

Battery capacity

Use Table B to estimate the battery capacity (amp-hours) required to power your VPAP.

Simply find the part of the table that matches your setup then read the required battery capacity for your IPAP pressure. The '4 hrs' and '8 hrs' columns show the requirement for 4 or 8 hours of operation respectively, including a **50% safety margin**. If you will be using your VPAP for a longer or shorter period, calculate the battery capacity that you will require by using the steps in 'Calculate your battery requirements'.

The 'current draw' column shows the electrical current consumption at 12V DC.

- This is a per/hr rate of consumption. Always add a 50% safety margin when calculating battery size.
- If you are using a 24V battery, the current draw value is halved.

The values in the tables are calculated for a respiratory rate of 20 breaths per minute.

Example:

You use your VPAP for 8 hours without H4i and with Resmed DC-24 Converter. IPAP is 12 cm H₂O.

Note: Use the value for IPAP = 15.

1.2 amps x 8 hours = 9.6 amp-hours

Add the 50% safety margin:

9.6 x 1.5 = 14.4 amp-hours

You require a battery with a capacity of at least 14 amp-hours.

Calculate your battery requirements

1. Inverter or converter?

Using H4i:

- Yes Inverter only
 No Converter or inverter

2. What is my VPAP's current draw?

Table B shows the current draw for IPAP values with a 12V battery. The current draw is halved with a 24V battery.

IPAP Pressure:..... cm H₂O

Current draw:..... amps

3. VPAP used for..... hours

4. Battery capacity

Use your values from (2) and (3) to calculate:

..... amps x hours x 1.5 = amp-hours

(Current x usage hours x safety margin)

This 'amp-hours' value is the battery capacity we recommend to run your VPAP.

Need further information?

If you would like more information about powering your VPAP with a battery, please contact your ResMed representative.

Manufacturer:

ResMed Ltd 1 Elizabeth Macarthur Drive Bella Vista NSW 2153 Australia

Distributed by:

ResMed Corp 14040 Danielson Street Poway CA 92064-6857 USA

ResMed (UK) Ltd 96 Milton Park Abingdon Oxfordshire OX14 4RY UK

See www.resmed.com for other ResMed locations worldwide.

VPAP and HumidAire are trademarks of ResMed Ltd and are registered in the US Patent and Trademark Office. Specifications may change without notice.

©2008 ResMed Ltd. 268261/1 08 10

VPAP™ Battery Guide

- VPAP Auto 25
- VPAP ST
- VPAP S
- VPAP IV ST
- VPAP IV



Table B: Minimum recommended battery capacity

1. Using the ResMed DC-24 Converter

IPAP (cm H ₂ O / hPa)	Current at 12V DC (amps)	4 hrs (amp-hours)	8 hrs (amp-hours)
10	1	6	12
15	1.2	7	14
20	1.5	9	18
25	1.8	11	22

2. Using an inverter (without H4i)

IPAP (cm H ₂ O / hPa)	Current at 12V DC (amps)	4 hrs (amp-hours)	8 hrs (amp-hours)
10	1.4	8	16
15	1.6	10	19
20	1.9	11	22
25	2.2	13	26

3. Using an inverter (with H4i) at IPAP cm H₂O/hPa

H4i Setting	Current at 12V DC (amps)	4 hrs (amp-hours)	8 hrs (amp-hours)
1	1.6	10	19
2	5.2	31	62
3	10.4	62	125
4	12.9	77	155
5	14.8	88	178
6	15.4	92	185

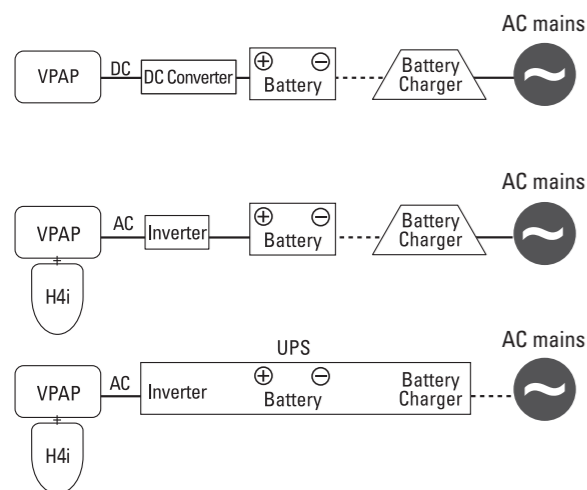
Note: Peak current may be higher during the warm-up.

