YUASA	型式 Model.	NP18-12B		
	首版日期 Initial Date.	2021.05.27	核准 Authorized.	作成 Author.
	改訂日期 Revision Date.	2021.07.15	陳光輝	黃錦淙

電池規格 BATTERY SPECIFICATIONS

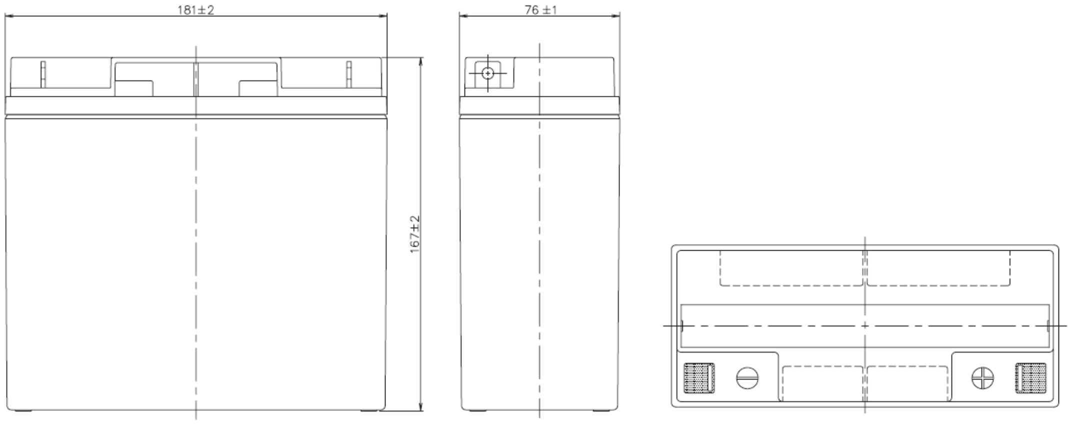
閥調式鉛酸蓄電池 Valve Regulated Lead Acid (VRLA) Rechargeable Battery

1.型式 Model：NP18-12/NP18-12 FR

2.額定電壓 / 容量 Nominal Voltage / Capacity：12V / 17.2AH（20HR）

3.諸元 Mechanical Spec：

尺寸 Measurements	長 Length	181±2mm
	寬 Width	76±1mm
	槽高 Case height	167±2mm
	總高 Overall height	167±2mm
端子 Terminal	螺絲式 Bolt （M5） 鎖緊轉矩 Tightening torque 2.0~3.0Nm（20~30kgf · cm）	
重量 Weight	約 About 5.8kg	
ABS難燃等級 ABS Flame class	NP18-12	難燃等級UL94HB Flame class UL94HB
	NP18-12 FR	難燃ABS， 難燃等級UL94V0 Flame Retardant ABS , Flame class UL94V0



4. 構造 Construction：

蓄電池係由陽極板、陰極板、電槽、蓋、隔離板、電解液等組成，並設有陽、陰極板引出端子。 密閉構造機能為蓄電池產生之氣体由陰極板吸收且不必補水。
This battery is composed of positive plates, negative plates, separators, container, lid, electrolyte etc., and is equipped with positive and negative polarity terminals. Any emitted gas from the battery is minimized with the negative plate gas recombinant method, thus requiring no topping up of electrolyte.

5. 外觀 External appearance：

不得有漏液、污垢、裂痕、變形等現象。
Battery shall be without acid leakage, conspicuous stain, scar or deformation.

6. 性能 Performance：

6-1 性能測試溫度：25±2℃（特別指定不在此限）
6-1 Temperature of tested battery shall be 25±2℃, if not specified.

