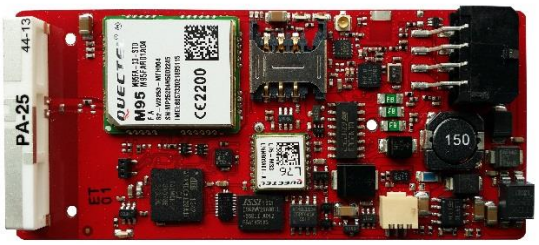
KCS TraceME TM-178 / R9H5

GPS / GPRS / SMS / RFID module, OEM Version



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

KCS TraceME TM-178 / R9H5 is targeted for tracing and controlling vehicles and other powered equipment. The TM-178 is equipped with an intelligent location based positioning solution, which provides locating the vehicle or object quickly and accurate in scenarios where traditional GPS systems are insufficient. It offers multiple connectivity options and server connections.
The TM-178 is designed to comply with all approvals for the North American market, and can be used in all countries of the world.

Key Features

- National telecom & worldwide satellite coverage
  - Quad-band GSM/GPRS
  - UMTS/HSPA (*)
  - GPS
  - Glonass/GPS (*)
- Very small, only 91 x 40 x 9 mm.
- Micro SIM socket
- Lightweight: 30 grams for the fully equipped PCB.
- BASIC I/O, Serial, analog and digital interfaces
- Ultra low power consumption, down to 12uA.
- 6 to 31VDC power supply
- Excellent GPS accuracy including full-size GPS antenna.
- Integrated 2.45 GHz. radio for special functions and peripherals
  - Short range, up to 30m (*)
  - Long range, over 1 km range, line of sight (*)
- Portable type: Integrated antennas.
  - External micro coax RF antenna. (*)
- Li-ion charger/switcher system seamlessly feeds all parts from external power source or Li-ion battery.
- Onboard 3D accelerometer up to 16g.
- Wide operating temperature range: -40°… +85°C (without LiPo battery)
- Robust IP67 housing (*)
- Multiple watchdog levels for maximum stability.
- Dual charge protection for voltages and temperature range.
- 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.

(*) 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
- Anti-theft
- Asset monitoring

Product Summary

Equipped with a state-of-the-art GPS receiver, the KCS TraceME TM-178 / R9H5 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.

Advanced location-based positioning (LSB) by GSM and RF enables positioning inside buildings and offers special power saving features for applications like Alzheimer's disease or security people. 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.

Ordering information

- TM-178B Basic version (Quad-band GSM/GPRS, GPS, Long-range RF)
- (*) Optional, please contact sales for more details

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Specifications KCS TraceME TM-178

Data communication

GPRS Modem	Quectel M95 QUAD band, optional UG95(-A or -E) UMTS/HSPA Module, optional UG96 UMTS/HSPA Module, all global certifications and R&TTE directives.
Power saving	Typical power consumption in sleep mode: 1.3mA @ GSM, DRX = 5 1.2 mA @ GSM, DRX = 9 1.15 mA @ UMTS, DRX=9
Frequency bands	• Quad-band GSM850, GSM900, DCS1800, PCS1900 • Dual-band UMTS850/1900 or UMTS900/2100 • Five-band UMTS800/850/900/1900/2100 • Frequency bands can be set by AT command • Compliant with GSM Phase 2/2+
GSM Class	Small MS
Transmitting power	• Class 4 (2 W) at GSM850 and GSM900 • Class 1 (1 W) at DCS1800 and PCS1900 • Class 3 (250 mW) at UMTS 800/850/900/1900/2100
GPRS connectivity	• GPRS multi-slot class 12 (default) • GPRS multi-slot class 1~12 (configurable) • GPRS mobile station class B

RF Communication

Radio chip	Nordic nRF24L01+		
Frequency	Worldwide 2.45 GHz ISM band, 126 channels, GFSK modulation		
Amplifier	RFaxis RFX2401C		
		Without amplifer	With amplifier
RF Tx Power		0, -6, -12, -18 dBm	+20, +14, +8, +2 dBm
RF Rx Sensitivity	2Mbps	-82dBm (typical)	-90dBm (typical)
	1Mbps	-85dBm (typical)	-93dBm (typical)
	250Kbps	-94dBm (typical)	-102dBm (typical)
Ultra low power		13uA average current use, at 1 RX/TX per second	90uA average current use, at 1 RX/TX per second, +20dBm Tx.

