INTRODUCING THE Z1™

SMALL, QUIET,
AND TOTALLY
INTEGRATED!

Z1™ Clear target set from start

- ➤ Freedom for users to travel, stay with friends, go camping
- ➤ Small and discrete
- ➤ Opportunities for cord-free CPAP
- ➤ A user focused design

Go anywhere, do anything cpap.

HDM
HUMAN DESIGN MEDICAL

BREAS

This is Z1™

Very quiet.

Extremely light.

Battery powered.*

Data capable.

Very quiet
26 dBA operation

Extremely light.
Only 284 grams.

Optional
integrated battery

Data viewing
software

HDM
HUMAN DESIGN MEDICAL

BREAS

Product Overview

End cap
Air inlet with underlying filter

284 GRAMS

26 DECIBELS (dBA)

3 YEAR WARRANTY

Backlit LCD
Always know the status of your therapy

Tiny and light weight
284 grams (the weight of 4 eggs)

4-20 cm H2O pressure
Suitable for 95% of the CPAP market

Connectivity
USB, Bluetooth® prepared

09-17-13

PRESSURE
cmH₂0

0.0

Real buttons
For tactile feedback

Power inlet

Air outlet

HDM
HUMAN DESIGN MEDICAL

BREAS

Z1™ Unplugged

Z1™ with PowerShell™

- Totally portable, integrated power source
- Small enough to fit in the palm of your hand
- Enough power for at least 8 hours of cord-free CPAP
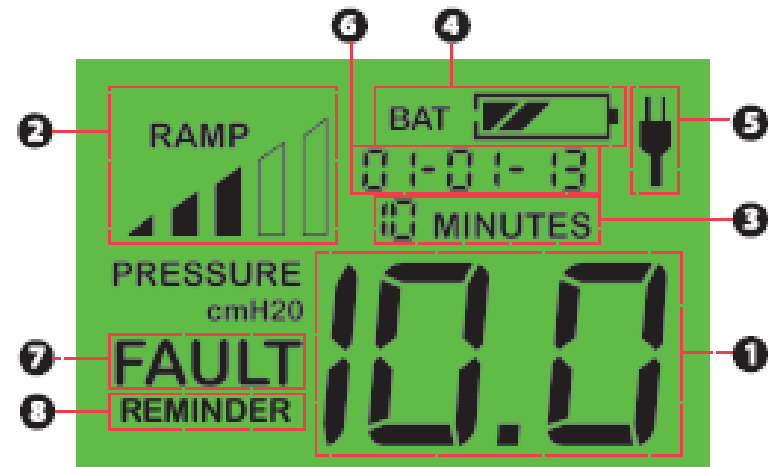- Meets FAA standards for in-flight use.

Go anywhere, do anything CPAP.

Setting the Z1™

Available settings:

- Pressure level (4-20 cmH2O)
- Ramp-up time
- Ramp-up start pressure

2. Ramp progress indicator (if ramp set
3. Ramp time remaining (if ramp set)
4. Battery status (if present)
5. AC Power Indicator (if connected)
6. Current date
7. Fault Indicator (if fault occurs)
8. Reminder Indicator (if excessive air leakage occurs)

Z1™ Features

- Z-Breathe™ for more natural breathing
  - Learns from the breathing pattern and relieves machine pressure on exhalation
  - Levels out the pressure differences in the breathing pattern

- Leakage compensation
  - Automatically compensates for minor air leakage helping ensure proper treatment pressure is maintained

- Auto altitude adjustment
  - Adjusts to altitudes up to 2400$^+$ meters above sea level

- Air Travel
  - Adjusts to an airplane's cabin pressure and meets all FAA in-flight requirements.
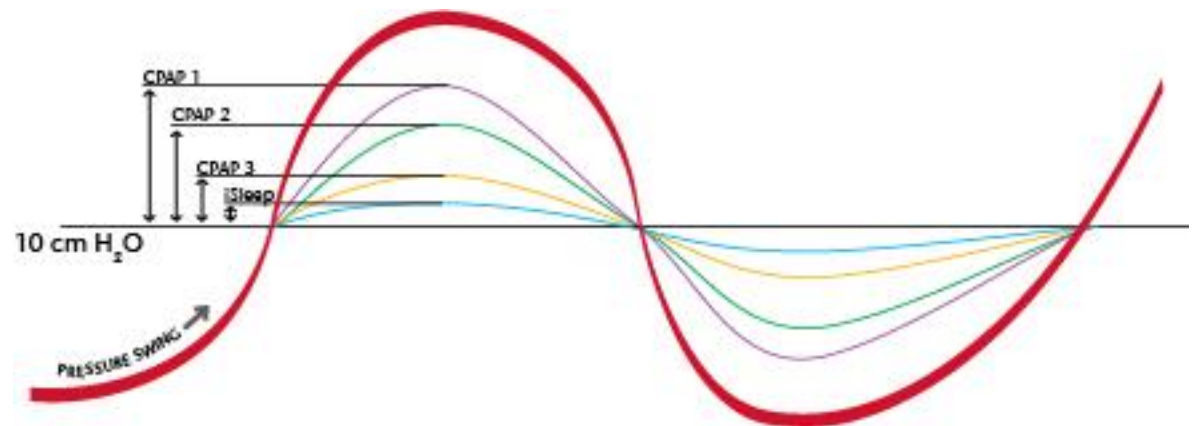
Z-Breathe™

