

# F7 Data Logger



F7 is a rugged, high-performance data logger designed for remote environmental monitoring, with a focus on wildfire risk management applications. F7 combines durability, low power consumption, and ease of use into an integrated system with solar charging and satellite communication capabilities. Its robust design ensures reliable data collection even in harsh environments, making it an ideal choice for safety-critical applications.

Featuring a sealed IP67 enclosure, military-grade connectors, and comprehensive electrical protection, F7 offers uncompromised reliability in challenging field conditions. The color touchscreen display and intuitive user interface eliminate the need for external devices for deployment and maintenance.

F7 includes four SDI-12 sensor ports and an auxiliary port for optional external cellular telemetry. It also offers integrated options for GOES and Iridium satellite telemetry, creating a robust platform for various weather station applications.

## MECHANICAL SPECIFICATIONS

<b>Dimensions</b>	10 x 8 x 5.7 inches (25.5 x 20.3 x 14.4 cm)
<b>Case Materials</b>	<ul style="list-style-type: none"> <li>Corrosion resistant</li> <li>Powder-coated aluminum body</li> <li>Glass-reinforced, injection-molded polyamide bezel</li> </ul>
<b>Connectors</b>	<ul style="list-style-type: none"> <li>Military-style circular connectors for sensors and power</li> <li>Sealed, RF and telemetry connections</li> <li>1x USB-A host port</li> </ul>
<b>Weight</b>	Max w/ all options - 9.25 lbs (4.2 kg) Min - 8.45 lbs (3.8 kg)

## DATA COLLECTION AND LOGGING

<b>Download Format</b>	Downloaded as CSV
<b>Logging Capacity</b>	>5 years, depending on configuration
<b>Internal Data Structure</b>	Embedded database
<b>Data Collection</b>	Full-spectrum Data Store
<b>Log Structure</b>	Dynamic logging allows for post-hoc data log construction from Full-spectrum Data Store.

## ELECTRICAL SPECIFICATIONS

<b>Power Input</b>	<ul style="list-style-type: none"> <li>12 V battery</li> <li>9.6 V to 24 V power</li> </ul>
<b>Solar Input</b>	12 V nominal, 20 W standard. >100 W, depending on site.
<b>Battery Compatibility</b>	12 V nominal, VRSLA 7 Ah to >200 Ah, depending on site.
<b>Charge Regulation</b>	<ul style="list-style-type: none"> <li>Voltage and current controlled</li> <li>Temperature compensated</li> </ul>
<b>Electrical Transient Protection</b>	<ul style="list-style-type: none"> <li><b>Sensor Inputs:</b> Gas discharge tube, series impedance, and TVS.</li> <li><b>Power:</b> TVS</li> <li><b>Antenna:</b> TVS Data I/O: Standard ESD</li> </ul>

## DATA I/O

<b>USB Host</b>	None
<b>USB Device</b>	1x USB 2.0 Type-A supports mass storage devices
<b>USB OTG</b>	n/a
<b>Serial Port</b>	RS-232/485

\*Preliminary specifications - details may change prior to final release.

### SENSOR PORTS

<b>SDI-12</b>	<ul style="list-style-type: none"> <li>• 4 discrete ports</li> <li>• SDI-12 v1.3 compliant, v1.4 compatible</li> <li>• Switched power</li> <li>• 2 A combined switched power</li> </ul>
<b>Analog Ports</b>	<ul style="list-style-type: none"> <li>• Temp-hum sensor and fuel stick sensors compatible.</li> <li>• Switched power</li> <li>• 2 A combined supply current</li> </ul>
<b>Counter Input</b>	Tipping bucket rain gauge input.

