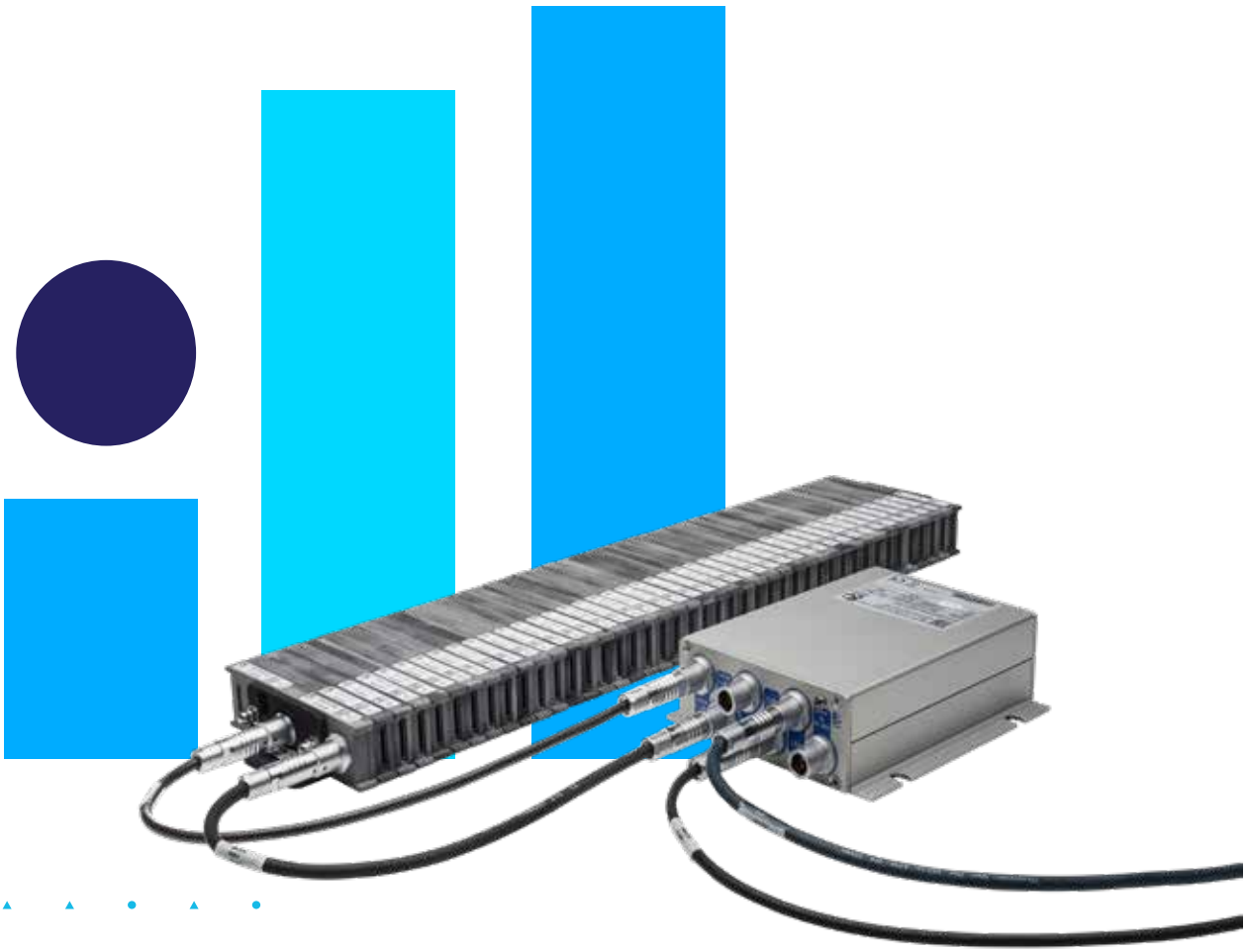
PRODUCT DIVISION
MULTICHANNEL I/O-MODULES

SMART
TESTSOLUTIONS

E_CELL ELECTRONICS

CELL VOLTAGE MONITORING FOR STATIONARY AND MOBILE APPLICATIONS



The Cell Voltage Monitoring (CVM) product family contains components for creating tailor-made cell voltage monitoring, simulation and processing systems. The decisive advantage of our modular concept is the great flexibility it offers for adaptation to cell stacks.

