



Telemedicine and Telecare

Many accumulated years of experience in radio communications systems, coupled with a detailed knowledge of electrical medical devices makes Plextek the ideal development partner in your next product development.



Incorporating wireless technology into medical and healthcare products offers undeniable benefits to both health professionals and patients alike.

Whether your wish is simply to reduce the cable clutter at a hospital bedside, or build a wide area telemedicine system, Plextek has the experience and skills that you need to succeed.

Plextek was established in 1989, as a technology design consultancy with a specialisation in radio communications. Over the years, this technology focus has meant that Plextek has accrued knowledge of all of the standard radio systems, including GSM, GPRS, Bluetooth and 802.11, as well as developing bespoke systems for numerous clients. Now including a group dedicated to medical and healthcare products, the cross-fertilisation between these technology areas means Plextek can deliver the product you need.

Application areas:

- ambulatory vital signs monitoring
- wireless cardiogram sensors
- cable free pre-natal and paediatric equipment
- sleep apnea monitoring units
- paramedic roadside telesystems
- point-of-care networked IVD equipment
- telecare social alarm systems
- smart housing for the elderly
- drug trials data loggers
- maternity unit baby abduction alarms

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Electronics Design and Consultancy

		Data Rate	Range	Battery	Europe	USA	Japan
GPRS	uplink	~ 25 kbit	km	hours	✓		✓
	downlink	~ 50 kbit					
802.11	a	54 Mbit	100m	hours	✓	✓	✓
	b	11 Mbit					
	g	54 Mbit					
DECT		768 kbit	100m	hours	✓		✓
Bluetooth	class 1	1 Mbit	100m	days	✓	✓	✓
	class 2		10m				
Zigbee	868MHz	20 kBit	30m	months	✓	✓	✓
	915MHz	40 kbit					
	2.4GHz	250 kbit					

The requirements for your product, and where you intend to use it, will have the greatest influence on which radio technology you need.

Standards Based Radio

Plextek is familiar with all of the standards based radio systems shown in the table above. Using one of these systems can offer many benefits to your product:

- systems are designed to coexist well together
- system infrastructure is often already established
- technology has reached the commodity market offering low entry barriers

Custom Radio Solutions

Standards based radios, although ideal in some applications, are generally less ideal in areas where battery life is of concern, or where a guaranteed quality of service is required. In these circumstances it may be better considering a full custom radio solution.

A custom radio is one developed uniquely for your application. Plextek has developed many custom radio systems including a large ambulatory telecare system. The advantage of a custom system is that you are able to design to a quality of service level, and create system topologies, which are not possible using the standards based radios. Plextek has many differing custom radio technologies to hand, including multipoint-to-point telemetry radios, direction finding radios and proximity detection systems.

Battery Life Considerations

Wireless devices are generally battery powered which means that careful consideration must be given to the power consumption of the product being developed. Plextek has a wealth of experience designing low power electronics, including the sensor power systems, as well as the radio transmitters and receivers. Although radios are power hungry when transmitting, it is possible to design sophisticated

radio receivers to recover weak radio signals successfully. This means that radio transmitter power can be reduced, increasing battery life.

Medical Equipment Design

Plextek has a dedicated medical and healthcare group which specialises in the design of electronic hardware and software for medical devices and *in vitro* diagnostic devices.

The Plextek quality system is certificated to ISO9001:2000 and includes explicit requirements for the development of medical equipment.

Our engineers are experienced with designing to the latest international standards, and with the processes necessary for placing medical devices on the market in both the United States of America, and the European Union.



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