Deep Cycle GEL
Tubular D.C GEL Series

Unibat
POWER FOR LIFE

GENERAL INFORMATION

UNIBAT Deep Cycle GEL Tubular Positive plate 12V series, are well established for partial state of charge operation and designed for repeated Deep Cycle use, even in heavy power cut areas or entirely off-grid systems.
GEL electrolyte makes it compact and maintenance free with no topping up for life. It is made with updated GEL VRLA technology from pure materials with excellent know how to meet all needs, providing excellent cyclic and recovery performance after over-discharging.
UNIBAT Deep Cycle GEL differs from conventional VRLA batteries, as it contains more lead, tubular plates and other special materials that enable to deliver more power and capacity over many charging cycles.
Positive plate: Robust Tubular spines with ultra low maintenance Pb-Ca-Sn alloy.
Negative plate: Pb-Ca alloy grid providing low corrosion and maintenance free characteristics.
Separator: Micro-porous and resin based separators with high porosity and low electrical resistance.
Electrolyte: Sulphuric acid in immobilized gelled form, specially made by mixing thixotropic inert additives.
Terminal structure: Bolt - on terminal with brass insert, specially designed for sustained high current discharges.
Valve: Flame arresting vent plug housing, long life rubber, explosion proof, self resealing and pressure regulating type.
Casing: The unique construction and sealing techniques of **UNIBAT Deep Cycle GEL** series guarantee leak proof operation in any position with no adverse effect to capacity or service life. The battery case is made of high grade pure polypropylene co-polymer material.
UNIBAT Deep Cycle GEL batteries are designed for a long service life in cyclic applications, up to 2200 cycles for 50% Depth Of Discharge.
All models comply to IEC 60896-21/22, IEC 61427, BS 6290 part IV standards, also classified according to Eurobat Guide 2015 “Very Long Life”.

APPLICATIONS

- Off-Grid solar systems.
- Power Plants.
- Railway Signaling.
- Telecom / Data Centers.
- Power substations / Oil & Gas Pipelines.
- Marine signaling / service applications.
- Road lights.
- RV service applications.

DESIGN FEATURES & BENEFITS

- Sealed construction / Maintenance Free / No acid stratification.
- Free from Orientation Constraints : The sealed construction allows battery to be installed in any position, horizontal, vertical, sideways - without any effect on its performance.
- Can safely be used in high ambient temperature zone.
- Eco Friendly : The unique gas recombination technology effectively nullifies generation of gas during normal use.
- Very low foot-print - Easy Handling - Easy Installation.
- Ready To Use : Available in fully (factory) charged condition.
- Excellent Service Life: More than 10 years lifetime in float use, 2200 charge/discharge cycles for cyclic use at 25°C.
- Low Self Discharge : Can be stored for more than 6 months.
- High Reliability : Tough construction and heavy duty tubular design with superior corrosion resistant lead calcium tin alloy.
- Specially designed to sustain high current discharge and mechanical ruggedness.

Deep Cycle GEL
Tubular D.C GEL Series

Unibat
POWER FOR LIFE

RANGE SUMMARY

UNIBAT D.C GEL SPECIFICATION TABLE											
BATTERY TYPE	V	CAPACITY @ 25°C (AH)			DIMENSIONS (mm)			WEIGHT (kg)	TERMINAL TYPE	Ri (mΩ)	MAX DISCHARGE CURRENT (A)
		C_{20} @ 1,80 Vpc	C_{100} @ 1,85 Vpc	C_{120} @ 1,85 Vpc	L	W	H				
DC 26 - 12TG	12	26	31	34	197	165	170	13	M5	13,0	156
DC 40 - 12TG	12	40	48	52	354	169	230	22	M5	10,0	240
DC 65 - 12TG	12	65	78	85	354	169	230	26	M6	8,2	390
DC 75 - 12TG	12	75	90	98	531	170	258	38	M6	7,0	450
DC 100 - 12TG	12	100	120	130	531	170	258	42	M8	6,0	600
DC 120 - 12TG	12	120	144	156	531	170	258	48	M8	5,4	720
DC 150 - 12TG	12	150	180	195	533	250	240	61	M8	5,0	900
DC 200 - 12TG	12	200	240	260	428	287	400	80	M8	4,0	1200

CHARGING INSTRUCTIONS

Batteries always to be recharged in CC-CV mode only.

A. Commissioning Charge

Before commissioning a new battery, IU charging method (bulk charge) is recommended :
At a raised voltage of 2.40 volts per cell.
The charging time will be 12 to 24 hours depending on the initial charge condition.
The current is required to be limited to 20% of the battery Ah capacity (0.2 C**20**).
Bulk charging must be switched off or switched over to float charging as soon as the fully charged state is reached.

A. Normal Recharge

Recommended Parameters for ambient temperature 25°- 30°C are shown below :

Tubular GEL VRLA Series	
RECHARGING CHARACTERISTICS DURING OPERATIONS	
Charging Current	Max. 20% - Min. 10% of the battery Ah capacity
Bulk Voltage	2.40 +/- 0.02v per cell
Float Voltage	2.28 +/- 0.02V per cell
Load Reconnect Voltage	2.20 +/- 0.02V per cell
Low Voltage Disconnect	1.90 +/- 0.02V per cell
Recharge Factor	106% of discharge Ah
Temperature Correction Factor (reference 25°C)	Cyclic : -5mV/ °C/cell, Float: -3mV/ °C/cell

BATTERY BANKS

In order to increase Battery Storage capacity, paralleling of Battery Strings is permitted under following conditions :

- Paralleling of a maximum of three strings is allowed provided they are all of the same brand, same age and Ah capacity.
- Adequate care shall be taken in ensuring that all system connecting cables have equal length and cross-section.
- Total charging current in the case of parallel strings, to be taken care of so that each of the strings get the recommended level of Amperes - minimum 10% and maximum 30% of the rated C**20** capacity of each block.

