



Intensive Care and Transport Ventilator Solutions



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LYRA x2 Top notch performance of Non-Invasive and Invasive Ventilation

LYRA x2 is a premium non-invasive turbine driven ventilator with no compromise on the performance in invasive ventilation.

User can easily switch between NIV- and IV-modes by UI operation only.

Comprehensive parameter monitoring describes the full scenario of patient's status to the care giver.

In a busy ICU it is imperative to give the desired mechanical ventilation to the patient.

An 18.5 inch vertical layout touchscreen display makes operating of the ventilator smooth & easy.



LYRA x2

Technical Specifications

Physical Specification

Dimensions: 327 mm x 310 mm x 493 mm
(L x W x H): 664 mm x 600 mm x 1520 mm
(with trolley)

Weight: Approximately 12.0 kg, Approximately
33.0 kg (with trolley)

Screen

Display Size: 18.3 Color active matrix TFT touch
Display Resolution (H) x (V): 1080 x 1980 pixels
Brightness: Adjustable

Ventilation Specifications

Patient Type: Adult, Pediatric, Neonate (optional)

Invasive Ventilation Modes:

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
Pressure/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 Modes:

CPAP (Continuous Positive Airway Pressure)

PCV (Pressure Control Ventilator)

PPS (Proportional Pressure Support)

S/T (Spontaneous and Timed)

VS (Volume Support)

Controlled Parameters

O₂ %: 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_{insp} (Inspiratory time): 0.20-10 s (increments
of 0.05 s)

T_{slope} (Time of Pressure Rising): Thigh
0-2.00 s (increments of 0.05 s)

T_{low}: 0.2-30 s (increments of 0.1 s)

T_{pause}: 0.2-30 s (increments of 0.1 s)

ΔP_{insp}: 5%-60 cm H₂O (increments of 1 cm
H₂O), Off

ΔP_{supp}: 0-60 cm H₂O (increments of 1 cm
H₂O)

Phigh: 0-60 cm H₂O (increments of 1 cm H₂O)

P_{low}: 0-45 cm H₂O (increments of 1 cm H₂O)

PEEP: 1-45 cm H₂O

(increments of 1 cm H₂O), Off

Flow trigger: 0.5-15 L/min

(increments of 0.1 L/min)

Pressure trigger: -10 to -0.5 cm H₂O

(increments of 0.5 cm H₂O)

Exp% (Expiration termination level): 10-85%

(increments of 5%), Auto

CPAP: 4-25 cm H₂O (increments of 1 cm H₂O)

EPAP: 4-25 cm H₂O (increments of 1 cm H₂O)

IPAP: 4-20 cm H₂O (increments of 1 cm H₂O)

Rise time: 1-5 (increments of 1)
 Ramp time: 5-45 min (increments of 5 min), Off
 Min P (VS minimum IPAP): 5-30 cm H₂O
 (increments of 1 cm H₂O)
 Max P (VS maximum IPAP): 6-40 cm H₂O
 (increments of 1 cm H₂O)
 Max P (PPV maximum pressure limit):
 5-40 cm H₂O (increments of 1 cm H₂O)
 Max V (PPV maximum volume limit):
 200-3500 mL (increments of 5 ml)
 Max E: 0-100 cm H₂O/L
 (increments of 1 cm H₂O/L)
 Max R: 0-50 cm H₂O/L
 (increments of 1 cm H₂O/L)
 PPV%: 0%-100% (increments of 1%)

Apnea Ventilation

Vt_{apnea}: Adult: 100-2000 mL
 (increments of 10 mL) / Pediatric: 20-300 mL /
 Neonate (opt): 2-300 mL (increments of 1 mL)
 Δ P_{apnea}: 5-60 cm H₂O
 (increments of 1 cm H₂O)
 F_{apnea}: 1-80 bpm (increments of 1 bpm)
 Apnea T_{insp}: 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)
 Δ int.PEEP: 1-45 cm H₂O
 (increments of 1 cm H₂O), 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	Oxygen concentration	WOB
P _{peak}	V _{Te} spn	RSBI
P _{plat}	V _{Te} /IBW	NIF
P _{mean}	f	P0.1
PEEP	f _{total}	PEEPi
Insp Flow	f _{mand}	PIP
Exp Flow	f _{spn}	EPAP
MV	Re	Pt.Trig
MV leak	Ri	Pt.leak
MV spn	C _{dyn}	Tot.leak
V _{te}	C _{stat}	Continuous Flow (O ₂ Therapy)
VTi	R _{cexp}	

Real time Graphics:

