

Temperature Profiling Systems

Monitoring the yearly evolution of temperature stratification is a critical component in many lake management and research programs due to its pronounced effects on aquatic chemistry and biology. Fisheries management, hydroelectric plants, selective withdrawal dams, and numerous aspects of aquatic and sediment research often depend on having temperature profile data for a water body.

Lake stratification develops seasonally as increasing solar radiation in the spring and summer heats up surface waters. Heat is quickly dissipated in the upper layers of water, and deeper waters remain cool. Because warmer water is significantly less dense than colder water, temperature-dependent density differences develop that prevent mixing and result in the formation of isolated layers of water. Due to the absence of water circulation between the layers, each strata of water develops its own distinct characteristic. Among the more common concerns is the depletion of oxygen in the deeper layers of stratified lakes. In the fall, the temperature and density gradient weakens as surface waters cool and sink. Mixing by wind and the sinking of cooler waters will eventually destroy the gradient, a process known as fall turnover. The resulting isothermal conditions restore water circulation and oxygen to the deeper layers of the lake.

NexSens has developed a unique buoy-based system to accurately and effectively monitor lake stratification. Contact our application engineering team for assistance in configuring a system.



NexSens TS110 Temperature String

The NexSens TS110 Temperature String measures water temperature by incorporating multiple sensors into a single 3-conductor cable, suspended vertically in a water column. This capability provides high precision, multi-point temperature profiling for environmental applications. The TS110 is designed for harsh environments and is submersible up to 200m in fresh, brackish, or seawater. When connected to the NexSens iSIC data logger and iChart software, the instrument is truly plug-and-play. No programming is required! It is typically used in one of the following configurations: standalone data logger, direct-connect to PC, bottom-deployed, or surface buoy.

Features Include:

- Easy-to-get multi-point temperature profiling data
- 3-wire temperature string
- Factory calibrated $\pm 0.1^{\circ}\text{C}$
- All the benefits of the NexSens iSIC data logger & iChart software

Popular Applications:

- Thermal discharge monitoring
- Selective withdrawal gate control
- Lake & thermocline monitoring
- Aquatic research
- Temperature profiling

NexSens TS110 Temperature String Specifications

User configuration	Number of sensors, spacing, and length
Sensor	Semiconductor
Range	0 to 50°C (32 to 122°F)
Accuracy	$\pm 0.1^{\circ}\text{C}$ ($\pm 0.2^{\circ}\text{F}$)
Reading time	60 seconds max for 120 sensors
Maximum sensors	120
Maximum length	200m
Power requirement	Supplied by iSIC or AC power adapter
Interface connector	RS-232, MS-8 for iSIC
Calibration	NIST Traceable

Part #	Description	Price
TS110	Temperature string, configured to order	Call
1001	iChart software	Call
TS-ADP	PC adapter cable	Call
A12	AC power supply	Call