

Centiva/5 Critical Care Ventilator

Meet a new level of expectations

Advanced Ventilation

- Adult to Pediatric and optionally Newborn patient range
- Volume controlled, Pressure controlled
- Dual control modes, optional
- Non-Invasive mask ventilation capability
- ARC: Airway Resistance Compensation for automatic endotracheal or tracheostomy tube compensation
- Synchronized and compensated pneumatic nebulizer drive

Informative display

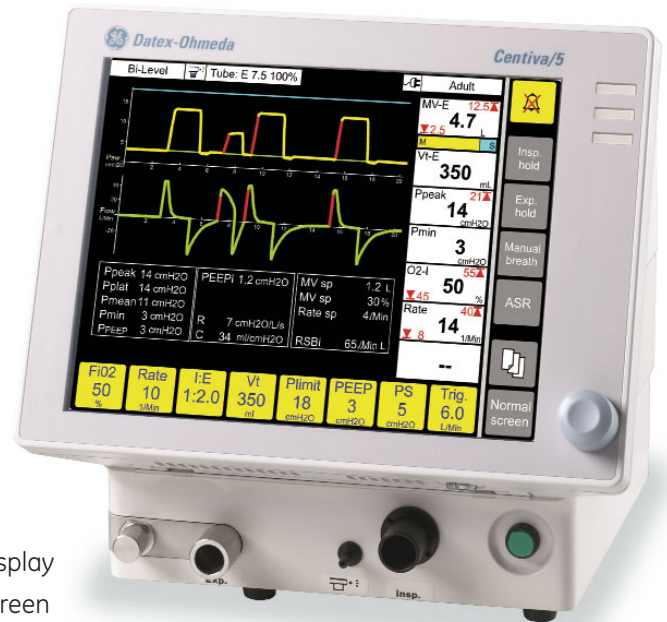
- Choice of a compact 6.5 inch or a large 12 inch touch screen display
- Settings, monitored values and waveforms visible on a single screen
- Displays can be detached and remote mounted for optimal placement

Ease of Use

- Simplified operation through ComWheel™ softkeys or touch screen and menus
- Fast and automatic system test and startup sequence
- APD: Automatic Patient Detection implementing safety and ease of use features
- ASR: Automatic Suction Routine facilitating bronchial suction procedures

Flexibility

- Optional features provide flexible purchasing and upgrade paths
- Possibility to start with the more economical 6.5 inch display and upgrade later to the 12 inch display with the advanced optional features
- Simple shelf mounting or an optional mobile cart with space for an internal compressor or cylinders for transporting patients within the hospital
- Internal backup battery and optional external battery pack



Physical Specifications

Centiva/5 with 6.5 inch Display:

Footprint:	25 x 24 cm/9.8 x 9.4 in
Height:	21 cm/8.3 in
Width:	26 cm/10.3 in
Depth:	29 cm/11.4 in
Weight:	13 kg/28.7 lb

Centiva/5 with 12 inch Display:

Footprint:	25 x 24 cm/9.8 x 9.4 in
Height:	32 cm/12.6 in
Width:	32 cm/12.6 in
Depth:	32 cm/12.6 in
Weight:	14.7 kg/32.3 lb

Environmental Conditions

During operation

Temperature:	Standard: 10° to 35°C Extended: 10° to 40°C For operation in e.g. burn units. Preventive maintenance is modified
Atmospheric pressure range:	600 to 1060 hPa
Humidity range:	0 to 90%, (non-condensing)

During storage and transport

Temperature:	-20° to 50°C
Atmospheric pressure range:	500 to 1060 hPa
Humidity range:	0 to 99%, (non-condensing)

Noise emission

Noise level:	≤ 43 db(A) when no alarm is active
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Electrical Specifications

Line supply

Line voltage:	207 to 253 Vac, 50/60 Hz 98 to 132 Vac, 50/60 Hz
Power consumption:	< 50 W

Alternate supply

DC supply voltage:	22.5 to 28 VDC
Max. current:	3 ADC

Battery backup

Backup battery:	Built-in
Type:	Lead Acid Gel
Battery backup time:	Minimum 30 minutes
Battery charging time:	12 hours from complete discharge

