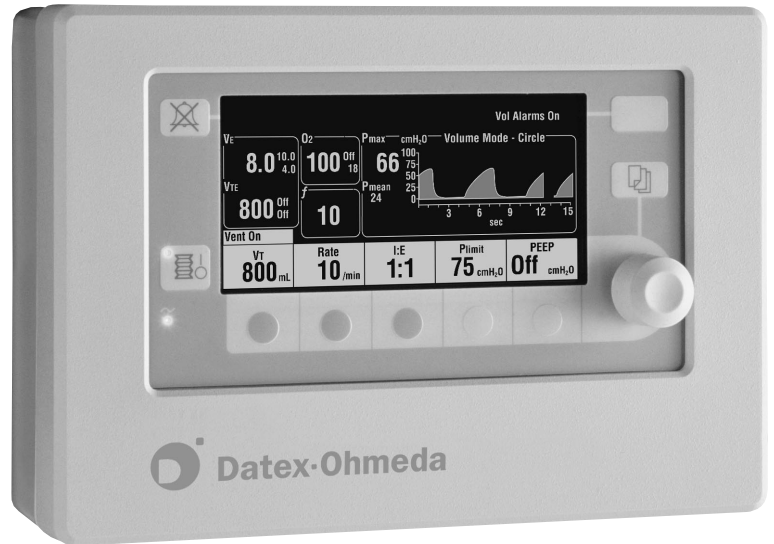


SmartVent™ 7900 Ventilator



Features

- Greatly expands patient range by providing performance without complexity
- Microprocessor controlled ventilator with internal monitors for inspired oxygen, airway pressure and exhaled volume
- Provides two powerful ventilation modes: volume control and pressure control
- Allows for automatic compensation of compression losses, changes in fresh gas concentration and small leaks within the absorber and bellows with the unique SmartVent tidal volume compensation system
- Innovative electronic PEEP mechanism is a standard feature of the SmartVent 7900 Ventilator
- Can be integrated with the Excel SE and Modulus® SE Anesthesia Machines and comes standard on the Aestiva 3000 Anesthesia Machine

Physical specifications

For reference only. The SmartVent 7900 Ventilator is not sold as a stand-alone unit.

Dimensions (base unit)

Height:	15 cm/5.9 in
Depth:	38 cm/15 in
Width:	25 cm/9.8 in
Weight:	15 kg/33 lbs

Dimensions (screen)

Height:	77 mm/3 in
Width:	152 mm/6 in

Pneumatic specifications

Gas supply

Gas source:	Anesthesia system
Gas composition:	Medical air or oxygen
Nominal supply pressure:	350 kPa/50 psig
Pressure range at inlet:	240 to 700 kPa/35 to 100 psig
Peak gas flow:	120 L/min @ 240 kPa/35 psig, 0.75 seconds
Continuous gas flow:	80 L/min @ 240 kPa/35 psig
Flow valve range:	1 to 120 L/min at 35 psig
Flow compensation range:	200 mL/min to 15 L/min
Gas composition:	O ₂ , N ₂ O, N ₂ , Air, Heliox, CO ₂ , anesthetic agents

Primary user settings

Tidal volume (V_T)

Range:	20 to 1500 mL
Incremental settings:	20 to 50 mL (increments of 2 mL) 50 to 100 mL (increments of 5 mL) 100 to 300 mL (increments of 10 mL) 300 to 1000 mL (increments of 25 mL) 1000 to 1500 mL (increments of 50 mL)

Rate

Range: 4 to 100 breaths per minute, increments of 1 breath per minute

Waveform

time cycles: 4 to 25 breaths per minute (0 to 15 seconds)
26 to 75 breaths per minute (0 to 5 seconds)
75 breaths per minute (0 to 3 seconds)

Inspiratory/expiratory ratio (I:E)

Range: 2:1 to 1:8 (increments of 0.5)

Inspiratory pressure (P_{inspired})

Range: 5 to 60 cm H₂O (increments of 1 cm H₂O)

Pressure limit (P_{limit})

Range: 12 to 100 cm H₂O (increments of 1 cm H₂O)

Positive End Expiratory Pressure (PEEP)

Type: Integrated, electronically controlled
Range: OFF, 4 to 30 cm H₂O (increments of 1 cm H₂O)

Accuracy

Parameters

Volume delivery:	±7% or 11 mL
Pressure delivery:	±10% or ±3 cm H ₂ O
Volume monitoring:	±9% or 9 mL
Pressure monitoring:	±5% or ±2 cm H ₂ O

Alarm settings

Tidal volume (V _{TE}):	Low: OFF, 0 to 1500 mL High: 20 to 1600 mL, OFF
Minute volume (V̇ _E):	Low: OFF, 0 to 10 L/min High: 0 to 30 L/min, OFF
Inspired oxygen* (FiO ₂):	Low: 18 to 100% High: 18 to 100%, OFF
Apnea alarm:*	<i>Mechanical ventilation ON:</i> < 5 mL breath measured in 30 seconds <i>Mechanical ventilation OFF:</i> < 20 mL breath measured in 30 seconds
Low airway pressure:	4 cm H ₂ O above PEEP
High pressure:	12 to 100 cm H ₂ O (increments of 1 cm H ₂ O)

