Continental
The Future in Motion

KIBES® – Always stay in control

Devices and software for future-oriented multiplex architectures

ALL-IN SYSTEM
Off-the-shelf

www.continental-automotive.com

KIBES® Key to integrated onboard electronic system.

Increasing requirements for efficiency, comfort and functionality affect the development of modern vehicles.

The KIBES® hardware and software package from Continental can meet the challenge of making buses, trucks, and special vehicles more powerful, efficient, and reliable to the highest requirements. It combines the benefits of a off-the-shelf system with the flexibility of a custom solution.

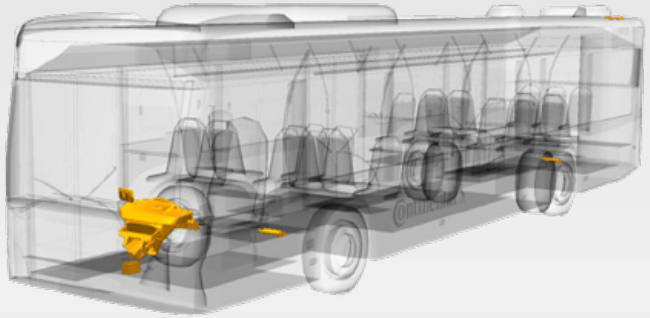
Advantages of KIBES®

› The flexible network system of KIBES® allows an **easy addition or removal of several components** and will help to **optimize the OEM application** – by reducing wirings, connectors, relays, and fuses the **vehicle weight and installation time** as well as the expenses for documentation **service and maintenance, will significantly drop**.

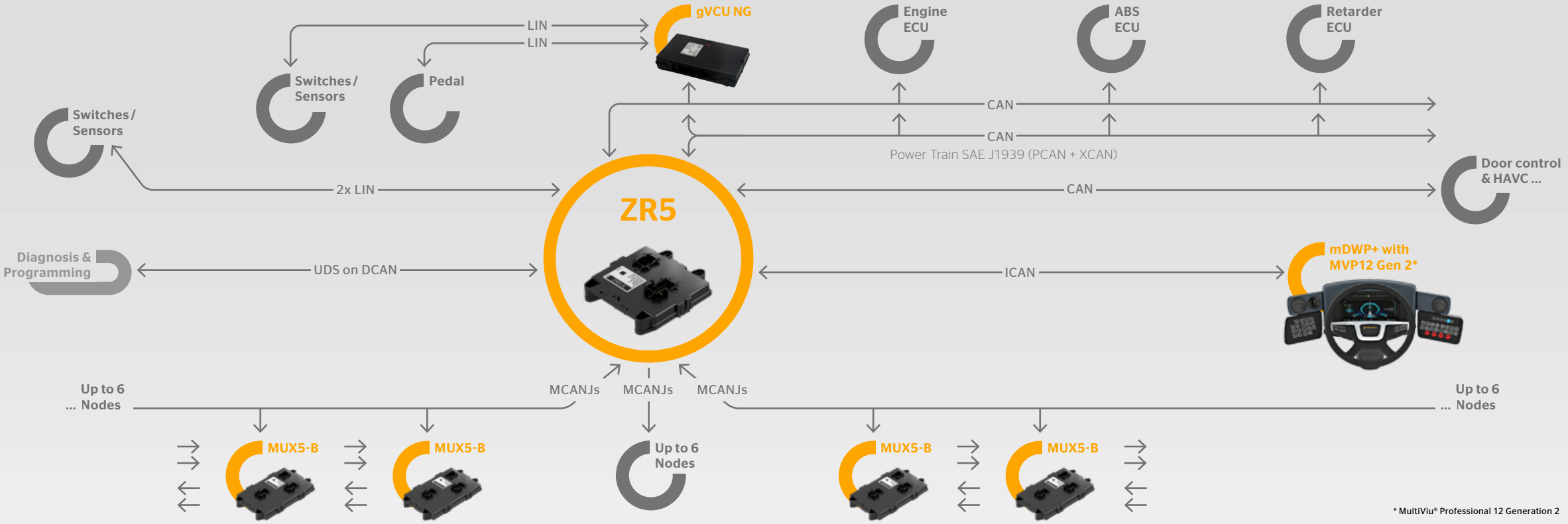
› At the same time, the **vehicle reliability can be improved through high quality components** that are carefully tested and validated not only on a component basis, but also on system level. Vehicles can be operated more safely and reliably due to **built-in diagnostic features** like short-circuit protection, open-load and over-temperature detection.

