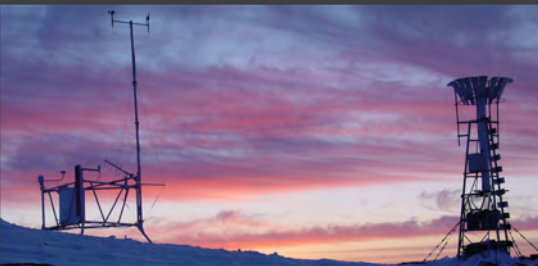


FTS



Fixed RAWS

Remote Automated Weather Station



Extreme environments. Extreme ruggedness. Extremely simple.

Fixed RAWS

The FTS fixed RAWS is the standard remote automated weather station used for fire weather monitoring in the United States. It's a purpose-built system comprised of components designed to inter-operate specifically with the interests of fire and fuels management agencies in mind. From the assembly of a new station at a remote location to yearly service and maintenance, the design of the FTS fixed RAWS shows our extensive 30 years of experience in the market.

Enclosure and Electronics

Made from durable heavy-gauge aluminum, the enclosure houses the Axiom F6 datalogger (which optionally contains a GOES transmitter and/or AirTalk Radio Voice Transmitter), one or more heavy-duty batteries, any other electronics, manuals, etc.

On top of the enclosure is mounted a GPS antenna, used by the GOES transmitter to set the internal clock to ensure that data is always transmitted during the allotted 10-second window.

Solar Radiation Sensor (Pyronometer)

The SDI-SR-PYR solar radiation sensor measures the amount of sunlight energy fuels are exposed to.

GOES Yagi Antenna

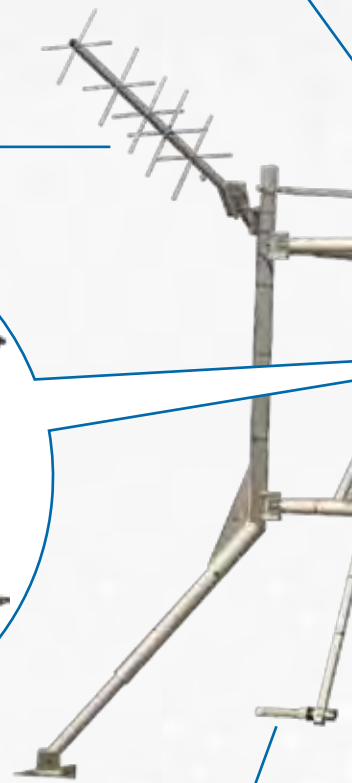
Transmits data to a GOES satellite.

Heavy-Duty Battery

FTS uses a 100 amp-hour starved electrolyte heavy-duty battery. This 6 cell, 12 Volt valve-regulated lead-acid battery powers all our fixed RAWS, and was chosen for its tolerance of extreme environmental conditions and its specific design for use with solar recharge applications.

Fuel Stick

The optional FS-3 fuel stick measures fuel moisture and temperature.



TriLeg Tower Mast

The mast of the TriLeg tower places the wind speed and direction sensor at a height of 20 feet (6.1m). Can be lowered by one person for easy servicing of sensors.

Wind Speed and Direction Sensor

The SDI RMYoung Wind Monitor by FTS measures the ten-minute average wind speed and wind direction just prior to the hourly GOES transmission. The maximum wind speed (gust) over a 60 minute period as well as the direction from which the maximum gust came from is logged.

We have recently switched the standard wind sensors for the fixed RAWS to a dual wind/speed sensor made by R.M. Young, converted by FTS to output using the digital SDI-12 protocol. The fixed RAWS can still be configured with separate analog wind speed and wind direction sensors or with an ultrasonic wind speed/direction sensor.

Rain Gauge (Tipping Bucket)

The RG-T rain gauge measures precipitation in increments of .01 inch (0.254mm), each hour.

AirTalk Antenna

Allows broadcast of voice alerts from an optional AirTalk Radio Voice Transmitter to any crew radios. AirTalk allows querying the station with any DTMF capable radio and receiving current weather conditions being monitored in real-time.