Alarm settings, continued

Sustained airway*

pressure:

Mechanical ventilation ON:

$P_{\text{limit}} < 30 \text{ cm H}_2\text{O}$, the sustained limit is 6 cm H₂O

$P_{\text{limit}} 30 \text{ to } 60 \text{ cm H}_2\text{O}$,

the sustained limit is 20% of P_{limit}

$P_{\text{limit}} > 60 \text{ cm H}_2\text{O}$,

the sustained limit is 12 cm H₂O

PEEP and mechanical ventilation ON:

Sustained limit increases by

PEEP minus 2 cm H₂O

Mechanical ventilation OFF:

$P_{\text{limit}} \leq 60 \text{ cm H}_2\text{O}$,

the sustained limit is 50% of P_{limit}

$P_{\text{limit}} > 60 \text{ cm H}_2\text{O}$,

the sustained limit is 30 cm H₂O

Subatmospheric

pressure:

$P_{\text{aw}} < -10 \text{ cm H}_2\text{O}$

Alarm silence

countdown timer:

120 to 0 seconds

Ventilator display values

Volume

Tidal volume (V_{TE}): 5 to 9999 mL, 1 mL resolution

Minute volume (\dot{V}_{E}): 0 to 99.9 L/min

Pressure**

Maximum: 0 to 120 cm H₂O

Mean: -20 to 120 cm H₂O

Plateau: 0 to 120 cm H₂O

Rate

Range: 0 to 105 breaths per minute,
1 breath per minute increments

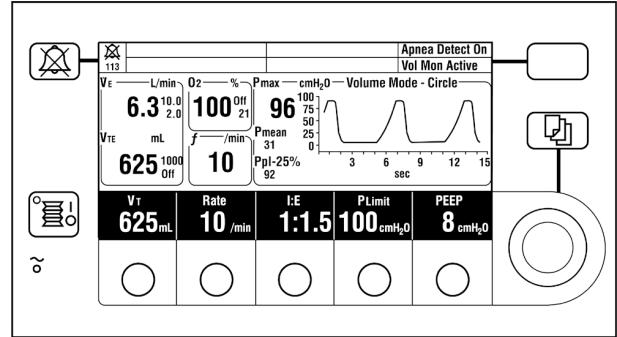
Oxygen

Display range: 0 to 110% O₂

Increments: 1% increments

* Software version 3.1.

** Please refer to the operating manual for a detailed discussion on pressure accuracy.



Ventilator components

Transducer

Type: Variable flow orifice sensor

Dimensions: 22 mm OD and 22 mm ID

Location: Inspiratory outlet and expiratory inlet

Optional transducer

for y-piece: 15 mm OD and 15 mm ID

Oxygen sensor

Type: Galvanic fuel cell

Life cycle: Approximately 18 months (dependent on usage)

Breathing connections

Gas scavenging

port: 30 mm ISO taper

Breathing circuit

connections: 17 mm and 25 mm taper

Electrical specifications

Power input: 110/120 Vac \pm 10%
50/60 Hz
54.5 Watts

Serial interface: Isolated RS-232 compatible port

Display type: ICE (Integral Contrast Enhanced)

Circuitry: Microprocessor controlled

Backup power: Approximately 30 minutes of operation provided by battery

Battery type: Internal rechargeable sealed gel cell

Power cord: Length: 1475 mm \pm 50 mm
Voltage rating: 125 V to 264 V
Wattage rating: 1250 W
Current capacity: 10 A
Leakage current: $< 10 \mu\text{A}$ @ 135 VAC, 60 Hz

Environmental specifications

Operation

Temperature:	5° to 40°C/41° to 104°F
Humidity:	15 to 95% relative humidity (non-condensing)
Altitude:	500 to 800 mmHg (3565 m to -440 m)

Storage

Temperature:	-40° to 70°C/-40° to 158°F*
Humidity:	10 to 100% relative humidity* (includes condensation)
Altitude:	375 to 800 mmHg* (5860 m to -440 m)

Compensation

Range:	525 to 795 mmHg (3,000 m to -100m)
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* Oxygen cell storage: -15° to 50°C,
10 to 95% RH,
500 to 800 mmHg

Bellows assembly specifications



Physical dimensions

Height:	22.9 cm/9 in
Depth:	20.3 cm/8 in
Width:	19 cm/7.5 in
Weight:	1.8 kg/4 lbs
Ventilator compliance:	3 mL per cm H ₂ O
Tidal volume range:	1600 mL maximum (bellows housing)
Miscellaneous:	Autoclavable and latex free

Storage

Temperature:	-20° to 70°C/-4° to 158°F
Humidity:	0 to 100% relative humidity (non-condensing)



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