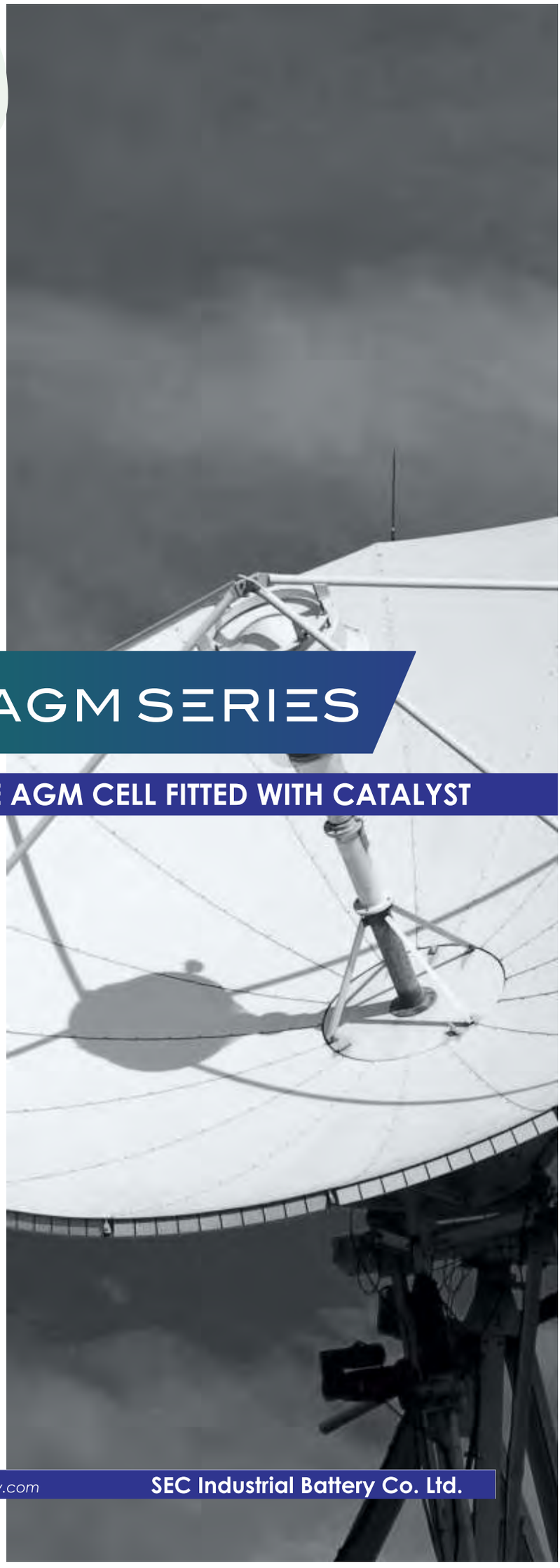


CELLYTE 2TLAM AGM SERIES

2V FLAT PLATE AGM CELL FITTED WITH CATALYST

SEC
ENERGY STORAGE

SEC - 2 - TLAM

info@secbattery.com / www.secbattery.com

SEC Industrial Battery Co. Ltd.

Battery Profile

DESIGN LIFE

15 year design life in float service @ 25°C with catalyst.

100Ah-1600Ah at C/10 to 1.80vpc @ 25°C.

MANUFACTURED TO COMPLY

IEC 60896-21/22-2004
BS 6290 Part 4
Eurobat
UL Component approval
ISO 9001:2000
ISO 14001:2004

APPLICATIONS

Telecommunications
Emergency Lighting
Photovoltaic/Solar
Navigation Aids
Control System
Standby Power
Cellular Radio
Switchgear
UPS

