The CELLYTE TUA Series

6-12 Volt flat plate Monobloc AGM battery fitted with SEC CatVent™ catalyst

Long lasting service for mission-critical conditions

FITTED WITH

PERFORMANCE ENHANCING CATALYST

CATVENT™ TECHNOLOGY

TÜV SÜD ISO 9001

SEC ENERGY STORAGE

TUA

Specification

Positive electrode:	Lead Calcium high Tin grid alloy
Negative electrode:	Lead Calcium grid alloy
Float voltage:	2.25 - 2.30 vpc ± 1% at 25°C
Max. charge voltage:	2.50 vpc ± 1% at 25°C
Electrolyte:	Sulphuric acid absorbed into AGM separator
Safety valve:	1-3 psi self-resealing
Separators:	Absorptive glass mat (AGM) separator
Terminals:	Integral brass insert for stainless steel bolt
Electrical:	6V 120Ah to 205Ah & 12V 16Ah to 244Ah at C/10 to 1.80vpc @ 25°C

Design life

Float life:	12-years in float service @ 30°C with an approved catalyst
Cycle life:	340 cycles @ 80% DOD at 25°C

Product compliance

IEC 60896-21/22-2004
BS 6290 part 4
UL component approval
Eurobat

Company accreditation

ISO 9001:2015
ISO 14001:2004

Product information

The CELLYTE TUA series

Long life and low maintenance

The SEC TUA is a premium, sealed standby battery that was especially designed for use as a long-lasting backup power source in telecoms, industrial and other mission-critical stationary applications.

The addition of pure Lead Calcium Tin grids and the SEC CatVent™ catalyst ensure maximum performance and endurance. With a minimal need for maintenance and a design life of 12-years, the TUA series is a reliable choice for those demanding long-lasting energy security.

Complies with international standards

The TUA complies with a range of international standards, offering operators complete peace of mind. This series consistently achieves Eurobat and is made in ISO9001 approved factories. SEC is proud to offer the CELLYTE TUA as a high integrity 6-12 Volt option that will match the best in the market.

High quality components

By marrying cutting-edge technology and the world's best components, SEC continues to make industrial batteries that lead the global market. The CELLYTE TUA is constructed with the highest regard to quality. It's available in 6 or 12V blocs with a choice of standard or flame retardant casing.

With German-made bespoke separators, valves and pure, Lead Tin positive grids, the TUA has gained a reputation as an enduring battery amongst its competitors. At the same time, the triple-post sealing system and gas recombinant catalyst increase both safety and energy density in this premium series.

Product features

- **Valve regulated with catalyst**
- **Propriety lead Calcium Tin alloy**
- **Latest plate formation technology**
- **Increased uniform cell cooling**
- **Capacity maintained with catalyst**
- **Never requires additional water**
- **Spill-proof and leak-proof**
- **Very low gassing on float charge**
- **Explosion-proof / Increased safety**

"A classic monobloc design is upgraded with advanced grid alloys and material processes. The addition of the CatVent™ catalyst makes the TUA range a sound financial and technical choice."

Dr. Mike McDonagh
SEC Group

Product Benefits

Long life in operation and storage

We have optimised the grid design and paste formulation to extend the TUA's service life in both operation and storage. The series recovers well from accidental deep-discharge and has a very low rate of self-discharge.

Very low maintenance

The TUA is designed for standby and float requirements. A high-energy reliable battery, it does not require additional water. This makes it virtually maintenance free and offers peace of mind for busy operators in a range of applications.

Patented valve system

When pressure builds up in the cell, the one-way safety valve opens at 1-3 psi and releases pressure before closing again. This patented valve system is well built and efficient, preventing the ingress of oxygen, which reduces battery life.

Wide operating temperature range

The TUA performs well under variable temperature conditions in many applications. Although the TUA has an operating temperature range of -10°C to +50°C, continuous or regular operation above 45°C is not recommended.

Suited for multiple applications

The TUA is a powerful top terminal battery that can be used for both float and cyclic conditions in horizontal and vertical positions. It's suited for a wide range of applications, but SEC engineers particularly recommend it for the UPS, emergency lighting and cellular radio markets.

ISO:9001 approved

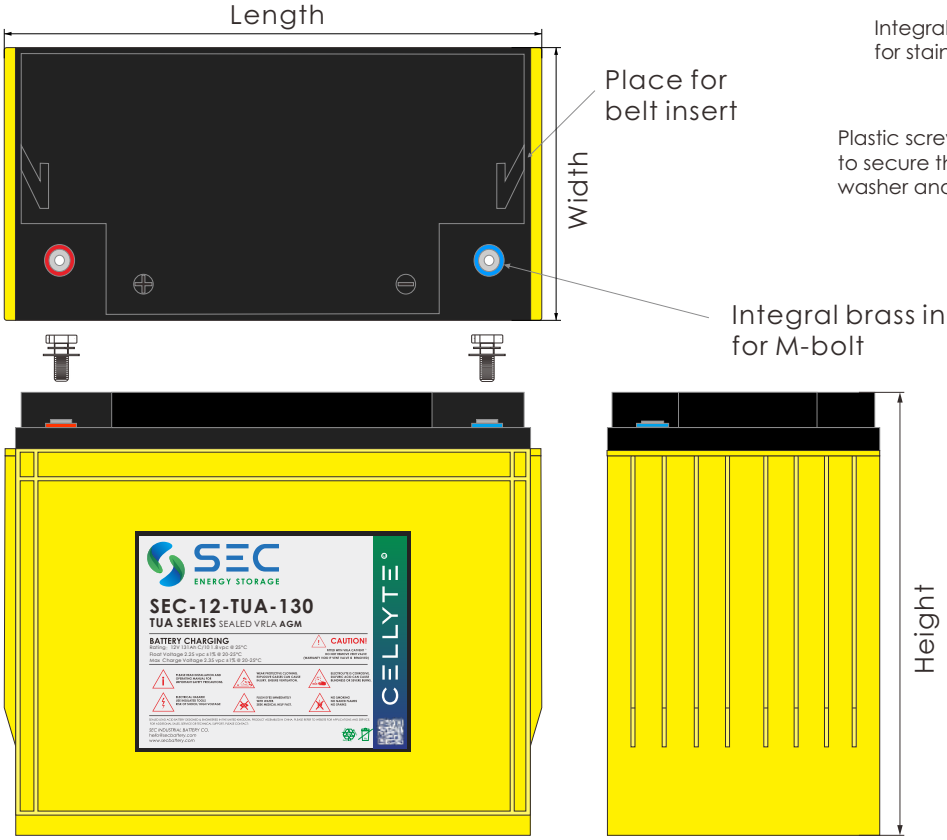
With installation of the most modern production and design equipment, SEC ensures that continuous product improvement is a given. We have recently had our efforts recognised with the coveted TUV SUD ISO:9001:2015 accreditation and are proud to remain the first in the industry to hold this mark of quality.

