



Intech INSTRUMENTS LTD

May 2008

Analogue or Digital?

Historical May



8th May 1968

Notorious gangster twin brothers Ronnie & Reggie Kray are arrested on suspicion of murder in London.



16th May 1990

Puppeteer Jim Henson, creator of 'The Muppets' dies at the age of 53 in New York.



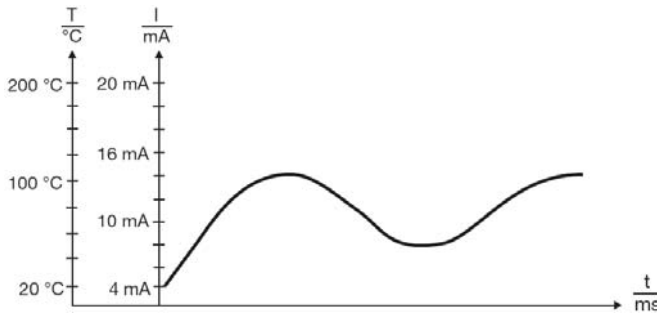
28th May 1968

Kylie Anne Minogue, Australian singer, songwriter & actress born in Melbourne.

Many instruments on the market are now microprocessor controlled. Microprocessors have advantages such as programmability but also they allow the use of a digital interface to transmit the measured process variables.

Principles of Analog Signals

A measurement, e.g. temperature, is converted to a signal that is proportional to a measured temperature. The signal could be a 4-20mA current. Each temperature value corresponds to a unique signal amplitude e.g. 0-100 °C / 4-20mA. So, as the temperature rises, so does the analog signal in proportion to the measured values.

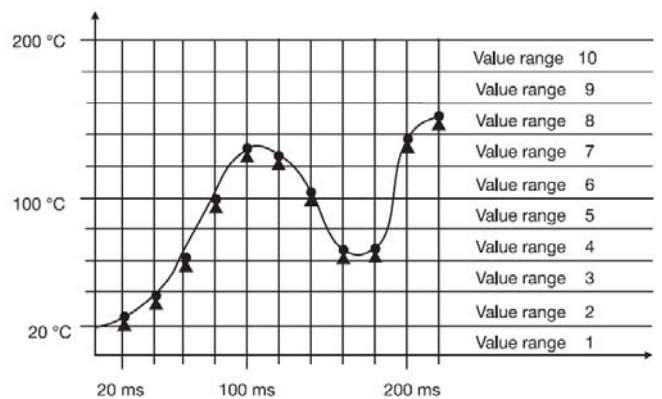
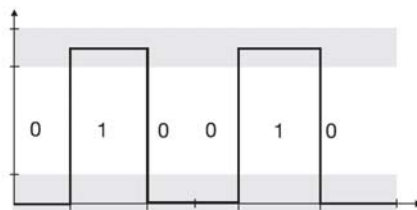


Photography has always been 'digital'

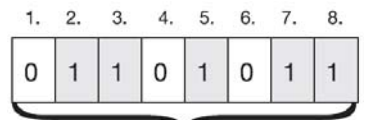
Principles of Digital Signals

When a signal is digitally processed, the continuous analog values must be divided into discrete signal levels and 'polled' within a specific time - the sample time. Conversions are then made by an analog to digital (A/D) converter. 16-bit resolution is common.

The diagram on the right shows ten sample levels and a sample time of 20ms. In reality this 'digitised' signal would be very poor. Intech use 16-bit resolution so there are $2^{16} = 65536$ possible signal 'levels'.



Bits (Left), Bytes (Right)



1 byte

Digital interfaces can transmit in only two conditions: 'High' (on) or 'Low' (off). The voltages depend on the interface type used. Each state (high or low) is known as a 'BIT'. In practice, devices never send single bits but at least 8 bits in a block of data. Such a block is known as a 'BYTE'.

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The Intech Difference

- ◆ New Zealand owned & operated
- ◆ Christchurch, Auckland, Hawkes Bay
- ◆ Service & sales facilities
- ◆ 25 years in the industry
- ◆ Experience you can rely on



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Use Compressors? Take A Look At These.

HB Products have designed some very clever units specifically for the Refrigeration sector. These are proven units and already have a very good reputation in Europe and the US. Two variants are available:-



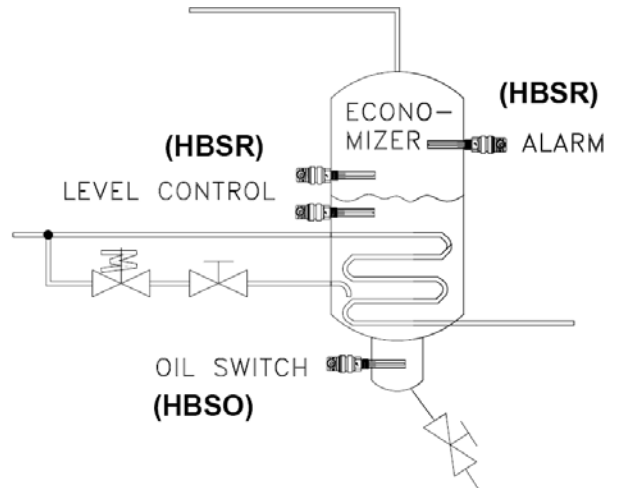
HBSO



HBSR

HBSO & HBSR Units (above) and a possible application (below). Proven units in the field.

- HBSO:-**
- ▣ Control of Oil Return, CO2 Compressors
 - ▣ Alarm low Oil Level
 - ▣ Screw Compressors lubricating control
 - ▣ Hydraulic systems
- HBSR:-**
- ▣ R717 and all synthetic refrigerants
 - ▣ Control of Liquid injection
 - ▣ High/Low Level Alarm
 - ▣ Control of Water/brine systems
- Why?**
- ▣ Fail Safe Execution
 - ▣ High Pressure applications
 - ▣ LED indication
 - ▣ No moving parts
 - ▣ Split type



Intech support NZ Industry



Make an Impact with Intech

JUMO DELOS Electronic Pressure TRANSMITTER / SWITCH

This unit is so hot that the press is still running. Available with a variety of outputs both switching AND analog outputs.

- ◆ Brilliant LC Display to show process value & unit status.
- ◆ High grade stainless steel - suitable for sanitary applications.
- ◆ 1xPNP, 2xPNP or 1xPNP + 4-20mA or 0-10VDC outputs.