SPECIFICATIONS

Positive electrode:	Virgin Pure Lead
Negative electrode:	Calcium Grid Plate
Float Voltage:	2.25 vpc ±1% at 25°C
Max.Charge Voltage:	2.35 vpc ±1% at 25°C
Electrolyte:	Sulphuric Acid
Safety Valve:	1-3 PSI Self-Resealing
Separators:	Absorbed Glass Mat
Terminals:	Integral Copper Insert for M10 Bolt

INNOVATIVE FEATURES

Valve regulated with Catalyst
Proprietary Virgin Lead Alloy
Latest plates formation technology
Uniform cell cooling
Increased Capacity with Catalyst
Never requires addition of water
Spill proof and leak proof
Very low gassing on float charge
Explosion proof / Increased safety
Operates at low internal pressure
For use in vertical or horizontal positions

CAPACITY

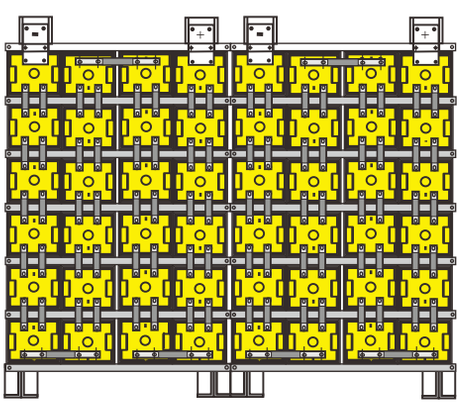
Ampere Hour @ 25°C

SEC CELL Type	End Volts / Cell	DATA AMPS @ 25°C DISCHARGE TIME IN MINUTES			End Volts / Cell	DISCHARGE DATA AMPERE HOURS @ 25°C DISCHARGE TIME IN HOURS										
		15mins	30mins	45mins		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
2-TLAM-100	1.75	128	92.3	73.5	1.80	57.0	63.0	68.0	75.9	82.0	86.0	88.8	98.0	100	102	109
2-TLAM-150	1.75	192	139	110	1.80	85.5	94.5	102	114	123	129	134	147	150	153	163
2-TLAM-200	1.75	257	185	147	1.80	114	126	136	152	164	172	178	196	200	204	218
2-TLAM-250	1.75	321	231	184	1.80	143	158	170	190	205	215	223	245	250	255	273
2-TLAM-300	1.75	385	277	221	1.80	171	189	204	228	246	258	267	294	300	306	326
2-TLAM-350	1.75	449	323	257	1.80	200	221	238	266	287	301	311	343	350	357	382
2-TLAM-400	1.75	513	369	294	1.80	228	252	272	303	328	344	356	392	400	408	436
2-TLAM-420	1.75	539	388	309	1.80	239	264	286	318	344	361	374	412	420	428	458
2-TLAM-450	1.75	577	416	331	1.80	257	284	306	342	369	387	401	441	450	459	490
2-TLAM-500	1.75	641	462	368	1.80	285	315	340	380	410	430	445	490	500	510	545
2-TLAM-550	1.75	705	508	404	1.80	314	347	374	417	451	473	490	539	550	561	600
2-TLAM-600	1.75	770	554	441	1.80	342	378	408	456	492	515	534	588	600	612	654
2-TLAM-650	1.75	834	600	478	1.80	371	410	442	494	532	559	578	637	650	663	708
2-TLAM-700	1.75	898	646	515	1.80	399	441	476	531	574	600	623	686	700	714	763
2-TLAM-750	1.75	962	693	551	1.80	428	473	510	570	615	645	666	735	750	765	818
2-TLAM-800	1.75	1026	739	588	1.80	456	504	544	608	656	688	712	784	800	816	871
2-TLAM-850	1.75	1090	785	625	1.80	485	536	578	645	696	730	756	832	850	867	926
2-TLAM-900	1.75	1154	831	662	1.80	513	567	612	684	738	774	801	880	900	918	981
2-TLAM-1000	1.75	1283	923	735	1.80	570	630	680	759	820	860	888	980	1000	1020	1090
2-TLAM-1100	1.75	1411	1016	809	1.80	627	693	748	836	902	945	978	1078	1100	1122	1199
2-TLAM-1200	1.75	1539	1108	882	1.80	684	756	816	912	984	1030	1068	1176	1200	1224	1308
2-TLAM-1300	1.75	1667	1200	956	1.80	741	819	884	987	1066	1118	1157	1272	1300	1326	1416
2-TLAM-1400	1.75	1796	1293	1029	1.80	798	882	952	1064	1148	1204	1246	1372	1400	1428	1526
2-TLAM-1500	1.75	1924	1385	1103	1.80	855	945	1020	1140	1230	1290	1335	1470	1500	1530	1634
2-TLAM-1600	1.75	2052	1477	1176	1.80	912	1008	1088	1215	1312	1375	1422	1568	1600	1632	1744

