EMITTER ELECTRONICS

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BUILT ON ENGINEERING.

PROVEN IN THE FIELD. SINCE 1990.

2026.05

ENGINEERED FOR REAL-WORLD DEMANDS.

Less wiring.
More control.
Better diagnostics.

Modular by design.
Ready to integrate.
Built to adapt.

ISO 9001 Certified

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CERTIFIED
EN ISO 9001
Certificate No. 20100203010103
TÜV AUSTRIA CERT GMBH

Interschutz Exhibitor

INTERSCHUTZ

We design and build advanced electronic control systems for applications where reliability is critical.

For over 30 years, we've helped OEM partners solve complex challenges in vehicle control, automation, sensing and measurement.

From standard products to fully custom solutions — we turn engineering into real-world performance.

Roman Majer
CEO, Emitter Electronics

CONTENT

MODULAR MULTIPLEX SYSTEM - MMX

KEY FEATURES

- Reduces wiring harness complexity and **decreases total wiring by more than 40%**
- Significantly **reduces the number of relays, fuses and connectors**
- **Fewer components** and simplified diagnostics reduce maintenance time
- **Software-based configuration** allows easy customisation without hardware changes
- **Advanced diagnostic** and monitoring capabilities
- **Improved vehicle reliability** and serviceability
- **Simplified integration** of electrical and electronic vehicle systems
- Scalable distributed **CAN-based architecture**

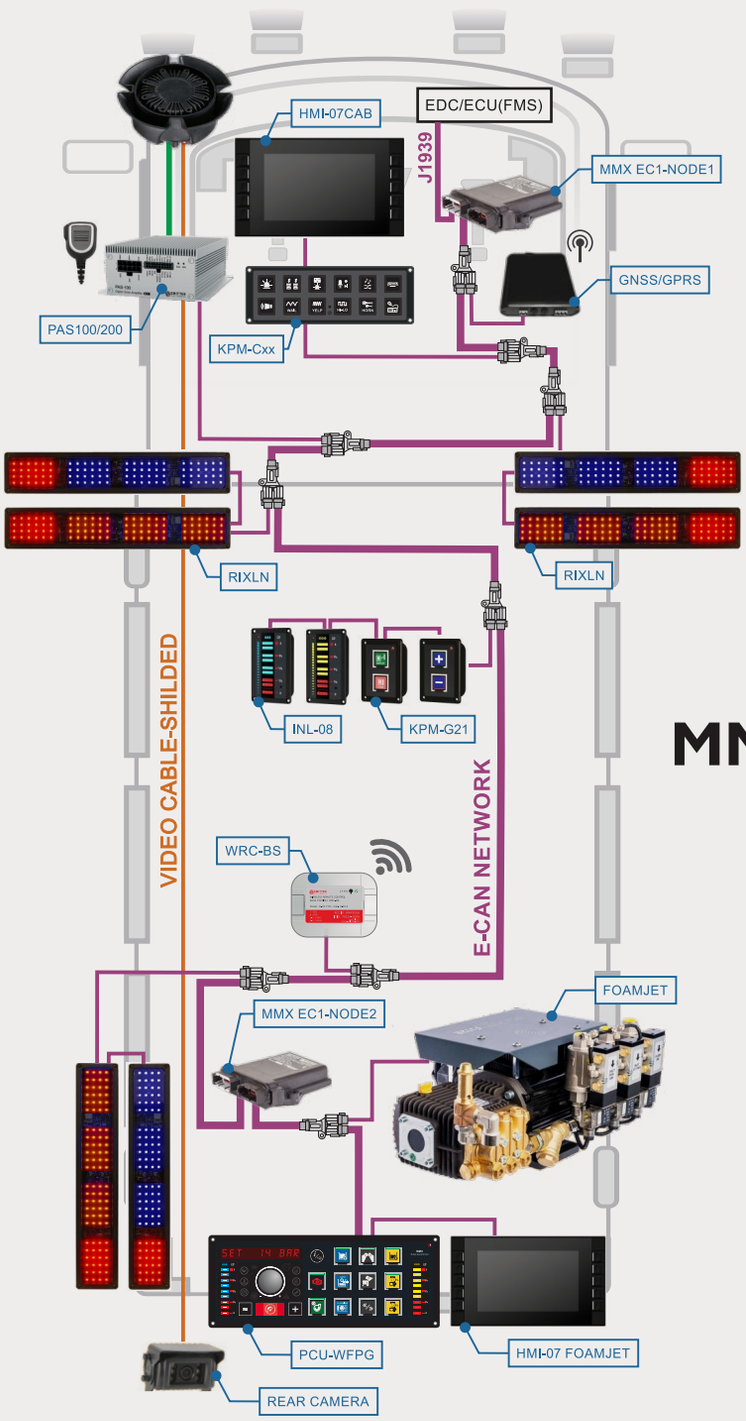
Modern emergency vehicles are becoming increasingly dependent on electronic control systems, displays, sensors and intelligent functions. This rapid growth in electrical and electronic equipment significantly increases the complexity of conventional vehicle wiring systems.

