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# Технические характеристики на устройства контроля PulsioFlex, устройства расширенного мониторинга NICCI, CeVOX компании **GETINGE**

**Виды товаров:** приборы мониторинга сердечного индекса, устройства гемодинамического мониторинга, устройства центральной венозной сатурации кислорода, устройства контроля.

# PulsioFlex Monitor

Patient focused flexibility

Modular platform with intelligent visualization for advanced patient monitoring



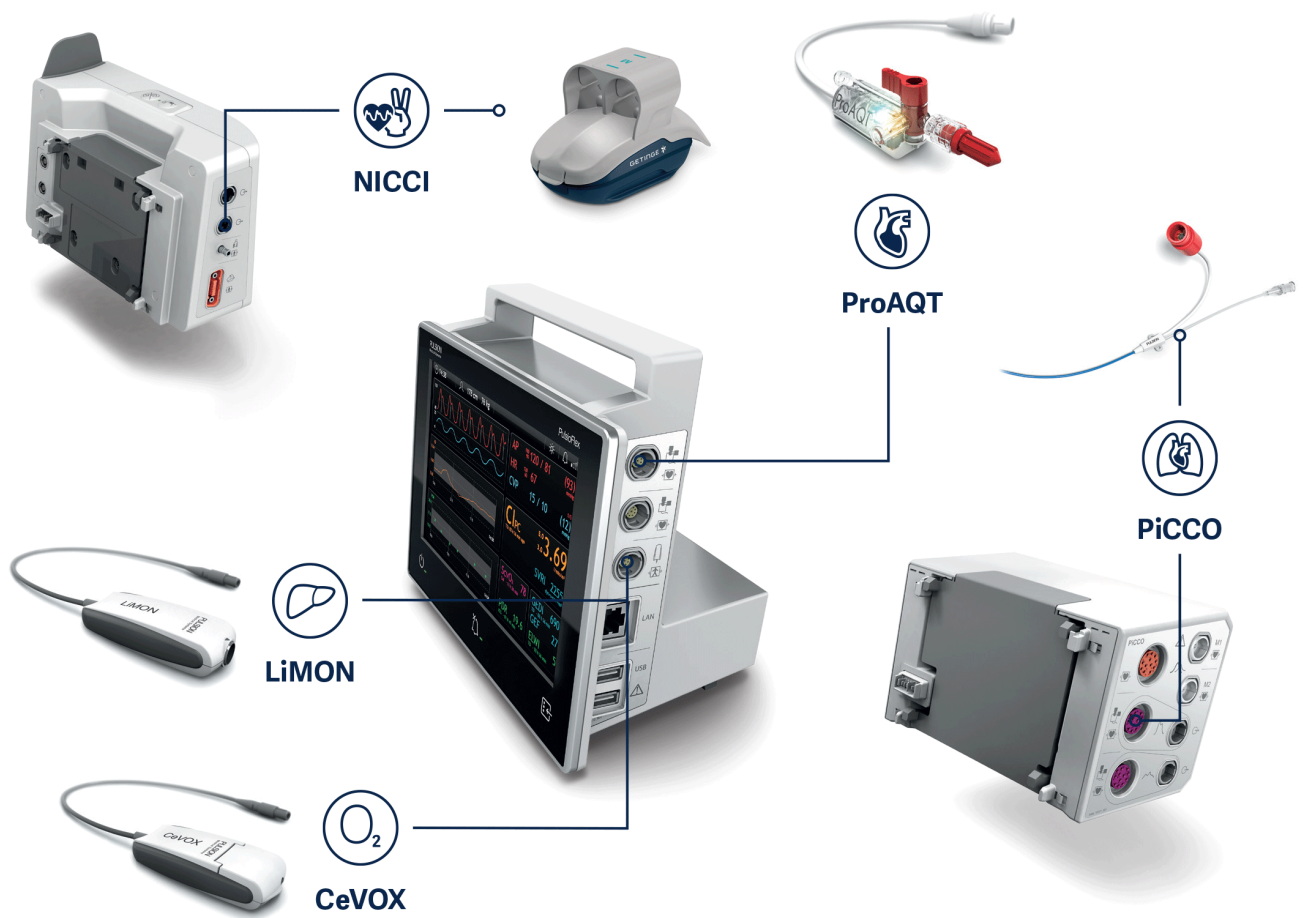
Flexible and patient-focused advanced hemodynamic monitoring

PulsioFlex is a flexible platform with intelligent visualization for advanced hemodynamic patient monitoring. Through modular expandability and the availability of our efficient monitoring technologies, the system is able to be adapted to each patient's individual need at any time:

- Meeting your information requirements
- Matching your clinical setting (OR, ER, ICU)
- Adapted to your patient's risk level

Technical specifications are subject to change without further notice

The medical device is CE marked according to Directive 93/42/EEC.



