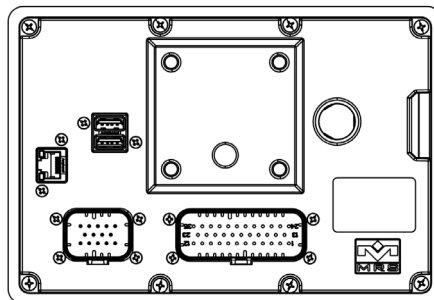


## DESCRIPTION



Angled view



Rear view (depending on assembly)

MConn7 device is an intelligent display that has numerous interfaces: CAN (2x), LIN, USB (2x) and Ethernet and can be used as a controller due to rich number of IOs. Equipped with powerful 32-bit processor it also supports 2D and 3D graphics acceleration, as well as multi touch gestures.

## TECHNICAL DATA

Housing	PC-ABS
Connector	1: TE AMPSEAL 35pol. 2: TE AMPSEAL 14pol. (optional) 3: RJ45 4: 2x USB-A
Display	7" Colour TFT Display 1024 x 600 800 cd/m <sup>2</sup> Contrast ratio: 800 Viewing angle up to 85°
Weight	1.145.020.0161: 670 g 1.145.023.0161: 690 g
Temperature range (acc. to ISO 16750-4)	Operation -20°C...+70°C Storage -30°C...+80°C
Environmental protection acc. to IEC 60529	IP 40
Current consumption	max. 260 mA @ 24 V/ 460 mA @ 12 V
Fuse protection	1 A + Load
Total inputs and output	22: 12 Digital inputs 6 Analog inputs 4 Digital outputs
Inputs	12 Digital inputs, 2 of them with Frequency inputs 6 Analog inputs 0...12.5 V
Outputs	4 Digital outputs (High-Side)
Operating voltage	9...32 V (Code B at 12 V, Code E at 24 V acc. to ISO 16750-2) 11.6...32 V for 10 V Reference voltage output
Overvoltage protection	≥ 33 V
Quiescent current	no sleep mode available
Reverse polarity protection	yes
CAN Interfaces	2x ISO 11898-2:2016 capable CAN Transceiver
Other interfaces	LIN, Ethernet

## TECHNICAL DATA

Features	Multitouch PCAP touchscreen (configurable) Switchable backlight Buzzer
----------	---------------------------------------------------------------------------------

## REGULATORY APPROVALS AND TESTING

E1 approval	06 9864
Electrical tests	<b>Acc. to ISO 16750 – 2 resp. -4:</b> Short circuit protection Reverse polarity test Ground offset Disconnection of pins and connector Long-term overvoltage at T <sub>Max-20K</sub> Storage test at T <sub>Max</sub> and T <sub>Min</sub> Operation test at T <sub>Max</sub> and T <sub>Min</sub> Starting profile (form. Pulse 4 acc. to ISO 7637) Superimposed alternating voltage Slow decrease and increase of supply voltage Momentary drop in supply voltage Reset behaviour at voltage drop  <b>Acc. to ISO 7637 - 2:</b> Pulse 1, 2a, 2b, 3a, 3b  <b>Acc. to ISO 10605:</b> Display ESD-resistant up to 15 kV all other ESD-resistant up to 4 kV

## SOFTWARE/PROGRAMMING

## Programming system

MConn7 can be programmed using Qt, which is a popular cross-platform C++ framework used for developing graphical user interfaces (GUIs) and applications. It provides a wide range of libraries and tools and is known for its flexibility and ease of use. It offers a comprehensive set of features for handling graphics, networking, and more.