The monitoring of bipolar electrochemical systems involves the measuring system having to satisfy a number of different requirements. The modules in the CVM product family not only meet all these requirements, they also offer a broad range of data processing and communication options.

Application areas

Batteries

The products of the e_Cell Electronics division are ideally suited for analysis during the battery manufacturing process. Here our systems score, among other things, with their scalability up to a very high number of measurement channels.

Electrolysers

Thanks to their large measuring range, our components are also used in the field of electrolysis. Here they monitor the voltages of the individual cells and thus contribute to process reliability.

Fuel cells

Our CVM measurement modules for the monitoring of the single cell voltages in fuel cell stacks have now proven themselves hundredfold and deliver reliable measuring results even in rough field operations.

From pototype to series production: benefit from these 3 advantages.

1

High sampling rates for optimum detection of changes in the system.

Our CVM products allow a precise cell voltage monitoring of batteries, fuel cells and electrolysers. The sampling rate can be set between 1 and 1000 samples per second. A high sampling rate ensures that changes in the system are recognized.

2

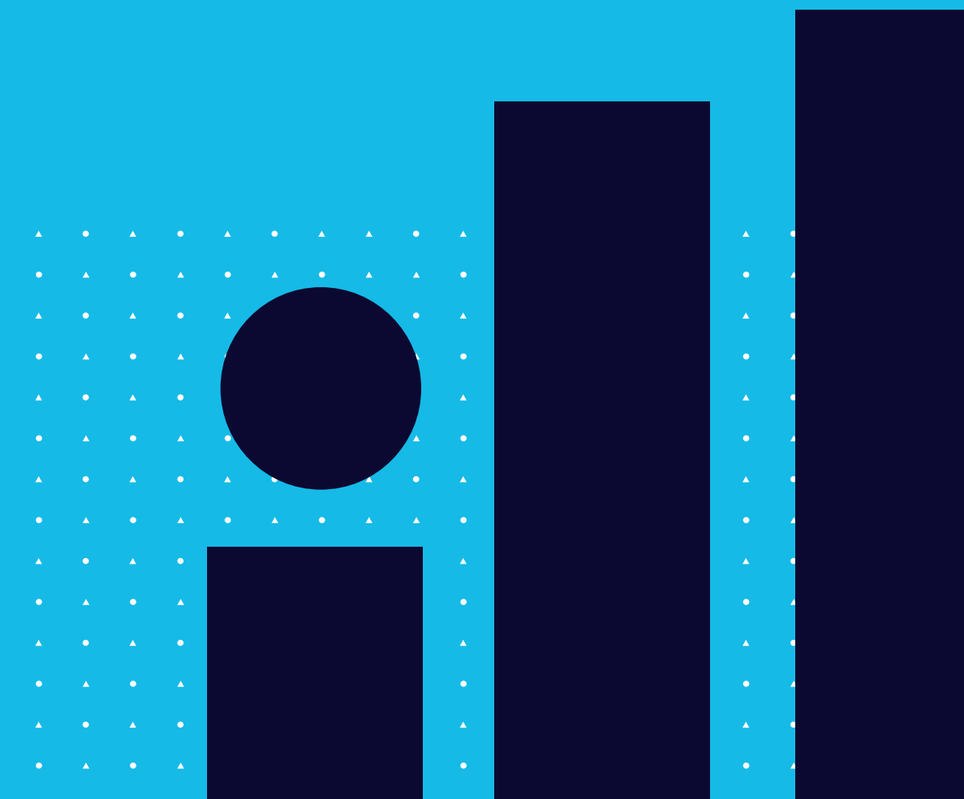
Time-synchronous monitoring and simulation of all measurement channels.

