



elisa 500 Specifications SW 2.10.x

Patient categories	
	Adults, children with a tidal volume of: 50–2600 ml (volume-controlled modes) 20–2600 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 6 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

Additional functions	O ₂ flush Automatic Suction Routine (ASR) Cuffscout Oesophageal and transpulmonary pressure measurement (Peso and TPP) IAP (Intra-abdominal pressure) 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 ₂ concentration) Sedaconda function Nurse call
Manoeuvres	PEEPfinder with display of inflection points and stress index C20/C Recruitment manoeuvre Sigh (inspiratory and expiratory) Inspiratory hold manoeuvre (with measurement of ΔP, Pplateau and C stat) Expiratory hold manoeuvre (with measurement of PEEPi, Vtrap and MIP) Manual breath Bronchoscopy manoeuvre
Weaning functions	Weaninganalyzer with SAT and SBT Occlusion measurement P0.1 WOB (Work of Breathing)
BF interface card with two LEMO connectors Configurable for:	mainstream CO ₂ sensor LEOCAP sidestream CO ₂ sensor LEOSTREAM CO ₂ sensor Masimo Multi-gas sensor LEOLYZER SpO ₂ sensor Nurse call PDMS/monitoring (Salvia protocol) PDMS/monitoring(Philips protocol) NO-A (EKU)
PDMS interface card with two LEMO connectors Configurable for:	PDMS/monitoring (Salvia protocol) PDMS/monitoring(Philips protocol)
Ventilator settings	
Ventilation modes	Volume-controlled ventilation modes VCV VC-SIMV Optional VCV PLV
	Adults
	Children

	Pressure-controlled ventilation modes	Adults	Children		
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"/>	<input checked="" type="checkbox"/>			
Spontaneous ventilation modes	Adults	Children			
CPAP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
PSV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Dynamic PSV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Proportional PSV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
PAPS (adults only)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Hybrid ventilation modes	Adults	Children			
VA BiLevel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Dynamic BiLevel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Dual BiLevel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Dynamic BiLevel ST	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Dual BiLevel ST	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Flexible BiLevel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Flexible VCV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
CPR (resuscitation mode)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Closed loop modes	Adults	Children			
ALPV	<input checked="" type="checkbox"/>				
WOBOV	<input checked="" type="checkbox"/>				
Nasal applications (NC)	HFOT	<input checked="" type="checkbox"/> up to 70 L/min	<input checked="" type="checkbox"/> up to 8 L/min		
	nCPAP		<input checked="" type="checkbox"/>		
	nBiLevel		<input checked="" type="checkbox"/>		
Ventilation rate (Rate)	Adults	0–100 breaths/min			
	Children	0–120 breaths/min			
Inspiratory time (T insp)	Adults, children	0.2–20 s			
Tidal volume (VT)	Adults, children with a tidal volume of: 50–2600 ml (volume-controlled modes) 20–2600 ml or 2600–5000 ml * (pressure-controlled modes)				
I:E ratio	150:1 up to 1:299				
Inspiratory flow (Flow insp)	0–180 L/min**				
PS Endflow	5–70%				
Inspiratory pressure (Pinsp)	0–(100 – PEEP) mbar				
PEEP	OFF, 0.5–50 mbar				
Switchflow for automatic release under PC-APRV	OFF, 1–80%				
PAPS additional adjustment ranges	Resistance compensation: 5–95% Compliance compensation: 5–95%				
pressure support (PS)	0–(100 – PEEP) mbar				

