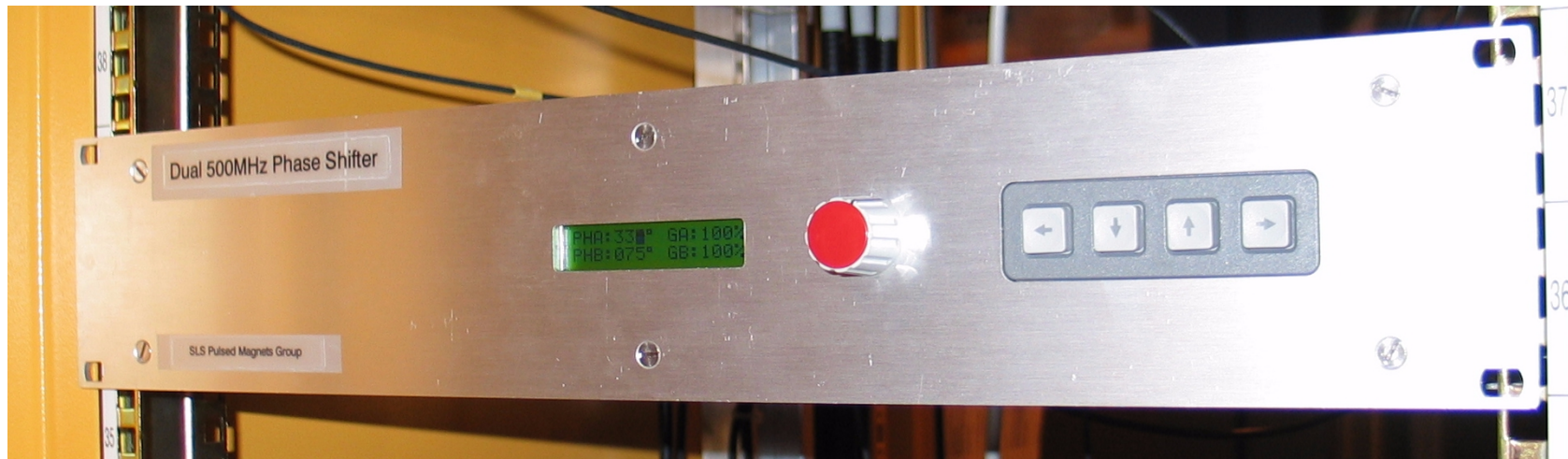




Phase Shifter and IQ Demodulator

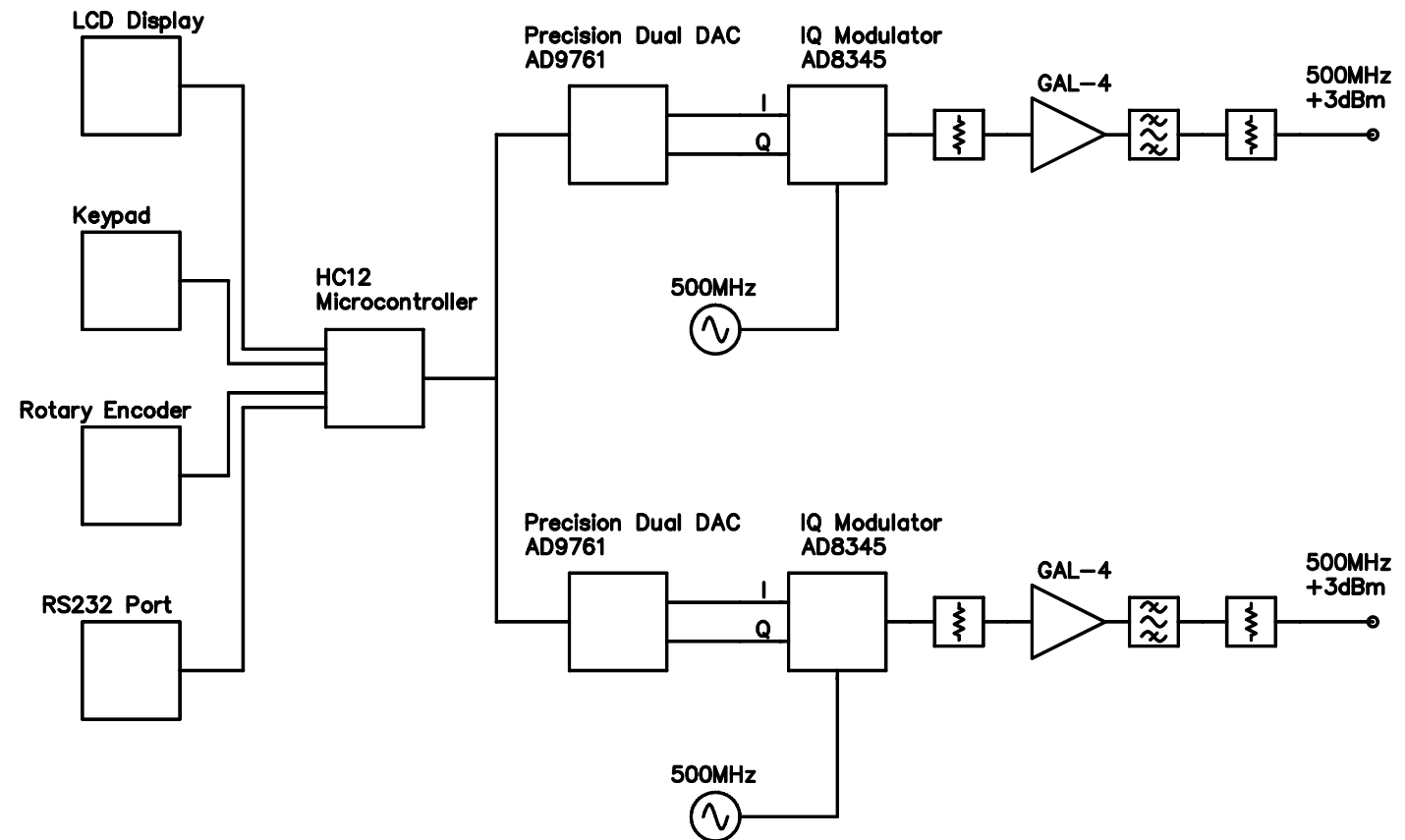
M Gaspar, C.Gough, M Mailand

Phase Shifter



- LCD / knob / keypad gives easy user interface
- RS232 on rear panel
- No moving mechanical parts so zero hysteresis
- Absolute errors difficult to measure but probably $< \pm 2^\circ$ RF
