

# Millar MPVS Duo™

## Pressure-Volume Loop Measurement System

The best of both worlds

Exclusively available from

**ADINSTRUMENTS**



Improve your training and data collection workflows for small and large animal pressure-volume research with the Millar MPVS Duo™.

The MPVS Duo™ from Millar is an intuitive pressure-volume loop measurement system designed to work in conjunction with Millar's gold standard Mikro-Tip™ PV Catheters.

Incorporating a digital color display, the MPVS Duo™ offers guided steps and a linear menu structure for all aspects of data collection, bringing the benefits of pressure-volume research to your studies in an intuitive, user-friendly design.

- Optimize catheter position with live ventricular volume feedback
- Supports both admittance and conductance calibration pathways
- Supports wide range of catheters for small and large animals
- Designed for use with Millar's gold standard Mikro-Tip™ PV Duo range of catheters
- BNC output for use with ADInstruments PowerLab and LabChart data acquisition systems (as well as a range of other DAQ devices)
- Future-proof your lab with in-lab firmware updates
- Single system for all animal models
- Automated pressure sensor balance



Since 1969, Millar Inc has led the development of catheter based solid state pressure sensors, and is known worldwide as the leader in MEMS pressure sensors that advance medical understanding. The company's clinical and life sciences products empower medical discovery and allow advanced cardiovascular diagnosis.



The best of both worlds. Millar's MPVS Duo™ and Mikro-Tip™ catheters are the perfect combination of ease and accuracy, so you can carry out cutting edge research with confidence.

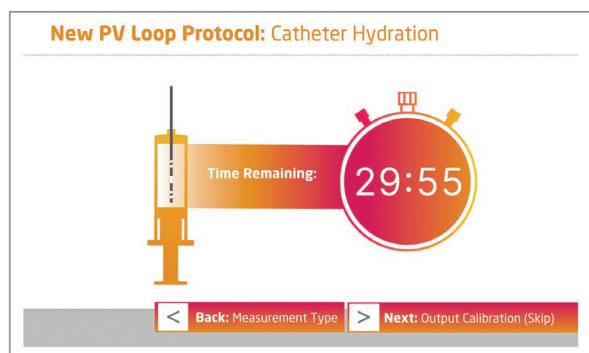
## Confidence throughout your protocol

### Realtime positional feedback

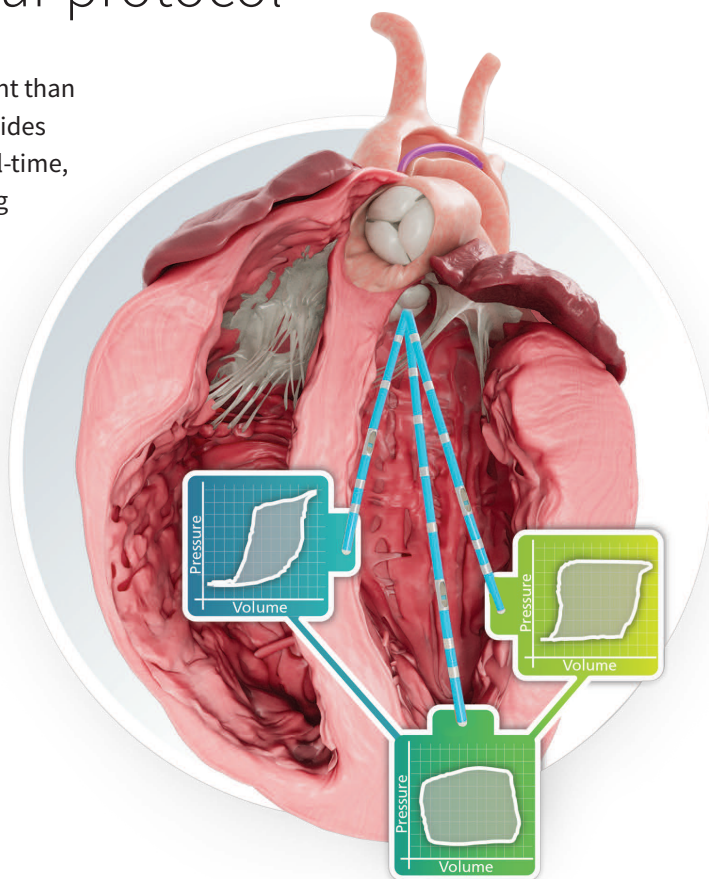
When it comes to PV data collection, nothing is more important than catheter positioning inside the ventricle. The MPVS Duo™ provides positional insight by reporting myocardial contribution in real-time, dramatically reducing catheter positioning time and providing greater confidence in the resulting data.