Traditional architectures require separate wires, relays and fuses for nearly every function, resulting in large and complex wire harnesses that are difficult to install, maintain and diagnose.

MMX distributed I/O controllers simplify vehicle electrical architecture by replacing conventional point-to-point wiring with intelligent CAN-based communication. Multiple control signals and system messages are transmitted through a shared datalink network, reducing the amount of wiring required throughout the vehicle.

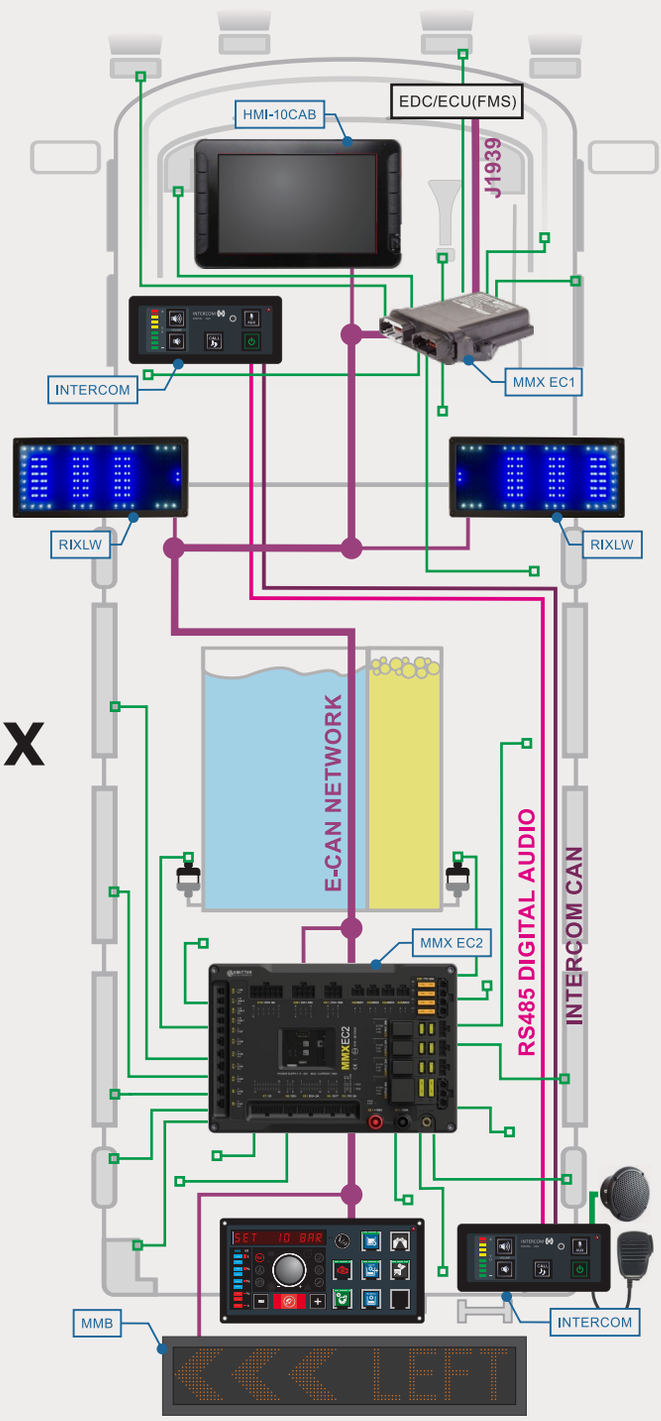
The MMX system continuously monitors and controls vehicle functions while enabling reliable communication between different electronic modules and operator interfaces. Because the system relies on intelligent electronic control rather than large numbers of conventional relays and hardwired connections, the number of components and possible failure points is significantly reduced.

The result is a cleaner, more reliable and easier-to-service electrical system with improved diagnostics, simplified integration and greater flexibility for future vehicle customisation



EXAMPLE 1

MMX



EXAMPLE 2

I/O CONTROLLER

MMX EC1 GEN.6

KEY FEATURES

- **16** Configurable Universal I/O Pins
- **Digital, Analog**, Resistance And Frequency Inputs
- **High-Side, Low-Side** and PWM Outputs
- Integrated **3-Axis Accelerometer**
- Integrated **I/O Status LEDs**
- **Expansion Options** Including H-Bridge, IMU, DAC And RS232/485 Interfaces
- **Scalable Distributed Architecture**

