



## KEY FEATURES



**HIGH  
PERFORMANCE**



**HOSPITAL &  
FIELD READY**



**INTERRUPTION-  
FREE OPERATION**



**INVASIVE &  
NON-INVASIVE**



**ADULT &  
PEDIATRIC**



**COMPACT &  
PORTABLE**

- ✓ With advanced ventilation modes and precise control parameters, it provides optimal respiratory support for both pediatric and adult patients.
- ✓ It is a high-performance portable transport ventilator that meets intensive care standards.
- ✓ The ambulance ensures safe and uninterrupted operation during in-hospital transfers and in
- ✓ It provides up to 4 hours of uninterrupted operation with the built-in battery and up to 10
- ✓ It offers invasive and non-invasive ventilation modes, as well as optional high-flow oxygen
- ✓ It is suitable for both adult and pediatric patients, and its range of applications can be expanded with



# Technical Specifications

## Usage areas

The Device can be suitable for ambulance, aircraft, mobile hospitals, emergency services at the hospitals, ship hospital and on the ground

## Ventilation Modes

| Type           | Mode     | Description                                                         | Neo. | Pediat. |
|----------------|----------|---------------------------------------------------------------------|------|---------|
| Invasive Modes | IMV      | Pressure-controlled ventilation.                                    | ✓    | ✓       |
|                | PCV+     | Pressure-controlled ventilation                                     | ✓    | ✓       |
| Pressure       | P-SIMV   | Pressure-controlled synchronized intermittent mandatory ventilation | ✓    | ✓       |
|                | CPAP/PSV | Continuous positive airway pressure / Pressure support ventilation  | ✓    | ✓       |
|                | APRV     | Airway pressure release ventilation                                 | ✓    | ✓       |
|                | Bilevel  | Duo positive airway pressure                                        | ✓    | ✓       |
| Volume         | (S)CMV   | (Synchronized) controlled mandatory ventilation                     | ✓    | ✓       |
|                | V-SIMV   | Synchronized intermittent mandatory ventilation                     | ✓    | ✓       |
|                | V-A/C    | Volume - Assist Control                                             | ✓    | ✓       |
| Noninvasive    | PSV-S/T  | Pressure supported ventilation                                      | ✓    | ✓       |
|                | P-A/C    | Pressure - Assist Control                                           | ✓    | ✓       |
|                | nCPAP    | Nasal pressure support ventilation                                  | ✓    | ✓       |

## Controls

| Type                                  | Adult / Pediatric                                                                                                                                                                                                                         |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Special Functions                     | Manual breath, O <sub>2</sub> enrichment, standby, sigh, screen lock, apnea backup ventilation, inspiratory hold, dimmable screen, configurable quick-start settings, integrated pneumatic nebulizer, O <sub>2</sub> consumption display. |
| Ventilation Modes                     | See in the table above                                                                                                                                                                                                                    |
| Patient Groups                        | Adult / Pediatric                                                                                                                                                                                                                         |
| V-A/C                                 | 1 to 80 b/min                                                                                                                                                                                                                             |
| (S)CMV                                | 1 to 80 b/min                                                                                                                                                                                                                             |
| V-SIMV                                | 1 to 80 b/min                                                                                                                                                                                                                             |
| PCV+                                  | 1 to 150 b/min                                                                                                                                                                                                                            |
| Bilevel-ST                            | 5 to 80 b/min                                                                                                                                                                                                                             |
| P-SIMV                                | 5 to 120 b/min                                                                                                                                                                                                                            |
| Bilevel                               | 1 to 80 b/min                                                                                                                                                                                                                             |
| APRV                                  | 1 to 120 b/min                                                                                                                                                                                                                            |
| Tidal volume                          | 50 to 2000 ml                                                                                                                                                                                                                             |
| PEEP                                  | 0 to 25 cmH <sub>2</sub> O                                                                                                                                                                                                                |
| Oxygen                                | 40% to 100%                                                                                                                                                                                                                               |
| I:E ratio                             | 1:10 to 4:1                                                                                                                                                                                                                               |
| Inspiratory Time (TI)<br>(Adjustable) | 0.10 to 12 s                                                                                                                                                                                                                              |
| Inspiratory Flow                      | 0-200 l/min                                                                                                                                                                                                                               |
| T Slope                               | 50-1100 ms                                                                                                                                                                                                                                |
| Flow Trigger                          | Closed, 1 to 20 lt/min                                                                                                                                                                                                                    |
| Pressure Control (Adjustable)         | 4 to 60 cmH <sub>2</sub> O, added to PEEP/CPAP                                                                                                                                                                                            |
| Pressure Support (Adjustable)         | 0 to 35 cmH <sub>2</sub> O, added to PEEP/CPAP                                                                                                                                                                                            |



