

# Ai1

All-in-one, rugged, remote monitoring

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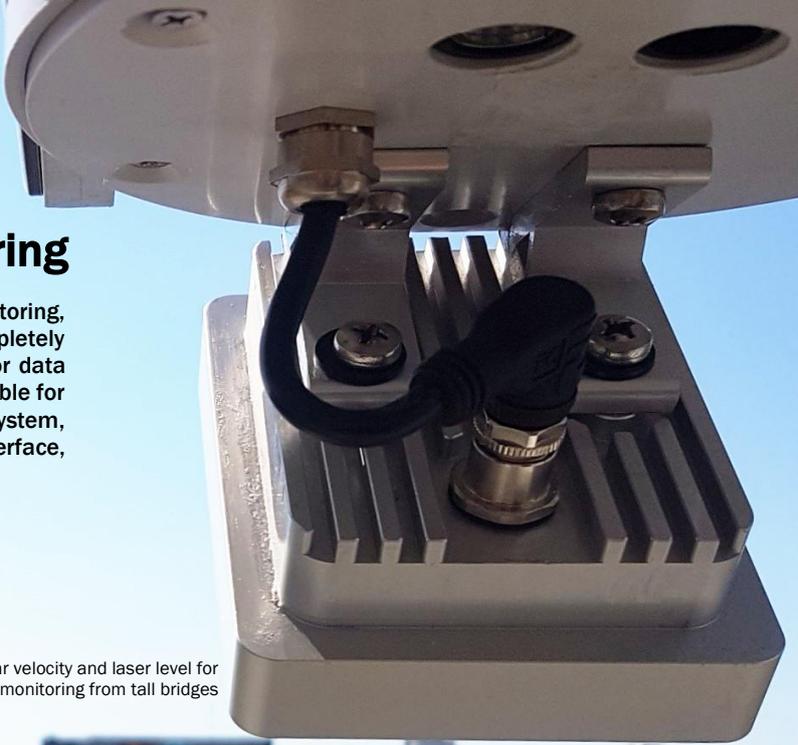
MEASUREMENT SCIENCE

# Ai1

## All-in-one, rugged, remote monitoring

Ai1 is an all-in-one, rugged and versatile system for remote monitoring, supporting almost any sensor or sensor combination. Ai1 is a completely integrated system, including everything required to transmit sensor data direct to your laptop, phone, or server, with industrial reliability suitable for critical systems. Fully programmable, high efficiency solar power system, online communications, and industry leading web-SCADA interface, providing power and flexibility at every level.

Ai1 with radar velocity and laser level for reliable flood monitoring from tall bridges



### All-in-one

- All-in-one design **eliminates on-site engineering**, and **simplifies installation**, typically performed safely by 1 person in less than 1 hour
- Everything included providing **plug & play operation**: customizable weatherproof housing, integrated solar power and lithium backup system, datalogger, indicator lights, integrated communications system with global web-SCADA subscription.
- Ai1 is fully **programmable and configurable** with sensors able to be added at any time,
- Versatile mounting system allowing **mounting to almost any surface**

### Industrial grade reliability

- A tightly integrated Campbell Scientific measurement module measures **almost any sensor combination** with versatile inputs supporting high accuracy (24-bit) analog voltages, 4-20mA current, pulse, frequency, and serial inputs (including multiple SDI12, Modbus, NMEA and RS232 ports).
- Fully programmable, supporting data concentration, event driven reporting, local control, intelligent power management, remote diagnostic tools and OTA (over-the-air updates), providing customization to suit any application or requirements and **minimizing costly site visits**
- **Compatible with almost any new or existing network** with DNP3 and Modbus protocols for integration to SCADA, models or large-scale databases
- **True global operation** with 4 regional models to suit global 2G/3G and 4G varieties in North America, EMEA and Australia/NZ, Wi-Fi, spread spectrum radio networks with a satellite backup option for when **data absolutely must go through**.

### Integrated sensors

- Available for user supplied sensors or factory fitted integrated sensors, eliminating custom integration and testing. Sensor combinations for almost any meteorological, hydrographic, water quality, structural, geotechnical or industrial application.