› With our KIBES® product portfolio, we provide an **efficient development tool chain** that offers a **scalable and flexible network system at a reasonable price**.The integration and testing of application software is **easy to handle and it supports flexible business models.** With some devices **safety relevant functions compliant to ISO 26262 can be supported up to ASIL B**. The customer enjoys high flexibility and will be able to program also these functions on his own.

Buses Typical architecture.



Bus requirements are more and more dependent upon enlarged functionality, efficiency, reliability and comfort. Relying on our KIBES® multiplex system means using a cost-optimized and scalable platform solution in your vehicle – ideally designed for all sorts of vehicle volumes.

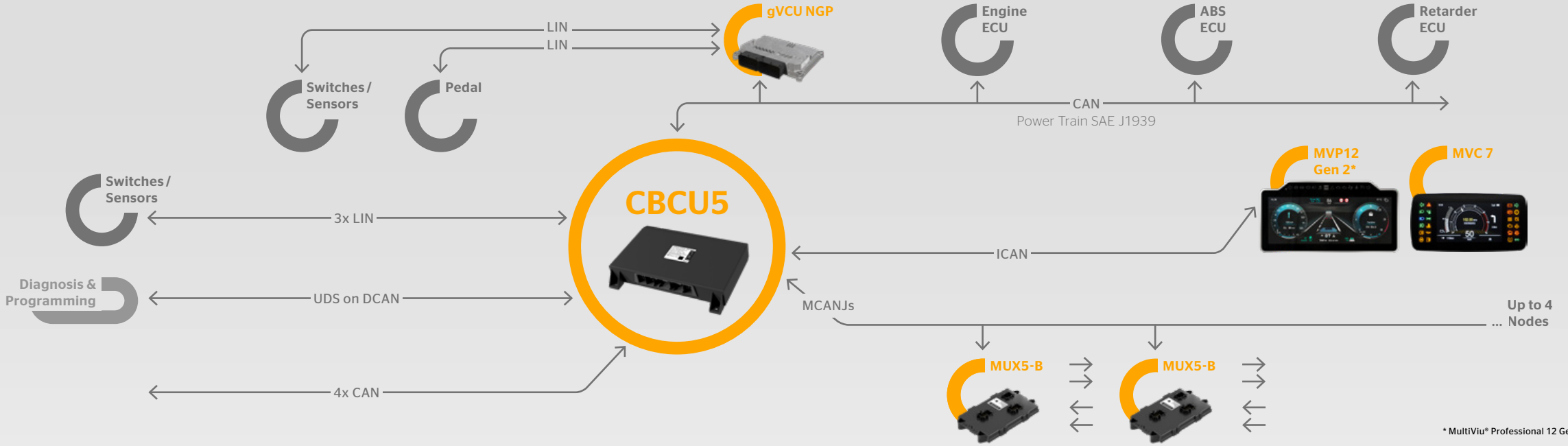


* MultiViu® Professional 12 Generation 2

Trucks, small buses and others.

Typical architecture.

This solution offers significant design flexibility in order to realize specific requirements for trucks, small buses as well as construction and agricultural vehicles. Starting with the body controller CBCU5 as basic component additional multiplex nodes, a vehicle controller and an instrument cluster can be easily added to achieve a scalable and future-proven system.



* MultiViu® Professional 12 Generation 2

Body Controller At a glance.

Our state-of-the-art body control products are designed to prepare commercial vehicles for future-oriented network architectures.

ZR5-A central computer

The system with central computer ZR5-A provides a solution to almost every possible requirement. Up to 18 MUX5-B can be connected to ZR5-A for various signals. It offers a complex network connectivity with several generic CANs which can be programmed customer-specific. It is also possible to connect different instrument clusters and driver's workplace solutions with a ZR5-A.

CBCU5 central computer / body controller

Systems with a control unit of the CBCU5 are powerful solutions that are optimized to meet many customer requirements in more simplified architectures. Up to four MUX5-B can be connected to CBCU5 via multiplex CAN. Also CBCU5 can be programmed customer-specific and offers a 12 / 24 V LIN interface for low-cost communication.

