

# Specification: V3

The logo features the word "COMEN" in a large, bold, 3D-style font. The letters are white with a blue gradient and a shadow effect, giving them a three-dimensional appearance. The background is a solid blue color with a subtle pattern of the word "COMEN" repeated in various sizes and orientations, creating a word cloud effect. Below the main logo, the tagline "COMEN Share with the world" is written in a smaller, white, sans-serif font.

**COMEN** Share with the world

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# Ventilator

## V3



### Technical Specification

#### Physical Characteristics

Dimensions	1365±10 mm × 526±5 mm × 544±5 mm (Height × Width × Depth) (including trolley); 354±5 mm × 315±5 mm × 249±5 mm (Height × Width × Depth) (excluding trolley)
Weight	30±0.5 kg (including trolley) 10±0.5 kg (excluding trolley)

#### Screen

Screen Size:	12.1" TFT touch screen
Resolution	1280 × 800
Brightness:	Adjustable

#### Ventilator Specification

Ventilation mode	V-A/C (Volume assist/control) P-A/C (Pressure assist/control) V-SIMV (Volume - Synchronized Intermittent Mandatory Ventilation) P-SIMV (Pressure - Synchronized Intermittent Mandatory Ventilation) CPAP/PSV, DuoVent, APRV, PRVC, PRVC-SIMV, VS PSV-S/T
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#### Controlled parameter ranges

O <sub>2</sub> %:	21 - 100% (increments of 1 %)
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TV (Tidal Volume):	Adult: 100 - 2200 mL (increments of 10 mL) Pediatric: 15 - 300 mL (increments of 1 mL)
Respiratory Rate (RR):	1 - 100 bpm (increments of 1 bpm)
fSIMV (Ventilation frequency in SIMV mode):	1 - 60 bpm (increments of 1 bpm).
I:E range:	4:1~1:10.
T <sub>insp</sub> (Inspiratory time):	0.10 - 10 s (increments of 0.05 s).
T <sub>slope</sub> (Time of Pressure Rising):	0 - 2.00 s (increments of 0.05 s).
High Pressure Time (Thigh):	0.2 - 30 s (increments of 0.1 s)
T <sub>low</sub> (Low Pressure Time):	0.2 - 30 s (increments of 0.1 s)
Max inspiratory Time (T <sub>imax</sub> ):	0.20 ~ 15.00 s
T <sub>pause</sub> :	5 % - 60 % (increments of 5 %), Off
ΔP <sub>insp</sub> (Inspiratory pressure):	5 - 85 cmH <sub>2</sub> O (increments of 1 cmH <sub>2</sub> O)
ΔP <sub>supp</sub> :	0 - 85 cmH <sub>2</sub> O (increments of 1 cmH <sub>2</sub> O)
Phigh (High Pressure Level):	0 - 85 cmH <sub>2</sub> O (increments of 1 cmH <sub>2</sub> O)
Plow (Low Pressure Level):	0 - 80 cmH <sub>2</sub> O (increments of 1 cmH <sub>2</sub> O)
PEEP:	1 - 50 cmH <sub>2</sub> O (increments of 1 cmH <sub>2</sub> O), Off
Flow trigger	0.5 -15 L/min (increments of 0.1 L/min), Off

Pressure trigger	-10 to -0.5 cmH <sub>2</sub> O (increments of 0.5 cmH <sub>2</sub> O), Off
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Exp % (Expiration termination/trigger level)	10 - 85% (increments of 5%), Auto
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### Apnea Ventilation

TVapnea	Adult: 100 - 2200 mL (increments of 10 mL) Pediatric: 20 - 300 mL (increments of 1 mL)
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ΔPapnea	5 - 85 cmH <sub>2</sub> O (increments of 1 cmH <sub>2</sub> O)
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RRapnea (Apnea Respiratory Rate)	1 - 80 bpm (increments of 1 bpm)
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Apnea Tinsp	0.20 - 10 s (increments of 0.05 s)
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### Automatic Tube Resistance Compensation