### Guided workflows

Designed with the end user in mind, the MPVS Duo™ provides onscreen workflows and helpful prompts, supporting process replication and shortening both training and data collection time.



Catheter hydration reminder helps to reduce sampling error.



### Are you learning PV Loops or training a new lab member?

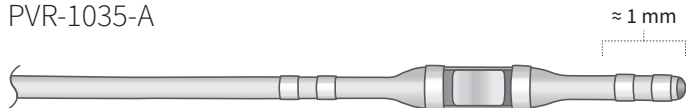
Turnover in a lab is healthy, but it presents a challenge for specialized techniques like PV Loop data collection. The combination of real-time data feedback during catheterization and guided workflows dramatically shortens this learning curve.

## Unmatched precision

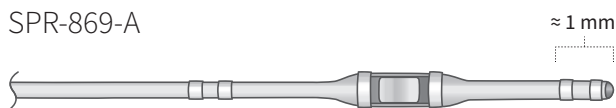
Fifty years of involvement in scientific studies has pushed Millar to the forefront of medical research. Innovation and reliability has kept them there.

Millar's gold-standard research catheters for pressure-volume and pressure, are pivotal in advancing the study and understanding of cardiovascular functions. All catheters feature solid-state pressure measurement technology with unmatched precision for the most reliable signals. MPVS Duo™ compatible catheters come in a wide range of sizes and options to suit your research requirements.

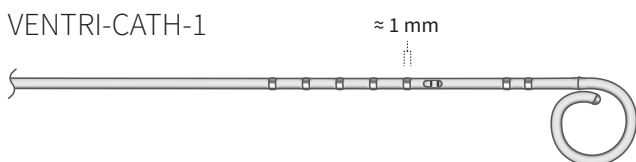
PVR-1035-A



SPR-869-A



VENTRI-CATH-1



Millar MPVS Duo compatible catheters are suitable for both admittance and conductance calibration pathways. They are also compatible with ADV500 and ADV550 PV Systems previously offered by Transonic Scisense.

### Need help selecting the right catheter?

To help simplify your decision making process download our research catheter selection guide from: [adi.to/Research-Catheter-Guide](https://adi.to/Research-Catheter-Guide)

A member of our team would be happy to discuss your research application and help you find the best model for your needs.

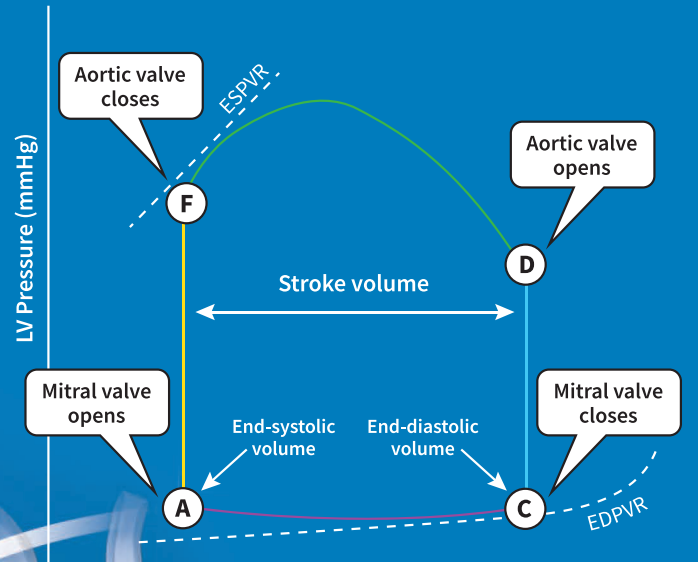




# Why Study Pressure-Volume Loops?

**Ventricular pressure and volume** are essential parameters because they allow for the calculation of  $dp/dt$ , stroke volume, ejection fraction, cardiac output, etc.

Each variable is important, but individually, they are incomplete. PV loops also provide a range of hemodynamic parameters which are otherwise not readily measurable. These include changes in contractility, elastance, power, energetics, and efficiency. By delivering both load-dependent and load-independent measures of contractility, PV loops provide the most comprehensive measurement of hemodynamics and cardiac function available today.



