Tender enclosure

caelus LITE

anaesthesia ventilator

Introduction

Caelus Lite is an ideal solution for optimal space allocation in your operating room. Its reduced footprint combined with the integrated working surface results in a remarkably compact anaesthesia ventilator. At the same time its cutting-edge technology makes for a modular platform, which can be upgraded to support the most demanding anaesthetic procedures. The ergonomically designed trolley with plenty of working space and storage room enhances your comfort while an 18.5 inch capacitive touchscreen shows all crucial information at a glance.

Caelus Lite is a pneumatically driven, electronically controlled anaesthesia ventilator suitable for all patient categories, ranging from neonates to bariatric patients. The new-generation ventilator is capable of working in the following ventilation modes: manual/spontaneous ventilation (MAN/SPONT), volume-controlled ventilation (VCV), synchronised intermittent mandatory ventilation (SIMV-VC), pressure-controlled ventilation (PCV), synchronised intermittent mandatory ventilation (SIMV-PC) and pressure support ventilation (PSV/CPAP). The system also allows manual ventilation by means of an induction breathing system (semi-open system). Optionally available: variable volume ventilation (VVV), synchronised variable volume ventilation (S-VVV), pressure-regulated volume-controlled ventilation (PRVC) and synchronised pressure-regulated volume-controlled ventilation (S-PRVC).

All ventilation parameters are displayed on the 18.5 inch (47 cm) full-colour touchscreen which is ergonomically positioned above the spacious working surface of 47 cm (18.5“) by 40 cm (15.7“). The display screen allows visualisation of up to 10 waveforms (up to 4 simultaneously) (pressure, flow, volume, P-V loop, F-V loop, CO_2, O_2, AA1, AA2 and N_2O) and 12 trends (up to 2 simultaneously) (P_{PEAK}, $P_{PLATEAU}$, MV_{EXP}, C_{RS}, R_{RS}, $EtCO_2$, EtO_2, EtAA1, EtAA2, MAC_X, qCON, qNOX).

Caelus Lite is equipped with a new electronic fresh gas mixer, the innovative *RotaSphere®,* which is controlled through the touchscreen display. Fresh gas flow settings are displayed in the form of a sphere so that both gas mixture and concentrations are immediately clear, even from a distance. Set individual flows or total flow at your preference in ‘%’ or ‘l/min’ simply by tapping the *RotaSphere®* and swiping over the settings wheel.

General characteristics

Patient category:

Caelus Lite is capable of ventilating neonates, infants, and adults, ranging from small babies of approximately 1 kg to bariatric patients. The system is pneumatically driven and electronically controlled through the *PureTouch®* user interface.

User interface:

Medec *PureTouch®* is an innovative graphical user interface which facilitates the control of the anaesthesia ventilator in a highly intuitive way. It allows you to swipe from one waveform to another in a fluent motion and browse through settings effortlessly with an unprecedented simplicity and visual acuity. Thanks to the smooth and responsive graphics changing parameters was never easier. Swipe to configure your parameter window and choose out of 10 waveforms (pressure, flow, volume, P-V loop, F-V loop, CO_2, O_2, AA1, AA2 and N_2O) and 12 trends (P_{PEAK}, $P_{PLATEAU}$, MV_{EXP}, C_{RS}, R_{RS}, $EtCO_2$, EtO_2, EtAA1, EtAA2, MAC_X, qCON, qNOX).

Ventilator:

Caelus Lite is equipped with Medec's latest-generation technology. The pneumatically driven, electronically controlled bag-in-bottle ventilator provides the nearest approximation of natural ventilation. It allows you to choose the flow pattern (constant or decelerating) in volume-controlled ventilation to optimise the ventilatory support. The dynamic tidal volume compensation system guarantees an impeccable accuracy. No inadvertent PEEP is generated during ventilation, allowing a setting of 0 cmH_2O End-Expiratory Pressure when required. The ergonomic internal design of the ventilator makes for a more efficient result, while at the same time requiring less maintenance intervention. In case of power failure the system can continue operation without interruption for a minimum of 90 minutes (typically up to 180 minutes, with a new and fully charged battery).

The ventilator is capable of working in the following ventilation modes: manual/spontaneous ventilation (MAN/SPONT), volume-controlled ventilation (VCV), synchronised intermittent mandatory ventilation (SIMV-VC), pressure-controlled ventilation (PCV), synchronised intermittent mandatory ventilation (SIMV-PC) and pressure support ventilation (PSV/CPAP). Optionally available: variable volume ventilation (VVV), synchronised variable volume ventilation (S-VVV), pressure-regulated volume-controlled ventilation (PRVC) and synchronised pressure-regulated volume-controlled ventilation (S-PRVC)

Variable volume ventilation (VVV): There is increasing preclinical evidence that mimicking the physiological variability in tidal volume is a new method to facilitate lung recruitment and reduce the risk of ventilator-induced lung injury. That is why in Medec's volume control the tidal volume can be set with a degree of variability of 75 - 200 percent. These small breath-to-breath variations in tidal volume allow you to mimic spontaneous breathing during mechanical ventilation.

The following parameters can be adjusted: V_T, P_{PEAK}, $P_{SUPPORT}$, PEEP, Rise time, End flow, RR, Backup RR, Backup pressure, I:E, Inspiratory pause, Trigger, Trigger window, Variable V_T, Breath pattern. The following parameters are measured and displayed: P_{PEAK}, P_{MEAN}, $P_{PLATEAU}$, PEEP, AUTO-PEEP, TV_{INSP}, TV_{EXP}, MV_{EXP}, RR_{TOTAL}, RR_{SPONT}, MAC_X, FIO_2, EtO_2, $FICO_2$, $EtCO_2$, FIAA1, EtAA1, FIAA2, EtAA2, FIN_2O, EtN_2O, $FLOW_{PEAKI/E}$, $FLOW_{MEAN\ I/E}$, C_{RS}, R_{RS}.

