SRX_400 Receiver Configurations

LOTEK WIRELESS FISH & WILDLIFE MONITORING

P/N 577 Rev.E

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SRX_400 Receiver Operational Functions	Coded (C) Configurations							Pulsed (P) Configurations			
	W5XS	W5XG	W6	W7	W16	W31	W32	W1	W4	W9	W21
Manual Tracking Capability using conventional Pulsed Transmitters	•	•	•	•	•	•	•	•	•	•	•
Manual Tracking Capability using Digitally Encoded Transmitters	•	•	•	•	•	•	•				
Acoustic Adaptability (with UUC- ultrasonic upconverter)	•	•	•	•	•	•	•	•	•	•	•
Audio Noise Blanking[1] (suppresses local ambient 'background' noise)	•	•	•	•	•	•	•	•	•	•	•
Separate Audio and Gain Control Adjustment	•	•	•	•	•	•	•	•	•	•	•
16 Frequency Partition Tables with Copy Command	•	•	•	•	•	•	•	•	•	•	•
Scratchpad (allows manual entry of numeric field data)	•	•	•	•	•	•	•		•	•	•
Echo Suppression Filter for use in Acoustic Applications	•	•	•	•		•	•				
Acoustic or Radio Frequency Display Feature						•	•				
Datalogging Capability (for continuous automatic data collection)		M[4]	•	•	•	•	•			•	•
Memory Capacity (mbytes)	0	½	½	½	1	1	1	0	0	½	1
Supports DSP_500 (for near-simultaneous monitoring of 25 frequencies)					•	•	•				
Multiple Antenna Switching (max. # of antennas / receiver)			4	4	8	8	8			8	8
Individual Antenna Gain Control				•	•	•	•				•
Data Download to Computer from Receiver (RS-232)		•	•	•	•	•	•			•	•
Frequency Upload to Receiver from Computer (RS-232)					•	•	•		•	•	•
Supports Terminal Control (remote data retrieval/upload capability)					•	•	•				•
Passcode Access			•	•	•	•	•			•	•
On-screen Memory Status			•	•	•	•	•				•
Frequency Table Scrolling Feature											•
Data Compression - User-definable Continuous Record "Event" Window [2]			•	•	•	•	•			•	•
High Speed Data Retrieval					•	•	•				•
User definable Frequency/Code Filter						•	•				
NMEA Standard GPS Interface[3]		•				•					
Independent Designation & Gain Adjustment for Acoustic and Radio Devices						•	•				
Pulsed/ Beeper Sensor Support in Datalogging mode											•
Coded Sensor Support	•						•				

Receiver configurations identified are based upon current specifications and may differ from earlier configurations. Certain features presented are options available to the standard configuration family specified. Multiple options are also available but may be limited in some configurations. Contact LOTEK directly for details regarding available options. Any current SRX_400 specified can be modified to an alternate configuration to meet evolving project requirements.

FOR FURTHER INFORMATION ABOUT OUR PRODUCTS:

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SRX_400 Datalogging Configuration Summary

W9 EVENT_LOG represents the entry-level datalogging configuration for SRX_400 receivers and is designed for operation using conventional pulsed beeper transmitters. Frequencies entered into tables selected by the user are automatically and sequentially scanned. Once a signal is detected, scanning is momentarily suspended until the receiver first validates, then logs the scanned signal as an "Event" (date, time, frequency, pulse rate, signal strength and where applicable, antenna). The summary record feature provides an average of pulse rates and signal strength during a user defined duration window.

W21 EVENT_LOG firmware incorporates all of the features of W9 firmware, plus many design and application enhancements useful to more comprehensive studies, which generally require greater data storage capacity and more sophisticated antenna switching capability. In addition, SRX_400 receivers configured with W21 firmware afford the ability to designate transmitters as sensors, i.e., temperature, mortality, and afford greater flexibility with respect to data retrieval.

W5XG firmware incorporates the standard NMEA 0813 GPS interface and one-touch datalogging capability for either pulsed (Beeper) or digitally coded transmitters. Originally designed to satisfy requirements for manual tracking applications, the "XG" addition allows researchers to manually log date, time frequency, code, signal strength, and GPS coordinates by pressing a single button on the receiver thus simplifying data collection when tracking by aircraft, boat or automobile.

