



bellavista® 1000e Intensive care ventilator

Technical specifications



Intensive care ventilator

The bellavista intensive care ventilator offers advanced technology and an innovative user interface. Designed for neonatal, paediatric, and adult ventilation, it supports you in your daily challenges in the ICU, clinics, and institutional facilities where medically trained professionals are available to attend the patient.

Workflow efficiency is at the heart of bellavista. Whether your patients require invasive, non-invasive, or high flow oxygen therapy, the full HD 17.3" glass touchscreen display allows users to configure important ventilation information. A powerful turbine blower, compact design, generous battery life, and customisable design adds versatility and value.

ZOLL®

Invasive



Non-invasive



High flow oxygen therapy



AVM

Adaptive Ventilation Mode maintains an operator-set minimal minute volume independent of the patient's activity. AVM adapts ventilation and optimises the breathing pattern to the patient's respiratory mechanics.

Lung Recruitment Tool

The lung recruitment maneuver inflates the lungs temporarily, the aim being to open alveoli that have collapsed. Separate settings are available for recruitment and assessment maneuvers.

Esophageal Pressure Monitoring

Tool to support your lung protective strategy with inspiratory and expiratory esophageal pressures.

HFOT

High Flow Oxygen Therapy for adults, paediatric, and neonatal patients with up to 80 L/min and ramp function for flow adaptation.

Volumetric Capnography

Quantitative measurement of CO₂ and dynamic deadspace monitoring with bellavista mainstream capnography.

Settings Assist

Graphical display of mode settings for better overview and forecast of dependencies (e.g., time, cycle, and I:E ratio).

Profile Settings

Store up to 20 individually configured patient profiles.

AnimatedLung

View compliance, resistance, and spontaneous breathing as a graphical real-time display.

VentSummary

Display various ventilation parameters to identify weaning status of patient.

Mask Fit

Helps identify leaks when transitioning patients to non-invasive ventilation with visual and acoustic guidance.

auto.sync

Automatic expiratory trigger uses three separate criteria simultaneously for switching from inspiration to expiration.

auto.rise

Automatic adaption of rise time with a breath-by-breath analysis.

automatic compensation

Adaptive inspiratory and expiratory leakage compensation.
Leak compensation ≥ 120 lpm.

Nasal CPAP

nCPAP with apnea and respiratory rate detection. Choose between two nCPAP generators: Infant Flow LP®, Medijet®.

Burst Backup

Enable automatic breaths to help mitigate apnea conditions.

Neo NIV

Spontaneous modes for mask use with full leakage compensation and disconnection detection.

Night Mode

Configure your own night setting and dim alarm lights, screen brightness, and alarm sound volume independently.

Circuits

Dual- and single-limb operation.

Parameter Trending

Store all trending parameters up to one year.

Real time Trending

Real-time data is recorded for 14 days.

Modes of Ventilation		Description	Invasive	Non-invasive	Adult/ Pediatric	Neonatal
Pressure controlled						
P-A/C	Pressure Assist Control Ventilation		■	■	■	■
PCV	Pressure Control Ventilation		■	■	■	■
PC-SMV	Pressure Controlled-Synchronised Intermittent Mandatory Ventilation		■	■	■	■
biLevel	Biphasic Ventilation		■	■	■	
APRV	Airway Pressure Release Ventilation		■	■	■	
CPAP	Continuous Positive Airway Pressure		■	■	■	■
PSV	Pressure Support Ventilation		■	■	■	■
S	Spontaneous		■	■	■	■
S/T	Spontaneous/Timed		■	■	■	■
T	Timed		■	■	■	■
Volume controlled						
V-A/C	Volume Assist Control Ventilation		■		■	
VCV	Volume Control Ventilation		■		■	
VC-SIMV	Volume Controlled – Synchronised Intermittent Mandatory Ventilation		■		■	
PLV	Pressure Limited Ventilation		■		■	
Volume target						
PSV target	Pressure Support Ventilation with Target Volume		■	■	■	■
P-A/C target	Pressure Assist Control Ventilation with Target Volume		■	■	■	■
PC-SIMV	Pressure Controlled – Synchronised Intermittent Mandatory Ventilation with Target Volume		■	■	■	■
S target	Spontaneous with Target Volume		■	■	■	■
S/T target	Spontaneous Timed with Target Volume		■	■	■	■
T target	Timed with Target Volume		■	■	■	■
Non-invasive, nasal						
nCPAP	Nasal Continuous Positive Airway setting (Flow/Pressure Option)			■		■
nIPPV	Nasal Intermittent Positive Pressure Ventilation			■		■
Oxygen therapy						
HFOT	High Flow Oxygen Therapy			■	■	■
Dual modes						
DualVent	Automatic switching between two modes		■	■	■	■
DayNight	Automatic Day/Night switching of two modes		■	■	■	

