



## elisa 600 Specifications SW 2.10.x

Patient categories	
	Adults, children, neonates with a tidal volume of: 10–2600 ml (volume-controlled modes) 1–5000 ml or 2600–5000 ml * (pressure-controlled modes)
Intended use	
	Invasive and non-invasive ventilation, nasal applications (NC)
Special features	
Device configuration	Fully configurable, agile user interface Configurable, user-specific default settings Up to 8 live curves Configuration transfer between machines with USB stick
Device functions	Non-invasive ventilation (NIV) Invasive ventilation (IV) Nasal applications (NC) Tube compensation Documented monitoring of the replacement intervals of accessories which are in direct contact with the patient (hygiene function) Adjustment of the alarm volume to the ambient noise level Display brightness: day/night mode, configurable night screen Configurable default ventilation mode with analysis function Indication of the tidal volume according to patient height in real-time in ml/kg IBW Permanent indication of lung compliance and resistance Tabular trend (incl. storage function) Graphical trend Up to 6 loops (+ storage of up to 5 reference loops) Screenshot function Help function Expiratory pressure ramps Assistance feature for switching between volume- and pressure-controlled ventilation modes

\* without automatic patient detection APD

<b>Additional functions</b>	O <sub>2</sub> flush
	Automatic Suction Routine (ASR)
	Pneumatic nebulizer
	Hygiene function
	Reference loops
	Capnometry (with mainstream and sidestream sensors)
	Multi-gas measurement
	Pulse oximetry
	LeoClac (automatic closed-loop control of the inspiratory O <sub>2</sub> concentration)
	Sedaconda function
Nurse call	
<b>Manoeuvres</b>	PEEPfinder with display of inflection points and stress index C20/C
	Recruitment manoeuvre
	Sigh (inspiratory and expiratory)
	Inspiratory hold manoeuvre (with measurement of $\Delta P$ , PPlateau and C stat)
	Expiratory hold manoeuvre (with measurement of PEEPi, Vtrap and MIP)
	Manual breath
	Bronchoscopy manoeuvre
<b>Options</b>	Mesh nebulizer interface
	Cuffscout
	Oesophageal and transpulmonary pressure measurement (Peso and TPP)
	IAP (Intra-abdominal pressure)
<b>Weaning functions</b>	Weaning analyzer with SAT and SBT
	Occlusion measurement P0.1
	WOB (Work of Breathing)
<b>BF interface card with two LEMO connectors</b> Configurable for:	mainstream CO <sub>2</sub> sensor LEOCAP
	sidestream CO <sub>2</sub> sensor LEOSTREAM
	CO <sub>2</sub> sensor Masimo
	Multi-gas sensor LEOLYZER
	SpO <sub>2</sub> sensor
	Nurse call
	PDMS/monitoring (Salvia protocol)
	PDMS/monitoring (Philips protocol)
	NO-A (EKU)

Ventilator settings		Adults / children	Neonates
<b>Ventilation modes</b>	<b>Volume-controlled ventilation modes</b>		
	VCV	<input checked="" type="checkbox"/>	
	VC-SIMV	<input checked="" type="checkbox"/>	
	Optional VCV	<input checked="" type="checkbox"/>	
	PLV	<input checked="" type="checkbox"/>	
	<b>Pressure-controlled ventilation modes</b>		
	PCV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	BiLevel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	BiLevel ST	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Mandatory BiLevel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	PC-SIMV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	PC-APRV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Optional BiLevel	<input checked="" type="checkbox"/>	
	<b>Spontaneous ventilation modes</b>		
	CPAP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	PSV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Dynamic PSV	<input checked="" type="checkbox"/>	
	Proportional PSV	<input checked="" type="checkbox"/>	
	PAPS (adults only)	<input checked="" type="checkbox"/>	
	<b>Hybrid ventilation modes</b>		
	VA BiLevel	<input checked="" type="checkbox"/>	
	Dynamic BiLevel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Dual BiLevel	<input checked="" type="checkbox"/>	
	Dynamic BiLevel ST	<input checked="" type="checkbox"/>	
	Dual BiLevel ST	<input checked="" type="checkbox"/>	
	Flexible BiLevel	<input checked="" type="checkbox"/>	
	Flexible VCV	<input checked="" type="checkbox"/>	
	CPR (resuscitation mode)	<input checked="" type="checkbox"/>	
	<b>Closed loop modes</b>		
	ALPV (adults only)	<input checked="" type="checkbox"/> (adults only)	
	WOBOV (adults only)	<input checked="" type="checkbox"/> (adults only)	
<b>Nasal applications (NC)</b>	HFOT	<input checked="" type="checkbox"/> up to 70 L/min	<input checked="" type="checkbox"/> up to 8 L/min
	nCPAP	<input checked="" type="checkbox"/> (children only)	<input checked="" type="checkbox"/>
	nBiLevel	<input checked="" type="checkbox"/> (children only)	<input checked="" type="checkbox"/>
<b>Ventilation rate (Rate)</b>	Adults	0–100 breaths/min	
	Children	0–120 breaths/min	
	Neonates	2–180 breaths/min	
<b>Inspiratory time (T insp)</b>	Adults	0.2–20 s	
	Children	0.2–20 s	
	Neonates	0.12–3 s	
<b>Tidal volume (VT)</b>	Adults, children, neonates with a tidal volume of: 10–2600 ml (volume-controlled modes) 1–5000 ml or 2600–5000 ml * (pressure-controlled modes)		