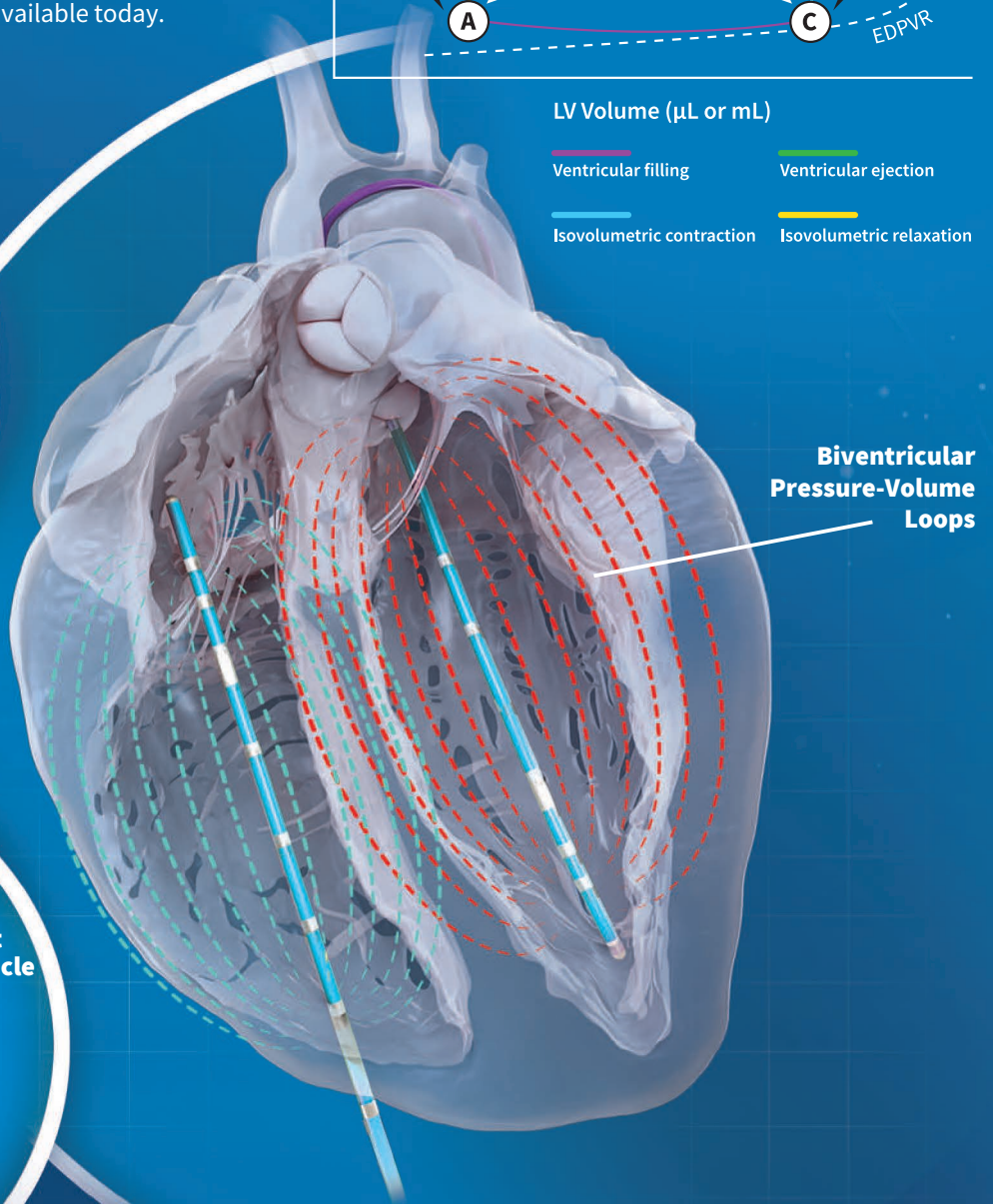
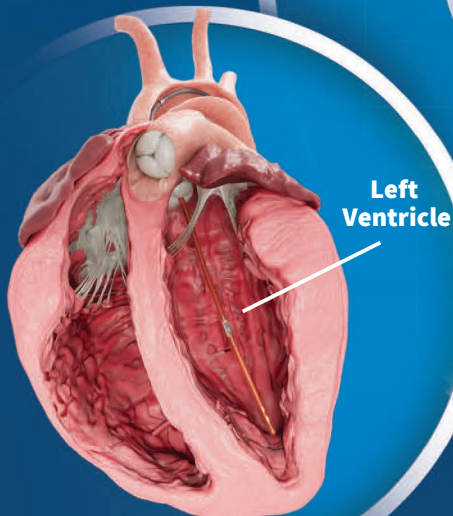
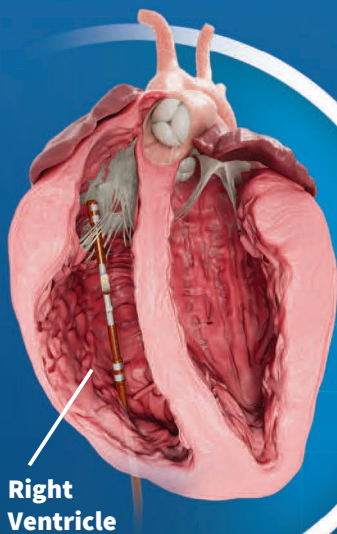
LV Volume ( $\mu\text{L}$  or  $\text{mL}$ )