Features	Adult/Paediatric	Neonatal
Peak inspiratory flow (L/min)	260	40
Apnea ventilation modes	P–A/C, PC–SIMV, V–A/C, VC–SIMV, PCV, VCV, S/T, T	P–A/C, PC–SIMV, nIPPV, PCV, S/T, T
Backup modes	PSV	PSV, Burst backup (nCPAP)
Flow pattern	Square, Decelerating 50%, Decelerating	Decelerating
Inspiratory trigger	Pressure, Flow, Off	Pressure, Flow, Off
Expiratory trigger	Manual, auto.sync	Manual, auto.sync
Rise time	Manual, auto.rise	Manual, auto.rise
Leakage compensation, auto.leak	■	■
Volumetric mainstream capnography ¹	■	
Sidestream capnography ¹	■	■
SpO ₂ plethysmography ²	■	■
ATC (Automatic Tube Compensation)	■	
Screenshot function	■	■
Touchscreen lock	■	■
O ₂ suction manoeuvre	■	■
Oxygen flush	■	■
Expiration valve, reusable	■	■
Expiration valve, single–patient	■	■
Integrated manual	■	■
Integrated instruction videos	■	■
Timer function	■	■
Stopwatch	■	■
Chameleon modes	■	■
Tests		
Automatic system test during startup	■	■
Circuit test	■	■
CO ₂ sensor calibration	■	■
Oxygen sensor calibration	■	■

Features	Adult/Paediatric	Neonatal
Curves		
Pressure airway	■	■
Flow	■	■
Volume	■	■
SpO ₂	■	■
EtCO ₂	■	■
P _{Aux}	■	■
P _{es}	○	○
P _{TP}	○	○
P _{TA}	○	○
ATC	■	
Loops		
Pressure/Volume	■	■
Pressure/Flow	■	■
Flow/Volume	■	■
P _{es} /Volume	○	○
P _{TP} /Volume	○	○
P _{TA} /Volume	○	○
Reference loops	■	■
Loop overlay	■	■
Volumetric CO ₂	■	
Trending		
Parameter trending	■	■
Realtime trending	■	■
Manoeuvres		
Manual breath	■	■
Sigh	■	
Inspiratory hold	■	■
Expiratory hold	■	■
NIF (Negative Inspiratory Force)	■	■
V _{trapped}	■	■
P _{0.1} (Occlusion pressure)	■	■
AutoPEEP	■	■
Lung Recruitment Tool	■	
Transpulmonary pressure	○	○

Features	Adult/Paediatric	Neonatal
Graphics		
AnimatedLung	■	
VentSummary	■	
AVM TargetView	■	
MaskFit	■	
TargetVent View	■	■
Alarms ³		
$V_t/V_{t_{\text{Insp}}}/V_{t_{\text{Exp}}}$	■	■
$MV/MV_{\text{Insp}}/MV_{\text{Exp}}$	■	■
P_{Peak}	■	■
Rate	■	■
FiO_2	■	■
Pulse	■	■
SpO_2	■	■
$inCO_2$	■	■
$EtCO_2$	■	■
Apnea	■	■
Leak %	■	
Autoset	■	■
Autoset leakage		■
Patient circuit type		
Single limb	■	■
Dual limb	■	■
Integrated pneumatic nebulizer		
Phase, flow compensated	■	
Duration, adjustable (min)	5-60 and infinity	
Phase	■	
Duration	■	