The alarms can easily be configured both in the alarms menu and directly in the ventilation window. Alarm messages are prioritised according to three levels of importance: low priority, medium priority and high priority. Each of these priority levels has a specific colour (blue, yellow and red).

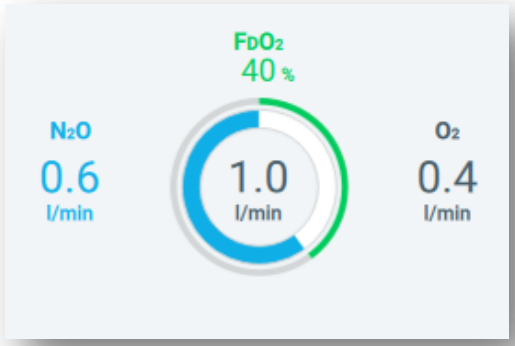
If a leak (> 150 ml/min) is detected in the breathing system a message is displayed showing the size of the leak. In case of emergency the system can still continue working as the ventilator automatically compensates for leakage.

During start-up an auto-test is performed automatically. The auto-test checks the system integrity, the fresh gas mixer, the ventilator and performs the leak test, which can be skipped in case of emergency. The auto-test takes approximately 2 - 3 minutes.

RotaSphere®:

The 18.5 inch full-colour touchscreen controls the gas mixer (*RotaSphere®*) and displays all ventilation parameters. All changes are effected directly on the touchscreen display by the touch of a finger, without the need to use any rotary knob. Fresh gas flow settings are displayed in the form of a sphere so that both gas mixture and concentrations are immediately clear, even from a distance. Set individual flows or total flow at your preference in '%' or 'l/min' simply by tapping the *RotaSphere®* and swiping over the settings wheel.

The electronic gas mixer is fitted with an electronic Oxygen Ratio Controller (ORC) to avoid hypoxic gas mixtures when oxygen is combined with nitrous oxide. The ORC guarantees a minimum O_2 delivery of 25% in a mixture with N_2O for fresh gas flows of more than 1 L/min. For fresh gas flows of less than 1 L/min the oxygen concentration is automatically increased up to 100% at the minimum adjustable flow of 250 ml/min.



Flow sensors:

Caelus Lite is equipped with two autoclavable digital flow sensors. These sensors measure the flow rate of gas (bi-directionally) with superb accuracy using a thermal measurement principle. An adjustable heating element is positioned at the center of a pressure-stabilised membrane, with a temperature sensor both upstream and downstream of the membrane in the direction of gas flow. Every flow of gas over the membrane causes a thermal transfer of heat to the temperature sensor positioned downstream and, because of the resulting temperature difference, creates a precisely measurable signal. The special design of the flow channel results in a very low pressure drop. Every sensor is digitally calibrated during production. As a result, the signal received by the sensor chip is always fully calibrated, linearised and temperature-compensated. No additional calibration is required, expediting your workflow. The flow sensors come with a 5-year warranty.

Trolley:

The trolley is equipped with two drawers, as well as an ergonomically positioned working and writing surface of 47 cm (18.5“) by 40 cm (15.7“).

Patient Breathing Unit (PBU):

The Patient Breathing Unit (PBU) contains the internal breathing bag and is fully autoclavable (up to 134˚C). It can easily be removed without the need for special tools. The PBU contains a water trap to reduce the condensation in the breathing circle. The absorber is integrated into the PBU and is easily attached or detached thanks to a user-friendly click system. If the canister is detached from the PBU the CO_2 bypass is activated, closing the breathing circle automatically. Both reusable and disposable canisters are available.

Backup:

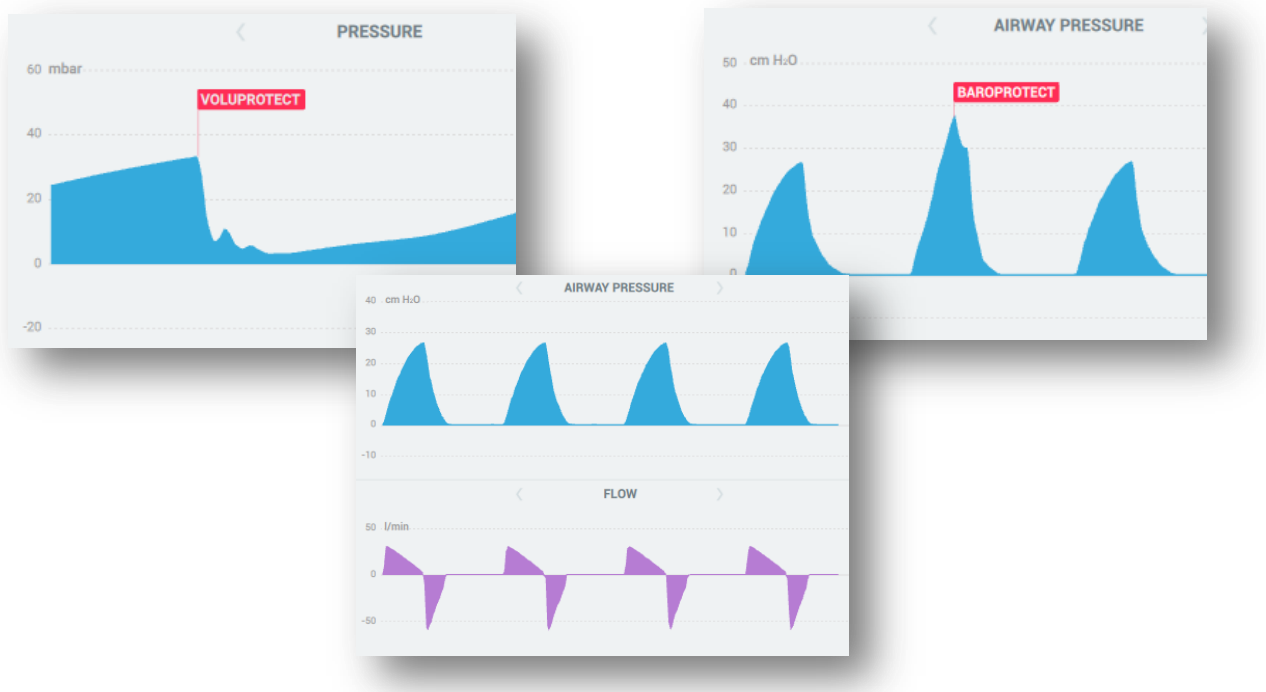
Backup gas cylinders can be connected to an optional pin-index system, which can be connected at the back of the trolley. This system supports backup cylinders for O_2, N_2O and air. The power backup system guarantees full functionality for a minimum of 90 minutes (typically up to 180 minutes, with a new and fully charged battery).