Control units overview

	ZR5-A	CBCU5
Installation	cabin	cabin
Operation mode	master	master
Max nbrs of MUX5-B nodes on MCAN	up to 18	up to 4
LIN interface	2	3
CAN interface	8	8

Node MUX5-B

	MUX5-B
Installation	cabin
Operation mode	client
Corresponding central computer	ZR5-A, CBCU5, gVCU NG
Input digital analog	 20 10 (also usable as digital inputs)
Output high side (PWM) low side	 24 (8) 8
Half bridges for motor control	4
CAN interface	MCAN JS

ZR5-A Central computer.

Advantages at a glance

- Generic central computer for general purpose
- Complex gateway functionality
- Central gateway for EOL programming & diagnosis
- Up to 18 nodes
- Application programming via KIBES® LC3 (IEC 61131-3)
- Supports application functions up to ASIL B acc. ISO 26262

The central controller ZR5-A is an intelligent and powerful gateway controller used together with a variable number of multiplex nodes (max. 18) in high-end multiplex systems.

It is compatible with the node MUX5-B and can be connected to up to three powerful multiplex CANs. It also provides an efficient CAN structure to connect various instrument clusters: MultiViu® Professional 12 and MultiViu® Compact 7 are possible choices as well as the driver's workplaces DWP+ and mDWP.

To achieve a maximum of flexibility, all the CAN communication is based on generic objects and supports flexible data rate (FD). ZR5-A also provides a central gateway for EOL programming and diagnosis and is controlled by the model based application programming tool KIBES® LC3 (IEC 61131-3). This device is designed according to ISO 26262 and supports application level up to ASIL B.

Technical specifications

ISO 26262

Dimensions	162 x 165 x 30 mm
Nominal voltage	12 V and 24 V
Operating temperature	-40 °C ... +85 °C
Protection class	IP 40
CAN interface Protocol SAE J 1939; generic CAN objects Multiplex CAN to MUX5-B Diagnosis CAN	8 4 3 1
LIN interface	2 (12 V)
Input digital (level programmable)	8 (there of 4 wake up capable)
Power-output low side (4 configurable as Digital Input) 0.25 A	7 (2x ASIL B)
Power-IO (configurable as HS, LS or digital Input) 0.25 A	2
Input frequency	2
Output sensor supply	1 (20 mA @ 8 V)
Diagnostic protocol	UDS on D CAN
Wake up	digital inputs, CAN, LIN

CBCU5 Central body control unit.

Advantages at a glance

- Generic body computer for general purpose usage
- Computing capabilities together with various inputs and power outputs combined in a compact device
- Enhanced network functionality using up to 4 MUX5-B
- Application programming via KIBES® LC3 (IEC 61131-3)
- Supports application functions up to ASIL B acc. ISO 26262

CBCU5 satisfies the growing demand for reliable and powerful onboard control units by centralizing the intelligence and input / output management of the cabin and body to one device.

CBCU5 implies not only high reliability and robustness but also a high potential for reduction of wiring harness, connectors, relays and fuses. It can be connected to up to four nodes via powerful multiplex CAN connection. CBCU5 can be connected to instrument clusters like MultiViu® Professional 12 or MultiViu® Compact 7 via instrument CAN.

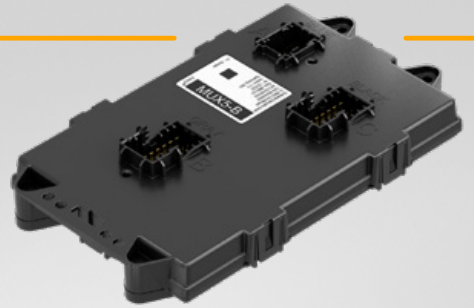
CBCU5 is a generic body controller to cover all possible functional requirements for heavy duty trucks, small busses and as well special vehicle applications. It provides a 12 / 24 V LIN interface for low-cost communication between the actuators and sensors in the vehicle. CBCU5 can be extended by up to four MUX5-B nodes. This device is designed according to ISO 26262 and supports applications level up to ASIL B.