## INPUT FEATURES - SUMMARY

Pin 9, 10, 17, 19, 20, 22 (Analog inputs)			Pin 1, 2, 5, 8, 11, 12, 25, 28, 29, 31, 34, 35 (Digital inputs)		
	Pin 9 and 10 additionally programmable as Sensor input	Resolution 12 Bit		Pin 2 and 5 also usable as frequency input	Resolution 12 Bit
Voltage input 0...12.5 V	Input resistance	18 k $\Omega$	Digital input	Input resistance	16 k $\Omega$
	Input frequency	$f_g^1 = 120$ Hz		Switch-on threshold	6.3 V $\pm 0.3$ V
	Deviation	$\pm 3$ %		Switch-off threshold	5.2 V $\pm 0.3$ V
Sensor input	Input resistance	1 k $\Omega$ to internal supply voltage	Frequency input 1 Hz...16 kHz	Input resistance	16 k $\Omega$
				Switch-on threshold	3.8 V $\pm 0.3$ V
				Switch-off threshold	1.3 V $\pm 0.3$ V
				Min. pulse width	35 $\mu$ s
				Deviation Frequency measurement	$\leq 16$ kHz max. $\pm 3$ %

<sup>1</sup>Cut-off frequency (-3 dB), measured with square signal 0...10 V<sub>Peak</sub>

## OUTPUT FEATURES - SUMMARY

Pin 3, 4, 6, 7 (VNQ)		
	Protective circuit for inductive loads	Integrated
	Diagnosis of wire breakage	Via current sense
	Diagnosis short circuit	Via current sense
Digital, positive switching (High-Side)	Switching voltage	9-32 V DC
	Switching current	see load tests
	Deviation current sense	>1000 mA $\pm 5$ %
Short circuit resistance against GND and V <sub>s</sub>	Switching-off is controlled by high side driver for each output channel	
Protective circuit overload	Overtemperature shutdown integrated	

LOAD TESTS AT T<sub>+70°C</sub> HSD OUTPUTS

Test voltage	Load	Duration
@ 28 V V <sub>s</sub>	4 x VNQ (3, 4, 6, 7) each 2.0 A	Permanent
@ 28 V V <sub>s</sub>	1 x VNQ (3 or 4 or 6 or 7) 4.0 A	60 min
@ 28 V V <sub>s</sub>	4 x VNQ (3, 4, 6, 7) each 3.5 A	30 sec

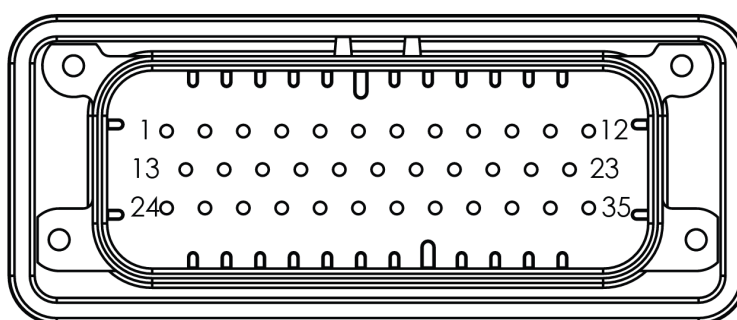
measured at +70°C, 28 V supply voltage, resistive load

## PIN ASSIGNMENT POWER SUPPLY AND INTERFACES 35 PIN CONNECTOR (CONNECTOR 1)

Pin	Pin Description	Pin	Pin Description
13	VCC LIN	24	GND / contact 31
14	LIN	26	CAN1 - L
15	GND / contact 31	27	CAN1 - H
16	supply voltage / contact 30	30	ignition / contact 15
18	GND / contact 31	32	CAN2 - L
21	GND / contact 31	33	CAN2 - H
23	supply voltage / contact 30		

## PIN ASSIGNMENT INPUTS AND OUTPUTS 35 PIN CONNECTOR (CONNECTOR 1)

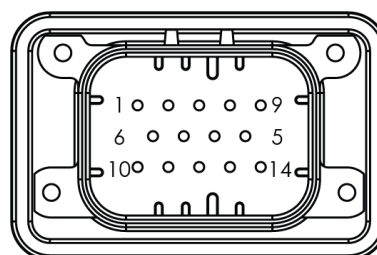
Pin	GPIO	Pin Description	Pin	GPIO	Pin Description
1	91	Digital Input 1	12	144	Digital Input 6
2	117	Digital Input 2	17		Analog Input 3
3	162	Digital Output 1	19		Analog Input 4
4	163	Digital Output 2	20		Analog Input 5
5	124	Digital Input 3	22		Analog Input 6
6	167	Digital Output 3	25	140	Digital Input 8
7	200	Digital Output 4	28	2	Digital Input 9
8	134	Digital Input 4	29	145	Digital Input 7
9		Analog Input 1	31	116	Digital Input 10
10		Analog Input 2	34	122	Digital Input 11
11	139	Digital Input 5	35	136	Digital Input 12