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## Optimal readability

- Brilliant 8" LED color screen with high resolution
- Dark background and wide reading angle (>170°)

## Easy to use

- Glass touch screen and intuitive user interface
- Individually adjustable parameter layout

## Comfortable handling

- Minimised dimensions and low weight
- Flexible mounting and installation possibilities

## Future- proof platform concept

- Modular expandability with automatic module detection
- Network compatible e.g. print function via hospital network

## Application

PulsioFlex is a flexible monitoring platform optimized for perioperative and intensive care monitoring.

It can be adapted to individual needs in order to answer the following questions:

Detection of  
perioperative and  
intensive care  
deterioration of  
hemodynamics:

operative volume  
optimization:

patients with  
increased post-  
operative risk  
profile:

**ProAQT/CeVOX**

- Is the systemic oxygen supply stable?  
CO Trend, ScvO<sub>2</sub>
- Will an increase in preload lead to a higher CO?  
SVV / PPV

**PiCCO / ProAQT**

- Is the patient adequately filled?  
CO, preload, lung water, volume responsiveness SVV / PPV

**CeVOX / LiMON**

- Is there or was there hypoxia?  
Continuous ScvO<sub>2</sub> monitoring
- Is there increased risk due to liver dysfunction/reduced splanchnic perfusion?  
PDRICG – global liver function

Post-operative management of  
haemodynamic complications:

Special risk and function  
monitoring in liver surgery:

**PiCCO / CeVOX**

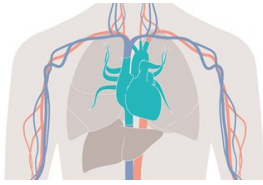
- Adequate oxygen supply?  
CO, ScvO<sub>2</sub>
- Volume or catecholamines?  
CO, preload, contractility, afterload
- Does an increase in preload lead to a higher CO? Volume responsiveness  
SVV / PPV
- Risk of volume overload?  
Lung water

**LiMON**

- Is there graft dysfunction post liver transplantation?  
PDRICG – global liver function
- Is the remaining liver function enough to withstand a planned liver resection?  
PDRICG – global liver function

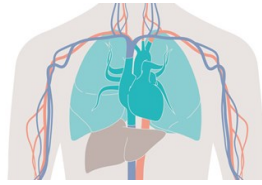
\*This parameter will not be available on the PulsioFlex monitor from software version 5.0

## At a certain point you will need more information about your patient's hemodynamic condition



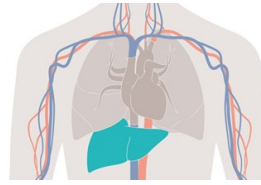
### Professional arterial flow\* CO trend monitoring with ProAQT:

- CO trend monitoring via a standard arterial catheter line
- Manual and automatic calibration possible
- Validated start value determination and PiCCO based pulse contour algorithm for beat by beat cardiac output trend



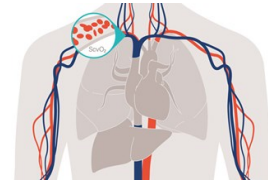
### Complete hemodynamic monitoring with PiCCO:

- Calibrated real-time CO and stroke volume
- Determination of preload volume and diagnosis of pulmonary oedema
- Afterload, contractility and volume responsiveness



### Liver function monitoring with LiMON:

- Liver function test available at the bedside
- Non-invasive measurement of the plasma disappearance rate of indocyanine green (PDRICG)
- High specificity and sensitivity for liver dysfunction



### Continuous ScvO2 monitoring with CeVOX:

- Fiberoptic measurement via standard CVC
- Calculation of oxygen extraction O<sub>2</sub> ER
- Assessment of oxygen balance (O<sub>2</sub> delivery vs. O<sub>2</sub>consumption)