Navigation

GPS Receiver	Quectel L70 GPS module, optional L76 GNSS (Glonass + 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	

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Operating Temperature Conditions

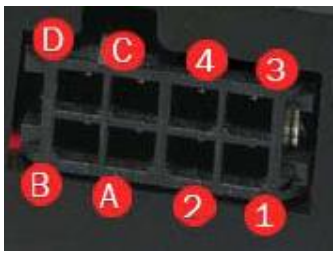
With Primary Lithium Cell or without LiPo battery	-40°C … +85°C (discharging only)
With rechargeable LiPo Cell (**)	-20°C … +60°C (discharging) 0°C … +45°C (charging)

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

Electrical

Power supply	Maximum range: +6…+31 VDC
Charging Current	Max 450mA. Higher charging currents (for batteries with higher capacity) on request.
Power Consumption	60 µW standby (typical): GPS off, hot start possible. GSM off. Processor monitors timer + acceleration 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	+6 to +31VDC charge input and power supply
3	TxD4	0	3V serial Tx4 Hardware pulse counter (*)
4	Analog In 3/In 5, Out 3 (*)	I/O	Analog Input #3/#5 (0..35V), Digital output #3 (*)
A	RxD4, or analog input 0..1V	I/O	3V serial Rx4, or analog input 0..1V Hardware pulse counter (*)
B	Analog in 1	I/O	Analog Input #1 0..35V, Digital output #1
C	Board Voltage	O	Optional board voltage 5 Volt max 500mA
D	Analog in 2	I/O	Analog input #2 0..35V, open collector output 2 (150mA), TxD2 open collector

(*) Optional, please contact sales for more details

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Module revision history

		TM-178/R9H4	TM-178/R9H5
GSM		Quad band GSM	Quad band GSM Optional: 2-band UMTS Optional: 5-band UMTS
Battery (Primary or Li-Ion)		Required for transmissions	Optional
Electrical connections	Pin 3	GND	TxD4, 3V
	Pin 4	Analog In5	Analog In3/In5 + digital Out3 (*)
	Pin A	RxD4/TxD4, 3V	RxD4 3V, or analog input 0..1V
	Pin B	Analog In1	Analog In1 + digital Out1
	Pin C	Not connected	Power output 5V/500mA
	Pin D	Digital In2, TxD2 open collector	Analog In2 + Out2, TxD2 open collector
Hardware Pulse counter		Combined with In2 (Pin D)	On special request
Power down mode		± 100uA	± 12uA

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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.

Support

Please visit our support page at: http://www.trace.me

Sales

Please contact us by email: trade@trace.me

Final notes & certification

We certify that Kolff Computer Supplies BV, Dordrecht, The Netherlands does not make any hardware or IMEI modifications to the QUECTEL devices as used in the TraceME track & trace device. All software modifications are restricted to official firmware upgrades as provided by Quectel Wireless Solutions Co., Ltd..

KCS is ISO9001:2008 and ISO14001 certified since 1999.

WARNING:

- The device should be turned off in vicinity of petrol pumps, chemical, flammable or hazardous environments where ignition of flammable atmospheres is possible.
- The GSM unit and antenna shall be operated at a distance greater than 20 cm from the human body.
- The device is to be operated in accordance with the user instructions or manufactured recommendations.

Disclaimer:

KCS BV reserves the right to make changes without further notice to any products herein to improve reliability, function or design. KCS BV does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

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