



Datasheet

Panther 3 Series

Revision A



Technical Specifications

General Information

Intended Use	The PANTHER 3 ventilator is: <ul style="list-style-type: none"> Intended for respiratory treatment in invasive and non-invasive of neonatal^(N), pediatric and adult patients Used in hospitals, professional healthcare facilities and transportation of patients within such facilities
Instructions for use	Please read the Panther 3 operator's manual
Legal Manufacturer	Origin Medical Devices Inc.
Size (W x D x H)	310 x 330 x 390 mm 12.2" x 13.0" x 15.4"
Weight (Ventilator)	10 Kg (22 lbs)
Power	110 to 240 V AC 50 to 60 Hz
Internal Battery	Li-ion, 98Wh, 14.4V
Operating Time on Battery	> 3 hours under standard conditions
Recharge Time	Approximately 3 hours

Oxygen Supply and Monitoring

High Pressure Range	35 to 87 PSI
Connector Type	DISS 1240, NIST or other per region
Low Pressure	Low flow/pressure inlet
Monitoring	O ₂ sensor on outlet. Galvanic or Paramagnetic options available

^(N) feature is currently not available in the USA

Operational

Enclosure Rating	IP22
Operating Temperature	10 to +40°C
Operating Humidity	10 to 90% Non-Condensing
Storage Temperature	-20 to +60°C
Storage Humidity	10 to 90% Non-Condensing
Barometric Pressure	700 to 1060 kPa internally compensated
Altitude - operation	0 to 3,280 m (0 to 10,000 ft)

Flow and Pressure

Pressure Range	-50 to +100 cmH ₂ O
Flow Range	0 to 240 lpm

Functionality and safety standards

ISO 80601-2-12:2011
ISO 60601-1-2:2014
EN 60601-1
ISO 60601-1-8:2007 + A11:2017
IEC 60601-2-49:2011
ISO 80601-2-55:2018

User Interface

Display	12.1" TFT with PCAP touchscreen
Control Interface	Touchscreen Encoder knob with LED
Audible Indicators	Speaker and Buzzer
Additional Visual Indicators	RED, YELLOW, GREEN indicators for alarms, ventilation in power save
Additional Visual Sensors	Ambient light detector for automated display intensity control

Mode Selections

Types	Invasive Non-invasive High flow O ₂ therapy
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Invasive Ventilation Modes

Controlled Ventilation	Volume Control (VC) Pressure Control (PC) Pressure regulated volume control (PRVC)
Support Ventilation	Pressure Support (PS) Volume Support (VS)
SIMV (synchronized intermittent mandatory ventilation)	VC + VS* VC + PS PC + PS PRVC* + PS PRVC* + VS*
SMART Mode™ (Automatic transition between a control mode and a spont mode based on presence or absence of patient efforts)	VC + VS* VC + PS PC + PS PRVC* + PS PRVC* + VS*
BiLevel	Dual PEEP with two defined PS levels *
APRV	Dual PEEP CPAP *

* Denotes an option

Non-Invasive Ventilation Modes

Controlled Ventilation	Volume Control (VC) Pressure Control (PC)
Support Ventilation	Pressure Support (PS)
SIMV (synchronized intermittent mandatory ventilation)	VC + PS PC + PS
SMART Mode™	VC + PS PC + PS
NIPPV *(N)	Nasal Intermittent Positive Pressure Ventilation (synchronized to patient efforts)

Non-Invasive compensation

Non-invasive max leak compensation	Adult <ul style="list-style-type: none"> Inspiratory: 200 lpm Expiratory: 60 lpm Pediatric and neonatal <ul style="list-style-type: none"> Expiratory 25 lpm
Inspiratory volume compensation during VC *	User selectable: ON/OFF When ON, volume is compensated for up to twice the defined volume

Invasive Compensation

Invasive max leak compensation when activated	Adult <ul style="list-style-type: none"> Inspiratory: 200 lpm Expiratory: 25 lpm Pediatric and neonatal Expiratory 25 lpm
Inspiratory volume compensation during VC *	User selectable: ON/OFF When ON, volume is compensated for up to an additional 50% of defined volume