\* the Q of ProAQT is the physical symbol for flow

## Parameter



### NICCI

### ProAQT

### PiCCO

### CeVOX

### LiMON

#### Invasiveness

Noninvasive

Minimally  
invasive  
Arterial line

Less  
invasive  
Arterial  
catheter

#### Pulse contour analysis (continuous)

#### Chronotropy

PR

HR

HR

#### Blood Pressure

AP<sub>sys</sub>, AP<sub>dia</sub>,  
MAP

AP<sub>sys</sub>, AP<sub>dia</sub>,  
MAP

AP<sub>sys</sub>, AP<sub>dia</sub>,  
MAP

#### Flow

CI<sub>Trend/Cal\*\*</sub>,  
SVI

CI<sub>Trend/Cal\*\*</sub>,  
SVI

CI<sub>PC\*</sub>, SVI

#### Contractility

dPmx, CPI

dPmx, CPI

dPmx, CPI

#### Afterload

SVRI

SVRI

SVRI

#### Volume Responsiveness

SVV/PPV

SVV/PPV

SVV/PPV

#### Thermodilution (discontinuous)

#### Flow

CI<sub>TD\*\*\*</sub>

#### Preload

GEDI

#### Contractility

CFI, GEF

#### Pulmonary edema

ELWI, PVPI

#### Oximetry

#### Oxygen saturation

ScvO<sub>2</sub>

#### ICG elimination

#### Liver function

PDR, R15

Getinge is a medical device manufacturer and does not practice medicine. Getinge does not recommend these values for use on a specific patient.

\* Cardiac index derived from pulse contour

\*\* Calibrated from internal or external reference value

\*\*\* Cardiac index derived from thermodilution

# NICCI Technology

## Advanced Hemodynamic Monitoring at your fingertips

NICCI is the latest innovation in Advanced Hemodynamic Monitoring, providing continuous and noninvasive hemodynamic insights.

\*The availability of NICCI depends on regional regulatory approval status



## Re-thinking Hemodynamic Monitoring

NICCI helps guiding individual treatment decisions by reliably providing dynamic parameters, such as mean arterial pressure (MAP), cardiac index (CI), stroke volume variation (SVV) and pulse pressure variation (PPV).

## Parameter



### Hemodynamic insights

Based on the pulse contour analysis, NICCI analyses the pressure curve and derives parameters providing valuable information about the blood flow, preload, afterload as well as contractility.

### Parameters provided by NICCI:

- [AP<sub>sys</sub>, AP<sub>dia</sub>](#)
- [MAP – Mean Arterial Pressure](#)
- [PR – Pulse Rate](#)
- [CI - Cardiac Index](#)
- [SVI - Stroke Volume Index](#)
- [SVV - Stroke Volume Variation](#)
- [PPV - Pulse Pressure Variation](#)
- [SVRI - Systemic Vascular Resistance](#)
- [CPI - Cardiac Power Index](#)
- [dPmx - Left Ventricular Contractility](#)





## Hypotension – an unknown risk?

Studies show: intraoperative hypotension is a fact. Even short hypotensive episodes are associated with severe complications. [\[1\]](#), [\[2\]](#)

### Learn more about hypotension:

- Why is intraoperative hypotension so common?
- What kind of risks does it bear?
- Is there a way to reduce hypotensive phases?

## Never miss a beat

Blood pressure is one of the most important variables evaluated during almost every medical examination. However, recent studies show that fluctuations in blood pressure may be missed due to standard intermittent readings. [\[3\]](#), [\[4\]](#)

Hypotension related complications can be reduced by continuous, noninvasive blood pressure monitoring. [\[1\]](#), [\[2\]](#) NICCI helps to ensure you never miss a beat.

## Peri-operative Value Card

Treatment decisions can be determined faster if they are confirmed by an algorithm and hemodynamic normal values. The Peri-operative Value Card allows to reflect on hemodynamic key questions:

1. Is this an adequate Cardiac Index (CI) for the individual patient?
2. Would my patient benefit from fluid loading or inotropic/vasoactive drug treatment?
3. Is the MAP continuously over 65 mmHg?

## Hemodynamic Monitoring has never been easier



### 2 finger cuff

Integrated 2 finger cuff with alternating measurement for continuous performance



### Ergonomic design

Ergonomic design for best possible patient comfort



### Click & play mechanism

Click and play mechanism allows an easy assembly and measurement start



### Smart design elements

Smart design elements like integrated cable and storage functionality

## Success in everyday use: easy setup, fast results

The NICCI Sensor contains two finger cuffs and performs an automatically alternating continuous measurement at the patient's finger. The easy click mechanism allows a fast setup. Smart features of the NICCI Module, like the integrated cable storage and quick access keys allow a simple handling.





