



## FACTSHEET

# VERA 3.0 SOLENOID OR PIEZO

Compact and powerful ECU with advanced automotive network connection.

- Available with Solenoid or Piezo Injector Powerstage generating user defined current profiles to drive a variety of available injectors
- Providing a wide range of automotive grade sensor inputs and actuator outputs to control modern combustion engines
- H2 ready

## PRODUCT DESCRIPTION

VeRa 3.0 is the new technology leader in the area of modern, flexible control units for prototypes and small series. Due to the open architecture and the nearly unlimited configuration options, VeRa 3.0 offers the perfect base for your control applications.

VeRa 3.0 contains two banks of solenoid injector drivers or, alternatively, two banks of piezo injector drivers. In both cases, a maximum of eight injectors is possible.

## YOUR DEVELOPMENT TOOL

Our VeRa 3.0 rapid prototyping ECU offers a powerful and adaptable hardware platform to realize your research and development projects from basic actuator tests up to new combustion methods on prototype or production engines.

With the VeRa 3.0 rapid prototyping control unit our customers can rely on a hardware that accompanies them from the first prototyping tests till small series production. To achieve your goals in a competitive market with shorter development cycles and increasing complexity in every E/E-System used in modern automotive products VEMAC will assist you from the first specification steps to a final hardware that fits your field of application.

All of this flexibility is packed into a housing and connector meeting the automotive standards for environmental testing and is therefore ready for integration into the engine compartment of your vehicles.

## AUTOMOTIVE REQUIREMENTS FOR 2021 ONWARD

With the full engine control capabilities of the VeRa 3.0 the fields of application reach from cars, trucks and busses over off-road and commercial engines to stationary applications. The individual use-cases are not limited to full-size ECU applications.

Due to the open software structure VeRa 3.0 can also be used to control individual actuators or selected subsystems within the engine and communicate via one of the many supported communication protocols with the actual ECU. In the final application steps of our RCP-System a wide variety of supported application tools allows the customer to perfectly implement the VeRa 3.0 into existing workflows with proven tools like ETAS INCA, dSpace CDNG or ATI Vision.

Our equipment is both splash and dust proof according to IP6K9K (DIN 40 050). The temperature range fulfils industry standards and allows operation from -40°C to +85°C.

## INPUTS

## SPECIFICATION

<b>Analog Inputs</b>	Input Range	0...5V or 0...10 V input voltage Pull-Up or Pull-down configuration Passive input low-pass filter
	Number of channels	Max. 24x
	Sampling	2 separate Multiplex-Chains ADCs, processor internal Max. sample rate 1MSPS
	Resolution	12 bit
<b>Fast Analog Inputs FPGA</b>	Input Range	0...5V or 0...10 V input voltage Pull-Up or Pull-down configuration Passive input low-pass filter
	Number of channels	Max. 8x (Default: 6x)
	Sampling	8x simultaneous ADCs Max. sample rate 3 MSPS
	Resolution	12 bit
<b>Digital Inputs Standard</b>	Input Range	5V/12V/24V-logic level Pull-up-or pull-down-resistors
	Number of channels	4x Compare Input 6x General Purpose
	Applications	DI or frequency measurement and PWM measurement
<b>Digital Inputs VRS/Inductive</b>	Input Range	Max. +/-200V input voltage
	Number of channels	6x VRS/HALL Sensors
	Applications	Fast DI or frequency measurement and PWM measurement

## OUTPUTS

### Analog Outputs

Configuration	0...5V or 0...10 V output voltage Max. 1 MSPS
Number of channels	Max 4x (Default 2x)

### Digital Outputs Standard

Configuration	5V-Logic Push/Pull outputs 24 mA maximum output short circuit current
Number of channels	Max. 8x

### Digital Outputs Performance

Low-side outputs	SPI Low Power Max. 8x 0,5A
High-side outputs	Fast High Power Max. 4x 20A
H-Bridge outputs	Fast Intelligent Max. 3x 5A Max. 3x 5A

## VEHICLE

### Sensor Interfaces

Lambda	Max. 2x Wide range lambda sensors compatible to Bosch CJ125 incl. control for sensor heating
Knock	Up to 4x piezoelectric knock sensors compatible to Bosch CC196
Temperature	Max. 4x TC inputs, K-type

### Injector Outputs

Solenoid (Option 1)	Max. 8x Diesel-/Otto-Solenoid User-configurable Peak & Hold current flow Output Current max. 25A, Boost-/Clear voltage max. 100V 2 internal power amplifiers
Piezo (Option 2)	Max. 8x Piezo injectors Configurable charge/discharge profile Open or closed loop Control variable in closed loop voltage, charge or energy

## SPECIFICATION

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## COM

<b>Communication</b>	CAN	Max. 4x CAN Bus, 1x CAN for the calibration access over XCP Max. 1 MBit/s
	LIN	1x LIN Bus
	Serial	1x RS-232
	SENT	1x SENT input (with Pull-Up-resistor) 1x SENT out

## DEVICE

<b>Mechanical</b>	Main Connector	MOLEX 154pin automotive qualified
	Housing	Anodized aluminium housing Protection class IP6K9K
	Operating Temperature	-40...85°C
<b>Power Supply</b>	Input voltage range	6...40V According to ISO 7637 Overvoltage protection
	Output voltage	5V, 500mA stabilized for sensor supply Protected battery output Overcurrent protected
	Current consumption	Nominal current consumption 300mA (12V) Quiescent current <100µA
<b>Miscellaneous</b>	Hardware Combinations	The combination of different inputs and outputs can result in limitations with regard to the other inputs and outputs
	Customizability	Customizations are possible based on customer requests

## SOFTWARE

<b>Software</b>	<ul style="list-style-type: none"> <li>▪ VeRa TC 3.0</li> <li>▪ Project management</li> <li>▪ Configuration and generating of Simulink libraries</li> <li>▪ Compiler call and code generation for configuration components</li> <li>▪ Flashing on hardware</li> <li>▪ Generation of A2L- and HEX files for calibration software</li> </ul>
<b>Compiler</b>	WindRiver C-Compiler (Diab-Compiler) Suited for developments according to ISO 26262

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