Pin Assignment 35 Pin (1)

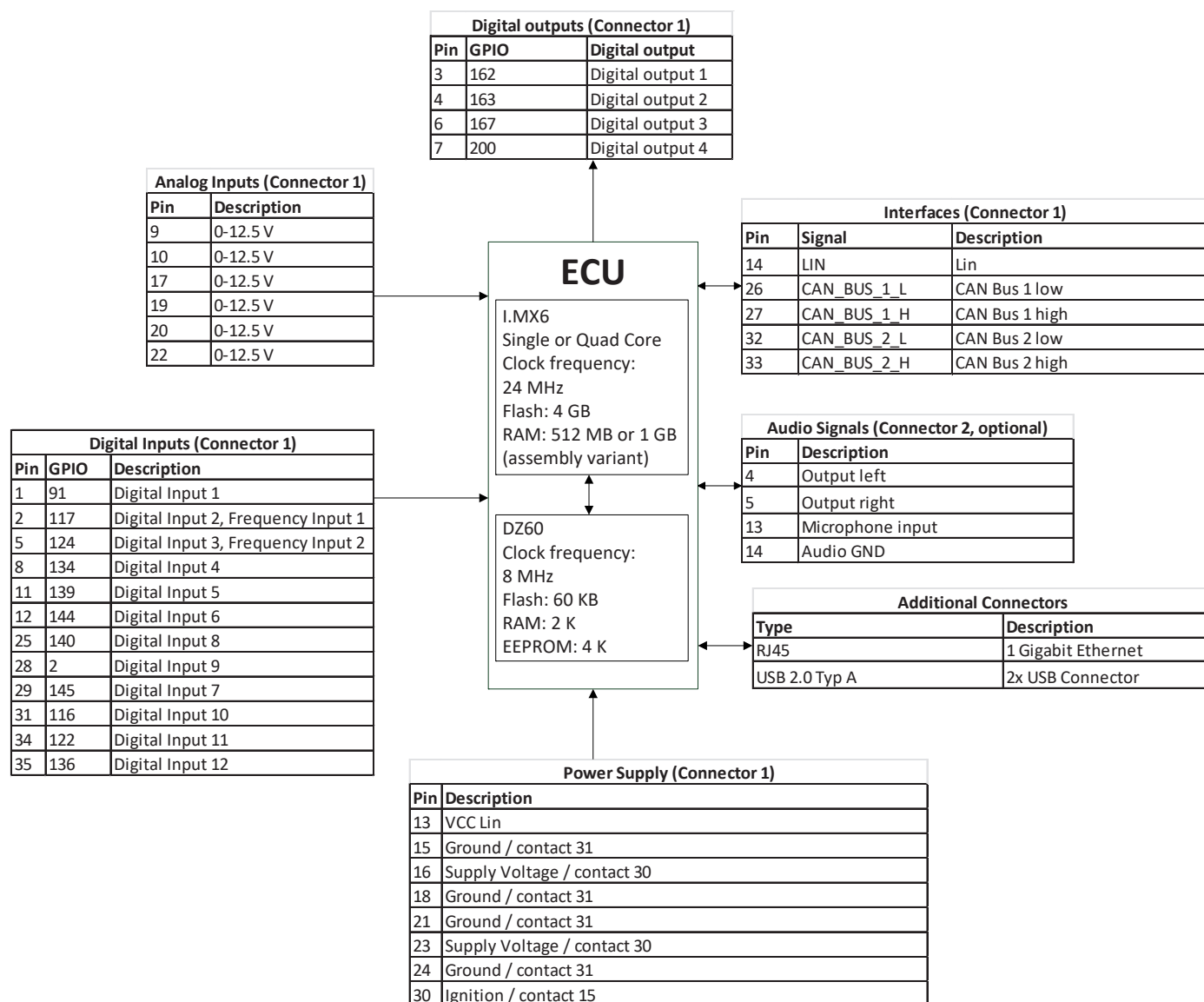
## PIN ASSIGNMENT 14 PIN CONNECTOR (CONNECTOR 2, OPTIONALLY)