\* without automatic patient detection APD

\*\* compressible volume of device and tubing taken into account

<b>I:E ratio</b>	150:1 up to 1:299			
<b>Inspiratory flow (Flow insp)</b>	0–150 L/min **			
<b>PS Endflow</b>	5–70%			
<b>Inspiratory pressure (P<sub>insp</sub>)</b>	0–(100 – PEEP) mbar			
<b>PEEP</b>	OFF, 0.5–50 mbar			
<b>Switchflow</b> for automatic release under PC-APRV	OFF, 1–80%			
<b>PAPS additional adjustment ranges</b>	Resistance compensation: 5–95% Compliance compensation: 5–95%			
<b>pressure support (PS)</b>	0–(100 – PEEP) mbar			
<b>Insp. Ramp</b> Insp. pressure ramp, mandatory	0.05–3 s (or 0.8 * T insp)			
<b>PS Ramp</b> Insp. pressure ramp, spontaneous	0.05–2 s			
<b>Exp Ramp mand</b> Exp. pressure ramp, mandatory	OFF, –100 mbar/s, –80 mbar/s, –50 mbar/s, –20 mbar/s,			
<b>Exp Ramp spont</b> Exp. pressure ramp, spontaneous	OFF, –100 mbar/s, –80 mbar/s, –50 mbar/s, –20 mbar/s,			
<b>O<sub>2</sub> concentration</b>	21–100%			
<b>Flow trigger</b>	OFF, 0.1–20 L/min			
<b>Pressure trigger</b>	OFF, –0.1 to –10 mbar			
<b>Tube compensation</b>	Tube, tracheostomy tube, inspiration, expiration, Degree of compensation 25–100% Tube diameter 4.0–12.0 mm			
<b>Byflow</b>	3–30 L/min			
<b>Available measurements</b>				
<b>Airway pressure</b>	Peak	–50 to 150 mbar		
	P Plateau	–50 to 150 mbar		
	PEEP	–50 to 150 mbar		
	P <sub>mean</sub>	–50 to 150 mbar		
	P <sub>min</sub>	–50 to 150 mbar		
<b>Oesophageal and transpulmonary pressure monitoring</b>	TPP <sub>i</sub> (es)	P exp. (es)	PEEP <sub>i</sub> (es)	ΔP (es)
	TPP <sub>e</sub> (es)	P <sub>min</sub> (es)	Δ TPP (es)	POB spont. (es)
	P insp. (es)	Peak (es)	WOB (es)	ΔP <sub>eso</sub> /ΔPAW
<b>Rate measurement</b>	respiratory rate (RR)			
	Spontaneous respiratory rate (RR spont.)			
	Mandatory respiratory rate (RR mand.)			
	Synchronised respiratory rate (RR sync.)			
<b>O<sub>2</sub> measurement</b>	18–100%			
<b>CO<sub>2</sub> measurement (option)</b>	Mainstream, sidestream			
<b>Multi-gas measurement (option)</b>	CO <sub>2</sub> (sidestream) Isoflurane Sevoflurane			
<b>Unit of measurement (configurable)</b>	vol.%	(0.0–25.0)		
	kPa	(0.0–25.5)		
	mmHg	(0–185)		

