

## SOLAR ExC-T

EXTREME CYCLING  
TUBULAR SERIES



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## GENERAL INFORMATION



# Solar ExC-T Extreme Cycling Tubular Series

**Northbatt Solar ExC-T series** are flooded - low maintenance 2V cells, especially built to last, meeting and exceeding stringent customer requirements in the Solar & Power Sector.

It is optimized for daily deep cycling, extreme cycle life (up to 3000 cycles @ 50% D.O.D) with minimum maintenance and highest performance reliability. It complies to IEC 61427 and IEC 60896-11, as well as safety requirements according to IEC 62485-2 standards. Constructed with 100 bar pressure technology Tubular positive plates, Solar ExC-T series eliminate shedding, operate even at low/available charge current, under Partial State of Charge & ensures good capacity and long cycle life.

**Northbatt Solar ExC-T series** includes a full range of deep cycling, low maintenance 2V cells, designed for long life – deep discharge applications with regular charging, and medium to long duration discharges. They perform excellent for a wide range of temperatures from -20oC up to +55oC. Cells up to 1200 are fitted in (6/4V) modules so that can be installed straightway on arrival at site.

It's high performance make series ideal for a wide range of renewable applications, such as Remote, Residential and Commercial RES systems, smart or mini-grids, Telecom hybrid systems, Signaling and Lighting.



## FEATURES Solar ExC-T

- Positive plates are spine grids produced on High Pressure Die Casting (PDC) Machines give defect-free grid with fine gain structure with excellent corrosion resistance and long life. High tensile acid resistant polyester gauntlets contain active material. Low antimony selenium alloy enhances the life of battery, minimizes water loss and reduces the topping up frequencies.
- Negative lead - calcium plates are pasted, made from Automatic Grid-Casting Machine.
- Optimum porosity envelope separators with low electrical resistance.
- Robust and aesthetically superior PPCP (Polypropylene Co polymer) container & lid.
- Heavy duty bold terminals.
- High purity diluted H<sub>2</sub>SO<sub>4</sub> s.g 1.24 at 25°C at fully charged condition.
- Special electrolyte level indicator.

## APPLICATIONS Solar ExC-T

- 01 Solar and Wind power On/Off Grid systems
- 02 Renewable Energy / Grid Support Storage
- 03 Electric / Nuclear Power Stations and sub-stations
- 04 Railway / Marine / Airport signaling
- 05 Telecommunication / UPS / Remote Power Networks
- 06 Emergency lighting / Automation

## DESIGN ADVANTAGES Solar ExC-T

- Excellent Cycle Life (3.000 cycles @ 50% D.O.D, 5.500 cycles @ 30% D.O.D).
- Ideally suited for operation in PSOC conditions.
- Special alloy in grids and pastes results very low water loss i.e. ultra low topping up frequency.
- Special non woven gauntlet for positive plates imports extra life of battery. Wrap around separators - Provide additional protection against internal battery short circuits.
- Large 'top-of-plate' electrolyte reservoir.
- Better safety performance and reliability.
- Wide operation temperature range.
- Excellent deep discharge recovery.
- Advanced low current discharge performance.
- Cells up to 800AH are housed in Steel Powder Coated racks (6/4V) so that compact modules can be installed directly (stands not required).
- Easy to Handle & Transport - Modular assembly & installation design.
- Inter-cell Connectors option of insulated solid copper or copper cable.
- Capacities from 450 to 1500 AH.
- Higher ampere-hour and watt-hour efficiencies.
- Batteries are supplied in factory charged condition and thus ready to be installed and used.
- 100% recyclable.
- Superior value/price ratio.