Applications

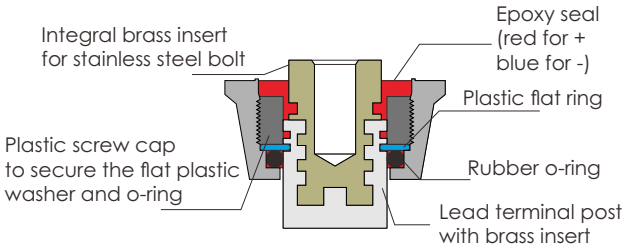
- Telecommunication
- Fire & security alarm systems
- Switch-gear operations
- Emergency lighting
- UPS systems
- Standby power supply

Engineering

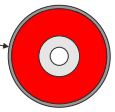
Cell outline



Triple-seal detail



SEC TRIPLE-SEAL DESIGN



Material:
ABS Case & Cover
(V0 Optional)

Colour:
Case: pantone Yellow C
Cover: black

Female terminal type

Female terminal type	Description
FT2	12mm ø brass insert terminal for M5 bolt
FT3	14mm ø brass insert terminal for M6 bolt
FT4	16mm ø brass insert terminal for M6 bolt
FT5	16mm ø brass insert terminal for M8 bolt

Cell dimensions

Dimensions/ Weights/ Data

SEC bloc type	Nominal capacity (Ah) C/10 1.80 vpc	Battery weight		Overall battery dimension						Short circuit amps	Internal resistance (mΩ)	Maximum charging current (A)	Female terminal type
				Length		Width		Height					
		kg	lbs	mm	Inch	mm	Inch	mm	Inch				
6-TUA-120	120	16.0	35.3	196	7.72	170	6.69	214	8.43	3200	3.00	24.0	FT4
6-TUA-175	180	26.5	58.4	306	12.0	168	6.61	225	8.86	4600	2.40	36.0	FT5
6-TUA-200	200	30.5	67.2	323	12.7	178	7.01	230	9.06	5000	2.30	40.0	FT5
6-TUA-210	205	31.8	70.1	243	9.6	188	7.40	275	10.8	5500	2.20	41.0	FT5
12-TUA-15	16.0	5.20	11.5	181	7.13	77.0	3.03	167	6.57	650	14.0	3.20	FT2
12-TUA-20	22.2	7.30	16.1	175	6.89	166	6.54	125	4.92	940	12.0	4.44	FT3
12-TUA-25	25.3	7.80	17.2	165	6.50	125	4.92	176	6.93	1220	8.20	5.06	FT3
12-TUA-30	32.0	9.40	20.7	196	7.72	131	5.16	181	7.13	1500	7.30	6.40	FT3
12-TUA-40	42.0	12.0	26.5	197	7.76	165	6.50	170	6.69	1700	6.00	8.40	FT3
12-TUA-50	53.6	16.5	36.4	230	9.06	138	5.43	228	8.98	1900	5.60	10.7	FT3
12-TUA-65	63.3	20.0	44.1	350	13.8	167	6.57	179	7.05	2000	5.50	12.7	FT3

Cell dimensions

Dimensions/ Weights/ Data

SEC bloc type	Nominal capacity (Ah) C/10 1.80 vpc	Battery weight		Overall battery dimension						Short circuit amps	Internal resistance (mΩ)	Maximum charging current (A)	Female terminal type
				Length		Width		Height					
		kg	lbs	mm	Inch	mm	Inch	mm	Inch				
12-TUA-70	68.2	20.5	45.2	260	10.2	169	6.65	227	8.94	2100	5.40	13.6	FT3
12-TUA-80	77.9	21.0	46.3	260	10.2	169	6.65	227	8.94	2400	4.50	15.6	FT3
12-TUA-90	90.0	26.0	57.3	307	12.1	170	6.69	227	8.94	2650	4.30	18.0	FT4
12-TUA-100	100	29.0	63.9	331	13.0	176	6.93	225	8.86	2900	3.90	20.0	FT4
12-TUA-110	108	31.0	68.3	331	13.0	176	6.93	225	8.86	3000	3.40	21.6	FT4
12-TUA-120	117	31.5	69.4	342	13.5	173	6.81	285	11.2	3300	3.10	23.4	FT4
12-TUA-130	131	41.0	90.4	342	13.5	173	6.81	285	11.2	4200	2.90	26.2	FT4
12-TUA-150	146	40.0	88.2	483	19.0	170	6.69	240	9.45	4500	2.80	29.2	FT5
12-TUA-160	156	49.0	108	532	20.9	207	8.15	240	9.45	4500	2.60	31.2	FT5
12-TUA-175	175	54.0	119	532	20.9	207	8.15	240	9.45	4700	2.30	35.0	FT5
12-TUA-200	195	60.5	133	522	20.6	240	9.45	225	8.86	5400	2.20	39.0	FT5
12-TUA-225	224	66.8	147	522	20.6	269	10.6	245	9.65	6157	2.00	44.8	FT5
12-TUA-250	244	73.0	161	522	20.6	269	10.6	245	9.65	6464	1.90	48.8	FT5

** 6-TUA-120, 6-TUA-175, 6-TUA-200, 12-TUA-15, 12-TUA-20, 12-TUA-25 and 12-TUA-30, 12-TUA-40,12-TUA-45 and 12-TUA-65 are not fitted with catalyst.*

