AGRINOVO-OMNI-GENESIS-LITE

Compact 1-Port Multi-Protocol IoT Controller

1. Overview

The Omni Genesis Lite is the compact member of the Genesis platform, built for distributed sensing where each measurement point needs its own node. It provides a single modular sensor port supporting I²C, Analog, Digital, 1-Wire, RS485 (Modbus-RTU), and SDI-12, with the same cloud-configured interface as the full-size Genesis. One quarter the size of the standard Genesis, it installs where a larger controller does not fit.

Genesis Lite runs on a single rechargeable 16340 Li-ion battery (950 mAh) with optional solar charging and the same deep-sleep power management as the Genesis platform, for long-term autonomous operation. Wi-Fi and Bluetooth are built in, with 4G-LTE cellular available for remote sites. The IP65-rated housing and industrial connectors are made for outdoor and remote installations.

Key Features

- Single multi-protocol, cloud-configurable port
- I²C, Analog, Digital, 1-Wire, RS485, SDI-12
- One quarter the size of the standard Genesis
- Single 16340 Li-ion battery (950 mAh)
- Optional solar charging, 6-32 V DC input
- Wi-Fi and Bluetooth built in, 4G-LTE available
- Over-the-air firmware updates
- IP65 enclosure, -20°C to +70°C operation

Applications

- Distributed field sensor nodes across large farms and environmental stations
- Single-point soil moisture, temperature, or irrigation monitoring
- Localized water quality measurement (pH, EC, DO, temperature)
- Compact nodes for air, water, and soil sensing networks

2. Specifications

Parameter	Specification
Sensor Ports	1 modular port, cloud-configurable
Supported Protocols	I²C, Analog, Digital, 1-Wire, RS485 (Modbus-RTU), SDI-12
Sensor Power	Switched 5 V / 12 V supply, managed per reading cycle
Power Supply	Single 16340 Li-ion battery, 950 mAh (rechargeable)
Solar / DC Input	6-32 V DC (optional)
Power Management	Deep-sleep cycle with ultra-low standby current
Connectivity	Wi-Fi 2.4 GHz, Bluetooth 5.0; 4G-LTE cellular available
Expansion	Modular communication slot, LoRa/LoRaWAN and GPS capable
Enclosure Rating	IP65 (dust-tight, water-resistant)
Operating Temperature	-20°C to +70°C
Storage Temperature	-40°C to +85°C
Size	One quarter of the standard Genesis controller
Data Logging	Local storage with cloud sync
Firmware Updates	Over-the-air via OmniCloud

3. Sensor Port

The port is a keyed connector carrying power and two data lines. The data lines take on the signals of the protocol assigned in OmniCloud, so the same port reads an RS485 probe, an I²C sensor, an analog input, or a 1-Wire temperature sensor depending on its configuration.

Port Pinout

Pin	Function	Description
V+	Power	Sensor power (switched 5 V or 12 V)
GND	Ground	Power ground
D1	Data	Protocol signal (RS485-A, SDA, analog in)
D2	Data	Protocol signal (RS485-B, SCL)

RS485 Probes

Agrinovo digital probes communicate over RS485 Modbus-RTU at 9600 bps, 8 data bits, no parity, 1 stop bit. Multiple RS485 probes can share the bus, each at its own Modbus address.

Changing What the Port Reads

Port configuration lives in OmniCloud. Switch the port from analog to RS485, swap sensor types, or adjust sampling intervals from the dashboard. No rewiring, no firmware update, no site visit.

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4. Connectivity

Interface	Role
Wi-Fi 2.4 GHz	Built-in connectivity for sites with local network coverage.
Bluetooth 5.0	Local access.
4G-LTE Cellular	Available for remote sites; the controller connects wherever there is cellular coverage.
Modular Slot	The communication slot is LoRa/LoRaWAN and GPS capable for project-specific configurations.

Genesis Lite operates as a node in distributed deployments, alongside full-size Genesis controllers on the same OmniCloud account.

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5. Power System

Genesis Lite is designed for autonomous single-point operation:

- **Battery:** A single rechargeable 16340 Li-ion cell (950 mAh) powers the node.
- **Optional solar charging:** Any 6-32 V DC solar panel connects directly; the same input accepts fixed DC power where available.
- **Deep-sleep cycle:** The controller wakes on schedule, powers the sensor, takes a reading, transmits, and returns to sleep.
- **Managed sensor power:** The port is powered only while it is being read, at the voltage its sensor requires.

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6. OmniCloud Integration

Every Genesis Lite is managed through OmniCloud:

Capability	Description
Live Dashboards	Real-time and historical data from every node, on web and mobile
Alerts	Instant notifications by WhatsApp or email when a reading crosses a threshold
Remote Configuration	Port protocol, sampling interval, and calibration values set from the dashboard
OTA Updates	Firmware improvements pushed over the air while the device is deployed
Data Export	Historical readings available for analysis and reporting

Data from Genesis Lite nodes sits in the same dashboards, maps, and history as data from full-size Genesis controllers.

7. Installation Notes

Placement

- Mount vertically with the connector facing down
- Place the node at the measurement point, not a junction box
- Confirm network coverage at the mounting point
- Keep the port connector capped when no sensor is fitted

Maintenance

- Recharge or swap the 16340 cell as part of routine site rounds when running without solar
- Keep the connector clean and dry when swapping sensors
- Firmware stays current automatically over the air

8. Ordering Information

Item	Model
Omni Genesis Lite 1-Port IoT Controller	AGRINOVO-OMNI-GENESIS-LITE
Omni Genesis 4-Port IoT Controller	AGRINOVO-OMNI-GENESIS