Safety systems:

VoluProtect® reduces the risk of ventilator-induced lung injury during manual or spontaneous ventilation. Clinical research has shown that sustained lung pressure at a critically high level can cause irreversible damage to lung tissue. VoluProtect® is designed to prevent this and to improve patient outcome. It effectively prevents volutrauma by reducing the lung pressure automatically in case of an inadvertently closed APL valve.

BaroProtect® reduces the risk of ventilator-induced lung injury during volume-controlled ventilation. It effectively prevents barotrauma by limiting unexpected pressure spikes (e.g. due to changing lung compliance). At the same time, a full breathing cycle is completed without any risk of barotrauma. BaroProtect® assesses each individual patient's respiratory functionality to determine the pressure level at which it is automatically activated.

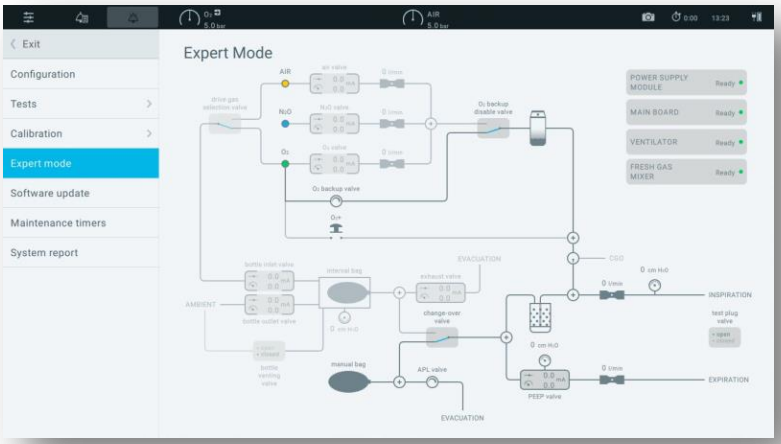
D^{FLOW} provides a decelerating flow pattern in volume-controlled ventilation. A decelerating flow provides a more desirable result in volume control. It reduces the risk of barotrauma at the end of inhalation. It improves patient-ventilator synchrony for patients requiring a high flow at the start of inhalation. And it allows for a more efficient oxygenation by delivering a larger part of the volume at an earlier stage of the inspiratory phase. In short, D^{FLOW} makes volume-controlled ventilation a safer option.



Cost-efficiency:

The digital flow sensors measure the flow rate with superb accuracy (thermal measurement principle) and show superior performance at low flow. Every sensor is digitally calibrated during production. As a result the sensor chip is always fully calibrated and temperature-compensated. The flow sensors can be autoclaved (134°C) and reused during the entire life cycle of the unit. A 5-year warranty on the flow sensors guarantees an unequalled cost-efficiency. Medec's flow sensors can reduce the cost of ownership by up to 30%.

A full diagnostics check is performed at start-up. Calibration procedures are performed automatically. Diagnostic tools like 'Expert Mode' enable additional component testing without the need for special equipment. The ergonomic design of the pneumatic architecture makes for a more accessible platform and the detailed 'Event Log' supports efficient troubleshooting, further reducing the downtime of the unit.

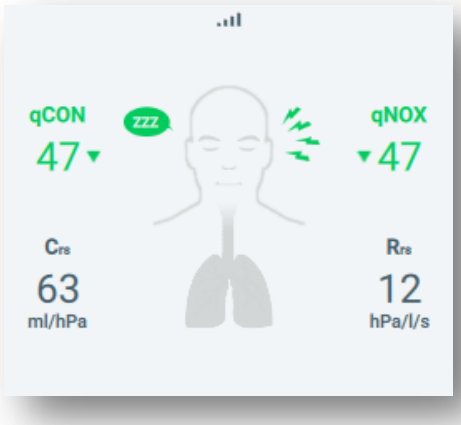


Join the Software Update Programme and enjoy free software updates for a period of eight years. Rest assured that your anaesthesia ventilator will be kept up-to-date as new software features become available. The Software Update Programme ensures a future-proof platform, capable of incorporating future software developments. This makes Caelus Lite an ideal solution for your operating theatre for the next decade and more.

