

## Battery Specifications

Model: UP-VW1245P1

Customer: PIE

Application: Trickle use

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2. Drawings.
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Please return a copy of these specifications to PSBS {Panasonic Storage Battery (Shenyang) Co., Ltd.} with the customer's signature of approval.

Signature for Approval: \_\_\_\_\_ : Date \_\_\_\_\_  
: \_\_\_\_\_ : \_\_\_\_\_  
: \_\_\_\_\_ : \_\_\_\_\_  
: \_\_\_\_\_ : \_\_\_\_\_  
: \_\_\_\_\_ : \_\_\_\_\_

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Panasonic Storage Battery (Shenyang) Co., Ltd.



**SPECIFICATIONS FOR THE RECHARGEABLE VALVE REGULATED LEAD-ACID BATTERY**  
**Model No. UP-VW1245P1**

### 1. Scope

These specifications pertain to Panasonic Storage Battery (Shenyang) Co.,Ltd.'s (PSBS`S) Rechargeable Valve Regulated Lead-Acid Battery, type UP-VW1245P1, hereafter referred to as the "battery" . This document only describes the performance of the battery. The price, delivery date and other matters should be dealt with in other mutual agreements.

### 2. Requirements

Voltage, capacity, mass and dimensions for this model are shown in Table1.

**Table 1 requirements**

<b>Model</b>	<b>UP-VW1245P1</b>
<b>Nominal Voltage</b>	<b>12V</b>
<b>Rated Capacity</b>	<b>45W/10 min rate/cell</b>
<b>Mass(approx.)</b>	<b>2.55 Kg</b>
<b>Dimensions</b>	<b>shown in the attached drawing</b>

### 3. Structure

The battery consists mainly of positive plates, negative plates, separators, electrolyte, valves, a container and a cover. The electrolyte is absorbed in both positive/negative plates and separators. Here a container and a cover meet the requirements of UL1778(UL94V-0).

### 4. Characteristics

The following characteristics are for the batteries, which are manufactured within 6 months, independently.

#### 4.1 Capacity

If the battery is discharged at 2.25A to the end voltage of 10.5V per battery after a full charge, followed by standing of one hour at an ambient temperature of  $25 \pm 2^\circ\text{C}$ , the discharge duration time should exceed 170 minutes within the first 3 times of the charge and discharge cycles.

See Table 4 for the characteristic data when the battery is used under the condition of constant wattage load.

**Note:** Values shown in the table are reference data.

#### 4.2 Shelf life characteristics

The duration time should be more than 80 minutes when the battery, which has been stored at an ambient temperature of  $40 \pm 2^\circ\text{C}$  for 4 months, is then stored at an ambient temperature of  $25 \pm 2^\circ\text{C}$  for 24 hours and is then discharged at 2.25A to the end voltage of 10.5V per battery.

#### 4.3 Trickle life

If the battery is fully charged with a constant voltage charger with the controlled voltage of  $13.7 \pm 0.10\text{V}$  at an ambient temperature of  $25 \pm 2^\circ\text{C}$ , and every 3 months the battery is discharged at a constant current of 2.25A to 10.5V at an ambient temperature of  $25 \pm 2^\circ\text{C}$ , the battery shall have a trickle life of over 2 years with a discharge duration of over 1.5 hours.

**Note:** the expected life of the battery shall decrease by one-half with each rise in temperature of  $10^\circ\text{C}$ . In particular, the life of the battery will shorten remarkably at about  $40^\circ\text{C}$ . Therefore careful consideration must be taken not to use the battery at high temperature. Also, as mentioned in 4.3 above, the life of battery will vary depending on the charge/discharge

conditions. For example, a non-flat current may shorten the life of the battery. Thus if special charge and/or discharge methods not described in this specification will be used, please confirm the battery characteristics with the actual application equipment before designing the charger.

As the period of use of VRLA battery becomes longer, the run time of the battery gradually becomes shortened. While the battery reaches the end of life with the shortened run time, such phenomena as gradual decrease of electrolyte and corrosion of the positive grid occur inside of the battery. If the battery of this condition continues to be used, it may suffer from thermal runaway (a vicious circle of increasing charge current and rising temperature) and electrolyte leakage as its capacity reaches 0. We strongly recommend taking proper preventive measures such as replacing batteries before any of these phenomena are found. In addition, if the case is made of metal, please be sure that the battery is insulated against its metal case with acid-and heat-resistant insulating material so that the battery can not touch the metal case directly. If the battery continues to be used without proper replacement, or if it is not insulated properly, it may generate fire. In case you can not replace batteries for some serious reason, please take some other preventive actions such as stopping charging. Please see 'Recommended timing for battery replacement for backup applications' for more detailed information.