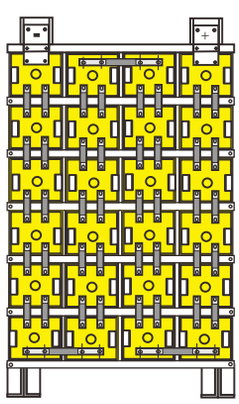
*Actual Battery Discharge Data may be ± 5% of figures shown.

Typical Modular Zone 4 Racks for 48 Volt Systems

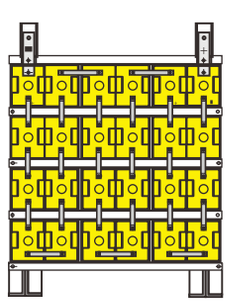
Note: Cells up to 1600Ah. are single cells. Cells over 1600Ah. are made up of 2 x 850Ah. to 2 x1600Ah. connected in parallel or series to give 1700Ah. to 3200Ah.



Front view
24 x 2TLAM2000 to 3200
(2 x 24 x 1000 to 1600)
2 x 4 post cells



Front view
24 x 2TLAM750 to 1600
4 post cells



Front view
24 x 2TLAM100 to 700
2 post cells

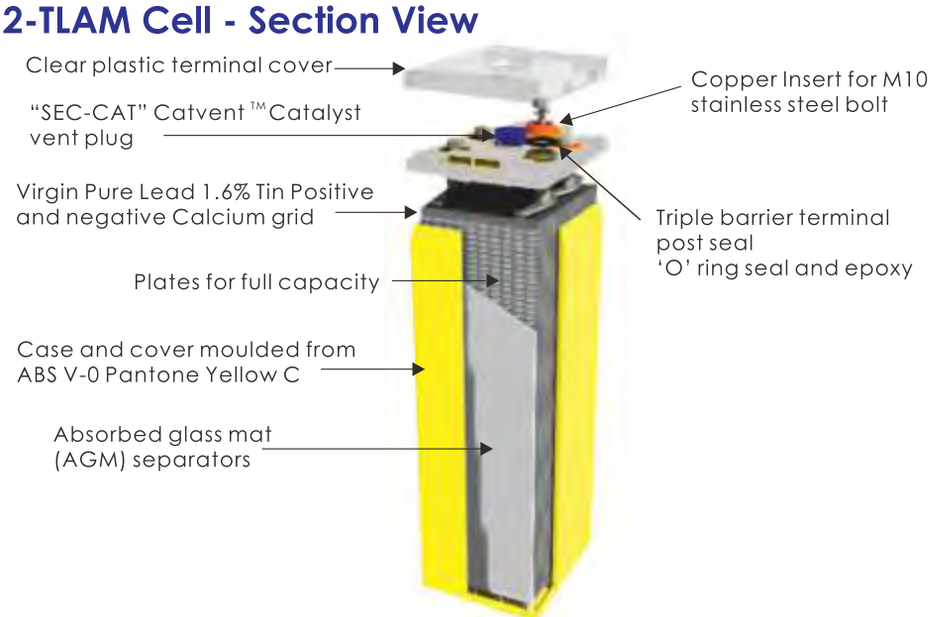
CURRENT

Amps @ 25°C

SEC CELL Type	End Volts / Cell	DATA AMPS @ 25°C DISCHARGE TIME IN MINUTES			End Volts / Cell	DISCHARGE DATA AMPS @ 25°C DISCHARGE TIME IN HOURS										
		15mins	30mins	45mins		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
2-TLAM-100	1.75	128	92.3	73.5	1.80	57.0	42.0	34.0	25.3	20.5	17.2	14.8	12.3	10.0	8.50	4.54
2-TLAM-150	1.75	192	139	110	1.80	85.5	63.0	51.0	38.0	30.8	25.8	22.3	18.4	15.0	12.8	6.81
2-TLAM-200	1.75	257	185	147	1.80	114	84.0	68.0	50.7	41.0	34.4	29.7	24.5	20.0	17.0	9.08
2-TLAM-250	1.75	321	231	184	1.80	143	105	85.0	63.3	51.3	43.0	37.1	30.6	25.0	21.3	11.4
2-TLAM-300	1.75	385	277	221	1.80	171	126	102	76.0	61.5	51.6	44.5	36.8	30.0	25.5	13.6
2-TLAM-350	1.75	449	323	257	1.80	200	147	119	88.7	71.8	60.2	51.9	42.9	35.0	29.8	15.9
2-TLAM-400	1.75	513	369	294	1.80	228	168	136	101	82.0	68.8	59.3	49.0	40.0	34.0	18.2
2-TLAM-420	1.75	539	388	309	1.80	239	176	143	106	86.0	72.2	62.3	51.5	42.0	35.7	19.1
