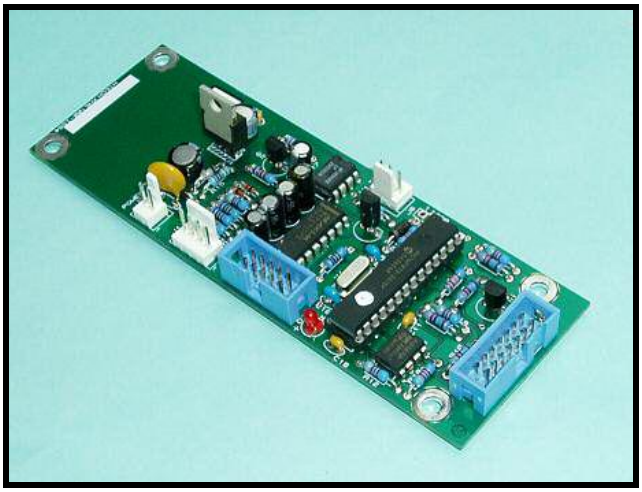
Case studies

Case #1: Serial Multi Adapter

Requirement
We were approached by our client who needed a smart card reader that would fit into a custom enclosure. Further they also wanted to interface to a Dallas iButton, and infrared receiver all controlled via a serial port.

Solution
The solution was to design a custom PCB utilising a Microchip PIC microcontroller. Firmware was written for the microcontroller to detect smart card insertions and communicate with the card according to the relevant standards. Protection circuitry was also included to prevent damage to the card during use.

Result
After completing the design Summit provided a prototype for approval and then was able to manufacture tested PCB assemblies in batches of fifty with warranty.



Serial multi adapter PCB assembly

Invoices & Deliveries to The Oaks, 17 Elnor Lane, Whaley Bridge, High Peak. SK23 7EX. UK.
Tel +44 (0) 1663 719572 Fax +44 (0) 1663 719570 Email: adrianm@summitelectronics.co.uk

Case #2: Data Logger

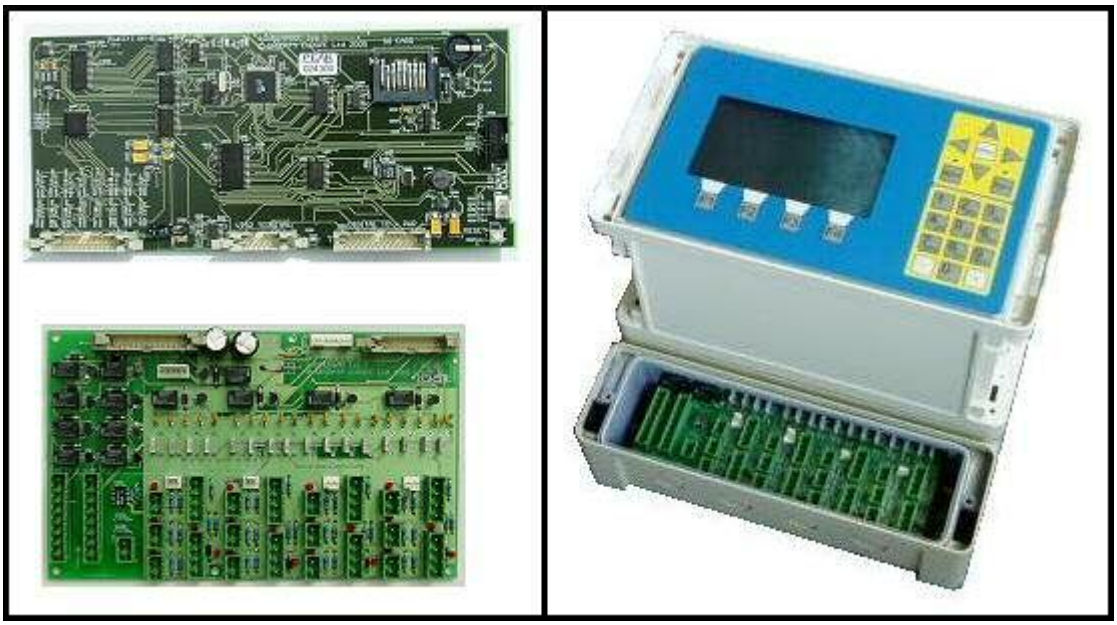
Requirement
In this instance our client needed to replace an aging data logger with an up to date design to improve performance and reduce cost.

