



## Intensive Care and Transport Ventilator Solutions



[www.axcentmedical.com](http://www.axcentmedical.com)



## LYRA x1 **Best performing and versatile ventilation for hospital applications**

A compact turbine driven ventilator with multi-function, covers the non-invasive and invasive ventilation, and is suitable for treatment of most patient type. LYRA x1 is versatile throughout hospital and transport. Comprehensive ventilating modes, including APRV, PRVC, NIV are available for all your demands and for all type of patients from neonatal (optional) to adult.

A collapsible high-resolution touch-screen display makes LYRA x1 mounted on a trolley your choice for ICU applications, as well as a high performance ventilator throughout hospital and transport.

The innovative expiration valve disassembling concept brings more ease and efficiency for the sterilization process. As your versatile assistant, LYRA x1 is configured with O2 therapy, P-V tool, a lung titrating gold standard, etc.



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# LYRA x1

## Technical Specifications

### Physical Specification

Dimensions: 336 mm x 330 mm x 345 mm  
(L x W x H): 664 mm x 600 mm x 1370 mm  
(with trolley)

Weight: Approximately 9.5 kg,  
Approximately 31.0 kg (with trolley)

### Screen

Display Size: 12.1 Color active matrix TFT touch  
Display Resolution (H) x (V): 1280 x 800 pixels  
Brightness: Adjustable

### Ventilation Specifications

Patient Type: Adult, Pediatric, Neonate (optional)

#### Invasive Ventilation Mode:

**VCV** (Volume Control Ventilation)

**PCV** (Pressure Control Ventilation)

**VSIMV** (Volume Synchronized Intermittent  
Mandatory Ventilation)

**PSIMV** (Pressure Synchronized Intermittent  
Mandatory Ventilation)

**CPAP/PSV** (Continuous Positive Airway Pres-  
sure/Pressure Support Ventilation)

**PRVC** (Pressure Regulated Volume Control)

**V + SIMV** (PRVC + SIMV)

**BPAP** (Bilevel Positive Airway Pressure)

**APRV** (Airway Pressure Release Ventilation)  
Apnea Ventilation

#### Non-invasive Ventilation Mode:

**PCV** (Pressure Control Ventilation)

**PSIMV** (Pressure Synchronized Intermittent  
Mandatory Ventilation)

**CPAP/PSV** (Continuous Positive Airway  
Pressure/Pressure Support Ventilation)

**BPAP** (Bilevel Positive Airway Pressure)

**APRV** (Airway Pressure Release Ventilation)

### Controlled Parameters

O<sub>2</sub> %: 21-100% (increments of 1%)

VT (Tidal Volume): Adult: 100-2000 mL  
(increments of 10 mL) / Pediatric: 20-300 mL /  
Neonate (opt): 2-300 mL (increments of 1 mL)

f (Ventilation frequency): 1-80 bpm /  
Neonate (opt): 1-150 bpm (increments of 1 bpm)

fSIMV (Ventilation frequency in SIMV mode):  
1-80 bpm / Neonate: 1-150 bpm  
(increments of 1 bpm)

I:E range: 4:1-1:10 (increments of 0.5)

T<sub>insp</sub> (Inspiratory time): 0.20-10 s  
(increments of 0.05 s)

T<sub>slope</sub> (Time of Pressure Rising): 0-2.00 s  
(increments of 0.05 s)

Thigh: 0.2-30 s (increments of 0.1 s)

T<sub>low</sub>: 0.2-30 s (increments of 0.1 s)

T<sub>pause</sub>: 5%-60% (increments of 1%), Off

ΔP<sub>insp</sub>: 5-60 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)

ΔP<sub>supp</sub>: 0-60 cm H<sub>2</sub>O  
(increments of 1 cm H<sub>2</sub>O)

Phigh: 0-60 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)

P<sub>low</sub>: 0-45 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)

PEEP: 1-45 cm H<sub>2</sub>O  
(increments of 1 cm H<sub>2</sub>O), Off

Flow trigger: 0.5-15 L/min  
(increments of 0.1 L/min)