Indoors, outdoors or in transit—your VPAP device can give you effective therapy wherever you are.

Some simple accessories, used with a battery or an uninterruptible power supply (UPS), can help you use your VPAP machine even where mains electricity is unavailable or unreliable.

What do I need?

Precisely what setup you require depends on where you intend using it and whether you use HumidAire 4i™. The diagram below shows how to set up your VPAP with the various options.



Using a battery with VPAP

Converter

The VPAP device has a 24V DC power socket which allows the connection of a 12V or 24V DC power supply (ie, battery) using the ResMed DC-24 Converter.

Converters are more efficient than inverters and ResMed recommends that you use the DC-24 Converter if you are using a VPAP without H4i.

Inverter

An inverter adapts the 12/24V direct current (DC) supplied by the battery into the 110/240V alternating current (AC) that powers your VPAP. See Table A for the types of inverters available.

Battery

ResMed recommends using either a 12V or 24V deep-cycle battery. The battery capacity that you will require depends on your system's power consumption. This is mainly affected by the IPAP pressure and usage hours (see Table B). You will need a charger for your battery.

Uninterruptible Power Supply (UPS)

A UPS consists of an inverter, a battery and a battery charger. It is designed to supply power automatically in the event of power loss. Consider a UPS in situations where the AC power supply (standard mains electricity) is intermittent or unreliable.

Can I use my H4i with battery power?

Yes. You will require a larger capacity battery and a more highly rated inverter.

No power will be supplied to your H4i if it remains connected to your VPAP while using a converter.

How do I connect my VPAP to the battery?

Connect the inverter or converter to a battery using the Battery Adapter Cable, then connect your VPAP to the inverter/converter. Be careful

to match the polarity (+ and -) symbols correctly between the adapter cable and the battery.

! WARNING

When lead-acid batteries discharge, they generate hydrogen gas. If this gas concentrates around the battery area, and sparks are created when connecting to battery terminals, then the potential for an explosion exists. To avoid this danger, always make the second connection to ground (battery negative) physically away from the battery to a metallic vehicle component.

Which inverter (or UPS) should I use?

The type of inverter that you need depends on your VPAP setup. Table A lists the minimum specifications for an inverter/UPS.

When purchasing an inverter please ensure that:

- the inverter is certified by an accredited certification body (eg, CE, UL)
- the inverter's case temperature is specified as less than 50°C at an ambient temperature of 35°C.

Can I connect my VPAP to a vehicle or boat battery?

Yes, but standard automotive batteries are generally unsuitable for therapy requirements; continual discharge of an automotive battery can shorten its lifespan and the therapy delivered may not be adequate.

If you are using your VPAP in, or close to, a vehicle, you should consider a dual-battery set up using a deep-cycle battery. Consult an automotive or marine electrician for details about installing a dual-battery system.

Most converters and inverters are supplied with a plug for an automobile cigarette lighter socket.

Table A: Types of Inverters

Setup	Output wave	Output Power Rating: Continuous/ Peak Setting
VPAP (without H4i)	Modified or pure sine wave	60W/180W
VPAP with H4i at 110V mains	Pure sine wave ¹	140W/260W
VPAP with H4i at 220/240V mains	Pure sine wave ¹	140W/500W ²

¹ The H4i requires a true sine wave inverter in order to operate correctly.

² For 220/240V inverter operation, the H4i can draw peak battery currents of up to 76A at a 25% duty cycle (cycles at mains frequency - 6 cycles ON, followed by 18 cycles OFF). The inverter output needs to be capable of supplying such current peaks without sustaining component damage or protectively shutting down from either current or thermal overload protection.

Ordering details

The Battery Adapter Cable (product code: 22006) and the ResMed DC-24 Converter (product code: 26932) can be purchased through your ResMed distributor.