

DSI™ Telemetry Devices

Continuous, Real-Time *In Vivo*
Physiologic Monitoring Solutions



Physiologic signals measured include:

- Pressures: arterial, left ventricular, ocular, bladder, intra-cranial
- Biopotentials: ECG, EMG, EEG, EOG
- Blood glucose
- Respiration
- Temperature: core and localized with thermistor
- Activity
- Sympathetic nerve activity



Implants for Extra-Small and Small Animals

Your proven physiological research partner for more than 40 years. DSI telemetry features the smallest size and broadest choice of implants for mice and rats.

NEW SoHo™ System

DSI's New Evolution of Preclinical Implants

| Model | Pressure | Biopotential | Respiratory Rate [^] | Temperature | Activity | Continuous Glucose | Warranted Battery Life (Months) | Implant Weight (g) | Implant Volume (cc) | Minimum Animal Weight (g)* |
|----------|----------|--------------|-------------------------------|-------------|----------|--------------------|---------------------------------|--------------------|---------------------|----------------------------|
| SoHo-X00 | | | | 1 | 1 | | 3** | 2.2 | 1.2 | 19 |

Empowering Group Housing

- Designed for up to 96 implants in the same environment for high-density social housing.
- Group-house animals for natural behavior, 3R compliance.



Scalable to Your Study Size

- Offering social housing with up to 16 subjects per transceiver.
- Interchangeable setup with a rolling rack that can be moved from room to room.



Extra-Small Implants for use with mice and other similarly sized animals.

| Model | Pressure | Biopotential | Respiratory Rate [^] | Temperature | Activity | Continuous Glucose | Warranted Battery Life (Months) | Implant Weight (g) | Implant Volume (cc) | Minimum Animal Weight (g)* |
|---------------|----------|--------------|-------------------------------|-------------|----------|--------------------|---------------------------------|--------------------|---------------------|----------------------------|
| New! SoHo-X00 | | | | 1 | 1 | | 3** | 2.2 | 1.2 | 19 |
| HD-X11 | 1 | 1 | 1 | 1 | 1 | | 1 | 2.2 | 1.4 | 19 |
| HD-X10 | 1 | | 1 | 1 | 1 | | 1.5 | 2.2 | 1.4 | 19 |
| HD-X02 | | 2 | | 1 | 1 | | 1.5 | 2.2 | 1.7 | 19 |
| HD-XG° | | | | 1 | 1 | 1 | 1.5 | 2.2 | 1.4 | 19 |
| PA-C10 | 1 | | 1 | | 1 | | 1.5 | 1.4 | 1.1 | 17 |
| ETA-F10 | | 1 | | 1 | 1 | | 2 | 1.6 | 1.1 | 17 |
| TA-F10 | | | | 1 | 1 | | 6 | 1.6 | 1.1 | 17 |

* All minimum animal weights assume subcutaneous implantation. Intraperitoneal implantation would require a larger animal.

° Sensor often functions for 6-8 weeks; warranty is 4 weeks.

[^] Implants can derive respiratory rate from pleural pressure or blood pressure.

** Battery life can be greatly extended by scheduling data acquisitions.

Small Implants for use with rats, guinea-pigs, ferrets, marmosets and others.

| Model | Pressure | Biopotential | Respiratory Rate [^] | Temperature | Activity | Continuous Glucose | Warranted Battery Life (Months) | Implant Weight (g) | Implant Volume (cc) |
|---|----------|--------------|-------------------------------|-------------|----------|--------------------|---------------------------------|--------------------|---------------------|
| HD-S21 | 2 | 1 | 1 | 1 | 1 | | 2 | 8 | 5.9 |
| HD-S20 | 2 | | 1 | 1 | 1 | | 2 | 8 | 5.9 |
| HD-S11-F0/F2** | 1 | 1 | 1 | 1 | 1 | | 2(F0)/3(F2) | 8 | 5.9 |
| HD-S1-F0/F2** | 1 | | 1 | 1 | 1 | | 2(F0)/3(F2) | 8 | 5.9 |
| HD-S10 | 1 | | 1 | 1 | 1 | | 5 | 4.4 | 3.1 |
| HD-S02 | | 2 | 1 | 1 | 1 | | 5 | 4.7 | 3.3 |
| HD-XG ^o | | | | 1 | 1 | 1 | 1.5 | 2.2 | 1.4 |
| F50-EEE | | 3 | 1 | | 1 | | 2 | 11.5 | 5.5 |
| CTA-F40 | | 1 | 1 | 1 | 1 | | 6 | 8 | 4.2 |
| F40-TT | | | | 2 | 1 | | 4 | 7.5 | 3.5 |
| TA-F40* | | | | 1 | 1 | | 12 | 7.25 | 3.5 |
| F50-W-F2 (records sympathetic nerve activity) | | | | | 1 | | 2 | 12 | 5.5 |

** Available in two frequencies: 455 kHz (F0) and 18 MHz (F2). Pair housing capable.

^o Sensor often functions for 6-8 weeks; warranty is 4 weeks.

