



HIGH-END DATA LOGGING

EVERY BIT COUNTS.

CCA 9010

ViGEM GmbH is one of the leading specialists for automotive data logging solutions. The embedded hardware and software products are used by OEMs and Tier 1 suppliers for the qualification and efficient validation of advanced driver assistance systems and automated driving functions.

Since 2009, ViGEM has successfully supported the automotive industry during the development of their innovative products up to the start of production (SOP): Prototype testing, validation, and final qualification testing.

ViGEM CCA (Car Communication Analyzer) solutions consist of high-end data loggers, robust removable data storage devices, and fast copy stations. The end-to-end product lines set standards in high-end data collection, reliable data storage, and fast ingestion of extremely high amounts of automotive data.

<< Innovative, advanced driver assistance systems can make driving more comfortable and much safer. By the development of high-performance test and analysis systems, the mission of ViGEM is to enable an efficient validation process of reliable driver assistance systems. >>
(Markus Trauth, CEO ViGEM GmbH)



At a glance:

- Data rates up to 25 Gbit/s
- Data storage capacities up to 122 TB
- Distributed data logging system
- Recommended for use in test vehicles and demanding mobility projects

Automotive manufacturers worldwide are gearing up for future mobility. In order to bring advanced concepts such as Connected Car, V2X or Autonomous Driving safely onto the road, it is first necessary to record, store and analyze enormous amounts of environmental and traffic data. It will later form the basis of advanced driving functions in the form of algorithms and artificial intelligence (AI).

The ever-increasing volumes of data recorded from radar and lidar sensors, high-resolution cameras, and automotive Ethernet buses in vehicle networks can only be managed by fast, uncomplicated data storage, transfer, and ingest processes. Furthermore, constant cost pressure demands the efficient utilization of test vehicle fleets.

Overcoming these challenges, ViGEM offers embedded hard- and software solutions for high-end data logging before SOP like the powerful solution CCA 9010 consisting of:

- CCA 9010-100 / CCA 9010-50 data logger
- CCA S10xxT removable data storage
- CCA CS10-100G copy station/CCA RACK10

The CCA 9010 data logging solution is ideally suited for the collection of highest amounts of data with test vehicles as well as for demanding future mobility projects in test environments or laboratories as shown in the boxes below.

For more information or specific adaptations to your project requirements, please contact our technical experts: sales@vigem.de

DATA COLLECTION

The validation and development of ADAS and autonomous driving demands the collection of enormous amounts of data. The distributed data logging with CCA 9010 data loggers enables the reliable and synchronized recording of raw sensor and camera data at more than 40 interfaces. Ease of use is guaranteed by integrated software features like pre-labeling and hot plugging. Multiplication of the performance is possible by cascading several data loggers that are synchronized via the integrated LoggerSync protocol.

FOT

The CCA 9010 is used for the efficient validation of in-vehicle communication networks before SOP: During field operational tests (FOT) the CCA devices can be operated by the driver alone. Special features such as the programmable wake-up function allow the easy start-up of the data logger. The quick exchange of the robust removable data storage and the comfortable mobile data handling enable the continuous reuse of the powerful modules. In this way, the downtime of test vehicles can be reduced to a minimum compared to other transfer methods. Thus, test fleets can be utilized time- and cost-efficiently.

TEST BENCH

With its enormous recording rates of up to 25 Gbit/s, the CCA 9010-100 data logger supports in the development of control units or reference setups of vehicle networks. Our interdisciplinary expert teams accompany our customers throughout the whole development and validation process. Custom configurations and extensions of the functionality can be implemented by our experienced engineering services to optimally integrate CCA solutions into your vehicle network. Furthermore, we offer technical support in project planning as well as in the development of test environments.

DATA CENTER

The sophisticated data handling concept and the option of data encryption provide a maximum of data security. At the end of a test drive or when the removable data storage is full, the robust data storage module can be easily exchanged and shipped to the ingest station at a data center. That allows test vehicles to be utilized almost 24/7, realizing significant cost and time savings. The recorded data is thus available for analysis within a very short time.

HIGH-END DATA LOGGING

The high-performance data loggers CCA 9010 are used for the efficient validation and qualification of advanced driver assistance systems (ADAS) as well as autonomous driving functions (AD). They are suitable for use in test vehicles, laboratories, and test benches.

As one of the most powerful mobile data loggers on the market, the CCA 9010-100 records

automotive bus systems and Ethernet at continuous data rates of up to 25 Gbit/s.

External Capture Modules collect sensor and automotive data on more than 40 interfaces and forward the data via Ethernet to the data logger, the center of this state-of-the-art distributed data logging system. Incoming data receive a common time-stamp with nano-second

CAMERA. RADAR. LIDAR

resolution by the Capture Modules, which are gPTP-synchronized. By cascading multiple synchronized CCA data loggers the recording bandwidth can be multiplied.