For inter-block connection flexible copper cable with suitable lugs are recommended. Cable cross section may be estimated at 2.8 Amps/mm2 at the maximum anticipated discharge load. Even though **UNIBAT Deep Cycle GEL** batteries are designed to perform anywhere between -20 to +50°C, for optimum battery life avoid prolonged operation in ambient in excess of 35°C. Above 25°C, for every 10°C rise of weighted average operating temperature, battery life is reduced by 50%. Ensure that batteries are put to recharge immediately after any discharge, under no circumstance the gap between the end of discharge and initiation of recharge should be more than 24 hours.

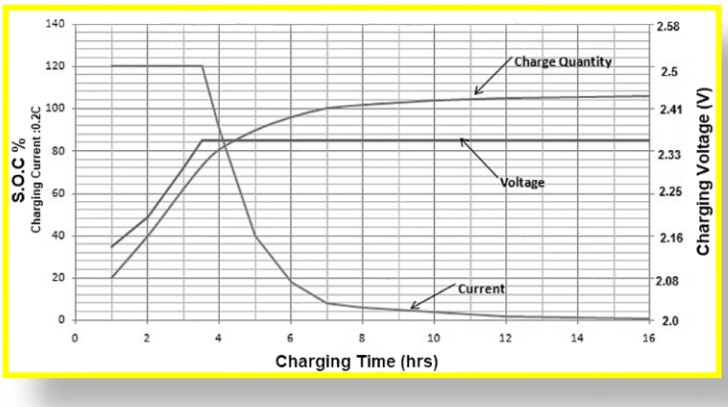
Deep Cycle GEL

Tubular D.C GEL Series

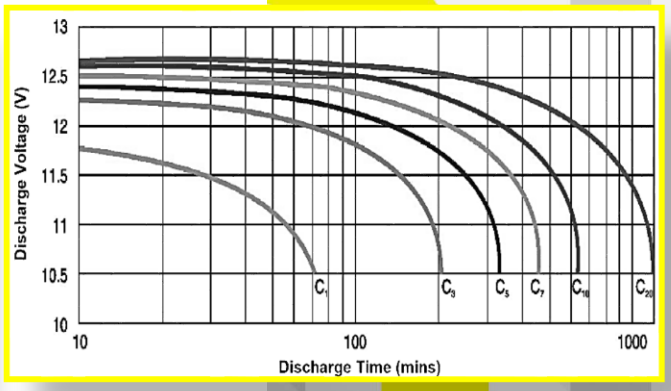
Unibat
POWER FOR LIFE

PERFORMANCE CURVES

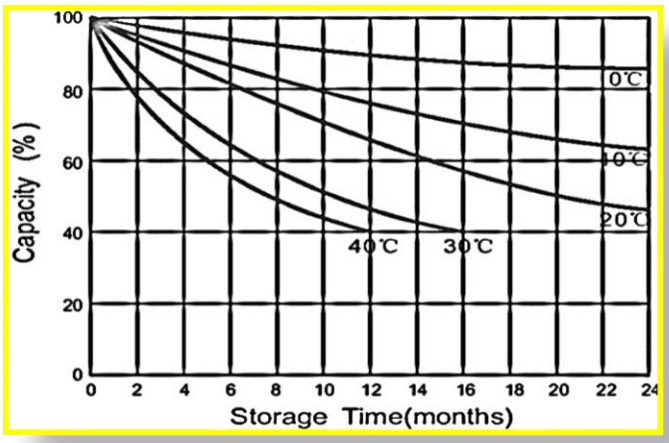
CHARGING CURVES



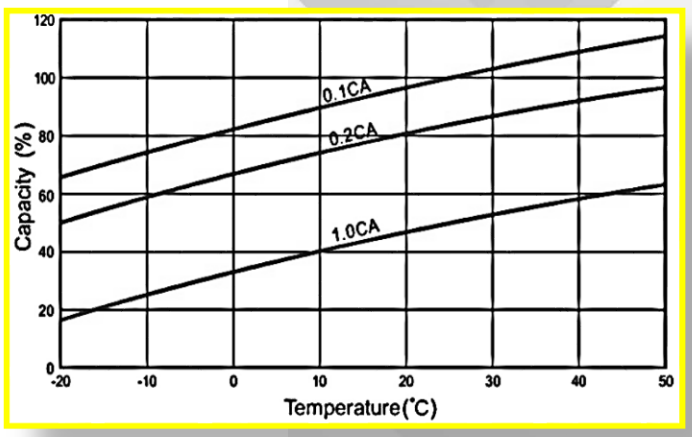
DISCHARGING CURVES



CAPACITY RETENTION – SELF DISCHARGE



TEMPERATURE vs CAPACITY



CYCLE LIFE vs DEPTH OF DISCHARGE