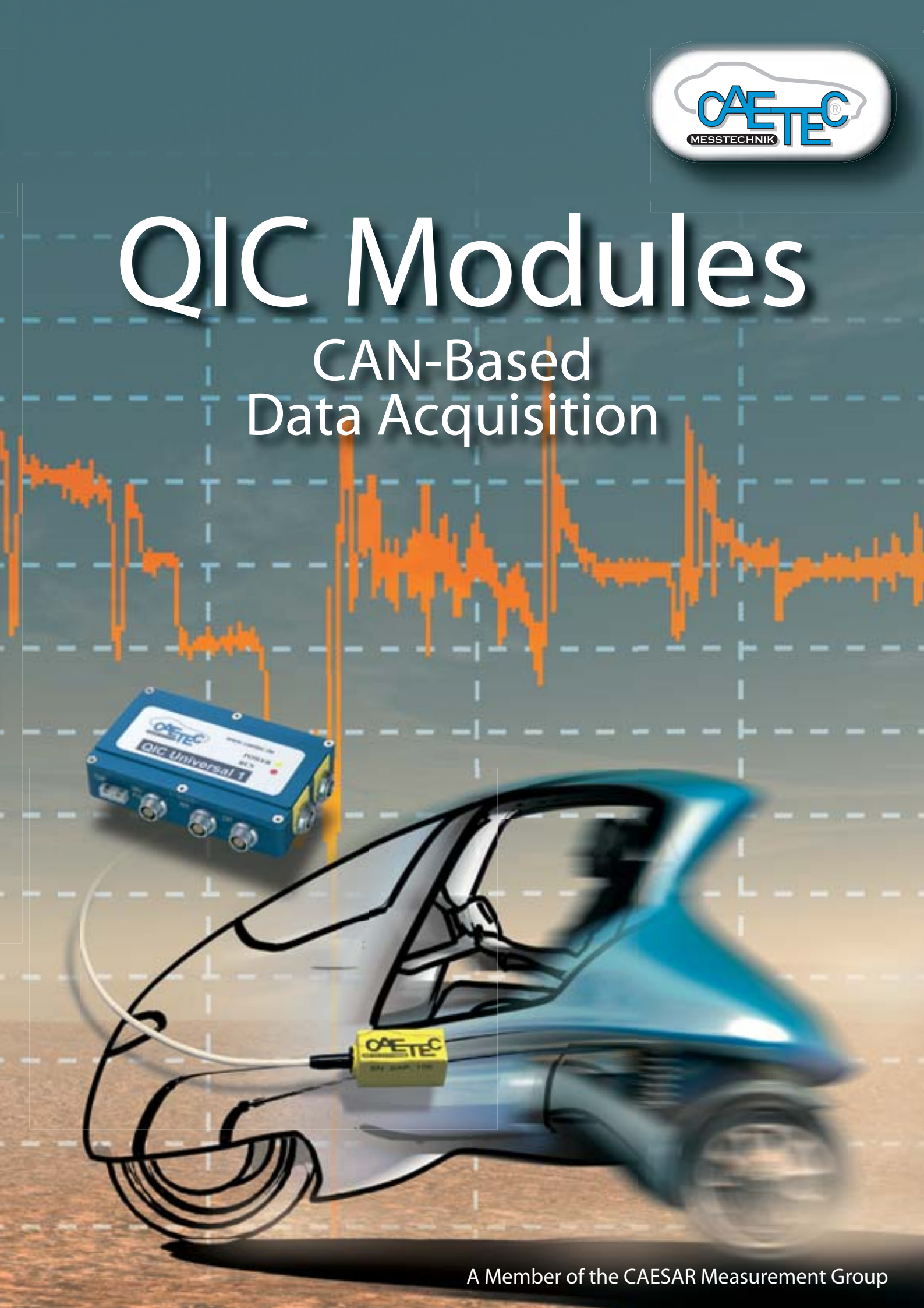
QIC Modules

CAN-Based Data Acquisition



A Member of the CAESAR Measurement Group

QIC and Easy :
CAN-Based Data Acquisition

QIC Modules for Signal Conditioning




Module Type	Thermo	PT 100	Analog with sensor excitation	Analog w/o sensor excitation
Signal conditioning	4/8/16	8/16	4/8	8/16
	16 bit	16 bit	16 bit	16 bit
	1-10 Hz	1-10 Hz	1-1000 Hz	1-1000 Hz
	-58 to 2192 ˚F (-50 to 1200 ˚C)	-58 to 842 ˚F (-50 to 450 ˚C)	±5 ±10 ±20 ±60 V ±25 ±100 ±500 ±1000 mV**	±5 ±10 ±20 ±60 V ±25 ±100 ±500 ±1000 mV**
	LP	LP	5 pole FIR	5 pole FIR
	-	-	5/8/10/12 V opt.15/20 V	-
	-	-	50 mA per chan.	-
Power supply	7-60 V DC	7-60 V DC	7-60 V DC	7-60 V DC
	3 W	2 W	5 W	3 W
Galvanic isolation	100 %	100 %	100 %	100 %
	500 V	500 V	500 V	500 V
Physical properties	4.7 x 2.75 x 1.7 in. (120 x 70 x 43 mm)	4.7 x 2.75 x 1.7 in. (120 x 70 x 43 mm)	4.7 x 2.75 x 1.7 in. (120 x 70 x 43 mm)	4.7 x 2.75 x 1.7 in. (120 x 70 x 43 mm)
	16.2 oz. (460 g)	17.3 oz. (490 g)	18 oz. (510 g)	13.4 oz. (380 g)
	-40 to 185 ˚F (-40 to 85 ˚C)	-40 to 185 ˚F (-40 to 85 ˚C)	-40 to 185 ˚F (-40 to 85 ˚C)	-40 to 185 ˚F (-40 to 85 ˚C)
	IP 67	IP 67	IP 67	IP 67
	2x22 pin Military	4x16 pin Fischer	8x5 pin Fischer	2x22 pin Military

QIC Modules are engineered and designed to decentralize data acquisition of different physical quantities like temperature, strain, frequency, current, high and low level voltage in mobile applications. Reduced wire routing is achieved by mounting the signal conditioning modules close to the transducers, which results in considerable cabling cost and time savings. Only one single cable between modules is needed for data transfer, configuration and power supply! The CAN network implementation allows a distortion-free digital transmission of the produced signals.

The QIC modules provide a smart link between the analog sensors and the digital CAN-Bus. Each module is a small and independent data acquisition system offering connectors for 4, 8 or up to 16 parallel sensors - depending on the configuration. It comprises not only high precision amplifiers and ADC for signal conditioning but also the necessary excitation for the sensors. All channels are galvanically isolated from one another and from the test object.