* Available with an external thermistor probe if desired.

[^] Implants can derive respiratory rate from pleural pressure, blood pressure or diaphragmatic EMG.

Implants for Medium and Large Animals

The trusted partner for drug discovery, safety pharmacology, toxicology and infectious disease research. Designed with social housing in mind, PhysioTel™ Digital implants have a 3-5m transmission distance. Species commonly monitored include, but are not limited to, non-human primates, dogs, rabbits, and swine.

| Model | Pressure | Biopotential | Respiratory Rate [^] | Temperature | Activity | Warranted Battery Life | Implant Weight (g) | Implant Volume (cc) |
|---------------------|----------|--------------|-------------------------------|-------------|----------|------------------------|--------------------|---------------------|
| M00 | | | | 1 | 1 | 100 Days | 13.7 | 11 |
| M01 | | 1 | 1 | 1 | 1 | 40 Days | 13.7 | 11 |
| M10 | 1 | | 1 | 1 | 1 | 55 Days | 13.7 | 11 |
| M11 | 1 | 1 | 1 | 1 | 1 | 35 Days | 13.7 | 11 |
| L03 | | 3 | 1 | 1 | 1 | 90 Days | 56 | 29 |
| L04 | | 4 | 1 | 1 | 1 | 95 Days | 56 | 29 |
| L11 | 1 | 1 | 1 | 1 | 1 | 105 Days | 56 | 29 |
| L11R [^] # | 1 | 1 | 1 | 1 | 1 | 125 Days | 49 | 33 |
| L21 | 2 | 1 | 1 | 1 | 1 | 84 Days | 56 | 29 |

[^] L11R provides respiratory volume and respiratory rate via respiratory impedance.

LV capable version of L11R has a 110 day battery life.

PhysioTel Digital

L series: Designed for chronic physiologic monitoring research in colony animals. Implants are used in safety pharmacology studies to address core battery requirements in cardiovascular (CV), neuroscience, and respiratory applications. Core CV measurements include systemic pressure and ECG and include LV pressure as a secondary measurement.

M series: The smaller size of the M series allows PhysioTel Digital technology to be expanded into a broader range and size of species including rabbits and ferrets. Primary applications for M series are toxicology and biological defense, discovery, and metabolism studies.

External Telemetry

Less invasive telemetry by offering jacketed solutions for animals.

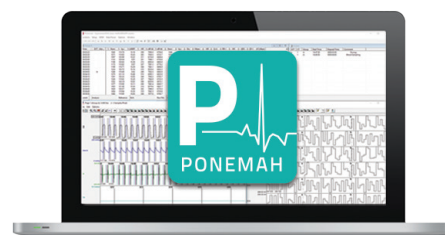
| Species | Device | ECG Vectors | ECG Vectors with Respiratory Impedance Plethysmography (RIP) | Blood Pressure Add-on* | Temperature | Activity | Battery |
|---------------|----------------------|-------------|--|------------------------|-------------|----------|----------------------------|
| Large Animals | JET-EA-BP | 1 | NA | Yes | No | Yes | Rechargeable 27-hr life |
| | JET-3ETA-BP | 7 | 1 | Yes | Yes | Yes | |
| | JET-5ETA-BP | 9 | 7 | Yes | Yes | Yes | |
| Small Animals | Etisense BLE Emitter | 1 | 1 | No | No | Yes | 12-hr life |

*PA-C10-TOX is available for less invasive blood pressure measurement

DSI Ponemah™ Software

Trusted by scientists globally, Ponemah powers DSI telemetry for real-time analysis of freely interacting animals. Acquire, analyze and report diverse physiological data - from cardiovascular to respiratory endpoints - to gain new research insights.

- Real-time analysis with visual validation.
- Customizable searches quickly locate patterns.
- Toggle between time-averaged or beat-beat data.
- Centralized user and study data management.
- Tools for FDA submission, alerts to improve animal welfare.



PhysioCath Telemetry Catheters

DSI pressure-sensing implants use a solid-state sensor coupled to a proprietary and biocompatible catheter to acquire high-fidelity signals.

DSI Services

Streamline your research by leveraging expertise you can rely on. Our Scientific Services teams can assist you with making better informed decisions, achieving greater surgical success, summarizing study data, executing preclinical in vivo studies, and meeting GLP validation requirements.



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