AVO

STEVENS
MEASUREMENTS TO MIND

ALL-IN-ONE, SENSORS-TO-CLOUD CELLULAR GATEWAY

Avo is a complete monitoring station platform. It includes all hardware, software and services needed for data acquisition, cloud-based data storage, viewing and analysis. It makes any sensor data easily accessible and the station remotely configurable.

Just add sensors.

ANY
monitoring application or type of sensor.

Avo Features

- All-in-one integrated system for quick, reliable deployments.

- Waterproof and weatherproof packaging for deployment in harsh environments.

- Mounts directly to a pole, or it can be placed inside another enclosure with an externally mounted antenna.

- Supports SDI-12, analog, and pulse sensors, providing flexible deployment options.

- Integrated cellular transceiver with intelligent network connection management ensures low-power, extremely reliable data acquisition.

- Data logged locally on an SD flash storage card as redundant backup.

- Pre-provisioned for instant cellular network connection and simple, reliable setup (use user-supplied SIM cards outside USA).

- No software installation, simplifying your IT infrastructure.

- One year subscription to Stevens-Connect cloud hub software is included.

Optional 5W solar panel and mount for up to 4" pipe

Enclosure suitable for year-round outdoor use

Inside:
- 10 Ah Li-ion battery
- SD card storage for data backup
- Cellular antenna (optional external high-gain antenna available)
- Solar charge regulator and power manager

Sensor connector port (expandable via sensor expansion adapter)

IP67-rated connectors

Connector port for solar panel (or AC/DC adapter)

Avo is perfect for:

- Temporary sensor deployments where simplicity and quick assembly / disassembly are important.
- Linking existing sensors directly to the cloud.
- Any environmental monitoring application where minimizing complexity and maximizing reliability is important.

AVO Components

| Part No.	Description
80060-70A1	Avo, GSM, internal antenna
80060-70A2	Avo, GSM, external 3dB omni antenna
80060-70B1	Avo, CDMA, internal antenna
80060-70B2	Avo, CDMA, external 3dB omni antenna
80060-701	5W solar panel kit
80060-702	AC power option kit
80060-710	Sensor adapter connector
80060-711	1:1 sensor cable, SDI-12, 1 ft. long
80060-712	1:1 sensor cable, 4-20mA, 1 ft. long
80060-713	1:1 sensor cable, pulse, 1 ft. long
80060-720	1:3 sensor multiplex box, 1 port ea. SDI-12, 4-20mA, pulse, 1 ft. long
80060-721	1:2 SDI-12 sensor splitter (2 SDI-12 inputs)
80060-725	Smart PT cable, vent tube/desiccant (1 ft. long
80060-730	Sensor cable, flying leads, 1ft. long

Turn Your Data into Useful Information with Stevens-Connect

For logging, analysis, reporting, and storage of data from remote monitoring locations, Avo **includes a one year subscription to Stevens-Connect** (yearly plans available for purchase thereafter).

Drag-and-Drop Customizable Dashboard

Configure what data to show and how with dashboard widgets. Place them where you want and stretch to resize. Choose high-visibility single data values, line graphs, bar charts, fuel-gauge style graphs, or 360° directional graphs, for any parameter.
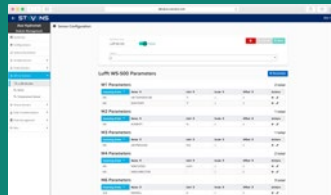
Remotely Configure Avo

Configure all aspects of the station including logging and reporting intervals and all analog, pulse and SD-12 sensors. Make changes at any time, from any device.
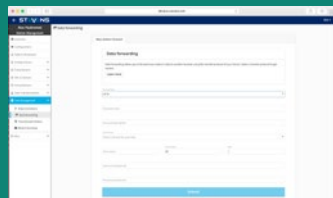
Forward Data to 3rd-Party Software

Stevens-Connect is an easy to use and easily accessible reporting and analysis tool for visualizing your data. However, if you prefer to use other software, data can be automatically formatted and forwarded to an external destination.

Custom Calculations and Data Transformations

Use the visual formula builder to create simple to complex math functions using any sensor data as variables. Create a "virtual sensor" from this data to create new graphs or serve as inputs to other calculations.

- Custom math functions and calculations
- Selectable calculations
- Data output in XML, Excel, .CSV and other formats
- Alarms
- Map view and integration of external data feeds
- Integrated Report Writers
- REST API supports integration with 3rd-party apps

WHY AVO?