Pneumatic Specifications

Gas supply

Single gas operation:	Yes
Emergency air valve:	Built-in

Oxygen supply

Pressure range:	280 to 600 kPa/40 to 80 psi
Flow:	120 L/min

Air supply

Pressure range:	280 to 600 kPa/40 to 80 psi
Flow:	120 L/min

Ventilator Operating Specifications


Key

 Available only when Adult Pediatric patient type is selected

 Available only when Newborn patient type is selected

 Feature available only when the 12 inch display is selected

 Optional feature

Note:  Newborn extensions are always an optional feature. If not specified feature applies to all units and all patient population selections.

Modes of ventilation

Volume Regulated Modes

Volume Control mode (VCV) and Assist Control (a-VCV) with Pressure Limited capability (PLV)

Volume Controlled Synchronized Intermittent Mandatory Ventilation (SIMV-VC) with Pressure Support (PSV) and Volume Controlled Pressure Limited capability (PLV)

Pressure Regulated Modes

Biphasic pressure mode with Pressure Support (Bi-Level): Pressure Controlled breaths (PCV) delivered in synchrony with patient's spontaneous breathing (SIMV-PC) and pressure supported (PSV) breaths during the exhalation phase. Patient can inhale and exhale spontaneously during the complete breath cycle (Active Exhalation Valve)














Dual Control Modes

Bi-Level VG™, volume targeted ventilation delivered as Bi-Level, pressure controlled mode with inspiratory pressure automatically adjusted to maintain set target tidal volume for the set mandatory rate. The Pressure Controlled, Volume targeted breaths are delivered in synchrony with patient's spontaneous breathing and allowing pressure supported breaths during the exhalation phase. Patient can inhale and exhale spontaneously during the complete breath cycle (Active Exhalation Valve).

Spontaneous Modes







Continuous Positive Airway Pressure (CPAP) with Pressure Support (PSV) with fully adjustable Bi-Level backup mode triggered by an apneic episode

Controls and ranges



FiO ₂ :	21 to 100%
Rate:	4 to 100 bpm
Inspiratory/ expiratory ratio:	4:1 to 1:9.9 VCV, SIMV-VC and Bi-Level VG modes 9.9:1 to 1:9.9 Bi-Level mode
Tidal volume range:	20 to 2,000 mL
Set pressure limit:	10 to 60 cm H ₂ O
Max. inspiratory pressure limit:	70 cm H ₂ O
PEEP/CPAP:	Off to 35 cm H ₂ O
Set inspiratory flow:	2 to 99.9 L/min 
Max. inspiratory flow:	~180 L/min (120 L/min continuous flow) 
Max. inspiratory flow:	60 L/min 
Inspiratory plateau:	0 to 75% of inspiration time, as a resulting parameter
By-flow:	3 to 30 L/min
Inspiratory pressure:	1 to 59 cm H ₂ O
Pressure Support (PS) level:	0 to 59 cm H ₂ O
Pressure Support Ramp:	0.1 to 0.5 seconds
PS end flow:	10 to 60% of peak PS flow
Trigger sensitivity:	0.5 to 20 L/min  0.1 to 20 L/min 
Trigger time window:	20 to 90% of expiration time
Bi-Level ramp:	0.1 to 3 seconds  0.05 to 0.5 sec 
Manual Breath  	
Inspiratory Pause  	
Expiratory Pause  	Performing Expiratory pause updates the PEEPi display

Ventilator Operating Specifications, Continued



Alarm settings

MV max:	50 to 0.6 L/min  9.99 to 0.2 L/min 
MV min:	0.5 to 49.9 LPM  0.1 to 9.98 L/min 
Pmax:	Set Pressure + 2 cm H ₂ O to 70 cm H ₂ O
Flow:	Automatic
Leakage:	5 to 95%
Apnea time:	10 to 60 sec  5 to 30 sec 
Rate max:	3 to 200 bpm
Rate min:	2 to 199 bpm
FiO ₂ High:	Automatically tracking set FiO ₂
FiO ₂ Low:	Automatically tracking set FiO ₂