Smooths out the pressure swings associated with fixed pressure CPAP including pressure spikes on exhalation and pressure drops on inhalation

- Uses a pressure sensor to detect pressure swings and motor speed to respond

  → Increases motor RPM's as respons to inhalation pressure drops

  → Reduces motor RPM's as respons to exhalation presssure spikes

Three settings:

- CPAP - 1: Mild
- CPAP - 2: Moderate
- CPAP - 3: Aggressive (coming)

Larger individuals typically choose
the higher settings

Inside the Z1™

BLOWER TECHNOLOGY
To meet the size challenge

PRESSURE SENSOR
Monitors pressure, detects and responds to leaks, supports Z-Breathe

ACCELEROMETER
Responds to motion and activates the back light display when the Z1 is picked up or moved

LIGHT SENSOR
Brightens or dims the back light display in accordance with the brightness of the room

TEMPERATURE SENSOR
Monitors proper operation temperature and electrical current temperature to shut down motor and generate fault code in case of over temp situations.

User Software for user engagement

Data Viewer

- Treatment feedback for patients
  - Usage data
  - Sleep quality (No of leaks)
  - Device settings
- Possibility to share data with physician

Z1 Firmware Installer

- Easy upgrades for the Z1

Available for download at
www.hdminternational.com

Z1™ Base System

Z1 Device

Tube Adapter

Patient Breathing Tube

Z1 User Guide

Z1 Getting Started

Filter

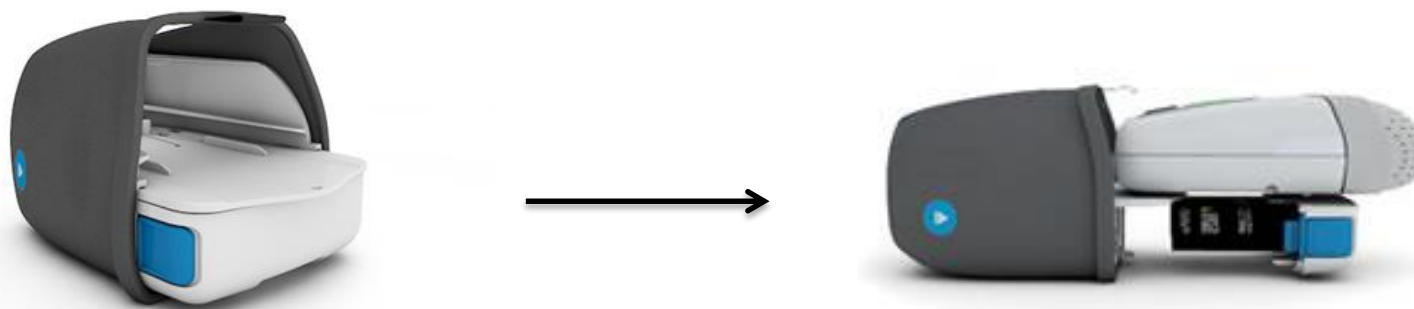Power Supply

USB Cable

HCHF

HDM — HUMAN DESIGN MEDICAL

BREAS

PowerShell™

The PowerShell™ can be included into the system.

The PowerShell turns your Z1 into a totally self-powered CPAP solution. Just insert the Z1 and put in a PowerShell Battery Module and you can get up to 14 hours of cord-free CPAP (Battery module tested at 14 cmH2O and delivered 8 hours of therapy)

PowerShell Getting Started Guide

BREAS

Z1™ Base System

PowerShell ™

Power Supply

Battery Module

End Cap

USB cable

Filter, 2 or 6 pack

Tube Adapter

Patient Breathing Tube

HCHF

DC Mobile Adapter (coming)

3 years warranty

3 year warranty for Z1™ main units!