CONNECTIONS

Black Connector: Pin Description					
PIN	**TYPE**	**OPTION 1**	**OPTION 2**	**OPTION 3**	**OPTION 4**
1	FIXED	BATTERY +	-	-	-
2	FIXED	BATTERY +	-	-	-
3	FIXED	CAN LOW 1	-	-	-
4	CONFIGURABLE	CAN LOW 2 (J1939)	CAN LOW 1	-	-
5	CONFIGURABLE	ANALOG INPUT	DIGITAL INPUT +/-	DIGITAL OUTPUT+	-
6	CONFIGURABLE	ANALOG INPUT	DIGITAL INPUT +/-	DIGITAL OUTPUT+	-
7	CONFIGURABLE	ANALOG INPUT	DIGITAL INPUT +/-	DIGITAL OUTPUT+	RESISTANCE INPUT
8	CONFIGURABLE	ANALOG INPUT	DIGITAL INPUT +/-	DIGITAL OUTPUT+	-
9	CONFIGURABLE	CAN HIGH 2 (J1939)	CAN HIGH 1	-	-
10	FIXED	CAN HIGH 1	-	-	-
11	FIXED	BATTERY -	ANALOG GND	-	-
12	FIXED	BATTERY -	-	-	-

Grey Connector: Pin Description						
PIN	**TYPE**	**OPTION 1**	**OPTION 2**	**OPTION 3**	**OPTION 4**	**EXTENSION BOARD**
1	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM	-	-	-
2	CONFIGURABLE	DIGITAL INPUT+/-	DIGITAL OUTPUT + PWM	-	-	-
3	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM	-	-	-
4	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM	-	-	-
5	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM	DIGITAL OUTPUT -	-	EXTENSION A
6	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM	DIGITAL OUTPUT -	-	EXTENSION A
7	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM	DIGITAL OUTPUT -	-	EXTENSION B
8	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM	DIGITAL OUTPUT -	RESISTANCE INPUT	EXTENSION B
9	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM*	DIGITAL OUTPUT -	-	EXTENSION C
10	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM*	DIGITAL OUTPUT -	-	EXTENSION C
11	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM*	DIGITAL OUTPUT -	-	-
12	CONFIGURABLE	DIGITAL INPUT +/-	DIGITAL OUTPUT + PWM*	DIGITAL OUTPUT -	-	-