2-TLAM-450	1.75	577	416	331	1.80	257	189	153	114	92.3	77.4	66.8	55.1	45.0	38.3	20.4
2-TLAM-500	1.75	641	462	368	1.80	285	210	170	127	103	86.0	74.2	61.3	50.0	42.5	22.7
2-TLAM-550	1.75	705	508	404	1.80	314	231	187	139	113	94.6	81.6	67.4	55.0	46.8	25.0
2-TLAM-600	1.75	770	554	441	1.80	342	252	204	152	123	103	89.0	73.5	60.0	51.0	27.3
2-TLAM-650	1.75	834	600	478	1.80	371	273	221	165	133	112	96.4	79.6	65.0	55.3	29.5
2-TLAM-700	1.75	898	646	515	1.80	399	294	238	177	144	120	104	85.8	70.0	59.5	31.8
2-TLAM-750	1.75	962	693	551	1.80	428	315	255	190	154	129	111	91.9	75.0	63.8	34.1
2-TLAM-800	1.75	1026	739	588	1.80	456	336	272	203	164	138	119	98.0	80.0	68.0	36.3
2-TLAM-850	1.75	1090	785	625	1.80	485	357	289	215	174	146	126	104	85.0	72.3	38.6
2-TLAM-900	1.75	1154	831	662	1.80	513	378	306	228	185	155	134	110	90.0	76.5	40.9
2-TLAM-1000	1.75	1283	923	735	1.80	570	420	340	253	205	172	148	123	100	85.0	45.4
2-TLAM-1100	1.75	1411	1016	809	1.80	627	462	374	279	226	189	163	135	110	93.5	50.0
2-TLAM-1200	1.75	1539	1108	882	1.80	684	504	408	304	246	206	178	147	120	102	54.5
2-TLAM-1300	1.75	1667	1200	956	1.80	741	546	442	329	267	224	193	159	130	111	59.0
2-TLAM-1400	1.75	1796	1293	1029	1.80	798	588	476	355	287	241	208	172	140	119	63.6
2-TLAM-1500	1.75	1924	1385	1103	1.80	855	630	510	380	308	258	223	184	150	128	68.1
2-TLAM-1600	1.75	2052	1477	1176	1.80	912	672	544	405	328	275	237	196	160	136	72.7

*Actual Battery Discharge Data may be ± 5% of figures shown.