Pin	Pin Description
4	Audio Left
5	Audio Right
13	Microphone input
14	GND / contact 31

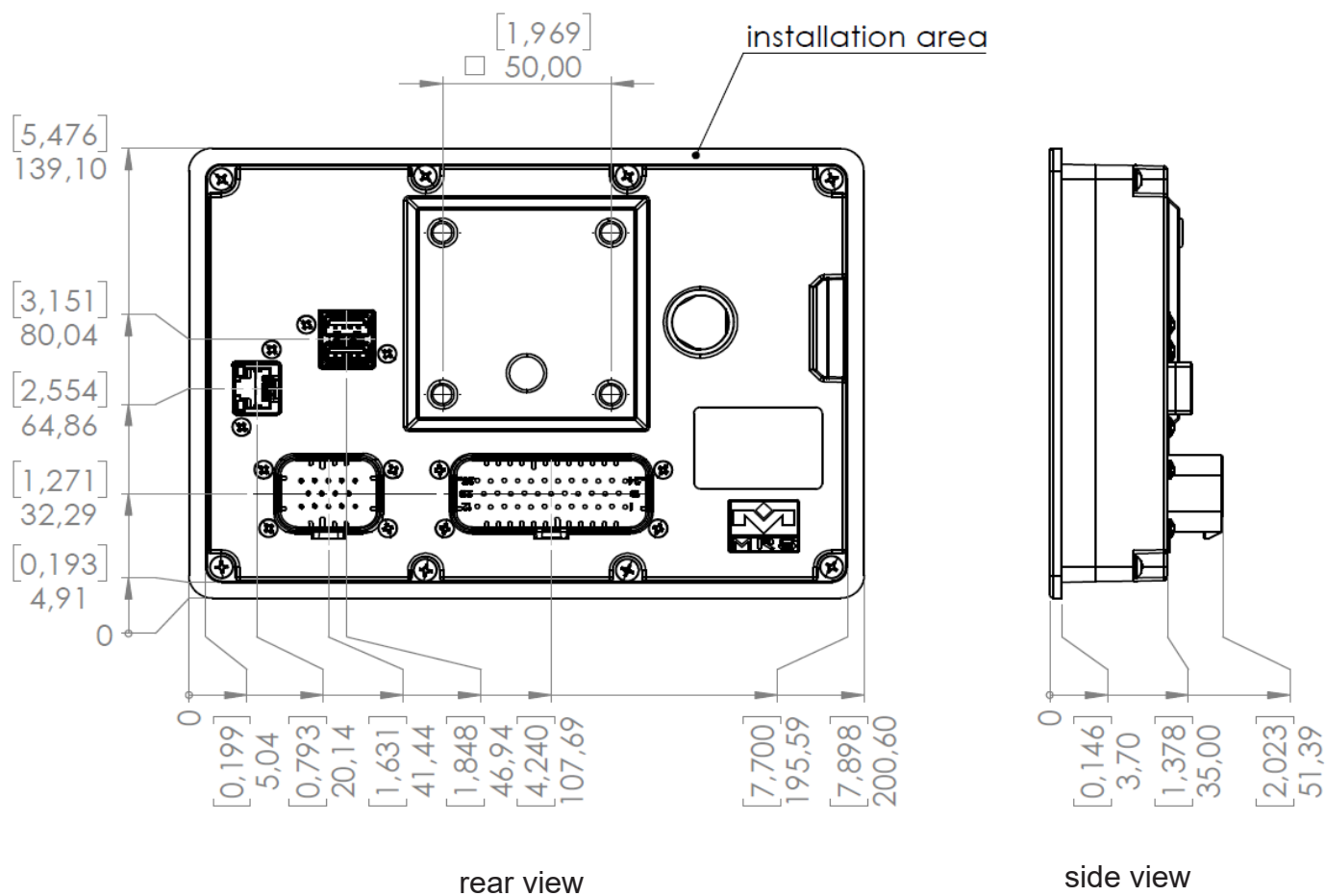


Pin Assignment 14 Pin (2)