Pressure trigger: -10 to -0.5 cm H<sub>2</sub>O  
(increments of 0.5 cm H<sub>2</sub>O)

Exp% (Expiration termination level): 10-85%  
(increments of 5%), Auto

# LYRA x1

## Technical Specifications

### Apnea Ventilation

Vtapnea: Adult: 100-2000 mL (increments of 10 mL) / Pediatric: 20-300 mL / Neonate (opt): 2-300 mL (increments of 1 mL)  
 $\Delta$ Papnea: 5-60 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)  
Fapnea: 1-80 bpm (increments of 1 bpm)  
Apnea Tinsp: 0.20-10 s (increments of 0.05 s)

### Sigh

Sigh Switch: On, Off  
Interval: 20 s-180 min (increments of 1 s from 20 to 59 s, increments of 1 min from 1 to 180 min)  
Cycles Sigh: 1-20 (increments of 1)  
 $\Delta$ int.PEEP: 1-45 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O), Off

### Synchronized Tube Resistance Compliance

Tube Type: ET Tube, Trach Tube, Disable STRC  
Tube I.D.: Adult: 5.0 -12.0 mm (increments of 0.5 mm) / Pediatric: 2.5 - 8.0 mm (increments of 0.5 mm)  
Compensate: 0-100% (increments of 1%)  
Expiration Compliance Switch: On, Off

### Monitored parameters

Numeric:

Paw	Vte	Cdyn
Ppeak	VTi	Cstat
Pplat	Oxygen concentration	Rcexp
Pmean	VT <sub>e</sub> spn	WOB
PEEP	VT <sub>e</sub> /IBW	RSBI
Insp Flow	ftotal	NIF
Exp Flow	fmand	P0.1
MV	fspn	PEEPi
MV leak	Re	Continuous Flow (O Therapy)
MV spn	Ri	

Real time Graphics:

Pressure-time waveforms: Paw-Volume Loop  
Flow-time waveforms: Flow-time Loop  
Volume-time waveforms: Paw-Flow Loop

### Control Accuracy

O<sub>2</sub> %:  $\pm$ (3 vol.% +1% of setting)  
TV:  $\pm$ (10 mL +10% of setting) (BTPS)  
Tinsp:  $\pm$ 0.1 s or  $\pm$ 10% of setting, whichever is greater  
I: E 2:1 to 1:4:  $\pm$ 10% of setting, other range:  $\pm$ 15% of setting  
f:  $\pm$ 1 bpm  
fSIMV:  $\pm$ 1 bpm  
Tslope:  $\pm$ (0.2 s + 20% of setting)  
PEEP:  $\pm$ (2.0 cm H<sub>2</sub>O + 5% of setting)  
 $\Delta$ Pinsp:  $\pm$ (2.0 cm H<sub>2</sub>O + 5% of setting)  
 $\Delta$ Psupp:  $\pm$ (2.0 cm H<sub>2</sub>O + 5% of setting)  
Phigh:  $\pm$ (2.0 cm H<sub>2</sub>O + 5% of setting)  
Plow:  $\pm$ (2.0 cm H<sub>2</sub>O + 5% of setting)  
Thigh:  $\pm$ 0.2 s or  $\pm$ 10% of setting, whichever is greater  
Tlow:  $\pm$ 0.2 s or  $\pm$ 10% of setting, whichever is greater  
Pressure Trigger:  $\pm$ (1.0 cm H<sub>2</sub>O + 10% of setting)  
Flow Trigger:  $\pm$ (1.0 L/min + 10% of setting)  
 $\Delta$ int.PEEP:  $\pm$ (2.0 cm H<sub>2</sub>O + 5% of setting)  
Exp%:  $\pm$ 10%  
fapnea:  $\pm$ 1 bpm  
 $\Delta$ Papnea:  $\pm$ (2.0 cm H<sub>2</sub>O + 5% of setting)  
T<sub>v</sub>apnea:  $\pm$ (10 mL + 10% of setting) (BTPS)  
Apnea Tinsp:  $\pm$ 0.1 s or  $\pm$ 10% of setting, whichever is greater

