KCS TraceME TM-206 / R9D9

GPS / LTE-M / NB-IoT module

The TM-206 / R9D9 is a mid-range product line member of KCS' advanced TraceME track and trace modules. The TM-206 is targeted for remotely tracking and tracing a variety of objects, even livestock, and for personal use.

The TM-206 offers excellent long range RF coverage and is equipped with a low-power GPS receiver, multiple on-board sensors, low-level I/O-connectivity and a USB rechargeable integrated battery. It offers accurate location based position data to be connected to any existing worldwide server application.

Key Features

- National telecom & worldwide satellite (GNSS) coverage
  - LTE Cat M1 / NB-2 / EGPRS
  - GPS (*)
  - Glonass/GPS/Galileo
- Nano SIM socket
- Standby battery lifespan of more than 10 years.
- Small enclosure 56 x 37 x 16mm.
- Lightweight: 39 grams, including housing, antennas and battery.
- Excellent GSM accuracy, external antenna.
- Excellent GPS accuracy, internal antenna.
- Integrated 2.45GHz. radio for special functions and peripherals.
  - Short range, up to 30m (*)
  - Long range, over 1 km range, line of sight
- 3 LEDs (Red/Green/Yellow) and 3 switches for user interaction.
- Wide operating range: -40 ˚C … +85˚C (Excluding optional LiPo battery Cell).
- Onboard sensors:
  - Temperature sensor (±0.5°C)
  - 3D accelerometer (up to 16g)
- Optional sensors (*)
  - Humidity sensor (±2%RH)
  - Baro-/Altitude meter (±10cm)
  - Compass/3D Magnetometer
- Multiple watchdog levels for maximum stability.
- Versatile interfacing:
  - Digital and analog I/O
  - Serial, 3V
  - iButton™ / 1-Wire™
- Event based free configurable module to fit any job; 300+ different events, up to 4,000 geozones.
- Remote maintenance. Both firmware and configuration files can be updated over the air.
- Audio with microphone and embedded class AB speaker amplifier. (*)
- Runs local user scripts via .src files.
- User definable SMS commands.
- Supports integration into third party networks.

(*) Optional, please contact sales for more details.

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Applications

- Object protection, up to 10 years of standby on a single lithium battery.
- Logistics
- Animal tracking, asset monitoring
- Security and surveillance
- Remote control and diagnostics
- Anti-theft

Product Summary

Equipped with a state-of-the-art GPS receiver, the TM-206 / R9D9 module provides reliable and accurate navigational data. Advanced location-based positioning (LSB) by proprietary RF enables positioning inside buildings and offers special power saving features for a variety of applications.

The module provides reliable, optimized connectivity and coverage for the next generation LTE-M and NB-IoT networks and offers seamless fall back to 2G networks. In areas without network coverage, position-data and events are stored in memory (up to 120,000 positions). As soon as communication is restored, all information can be transmitted.

The full version module (TM-206LAR) is equipped with different technologies for traceability (e.g. GPS/Glonass/Galileo, LTE-M/NB-IoT modem, LoRa, Bluetooth Smart (BLE) and proprietary RF),, which can all be combined dependent of the application and local mobile network coverage. User specific low-budget basic versions are available on request.

Multiple on-board sensors (temperature, acceleration and optional: humidity, baro-/altimeter and compass/3D magnetometer) as well as LEDs, I/O-functionality and pushbutton enable the integration of TraceME into a variety of custom specific (M2M) applications. With a minimal size of 56 x 37 mm, weight of only 39 grams and a battery lifespan of more than 10 years, the module offers endless OEM integration possibilities.

The functionality of the module can be remotely programmed to fit any job. From basic/general functionality to advanced/low-level application specific detailed functionality.

All of the necessary server-side scripts to process and store data from these units are available for registered distributors and resellers. If you do not want to host data and maps yourself, you can use the hosting services of one of our partner companies.

(*) Optional, please contact sales for more details.

Ordering information

The KCS TraceME TM-1206 / R9D9 can be equipped with different optional technologies for traceability. It can be fully customized dependent of the application. Please contact sales for more details.