- Resolution is unlimited - interesting for precision timing applications
(e.g. 0.1° RF step gives 0.55ps time step)

Phase Shifter



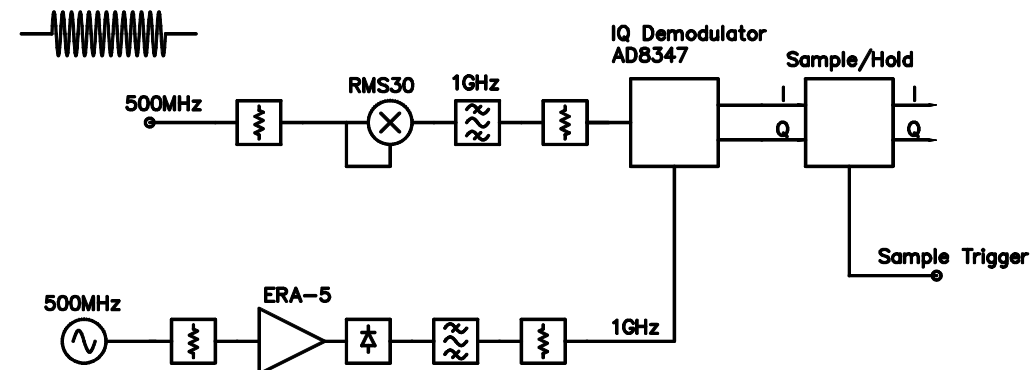
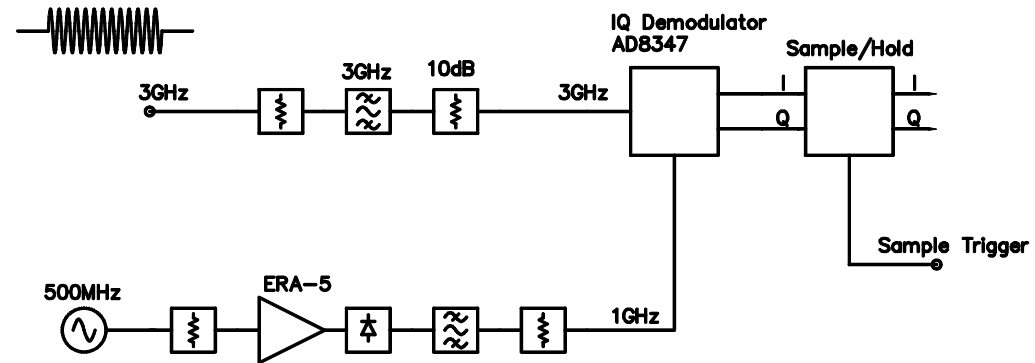
- One microcontroller can control many channels
- High precision dual DAC - errors are dominated by IQ Modulator
- Power levels limited to around 0dBm
- Software took over two months !