# RANGE SUMMARY

NORTHBATT SOLAR ExC-T 2V CELLS SPECIFICATION TABLE

BATTERY TYPE	C10	C20	C48	C72	C100	C120	DIMENSIONS (MM)			WEIGHT	NUMBER OF POLES
	F.V=1,80V		F.V=1,85V				L	W	H	(kg)	
SOLAR ExC-T 450	322	378	391	398	440	451	125	156	505	21,00	2
SOLAR ExC-T 600	429	504	522	531	587	603	125	156	663	29,00	2
SOLAR ExC-T 750	536	630	652	664	733	751	172	156	663	38,00	2
SOLAR ExC-T 900	643	756	783	797	880	904	172	156	663	41,00	2
SOLAR ExC-T 1050	750	882	913	930	1027	1051	205	156	715	51,00	4
SOLAR ExC-T 1200	858	1008	1043	1062	1173	1202	205	156	715	53,00	4
SOLAR ExC-T 1350	965	1134	1174	1195	1320	1353	415	175	515	67,00	4
SOLAR ExC-T 1500	1072	1260	1304	1328	1467	1501	415	175	515	72,00	4

TYPES	ELECTRICAL DATA @25 °C				PHYSICAL DATA			
	NOMINAL VOLTAGE	C10	C120	DIMENSIONS (MM)			WEIGHT	CELLS PER MODULE
		F.V=1,80V	F.V=1,85V	L	W	H	(KG)	
SOLAR ExC-T 450 - 6V	6 V	322 AH	451 AH	540	160	517	68,20	3
SOLAR ExC-T 600 - 6V	6 V	429 AH	603 AH	553	160	670	87,00	3
SOLAR ExC-T 750 - 6V	6 V	536 AH	751 AH	553	207	670	111,40	3
SOLAR ExC-T 900 - 6V	6 V	643 AH	904 AH	553	207	670	127,00	3
SOLAR ExC-T 1050 - 4V	4 V	750 AH	1051 AH	390	240	725	107,00	2
SOLAR ExC-T 1200 - 4V	4 V	858 AH	1202 AH	390	240	725	113,60	2

Power  
for  
Life

# CHARGING INSTRUCTIONS

## COMMISSIONING CHARGE



Before commissioning a new battery, please apply following IU charge procedure :

Bulk charging is performed at a raised voltage of 2.40 to 2.45 Volts per cell. The charging time will be 12 to 24 hours depending on

the state of charge condition during installation. The current is required to be limited to 20% of the battery Ah capacity (0.2 C10).

The s.g of each cells rise to the maximum level (1.240 to 1.245) and remains constant till four consecutive hourly readings.

Bulk charging must be switched off or switched over to float charging as soon as the fully charged state is reached.

PARAMETERS	RECOMMENDED PARAMETERS FOR AMBIENT TEMPERATURE OF 25-30 °C
Charging Current	Minimum : 10% - Maximum: 20% of the battery Ah capacity
Bulk Voltage	2.60 ± 0.02 V/CELL
Float Voltage	2.30 ± 0.02 V/CELL
Equalizing Voltage	2.45 ± 0.02 V/CELL
Load Reconnect Voltage	2.16 ± 0.02 V/CELL
Low Voltage disconnect	1.90 T 0.02 V/CELL
Recharge factor	110% OF DISCHARGED AH
PARAMETERS	FLOAT : - 3MV/°C/2V UNIT, CYCLIC : - 5MV/°C/2V UNIT

