



Front View

DESCRIPTION

Fusion is our new generation of Connected Products with a powerful 32-bit ARM Cortex-A7 processor. The Fusion comes packed with a rich set of wired and wireless interfaces, including CAN (3x), LIN (2x), Ethernet, I/O (5), LTE, GPS, WiFi, and Bluetooth.

TECHNICAL DATA

Housing	PPA, GF33
Connector FT10	1x Cinch 581 01 18 023
Connector FT15	1x Molex 0347290160 (Power, GND, CAN, LIN, I/O) 1x Fakra, Code C GPS connector 1x Fakra, Code D LTE connector
Main Processor	NXP i.MX6UL, 32-bit Cortex-A7 ARM processor Single Core 696 MHz (automotive grade)
Co-Processor	Watchdog, analog inputs, & CAN functions. CAN ready in < 0.5s from cold boot
RAM	256 MB DDR3
Storage	4 GB eMMC for OS and user application. Up to 32 GB available on micro SD card for additional applications or logging
Dimensions	115.4mm x 130.3mm x 42.3mm
Weight	270 g
Over-current Protection	Yes
Quiescent Current	12V: 2.65mA 24V: 5.1mA
Nominal Current	12V: 275mA 24V: 155mA
Maximum Current	12V: 600mA 24V: 300mA
Total Inputs and outputs	9 (5 inputs 4 outputs)
Inputs	5 analog inputs
Outputs	4 PWM capable digital high side drivers (2A each)
Operating voltage	9-32 V DC
Boot Time	< 8 second boot (default) CAN ready in < 0.5s on coprocessor < 2 second boot possible, dependent on OS requirements

TECHNICAL DATA

Interfaces	3x CAN, 20 kbps - 1Mbps 2x LIN, 1kbps - 20kbps Ethernet GPS, NMEA data WiFi Bluetooth 4.0 AM/FM/WX Tuner
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SOFTWARE/PROGRAMMING

Programming System	Qt5, C++, Python, Java
Software Updates	Over the Air (OtA): Ethernet, WiFi, Cellular, CAN

OPERATING SYSTEM

Operating System	Linux, QNX
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ENCLOSURE

Mounting	2x .292" [7.42] mounting boss
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SENSORS

Accelerometer	3-axis, $\pm 2/\pm 4/\pm 8/\pm 16$ g acceleration range. Selectable full scales
Gyroscope	3-axis, $\pm 125/\pm 245/\pm 500/\pm 1000/\pm 2000$ dps angular range. Selectable full scales
Compass	3-axis, used in conjunction with accelerometer to provide accurate heading information
Real Time Clock	Onboard battery to keep track of time while unit is powered off

TESTING

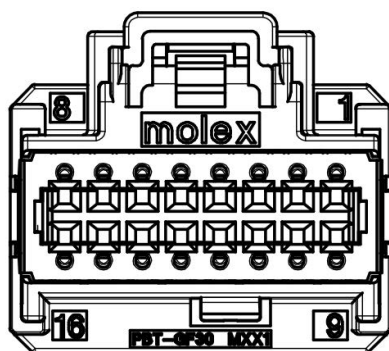
EMC/EMI	ISO 10605, CISPR 25
Immunity	ISO 7637-2, ISO 16750-2
Shock	ISO 16750-3, 20G
Vibration	ISO 16750-3, Test VII
Environmental Protection	IP20 - FT15 Model IP69K - FT10 Model
Temperature range	Operating: -20 °C to 70 °C Storage: -30 °C to 80 °C

FT15 ONLY - IP56

PIN ASSIGNMENT MATING CONNECTOR: MOLEX 0347290160

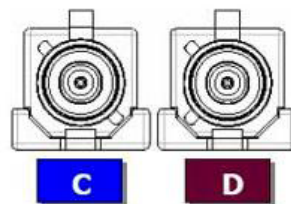
Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	VCC	5	CAN1_H	9	GND	13	CAN1_L
2	AIN4 / PWM3	6	CAN2_L	10	LIN1	14	CAN2_H
3	AIN2 / PWM1	7	LIN2 / RXM	11	Ignition	15	AIN1 / RXP
4	AIN3 / PWM2	8	CAN3_L/TXM	12	AIN5 / PWM4	16	CAN3_H/TXP