Ventricular filling

Ventricular ejection

Isovolumetric contraction

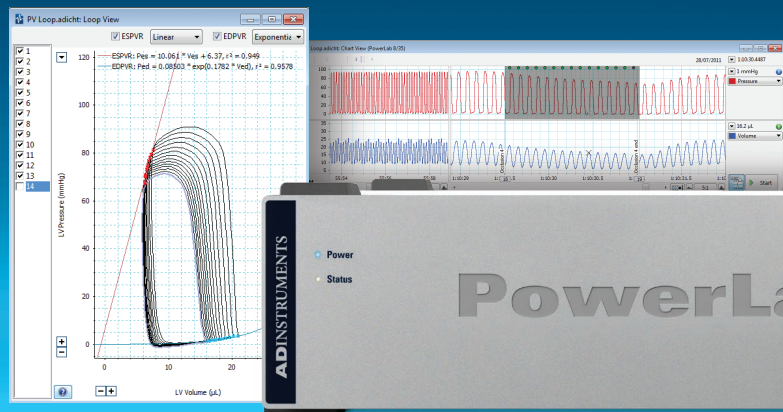
Isovolumetric relaxation



Historically, PV loops were used predominantly in left ventricular research, but right ventricular applications, such as studying pulmonary arterial hypertension, are on the rise. Recently, our equipment has also been used in biventricular applications — both ventricles are catheterized, and performance is interrogated simultaneously.

# World-class data acquisition for unparalleled analysis of cardiovascular function.

**LabChart**  
**PowerLab**



PowerLab data acquisition and LabChart data analysis from ADInstruments create a platform for all your recording devices to work together, allowing you to acquire multiple biological signals simultaneously and apply advanced calculations and plots as your experiments unfold.

- LabChart is the industry leading time based data analysis software, with premium sampling environment and advanced features all while keeping original data safe.
- Combine the MPVS Duo with the LabChart PV Loop Module for extended intuitive, user-friendly PV workflows and unsurpassed cardiovascular analysis.
- LabChart provides unsurpassed stability and a robust feature set that makes it ideal for pressure-volume research.
- Seamlessly switch between hemodynamics table and data, providing invaluable filtering and smoothing features.
- ADInstruments DAQ is used in 10,000+ universities and organizations around the world, including all 100 of the top 100 universities.

## Support and education resources

At ADInstruments, we provide researchers with a trusted global network of scientific sales and support specialists. Pressure-Volume Loop data is vast and detailed, which can be both illuminating and challenging. We understand these challenges, so whether you are new to the approach, have years of experience, or simply have questions, we are here to help.



### Expert advice

One-stop shop with access to complementary solutions for your research. We know how systems work together and are there to help.



### Trusted support

Local support with 95% average customer satisfaction rating. There to help when needed so you can focus on your research.



### Educational library

Looking for application support, PV Loop theory, self-guided resources or data collection tips?

We offer a wide range of online education content on the ADInstrument website:

- Library of surgical videos, recorded webinars, and customer case studies
- Best practice guides and setup videos
- Extensive knowledge base
- PV Loop-related research blogs



### Ongoing learning and networking opportunities

Whether you have a new lab member, or want to enhance your own skills set, we offer a variety of ways to connect with peers and industry leaders:

- Multi-day Surgical PV Workshops:  
North America, Europe, China, and Australia
- Client-led webinar series
- In-person user group meetings

## Your Trusted Partners in Research Excellence

With a combined 85+ years experience of technology innovation and support for leading cardiovascular researchers, ADInstruments and Millar's goal is to help you find the right products and technology to help you unlock new insights and push the boundaries of discovery.

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