



**EXTREME ENVIRONMENTS
EXTREMELY RELIABLE**



DIGITEMP

DIGITAL SDI-12 SUBMERSIBLE TEMPERATURE SENSOR



Accurate, durable, plug-and-play installation.

The FTS DigiTemp submersible temperature sensor is a rugged SDI-12 sensor for measuring the temperature of soil, water or other liquids with scientific-grade accuracy and long-term reliability. It makes adding automatic temperature monitoring to existing stations incredibly easy and cost-effective.





DigiTemp.

The digital SDI-12 submersible temperature sensor from FTS.

CUSTOMER PROFILE

USGS | Arkansas

Collecting information from over 150 locations across Arkansas for anglers, boaters, and water-resource managers keeps this team busy and in need of quality sensors that provide reliable data.

OPPORTUNITY

- A stilling well built in the 1930s had filled with silt from the river, making it impractical to collect accurate water temperature data at this location. Safety challenges within this confined space, meant the team wasn't able to remove the silt that covered the intake pipe.
- A possible solution involved installing a 200' cable run, including a 120' vertical climb, using an analog sensor connected to a DCP, sending the information over the cable to another DCP, to be recoded and transmitted via GOES with the rest of the data.
- This solution was not ideal due to the complexity of the installation and the cost of the additional equipment.

SOLUTION

- The team had access to GOES transmitters capable of connecting sensors directly via SDI-12, so they chose the fully digital FTS DigiTemp. The transmitter was installed on a floating dock and the probe was immersed in the river.
- The team was able to eliminate the need for the second DCP and additional processing as well as hundreds of feet of expensive cable.

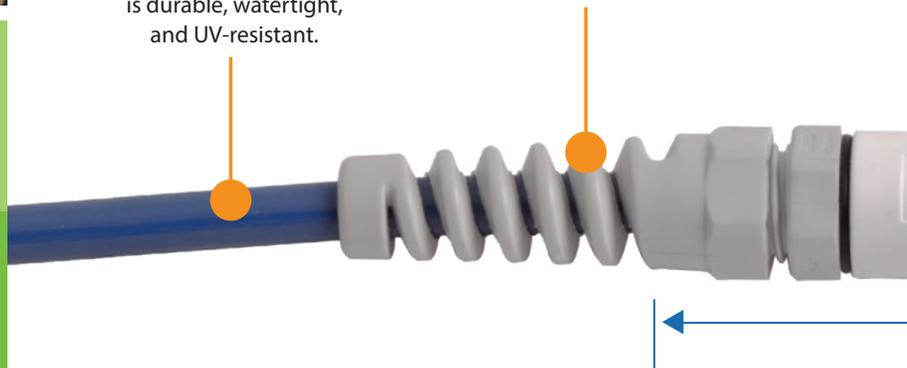
THE DIGITEMP DIFFERENCE

SDI-12 Capabilities Trump Analog Limitations

The DigiTemp solution provided an economical, safe, and effective way of collecting the temperature data for this station at a cost significantly less than what an analog sensor solution would have cost.

18.3 m (60') flexible cable is durable, watertight, and UV-resistant.

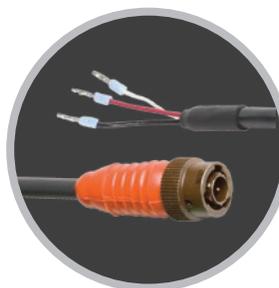
Strain relief protects cable.



The Digital Advantage.

DigiTemp is a fully digital sensor, using the SDI-12 protocol, and is compatible with any SDI-12 compliant datalogger, like the Axiom.

- No complex wiring to set up.
 - No need to program coefficients.
 - Just plug it in. Set it and forget.
- ✓ 18.3 m (60') flexible cable is durable, watertight, and UV-resistant.
 - ✓ Strain relief protects cable.
 - ✓ Housing made from Delrin™, providing high stiffness, low friction and excellent strength.
 - ✓ Strong molded end loop for attaching weights or other mechanism for helping to fish through conduit.



Three-lead connection provides compatibility with all existing dataloggers, or optional bayonet connector for watertight, quick connect compatibility with Axiom dataloggers.

CUSTOMER PROFILE

USGS | Colorado

The USGS Colorado Water Science Center is devoted to data collection, applied science, and the dissemination of information.

OPPORTUNITY

- Local biologists turned to the Colorado USGS for help when they required an effective solution to create a reference network for long-term monitoring of stream temperatures and biological productivity.
- For the 50 stations they were operating, they needed an easy-to-install solution that was accurate and didn't require any programming or calibration.