Capacity

Ampere hour at 25°C

SEC bloc type	Discharge ampere hour at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
6-TUA-120	1.80	43.2	55.7	62.0	1.85	69.6	80.3	86.0	91.8	96.0	99.5	103	110	112	114	119
	1.75	47.4	57.7	64.4	1.80	73.2	85.2	91.2	97.5	102	106	109	117	120	122	128
	1.67	49.8	59.0	65.1	1.75	75.4	87.3	93.4	99.9	104	108	112	120	123	125	132
6-TUA-175	1.80	63.8	82.2	91.5	1.85	104	120	129	137	144	149	155	166	167	170	178
	1.75	69.8	85.0	94.9	1.80	108	128	136	146	153	158	164	175	180	182	192
	1.67	73.4	86.9	95.8	1.75	111	131	140	149	156	162	168	180	184	187	198
6-TUA-200	1.80	70.9	91.3	102	1.85	116	134	143	153	160	166	172	184	187	190	198
	1.75	78.0	95.0	106	1.80	120	142	152	162	170	176	182	194	200	203	214
	1.67	82.0	97.1	107	1.75	124	146	156	166	174	180	187	200	205	209	220
6-TUA-210	1.80	71.5	92.1	103	1.85	119	137	147	157	164	170	176	188	191	194	203
	1.75	78.0	95.0	106	1.80	121	146	156	166	174	180	187	199	205	208	218
	1.67	82.0	97.1	107	1.75	124	149	160	170	178	185	191	205	210	214	225
12-TUA-15	1.80	5.76	7.43	8.27	1.85	8.66	10.7	11.5	12.2	12.8	13.3	13.7	14.7	14.9	15.2	16.0
	1.75	6.32	7.70	8.59	1.80	9.76	11.4	12.2	13.0	13.6	14.1	14.6	15.6	16.0	16.3	17.2
	1.67	6.64	7.87	8.68	1.75	10.1	11.6	12.5	13.3	13.9	14.4	14.9	16.0	16.4	16.7	18.0

Capacity

Ampere hour at 25°C

SEC bloc type	Discharge ampere hour at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
12-TUA-20	1.80	7.97	10.3	11.4	1.85	12.9	14.9	15.9	17.0	17.8	18.5	19.1	20.4	20.7	21.1	21.6
	1.75	8.80	10.7	12.0	1.80	13.5	15.8	16.9	18.1	18.9	19.6	20.3	21.7	22.2	22.6	24.0
	1.67	9.25	11.0	12.1	1.75	14.0	16.2	17.3	18.5	19.4	20.1	20.8	22.2	22.8	23.3	24.0
12-TUA-25	1.80	9.09	11.7	13.1	1.85	14.7	17.0	18.2	19.4	20.3	21.0	22.0	23.2	23.7	24.1	25.2
	1.75	10.0	12.2	13.6	1.80	15.4	18.0	19.3	20.6	21.6	22.3	23.3	24.7	25.3	25.8	27.1
	1.67	10.5	12.4	13.7	1.75	15.9	18.5	19.8	21.1	22.1	22.9	23.9	25.4	26.0	26.5	28.0
12-TUA-30	1.80	11.5	14.8	16.5	1.85	18.6	21.6	23.0	24.7	25.8	26.7	27.6	29.4	30.0	30.6	32.2
	1.75	12.6	15.4	17.2	1.80	19.5	22.8	24.4	26.2	27.4	28.3	29.3	31.2	32.0	32.8	34.3
	1.67	13.3	15.7	17.4	1.75	20.1	23.4	25.0	26.8	28.0	29.0	30.0	32.0	33.0	33.7	35.4
12-TUA-40	1.80	15.1	19.5	21.7	1.85	24.4	28.7	30.8	32.9	34.4	35.6	36.6	38.6	40.0	40.8	42.9
	1.75	16.6	20.2	22.6	1.80	25.6	30.5	32.6	34.8	36.5	37.8	38.8	41.0	42.0	43.7	43.9
	1.67	17.5	20.7	22.8	1.75	26.4	31.2	33.4	35.7	37.4	38.7	39.8	42.0	44.0	44.9	47.0
12-TUA-50	1.80	19.3	24.9	27.7	1.85	31.1	35.9	38.4	41.1	43.0	44.5	46.1	49.3	50.1	51.0	53.7
	1.75	21.2	25.8	28.8	1.80	32.7	38.1	40.8	43.5	45.6	47.2	48.9	52.2	53.6	54.6	57.5
	1.67	22.3	26.4	29.1	1.75	33.7	39.0	41.8	44.7	46.8	48.4	50.1	53.6	55.0	56.1	59.0
12-TUA-65	1.80	22.8	29.4	32.7	1.85	36.7	42.5	45.4	48.6	50.8	52.5	54.5	58.2	59.2	60.3	63.8
	1.75	25.0	30.5	34.0	1.80	38.6	45.0	48.2	51.5	53.9	55.8	57.8	61.7	63.3	64.5	67.9
	1.67	26.3	31.2	34.4	1.75	39.8	46.2	49.4	52.8	55.2	57.0	59.2	63.3	65.0	66.3	71.0
12-TUA-70	1.80	24.6	31.7	35.3	1.85	39.5	45.7	48.9	52.2	54.7	56.5	58.7	62.7	63.7	64.9	69.3
	1.75	26.9	32.8	36.6	1.80	41.6	48.5	51.9	55.5	58.0	60.0	62.2	66.5	68.2	69.5	74.8
	1.67	28.3	33.5	37.0	1.75	42.8	49.7	53.2	56.7	59.5	61.5	63.6	68.2	70.0	71.4	77.0
12-TUA-80	1.80	28.1	36.1	40.3	1.85	45.2	52.2	55.9	59.7	62.4	64.8	67.1	71.7	72.8	74.3	79.2
	1.75	30.8	37.5	41.9	1.80	47.5	55.4	59.3	63.3	66.4	68.5	71.1	76.0	77.9	79.4	83.5
	1.67	32.4	38.4	42.3	1.75	49.0	56.8	60.8	65.0	68.0	70.4	72.9	77.9	80.0	81.6	88.0
12-TUA-90	1.80	32.4	41.8	46.5	1.85	52.2	60.1	64.3	68.7	71.9	74.5	77.3	82.8	83.7	85.4	90.0
	1.75	35.5	43.3	48.3	1.80	54.9	63.8	68.2	72.9	76.3	79.0	81.9	87.8	90.0	91.3	96.5
	1.67	37.4	44.2	48.8	1.75	56.5	65.3	69.9	74.7	78.2	81.0	84.0	90.0	92.0	93.8	100
12-TUA-100	1.80	36.0	46.4	51.7	1.85	58.0	67.3	72.0	76.8	80.4	83.4	86.3	92.0	93.7	95.6	103
	1.75	39.5	48.1	53.7	1.80	61.0	71.4	76.4	81.6	85.4	88.5	91.2	97.5	100	102	109
	1.67	41.5	49.2	54.2	1.75	62.8	73.1	78.2	83.6	87.6	90.5	93.6	100	103	105	110
12-TUA-110	1.80	38.9	50.1	55.9	1.85	62.6	72.5	77.6	82.8	86.8	89.9	93.0	99.0	101	103	109
	1.75	42.7	52.0	58.0	1.80	65.9	76.9	82.3	87.9	92.0	95.3	98.4	105	108	110	116
	1.67	44.9	53.2	58.6	1.75	67.9	78.8	84.4	90.0	94.4	97.5	102	108	111	113	121
12-TUA-120	1.80	42.1	54.2	60.4	1.85	67.8	78.4	83.9	89.6	93.8	97.0	101	108	109	111	119
	1.75	46.1	56.2	62.7	1.80	71.3	83.1	89.0	95.1	99.6	103	107	114	117	119	125
	1.67	48.5	57.5	63.4	1.75	73.4	85.2	91.2	97.4	102	106	109	117	120	122	132
12-TUA-130	1.80	45.8	59.0	65.8	1.85	76.3	88.2	94.4	101	106	109	113	121	123	125	133
	1.75	50.2	61.2	68.3	1.80	77.6	93.5	100	107	112	116	120	128	131	134	139
	1.67	52.8	62.6	69.0	1.75	79.9	95.9	103	110	115	119	123	131	135	138	148
12-TUA-150	1.80	50.9	65.6	73.1	1.85	84.7	98.0	105	112	117	121	126	134	137	139	149
	1.75	55.8	68.0	75.9	1.80	86.2	104	111	119	124	129	133	142	146	149	157
	1.67	58.7	69.5	76.7	1.75	88.8	107	114	122	128	132	137	146	150	153	165
12-TUA-160	1.80	54.3	69.9	77.9	1.85	90.4	105	112	119	125	130	134	143	146	149	159
	1.75	59.5	72.5	80.9	1.80	91.9	111	119	127	133	137	142	152	156	158	167
	1.67	62.6	74.1	81.8	1.75	94.7	114	122	130	136	141	146	156	160	163	177
12-TUA-175	1.80	60.8	78.4	87.3	1.85	102	118	126	134	141	146	151	161	164	167	178
	1.75	67.3	81.9	91.5	1.80	103	125	134	143	149	155	160	171	175	179	188
	1.67	70.7	83.8	92.4	1.75	107	128	137	146	153	158	164	175	180	184	198