Ventilation Settings	Adult	Paediatric	Neonatal*
P_{Insp} , P_{High} , IPAP (mbar)	2 – 100	2 – 60	2 – 60
P_{Support} (mbar)	0 – 100	0 – 60	2 – 60
CPAP (mbar)	4 – 30	4 – 30	4 – 30
PEEP, EPAP (mbar)	0 – 50	0 – 50	0 – 30
Pressure trigger (mbar)	0.1 – 15	0.1 – 15	0.1 – 15
Flow trigger (L/min)	0.1 – 20	0.1 – 20	0.1 – 20
Expiration trigger (%)	5 – 90, auto.sync	5 – 90, auto.sync	5 – 90
Oxygen (%)	21 – 100	21 – 100	21 – 100
Rate (breaths/min)	5 – 50	5 – 100	10–150, 6–200 (nIPPV)
$\text{Rate}_{\text{Backup}}$ (breaths/min, Off)	5 – 50	5 – 100	10 – 100
Rise time (ms, auto.rise)	0 – 2000	0 – 2000	0 – 400
Plateau (% of T_{Cycl})	0 – 70	0 – 70	
Ramp (min, Off)	5 – 45	5 – 45	
T_{Insp} , I – time (s)	0.1 – 10	0.1 – 10	0.1 – 2
$T_{\text{Insp Max}}$, I – time _{Max} (s)	0.5 – 3	0.3 – 3	0.3 – 2
T_{High} (s)	0.1 – 59.8	0.1 – 59.8	
T_{Low} (s)	0.2 – 10	0.2 – 10	
V_{tTarget} (mL)	250 – 2500	40 – 500	2 – 250
AVM			
%MinVol (%)	25 – 350		
Height (cm)	145 – 250	50 – 171	
IBW (kg)	39 – 138	6 – 63	
V_{tTarget} (mL)	250 – 2500	40 – 500	
P_{Limit} (mbar)	5 – 95	5 – 60	
nCPAP/nIPPV			
Flow nCPAP (L/min)			2 – 18
Pressure nCPAP (mbar)			0 – 20
$\text{Burst}_{\text{Backup}}$ (breaths/Off)			1 – 5
PEEP (mbar)			0 – 20
P_{Insp} (mbar)			0 – 30
$T_{\text{Insp Man}}$ (s)			0.1 – 3
T_{Insp} (s)			0.1 – 3
Rate (breaths/min)			6 – 200
Rise time (ms)			0 – 400
Interfaces			Infant Flow® LP, Medijet®

nCPAP/nIPPV	Adult	Paediatric	Neonatal*
Flow (L/min)	2 – 80	2 – 80	1 – 60
Ramp (min, Off)	1 – 20	1 – 20	1 – 20
Lung Recruitment Tool			
P _{Start} (mbar)	0 – 50	0 – 50	
P _{End} (mbar)	0 – 50	0 – 50	
Slope (mbar/s)	2 – 5	2 – 5	
P _{Max} (mbar)	10 – 100	10 – 100	
T _{Recruit} (s)	0 – 60	0 – 60	
PEEP _{End} (mbar)	0 – 50	0 – 50	
ATC			
Endotracheal tube Ø (mm)	5.0 – 12.0		
Tracheostomy tube Ø (mm)	5.0 – 12.0		
Tube compensation (%)	10-100		
Inspiratory + Expiratory	■		
Inspiratory	■		
P _{TP} /P _{TA} *			
Endotracheal tube Ø (mm)	2.5 – 12	2.5 – 12	2.5 – 12
Tracheostomy tube Ø (mm)	2.5 – 12	2.5 – 12	2.5 – 12
Sigh			
Sigh amplitude (%)	5 – 50	5 – 50	5 – 50
Sigh interval (breaths)	10 – 200	10 – 200	10 – 200
Sigh breaths	1 – 5	1 – 5	1 – 5

