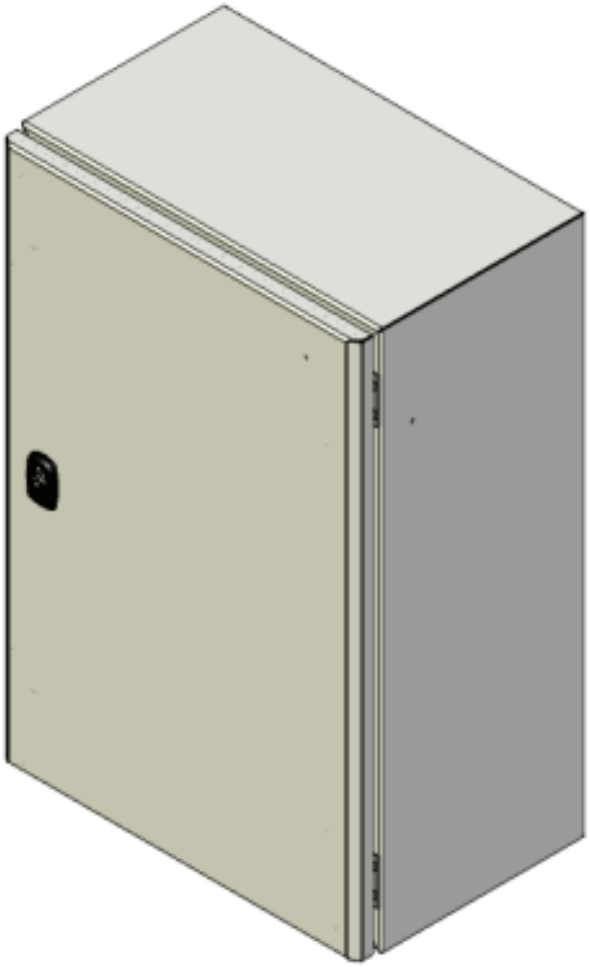
O-MAN-00016-BAT

# USER MANUAL

OBSTA supply unit

**48V-BAT-24Ah //** 113954B



**www.obsta.com**

# 1. Product name and part number

| Description | Part number (P/N) | Power supply | QR code |
|---|---|---|---|
| **48V-BAT-24Ah** | 113954B | 48Vdc<br>+5% -15%<br>24Ah (C20) | |

# 2. Caution


- Do not proceed with any maintenance job when the product is under operation.
- Power supply must be shut down when opening the flash-head or the cabinet.
- Installation must be performed only by an electrically skilled operator and National electrical installation rules must be respected.
- Always wear appropriate Personal Protective Equipment (PPE) when installing, maintaining or servicing the system.
- Any installation or maintenance operation performed at height must be carried out in strict compliance with fall-protection procedures.
- Do not look directly at the projector while it is in operation: Led projectors produce brilliant flashes of lights which can result in temporary or permanent eye damage.
- OBSTA products may be affected by ESD, use state of the art precaution before manipulation.
- Unless otherwise specified, all cables must be shielded, and the shielding must be connected to ground.
- All cables connected to PCBs and terminal blocks must be equipped with a cable connector to prevent false contacts when connecting devices.

# 3. Warranty

OBSTA warrants the equipment described in the instruction manual and sold to purchasers to be free from defects in material and workmanship at the time of shipment. OBSTA's liability under this warranty being limited to repairing or replacing, at OBSTA's option, items which are returned to it prepaid within twenty-four (24) months from shipment to the original Purchaser, or twelve months from commissioning, and found, to OBSTA's satisfaction, to have been defective. In no event shall OBSTA be liable for consequential damages. NO PRODUCT IS WARRANTED AS BEING FIT FOR A PARTICULAR PURPOSE AND THERE IS NO WARRANTY OF MERCHANTABILITY.

This warranty applies only if: (I) the items are used solely under the operating conditions and in the manner recommended in OBSTA's instruction manual, specifications, or other literature; (II) the items have not been misused or abused in any manner or repairs attempted thereon; (III) written notice of the failure within the warranty period is forwarded to OBSTA and the directions received for properly identifying items returned under warranty are followed; and (IV) such return notice authorizes OBSTA to examine and disassemble returned products to the extent OBSTA deems necessary to ascertain the cause of failure. The warranties stated herein are exclusive.

THERE ARE NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, BEYOND THOSE SET FORTH HEREIN, and OBSTA does not assume, nor does OBSTA authorize anyone else to assume for it, any other obligation or liability in connection with the sale or use of said products. OBSTA's liability on any claim of any kind, including negligence, for loss or damages arising out of or connected with the manufacture, sale, delivery, repair or use of any equipment or services provided by OBSTA shall in no case exceed the price allocable to the item or service or part thereof which gives rise to the claim.

The integrity and reliability of OBSTA aviation obstruction lighting systems is dependent on the use of OBSTA parts and components. To ensure the optimum performance and reliability of your OBSTA system, it is strongly advised that only components and modules manufactured by OBSTA be used.

