

# FTS Axiom F6-G6-TLM Datalogger

## PRODUCT SPECIFICATIONS



The Axiom F6-G6-TLM datalogger is a rugged with an integrated waterproof, daylight-readable touchscreen.

It also integrates the FTS G6 GOES HDR2 transmitter, which operates on the North and South American GOES Satellite networks and is fully certified to NOAA CS2 standards.

- 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.
- Automatic reset and start-up (all configuration data stored in non-volatile memory).
- Automatically calculates antenna inclination and bearing.
- Capable of transmitting on all NOAA channels.
- Capable of hourly transmissions in GMT or ZT.
- Random transmissions based on alert or specific sensor triggers.

### Hardware

#### Display / touchscreen

- Graphical color touch screen display, 3.65" (diagonal), QVGA (320x240 pixels).
- Display is transfective (readable in low light and outdoors in bright daylight)
- Displays system status, configuration, stored data (graphical and tabular) and provides system configuration and troubleshooting/diagnostics.
- Displays voltage and current separately for battery and solar panel and battery temperature.
- Supports troubleshooting, configuration and programming.
- Display is sealed from moisture penetration.

#### CPU

- (2) CPUs total, both low-power RISC.
- Main CPU is 200MHz 32-bit ARM.
- Sensor collector is 10MHz.

#### Memory/storage

- 64MB RAM
- 256MB fixed physical, non-volatile flash memory for data and program storage.
- Data is stored in a circular 10MB buffer (oldest data overwritten by newest when buffer full).
- Memory holds approximately 5.9 years of EMAS data prior to earliest data being overwritten.

#### Device ports

- 2 waterproof USB 2.0 host ports, 1.5Mbps and 12 Mbps, support for flash memory and other USB-compliant devices.
- 1 waterproof USB 2.0 12 Mbps device port with automatic PC detect.
- Support for USB bar code readers—meta data table population and sample bottle logging.
- Supports USB keyboard and mouse.
- GOES RF output: N-type jack
- GPS RF input: SMA jack.

#### Sensor ports

- Waterproof, color-coded, military-style connectors
- Dedicated ports for:
  - wind speed (frequency input)
  - wind direction (potentiometer input)
  - rain gauge (counter)
  - temperature (thermistor, 0-20 mA)
  - humidity (thermistor, 0-1.0V)
  - fuel stick (thermistor, 0-1.0V)
- 2 independent SDI-12 V1.3 ports, expandable using external expansion modules to support up to 61 digital sensors.
- Optional, configurable analog-to-SDI expansion module to connect legacy analog sensors (terminal strips).

#### Serial ports:

- 1 external, waterproof, military style bayonet connector



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Rev. 15.06.12

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- Power supply:**
- Internal, temperature compensated charge regulator
  - Waterproof, military style bayonet connectors for solar panel and battery.
  - Sensing of battery voltage, battery current, battery temp, solar voltage and solar current.
  - 9.6VDC to 20VDC operating voltage.

**Dimensions:** • 10" W x 8" H x 6" D

**Weight:** • Weight: approx. 8 lbs.

### Software

- Programming:**
- All programming done through intuitive graphical user interface (GUI) without writing code.
  - No laptop required; GUI accessed through integrated touchscreen.
  - Unlimited setup configurations are stored directly on the datalogger; different configurations can be selected or a new one created with the GUI.

- Electronic service reports**
- All of the data that must be recorded by field techs during a service call can be captured electronically in the Axiom and saved to a USB memory stick.
  - Data includes:
    - a list of sensor serial numbers before and after the service trip.
    - audit log.
    - datalogger program version.

- Datalogger performance verification:**
- Graph sensor data and diagnostic parameters.
  - Battery load tests; view voltage before and after (requires dummy load on battery).
  - View current sensor readings.
  - View historical data.

- Rain count**
- Rain GUI allows users to quickly test tipping buckets each year by viewing manual tip measurement in real-time and quickly removing the test tips from memory.
  - User can select a rain reset date if desired and set the action on power failure (rain total can be set to return to previous values or reset to zero).

- One-touch current conditions**
- Users can customize the Current Conditions screen so that all of the sensors' real time data are viewable with one button press.
  - This is extremely handy when validating wind quadrants or simply validating each sensor as it is replaced.
  - The electronic service report automatically captures the current conditions at the start (pre swap) and after (post swap).