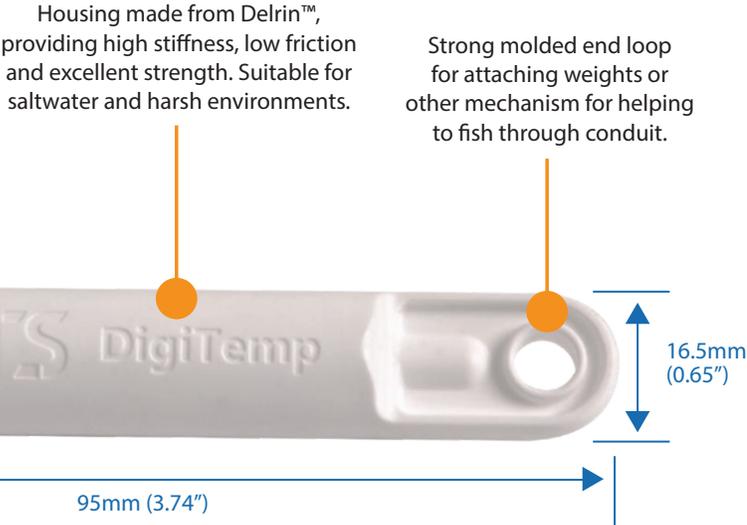
SOLUTION

- The Colorado team queried other USGS offices and learned that FTS DigiTemp sensors were the easiest to install because they don't require extensive calibration calculations.
- Several DigiTemp sensors were purchased to distribute throughout the Western United States; these units have been in place for almost three years.

THE DIGITEMP DIFFERENCE

Quick Installation and High Accuracy

The DigiTemp sensors were very quick to install, which saved countless hours given the large number of installs. The sensors were also found to provide an unexpected level of accuracy. In one location, the engineers thought the sensor was malfunctioning, as the reported water temperatures were inordinately high. They brought the unit back to the lab for testing and learned that the probe was working perfectly; it was the stream location itself that had caused the spike in temperatures.



TECHNICAL SPECIFICATIONS

SENSOR TYPE	Encapsulated thermistor
INTERFACE	SDI-12 v.1.3
TEMPERATURE RANGE	-40°C to +60°C (readings returned in °C and °F)
ACCURACY	±0.2°C (-5°C to +45°C)
RESOLUTION	0.01°C
RESPONSIVENESS	Reaches 95% of final value in 1.7 min., 99% in 2.9 min
CURRENT CONSUMPTION	5mA active, 0.6mA quiescent
CABLE LENGTH	18.3m (60')
CABLE DURABILITY	UV-resistant, 0.060" polyurethane jacket
MAXIMUM DEPTH	30.5m (100')
MAXIMUM WEIGHT LOAD	4.54 kg (10 lbs.)



DigiTemp is small enough to easily deploy through standard 1" (2.5cm) PVC conduit with 8" (20.3cm) factory bend corners.



CUSTOMER PROFILE

USGS | Iowa

- Surface water data gathered from 25 stream gauge locations
- Information available through the USGS website to US Army Corps of Engineers, Iowa Department of Natural Resources, Iowa Department of Transportation, various cities and communities.
- Data used to inform decisions regarding domestic, commercial, and industrial uses; crop irrigation; waste removal; hydroelectric power generation; commercial transport; and recreation
- Data accuracy is imperative.

OPPORTUNITY

- Analog sensors required frequent replacement from staff with specialized knowledge to calculate the program coefficients for correct installation.
- Due to the remote locations required for many of these units, the team wanted sensors that were easy to install and durable enough to last longer than a few years, without sacrificing data accuracy.

SOLUTION

- Built with durability, accuracy, and simplicity in mind, DigiTemp provides a simple-but-effective solution to measure water temperature.
- DigiTemp requires no maintenance or calibration once deployed, and is designed to work flawlessly for years.
- SDI-12 interface is purely plug-and-play and does not require an advanced understanding of calibration coefficients or resistance biasing.

THE DIGITEMP DIFFERENCE

Accuracy = Credibility

By implementing an easy to deploy and highly accurate tool to obtain reliable temperature information, this office has experienced an **increased awareness of the local hydrology conditions in the online communities** accessing this data, ensuring the continued ability to provide effective management of the land, water, and biological resources within the state.



CUSTOMER PROFILE

USGS | Arkansas

Reliable data from over 150 locations is important for both recreational and institutional use, from anglers and boaters to water-resource managers.

OPPORTUNITY

- This team does a yearly five-point calibration check on their field stations and sensors to ensure the equipment is working properly.
- Frequently, the people checking on this equipment are water quality students, and they usually don't have the engineering experience required to properly complete on-site calibrations.

SOLUTION

- Since the FTS DigiTemp sensors do not require calibration, the engineering team can verify each sensor's operational ability in the comfort of the home lab, and then outfit the students with known-good equipment.
- The students are able to quickly swap the plug-and-play sensor at the site, and return the swapped unit for confirmation and re-deployment next year.

THE DIGITEMP DIFFERENCE

Simplicity and Accuracy in One

Accuracy is more critical than speed of installation, but with DigiTemp sensors, neither is sacrificed, providing more flexibility when choosing a team to install or maintain the sensors.



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Rev. 10-26-2018