CELLYTE 2-TLAM Cell - Section View



Heavy duty ABS cell jar can be free standing or in zone 4 modular rack

POWER

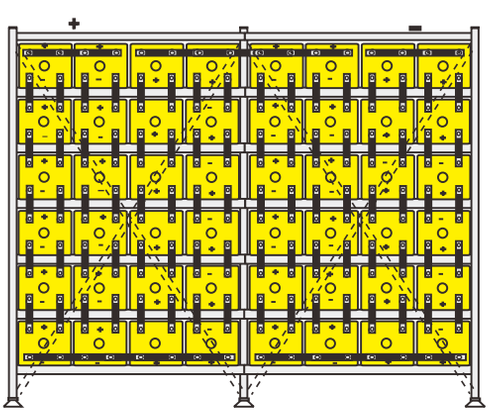
Watts @ 25°C

SEC CELL Type	End Volts / Cell	DATA WATTS/CELL @ 25°C DISCHARGE TIME IN MINUTES			End Volts / Cell	DISCHARGE DATA WATTS/CELL @ 25°C DISCHARGE TIME IN HOURS										
		15mins	30mins	45mins		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
2-TLAM-100	1.75	230	168	136	1.80	108	80.2	65.3	49.0	40.0	33.7	29.1	24.2	19.8	16.9	9.08
2-TLAM-150	1.75	346	254	203	1.80	162	120	97.9	73.6	60.0	50.5	43.8	36.3	29.8	25.4	13.6
2-TLAM-200	1.75	463	338	271	1.80	216	160	131	98.1	80.0	67.4	58.3	48.4	39.7	33.8	18.2
2-TLAM-250	1.75	578	422	339	1.80	271	200	163	123	100	84.2	72.9	60.5	49.6	42.3	22.8
2-TLAM-300	1.75	693	506	408	1.80	324	241	196	147	120	101	87.5	72.7	59.5	50.7	27.2
2-TLAM-350	1.75	808	589	474	1.80	379	281	228	172	140	118	102	84.8	69.4	59.2	31.8
2-TLAM-400	1.75	923	673	542	1.80	432	321	261	196	160	135	117	96.9	79.4	67.6	36.3
2-TLAM-420	1.75	970	708	570	1.80	453	336	275	205	168	141	122	102	83.3	70.9	38.2
2-TLAM-450	1.75	1039	759	611	1.80	487	361	294	221	180	152	131	109	89.3	76.1	40.8
2-TLAM-500	1.75	1154	843	679	1.80	540	401	326	245	200	168	146	121	99.2	84.5	45.4
2-TLAM-550	1.75	1269	927	745	1.80	595	441	359	269	220	185	160	133	109	93.0	50.0
2-TLAM-600	1.75	1386	1011	814	1.80	648	481	392	294	240	202	175	145	119	101	54.5
2-TLAM-650	1.75	1501	1095	882	1.80	703	521	424	319	259	219	190	157	129	110	59.0
2-TLAM-700	1.75	1616	1179	950	1.80	756	561	457	343	280	235	204	170	139	118	63.6
2-TLAM-750	1.75	1732	1265	1017	1.80	811	601	490	368	300	253	218	182	149	127	68.2
2-TLAM-800	1.75	1847	1349	1085	1.80	864	641	522	393	320	270	233	194	159	135	72.6
2-TLAM-850	1.75	1962	1433	1153	1.80	919	682	555	416	339	286	248	206	169	144	77.2
2-TLAM-900	1.75	2077	1517	1221	1.80	972	722	588	442	360	303	262	217	179	152	81.8
2-TLAM-1000	1.75	2309	1684	1356	1.80	1080	802	653	490	400	337	291	242	198	169	90.8
2-TLAM-1100	1.75	2540	1854	1493	1.80	1188	882	718	540	440	370	320	266	218	186	100
2-TLAM-1200	1.75	2770	2022	1627	1.80	1295	962	783	589	480	404	350	291	238	203	109
2-TLAM-1300	1.75	3001	2190	1764	1.80	1403	1042	849	637	520	438	379	314	258	220	118
2-TLAM-1400	1.75	3233	2360	1899	1.80	1511	1122	914	687	560	472	408	339	278	237	127
2-TLAM-1500	1.75	3463	2528	2035	1.80	1619	1203	979	736	600	505	437	363	298	254	136
2-TLAM-1600	1.75	3694	2696	2170	1.80	1727	1283	1044	784	640	539	466	387	317	271	145