Airway Resistance Compensation (ARC)






Type of compensation:	Electronic tube compensation
Compensation for:	Endotracheal and tracheostomy tubes
Tube diameter:	4 to 10 mm, select from database 
Tube diameter:	3 to 6 mm, select from database 
Level of compensation:	25 to 100%

Automatic Suction Routine (ASR)

Pre oxygenation:	≤ 2 min with 100% O ₂ 
Standby for suction:	≤ 2 min with automatic patient (re-connection) detection
Post oxygenation:	≤ 2 min with 100% O ₂ 

Note: FiO₂ can be set to level other than 100%

Nebulization

Nebulizer Flow:	Synchronized with inspiration for rates < 16 bpm  Continuous for rates > 16 bpm  Continuous 
Nebulizer Control:	On/Off, Automatic off after 30 minutes  On/Off, Automatic off after 5 minutes 
Compensations:	Tidal Volume and FiO ₂
Nebulizer Pressure range:	1.6 to 2.0 bar/22.5 to 28.2 PSI
Nebulizer Flow range:	4 to 12 L/min

Non-Invasive Ventilation (NIV)

Leakage compensation:	Always active in all modes, trigger sensitivity compensated
Limited to 50% of the set tidal volume in volume modes (VCV and SIMV-VC and Bi-Level VG)	
Mask ventilation:	Yes

Automatic Patient Detection (APD)

Detection by:	I and E ByFlow difference
Prevention of Standby or power off when patient connected	
Patient detected alarm when in Standby	







Trends ●




Time based trends:	All measured parameters and all settings with 5 minutes resolution
Period:	288 hours (12 days)
Selectable resolution:	5 minutes, 15 minutes, 30 minutes and 60 minutes
Event based trends (log):	All alarm activations and deactivations, all setting changes etc.
Number of events stored:	In excess of 1000 events

Spirometry Loops ●





Spirometry loops:	Pressure Volume and Flow Volume
Reference Loop:	Save, On/Off

Ventilator monitoring

Airway pressure:	-9 to +90 cm H ₂ O
Patient flow:	-150 to +200 L/min
Tidal volume:	0 to 2,500 mL resolution 1 mL 
	0 to 400 mL resolution 0.1 mL 
Minute volume:	0 to 99 L/min resolution 0.1 L/min 
	0 to 9.99 L/min resolution 0.01 L/min 
Minute volume	0 to 99 L/min resolution 0.1 L/min 
Spont.:	0 to 9.99 L/min resolution 0.01 L/min 
Rate:	0 to 200 breaths per minute

Rate Spont.:	0 to 200 breaths per minute
O ₂ Inspiratory:	0 to 100%
Peak pressure:	-9 to 90 cm H ₂ O
Plateau pressure:	-9 to 90 cm H ₂ O
Mean Airway Pressure:	-9 to 90 cm H ₂ O
Pmin:	-9 to 90 cm H ₂ O, measured
PEEP:	-9 to 90 cm H ₂ O
PEEPi:	-9 to 90 cm H ₂ O (measured during exp Pause)  
Compliance:	1 to 999 mL/cm H ₂ O
Resistance:	1 to 99 cm H ₂ O/L/s
RSBI:	1 to 999 

Monitoring accuracy

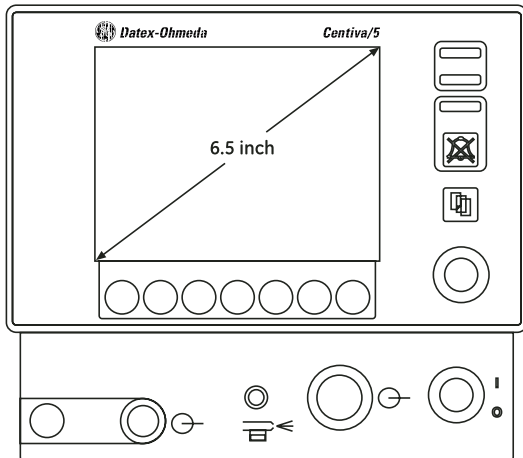
Pressure readings:	±(0.5 cm H ₂ O + 2%)
Volume readings:	±15 mL or ±10% of reading  , whichever is greater
Volume readings:	±(5 mL + 5%) @ 3 to 100 mL 
	±(10 mL + 5%) @ 101 to 300 mL 
	+5% @ 301 to 400 mL 
O ₂ Inspiratory:	±3% of full scale