The user-friendly embedded software of the CCA 9010 allows intuitive installations and comfortable use, e.g., during FOT. All ViGEM data loggers can be configured and easily controlled via web browser from any PC,

tablet or smart phone. Custom configurations can be engineered according to your special requirements.

For specific engineering projects, the mid-range model CCA 9010-50 provides continuous data rates of up to 10 Gbit/s. This logger variant is particularly suitable for development projects with less amounts of data but demanding the same high quality and product standards.

CCA 9010




Front side: Data logger CCA 9010 with removable data storage




Rear side CCA 9010-100: More than 40 interfaces for data recording with up to 25 Gbit/s.




Rear side of the mid-range model CCA 9010-50: Continuous data recording up to 10 Gbit/s.




Data rates up to 25 Gbit/s




Data storage up to 122 TB




Mobile data handling




Distributed data logging system




Embedded software



Data encryption



gPTP timestamp



Cascading possible

REMOVABLE DATA STORAGE

The removable data storage devices **CCA S10xxT** are part of the data logging solution CCA 9010. They are specially designed for laboratory and vehicle field testing. Very durable and technologically challenging. Rugged cartridges at the highest technical standards offer hardware encryption and hot plugging to ensure best performance in mobile data handling. Total storage capacities range from

16 TB to 122 TB. The storage modules are available for the standard (0° C ... +50° C) or extended ambient operating temperature range (-20° C ... 65° C). All variants are characterized by high write speeds up to 32 Gbit/s and high read speeds up to 48 Gbit/s. The robust metal housing reliably protects the internal electronic components from mechanical loads. Due to this robust design, the

DATA SECURITY & AVAILABILITY

removable data storage from ViGEM is suitable for permanent use in long-term projects and many automotive use cases. It stands for fast and easy transfer of your encrypted vehicle test data. The end-to-end solution CCA 9010 is equipped with data encryption/decryption according to AES-256 standard and OPAL 2.0 from the data logger, to the removable data storage, to the copy station. Your data is reliably protected during

the entire processing: Data collection, data storage, and data ingestion at highest level.

Future variants of the removable data storage devices offer additional features like double backplane bandwidth and an optimized thermal design. Thus, ViGEM customers are well prepared to meet future requirements in vehicle testing.

CCA S10xxT



HIGHEST RELIABILITY by ViGEM

Continuous Validation

Benefit from our many years of experience. All ViGEM product lines continuously pass quality and performance tests according to strict rules and requirements.

Reliable Supply Chains

Long-term relationships with reliable suppliers are an important basis for the consistent quality of our products.

Long-Term Availability

Whether initial purchase, project adaptation or repeat purchase: We deliver your selected products in consistently high quality, even over years.

Mobile Data Handling

Due to ViGEM's sophisticated mobile data handling, you can utilize your test fleets time- and cost-efficiently. Via a fast, uncomplicated data transfer, the recorded data is available for analysis purposes within a very short time.



Data storage capacity
up to 122 TB



Data encryption
OPAL 2.0 / AES-256



Extended temperature
range available
(I- and C-temp)



Robust
cartridge

COPY STATION

In combination with CCA 9010 data loggers the copy station **CCA CS10-100G** is the most powerful and most comfortable data ingest solution by ViGEM. It transfers the encrypted data of the removable data storage via standard network file transfer protocols to connected Networked Attached Storage (NAS), into local data lakes or into the cloud with speeds up to 50 Gbit/s.

The CCA CS10-100G comes with user-friendly, integrated software, standardized hardware decryption, automation features, and intuitive user interfaces. They enable the use in data centers and laboratory environments in a highly convenient as well as time- and cost-efficient manner.

CCA CS10-100G



Front side: Copy station CCA CS10 -100G



Rear side: Copy station CCA CS10-100G



Transfer rates
up to 50 Gbit/s



Data
security



Integrated
software



Ease
of use

FAST DATA TRANSFER

The **CCA RACK10** is the expert solution for IT environments with individual security and compliance requirements. The customer becomes fully responsible for software design, development and maintenance.

The hardware is a passive mount for the CCA 9010 removable data storage with data transfer rates of up to 50 Gbit/s. Connecting the CCA RACK10 to a server's PCIe port provides direct low-level access to the removable data storage of the CCA 9010

solution. For data processing professionals, the CCA RACK10 offers full freedom in software design according to their specific environment requirements.

For integration of the hardware into a customized solution, ViGEM offers engineering services to read out the recorded data.

In order to discuss your specific project requirements, please contact our [Engineering Services](#).

CCA RACK10



Front side: CCA RACK10



Rear side: CCA RACK10-100



Transfer rates
up to 50 Gbit/s



Flexibility in
software design



Cost
savings



EVERY BIT COUNTS.

www.vigem.de