## NICCI Sensor in 3 sizes

1. **Comfortable fit** - Ergonomically designed to fit on left/right, index/middle or middle/ring finger
2. **Dual Cuff Sensor** - Automatically alternating finger cuffs for improved patient safety – max. application on one finger is 1h
3. **3 available sizes** - Because every patient is different we designed 3 different sensors that fit every hand size and shape and even fits pediatric patients (excluding neonates)



## NICCI Mouse

1. **Compact mouse design** - To fit into patients' palm
2. **Built in finger size measurement tool** - Determination of correct sensor size where you need it
3. **Easy to clean and store** - Ergonomic design for a quick setup
4. **Easy click and plug mechanism** - User friendly and quick setup



## NICCI Module

1. **Quick access keys** - To start/stop measurement or trigger a manual NIBP measurement
2. **Integrated Cable & Mouse Storage Management** - Storage functionality for NICCI Mouse and cable
3. **Integrated NIBP Calibration** - Automatic calibration to the gold standard
4. **Expands PulsioFlex Monitor with NICCI Technology** - 1 Monitor for all technologies



## NICCI Upper Arm Cuff

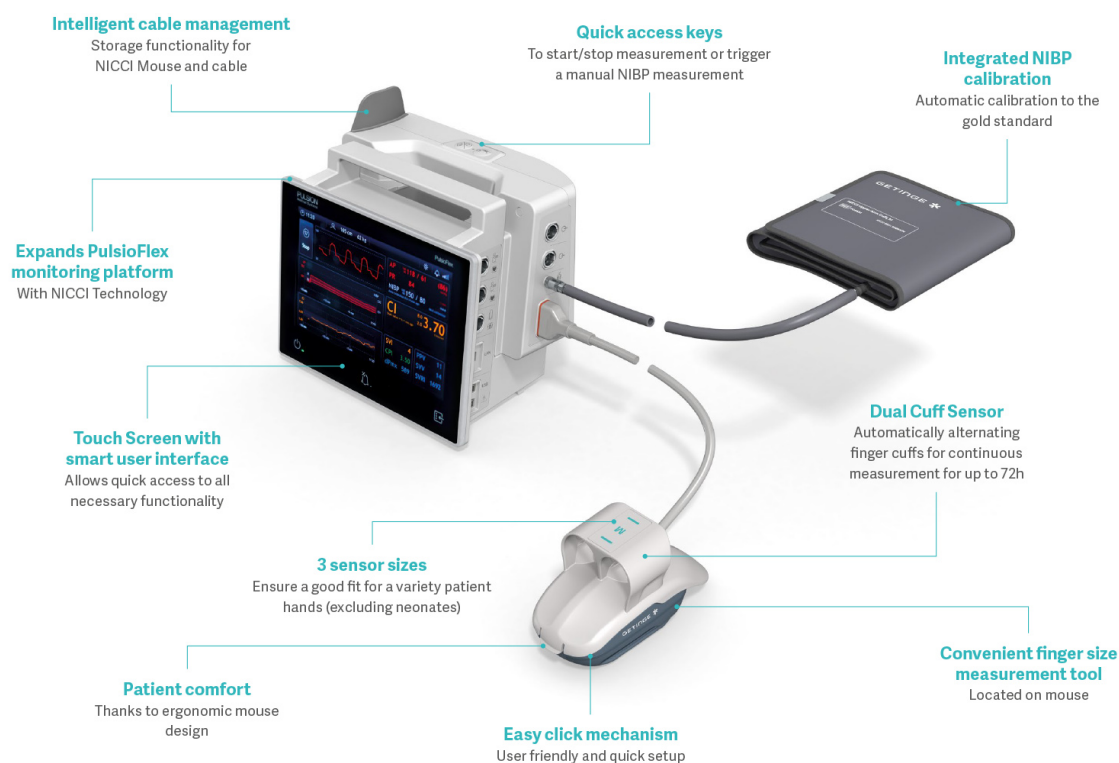
1. **Calibration to the gold standard** - Integrated NIBP Module automatically calibrates to the gold standard
2. **4 NIBP cuffs available** - S, M, L XL, for proper calibration values

## Incorporate 20 years of intelligence

The NICCI Technology is based on the CNAP's® continuous noninvasive blood pressure technology. The Vascular Unloading Technique's accuracy is proven in clinical settings for more than 20 years.