MOLEX 0347290160 CONNECTOR



POLARIZATION OPTION A
P/N 34729-0160

ANTENNA CONNECTORS



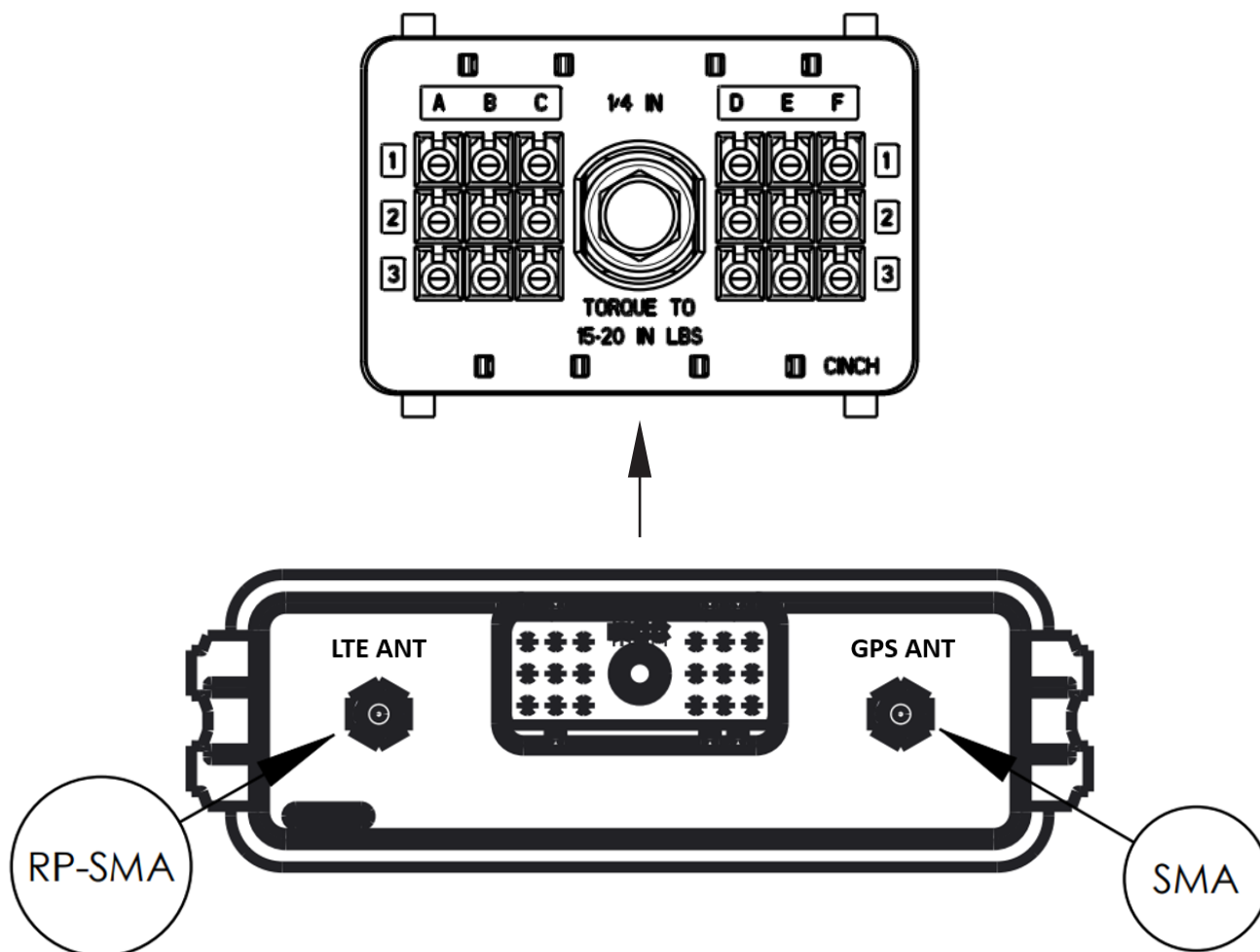
C	Signal blue	5005	GPS
D	Bordeaux violet	4004	Cellular