Optional gas analyser:

Optionally Caelus Lite can be equipped with an integrated gas analyser, which allows the measurement of inspiratory and expiratory gas concentrations, including FIO_2, ETO_2, $FICO_2$, $ETCO_2$, FIN_2O, ETN_2O, FIAA1, ETAA1, FIAA2 and ETAA2. The additional waveforms for CO_2, O_2, AA1, AA2 and N_2O can also be displayed on screen (up to four simultaneously). The analysis of the minimal alveolar concentration (MAC_x) is age-compensated using the algorithm of W.W. Mapleson (British Journal of Anaesthesia 1996, p. 179-185). The analysis of CO_2, N_2O and AA is based on infrared spectrometry. The AA measurement includes Auto-ID and Dual Agent Identification. The analysis of O_2 is based on paramagnetic detection. Paramagnetic O_2 monitoring does not require any consumables to be replaced during the life cycle of the unit.

Optional qCON-qNOX module:



Optionally Caelus Lite can be equipped with the qCON-qNOX module for measuring the level of hypnosis and for measuring the level of nociception (response to pain stimulus). qCON monitors consciousness (EEG and EMG) and allows you to tailor the hypnotics to each individual patient, providing improved patient outcome and reduced costs. qNOX monitors nociception during general anaesthesia. When using both consciousness and nociception monitoring, hypnotics and analgesics can be dosed more accurately, reducing PONV and length of stay in post-operative care units. Adding to the cost-efficiency, no custom-made EEG sensor is required. Common ECG electrodes are compatible with the qCON-qNOX module.

Optional vaporisers:

Caelus Lite can be equipped with up to two variable-bypass vaporisers for all types of inhalational anaesthetics (halothane, enflurane, isoflurane, sevoflurane, desflurane). These vaporisers are equipped with the interlock safety system, preventing inadvertent activation of two vaporisers at the same time. Variable-bypass vaporisers are temperature and flow-compensated and don't require recalibration during their life cycle.

Technical Data

Environment

During operation		
	Temperature	10 - 40˚C (50 - 104˚F)
	Pressure	700 - 1060 hPa (525 - 795 mmHg)
	Humidity	20 - 80% (non-condensing)
During storage / transportation		
	Temperature	-20 - +50˚C (-4 - 138˚F)
	Pressure	500 - 1060 hPa (375 - 795 mmHg)
	Humidity	10 - 90% (non-condensing)

Dimensions and weight

Trolley		
	Height	138.5 cm (54.5“)
	Width	63.7 cm (25.1“)
	Depth	71.8 cm (28.3“)
	Weight	approx. 110 kg
Display		
	Type	TFT full-colour capacitive touch screen
	Diagonal size	46.9 cm (18.5”)
	Display arm, max. load	2.5 kg
Writing surface		
	Width	47.1 cm (18.5“)
	Depth	40.0 cm (15.7“)
	Height (from floor)	87.4 cm (34.4“)
	Max. load	20 kg
Drawers		
	Number of drawers	2
	Height (internal)	8.5 cm (3.3”)
	Width (internal)	27.8 cm (10.9”)
	Depth (internal)	30.5 cm (12.0“)
	Max. load	5 kg
Casters		
	Diameter	12.4 cm (4.9”)
	Brakes	4 casters
Tubing holder		
	Length	125 cm (49.2”)
	Max. load	0.5 kg
Vertical side rail (left side)		
	Height	116.5 cm (45.9”)

	Max. load	150 N.m
Vertical side rail (upper right side)		
	Height	47 cm (18.5”)
	Max. load	150 N.m
Horizontal DIN rail (right side)		
	Height	25 mm (0.98”)
	Width	10 mm (0.39”)
	Length	391 mm (15.39”)
GCX swivel arm*		
	Length	30.5 cm (12 in)
	Max. load	13.6 kg (tilt mechanism), 27.2 kg (total arm)

Power supply

Mains power		
	Mains power	100 - 240V, AC 50-60 Hz
	Power consumption	230V / 0.8A
Battery		
	Type	12V sealed lead-acid, rechargeable
	Operating time	≥ 90 min. (typ. 180 min, new and fully charged)
Auxiliary power outlets		
	Number of outlets	1x EU/UK/US + 4x IEC-C13
	Maximum load	2A

Gas supply

Central supply		
	AIR range	2.8 - 6 bar / 40.6 - 87 psi / 280 - 600 kPa
	O_2 range	2.8 - 6 bar / 40.6 - 87 psi / 280 - 600 kPa
	N_2O range	2.8 - 6 bar / 40.6 - 87 psi / 280 - 600 kPa
	Oil content	<0.1 mg/m^3
	Particles	dust-free air (filtered with pores: <1µm)

Fresh gas delivery

Fresh gas delivery		
	Mixer type	electronic
	Delivery type	non-decoupled
	Flow setting range	0.1 - 12 l/min (N_2O)

		0.1 - 15 l/min (O_2 / AIR)
	Resolution	increments of 0.05 L/min (0.2 - 0.3 l/min)
		increments of 0.1 L/min (0.3 - 2 l/min)
		increments of 0.2 L/min (2 - 4 l/min)
		increments of 0.5 L/min (> 4 l/min)
	Accuracy	± 10% (≥ 1l/min); 100 ml (< 1l/min)
	O_2 concentration	21 - 100 % in combination with AIR
		25 - 100 % in combination with N_2O
	Resolution	± 1%
	Accuracy	± 5%
Backup O_2 flow		
	Backup O_2 flow	0 - 15 l/min
	Resolution	Increments of 1 l/min
	Accuracy	± 10 (> 1l/min)
O_2 flush		
	O_2 flush	Approx. 35 l/min
Common Gas Outlet (for semi-open breathing systems)		
	Connection	22 mm OD, 15 mm ID
	Pressure limitation	Max 200 hPa
	Fresh gas flow setting range	0.1 - 12 l/min (N_2O)
		0.1 - 15 l/min (O_2 / AIR)
	Resolution	increments of 0.05 L/min (0.2 - 0.3 l/min)
		increments of 0.1 L/min (0.3 - 2 l/min)
		increments of 0.2 L/min (2 - 4 l/min)
		increments of 0.5 L/min (> 4 l/min)
	Accuracy	± 10% (≥ 1l/min); 100 ml (< 1l/min)
Auxiliary O_2 flow meter*		
	Connection	DIN
	Flow setting range	0 - 8 l/min or 0 - 15 l/min
	Accuracy	± 10% of set value (≥ 1 l/min @ 4 bar)
	Pressure range	2.8 - 6 bar