The measurement results are comparable to invasive arterial line measurements in terms of continuity, accuracy and waveform dynamics

Pulsating blood flow detected by infrared light sensors is kept constant by the counter pressure exerted on the artery by inflating or deflating the integrated cuff. The resulting pressure in the finger sensor corresponds to the real arterial pressure.





### Why we choose continuity

Continuous blood pressure (BP) measurement allows the detection of rapid BP changes often unidentified by upper arm cuff readings and therefore helps to improve perioperative care.



### More than blood pressure

Derived advanced hemodynamic parameters (CI, SVV, PPV, CPI etc.) allow the user to quickly obtain cardiovascular parameters at baseline.



### Individualized patient monitoring

Enables individualized intraoperative fluid management and enables health care professionals to make confident informed therapy decisions.

# ProAQT

## Optimized Fluid Management

Your navigator in perioperative hemodynamic management



## Reliable interpretation of the patient's hemodynamic status in the OR

ProAQT is one component of the PulsioFlex monitoring concept. Based on over 20 years of research with the PiCCO pulse contour algorithm, ProAQT allows reliable and physiological interpretation of the patient's hemodynamic status. The ProAQT technology supports goal directed therapy and allows the review of interventions to assess their success.

Within minutes the monitoring range can be expanded to include variables such as blood flow, volume responsiveness, afterload and contractility. The ProAQT sensor is simply integrated into the existing blood pressure measurement system.

### Advantages

- Recognize instability, make the right decision - earlier!
- Easy setup using the existing arterial-line
- Manual calibration with a reference

Integrated signal LED increases safety

# ProAQT Technology is the innovative CO trend monitoring

Delivers real time  
beat to beat CO  
trend

Works with a  
standard arterial  
catheter to support  
easy setup

Detects dynamic  
fluid  
responsiveness  
(PPV, SVV)

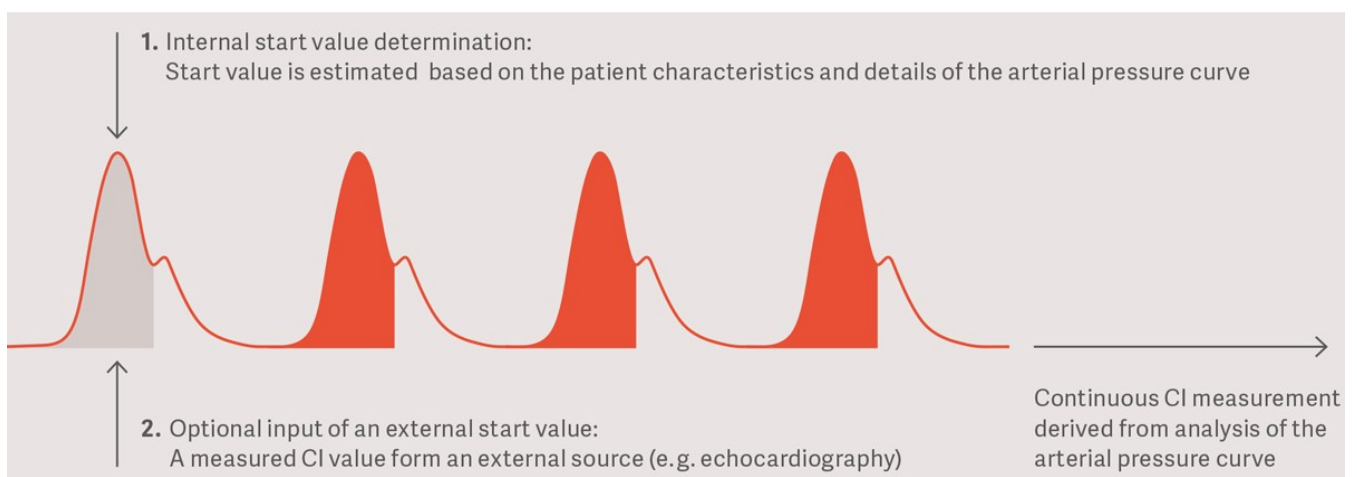
Clinical studies show  
reduction in  
complications<sup>[1]</sup>

Can be calibrated  
manually using data from  
ultrasound or PAC

## Useful application in

- Perioperative hemodynamic optimization of high risk patients or high risk procedures
- Assessment of therapy effect
- Early recognition of unstable patients

## How does ProAQT Cardiac-Index Monitoring work?



The patient characteristics used within the ProAQT calibration algorithm operate on some assumptions about patient demographics and change in vascular tone of the patient. This may lead to some discrepancies in the calculated values.

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