

# FIAMM

Industrial Batteries

ENDURLITE

## LM series



FIAMM's **LM** battery range can be used in standby mode or for duties requiring repeated charging and discharging operations (cycling applications). The **LM** battery range is specially designed for difficult environments and special applications such as solar and long discharge rates. Its tubular positive plates, very reliable post seal and the fully insulated connections among cells, guarantee a long life, even in the worst operating conditions.

FIAMM has a program of continuous improvement, investing in manufacturing processes, equipment and technology.

FIAMM's Standby Battery factories are ISO 9001-2000 certified. Our continuous investment in battery technology is reflected by means of premium products that are of the highest quality and reliability.

FIAMM's **LM** tubular vented lead acid batteries are the ideal energy source for many different standby applications.

### Technical Features

**Positive Tubular Plates:** with lead selenium alloy to reduce frequency of watering intervals. The tubular design prevents the loss of active material during operation, this result in a longer operating life and high performance.

**Negative Plates:** designed to have service life consistent with the positive plates. The alloy and curing process are designed so that porosity of active material is maintained during operation.

**Electrolyte:** high purity sulfuric acid solution with a specific gravity of 1.24 ( $\pm 0.01$ ) at 77°F, lower specific gravity acid available upon request.

**Separators:** made of high quality microporous material, with low electrical resistance to achieve the lowest self discharge and highest efficiency.

**Containers:** injection molded from high quality transparent SAN (Styrene acrylonitrile) for easy cell status inspection.

**Lids:** made of opaque SAN. Flame retardant ABS is optional.

**Vent Caps:** effectively prevent acid spray from the cell when 'gassing' during boost charge. They are provided with ceramic filter and bayonet lock, designed to prevent any errant spark or flame from entering the cell.

**Connectors:** flexible, fully insulated cable connectors are bolted to the terminal with an insulated screw, having a probe hole on the top for electrical measurement.

**Terminals:** female threaded terminals (M10) ensure perfect contact and a low resistance with the flexible cable connectors.

**Post Seals:** high integrity post seal design to prevent electrolyte leakage and terminal corrosion.

### Applications

Telecommunications  
Solar and Wind Power Stations  
Electric Utilities  
Railway Signaling  
Airport and Seaport Signaling

### Product Features

- + Design Life: up to 20 years on float in temperature controlled environments
- + Very Low Maintenance
- + Excellent for cycling applications: up to 1500 cycles to 80% DOD