## Controls

| Type                                 | Adult / Pediatric                               |
|--------------------------------------|-------------------------------------------------|
| Control method                       | Front panel with rotary knob and digital button |
| Manual ventilation                   | Yes                                             |
| Inspiration hold                     | Yes                                             |
| Expiration hold                      | Yes                                             |
| O2 Flush                             | Yes                                             |
| P high (APRV / Bilevel)              | 0 to 60 cmH <sub>2</sub> O                      |
| P low (APRV)                         | 0 to 35 cmH <sub>2</sub> O                      |
| T high (APRV)                        | 0.1 to 12s                                      |
| T low (APRV)                         | 0.2 to 12s                                      |
| Expiration trigger sensitivity (ETS) | 5% to 85% inspiratory peak flow                 |

## Monitoring parameters

| Type              | Parameter            | Unit                        | Description                                                           | Numeric Monit. | Wave Forms | Vent Status | Dyn. Lung |
|-------------------|----------------------|-----------------------------|-----------------------------------------------------------------------|----------------|------------|-------------|-----------|
| Pressure          | Paw                  | cmH <sub>2</sub> O;mbar;hPa | Real-time airway pressure                                             | ✓              | ✓          | -           | -         |
|                   | Ppeak                | cmH <sub>2</sub> O;mbar;hPa | Peak airway pressure                                                  | ✓              | -          | -           | -         |
|                   | Pmean                | cmH <sub>2</sub> O;mbar;hPa | Mean airway pressure                                                  | ✓              | -          | -           | -         |
|                   | Pinsp                | cmH <sub>2</sub> O;mbar;hPa | Inspiratory pressure                                                  | ✓              | -          | ✓           | -         |
|                   | PEEP/CPAP            | cmH <sub>2</sub> O;mbar;hPa | Positive end expiratory pressure/ continuous positive airway pressure | ✓              | -          | ✓           | -         |
|                   | Pplateau             | cmH <sub>2</sub> O;mbar;hPa | Plateau or end inspiratory pressure                                   | ✓              | -          | -           | -         |
| Flow              | Flow                 | l/min                       | Real-time inspiratory flow                                            | ✓              | ✓          | -           | -         |
|                   | Insp Flow            | l/min                       | Peak inspiratory flow                                                 | ✓              | -          | -           | -         |
|                   | Exp Flow             | l/min                       | Peak expiratory flow                                                  | ✓              | -          | -           | -         |
| Volume            | Volume               | ml                          | Real-time tidal volume                                                | ✓              | ✓          | -           | -         |
|                   | VTE/VTE NIV          | ml                          | Expiratory tidal volume                                               | ✓              | -          | -           | -         |
|                   | VTI/VTI NIV          | ml                          | Inspiratory tidal volume                                              | ✓              | -          | -           | -         |
|                   | ExpMinVol/MinVol NIV | l/min                       | Expiratory minute volume                                              | ✓              | -          | -           | -         |
|                   | MVSpont/MVSpont NIV  | l/min                       | Spontaneous expiratory minute volume                                  | ✓              | -          | -           | -         |
|                   | Leak/MV Leak         | %l/min                      | Leakage minute volume Leakage percentage at the airway                | ✓              | -          | -           | -         |
| Time              | I:E                  |                             | Inspiratory-expiratory ratio                                          | ✓              | -          | -           | -         |
|                   | fTotal               | b/min                       | Total breathing frequency                                             | ✓              | -          | -           | -         |
|                   | fSpont               | b/min                       | Spontaneous breathing frequency                                       | ✓              | -          | -           | -         |
|                   | TI                   | s                           | Inspiratory time                                                      | ✓              | -          | -           | -         |
|                   | TE                   | s                           | Expiratory time                                                       | ✓              | -          | -           | -         |
|                   |                      |                             |                                                                       |                |            |             |           |
| Lung Mechanics    | Cstat                | ml/cmH <sub>2</sub> O       | Static compliance                                                     | ✓              | -          | -           | -         |
|                   | AutoPEEP             | cmH <sub>2</sub> O;mbar;hPa | AutoPEEP or intrinsic PEEP                                            | ✓              | -          | -           | -         |
|                   | P0.1                 | cmH <sub>2</sub> O;mbar;hPa | Expiratory time constant                                              | ✓              | -          | -           | -         |
| Oxygen            | O <sub>2</sub>       | %                           | Inspiratory flow resistance                                           | ✓              | -          | -           | -         |
| Battery           | Battery level        | %                           | Rapid shallow breathing index                                         | ✓              | -          | -           | -         |
| etCO <sub>2</sub> |                      | mmHg                        | Carbon dioxide level indicator                                        | -              | -          | -           | -         |
| spO <sub>2</sub>  |                      | bpm                         | O <sub>2</sub> level indicator                                        | -              | -          | -           | -         |