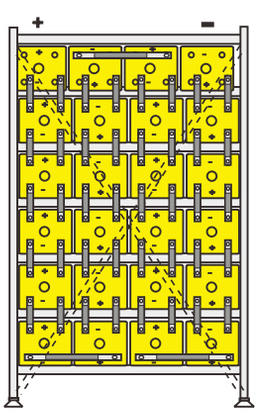
*Actual Battery Discharge Data may be ± 5% of figures shown.

Typical Tubular Zone 0 racks for 48Volt System

Note: Cells up to 1600Ah. are single cells. Cells over 1600Ah. are made up of 2 x 850Ah. to 2 x1600Ah. connected in parallel or series to give 1700Ah. to 3200Ah.

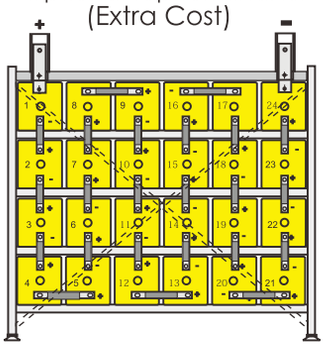


Front view
24 x 2TLAM2000 to 3200
(2 x 24 x 1000 to 1600)
2 x 4 post cells



Front view
24 x 2TLAM750 to 1600
4 post cells

Optional top terminal kit
(Extra Cost)



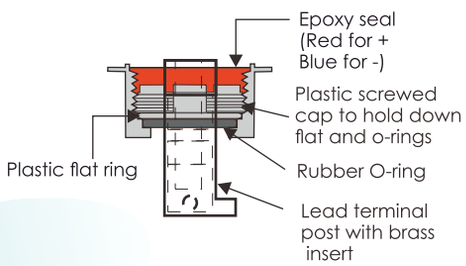
Front view
24 x 2TLAM100 to 700
2 post cells

