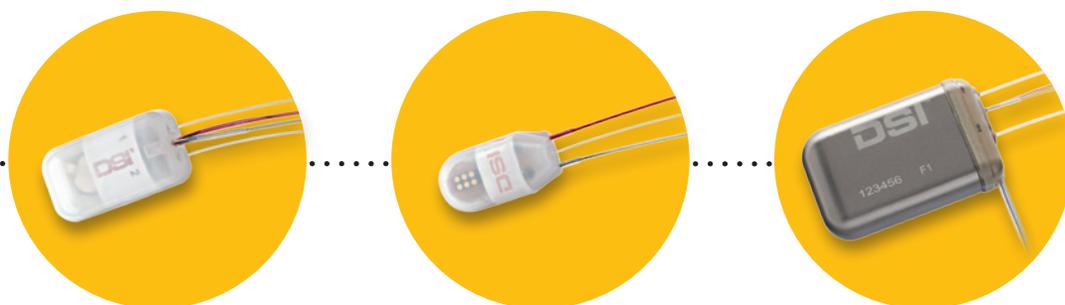


Guide to DSI's

Implantable

Telemetry Devices



***In Vivo* Physiologic Monitoring Solutions** for Animal Models
Ranging from Mice and Rats to Dogs and Non-Human Primates

DSI™

BetterData. BetterScience.

DSI Exchange for Telemetry Implants

DSI Exchange allows customers to exchange their used telemetry implants for replacement devices at a fraction of the cost of the original purchase price.

We ensure that each implant manufactured as part of DSI Exchange meets or exceeds design specifications for guaranteed performance and quality. Participating in DSI Exchange contributes to a decrease in the overall cost of each customer's study.

Ask about our option to pre-pay for exchanges – maximize your budget and purchase telemetry implants according to your budget cycle.

Learn more about DSI Exchange at www.datasci.com



Advantages of Telemetry

- Animals can be chronically instrumented and used sequentially as their own control or in multiple studies to reduce the number of animals.
- Stress artifact induced by handling is avoided.
- Physiologic measurements can be obtained around the clock with no lab personnel present.
- Decreases the costs of many protocols by reducing the number of animals required.
- Reduces animal maintenance costs.

Implantable Telemetry Devices from DSI

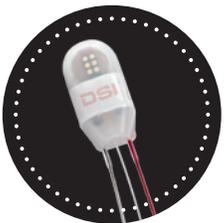
DSI's PhysioTel™ implants are designed for monitoring and collecting data from conscious, freely moving laboratory animals—providing stress-free data collection while eliminating percutaneous infections. PhysioTel implants are offered in different sizes to support a variety of research models ranging from mice and rats to dogs and non-human primates. The shape of DSI implants is also designed to accommodate various surgical placements, including subcutaneous and intraperitoneal placement.

Physiologic signals measured include:

- Pressures: arterial, venous, left ventricular, ocular, bladder
- Biopotentials: ECG, EMG, EEG, EOG
- Blood glucose
- Respiration
- Temperature
- Activity

DSI offers a variety of implant models to help researchers optimize data collection and simplify studies. All PhysioTel implants may be switched on/off *in vivo* to extend study duration.

PhysioTel™ HD Implants



DSI's PhysioTel HD implants allow researchers to focus on what matters — research.

Ease of use

- Auto-configuration of implants to save time
- Encoded animal ID to prevent wrong data collection
- Device on-time counter to track remaining battery life

Enhanced performance

- Improved parameter sensitivity
- Reduced pressure channel drift and improved accuracy
- Consolidate studies with more signal types combined into a single implant

Proven success

- Proven chronic *in vivo* pressure sensing
- Versatile platform supports a wide range of research applications
- Established in the global research community

New to the HD platform, the HD-XG glucose telemetry implant offers preclinical diabetes and metabolic disease scientists a novel solution to obtain continuous, real-time blood glucose measurements in rats.

Extra-Small Implants (For animals weighing 17 g or more).....



All extra-small implants are designed for use in cages that measure 33 x 33 x 14 cm. Species commonly monitored with extra-small implants include mice, hamsters, gerbils, and juvenile rats.

Model	Pressure	Biopotential	Glucose	Temperature	Activity	Warranted Battery Life (Months)	Implant Weight (g)	Implant Volume (cc)	Minimum Animal Weight (g)*
HD-X11	1	1		1	1	1	2.2	1.4	19
HD-X10	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	1.5	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 warranty is 28 days from implantation. Measurement range of 10-750 mg/dL (0.5-42 mmol/l). Sensor often functions for 6-8 weeks without issue.