Monitoring Parameters	Description	Range Adult/ Paediatric/Neonatal
P _{Peak} (mbar)	Peak pressure during inspiration	0 – 100
P _{Mean} (mbar)	Mean pressure during the entire respiratory cycle	0 – 100
P _{Plateau} (mbar)	Plateau pressure (only available if plateau is >0)	0 – 100
P _{Insp} (mbar)	Applied inspiratory pressure (relative above PEEP).	0 – 100
PEEP/CPAP (mbar)	Positive end – expiratory pressure	0 – 100
Rate (breaths/min)	Respiratory rate	0 – 200
T _{Insp} (s)	Inspiration time	0 – 100
T _{Exp} (s)	Duration of expiration	0 – 100
Vt (mL)	Leak – compensated tidal volume	0 – 2500
Vt _{Insp} (mL)	5 – 50 breaths/min, Off	0 – 2500
Vt _{Exp} (mL)	Inspiratory tidal volume	0 – 2500
Vt/kg, Vt _{Insp} /kg, Vt _{Exp} /kg (mL/kg)	Expiratory tidal volume	0 – 100
MV (L/min)	Tidal volume per kg body weight	0 – 250
MV _{Exp} (L/min)	Leak – compensated minute volume	0 – 250
MV _{Insp} (L/min)	Inspiratory minute volume	0 – 250
MV/kg, MV _{Insp} /kg, MV _{Exp} /kg (mL min/kg)	Minute volume per kg body weight	0 – 9999
T _{Insp} / T _{Tot} (%)	Ratio of inspiratory time to duration of respiratory cycle	0 – 100
%Spont (%)	Percentage of spontaneous breaths per minute	0 – 100
Flow (L/min)	Flow delivered in HFOT	0-180
Flow _{Exp Peak} (L/min)	Expiratory peak flow	0 – 180
Flow _{Insp Peak} (L/min)	Peak inspiratory flow	0 – 180
Flow _{Mean} (L/min)	Mean flow / min (nCPAP and nIPPV)	0-180
PTP (mbar*s)	Pressure Time Product	0 – 100
I:E	Ratio of inspiration time to expiration time	1:99 – 100:1
Leak (%)	Leak in % of the volume delivered to the patient	0 – 100
Leak flow (L/min)	Mean leak flow / min	0 – 200
Pulse (L/min)	Pulse rate (SpO ₂)	0 – 300
SpO ₂ (%)	Oxygen saturation measured with pulse oximeter	0 – 100

Monitoring Parameters	Description	Range Adult/ Paediatric/Neonatal
EtCO ₂ (%)	End-expiratory CO ₂	0 – 15
inCO ₂ (%)	Maximum inspiratory CO ₂ concentration	0 – 15
MVCO ₂ (L/min)	Exhaled CO ₂ volume per minute	0 – 250
VtCO ₂ (mL)	Exhaled CO ₂ tidal volume per breath	0 – 2500
Vd (mL)	Anatomical dead space	0 – 2500
Vd/kg (mL/kg)	Anatomical dead space per kg	0 – 100
VD/Vt _{Exp} (%)	Dead space volume / Tidal volume ratio	0 – 100
Vt _{alv} (mL)	Alveolar tidal volume	0 – 2500
Expert Ventilation	Description	Range Adult/ Paediatric/Neonatal
Auto _{PEEP} (mbar)	5 – 50 breaths/min, Off	0 – 100
NIF (mbar)	Inspiratory tidal volume	0 – -50
P _{0.1} (mbar)	Expiratory tidal volume	0 – 100
V _{Trapped} (mL)	Tidal volume per kg body weight	0 – 2500
AVM	Description	Range Adult/ Paediatric
Rate _{Target} (bpm)	Mandatory target rate of AVM	5 – 100
MV _{Target} (L/min)	Target minute volume in AVM	0 – 250
T _{InspTarget} (s)	Inspiratory time of mandatory AVM breaths	0.5 – 2
Vt _{Target} (mL)	Target tidal volume for AVM	40 – 2500
Expert Monitoring	Description	Range Adult/ Paediatric/Neonatal
Rate _{Spont} (breaths/min)	Respiratory rate of spontaneous breaths	0 – 200
T _{InspSupport} (s)	Duration of inspiration in the case of pressure-supported breaths	0 – 100
%Spont 1 h (%)	Percentage of spontaneous breaths over the last 1 hour	0 – 100
%Spont 8 h (%)	Percentage of spontaneous breaths over the last 8 hours	0 – 100
MV _{InspSpont} (L/min)	Inspiratory minute volume of spontaneous breaths	0 – 250
MV _{ExpSpont} (L/min)	Expiratory minute volume of spontaneous breaths	0 – 250
MV _{Spont} (L/min)	Leak-compensated minute volume of spontaneous breaths	0 – 250
RSBI (breaths/min/L)	Rapid Shallow Breathing Index (Tobin Index)	1 – 9999
R _{Insp} (mbar/L/s)	Inspiratory resistance	0 – 300
R _{Exp} (mbar/L/s)	Expiratory resistance	0 – 300
C _{Stat} (mL/mbar)	Static compliance	0 – 1000
WOB _{Imp} (J/L)	Work of Breathing imposed	0.00 – 9.99