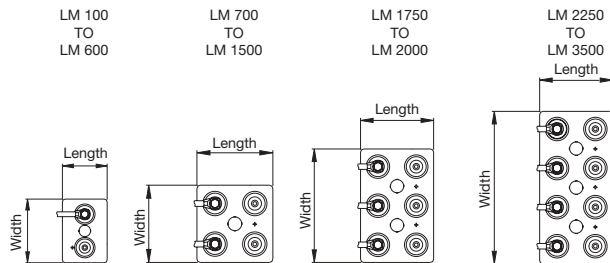
# Standby Products

# LM series

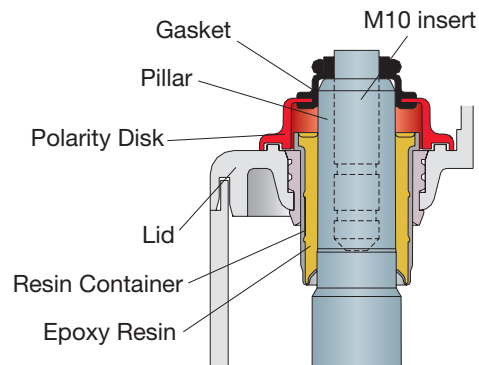
CELL TYPE	DIN 40736 STANDARD Type	CAPACITY (Ah) at 77°F 8 hrs to 1.75 Vpc	DIMENSIONS						WEIGHT		ELECTROLYTE VOLUME (Sg 1.24) Gals	TERMINALS	
			Length		Width		Height		lbs	kg		+	-
			in	mm	in	mm	in	mm					
LM 100	2 OPzS 100 LA	109	4.1	104	8.1	206	16.5	419	30.8	14	1.06	1	1
LM 150	3 OPzS 150 LA	164	4.1	104	8.1	206	16.5	419	35.3	16	0.98	1	1
LM 200	4 OPzS 200 LA	220	4.1	104	8.1	206	16.5	419	39.7	18	0.9	1	1
LM 250	5 OPzS 250 LA	274	4.9	125	8.1	206	16.5	419	46.3	21	1.22	1	1
LM 300	6 OPzS 300 LA	329	5.7	145	8.1	206	16.5	419	55.1	25	1.37	1	1
LM 350	5 OPzS 350 LA	390	4.9	125	8.1	206	21.1	536	63.9	29	1.56	1	1
LM 420	6 OPzS 420 LA	468	5.7	145	8.1	206	21.1	536	77.2	35	1.85	1	1
LM 490	7 OPzS 490 LA	546	6.5	165	8.1	206	21.1	536	88.2	40	2.06	1	1
LM 600	6 OPzS 600 LA	640	5.7	145	8.1	206	28	711	103.6	47	2.67	1	1
LM 700	7 OPzS 700 LA	746	8.3	210	7.5	191	28	711	132.3	60	3.70	2	2
LM 800	8 OPzS 800 LA	856	8.3	210	7.5	191	28	711	138.9	63	3.59	2	2
LM 900	9 OPzS 900 LA	960	8.3	210	9.2	234	28	711	163.1	74	4.76	2	2
LM 1000	10 OPzS 1000 LA	1064	8.3	210	9.2	234	28	711	169.8	77	4.50	2	2
LM 1200	12 OPzS 1200 LA	1280	8.3	210	10.8	274	28	711	198.4	90	5.34	2	2
LM 1500	12 OPzS 1500 LA	1648	8.3	210	10.8	274	33.9	861	249.1	113	5.97	2	2
LM 1750	14 OPzS 1750 LA	1920	8.4	214	15.7	399	32.9	837	326.3	148	9.38	3	3
LM 1875	15 OPzS 1875 LA	2056	8.4	214	15.7	399	32.9	837	335.1	152	8.98	3	3
LM 2000	16 OPzS 2000 LA	2192	8.4	214	15.7	399	32.9	837	343.9	156	8.48	3	3
LM 2250	18 OPzS 2250 LA	2464	8.4	214	19.2	488	32.9	837	414.5	188	11.5	4	4
LM 2500	20 OPzS 2500 LA	2744	8.4	214	19.2	488	32.9	837	432.1	196	10.67	4	4
LM 3000	24 OPzS 3000 LA	3288	8.4	214	22.7	577	32.9	837	504.9	229	13.40	4	4
LM 3500	28 OPzS 3500 LA	3544	8.4	214	22.7	577	32.9	837	540.1	245	12.20	4	4

## Electrical Characteristics

- ✦ NOMINAL VOLTAGE: 2 V
- ✦ FLOAT VOLTAGE AT 77°F: 2.23 Vpc
- ✦ BOOST RECHARGE: 2.4 Vpc
- ✦ SELF DISCHARGE at 77°F: < 2% a month
- ✦ TERMINAL TORQUE 106 - 124 inlbs (12-14 Nm)



## High Reliability Post Seal



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CELL TYPE	Constant Current Discharge Rates Amperes to 1.75 Vpc at 77°F (25°C) Sg 1.24												
	MINUTES					HOURS							
	1	5	10	15	30	1	1.5	2	3	4	5	8	10
LM 100	100	99.3	98.3	96.0	77.2	55.0	43.8	36.6	28.1	23.3	19.8	13.7	11.4
LM 150	150	149	147	144	116	82.5	65.7	54.8	42.2	34.9	29.7	20.6	17.1
LM 200	200	199	197	192	154	110	87.5	73.1	56.2	46.5	39.6	27.5	22.9
LM 250	250	248	246	240	193	138	109	91.4	70.3	58.1	49.4	34.3	28.6
LM 300	300	298	295	288	232	165	131	110	84.4	69.8	59.3	41.2	34.3
LM 350	313	310	307	301	252	190	153	129	99.3	81.6	69.7	48.9	41.1
LM 420	375	372	369	361	302	228	184	155	119	97.9	83.6	58.7	49.3
LM 490	438	434	430	421	353	266	214	180	139	114	97.5	68.5	57.5
LM 600	464	462	460	451	393	309	253	216	165	136	115	80.0	66.4
LM 700	541	539	537	526	459	361	296	252	193	158	134	93.3	77.4
LM 800	619	616	614	602	524	412	338	288	221	181	153	107	88.5
LM 900	696	692	691	677	590	464	380	324	248	204	172	120	99.6
LM 1000	774	769	767	752	655	515	422	360	276	226	192	133	111
LM 1200	928	923	921	902	786	618	507	432	331	271	230	160	133
LM 1500	939	924	901	881	821	697	590	510	400	330	281	196	166
LM 1750	1096	1078	1051	1027	958	813	688	594	467	385	328	229	194
LM 1875	1174	1155	1126	1101	1026	871	737	637	500	412	352	245	208
LM 2000	1252	1232	1201	1174	1095	929	786	679	533	439	375	261	222
LM 2250	1409	1386	1351	1321	1232	1046	885	764	600	494	422	294	249
LM 2500	1566	1540	1501	1468	1368	1162	983	849	667	549	469	327	277
LM 3000	1879	1848	1801	1761	1642	1394	1180	1019	800	659	563	392	332
LM 3500	2192	2156	2102	2055	1916	1626	1376	1189	933	769	657	458	388

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