- Data transfer via USB memory stick**
- Data, Programs and Firmware updates can be transferred to and from datalogger via a conventional USB memory stick.
  - Historical data download is fast: approximately 5 seconds for 1 year of data including logger and telemetry records).
  - Data downloaded in universal .CSV (comma-separated values) format; importable into Excel and many other software.

### GOES Transmitter

**Operating supply voltage:** • 10.8 VDC to 16 VDC

**Supported baud rates:**

- 100 bps **EUMETSAT SRD**
- 300 bps
- 1,200 bps

**Supply current (at 12 VDC):**

- Idle: <3 mA
- Transmitting: <2.6 A
- GPS on: <50 mA

**Output power:**

<b>GOES</b>	<b>METEOSAT</b>
• 300 bps: 6.3 W max	• 100 bps: 14 W max
• 1,200 bps: 6.34 W max	

**GOES antenna:**

- Power: 6.3 W max
- Polarization: Right hand circular
- Connector: N-Type Female

**Recommended antenna:** • FTS Eon2 CS2 GOES Antenna Option

**Frequency range:**

- **GOES:** 401.701 MHz - 402.09850 MHz
- **METEOSAT:** 402.0355 MHz - 402.4345 MHz

**Frequency stability:**

- Initial Accuracy: +/-20Hz disciplined to GPS
- GPS Schedule: 1 fix at power up, 1 fix per day thereafter

**Channel bandwidth:**

- 100 bps: 3KHz
- 300 bps: 750 Hz
- 1,200 bps: 1.5 KHz

**Time-keeping:**

- < 100 microseconds initial accuracy, automatically synchronized to GPS
- < 10ms per day drift without GPS
- 28 day operation without GPS signal (after initial GPS synchronization)

**Temperature range:**

- Operating: -40°C to +60°C
- Storage: -55°C to +70°C

**GPS antenna:**

- Type: 3 V active
- Connector: SMA female



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Management System registered to ISO 9001 QM-SAI Global



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### Environmental Protection

- Operational moisture range:**
- 0-100% RH, condensing
- Corrosion resistance:**
- Components made of a combination of stainless steel, anodized or powder coated aluminum provide excellent corrosion resistance.
  - Connectors are bayonet-style and are corrosion-resistant.
  - Many FTS stations are deployed in coastal, desert and arctic locations.
- Operational temperature range:**
- Datalogger operation: -40°C to +60°C
  - Storage: -55°C to +70°C
- UV resistance:**
- Excellent, as minimal plastics are used.
- Environmental sealing:**
- Waterproof to IP67, O-ring sealed, cast aluminum & stainless steel hardware
- Lightning protection:**
- Three-stage protection circuit offers superior protection:
    - Stage 1: transient earth clamp.
    - Stage 2: series impedance.
    - Stage 3: high speed shunt diode.
- Electronics protection:**
- Core electronics sealed from moisture and dust in waterproof housings, completely isolated from environment and user
  - All non-telemetry data exchange (firmware upgrades, report downloads) performed through waterproof USB port.

### Power Consumption

- Datalogger current:**
- 2-3mA at idle.
  - 12mA average while collecting data.
  - 60mA while display backlight on.
  - 2.6A while transmitting.
  - <50 mA while GPS on.
- Power status:**
- Datalogger measures and logs solar panel voltage, solar panel current, battery voltage and battery current.
  - Status indicators (always visible) allow techs to identify if the system is charging correctly or not.
  - This data is also part of the Current Conditions screen call and are captured in the electronic service report.

### Resolution, Accuracy and Stability

- I/O accuracy (with optional SDI-AM digital to analog module)**
- 25mV & 55mV ranges: +/-0.055mV
  - 100mV range: +/-0.1mV
  - 1V range: +/- 1mV
  - 2.5V range: +/-2.5mV
  - 5V range: +/-5mV
- Bits of resolution:**
- 24 bits
- Sampling rates:**
- Sampling rates are user-defined, as frequent as 1 second.
  - Sampling can be done on a timed basis or conditionally.
  - Special "burn day" function allows logging data every 5 min during a prescribed burn for higher resolution data.
  - Sampling can be increased when a specific condition is met, ex. if relative humidity drops below a certain level, logging frequency can increase to every 15 minutes.
  - Multiple logging routines can be set and stored.
- GPS:**
- Internal 12-channel GPS receiver.
  - SMA connector for 3V active patch GPS antenna.
  - Periodic time synchronization to UTC.
  - Latitude, longitude, elevation to full GPS accuracy.