DIMENSIONS

Dimensions, Weights, Data

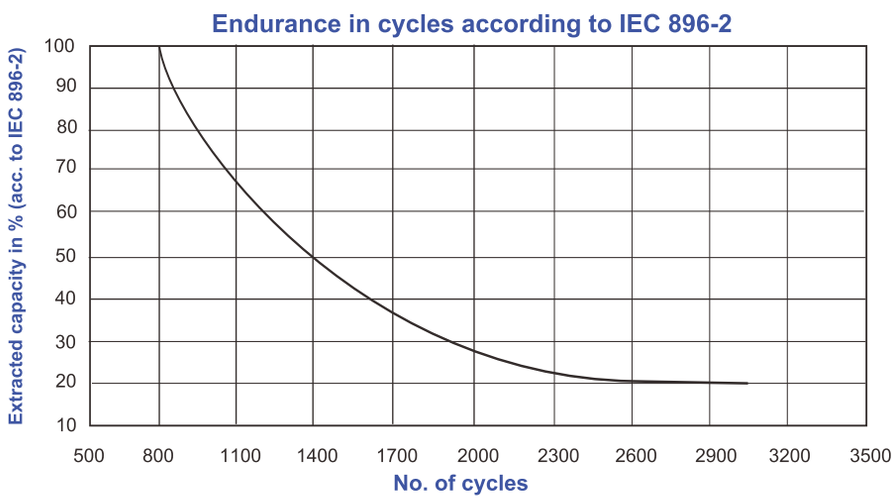
SEC CELL Type	Nominal Capacity C/10 1.80vpc	Overall Battery Dimesion					Internal Resistance (mΩ)	Maximum Charge Current (A)	Short Circuit (A)	No. of Terminal Post
		Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Total Height (mm)				
2-TLAM-100	100	8.0	187	102	278	300	0.70	17.2	1080	2
2-TLAM-150	150	10	187	102	278	300	0.60	25.8	1500	2
2-TLAM-200	200	14	187	102	278	300	0.50	34.4	1600	2
2-TLAM-250	250	16	187	102	374	396	0.45	43.0	1900	2
2-TLAM-300	300	20	187	102	374	396	0.40	51.6	2400	2
2-TLAM-350	350	22	187	151	374	396	0.39	60.2	2900	2
2-TLAM-400	400	24	187	151	374	396	0.36	68.8	3200	2
2-TLAM-420	420	25	187	151	374	396	0.35	72.2	3300	2
2-TLAM-450	450	27	187	151	374	396	0.34	77.4	3600	2
2-TLAM-500	500	30	187	151	543	565	0.34	86.0	4000	2
2-TLAM-550	550	36	187	151	543	565	0.33	94.6	4500	2
2-TLAM-600	600	39	187	151	543	565	0.33	103	4800	2
2-TLAM-650	650	40	187	151	543	565	0.32	112	5100	2
2-TLAM-700	700	42	187	151	543	565	0.31	120	5600	4
2-TLAM-750	750	49	223	187	543	565	0.31	129	6000	4
2-TLAM-800	800	54	223	187	543	565	0.30	138	6400	4
2-TLAM-850	850	56	223	187	543	565	0.29	146	6900	4
2-TLAM-900	900	58	223	187	543	565	0.29	155	7300	4
2-TLAM-1000	1000	63	223	187	543	565	0.28	172	7900	4
2-TLAM-1100	1100	65	223	187	543	565	0.28	189	8600	4
2-TLAM-1200	1200	74	223	187	643	665	0.27	206	9000	4
2-TLAM-1300	1300	77	223	187	643	665	0.26	224	9500	4
2-TLAM-1400	1400	82	223	187	643	665	0.26	241	10500	4
2-TLAM-1500	1500	90	235	212	653	675	0.25	258	12000	4
2-TLAM-1600	1600	94	235	212	653	675	0.24	275	12800	4

*Actual Dimension may be ± 5% from the figures shown.



Female terminal inserts
for M10 Bolt

TYPICAL TRIPLE BARRIER POST SEAL DETAIL



INFORMATION

CELLYTE 2TLAM Modular/ Tubular AGM-VRLA Stationary Batteries

The SEC CELLYTE 2TLAM batteries are manufactured using modern technology in a new joint venture battery manufacturing facility. SEC has been able to draw on a wealth of international experience and knowledge to produce high quality reliable lead acid batteries. The continuing installation of modern production equipment makes continuous product improvement possible.

The CELLYTE 2TLAM Modular free standing 2 volt cells - AGM Technology - with Catalyst. Valve Regulated Lead Acid (VRLA) low Maintenance Batteries - for Standby Applications. These are free standing cells and can be supplied as cells only or with Modular zone 4 racks or in vertical or horizontal conventional zone 0 Tubular racks.The steel modular or tubular racks are designed to provide strength, ease of handling, protection against shock and vibration damage, and allows for uniform cooling of all cells.

