KCS TraceME TM-203 / R9F4

GPS / GPRS / SMS / module, OEM Version

The KCS GPRS/GPS range of modules enables you to remotely track & trace people, animals and a variety of objects, e.g. cars, trucks, containers, (motor)cycles, lawnmowers, vessels, etc.

KCS TraceME TM-203 / R9F4 is targeted for personal use, or any other applications that needs a small size with extremely long battery life. It offers multiple connectivity options and server connections.

Key Features

- National telecom & worldwide satellite (GNSS) coverage
  - Quad-band GSM/GPRS
  - GPS (*)
  - Glonass/GPS/Galileo
- Micro sim socket
- SIM on chip (*)
- Small: only 87 x 22 x 7 mm (*)
  - 13 mm height with external connectivity option
- Lightweight: 15.5 grams for the fully equipped PCB, excl. battery and GSM antenna.
- BASIC I/O, Serial, analog and digital interfaces
- Ultra low power consumption
- 5 to 31VDC power supply
- Robust IP67 housing (*)
- Portable type: Integrated antennas.
  - External GSM antenna (*)
- Li-ion charger/switcher system seamlessly feeds both the TraceME and GPS receiver from external power source or Li-ion battery.
- Onboard sensors:
  - 3D accelerometer (up to 16g)
- Optional sensors: (*)
  - Temperature sensor (±0.5°C)
- Multiple watchdog levels for maximum stability.
- Wide operating temperature range: -40°C… +85°C (using Primary Lithium Cell)
- Dual charge protection for voltages and temperature range.
- Membrane switch interface for buttons and LED's, user configurable.
- 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.
- Runs local user scripts via .src files.
- User definable SMS commands.
- Supports integration into third party networks.
- Complies with automotive safety standard (E-mark)
- Complies with additional standards for insurance benefits (e.g. SCM and Incert)

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

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Applications

- Vehicle and boat tracking
- Object protection and tracking
- Logistics, M2M
- Security and surveillance
- Remote control and diagnostics
- Vehicle immobilization
- Anti-theft
- Asset monitoring

Product Summary

Equipped with a state-of-the-art GPS receiver, the KCS TraceME TM-203 / R9F4 module provides reliable and accurate navigational data.
All communication is handled rapidly and effectively by a GPRS/GSM modem (QUAD band version) through GPRS or SMS. In areas without network coverage, position-data and events are stored in memory (up to 250,000 positions (*)). As soon as communication is restored, all information can be transmitted.

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.

The TM-203 meets the emission limits and immunity levels as described in ECE Regulation 10 (Rev.4) + Corr.1 + Amend. 1 + Amend. 2 and in 2004/104/EC and Amendments 2005/49/EC, 2005/83/EC, 2006/28/EC and 2009/19/EC.

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

Ordering information

The KCS TraceME TM-203 / R9F4 can be equipped with different optional technologies for traceability. It can be fully customized dependent of the application. Please contact sales for more details.

Enclosure (*)

The picture above is an example of an available enclosure.

Specifications KCS TraceME TM-203 OEM

Data communication

GPRS Modem	Quectel M95 QUAD band, global certifications and R&TTE directives. 
Power saving	Typical power consumption in sleep mode: 1.3 mA @ GSM, DRX = 5 1.2 mA @ GSM, DRX = 9
Frequency bands	• Quad-band GSM850, GSM900, DCS1800, PCS1900 • Frequency bands can be set by AT command • Compliant with GSM Phase 2/2+
GSM Class	Small MS
Transmitting power	• Class 4 (2W) at GSM850 and GSM900 • Class 1 (1W) at DCS1800 and PCS1900
GPRS connectivity	• GPRS multi-slot class 12 (default) • GPRS multi-slot class 1~12 (configurable) • GPRS mobile station class B

Navigation

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

Operating Temperature Conditions

With Primary Lithium Cell	-40°C … +85°C (discharging only)
With rechargeable LiPo Cell (*) (**)	-20°C … +60°C (discharging) 0°C … +45°C (charging)

(*) Without (charged) battery, it is not possible to transmit data via GPRS. Normal operating like GPS tracking will continue, data will be stored in flash and transmitted at a later time, when the battery has been recharged.
(**) Extended temperature range LiPo batteries available on request.