## PIN FEATURE MAP



## TECHNICAL DRAWING IN MM [INCH]



## ASSEMBLY VARIANTS AND ORDERING INFORMATION

	Performance			Interfaces		Wake Up	Remarks
	Processor	RAM	Audio	CAN Bus High-Speed	others		
<b>1.145.020.0161</b>	Single Core	512 MB	No audio	CAN 1 CAN 2	LIN Master	No sleep mode available	Connectors: AMPSEAL 776164-1 35 Pin, RJ45, 2x USB
<b>1.145.323.0161</b>	Quad Core	1 GB	Audio Input (mono) Audio output (stereo)	CAN 1 CAN 2	LIN Master	No sleep mode available	Connectors: AMPSEAL 776164-1 35 Pin, AMPSEAL 776273-1 14 Pin, RJ45, 2x USB

## ACCESSORIES

Description	Order No.
Programming cable	502247
Mating connector / AMPSEAL 776164-1, 35 Pin	501833
Mating connector / AMPSEAL 776273-1, 14 Pin	501831
Crimp contact / AMPSEAL 770520-1	501834
PCAN FD USB Adapter	503750

## BRACKETS FROM OTHER MANUFACTURERS

Name	Manufacturer no.	Link
RAM Mounts AMPS Halterset	RAM-B-138U	<a href="https://www.mount-shop.de/AMPS-Halterset-mit-Diamond-Base-und-Round-Base/RAM-B-138U">https://www.mount-shop.de/AMPS-Halterset-mit-Diamond-Base-und-Round-Base/RAM-B-138U</a>
RAM Mounts Diamond Base	RAM-B-238U	<a href="https://www.mount-shop.de/Diamond-Base/RAM-B-238U">https://www.mount-shop.de/Diamond-Base/RAM-B-238U</a>
RAM Mounts Socket Arm Standard	RAM-B-201U	<a href="https://www.mount-shop.de/Socket-Arm-Standard-9-47-cm-3-73-inch/RAM-B-201U">https://www.mount-shop.de/Socket-Arm-Standard-9-47-cm-3-73-inch/RAM-B-201U</a>
RAM Mounts Round Base	RAM-B-202U	<a href="https://www.mount-shop.de/Round-Base/RAM-B-202U">https://www.mount-shop.de/Round-Base/RAM-B-202U</a>



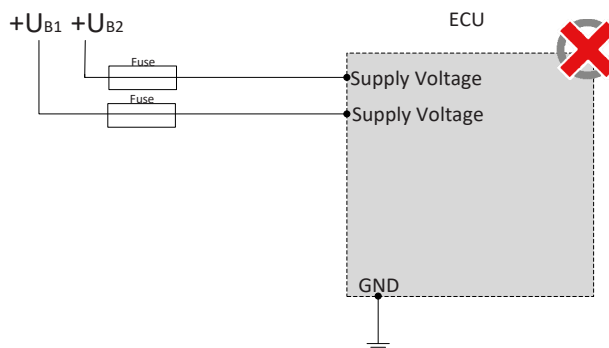
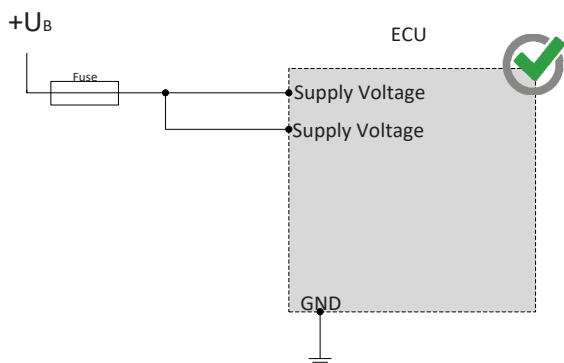
Image similar

