Proper assessment of cardiac function and hemodynamic performance requires a measurement of pressure from within the heart and the peripheral arteries. iWorx offers several solutions for measuring pressure including fluid-filled pressure transducers, catheter-tipped micro pressure sensors and non-invasive tail cuff pressure systems.

Systems and Components

Fluid-Filled Catheter Transducer
The BP-100 blood pressure transducer is an economical and accurate device used to measure direct arterial or venous pressure in animals using the fluid-filled transducer technique. A precision laser-trimmed chip provides accurate and linear measurements over a broad range of pressures. Pressure changes in the vessel are transmitted within the fluid-filled tube to the pressure transducer and acquired for monitoring and further analysis. Tubing is available as small as 1 mm in outside diameter making this technique well-suited for measuring pressures in very small vessels.

Catheter-Tipped Transducers
iWorx offers catheter-tipped solid-state pressure catheters in sizes ranging from 1.2F to 1.6F. These catheters are recommended for measuring pressure in small vessels as well as ventricular pressures in small rodents. Solid-state transducer-tipped catheters offer superior sensitivity and temporal resolution compared to fluid-filled catheters and are generally more suitable for measuring intra-cardiac pressures from animal species with high intrinsic heart rates.

Non-invasive Blood Pressure
Invasive measures of pressure are not always possible and, as a result, there is a need for non-invasive methods to detect pressure. The most widely accepted technique for animals is the tail-cuff method.

iWorx offers the IITC noninvasive blood pressure systems for mice and rats. The IITC Life Science amplifier with built-in inflation outputs systolic pressure, mean pressure, diastolic pressure and heart rate as analog signals which can be acquired by iWorx data recorders. Systems include the amplifier with built-in cuff pump, sensor and restrainer, cables, sphygmomanometer and accessories. Warming chambers are available so that no heating pads are required.
Arterial pressure calculations:
- Heart Rate (HR)
- Maximum Pressure (Pmax)
- Minimum Pressure (Pmin)
- Mean Arterial Pressure (MAP)
- Systolic and diastolic pressure
- Maximum dP/dt (dP/dtmax)
- Minimum dP/dt (dP/dtmin)
- Pulse Height
- Notch Pressure
- Systolic Duration
- Diastolic Duration
- Cycle Duration
- Time To Peak
- Election Time
- Percent Recovery

Ventricular pressure calculations:
- Heart Rate (HR)
- Maximum Pressure (Pmax)
- Minimum Pressure (Pmin)
- Mean Pressure (Pmean)
- End-systolic Pressure (Pes)
- End-diastolic Pressure (Ped)
- Maximum dP/dt (dP/dtmax)
- Minimum dP/dt (dP/dtmin)
- Developed Pressure
- dP/dt@
- Contractility Index
- Relaxation Index
- Systolic Duration
- Diastolic Duration
- Cycle Duration
- Tension Time Index
- Relaxation Time
- Isovolumetric Time
- Tau (Weiss, Logistic, Glantz, Mirsky)

Acquire and analyze data from blood pressure transducers. Data can be analyzed from ventricular and arterial signals in real-time.

The blood pressure module automatically calculates common indices of function from the blood pressure signal where it can easily be exported to another program for further analysis.

iWorx Cardiovascular Research Solutions
iWorx offers complete systems to study physiological function for a variety of scientific research applications. Our cardiovascular products are used to assess cardiac performance and hemodynamics both in vivo and in vitro. We offer transducers, accessories, amplifiers, data recorders and software for in situ experiments, isolated heart preparations and isolated tissue protocols.