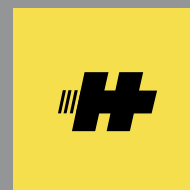
## REVIVAL CHARGE



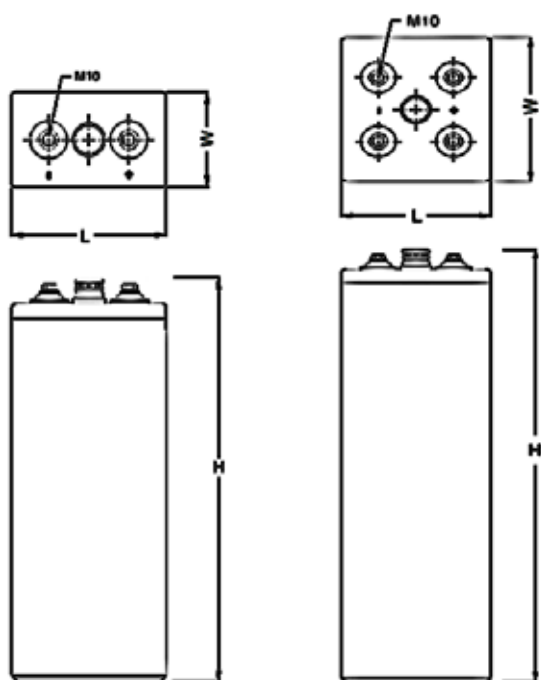
Sometimes, due to variable solar irradiation or various operational electrical losses low specific gravity is observed in battery banks. It is very important to maintain a good state of charge condition of battery bank to prevent premature failure. The s.g of the fully charged cell is at a range of 1.240 to 1.245, but due to insufficient recharging the s.g reduces progressively and if any point of time it is found at 1.180 or even lower, the battery bank must be recharged immediately either through solar panel or by a dedicated Diesel

Generator or Mains. The following setting in the charger is recommended to perform during revival of the battery bank:

BULK VOLTAGE	2.70 ± 0.02 V/CELL
CHARGING DURATION	10 to 12 hours or till specific gravity of 1.240 to 1.245 are achieved & remains constant for all cells for four hours. The charging duration will solely depend on the battery bank S.O.C condition.