## MANUFACTURER

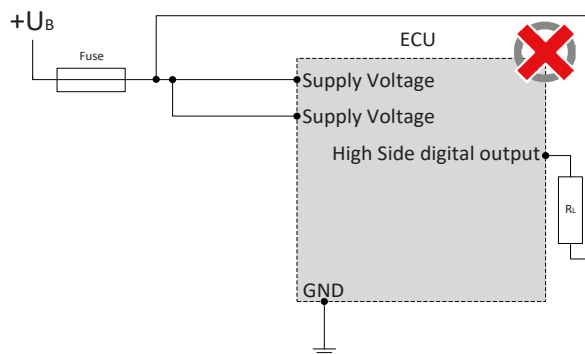
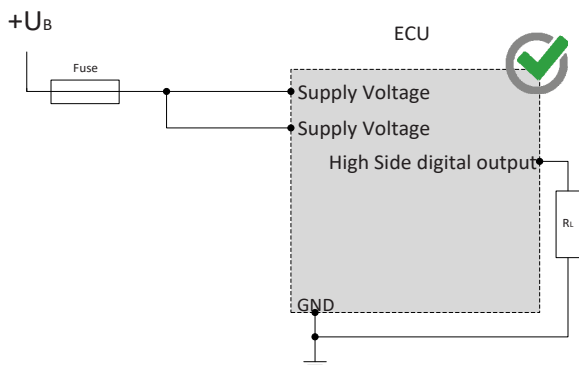
MRS Electronic GmbH & Co. KG  
 Klaus-Gutsch-Str. 7  
 78628 Rottweil  
 Germany

## NOTES ON WIRING AND CABLE ROUTING

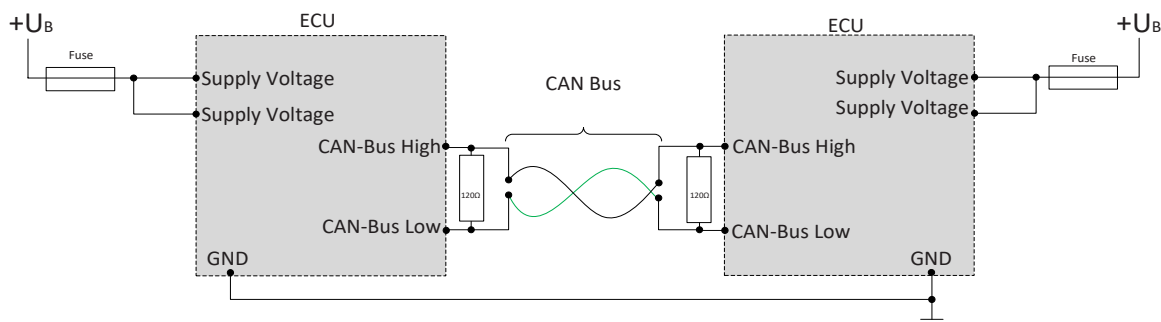
The electronic system and the power outputs of a control unit must be supplied by the same power supply system.



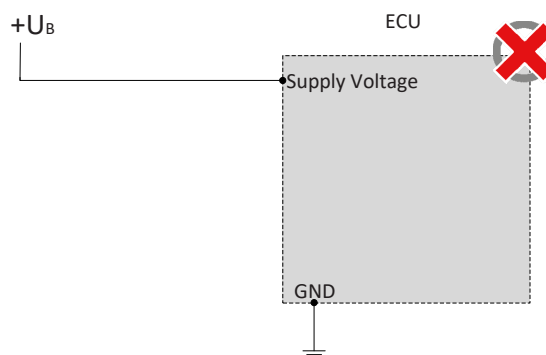
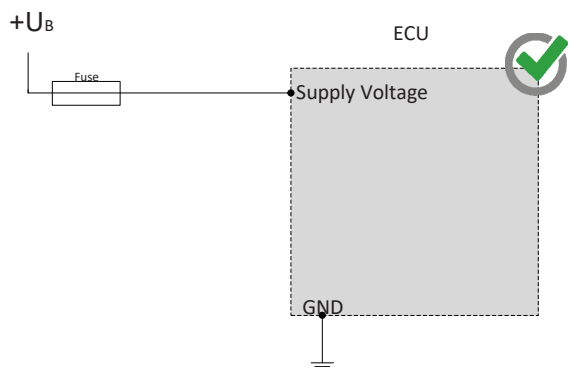
Highside outputs may only be switched to ground.



