ORBCOMM®

WHERE DATA DRIVES DECISIONS

Datasheet

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.

Continuous operation

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

Specifications

Dimensions

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

Satellite communications

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

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
- AES 256 encryption-capable

Specifications

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

Order codes

- ST9101-F01
- 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
- ST101356-004 ST9101 Dev Kit

** 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 to ensure you have the latest version of these specifications.

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