medinCNO®

Technical specifications

The medinCNO® CPAP driver is used in combination with the Medijet® nCPAP generator to administer CPAP therapy to premature infants and newborns. The medinCNO® must be used under the supervision of expert, specially trained staff in a clinical setting, and the patient's oxygen saturation must be monitored at the same time.

Specification

Dimensions (L x W x H)	29 x 23.5 x 18.5 cm
Weight	4.75 kg
Gas feed system	Computer-controlled electronic gas mixer with integrated oxygen sensor; flow-controlled Setting range: 0 l/min to 15 l/min Working range: 4 l/min to 10 l/min Accuracy: ±1 l/min (in working range) ±2 l/min (outside of the working range)
Gas feed	Air supply: 300 to 600 kPa (= 3.0 to 6.0 bar) Oxygen: 300 to 600 kPa (= 3.0 to 6.0 bar)
Gas connection	Connector standard: DISS or NIST (as preferred)
Patient flow outlet	Dimensions M22 (OD) or F15 (ID)
CPAP pressure meter connection	Luer-type – 4.3 mm ID
Power supply	1x internal battery, 14.4 V DC, approx. 3 hours run time, rechargeable External power supply 100 to 240 V AC / 50 to 60 Hz
Display	7.0" – color, 800 x 480 pixel
Data	Patient pressure (diagram and measurement) Trend: CPAP, flow, FiO_2, RR, push frequency (among other things, up to 28 days)
CPAP	Measurement range 0 to 18 mbar (in 0.1 mbar increments) Verification: Redundant measurement by two sensors Accuracy: ± 1.3 mbar
Push (inspiration support)	Setting range Additional flow during the inspiration push: Min: 0 l/min Max: 17.5 l/min (basic flow + push flow) Duration 200 ms to 2 seconds Manual and automatic triggering of pushes Accuracy ± 1 l/min (if the total flow = basic flow + additional inspiration flow - is within the flow working range) ± 2 l/min (if the total flow = basic flow + additional inspiration flow - is outside of the flow working range)
Leak-Assist	Leakage compensation (±2 l/min to maintain the target pressure) in CPAP mode
RR (respiration rate)	Display of the measured respiratory rate, no breaths up to 120 breaths per minute, in CPAP and Apnea CPAP mode
Apnea time	2 to 20 s (in 0.1 s increments)

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$T_{insp.}$	0.2 to 2.0 s (in 0.1 s increments)
Triggering	Pressure trigger, based on the CPAP pressure sensitivity, ±0.2 to ±2.0 mbar (in 0.1 mbar increments)
FiO_2	Oxygen concentration Setting range: 21 to 100% (in 1% increments, in the flow working range) Measurement range: 21 to 100% Alarm settings: ± 2-5% difference O_2 flush (level: +10, +20, +30% (vol.) above set target oxygen concentration or 100% oxygen) for 60 s Accuracy: ± 3% (vol.)
Oscillation	Frequency range 5 to 20 Hz (in 1 Hz increments) Amplitude range from increment 1 to 10 Measured average amplitude 0 to 15 mbar (in 0.1 mbar increments)
Alarms	Visual (LED & display) and acoustic (adjustable push alarm settings) Alarm countdown Interface to external alarm system
Safety	Mechanical overpressure valve (opening pressure 4 kPa (= 40 mbar)) Electronic shut-off valve (in the event of an error, interrupts the flow supply to the patient and opens the tubing system to the atmosphere)
External data	USB/RS232 port, export of live and trend data
Operating time	The medinCNO® can be used for continuous, long-term operation up to 4 weeks without a restart in the interim.

Environmental Conditions

Operation	Temperature:	15 to 35°C
	Relative humidity:	20 to 80% (not condensing)
Storage	Short-term/transport:	Temperature: -20 to +50°C Relative humidity: 20 to 80% (not condensing)
	Long-term:	Temperature: Room temperature (about 20°C) Relative humidity: 20 to 80% (not condensing)

Description of modes

CPAP	Standard CPAP; additional function: Leak-Assist
Apnea CPAP	CPAP with apnea detection (automatically generated pushes); additional function: Backup (backup rate: 5 to 120 1/min as a function of $T_{insp.}$ (minimum 0.2 s)
NIPPV	Bi-level CPAP with measurement of the I:E ratio as a function of the set rate and inspiration time (minimal I:E ratio 1:1.5)
Oscillation	Pressure with superimposed high-frequency oscillation from 5 to 20 Hz instead of a constant CPAP pressure
SNIPPV	Bi-level CPAP adjustable in time and trigger, synchronously with the patient's inspiration; delay following trigger: up to 0.1 s; additional function: (Backup rate: 5 to 120 1/min as a function of $T_{insp.}$ (minimum 0.2 s)
Standby	No flow, deactivated alarms, settings made will be saved (exceptions: amplitude and flow in the oscillation, Leak-Assist); keeps medinCNO® ready for use

Software settings

Languages	EN, DE, ES, FR, IT, NL, EL, NO, SV, DA, PL, CS, RU, LT, JA, ZH, TR, RO
Pressure units	mbar or cmH_2O
Scale of pressure	Three adjustments: 0-10, 0-15 and 0-20 mbar/cmH_2O

Standards and certifications

Declaration	The medinCNO® is manufactured within an EN ISO 13485 and EN ISO 9001, Council Directive 93/42/EEC, Annex II excluding Section 4 certified quality management system. The nCPAP device meets the Essential Requirements of Council Directive 93/42/EEC, Annex I.
Classification to EC directive 93/42/EEC	Class IIb
Certifications of IEC	60601-1, 60601-1-2, 60601-1-8
Class of protection	Class II equipment
IP class	IP20

Warranty

Period	24 months

Humidification (recommended)

Hamilton Medical	HAMILTON-H900 humidifier

Accessories and configurations

Suitable accessories and possible configurations of the device can be found in the corresponding configuration sheet.

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