W6 CODE_LOG brings the benefits of our digitally coded systems to first-time users involved in presence/absence datalogging projects where study populations typically number under 100 animals. The SRX/W6 configuration supports up to four antennas when used in combination with the ASP-8 external switchbox.

W7 CODE_LOG is a datalogging firmware typically used for radio, acoustic, and combined acoustic/radio (CART) applications (when used in conjunction with the UUCN acoustic converter) where animals traverse low/high salinity and/or shallow/deep water environments. The researcher can place up to 212 uniquely identifiable animals on each of seven frequencies for study populations numbering up to 1484 individuals. The SRX/W7 configuration supports up to four antennas, each having a user set gain for applications that combine aerial and underwater antennas, hydrophones and antennas or applications where balancing the system is imperative without the need for external attenuators. As well as being compatible with other W3X coded configurations, the SRX/W7 is fully compatible with Wireless Hydrophone Systems (WHS-1000 series) which allow coded acoustic transmissions to be received and retransmitted in real time using VHF radio.

W30 CODE_LOG datalogging firmware used in our digitally coded systems is particularly well suited to projects involving large study populations, and can be used in combination with our DSP co-processor. The SRX/DSP station is highly effective for use in studies that involve evaluation of fish passage efficiency through fish ladders, along forebays, spillways, of hydro facilities and dams. A SRX_400 so configured is able to interpret and log signals from up to 212 transmitters on a single frequency, at up to 25 frequencies and at seven antennas, virtually in real-time. This capability, also available in the W16 family, significantly reduces total scanning time over pulsed systems and furnishes a high degree of spatial and temporal resolution.

W31 CODE_LOG incorporates features which make this configuration readily adaptive for use in both radio or acoustic research applications, as well as in studies whose objectives dictate monitoring animals through both freshwater and estuarine/marine environments. The SRX/W31 configuration brings all the benefits of digitally coded systems to both radio and acoustic telemetry with special features to address the demands of telemetry use in acoustic environments. Sophisticated noise filtering systems, adaptive gain control and the ability to designate individual peripherals as radio or acoustic and adjust gain accordingly for each, allow users to optimize system performance to local conditions. W31 also supports an optional GPS NMEA standard interface, allowing GPS co-ordinates to be automatically appended to the corresponding signal when logged.

W32 CODE_LOG brings an innovation to fisheries researchers using either/both radio and acoustic telemetry, by extending the inherent advantages of our digitally coded systems into sensor applications. Through use of advanced algorithms, coded transmitters can now be designated as sensor devices to provide depth, temperature and electromyogram data, in addition to providing identity and relative location of the animal. Study results are enhanced accordingly. Data from single and multiple sensors on a single transmitter are interpreted and logged along with date, time, frequency, code, antenna and signal strength. The SRX/W32 configuration is fully compatible with all identification only based coded transmitters designed for use with SRX_400 receivers.

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1. The **"Noise Blanking"** feature is standard in all receivers purchased after May 1994.

2. The "**Continuous Record**" (data compression) function incorporated into the SRX_400 datalogging receiver configurations specifed, offers researchers great flexibility with respect to logging "Events". Researchers can use this feature to specify the duration of observation windows (one second to one hour) for data collection. Consecutive appearances of Events for an animal detected during a defined observation window, results in an averaging of that animal's Event data for the window period defined. A window can also be defined based upon a specified number of Events. Upon expiry of each window, data are averaged, logged and the window automatically resets to begin monitoring the next window. For example, if it is expected that instrumented animals will congregate within a reception zone of a system and activity will be minimal, extending the duration window results in a greater averaging of Event activity. This 'data compression' technique reduces repetitive logging of identical data and affords greater overall data storage capacity. Alternatively, selecting a short window, i.e., same as the transmitter pulses or burst rate allows all Events to be logged. Use of the continuous record feature is thus specific to each project and can be defined accordingly.

3. When enabled, the **SRX/GPS** function obtains a new GPS position from a NMEA Standard GPS receiver connected to the SRX serial port each time a new continuous record is created. To maximize storage efficiency of GPS data into existing Code_Log storage formats with no increase in record size, GPS position information is saved in a compressed form. The technique uses a deviation from a known reference position entered by the user based upon the geographic location of the study site. This format provides a range of validity of stored GPS data within a "square" 109 arc-minutes on a side, centered on the reference position.

4. Manual (one-touch) datalogging