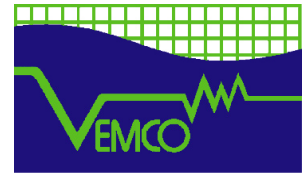


V9 Coded Transmitter



A division of **AMIRIX**

Implantable transmitter for small and juvenile species

The **V9 coded tag**, 9 mm in diameter, was developed to provide researchers with the means to track and determine the behaviour patterns of small and juvenile fish. The V9 tag can function as a simple pinger giving location only, or can be equipped with depth and/or temperature sensors. When used with a monitoring receiver, such as the VR2W or the VR3-UWM, coded V9 tags can be used to help meet the challenges of tracking large numbers of fish over large surface areas. The V9 can also be tracked using the VR28, the VR100, or VR60 (with Option 07 version 2.01) receivers, or the VRAP system.



The V9P-6L transmitter.

As one of our smaller tags, V9s have been successfully implanted in salmon smolts as small as 150 mm fork length and feature rounded ends for better implant retention.

Coded Mode

“Coded” pingers send acoustic pings at 69 kHz that are infrequent and random about an average delay. This ping train includes an ID number which permits identification of the specific tag and sensor data, if applicable. For applications such as site residency studies and automated monitoring of migrations, coded transmissions are desirable

because of significantly increased battery life and the large number of unique IDs available on a single frequency.

V9 Coded Tag Sensor Options

For research requiring temperature and depth information, V9 tags can be equipped with temperature, V9T, or depth, V9P, or both, V9TP. V9P pressure transmitters are available in the following full scale pressure options: 50, 100 and 200 meters. V9T temperature transmitters are available in four temperature ranges: -5 to 35°C, -4 to 20°C, 0 to 40°C and 10 to 40°C.

Available Frequencies

Coded V9 tags are available at 69.0 kHz.

Physical Specifications

	Battery Option:	6L	1L	1H	2L	2H
V9	Length (mm)	21	24	24	29	29
	Weight in air (g)	2.9	3.6	3.6	4.7	4.7
	Weight in water (g)	1.6	2.2	2.2	2.9	2.9
	Power Output (dB re 1uPa @1m)	142	142	147	142	147
V9TP	Length (mm)	39	40	40	47	46
	Weight in air (g)	4.6	5.2	5.2	6.4	6.4
	Weight in water (g)	2.2	2.7	2.7	3.5	3.5
	Power Output (dB re 1uPa @1m)	143	143	150	143	150

Stated tag length, weight and output power are nominal. Small manufacturing variations can be expected.

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Temperature Sensor		
Range	Accuracy	Resolution
-5 to 35 °C	±0.5 °C	0.15 °C
-4 to 20 °C	±0.5 °C	0.1 °C
0 to 40 °C	±0.5 °C	0.15 °C
10 to 40 °C	±0.5 °C	0.12 °C

Pressure Sensors (at room temperature)		
Max Depth	Accuracy	Resolution
50 m	±2.5 m	0.22 m
100 m	±5 m	0.44 m
200 m	±10 m	1.2 m

Expected Battery Life

The life span of the V9 depends on battery size [1, 2 or 6] power output [high or low] and the delay between ping trains [in seconds]. As detailed in the tables below, V9 coded tags have six standard ping train delays. V9 pingers incur a small current drain prior to activation. Tag life will be reduced if tags are shelved for a significant period of time (months). Contact VEMCO for information. V9 pingers should be activated within 6 months of delivery.

Nominal Delay (secs)	Projected Battery Life for 1L (days)				Projected Battery Life for 1H (days)			
	V9-1L	V9T-1L	V9TP-1L	V9P-1L	V9-1H	V9T-1H	V9TP-1H	V9P-1H
30	84	84	78	72	27	27	27	26
60	157	156	145	135	52	52	50	49
90	226	224	208	194	76	76	74	72
120	291	289	269	251	99	99	97	94
180	413	410	382	358	145	145	141	137
240	523	520	486	456	189	189	184	179

Nominal Delay (secs)	Projected Battery Life for 2L (days)				Projected Battery Life for 2H (days)			
	V9-2L	V9T-2L	V9TP-2L	V9P-2L	V9-2H	V9T-2H	V9TP-2H	V9P-2H
30	156	156	144	134	50	51	49	48
60	290	289	268	249	95	96	93	90
90	417	415	385	359	139	140	136	132
120	537	534	496	464	183	183	178	173
180	759	754	704	660	267	267	260	253
240	959	953	892	839	348	347	338	329

Nominal Delay (secs)	Projected Battery Life for 6L (days)			
	V9-6L	V9T-6L	V9TP-6L	V9P-6L
30	55	55	50	50
60	105	105	100	90
90	150	150	140	130
120	195	195	180	165
180	275	275	250	235
240	350	350	320	300

Range Testing Tag

Range testing tags can be provided, at the same output power as your proposed study, to be used to conduct in situ range testing. Range test tags are configured with a FIXED delay and an on-time of two weeks. This is a precautionary measure to ensure that the tag will expire within a reasonable period of time if accidentally dropped overboard. The tag on-time can be reset using the external magnet.

Programmable ON/OFF

V9 coded tags can be programmed to turn off for extended periods of time and reactivated later. This is useful to extend the life of the tag. Consult with your VEMCO sales representative for more details.

How to Order V9 Coded Transmitters

When ordering V9 transmitters, specify the following:

- [1] Battery size (1, 2 or 6)
- [2] Output power level (high or low)
- [3] Nominal delay
- [4] If a depth sensor (V9P) is required, what is the maximum depth (50, 100 or 200 meters)?
- [5] If a temperature sensor (V9T) is required, what is the temperature range (-5 to 35°C, -4 to 20°C, 0 to 40°C or 10 to 40°C)?
- [6] Is this a Range Testing Tag?
- [7] Quantity of tags

Notes: The transmission rate varies randomly ±50% about the nominal delay value. For example, a 30 second nominal delay indicates that the tag transmits randomly every 15 to 45 seconds.

The projected battery life is an estimate and users will experience a decrease in battery life if their tags are operating in extreme warm or extreme cold temperatures.

VEMCO transmitters are programmed to stop transmitting when they reach their stated battery life.

VEMCO tags are warranted to be free from defects in material and workmanship for one year from date of delivery.

Tags can be programmed for shorter lives, if required.

The tables above are for our most popular nominal delay settings. Please contact VEMCO for more information regarding battery life for other nominal delay settings.