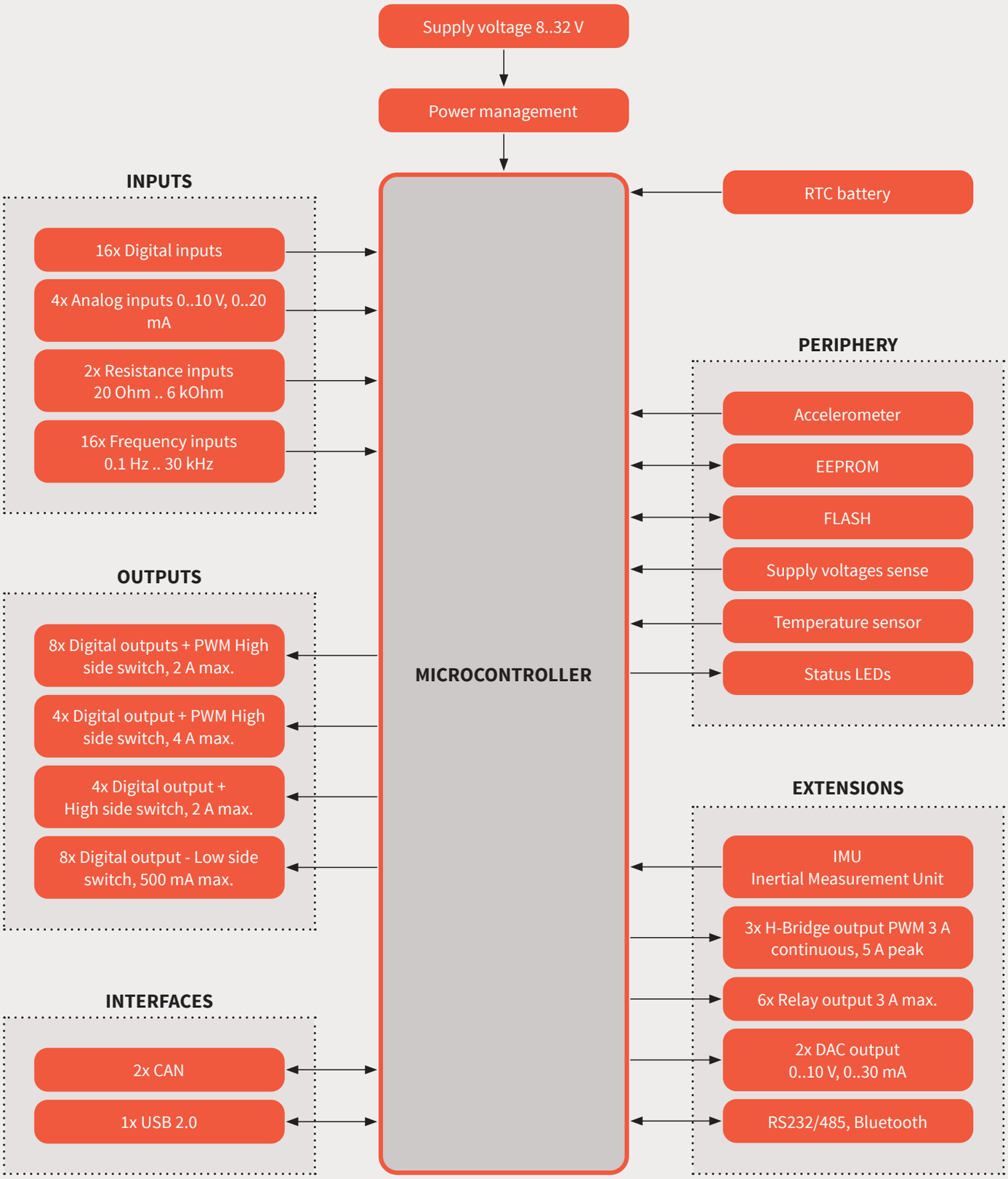
FLEXIBLE CONTROL PLATFORM FOR ADVANCED VEHICLE SYSTEMS

The **MMX EC1** is a highly flexible distributed I/O controller designed for demanding automotive, special vehicle and industrial applications. It provides an intelligent platform for integrating sensors, switches, actuators and CAN-based devices into a reliable and scalable control system.

As part of the Emitter Electronics MMX product family, the MMX EC1 seamlessly integrates with other MMX devices including HMIs, LCD displays, keypads, pump governors, tank level indicators and additional control modules.

For applications requiring extended I/O capacity, multiple MMX EC1 controllers can be connected over CAN networks using CAN SAE J1939, CANopen or custom communication protocols, enabling scalable and highly configurable system architectures.

BLOCK DIAGRAM



NOTE: Block diagram shows all available MMX EC1 G6 controller inputs and outputs - 16 of them can be used simultaneously (MMX EC1 G6 controller has 16 configurable IO pins).

SPECIFICATIONS

KERNEL

Processor	32-bit ARM Cortex-M4, 168 MHz
Processor flash	1 MByte
Processor RAM	192 kByte
External EEPROM	2 kByte
External flash	64 MByte

I/O PINS

Total	16x universal pins, individually configurable via software, all I/O pins are protected against short circuit to GND and BAT +, each I/O pin is diagnosable via status LEDs

INPUTS

Digital input	16x total, configurable integrated pull-up/down resistor and active low/high levels via software, protected
Analog input	4x total, 12-bit resolution, configurable voltage/current input via software, 4 .. 20 mA, 0 .. 10 V, out-of-range detection, protected
Resistance input	2x total, 12-bit resolution, 20 Ohm .. 6 kOhm, Pt1000, Pt100, KTY support, protected
Frequency input	16x total, ≤ 30 kHz, incremental encoder A/B - 8x total, protected

OUTPUTS

Digital output + PWM	8x total, high side switch, 2 A max., 0 .. 100 %, overload/short circuit protection, overtemperature protection, open load detection
Digital output + PWM (high current)	4x total, high side switch, 4 A max., 0 .. 100 %, overload/short circuit protection, overtemperature protection, open load detection
Digital output +	4x total, high side switch, 2 A max., overload/short circuit protection, overtemperature protection, open load detection
Digital output -	8x total, low side switch, 500 mA max., overload/short circuit protection, overtemperature protection, open load detection
DAC output	2x total, 12-bit resolution, available via extension board
Voltage DAC	0 .. 10 V (10mA)
Current DAC	0 .. 30 mA

INTERFACES

CAN	2x CAN, ISO 11898 2.0 A/B up to 1 Mbps, protocols SAE J1939, CANopen, free, etc.
CAN Link	1x T-connection, configurable termination 120 ohm via DIP switch, node ID definition via software
USB	1x USB 2.0, for firmware update
RS232/485, Bluetooth, ...	available via extension boards

OTHER FEATURES

Accelerometer	integrated 3-axis, MEMS, 12-bit digital accelerometer, +/-2, +/-4, +/-8 g, for inclination/acceleration sensing
IMU	3-axis accelerometer 12-bit, measurement ranges ±2 g, ±4 g, ±8 g, ±16 g, resolution 0.98 mg, 3-axis gyroscope 16-bit, ±125 °/s, ±250 °/s, ±500 °/s, ±1000 °/s, ±2000 °/s, resolution 0.004 °/s, 3-axis magnetometer 16-bit, ±1300 µT (x,y), ±2500 µT (z), resolution 0.3 µT, available via extension board
Data logger	system information/data logging, optional RTC logging with dedicated 1000 mAh onboard battery
Monitoring	internal monitoring of power supply voltage, RTC battery voltage, CPU core temperature and board temperature, over/under supply voltage detection, watchdog functionality
LED diagnostics	dedicated on board status LEDs for I/O pin diagnostics and error indication
Protections	overvoltage, transients , load dump protection, reverse polarity protection by external fuse