Tube Type	endotracheal intubation and tracheotomy tube
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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)
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Compensate	0 -100 % (increments of 1 %)
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Expiration Compensation Switch	ON, Off
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### Monitoring

Airway pressure range	Ppeak, Pplat, Pmean (Range -20 - 120 cmH <sub>2</sub> O)
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PEEP	0~120 cmH <sub>2</sub> O
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Tidal volume range:	0~4000 mL
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Respiratory Rate	ftotal, fmand, fspn (Range 0 - 200 bpm)
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Minute volume range	MV, MVspn, MVleak (Range 0 - 100 L/min)
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Resistance	Rinsp, Rexp (0 - 600 cmH <sub>2</sub> O/L/s)
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Compliance	Cstat, Cdyn (0 - 300 mL/cmH <sub>2</sub> O)
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Inspired Oxygen (FiO <sub>2</sub> )	15 - 100 %
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WOB (Work of Breathing)	0 - 100 J/min
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RCexp (Expiratory Time Constant)	0 - 10 s
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Waveforms	Airway pressure - time, Flow - time, Volume - time
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### Weaning indicator

RSBI (Rapid Shallow Breathing Index)	0 - 999 1/(L•min)
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### Special Function

Manual Breath
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Expiration Hold
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Inspiration Hold
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Nebulizer
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O <sub>2</sub> ↑ (O <sub>2</sub> enrichment)
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Sputum Suction
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Loops	Paw - Volume, Flow - Volume, Paw - Flow
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Smart Sync	IntelliSynTec
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O <sub>2</sub> Therapy
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### Control accuracy

O <sub>2</sub> %	± (3 vol.% +1 % of setting)
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TV	± (10 mL + 10% of the set value)
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Tinsp	± 0.1 s or ± 10 % of setting, whichever is greater
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I: E	1:4~2:1: ± 10% of the set value; Other range: ± 15% of the set value.
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RR	±1 bpm
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fSIMV	±1 bpm
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Tslope (Rising Time)	± (0.2s + 20% of the set value)
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Phigh	± (2 cmH <sub>2</sub> O + 5% of the set value)
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Plow	± (2 cmH <sub>2</sub> O + 5% of the set value)
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Thigh	±0.2s or ± 10% of the set value, whichever is larger
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Tlow	±0.2s or ± 10% of the set value, whichever is larger
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Pressure Trigger	± (1 cmH <sub>2</sub> O + ± 10% of the set value)
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Flow Trigger	± (1 L/min + 10% of the set value)
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Δint.PEEP	± (2 cmH <sub>2</sub> O + 5% of the set value)
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Exp %	±10% (absolute error)
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Fapnea (Apnea Frequency)	±1bpm
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ΔPapnea	± (2 cmH <sub>2</sub> O + 5% of the set value)
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TVapnea	± (10 mL + 10% of the set value)
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Apnea Tinsp	±0.1s or ± 10% of the set value, whichever is larger
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### Monitoring Accuracy

