

# STARMAX

## OPzS FLOODED TUBULAR BATTERIES

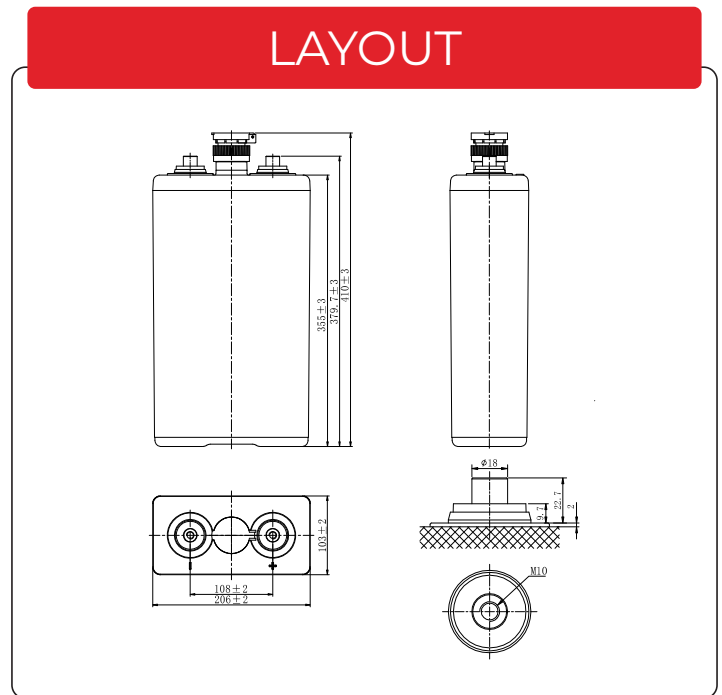
OPzS150-2



# OPzS150-2 (2V 150Ah)



## LAYOUT



## General Features

- ✓ 20 years design life(20°C)
- ✓ Lower self discharge
- ✓ Higher thermal capacity, no thermal runaway will occur
- ✓ Superior deep cycle performance
- ✓ Wide operation temperature range

## Applications

- ✓ Telecommunications
- ✓ Buoy lighting
- ✓ Standby power
- ✓ Railway signalling
- ✓ Emergency lighting systems
- ✓ Alternative power (solar, wind)
- ✓ Maritime standby power on ships and ashore

## Standards

- ✓ ACC. to IEC60896, DIN 40736
- ✓ Manufactured by Starmax ISO 45001, ISO 9001 and ISO 14001 certified production facilities



# SPECIFICATIONS

Rated Voltage	2V	
Nominal Capacity	C <sub>10</sub> ,1.80V/cell	150.0Ah
Dimensions	Length	103±2mm (4.06 inches)
	Width	206±2mm (8.11 inches)
	Container height	355±3mm (13.98 inches)
	Total height	410±3mm (16.14 inches)
Approx. weight	Without Electrolyte 10.8kg (23.8lbs)   With Electrolyte 15.3 kg (33.7lbs)	
Terminal	M10	
Container material	SAN transparent container	
Rated capacity (25°C)	150.0 Ah	(10hr,15.0A,1.80V/cell)
	133.0 Ah	(5hr,26.6A,1.75V/cell)
	115.8 Ah	(3hr,38.6A,1.75V/cell)
	85.7 Ah	(1hr,85.7A,1.60V/cell)
Max. discharge current	1200A (5s)	
Internal resistance (25°C)	Approx 1.15mΩ	
Operating temp. range	Discharge	-15~55°C (5~131°F)
	Charge	0~45°C (32~113°F)
	Storage	-15~45°C (5~113°F)
Nominal operating temp. range	25±5°C (77±9°F)	
Cycle Use	Initial Charging Current less than 0.15CA.Voltage 2.40V~2.45V at 20°C(68°F)Temp. Coefficient -5mV/°C	
Standby Use	Initial Charging Current less than 0.15CA. Voltage 2.23V~2.25V at 20°C(68°F)Temp. Coefficient -3mV/°C	
Effect of temp. to Capacity	40°C (104°F)	103%
	20°C (68°F)	100%
	0°C (32°F)	86%
Self discharge	≤4% per month at 20°C	

