

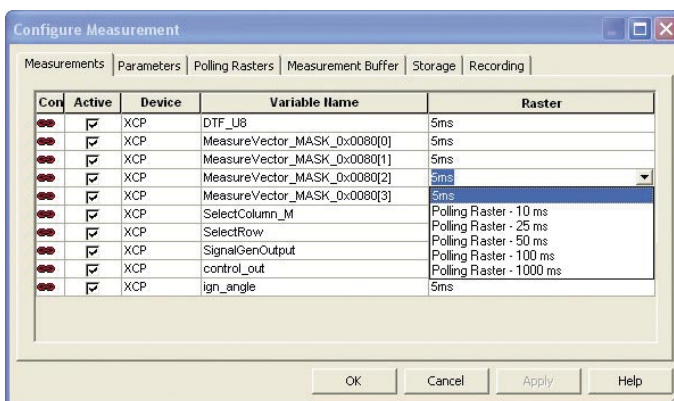
New: CalDesk 1.2

- Downsampling, hardware polling, virtual variables
- Extended interface options
- Enhanced handling

Version 1.1 of the CalDesk calibration software aimed primarily to provide all the major calibration and measurement interfaces, plus connection to dSPACE prototyping systems. The new version, CalDesk 1.2, greatly extends interface functionality and supports additional calibration concepts. It also has far greater functionality for instrumentation, data analysis, and handling in general.

Measuring via On-Chip Debug Interfaces Without ECU Service

DCI-GSI is a generic serial interface for calibration, measurement, and bypassing. It can be connected to debug ports such as Nexus, AUD/NBD, and JTAG. An increasing number of developers are using DCI-GSI to record the internal data of electronic control units (ECUs) as part of function development and validation.



▲ *Configuring measurements by means of polling.*

DCI-GSI is ideal for such tasks, since it is enormously powerful in terms of measurement data throughput and provides a way of capturing internal ECU measurement variables, without the ECU software having to be specially adapted. In one application, for example, several thousand measurement variables in the ECU are recorded cyclically, and in another, the contents of a 40-KB RAM area on the microcontroller are logged on the ECU raster-synchronously. Version 1.2 boosts measurement data throughput even further, both on the DCI-GSI and in CalDesk itself. It also gives you an efficient means of processing the measurement files created during measurement runs – even ones larger than 1 GB.

Single-Page Concept, Flash Programming, Polling Measurement

ECUs for car body and comfort functions often have very limited RAM and ROM resources. This means it is not always possible to implement a two-page calibration concept, as this would require two sets of data: a write-protected set on a reference page (typically located in the flash memory) and a second, modifiable set of data on the working page in the ECU's RAM. CalDesk 1.2 now also fully supports single-page concepts, in addition to the two-page calibration concept usually applied in powertrain ECUs. It makes no difference whether the calibration data is stored in the RAM, on an EEPROM, or in flash memory, or whether calibration is performed offline or online. dSPACE's new ECU Flash Programming Tool lets you store a new set of data persistently in the ECU's flash memory. The limited resources in ECUs can also restrict the functional scope of a CCP or XCP on CAN implementation, for example, as regards the number of measurement lists that can be used to run raster-synchronous measurements. Variables can be captured on an ECU without measurement lists, at a clock rate defined via the PC timer (this is known as polling). This new CalDesk feature lets you increase the number of measurement variables to be recorded and work with ECUs without measurement lists.

