

MICROSAR CAL

Uniform Interface for Operating Microcontroller Peripherals based on the AUTOSAR Standard

AUTOSAR has consistently subdivided ECU software into a number of different, largely platform-independent, functional layers. This reduces development effort and guarantees higher quality of the Basic Software Modules (BSW). MICROSAR CAL is the Vector implementation of the AUTOSAR hardware abstraction. It incorporates all hardware-specific drivers of an AUTOSAR ECU.

Properties and Advantages

The Basic Software Modules of MICROSAR CAL are intended for use in production vehicles. They may be integrated into your ECU software as required. All MICROSAR BSW modules conform to AUTOSAR Release 3.0. When implementing them, special emphasis was placed on efficient memory utilization and short execution times.

During integration you can combine MICROSAR CAL Basic Software Modules with the rest of the MICROSAR Basic Software Modules of the seamless Vector AUTOSAR solution. This provides a reliable foundation for your ECU software so that you can focus on developing your application.

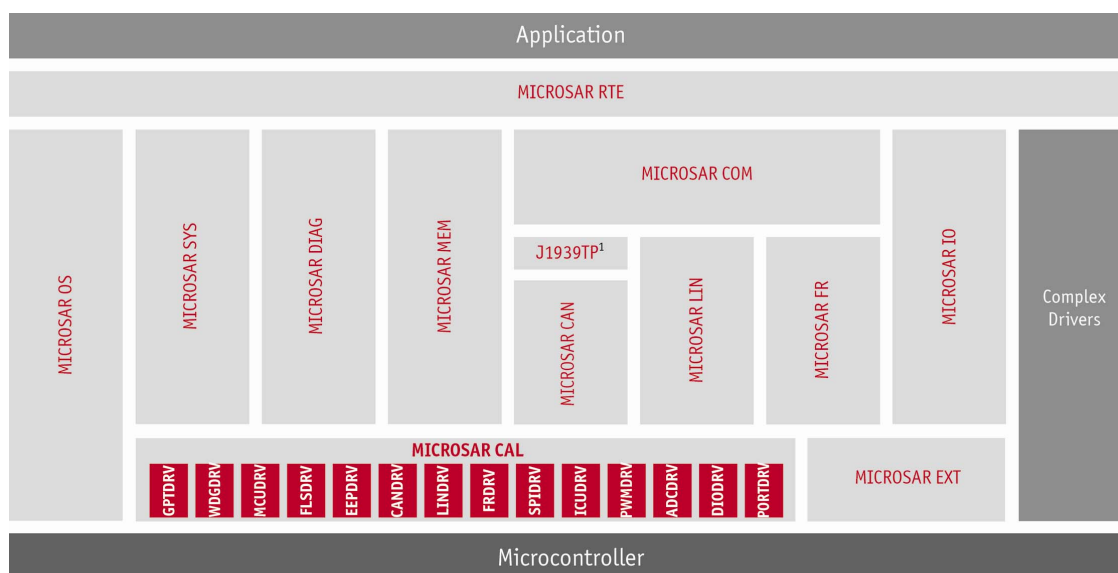
Application Areas

The hardware-specific MICROSAR CAL Basic Software Package contains all the drivers needed to control a wide variety of peripheral components on various microcontrollers. Services of the MICROSAR CAL drivers are made available to the other MICROSAR BSW modules via uniform hardware-independent interfaces. Each MICROSAR CAL driver is optimized to be controller-specific.

Functions

MICROSAR CAL

- > ADCDRV – The ADC driver controls the analog-digital converter and makes the results of the conversion available to other software modules.
- > CANDRV, FRDRV, LINDRV - These communication-specific drivers handle hardware initialization, sending and receiving messages for the relevant bus (CAN, FlexRay, LIN) and they are responsible for switching the controllers to defined communication modes that can be queried.
- > DIODRV – The Digital Input/Output driver enables reading and writing of individual pins, groups of pins or complete ports of a microcontroller.
- > EEPDRV - The EEPROM driver gives the EA module of MICROSAR MEM access to an internal EEPROM. It writes, reads and erases EEPROM data.
- > FLSDRV - The Flash driver gives the FEE module of MICROSAR MEM access to internal flash memory. It writes, reads and erases flash memory data.
- > GPTDRV - The General Purpose Timer driver offers an interface for accessing the microcontroller's very precise timer. It can handle control of both one-time and recurring events.
- > ICUDRV - The ICU driver detects or counts edges and measures periodic signals at the microcontroller's inputs. It can assign time stamps and detect wakeup interrupts.



