

# bioSCOPE

# Safe Protection of **Neural Functions**



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Safe Protection of **Neural Functions** 

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# INNOVATIVE MEDICAL TECHNOLOGIES

Since 2012, Biosys has been producing innovative medical technologies with the combination of R&D experience of engineers who are experts in their fields, and doctors with high field experience, and creating new generation solutions by identifying the needs of the sector. Biosys is constantly working to improve health services worldwide and to enable more people to access these services.

It aims to be a pioneer with its new project Neuromonitor device "Bioscope", which goes beyond Intensive Care Type Mechanical Ventilation Device "Biyovent", "Bio2Flow" providing High Flow Oxygen therapy, Humidifier device "Bioaqua" and Patient Monitor Device "Biolog".

Biosys Biomedical Engineering, in cooperation with Aselsan, Arçelik, Baykar and Infinium (USA) Defense in previous projects, gained experience in the sector and then started to produce the Patient Monitor Biolog in its own facilities.

As of 2022, Biosys Biyomedikal A.Ş established Biosys GmbH and started to make some of its production in Germany.

### DETAILED RESEARCH CORRECT RESULT



to meet the needs of the health sector, there are deficiencies, especially in intensive care systems and that these deficiencies directly affect both healthcare professionals and patients. In the direction of this awareness, we have developed the Biyovent Intensive Care Type Mechanical Ventilator Device as a result of the 5-year R&D work that we have progressed with the opinions of experienced doctors.

biO<sub>f</sub>low

bioaqua

bioSC@PE

While we are leading the way in Turkey for the production of intensive care type mechanical ventilator devices through Biyovent, which we developed with the support of the Republic of Turkey Ministry of Science, Industry, and Technology, TÜBİTAK, Bilkent University Cyberpark, we also make a difference in the world's health sector thanks to its high-level features. In addition to achieve great success in a short time with this new generation technology, we also make contributions to the health of many people all around the world.

BİYOVENT

bioLOG

### FUTURE Projects

Hemodialysis Machine Anesthesia Machine Home Type Ventilator Nebuliser Endoscopic Capsule



### INNOVATIVE DESIGN, FUNCTIONAL USAGE

#### Designed for patient safety, Optimized with doctors.

The Bioscope Neuromonitor Device minimizes the risk in operations such as thyroid, parathyroid, hand-face surgery, ENT surgery where the nerve injury risk is high. It provides patient safety by testing nerve-function integrity during the operation. The feedbacks are made according to the data obtained from the doctors. It prevents injuries and permanent damage situations.

### Why Bioscope?

- Maximum patient and doctor safety
- Long-term battery life
- Detailed operation report and documentation

bioSC@PE

- Functional and aesthetic interface
- Portable design and easy installation

biO<sub>2</sub>flow

bioaoua

## EASILY PORTABLE, MULTIFUNCTIONAL NEUROMONITOR

#### Working Principle

- Electrodes are used for direct contact with the nerve and surrounding tissues.
- Electrical stimulation is generated with the electrode used.
- The emerging electrical stimulation is transmitted to the relevant muscle by the stimulated nerve. This electrical signal formed in the muscle is transferred to the device.
- The recording electrode converts the electrical signal into sound and image.
- The signals that are converted into images are controlled by the surgeon.
- The operator processes the signal along with the acquired image and sound.

Neuromonitoring not only locates the recurrent laryngeal nerve, but also detects variant nerve tissues, finds impaired locus, provides help in positioning the neural restoration process, and helps for interpretation of the state of vocal cord function after surgery.

#### **Physical Features**

- ▶ Height: 30 cm
- Depth: 12 cm
- Width: 35 cm
- Weight: 4.5 Kg

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**BİYOVENT** 

**BIOSCOPE** Safe Protection of Neural Functions







## HIGH DATA SECURITY, AND DETAILED DOCUMENTATION

### Your Health is in Safe Hands with High Safety Measures

#### **Consumables and Accessories**

- > The device is used by an adapter cable and a control connection cable.
- ▶ It is compatible with the use of monopolar and bipolar probes.
- ▶ It is suitable for the use of EMG Endotracheal Tube and EMG electrodes.