# 4. Introduction

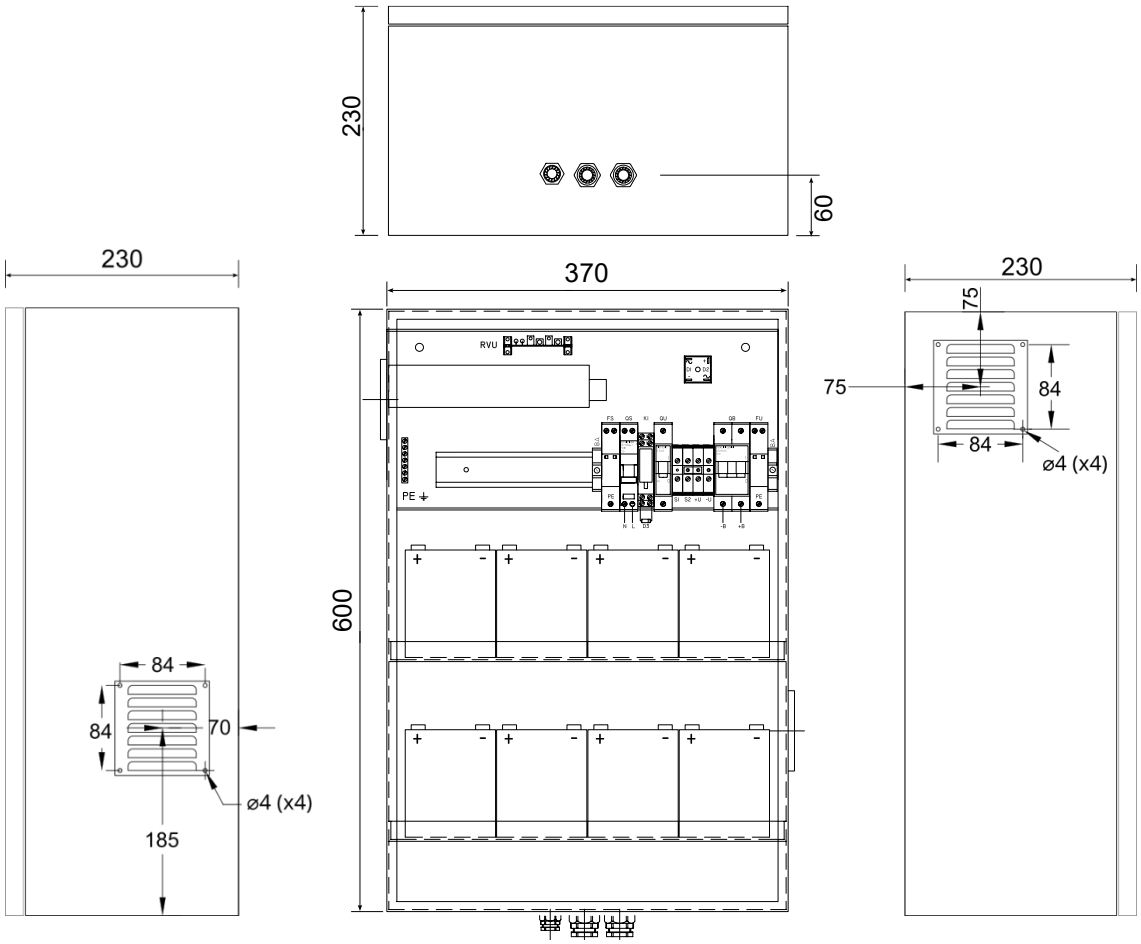
## 4.1. Scope

The OBSTA power supply unit ensures power supply to the light heads in the event of a power cut.

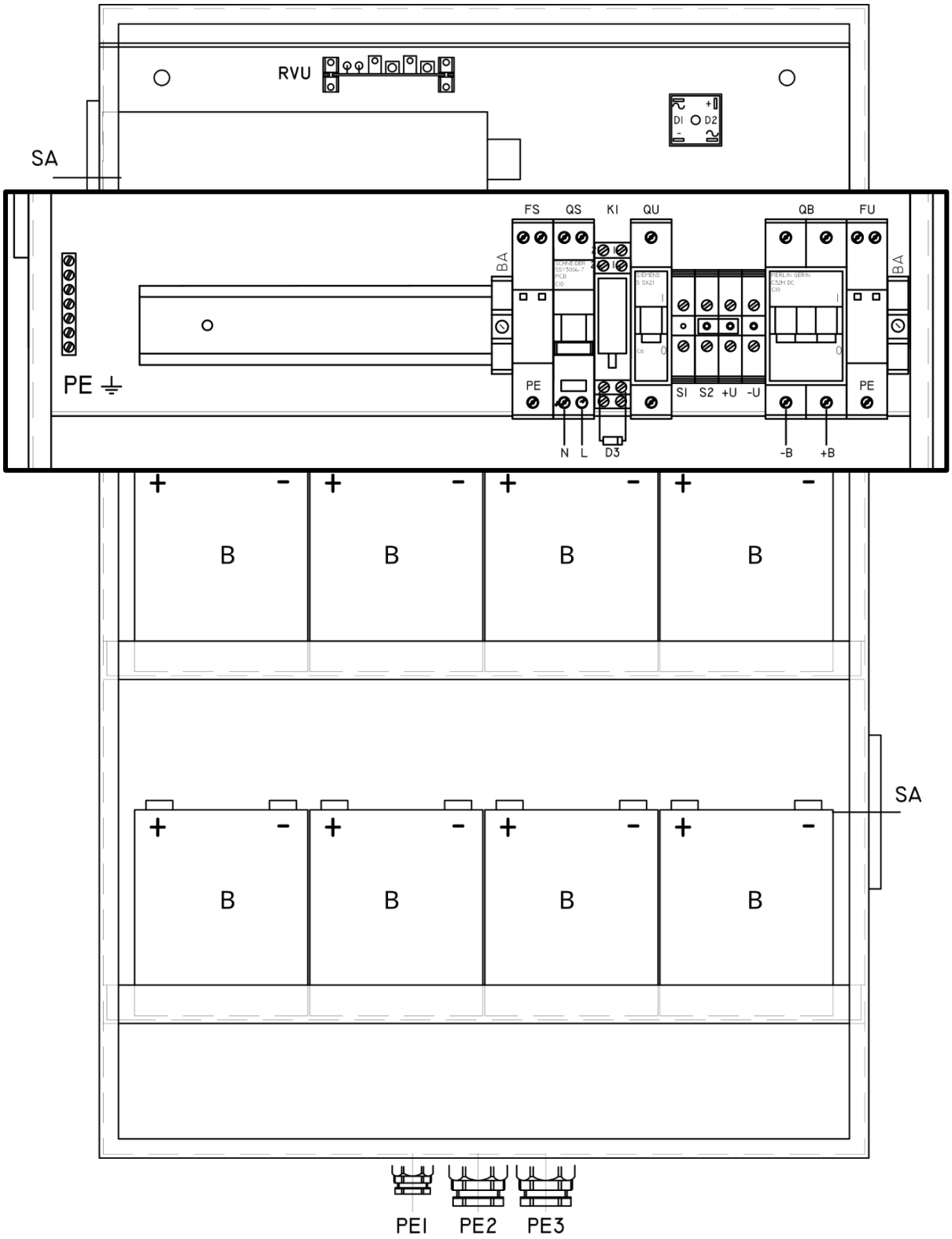
## 4.2. General description

The steel cabinet is connected to a 240Vac power supply, and contains input and output overvoltage protection, as well as 4 batteries to keep OBSTA lamps running for up to 12 hours in the event of a power supply.