CAN bus communication is the main communication between the control unit and the vehicle. Therefore, connect the CAN bus with special care and check the correct communication with the vehicle to avoid undesired behavior.



The control must be protected against overload (see performance data)





## SAFETY AND INSTALLATION INFORMATION

It is essential to read the instructions in full thoroughly before working with the device.

Please note and comply with the instructions in the operating instructions and the information in the device data sheet, see [www.mrs-electronic.com](http://www.mrs-electronic.com)

**Staff qualification:** Only staff with the appropriate qualifications may work on this device or in its proximity.

### SAFETY



**WARNING! Danger as a result of a malfunction of the entire system.**

Unforeseen reactions or malfunctions of the entire system may jeopardise the safety of people or the machine.

- Ensure that the device is equipped with the correct software and that the wiring and settings on the hardware are appropriate.



**WARNING! Danger as a result of unprotected moving components.**

Unforeseen dangers may occur from the entire system when putting the device into operation and maintaining it.

- Switch the entire system off before carrying out any work and prevent it from unintentionally switching back on.
- Before putting the device into operation, ensure that the entire system and parts of the system are safe.
- The device should never be connected or separated under load or voltage.



**CAUTION! Risk of burns from the housing.**

The temperature of the device housing may be elevated.

- Do not touch the housing and let all system components cool before working on the system.

### PROPER USE

The device is used to control or switch one or more electrical systems or sub-systems in motor vehicles and machines and may only be used for this purpose. The device may only be used in an industrial setting.



**WARNING! Danger caused by incorrect use.**

The device is only intended for use in motor vehicles and machines.

- Use in safety-related system parts for personal protection is not permitted.
- Do not use the device in areas where there is a risk of explosion.

**Correct use:**

- operating the device within the operating areas specified and approved in the associated data sheet.
- strict compliance with these instructions and no other actions which may jeopardise the safety of individuals or the functionality of the device.

### Obligations of the manufacturer of entire systems

It is necessary to ensure that only functional devices are used. If devices fail or malfunction, they must be replaced immediately.

System developments, installation and the putting into operation of electrical systems may only be carried out by trained and experienced staff who are sufficiently familiar with the handling of the components used and the entire system.

It is necessary to ensure that the wiring and programming of the device does not lead to safety-related malfunctions of the entire system in the event of a failure or a malfunction. System behaviour of this type can lead to a danger to life or high levels of material damage.

The manufacturer of the entire system is responsible for the correct connection of the entire periphery (e.g. cable cross sections, correct selection/connection of sensors/actuators).

Opening the device, making changes to the device and carrying out repairs are all prohibited. Changes or repairs made to the cabling can lead to dangerous malfunctions. Repairs may only be carried out by MRS.

### Installation

The installation location must be selected so the device is exposed to as low a mechanical and thermal load as possible. The device may not be exposed to any chemical loads.

Install the device in such a manner that the plugs point downwards. This means condensation can flow off the device. Single seals on the cables/leads must be used to ensure that no water gets into the device.

### Putting into operation

The device may only be put into operation by qualified staff. This may only occur when the status of the entire system corresponds to the applicable guidelines and regulations.

## FAULT CORRECTION AND MAINTENANCE



**NOTE The device is maintenance-free and may not be opened.**

- If the device has damage to the housing, latches, seals or flat plugs, it must be taken out of operation.

Fault correction and cleaning work may only be carried out with the power turned off. Remove the device to correct faults and to clean it.

Check the integrity of the housing and all flat plugs, connections and pins for mechanical damage, damage caused by overheating, insulation damage and corrosion. In the event of faulty switching, check the software, switches and settings.

Do not clean the device with high pressure cleaners or steam jets. Do not use aggressive solvents or abrasive substances.