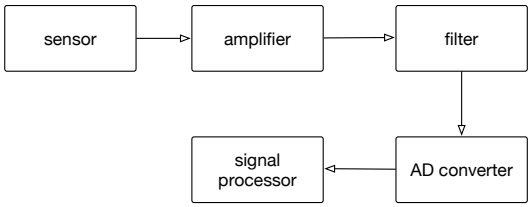
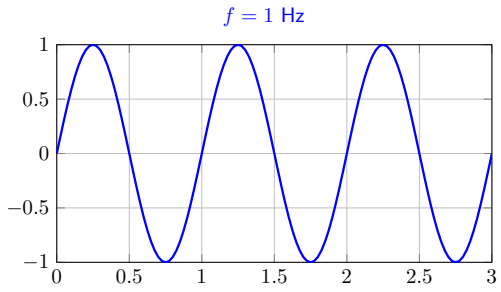
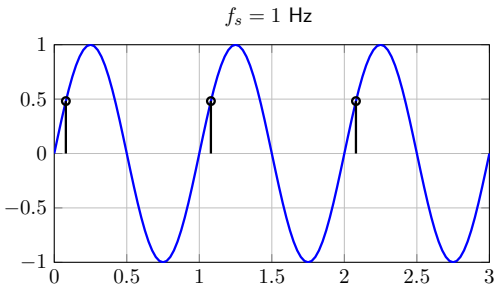
Block diagram of measurement systems



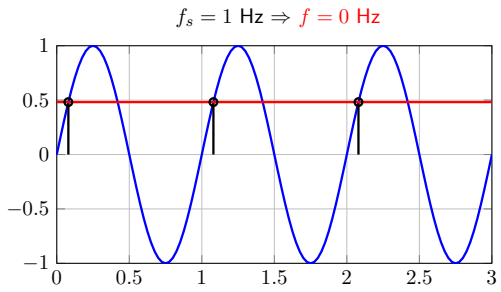
Sampling and aliasing



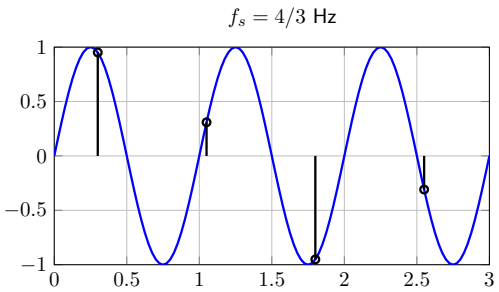
Sampling and aliasing



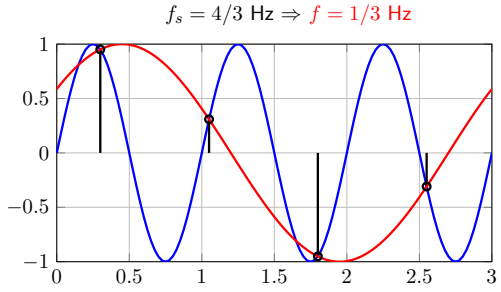
Sampling and aliasing



Sampling and aliasing



Sampling and aliasing



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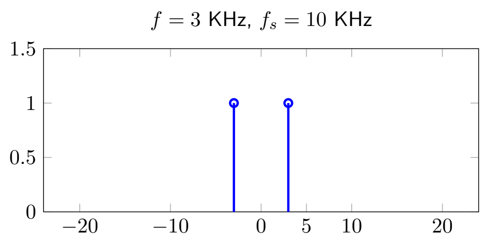
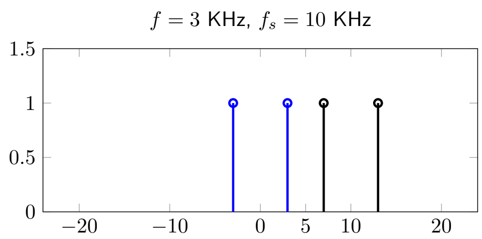
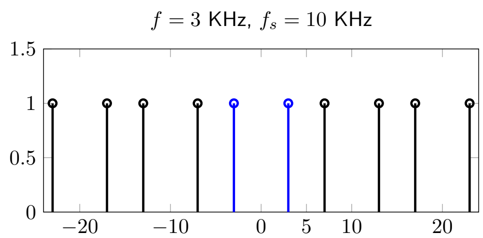