Vaporisers

Vaporisers*					
	AA	Type	Volume	Weight	Operating principle
	Halothane	Sigma Delta / Vapor 2000	250 / 360 ml	4.8 / 8.1 kg	Variable bypass
	Enflurane	Sigma Delta / Vapor 2000	250 / 360 ml	4.8 / 8.1 kg	Variable bypass
	Isoflurane	Sigma Delta / Vapor 2000	250 / 360 ml	4.8 / 8.1 kg	Variable bypass
	Sevoflurane	Sigma Delta / Vapor 2000	250 / 360 ml	4.8 / 8.1 kg	Variable bypass
	Desflurane	D-Vapor	300 ml	< 7 kg	Measured flow

Ventilator

Pneumatically driven, electronically controlled		
	Ventilation modes included (depending on configuration)	Manual/Spontaneous (MAN/SPONT) Volume Control (VCV, SIMV) Pressure Control (PCV, SIMV) Pressure Support (PSV/CPAP) Heart Lung Mode (HLM)
	Optional ventilation modes	Variable Volume Ventilation (VVV, S-VVV) Pressure Regulated Volume Control (PRVC, S-PRVC) and Balanced Flow mode.
	Max. inspiratory flow	120 l/min
	Drive gas consumption	≥ minute volume
	Displayed waveforms	P, F, V, P-V, F-V, CO_2*, O_2*, AA1*, AA2*, N_2O*
Parameter setting range		
	Tidal volume (V_T)	5 - 1600 ml Volume mode (0-2000ml PCV mode)
	Resolution	increments of 1 ml
	Variable tidal volume	5 - 1600 ml
	Resolution	10 %, 20 %, 30 %
	Peak pressure (P_{PEAK})	4 - 70 cmH_2O
	Resolution	increments of 1 cmH_2O
	Pressure support ($P_{SUPPORT}$)	0 - 50 cmH_2O
	Resolution	increments of 1 cmH_2O
	Positive End-Expiratory Pressure (PEEP)	0 - 30 cmH_2O
	Resolution	increments of 1 cmH_2O
	Respiratory Rate (RR)	2 - 100 bpm
	Resolution	increments of 1 bpm (<25 bpm)
		increments of 5 bpm (25 - 50 bpm)
		increments of 10 bpm (>50 bpm)
	Backup RR	Off, 2 - 60 bpm
	Resolution	increments of 1 bpm
	Backup pressure	4 - 70 cmH_2O
	Resolution	increment of 1 cmH_2O
	I:E ratio	4:1 - 1:10
	Resolution	increments of 0.5
	Inspiratory pause	0 - 60 %
	Resolution	increments of 5 %
	Trigger	Off, 0.2 - 10 l/min or 0.4 - 10 cmH_2O
	Trigger window	5 - 50 %
	Resolution	increments of 5 %
	Rise time	slow / medium / fast
	End of flow	50 - 5 %
	Resolution	increments of 5 %
	Flow pattern	constant or decelerating (D^{FLOW})

Breathing system

Internal volume *(incl. canister volume , w/o breathing hoses)*		
	Manual	2.2 l
	Mechanical ventilation	2.1 l
Internal compliance		
	System compliance	Approx. 3 ml/cmH_2O
CO_2 Absorber		
	Canister volume	2 l
Breathing system leakage		
	Total leakage	≤ 150 ml/min at 30 hPa
APL valve		
	Setting range	0 - 70 hPa
	Accuracy	< 15 % or 10 hPa, whichever is greater
Opening pressure one-way valves		
	Dry valves	0.1 cmH_2O
	Wet valves	0.1 cmH_2O
Resistance		
	Insp. + Exp. resistance	≤ 6 cmH_2O
Technical safety valves		
	CGO valve	100 cmH_2O
	PBU valve	100 cmH_2O

Measurements

Pressure (P_{PEAK}, P_{MEAN}, PEEP)		
	Range	- 31.25 - +112.50 cmH_2O
	Resolution on display	increments of 1 cmH_2O
	Accuracy	± 5 % or 2 cmH_2O
Flow ($FLOW_{PEAK}$, $FLOW_{MEAN}$)		
	Range	- 250 - +250 l/min
	Resolution on display	± 1l/min
	Accuracy	± 5 %
Volume (V_T, V_{MINUTE})		
	Range	0 - 200 ml
	Resolution on display	1 ml
	Accuracy	± 15 ml
	Range	200 - 1600 ml
	Resolution on display	1 ml
	Accuracy	± 7 %
Minute volume (MV_{EXP})		
	Range	0.1 - 30 l/min
	Resolution on display	0.1 l/min
	Accuracy	± 10 % or 0.3 l/min, whichever is greater