FT10 ONLY - IP69K

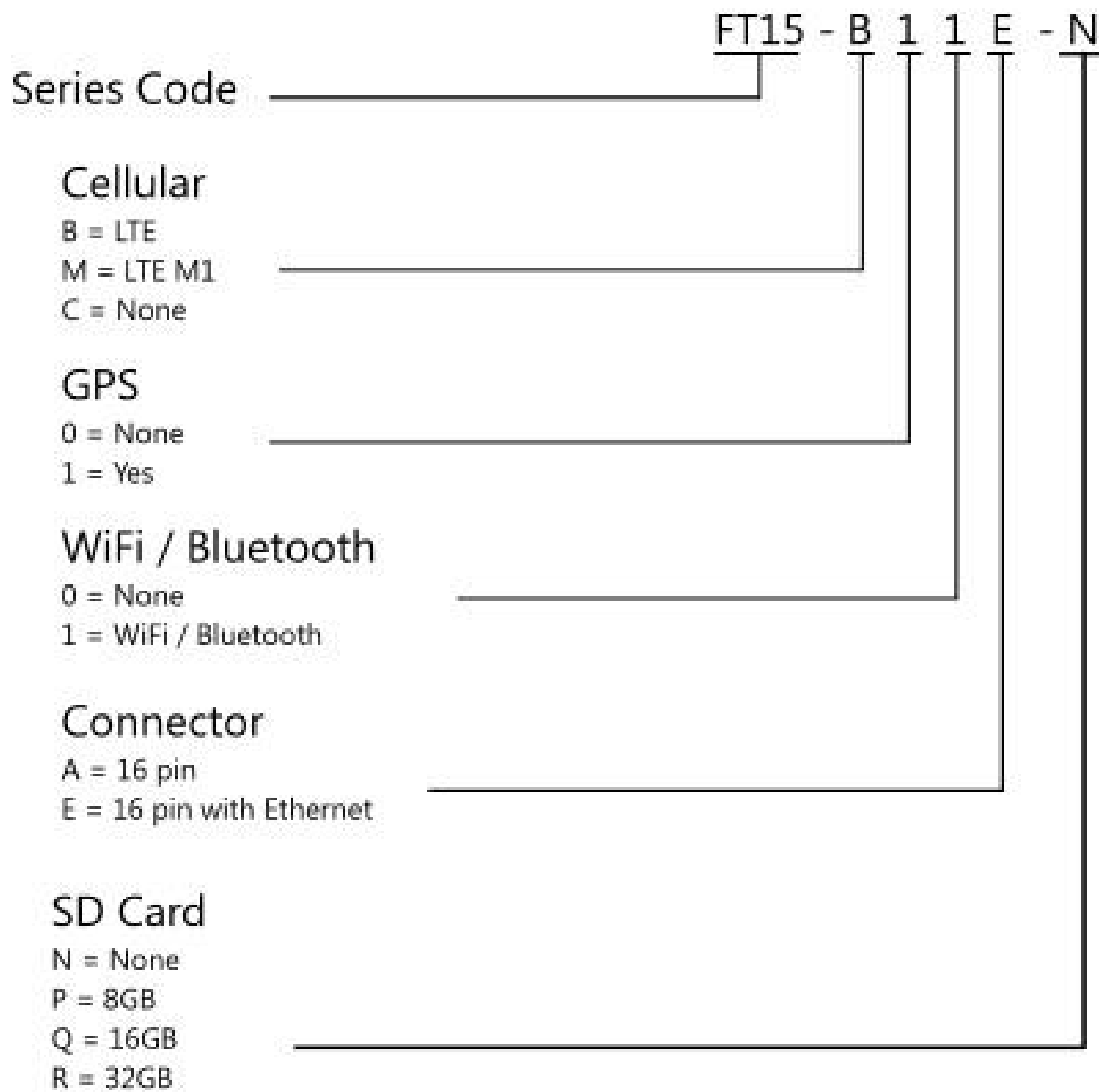
PIN ASSIGNMENT MATING CONNECTOR: CINCH 581 01 18 023