High Flow O₂ therapy

Oxygen	21 to 100%
Flow	Adult: 1 to 80 lpm Pediatric: 1 to 80 lpm Neonate: 1 to 25 lpm

SBT (spontaneous breathing trial) *

SBT Time	15 to 120 Minutes
Oxygen (O ₂ %)	21 to 100%
PEEP	0 to 40 cmH ₂ O
Support Pressure	0 to 75 cmH ₂ O
Support Slope	1 to 10
Termination	Analyzes patient degradation using a variety of indications and automatically resume normal ventilation when needed

Additional Functions

Speaking Valve *	Automatically adjusts specific alarms, disables activation of conflicting features to enable safe use of a speaking valve. When turned off reactivates disabled features and returns alarms to normal
Demand Flow * (in VC only)	Detects patient's need of additional flow and automatically transitions to PS for that specific breath
Auto exhalation* Sensitivity (E _{SENS})	Automatic Breath-by-Breath ventilator management of the exhalation sensitivity setting
SMART Trigger™	Proprietary triggering mechanism which significantly improves trigger detection in high and varying leaks as well as COPD patients

* Denotes an option

IBW Calculation

Weight Ranges	Adult: 25 to 144 Kg Pediatric: 2.9 to 24 Kg Neonate: 0.4 to 2.8 Kg
High Ranges	Adult: 125 to 256 cm Pediatric: 48 to 124 cm Neonate: 26.5 to 47 cm
Units	Allows entry of height in cm or inches and weight in Kg or lbs
Gender	Male or female

Display Configurations

Waveforms	<ul style="list-style-type: none"> • Circuit Pressure • Flow • Volume • Circuit + Tracheal Pressure (TC) * • CO₂ * • SpO₂ *
Loops	<ul style="list-style-type: none"> • Pressure Volume (PV) • Flow Volume (FV) • Volume Flow (VF) • Single Breath CO₂ Curve *
Reference Loops *	Shows up to two out of eight saved loops superimposed on the live loops along with event information prior to the loop save
Trends	<ul style="list-style-type: none"> • Shows two selected trends and 15 monitored values corresponding to the trend cursor position. • Trend views can be selected from 25 trended parameters which are recorded per breath (no faster than once a second) • Views can be zoomed and scrolled with the x-axis or finger swipe • Trends record 72 hours of data

Maneuvers

P0.1 (P100)

User initiated automated maneuver to measure the patient's respiratory drive during the first 100 ms of inspiratory effort when the airway is occluded.

Max Time	Adult: 8 seconds Pediatric: 6 seconds
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Smart NIF *

User initiated automated maneuver to measure the patient's inspiratory muscle strength during airway occlusion. Provides visual and audible indications and automated analysis of patient fatigue to increase safety and patient synchronization.

Max maneuver Time	Adult: 20 seconds Ped/Neo: 10 seconds
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Initiation	Audible BEEP and LED flashing indicated to the patient and clinician
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Termination	Time and automated detection of patient fatigue
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Suction Maneuver *

Provides an automated safe management of suction procedure by automatically transitions between suction phases, adjusts alarms, and detects reconnection to resume ventilation.

Types	<ul style="list-style-type: none"> Open Suction Closed Suction
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O ₂ settings	21 – 100%
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Phases	<ul style="list-style-type: none"> Pre-Oxygenation at set O₂ level Suction: auto detected on open suction, manual press in closed suction Post-Oxygenation: auto detected on open suction, manual press in closed suction Automated phase timeouts
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Effects	Oxygen, alarms and delayed activation of alarms automated by the system.
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PV (Slow Inflation/Deflation) *

A slow inflation/deflation PV Maneuver is both a diagnostic and therapeutic tool that provides information that may be used to optimize PEEP, tidal volume and other ventilator settings to allow lung protective ventilation. Upon maneuver completion, ventilation transitions back to the settings prior to the maneuver at the user defined End PEEP setting.