Breathing frequency (RR_{TOTAL})			
	Range	0 - 255 breaths / minute	
	Resolution on display	increments of 1 breath / minute	
	Accuracy	± 1breath / minute	
Lung compliance (C_{RS})			
	Range	0 - 1000 ml/cmH_2O	
	Resolution on display	increments of 1 cmH_2O	
	Accuracy	± 5 %	
Respiratory resistance (R_{RS})			
	Range	0 - 20 cmH_2O/L/s	
	Resolution on display	increments of 1 cmH_2O/L/s	
	Accuracy	± 5 %	
Gas concentrations*		**ILCA 3 (O_2 = Pato)**	**ISA OR+ (O_2 = Servomex)**
	Oxygen (FIO_2, EtO_2)	*Paramagnetic*	
	Range	5 - 100 vol. %	0 - 100 vol. %
	Range on display	0 - 100 vol. %	0 - 100 vol. %
	Resolution on display	increments: 1 vol. %	increments: 1 vol. %
	Accuracy	± 2.5 vol. % + 2.5 % rel.	± 1 vol. % + 2 % of reading
	Carbon dioxide ($FICO_2$, $EtCO_2$)	*Infrared spectrometry*	
	Range	0 - 10 vol. %	0 - 15 vol. %
	Range on display	0 - 100 vol. %	0 - 100 vol. %
	Resolution on display	increments: 0.1 vol. %	increments: 0.1 vol. %
	Accuracy	± 0.43 vol. % + 8 % rel.	± 0.2 vol. % + 2 % of reading
	Nitrous oxide (FIN_2O, EtN_2O)	*Infrared spectrometry*	
	Range	0 - 100 vol. %	0 - 100 vol. %
	Range on display	0 - 100 vol. %	0 - 100 vol. %
	Resolution on display	increments: 1 vol. %	increments: 1 vol. %
	Accuracy	± 2 vol. % + 8 % rel.	± 2 vol. % + 2 % of reading
	Anaesthetic agent (FIAA, EtAA)	*Infrared spectrometry*	
	Range halothane	0 - 8.5 vol. %	0 - 8 vol. %
	Range enflurane	0 - 10 vol. %	0 - 8 vol. %
	Range isoflurane	0 - 8.5 vol. %	0 - 8 vol. %
	Range sevoflurane	0 - 10 vol. %	0 - 10 vol. %
	Range desflurane	0 - 20 vol. %	0 - 22 vol. %
	Range on display	0 - 100 vol. %	0 - 100 vol. %
	Resolution on display	increments: 0.1 vol. %	increments: 0.1 vol. %
	Accuracy	± 0.15 vol. % + 15% rel.	± 0.15 vol. % + 5 % of read.
	Agent identification	Auto-ID, Dual AA-ID	Auto-ID, Dual AA-ID
MAC_X*			
	Age-compensated + altitude-compensated MAC		
	Range	1 - 79	
	Resolution on display	increments of 0.1	

Anaesthetic gas scavenging

Scavenging interface		
	Flow range	< 50 l/min
	Min. - Max. flow	15 - 27 l/min
	Weight	0.5 kg

qCON-qNOX module

qCON-qNOX*		
	Index and display update	qCON 0-99s, 1s
	Total index update time	10 s
	EEG	± 475 µV
	BSR (Burst SuppRession)	Index (0 - 100%)
	EMG	Index (0- 100)
	SQI 5 signal Quality Index	Index (0 - 100)
	Visual and audio alarms	Yes
	Test system of impedance at electrodes	Yes
	EEG sample frequency	1024 samples/s, 16 bits
	CMRR	> 100 dB

Endotracheal suction

Endotracheal suction system		
	Type	Vacuum-driven
	Supply	External vacuum (hospital supply)
	Maximum vacuum	-1 bar
	Minimum peak flow	20 l/min
	Accuracy	± 2.5 % of measured value

Noise emission

Sound pressure level		
	System in standby (= minimum)	37 dbA
	During ventilation (= maximum)	45 dbA
	Alarm sound pressure level	76 dbA
	Accuracy	± 3dbA

Interfaces

External connections		
	Serial ports	2x
	Connector	9 pole D-sub connector
	USB port	1x (trolley), 2x (monitor)
	Type	USB 2.0
	Connector	Type A
	Network port	1x
	Connector	RJ45

General

Latex use		
	No parts of the breathing system contain latex. All parts which can come into contact with the patient or patient gases are latex-free.	
Classification according to IEC 60601-1-2:2007		
	Class I equipment	Type of protection against electrical shock with protective earthing
	Type B equipment	Degree of protection against electrical shock for patient contact
	Continuous operation	Mode of operation
	IP classification	IP30
Classification according to directive 93/42/EEC		
	Anaesthesia machine classification	Class II b
EMC		
	Electromagnetic compatibility	Tested as per IEC 60601-1-2:2007 Group 1, Class A
	Oxygen rich environment	Not for use in oxygen rich environment
Sterilisation		
	Standards	IEC 60601-1, IEC 60601-2-13, ISO 17664
Workstation		
	Anaesthetic workstation	ISO 80601-2-13
	Anaesthetic gas delivery system	ISO 80601-2-13
	Anaesthetic gas scavenging system	ISO 80601-2-13
	Anaesthetic breathing system	ISO 80601-2-13
	Anaesthetic ventilator	ISO 80601-2-13
	Circle breathing system	ISO 80601-2-13
	Gas monitoring (O_2, N_2O, AA, CO_2)	ISO 80601-2-13, ISO 80601-2-55

** = optionally available*

About Medec

40 years of experience

Forty years ago Medec started manufacturing accessories for anaesthesia and critical care. It didn't take long before the first anaesthesia workstation was introduced. Today Medec offers a wide variety of products, ranging from basic ventilators to the most sophisticated workstations.

