Crowcon Technical Note

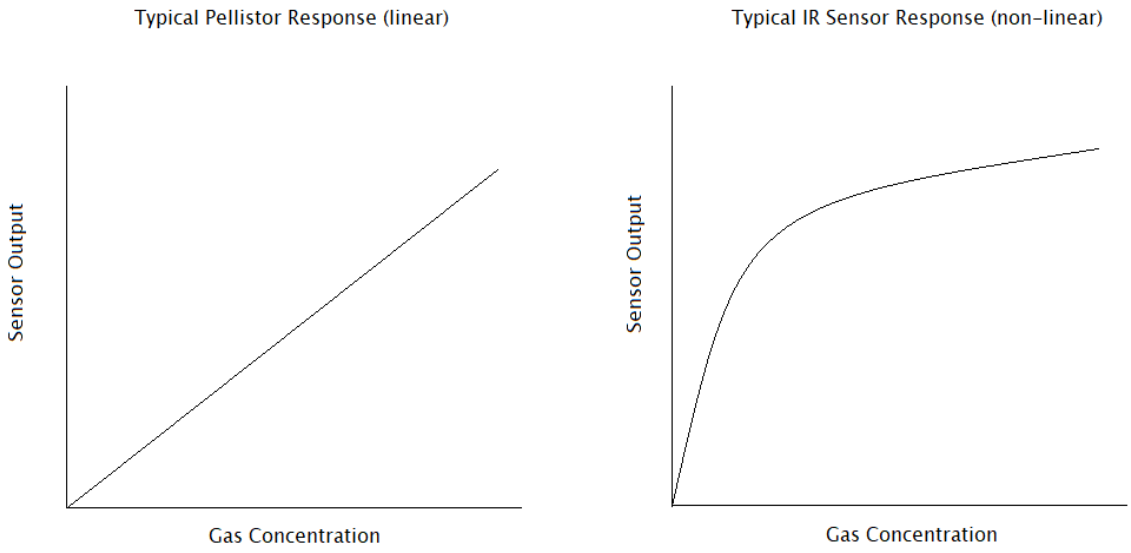
Document Reference: **GEN080 – Infra Red (IR) sensors - calibration**

Date: **9/7/2018**

Document applies to: **Fixed and Portables Detectors with IR sensors**

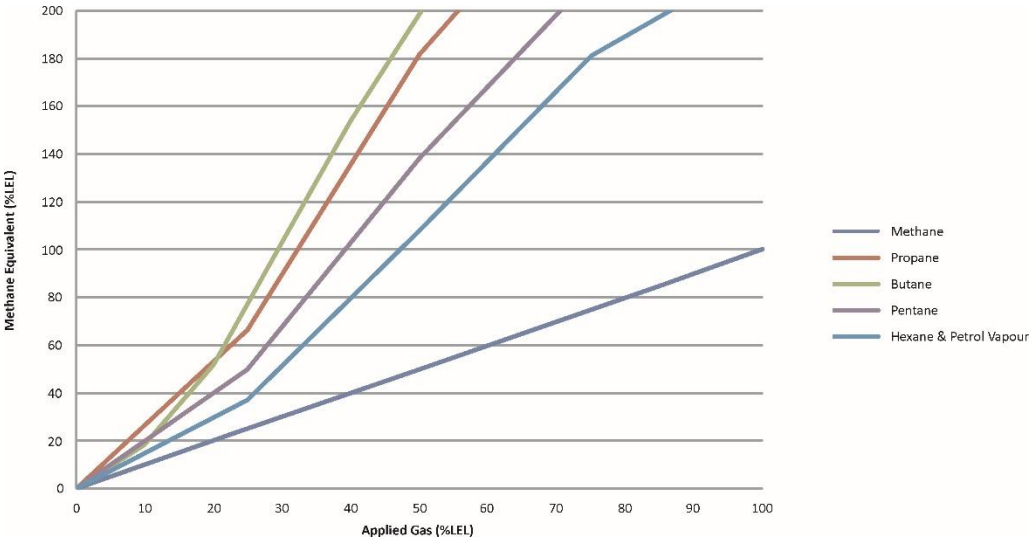
Infra-Red (IR) sensors are a popular solution for the detection of flammable gases, particularly in applications not suited to traditional pellistor technology – for instance in low oxygen environments.

However, unlike pellistors, the output signal from an IR sensor is not linear:



The sensor signal has to be linearized to the specific target gas. An IR gas detector will therefore only provide a linear response to the gas for which it is calibrated; it will still respond to other hydrocarbons gases/vapours, but in a non-linear fashion, as shown in this relative response chart for a methane linearized detector:

Crowcon Detection Instruments Ltd
172 Brook Drive, Milton Park, Abingdon, Oxfordshire, OX14 4SD, UK
Email: customersupport@crowcon.com Web: www.crowcon.com



This non-linearity has important implications for the calibration of IR detectors:

1. Correction (multiplication) factors published for pellistors, are not applicable to IR sensors.

2. IR detectors should only be calibrated using the target gas, or using the **specific** surrogate gas at the concentration specified by Crowcon. This information can be found in the product specific technical notes and data sheets available on the Crowcon website, e.g.

   FSIR004 IRmax IREX Cross Calibration Technical Note (partner's login required)

   Xgard IR Technical Notes (partner's login required)

   Xgard IQ IR sensor module data sheets

3. These cross calibration values will have been derived through testing and validation. **It is not possible to extrapolate or calculate cross calibration values for other concentrations of surrogate gases.**

For more information please contact customersupport@crowcon.com +44 (0)1235 557711.

Crowcon Detection Instruments Ltd
172 Brook Drive, Milton Park, Abingdon, Oxfordshire, OX14 4SD, UK
Email: customersupport@crowcon.com Web: www.crowcon.com