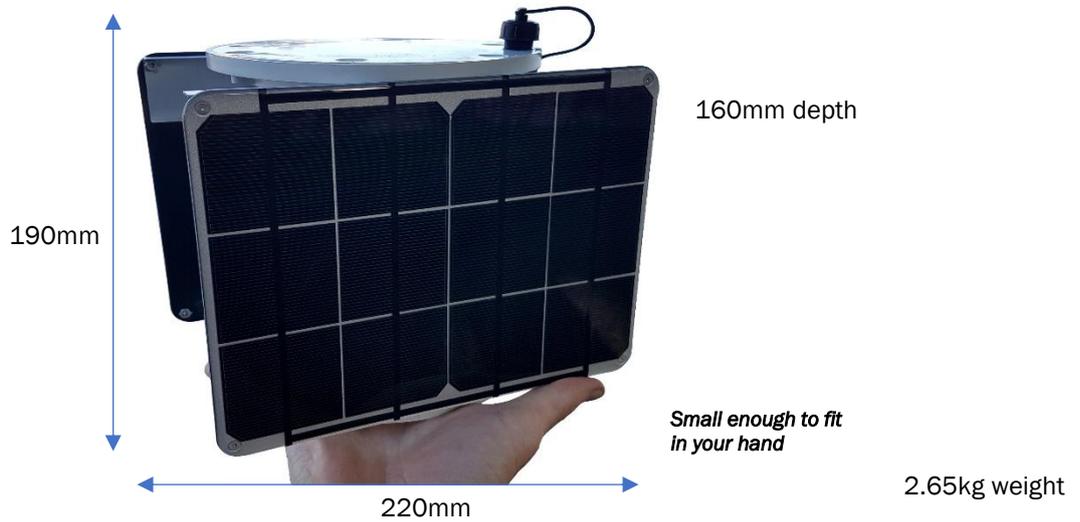


Integrated alarm option for local alerts

Integrated, external indicator LED's, red for status and power, blue for program control



# Specifications



INPUTS & OUTPUTS	
Analog	6 inputs, 24-bit resolution, -100 to +2500mV range, ±0.04% accuracy (0 to 40°C)
Digital	7 configurable digital and pulse counting ports (high/low, pulse width modulation, switch closure, interrupts)
Serial	Integrated USB port, 9-pin RS232 serial, Dual 5V RS232 ports as 2 x Tx, 2 x Rx or Tx/Rx pair. Supports SDI12 v1.4, NMEA, Modbus RTU, Modbus ASCII, DNP3 and custom serial protocols
Power	12V (800mA) program controlled output and dual analog excitation ports (+150mV to 5000mV analog output)
COMMUNICATIONS	
Primary	Select from cellular, wifi or radio primary communications option all with integrated internal 2dBi antenna or optional external high gain antenna. <b>Cellular:</b> Global 3G with 2G fallback, or region specific 4G models. <b>Wi-Fi:</b> Client or access point operation. <b>Radio:</b> Frequency hopping spread spectrum radios with region specific models
Secondary	Optional Iridium 9602 satellite modem to backup primary communications method
Management	Management of communications connection through datalogger program for power optimization
Subscription option	Cellular and Wi-Fi models support Eagle.io connection. Eagle.io subscription included for global SIM option. Eagle.io provides alarms & notifications, public & private dashboards, historic charts/tables/data export, processing and logic and on-demand direct connection to the remote field site for program changes, firmware update and diagnostics
Protocols supported	PPP, RNDIS, ICMP/Ping, Auto-IP, IPv4, IPv6, UDP, TCP, TLS, DNS, DHCP, SLAAC, NTP, Telnet, HTTP(S), FTP(S), SMTP/TLS, POP3/TLS (depending on communications)
POWER	
Solar	Dual solar panels (12W total) arranged in east-west facing for extended hours charging and moving platforms
Battery	Integrated 3.3Ah (35Wh) lithium polymer battery with dedicated regulator and voltage monitoring
Protection	Panel mounted fuse (factory fitted with 1A fuse) for protection and on/off control
Operation	Current consumption typ <15mA (depending on sensor and communications). Idle current (no comms) 1.5mA @ 12V
CUSTOMIZATION	
Sensors	Customizable top and bottom plates available for sensor mounting. Integrated sensor options: GPS, ultrasonic level, laser distance, radar velocity, electromagnetic flow, non-contact temperature, ultrasonic wind, rainfall, air temperature & RH, barometric pressure, water quality, thermistor chain, movement detection, solar radiation, lightning detection, inclination, visibility, evaporation, soil moisture, seepage, strain gauges, crack and joint sensors.
Branding	Laser engraved branding, labelling and logo available for bulk orders
Mounting	Top or bottom plate mounting & pole mounting kit included. Kits available for complex mounting locations
GENERAL	
Indicators	Inbuilt status LED indicators, externally visible. Blue LED available for program control
Housing	IP67 (NEMA 4X) before being modified for sensor mounting or cable entry
Clock	Battery backed internal clock ±1min/month. Execution rate from 0.1s to once/day.
Temperature	-5°C to +50°C operating range (lithium charging)
Warranty	1 year, return to base, parts and labour
Country	Country of manufacture USA

Specifications values typical over 0 to 40°C operation and are subject to change without notice.