Currently specific modules for the direct connection of thermocouples (type K) and PT100 sensors, analog transducers and strain gauge bridges are available, as well as modules offering analog, digital and pulse counter inputs. In addition, a 1-channel Universal module is offered, which can be configured for different sensor types by software. All common connector types (e.g. Lemo, Fischer, Military) are provided on request as well as customer specific configurations.

The QIC modules meet the special requirements of mobile, in-vehicle data acquisition. The rugged, watertight design and the wide operating temperature range allow mounting of the modules inside the engine compartment or any harsh environment. The low power consumption results in an exceptionally stable unit - making the modules highly suitable for any kind of temperature control.

Any number of QIC modules can be daisy-chained in a CAN-Bus network. The distance between one module and another may be up to

Technical Data




Strain	Counter	Digital	Universal	
4/8	4/8	16 In / 16 Out	1	Input channels
16 bit	16/32 bit	1 bit	16 bit	Resolution
1-1000 Hz	1-1000 Hz	1-1000 Hz	1-200 Hz	Sample rate
0.1- 100mV/V*	650 kHz	2-60 V	Type K -50 to 2192 ˚F PT 100 -58 to 842 ˚F ±5 ±10 ±20 ±60 V ±20mA Strain ±3 to ±100 mV/V Counter 0-20 kHz	Measurement ranges
8 pole Butterw.	-	-	LP	Anti-aliasing filter
1/2.5/5/10 V*	5/8/10/12 V	Open collector	5/8/10/12 V	Sensor excitation
80 mA per chan.	50 mA per chan.	1A per chan.	50 mA per chan.	Max. output current
7-60 V DC	7-60 V DC	7-60 V DC	7-60 V DC	Input voltage
6 W	2 W	3 W	2 W	Power consumption
100 %	100 %	100% (4 ch.)	100 %	Channel vs. channel
500 V	500 V	500 V	500 V	Isolation voltage
4.7 x 2.75 x 1.7 in. (120 x 70 x 43 mm)	4.7 x 2.75 x 1.7 in. (120 x 70 x 43 mm)	4.7 x 2.75 x 1.7 in. (120 x 70 x 43 mm)	4.7 x 2.75 x 0.9 in. (120 x 70 x 22 mm)	Max. dimensions
18.4 oz. (520 g)	16.2 oz. (460 g)	11.7 oz. (330 g)	10.6 oz. (300 g)	Max. weight
-40 to 185 ˚F (-40 to 85 ˚C)	-40 to 185 ˚F (-40 to 85 ˚C)	-40 to 185 ˚F (-40 to 85 ˚C)	-40 to 185 ˚F (-40 to 85 ˚C)	Operating temperature
IP 67	IP 67	IP 67	IP 67	Protection
8x7 pin Lemo	8x5 pin Fischer	2x26 pin D-Sub	3x7 pin Lemo	Connector type***

