Panther 5 Acute Care Ventilator

HIGHLIGHTS

- High performance and advanced features target the ICU environment
- Utilizes an internal blower with a specially designed flow control valve removing the need for using compressed air without compromising performance
- Advanced modes and non invasive support as required by an ICU ventilator
- Small overall size and weight enables using the ventilator in the ICU as well as transporting the patient from the ICU without the need to change ventilators
- Large 15" TFT display with a projective capacitive touch screen
- Low power consumption enables battery operation for up to 4 hours
- Flexible communication capabilities incorporated
- Designed from the ground up with low COGS in mind, easy assembly, low maintenance and automated testing to reduce overall manufacturing costs

The Panther5 ventilator is an ICU level ventilator utilizing an advanced blower along with a specially designed flow control valve. Unlike other blower based ventilators, this design provides both high flow delivery, extremely fast response to patient demand and very fast and stable pressurization during pressure breaths.

The capability to achieve a high level of control enables ventilation in advanced modes as well as the standard modes.

Because an internal blower is used, there is no need for compressed air, making it both highly versatile and transportable.

Utilizing a high end 15" TFT display with a projective capacitive touch screen provides a very clear and easy to use interface for control and monitoring along with easy to operate functionality. Common gestures used in daily devices such as phones and tablets are used to make usage as intuitive as possible.

The high integration of the design utilizes very low power enabling the ventilator to run off its internal battery for up to 4 hours.

The design of the ventilator takes into account the growing needs for communications, remote access, program updates and more. By utilizing different communication methods and modes, SD card and USB slots, the Panther 5 can answer any communication and remote access demands.

Designed for cost effectiveness, the Panther5 design was focused not just on low COGS, but also on ease of assembly, automated built in tests as well as automated external programs that reduce the total cost of manufacturing and maintenance of the ventilator. This provides an ICU solution at a very low cost.

The versatile design enables easy and low cost adaptation of the ventilator to changing market needs.

Ventilation Modes

Controlled ventilation

PC - Pressure Control

VC - Volume Control

Adaptive Pressure Control

Support Ventilation

CPAP/PSV

VS - Volume Support

Combined controlled and support

SIMV with either VC, PC or adaptive pressure control

Support breaths can be PSV or VS

Additional modes

Bi-Level	Pressure control ventilation switching between two pressure levels
Smart Mode	Promotes spontaneous breaths and switches to corresponding controlled breaths automatically

Non Invasive

PC

PSV

Direct function functions

100 O_2, Inspiratory hold, Expiratory hold,

Manual breath, $P_{0.1}$ maneuver

Display Subsystem

15" TFT with projective capacitive touch screen

Waveform View

Real time view of 3 waveforms. Auto and manual scaling are supported with swipe motion and double click support

Cursor support for measuring values in "Display Capture" Mode

Loops View

Displays a Volume/Pressure loop, a Flow/Volume loop and one real time waveform which can be selected by the user

Cursor support for measuring values in "Display Capture" Mode

Trend View

Displays four trends simultaneously. Each trend can be assigned a parameter from all trended parameters

Trends are stored for up to 24 hours

Cursor support for measuring values in "Display Capture" Mode

Log View

Logs are maintained and include patient related alarms, ventilator related alarms, changes in ventilator settings and operation related alarms

Alarm view can be filtered to show a specific type of alarm

Logs can be saved to SD Card and to USB memory as well as sent over the Ethernet and USB communications channels

Parameter Ranges

	Min	Max		Min	Max
Inspiratory Volume (ml)	25	3000	PSV Maximal Inspiratory Time (sec)	0.1	3
Respiratory Rate (bpm)	1	99	PSV Flow Threshold (%)	10	70
Maximal set pressure (cmH_2o)		75	PSV/PCV Slope	1	10
PEEP (cmH_2o)	0	40	O_2 concentration (%)	21	100
Maximal Inspiratory Flow (lpm)		200	Flow Trigger (lpm)	0.1	20
Inspiratory Time (sec)	0.1	3	Pressure Trigger (cmH_2O)	-0.1	-9.9
Apnea time Range (sec)	5	45	Inspiratory Pause (sec)	0	3
Smart Mode Range (sec)	3	15	Expiratory Pause (sec)	0	30

Monitored Parameters

Total Respiratory Rate
Spontaneous Respiratory Rate
Peak Airway Pressure
PPlateu
Mean Airway Pressure
End expiratory pressure
Inspired Tidal Volume
Expired Tidal Volume
Inspired Spontaneous Tidal Volume
Expired Spontaneous Tidal Volume
Total Inspired Minute Volume
Total Expired Minute Volume
Spontaneous Inspired Minute Volume
Spontaneous Expired Minute Volume
Last breath inspiratory time
Auto PEEP
Static Compliance
Dynamic Compliance
Inspiratory Resistance
Expiratory Resistance
Time Constant
$P_{0.1}$
Work Of Breath Patient
Work Of Breathing Ventilator
Shallow Breathing Index (SBI)
FiO_2
Barometric Pressure
O_2 Inlet Pressure

Alarms

High Peak Airway Pressure
Low Airway Pressure
High Expired Tidal Volume
Low Expired Tidal Volume
High Expired Spontaneous Tidal Volume
Low Expired Spontaneous Tidal Volume
High Respiratory Rate
Low Respiratory Rate
+ Additional technical alarms

High Expired Minute Volume
Low Expired Minute Volume
Apnea
High Baseline
Low Baseline
High FiO_2
Low FiO_2
Battery Alarms

Communications Interfaces

Serial

- Serial RS232 sending automatic data to nurse call station. Can be configured to send the required data. Software plug-ins easily adapt to required protocols
- USB device/ RS232 for providing remote control and programming as well as log downloads

Ethernet

Ethernet for sending automatic data as well as providing 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

Memory Cards

- USB Host connection for saving of logs, screen images and uploading software updates from standard USB memory sticks
- SD Card interface for saving of logs, screen images and uploading software updates

External Sensors

- Capnograph module
- SpO_2 sensors

Remote Alarm

Dry contact remote alarm connections with/without cable disconnection detection

Options

- Single use (delta pressure) or multiuse (mass) expiratory flow sensors
- Galvanic or Paramagnetic O_2 sensor

Environmental

Operating Temperature	-10°C to +40°C
Operating Humidity	10% - 90% Non Condensing
Power Supply	90V – 264V, 50/60Hz Automatic
Size (WxDxH)	400mm x 400mm x 300mm
Weight	10 Kg

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