METHANE detection

Methane is produced by many natural and human-influenced sources. There are several different techniques of methane detection. We offer method of mid-infrared optical absorption based on LED-PD optopair.

Methane has the main absorption band at 3200-3400 nm. Weaker absorption bands that can be used for detection are located around 2300 nm and 1650 nm (the data are taken from HITRAN Catalogue). So, we recommend using:

- for compact measuring cells and/or for detection of low CH4 concentrations: light emitting diode Lms34LED and Lms36PD series photodiode;
- for long-path measuring cells and/or for high CH4 concentration detection: light emitting diode Lms23LED and Lms24PD series photodiode.

The features of LEDs and PDs for CH4 detection:

Advantages of our devices:

- Possibility to arrange a compact design of an optical cell thanks to compact size of the LED chip – 0.35 × 0.35 mm
- No need of using additional optical filters – LED emission band width is comparable to absorption band width of CH4
- Low power consumption (<1 mW)
- Short response time (10–50 ns)
- Possibility to achieve modulation ranges of up to 100 MHz
- Operation temperatures up to +150°C
- Lifetime of 80 000 hours

LED-PD based Evaluation systems for methane

For quick start we offer out-of-the-box solutions that can be launched with minimal effort – evaluation systems:

- Flexible evaluation kit with modular design that includes:
  - Light emitting diode Lms34LED (other LED is available) with an LED driver
  - Photodiode Lms36PD (other PD is available) with a preamplifier
  - SDM synchronous detector

- MDS-3 system with a 3-pass gas chamber that provides optical path about 70-80 mm long and efficient focusing of the LED emission on the PD sensitive area.
  The system includes:
  - 3-pass optical chamber
  - Light emitting diode Lms34LED with an LED driver
  - Photodiode Lms36PD-05 with a preamplifier
  - SDM synchronous detector

- NEW MDS-4 methane evaluation system – a low-cost system with “on-board” design that includes a very compact optical cell and electronics for LED power supply and PD signal amplification all-in-one.