

Data sheet

Intra hospital emergency and Transport ventilator



TECHNICAL SPECIFICATIONS

Intra hospital emergency and Transport ventilator



Monnal T60 Advanced allows ventilatory management of the most critical patients adults, children and infants (> 3 kg).

Monnal T60 Advanced adapts to all environments requiring intensive care inside and outside hospital:

- in intensive care
- during intra-hospital transport
- in the emergency services, in the trauma care
- in ground and air mobile units, helicopters, airplanes, long-distance medical transport

Its new, simplified visual identity allows very fluid use, particularly suited to critical situations.

In order to optimize the care of the most critical patients, Monnal T60 Advanced integrates:

- 5 new monitors: Spontaneous VME, Spontaneous RR, Driving Pressure, VTe/PBW, and Static and dynamic compliances
- The CPV solution
- The APRV mode
- An ECLS environment dedicated to the management of patients placed on ECMO

VENTILATION

Types	<ul style="list-style-type: none"> - Volume controlled - Pressure controlled - Pressure support - Spontaneous
Modes	(A)VCV, (A)VCV - NIV (A)PCV, (A)PCV - NIV SIMV, PSV, PSV - NIV, CPAP, APRV Option: PS-Pro, PSIMV, PRVC

FUNCTIONS

Nasal high flow oxygen therapy	<ul style="list-style-type: none"> - Flow : adult: 4 to 80l / min child and infant: 2 to 60l / min - FiO₂: 21 to 100% <p>This function must be used with a specific circuit and nasal cannulas as well as a heated humidifier.</p>
CPV	<p>Cardio Pulmonary Ventilation :</p> <p>CPV standard on the MT60 Advanced device.</p> <p>It is a solution dedicated to the care of adult patients in cardiac arrest. CPV combines ventilation, monitoring and functions adapted to cardiopulmonary resuscitation.</p>

SCREEN

Technology	LCD 262k colors (18 bits). Resistive touch-panel
Dimensions	8.4 inches
Display resolution	640*480 pixels
Luminosity	800 cd/m ² LED backlight Luminosity adjustment Day / Night screen display

PHYSICAL SPECIFICATIONS

Dimensions	29x25x11 cm (L x W x H)
Weight	3.7 kg (4 kg with 2 batteries)

STANDARDS AND REGULATORY INFORMATIONS

ISO 14971
IEC 60601-1+A1
IEC 60601-1-2
IEC 60601-1-6
IEC 62366-1
IEC 60601-1-8+A1
ISO 80601-2-12
ISO 80601-2-55
EN 794-3+A1+A2
EN 1789+A1
EN 13718-1
IEC 62304
RTCA DO-160
CE0459

ACCESSORIES

Accessories required for a transport use :

- Carrying bag
- Removable battery

Wall-mounted charging station

Intrahospital universal support

Roll stand: for

- humidifier
- oxygen cylinder
- articulated arm
- autoclavable basket

TECHNICAL SPECIFICATIONS

Intra hospital emergency and Transport ventilator

PARAMETERS SETTINGS	
Patient categories	Adult / Children / Infant (from 3 kg)
Patient gender and height	Adjustable predicted body weight (PBW)
Tidal volume	20 to 2000 mL
Frequency	1 to 80 Bpm
PEEP	0 to 20 cmH ₂ O
FiO ₂	21 to 100 %
I:E ratio	1:1 to 1:9
APRV T. high T. low	0,3 to 30 s 0,3 to 30 s
Inspiratory time	0.25 to 5 s
Inspiratory flow rate trigger	OFF, between 0.5 - 10 l/min
Inspiratory pressure	5 to 60 cmH ₂ O
Pressure support	5 to 40 cmH ₂ O
Pressure rise slope	60 to 120 cmH ₂ O/s
Expiratory trigger	10 to 90% of peak flow
Inspiratory and expiratory pause	Inspiratory pause: 40s Expiratory pause: 60s
Ventilator peak flow	2 to 150 l/min in volumetric mode
Turbine peak flow	230 l/min
P work max	70 cmH ₂ O
P limit max	90 cmH ₂ O

MAIN ALARMS	
Adjustable by users (Non-exhaustive)	-Low/high pressure, -High plateau pressure, -Low/high VTi, -Low/high MVi, -Low/high MVe, -Low/high VTe -Low/high RR, -Low/high FiO ₂ , -Low/high etCO ₂
Specific alarms	-Patient disconnection, -Expiratory obstruction, -Flow sensor, -Power supply, batteries, -Oxygen supply -Patient pre-oxygenation -Mains cable unplugged
Features	Adjustable volume, 5-levels of criticality