Technical specifications

ISO 26262

Dimensions	252 x 190 x 43 mm
Nominal voltage	12 V and 24 V
Operating temperature	-40 °C ... +85 °C
Protection class	IP 40
CAN interface	total 8
Protocol SAE J 1939; generic CAN objects	6
Multiplex CAN to MUX5-B (can also be used as generic CAN)	1
Diagnosis CAN	1
LIN interface	3
Input digital	total 56
1.6 mA (high)	25 (6 w / wake up; 2 ASIL A; 3 ASIL B)
1.6 mA (configurable)	17 (2 ASIL B)
5.0 mA (configurable)	8 (2 ASIL B)
8.0 mA (configurable)	6 (2 ASIL B)
Input analog (configurable)	4 (2 ASIL B)
Power-output high side	total 22
0.2 A	4 (2 ASIL A; 2 PWM)
1.0 A	10 (2 ASIL B; 5 PWM)
2.0 A	2 (2 ASIL B; 2 PWM)
3.0 A	6 (ASIL B)
Power-output half-bridge	
5.0 A	4
Output sensor supply	2 (200 mA @ 12 V; 100 mA @ 5V)
Diagnostic protocol	UDS on D CAN
Wake up	digital inputs, CAN, LIN

MUX5-B Multiplex node.



Advantages at a glance

- Generic multiplex node for general purpose
- Built in diagnostic & protection capabilities
- Multiple input & output capabilities
- Supports application functions up to ASIL B acc. ISO 26262

The MUX5-B is a generic multiplex node to decentralize and optimize the system. It provides one CAN interface connected to ZR5-A central computer and a large number of inputs and outputs. It is designed for cabin installation and provides built-in diagnostic and protection capabilities as well as multiple input and output capabilities: 24 high side switch outputs, 8 low side switch outputs, 20 digital inputs and 10 analog inputs. This device is designed according to ISO 26262 and supports applications level up to ASIL B.

Technical specifications

ISO 26262

Dimensions	258 x 155 x 30 mm
Nominal voltage	12 V and 24 V
Operating temperature	-40 °C ... +85 °C
Protection class	IP 40
Input digital, 8 mA (parametric)	20
Input analog (parametric)	12
Power-output high side 8.8 A 5.0 A 3.0 A 1.0 A 0.3 A	 2 4 6 8 4
Power-output low side 1.0 A	 8 (4 PWM)
Power-output half bridge 3.0 A	4
Sensor supply 20 mA	2
Wake up	CAN

NODE

gVCU NG Vehicle Control Unit.

The generic Vehicle Control Unit enables to manage quickly all drive train configurations without high development efforts.

A modern vehicle architecture with a VCU (Vehicle Control Unit) as powertrain master controller pro-vides easy to test units and features clearly defined system interfaces and limits – simplifying development and production processes.

Typical VCU functions are engine speed managment, engine brake control, cruise and downhill speed control, power take off, vehicle speed limiter, fan clutch control, outside air temperature measurement, gearbox control, immobilizer and gateway functionality.

The Continental gVCU NG system consists of a universal platform hardware with all necessary I/O features implemented, a base software incl. low level driver and diagnostics of the hardware as well as the proven software development tool MBDS based on MatLab®/Simulink®.

gVCU NG and gVCU NGP Vehicle Control Unit.

Advantages at a glance

- Generic vehicle control unit, also usable for many other purposes
- Supports application functions up to ASIL B acc. ISO 26262
- Available for 24 V and 12 V environment
- KIBES® MBDS and KIBES® LC3 for safe and reliable application function programming

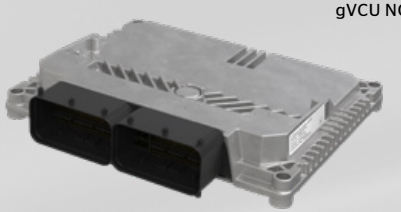
The gVCU NG and gVCU NGP are free of any application program and can be used for any application defined by the customer.

Primarily designed as a vehicle control unit the interfaces of the gVCU NG are dedicated for different accelerator pedal types. The unit provides several CAN and LIN interfaces, digital I/Os and analog inputs as well as frequency I/Os with different characteristics. The gVCU NG is available in two hardware variants: one for 24 V and one for 12 V environment.