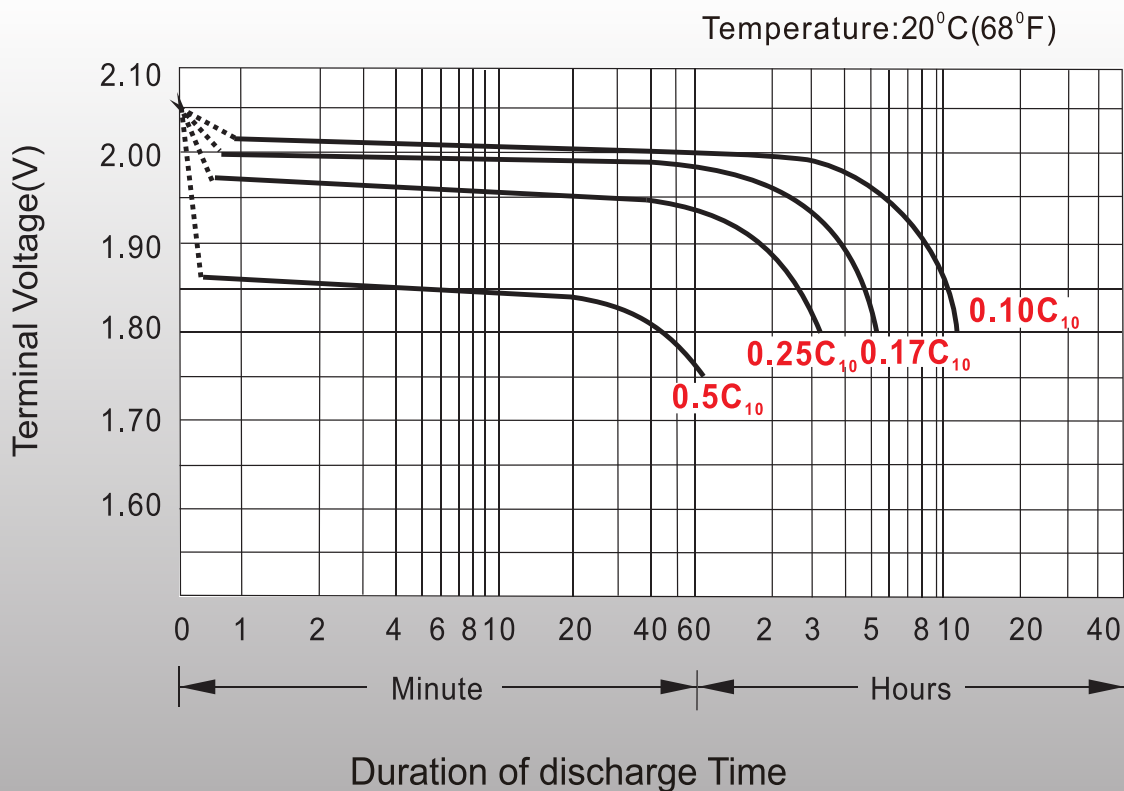
## Constant Current Discharge (Amperes) at 20°C (68°F)

F.V/Time	1h	2h	3h	4h	5h	6h	8h	10h	20h	24h	72h	100h	120h
1.85V/cell	59.6	43.5	33.5	27.7	23.9	21.0	17.1	14.4	7.88	6.61	2.37	1.78	1.53
1.80V/cell	69.6	47.9	36.6	30.0	25.5	22.3	18.0	15.0	8.20	6.88	2.47	1.85	1.59
1.75V/cell	75.6	51.0	38.6	31.3	26.6	23.2	18.5	15.3	8.36	7.01	2.52	1.89	1.62
1.70V/cell	79.7	53.3	39.8	32.3	27.4	23.7	18.8	15.6	8.50	/	/	/	/
1.65V/cell	82.8	54.5	41.0	33.0	28.0	24.2	19.2	15.9	8.62	/	/	/	/
1.60V/cell	85.7	55.8	41.7	33.5	28.4	24.5	19.4	16.0	8.70	/	/	/	/