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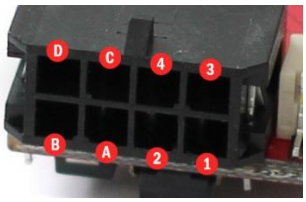
Electrical

Power supply	Maximum range: +5…+31 VDC
Charging Current	Max 450mA. Higher charging currents (for batteries with higher capacity) on request.
Power Consumption	<0.1mW standby (typical): GPS off, hot start possible. GSM off. Processor monitors timer + vibration sensor + I/O, watchdog on, brownout detection on.
	Power per fix: < 1.3 mAh, including cold start of GPS, GSM power-up and transmission via GPRS or SMS.
	150 mW tracking: GPS always on, GPRS active, GPRS session open.
	Power consumption depends on amount of GPRS traffic and navigation parameters.

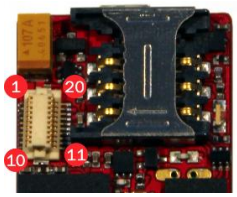
External connections



Pin	Signal	Type	Description
1	GND	GND	Ground for VCC and IO
2	VCC	VCC	+5 to +31VDC charge input and power supply
3	GND	0	Ground for VCC and IO
4	Analog In 5	I	Digital/Analog Input #5 0..35V
A	Serial In/Out	I/O	3V serial Tx1/Rx1 or analog input 1 0..3V
B	Analog in 1	I/O	Digital/Analog Input #1 0..35V, open collector output 1 (150mA), Hardware pulse counter (*)
C	Board Voltage	O	Optional board voltage 5 Volt max 1 Amp
D	Analog in 2	I/O	Digital/Analog input #2 0..35V, open collector output 2 (150mA)

(*) The internal hardware pulse counter is combined with input 1. It has an internal pull-up making the input measure a voltage close to 3 Volt when nothing is connected. Since default settings determine a voltage like that to be digitally active, the input may always seem active unless you:
- do not keep the input floating.
- use a switch level of 4Volt or higher in the settings.
- disable the hardware pulse counter in the settings which also disables the internal pull-up.

20 pins extension header



Pin	Description	Description	Pin
1	3.4 - 4.5V Board Voltage (direct battery connection, not switched)*	3.4 - 4.5V Board Voltage (switched)	20
2	general IO / TxD 4 open collector , max 30V @ 5mA	3.4 - 4.5V Board Voltage (switched)	19
3	general IO / RxD 4 , logic 0 if 0-0.4 V, logic 1 if 2..30V	Battery temperature sensor*	18
4	Red LED / general IO*	Analog IN 1 (0..1V or 0..30mV, firmware dependant)	17
5	Ground	Ground	16
6	general IO / TxD 5 (2V8 level)	Ground	15
7	general IO / RxD 5 (2V8 level)	4.5-5.5V input (parallel to USB power)	14
8	Ground	4.5-5.5V input (parallel to USB power)	13
9	Ground	Ground	12
10	reserved, do not connect	reserved, do not connect	11

* Yellow marked pins available from PCB version R9F4 and up, do not connect for older versions.
Max current per pin 300mA

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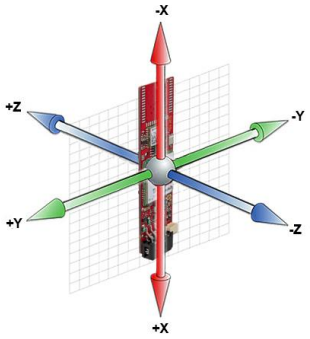
Onboard sensors

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.

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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

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Sales

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Kuipershaven 22
3311 AL Dordrecht
The Netherlands

email: Trade@trace.me
URL: www.trace.me