Pin	Function	Pin	Function	Pin	Function
1A	VCC	2A	PWM2 / AIN3	3A	GND
1B	IGNITION	2B	PWM1 / AIN2	3B	PWM3 / AIN4
1C	CAN2_H	2C	CAN2_L	3C	PWM4 / AIN5
1D	CAN1_H	2D	CAN1_L	3D	LIN1
1E	CAN3_H	2E	CAN3_L	3E	TXP
1F	AIN1 / RXP	2F	LIN2 / RXM	3F	TXM

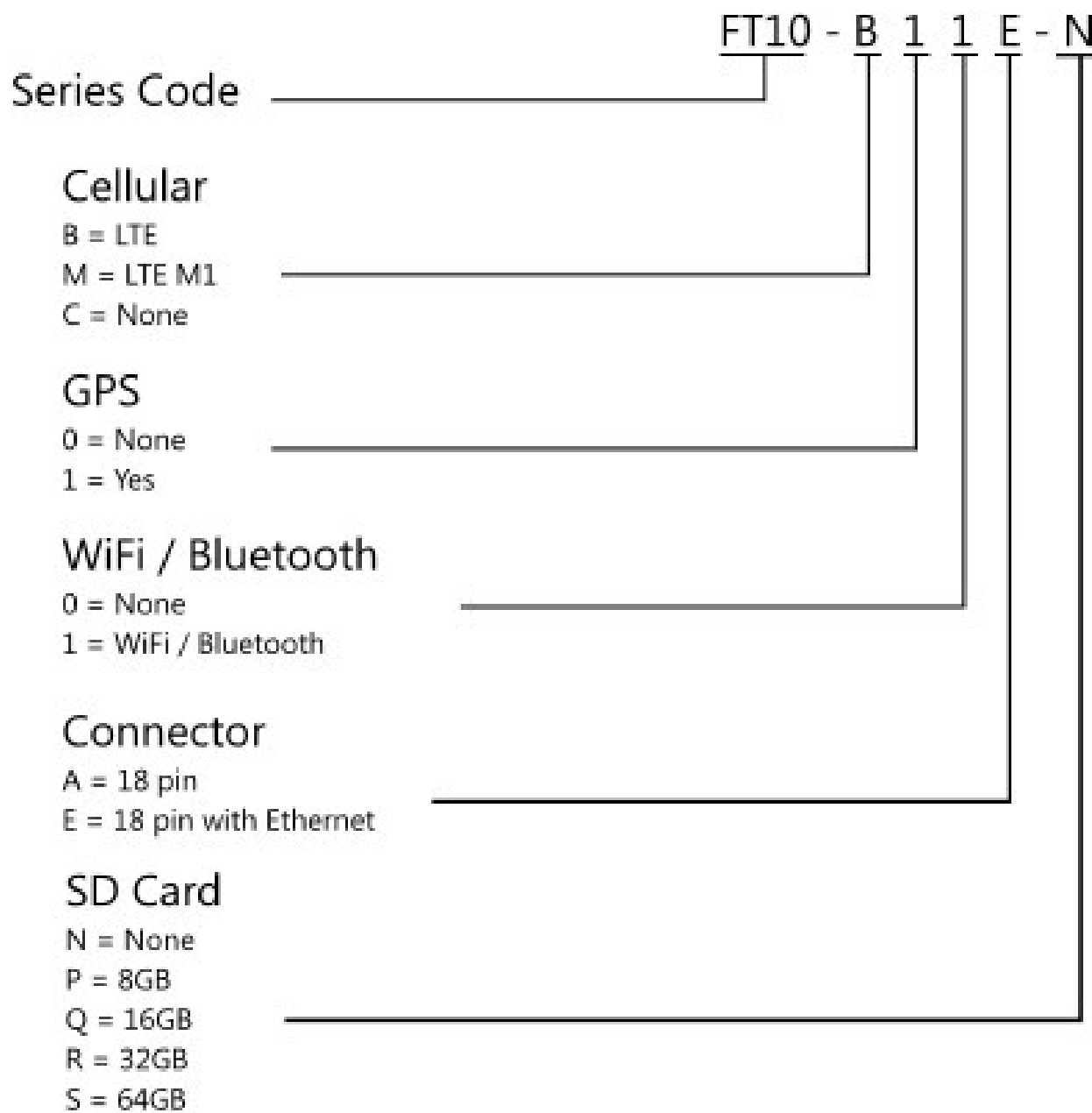
