



INSPIRE - 100

An Emergency Ventilator

TekMedika Pvt. Ltd.

(12) United States Patent
Nanda et al.

(10) Patent No.: US 12,465,716 B2
(45) Date of Patent: Nov. 11, 2025

INSPIRE-100 is a patent-pending ventilator design tailored for adult patients, providing comprehensive ventilatory support from initiation to weaning.

It features a user-friendly Human-Machine Interface with a clear front panel and advanced remote monitoring capabilities accessible via laptops, desktops, tablets, or mobile devices.

This device is particularly suited for facilities without access to compressed gas or oxygen pipelines and is built to withstand challenging environmental conditions.

INSPIRE-100 supports four commonly used ventilation modes: CMV, ACV, SIMV, and PSV. It offers a full range of breath parameters across all modes, ensuring complete assistance for patient-initiated breathing.



Unmatched Affordability



Unmatched Remote Monitoring via WiFi



Unmatched Ease-of-use



Works without Compressed Air Pipeline



Works with Oxygen Cylinder or Concentrator



Field Upgradeable



Complete Set of mainstream Parameters

Intended Use

Adult Patients only



Acute Respiratory Distress Syndrome (ARDS)



Chronic Obstructive Pulmonary Disease (COPD)



Obese Hypoventilation Symptoms (OHS)



Cheyne-Stokes breathing (CSR/CSA)



Neuromuscular Diseases



Pneumonia



Asthma



Drug Overdose



Snake Bites

Technical Specs

Mode	Description
CMV	Continuous Mandatory
ACV	Synchronized Assist Control
SIMV	Synchronized Intermittent Mandatory
PSV (BiPAP)	Pressure Supported (BiPAP equivalent)

Volume Control Parameter	Range
Tidal Volume (ml)	200 - 600
Respiration Rate (bpm)	10 - 30
I:E Ratio	1:1 - 1:3
PEEP (cmH ₂ O)	4 - 15
FiO ₂ (System Managed)	External

Pressure Support Parameter	Range
Support Pressure (cmH ₂ O)	5 - 20
Flow Trigger Termination (%)	10 - 60

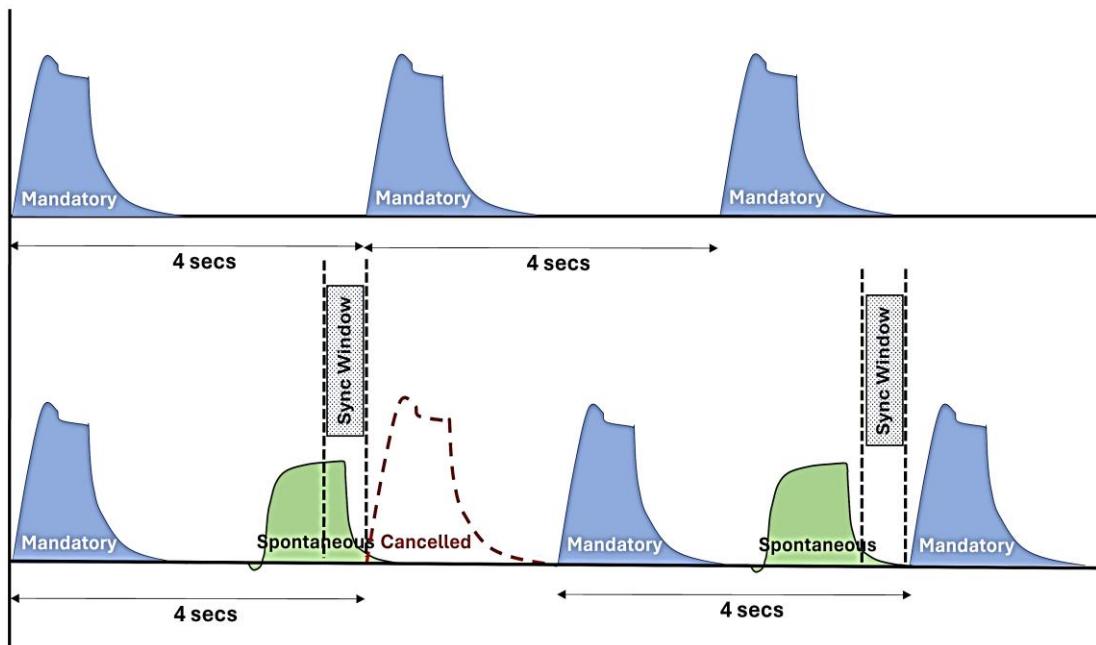
Full Set of ALARMS	
Max Pressure	Pressure Leak
Pressure Loss	Airway Blockage
Cough / Hiccups	System Temperature
Inconsistent Parameters	Extreme Parameters
Replace BVM	BVM Size
and many more ...	