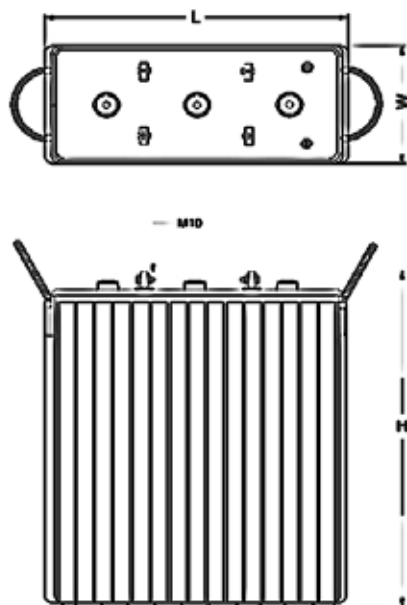


# DIMENSIONS – LAYOUTS



EXC-T 450 TO 900

EXC-T 1050 & 1200

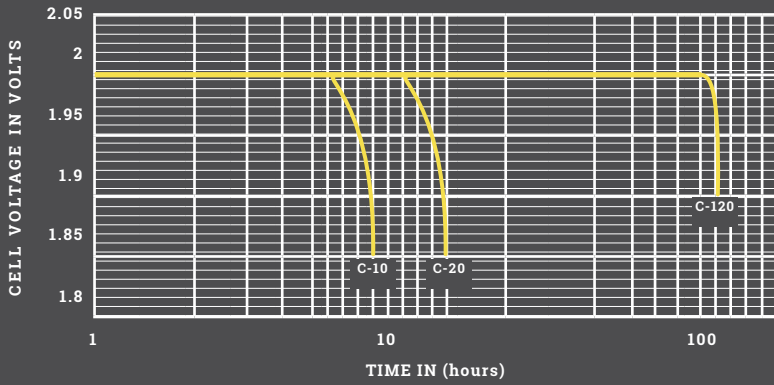


EXC-T 1350 & 1500

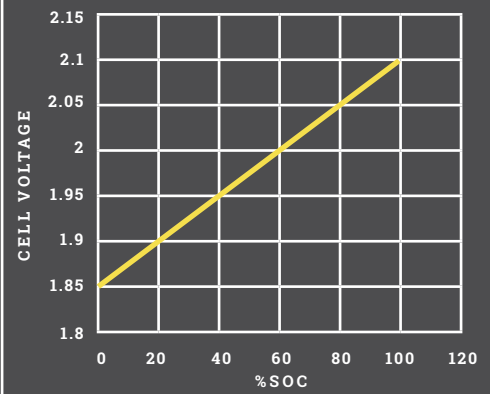


# PERFORMANCE CURVES

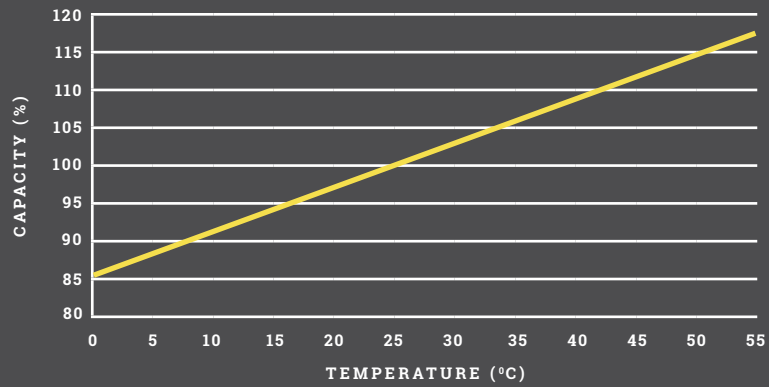
DISCHARGE CHARACTERISTIC



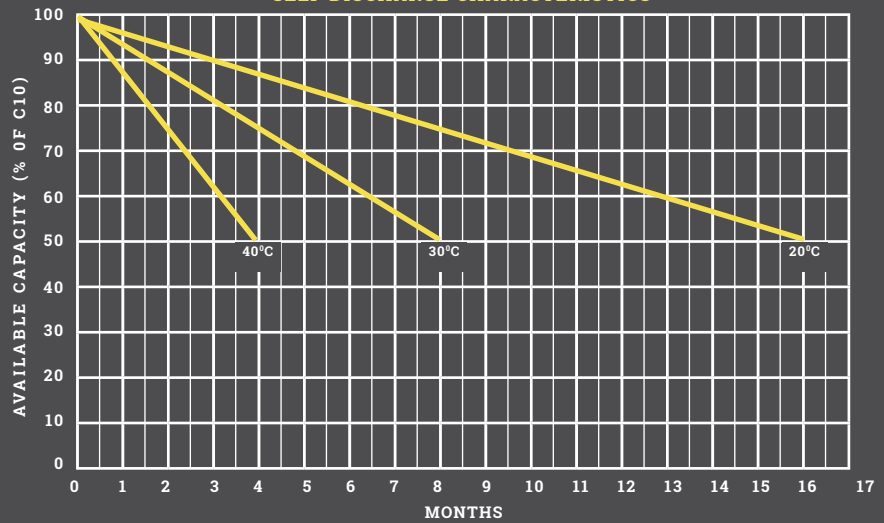
OPEN CIRCUIT VOLTAGE VS % S.O.C



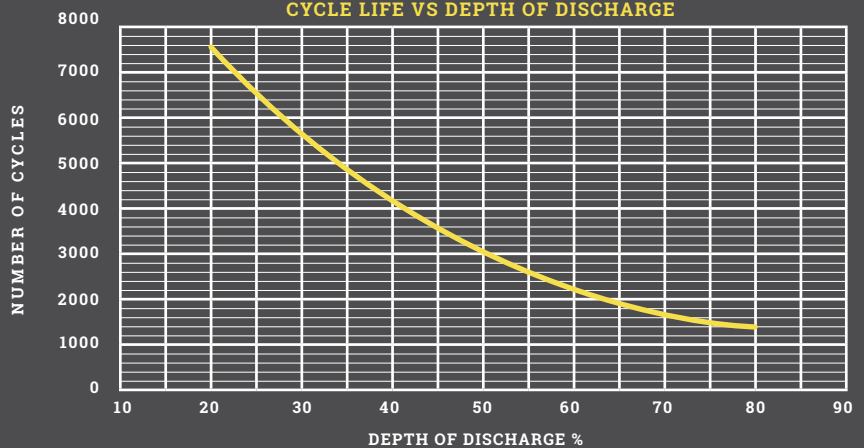
CAPACITY VS TEMPERATURE



SELF DISCHARGE CHARACTERISTICS



CYCLE LIFE VS DEPTH OF DISCHARGE





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