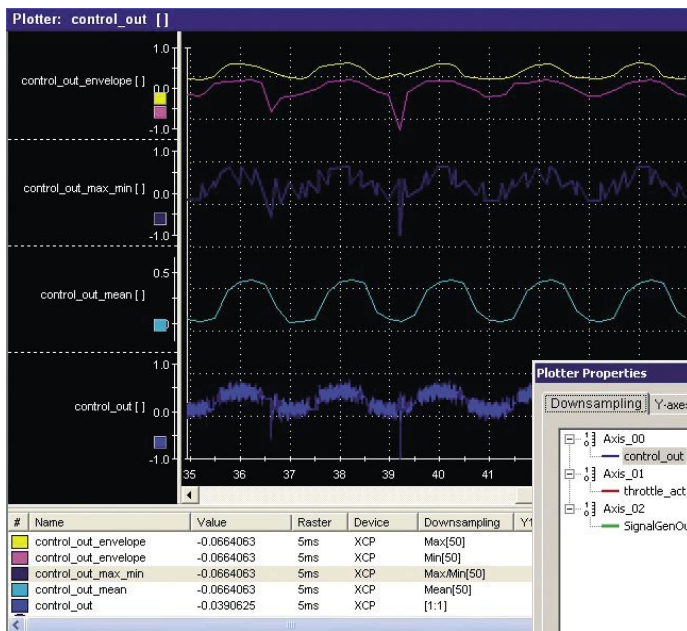
Extended Interface Functionality

- Cold-start measurement supported for CCP, XCP on CAN, and DCI-GSI1
- Calibration results automatically saved to ECU's flash memory
- DCI-GSI: Supports Infineon TriCore Processors via JTAG/OCDS
- Easy updating of the variable description file – especially useful for users of rapid control prototyping (MicroAutoBox or DS1005).

In addition, ECU calibration variables and adaptive parameters can be measured easily.

No-Overlap Signal Display, Downsampling, Automatic Bookmarks

The Plotter in CalDesk 1.2 provides a lot of new functions for data analysis. A single click displays several signals and their y-axes simultaneously without overlapping, making them much easier to observe. The Plotter legend contains additional information for the selected time interval, such as mean value,



▲ New Plotter features: signals stacked with no overlap, scroll bar, and downsampling (this example shows downsampling over 50 data points).

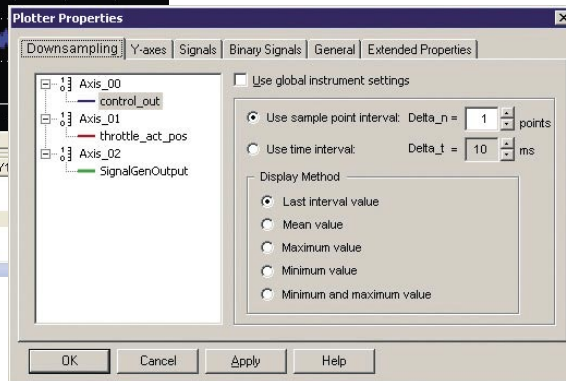
standard deviation, and extreme values. The new scroll bar lets you navigate through the measurement buffer, and you can also define the interval for visualization and signal analysis. Several markers can be placed on different signals for data analysis purposes. The new downsampling option reduces the number of measurement values that are displayed, allowing signals with very high sampling rates to be visualized during measurement – virtually in real time. Typical applications include visualizing the envelope curve of a torsional vibration or the mean value of a noisy signal. Only the visualization is downsampled – the number of measurement values that are recorded is not affected. Bookmarks can be inserted in measurement files automatically using configurable trigger rules.

Virtual or Calculated Variables

With CalDesk 1.2, you can create new, calculated (virtual) variables whose values are calculated from other elements in the variable description and connect them to instruments in CalDesk and in measurement files just like “normal” measurement variables. Power calculation is a typical example.

Enhanced Handling

With CalDesk 1.2, you can edit folder structures in the Experiment Navigator and specify automatic naming of projects and experiments. This greatly speeds up experiment configuration, especially for rapid control prototyping tasks. You can display reference values in calibration instruments even while the working page is active, assign reference values to selected variables, and group variables by defining individual foreground and background colors.



◀ Several downsampling options for Plotter visualization.

Improved Instrumentation

CalDesk 1.2 allows several 1-D or 2-D look-up tables to be assigned to a single table editor and organized on individual pages. The new Multistate LED instrument lets you visualize threshold and range violations, and display status information. Many ECUs contain state machines that represent individual states by bits in status variables. The Multistate LED instrument makes use of this, providing a method of evaluating selected bits or bit ranges of one variable.

▼ Dialog for setting calculated variables.