Airway pressure (Ppeak, Pplat, Pmean, PEEP)	Within the range of 0 cmH <sub>2</sub> O~120 cmH <sub>2</sub> O, ± (2 cmH <sub>2</sub> O + 4% of the actual reading)
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Tidal Volume (TV <sub>i</sub> , TV <sub>e</sub> , TV <sub>e</sub> /IBW, TV <sub>e</sub> spn)	Within the range of 0 mL~100 mL, ± (10 mL + 3% of the actual reading); Within the range of 100 mL~4000 mL, ± (3 mL + 10% of the actual reading)
Minute Volume (MV, MV <sub>spn</sub> , MV <sub>leak</sub> )	Within the range of 0.0 L/min~100.0 L/min, ± (0.2 L/min + 10% of the actual reading)
Frequency (f <sub>total</sub> , f <sub>mand</sub> , f <sub>spn</sub> )	Within the range of 0 bpm~200 bpm, ±1 bpm or ±5% of the actual reading, whichever is larger
Inspired Oxygen (FiO <sub>2</sub> )	Within the range of 15 vol.%~100 vol.%, ± (2.5 vol. % + 2.5% of the actual reading).
Resistance	Within the range of 0 cmH <sub>2</sub> O/(L/s) ~20 cmH <sub>2</sub> O/(L/s), ±10 cmH <sub>2</sub> O/(L/s); Within the range of 20 cmH <sub>2</sub> O/(L/s) ~600 cmH <sub>2</sub> O/(L/s), ±50% of the actual reading).
Compliance	Within the range of 0 mL/cmH <sub>2</sub> O~300 mL/cmH <sub>2</sub> O, ± (2 mL/cmH <sub>2</sub> O + 20% of the actual reading).
RSBI	Within the range of 0 / (min·L)~999 / (min·L), ± (3 / (min·L)+15% of the actual reading).
WOB	Within the range of 0.0 J/min~100.0 J/min, ± (1 J/min + 15% of the actual reading).
NIF	Within the range of -45.0 cmH <sub>2</sub> O~0.0 cmH <sub>2</sub> O, ± (2 cmH <sub>2</sub> O + 4% of the actual reading)
PO.1	Within the range of -20.0 cmH <sub>2</sub> O~0.0 cmH <sub>2</sub> O, ± (2 cmH <sub>2</sub> O + 4% of the actual reading).
RC <sub>exp</sub>	Within the range of 0.0s~10.0s, ± (0.2s + 20 % of the actual reading).

## Alarm Settings

Tidal Volume	Upper alarm limit Adult: 110~4000 mL, OFF Pediatric: 25~600 mL, OFF
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Lower alarm limit	Adult: OFF, 50~3995 mL Pediatric: OFF, 10~595 mL
Minute Volume	Upper alarm limit: Adult: 0.2~100.0 L/min Pediatric: 0.2~60.0 L/min Lower alarm limit: Adult: 0.1~50.0 L/min Pediatric: 0.1~30.0 L/min
Airway pressure	Upper alarm limit: 10~90 cmH <sub>2</sub> O. Lower alarm limit: OFF, 5~ (upper alarm limit -5) cmH <sub>2</sub> O
Frequency (Respiratory Rate)	Upper alarm limit: 2~160 bpm, OFF Lower alarm limit: OFF, 1~159 bpm
Inspired oxygen (FiO <sub>2</sub> )	Upper alarm limit: 20 vol.%~100 vol.% Lower alarm limit: 18 vol.%~ 98 vol.%
Apnea alarm time	5~60s, in nasal positive airway pressure ventilation mode, it can be set to OFF

## Trend

Type	Tabular, Graphic
Length	72 hours
Content	Monitor Parameters, Setting Parameters (Setting Ventilation mode and Parameters) includes parameter alarm events and parameter waveforms related to the alarm time

## Data Review

Event logs	Up to 8000 event logs can be saved, including alarm logs and operation logs. The alarm log includes parameter alarm events and parameter waveforms related to the alarm time.
Freeze the waveform review	Freeze the waveform of the interface at the current time and use the knob to review the data. When freezing, 30 most recent historical waveforms can be reviewed by sliding the screen or rotating the knob.