The gVCU NGP is designed with outside vehicle use in mind. It is contained in a waterproof housing with an IP 67 protection grade and shares the same EE design, SW, and operational characteristics as the current gVCU NG.

gVCU NG

gVCU NGP



Technical specifications

ISO 26262

Dimensions	218 x 135.6 x 40 mm
Nominal voltage	12 V and 24 V
Operating temperature	-40 °C ... +80 °C
Protection class gVCU NG gVCU NGP	 IP 40 (with connected plugs) IP 67
Pedal interface	1 PWM, 1 Analog, 1 Remote
CAN interface Protocol SAE J 1939; generic CAN objects Multiplex CAN to MUX5-B (can also be used as generic CAN) Diagnosis CAN	6 3 2 1
LIN interface	2 (one for usage with 24 V and one for 12 V LIN slave components)
Input digital	21 (there of 7 wake up and 11 ASIL B capable)
Input analog (6 are configurable)	18
Power-output high side 1 A 2 A	 13 4
Power-output low side 2 A 4 A	 2 1
Pedal interface	1 PWM, 1 Analog, 1 Remote
Input frequency	2
Wake up	digital inputs, CAN, LIN

Instrument Clusters At a glance.

Continental provides a wide range of display solutions suitable for various requirements and easy customization.
Logic and human machine interfaces of all our solutions are individually programmable.

MultiViu® Professional 12 Generation 2

The MultiViu® Professional 12 Generation 2 is the most innovative stand-alone instrumentation display product. It provides high-quality presentation of pictures, 2D / 2,5D-graphics and videos with high flexibility through a fully programmable 12.3" wideview colored TFT display. Thanks to its customizable modular concept it can easily be adapted to the dashboard geometry. The MultiViu® Professional 12 Generation 2 is programmable via KIBES® LC3 and KIBES® CGI Studio. It is compatible with Continental's Driver's Workplace systems.

MultiViu® Compact 7

The MultiViu® Compact 7 is a flexible full digital display instrumentation, which comes at an affordable price. Thanks to its bright TFT module it stays readable even under direct sunlight. Its tablet like design, with 7" TFT and optional touch function, can easily be adapted to give the customer an individual product.

Specifications and features

	MultiViu® Professional 12 Generation 2	**MultiViu®** Compact 7
Display	12,3" / 1920 x 720 pixel	7.0" / 800 x 480 pixel
Dimensions (w x h x d)	Modern: 335 x 173 x 54 mm Classic: 414 x 219 x 56 mm	271 x 134 x 43 mm
Software tool	KIBES® LC3 + KIBES® CGI Studio	KIBES® LC3 + KIBES® grADI

MultiViu® Professional 12 Generation 2.

Advantages at a glance

- High performance dual µC hardware with a dedicated vehicle controller for automotive real-time requirements an additional graphics controller supporting high-end Human Machine Interface needs
- 2 mechanical versions with identical functionality
  - "Classic" version with well known dimensions and fixation points for easy installation into existing customer dashboards or Continental DWP+ or mDWP
  - "Modern" version supports new dashboard styling and can be screwed on with a VESA mount.
- Application programming using KIBES® LC3 for functional programming and KIBES® CGI Studio for graphical programing of the display area
- Supports application functions up to ASIL B acc. ISO 26262

Description

- Super wide-view 12,3" color TFT-display with HD resolution of 1920 x 720 px in 8:3 format
- Display optically bonded to a mineral front glass
- Touch area over the full display for flexible user interaction
- Several interfaces available: highspeed CAN, anlog video, LIN, I/Os, Audio, Ethernet

With the MultiViu® Professional 12 Generation 2 we offer the most innovative off-the-shelf instrument cluster. It is fully programmable to different needs and requirements and supports the trend towards a larger and more colorful display with its 12.3" full-color TFT display.

MultiViu® Professional 12 Generation 2 is the path forward of successful todays MultiViu® Professional 12 but updated with latest technology and features.

The future of primary vehicle instrumentation – replacement of a conventional pointer cluster with a large display instrument: Use of large high-resolution color TFT-displays for indication of driver, vehicle and traffic information in real time.

YouTube Continental MultiViu® Professional 12 Generation 2

Modern

Classic

Specifications and features

ISO 26262

Dimensions	Modern: 335 x 173 x 54 mm Classic: 414 x 219 x 56 mm
Display	12,3" / 1920 x 720 pixel
Nominal voltage	12 V or 24 V
Operating temperature	-30 °C ... +70 °C
Protection class	IP 54 front / IP 20 back
CAN interface	4
LIN interface	2
Ethernet	1 (DoIP / digital video input)
Acoustic	1x Audio output for external loudspeaker 1x Internal loudspeaker
Input digital	67 (8 are wakeup capable)
Input analog (configurable)	6
Power-output high side 0.1 A	19
Ambient light sensor	1
Analog video input	3 (PAL/NTSC)
Digital video input	2 (Ethernet H.264 streaming / LVDS)
Telltales	14
Wake up	digital inputs, CAN, LIN

MultiViu® Compact 7.