ELECTRICAL & ENVIRORMENTAL REQUIREMENTS

Supply voltage	8 .. 32 V
Peak supply voltage	≤ 36 V for ≤ 5 min, ≤ 40 V for ≤ 2 s
Idle current	30 mA @ 24 V
Max total current	15 A
RTC battery life	min. 10 years
Operating temperature	-40 .. +85 °C (with full load)

ENCLOSURE

Connector	2x 12 pin Deutch DTM connector, waterproof
Ingress Protection	EN 60529 IP67
Housing material	Nylon 6/6 black glass fibre reinforced, silicone rubber
Housing dimensions	133 x 119 x 35 mm
Weight	250 g

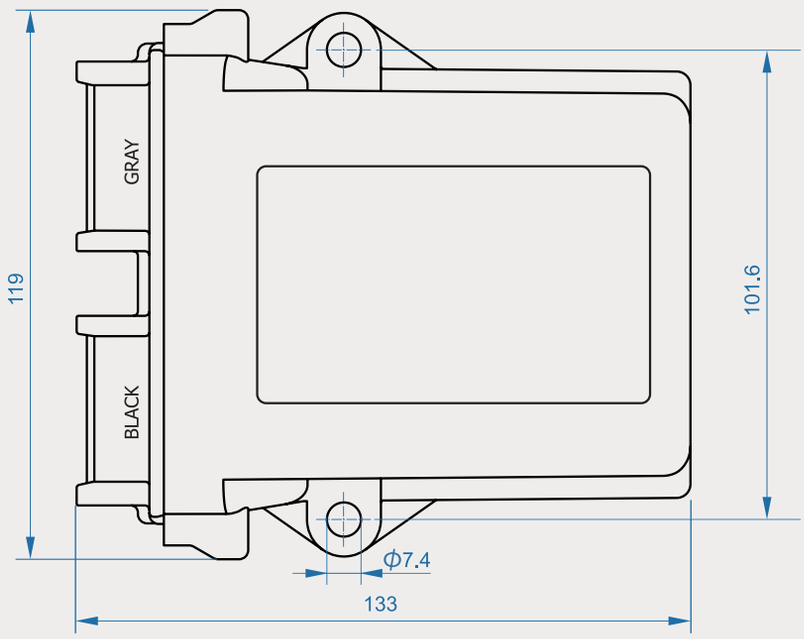
SOFTWARE

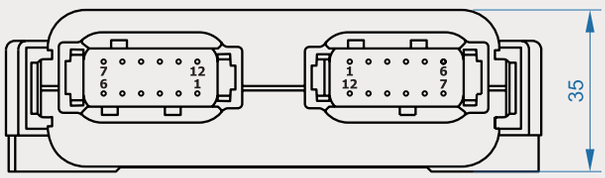
Programming enviroment	C/C++, high level API-library included

STANDARDS

CE-Mark	2014/30/EU
E-Mark	ECE 10 R-06 noise immunity with 100 V/m
EMC	EN 61000-6-2, noise immunity EN 61000-6-4, radiation of interference
Electrical	ISO 7637-2, pulse immunity, load dump

DIMENSIONS





PRODUCT CODE

Product Code	Total IO	OUT+	OUT+*	OUT-	IN+	IN-	AIN	RIN	F	B	CAN Configuration	EXT1	EXT2	EXT3	Type	Status
MMXEC1-0000-xxxx	16	0	0	0	16	16	4	2	-	-	DIP Switch	-	-	-	TBD	Preview
MMXEC1-0400-xxxx	16	4	0	0	16	12	4	2	-	-	DIP Switch	-	-	-	TBD	Preview
MMXEC1-0600-0012	16	6	2	0	16	10	4	2	-	-	DIP Switch	-	-	-	Standard	Active
MMXEC1-0800-xxxx	16	8	4	0	16	8	4	2	-	-	DIP Switch	-	-	-	TBD	Preview
MMXEC1-1000-xxxx	16	10	2	0	16	6	4	1	-	-	DIP Switch	-	-	-	TBD	Preview
MMXEC1-1200-0013	16	12	4	0	16	4	4	1	-	-	DIP Switch	-	-	-	Standard	Active
MMXEC1-1600-xxxx	16	16	4	0	16	0	0	0	-	-	DIP Switch	-	-	-	TBD	Preview
MMXEC1-1200-0014	16	6	2	6	10	10	4	1	-	-	DIP Switch	-	-	-	Special	Active

*High current outputs

OUT - Output, IN - Input, AIN - Analog input, RIN - Resistance input, F - Flash, B - Battery, EXT1 - Extension 1, EXT2 - Extension 2, EXT3 - Extension 3

For other possible IO configurations please contact the supplier.