## 4.3. Dimension



## 4.4. Bill of materials



| Reference | Designation | Qty |
|---|---|---|
| **PE** | Grounding bar | 1 |
| **FU** | Lighting protection | 1 |
| **FS** | Lighting protection | 1 |
| **B** | Battery AMC9022 | 8 |
| **D3** | Diode | 1 |
| **D1 D2** | Diode bridge | 1 |
| **K1** | Relay | 1 |
| **U1** | 48Vdc 300W power – HRP-300 | 1 |
| **A1** | RVU Card | 1 |
| **QU** | Circuit breaker C6 | 1 |
| **QB** | Circuit breaker C10 | 1 |
| **QS** | Circuit breaker Ph+NC10 | 1 |
| **-U** | Blue terminal 10/10mm$^2$ | 1 |
| **S1 - S2 - +U** | Terminal 10/10mm$^2$ | 3 |
| **PE1** | Cable gland 11 | 1 |
| **PE2 – PE3** | Cable gland 13 | 2 |
| **SA** | Ventilation grating | 2 |
| **ENV** | Steel box | 1 |
| **-** | DIN rail | 1 |

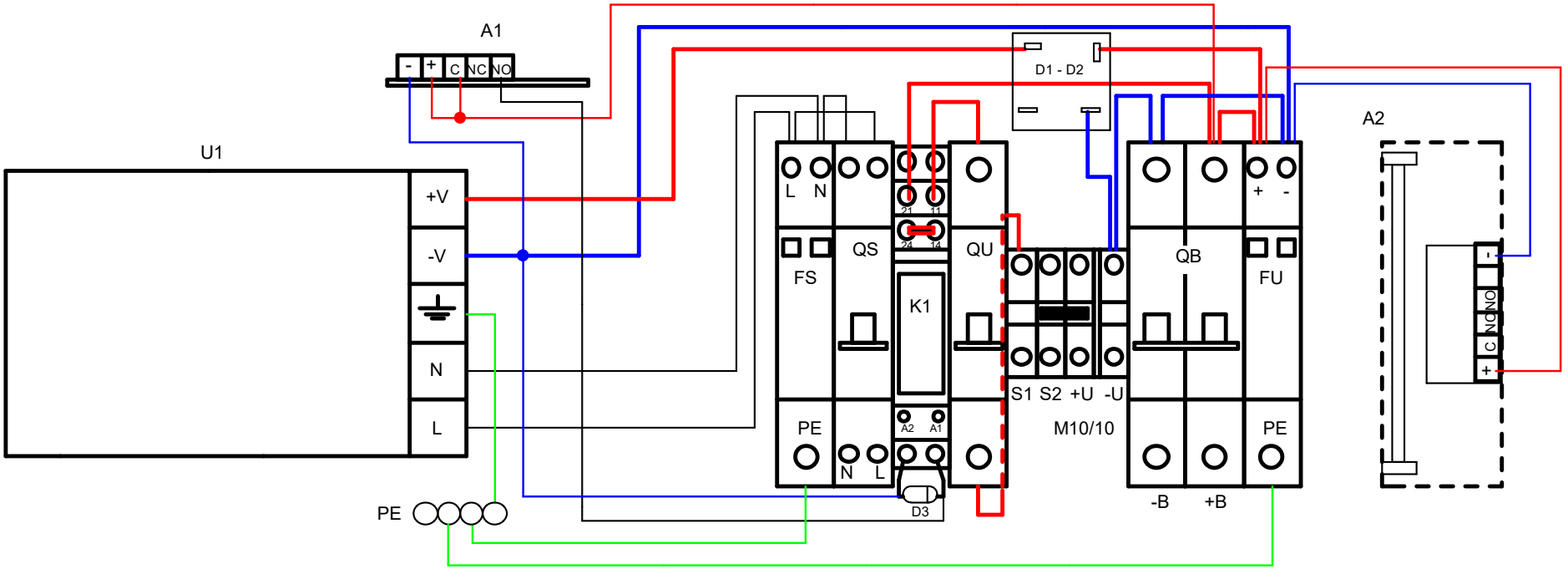
## 4.5. Power supply specifications

Meanwell – HRP300-48:

| MODEL | | HRP-300-3.3 | HRP-300-5 | HRP-300-7.5 | HRP-300-12 | HRP-300-15 | HRP-300-24 | HRP-300-36 | HRP-300-48 |
|---|---|---|---|---|---|---|---|---|---|
| OUTPUT | DC VOLTAGE | 3.3V | 5V | 7.5V | 12V | 15V | 24V | 36V | 48V |
| | RATED CURRENT | 60A | 60A | 40A | 27A | 22A | 14A | 9A | 7A |
| | CURRENT RANGE | 0 ~ 60A | 0 ~ 60A | 0 ~ 40A | 0 ~ 27A | 0 ~ 22A | 0 ~ 14A | 0 ~ 9A | 0 ~ 7A |
| | RATED POWER | 198W | 300W | 300W | 324W | 330W | 336W | 324W | 336W |
| | RIPPLE & NOISE (max.) Note.2 | 80mVp-p | 90mVp-p | 100mVp-p | 120mVp-p | 150mVp-p | 150mVp-p | 250mVp-p | 250mVp-p |
| | VOLTAGE ADJ. RANGE | 2.8 ~ 3.8V | 4.3 ~ 5.8V | 6.8 ~ 9V | 10.2 ~ 13.8V | 13.5 ~ 18V | 21.6 ~ 28.8V | 28.8 ~ 39.6V | 40.8 ~ 55.2V |
| | VOLTAGE TOLERANCE Note.3 | ±2.5% | ±2.0% | ±2.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% |
| | LINE REGULATION | ±0.5% | ±0.5% | ±0.5% | ±0.3% | ±0.3% | ±0.2% | ±0.2% | ±0.2% |
| | LOAD REGULATION | ±1.0% | ±1.0% | ±1.0% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | SETUP, RISE TIME | 1000ms, 50ms/230VAC 2500ms, 50ms/115VAC at full load | | | | | | | |
| | HOLD UP TIME (Typ.) | 16ms/230VAC 16ms/115VAC at full load | | | | | | | |
| INPUT | VOLTAGE RANGE Note.5 | 85 ~ 264VAC 120 ~ 370VDC | | | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | | |
| | POWER FACTOR (Typ.) | PF>0.95/230VAC PF>0.99/115VAC at full load | | | | | | | |
| | EFFICIENCY (Typ.) | 80% | 82% | 86% | 88% | 88% | 87% | 88% | 89% |
| | AC CURRENT (Typ.) | 3.5A/115VAC 1.8A/230VAC | | | | | | | |
| | INRUSH CURRENT (Typ.) | 35A/115VAC 70A/230VAC | | | | | | | |
| | LEAKAGE CURRENT | <1.2mA / 240VAC | | | | | | | |
| PROTECTION | OVERLOAD | 105 ~ 135% rated output power | | | | | | | |
| | | Protection type : Constant current limiting, recovers automatically after fault condition is removed | | | | | | | |
| | OVER VOLTAGE | 3.96 ~ 4.62V | 6 ~ 7V | 9.4 ~ 10.9V | 14.4 ~ 16.8V | 18.8 ~ 21.8V | 30 ~ 34.8V | 41.4 ~ 48.6V | 57.6 ~ 67.2V |
| | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | | | |
| | OVER TEMPERATURE | Shut down o/p voltage, recovers automatically after temperature goes down | | | | | | | |
| FUNCTION | DC OK SIGNAL | PSU turns on : 3.3 ~ 5.6V ; PSU turns off : 0 ~ 1V | | | | | | | |
| | FAN CONTROL (Typ.) | Load 35±15% or RTH2≧50℃ Fan on | | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -40 ~ +70℃ (Refer to "Derating Curve") | | | | | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85℃, 10 ~ 95% RH | | | | | | | |
| | TEMP. COEFFICIENT | ±0.03%/℃ (0 ~ 50℃) | | | | | | | |
| | VIBRATION | 10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | | | |
| SAFETY & EMC (Note 4) | SAFETY STANDARDS | UL62368-1, TUV BS EN/EN62368-1, EAC TP TC 004, AS/NZS 62368.1 approved | | | | | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC | | | | | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH | | | | | | | |
| | EMC EMISSION | Compliance to BS EN/EN55032 (CISPR32) Class B, BS EN/EN61000-3-2,-3, EAC TP TC 020 | | | | | | | |
| | EMC IMMUNITY | Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11,BS EN/EN55035,BS EN/EN61000-6-2,heavy industry level,EAC TP TC 020 | | | | | | | |
| OTHERS | MTBF | 1487.1K hrs min. Telcordia SR-332 (Bellcore) ; 200.4K hrs min. MIL-HDBK-217F (25℃) | | | | | | | |
| | DIMENSION | 199*105*41mm (L*W*H) | | | | | | | |
| | PACKING | 0.95Kg;15pcs/15.3Kg/0.79CUFT | | | | | | | |
| NOTE | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μF & 47 μF parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf )<br>5. Derating may be needed under low input voltages. Please check the derating curve for more details.<br>6. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).<br>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx | | | | | | | | |

# 5. Wiring

## 5.1. Internal wiring

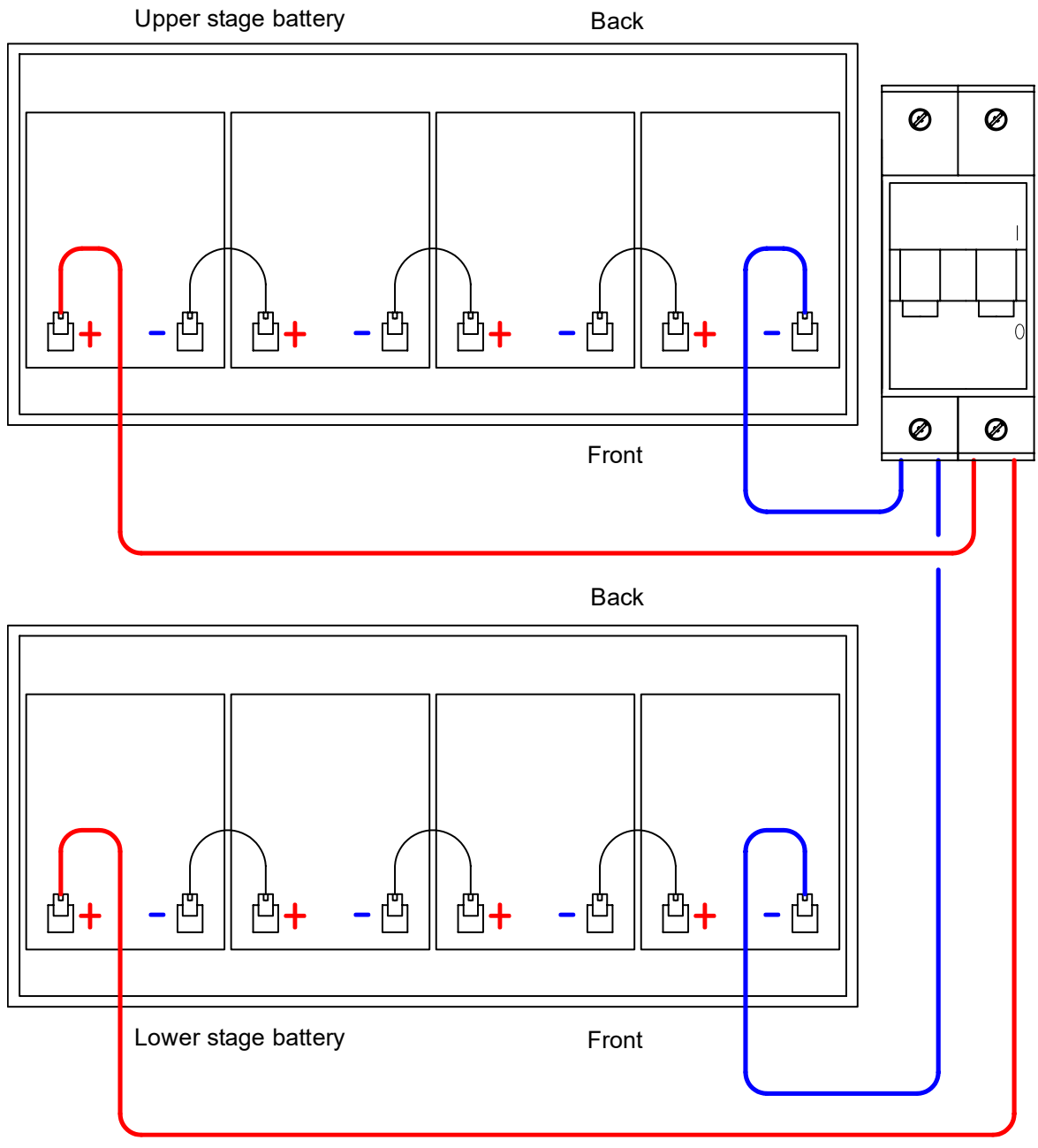


## 5.2. Battery

**Storage**: Always store batteries fully charged. If a battery is stored for a long period, it will top up every 6 months. Store batteries in a cool, dry place.

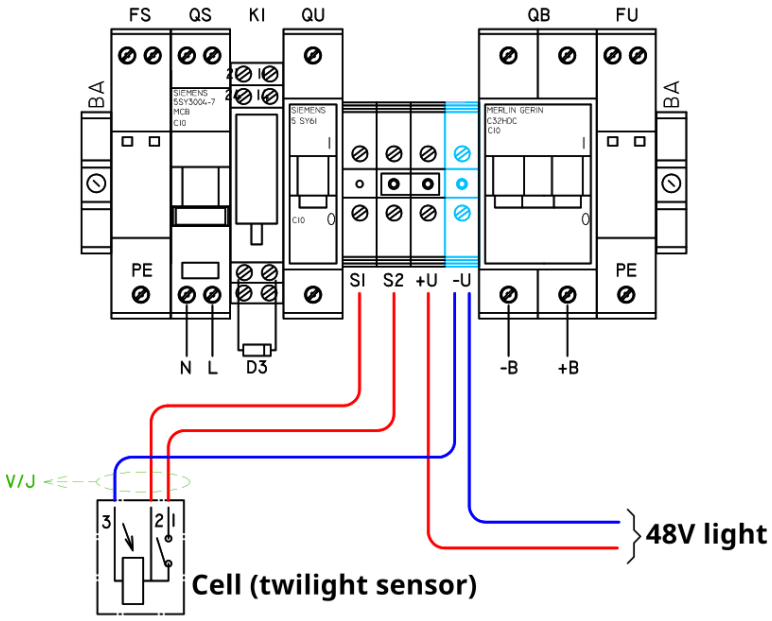
**Temperature**: Keep batteries at a temperature between -15°C and +50°C during charging and discharging. Avoid installing batteries near heat sources.

**Recommendation**: Avoid short-circuiting terminals. NEVER expose to flame. Avoid contact with any type of oil, solvent, petroleum-based detergent or ammonia solution, as this may damage the batteries.