Advantages at a glance

- Stand-alone display unit for various purposes
- 2 versions available for landscape or portrait usage
- Customization of telltales and symbols possible
- Application programming using KIBES® LC3 for functional programming and KIBES® grADI for graphical programing of the display area

Description

- Display: 7,0", 15:9, 800 x 480 pixel, brightness 800 cd / m^2 min., contrast 1,000:1 (typ.) transmissive
- Optional touch area over the full display for flexible user interaction

The MultiViu® Compact 7 is an universal off-the-shelf display solution based on TFT display controllers. With 24 status-indicators large amounts of driver information can be displayed. Its tough and scratch-resistant mineral glass surface and the optical bonding of the display make it the perfect solution for the use in dirt-prone environments and readable also in strong sunlight. The modular architecture offers easy and economic customization of logo, telltales and AGAF coating. It can be used either as primary cluster or as second device (e. g. for menu navigation). Optionally the display is available with a capacitive touch panel.

Specifications and features

ISO 26262

Dimensions	271 x 134 x 43 mm
Display	7,0" / 800 x 480 pixel
Nominal voltage	12 V and 24 V
Operating temperature	-30 °C ... +70 °C
Protection class	IP 65 front / IP 64 back
CAN interface	2
Input digital	15 (3 are wakeup capable)
Input analog	
voltage	3
resistive	3
Power-output high side	
0.05 A	4
0.8 A	1
Input frequency	2
Analog video input	1 (PAL/NTSC)
Telltales	24
Wake up	3 digital inputs / CAN

Driver’s workplaces functionality and flexibility.

Continental offers driver’s workplace solutions for different purposes: city and intercity buses as well as special vehicle applications.

The driver’s workplace can be extended from its base version by two further customized panels. The integrated instrument cluster solution MultiViu® Professional 12 Generation 2 is fully programmable, easy to handle and displays all relevant information according to the bus operating mode. The switch panels with PowerOn or memory function (CAN-based) are fully programmable and customizable, as well as integrated RGB-LEDs to support individual switch state lightening and ambient light, for example. You can even create your own panel or use a 3rd party module for integration into the modular concept. On demand, functions like the display of camera information can be implemented.

More information on mDWP

Driver’s workplaces At a glance.

Continental Driver’s workplace solutions have been designed for greatest flexibility and functionality.

Driver’s workplace – DWP+

The workplace for functionality and flexibility offers an innovative design with contemporary features. Equipped with the instrument cluster solution MultiViu® Professional 12 Generation 2 it provides various possibilities of customer-specific adaption. The color pad of the DWP+ is also customizable to match with vehicle design. Moreover, an accessory holder and a power outlet for miscellaneous applications (mobile phones, navigation, etc.) are available as optional features.

Modular concept – mDWP

The new modular concept of a driver’s workplace for city buses and coaches sets a new standard in flexibility, individuality, design and technology. It can easily be adapted to different cases, in compliance with all ergonomic requirements, safety and usability according to VDV and EBSF standards. The modular elements fit perfectly with the interior design used in the latest generation of buses, resulting in attractive, flexible and very practical driver’s workplaces. The separation of the individual elements provides individual design possibilities. The modular driver’s workplace was recognized by IF Design Award and German Design Award.

YouTube Modular drivers workplace for truck and bus drivers

mDWP Configurator

IF DESIGN AWARD 2015

GERMAN DESIGN AWARD WINNER 2016

KIBES® system and application development.

A fast delivery time to market is one of the benefits of the KIBES® system approach. With the integrated KIBES® software tool chain for application and human machine interface programming no expert knowledge is needed. The tool chain allows an easy and fast design of software functionality for ECUs and Instrument Clusters.

All functional programming tools offer an integrated model based development environment for a seamless and holistic design approach. They realize an integrated process flow from specification, implementation and test up to automated code generation, build process and download of the generated software binary file to the target product.