Air Temperature and Relative Humidity Sensor

Current air temperature and 10-minute average relative humidity are measured by the THS-3 sensor and logged.

Solar Panel

Most stations operate on a battery, which is recharged by a solar panel. A 20W solar panel is most common, but 10W and 50W panels are available when needed by site-specific conditions.

Adjustable Legs

The three legs of the TriLeg tower are adjustable in length to permit the tower to be installed on uneven ground. The feet can be anchored with metal stakes, or rocks can be piled on top of the feet.

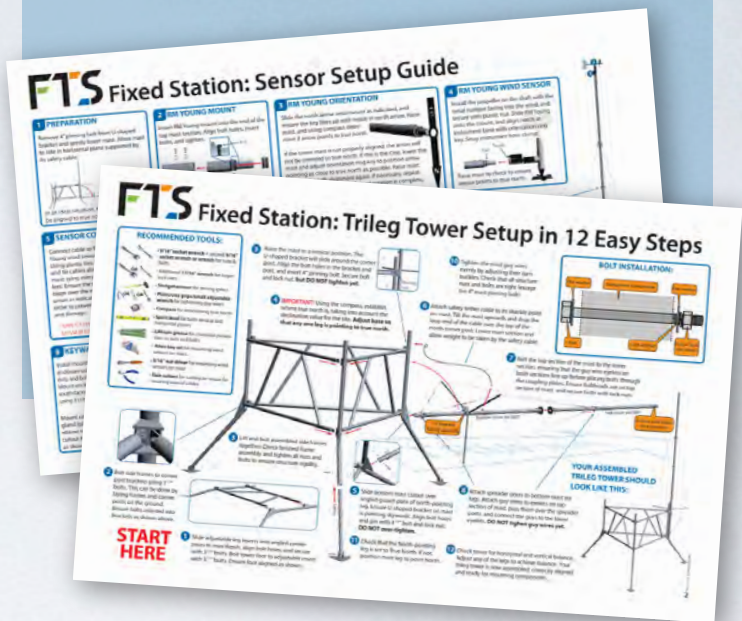
TriLeg Tower

FTS' TriLeg tower provides a solid frame to mount sensors and other equipment. Anchored to the ground, it is able to withstand sustained 125 mph (201 km/h) winds without requiring setting in a concrete base.

- Every component meets or exceeds NFDRS/CFDRS standards.
- Approved, certified and serviced by RSFWSU.
- Pre-configured for fire applications and compliant with WFMI database.

The Best Part Weighs Nothing

FTS customers know that our equipment is exceptionally reliable and built like a tank. But the most significant reason that more fire management professionals rely on FTS than any other vendor is the service and support. We really take care of our customers, and they know it. So much goes into making things extremely simple—from extensive documentation written by people who work with the same equipment in the field as our customers do, to our lifetime, toll-free technical support.



Annual Onsite Maintenance (AOM)

Our most complete maintenance contract offered is directed at customers who own a network of monitoring stations. FTS takes responsibility for complete station maintenance and management via an annual on-site station visit. FTS also stocks emergency spares to support customer first-response in the event of equipment failures. The contract includes sensor swap out, station inspection, digital photos, detailed service reports and recommendations plus all costs associated with getting our technicians to your site.

FTS technicians are dispatched on an annual basis to perform the following:

- Inspection
- Shipping Coordination
- Documentation
- Sensor Exchange
- Training

NFDRS requires station maintenance every 12 months. Let FTS do it right, on time, hassle free.

100% of the top 50 North American forest management agencies use FTS solutions.

FTS has designed, developed, deployed and serviced many different systems for different meteorological and hydrological applications throughout North America. What all of our projects have in common is the need for rock-solid reliability... equipment that needs to operate continually in extremely remote locations. No application exemplifies that need better than fire weather, which, given what's at stake (billions of dollars and people's lives), requires data accuracy and reliability far more than any other type of environmental monitoring.