* without automatic patient detection APD

** compressible volume of device and tubing taken into account

Insp. Ramp	0.05–3 s (or 0.8 * Tinsp)
Insp. pressure ramp, mandatory	
PS Ramp	0.05–2 s
Insp. pressure ramp, spontaneous	
Exp Ramp mand	OFF, -100 mbar/s, -80 mbar/s, -50 mbar/s, -20 mbar/s,
Exp. pressure ramp, mandatory	
Exp Ramp spont	OFF, -100 mbar/s, -80 mbar/s, -50 mbar/s, -20 mbar/s,
Exp. pressure ramp, spontaneous	
O₂ concentration	21–100%
Flow trigger	OFF, 0.1–20 L/min
Pressure trigger	OFF, -0.1 to -10 mbar
Tube compensation	Tube, tracheostomy tube, inspiration, expiration, Degree of compensation 25–100% Tube diameter 4.0–12.0 mm
Byflow	10–30 L/min

Available measurements

Airway pressure	Peak	-50 to 150 mbar		
	Plateau	-50 to 150 mbar		
	PEEP	-50 to 150 mbar		
	Pmean	-50 to 150 mbar		
	Pmin	-50 to 150 mbar		
Oesophageal and transpulmonary pressure monitoring	TPP i (es)	P exp. (es)	PEEPi (es)	ΔP (es)
	TPP e (es)	Pmin (es)	Δ TPP (es)	POB spont. (es)
	P insp. (es)	Peak (es)	WOB (es)	ΔPeso/ΔPAW
Rate measurement	Respiratory rate (RR)			
	Spontaneous respiratory rate (RR spont.)			
	Mandatory respiratory rate (RR mand.)			
	Synchronised respiratory rate (RR sync.)			
O₂ measurement	18–100%			
CO₂ measurement (option)	Mainstream, sidestream			
Multi-gas measurement (option)	CO ₂ (sidestream) Isoflurane Sevoflurane			
Unit of measurement (configurable)	vol.%	(0.0–25.0)		
	kPa	(0.0–25.5)		
	mmHg	(0–185)		
Volumetric capnography Measurements (option)	VTalv	Functional dead space volume		
	VTds	Anatomic dead space volume		
	V'CO ₂	Measured volume of the eliminated CO ₂ /ml		
SpO₂ measurement	HR (pulse)	18–321 beats/min		
	SpO ₂	0–99%		

Volume measurement	VT/IBW	all	0-49.9 ml/kg			
	MVe	all	0-50 L			
	MVe spont.	all	0-50 L			
	VTi	Adults Children	50-5000 ml 20-5000 ml			
	VTe	all	0-4000 ml			
	VTe spont.	all	0-4000 ml			
	Vtrap	all	0-1000 ml			
	Leakage	all	0-75%			
	Compliance (C dyn.)					
0-500 ml/mbar						
Resistance (R exp.)						
0-500 mbar/(l/s)						
Static compliance (C stat.)						
0-500 ml/mbar						
C20/C stat.						
0-9.9						
Rapid Shallow Breathing Index						
0-999						
Surrogate measurements in PAPS mode	WOB vent	(J/L)				
	WOB spont.	(J/L)				
	Resistance	(mbar/l/s)				
	Compliance	(ml/mbar)				
Curve presentation	Pressure Flow Volume etCO ₂ Transpulmonary pressure curve TPP Trigger Tube compensation Plimit (baseline) Ptrach Pcuff Peso					
Configurable measurements						
Basic values	MVe	PEEP	C stat.	VTe spont.		
	Pmean	R exp.	ΔP (es)	I:E		
	Leakage	ΔP	MVe mand.	Flow insp.		
	VT/IBW	RR	Pplateau	Flow exp.		
	VTe	VTi	RR spont.	C dyn.		
	MIP	PEAK	P min	Cuff pressure		
	Tplateau	MVe spont.	MVe spont. %	Flow insp.		
	MV Leakage	RC exp.	RSBI	P0.1		
	HR (pulse)	Flow exp.	RR mand.	SpO ₂		
	RR sync.					
Advanced measurements	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)	ΔTPP (es)	IAP	Pmin (es)		
	Peak (es)	ΔPeso/ΔPAW				
Volumetric capnometry	VTds (%)	VTds (ml)	VTalv (%)	VTalv (ml)		