#### 4.4 Vibration Resistance Characteristics

Vibration resistance characteristics are tested such that a fully charged battery, being in a right side up position, is subjected to vibrations under the conditions given below. The battery is then checked visually for damage such as deformation or leakage of electrolyte, and checked electronically for existence of a short circuit or the terminal voltage being lower than the nominal voltage.

(1) Direction of vibration	Vertical
(2) Peak to peak Amplitude	4 mm
(3) Vibration Frequency	16.7Hz
(4) Duration of Vibration	Continuously for 1 hour
(5) Ambient temperature	25 ± 2°C

Note: The battery being tested must be firmly fixed on the vibration board.

### 5. Usage Conditions

#### 5.1 Discharge

Discharge current range	0.45A to 27.0A
Temperature range	-15°C to 50°C
Recommended cut-off voltage	Shown in Table 2

Table 2 Recommended cut-off Voltage

Discharge Current	Recommended Cut-off Voltage
Below 1.8A	10.5V
1.8A to 4.5A	10.2V
4.5A to 9.0A	9.90V
9.0A to 18.0A	9.30V
18.0A to 27.0A	8.70V

Do not allow the batteries to discharge below the recommended cut-off voltage.

#### 5.2 Charge

Current limited, constant voltage charge

Initial charge current for trickle use	less than 1.1A
Temperature range	0°C to 40°C

Charge voltage		shown in Table 3
Table 3 Charge Voltage		
Ambient Temperature	Charge Voltage(a)	Trickle Type
0°C	14.00 to 14.20V	
25°C	13.60 to 13.80V	
40°C	13.30 to 13.50V	

**Notes:**

- (a) Charge voltage refers to the voltage remaining at the end of charge.  
 (b) When the initial charging current is bigger than 1.1A, please consult us.

**5.3 Ambient Temperature Range of Storage**

The ambient temperature range of storage shall be -15 to 40°C. But for the short-time (about 0.5month) storage, temperature range shall be -40 to 60°C. Also, for the long-time (about 12 months) storage, temperature range is desirably shall be -15 to 25°C.

**6. Limited Warranty**

(In condition of other detailed contracts on this made with PSBS, please base on that.)

The following limitations apply to PSBS`S warranty:

- (1) The battery is covered by warranty for a period of 1 year from the date of delivery from PSBS if defective materials or production mistakes originating from PSBS are the cause of any battery problem.
  - (2) PSBS will repair or replace batteries which are not conforming to the specification while PSBS is not responsible for the charges of recycle of the nonconforming batteries and installation of new batteries.
  - (3) The warranty does not apply if the problem has been caused by one of the following:
    - (a) The battery has been used for purposes not specified by PSBS; or
    - (b) The battery has been modified in any way.
  - (4) If the cause of the problem is not clear, PSBS reserves the right to investigate the actual application in which the battery was subjected.
- Please keep the next “Precautions in handling the Rechargeable Valve Regulated Lead-Acid Batteries”, to get full performances and operate them safety.
  - Making design especially recycle symbol will be changed by individual country recycle circumstances such as law and/or voluntary. If you intend to export this battery another country, please consult Panasonic sales person.

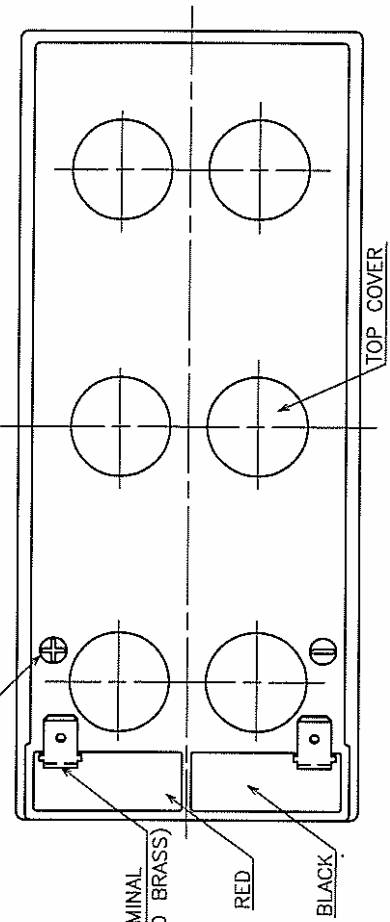
**Table 4 Typical Watt Table for UP-VW1245 at 25°C**