Power Consumption 120W

Breath Synchronization for Patient Comfort

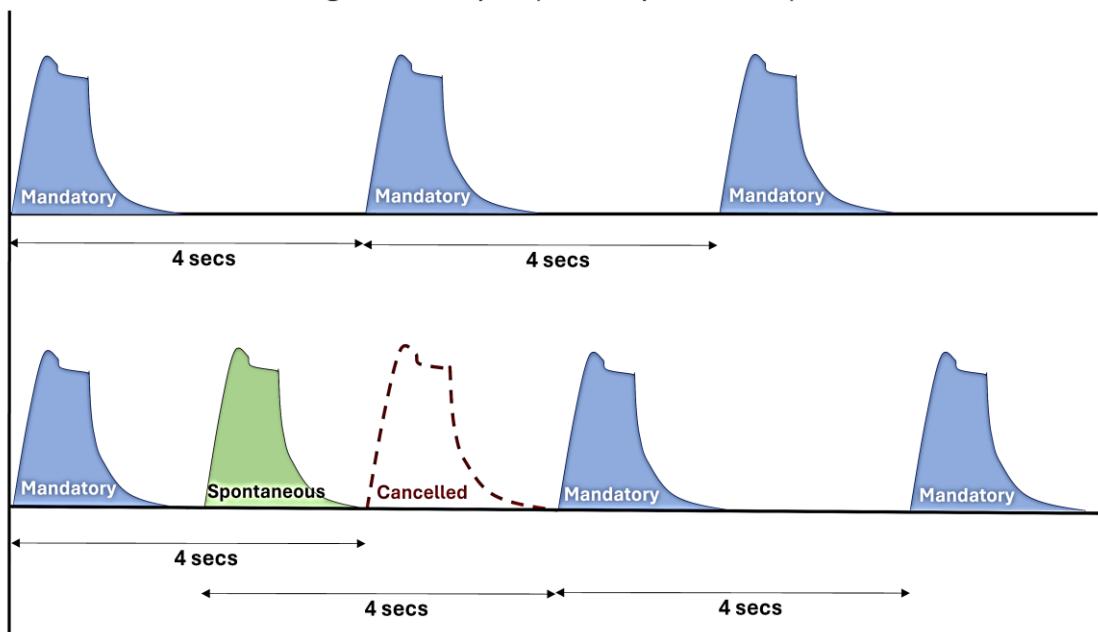
Breath Synchronization in SIMV Mode

e.g. RR=15 bpm (4 secs per breath)



