLB 200	360	259	207	168	143	126	92.5	73.8	49.9	38.7	28.5	22.0	18.2	15.4	12.1	10.2	5.58
12 FLB 250	497	342	259	208	176	153	109	87.0	61.4	49.3	35.4	27.7	23.1	19.8	15.4	13.0	7.10
12 FLB 300	573	404	314	257	217	188	135	107	73.1	57.2	38.8	30.0	24.8	21.0	16.5	13.9	7.61
12 FLB 350	688	485	377	308	261	226	162	128	87.7	68.7	46.6	36.0	29.8	25.2	19.8	16.7	9.13
12 FLB 400	764	538	419	342	290	251	180	142	97.4	76.3	51.8	40.0	33.1	28.0	22.0	18.6	10.1
12 FLB 450	879	619	482	394	333	288	206	164	112	87.8	59.5	46.0	38.0	32.2	25.3	21.4	11.7
12 FLB 540	858	642	526	435	378	331	240	188	130	102	71.7	55.3	45.6	38.9	33.0	27.9	15.2
12 FLB 700	940	886	739	602	516	452	334	273	200	166	122	93.4	76.5	64.9	50.9	43.7	23.9

Watt per cell to 1.67 VPC (at 25 °C)																	
TYPE	5	10	15	20	25	30	45	60	90	120	180	240	300	360	480	600	1200
12 FLB 100	186	126	103	86.1	73.9	65.4	47.4	37.4	25.4	19.7	13.4	10.4	8.58	7.27	5.72	4.83	2.63
12 FLB 150	286	201	156	127	108	93.9	68.3	53.4	36.5	28.6	20.7	16.0	13.2	11.2	8.81	7.42	4.05
12 FLB 200	354	256	204	167	142	125	91.9	73.4	49.7	38.5	28.4	22.0	18.2	15.4	12.1	10.2	5.57
12 FLB 250	489	339	257	207	175	152	108	86.8	61.2	49.1	35.3	27.6	23.1	19.8	15.4	13.0	7.09
12 FLB 300	557	397	311	254	215	186	134	106	72.8	57.1	38.8	29.9	24.8	21.0	16.5	13.9	7.60
12 FLB 350	669	477	374	305	258	224	161	128	87.4	68.5	46.5	35.9	29.7	25.2	19.8	16.7	9.12
12 FLB 400	743	530	415	339	287	248	179	142	97.1	76.1	51.7	39.9	33.0	28.0	22.0	18.6	10.1
12 FLB 450	855	609	477	390	330	286	206	163	112	87.5	59.4	45.9	38.0	32.2	25.3	21.3	11.7
12 FLB 540	838	631	517	430	373	327	239	187	129	102	71.5	55.2	45.6	38.9	33.0	27.8	15.2
12 FLB 700	935	883	735	600	514	451	334	273	200	166	122	93.2	76.2	64.7	50.8	43.6	23.9

Watt per cell to 1.70 VPC (at 25 °C)																	
Time (min.)	5	10	15	20	25	30	45	60	90	120	180	240	300	360	480	600	1200
12 FLB 100	183	124	102	85.8	73.5	65.3	47.3	37.3	25.3	19.7	13.4	10.4	8.57	7.26	5.72	4.82	2.63
12 FLB 150	278	198	154	126	107	93.2	67.9	53.1	36.4	28.5	20.6	15.9	13.2	11.2	8.80	7.41	4.04
12 FLB 200	345	252	201	165	141	123	91.0	72.8	49.3	38.2	28.3	21.9	18.1	15.4	12.1	10.2	5.56
12 FLB 250	477	334	253	205	174	151	108	86.4	60.8	48.8	35.3	27.6	23.1	19.7	15.4	13.0	7.08
12 FLB 300	534	387	307	251	212	184	133	106	72.4	56.8	38.6	29.9	24.7	21.0	16.5	13.9	7.58
12 FLB 350	640	465	368	301	255	221	160	127	86.9	68.1	46.4	35.9	29.7	25.1	19.8	16.7	9.10
12 FLB 400	711	516	409	334	283	245	178	141	96.6	75.7	51.5	39.8	33.0	27.9	22.0	18.5	10.1
12 FLB 450	818	594	471	384	325	282	204	162	111	87.1	59.3	45.8	37.9	32.1	25.3	21.3	11.6
12 FLB 540	809	614	504	423	365	321	236	185	128	101	71.1	55.0	45.5	38.8	33.0	27.8	15.2
12 FLB 700	926	878	728	596	512	450	334	273	200	166	122	93.0	75.9	64.4	50.6	43.5	23.8

Watt per cell to 1.75 VPC (at 25 °C)																	
Time (min.)	5	10	15	20	25	30	45	60	90	120	180	240	300	360	480	600	1200
12 FLB 100	174	121	99.7	83.4	72.3	63.8	47.0	37.1	25.2	19.6	13.3	10.3	8.52	7.23	5.70	4.79	2.61
12 FLB 150	266	192	151	125	106	92.6	67.4	52.7	36.2	28.4	20.4	15.8	13.1	11.1	8.78	7.37	4.02
12 FLB 200	327	240	195	161	137	121	90.0	71.8	48.6	37.7	28.1	21.7	18.0	15.3	12.1	10.1	5.52
12 FLB 250	447	318	246	200	169	148	106	84.8	60.2	48.5	35.1	27.4	22.9	19.6	15.4	12.9	7.03
12 FLB 300	487	361	291	240	203	176	129	103	71.1	56.1	38.3	29.7	24.6	20.9	16.5	13.8	7.53
12 FLB 350	585	433	349	288	243	211	154	123	85.3	67.4	45.9	35.6	29.5	25.0	19.7	16.6	9.04
12 FLB 400	649	481	387	319	270	234	172	137	94.8	74.8	51.1	39.5	32.8	27.8	21.9	18.4	10.0
12 FLB 450	747	554	446	367	311	270	197	158	109	86.1	58.7	45.5	37.7	32.0	25.2	21.2	11.5
12 FLB 540	712	560	459	392	344	306	229	181	126	100	70.6	54.6	45.3	38.7	32.9	27.6	15.0
12 FLB 700	894	824	689	575	497	440	331	271	199	165	121	92.2	75.5	64.0	50.5	43.4	23.8