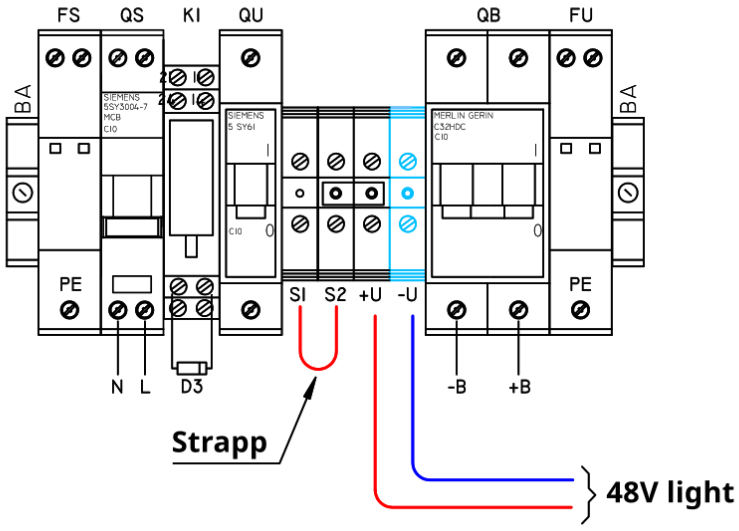


## 5.3. Photocell (option)

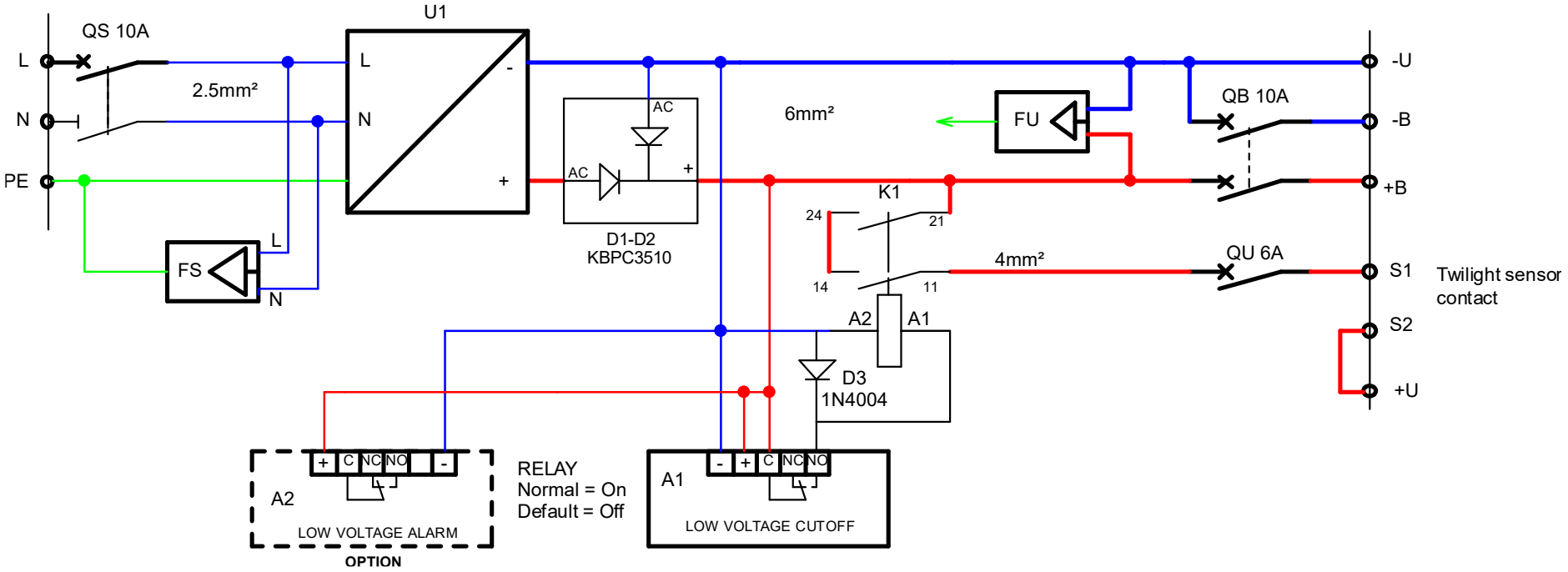
**Connection with twilight sensor**




**Connection without twilight sensor**



## 5.4. Electrical diagram



# 6. Maintenance

## 6.1. Annual visit

| Test | Frequency | Preventive action | Risk |
|---|---|---|---|
| **Wiring** | Annual | Visual control<br>Tightening cable glands<br>Tightening PCB wires | Water infiltration<br>Poor circuit<br>Cable degradation |
| **Waterproof** | Annual | Visual verification<br>Search for the water leak | Water infiltration<br>Short circuit<br>Lamp in default mode (or light off) |
| **Clamping** | Annual | Checking tightness | Cabinet falling |
| **Aspect (rust, dust…)** | Annual | Exterior cleaning | Malfunction |

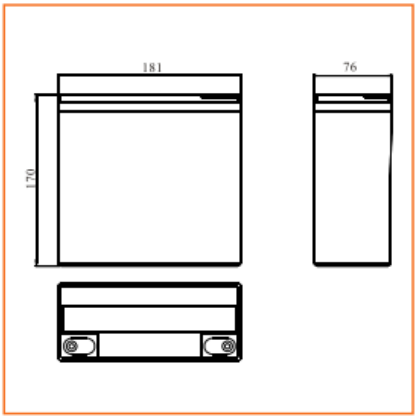
## 6.2. Spare part

| | |
|---|---|
| HRP-300-48 | **113956-U1** |
| Carte RVU 1521-3 | **113956-RVU** |
| Parafoudre DC **- DS230-48DC** | **390401** |
| Parafoudre AC **- DS215-230/G** | **451721** |

# 7. Appendix

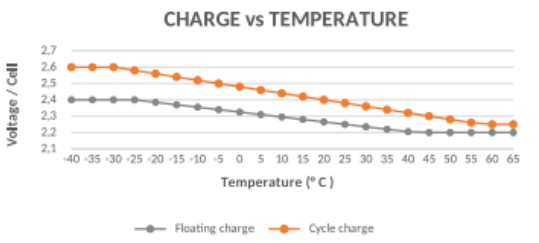
## 7.1. Battery spécifications (AMC9022)

| MAIN INFORMATION / INFORMATIONS GÉNÉRALES | | |
|---|---|---|
| **BRAND** | MARQUE | NX |
| **TECHNOLOGY** | TECHNOLOGIE | LEAD CRYSTAL |
| **NOMINAL VOLTAGE** | TENSION NOMINALE | 12V |
| **NOMINAL CAPACITY** | CAPACITÉ NOMINALE 25°C | |
| **C120** | | 26,4AH |
| **C20** | | 24AH |
| **C10** | | 22AH |
| **DIMENSIONS (±2mm)** | DIMENSIONS (±2mm) | |
| • **Length /** Longueur | | 181mm |
| • **Width /** Largeur | | 76mm |
| • **Height /** Hauteur | | 170mm |
| • **TOTAL HEIGHT WITH TERMINALS /** Hauteur totale (avec cosses) | | 170mm |
| **WEIGHT (±2%)** | POIDS (±2%) | 6,9Kg |
| **POLARITY** | POLARITÉ | - + |
| **TERMINAL** | TYPE DE COSSES | M5.F |


| TECHNICAL INFORMATION / INFORMATIONS TECHNIQUES | | |
|---|---|---|
| **MAX DISCHARGE CURRENT** | COURANT DE DÉCHARGE MAX | 220A (5S) |
| **INTERNAL RESISTANCE** | RÉSISTANCE INTERNE 25°C | 10,8 mΩ |
| **SELF DISCHARGE** | AUTO DÉCHARGE | |
| **3 months /** 3 mois | | 95% |
| **6 months /** 6 mois | | 85% |
| **12 months /** 12 mois | | 80% |
| **FLOAT CHARGING VOLTAGE** | TENSION DE CHARGE EN FLOATING 25°C | 13,5V - 13,6V |
| **CYCLING CHARGING VOLTAGE** | TENSION DE CHARGE EN CYCLAGE | 14,4V - 14,5V |

| DISCHARGE CURRENT AND CUT OFF VOLTAGE / COURANT DE DECHARGE ET TENSION DE FIN DE DECHARGE | |
|---|---|
| **DISCHARGE CURRENT /** COURANT DE DÉCHARGE (A) | **DISCHARGE CUT OFF VOLTAGE /** TENSION DE FIN DE DÉCHARGE (V) |
| 0,01C | 11,40 |
| 0,01C - 0,05C | 11,10 |
| 0,05C - 0,1C | 10,80 |
| 0,1C - 0,5C | 10,50 |
| 0,5C - 1C | 10,20 |
| 1C - 3C | 9,60 |
| 3C - 6C | 9,00 |
| 6C - 10C | 7,80 |
| 10C | 7,20 |