Solution
The solution was to split the design into three components as follows:

i) Human interface sub-assembly consisting of membrane keypad, LCD and driver PCB.
ii) Processor PCB consisting of ATMEL microcontroller RAM, RTC, USB & A/D.
iii) Barrier PCB consisting of surge protectors and 4-20mA transmitters.

Each of these PCB's were designed by Summit and programmed in part by our client and in part by Summit.

Result
The result was a much easier to manufacture HMI delivered in a timely manner.



Right: Data Logger assembled with membrane keypad and LCD. Top left: Processor PCB. Bottom left: Barrier PCB

Invoices & Deliveries to The Oaks, 17 Elnor Lane, Whaley Bridge, High Peak. SK23 7EX. UK.
Tel +44 (0) 1663 719572 Fax +44 (0) 1663 719570 Email: adrianm@summitelectronics.co.uk

Case #3: Roulette Wheel Reader Head

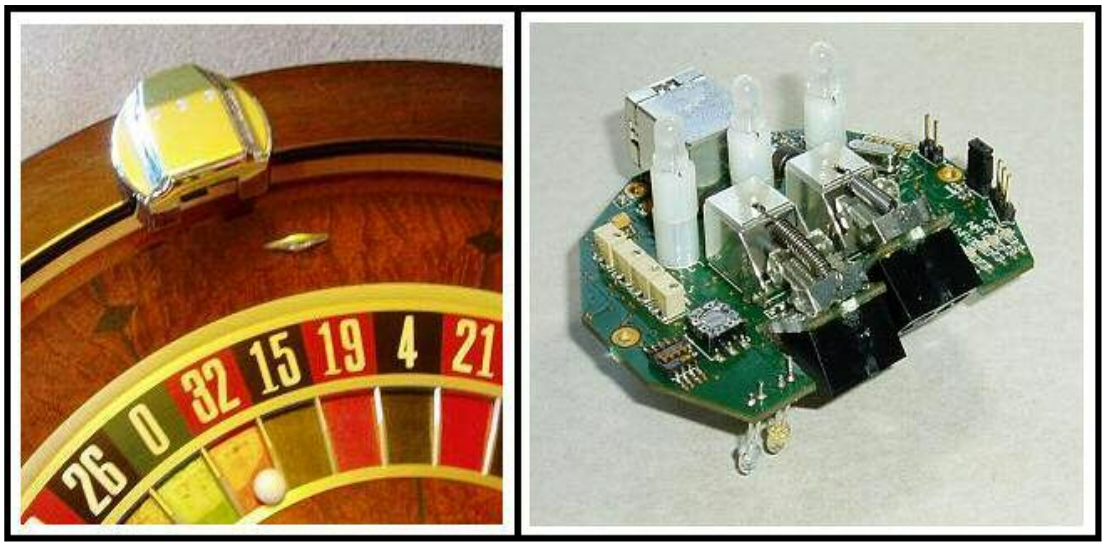
Requirement
In this case a previous client, having seen what we can do, asked us to develop a device for reporting the 'winning number' of a ball on a roulette wheel.

Solution
This solution involved multiplexing a number of focused LED light sources onto the roulette wheel and measuring their reflected light intensities to determine wheel and ball position.

Two LED's were focused on the number ring and one on the ball back. Each was made adjustable to allow alignment on site by means of a mechanism fabricated from electrochemically etched tin plated parts. A further sensor employing a similar technique was used for the ball track. Communications and power was provided by a USB interface. An ARM based microcontroller was used to carry out data acquisition and compute the location of the white ball.

Summit designed the electronics, the PCB, the adjuster mechanism and wrote the firmware.

Result
After design completion Summit was contracted to supply tested Reader Head chassis in batches of 100 with warranty.



Left: Reader head chassis cased and in use. Right: Reader head chassis.

Invoices & Deliveries to The Oaks, 17 Elnor Lane, Whaley Bridge, High Peak. SK23 7EX. UK.
Tel +44 (0) 1663 719572 Fax +44 (0) 1663 719570 Email: adrianm@summitelectronics.co.uk