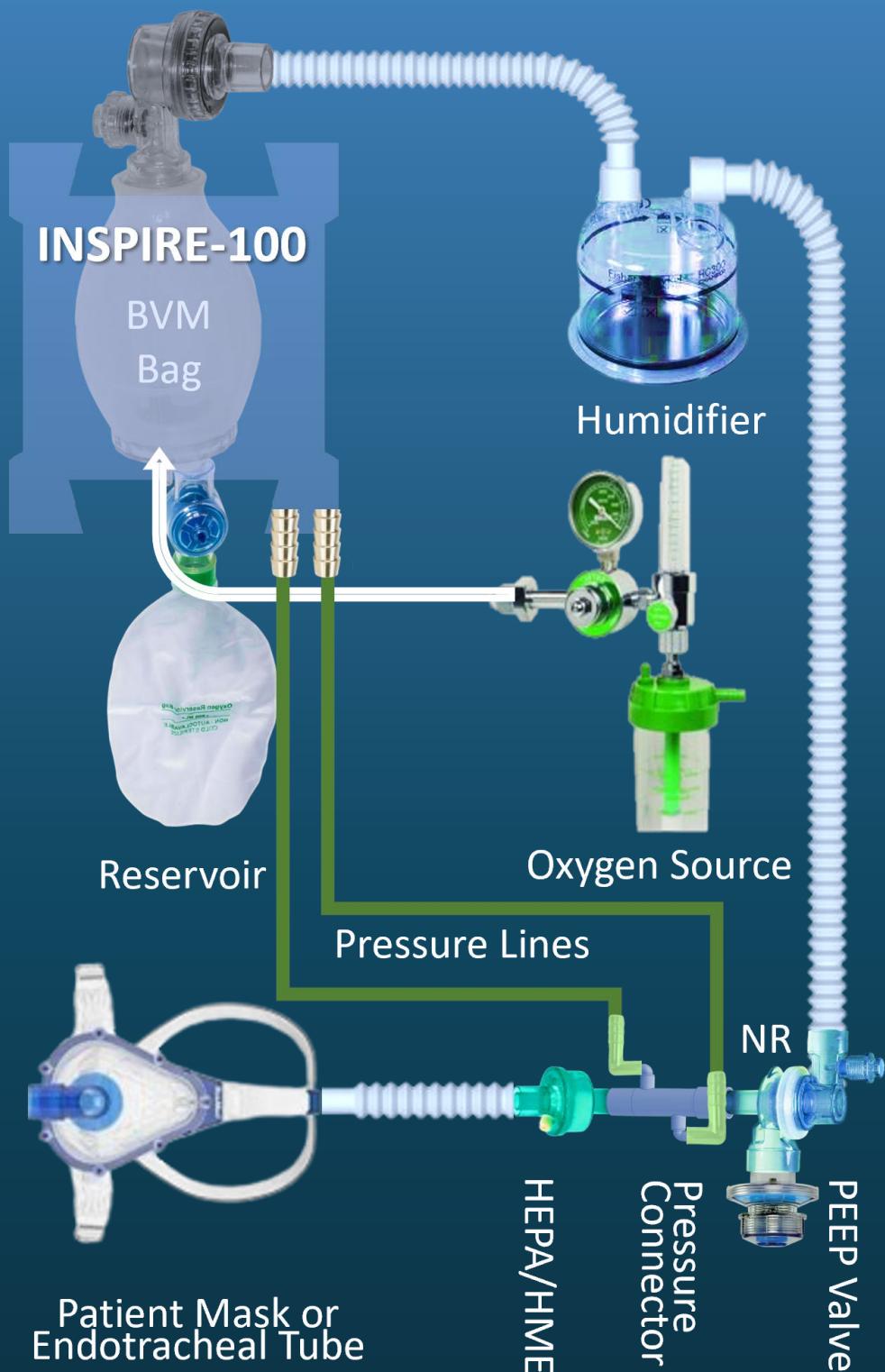
Breath Synchronization in ACV Mode

e.g. RR=15 bpm (4 secs per breath)