10 m, thus allowing a decentralized installation. Another special feature: If desired, neighbouring modules can be easily locked together by means of a dovetail joint, in order to build up a compact signal conditioning node, or even an integrated data acquisition system. In this case, the cable connection between the modules is replaced by special bridge connectors.

By means of a suitable CAN interface board the module network can be connected to any PC system. Configuration and data acquisition take place exclusively via the CAN-Bus. The supplied software QIC-Config is based on CCP standards, has a clear structure and is easy to understand - without previous CAN-Bus experience.

* Other input ranges on request
** High (HV) or Low (LV) Voltage configuration
*** Customer specific configurations on request

All technical data subject to change without notice!

The modules are autostart-capable and recognize the previous configuration at power-up. As each input channel has its own separate 16-bit A/D converter and anti-aliasing filter the sampling rate can be selected individually in the range between 1 and 1000 Hz - depending on the module type.

QIC and Easy :

CAN-Based Data Acquisition

QIC Thermo
QIC PT100

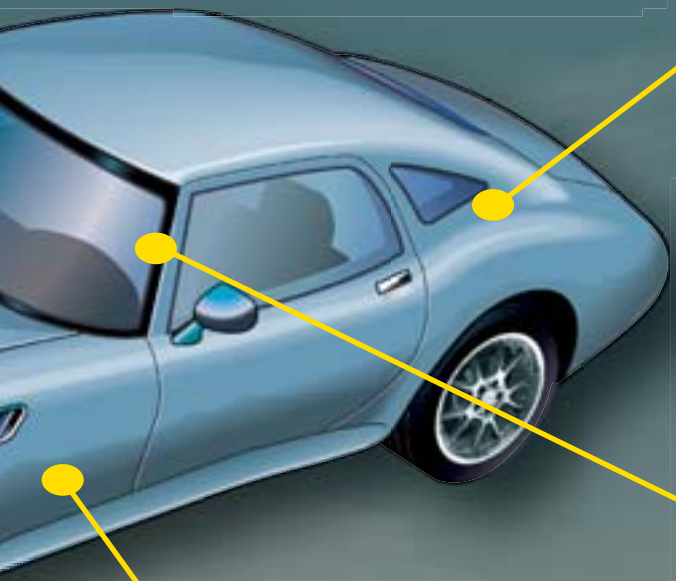
QIC Analog
QIC Strain
QIC Digital
QIC Counter

