imc CANSAS-IGN

high precision • cylinder recognition • high-speed snapshot

Ignition angle measurement module with CAN output

imc CANSAS-IGN at a glance

- CAN output of all processed signals
- High speed transient signal capture in Snapshot Mode; transfer of buffered signals via CAN
- Cylinder recognition determines which piston(s) fire based on a camshaft position sensor
- High sampling rate and high resolution for even the highest RPM engines

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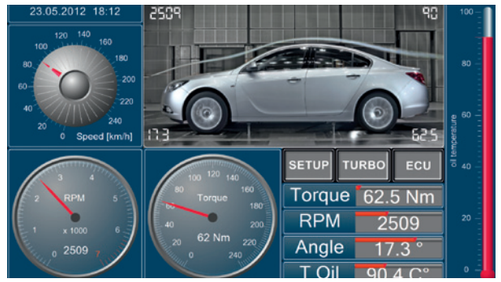
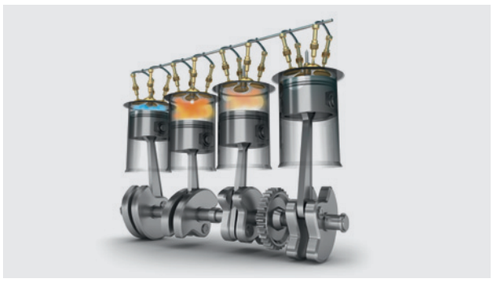
Ignition angle measurement module with CAN output

Particularly now in the age of hybrid vehicles, efficient and environmentally friendly combustion engines are a top priority for the world's automotive manufacturers. Precise information about ignition timing is essential to understand and optimize efficiency in spark-ignited gasoline combustion engines.

With the convenience and ease-of-use of the imc CANSAS family, the imc CANSAS-IGN provides universal CAN outputs of RPM and per-cylinder ignition timing for any spark-ignited engine up to 12 cylinders.

The imc CANSAS-IGN is compatible with a wide range of ignition sensors and crankshaft position sensor types. The module determines the ignition angle and the engine's current RPM value and makes these computed values available as a CAN and/or analog data stream. To assist in setup diagnostics, the module's unique Snapshot Mode provides a low-speed download of the high-speed transient signal capture.





Enhancing your testing productivity

...with ease of integration:

- From test stands to mobile applications - imc CANSAS-IGN is simple to integrate into virtually any existing test environments due to its configurable CAN-Bus outputs.

...with high speed:

- imc CANSAS-IGN captures a signal's crossing through defined thresholds at a resolution of a fraction of microseconds. From this, the ignition angle can be calculated with a high precision of 0.1 degree of the crankshaft, up to 20,000 RPM. The module has a sampling rate of 3 MSamples/sec.

...with its adaptability:

- Results can be recorded by any CAN data acquisition system, and combined and compared with other measurement data.

Ignition angle measurement module with CAN output

The prototype engine with a newly optimized ECU has just been delivered for testing, and you need the results fast. Although you're set up for evaluating the thermal stresses, the ECU team wants ignition timing measurements, as well as the usual stress tests. You're in for a late night of trying to integrate incompatible systems. What's more, the combustion analyzer is going to be tied up for days. Here is the good news: imc CANSAS-IGN provides a high-speed, high-resolution measurement of ignition angle and RPM, and is compatible with any dynamometer and data acquisition system with CAN inputs. Even the initial setup will be easy because the high-speed Snapshot Mode lets you see exactly what is going on.

Who benefits from imc CANSAS-IGN?

- Engine developers requiring a field and/or test stand compatible measurement system
- Vehicle manufacturers combining engine timing with other vehicle measurements
- Integrators building complete test stations for the automotive industry

In Practice: system study

Isolated inputs: Compatible with all common sensors

Four fully-conditioned isolated inputs are provided for connecting the ignition signal (SPARK), crankshaft rotation pulse (ANGLE), absolute angle reference signal (REF) and the camshaft position signal (CAM).

Based on high-speed measurement of the ignition signal and crankshaft rotation pulse (with optional absolute angle reference signal), ignition angle and engine RPM can be simultaneously computed and transferred via CAN as latest or averaged values. Cylinder specific measurements are available by utilizing the optional CAM signal input.

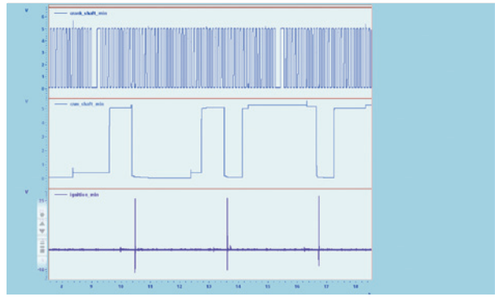
With isolated and fully-conditioned, 3 MSamples/sec inputs (low-pass, AC-coupled, including individually selectable signal level and hysteresis), the imc CANSAS-IGN module processes all signals with software selectable settings, outputting RPM and timing angle for each cylinder via configurable CAN and analog outputs.

Thanks to the built-in display, the imc CANSAS-IGN module can also be used as a high-speed assistant for investigating the ignition angle, even when data logging isn't required.