<b>Volumetric capnography Measurements (option)</b>	VT <sub>alv</sub>	Alveolar tidal volume	
	VT <sub>ds</sub>	Anatomic dead space volume	
	V'CO <sub>2</sub>	Measured volume of the eliminated CO <sub>2</sub> /ml	
<b>SpO<sub>2</sub> measurement</b>	HR (pulse)	18–321 /min	
	SpO <sub>2</sub>	0–99%	
<b>Volume measurement</b>	VT/IBW	all	0–49.9 ml/kg
	MVe	Adults, Children Neonates	0–50 L 0–9.99 L
	MVe spont.	Adults, Children Neonates	0–50 L 0–9.99 L
	VT <sub>i</sub>	Adults Children Neonates	50–5000 ml 20–5000 ml 1–999.9 ml
	VT <sub>e</sub>	Adults, Children Neonates	0–4000 ml 0–400 ml
	VT <sub>e</sub> spont.	all	0–4000 ml
	V <sub>trap</sub>	Adults, Children	0–1000 ml
	Leakage	all	0–75%
<b>Compliance (C dyn.)</b>	0–500 ml/mbar		
<b>Resistance (R exp.)</b>	0–500 mbar/(l/s)		
<b>Static compliance (C stat.)</b>	0–500 ml/mbar		
<b>C20/C stat.</b>	0–9.9		
<b>Rapid Shallow Breathing Index</b>	0–999		
<b>Surrogate measurements in PAPS mode</b>	WOB vent.	(J/L)	
	WOB spont.	(J/L)	
	Resistance	(mbar/l/s)	
	Compliance	(ml/mbar)	
<b>Curve presentation</b>	Pressure Flow Volume etCO <sub>2</sub> Transpulmonary pressure curve TPP Trigger Tube compensation P <sub>limit</sub> (baseline) Pleth P <sub>trach</sub> P <sub>cuff</sub> Peso		

**Configurable measurements**

<b>Basic values</b>	MVe	PEEP	C stat.	VT <sub>e</sub> spont.
	P <sub>mean</sub>	R exp.	ΔP (es)	I:E
	Leakage	ΔP	MVe mand.	Flow insp.
	VT/IBW	RR	P Plateau	Flow exp.
	VT <sub>e</sub>	VT <sub>i</sub>	RR spont.	C dyn.
	MIP	Peak	P min	Cuff pressure
	T Plateau	MVe spont.	MVe spont. %	Flow insp.
	MV Leakage	RC exp.	RSBI	P0.1
	HR (pulse)	Flow exp.	RR mand.	SpO <sub>2</sub>
	RR sync.			

<b>Advanced measurements</b>	PEEPi	Vtrap	POB	WOB (es)
	P exp. (es)	P insp. (es)	POB spont. (es)	WOB spont.
	TPP e (es)	TPP i (es)	POB spont.	WOB vent.
	PEEPi (es)	$\Delta$ TPP (es)	IAP	Pmin (es)
	Peak (es)	$\Delta$ Peso/ $\Delta$ PAW		
<b>Volumetric capnometry</b>	VTds (%)	VTds (ml)	VTalv (%)	VTalv (ml)
<b>Gases</b>	O <sub>2</sub>	inISO	inSEV	exSEV
	etCO <sub>2</sub>	exISO	inCO <sub>2</sub>	V'CO <sub>2</sub>

### Weaning functions

<b>Fastwean</b> Recommended measurements	RSBI
	P0.1
	VTe spont.
	RR spont.
<b>Fastprotect</b> Recommended measurements	$\Delta$ P
	VT/IBW
	P Plateau
	TPP i (es)
	TPP e (es)
<b>WOB (Work of Breathing)</b> Measurements	WOB spont.
	WOB vent.
	POB spont.
	POB

### Loops (5 reference loops can be saved)

Paw - V
V - Flow
Flow - Paw
PAW - Peso
CO <sub>2</sub> - V
Flow - Ptrach

### Languages

English	Norwegian	Polish	Portuguese
German	Slovenian	Spanish	Danish
French	Italian	Russian	Czech
Dutch	Turkish	Finnish	Chinese
Swedish	Hungarian	Serbian	Greek
Japanese (in separate software)			

### Adjustable alarms

<b>Ventilation</b>	Minute volume MV	min/max
	Tidal volume VT	min/max
	Respiratory rate RR	min/max
	PEEP	min/max
	Plimit (relative or absolute)	max
	P min	min
	Leakage	5-95%

