



1. Model Type: **NPW45-12**
2. Nominal Performance: 12V, 45 W/cell at 10-min to 1.60 V/cell
3. Mechanical Specification:
  - 3.1 Dimension:
 

Length :	151 ±1 mm
Width :	65 ±1 mm
Case height :	94 ±1 mm
Overall height :	97.5 ±1 mm
  - 3.2 Terminal: Faston 250 tab
  - 3.3 Mass: 2.7 kg (approx.)
  - 3.4 Container material: ABS (UL94HB)
4. Construction:
 

The battery is composed of positive and negative plates, separators, electrolyte, container, lid etc. and is equipped with positive and negative polarity terminals. Any emitted gas from the battery is minimised with the negative plate gas recombination method, thus requiring no topping up of electrolyte.
5. External Appearance:
 

The battery shall be without acid leakage, conspicuous stain, scar or deformation.
6. Performance:
  - 6.1. Temperature of tested battery shall be 20°~25 °C if not specified.
  - 6.2. Discharge performance:

Constant Power Discharge Characteristics: Watts/Battery at 25°C							
Final Voltage	Discharge time (min)						
	1-min	3-min	5-min	10-min	15-min	30-min	60-min
9.6 V	720	534	414	273	213	120	62
10.2 V	660	495	396	264	204	114	60
10.8 V	630	444	354	252	198	111	59

Constant Current Discharge Characteristics: at 25°C				
Discharge rate	Discharge current (A)	Final Voltage (V)	Capacity (Ah)	Temperature (°C)
20-hr	0.35	10.5	8.5	25°±2°
10-hr	0.70	10.5	8.0	25°±2°
5-hr	1.20	10.2	7.3	25°±2°
3-hr	1.75	10.0	6.6	25°±2°
1-hr	4.20	9.6	6.0	25°±2°

Battery capacity at time of delivery shall be 75% or more, provided it is tested within 14 days after delivery.  
 After delivery, the capacity shall exceed 95% of nominal within 3 charge/discharge cycles or 10 days on float charge.

- 6.3. Open circuit voltage:



The battery at time of delivery shall read 12.6 V (OCV) or more at 25°C ±10°C, provided it is measured within 14 days after delivery.

6.4 Internal resistance:

Give a full charge to the battery, and measure with AC Bridge (1 kHz test frequency) the reading shall be less than 24 mΩ.

6.5 Capacity retention:

The remaining capacity of the battery, left standing for 3 months at 25°(±5)°C shall be more than 80%. After 6 months it shall retain more than 60% capacity.

6.6 Characteristics against given load:

No deterioration shall be found with 42 A continuous discharge.

No deterioration shall be found with 105 A discharge for 5 seconds.

6.7 Charging recommendations:

Method	Given Voltage	Charge Current (Maximum)	Conditions
Standby, Float charge	13,65 V ± 0,15 V	No limit	When temperature is less than 5°C or greater than 35°C, temperature compensation of -3mV/°C/cell shall be applied with 25°C as reference point.
Cyclic charge	14,4 V ~ 15,0 V	1,75 A	When temperature is less than 5°C or greater than 35°C, temperature compensation of -4mV/°C/cell shall be applied with 25°C as reference point.

6.8 Permissible temperature range:

Conditions	Temperature range
Discharging	-15°C ~ 50°C
Charging	0°C ~ 40°C
Storage	-15°C ~ 40°C

6.9 Storage period without use:

Storage temperature	Maximum storage period
Less than 25°C	6 months
Less than 30°C	4 months
Less than 35°C	3 months
Less than 40°C	2 months

6.10 Design life (at 20°C)

(1) Cycle life:

Discharge at 1.75 A for 2 hours. Charge at 14.4 V for 16 hours.

Final discharge voltage at the 200th cycle shall be 10.2 V or more

(2) Standby, float charge:

(a) Charge at 13.65 V (±0.15V) continuously and discharge at 1.75 A to Final Voltage 10.2 V every 3 months. The battery shall last minimum 3 years until capacity falls to 2 hours.



- (b) Charge at 13.65 V ( $\pm 0.15$  V) continuously and discharge at 3C (21 A) to Final Voltage 9.6 V every 3 months. The battery shall last minimum 3 years until capacity falls to 5 minutes.

6.11 Mechanical strength:

(1) Anti-vibration performance:

Vibrate the battery in any direction for 60 consecutive minutes with 4 mm amplitude and frequency 16.7 Hz. Read the voltage and make visual inspection. The battery shall show no extreme damage or electrolyte leakage and should read nominal 12 V or more.

(2) Anti-impact performance:

Drop the battery from a height of 20 cm onto a 10 cm thick solid wooden block in any direction except terminal portions. Read the voltage and make visual inspection. The battery shall show no extreme damage or electrolyte leakage and should read nominal 12 V or more.

7. Designation:

7.1 Manufacturing code shall be designated in visible area.

7.2 Caution label shall be attached.

8. Others:

If anything to cause doubt or inconvenience in respect of the specifications hereof, it shall be mutually discussed and altered or revised in case necessity arises.

9. Design life: 3-5 years acc. to EuroBat