IQ Demodulator

3GHz and 500MHz
versions

I + Q outputs are read by
computer

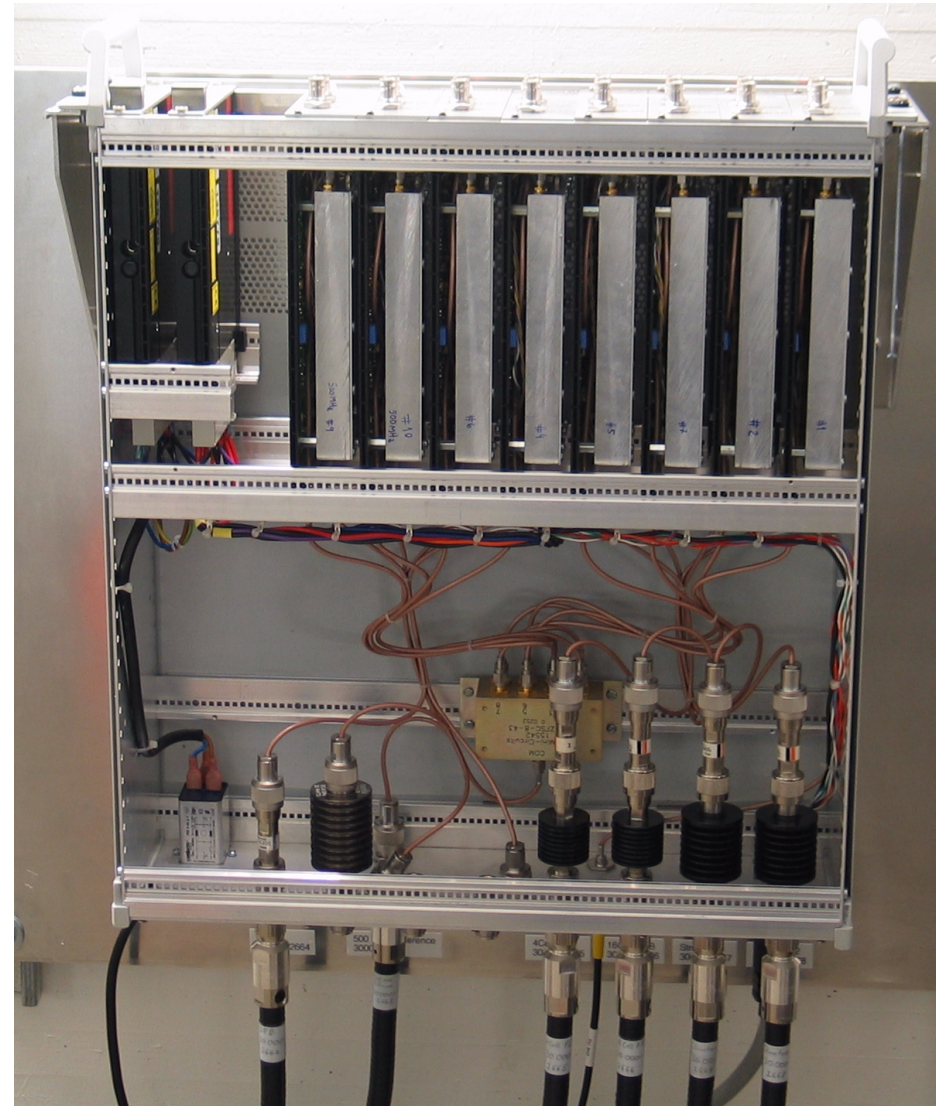
Computer finds modulus and
argument from $\text{SQR}(I^2+Q^2)$
and $\text{ARCTAN}(Q/I)$