**Reliability =
Ruggedness
+ Simplicity**



The Sky's the Limit

Alongside the standard TriLeg Tower (see page 4) FTS also supplies 10 meter (30') RAWs to clients in Canada and Mexico.



Features and Benefits

Zero civil works cost required - no cement or special engineering required. The tower provides exceptional strength and stability as a free-standing structure assembled with only a few hand tools. No need to pour a cement pad in your remote location!

Technician safety—doesn't require climbing to service wind sensors. The folding mast can be lowered and raised by only one person, making it easy to access the wind sensor.

Easy to transport - the entire structure can be shipped on a single 7' x 4' pallet. With or without the pallet, it can also fit in a pickup truck.

Quick and easy to set up - assembled and anchored in one hour by two people, with a minimum of tools. Adjustable legs permit installation on uneven terrain. Full setup instructions fit on only two laminated "Quick Start" sheets.



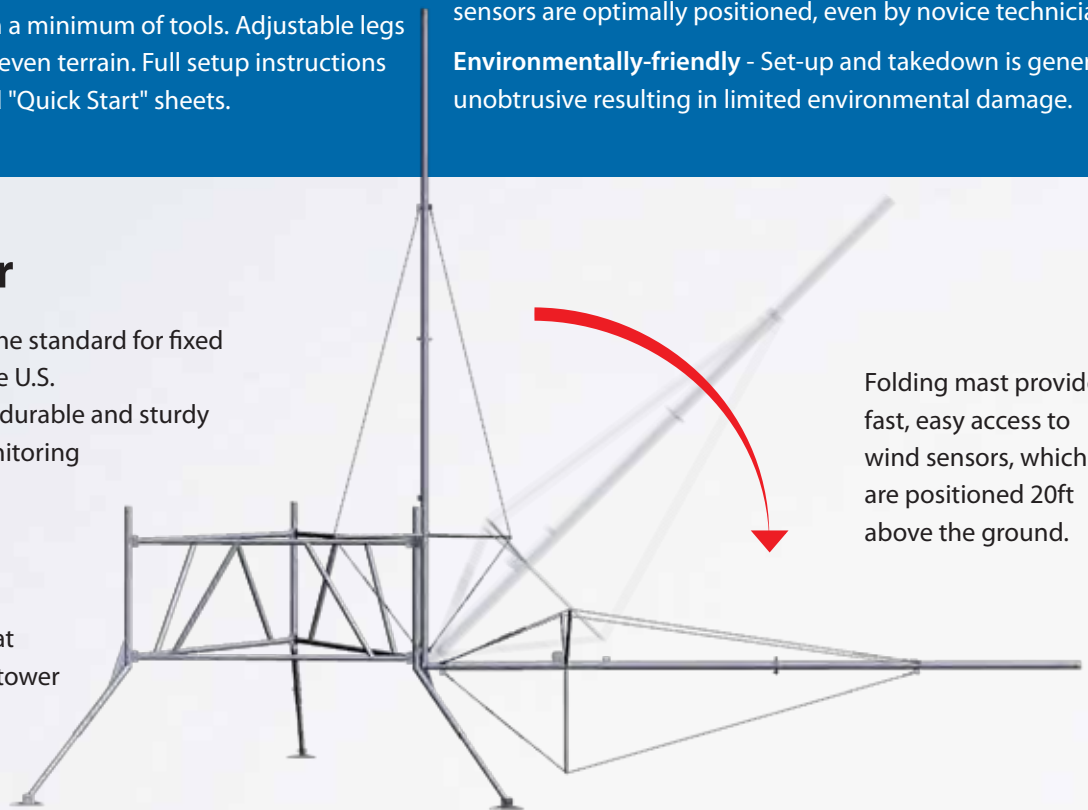
Smart design ensures data integrity - By aligning one side of the triangular tower to true east/west, all of the station components requiring alignment will automatically be aligned when installed. This ensures sensors are optimally positioned, even by novice technicians.

Environmentally-friendly - Set-up and takedown is generally unobtrusive resulting in limited environmental damage.

