



## ST 9100 Series

**Dual mode satellite-cellular terminal  
for diverse IoT applications.**

A flexible, robust, and programmable dual mode satellite-cellular terminal. It is ideal for remotely monitoring and controlling fixed and portable assets. Versatile and environmentally sealed, the ST 9100 is perfect operating in remote and rugged environments.

### Easy integration

The ST 9100 offers a flexible programming environment that supports the development of custom solutions, as well as support for ORBCOMM® configurable terminal apps. In fact, you can combine terminal apps with your own code to create a custom solution to speed time to market.

### Development kit

The ST 9100 development kit includes all the hardware, software development tools, documentation, accessories and support to write and test your IoT solution for quicker time to market.

### Feature-rich

Standard features include multiple I/Os, including analog/digital, 2 RS232, 1 RS-485/J1708, 1-Wire and 2 CANbus. 3-Axis accelerometer, Bluetooth connectivity and multiple SIMs are also supported.

Satellite-cellular connectivity

Feature-rich, rugged and versatile

Flexible programming environment

Supports market-specific terminal apps

Comprehensive integration resources for quick deployment

## Airtime savings

Use cellular or automatically switch between cellular and satellite for cost savings. Program the terminal to process data and send essential updates over the air.

# Specifications

## Dimensions

- 148 x 113 x 47 mm
- 181 x 113 x 47 mm including mounting feet

## Satellite communications

- Satellite service: Two-way, Global, IsatData Pro or OGx
- Maximum message size:
  - ▶ *IsatData Pro*: From-mobile 6.4 kB, to-mobile 10 kB
  - ▶ *OGx*: From-mobile 1 MB, to-mobile 1 MB
- Typical latency: <15 sec, 100 bytes
- Elevation angle: +20° to +90° (remote antenna); -15° to +90° (low elevation antenna)
- Frequencies:
  - ▶ *IsatData Pro*: Rx 1525.0 to 1559.0 MHz; Tx 1626.5 to 1660.5 MHz
  - ▶ *OGx*: Rx 1525.0 to 1559.0 MHz; Tx 1626.5 to 1660.5 MHz
- EIRP: <7.0 dBW

## Cellular communication

- ST 9100 Global: Cat 4 LTE (B1, B3, B5, B7, B8, B28), UMTS (850, 900, 1900, 2100), Quad-band GSM
- ST 9100 Americas: Cat 1 LTE (B2, B4, B5, B12), UMTS (850, 900, 1900, 2100), Quad-band GSM
- ST 9100 Saudi Arabia: Cat 1 LTE (B1, B3, B8, B20, B28), UMTS (2100)
- ST 9101 Global: Cat 1 LTE (B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B26, B28, B38, B39, B40, B41), UMTS (850, 900, 1900, 2100), Quad-band GSM
- SIM: 3.3V/1.8V SIM

## Certification

- CE, FCC/IC, FFA, PTCRB, Inmarsat type approval, RCM, ICASA, Anatel, IFT, IEC 60945, ENACOM

## Battery

- Lithium ion 2,000 mAh
- Discharge temperature range: -20°C to +75°C
- Battery backup: >48 hours operation with 1-minute cellular reporting or 60-minute satellite reporting

## Memory

- Lua Code: PSRAM 8MB, NVM: ST 9100, 16 MB; ST 9101, 32 MB

## Continuous operation

A backup battery enables reporting for more than 48 hours (1-minute cellular or 60-minute satellite reporting) when power is interrupted.

## External interfaces

- 4 configurable inputs/outputs: Analog/digital/input/output
- 2 dedicated outputs (sink-ground)
- 4 Digital/analog inputs (2x 4-20mA)
- Serial: 2 RS-232; 1 RS-485/J1708; 2 CAN bus; 1-Wire

## GPS/Glonass/Beidou/Galileo

- Acquisition time:
  - ▶ *Hot*: 1 second – *Cold*: 26/30/34/26 seconds
- Accuracy: 2.0 m CEP-horizontal
- Sensitivity:
  - ▶ *Acquisition*: -148 dBm
  - ▶ *Tracking*: -167 dBm
- Security: signal jamming detection

## Electrical

- Input voltage: 9 to 32V; load dump protection: +150V; SAE J1455 (Sec. 4.13)

## Other interfaces

- Bluetooth v5.0 low energy module
- Two embedded SIMs plus additional user accessible SIM

## Accelerometer

- 3-axis accelerometer

## Environmental

- Operating temperature:
  - ▶ *Transceiver and antenna*: -40°C to +85°C
  - ▶ *Back-up battery*: -20°C to +75°C
- Dust and water ingress:
  - ▶ *Transceiver*: IP67
  - ▶ *Satellite/GPS antenna*: IP67
- Vibration: SAE J1455 (Sec 4.9.4.2 fig 6-8); MIL-STD-810G
- Shock: MIL-STD-810G (Sec 516.6)

## Programming

- Lua scripting engine with core services. SDK with GUI development tools available. Lua software application and firmware upgradable over the air (SOTA, FOTA)
- Geofencing: 128 Polygons
- Data Logger: 50,000 position reports

# Specifications

- Optional, configurable terminal apps:
  - ▶ **AVL app** enables location tracking, status monitoring and driver behavior monitoring.
  - ▶ **Heavy CAN Bus app** extracts engine data such as engine hours, fuel consumption from heavy-duty vehicles.
  - ▶ **Garmin Dispatch app** enables text messaging, custom forms, stops, and HOS through a Garmin device.
  - ▶ **Sensors app** extracts data from connected sensors or devices and generates reports, alarms and histograms.
  - ▶ **Modbus app** interprets data from Modbus devices and allowdata processing and alarms.
  - ▶ **Vessel Monitoring System (VMS) app** provides location tracking, status monitoring and behavior monitoring.

## Order codes

- ST9101-F01 Global Cat 1
- ST9100-C01 Global Cat 4 \*
- ST9100-D01 Americas terminal \*
- ST9100-E01 Saudi Arabia terminal \*
- ST101599-APA OGx antenna
- ST101600-APA OGx low elevation antenna
- ST101597-NSA OGx side no cable
- ST101597-NSB OGx bottom no cable
- ST101598-NSA OGx low elevation side no cable
- ST101598-NSB OGx low elevation bottom no cable
- ST101066-001 bar cellular antenna
- ST101561-001 puck cellular antenna
- ST101014-001 White shroud
- ST101062-002 Blunt cut cable, 5 meters
- ST101096 Mating connector kit
- ST101356-001 Dev Kit Americas
- ST101356-002 Dev Kit Global
- ST101356-003 Dev Kit Saudi
- ST101356-004 ST9101 Dev Kit Global

\* Cellular antenna included

*Although we strive to ensure accuracy in all of our published specifications, actual field performance can vary depending on a variety of environmental, installation and usage factors, as well as third-party factors such as cellular providers. The specifications listed are approximations, and do not constitute binding statements or modify the terms and conditions of purchase or lease including, but not limited to, product operational limitations and warranties. All specifications are subject to change without notice. Please check [www.orbcomm.com](http://www.orbcomm.com) to ensure you have the latest version of these specifications.*

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