QUAKE GLOBAL

ORBCOMM
GSM/GPRS
GPS
CAN BUS
ANALOG
DIGITAL
MEMORY
Choices

Q4000 The First Interchangeable Modem

Which way do you want to go?

With the Q4000 the choices are all yours

Preliminary. subject to change

TECHNICAL SPECIFICATIONS

PRELIMINARY. SUBJECT TO CHANGE

PHYSICAL SPECIFICATIONS	
SIZE	4" X 2.5 X .65"
	101 mm X 64 mm x 17 mm
GPS	
Accuracy	< 2.5 m
Hot Start TTFF	1 Sec
Cold Start TTFF	32 Sec
INPUT/OUTPUT	
(8) General Purpose	3.3 V CMOS
	Can source up to 25mA when used as output
(2) Analog Input	0-3.3V
	10 bit resolution
(4) Relay	(2) Switch Ground / (2) Switch Input Power
CAN BUS (J1939)	
DATA INTERFACES	
SERIAL I/F PORT	(3) RS-232
	(2) 5-wire /(1) 3-wire
COMMUNICATIONS - GSM/GPRS	
QUAD BAND OPERATIONS	GSM 850/900/1800/1900 MHz
	SMTP, POP3, SMS, TCP, GPRS
COMMUNICATIONS- ORBCOMM	
TRANSMIT FREQUENCY	148.000 TO 150.050 MHz
RECEIVE FREQUENCY	137.000 TO 138.000 MHz
TRANSMIT POWER	5W - 10W max
DATA RATES	2400bps Uplink 4800 bps Downlink

POWER	
INPUT POWER RANGE	* 5-36 VDC
	*5 - 9 VDC Orbcomm TX not supported
	9-36 VDC
	all features supported
POWER CONSUMPTION (12V)	
TRANSMIT ORBCOMM	2.50A (nominal)
TRANSMIT GSM	140 mA
STANDBY	20 mA
ORBCOMM RX	40 mA
SLEEP	25uA
ENVIRONMENTAL SPECIFICATIONS & CERTIFICATION	
FCC	Pending
PTC RB	pending
CE MARK	Pending
OPERATING TEMPERATURE	
OPERATIONAL TEMPERATURE	-40C to +85C
STORAGE TEMPERATURE	-50C to +85C
MISCELLANEOUS FEATURES	
REAL TIME CLOCK	RoHS Compliant
ORBCOMM ANTENNA DETECTION	(VSWR)

It's all about choice!

You choose the features that you need for your particular application and disregard the ones you don't. Why pay for features that you don't need? It is that simple!

You can program the Q4000 to meet your needs. Individual inputs can be specifically programmed to continuously monitor sensors and to report at selected intervals. Additionally, alarm conditions can be preprogrammed so the unit reports the condition automatically and immediately if the targeted conditions are detected. Reports can be generated on a regular schedule, by exception-only reporting, or a combination of both.

Given the numerous choices that the Q4000 affords, including a full list of potential combinations and applications would be impossible. However, the following list illustrates a few of the applications for which the Q4000 is particularly well suited:

Stand-Alone Applications – When configured with a powerful ARM processor that is easily programmed with QUAKE's flexible Application Programmer's Interface (API), the Q4000 is a complete stand-alone M2M satellite communicator.

Monitoring – The Q4000 is designed to receive and process data from any number of sensors and other monitoring devices in place on the monitored as-set.

The Q4000 provides two external analog inputs with an input voltage range of 0 – 3.3 Volts, as well as eight digital GPIO's. All I/Os are protected against transients and over-voltage conditions that are typically found in vehicular electrical systems.

The Q4000 has three external RS-232 serial ports for monitoring and communicating with your asset. In addition, there is built-in software support for messaging using the J1939 protocol. These features make the Q4000 particularly well suited for applications that include monitoring operating parameters on vehicles or heavy equipment.

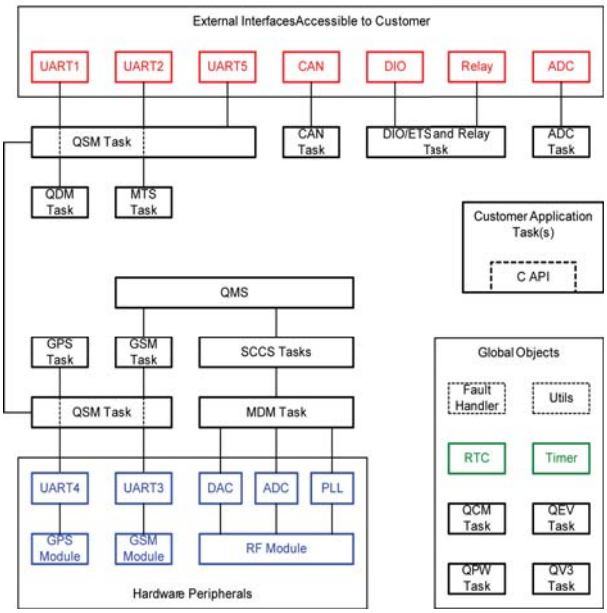
Control – The Q4000 is equipped with four relay outputs; two providing a closure to ground and two providing closure to the Q4000 input voltage. These outputs are capable of sinking 1 Amp at ambient temperature. Error conditions occurring on the outputs may be determined by software interrogation of the hardware. These outputs are ideal for control of lamps or relay drivers typically found in vehicles and remote monitoring stations.