CINCH 581 01 18 023 CONNECTOR



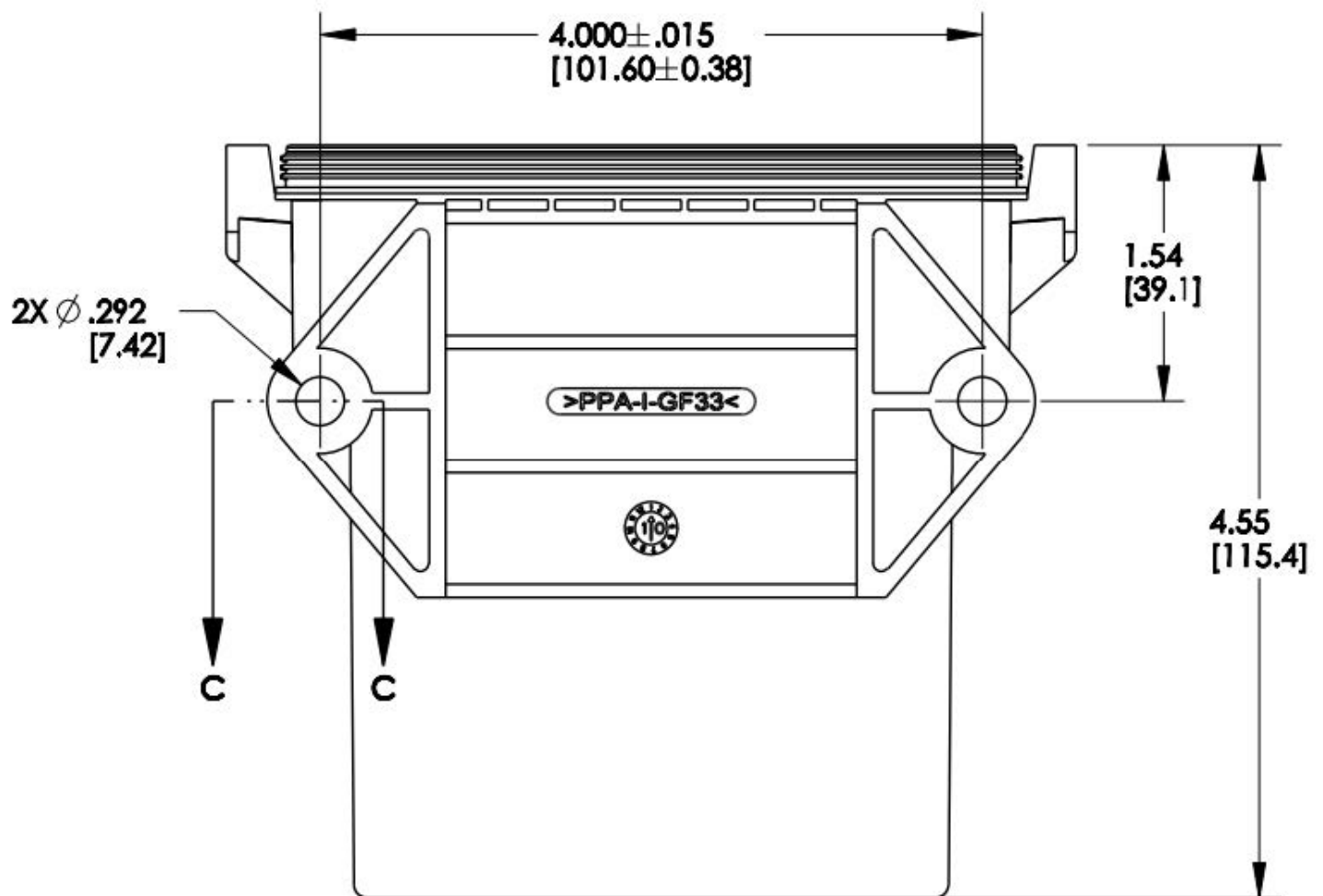
ORDERING INFORMATION - FT15



ORDERING INFORMATION - FT10



TECHNICAL DRAWING (IN MM)



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-electronics.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.