Small Implants (For animals weighing 175 g or more).....



Small implants are designed for use in cages that measure 42 x 42 x 18 cm. Species commonly monitored with small implants include rats, guinea pigs, rabbits, ferrets, and marmosets.

Model	Pressure	Biopotential	Glucose	Temperature	Activity	Warranted Battery Life (Months)	Implant Weight (g)	Implant Volume (cc)
HD-S21	2	1		1	1	2	8	5.9
HD-S11-F0**	1	1		1	1	2	8	5.9
HD-S11-F2** New	1	1		1	1	3	8	5.9
HD-S10	1			1	1	5	4.4	3.1
HD-S02		2		1	1	5	4.7	3.3
HD-XG°			1	1	1	1.5	2.2	1.4
4ET^+		4		1	1	3	12.8	8.8
F50-EEE		3			1	2	11.5	5.5
CTA-F40		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.

°Sensor warranty is 28 days from implantation. Measurement range of 10-750 mg/dL (0.5-42 mmol/l). Sensor often functions for 6-8 weeks without issue.

^Minimum animal weight is 200 g.

+ Available in two frequencies: 8 MHz (F1) and 18 MHz (F2). Pair housing capable.

*Available with an external thermistor probe if desired.



Large Implants (For animals weighing 2.5 kg or more).....

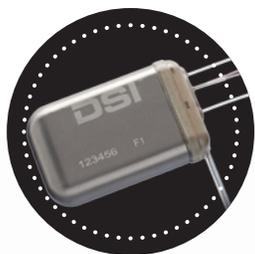
PhysioTel™ Digital implants have a 3-5 m transmission distance. PhysioTel D70 implants are designed for use in cages that measure 1 m³; however, multiple RMC-1 receivers can be used to ensure signal detection in a larger cage. Species commonly monitored with large implants include, but are not limited to, non-human primates, dogs, rabbits, and swine.

Model	Pressure	Respiration	Biopotential*	Temperature	Activity	Warranted Battery Life	Implant Weight (g)	Implant Volume (cc)
M00				1	1	100 days	13.7	11
M01			1	1	1	40 days	13.7	11
M10	1			1	1	55 days	13.7	11
M11	1		1	1	1	35 days	13.7	11
L11	1		1	1	1	105 days	56	29
L21	2		1	1	1	84 days	56	29
D70-PCTR	1	1	1	1	1	2.5 months	49	33
D70-PCTP**	2		1	1	1	2.5 months	49	33
D70-CCTP**	1		2	1	1	2.5 months	49	33
D70-PCT**	1		1	1	1	3.5 months	49	33
D70-EEE			3		1	2 months	37	25
CTA-D70**			1	1	1	4 months	30	20
PA-D70**	1				1	4 months	37	25
TA-D70**				1	1	11 months	40	25

*Implants with biopotential channels can be ordered with a Solid Tip Lead to acquire “clean” ECG signals. All L21 and L11 models are manufactured with the Solid Tip Lead, unless requested otherwise.

** Not available for sale in North America and Europe.

PhysioTel™ Digital Implants



**Simplify.
Enhance.
Improve.**

PhysioTel Digital is the first fully digital large animal telemetry system that advances your research by simplifying study execution, enhancing animal welfare, and improving data accuracy.

Simplify study execution

- Reduce study start-up time
- Automated positive animal ID to avoid animal handling mistakes
- Implants automatically turn off when not on study to maximize device life

Enhance animal welfare

- Social housing compatible
- Longer transmission range
- Increased implant longevity enables longer study periods

Improve data accuracy

- Clean, digital data
- Encoded animal ID
- Improved sensor performance

About Data Sciences International

DSI is a pioneering biomedical research company focused on preclinical systems physiology and pharmacology. The recognized global leader in physiologic monitoring, DSI offers telemetry, pulmonary solutions, software, and services that facilitate accelerated, well-informed drug therapy and development decisions.

DSI serves many industries, including: Pharmaceuticals, Academia, Contract Research Organizations, Biological and Chemical defense, the Medical Device Industry, Government, and Biotechnology companies. We offer solutions that are tailored specifically to meet the unique research needs of our customers.

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