TriLeg Tower

The FTS TriLeg tower is the standard for fixed (permanent) RAWS in the U.S. It's an extremely strong, durable and sturdy platform for remote monitoring equipment that will last for decades.

Built from heavy gauge aluminum pipe welded at critical joints, the TriLeg tower is extremely robust.



Folding mast provides fast, easy access to wind sensors, which are positioned 20ft above the ground.



Thousands of fire weather stations deployed

Beginning in British Columbia, Canada, FTS equipment has gained loyal customers at multiple levels of government and the private sector for over 30 years.

 North American FTS fire weather stations

The Digital Advantage

The Axiom F6 datalogger has two independent SDI-12 ports which can accommodate a wide variety of current and future digital sensors.

More and more sensors are being designed to take advantage of the digital SDI-12 (Serial Digital Interface) protocol, which offers many advantages over analog sensors. The Axiom's dual SDI-12 ports and upgradable software allows any future sensor compatible with the SDI-12 protocol to be added to the site. Some of the advantages of SDI-12 include:

- Unique and complex self calibration algorithms can be done in microprocessor based sensors.
- Sensors can be interchanged without reprogramming the data recorder with calibration or other information.
- Power is supplied to sensors through the interface.
- Personnel trained in SDI-12 will have skills to work with a variety of SDI-12 data recorders and SDI-12 sensors.

Extreme expansion.

Having two SDI ports provides not only **virtually unlimited expansion** (up to 61 digital sensors), but also provides more **responsive data throughput** when connecting multiple sensors. Because each SDI port is independent of the other, the datalogger can drive 2 sets of sensors without having to wait for the first to respond before polling the second.

Extreme reliability.

The SDI ports use FTS' positive-locking, fully waterproof, corrosion-resistant military style bayonet connectors. This unique design **eliminates the most probable point of failure** in a weather station. Like all other ports on the Axiom datalogger, they are keyed and color-coded, so it's impossible to connect sensors incorrectly. They make the installation of new sensors extremely simple and quick, and ensures that the connections are reliable for years, regardless of who does it.

Flexibility and expandability.

Any FTS RAWS can be fully customized to allow for an amazing array of configurations, allowing additional features to be added as required. Two independent SDI ports provide true plug-and-play integration

of current and future digital sensors like

barometric pressure, visibility, snow depth, stage and other sensors.

A RAWS can also be expanded by adding virtually any analog sensor with the optional SDI-AM analog interface to SDI module.



Dual independent SDI-12 expansion ports on the Axiom F6 datalogger

Examples of sensors that can be easily added

- Barometric pressure
- Soil moisture
- Ultrasonic wind speed direction
- Snow depth
- Soil temperature
- Visibility
- All-season precipitation
- Snow pillow
- Turbidity
- Pressure transducer
- Bubbler (water level)
- Multisondes



Telemetry and Remote Communications

FTS communication technology forms the backbone of the National Climate Reference Station system.

Robust and innovative remote communication technology is a significant part of our 30 year history. Given our focus on systems designed for extremely remote deployment, it's no wonder that we've matured into a leader in GOES satellite communication technology.

Today we offer a variety of telemetry options for our systems, each with their own unique characteristics which will govern which applications they are most suitable for.

In addition to the options profiled here, FTS can also provide cellular and PSTN telemetry methods.

options

AirTalk Radio Voice Transmitter

AirTalk uses "text-to-speech" to convert weather data into spoken audio which is then broadcast over standard voice channels using any standard DTMF-capable radio.

GOES Satellite

FTS is a world leader in GOES communication technology.

We were the first to introduce automatic GPS correction of clock and oscillator drift, which provides continual operation of up to 28 days without needing a GPS fix, resulting in close to 100% successful transmissions. We were also the first to offer an HDR (high data rate) GOES transmitter, and our technology is even used by other vendors.

The FTS G5 GOES transmitter operates on the North and South American GOES Satellite networks. The G5 is extensively field proven and has demonstrated industry leading reliability with optimal operational characteristics for remote locations.

