

UVENT-S ICU Ventilators

Our contribution
to the fight against COVID-19

COVID-19



Solutions that support patients
and assist clinicians





UVENT-S ICU Ventilators Features to support clinicians and COVID-19 patients

Search for prompt and reliable solutions in respiratory support in this time of increasing numbers of COVID-19 being recognized as a large and growing global challenge for healthcare sector and medical equipment manufacturers.

Modern ventilators in the time of the coronavirus pandemic must be high-class and provide a wide range of options. Including non-invasive and protective ventilation modes, oxygen therapy with humidification, continuous, and remote monitoring.



For the respiratory support of patients with coronavirus, UTAS has implemented several innovative solutions in UVENT-S ICU ventilators.

High Flow Oxygen Therapy

High Flow Oxygen Therapy (HFOT) with high-quality humidification and Nasal Cannula.

The primary strategy for COVID-19 patients is supportive care, including oxygen therapy for hypoxaemic patients, in which high-flow nasal cannula (HFNC) has been reported to be efficient in improving oxygenation.

Among patients with acute hypoxaemic respiratory failure, HFNC was proven to avoid intubation compared to conventional oxygen devices.^{[1,2](#)}



High Flow Oxygen Therapy (HFOT)
 with high-quality humidification and Nasal Cannula.

UVENT-S Ventilators provide

- ◆ **High-quality humidification** of the air-oxygen gas
- ◆ **Oxygen concentration adjustment** with SpO₂ monitoring for control and maintenance of optimal oxygen concentration during inspiration.
- ◆ **Wide range of flow rate setting (up to 80 l/pm)** to facilitate the setup to increase FRC and effectively compensate early signs of respiratory failure.

Protective ventilation with adaptation to the dynamic patient's needs

New adaptive ventilation modes in UVENT-S guarantee the protection of the affected lungs during long-term ventilation.

In UVENT-S Ventilators we implemented two intelligent adaptive modes:

- ◆ **AdVent** — Adaptive Ventilation mode with guaranteed minimum minute ventilation.
- ◆ **ProVent** — The Newest Adaptive Ventilation mode with volume-based intelligent support.



AdVent mode maintains operator-preset minute ventilation regardless of the patient's activity and automatically changeover to support ventilation based on spontaneous respiratory effort of the patient.

This mode is using lung protection strategy for patient safety and to reduce the number of events associated with complications caused by ICU ventilator.



The foundation of intelligent ventilation is the breathing support with ICU ventilator's automatic adaptation to the dynamically changing mechanics of the patient's breathing during treatment.

ProVent maintains operator-preset minute ventilation with the protective ventilation with automatic respiration rate detection and breathing mechanics continuous analysis. Each mandatory inspiration is adaptive: in case of spontaneous respiratory effort, the patient receives additional flow support.

After the breathing mechanics data (R, C, RCexp, Fspont etc.) is collected, ventilator applies optimal settings of breath rate, tidal volume, I:E ratio, and synchronization type.

Adaptive ventilation modes provide quality respiratory support for COVID-19 patients with minimal setup time. By using intelligent ventilation modes clinicians can reduce the number of readjustments of ventilation settings, which are commonly required during respiratory support as patient condition continuously changes during therapy. And the time previously spent on setting up the ventilator, medical personnel can devote to patients and optimize the work process.

Increased patient comfort and safety with helmet ventilation

Non-invasive ventilation with a helmet in UVENT-S is implemented as a separate mode with an adjustable base flow to replace CO₂.



Non-invasive ventilation with helmet in CPAP/PS mode

- ◆ **Special mode with the adjustable base flow** and maximal synchronization with the patient's respiratory effort.
- ◆ **The helmet does not have any pressure points on the face**, thereby reducing patient discomfort and improving device tolerance without the risk of skin necrosis.³
- ◆ **The helmet allows a patient to interact with clinicians during treatment**, to drink or even eat through a special port, to see and to talk.

◆

**UVENT-S ICU Ventilators have the optimal patient's breathing support system
 for non-invasive ventilation with the helmet.**

Ventilation with the helmet is using CPAP/PS mode — with the permanent base pressure level, which is defined by PEEP. With activated pressure support, each spontaneous breath effort is supported by pressure.

Continuous Respiratory Mechanics and Gas Exchange monitoring



Built-in SpO₂ and CO₂ channels and visual monitoring in UVENT-S

- ◆ **Built-in SpO₂ and CO₂ channels** and a wide range of vital functions monitoring.
- ◆ **Continuous monitoring of saturation** is critically important in the case of COVID-19 patients.
- ◆ **CO₂ level measurement in mainstream or sidestream**, as well as volumetric capnometry visualization possibility.