SUPERSTRUCTURE I/O CONTROLLER

MMX EC2

KEY FEATURES

- **120A** Total Current Capacity
- **93 I/O Ports** (66 Outputs, 27 Inputs)
- **14 High-Power** Outputs Up To 25A
- **4 Motor Driver** Outputs
- **Intelligent Current Monitoring** with Load Shedding
- **Status LEDs** For All I/O
- Integrated **Fused Outputs**
- Integrated **Power Relay Outputs**
- **3 Independed CAN Bus** Interfaces
- **Extension Options** (DAC, IMU,…)
- Optional Built-in **3-Axis Accelerometer**

HIGH-POWER SUPERSTRUCTURE CONTROL PLATFORM

The MMX EC2 is a cutting-edge, highly configurable controller designed to provide reliable control solutions for special vehicles, machinery, and industrial automation systems. With its expansive 120A current handling capacity, 93 I/O ports, and variety of input/output configurations, the MMX EC2 offers exceptional flexibility, superior reliability, and efficient power management for high-performance automation and control.

Seamless CAN bus integration is supported with three CAN ports compatible with CAN SAE J1939, CANopen, or custom protocols. This allows the MMX EC2 to interface smoothly with a wide range of devices, including HMIs, keypads, and other MMX family products like the MMX EC1

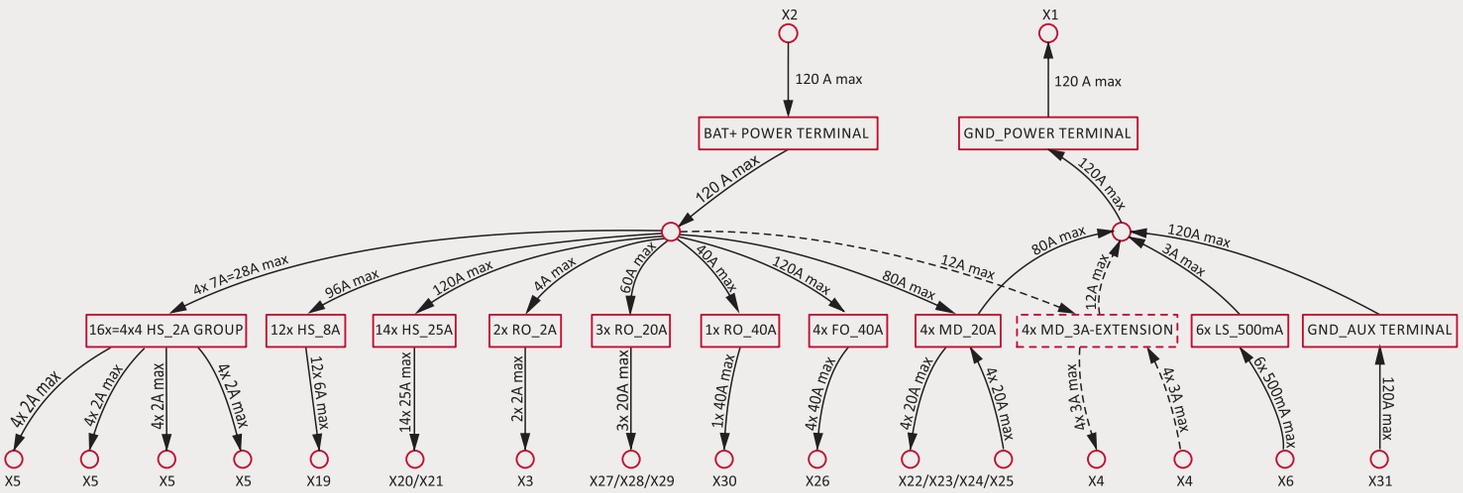
Programming is made easy with C/C++ compatibility and a high-level API library included, giving you complete control over system functionality and making the MMX EC2 the ultimate solution for complex control requirements.

