



IMPORTANT TRANSMITTER INFORMATION

- Please check to ensure all the transmitters are OFF by monitoring each frequency with a telemetry receiver.
- Each transmitter has an on/off reed switch controlled by a magnet. When the magnet is affixed the transmitter will be off. As soon as the magnet is removed, the transmitter will enter a start up mode. If the on/off reed switch is not visible through the transmitter resin, dots indicate where the magnet should be placed.
- Transmitters should be separated by at least 5 cm (2 in) so the magnets do not cancel each other.
- Transmitters should be stored in a cool, dry location away from heat vents.
- Transmitters with a silver oxide 1.5-volt battery 357, 384, 386, 389, 393, or 394 should be stored no longer than 90 days before deployment; 377 and 379 should be stored no longer than 30 days before deployment. Silver oxide batteries have a low drain even with the magnet in place. Storage of transmitters with lithium batteries is not a concern.
- All duty cycle on/off transmitters and most 3.0-volt or higher voltage transmitters have a 16-pulse start up test mode when the magnet is removed prior to beginning their normal pulse rate.
- All mortality transmitters will start in the mortality mode after the magnet is removed. Shake the transmitter to reset the mortality switch.
- Keep the data sheet and job number sent with this order for future reference.

Thank you for ordering Advanced Telemetry Systems' transmitters.

If you have any questions or concerns, please contact ATS.



ADVANCED TELEMETRY SYSTEMS, INC.

470 FIRST AVE NO • BOX 398 • ISANTI, MN 55040

763-444-9267 • 763-444-9384 FAX

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TRANSMITTER REFURBISHMENT

- Please fill out a refurbishment form and send a copy with the transmitters and one with the purchase order. The refurbishment form is attached or see our website at www.atstrack.com.
- The cost to refurbish a transmitter is 70% of the current market value for a new unit.
- Most ATS transmitters can be refurbished; some special designs cannot. We do not advise refurbishing transmitters more than five years old. Please refer to the label on the transmitter or the data sheet for the manufacture date.
- Refurbished transmitters carry a limited materials and workmanship warranty.
- Transmitters that arrive damaged may not be able to be refurbished.
- Only transmitters meeting original specifications can be refurbished. Please indicate on the refurbishment form if you would like ATS to replace damaged units at current market prices. ATS does not charge for a failed refurbishment attempt.
- The frequency of the transmitter cannot be changed during the refurbishing process.
- Transmitters will be refurbished with the same attachment configuration and battery as the original unit.
- Transmitters cannot have options, such as activity, mortality, temperature, etc., changed or added during refurbishment.
- International shipping costs may not warrant refurbishing transmitters. Purchasing new transmitters is usually more cost effective for intercontinental customers.

Please contact ATS with any questions or concerns.



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Complete this form and send with transmitters to be refurbished

Contact person

Name _____

Organization _____

Telephone _____ Email _____

Species (turtle, grouse, etc.) _____

We do not advise refurbishing transmitters older than 5 years.

Number of transmitters _____ Requested return date _____

ATS job number (on transmitter or original data sheet) _____

Transmitter frequencies _____

Requested transmitter label (dependent on available space, max 4 lines 20 characters)

Bill To:

Ship To:

Purchase order, Visa or M/C number _____ Exp date _____

Name as it appears on card _____

If a transmitter cannot be refurbished, do you want to replace it at the current market price? Yes No

Can the purchase order be increased for these replacement costs? Yes No

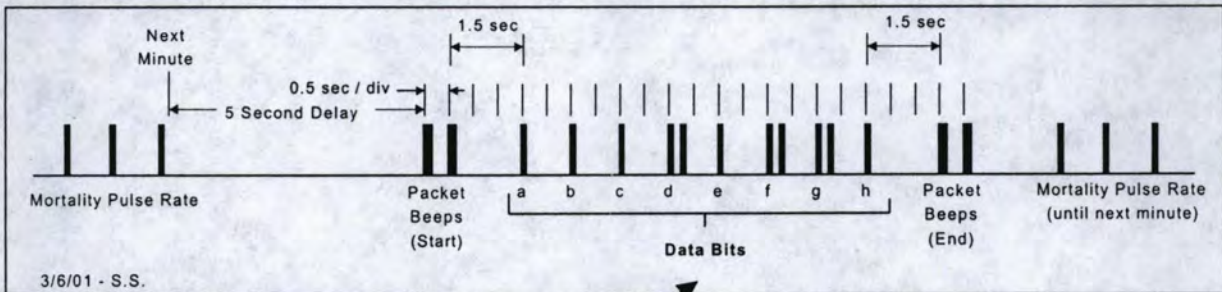
Shipping charges will be added to the invoice (circle appropriate choice)

UPS Ground UPS Blue (second day) UPS Red (overnight) OTHER

Comments _____

PET Decoding Worksheet

- Packet beeps indicate the start and end of the data bit sequence
- Data bits will be either single (I) or double (II) beeps
- Single data beeps always contribute a '0' value
- Double data beeps contribute various amounts depending on their position within the code (a=128, b=64, c=32, d=16, e=8, f=4, g=2, h=1)
- Summing up the data bit values produces the encoded time value