Specifications KCS TraceME TM-206

Data communication

Modem	Quectel BG95-M3 LTE Cat M1 / NB-2, GSM Module, all global certifications and R&TTE directives.
Frequency bands	GSM/GPRS: 850/900/1800/1900 MHz LTE: B1-5, 8, 12, 13, 14 (Cat M1) 18, 19, 20, 25, 26, 27 (Cat M1), 28

RF Communication (*)

RF 2.4GHz.	Nordic nRF51822
Frequency	2.45 GHz.
Protocol	BLE 4.0 and custom 2.4 GHz. protocol
Transmitting power	up to +20 dBm (with on-board amplifier)
Sensitivity	-93 dBm (BLE)

Navigation

GPS Receiver	Quectel L76 GNSS (Glonass + GPS + Galileo) module, optional L70 GPS module	
Frequency	GPS L1 1575.42 MHz. C/A Code, 48 search channels Glonass L1 1598.0625 ~ 1605.375 C/A Code	
Sensitivity	Acquisition	-148 dBm (typical)
	Reacquisition	-160 dBm (typical)
	Tracking	-165 dBm (typical)
Horizontal Position Accuracy	<2.5 m CEP	

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Operating Temperature Conditions

With Primary Lithium Cell or without LiPo battery	-40°C … +85°C (discharging only)
With rechargeable LiPo Cell (**)	-20°C … +60°C (discharging) 0°C … +45°C (charging)

(**) Extended temperature range LiPo batteries available on request.

Electrical

Power supply	Internal Lithium primary cell
	Optional external +5VDC ±10% (micro USB-connector)
Charging Current (LiPolymer)	450 mA. Observing 0...+45 ˚C safety range for LiPolymer.
Typical power consumption	30 mA, GPS full power tracking, open GPRS session
	6 mA, using AlwaysLocate™
	100 mA BLE transmissions
	8uA standby, sensors, timer and I/O active, no transmissions

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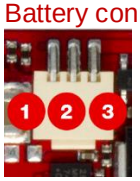
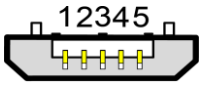
External Connections

Battery connector



Pin	Description
1	Temperature sensor
2	Ground
3	3.4 - 4.5V Battery (+) connection

Micro-USB



Pin	Signal	Type	Description
1	USB VCC	VCC	+4.5 … +5.5 VDC Charge input, max 600mA
2	Serial IN	I	Serial input or digital input (2..31V for active high) ~ 50k pulldown
3	Serial OUT	O	Serial or digital output, open collector (max 31V/10mA/100mW)
4	Analog IN	-	Analog input (0..44V)
5	GND	GND	GND for charge and I/O

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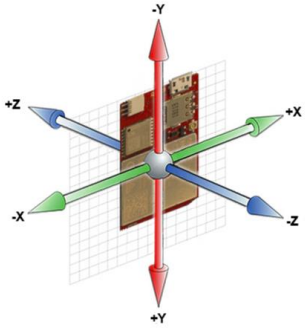
Onboard sensors

3D accelerometer



The module contains a 3D accelerometer (up to 16g), which can be used for a variety of custom specific (M2M) applications. Accelerometers are useful for measuring movement, speed, g-forces and vibration of the object. The accelerometer and advanced embedded firmware enables a very low-power battery solution.

Temperature sensor

The module contains a temperature sensor (±0.5°C), which can be used for example to monitor and control any temperature sensitive equipment.

Humidity sensor (*)

The module contains an optional humidity sensor (±2%RH), which can be used to monitor and control any object in an environmental sensitive infrastructure, for example goods stored in a unmanned warehouse.

Baro-/Altitude meter (*)

The module contains an optional baro-/altitude meter (±10cm), which can be used for advanced 3D location based positioning applications.

Compass/3D Magnetometer (*)

The module contains an optional compass/3D magnetometer, which can be used for advanced position detection applications.

(*) Optional, please contact sales for more details.

About KCS BV

KCS BV, founded in The Netherlands in 1984, develops and manufactures electronics in-house for industrial applications, medical purposes, broad- casting solutions, etc.

KCS is ISO 9001:2015 and ISO 14001:2015 certified.

KCS is a LoRa Alliance member since 2016.

Support

Visit our support page at: www.trace.me

Sales

Contact us by email: Trade@trace.me

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