Cut-off V	5min	10min	15min	20min	30min	45min	1h	3h	5h	10h	20h
9.6V	410	270	195	159	112	82.1	65.7	26.0	16.5	8.79	4.76
9.9V	400	263	194	158	111	81.6	65.1	25.9	16.4	8.75	4.75
10.2V	390	258	193	156	110	80.8	64.4	25.6	16.2	8.65	4.73
10.5V	360	246	187	151	109	78.7	63.0	25.2	16.1	8.62	4.72
10.8V	330	234	180	146	108	78.3	61.8	24.7	15.7	8.52	4.69

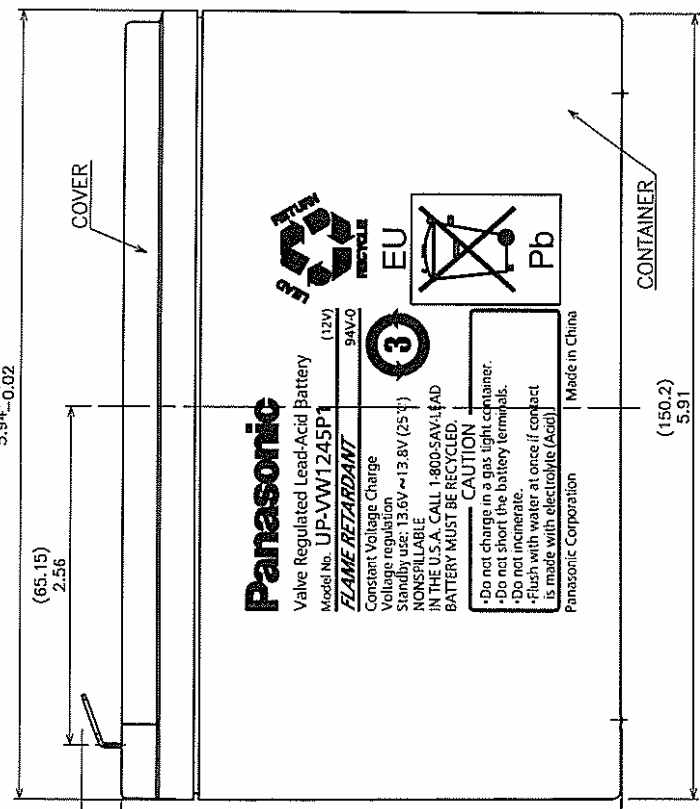
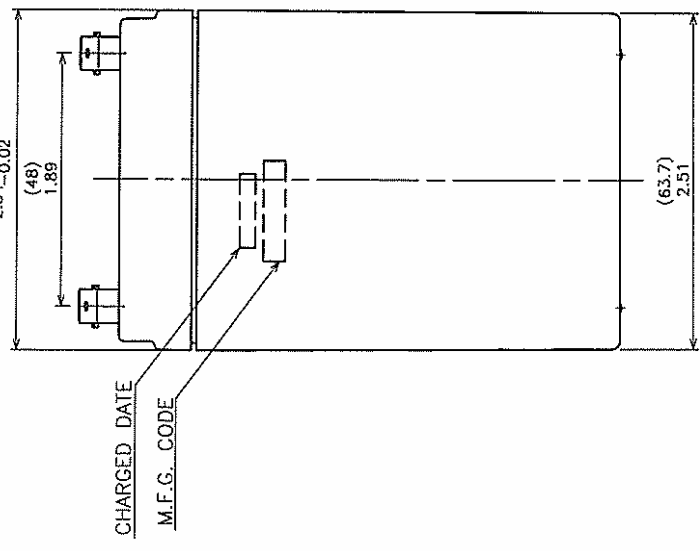
**Note:** The above characteristics data are average values obtained within three charge/discharge cycles.

The above data are average values, not guaranteed.

Commercial Tolerance	Sym.	Date	Revision	Signed	Checked
	△				



(15.1<sup>+1.5</sup>  
-0.5)  
5.94<sup>+0.06</sup>  
-0.02



**Panasonic**  
Valve Regulated Lead-Acid Battery  
Model No. **UP-VW1245P1** (12V) 9Ah

**FLAME RETARDANT**  
Constant Voltage Charge  
Voltage regulation  
Standby use: 13.6V ~ 13.8V (25 °C)  
NONSPILLABLE  
IN THE U.S.A. CALL 1-800-SAV-A-LEAD  
BATTERY MUST BE RECYCLED.

**CAUTION**  
• Do not charge in a gas tight container.  
• Do not short the battery terminals.  
• Flush with water at once if contact is made with electrolyte (Acid).