Gases	O ₂ etCO ₂	inISO exISO	inSEV inCO ₂	exSEV V'CO ₂
Weaning functions				
Fastwean Recommended measurements	RSBI P0.1 VTTe spont. RR spont.			
Fastprotect Recommended measurements	ΔP VT/IBW Pplateau TPP i (es) TPP e (es)			
WOB (Work of Breathing) Measurements	WOB spont. WOB vent. POB spont. POB			
Loops (5 reference loops can be saved)				
	Paw – V V – Flow Flow – Paw PAW – Peso CO ₂ – V Flow – Ptrach			
Languages				
	English German French Dutch Swedish Japanese (in separate software)	Norwegian Slovenian Italian Turkish Hungarian	Polish Spanish Russian Finnish Serbian	Portuguese Danish Czech Chinese Greek
Adjustable alarms				
Ventilation	Minute volume MV Tidal volume VT Respiratory rate RR PEEP Plimit (relative or absolute) Pmin Leakage		min/max	
Gas	FiO ₂ concentration O ₂ ctrl. etCO ₂ concentration inCO ₂ concentration inISO concentration exISO concentration inSEV concentration exSEV concentration		min/max	

Additional alarms	RR spont.	min/max		
	Pmean	min/max		
	Pplateau	max		
	HR (pulse)	min/max		
	SpO ₂	min/max		
	SpO ₂ ctrl.	min/max		
Alarms with adjustable delay	T VTmax	0–15 s		
	T VTmin	0–15 s		
	T Pmin	0–30 s		
	T Backup ventilation	5–120 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 ₂ flush			
Trend displays				
Tabular trend	Configurable trend display Storage capacity: up to 90 days (depending on respiration, equivalent to over 1,500,000 entries) Export function to USB stick			
Graphical trend Storage capacity: Up to 30 days Graphical display of the measurements (configurable):	MVe	VTe spont.	PEEPi	MVe spont.
	Pmean	I:E	P exp. (es)	RC exp.
	Leakage	Flow insp.	TPP e (es)	Flow exp.
	VT/IBW	Flow exp.	PEEPi (es)	P min
	VTe	C dyn.	Vtrap	MVe spont. %
	P insp. (es)	C stat.	VTalv (ml)	RSBI
	ΔPeso/ΔPAW	O ₂	inISO	RR mand.
	MVe mand.	etCO ₂	TPP i (es)	Cuff pressure
	Pplateau	inCO ₂	ΔTPP (es)	Flow insp.
	RR spont.	VTalv (%)	POB	P0.1
	PEEP	MIP	POB spont. (es)	inSEV
	R exp.	Tplateau	POB spont.	exSEV
	ΔP	MV Leakage	IAP	V'CO ₂
	RR	VTds (%)	HR (pulse)	exISO
	VTi	VTds (ml)	PEAK	WOB (es)
	Pmin (es)	ΔP (es)	WOB spont.	RR sync.
	Peak (es)	SpO ₂	WOB vent	
Electrical supply				
Mains power	100–240 VAC, 50 / 60 Hz			
Power consumption	160 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 ₂)	Pressure range: 200 to 600 kPa (29 to 87 PSI)	
Air supply (AIR)	From turbine, noise level 46 dB(A)	
Maximum inspiratory flow	Up to 300 L/min	
Inspiratory O ₂ measurement	Maintenance-free paramagnetic O ₂ sensor	

Dimensions and weight

elisa 500	Width x depth x height:	360 x 245 x 455 mm
	Weight, net:	10 kg
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:	27 kg

Control unit

Screen type	4:3 LCD display, tilt angle of 35°
Screen diagonal	15"
Input system	Touch screen (capacitive multi-touch)

Hardware connections

elisa 500	2 x USB interface 1 x RJ45 1 x DVI (interface for service purposes) 2 x BF interface card with two LEMO connectors 1 x PDMS interface card with two LEMO connectors Up to 5 additional interfaces via data interface elisaATmegs
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Software version

SW	2.10.x
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