LÖWENSTEIN
medical

elisa 300 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 5 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)		
	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, P Plateau 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		**Adults**	**Children**
Ventilation modes	**Volume-controlled ventilation modes**		
	VCV	☑	☑
	VC-SIMV	☑	☑
	Optional VCV	☑	☑
	PLV	☑	☑

	Pressure-controlled ventilation modes		Adults	Children
	PCV		☑	☑
	BiLevel		☑	☑
	BiLevel ST		☑	☑
	Mandatory BiLevel		☑	☑
	PC-SIMV		☑	☑
	PC-APRV		☑	☑
	Optional BiLevel		☑	☑
	Spontaneous ventilation modes		Adults	Children
	CPAP		☑	☑
	PSV		☑	☑
	Dynamic PSV		☑	☑
	Proportional PSV		☑	☑
	PAPS (adults only)		☑	
	Hybrid ventilation modes		Adults	Children
	VA BiLevel		☑	☑
	Dynamic BiLevel		☑	☑
	Dual BiLevel		☑	☑
	Dynamic BiLevel ST		☑	☑
	Dual BiLevel ST		☑	☑
	Flexible BiLevel		☑	☑
	Flexible VCV		☑	☑
	CPR (resuscitation mode)		☑	☑
	Closed loop modes		Adults	Children
	ALPV		☑	
	WOBOV		☑	
Nasal applications (NC)	HFOT		☑ up to 70 L/min	☑ up to 8 L/min
	nCPAP			☑
	nBiLevel			☑
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 Insp. pressure ramp, mandatory	0.05–3 s (or 0.8 * T insp)		
PS Ramp Insp. pressure ramp, spontaneous	0.05–2 s		
Exp Ramp mand Exp. pressure ramp, mandatory	OFF, –100 mbar/s, –80 mbar/s, –50 mbar/s, –20 mbar/s,		
Exp Ramp spont Exp. pressure ramp, spontaneous	OFF, –100 mbar/s, –80 mbar/s, –50 mbar/s, –20 mbar/s,		
O_2 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	
	P Plateau	–50 to 150 mbar	
	PEEP	–50 to 150 mbar	
	Pmean	–50 to 150 mbar	
	P min	–50 to 150 mbar	
Rate measurement	Respiratory rate (RR)		
	Spontaneous respiratory rate (RR spont.)		
	Mandatory respiratory rate (RR mand.)		
	Synchronised respiratory rate (RR sync.)		
O_2 measurement	18–100%		
CO_2 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	Alveolar volume	
	VTds	Anatomic dead space volume	
	V´CO_2	Measured volume of the eliminated CO_2/ml	
SpO_2 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 $etCO_2$ Trigger Tube compensation Plimit (baseline) Ptrach	

Configurable measurements

Basic values	MVe	PEEP	C stat.	VTe spont.
	Pmean	R exp.	SpO_2	I:E
	Leakage	ΔP	MVe mand.	Flow insp.
	VT/IBW	RR	P Plateau	Flow exp.
	VTe	VTi	RR spont.	C dyn.
	MIP	Peak	P min	RR sync.
	T Plateau	MVe spont.	MVe spont. %	Flow insp.
	MV Leakage	RC exp.	RSBI	P0.1
	HR (pulse)	Flow exp.	RR mand.	
Advanced measurements	PEEPi	Vtrap	POB	POB spont.
	WOB spont.	WOB vent.		
Volumetric capnometry	VTds (%)	VTds (ml)	VTalv (%)	VTalv (ml)
Gases	O_2	inISO	inSEV	exSEV
	$etCO_2$	exISO	$inCO_2$	$V´CO_2$

Weaning functions

Fastwean Recommended measurements	RSBI
	P0.1
	VTe spont.
	RR spont.
Fastprotect Recommended measurements	ΔP
	VT/IBW
	P Plateau
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			
	CO_2 – 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				
Ventilation	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%	
Gas	FiO_2 concentration		min/max	
	O_2 ctrl.		min/max	
	$etCO_2$ concentration		min/max	
	$inCO_2$ concentration		max	
	inISO concentration		min/max	
	exISO concentration		min/max	
	inSEV concentration		min/max	
	exSEV concentration		min/max	
Additional alarms	RR spont.		min/max	
	Pmean		min/max	
	P Plateau		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	SpO_2	RC exp.
	Leakage	Flow insp.	VTds (%)	Flow exp.
	VT/IBW	Flow exp.	VTds (ml)	P min
	VTe	C dyn.	Vtrap	MVe spont. %
	MVe mand.	C stat.	VTalv (ml)	RSBI
	P Plateau	O_2	inISO	RR mand.
	RR spont.	$etCO_2$	WOB spont.	HR (pulse)
	PEEP	$inCO_2$	WOB vent.	Flow insp.
	R exp.	VTalv (%)	POB	P0.1
	ΔP	MIP	Peak	$V´CO_2$
	RR	T Plateau	POB spont.	exISO
	VTi	MV Leakage	RR sync.	
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 300	Width x depth x height:		315 x 245 x 405 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 1327 mm	
	Weight, net:		27 kg	
Control unit				
Screen type	4:3 LCD display, tilt angle of 35°			
Screen diagonal	12.1"			
Input system	Touch screen (capacitive multi-touch)			

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Hardware connections	
elisa 300	2 x USB interface 1 x RJ45 1 x DVI (interface for service purposes) 1 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
Software version	
SW	2.10.x

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made in GERMANY

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With people in mind