Especially the new generation tools KIBES® LC3 and KIBES® MBDS support the development process by model rule checking, document generation and automated testing at model and source code level. In order to support development of ASIL rated functionality they are ISO-26262 compliant up to an ASIL level B. Finally, interfaces to the graphical programming tools KIBES® grADI and KIBES® CGI Studio are provided for an easy and seamless integration of HMI designs in the overall development process.

YouTube KIBES® Software Platform and Tool Chain

KIBES® system Functional Programming Tools.

KIBES® LC3 Better visibility into complex structures

The innovative and powerful development tool for the next generation KIBES®-LC3 family is a significant step forward in programming PLC according to IEC 61131-3. It offers an improved graphic representation and helpful features for bringing better visibility into complex structures. It also gives the user an improved overview over large projects by customizable positioning of different views and windows.

Advantages at a glance
- Context sensitive extended assistance
- Syntax highlighting in structured text
- Step by step debugging features to save time in analyzing complex application programs
- Predefined templates to save programming time and reduce syntax problems

KIBES® MBDS Comprehensive and powerful simulation capabilities

The **KIBES® M**odel **B**ased **D**evelopment **S**ystem (MBDS) is a software development environment based on MATLAB® Simulink by The MathWorks. It provides all the benefits of the state-of-the-art modelling tool Simulink but turns the versatile and complex MATLAB and Simulink software into an easy-to-use automotive embedded software development tool for our KIBES® products. The comprehensive and powerful simulation capabilities are very useful in upfront analyzing models for improving the overall quality of your designs. Especially in the field of control design and complex algorithms the visualization capabilities are most welcome and finally, with Stateflow even the design of flow charts and state machines is well supported.

KIBES® system Graphical Programming Tools.

KIBES® grADI Create's human machine interface

The KIBES® grADI software is a tool for professional mask design. It gives customers the possibility to create their own graphic human machine interface and to easily adapt to market demands.

Advantages at a glance
- Supports screen design of dot-matrix and colored TFT displays up to WVGA resolution
- Fits seamlessly to the KIBES® LC3 software tool chain
- Graphic objects and text files are created by a common software tool like Adobe and can be easily imported into KIBES® grADI
- Basic animations possible
- Multi-language support for international applications
- Development tool based on CINEMA 4D
- Intuitive GUI for human machine interface implementation

KIBES® CGI Studio Create's premium human machine interface

KIBES® CGI Studio is a professional software tool to create a premium human machine interface with high definition graphics. It is compatible to the MultiViu® Professional 12 Generation 2 and is adapted to the KIBES® LC3 software, which controls the cluster's functionality. With KIBES® CGI Studio you will receive brilliant looking human machine interfaces displayed with the MultiViu® Professional 12 Generation 2.

Advantages at a glance
- Drag and drop scene editor
- Reusable graphic elements
- Time and curve editor for key frame animations
- Multiple rendering modes
- Advanced graphic tools (e. g. shader editor, render time analysis)
- Benefits from Continental widgets set
- Multi-language support (Texteffect Widget, UTF16)
- Intuitive GUI for human machine interface implementation
- Multi-language support for international applications
- Development tool based on CINEMA 4D
- Intuitive GUI for human machine interface implementation

KIBES® system Service tools.

KIBES® cvFlash Programming electronic control units

KIBES® cvFlash is an easy to use tool for programming one or more electronic control units as standalone unit. With cvFlash software and updates can be transferred to the ECU. Easy integration into other tool chains.

Advantages at a glance
- Many configuration possibilities
- Specific programming protocol behaviors can be introduced
- ECU programming over UDSonCAN
- Possibility to implement plug-ins to support other protocols and drivers e.g. UDSonIP
- Easy and affordable solution for updates or flashing progress in your workshops

KIBES® cvDiagnostics Diagnostic analysis and parametrization

KIBES® cvDiagnostics is an ODX based application for diagnostic analysis and parametrization of electronic control units. Configured sets of identification data, parameters and I/Os can be read, parameters configurated and I/Os written. Easy integration into other tool chains.

Advantages at a glance
- Many configuration possibilities
- Diganostic analysis over UDSonCAN
- Possibility to implement plug-ins to support other protocols and drivers e.g. UDSonIP
- Easy and cheap solution for diagnostic and parametrization services
- Generate and run Lua Scripts
- Data charts for I/O Control

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Legal notice

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The Future in Motion