<b>Gas</b>	FiO <sub>2</sub> concentration	min/max
	O <sub>2</sub> ctrl.	min/max
	etCO <sub>2</sub> concentration	min/max
	inCO <sub>2</sub> concentration	max
	inISO concentration	min/max
	exISO concentration	min/max
	inSEV concentration	min/max
	exSEV concentration	min/max
<b>Additional alarms</b>	RR spont.	min/max
	Pmean	min/max
	P Plateau	max
	HR (pulse)	min/max
	SpO <sub>2</sub>	min/max
	SpO <sub>2</sub> ctrl.	min/max
<b>Alarms with adjustable delay</b>	T VTmax	0-15 s
	T VTmin	0-15 s
	T Pmin	0-30 s
	T Backup ventilation	5-120 s (neonates 5-60 s)
	T Leakage high	0-15 s
	T Apnoea alarm	5-60 s
	T Disconnection	0-30 s

#### Advanced safety functions

Automatic patient detection (APD)  
Confirmation prompt before ending ventilation  
Backup modes  
O<sub>2</sub> flush

#### Trend displays

<b>Tabular trend</b>	Configurable trend display Storage capacity: up to 90 days (depending on respiration, equivalent to over 1,500,000 entries) Export function to USB stick			
<b>Graphical trend</b> Storage capacity: Up to 30 days Graphical display of the measurements (configurable):	MVe	VT <sub>e</sub> spont.	PEEP <sub>i</sub>	MVe spont.
	Pmean	I:E	P exp. (es)	RC exp.
	Leakage	Flow insp.	TPP e (es)	Flow exp.
	VT/IBW	Flow exp.	PEEP <sub>i</sub> (es)	P min
	VT <sub>e</sub>	C dyn.	V <sub>trap</sub>	MVe spont. %
	P insp. (es)	C stat.	VTalv (ml)	RSBI
	ΔPeso/ΔPAW	O <sub>2</sub>	inISO	RR mand.
	MVe mand.	etCO <sub>2</sub>	TPP i (es)	Cuff pressure
	P Plateau	inCO <sub>2</sub>	ΔTPP (es)	Flow insp.
	RR spont.	VTalv (%)	POB	P0.1
	PEEP	MIP	POB spont. (es)	inSEV
	R exp.	T Plateau	POB spont.	exSEV
	ΔP	MV Leakage	IAP	V'CO <sub>2</sub>
	RR	VTds (%)	HR (pulse)	exISO
	VTi	VTds (ml)	Peak	WOB (es)
	Pmin (es)	ΔP (es)	WOB spont.	RR sync.
	Peak (es)	SpO <sub>2</sub>	WOB vent.	

Electrical supply		
Mains power	100–240 VAC, 50 / 60 Hz	
Power consumption	170 VA	
Internal power supply	Rechargeable lithium ion battery (1 or 2) Automatic switch-over when mains supply fails Replacement possible during operation Operating time of up to 2 h with each fully charged battery Charging time < 4 h for each depleted battery	
Gas supply		
Oxygen supply (O <sub>2</sub> )	Pressure range: 200 to 600 kPa (29 to 87 PSI)	
Air supply (AIR)	Pressure range: 200 to 600 kPa (29 to 87 PSI)	
Inspiratory O <sub>2</sub> measurement	Maintenance-free paramagnetic O <sub>2</sub> sensor	
Dimensions and weight		
elisa 600	Width x depth x height:	400 x 350 x 220 mm
	Weight, net:	23 kg (incl. control unit)
Control unit 18.5"	Width x depth x height:	480 x 90 x 300 mm
elisa 600 with control unit	Width x depth x height:	480 x 350 x 560 mm
Cart	Width x depth x height: with turned in wheels:	720 x 840 x 920 mm 580 x 700 x 920 mm
	Weight, net:	17 kg
Total	width x depth x height:	720 x 840 x 1480 mm
	Weight, net:	46 kg
Control unit		
Screen type	16:9 LCD display, resolution 1920 x 1080 pixels	
Screen diagonal	18.5"	
Input system	Touch screen (capacitive multi-touch)	
Mounting system	detachable	
Hardware connections		
elisa 600	1 x connection for control unit 1 x BF interface card with two LEMO connectors	
Options	1 x connection for mesh nebulizer 1 x RJ45 interface Up to 5 additional interfaces via data interface elisaATmegs	
Control unit	2 x USB interface 1 x display port (video interface for service purposes)	
Software version		
SW	2.10.x	