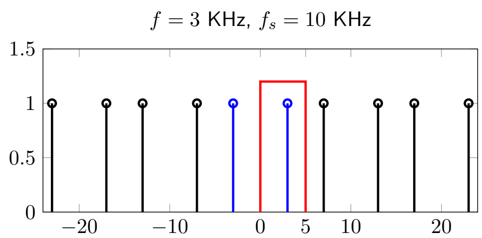
Sampling and aliasing



Sampling and aliasing

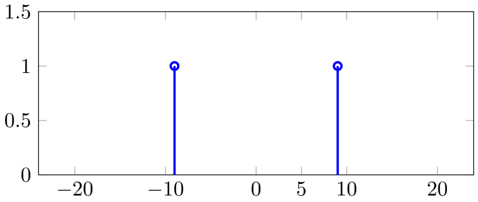


Sampling and aliasing



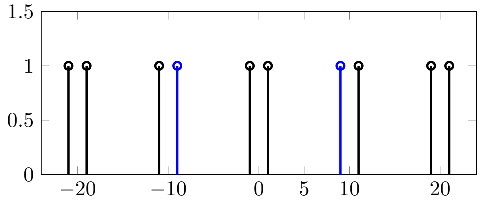
Sampling and aliasing

$f = 9$ KHz, $f_s = 10$ KHz



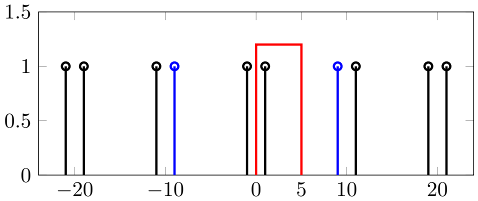
Sampling and aliasing

$f = 9$ KHz, $f_s = 10$ KHz

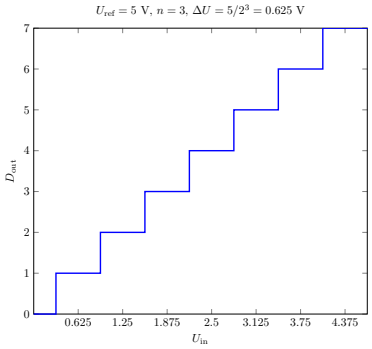


Sampling and aliasing

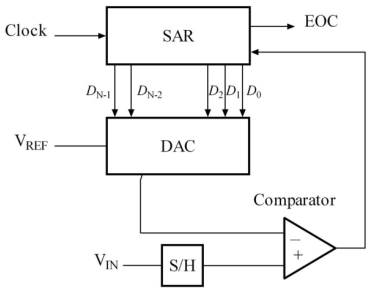
$f = 9$ KHz, $f_s = 10$ KHz



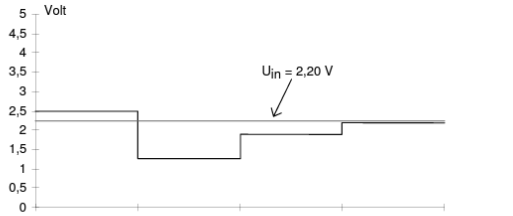
ADC: example



Successive approximation ADC



Successive approximation ADC



DA_{in} =	1000	0100	0110	0111	0111
DA_{out} =	2,5 V	1,25 V	1,87 V	2,19 V	Done!
$Comp_{out}$ =	L	H	H	H	

Fig 4.34 The DAC output successively approaches the analog input voltage

Flash ADC

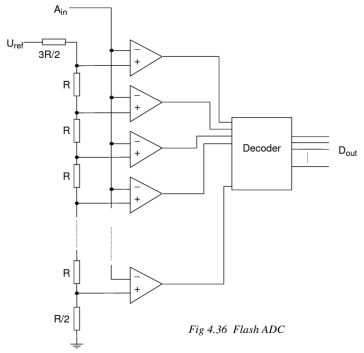


Fig 4.36 Flash ADC

3-Bit Flash ADC

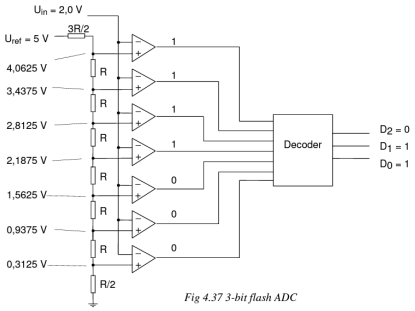


Fig 4.37 3-bit flash ADC

Dual-slope ADC

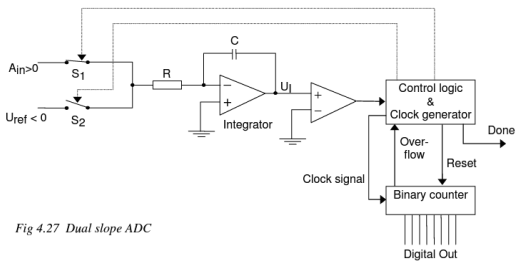


Fig 4.27 Dual slope ADC

Grounding: one end only

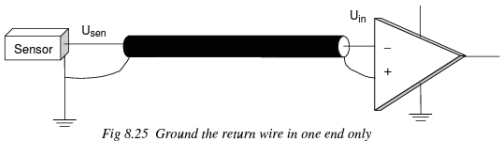


Fig 8.25 Ground the return wire in one end only

Grounding: shielded pair cable

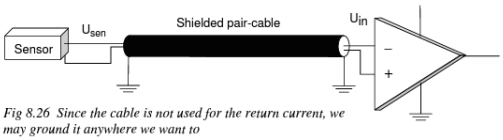


Fig 8.26 Since the cable is not used for the return current, we may ground it anywhere we want to

Grounding: differential signals

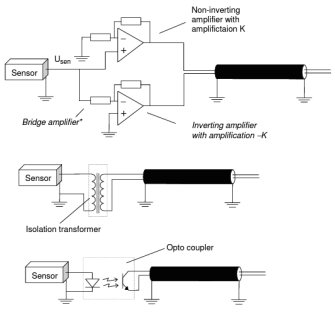


Fig 8.28 There are several ways to make the signal differential