Capacity

Ampere hour at 25°C

SEC bloc type	Discharge ampere hour at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
12-TUA-200	1.80	67.9	87.5	97.5	1.85	113	131	140	149	156	162	167	179	182	186	198
	1.75	74.2	90.4	101	1.80	115	139	148	158	166	172	178	190	195	198	209
	1.67	78.0	92.4	102	1.75	118	142	152	162	170	176	182	195	200	204	220
12-TUA-225	1.80	78.0	100	112	1.85	130	150	161	172	180	186	193	206	209	213	228
	1.75	85.5	104	116	1.80	132	159	171	182	191	198	205	218	224	228	245
	1.67	89.9	106	117	1.75	136	163	175	187	196	202	209	224	230	235	252
12-TUA-250	1.80	85.0	110	122	1.85	141	163	175	187	196	202	209	224	228	232	242
	1.75	93.0	113	127	1.80	144	173	185	198	207	215	222	237	244	248	262
	1.67	97.8	116	128	1.75	148	177	190	203	212	220	228	243	250	255	270

Current

Amps at 25°C

SEC bloc type	Discharge amps at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
6-TUA-120	1.80	173	111	82.7	1.85	69.6	53.5	43.0	30.6	24.0	19.9	17.2	13.8	11.2	9.50	4.95
	1.75	190	115	85.9	1.80	73.2	56.8	45.6	32.5	25.5	21.1	18.2	14.6	12.0	10.2	5.33
	1.67	199	118	86.8	1.75	75.4	58.2	46.7	33.3	26.1	21.6	18.7	15.0	12.3	10.4	5.50
6-TUA-175	1.80	255	164	122	1.85	104	80.0	64.3	45.7	36.0	29.8	25.8	20.7	16.7	14.2	7.42
	1.75	279	170	127	1.80	108	85.0	68.0	48.6	38.2	31.6	27.3	21.9	18.0	15.2	8.00
	1.67	294	174	128	1.75	111	87.1	69.9	49.7	39.0	32.4	28.0	22.5	18.4	15.6	8.25
6-TUA-200	1.80	283	183	136	1.85	116	89.3	71.5	51.0	40.0	33.2	28.6	23.0	18.7	15.8	8.25
	1.75	312	190	141	1.80	120	94.7	76.0	54.0	42.5	35.2	30.3	24.3	20.0	16.9	8.90
	1.67	328	194	143	1.75	124	97.0	77.9	55.3	43.5	36.0	31.1	25.0	20.5	17.4	9.17
6-TUA-210	1.80	286	184	137	1.85	119	91.3	73.4	52.3	41.0	34.0	29.3	23.5	19.1	16.2	8.44
	1.75	312	190	141	1.80	121	97.0	77.9	55.3	43.5	36.0	31.1	24.9	20.5	17.3	9.08
	1.67	328	194	143	1.75	124	99.3	79.8	56.8	44.6	37.0	31.8	25.6	21.0	17.8	9.38
12-TUA-15	1.80	23.1	14.9	11.0	1.85	8.66	7.13	5.73	4.08	3.20	2.66	2.29	1.84	1.49	1.27	0.67
	1.75	25.3	15.4	11.5	1.80	9.76	7.58	6.08	4.33	3.40	2.82	2.43	1.95	1.60	1.36	0.71
	1.67	26.6	15.7	11.6	1.75	10.1	7.73	6.23	4.43	3.48	2.88	2.49	2.00	1.64	1.39	0.75
12-TUA-20	1.80	31.9	20.5	15.3	1.85	12.9	9.93	7.95	5.67	4.45	3.69	3.18	2.55	2.07	1.76	0.90
	1.75	35.2	21.4	16.0	1.80	13.5	10.5	8.45	6.02	4.73	3.92	3.38	2.71	2.22	1.88	1.00
	1.67	37.0	21.9	16.1	1.75	14.0	10.8	8.65	6.17	4.85	4.01	3.46	2.78	2.28	1.94	1.00
12-TUA-25	1.80	36.4	23.4	17.4	1.85	14.7	11.3	9.09	6.47	5.08	4.20	3.67	2.90	2.37	2.01	1.05
	1.75	40.0	24.4	18.1	1.80	15.4	12.0	9.64	6.87	5.39	4.46	3.88	3.09	2.53	2.15	1.13
	1.67	42.0	24.9	18.3	1.75	15.9	12.3	9.88	7.03	5.53	4.58	3.98	3.18	2.60	2.21	1.17
12-TUA-30	1.80	46.1	29.7	22.0	1.85	18.6	14.4	11.5	8.22	6.45	5.34	4.60	3.68	3.00	2.55	1.34
	1.75	50.5	30.8	22.9	1.80	19.5	15.2	12.2	8.72	6.84	5.66	4.88	3.90	3.20	2.73	1.43
	1.67	53.1	31.5	23.1	1.75	20.1	15.6	12.5	8.93	7.01	5.80	5.00	4.00	3.30	2.81	1.47
12-TUA-40	1.80	60.5	39.0	28.9	1.85	24.4	19.1	15.4	11.0	8.60	7.12	6.10	4.83	4.00	3.40	1.79
	1.75	66.4	40.4	30.1	1.80	25.6	20.3	16.3	11.6	9.13	7.56	6.47	5.12	4.20	3.64	1.83
	1.67	69.8	41.3	30.4	1.75	26.4	20.8	16.7	11.9	9.35	7.74	6.63	5.25	4.40	3.74	1.96
12-TUA-50	1.80	77.2	49.8	37.0	1.85	31.1	23.9	19.2	13.7	10.8	8.90	7.68	6.16	5.01	4.25	2.24
	1.75	84.7	51.6	38.4	1.80	32.7	25.4	20.4	14.5	11.4	9.44	8.15	6.53	5.36	4.55	2.39
	1.67	89.1	52.8	38.8	1.75	33.7	26.0	20.9	14.9	11.7	9.68	8.35	6.70	5.50	4.68	2.46
12-TUA-65	1.80	91.2	58.7	43.6	1.85	36.7	28.3	22.7	16.2	12.7	10.5	9.08	7.28	5.92	5.03	2.66
	1.75	100	61.0	45.4	1.80	38.6	30.0	24.1	17.2	13.5	11.2	9.63	7.71	6.33	5.38	2.83
	1.67	105	62.3	45.8	1.75	39.8	30.8	24.7	17.6	13.8	11.4	9.87	7.91	6.50	5.53	2.96