Thanks to the modular design of the CVM products, the number of channels is highly scalable. Depending on the requirements of data volume and data processing rate, the modules can either be operated directly via CAN bus or in combination with a process module via LVDS, Ethernet, EtherCAT or GPIO.

3

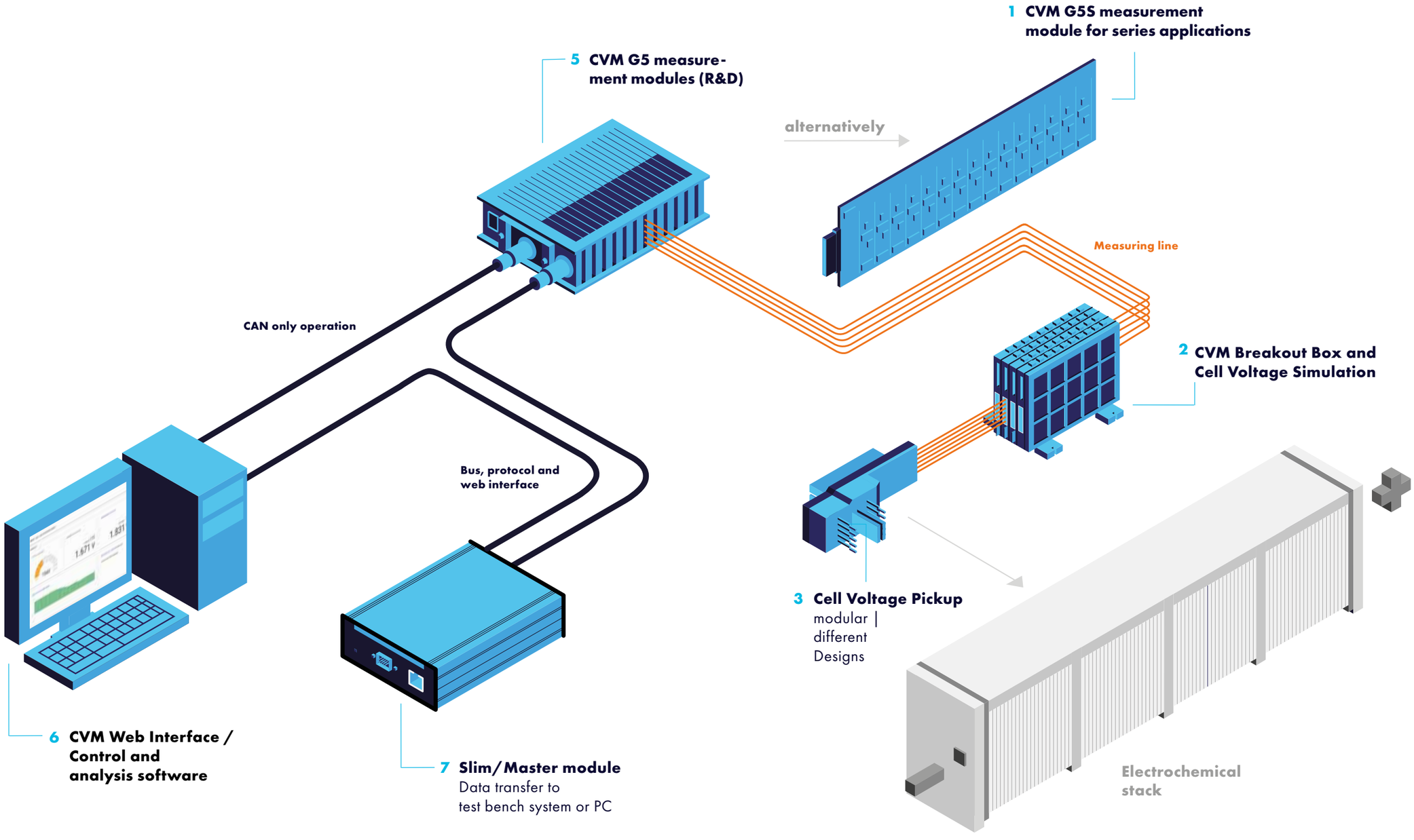
Temperature range and moisture resistance for use in various climatic conditions.