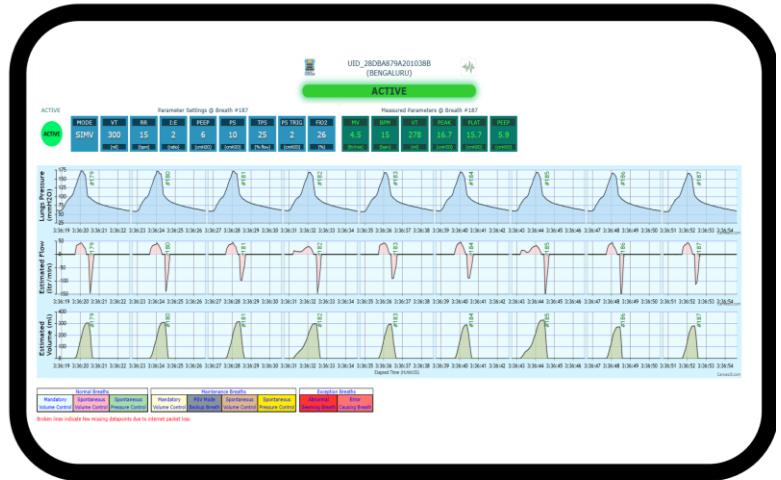


Breathing Circuit

Simple, Off-the shelf, Single-limbed and compatible with Standard Accessories



Remote Monitoring



Accessible on Laptops & Mobile devices



Search & Range Selection



Snapshots View



Waveforms View



Charts View



Statistics View



Recording and Playback



Multi-system Display

Powerful Search for Combination of Events

Demo Long [09-05-2024 17:40:26]

MATCH CRITERIA

`((MODE_SETTING == "SIMV") AND ((BREATH_TYPE == "MANDATORY") AND ((TIDAL_VOLUME < 250) OR (PEAK_PRESSURE > 30))))`

<input checked="" type="checkbox"/> MODE_SETTING	EQ	SIMV
AND		
<input checked="" type="checkbox"/> BREATH_TYPE	EQ	MANDATORY
AND		
<input checked="" type="checkbox"/> TIDAL_VOLUME	LT	250
OR		
<input checked="" type="checkbox"/> PEAK_PRESSURE	GT	30

SEARCH RESULTS in Breath number range [1, 128]

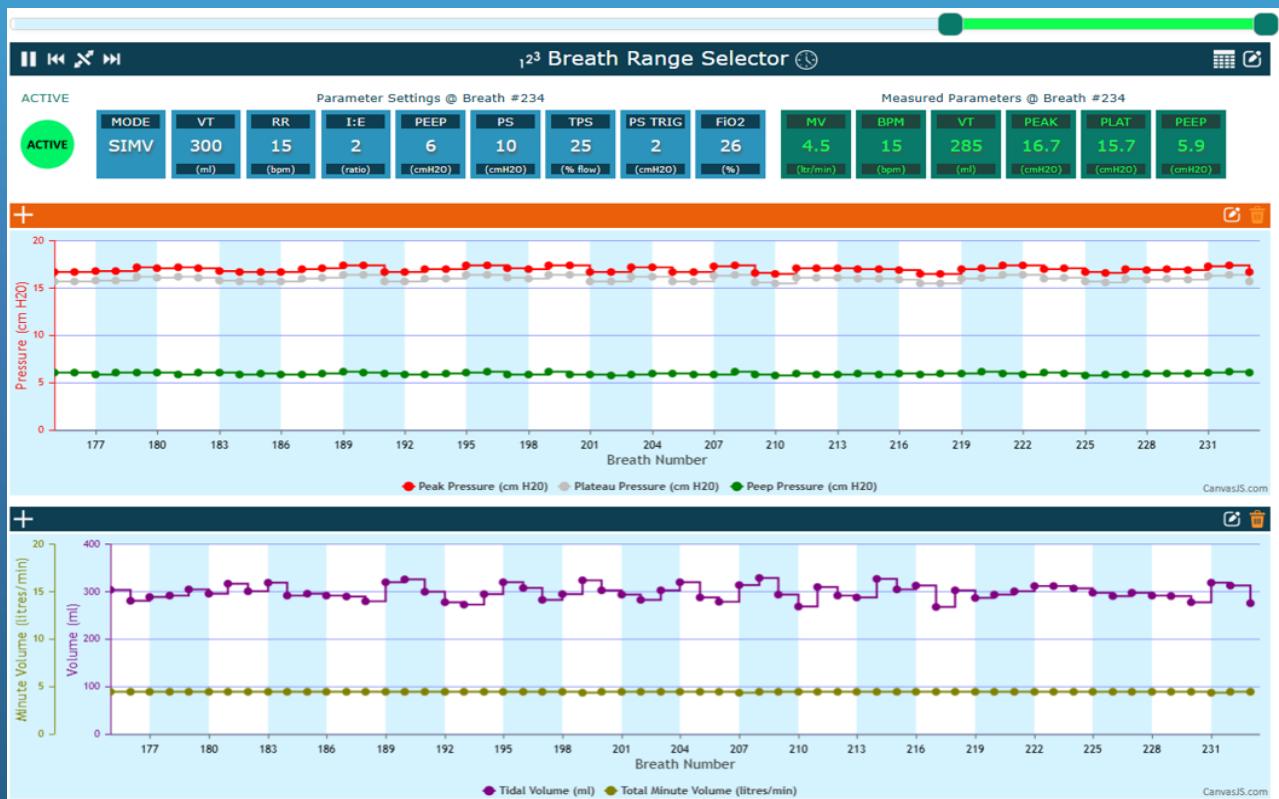
Range Select	Matching Breaths			Parameter Values			
	Number	Date	Time	MODE_SETTING	BREATH_TYPE	TIDAL_VOLUME	PEAK_PRESSURE
<input type="checkbox"/>	9	09-05-2024	17:40:56	SIMV	MANDATORY	229	37
<input type="checkbox"/>	10	09-05-2024	17:41:00	SIMV	MANDATORY	252	34
<input type="checkbox"/>	11	09-05-2024	17:41:04	SIMV	MANDATORY	278	36
<input type="checkbox"/>	43	09-05-2024	17:43:31	SIMV	MANDATORY	216	10
<input type="checkbox"/>	44	09-05-2024	17:43:35	SIMV	MANDATORY	216	10
<input type="checkbox"/>	46	09-05-2024	17:43:43	SIMV	MANDATORY	205	22
<input type="checkbox"/>	47	09-05-2024	17:43:47	SIMV	MANDATORY	227	24
<input type="checkbox"/>	48	09-05-2024	17:43:51	SIMV	MANDATORY	234	23