QIC Sensor Interface
for Pressure Sensors

CAETEC MESSTECHNIK

QIC viewLog
Data Logger

QIC Speed
GPS
Speed Sensor



QIC INS
GPS / Inertial
Navigation System

QIC Universal

QIC Data Logger

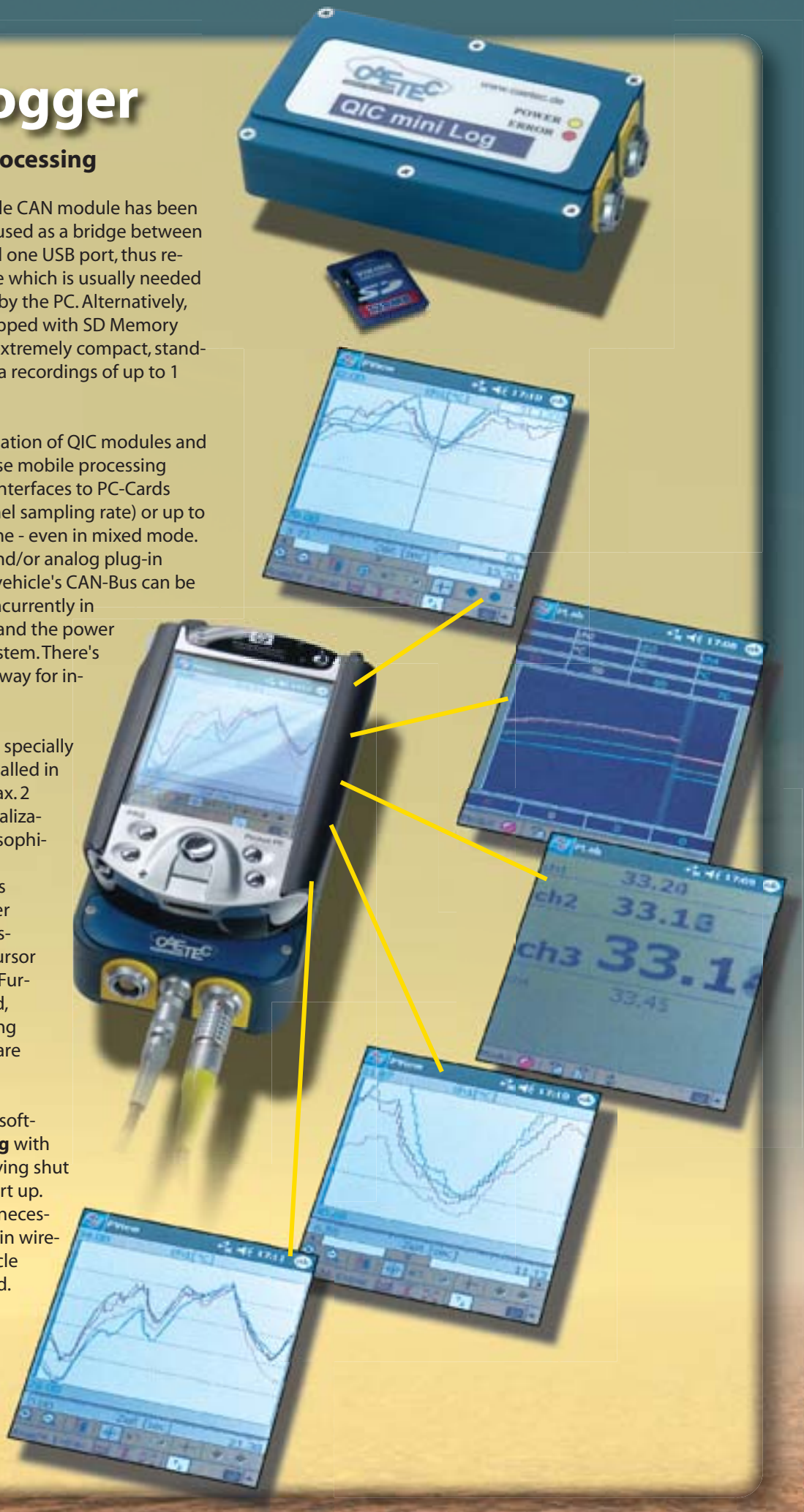
Local data storage and processing

With the **QIC-miniLog** a very flexible CAN module has been introduced: On one hand it can be used as a bridge between a maximum of two CAN-Busses and one USB port, thus replacing an extra CAN-Card interface which is usually needed for data transfer and configuration by the PC. Alternatively, the QIC-miniLog can easily be equipped with SD Memory Cards turning this module into an extremely compact, standalone, data logger for triggered data recordings of up to 1 GigaByte.

A very smart solution is the combination of QIC modules and **QIC-viewLog** or **QIC-dataLog**. These mobile processing units in pocket format offer broad interfaces to PC-Cards (16 analog inputs with 1 kHz/channel sampling rate) or up to 4 CAN data-streams at the same time - even in mixed mode. In conjunction with QIC modules and/or analog plug-in boards the data and signals of the vehicle's CAN-Bus can be collected, monitored and saved concurrently in real-time. The CAN-Bus transceiver and the power supply are also integrated in the system. There's no more elegant and more flexible way for in-vehicle data recording.

The data can be stored utilizing the specially developed PDA-Software **PLab** installed in the pluggable storage modules (max. 2 GigaByte). PLab enables online visualization to control the data, set-up the sophisticated trigger conditions and the transmission of the data via wireless LAN to a PC. **PView** is a Quick Viewer that enables fast validation of measured data by means of zoom and cursor functions and spreadsheet display. Furthermore, the data can be displayed, analysed and edited in any way using CAESAR´s extensive range of software products on standard PCs.

Windows CE and the special tuned software PLab provide the **QIC-dataLog** with plug-and-play capability - no annoying shut down and reboot is required for start up. Neither a display nor a keyboard is necessary. The system can be configured in wireless mode via GSM. Long term vehicle testing can become fully automated.