Freeze the loop review	Up to 5 reference loops can be saved.
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## O<sub>2</sub> Therapy

O <sub>2</sub> %	21 - 100 % (increments of 1 %) ± (3 vol.% +1 % of setting)
Flow	2 - 60 L/min ± (2 L/min +10 % of setting) (BTPS)

## Gas Circuit Specification

Gas type	Air, O <sub>2</sub>
Gas source requirement	Medical compressed oxygen and medical compressed air

## High-pressure O<sub>2</sub> source

Gas source pressure range	280~600 kPa
Rated flow rate requirement	120 L/min
Input connector	NIST (ISO 5356-1) or DISS (CGA 1240)
Standards compliant	YY/T 0799-2010 EN ISO5359:2008

## Low-pressure O<sub>2</sub> source

Input pressure range	< 100 kPa
Maximum flow rate	15 L/min
Input connector	CPC quick coupling

## Inspiratory module

Peak flow rate	≥ 210 L/min
Nebulizer connector	Flow rate: 6 L/min~9 L/min
Safety pressure of respiration	≤ 12.5 kPa
Inspiratory-side external connector	Coaxial 22 mm/15 mm conical connector
Removable, sterilizable	can be entirely removed quickly; and can be entirely cleaned and disinfected.
Regulatory compliance	YY1040.1-2003 EN ISO5356-1:2004

## Expiratory module

Expiratory-side external connector	Coaxial 22 mm/15 mm conical connector
Removable, sterilizable	can be entirely removed quickly; and can be entirely cleaned and disinfected.

Regulatory compliance	YY1040.1-2003 EN ISO5356-1:2004
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## System compliance and resistance

Compliance	Adult disposable circuit (including inspiratory safety valve, adult disposable breathing tube, water collection cup, expiratory valve): ≤ 4 mL/cmH <sub>2</sub> O; Adult reusable circuit (including inspiratory safety valve, adult reusable breathing tube, water collection cup, expiratory valve, Y-joint): ≤ 2 mL/cmH <sub>2</sub> O; Pediatric disposable circuit (including inspiratory safety valve, pediatric disposable breathing tube, water collection cup, expiratory valve): ≤ 2 mL/cmH <sub>2</sub> O; Pediatric reusable circuit (including inspiratory safety valve, pediatric reusable breathing tube, water collection cup, expiratory valve, Y-joint): ≤ 2 mL/cmH <sub>2</sub> O; Neonate reusable circuit (including inspiratory safety valve, neonate reusable breathing tube, water collection cup, expiratory valve, Y-joint): ≤ 1 mL/cmH <sub>2</sub> O.
Inspiratory resistance	≤ 6 cmH <sub>2</sub> O at the flow rate of 60 L/min (Adult); ≤ 6 cmH <sub>2</sub> O at the flow rate of 30 L/min (Pediatric); ≤ 6 cmH <sub>2</sub> O at the flow rate of 5 L/min (Neonate).
Expiratory resistance	≤ 6 cmH <sub>2</sub> O at the flow rate of 60 L/min (Adult);

	≤ 6 cmH <sub>2</sub> O at the flow rate of 30 L/min (Pediatric);
	≤ 6 cmH <sub>2</sub> O at the flow rate of 5 L/min (Neonate).

## Basic performance

Pressure monitoring range	-20~120 cmH <sub>2</sub> O
Safety pressure of system	In ventilation state: ≤ 125cmH <sub>2</sub> O In non-ventilation state or power failure or gas source failure (<0.12MPa): ≤ 14 cmH <sub>2</sub> O

## 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	5 - 95 % (operating); 5 - 95 % (storage and transport)
Barometric Pressure	62 - 106 kPa (operating); 50 -106 kPa (storage and transport)

## Power Specification

### External AC power supply

Input voltage	100 - 240 V
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Input frequency	50/60 Hz
Input current	2.7 - 1.1 A
Fuse	T3.15 AH/250 V

### External DC power supply

Input voltage	12V
Input current	10A

### Internal battery

Number of batteries	One or Two
Battery type	Build-in Lithium-ion battery, 14.4 VDC, 6A, 6700mAh
Battery life	140 min (when a new fully charged battery is used in standard operating mode) 280 min (when two new fully charged batteries are used in standard operating mode)

## I/O

Communication interface	Rs232, Ethernet, VGA, USB port, Nurse call
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## Trolley MC100

Dimensions	
Weight	20 kg

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