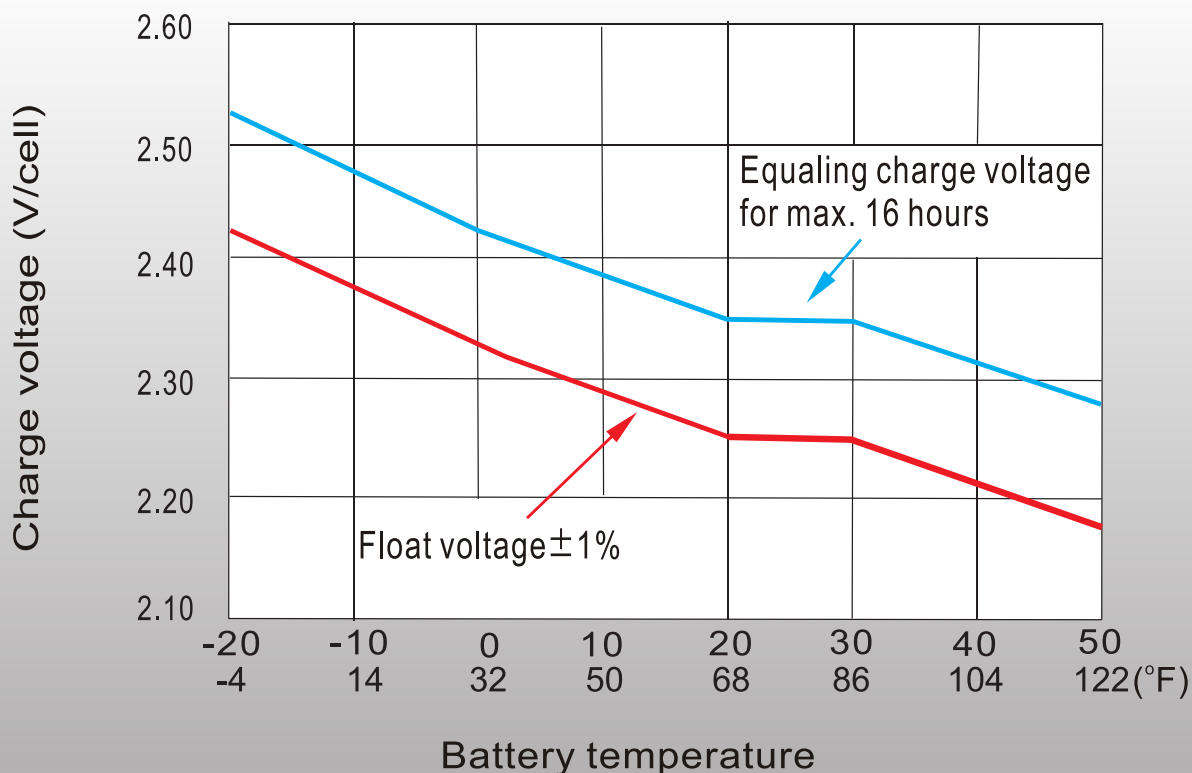
## Constant Power Discharge (Watts/Cell) at 20°C (68°F)

F.V/Time	1h	2h	3h	4h	5h	6h	8h	10h	20h	24h	72h	100h	120h
1.85V/cell	111.4	82.0	63.5	52.8	45.8	40.4	33.1	27.8	15.3	12.8	4.57	3.42	2.92
1.80V/cell	128.3	89.4	68.6	56.5	48.4	42.5	34.5	28.8	15.8	13.2	4.72	3.53	3.02
1.75V/cell	137.7	94.3	71.7	58.6	50.2	43.9	35.3	29.3	16.0	13.4	4.78	3.57	3.05
1.70V/cell	143.7	97.7	73.6	60.2	51.4	44.8	35.8	29.7	16.2	/	/	/	/
1.65V/cell	148.2	99.6	75.5	61.3	52.3	45.5	36.3	30.1	16.4	/	/	/	/
1.60V/cell	152.1	101.5	76.4	61.9	52.7	45.9	36.5	30.3	16.5	/	/	/	/