Global presence

On a daily basis over 20.000 patients in over 100 countries are ventilated by a Medec system. Medec has a vast international network of authorised dealers specialised in anaesthesia and critical care. Our dealers receive comprehensive product training to support customers in an optimal way.

Made in Belgium

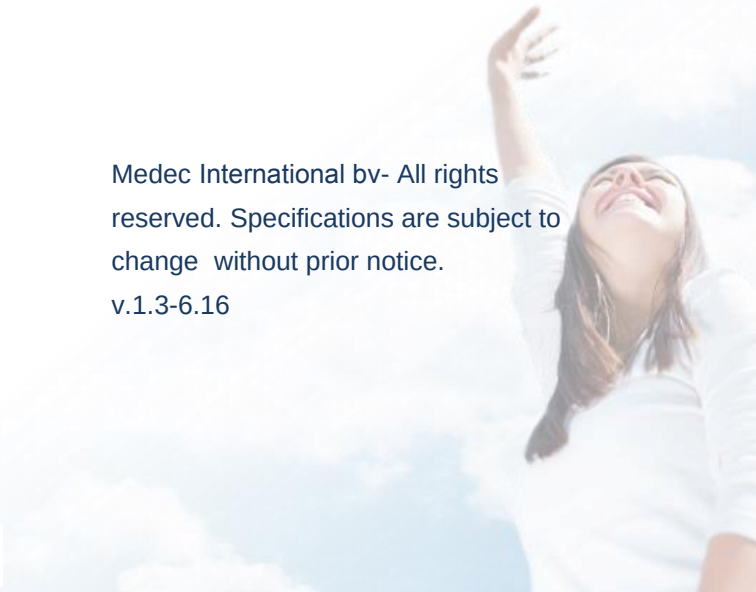
Medec products are developed and manufactured at our factory in Aalst, Belgium. In-house research and development is the driving force behind constant innovation. All manufactured equipment is subject to a strict Quality Management System. Medec is ISO certified and its product range is CE marked.

a smart choice.

Medec
International bv
Wijngaardveld 14
BE - 9300 Aalst
Belgium

Phone: +32 53 70 35 44
Fax: +32 53 70 35 33
sales@medec-intl.com
www.medec-intl.com

v.1.3-6.16



Improving patient outcome

Through innovation

a smart choice.

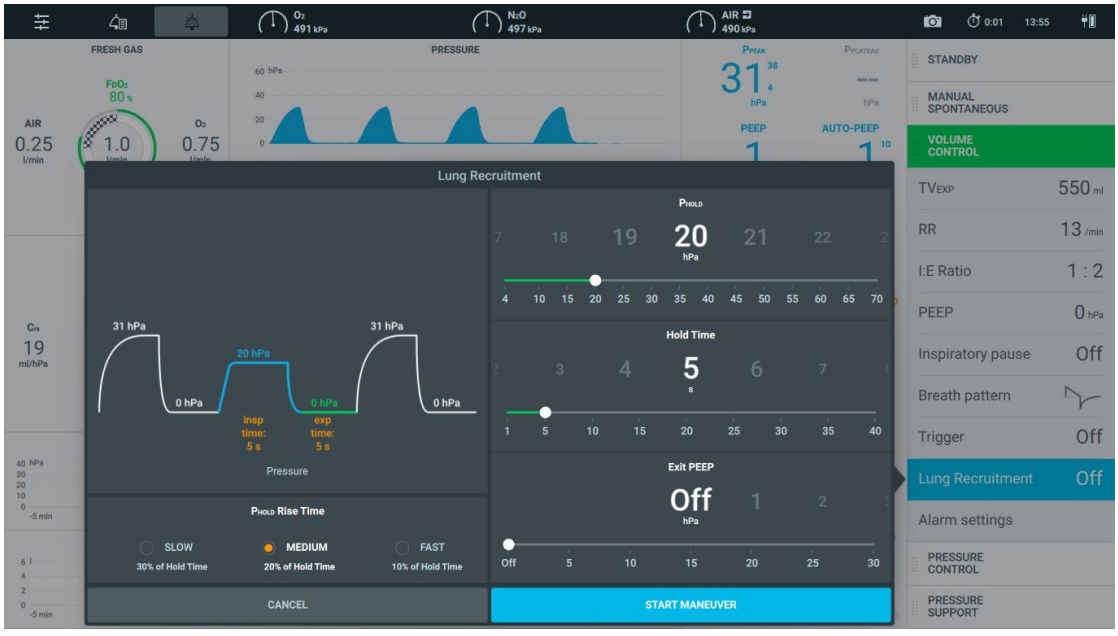
Available in software release V2.3
Products applicable: Caelus (Lite) family
Release date: 12/5/2021

At Medec we believe that combining innovation and safety is key in the success factors of our product range. We improve our products continuously by implementing innovative features and expanding compatibility with high quality accessories. Below new features and compatibilities are introduced in a new software release.

Lung Recruitment Maneuvers:

In patients with acute lung injury and acute respiratory distress syndrome, a protective mechanical ventilation strategy characterized by low tidal volumes has been associated with reduced mortality. However, such a strategy may result in alveolar collapse, leading to cyclic opening and closing of atelectatic alveoli and distal airways. Thus, recruitment maneuvers (RMs) have been used to open up collapsed lungs, while adequate positive end-expiratory pressure (PEEP) levels may counteract alveolar derecruitment during low tidal volume ventilation, improving respiratory function and minimizing ventilator-associated lung injury.

