



SMALL BIRD TRANSMITTERS

Transmitter Number	Type	Battery	Dimensions LxWxH (cm)	Mounted Weight** (grams)	Pulse Width (ms)	Pulse Rate (ppm)	Peak Current (ma)	Antenna Length 218 MHz (cm)	Power Output (dBm)	Battery Life (days)	Typical Species
LPB-3350	3 Stage	3.5 v 350 mah Lithium	2.4x2.2x.7	16-25	20	30	9	15 whip	-8 to -10	123	heron, hawk
LPB-3350 A	3 Stage	3.5 v 350 mah Lithium	2.4x2.2x.7	16-25	20	30-60	9	15 whip	-8 to -10	85	heron, hawk
LPB-2350M	CMOS 2 Stage	3.5 v 350 mah Lithium	2.4x2.2x.7	16-25	20	30 (100)	9	15 whip	-13 to -16	128	heron, hawk
LPB-2350AM	CMOS 2 Stage	3.5 v 350 mah Lithium	2.4x2.2x.7	16-25	20	30-60 (150)	9	15 whip	-13 to -16	87	heron, hawk
LPB-2350B	CMOS 2 Stage	3.5 v 350 mah Lithium	2.4x2.2x.7	16-25	20	30-90	9	15 whip	-13 to -16	43	heron, hawk
LPB-2320	Multivibrator 2 stage	3.0 v 160 mah Lithium	4.1x1.4x1.4	14-18	19	35	4	22 whip	-15 to -20	199	goshawk, parrot, quail
LPB-2320M*	Multivibrator 2 stage	3.0 v 160 mah Lithium	4.1x1.4x1.4	14-18	19	35	4	22 whip	-23 to -26	211	goshawk, parrot, quail
SOPB-2380	Multivibrator 2 stage	1.5 v 350 mah silver oxide	3.5x1.5x1.3	10-16	20	45	2.5	20 whip	-25 to -30	309	heron, owl
SOPB-2380A	Multivibrator 2 stage	1.5 v 350 mah silver oxide	3.5x1.5x1.3	10-16	20	35-70	2.5	20 whip	-25 to -30	267	heron, owl
SOPB-2190	Multivibrator 2 stage	1.5 v 175 mah silver oxide	3.3x1.3x.8	4.6-5.0	19	35	2	20 whip	-25 to -30	248	quail, parrot
SOPB-2190A	Multivibrator 2 stage	1.5 v 175 mah silver oxide	3.3x1.3x.8	5.6-6.0	19	30-55	2	20 whip	-25 to -30	209	quail, parrot
SOPB-2070	Multivibrator 2 stage	1.5 v 70 mah silver oxide	2.5x.9x.6	2.2-2.7	19	33	1.5	20 whip	-26 to -31	134	dove, cow bird
SOPB-2070A	Multivibrator 2 stage	1.5 v 70 mah silver oxide	2.5x.9x.6	3.2-3.7	19	25-45	1.5	20 whip	-26 to -31	127	dove, cow bird
SOPB-2038	Multivibrator 2 stage	1.5 v 43 mah silver oxide	2x.8x.6	1.8-2.1	19	33	1.5	20 whip	-26 to -31	83	turkey, poult, jay, cow bird, bat
SOPB-2028	Multivibrator 2 stage	1.5 v 28 mah silver oxide	1.6x.8x.6	1.6-1.7	19	33	1.5	20 whip	-26 to -31	54	turkey, poult, jay, song bird, bat
SOPB-2018	Multivibrator 2 stage	1.5 v 19 mah silver oxide	1.6x.8x.5	1.3-1.4	19	33	1.5	20 whip	-27 to -32	36	turkey, poult, jay, song bird, bat
SOPB-2012	Multivibrator 2 stage	1.5 v 11.5 mah silver oxide	1.6x.8x.5	0.9-1.1	19	32	1.5	15 whip	-31 to -36	23	thrush, blue bird, other tiny birds, bat
SOPB-2011	Hand-Wired 2 stage	1.5 v 11.5 mah silver oxide	.9x.5x.4	0.6-0.8	19	32	1.5	10 whip	-36 to -41	23	thrush, blue bird, other tiny birds, bat
SOM-2007	Hand-Wired 2 Stage	1.5 v 7 mah silver oxide	.9x.5x.4	0.55-0.6	19	32	1.5	10 whip	-38 to -43	14	tiny birds

*Weight may vary, depending on mounting used.

**Mortality can be added to this unit and will affect days life and add 1.1 grams to weight.

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The transmitters shown in these tables are meant only as examples of typical applications for three stage circuitry, CMOS two stage and multivibrator two stage circuitry. The tables in no way exhaust the many combinations of transmitter type, weight, peak current, pulse width, pulse rate, battery, and mountings available. Bluesky Telemetry will custom-build according to the researcher's specifications.

The efficient multivibrator-pulsed circuits used in Bluesky Telemetry transmitters offer a clear, chirpfree signal that is easy to tune and hear in receiver noise. Multivibrator-pulsed transmitters permit greater flexibility in customizing for optimum output and duty cycle. Because pulse rate and pulse width remain virtually constant throughout the life of the battery, transmitter performance is more predictable than that of older designs.

Surface mounting techniques enhance miniaturization by allowing more chip components to be placed on a smaller, flatter circuit board. The low-profile, rugged components also greatly improve reliability in punishing environments.

To minimize weight and provide packaging strength, transmitters are waterproofed with a tough acrylic or epoxy resin conformal coating.

The Behavior Circuit can be built into the transmitter (indicated by .B. at the end of the Transmitter Number) to change the transmitter's pulse rate gradually as the animal's level of activity increases. When an animal is at rest, the behavior circuitry's pulse rate is approximately 30 pulses per minute; the pulse rate increases to 120 pulses or more per minute when the animal is engaged in vigorous activity like running or flying.

The optional Activity Switch (indicated by .A. at the end of the Transmitter Number) varies pulse rate according to the position or movement of the animal.

The Mortality and/or Hibernation Switch options allow the researcher to detect lack of movement in the animal. This lack of activity triggers a customer-specified increase or decrease in pulse rate. The time delay before activation can be programmed to be any period from a few seconds to over 12 hours. During normal activity in live animals, the timer circuit is continually reset so that no mortality is indicated. The Switch is listed with an M at end of the Transmitter Number.

Combined Activity/Mortality features can be built into a transmitter, as indicated by .AM. at the end of the Transmitter Number.

Implantable transmitters are effective for any species with a body shape that precludes a collar or backpack, such as an otter, snake or fish. When implanting a radio device in the species's peritoneum, researchers should take precautions to prevent infection.

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Implantable transmitters use a tuned loop antenna, which is coiled around the transmitter. However, a small-diameter flexible whip antenna may be used. This enhances the signal range and is not injurious to the animal if implanted correctly. Especially in snakes, the antenna is implanted between skin and muscle. Many researchers use a technique described in **Copea** (1982 (3): pp. 702-705) for inserting the antenna under the skin.

Implanting allows a deep body temperature reading for research studies. See the Implantable Temperature Transmitter chart for availability of large to small transmitters. Temperatures are accurate to +/-1 degree Celsius. We will supply a temperature calibration procedure where needed at extra cost. Assuming that the temperature of each animal's transmitter has been calibrated before implanting, the transmitter registers illness, stress or estrus by means of an internal thermister that varies the pulse rate with any temperature change. The higher the transmitter's temperature is, the faster its pulse rate will go.

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