Mortality Example:

- 1) Record beeps while listening to the transmitter →
- 2) After recording the beeps, decode their values →
- 3) Sum up the values →

Packet Beeps	Data Bits								Packet Beeps
II	a	b	c	d	e	f	g	h	II
	I	I	I	I	I	I	I	I	
Value	0	0	0	0	0	0	0	0	Single
	128	64	32	16	8	4	2	1	Double
Sum	16 + 4 + 2 = 22								Half-hours

Results: 22 Half-hours have passed since activity was last detected

Packet Beeps	Data Bits								Packet Beeps
II	a	b	c	d	e	f	g	h	II
	I	I	I	I	I	I	I	I	
Value	0	0	0	0	0	0	0	0	Single
	128	64	32	16	8	4	2	1	Double
Sum									Half-hours

Packet Beeps	Data Bits								Packet Beeps
II	a	b	c	d	e	f	g	h	II
	I	I	I	I	I	I	I	I	
Value	0	0	0	0	0	0	0	0	Single
	128	64	32	16	8	4	2	1	Double
Sum									Half-hours

112112111

Packet Beeps	Data Bits								Packet Beeps
	a	b	c	d	e	f	g	h	
	I	I	I	I	I	I	I	I	
	II	II	II	II	II	II	II	II	
Value	0	0	0	0	0	0	0	0	Single
	128	64	32	16	8	4	2	1	Double
Sum									Half-hours

Packet Beeps	Data Bits								Packet Beeps
	a	b	c	d	e	f	g	h	
	I	I	I	I	I	I	I	I	
	II	II	II	II	II	II	II	II	
Value	0	0	0	0	0	0	0	0	Single
	128	64	32	16	8	4	2	1	Double
Sum									Half-hours

Packet Beeps	Data Bits								Packet Beeps
	a	b	c	d	e	f	g	h	
	I	I	I	I	I	I	I	I	
	II	II	II	II	II	II	II	II	
Value	0	0	0	0	0	0	0	0	Single
	128	64	32	16	8	4	2	1	Double
Sum									Half-hours

Packet Beeps	Data Bits								Packet Beeps
	a	b	c	d	e	f	g	h	
	I	I	I	I	I	I	I	I	
	II	II	II	II	II	II	II	II	
Value	0	0	0	0	0	0	0	0	Single
	128	64	32	16	8	4	2	1	Double
Sum									Half-hours

Packet Beeps	Data Bits								Packet Beeps
	a	b	c	d	e	f	g	h	
	I	I	I	I	I	I	I	I	
	II	II	II	II	II	II	II	II	
Value	0	0	0	0	0	0	0	0	Single
	128	64	32	16	8	4	2	1	Double
Sum									Half-hours

Precise Event Transmitter – RPET003

Overview: The Precise Event Transmitter (PET) option is programmed to convey the amount of elapsed time since trap activity was detected. The transmitter is programmed to ignore any movement during the initial 15 minutes after the magnet is removed to allow the transmitter to be attached to the chain.

Transmitter Operation Modes:

1. Normal Operation – The transmitter will pulse at a constant 40 ppm rate, functioning like a standard transmitter.
2. Time of Trap Activity Operation – Once the transmitter tilt switch detects any activity, the transmitter will enter the PET transmission mode. In this mode, the 80 ppm activity pulse rate will be interrupted once per minute to transmit a sequence of pulses. Encoded in this sequence is a value that indicates the amount of time that has elapsed since activity was detected by the transmitter's micro-controller. The format of this encoded byte is described on the *Precise Event Transmitter Encoding* section below. A byte is capable of representing values up to 255. This allows a maximum time since activity was detected of up to 127.5 hours (5.3 days) for one-half hour time increments.
3. Start-up Operation – The transmitter will start up after the magnet is removed and transmit a quick series of 16 beeps. The pulse rate will be 40 ppm regardless of any motion for 15 minutes. Once the 15 minutes has passed, any new motion will trigger the transmitter into the 'Time of Trap Activity Operation'.

Precise Event Transmitter Encoding: Preceding the time of trap activity pulses will be 5-seconds of silence (no pulses). This signals that data transmission is about to begin. A set of two beeps (each 30 ms wide), known as packet beeps, will then be transmitted. One and a half seconds after the completion of the packet beeps there will be 8 data bits transmitted at a rate of one bit per second. Each bit will be either a single beep, denoting a 'Zero' bit, or a double beep, denoting a 'One' bit. All pulses representing bits will be 20 ms wide with the double beeps being separated from each other by 100 ms. Eight bits together represent a byte with the first bit being the most significant and the last one the least significant. One and a half seconds after the last bit will be another set of packet beeps signaling the end of data transmission. The transmitter will then go back to transmitting the 80 ppm activity pulse rate until the next minute at which time it will repeat the *Time of Trap Activity* code sequence.