#### **Technical Features**

- Audio and visual feedback
- Data recording and reporting
- Electrode status control with impedance measurement
- 2-hour battery strength
- Artifact cancellation.

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Hibernate (Display Disabled Mode)





#### **Electrical Supply**

- Current: 2 A
- Power: 40 W
- Voltage: 19 VDC
- Stimulator Isolation: 3750 V
- EMG Isolation: 5000 V
- Use of Medical Grade Adapter

- Modes
- Single channel measurement,
- Dual channel measurement,





#### **Stimulator Parameters**

▶ Current: 0.01-30 mA ► Frequency: 1 Hz-5 Hz Output Sensitivity: ±0.01 mA ± 10% Measurement Sensitivity: ±0.02 mA ± 10% Compliance Voltage: 36 V (Optional 90 V) ▶ Wave Width: 50, 100, 150, 200, 250, 300 us Duration: 10, 20, 30, 40, 50, 100 ms ▶ Time to Reach Target Current: Less than 10 us

### SAFE PROTECTION OF **NEURAL FUNCTIONS**

### Neuromonitoring

Intraoperative neuromonitoring (IONM) is the process of examining the effects on nervous system by creating electrical impulses. Electrodes are attached to certain muscle groups based on the type of surgery. The attached electrodes record your nervous system's response to electrical stimulation and show changes in your nervous system's functioning on the neuromonitoring device's screen. It transmits the unusual data emerging in the nervous system to the operators.

#### **Display Features**

- ▶ 10.1" sized touchscreen
- ▶ 1024 x 600 resolution
- ► 50 uV- 50 mV Vertical Display Modes

BIOSCOPE aims to convey the desired operations to the operator quickly and accurately by aiming at simplicity with its screen design.













## **TECHNICAL FEATURES**

General Features
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Audio and visual feedback

Data recording and reporting

Electrode status control with impedance measurement

Artifact cancellation

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EMG Amplifier	
Input	1/2 channels
Automatic/Manuel Gain Selection	1-50K
Band Width	30 Hz-30 KHz
Input Sensitivity	1uV- 40 mV
Input Noise	Maximum input voltage noise of 8 nV/√Hz at 1 kHz 100 fA/√Hz current noise at 1 kHz
Input Impedance	30 GΩ
Common Mod Rejection	>90 dB@60 Hz
DC Offset Rejection	±4.00 vDC

Physical Features		
Height	30 cm	
Depth	12 cm	
Width	35 cm	
Weight	4.5 Kg	

#### Internal Fuse

32 mA Model F, 250 V 5 x 20 mm (Other similar fuses may not provide the same degree of protection.)

#### Display Features

- 10.1" sized touchscreen
- 1024 x 600 resolution
- 50 uV-50 mV Vertical Display Modes
- Hibernate (Display Disabled Mode)

Stimulator Parameters		
Current	0.01-30 mA	
Frequency	1 Hz-5 Hz	
Output Sensitivity	±0.01 mA ± 10%	
Measurement Sensitivity	±0.02 mA ± 10%	
Compliance Voltage	36 V (Optional 90 V)	
Wave Width	50, 100, 150, 200, 250, 300 us	
Duration	10, 20, 30, 40, 50, 100 ms	



Electrical Supply		
Current	2 A	
Power	40 W	
Voltage	19 VDC	
Usage of Medical Grade Adaptor		
Double Electrical Isolation		
2 hour battery strength		

#### Alarms

Battery Alarm

High Current Alarm

High Voltage Alarm

High Temperature Alarm

Voltage Alarm

Probe Connection Alarm

#### Modes

Single channel measurement

Dual channel measurement