

Argos[®] Cardiac Output Monitor

Advanced Multi-Beat Analysis Algorithm – Better Data Saves Lives

No Disposables • 1 Minute Set Up • Consistently Accurate



Argos® Cardiac Output Monitor



Advanced Multi-Beat Analysis (MBA™)

The advanced algorithm called Multi-Beat Analysis built into the Argos monitor was developed at Massachusetts Institute of Technology (MIT) and Michigan State University. **Unlike other monitors that analyze only one beat at a time, the Argos MBA algorithm analyzes multiple heart beats from the blood pressure signal to model the patient's vascular resistance directly.** This algorithm provides accurate hemodynamic data even during changes in vasomotor tone, low cardiac output, and arrhythmia. Our technology enables healthcare professionals to provide individualized data driven treatment to high risk surgical and critically ill patients.

Comprehensive monitoring of vital data

You deserve accurate comprehensive hemodynamic data to help you give your patients the care they need. The innovative Argos monitor provides the following parameters:

- Cardiac output (CO)
- Cardiac index (CI)
- Blood pressure (BP)
- Heart rate (HR)
- Stroke volume (SV)
- Stroke volume index (SVI)
- Mean arterial pressure (MAP)
- Systemic vascular resistance (SVR)
- Systemic vascular resistance index (SVRI)
- Pulse pressure variation (PPV)

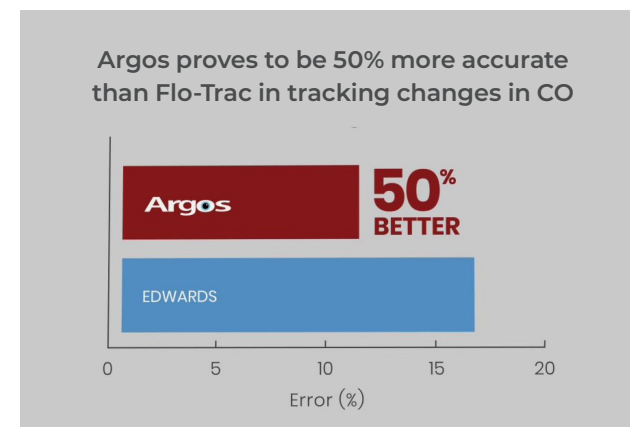
Detect and Treat Shock Before It Becomes An Emergency



Accurate

Trusted accuracy with MBA technology validated in US, France and Germany.

- In a head-to-head comparison study against the leading competitor, the Argos system proved to be 50% more accurate.¹
- Proven in the toughest patient populations: cardiac surgery, liver transplant, off pump cardiac surgery, neurosurgery, major abdominal surgery and post-surgery in the ICU.²⁻⁶
- Accuracy maintained with arrhythmia patients, changes in vasomotor tone changes and low flow states.⁴⁻⁶
- 25,000 patients monitored to date



Argos accurately tracks changes when vasopressors are given.^{4,6}



Easy-to-Use

1 minute set up that any clinician can do.

- 1 cable connection – Connect and monitor at any time without losing the invasive blood pressure signal, even during periods of hemodynamic instability.
- No calibration required
- Intuitive multi touch screen interface
- Training in under 5 minutes
- Start monitoring in less than 1 minute



The Argos simply connects to the analog output of the blood pressure signal from a compatible multi-parameter monitor.



Cost Effective

Eliminate costly proprietary disposables - Unlimited use

- Unlimited use makes it affordable to use on any high risk patient with an A-line
- Internal data shows an average yearly cost saving of \$63,000 in the OR
 - 250 patients monitored in the OR per year x \$250 per disposable
 - Reduce and save on costly complications such as AKIs, MINS, and SSIs by implementing hemodynamic care protocols⁷
- Increase ICU bed turnover via improved weaning from fluids and vasopressors guided by hemodynamic data⁸



Better data supports enhanced recovery and rapid discharge.

Leading Academic, and Highly Regarded Medical Centers Rely on the Argos Cardiac Output Monitor

- 3 out of the top 5 leading academic medical centers have implemented the Argos Cardiac output monitor for critical patient care
- Leading Level 1 trauma centers across the US and 14 countries
- Over 25,000 patients monitored to date



...And More

Clinically proven to effectively monitor hemodynamic data

“The accuracy of the Argos is really superior to other monitors that are currently on the market. It remains precise across a myriad of hemodynamic conditions and enables rapid and intelligent decision-making. It really is, quite simply, a leap forward in technology.”

- Benjamin Kohl; Vice Chair of Critical Care Medicine, Thomas Jefferson University

Join our growing network of clinicians who rely on the Argos monitor to protect their High Risk Patients.

1. Mukkamala, R., Kohl, B. A., & Mahajan, A. (2021). Comparison of accuracy of two uncalibrated pulse contour cardiac output monitors in off-pump coronary artery bypass surgery patients using pulmonary artery catheter-thermodilution as a reference. *BMC anesthesiology*, 21(1), 1-7.
2. Saugel B et al. Cardiac output estimation using multi-beat analysis of the radial arterial blood pressure waveform: a method comparison study in patients having off-pump coronary artery bypass surgery using intermittent pulmonary artery thermodilution as the reference method. *J Clin Monitoring and Computing*, doi: 10.1007/s10877-019-00375-z.
3. Greiwe G et al. Cardiac output estimation by multi-beat analysis of the radial arterial blood pressure waveform versus intermittent pulmonary artery thermodilution: a method comparison study in patients treated in the intensive care unit after off-pump coronary artery bypass surgery. *J Clin Monitoring and Computing*, doi: 10.1007/s10877-019-00374-0
4. Le Gall, A., Vallée, F., Joachim, J. et al. Estimation of cardiac output variations induced by hemodynamic interventions using multi-beat analysis of arterial waveform: a comparative off-line study with transesophageal Doppler method during non-cardiac surgery. *J Clin Monit Comput* (2021).
5. Khanna, A.K., Nosow, L., Sands, L. et al. Agreement between cardiac output estimation by multi-beat analysis of arterial blood pressure waveforms and continuous thermodilution in post cardiac surgery intensive care unit patients. *J Clin Monit Comput* (2022). <https://doi.org/10.1007/s10877-022-00924-z>
6. Retia Argos Cardiac Output Monitor Operator's Manual - Appendix G Clinical Studies. K181372 FDA validation study - (2018)
7. Thomas R, et al. Goal directed therapy after cardiac surgery and the incidence of acute kidney injury, *Journal of Critical Care*. 2014Dec;29(6):997-1000.
8. Benes, J., Giglio, M., Brienza, N. et al. The effects of goal-directed fluid therapy based on dynamic parameters on post-surgical outcome: a meta-analysis of randomized controlled trials. *Crit Care* 18, 584 (2014). <https://doi.org/10.1186/s13054-014-0584-z>



Scan the QR code or visit retiamedical.com to learn more.



914.437.6704 | info@retiamedical.com

www.retiamedical.com

Rev. 4/23