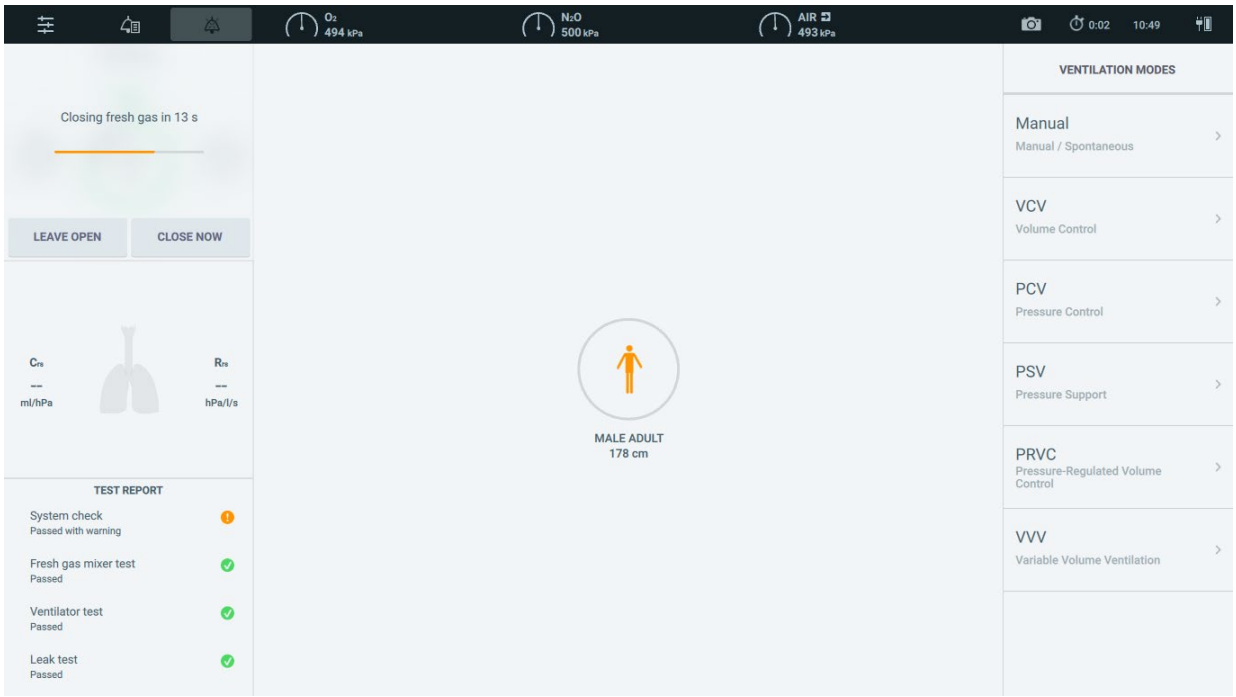
Lung recruitment strategies can help prevent lung collapse and improve oxygenation in patients on mechanical ventilation



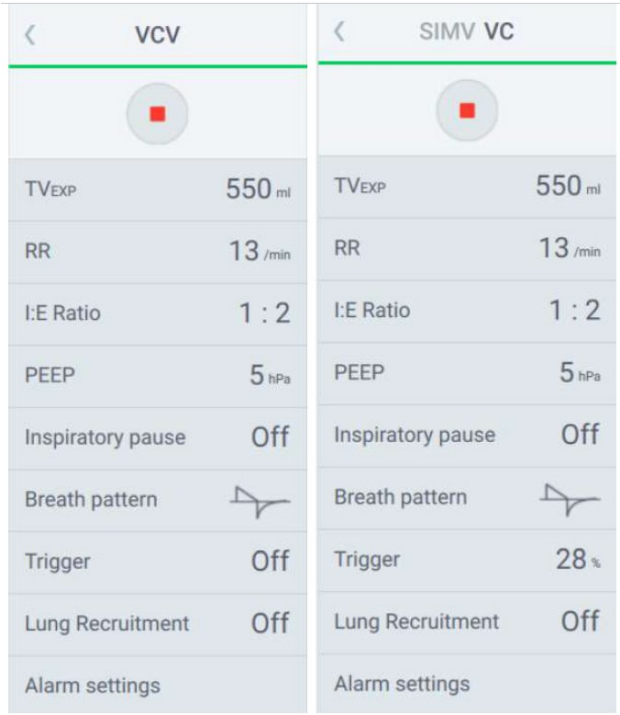
software release V2.3 upgrade features

PureTouch® user interface:

To improve the workflow, the cryptic list of ventilator mode abbreviations is reduced to a strict minimum. Every ventilation mode is now clearly identified with its full name. The main modes have been categorized to guarantee: "*choosing a ventilation mode was never faster*". Additionally, you can adjust the parameters within the main mode to expand each mode's functionality, without the need to switch between modes.



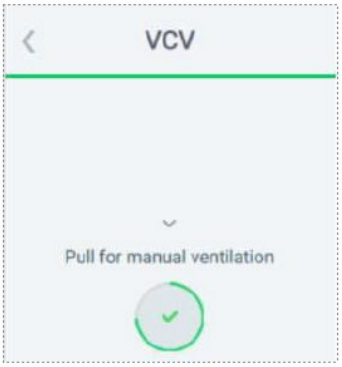
By adjusting the parameters, the chosen (sub) mode will be displayed on the 18,5 inch full-colour touchscreen.



As example given in the illustration:
Initially the patient trigger parameter is not active during VCV.
After activation of trigger, the mode name is updated to SIMV VC

Manual ventilation mode:

An extra feature is added enabling a quick shift to manual ventilation mode in case of necessity or emergency. The user can easily change to manual ventilation mode by dragging down the applicable mode parameters.



Anesthetic Agent Consumption:

Anaesthetic gas consumption during ventilation has become a standard feature for every Caelus (Lite) unit provided with a gas module. The anaesthetic gas type is automatically recognized and its consumption visualized on the main screen.