Accuracy settings

Pressure settings:	±(0.5 hPa + 2%)
FiO ₂ settings:	±5% at 21 to 30 Vol %
FiO ₂ settings:	±4% at 31 to 40 Vol %
FiO ₂ settings:	±3% at 41 to 70 Vol %
FiO ₂ settings:	±5% at 81 to 100 Vol %
Frequency:	≤ 0.1 sec

Screens

Display type: 6.5 inch full color LCD screen



Adjustable viewing angle and detachable

Waveforms on screen: Two at a time

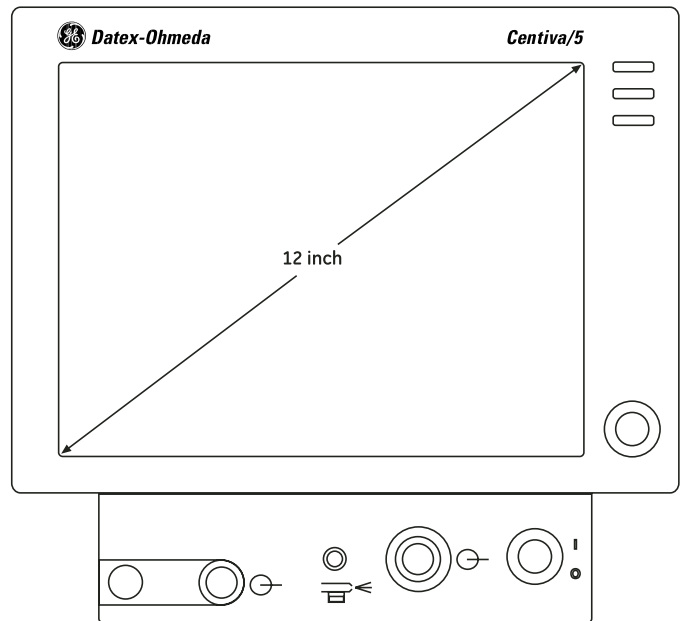
Waveform parameters: Pressure and flow

Graphic scaling: Automatic for optimal size

Numeric Data: Ventilator settings, monitored data, alarm settings

Status indicator: Ventilation mode, battery level, test status, tube compensation, nebulizer on

Display type: 12 inch full color LCD touch screen



Adjustable viewing angle and detachable

Waveforms on screen: Two at a time

Waveform parameters: Pressure and flow

Graphic scaling: Automatic for optimal size

Spirometry loops: Pressure Volume and Flow Volume ●

Data: Ventilator settings, monitored data, alarm settings

Status indicator: Ventilation mode, battery level, line supply, test status, tube compensation, nebulizer on

Feature Matrix



	Screen size	6.5 inch	12 inch
Modes	VCV, aVCV	●	●
	SIMV-VC	●	●
	Bi-Level	●	●
	Bi-Level VG		○
	CPAP/PSV	●	●
	Apnea Backup	●	●
Monitored Parameters	TVe, MVe Tot., Sp.	●	●
	Rate Tot., Sp.	●	●
	Ppeak	●	●
	Pplat, Pmean	●	●
	PpEEP, Pmin	●	●
	Comp., Res.	●	●
	PEEPi		●
	RSBI		●
	MVsp/MVmand bar graph		●
	Features	ARC, compensation	●
APD		●	●
ASR, suction routine		●	●
NIV, Non Invasive		●	●
Neb drive		●	●
IBW startup			●
Insp/Exp hold			●
Int Battery		●	●
Ext Battery pack		○	○
Newborn extensions		○	○
Trends package			○
Spirometry loops			○
RS-232 / Real Time		●	●
Serial Out / Trends			○

● Standard
○ Optional

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