Lung Mechanics	Description	Range Adult/ Paediatric/Neonatal
RC_{Exp} (s)	Expiratory time constant	0.1 – 5
C_{20}/C_{Dyn} (%)	A measure for potential overdistension of the lung	0 – 900
C_{Dyn} (mL/mbar)	Dynamic compliance	0 – 1000
$C_{Stat/kg}$, $C_{Dyn/kg}$ (mL/mbar/kg)	Compliance per kg of set ideal body weight	0 – 99
$C_{Cursor\ Infl}$, $C_{Cursor\ Defl}$ (mL/mbar)	Compliance between the manually set cursor lines	0 – 1000
dV_{Max} (mL)	Maximum volume hysteresis in the lung recruitment and assessment manoeuvre	0 – 2500
$P_{dV\ Max}$ (mbar)	Airway pressure at the maximum volume hysteresis in a lung recruitment and assessment maneuver	0 – 100
V_{Insp} (mL)	Maximum tidal volume during the lung recruitment and assessment manoeuvre	0 – 2500
V_{PEEP} (mL)	Volume gain at the end of the lung recruitment and assessment maneuver.	0 – 2500
$V_{Recruit}$ (mL)	Volume gain through recruitment during $T_{Recruit}$	0 – 2500
Esophageal Pressure Monitoring*	Description	Range Adult/ Paediatric/Neonatal
P_{aux} (mbar)	Auxiliary pressure	-30 – +100
ΔP_{es} (mbar)	Delta esophageal pressure	0 – 100
ΔP_{TASat} (mbar)	Transalveolar tidal pressure (driving pressure)	-50 – +100
C_{TA} (mL/mbar)	Transalveolar compliance (lung compliance)	0 - 1000
C_{CW} (mL/mbar)	Chest wall compliance	0 - 1000
P_{esInsp} (mbar)	Inspiratory esophageal pressure	-50 – +100
P_{esExp} (mbar)	Expiratory esophageal pressure	-50 – +100
$PEEP_{TA}$ (mbar)	Transalveolar PEEP	-40 – +100
P_{TAInsp} (mbar)	Inspiratory transalveolar pressure (resistance compensated)	-50 – +100
P_{TAExp} (mbar)	Expiratory transalveolar pressure (resistance compensated)	-50 – +100
P_{TASat} (mbar)	Transalveolar plateau pressure	0 – 100
$P_{TPIInsp}$ (mbar)	Inspiratory transalveolar pressure	-50 – +100
P_{TPExp} (mbar)	Expiratory transalveolar pressure	-50 – +100