6-2 放電容量 Discharge capacity：（此數值為最小值 This value is the minimum）

PERFORMANCE DATA AT 25℃(77℉) - Amperes and Watts

F.V. \ TIME		3M	5M	6M	8M	10M	15M	30M	1H	2H	3H	5H	10H	20H
9.60V	W	1113	884	805	678	592	442	265	151	82.3	58.8	38.5	20.2	10.8
	A	106.3	81.9	73.5	61.9	53.2	39.0	23.1	13.0	6.96	4.97	3.22	1.68	0.90
10.02V	W	1050	854	787	663	585	438	263	150	81.7	58.3	38.1	20.0	10.7
	A	99.0	78.3	71.2	60.0	52.2	38.0	22.5	12.6	6.82	4.87	3.17	1.66	0.89
10.20V	W	1014	836	775	652	579	435	261	150	81.1	57.9	37.8	19.8	10.6
	A	94.1	75.4	69.0	58.1	50.9	37.5	22.2	12.6	6.77	4.83	3.14	1.64	0.88
10.50V	W	950	799	749	630	565	428	258	148	80.3	57.3	37.4	19.6	10.6
	A	87.0	71.9	66.8	56.2	49.9	36.9	22.0	12.5	6.72	4.80	3.12	1.63	0.88
10.80V	W	855	739	668	589	534	412	251	146	78.4	56.0	36.4	19.0	10.5
	A	76.8	65.6	59.3	52.1	46.9	35.5	21.3	12.3	6.64	4.74	3.10	1.62	0.87

蓄電池交貨時，經完全充電〔電壓 14.4V/只（MAX: 0.25C_{20} A）充電 16hr〕後，1 天內測試時仍須視電池充電狀態，必要時須延長充電時間。
The battery capacity at the time of delivery, within 1 day after being charged at 14.4V（MAX: 0.25C_{20} A）for 16hr. Charge period may need to be extended, as it is dependent on the state of the charge of the battery.

6-3 開路電壓 Open circuit voltage：

在完全充飽電的狀態，開路電壓大約 13V。
Open circuit voltage will be around 13 V at fully charged condition. It is dependent on the state of the charge of the battery.

6-4 內部電阻 Internal resistance：

完全充電後以 AC 橋式(1KHz)測試約 11mΩ。
Give a full charge to the battery, and measure with AC bridge (1KHz), about 11mΩ.

6-5 最大連續放電電流 Maximum continuous discharge current：

258A 放電 5 秒，電池不得有異常現象。
No deterioration shall be found with 258A discharge for 5 seconds.

6-6 充電 Charging：

充電方式 Method	電壓設定 Given Voltage	充電最大電流 Maximum charging Current	說　明 Special condition(S)
浮動充電 Float Charging	13.65V±0.15V	$0.25C_{20}$（A）	當環境溫度上升時，充電電壓必須降低避免造成過充電。因此建議以-3mV/℃/cell（25℃基準值）做溫度校正補償。 As the average ambient temperature rises, charging voltage should be reduced to prevent overcharge. Accordingly, the recommended compensation factor is -3mV/℃/cell at 25℃ of standard centre point.
循環充電 Cyclic Charging	14.4V~15.0V	$0.25C_{20}$（A）	當環境溫度上升時，充電電壓必須降低避免造成過充電。因此建議以-4mV/℃/cell（25℃基準值）做溫度校正補償。注意：為了避免造成電池過量的充電，導致電池的故障損壞，這種充電方式必須適當的終止電池充電時間。 As the average ambient temperature rises, charging voltage should be reduced to prevent overcharge. Accordingly, the recommended compensation factor is -4mV/℃/cell at 25℃ of standard centre point. Caution：This needs to be terminated with appropriate charging period in order to avoid excess over charging that can result in the damage of the batteries.

6-7 使用溫度範圍 Permissible temperature range：

狀態 Conditions	溫度範圍Temperature range
放電 Discharging	-15℃～45℃
充電 Charging	-15℃～45℃
放置 Storage	-15℃～45℃

6-8 放置期限 Storage period without charge：

溫度狀況 Storage temperature	容許放置期限 Max. storage period
Temp.≦25℃	6 個月 months
25＜ Temp. ≦30℃	4 個月 months
30＜ Temp. ≦35℃	3 個月 months
35＜ Temp. ≦40℃	2 個月 months

6-9 期待浮充壽命 Expected float use life：

測試條件： 以13.65±0.15V定電壓持續充電,每3個月後以0.25C20（A）放電至10.2V終止電壓。 在環境溫度25±2℃，3年內電池容量維持在2Hr以上。 期待壽命會因溫度的升高而變得更短。
Test condition： Charge at 13.65±0.15V continuously and discharge at 0.25C20（A）to FV 10.2V every 3 months. Battery capacity maintains more than 2Hr during 3 years, at 25±2℃. Expected life will become shorter accordingly with rise in the temperature.