Current

Amps at 25°C

SEC bloc type	Discharge amps at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
12-TUA-70	1.80	98.3	63.3	47.0	1.85	39.5	30.5	24.5	17.4	13.7	11.3	9.78	7.84	6.37	5.41	2.89
	1.75	108	65.5	48.8	1.80	41.6	32.3	26.0	18.5	14.5	12.0	10.4	8.31	6.82	5.79	3.12
	1.67	113	67.0	49.3	1.75	42.8	33.1	26.6	18.9	14.9	12.3	10.6	8.52	7.00	5.95	3.21
12-TUA-80	1.80	112	72.3	53.7	1.85	45.2	34.8	28.0	19.9	15.6	13.0	11.2	8.96	7.28	6.19	3.30
	1.75	123	75.0	55.8	1.80	47.5	36.9	29.7	21.1	16.6	13.7	11.9	9.50	7.79	6.62	3.48
	1.67	130	76.7	56.4	1.75	49.0	37.9	30.4	21.7	17.0	14.1	12.2	9.74	8.00	6.80	3.67
12-TUA-90	1.80	130	83.5	62.0	1.85	52.2	40.1	32.2	22.9	18.0	14.9	12.9	10.4	8.37	7.12	3.75
	1.75	142	86.5	64.4	1.80	54.9	42.5	34.1	24.3	19.1	15.8	13.7	11.0	9.00	7.61	4.02
	1.67	149	88.5	65.0	1.75	56.5	43.5	35.0	24.9	19.6	16.2	14.0	11.3	9.20	7.82	4.17
12-TUA-100	1.80	144	92.8	68.9	1.85	58.0	44.9	36.0	25.6	20.1	16.7	14.4	11.5	9.37	7.97	4.29
	1.75	158	96.2	71.6	1.80	61.0	47.6	38.2	27.2	21.4	17.7	15.2	12.2	10.0	8.52	4.54
	1.67	166	98.3	72.3	1.75	62.8	48.7	39.1	27.9	21.9	18.1	15.6	12.5	10.3	8.75	4.58
12-TUA-110	1.80	156	100	74.5	1.85	62.6	48.3	38.8	27.6	21.7	18.0	15.5	12.4	10.1	8.58	4.54
	1.75	171	104	77.4	1.80	65.9	51.3	41.2	29.3	23.0	19.1	16.4	13.1	10.8	9.17	4.82
	1.67	180	106	78.2	1.75	67.9	52.5	42.2	30.0	23.6	19.5	16.9	13.5	11.1	9.42	5.04
12-TUA-120	1.80	168	108	80.6	1.85	67.8	52.3	42.0	29.9	23.5	19.4	16.8	13.5	10.9	9.25	4.95
	1.75	185	112	83.7	1.80	71.3	55.4	44.5	31.7	24.9	20.6	17.8	14.3	11.7	9.93	5.23
	1.67	194	115	84.5	1.75	73.4	56.8	45.6	32.5	25.5	21.1	18.2	14.6	12.0	10.2	5.50
12-TUA-130	1.80	183	118	87.7	1.85	76.3	58.8	47.2	33.6	26.4	21.8	18.8	15.1	12.3	10.4	5.54
	1.75	201	122	91.1	1.80	77.6	62.3	50.0	35.7	28.0	23.2	20.0	16.0	13.1	11.2	5.79
	1.67	211	125	92.0	1.75	79.9	63.9	51.3	36.5	28.7	23.8	20.5	16.4	13.5	11.5	6.17
12-TUA-150	1.80	204	131	97.4	1.85	84.7	65.3	52.4	37.3	29.3	24.2	21.0	16.8	13.7	11.6	6.20
	1.75	223	136	101	1.80	86.2	69.3	55.5	39.6	31.0	25.8	22.2	17.8	14.6	12.4	6.54
	1.67	235	139	102	1.75	88.8	71.0	57.0	40.6	31.9	26.4	22.8	18.3	15.0	12.8	6.88
12-TUA-160	1.80	217	140	104	1.85	90.4	69.7	55.9	39.8	31.3	25.9	22.3	17.9	14.6	12.4	6.63
	1.75	238	145	108	1.80	91.9	73.9	59.3	42.3	33.2	27.4	23.7	19.0	15.6	13.2	6.97
	1.67	250	148	109	1.75	94.7	75.7	60.8	43.3	34.0	28.2	24.3	19.5	16.0	13.6	7.38
12-TUA-175	1.80	243	157	116	1.85	102	78.4	62.9	44.7	35.2	29.1	25.2	20.1	16.4	13.9	7.42
	1.75	269	164	122	1.80	103	83.2	66.8	47.6	37.3	30.9	26.7	21.4	17.5	14.9	7.82
	1.67	283	168	123	1.75	107	85.2	68.4	48.7	38.3	31.6	27.3	21.9	18.0	15.3	8.25
12-TUA-200	1.80	272	175	130	1.85	113	87.1	69.9	49.7	39.0	32.4	27.9	22.4	18.2	15.5	8.25
	1.75	297	181	134	1.80	115	92.4	74.0	52.8	41.5	34.4	29.6	23.7	19.5	16.5	8.71
	1.67	312	185	136	1.75	118	94.7	76.0	54.0	42.5	35.2	30.3	24.4	20.0	17.0	9.17
12-TUA-225	1.80	312	201	149	1.85	130	100	80.4	57.3	45.0	37.2	32.1	25.8	20.9	17.8	9.49
	1.75	342	208	155	1.80	132	106	85.3	60.7	47.7	39.5	34.1	27.3	22.4	19.0	10.2
	1.67	360	213	157	1.75	136	109	87.4	62.3	48.9	40.4	34.9	28.0	23.0	19.6	10.5
12-TUA-250	1.80	340	219	163	1.85	141	109	87.4	62.3	48.9	40.4	34.9	28.0	22.8	19.3	10.1
	1.75	372	227	169	1.80	144	115	92.5	66.0	51.8	42.9	37.0	29.6	24.4	20.7	10.9
	1.67	391	232	170	1.75	148	118	95.0	67.7	53.1	44.0	38.0	30.4	25.0	21.3	11.3