## PRODUCT DESCRIPTION / DESCRIPTION DU PRODUIT

**UK: Lead Crystal batteries offer significantly better performance than traditional lead acid battery technologies. Totally sealed, Lead Crystal batteries use a new type of electrolyte that crystallizes when charged/discharged. This new electrolyte technology (non-corrosive SiO2 acid) combined with the use of high quality plates (high-purity lead calcium selenium) considerably improves battery performance.**

FR: Les batteries Lead Crystal offrent des performances nettement supérieures aux technologies classiques de batterie plomb. Totalement étanches, les batteries au plomb Crystal utilisent un nouveau type d'électrolyte qui se cristallise au fur à mesure des cycles. cette nouvelle technologie d'électrolyte (acide SiO2 non corrisif) combiné à l'usage de plaques de grande qualité (plomb pur calcium sélénium) permet d'améliorer considérablement les performances des batteries.

## FEATURES / CARACTERISTIQUES PRINCIPALES

**- Greenest lead acid battery:**

**Less acid, no cadmium, no antimony. NX lead crystal batteries are up to 99% recyclable and are classified as non-hazardous goods for transport.**

**- Long lifespan: Up to 11 years in floating and 2000 cycles at 50% DOD**
**- Good recovery from deep Cycle : Lead crystal batteries can be 100% discharged**
**- Long shelf life / Low self-discharge:**
**Up to 2 years in storage without refresh charging**
**- Very short recharge time / Higher availability:**
**Charge up to 3 time faster than other lead acid battery technologies**

**- Safest Lead Acid Technology:**
**• Extreme temperature resistance (-40°C to +65°C)**
**• High resistance to vibration**
**• Operation in any direction**
**• Sealed and Maintenance Free**

**- High Rate discharge : Excellent high rate discharge**

- Batterie plomb la plus ecologique:

Moins d'acide, pas de cadmium, pas d'antimoine. Les batteries NX Lead Crystal sont recyclables jusqu'à 99 % et sont classées comme marchandises non dangereuses pour le transport.

- Longue durée de vie : Jusqu'à 11 ans en floating et 2000 cycles à 50% de décharge.
- Performance en décharge profonde: Supporte des profondeurs de décharge jusqu'à 100%
- Faible autodécharge / Longue durée de stockage : Les batteries lead crystal peuvent être stockées jusqu'à 2 ans sans recharge.
- Recharge rapide / Plus grande disponibilité :
Charge jusqu'à 3 fois plus rapide que les autres technologies de batteries au plomb

- Technologie Haute fiabilité:
• Bonne résistance aux températures extremes (-40°C à +65°C)
• Bonne résistance aux vibrations,
• Fonctionnement dans n'importe quel sens
• Etanche et sans entretien

- Décharge rapide : Excellentes performances pour des usages à débit élevé (UPS par exemple)

## CAUTION / AVERTISSEMENT

**- Operation in any orientation except permanently inverted.**
**- Continuous use of the battery in a permanently inverted position may adversely affect battery life and performance.**
**- End-of-life NX batteries must be recycled in accordance with current legislation.**

- Fonctionnement dans n'importe quel sens sauf en utilisation inversée continue.
- L'utilisation continue de la batterie en position inversée peut impacter négativement sa durée de vie et ses performances.
- Les batteries NX en fin de vie doivent être recyclées selon la législation en vigueur.

## APPLICATIONS / APPLICATIONS

| | |
|---|---|
| **Solar and renewable energies** | Solaire et énergies renouvelables |
| **Leisure (marine, camping car, etc.)** | Servitude (marine, camping car, etc…) |
| **Cyclic use (Mobility scooters, Electric vehicles, Golf carts, etc.)** | Usage cyclique (Fauteuil roulant, Véhicule électrique, Golf etc...) |
| **Medical** | Médical |
| **Emergency lighting** | Éclairage de secours |
| **Railway signal** | Signalisation ferroviaire |
| **Alarm and security system** | Alarme et sécurité |
| **Aircraft signal** | Signal d'avion |
| **Electronic devices and equipment** | Appareils et équipements électroniques |
| **Emergency backup** | Alimentation de secours |
| **Power supply** | Réserve d'énergie |

*** Non exhaustive list /** Liste non-exhaustive

OBSTA
3, impasse de la blanchisserie
51052 Reims CEDEX – France

## CONSTANT CURRENT DISCHARGE CHARACTERISTICS / CARACTÉRISTIQUES DE DÉCHARGE À COURANT CONSTANT

| Cut off voltage per cell | 5min | 15min | 30min | 45min | 1h | 2h | 3h | 4h | 5h | 6h | 8h | 10h | 12h | 20h | 24h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.60V | 59.4 | 37.9 | 24.9 | 18.8 | 14.0 | 9.17 | 6.66 | 5.18 | 4.40 | 3.78 | 2.86 | 2.31 | 1.94 | 1.21 | 1.01 |
| 1.67V | 51.1 | 34.3 | 23.1 | 17.8 | 13.8 | 8.75 | 6.33 | 5.12 | 4.18 | 3.74 | 2.81 | 2.26 | 1.94 | 1.21 | 1.01 |
| 1.70V | 48.8 | 33.3 | 22.4 | 17.6 | 13.7 | 8.62 | 6.20 | 5.08 | 4.15 | 3.71 | 2.79 | 2.24 | 1.94 | 1.21 | 1.01 |
| 1.75V | 44.4 | 31.1 | 21.5 | 16.9 | 13.5 | 8.29 | 6.02 | 4.95 | 4.02 | 3.63 | 2.75 | 2.22 | 1.92 | 1.21 | 1.01 |
| 1.80V | 39.2 | 28.5 | 20.7 | 16.3 | 13.2 | 8.00 | 5.94 | 4.86 | 3.93 | 3.54 | 2.68 | 2.20 | 1.88 | 1.21 | 1.01 |
| 1.83V | 34.2 | 26.1 | 19.1 | 15.1 | 12.6 | 7.65 | 5.72 | 4.66 | 3.76 | 3.41 | 2.59 | 2.13 | 1.83 | 1.20 | 0.98 |
| 1.85V | 29.3 | 23.6 | 17.6 | 14.0 | 11.9 | 7.32 | 5.50 | 4.48 | 3.60 | 3.30 | 2.50 | 2.07 | 1.78 | 1.20 | 0.95 |