Using the included imc CANSAS software and any compatible PC-to-CAN interface, the imc CANSAS-IGN may be user-configured for a wide range of input signal combinations. This includes absolute angle determination from a missing tooth, conditioning of the threshold, edge and hysteresis, filter properties necessary for a variety of ignitions and the crankshaft/camshaft signal electrical standards.

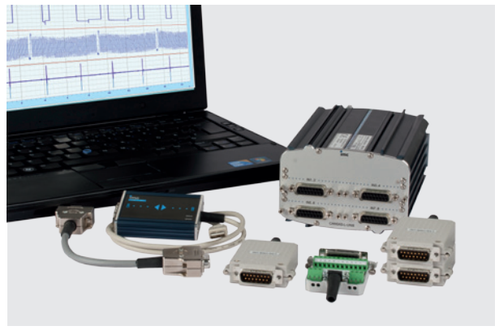
Thus, the results of the high-speed ignition angle measurement and engine RPM can be easily recorded via any CAN equipped data logger, such as the imc BUSDAQ or more full-featured imc CRONOS*flex*.

Always see what's going on: Snapshot Mode and integrated display

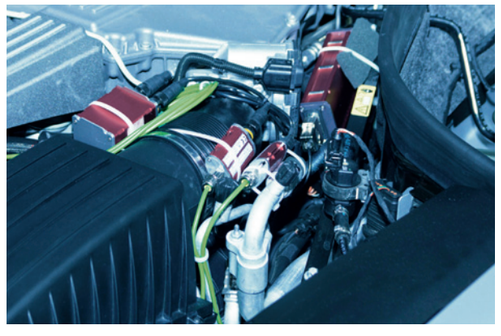


The high-speed Snapshot Mode captures the complete signal envelope, buffering and transferring this to the data logger via the CAN interface. The built-in display is another helpful feature which allows the module to be used as a hand-held assistant, even when data logging isn't required and a computer isn't used.

imc CANSAS product family: distributed data acquisition



Providing a universal CAN interface to the "real" physical world, the imc CANSAS modules find a home in almost any test engineer's toolbox. Easily integrated into any CAN data acquisition environment, the imc CANSAS modules are available in housings suitable for any test environment: in-vehicle, under-the-hood, as well as rack and DIN-rail mounting for test stands. With integrated signal conditioning, amplifiers and digitizers for voltage, current, temperature, high isolation, encoder and digital inputs, there is an imc CANSAS module compatible with virtually every sensor.



Test engineers benefit from the adaptability built into the imc CANSAS modules. Modular expandability to high channel counts, and sample rates of up to 1,000 Samples/sec allow both centralized and distributed system configurations to benefit from the imc CANSAS design. Serial connectivity with easy module interchangeability is key to both imc CANSAS end users and system integrators alike.

Although only a decade has passed since imc introduced the first CAN based measurement modules, today there are tens of thousands of imc CANSAS modules in use worldwide. From automobiles to aircraft, and ocean liners to wind turbines, engineers across industries have found the imc CANSAS modules to be an easy way to efficiently and economically meet testing requirements.

Facts & Features

imc CANSAS-IGN

Operating conditions	
Operating temperature:	-30° C to +85° C condensation allowed
Shock resistance:	50 g pk over 5 ms

Measurement channel	
Ignition signal:	Inductive transducers, clamp ignition sensor at ignition coil's primary or secondary line or logic level signals
Crankshaft signal:	The engine's VRS sensor or Hall sensor or logic level signals are supported; various patterns
Index (reference) channel:	This is the reference output (zero impulse) of an incremental encoder attached to measure crankshaft position.
Camshaft position:	Freely editable pattern with 1 to 20 signal edges per camshaft revolution; use is optional
Channel conditioning:	All channels fully conditioned. The slopes of the edges, as well as the hysteresis for the module are adjustable. For each channel low pass filters, AC coupling, absolute value calculation can be activated.
Time resolution:	333 ns (counter frequency 3 MHz)
Crankshaft sensor:	36-1, 36-2, 60-1, 60-2, 36+1, 24-1 / 2 to 3600 cogs / 1 pulse per revolution
Input voltage range:	±40 V differential
Switching threshold:	-40 V to 40 V
Hysteresis:	0 V bis 40 V

Output signals	
Analog output angle:	-10 V to +10 V
Analog output RPM:	0 to 10 V
Digital outputs:	TTL-conditioned copy of all input signals
CAN output:	Angle / RPM, max. 200 Hz
Power supply	
Supply voltages:	10 to 30 V

CAN interface	
CAN-bus rates	Software selectable of up to 1 Mbit/s
CAN Standard	CAN interface equipped in accordance with the CAN in Automation Draft Standard 102 Version 2.0, CAN physical layer for industrial applications

Software	
imc CANSAS	Free, imc CANSAS configuration software
imc CANSASpro	Optional, imc CANSAS configuration software, real-time data viewer and data recording software

imc CANSASpro

Bring the capability of imc CANSAS modules directly to your desktop with imc CANSASpro software.

Benefit from our international partner network

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