Power

Watts/cell at 25°C

SEC bloc type	Discharge watts/cell at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
6-TUA-120	1.80	376	238	179	1.85	133	103	83.1	59.6	47.1	39.2	33.9	27.3	22.3	19.0	9.93
	1.75	396	241	181	1.80	139	108	87.6	63.0	49.7	41.3	35.7	28.9	23.8	20.2	10.7
	1.67	404	243	180	1.75	141	110	88.6	63.9	50.4	41.9	36.4	29.4	24.2	20.6	10.9

Power

Watts/cell at 25°C

SEC bloc type	Discharge watts/cell at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
6-TUA-175	1.80	527	343	260	1.85	199	154	124	89.0	70.6	58.7	51.0	41.1	33.3	28.4	14.9
	1.75	556	345	264	1.80	205	162	131	94.1	74.5	61.9	53.7	43.3	35.7	30.2	16.0
	1.67	569	347	262	1.75	207	164	133	95.3	75.3	62.9	54.6	44.1	36.2	30.8	16.4
6-TUA-200	1.80	586	381	290	1.85	222	172	138	99.4	78.5	65.4	56.5	45.7	37.3	31.7	16.6
	1.75	619	383	292	1.80	227	181	146	105	82.9	69.0	59.6	48.0	39.7	33.6	17.8
	1.67	632	387	291	1.75	231	183	148	106	84.0	69.9	60.6	49.0	40.3	34.3	18.2
6-TUA-210	1.80	590	383	290	1.85	228	176	142	102	80.4	67.0	57.9	46.7	38.1	32.4	16.9
	1.75	623	385	293	1.80	229	185	150	107	84.8	70.5	61.1	49.2	40.7	34.5	18.2
	1.67	635	389	293	1.75	231	187	151	109	86.2	71.9	62.0	50.2	41.3	35.2	18.6
12-TUA-15	1.80	50.3	32.7	24.5	1.85	16.6	13.7	11.1	7.95	6.28	5.24	4.53	3.65	2.97	2.53	1.34
	1.75	53.1	32.9	24.7	1.80	18.5	14.5	11.7	8.39	6.63	5.52	4.78	3.86	3.17	2.70	1.43
	1.67	54.3	33.1	24.5	1.75	18.7	14.6	11.8	8.50	6.71	5.59	4.85	3.92	3.23	2.74	1.49
12-TUA-20	1.80	69.7	45.2	33.9	1.85	24.7	19.1	15.4	11.0	8.73	7.27	6.29	5.07	4.13	3.52	1.81
	1.75	73.6	45.6	34.3	1.80	25.6	20.0	16.2	11.7	9.21	7.68	6.65	5.36	4.40	3.75	2.00
	1.67	75.3	45.9	34.0	1.75	26.1	20.4	16.4	11.8	9.37	7.79	6.74	5.44	4.49	3.83	1.99
12-TUA-25	1.80	79.6	51.6	38.6	1.85	28.1	21.7	17.6	12.6	10.0	8.27	7.25	5.76	4.73	4.01	2.11
	1.75	83.9	52.0	39.1	1.80	29.2	22.9	18.5	13.3	10.5	8.74	7.63	6.11	5.02	4.28	2.26
	1.67	85.8	52.4	39.0	1.75	29.7	23.2	18.8	13.5	10.7	8.89	7.76	6.23	5.12	4.36	2.32
12-TUA-30	1.80	100	65.3	48.9	1.85	35.6	27.7	22.2	16.0	12.7	10.5	9.09	7.30	5.98	5.10	2.69
	1.75	106	65.7	49.4	1.80	36.9	29.0	23.4	16.9	13.3	11.1	9.59	7.71	6.35	5.43	2.86
	1.67	108	66.2	49.2	1.75	37.5	29.4	23.7	17.1	13.5	11.3	9.75	7.84	6.49	5.54	2.92
12-TUA-40	1.80	132	85.8	64.2	1.85	46.7	36.8	29.8	21.4	16.9	14.0	12.1	9.59	7.98	6.80	3.59
	1.75	139	86.3	64.8	1.80	48.5	38.8	31.3	22.5	17.8	14.8	12.7	10.1	8.33	7.24	3.66
	1.67	142	86.9	64.6	1.75	49.2	39.2	31.7	22.8	18.1	15.0	12.9	10.3	8.66	7.38	3.89
12-TUA-50	1.80	168	109	81.9	1.85	59.5	46.0	37.1	26.7	21.1	17.5	15.2	12.2	10.0	8.50	4.50
	1.75	178	110	82.7	1.80	61.9	48.5	39.2	28.1	22.2	18.5	16.0	12.9	10.6	9.05	4.58
	1.67	182	111	82.4	1.75	62.9	49.0	39.7	28.6	22.6	18.8	16.3	13.1	10.8	9.22	4.87
12-TUA-65	1.80	198	129	96.7	1.85	70.2	54.4	43.9	31.6	24.9	20.7	18.0	14.5	11.8	10.0	5.34
	1.75	211	130	97.8	1.80	73.1	57.3	46.3	33.3	26.3	21.9	18.9	15.2	12.6	10.7	5.65
	1.67	215	131	97.4	1.75	74.2	58.1	46.9	33.8	26.7	22.1	19.2	15.5	12.8	10.9	5.88
12-TUA-70	1.80	215	139	104	1.85	75.6	58.6	47.3	33.9	26.8	22.3	19.3	15.6	12.7	10.8	5.80
	1.75	227	140	105	1.80	78.8	61.7	49.8	35.8	28.3	23.5	20.4	16.4	13.5	11.5	6.23
	1.67	231	141	105	1.75	79.8	62.4	50.5	36.3	28.7	23.9	20.7	16.7	13.8	11.7	6.37
12-TUA-80	1.80	244	159	119	1.85	86.5	67.0	54.0	38.8	30.6	25.5	22.1	17.8	14.5	12.4	6.62
	1.75	259	160	120	1.80	90.0	70.5	56.9	40.9	32.4	26.8	23.3	18.8	15.5	13.2	6.96
	1.67	264	161	120	1.75	91.4	71.4	57.7	41.6	32.8	27.3	23.7	19.1	15.7	13.4	7.28
12-TUA-90	1.80	283	184	137	1.85	99.9	77.1	62.1	44.6	35.3	29.4	25.5	20.6	16.7	14.2	7.53
	1.75	299	185	139	1.80	104	81.1	65.5	47.1	37.2	31.0	26.8	21.7	17.9	15.1	8.04
	1.67	305	187	138	1.75	105	82.0	66.3	47.8	37.8	31.5	27.3	22.1	18.1	15.4	8.28
12-TUA-100	1.80	315	205	153	1.85	111	86.3	69.6	49.9	39.4	32.9	28.4	22.9	18.7	15.9	8.61
	1.75	331	206	154	1.80	116	90.9	73.3	52.7	41.6	34.7	29.9	24.1	19.8	16.9	9.08
	1.67	340	207	154	1.75	117	91.9	74.2	53.4	42.3	35.2	30.4	24.5	20.3	17.3	9.10
12-TUA-110	1.80	339	220	164	1.85	120	92.9	75.0	53.8	42.6	35.4	30.6	24.6	20.1	17.2	9.11
	1.75	358	223	165	1.80	125	97.9	79.0	56.8	44.9	37.3	32.2	25.9	21.4	18.2	9.65
	1.67	366	223	165	1.75	127	99.0	80.1	57.5	45.6	37.9	34.7	26.5	21.8	18.6	10.0
12-TUA-120	1.80	357	235	176	1.85	130	101	81.1	58.2	46.0	38.2	33.2	26.8	21.7	18.5	9.93
	1.75	378	235	178	1.80	135	106	85.4	61.4	48.6	40.4	35.0	28.2	23.2	19.7	10.4
	1.67	385	238	177	1.75	137	107	86.5	62.3	49.3	41.0	35.4	28.6	23.6	20.1	10.9