Impressive 440 mm Full HD Display



Alarm Limits ³	Adult	Paediatric	Neonatal*	Autoset
FiO ₂	High: 24 – 100 % Low: 18 – 80 %	High: 24 – 100 % Low: 18 – 80 %	High: 24 – 100 % Low: 18 – 80 %	± 5 %
P _{Peak}	High: 7 – 105 mbar Low: Off, 1 – 75 mbar	High: 7 – 70 mbar Low: Off, 1 – 40 mbar	High: 10 – 50 mbar Low: Off, 1 – 40 mbar	± 5 mbar
MV, MV _{Insp'} , MV _{Exp}	High: 0.1 – 60 L/min, Off Low: Off, 0.1 – 50 L/min	High: 0.1 – 60 L/min, Off Low: Off, 0.1 – 50 L/min	High: 0.1 – 20 L/min, Off Low: Off, 0.01 – 19.9 L/min	± 35 %
Vt, Vt _{Insp'} , Vt _{Exp}	High: 250 – 3500 mL, Off Low: Off, 10 – 2500 mL	High: 40 – 700 mL, Off Low: Off, 10 – 500 mL	High: 1 – 350 mL, Off Low: Off, 0.1 – 340 mL	± 35 %
Rate	High: 1 – 100 breaths/min Low: Off, 1 – 99 breaths/min	High: 2 – 180 breaths/min Low: Off, 1 – 179 breaths/min	High: 2 – 180 breaths/min Low: Off, 1 – 179 breaths/min	± 35 %
Apnea time	15 – 100 s	4 – 100 s	4 – 60 s	n. a.
SpO ₂	71 – 100 %	71 – 100 %	71 – 100 %	± 15 bpm
Pulse	High: 20 – 300 1/min Low: 15 – 295 1/min	High: 20 – 300 1/min Low: 15 – 295 1/min	High: 20 – 300 bpm Low: 15 – 295 bpm	± 1 %
EtCO ₂	High: 0.1 – 15 % Low: 0.1 – 15 %	High: 0.1 – 15 % Low: 0.1 – 15 %	High: 0.1 – 15 % Low: 0.1 – 15 %	± 1 %
inCO ₂	0 – 15 %	0 – 15 %	0 – 15 %	1.5%
Leak %	5 – 100 %, Off	5 – 100 %, Off	Off	

Interfaces	
RS232	2
Display Port	■
Ethernet	100 Mbit
USB	2
Nurse Call	■
EtCO ₂	○
SpO ₂	○
CAN Bus (Service only)	■
Connection protocols*	VueLink, Intellibridge, HL7
Dimensions (w × h × d)	440 × 250 × 360 mm/17.32 × 9.84 × 14.18 inch
Screen	17.3" color full HD touchscreen, TFT
Resolution	1920 × 1080 pixels
Touchscreen	Capacitive, glass touchscreen
Battery time	Minimum 180 min. (internal)
Oxygen supply	0–7 bar, 21.75 – 101.5 psi, 0 – 110 L/min
Oxygen connectors	DISS or NIST
Air inlet	Built-in turbine, 5 years unlimited warranty
Weight	15.4 kg
Protection class	IP21
Color	Dark Grey/Silver
Acoustic power level	47.91 dBA (single limb), 52.98 dBA (dual limb)
Power input AC	100 – 240 VAC, 50 – 60 Hz (80 – 264 VAC max. tolerance)
Power input DC	24 VDC (20 – 29 VDC) / 3.5 – 6 A
Power consumption	80 – 200 VA

Interfaces	
Units	
Pressure monitoring	mbar, cmH ₂ O, hPa
Pressure input	bar, kPa, psi
CO ₂	%, mmHg, kPa, hPa
Height	cm, ft, inch

Software Options

Expert Ventilation	■
Expert Monitoring	■
Lung Mechanics	■
Extended Pressure Range	■
Neonatal advanced	○
TargetVent	■
DualVent	■
DayNight	■
ChameleonClassic	■
ChameleonGreen	■
Data Communication	■
High Flow Oxygen Therapy	■
Lung Recruitment Tool	■
Auxiliary Pressure	■
Esophageal Pressure Monitoring	○
Integrated Pneumatic Nebulizer	■
Diagnostics Package Pulse Oximetry	■
Diagnostics Package Capnography	■

Legend

Standard	Optional
■	○



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NOTES

*Optional

¹Capnometer not included

²SpO₂ plethysmography not included

³Complete overview of alarms in the user manual

Not all options are available in every country. Please contact your local dealer or contact us on www.ZOLL.com for further information.

ZOLL Medical Corporation

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