*FTS G5
GOES inside*



options

RMX Radio

The RMX radio transceiver is a two-way, 9,600 baud VHF/UHF radio modem. It's a medium-range line-of-site option, but can be used in combination with satellite modems to provide satellite access to an RMX station cluster throughout North America. There are no airtime costs, but the radio spectrum used must be licensed by the FCC (requires a radio station license) or the IC in Canada.

- Able to operate for 28 days between GPS synchronizations, maximizing operational availability.
- Optimized for low power operation to extend battery standby operation at remote sites in situations of low power or interrupted solar panel charging.
- Easy set-up and installation:
- Automatic reset and start-up (all configuration data stored in non-volatile memory).
- Works with FTS dataloggers to automatically calculate antenna inclination and bearing.
- Provides diagnostic reports on forward and reflected power for on-site troubleshooting.

The FTS Axiom™ F6 Datalogger

No laptop, no programming required.

The Axiom is the first and only fire RAWS datalogger to offer a waterproof, industrial-grade, daylight-readable, color integrated touch screen. We integrated the computer and software right into the datalogger, eliminating the need for field laptops and cables.

- No more wind and rain damage, low battery or “where do I put the laptop?” hassles.
- No complex software to install, maintain or learn.
- Graph sensor data, view current readings, profile battery performance, change annual rain count, and more... in any weather condition.



Simple diagnosis

Even though the Axiom offers unprecedented reliability, we know that things can and will go wrong—it’s the nature of using electronics outdoors. Our integrated power manager reduces the chance of a problem with the power system—the most common source of problems—and minimizes your time spent troubleshooting.

- An integrated power manager adds an additional layer of intelligence to the Axiom by allowing the datalogger to directly talk to and manage the solar panel and battery.
- The Axiom is constantly aware of parameters like solar voltage and current, battery voltage and current, battery and internal ambient temperature, and can transmit this information via any telemetry method. This allows the datalogger to provide a complete picture of power conditions for diagnosing power issues remotely, eliminating unnecessary site visits.
- At the site, this information is readily available as a graph on the integrated touchscreen.
- An integrated power manager also eliminates the need to buy and install an external charge regulator, and like everything else inside the waterproof housing, it’s protected.

Rapid site visits

By embedding the software and user interface right into our sixth-generation datalogger, we were able to meet our customers’ predominant desire: less time spent doing site visit tasks.

- Download years worth of data within seconds via any standard USB flash memory stick. Review on your PC later.
- Electronic site visit reports eliminate manual report writing. All activity during the site visit is recorded (including sensor serial number changes), and a full set of quality control documentation is completely automated. The file can be easily sent to WFMI/CMMS.

Extreme ruggedness

Because reliability is paramount and any downtime means lost data and increased liability, the Axiom is engineered for long-term durability in the harshest environments.

- Three levels of lightning protection. We have 30 years of experience building equipment for the most extreme lightning strike locations, and it’s in here.
- The entire unit — the cast aluminum alloy, O-ring sealed case and all ports—is completely impervious to the elements. Even the touchscreen. And not just splashproof: fully watertight.
- Positive-locking, waterproof, color-coded, plated, corrosion resistant, military-style bayonet connectors.





**Portable and fixed remote
automated fire weather stations.**

We are the world leader.

More fire management professionals rely on FTS than any other vendor. We know fire weather better than anyone.

FTS at a glance

- Founded in 1980
- Our focus is environmental monitoring and remote data collection in Fire Weather, general Meteorology and Hydrology.
- Our expertise is equipment that is rugged, self-sustaining, low maintenance, simple to deploy and operate, with proven reliability.
- Almost 35% of our revenues are invested in research and development.
- We're ISO 9001 registered.
- We have deployed thousands of environmental monitoring stations throughout North America, South America, Australia, Africa and China.

“ We have found FTS' products to be vastly superior in every aspect of data collection and equipment maintenance. I know that I can count on FTS to support their product. Whenever anyone asks me for advice on what to purchase, I recommend FTS in no uncertain terms. ”

Kate Sullivan, PhD, Pacific Lumber Company



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