Buoy mounted instruments providing actionable information, streaming live to the secure web portal. Web site subscription included with global SIM option





**MEASUREMENT SCIENCE**

Water, Air, Earth & Infrastructure

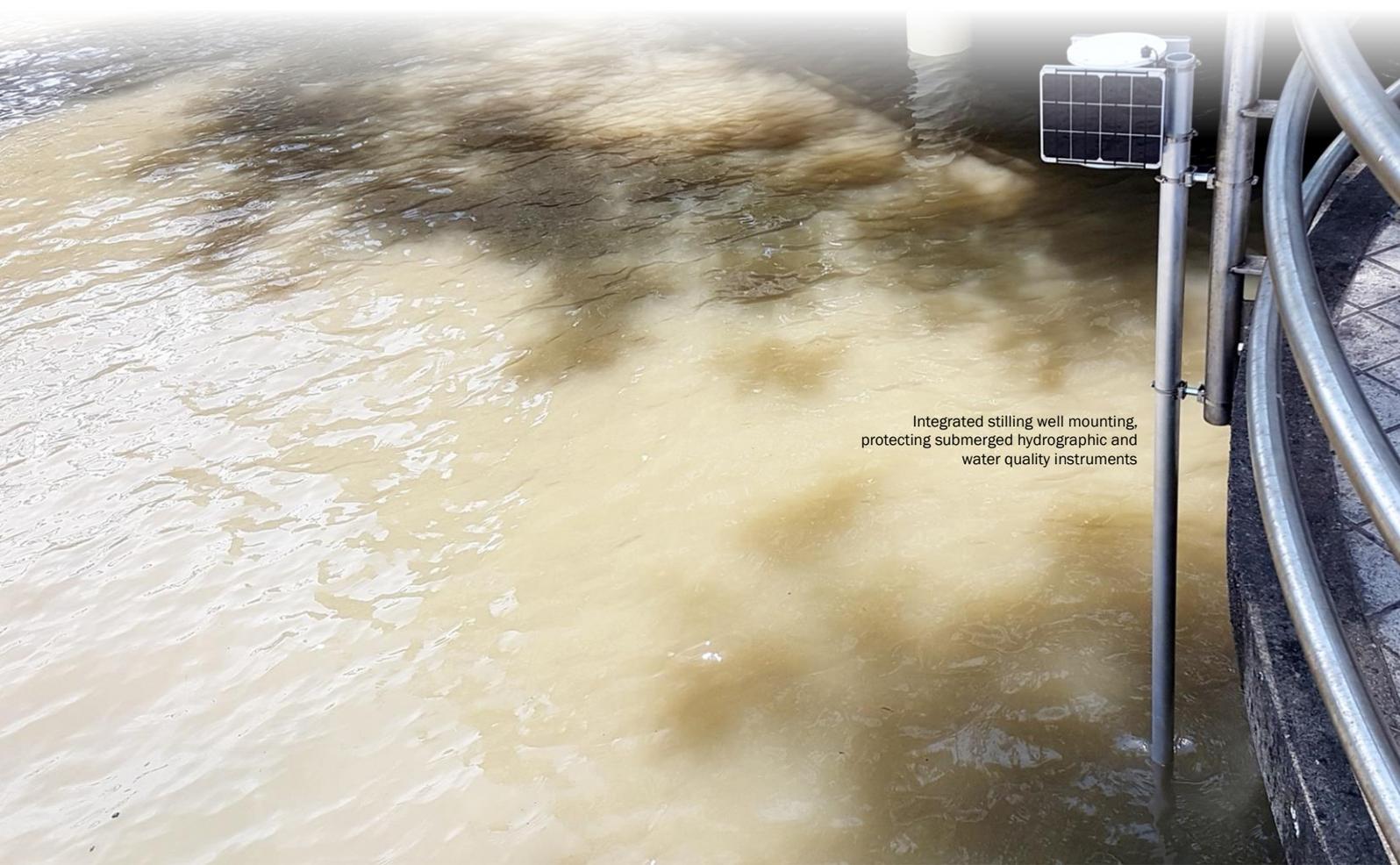
*The Ai1 is intended to be part of a well maintained and comprehensive environmental monitoring system. Stations are provided for complete user customization and programming (programming services available). Reliable operation depends on suitable site selection, correct installation, real time monitoring of data, adequate maintenance and investigation of alarm and diagnostic information. Stations are designed to be mounted above maximum flood elevation, flooding may result in damage. In order to protect the design information, purchasers warrant to not reverse engineer the housing, components, software or supplier information. Refer to terms and conditions of sale for full details.*

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Integrated stilling well mounting,  
protecting submerged hydrographic and  
water quality instruments