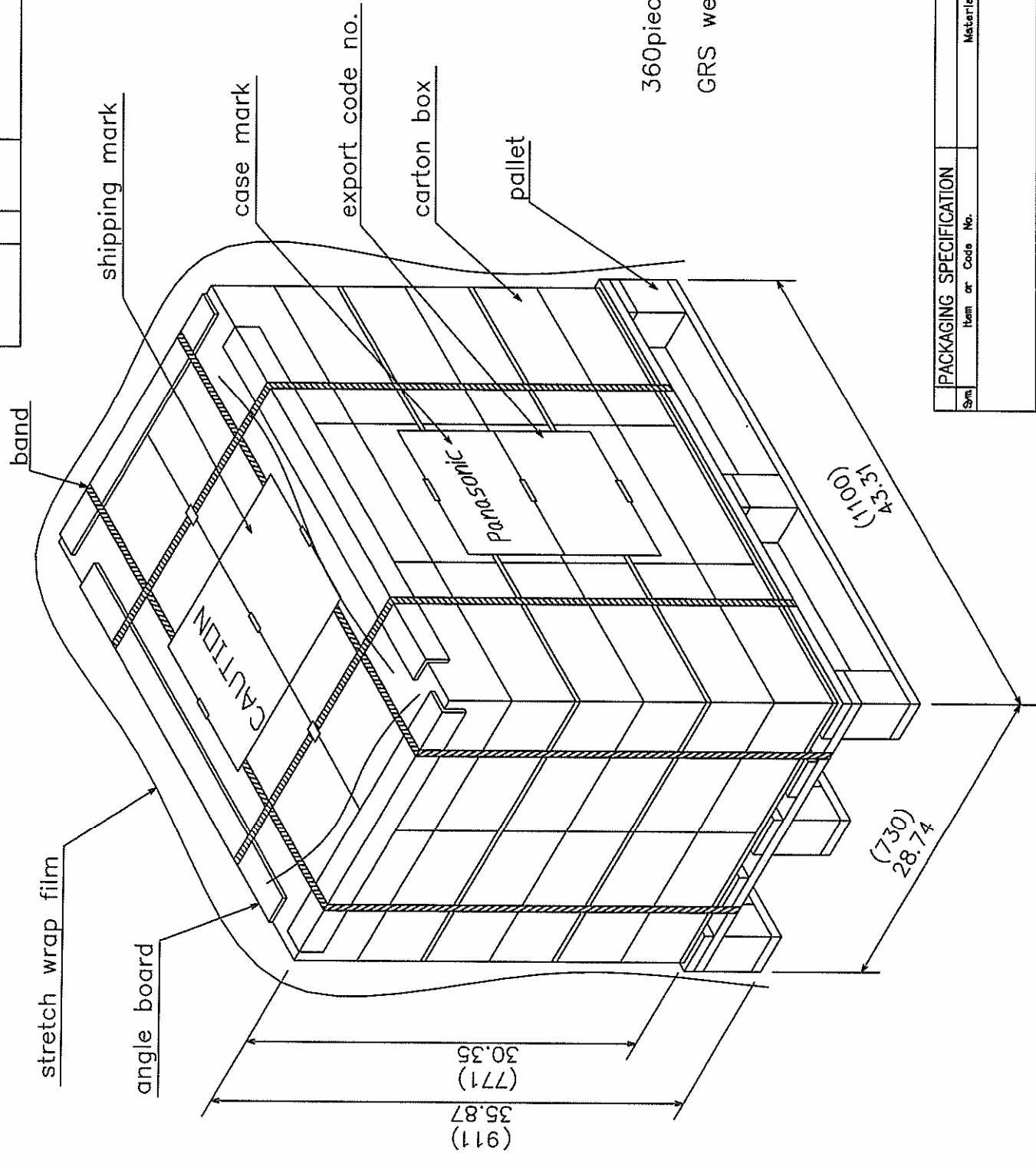
Made in China  
Panasonic Corporation

RECYCLE  
EU  
Pb

Smt.	MSW1245P1	Item or Code No.	ABS	Material & Size	qL	Process	Remark
Scale	~	Described	Drawn	Checked	Approved	Name	OUTWARD DRAWING
		Kiyuigo Kiyuigo	Jing C. Bai			No.	MSW1245P1
		Nov-27-08	Nov-27-08	Nov-27-08	Nov-27-08	UP-VW1245P1	



Commercial Tolerance	Sym.	Date	Revision	Signed	Checked



360pieces[36 carton boxes]  
(10pcs/carton box)  
GRS weight:974kg

PACKAGING SPECIFICATION		Material & Size	ct.	Process	Remark
Sym.	Item or Code No.	UP-VW1245(+/-EXP)(For PIE)			
Scale	Desigined	Drawn	Checked	Checked	Approved
~	Hayashi	Hayashi	Jing	C.Bai	[Signature]
	Nov:27.08	Nov:27.08	Nov:27.08	Nov:27.08	Nov:27.08
Name		PACKAGING SPECIFICATION			
No.		PPVW1245C-E			