Start PEEP	0 to 40 cmH ₂ O
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PEEP EQ Time	0.0 to 30.0 sec
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Inflation/Deflation	2 to 5 cmH ₂ O / sec
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Target Pressure	5 to 60 cmH ₂ O
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Pause at Target	0.0 to 30.0 sec
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End PEEP	0 to 40 cmH ₂ O
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Time limit	60 sec
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Safety Termination	Time and on patient effort (resumes ventilation)
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Views	<ul style="list-style-type: none"> PV loop during the maneuver, auto scaled Maneuver graph shows expected maneuver progress and progress during the maneuver
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Measurement	Four cursors for four inflection points
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Recruitment *

Single or multi step recruitment maneuver (RM) via continuous ventilation at user defined step settings. Upon maneuver completion, ventilation transitions back to the settings prior to the maneuver at the user defined End PEEP setting.

Number of steps	1 to 20
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T High	1.0 to 59.0 sec
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T Low	1.0 to 5.0 sec
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P High	10 to 40 cmH ₂ O
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P Low	0 to 30 cmH ₂ O
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End PEEP	0 to 30 cmH ₂ O
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Views	Graphical representation of the maneuver and its progress
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Direct Access Functions

Elevated O ₂	User adjustable O ₂ level active for up to 120 seconds
Manual Breath	Activates a mandatory breath upon pressing during the expiratory phase

Tube Compensation *

Activation	ON/OFF (restrictions apply)
Tube Type	<ul style="list-style-type: none"> • Endotracheal • Tracheostomy
Tube ID	Adult: 5.5 to 10.0 mm Pediatric: 4.0 to 6.5 mm Neonate: 2.0 to 4.5 mm
Length	Adult: 2.0 to 30.0 cm Pediatric: 2.0 to 26.0 cm Neonate: 2.0 to 15.0 cm
Support %	10 to 100%

Nebulization

Pneumatic *

Flow	7 lpm, Oxygen
Operating Time	5, 10, 20, 30 minutes
Compensation	Volume is compensated for the added flow
Automation	Automated termination under violating conditions

Aerogen

Method	Direct drive to nebulizer
Supported Types	SOLO or PRO
Controls	<ul style="list-style-type: none"> • Selection of type • Continuous option • Run time and Extend time
Visuals	<ul style="list-style-type: none"> • Time since start • Time to run • Operational status

* Denotes an option

Capnography *

Measurements	Measures EtCO ₂ and real time inspired and expired CO ₂
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Calculated Parameters

End-Tidal CO ₂	EtCO ₂
Fractional End-Tidal CO ₂ Concentration	FetCO ₂
Partial Pressure of Mean Expired CO ₂	PeCO ₂
Fractional Concentration of Mean Expired CO ₂	FeCO ₂
Exhaled CO ₂ Volume	V _{TE} CO ₂
Inspired CO ₂ Volume	V _{TI} CO ₂
Exhaled Volume of CO ₂ Per Minute	VCO ₂
Alveolar Tidal Volume	Valv
Alveolar Minute Volume	Valv/min
Anatomical Dead Space	V _d ana
Alveolar Dead Space	V _d alv
Physiological Dead Space to Tidal Volume Ratio	VD/VT Eng
Physiological Dead Space to Tidal Volume Ratio	VD/VT Bohr Est
Graphical	<ul style="list-style-type: none"> • Single breath CO₂ curve • Realtime exhaled CO₂ over time

Oximetry *

Measurements	<ul style="list-style-type: none"> • SpO₂ • Heart Rate • SpO₂/O₂ (Ratio Approximation to PaO₂/FiO₂) • Signal Level
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Log

Logged Information	<ul style="list-style-type: none"> • Changes • Alerts • Operations
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Number of Entries	5,000
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Settings