## Main View

|                               |                                                                                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------|
| Graphics                      | Graphic image of target and valid parameters for tidal volume, pressure, patient activity and minute vent. |
| Monitoring                    | Display of more than 50 monitoring parameters                                                              |
| Real-time automatic waveforms | Paw, Flow, Volume, Plethysmogram, and Capnograph                                                           |
| Others                        | P-V, V-Flow, P-Flow, Trends: 1, 6, 12, 24, and 72 hours                                                    |

## Alarms

|                     |                                                                                                                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operator adjustable | Low/high minute volume, low/high pressure, low/high tidal volume, low/high rate/frequency, apnea time, low/high oxygen, low/high FIO <sub>2</sub> , low/high pulse, low/high perfusion index, flow, low/high PVI, low/high SpMet, low/high SpHb, Alarm reset                       |
| Alarm Limits        | Alarm limits can be set at intervals determined by the operator, Low battery                                                                                                                                                                                                       |
| Special alarms      | O <sub>2</sub> cell, disconnection, Patient circuit clogged, exhalation obstructed, loss of PEEP, pressure not released, flow sensor, expiratory valve, pressure limitation, performance limited, battery, power supply, gas supply, oxygen concentration, check patient interface |
| Loudness            | Adjustable (1 – 6), configurable minimum loudness,                                                                                                                                                                                                                                 |

## Maintenance

|              |         |
|--------------|---------|
| Product Life | 5 years |
|--------------|---------|

## Standards

|           |                                                                                                                                                                         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standarts | ISO 13485, ISO 14971, IEC 60601-1, IEC 60601-1-2, IEC 60601-1-6, IEC 60601-1-8, IEC 60601-1-12, IEC 62304, IEC 62366-1, ISO 80601-2-12, ISO 15223-1, ISO 20417, EN 1789 |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Configurations

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard Accessories | Carry Case, Single-Use Adult Patient Circuit, Single-Use Paediatric Patient Circuit, Adult and Paediatric Flow Sensor, External Flow Sensor Connector and Cable, Bacterial Filter, Disposable Exhalation Valve, 1.5-metre O <sub>2</sub> Hose with Quick Coupler, O <sub>2</sub> Connection Hose, 12V Adapter                                                                                                                                                    |
| Optional Accessories | Transport unit for bed or stretcher with ambulance mounting kit, O <sub>2</sub> Cylinder, protection kit and handle with Carrying bag, Reusable Adult and Pediatric Flow Sensor, Sensor Data Cable, Bacteria Filter, Mask, Carry Stand, 2-3-4-5-lt O <sub>2</sub> Tube, O <sub>2</sub> Regulator with two Manometers, 1.5 meter Oxygen Hose with Quick Coupling with O <sub>2</sub> Prop, Trolley stand, Humidifier support, cylinder holder, tubing support arm |

## Electrical and pneumatic specifications

|                    |                                                                                 |
|--------------------|---------------------------------------------------------------------------------|
| Input Voltage      | 12 V DC 5 A                                                                     |
| Power Consumption  | 100-240 V 50-60 Hz - 60 Watt                                                    |
| Backup Batterytime | Typical 4 hours with one internal battery. Maximum 10 hours with extra battery. |
| Oxygen Supply      | 2.7 to 6 bar (internal/external cylinder or hospital central system)            |
| Air Supply         | Integrated turbine (dry air)                                                    |
| Peak Flow          | 200 l/min                                                                       |



## Environment

|                      |                                                                         |
|----------------------|-------------------------------------------------------------------------|
| Temperature          | Operating: -15°C to 50°C (adult / pediatric) Storage: -18°C to 60°C     |
| Humidity             | 5% to 95% noncondensing (operating), 10% to 95% noncondensing (storage) |
| Altitude             | Up to approx 70 to 200 Kpa                                              |
| Degree Of Protection | IP44                                                                    |
| Interface Connectors | USB, COM1 (RS-232), nurse call, or optional bluetooth                   |
| Event Log            | Storage and display up to 2,000 events with date and time stamp         |

## Physical dimensions

|                           |                                                                                          |
|---------------------------|------------------------------------------------------------------------------------------|
| Size                      | 241(W) x 160(H) x 116(D) (without handle)                                                |
| Weight                    | 3.5 kg (basic weight)                                                                    |
| Display                   | 7.1 inch, LCD color, touch screen                                                        |
| Main Patient Output       | ISO 5356-1; 22OD/15ID                                                                    |
| Oxygen Input              | DISS or NIST, with the option of using O <sub>2</sub> cylinder or hospital center system |
| Low Pressure Oxygen Input | CPC quick coupling                                                                       |



**MODÜL GRUP MÜHENDİSLİK MED.A.Ş.**

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