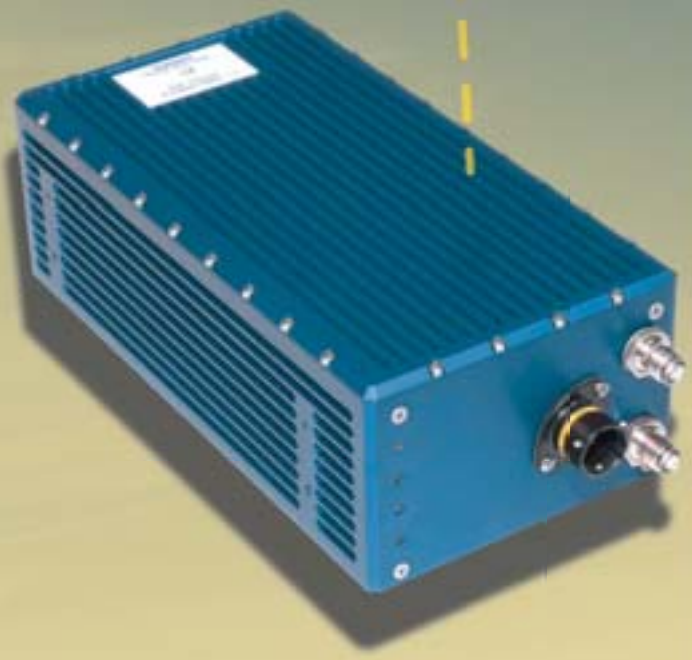
QIC plus GPS

Good to know where you are!

A complete range of specific QIC modules interfaces the satellite aided **GPS** (= Global Positioning System) which uses satellites orbiting the earth to provide estimates of position, velocity and, for twin-antenna receivers, heading. This technology shows new ways in the area of mobile driving performance measuring.

For instance the **QIC-Mouse** converts the geographic data (longitude, latitude and altitude, speed, time and heading) from GPS into CAN format at a sample rate of 1 Hz. It can be used for the continuous recording of road profiles in mobile testing.

In contrast to conventional speed sensors, **QIC-Speed** works completely wireless and friction free. It can be used without problems on rough roads and off-road even with rain, fog, snow or icy conditions. Installation is quick, easy and convenient. The GPS-antenna with its magnetic foot is fixed to the vehicle and connected to a Palm or a Notebook via a compact signal conditioning box. The entire data and settings are synchronized automatically with the PC at power on. QIC-Speed calculates the current speed and direction continuously with a rate of 20 Hz from the Doppler shift of the carrier frequency of the GPS-Signal caused by the movement of the vehicle. The accuracy is within 0.3 km/h in the range between 0 and 1,800 km/h. Position, route and direction with a resolution of few centimeters as well as longitudinal and transversal acceleration are calculated online from the speed. An event input is provided for braking and timing tests.



QIC-INS is the name of a family of very precise inertial navigation systems aimed at measuring vehicle positioning and motion parameters, such as velocity, acceleration, orientation and angular rates. The GPS is the key to the high precision of the system (2 cm for the position, 0.05 km/h for the velocity, depending on the configuration). It provides a mechanism for preventing the inertial navigation system from drifting and enables errors in the inertial sensors to be corrected. The QIC-INS products are compact, easy to use and rugged. They are quickly installed in vehicles. It is not necessary to place the unit at the centre of gravity; it should be placed close to the position where the measurements are required. The outputs enable the engineer to move the measurements to any other point on the vehicle. Calibration of the unit within the vehicle is not required, the system figures out the necessary calibration constants itself as it operates. A monitor gives continuous information about the accuracy of the system. A laptop computer running Windows should be supplied by the user to view the outputs in real-time, or the outputs can be fed directly into other equipment like data acquisition systems, steering robots and multi-beam echo sounders.

NEW

Intelligent sensor interface for pressure sensors

The brand new QIC-Sensor AP is an extremely miniaturized, intelligent CAN interface for active and passive pressure sensors. The 1-channel module stores all configuration and calibration data of the sensor locally. No central sensor database is needed!

QIC Sensor AP Specifications	Technical Data
Sensor interface	3 or 4 wire
Resolution	16 bit
Sample rate	1-1000 Hz
Measurement ranges	±25 to ±100 mV (LV) ±2.5 to ±10 V (HV)
Over voltage protection	120 V
Anti-aliasing filter	LP
Sensor excitation	5/8/10/12 V opt.15/20 V
Max. output current	50 mA
Power supply	7-60 V DC
Power consumption	~. 1 W
Galvanic isolation	100 %
Isolation voltage	500 V
Dimensions	1.8 x 0.8 x 0.8 in. (45 x 20 x 20 mm)
Weight	2.6 oz. (75 g)
Operating temperature	-40 to 250 °F (-40 to 120 °C)
Protection	IP 67

Represented by:

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