PEEP / CPAP	0 to 40 cmH ₂ O
Pressure (PC) (above PEEP)	5 to 60 cmH ₂ O Optional: 5 to 90 cmH ₂ O
Support Pressure (PS) above PEEP	0 to 60 cmH ₂ O Optional 0 to 75 cmH ₂ O
Mandatory Slope (Mand Slope)	1 to 10 (1 is the fastest)
Spontaneous Slope (Support Slope)	1 to 10 (1 is the fastest)
Exhalation Sensitivity (Esens)	5 to 80 %
Max Spont Breath Time (Support TI)	Adult: 0.4 to 5.0 sec Pediatric: 0.4 to 3.0 sec Neonate: 0.2 to 2.0 sec *
Tidal Volume (VT) Range	Adult: 100 to 2500 ml Pediatric: 20 to 500 ml Neonate: 2 ^{(1)(N)} to 100 ml *
Waveform (VC)	Square / Decelerating
Inspiratory Time (TI)	Adult: 0.10 to 5.00 sec Pediatric: 0.10 to 4.00 sec Neonate: 0.10 to 3.00 sec BiLevel: Up to 59.8 sec
Plateau Time (Insp Hold)	0.0 to 3.0 sec
Respiratory Rate	Adult: 1 to 110 b/min Pediatric: 1 to 120 b/min Neonate: 1 to 150 b/min *
SMART Time (Applies to SMART Mode™)	3 to 15 sec
Rate NIPPV *	1 to 150 b/min
Pressure Trigger	-15 to -0.1 cmH ₂ O
Flow Trigger	0.1 to 20 lpm
SMART Trigger™	1 to 7
Oxygen (O ₂ %)	21 to 100%

* Denotes an option

⁽¹⁾ 5ml in VC, 2ml in pressure modes

^(N) feature is currently not available in the USA

Apnea

Apnea Time	0 to 60 sec and OFF (OFF allowed in SPONT when PS is set ≤ 5 cmH ₂ O)
Oxygen (O ₂ %)	21 to 100%
Inspiratory Time (TI)	Adult: 0.10 to 5.00 sec Pediatric: 0.10 to 4.00 sec Neonate: 0.10 to 3.00 sec
Pressure (PC) (above PEEP)	5 to 60 cmH ₂ O
Respiratory Rate	Adult: 1 to 110 b/min Pediatric: 1 to 120 b/min Neonate: 1 to 150 b/min *
Slope	Uses set Slope
Triggers	Uses set triggers

Control Ranges

Peak Flow	240 lpm
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Monitored Parameters

Pressure

Peak Pressure	P _{peak}
End Inspiratory Pressure	P _{Insp}
Mean Airway Pressure	P _{mean}
End Expiratory Pressure	PEEP
Calculated Tracheal Pressure *	P _{trach Insp}
Plateau Pressure	P Plateau
Intrinsic (Auto) PEEP	Intr. PEEP
Total PEEP	PEEP Tot
Delta Air Pressure *	dPAW
Breathing Drive Occlusion Pressure	P0.1
Negative Inspiratory Pressure *	NIF

Volume

Inspired Tidal Volume	V _{Ti}
Exhaled Tidal Volume	V _{TE}
Spontaneous V _{Ti}	Spont V _{Ti}
Spontaneous V _{TE}	Spont V _{TE}
VTI Normalized to Patient Body Weight *	V _{Ti} /PBW
VTE Normalized to Patient Body Weight *	V _{TE} /PBW
Inspired Minute Volume	\dot{V}_i
Exhaled Minute Volume	\dot{V}_e
Spont Inspired Minute Volume *	Spont \dot{V}_i
Spont Exhaled Minute Volume *	Spont \dot{V}_e

Flow and Leak

Peak Inspiratory Flow	PIF
Peak Expiratory Flow	PEF
Delivered Oxygen	O ₂
Inspiratory Leak (lpm) *	Insp Leak lpm
Inspiratory Leak (%) *	Insp Leak %
Average Total Leak Rate	Avg Leak lpm
Inspiratory Leak Volume	V _{leak} ml

Rate and Timing

Total Breath Rate	Total BR
Mandatory Respiratory Rate *	Mand BR
Spontaneous Respiratory Rate *	Spont BR
Inspiratory Time	Last Ti
Expiratory Time	Te
Spontaneous Inspiratory Time Ratio*	Ti/Ttot
Ratio between THigh and TLow	TH:TL
Inspiratory to Expiratory Ratio	I:E

Mechanics

Inspiratory Pressure Time Product *	PTP
Static Compliance	Cstat
Dynamic Compliance	Cdyn
Static Resistance *	RStat
Expiratory Resistance	RE
Inspiratory Time Constant *	RC _{Insp}
Expiratory Time Constant	RC _{Exp}
Rapid Shallow Breathing Index	RSBI
Work of Breathing Imposed *	WOB Imposed

Capnography and Oximetry *

See Capnography and Oximetry sections above.