The ultra-compact design, density and temperature resistance allows the application within test benches as well as the operation in harsh environmental conditions in mobile applications e.g. in the automotive or navy field.
The possible operation Temperature ranges from -40 to 105°C.



SMART e_Cell Electronics – CVM and beyond.

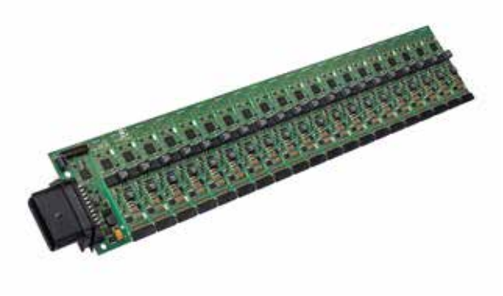
The e_Cell Electronics product range of SMART TESTSOLUTIONS includes all the components you need for monitoring and testing fuel cell systems. We combine them according to the requirements of your fuel cell stack and the planned application.



APPLICATION AREAS

- MARINE
- STATIONARY SYSTEMS
- VEHICLES
- TEST BENCHES

SMART e_Cell Electronics – components and products



1 CVM G5S measurement module for series applications

The CVM G5S modules have been developed for high channel voltage monitoring in series vehicles. The single board solution offers increased long-term operation robustness. The devices are cascadable and are equipped with automotive conformal components and connectors.

2 CVM Breakout Box (BoB) and Cell voltage simulation (CVS)

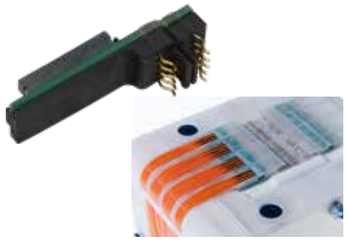
With the CVM Breakout Box you get access to the single cell voltages of an electrochemical stack. In addition, the CVM BoB can be used for simple stack simulation. For this a total voltage is applied to an integrated resistor cascade. The CVM system measures the voltage dropped across each resistor.

5 CVM G5 measurement modules (R&D)

The measurement modules of the CVM G5 system feature an ultra-compact design and a high degree of modularity. Each module has ten channels. Measurement can be taken in the ranges from -1 to +5V or from -3 to +3V. A measurement system is always made up of a communication module, a termination measurement module and up to 59 measurement modules.

6 CVM Web Interface

The webbased user interface integrated in the MASTER and the SlimMASTER module enables convenient, real-time monitoring of CVM data logging. The software is thus a valuable helper during test drives of fuel cell vehicles. Precondition for the access is just an internet-enabled browser. The display can be wireless via WLAN.



3 Cell voltage pickup (CVP) solutions

In the past few years we have developed various CVP solutions. All are multichannel voltage taps for fuel cell stacks that can be individually adopted to the corresponding target application. Also they are characterized by their low space requirement, easy-to-install design and reliable contacting properties, especially in mobile applications.

4 Custom cable harnesses

In addition to the standard measurement signal lines, we also offer tailor-made cable harnesses and adapter cables for your project. All harnesses are produced in our wiring harness manufacture in Stuttgart.

7 Process modules MASTER and SlimMASTER

The MASTER modules expand considerably the cell voltage monitoring functionality. They provide synchronous data rates of up to 400 x 1 kHz per channel via LVDS bus, a high-speed data link to the PC via Ethernet and bus interfaces (EtherCAT, CAN, GPIO). The Lua-scripting engine of the modules makes it easy to apply the integrated local data processing.

8 Test systems for fuel cell control units (FCCUs) and other components

Cell voltage simulation (CVS) ist one of our strenghts. It is often an integral part of the test systems that we develop for our customers. These systems allow developers to test the electronic circuitry for fuel cell or battery systems without requiring a real system. Therefore the voltages of the fuel cell stack as well as all relevant environmental parameters are simulated.

BE SMARTER
And call us.

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