**Units: Amperes (25°C, 77°F)**

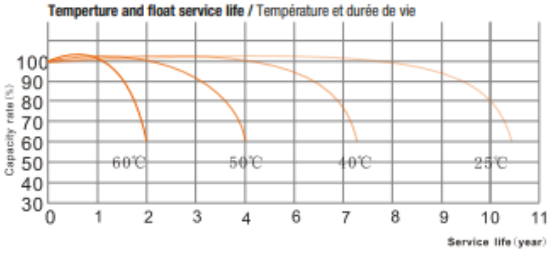
## CONSTANT CURRENT DISCHARGE CHARACTERISTICS / CARACTÉRISTIQUES DE DÉCHARGE À COURANT CONSTANT

| Cut off voltage per cell | 5min | 15min | 30min | 45min | 1h | 2h | 3h | 4h | 5h | 6h | 8h | 10h | 12h | 20h | 24h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.60V | 97.72 | 65.80 | 45.03 | 34.33 | 28.36 | 16.82 | 12.17 | 9.84 | 8.16 | 7.35 | 5.56 | 4.53 | 3.79 | 2.36 | 1.98 |
| 1.67V | 87.30 | 61.35 | 42.16 | 32.84 | 27.70 | 16.54 | 11.99 | 9.79 | 8.02 | 7.26 | 5.45 | 4.43 | 3.79 | 2.36 | 1.98 |
| 1.70V | 84.48 | 59.75 | 41.00 | 32.49 | 26.91 | 16.38 | 11.84 | 9.73 | 7.96 | 7.22 | 5.43 | 4.38 | 3.79 | 2.34 | 1.97 |
| 1.75V | 72.19 | 56.18 | 39.65 | 31.49 | 26.17 | 15.83 | 11.56 | 9.57 | 7.76 | 7.11 | 5.32 | 4.34 | 3.79 | 2.32 | 1.97 |
| 1.80V | 64.55 | 51.77 | 38.30 | 30.49 | 25.19 | 15.31 | 11.43 | 9.40 | 7.57 | 7.00 | 5.23 | 4.30 | 3.69 | 2.32 | 1.97 |
| 1.83V | 60.85 | 47.93 | 35.77 | 28.57 | 23.92 | 14.74 | 11.04 | 9.09 | 7.31 | 6.80 | 5.06 | 4.19 | 3.60 | 2.30 | 1.92 |
| 1.85V | 54.17 | 44.10 | 33.24 | 26.65 | 22.68 | 14.18 | 10.64 | 8.77 | 7.02 | 6.61 | 4.89 | 4.08 | 3.51 | 2.29 | 1.87 |

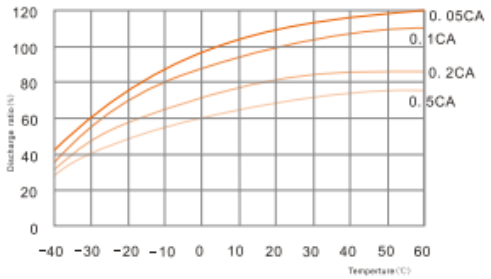
**Units: Watts per cell (25°C, 77°F)**

## CHARGE AND DISCHARGE CURVES / COURBES DE CHARGE ET DÉCHARGE

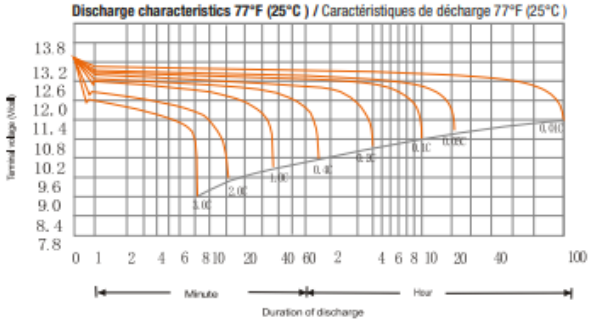
**Temperture and float service life** / Température et durée de vie



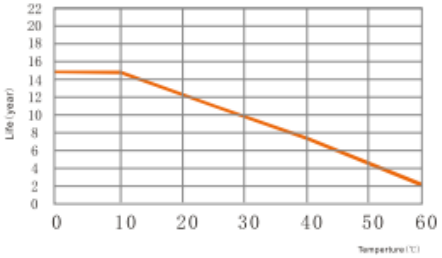

**Temperture and discharge capacity** / Température et capacité de décharge



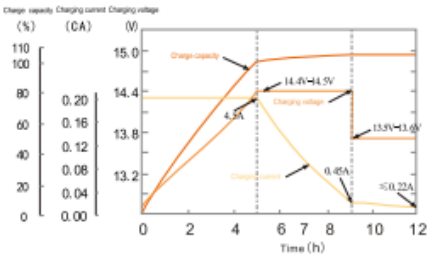

**Discharge characteristics 77°F (25°C )** / Caractéristiques de décharge 77°F (25°C )




**Float service life** / Durée de vie en floating




**Charge characteristics 77°F (25°C )** / Caractéristiques de charge 77°F (25°C )




**Cycle life curves (25°C )** / Courbes de cycle de vie (25°C )
Discharge at 0.1C /Cut off voltage 1.8V by cell