"SEC-CAT" Catvent ™- Catalyst Vent Plug

SEC's VRLA cells incorporate the Philadelphia Scientific Precious Metal Catalyst Catvent™ to stabilise the negative plate,enhance the water recombination process within the cell, reduce cell dry out, reduces float current by up to 50%, positive plate corrosion, thermal runaway, and capacity loss due to negativeplate polarisation. This makes the 2TLAM battery idealy suited for Telecom,UPS, Photovoltaic, Wind power, and other Float & Shallow Cyclic applications. Manufactured to Quality system certified to ISO 9001

SEC CELLYTE 2TLAM battery end of life is defined as when the battery system can no longer deliver 80% of rated capacity for which it was initially designed. The batteries are clearly marked with the SEC battery reference, nominal capacity (C/10 to 1.8 vpc 25°C), environmental related information.

FEATURES

The CELLYTE 2TLAM 'High Integrity' high density battery is supplied as a free standing 2 volt vertical or horizontal cells in a Modular or Tubular steel racking system for minimum floor space, uniform cell cooling and extra long life. The Zone 4 Modular battery rack design provides a stronger battery rack that is reduced in both height, width. The Zone 0 Tubular battery racks for use in regions that are not subject to earthquakes.

System Configuration:
24 and 48 volts for Telecommunications and 120,240 and 480 volts for UPS, Power and Switchgear Control.
Zone 4 rated modules with horizontal cell layout provides smaller battery foot print
Zone 0 rated tubular racks with vertical or horizontal cell layout for minimum battery footprint.

Operating Temperature: -25°C to +55°C
However we recommend that the batteries be operated in the temperature range of 20 to 25°C, to obtain full life and optimum performance.

Benefits of Catalyst in SEC VRLA Batteries

One of the most immediate, observable effects of installing a catalyst in a VRLA cell is a sudden drop in the float current. Typically float currents are one half or less when a catalyst is installed. Adding a catalyst to the cell prevents some of the oxygen reaching the negative plate and allows the negative plate to stay polarized. This means that less current needs to be supplied to the cell from the charging system, manifesting itself as lower float current, leading to the following benefit:

***Minimize water loss**
Gasses are recombined into water inside the cell rather than exiting the cell. Too much gas leaving the cell can lead to premature dry-out and cell failure. Cell dry out is a major cause of VRLA cell failure.

***Increase life**
There are many potential failure modes of VRLA cells. A number of these failure modes can be mitigated by the catalyst technology such as: Cell dry out, positive plate corrosion, thermal runaway, capacity loss due to negative plate depolarization.

***Minimize positive plate corrosion**
A reduction in float current reduces the amount of over-charge on the positive plate which directly impacts the corrosion rate. The design life of a lead acid battery is based on the corrosion of the plate barring any other unforseen failure modes.

***Maintain cell capacity**
Many VRLA cells in service are failing capacity tests because their negative plates are depolarized. In fact significant capacity increase have been seen on some cells just by installing a catalyst.

SEC ALL PRODUCT RANGE

SEC ENERGY STORAGE

CELLYTE 2CMT/G
Modular Steel Rack

CELLYTE 2TLAM/G
Tubular Steel Rack

CELLYTE 2CMT/G,CELLYTE 2TLAM/G
with Catalyst

CELLYTE 12PLF & 12PLT Range

CELLYTE 12FTA/G Range

CELLYTE 6-12TUA Range

CELLYTE 6-12TSG Range

CELLYTE 6-12TLA Range

CELLYTE 6-12TLG Range

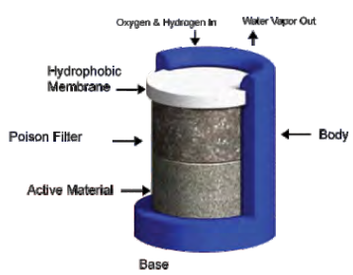
MICROLYTE +Plus Range

MICROLYTE Red Top Range

CELLYTE 2ETG OPzV Range
Tubular Steel Rack

CELLYTE TRA Range

Nickel Cadmium Range
Pocket Plate flooded and VR



Typical VRLA catalyst

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