Watt per cell to 1.80 VPC (at 25 °C)

Time (min.)	5	10	15	20	25	30	45	60	90	120	180	240	300	360	480	600	1200
12 FLB 100	162	114	96.2	81.1	71.0	62.4	46.5	36.8	25.0	19.5	13.0	10.1	8.42	7.17	5.67	4.73	2.57
12 FLB 150	254	187	149	123	105	91.5	66.1	51.8	35.7	28.1	20.0	15.6	13.0	11.0	8.73	7.28	3.96
12 FLB 200	285	217	176	148	128	113	84.7	67.2	46.6	36.9	27.6	21.4	17.8	15.2	12.0	10.0	5.44
12 FLB 250	405	291	229	190	162	141	102	81.9	58.8	47.9	34.8	27.2	22.7	19.5	15.3	12.7	6.93
12 FLB 300	418	323	263	219	187	164	122	99.8	69.3	55.0	37.6	29.2	24.3	20.7	16.4	13.7	7.42
12 FLB 350	502	387	315	263	224	196	147	120	83.2	66.0	45.1	35.1	29.2	24.8	19.6	16.4	8.91
12 FLB 400	557	430	350	292	249	218	163	133	92.4	73.3	50.1	39.0	32.4	27.6	21.8	18.2	9.90
12 FLB 450	641	495	403	336	286	251	187	153	106	84.3	57.6	44.8	37.3	31.7	25.1	20.9	11.4
12 FLB 540	632	496	414	356	316	284	218	176	123	97.9	69.5	53.9	44.8	38.3	32.7	27.3	14.8
12 FLB 700	860	746	615	523	460	416	321	264	193	159	120	91.4	74.8	63.5	50.1	42.8	23.3

Watt per cell to 1.85 VPC (at 25 °C)

Time (min.)	5	10	15	20	25	30	45	60	90	120	180	240	300	360	480	600	1200
12 FLB 100	141	103	84.5	70.5	60.3	52.9	39.2	31.6	22.1	17.6	11.9	9.29	7.75	6.68	5.32	4.42	2.46
12 FLB 150	216	164	130	110	95.0	83.6	61.6	49.1	34.1	27.1	18.3	14.3	11.9	10.3	8.19	6.80	3.78
12 FLB 200	238	192	161	137	119	105	78.3	62.7	43.8	34.9	25.2	19.6	16.4	14.1	11.3	9.35	5.20
12 FLB 250	307	243	197	168	146	130	95.6	77.1	56.0	46.1	33.3	25.8	21.4	18.2	14.3	11.9	6.61
12 FLB 300	345	275	227	191	165	145	111	91.5	64.3	51.6	34.4	26.8	22.4	19.3	15.4	12.8	7.09
12 FLB 350	414	329	273	230	198	174	133	110	77.2	61.9	41.2	32.2	26.8	23.1	18.4	15.3	8.50
12 FLB 400	460	366	303	255	220	193	148	122	85.8	68.8	45.8	35.7	29.8	25.7	20.5	17.0	9.45
12 FLB 450	530	421	348	293	253	222	171	140	98.7	79.1	52.7	41.1	34.3	29.6	23.5	19.6	10.9
12 FLB 540	518	433	370	322	286	260	198	163	114	91.3	64.9	50.4	41.9	35.9	30.7	25.5	14.2
12 FLB 700	749	629	541	471	423	380	303	253	183	151	111	85.3	70.0	60.4	48.1	40.0	22.2

Watt per cell to 1.90 VPC (at 25 °C)

Time (min.)	5	10	15	20	25	30	45	60	90	120	180	240	300	360	480	600	1200
12 FLB 100	112	87.4	73.0	61.1	52.8	47.1	34.7	27.4	19.3	15.4	11.1	8.72	7.31	6.32	4.99	4.11	2.20
12 FLB 150	173	137	113	96.4	83.2	74.0	56.0	45.1	32.0	25.8	17.1	13.4	11.2	9.73	7.68	6.32	3.38
12 FLB 200	202	164	140	120	105	94.0	70.4	56.8	40.2	32.3	23.5	18.5	15.5	13.4	10.6	8.69	4.65
12 FLB 250	240	199	167	144	128	115	87.7	72.0	52.4	43.2	31.4	24.5	20.4	17.3	13.4	11.1	5.92
12 FLB 300	269	218	186	161	140	124	99.8	83.3	59.3	48.0	32.1	25.2	21.1	18.2	14.4	11.9	6.34
12 FLB 350	323	261	223	193	168	149	120	99.9	71.1	57.6	38.5	30.2	25.3	21.9	17.3	14.2	7.61
12 FLB 400	359	290	248	214	187	165	133	111	79.0	64.0	42.8	33.5	28.1	24.3	19.2	15.8	8.45
12 FLB 450	413	334	285	246	215	190	153	128	90.9	73.6	49.2	38.6	32.3	28.0	22.1	18.2	9.72
12 FLB 540	442	374	320	282	253	228	176	143	103	83.4	60.0	46.9	39.1	33.8	28.8	23.7	12.7
12 FLB 700	597	521	460	404	366	333	266	222	164	137	101	78.8	66.1	57.1	45.1	37.1	19.9