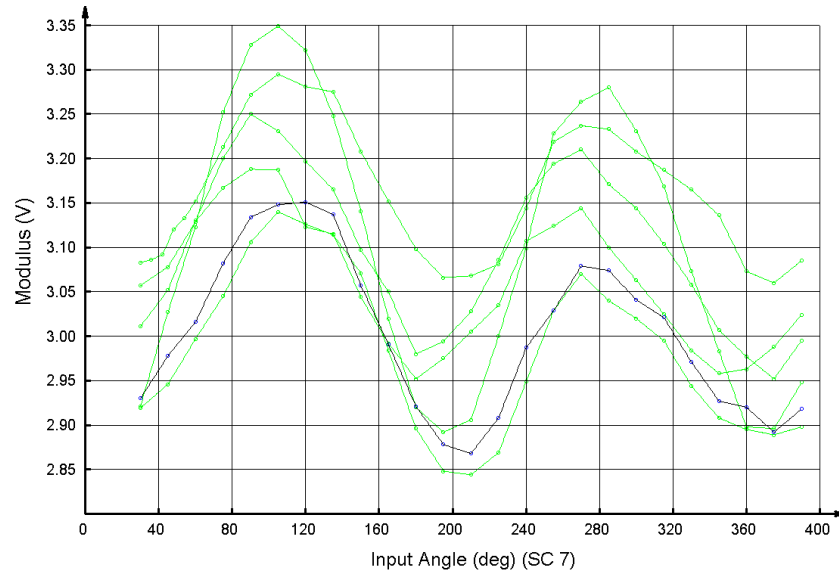
IQ Demodulator



Short cable runs in temperature controlled environment help maintain phase stability

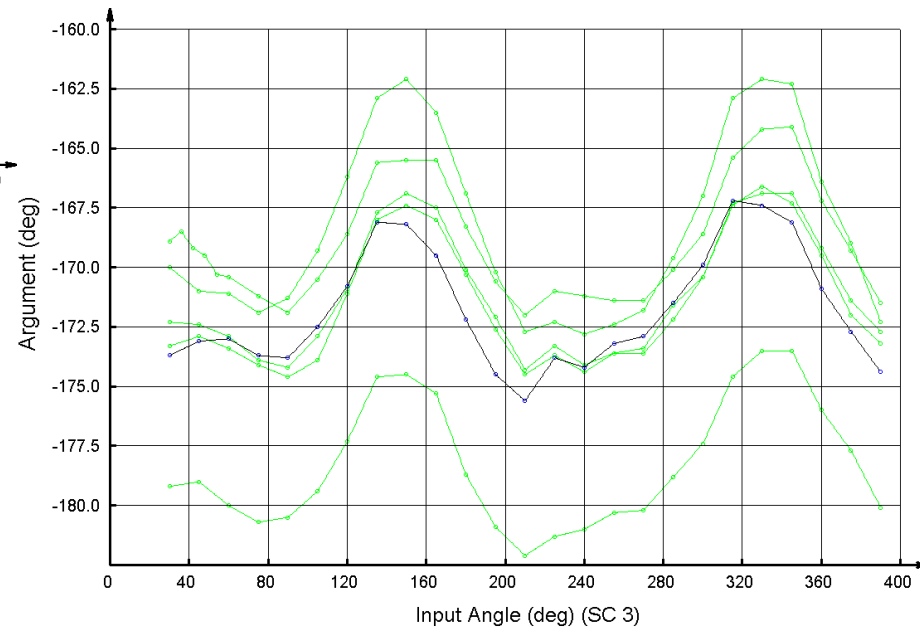


IQ Demodulator



Errors are more likely to be from the mechanical phase shifter than from the AD8347

Modulus and argument error plots



IQ Demodulator

Profoundly
satisfied
colleague !