## Monitoring Accuracy

Airway pressure (Ppeak, Pplat, Pmean, PEEP, PAP, EPAP):  $\pm(2 \text{ cm H}_2\text{O} + 4\%$  of the actual reading)

Tidal Volume: (Tvi, Tve, Tve/IBW, Tve spn):  
0 ml-100 ml:  $\pm(10 \text{ ml} + 3\%$  of the actual reading) (BTPS)

100 ml-4000 ml:  $\pm(3 \text{ ml} + 10\%$  of the actual reading) (BTPS)

Minute Volume (MV, MVspn, Mvleak):  
 $\pm 0.3 \text{ L/min}$  or  $\pm 8\%$  of the actual reading, whichever is greater (BTPS)

Frequency (ftotal, fmand, fspn):  $\pm 5\%$  of reading or  $\pm 1 \text{ bpm}$ , whichever is greater

Inspired Oxygen (FiO<sub>2</sub>):  $\pm(2.5 \text{ vol.}\% + 2.5\%$  of the actual reading)

Resistance: 0 to 50:  $\pm 10 \text{ cm H}_2\text{O/L/s}$

Other range: 50% of the actual reading

Compliance: 25% of the actual reading or  $\pm 10 \text{ ml/cm H}_2\text{O}$ , whichever is greater

RSBI: 0 to 1000 1/(Lmin): 15% of the actual reading or  $\pm 20 \text{ 1/(Lmin)}$

WOB: -

NIF:  $\pm(2 \text{ cm H}_2\text{O} + 4\%$  of the actual reading)

P0.1:  $\pm(2 \text{ cm H}_2\text{O} + 4\%$  of the actual reading)

PEEPi: -

Rcexp: -

## Alarm settings

Tidal Volume: High / Low

Minute Volume: High / Low

Airway pressure: High / Low

Frequency: High / Low

Inspired Oxygen (FiO<sub>2</sub>): High / Low

etCO<sub>2</sub>: High / Low

Apnea alarm time: 5-60 s

## Trend

Type: Tabular, Graphic

Length: 72 hours

Content: Monitor Parameters, Setting Parameters (Setting Ventilation mode and Parameters)



# LYRA x1

## Technical Specifications

### O<sub>2</sub> Therapy

Controlled Parameters

O<sub>2</sub>%: 21-100% (increments of 1%)

Flow: 4-60 L/min

Controlled Accuracy

O<sub>2</sub>%:  $\pm(3 \text{ vol.}\% + 1\% \text{ of setting})$

Flow:  $\pm(2 \text{ L/min} + 10\% \text{ of setting})$  (BTPS)

### Environmental specifications

Temperature: 5-40 °C (operating); -20 to 60 °C (storage and transport, O<sub>2</sub> sensor: -20 to 50 °C)

Relative Humidity: 10-95% (operating);

10-95% (storage and transport)

Barometric Pressure: 62-106 kPa (operating);

50-106 kPa (storage and transport)

### Power Battery Backup

External AC power supply

Input voltage: 100-240 V

Input frequency: 50/60 Hz

Input current: 2.5 A Max

Fuse: T2.5 AH/250 V

Internal battery

Number of batteries: One or Two (Optional)

Battery type: Build-in Lithium-ion battery,

11.25 VDC, 6400 mAh

Battery run time: 3 hours (Powered by one new fully-charged battery in standard working condition), 6 hours (powered by two new fully-charged batteries in standard working condition).

### Others

Communication interface: RS-232, Ethernet, USB port, CO<sub>2</sub> analyzer connector

Gas supply: O<sub>2</sub>

(HPO) Oxygen connector: NIST (DISS optional)

Gas supply pressure: 280-600 kPa

**CE 0123**



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## Intensive Care and Transport Ventilator Solutions

For more information, please contact us.

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