### ELECTRONIC FEATURES AND USER INTERFACE

<b>Display</b>	<ul style="list-style-type: none"> <li>• Transmissive color TFT IPS</li> <li>• 480x272</li> <li>• 0.194 mm dot pitch</li> <li>• LED backlight</li> <li>• 750 nits</li> <li>• 1:1500 contrast</li> </ul>
<b>Touch Panel</b>	Capacitive
<b>Processor</b>	Ultra-low-power ARM 32-bit Cortex-M4 with FPU, adaptive ART, DSP
<b>Memory/Storage</b>	<ul style="list-style-type: none"> <li>• 640 kB (MCU) RAM</li> <li>• 2 MB (MCU)</li> <li>• 2 x 1 Mb banks of internal flash</li> <li>• 32 MB NOR Flash</li> </ul>
<b>OS</b>	FreeRTOS

### INTERNAL (SYSTEM) SENSORS

<b>Battery</b>	<ul style="list-style-type: none"> <li>• Voltage</li> <li>• Current</li> <li>• Temperature</li> </ul>
<b>Solar Power</b>	<ul style="list-style-type: none"> <li>• Voltage</li> <li>• Current</li> </ul>
<b>Internal</b>	Case temperature

### EXTERNAL SENSORS

<b>Temperature Humidity</b>	THS-3
<b>Fuel stick</b>	FS-3
<b>Rain Gauge</b>	RG-T
<b>Anemometer</b>	SDI-WS-RMY
<b>DigiTemp</b>	SDI-DigiTemp
<b>Solar Radiation</b>	SDI-SR-PYR
<b>Soil Moisture</b>	S-HP11-CON
<b>Barometric Pressure</b>	SDI-BP-1
<b>Generic SDI</b>	User configurable
<b>Pressure Transducer</b>	SDI-PT-SS-KEL

### ENVIRONMENTAL SPECIFICATIONS

<b>Operating Temp</b>	-40°C to 60°C
<b>Storage Temp</b>	-55°C to 70°C
<b>Operational Humidity</b>	10–90% RH, condensing
<b>Sealing</b>	IP67, O-ring seals
<b>Impact</b>	Shipping drop ISTA-2
<b>Vibration</b>	TBD
<b>Random Vibration</b>	MIL-STD 810G, Meth. 514.6, Cat. 4, Proc. I, Fig. 514.6C-3
<b>Mechanical Shock – Functional</b>	MIL-STD 810G, Meth. 516.6, Proc. I, Sec. 4.6.2.3
<b>Transit Drop</b>	MIL-STD 810G, Meth. 516.6, Proc. IV, Sec. 4.6.5.3
<b>Bench Handling</b>	MIL-STD 810G, Meth. 516.6, Proc. VI, Sec. 4.6.7.3

### GOES SATELLITE TRANSMITTER (OPTIONAL)

<b>Transmitter</b>	AEM G6
<b>Baud Rate</b>	300 bps or 1200 bps
<b>RF Power</b>	<ul style="list-style-type: none"> <li>• 6.3 Wmax at 300 bps</li> <li>• 6.34 Wmax at 1200 bps</li> </ul>
<b>Antenna</b>	Directional or omnidirectional

### IRIDIUM SBD (OPTIONAL)

<b>Mode</b>	Iridium Short-burst Data
<b>Data Connection</b>	AEM Elements™ 360 comp.

### AIRTALK SPECIFICATIONS

<b>Radio Interface</b>	AEM AirTalk
<b>Radio Compatibility</b>	BK Technologies BKR 5000
<b>Voice Report Trigger</b>	Measurement threshold or DTMF code
<b>Language</b>	English

### CELL PHONE (EXTERNAL AUX COMM PORT)

<b>AEM Cellular Modem</b>	<ul style="list-style-type: none"> <li>• 4G, LTE Cat-M1/NB2</li> <li>• AT&amp;T, Verizon, RED Cert.</li> </ul>
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### DATA PROCESSES

<b>Statistical</b>	<ul style="list-style-type: none"> <li>• Min, Max, Avg</li> <li>• Delta</li> <li>• Std Deviation</li> </ul>
<b>Wind</b>	<ul style="list-style-type: none"> <li>• Vector Average</li> <li>• Gust</li> <li>• Peak</li> <li>• Variation</li> </ul>
<b>Function</b>	User-defined calculation
<b>Other</b>	<ul style="list-style-type: none"> <li>• Weighted Average</li> <li>• Burst Average (TBD)</li> <li>• Stage (TBD)</li> </ul>