Power

Watts/cell at 25°C

SEC bloc type	Discharge watts/cell at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
12-TUA-130	1.80	398	253	190	1.85	146	113	91.2	65.5	51.8	42.9	37.2	30.0	24.5	20.8	11.1
	1.75	419	256	192	1.80	147	119	96.0	69.1	54.6	45.4	39.3	31.6	26.0	22.2	11.6
	1.67	429	257	190	1.75	149	120	97.4	70.0	55.4	46.2	40.0	32.1	26.6	22.7	12.2
12-TUA-150	1.80	442	282	211	1.85	162	126	101	72.8	57.4	47.7	41.5	33.3	27.3	23.2	12.4
	1.75	466	283	214	1.80	163	132	107	76.7	60.5	50.5	43.6	35.1	29.0	24.7	13.1
	1.67	476	286	212	1.75	166	134	108	77.9	61.6	51.3	44.4	35.8	29.5	25.2	13.7
12-TUA-160	1.80	450	291	222	1.85	173	134	108	77.6	61.3	51.0	44.2	35.5	29.1	24.8	13.3
	1.75	473	294	223	1.80	174	141	114	81.9	64.7	53.7	46.5	37.6	31.0	26.3	14.9
	1.67	485	295	223	1.75	177	143	115	83.0	65.7	54.8	47.4	38.2	31.5	26.8	14.6
12-TUA-175	1.80	505	328	248	1.85	195	151	122	87.1	69.1	57.3	49.8	40.0	32.7	27.8	14.9
	1.75	533	330	253	1.80	195	159	128	92.2	72.6	60.5	52.4	42.3	34.7	29.6	14.9
	1.67	544	333	251	1.75	200	161	130	93.3	73.9	61.4	53.2	42.9	35.4	30.2	16.4
12-TUA-200	1.80	561	364	277	1.85	216	168	135	96.8	76.5	63.8	55.2	44.5	36.3	31.0	16.6
	1.75	592	367	280	1.80	218	176	142	102	80.9	67.4	58.2	46.9	38.7	32.8	19.0
	1.67	606	371	278	1.75	220	178	144	104	82.1	68.4	59.1	47.8	39.4	33.5	18.2
12-TUA-225	1.80	646	419	318	1.85	249	192	155	112	88.3	73.3	63.5	51.2	41.7	35.5	19.0
	1.75	682	422	321	1.80	250	202	164	118	93.0	77.4	67.0	53.9	44.4	37.8	20.4
	1.67	697	425	320	1.75	254	205	166	119	94.5	78.5	68.0	54.9	45.3	38.6	20.9
12-TUA-250	1.80	701	456	346	1.85	270	209	169	121	95.9	79.6	69.0	55.6	45.5	38.6	20.3
	1.75	742	458	351	1.80	273	220	178	128	101	84.0	72.7	58.6	48.4	41.1	21.8
	1.67	756	463	348	1.75	276	222	180	130	103	85.4	74.1	59.6	49.2	41.9	22.3

Operating temperature

Design operating temperature	30°C with an approved catalyst
Limit for charging	-10 to +50°C
Limit for discharging	-15 to +50°C
Limit for storage	-20 to +50°C

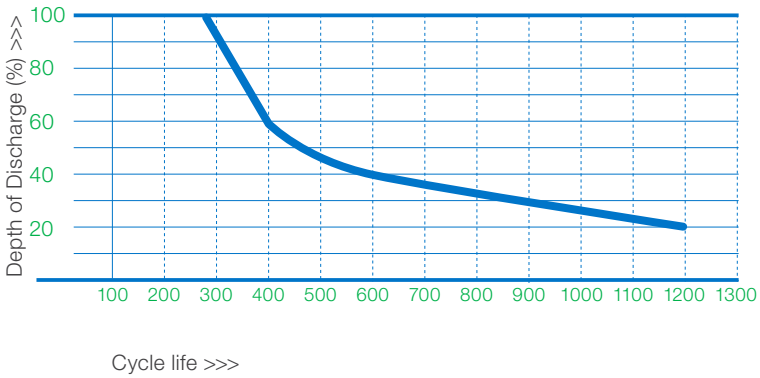
Charging method

Float charging voltage at 25°C	2.25 - 2.30vpc with temperature compensation
Maximum charging voltage at 25°C	2.50vpc with temperature compensation
Float charge temperature compensation factor	-3 mV/cell/°C above 25°C +3 mV/cell/°C below 25°C
Cyclic charge temperature compensation factor	-5 mV/cell/°C above 25°C +5 mV/cell/°C below 25°C