* Denotes an option

Adjustable Alarms

Pressure High	6 to 70 cmH ₂ O Optional 6 to 100 cmH ₂ O
Pressure Low	3 to 67 cmH ₂ O Optional 3 to 97 cmH ₂ O
Minute Volume (V̇ _e) High	0.5 to 100 lpm Adult 0.5 to 30 lpm Pediatric 0.5 to 10 lpm Neonate
Minute Volume (V̇ _e) Low	OFF to 0.1 to 99.5 lpm Adult OFF to 0.05 to 29.5 lpm Pediatric OFF to 0.01 to 9.5 lpm Neonate
V _{TE} High	25 to 3000 to OFF ml Adult 25 to 700 to OFF ml Pediatric 5 to 300 to OFF ml Neonate
V _{TE} Low	OFF to 1 to 2500 ml Adult OFF to 1 to 690 ml Pediatric OFF to 1 to 295 ml Neonate
Spont V _{TE} High	25 to 3000 to OFF ml Adult 25 to 700 to OFF ml Pediatric 5 to 300 to OFF ml Neonate
Spont V _{TE} Low	OFF to 1 to 2500 ml Adult OFF to 1 to 690 ml Pediatric OFF to 1 to 295 ml Neonate
Rate High	10 to 110 b/min Adult 10 to 130 b/min Pediatric 10 to 170 b/min Neonate
Rate Low	1 to 109 b/min Adult 1 to 129 b/min Pediatric 1 to 169 b/min Neonate
Disconnect Sensitivity (Dsens)	20 to 95 %
V _{Ti} Limit	105 to 3000 ml Adult 25 to 750 ml Pediatric 6 to 300 ml Neonate

ETCO ₂ High *	10 to 150 to OFF mmHg
ETCO ₂ Low *	OFF to 5 to 60 mmHg
VteCO ₂ High *	0.2 to 100 to OFF ml
VteCO ₂ Low *	OFF to 0.1 to 99 ml
SBT Rate High *	5 to 80 to OFF b/min
SBT Rate Low *	OFF to 1 to 75 b/min
SBT RSBI High *	5 to 900 to OFF
SBT RSBI Low *	OFF to 5 to 895
Leak High	5 to 95 %
SPO ₂ High *	71 to 100%
SPO ₂ Low *	70 to 99%
Heart Rate High *	45 to 245 bpm
Heart Rate Low *	40 to 240 bpm

Non-Adjustable Alarms

Standby	Occlusion
Low PEEP	High PEEP
PRVC Limited by High P	VS Limited by High P
Circuit Open	Apnea
Low O ₂	High O ₂
No O ₂ Inlet Pressure	Aerogen Fault
Battery Gauge Error	Battery Hot
Battery Low	Battery Empty
Shutting Down	Charger Fault

Additional Technical Alarms

Additional CO₂ module related error alarms *

Additions SpO₂ module related error alarms *

* Denotes an option

Communication Interfaces

Serial RS232

- Sends automatic data to nurse call station
 - Can be configured to send the required data under different conditions
 - Software plug-ins for required protocols
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Ethernet

- Sending automatic data as well as provides online monitoring, log reading and remote control
 - Software enables connection to dedicated control/monitoring software that run on remote computers/tablets/phones or standard control centers
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- USB Host connection for saving of logs, screen images and uploading software updates from standard USB memory sticks
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External Interfaces

Capnography Module

SpO₂ Modules

Direct Aerogen Nebulizer

Dry contact remote alarm connections with/without cable disconnection detection

Ventilator Options

Software

Options may be purchased or added at a later time

Hardware

O₂ Sensor

Paramagnetic sensor

The ventilator includes all hardware to fully support all features and all software options. There is no need to install additional internal hardware for any option.