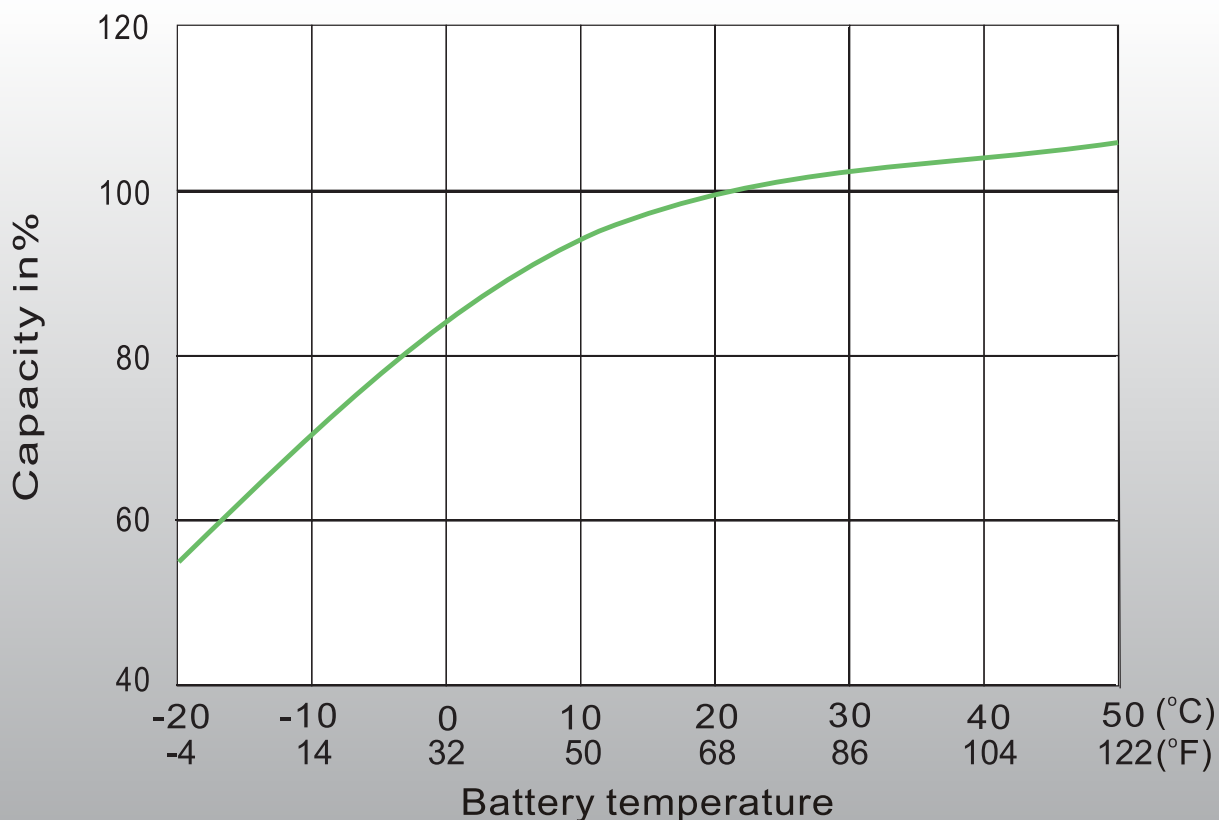
## Discharge Characteristics



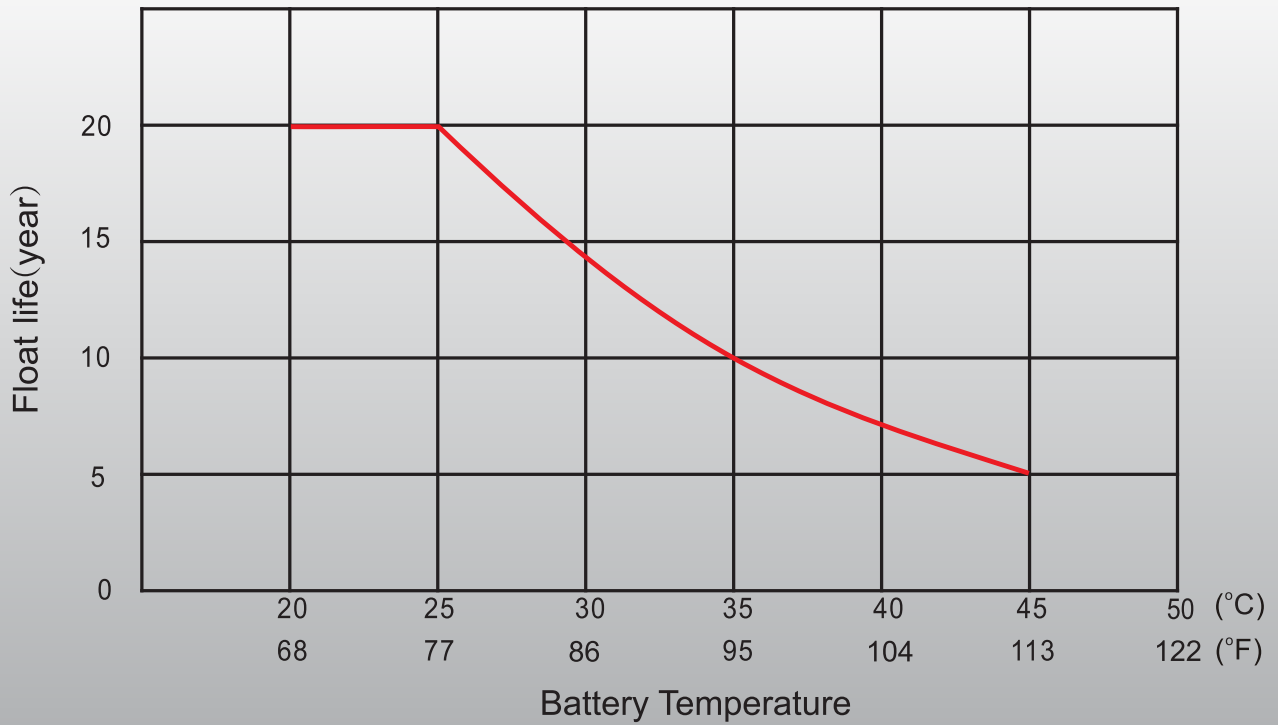
# Charge Voltage vs Ambient Temperature Curve



# Discharge Capacity vs Ambient Temp. Curve (110A)



# Effect of Temp. on Long Term Float Life





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