Tracking – The Q4000 has an on-board GPS chipset that provides the location of your moving asset. This asset might be a truck, car, trailer, bus, locomotive, rail car, or container … basically anything of value that moves.

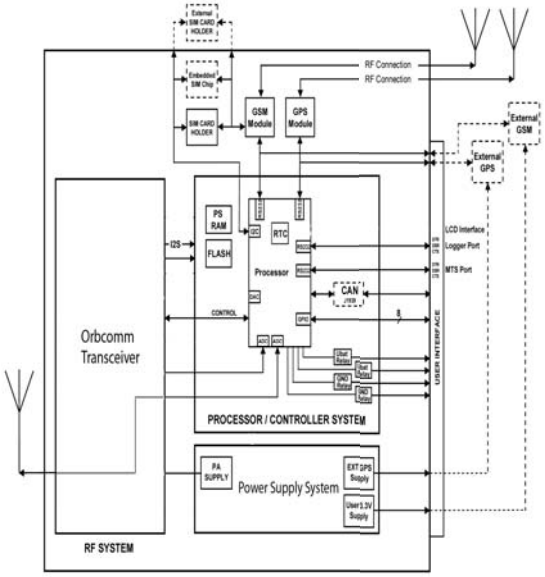
Sophisticated, easily programmable software allows you to set alarm setpoints to warn of an asset moving in and out of certain areas (i.e. geo-fencing). The processing power of the Q4000 and the independent GPS chipset allow for GPS positioning, GSM messaging, ORBCOMM messaging, and customer specific data processing to take place concurrently within the Q4000.

Commercial Messaging – The Q4000 is also ideal for sending and receiving text emails. With GSM as the primary and Orbcomm as the back-up, you do not have to worry about whether there is cellular coverage or not. ORBCOMM is a global system with coverage throughout the world.

Q4000 SOFTWARE ARCHITECTURE



Q4000 HARDWARE ARCHITECTURE



Embedded code for QUAKE modems can be developed on many different hardware and software platforms with the use of Quake's Application Programmer's Interface. These include but are not limited to Windows, Solaris, Sun OS, Mac, and Linux. The QUAKE Development Environment CD contains the development environment for Windows platforms. The QUAKE development environment includes a full-featured C-compiler and associated tools, collectively called the GNU ToolKit. Compiled applications are down-loaded to the QUAKE modem via a serial port or OTA. The tools necessary for developing custom C-code for QUAKE modems are contained in the QUAKE Development Environment and API CD that comes along with the QUAKE Developers Kit. To program using the API requires knowledge of C-programming.

Q4000 CONFIGURATION OPTIONS MATRIX

	TYPE	GSM	GPS	ORB	CAN (J1939)	DIGITAL I/O	RELAYS	ANALOG	RF CONN	DIG CONN	SIM	MEMORY
STANDARD OPTIONS 1135-5000	-00 ORB-COMM/GSM	1	1	1	1	1	1	1	1	1	1	1
	-01 ORB-COMM ONLY	N/A	1	1	1	1	1	1	1	1	N/A	1
	-02 GSM ONLY	1	1	N/A	1	1	1	1	1	1	1	1

RF CONN	0	SMA (ORBCOMM)
		SMB (GPS)
		MCX (GSM)
	1	FAKRA

DIGITAL CONN	0	PCB-PCB
	1	LOCKING

SIM (GSM ONLY)	0	INTERNAL HARDENED SIM
	1	SIM CARD W. HOLDER

FLASH MEMORY	0	8 MB
	1	2 MB
	2	4 MB

WHY CHOOSE THE Q4000?

The Q4000 represents the true "state of the art" in LEO satellite M2M communicators. This new generation QUAKE modem has a huge advantage over any other dual mode modem on the market, in that it allows you to choose from numerous stuffing options. You are able to configure the Q4000 to meet your specific needs and your specific budget.

Why do I need dual mode communication?

Multiple technologies help to ensure total coverage for mobile assets utilizing the most economical service. The Q4000 allows you to utilize economical and reliable GSM/GPRS networks when an adequate cell signal is present, such as in urban areas. When your asset leaves a cellular coverage area, the modem will seamlessly switch to the worldwide coverage of the ORBCOMM satellite network. By having connectivity to both the ORBCOMM and GSM/GPRS networks, you are assured seamless coverage for your M2M communications anywhere in the world.

Can I use the Q4000 modem if my solution already has a processor?

Yes! If your current solution already utilizes a data processor, the Q4000 can easily be adapted for use as a simple modem with send and receive capabilities only. The Q4000 will provide GSM/GPRS and/or ORBCOMM satellite coverage with the use of an AT command interface.

Simply process your data as you do now, send it to the modem, and the Q4000 will handle the delivery of the data over the most economical connection. It's as simple as that!

Remember, too, that if your current solution does not have GPS capability, it would be easy to add that feature, or you could even add access to simple I/Os with the use of an additional AT command.

Can the Q4000 be used as a complete solution?

Yes! The Q4000 is contained in a compact aluminium housing that is ready to be affixed to any weather and moisture-protected surface for M2M use. Just connect the appropriate input/output cables and the appropriate antenna(s), and you are ready for fixed and/or mobile tracking and monitoring of your assets.

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