Sensor-agnostic.

Whether you're using Stevens sensors or sensors from another manufacturer, they're fully compatible. Field-installable connectors can be used for sensors on an existing station.

Flexibility.

Up to 10 SDI-12, up to 4 analog (0-2.5 V or 4-20 mA) or up to 2 pulse sensors can be connected. The number of sensors that can be connected is limited only by the total power load.

Stevens-Connect.

Our cloud-based data hub is incredibly powerful and incredibly intuitive. It's used to configure your sensors' logging and reporting settings. It stores and analyzes your data, notifies your smartphone when conditions are met, allows you to visually create custom calculations and "virtual sensors", and it can receive and/or forward data from/to 3rd-party systems.

3 steps to set up your station in minutes.

1 Connect solar panel.

2 Connect sensors.

3 Configure data handling (frequency, redundancy, destination) with a simple online GUI.*

This step can be done anywhere, with any device.

Configure station, and access data ANYWHERE.

Unique Features

- **Unified data interface experience**: Sensor configuration, data storage, custom algebraic equations, custom data formats and forwarding, control, analysis, alarm notifications (email, SMS), reporting and actions all done with one simple cloud-based user interface.

- **Easy configuration**: Configure with your smartphone, tablet or PC via the cloud-based Stevens-Connect. No custom programming or scripts required.

- **Automated updates:** Updates to firmware and cloud-based application can be automatically installed.

- **Security:** Three user access levels for configuration, data management interface and visualization. Optional data encryption available.

- **Redundancy**: All data is saved locally on an SD storage card, and once in the cloud is replicated on a redundant data server and backed up nightly.

- **Connection verification**: Avo verifies connection with cell network and server connection before data is sent. If no connection is available or if data reception is not confirmed, data is saved and sent the next scheduled transmission.

- **Data format flexibility**: Optionally forward data in various formats for third party software platforms, like Aquarius or WISKI, and in other formats such as binary, pseudo-binary, SHEF, and more.

- **Direct data access options**: Third-party programs can access data using REST API or HTTP post.

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TECHNICAL SPECIFICATIONS

GENERAL

Data storage	Removable 2 GB SD memory card (FAT 32)
Non-volatile memory	All setup parameters
Logging interval	1 second to 24 hours (sensor dependent)
Reporting interval	2 minutes to 24 hours
Cellular communications	• Dual band CDMA 800, 1900 MHz • Penta-Band HSPA+ • GSM Quad band 850, 900, 1800, 1900 MHz • UMTS/HSPA Penta Band 850, 900, 1700, 1900, 2100 MHz • EGPRS/WCDMA/HSDPA/HSUPA protocol stack

CURRENT CONSUMPTION

Listen/trigger mode/idle	<2 mA
Data receive/store/ prepare for Tx	150 mA
Data Tx	250 mA

POWER

Battery	10 Ah Li-ion
TX output power	24.3 dBm (270 mW)
Solar panel	5W, 12V

SENSOR INPUT

Analog input	2 analog channels (additional available[1]) **Input type**: 2 wire, 0-2.5 V or 4-20 mA current loop **Sensor power**: 24 VDC switched (under firmware control) **Analog to digital (0-2.5 VDC)**: 21-bit resolution
Pulse input	2 pulse channels[1] **Continuity or TTL**: 0 V to 2.2 V - 5 V **Maximum rate**: 10 pulses per second
SDI-12 input	**Number of sensors**: up to 10 sensors[2] **Sensor power**: 12 VDC switched or constant during measurement

ENVIRONMENTAL

Environmental sealing	IP65
Operating temperature	-20°C to 75°C (-4°F to 167°F). Battery won't charge below 0°C. -40°C to 75°C (-40°F to 167°F with extended temperature option)
Storage temperature	-40°C to 85°C
Lightning protection	AC transient voltage suppressor (TVS) on each sensor port input

PHYSICAL

Dimensions	1.6" (4.1 cm) x 6.7" (17.0 cm) x 4.8" (12.2 cm)
Weight	10.78 oz (305.6 g)

[1] Custom configuration can be done to support additional analog and pulse channels with custom cable and configuration options. Enquire with our technical sales support staff.

[2] Sensor capacity is driven by the power model for your system. Sensor power consumption profile in combination with high transmission and logging intervals may require larger solar panels and or external battery options.