Range Selector to Navigate Any View Back and Forth in Time

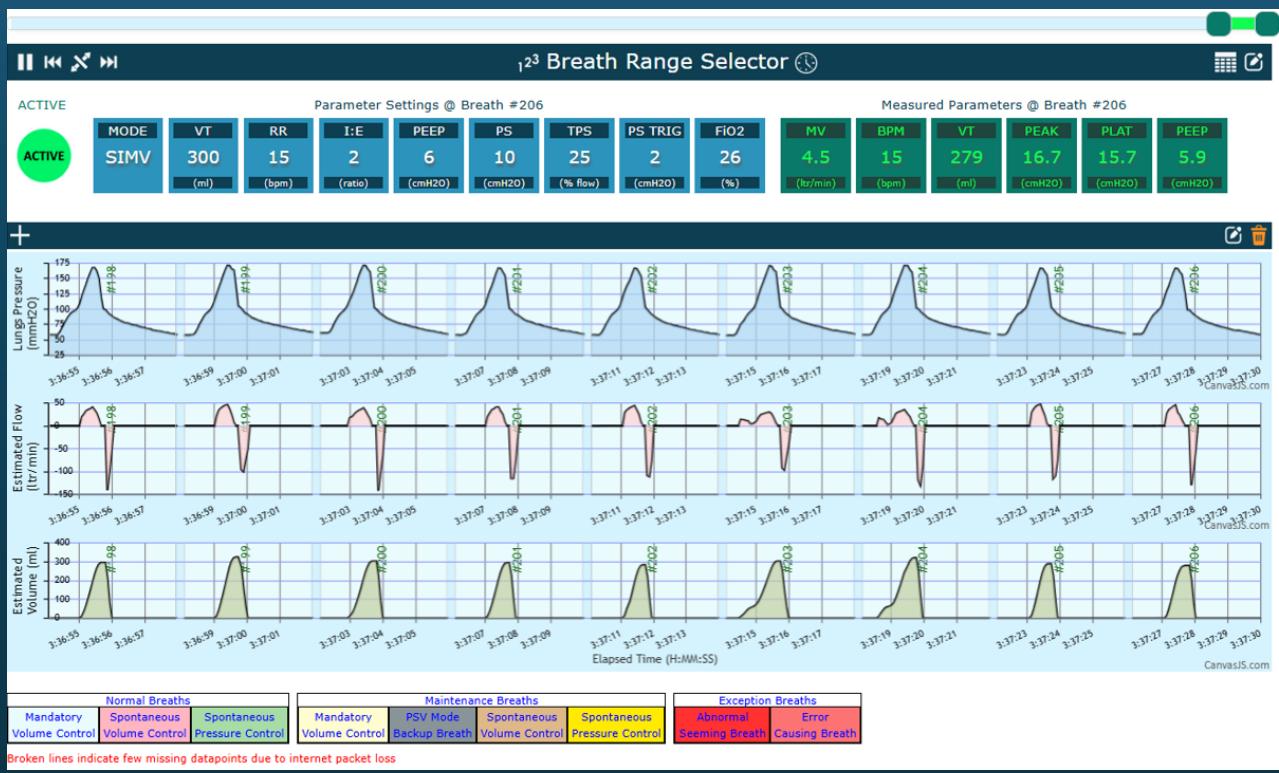
The screenshot shows a software interface titled "1²3 Breath Range Selector". The main title is in large white font, with a small clock icon to its right. Below the title, there is a subtitle "Selected Breath Range" in a larger white font. Underneath this, a table displays the selected breath range details:

	Breath Number	Breath Start Time		
		Day	Date	Time
From	520	Fri	26-Apr-2024	12:20:05
Upto	579	Fri	26-Apr-2024	12:22:58
SPAN	60	00:02:53		

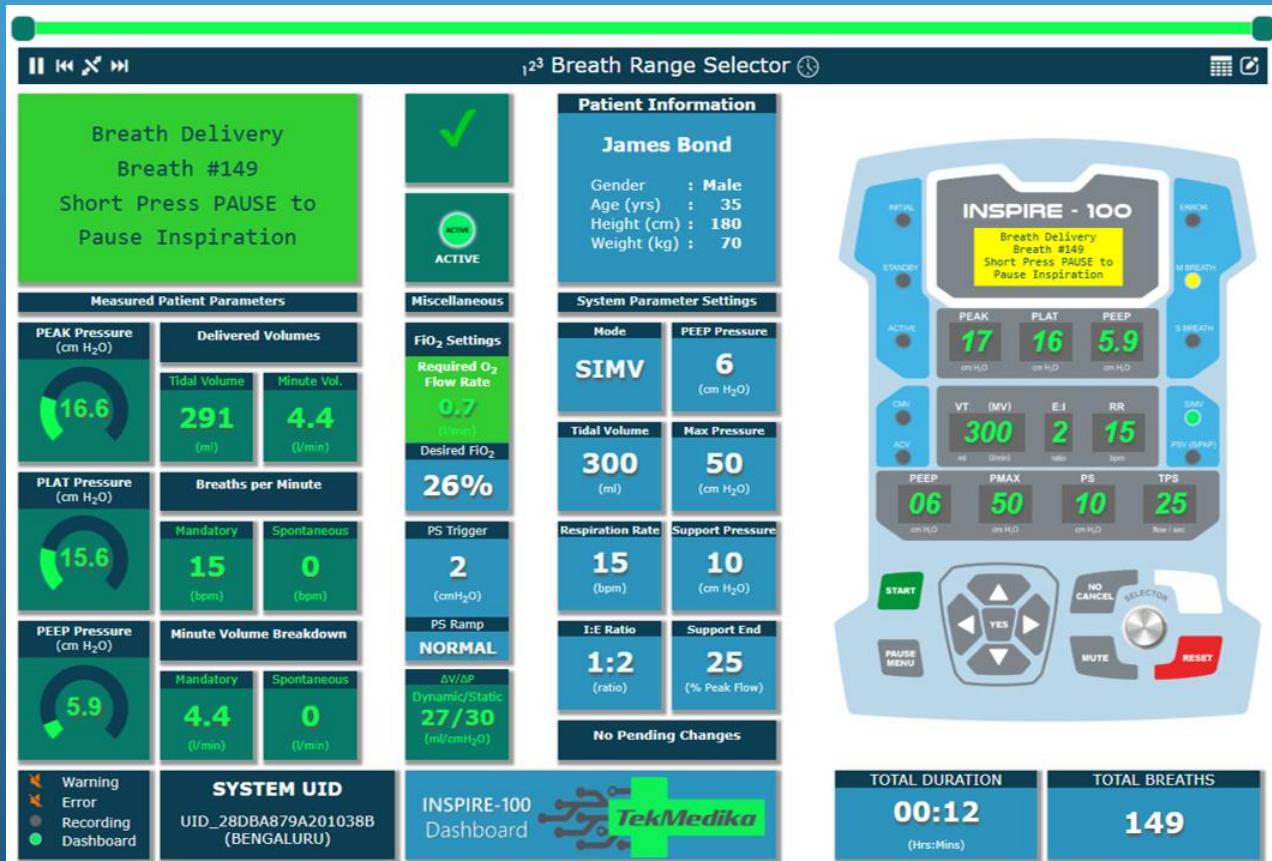