6-10 期待循環壽命 Expected Cyclic life：

50%放電測試條件： 在環境溫度25±2℃，以0.25C20（A）放電2小時。再以定電壓14.4～14.7V/只充電（充電電氣量=放電電氣量量的105～110%），期待循環壽命約400Cycle（放電末電壓應達10.2V以上）。 期待壽命會因溫度的升高而變得更短。
50% DOD test condition：（at 25±2℃） Discharge at 0.25C20（A）for 2 hours. Constant voltage charge at 14.4～14.7V / battery【Charge amount（AH）=105～110% of discharge amount（AH）】. Expected cycle life about 400 cycle（Final discharge voltage over 10.2V）. Expected life will become shorter accordingly with rise in the temperature.

6-11 機械強度 Mechanical strength：

6-11-1 耐振動性能： 振 幅：4 mm 頻 率：16.7 Hz任意方向連續60分鐘振動後,目視檢查電池不得有漏液、異常現象,測定電壓應達12V以上 6-11-2 耐衝擊性： 在厚約10mm以上之硬木板上測試,由20cm高處落下(方向任意,但端子部除外)一次後,目視檢查不得漏液、異常現象,測定電壓應達12V以上。
6-11-1 Anti-vibration performance： Vibrate the battery in any directions for 60 consecutive minutes with 4 mm amplitude and 16.7 Hz per minute. Read the voltage and make visual inspection. Battery shall show no extreme damage or no electrolyte leakage and should read nominal 12V or more. 6-11-2 Anti-impact performance： Drop it from a 20cm height onto a 10mm thick solid wooden block in any directions except terminal portions. Read the voltage and make visual inspection. Battery shall show no extreme damage or no electrolyte leakage and should read nominal 12V or more.

7.安裝條件 Installation Conditions：

蓄電池的收納容器不得為密封構造，收納容器請務必設置通往外部的通氣孔。 若在金屬製的收納容器內使用蓄電池，則為了避免蓄電池因電槽（外殼）破裂而產生漏液，導致收納容器或固定架與蓄電池之間形成漏電迴路，請在兩者之間配置具耐熱、耐酸性且不會因固定時的應力而造成破損的絕緣片或絕緣匣，或者將蓄電池裝入絕緣袋中。 上述絕緣物請使用不會在表面附著油脂類、或由絕緣物內部滲出有機物之絕緣物。 蓄電池請勿與含有可塑劑的乙烯絕緣帶、絕緣片或溶劑、油脂等接觸。
Storage container for rechargeable battery must not be of sealed and air tight construction; the container must be equipped with appropriate ventilation system，such as ventilation holes leading to the outside and so on. The following applies to using a rechargeable battery inside a metallic storage box: to prevent the rechargeable battery from leaking fluid due to a breakage in the electrolytic cell, thus forming a leak circuit between the battery and the storage box (or fixed frame), install between these two items a heat and acid resistant insulating sheet (or tray) that will not be damaged by periodic stress. Alternatively, place the rechargeable battery inside an insulating bag but not to be sealed. For the above described insulation material, do not use any material that can be stained with grease, or that can have organic substance oozing out of itself. Do not allow the rechargeable battery to come into contact with vinyl tape containing plasticizer, insulation sheet, solvent, or grease.

8.注意 Caution：

請避免不同種類、容量、新舊電池串聯，或並聯組數超過三組以上，或循環使用。
Use different kinds, capacity, new and old production of battery to series connection, or parallel connection more than three groups, or cycle use, please avoid.

9.變更履歷 Modification record：

版次 Revision	日期 Date	變　更　內　容 Modification content
2	2021.06.08	修訂3. 諸元：尺寸。 Revised Item 3 Mechanical Spec：Measurements.
3	2021.06.25	修訂3. 諸元：端子。 Revised Item 3 Mechanical Spec：Terminal.
4	2021.07.15	修訂6-2 放電容量。 Revised Item 6-2 Discharge capacity.