

Generation 2 PIT Tag Reader System/ Multiplexer Technology using the FS1001A / Single Use Injectors

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Generation 2 Reader

The ISO PIT Tag Readers developed for juvenile (FS1001) and adult (FS1001A) detection in the past 5 years have been designed around a specific set of requirements for installation at the Hydro-electric Dams on the Columbia and Snake Rivers. The success of these systems has led to the increased interest and use of the tool by researchers system wide. As a result, there was the need for additional requirements to be added to the current transceiver system to expand the use of PIT Tag interrogation beyond the current level. The need for Small-Stream and Hi-Q detection, as well as possible increased efficiencies to the existing Full-Flow and the Counting Window systems; requires modifications to the existing FS1001A Transceiver system to improve performance and system capabilities. By integrating the hardware and software in the current system (as well as the current development of hardware and software for multiplexing and auto tuning) with an upgraded CPU processor, layer of Digital Signal Processing, expandable and removable memory, reduced system power budget, and modular packaging using a standard interface bus for additional interfaces will provide for the current and future needs of the PIT Tag community. A final set of requirements was developed jointly with NMFS, BPA, ACOE, PTSC, and PSMFC.

Multiplexer

As part of the small-stream detection project, it has been determined that there is a need for a PIT Tag interrogation system that can have multiple antennas (in order to span a stream) driven by a single reader. By driving one antenna at a time and switching between them, there will be a significant reduction in power consumption and cost versus using one reader for each antenna. In order to simplify the installation and adapt to changing river conditions it will be necessary for the reader to automatically tune the antenna. In order to allow for stand-alone data logging operation, it will be necessary to put the real-time clock hardware and software on the CPU card.

Single Use Injectors

Digital Angel has been developing a single use injector at the request of Doug Marsh of NMFS to minimize the labor involve in tagging operations. This injector involves a multiple use handle assembly with a one time use needle and hub. The units will be pre-sterilized and packaged in tray systems.