Charts for All Parameters



Pressure & Flow Waveforms



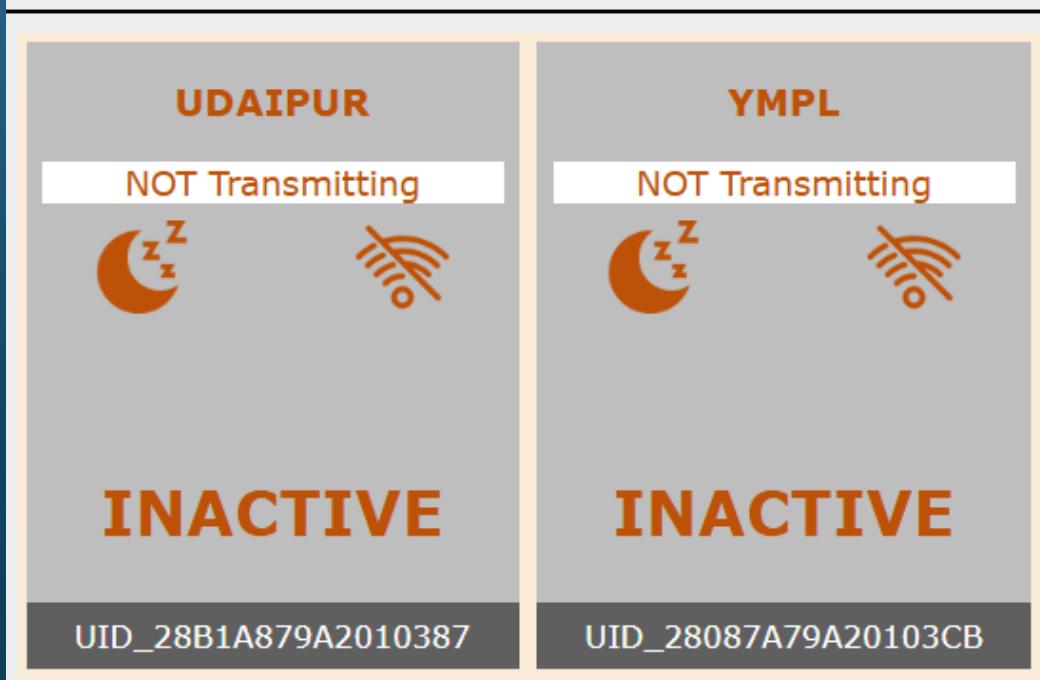
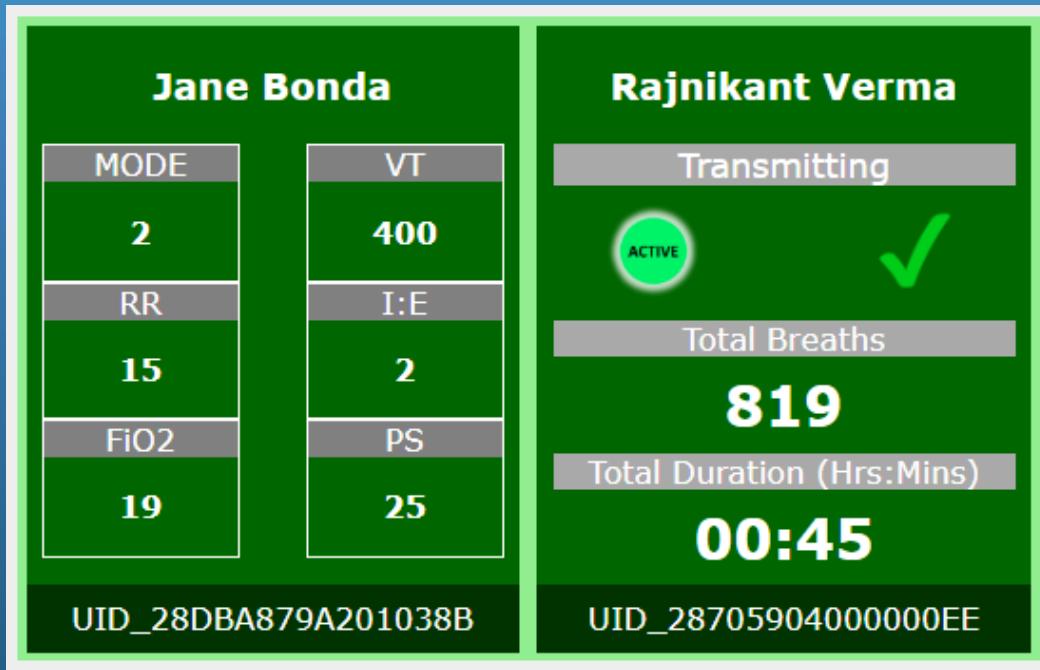
Snapshots for each Breath