MAIN MEASUREMENT PARAMETERS		
MEASURED PARAMETERS	MEASUREMENT RANGES	TRENDED VALUE
Expired minute volume (MVe)	0 to 99 L/min	yes
Expired tidal volume (VTe)	20 to 3000 mL	yes
Insufflated minute volume (MVi)	0 to 99 L/min	yes
Insufflated tidal volume (VTi)	20 to 3000 mL	yes
Respiratory rate (RR)	1 to 120 c/min	yes
Peak airway pressure (Ppeak)	0 to 100 cmH ₂ O	yes
Positive expiratory pressure (PEEP)	0 to 100 cmH ₂ O	yes
Mean airways pressure (Pmean)	0 to 100 cmH ₂ O	yes
Plateau pressure (Pplat)	0 to 100 cmH ₂ O	yes
Leak index	0 to 100 %	yes
Ti/Ttot	0 to 100 %	yes
I:E ratio	1:0 to 1:99.9	No
FiO ₂	21 to 100 %	yes
CO ₂ (option)	0 to 100 mmHg	yes
CURVES		
-Pressure, -Flow (inspiratory flow in all modes including CPV mode) -Volume, -CO ₂ (optional)		
Loop curves : P/V, P/D, D/V, V/CO ₂ (optional)		
TRENDS		
80h of ventilation (1 value per minute for all the trended parameters)		

SPECIFIC FUNCTIONS	
Apnea ventilation	VCV apnea ventilation, adjustable in VT, RR and apnea time

TECHNICAL SPECIFICATIONS

Intra hospital emergency and Transport ventilator



ELECTRICAL SPECIFICATIONS

Main power supply

Input voltage	100 – 240 V AC (tolerance -10% ; +10%)
Frequency	50 to 60 Hz
Electrical power consumption	120 VA max (0.12 kW)

Battery

Type	Lithium-ion
Battery capacity	5 hours in total (2h30 from removable battery + 2h30 from internal safety battery) In case the device is intentionally used on battery, an removable battery must be used. Using the internal battery intentionally can cause ventilation to stop unexpectedly.
Charging time per battery	2h20 (machine in stand-by) 5h30 (machine ventilating)
Replacement frequency	Every 2 years for internal and removable batteries

CBAT

Estimation of the battery remaining capacity

Alarm Internal battery defective	- CBAT < 60% of the internal battery nominal capacity - After 27 months
----------------------------------	--

PNEUMATIC SPECIFICATIONS

Type of gas fitting (O ₂ high pressure inlet)	-NF -DISS -NIST
O ₂ pneumatic supply (high pressure)	2.8 – 6 bar / 280 – 600 kPa / 40 – 86 psi (HP)
O ₂ pneumatic supply (low pressure)	0 – 1.5 bar / 0 – 150 kPa / 0 – 22 psi (LP)
Air supply	Turbine: autonomous ambient air supply via HEPA filter

ENVIRONMENT

OPERATING CONDITIONS

Temperature	-10°C à +40°C (14°F à 104°F)
Relative humidity	0 to 95% without condensation at 40°C max.
Atmospheric pressure	600 to 1150 hPa

STORAGE CONDITIONS

Temperature	-20°C to +50°C (-4°F to +158°F)
Relative humidity	0 to 95% without condensation at 40°C max.
Atmospheric pressure	600 to 1150 hPa

PROTECTION

Protection index	IP34
------------------	------

INTERFACE CONNECTORS

-VGA
-USB-A,USB-B
-CO₂



Contact

Air Liquide Medical Systems



Parc de Haute Technologie
6, rue Georges Besse
92 182 ANTONY Cedex, France
Tél: +33 (0)1 40 96 66 00
Fax: +33(0)1 40 96 67 00



Manufactured by Air Liquide Medical Systems -
Conformity assessment: GMED 0459 -
Commercial code: R.C.S. Nanterre 348 921 735 -
Please read the user manual carefully.



Monnal T60 Advanced is a class IIb air turbine medical device for the treatment of infants (from 3 kg), children and adults, intended for hospital use in intensive care, emergency and intra/extra-hospital transport - The acts carried out with Monnal T60 Advanced are covered by the health insurance bodies in certain situations.

Air Liquide Medical Systems is committed to an environmental approach with a quality-environment management system certified ISO 14001:2015. For more information, go and visit our website <https://www.device.airliquidehealthcare.com/our-commitments>