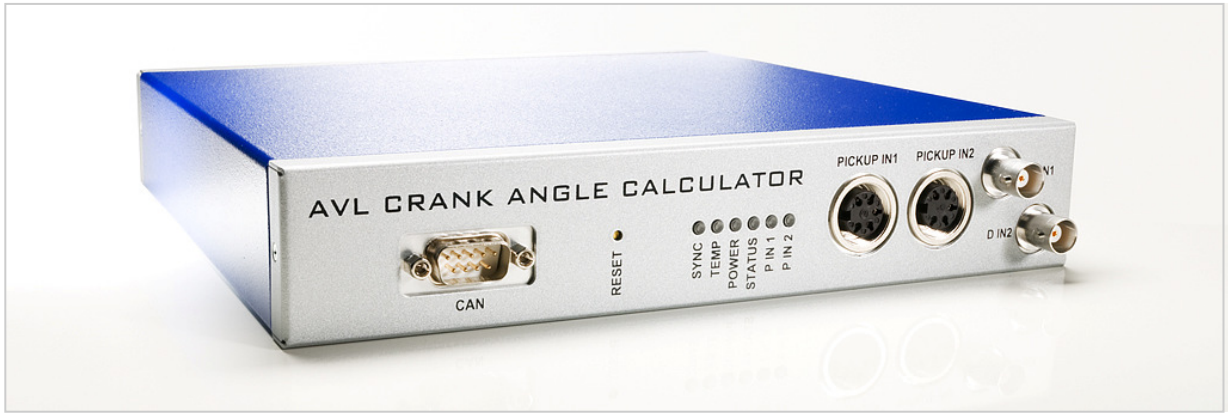

SENSORS AND SIGNAL CONDITIONING

4CA1

CRANK ANGLE CALCULATOR

Description

The high dynamic Crank Angle Calculator 4CA1 is designed for acquisition and conditioning of signals which are used as crank angle basis for indicating measurements. Different types of signal can be processed e.g. inductive, TTL, Hall-sensor or ECU-signal. Pulses - or also pulse sequences - can be used as input signals whereas pulse gaps are accordingly adjusted and used as trigger.

The engine speed can now be calculated and outputted via DAC. The device can furthermore be used as a real-time CAN interface for indicating devices (optional).

Application

Pulse multiplication of different signal sources and conversion into crank angle marks which are used as basis for indicating measurement. Typical application fields of the crank angle calculator:

- In-vehicle indicating: passenger car, commercial car, two-wheelers
- Indicating at the test bed
- Acquisition of ECU-signals (TTL)

Benefits

- Highly dynamic operation mode
- Parameterization: IndiCom / stand-alone parameterization software
- Firmware update via RS232
- Stand-alone solution or easy integration in the IndiAdvanced series (I/O Processor)
- Time resolution 20ns
- Input signals compatible to predecessor 3069
- Can be cascaded with MicroIFEM
- Optional activation of the RT-CAN functionality is possible

Technical Insight

- Input:
  - 2 channels for CDM & Trigger
  - Signal: TTL (ECU), digital, inductive, Hall sensor / different configuration of flywheel
  - Maximum number of marks: 1024
  - Maximum speed: 20,000 rpm
  - Frequency of inductive marks: 50 kHz (approx. 150 marks at 20,000 rpm)
  - Frequency of digital marks: 240 kHz (approx. 720 marks at 20,000 rpm)

- Output:
  - Multiplier function, any kind of multiplication possible
  - CDM / trigger available as TTL, RS422, LVDS
  - Angle resolution: max. 0.025 deg CA
  - Angle frequency: max. 1.2 MHz (approx. 0.1 deg CA at 20,000rpm)

- General:
  - Compatible with MicroIFEM family regarding parameterization
  - 9.5“ / 1HU

New Functions

- Tachometer: Analog output of instantaneous engine speed
- RT-CAN output (optional): Output via the CAN interface of any real-time values (statistics or current values) coming from an AVL indicating device. In addition any other cyclic result values can also be outputted.