Accessories warranty:

- PowerShell and Power Supplies – 2 years
- Replacement Batteries – 9 months
- Accessories and Replacements (End Caps, Tube Adapters, Tubes, etc.) – 90 days
- Consumables (Filters) – 30 days.

This limited warranty does not cover: a) any damage caused as a result of accident, improper use, abuse, modification or alteration of the product; b) repairs carried out by any service organization that has not been expressly authorized by Human Design Medical to perform such repairs; c) any damage or contamination due to cigarette, pipe, cigar or other smoke; d) damage caused by water entering the product. Warranty claims on defective product must be made by the initial purchaser.

Warranty to private customers

For purchases via the website, local consumer laws apply

HDM HUMAN DESIGN MEDICAL

BREAS

User experiences

- **More than 5000 users in the US!**

"I was tired of carrying full sized machine so I purchased the Z1. It is light weight, compact, and quiet. I combined it with light weight nasal pillow and I do not need a seperate bag for CPAP. It was exactly what I was looking to use."
DAVID S, VA – MAY 06, 2014

"What's awesome:
- Integrated battery! I bought it for camping (have not used it for that yet. too cold :-/) but not having a big external doohickey and extra wires is UNBELIEVABLE. Literally everything is connected together into the Powershell. Ideal.

- Size- I can't believe it's actually a CPAP machine. It fits in the hand.

- If you travel it is amazing too. No extra stuff to pack. For the first time in 6 years I didn't pack an extra bag to go out of town- it all fit in my carry-on!"
NANCY F, TN – DECEMBER 09, 2013

HDM
HUMAN DESIGN MEDICAL

BREAS

A shared opportunity

For Breas partners to add extra business and support for patients

For CPAP patients to benefit from continued CPAP support outside of the home

- Power back-up
- Camping
- Boating
- Cord-free cpap at home
- Travelers

Z1™ and the HDM logo are registered trademarks of Human Design Medical, LLC, Boston, MA, USA 02134

Date 5 June, 2014,   DOC 1560556

BREAS

APPENDIX

BREAS

Leaks and pressure stability

An internal pressure transducer monitors pressure drops and instantly compensates for leaks that result in pressure drops up to 15% of set pressure

- Compensation for leaks up to 1.5 cmH20 when set at 10 cmH20
- Compensation for leaks up to 3 cmH20 when set at 20 cm H20

Leaks beyond 15% of the set pressure will result in the "REMINDER" warning appearing and flashing after a 10 second duration of the gross leak.

HDM
HUMAN DESIGN MEDICAL

BREAS

Technical specifications

30W Power Adapter	Unit Input range 100–240V, 50–60Hz
	Typical power consumption 20W (30VA)
	Maximum power consumption 35W (70VA)
Operating temperature	5°C to 35°C (41°F to 95°F)
Operating humidity	10–80% Relative Humidity, Non-Condensing
Operating altitude	Sea level to 2400 m (8000 ft)
Operating atmospheric pressure	101 to 75.3 kPA
Storage and transport temperature	-20°C to +60°C (-4°F to +140°F)
Storage and transport humidity	10–80% Relative Humidity, Non-Condensing
Storage and transport altitude	No limit
Storage and transport atm. pressure	No limit
Electromagnetic compatibility	Compatible with IEC 60601-1-2
Aircraft use	Complies with RTCA DO-160G Standard for use in flight

HDM
HUMAN DESIGN MEDICAL

BREAS

Technical specifications

IEC 60601-1 classification	Class II (double insulation), Type BF
Available modes	Standby, CPAP and CPAP with Ramp
Operating pressure range	4 to 20 cm H_2O
Maximum single fault steady pressure state	30 cm H_2O
Deliverable pressure accuracies	±0.6 cm H_2O ± 4% of the measured reading
Sound pressure level	< 26 dBA
Nominal dimensions (L x W x H)	16.46 cm x 8.38 cm x 5.13 cm (6.48" x 3.30" x 2.02")
Weight	238 g (10 oz.)
Housing construction	Flame retardant engineered thermoplastic
Supplemental oxygen	Not for use with oxygen
Standard air filter	Polyester
Air outlet	The 22 mm air outlet complies with ISO 5356-1
PowerShell Battery Specifications	45 Watt-hours capacity Lithium Ion Battery Pack 4S1P Weight approx. 225 g (8 oz.)

HDM
HUMAN DESIGN MEDICAL

BREAS