Cycle life

Relationship between depth of discharge and life

Ambient temperature 25°C

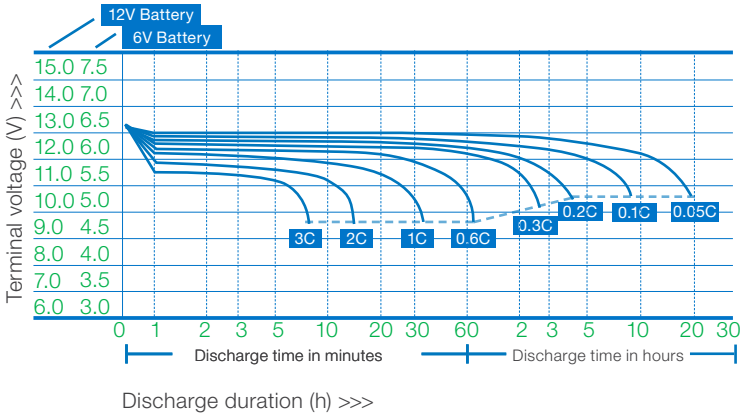


The depth of discharge critically affects the number of cycles which a battery will complete during its life time.

Discharge characteristics

Discharge current VS discharge time curve

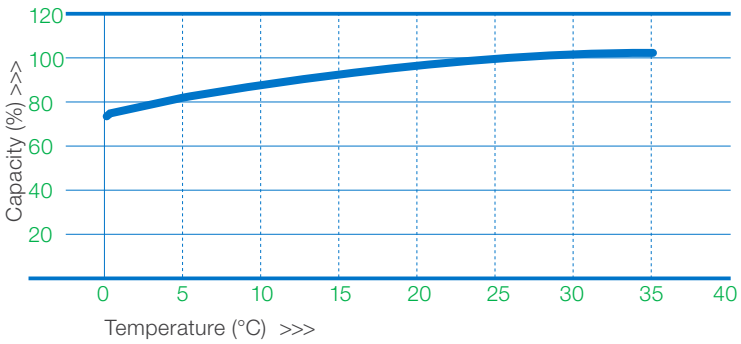
Ambient temperature 25°C



Effect of discharge rate on battery capacity.

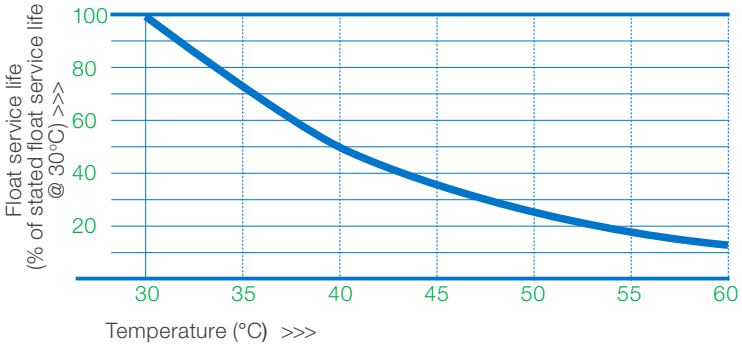
Effect of inclined temperature

Effect of temperature on capacity at C/10 discharge rate



A high ambient temperature will increase the cell capacity but will significantly shorten its calendar and cycle life.

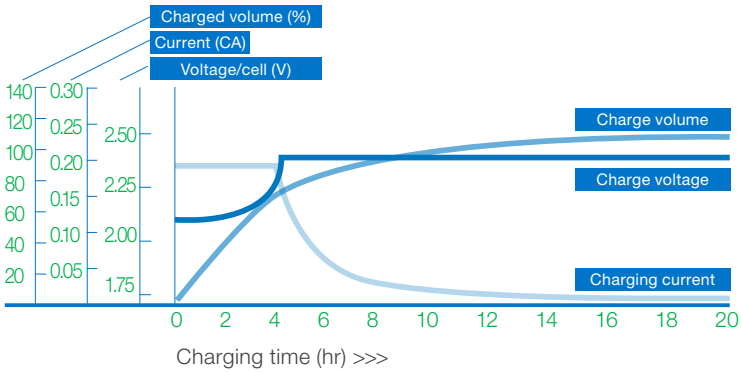
Float service life VS temperature



Effect of temperature on float service life.

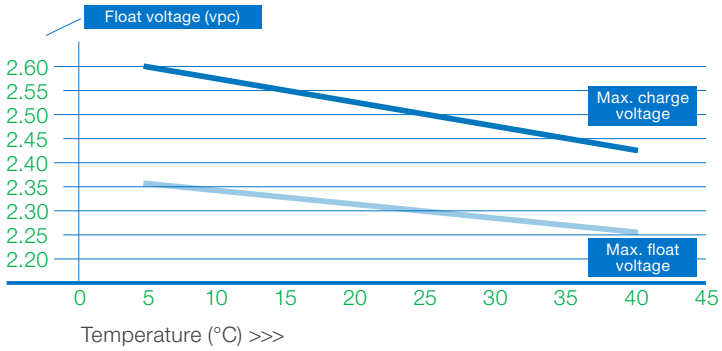
Charge method

Constant current/voltage charge characteristics



Charge compensation

Temperature compensation for float voltage



The preferred charging procedure should be in accordance with DIN 41773, constant current/constant voltage (IU characteristics). Constant float charging utilising a constant voltage charger is also acceptable.

Charging voltage measured at the battery terminals: 2.40+/-1% x number of cells.

Equalising or fast charging can occasionally be permitted in which the charging voltage is 2.50V x number of cells for a maximum fixed period of 8 hours (depends on state of charge). This will apply in deep discharge and limited recharge operations such as stand-by with parallel connections. Automatic changeover to the charging voltage of 2.30V ±1% x number of cells should follow after this period.

Actual performance data may be ±5% (for data & weight); ±2% (for dimension) from the figure shown.
For operation outside of these conditions please consult SEC Industrial Battery info@secbattery.com or your local sales representative.

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The energy storage market is booming. From 2012 to 2016, the market has tripled from 6 billion to 18 billion US dollars, driven in large part by renewable energy needs. With more than half of the world's energy supply destined to come from renewable energy sources in the near future, continued rapid growth is a certainty. The opportunities are immense.

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