**MICROSAR CAL
modules**

¹ Available extensions for AUTOSAR 3.0

Training Courses

We offer various training courses and workshops for AUTOSAR in our classrooms or at your business site.

For further information on individual training events and dates on the Internet go to: www.vector-academy.com.

Contact and Availability

Our Basic Software Modules for automotive ECUs are available for a wide variety of currently used microcontrollers. You can obtain additional information at www.micosar.com or by inquiry

E-mail: embedded@vector-informatik.com

Telephone: +49 711 80670 400.

- > MCUDRV - The Microcontroller Unit Driver is used to correctly set the microcontroller clock pulse, initialize RAM segments with default values, trigger resets, control power modes (STOP, SLEEP, etc.) and coordinate wake-up behavior.
- > PORTDRV - The Port driver handles configuration and initialization of the microcontroller's I/O periphery.
- > PWMDRV - The PWM driver controls the microcontroller's PWM channels to generate flexible signals.
- > SPIDRV - The SPI driver controls communication via the microcontroller's synchronous serial interface to enable interfacing to a wide variety of peripheral devices via MICROSAR EXT.
- > WDGDRV - The Watchdog driver initializes and triggers the microcontroller's internal watchdog timer. It also offers services for correct operation of the watchdog hardware.

Configuration

DaVinci Configurator Pro supports you in configuring the drivers of MICROSAR CAL. This provides a quick way to create a runnable system. Configuration errors are detected early in the process.

Scope of Delivery

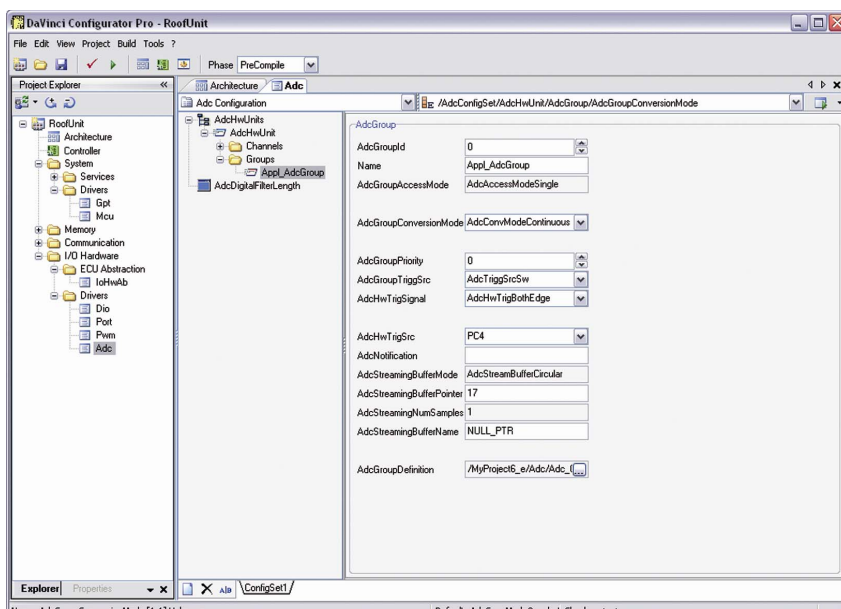
- > DaVinci Configurator Base as a Generic ECU Configuration Editor (GCE) as well as a command line based generator
- > Object files, C header files, optionally with source code
- > BSW Module Description, makefiles and sample programs
- > Documentation/operating instructions/Readme file

License

Vector offers flexible licensing customized to your individual requirements.

Optional Services

- > Integrating drivers provided by semiconductor manufacturers in DaVinci Configurator Pro. This lets the integrator configure all of the ECU software seamlessly and quickly with a single tool.
- > Consultation in system design
- > Integrating the Basic Software into existing ECUs
- > Extending standard modules according to your needs
- > Developing customer-specific AUTOSAR Software Components (SWCs)
- > Hotline, special workshops and training courses on the topic of embedded software and AUTOSAR



Configuration of MICROSAR CAL with
DaVinci Configurator Pro