Detailed Statistics

Parameters Measured				Static Information			
Parameter	Units	Min	Max	Avg	Patient Name:	Gender:	Age:
Peak Pressure	cmH ₂ O	15.9	18.1	17.0	James Bond		
Plateau Pressure	cmH ₂ O	14.9	17.1	16.0		Male	35yr
PEEP Pressure	cmH ₂ O	5.2	6.6	5.9			Weight: 70kg Height: 180cm
Tidal Volume Delivered	ml	248	344	298.6			
Total Minute Volume	litres/min	4.1	4.5	4.5			
Mandatory Minute Volume	litres/min	4.1	4.5	4.5			
Spontaneous Minute Volume	litres/min	0	0	0.0			
Mandatory BPM	bpm	14	15	15.0			
Spontaneous BPM	bpm	0	0	0.0			
FIO ₂	%	26	26	26.0			
Static ΔV/ΔP	ml/cmH ₂ O	26	34	29.9			
Dynamic ΔV/ΔP	ml/cmH ₂ O	23	31	27.2			
System Temperature	degC	30	33	31.9			
Miscellaneous Information							
Information	Value						
Number of Breaths	120						
Number of Mandatory Breaths	120						
Number of Spontaneous Breaths	0						
Number of Maintenance Breaths	0						
Number of CMV Spontaneous Breaths	0						
Number of PSV Backup Breaths	0						
Number of Missing Breath Times (Packet loss)	0						
Number of Missing Breath Waveforms (Packet loss)	1						
Number of WiFi Disconnects	0						
Number of Notifications	0						
Number of Warnings	1						
Number of Errors	0						
Parameter Settings Used							
Parameter	Units	Values					
Ventilation Mode	mode	SIMV					
Tidal Volume	ml	300					
Minute Volume	l/min	6					
Respiration Rate	bpm	15					
I:E Ratio	ratio	1:2					
PEEP Pressure	cmH ₂ O	6					
Maximum Pressure	cmH ₂ O	50					
Support Pressure	cmH ₂ O	10					
Support Pressure Termination	%flow	25					
Spontaneous Breath Trigger	cmH ₂ O	2					
FIO ₂	%	26					
Sequence of Parameter Combinations							
Parameter Combination				Starting From			
SIMV	300	15	1:2	6	50	10	25
					2	26	73
						28-Dec-2025	13:17:40

Multi-system Monitoring For Nurses Station



A summary state of all systems can be displayed on one screen. Each system is shown as a tile.



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