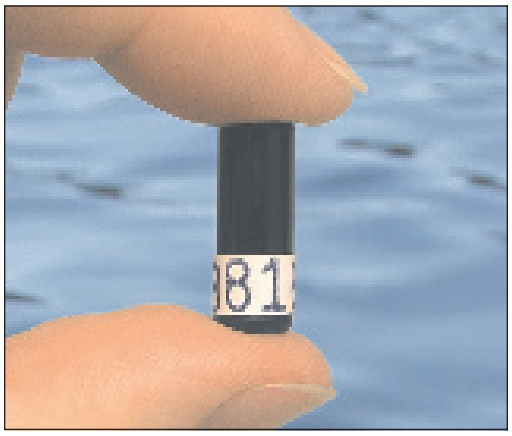
TRANSMITTERS

V7 Coded Transmitter

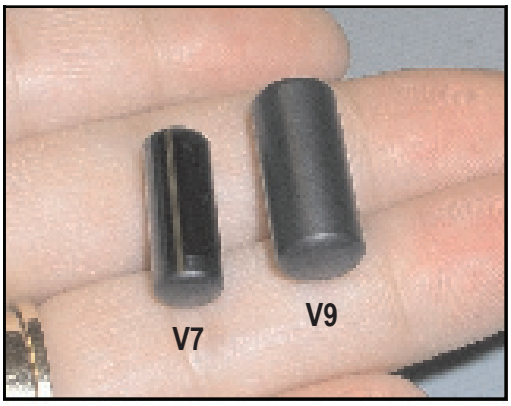
A division of AMIRIX

Implantable transmitter for salmon smolt and juvenile species

The V7 coded transmitter, 7 mm in dia-meter, was developed to provide researchers with the means to track the behaviour patterns of small and juvenile fish. This tag is particularly suited for seamless monitoring of salmon smolt migrations. V7 coded transmitters operate at 69 kHz and can be detected by VRAP, VR2, VR3, VR100, VR28 and VR60 (with Option 07 version 2.01) receivers. When used with the single channel VR2 or VR3 receivers, coded V7s can be used to help meet the challenges of tracking large numbers of fish over large areas.



The V7-1L weighs only about 0.7 grams in water and is only 18 mm long.



The V7-1L pinger has approximately half the volume and half the weight of the V9-6L pinger. This is particularly noticeable in the side-by-side comparison shown in the photo above.

Coded Mode

"Coded" pingers send acoustic pulse trains that are infrequent and random about an average delay. This pulse train includes an ID number which permits identification of the specific tag.

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 (>1,000,000) of unique tags available.

Physical Specifications

Model:	V7-1L	V7-2L	V7-4L
Length (mm)	18	20	22.5
Diameter (mm)	7	7	7
Power Output (dB re 1 uPa @ 1m)	136	136	136
Weight in air (g)	1.4	1.6	1.8
Weight in water (g)	0.7	0.75	1.0

Stated tag lengths are nominal. Small manufacturing variations can be expected. Due to the small size of the V7s, there is greater manufacturing variation than with our larger tags. V7s are individually screened to ensure they meet the power output stated. Some tags will have higher output power. Range test tags are chosen to be close to the minumum specification to ensure range tests are adequate.

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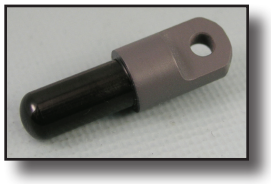
Range Testing Tag



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.

Expected Battery Life

The life span of the V7 depends on the battery option [1L, 2L, 4L] and the delay between transmissions [seconds]. The table below shows the estimated battery life for the V7-2L and V7-4L transmitter battery options using the most common delay settings. Note that V7 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.

Projected Battery Life (Days)		
Nominal Delay (seconds)	**V7-2L**	**V7-4L**
60	94	138
120	168	246
180	230	337

Notes: The transmission rate varies randomly ±50% about the nominal delay value. For example, a 120 second nominal delay indicates that the tag transmits randomly every 60 to 180 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.

Users are advised that the V7-1L transmitter is not recommended for cold water experiments as acoustic power output, battery life and detection range of the V7-1L decreases significantly below 5°C due to the small battery. Decreased range may also be observed at temperatures less than 10°C.

VEMCO transmitters are programmed to stop transmitting when they reach their stated battery life. This ensures that tags will operate at published specifications until expiration.

Tags can be programmed for shorter lives, if required.

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

Programmable ON/OFF

VEMCO transmitters are available with programming options that allow users to take greater advantage of fish behaviour over the life of their tags. In order to control the characteristics of their tags, users have the option of using between one to four programming steps to define the tags transmission: Status (ON/OFF), time interval, acoustic power level (L/H) and nominal delay.

This is an example of how tag programming options can be utilized to provide a staged release tag behaviour.

Interval	Status	Time Days	Power (L/H)	Nominal Delay (sec)
Step 1	ON	1	L	30
Step 2	OFF	9		
Step 3	ON	30	L	60
Step 4	ON	110	L	120

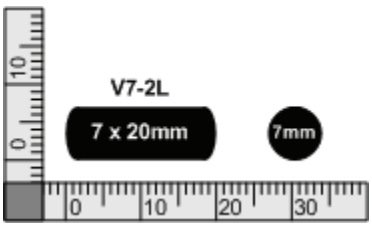
When finished LOOP back to Step 4. Estimated tag life in this example is 150 days.

Step 1: The tag is programmed to start in LOW power mode with a nominal delay setting of 30 seconds for a period of 1 day. This allows a researcher to activate a tag and have it transmit for 1 day during the surgical implantation phase of the study.

Step 2: The tag is programmed to turn OFF for a period of 9 days. In order to conserve battery life while the animals recover from surgery, the tags are switched to the OFF status since the location of the animals is known.

Step 3: The tag is programmed to turn ON in LOW power mode with a nominal delay setting of 60 seconds for a period of 30 days. This allows a researcher to release and track the animals during a 30 day migration period through a given study area.

Step 4: The tag is programmed to stay ON in LOW power mode with a nominal delay setting of 120 seconds for a period of 110 days. This allows a researcher the ability to track the animals for 110 days during what might be a more residency type setting. Note the Loop control setting is set to Step 4 thus keeping the tag in the ON status until the tag reaches its battery end of life.



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