Pressure-time waveforms: Paw-Volume Loop

Flow-time waveforms: Flow-time Loop

Volume-time waveforms: Paw-Flow Loop

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Technical Specifications

Control Accuracy

O₂ %: $\pm(3 \text{ vol.}\% + 1\% \text{ of setting})$
TV: $\pm(10 \text{ mL} + 10\% \text{ of setting})$ (BTPS)
T_{insp}: $\pm 0.1 \text{ s}$ 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: $\pm 1 \text{ bpm}$
fSIMV: $\pm 1 \text{ bpm}$
Tslope: $\pm(0.2 \text{ s} + 20\% \text{ of setting})$
PEEP: $\pm(2.0 \text{ cm H}_2\text{O} + 5\% \text{ of setting})$
 ΔP_{insp} : $\pm(2.0 \text{ cm H}_2\text{O} + 5\% \text{ of setting})$
 ΔP_{supp} : $\pm(2.0 \text{ cm H}_2\text{O} + 5\% \text{ of setting})$
P_{high}: $\pm(2.0 \text{ cm H}_2\text{O} + 5\% \text{ of setting})$
P_{low}: $\pm(2.0 \text{ cm H}_2\text{O} + 5\% \text{ of setting})$
T_{high}: $\pm 0.2 \text{ s}$ or $\pm 10\%$ of setting,
whichever is greater
T_{low}: $\pm 0.2 \text{ s}$ or $\pm 10\%$ of setting,
whichever is greater
Pressure Trigger: $\pm(1.0 \text{ cm H}_2\text{O} + 10\%$
of setting)
Flow Trigger: $\pm(1.0 \text{ L/min} + 10\%$ of setting)
 $\Delta \text{int. PEEP}$: $\pm(2.0 \text{ cm H}_2\text{O} + 5\%$ of setting)
Exp %: $\pm 10\%$
CPAP: $\pm(2.0 \text{ cm H}_2\text{O} + 5\%$ of setting)
EPAP: $\pm(2.0 \text{ cm H}_2\text{O} + 5\%$ of setting)
IPAP: $\pm(2.0 \text{ cm H}_2\text{O} + 5\%$ of setting)
Rise time: -
Ramp time: $\pm 1 \text{ s}$
Min P (VS minimum IPAP): $\pm(2.0 \text{ cm H}_2\text{O} +$
 5% of setting)
Max P (VS maximum IPAP): $\pm(2.0 \text{ cm H}_2\text{O} +$
 5% of setting)
Max P (PPV maximum pressure limit):
 $\pm(2.0 \text{ cm H}_2\text{O} + 5\%$ of setting)

Max V (PPV maximum volume limit): $\pm 15\%$ of
setting
Max E: -
Max R: -
F_{apnea}: $\pm 1 \text{ bpm}$
 ΔP_{apnea} : $\pm(2.0 \text{ cm H}_2\text{O} + 5\%$ of setting)
T_{vapnea}: $\pm(10 \text{ mL} + 10\%$ of setting) (BTPS)
Apnea T_{insp}: $\pm 0.1 \text{ s}$ or $\pm 10\%$ of setting,
whichever is greater

Monitoring Accuracy

Airway pressure (P_{peak}, P_{plat}, P_{mean}, PEEP,
PAP, EPAP): $\pm(2 \text{ cm H}_2\text{O} + 4\%$ of the actual
reading)
Tidal Volume (T_{vi}, T_{ve}, T_{ve/IBW}, T_{ve 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, MV_{spn}, MV_{leak}): $\pm 0.3 \text{ L/min}$
or $\pm 8\%$ of the actual reading, whichever is
greater (BTPS)
Frequency (f_{total}, f_{mand}, f_{spn}): $\pm 5\%$ of reading
or $\pm 1 \text{ bpm}$, whichever is greater
Inspired Oxygen (FiO₂): $\pm(2.5 \text{ vol.}\% + 2.5\%$ 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)
P_{0.1}: $\pm(2 \text{ cm H}_2\text{O} + 4\%$ of the actual reading)
PEEP_i: -
R_{cexp}: -

Alarm settings

Tidal Volume: High / Low
Minute Volume: High / Low
Airway pressure: High / Low
Frequency: High / Low
Inspired Oxygen (FiO₂): High / Low
etCO₂: 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)

O₂ Therapy

Controlled Parameters
O₂ %: 21-100% (increments of 1%)
Flow: 4-60 L/min
Controlled Accuracy
O₂ %: ±(3 vol.% +1% of setting)
Flow: ±(2 L/min +10% of setting) (BTSP)

Environmental specifications

Temperature: 5-40°C (operating); -20 to 60 °C
(storage and transport, O₂ 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 battery in standard working
condition)



LYRA x2

Technical Specifications

Others

Communication interface: RS-232, Ethernet,
USB port, CO2 analyzer connector

Gas supply: O²

(HPO) Oxygen connector: NIST (DISS optional)

Gas supply pressure: 280-600 kPa

CE 0123





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