Integrated SpO₂ and CO₂ monitoring in UVENT-S ICU Ventilators allow clinicians to evaluate the respiratory support relevance and efficiency continuously. It is critically important during the fast progression of the disease and dynamic changes of a patient with COVID-19 status.

Monitoring data can be displayed on the **additional HD-display with UniScreen™ technology**. It allows clinicians to optimally configure the information on each of the screens if it is necessary.

Fast diagnostics of the lungs status right at the patient's bed with an compatible ultrasound probe

The lungs status monitoring with an point-of-care ultrasound probe* (POCUS) makes possible the fast receiving of information without transporting patient to the diagnostic room.



Visualization of compatible ultrasound on the additional HD-display by UniScreen™ technology

- ◆ **A simple, fast, and effective way for diagnosing the lungs' status:** maximum information without using fluoroscopy.
- ◆ **Quickly choose a strategy and individual tactic of respiratory therapy** for patients with acute respiratory failure (patient selection).
- ◆ **Reducing radiation doses to patients.** This factor is especially important in the COVID-19 treatment.
- ◆ **UVENT-S is compatible with POCUS and can directly visualize lung complications on HD-display** during the ventilation.

POCUS makes possible immediate diagnostic procedure by Extended Focused Assessment with Sonography in Trauma (eFAST) and lung status monitoring with ultrasound.

With BLUE-protocol and FALLS-protocol diagnose the majority of the complications in critical conditions are easy quickly and accurately.

* This feature may not be available on your market. For more information, please, contact sales department or authorized representative in your region.

Innovative Intubation Support Tool

Intubation support with compatible video laryngoscope* and built-in supporting maneuver.

- ◆ **Visual control of the tube positioning with an compatible video laryngoscope** and vizualization on additional HD-screen by UniScreen™ technology.
- ◆ **Built-in maneuver “Intubation support tool”** with preoxygenation mode and adaptive respiratory support.



Compatible video laryngoscope vizualization
on additional HD-screen by UniScreen™ technology.

The compatibility with video laryngoscope allows clinicians to get visual control on the HD-screen of the real-time tube positioning. That makes intubation procedure easier, and increases patient safety.

This tool in UVENT-S includes preoxygenation and oxygenation during the intubation with continuous SpO₂ and CO₂ monitoring via built-in pulse oximeter and capnograph.

* This feature may not be available on your market. For more information, please, contact sales department or authorized representative in your region.

Remote patient monitoring during respiratory support

Remote monitoring during respiratory support for the patients with COVID-19 is the solution to access the real-time patients' vital data from any location via the internet using UNET-S Central Station and UniViewer*.

UVENT-S Respiratory Station continuously transmits information to the UNET™ central station.

The Central Station can be located outside the patient care infected areas.

Via UNET™ Central Station and UniViewer solution clinicians can monitor the patients' status without increasing the contact time even in the case of limited human resources.

UniViewer display important measuring parameters such as waveforms, alarms, and numeric data on any clinical personnel mobile devices.



Data visualization on tablet and smartphone

Remote monitoring of the patient condition with COVID-19 during respiratory support using UNE-S Central Station and UniViewer solution:

- ◆ **No need to be constantly at the patient's bedside.**
- ◆ **Reduce virus load and the risk of the hospital-acquired infection.**
- ◆ **Increases the possibility to monitor patient's status by qualified medical personnel, especially in conditions of high workload in the ICU.**
- ◆ **The possibility of remote consultation with colleagues around the world.**

* This feature may not be available on your market. For more information, please, contact sales department or authorized representative in your region.



Solutions that **UTAS** implemented in **UVENT-S ventilators**
support clinicians in the face of the rising patient load in hospitals.

At the same time, our solutions ensure the patients' safety, improve the care quality, and reduce potential risks, especially taking into account acute complications of COVID-19.

This is our contribution to the fight against the COVID-19 pandemic.

References

1. Rochweg B, Granton D, Wang DX, et al. High flow nasal cannula compared with conventional oxygen therapy for acute hypoxemic respiratory failure: a systematic review and meta-analysis. Intensive Care Med 2019; 45: 563–572. doi:[10.1007/s00134-019-05590-5](https://doi.org/10.1007/s00134-019-05590-5).
2. Li J, Jing G, Scott JB. Year in review 2019: high-flow nasal cannula oxygen therapy for adult patients. Respir Care 2020; 65: 545–557. doi:[10.4187/respcare.07663](https://doi.org/10.4187/respcare.07663) [Abstract/FREE Full Text](#)
3. Patel BK, Wolfe KS, Pohlman AS. Effect of noninvasive ventilation delivered by helmet vs face mask on the rate of endotracheal intubation in patients with acute respiratory distress syndrome: A randomized clinical trial. JAMA. 2016;315:2435–2441. [[PMC free article](#)]