Service Access

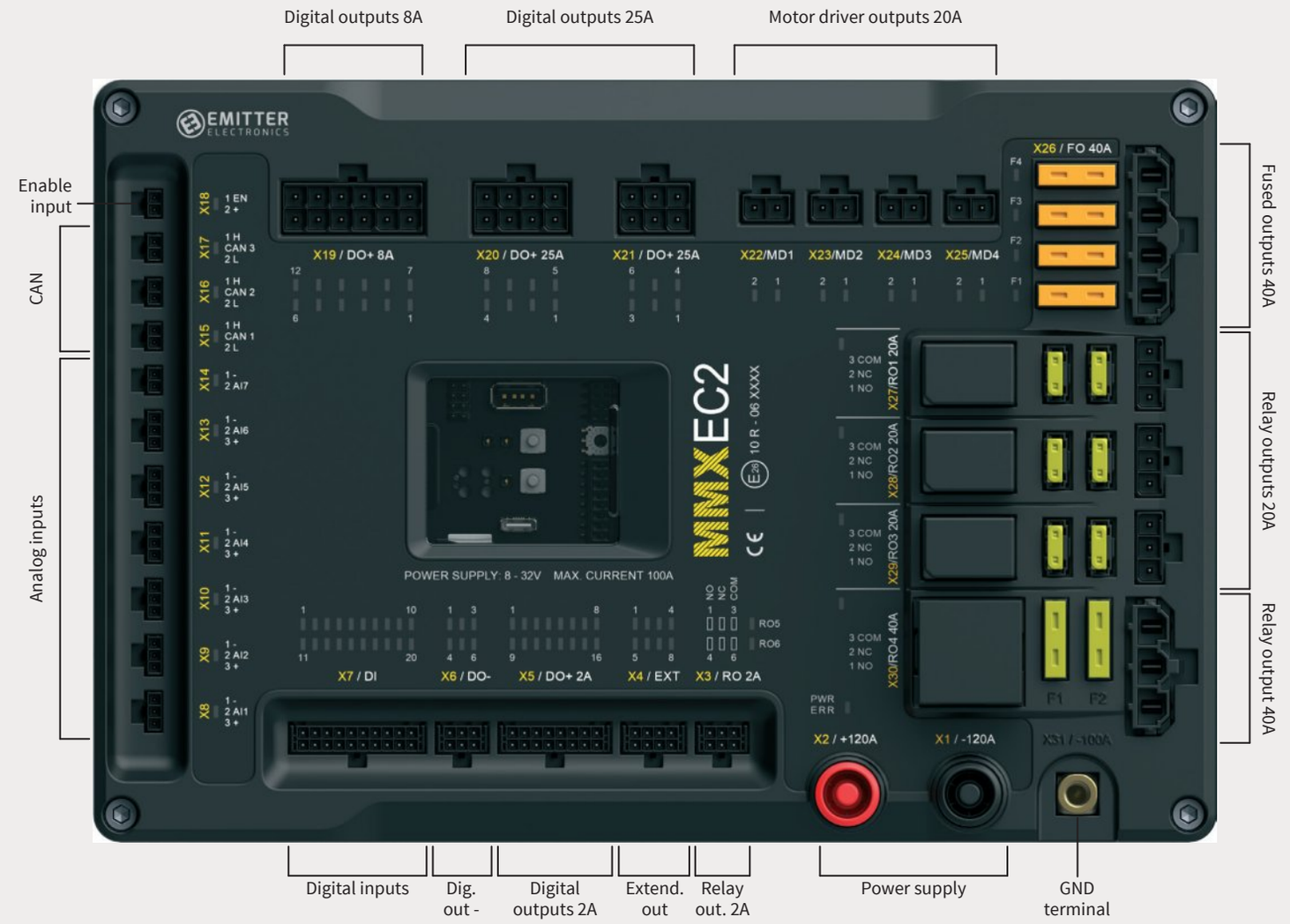
I/O Status LED

Quick Lock Power Connector

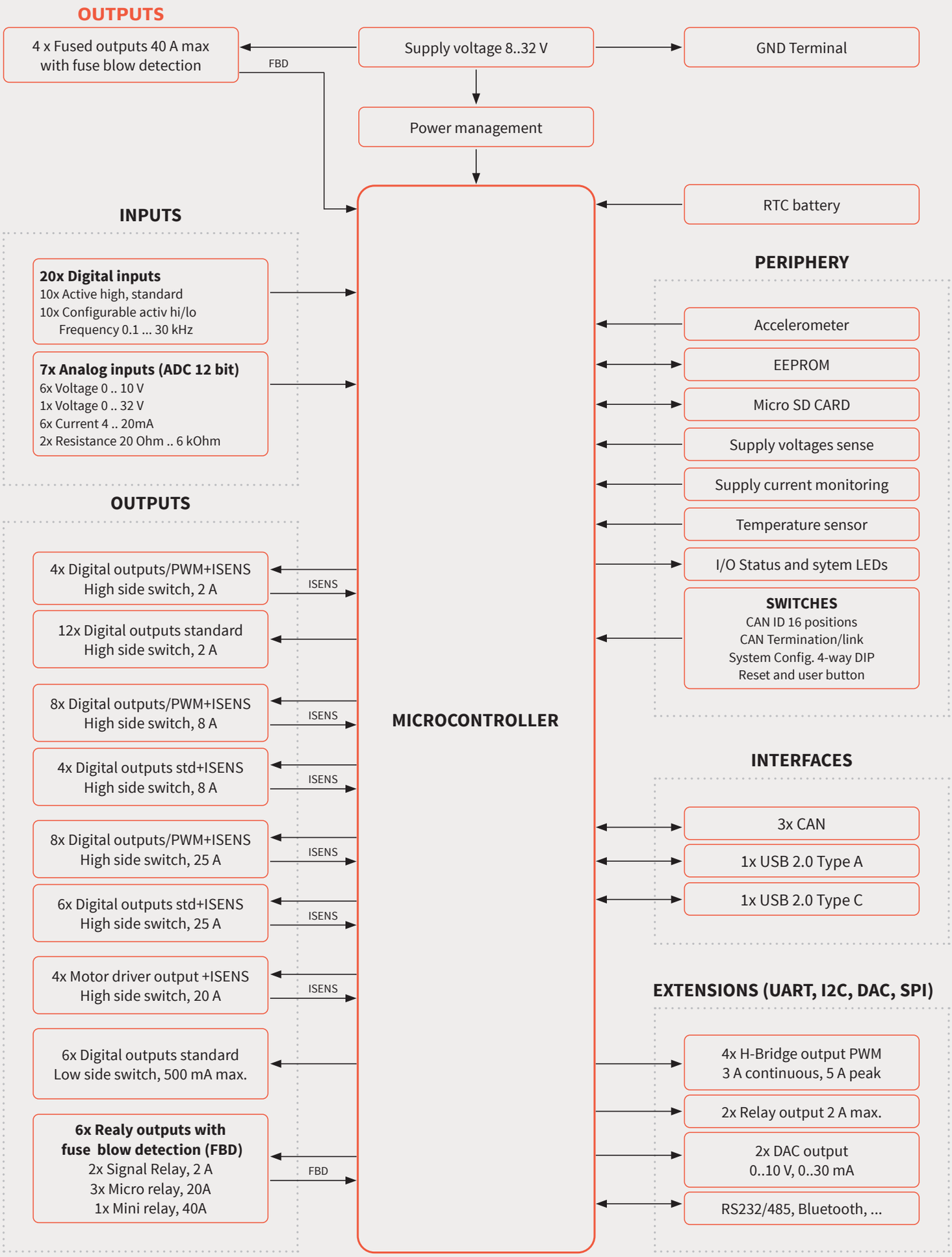
OUTPUT CURRENT DIAGRAM



DEVICE LAYOUT AND I/O OVERVIEW



BLOCK DIAGRAM



SPECIFICATIONS

POWER

Supply Voltage	8-32 V DC
Peak supply voltage	≤ 36 V for ≤ 5 min, ≤ 40 V for ≤ 2 s.
Idle current	30 mA @ 24 V
Current total	100 A max.
Electrical Protection	overvoltage, transients, overcurrent, load dump, reverse polarity protection by external fuse

KERNEL

Processor	32-bit ARM Cortex-M7, 216 MHz
Processor flash	2 MBytes
Processor SRAM	512 kBytes
External EEPROM	2 kByte

INTERFACES

CAN	3x CAN, node ID definition via 16 positions rotary switch
CAN link	T-connection, configurable termination 120 ohm via DIP switch
USB A	Firmware update
USB C	accessing to device via Command-Line-Interface (CLI)
Micro SD card	Data storage
JTAG connect	Programming
RS232/485, Bluetooth,...	Available via extension boards
Programming enviroment	C/C++, high level API-library included

SOFTWARE

Programming enviroment	C/C++, high level API-library included

ENVIROMENT

IP CLASS (IEC529)	IP20
EMC Conformity	EN61000-6-2 noise immunity EN61000-6-4 radiation of interference
Temperature Range	storage from -40° to +85°C (-40°F to 185°F) operating from -40° to +85°C (-40°F to 185°F

INPUTS

Digital inputs	20x total, GND and BAT+ protected
Active high	10x active high levels, integ. pull-down res.
Configurable	10x configurable, integrated pull-up/down resistor and active low/high levels via SW
Analog Inputs	7x total (6 configurable), ADC 12bit
Voltage/current	6x configurable, 0 .. 10V or 0 .. 20 mA
Resistance	2x resistance 30 ohm .. 5 kOhm
Batt Voltage	1x 0 .. Batt+ V

OUTPUTS

Digital Outputs	total current 120A max., protection from short circuit and overload, open load detection
Loads	Inductive, capacitive, resistive
2A	16x 2A high side, 4 with precise Isense
6A	12x 8A high side outputs, PWM, Isense
20A	14x 25A high side outputs, PWM, Isense
0.5A	6x 500 mA low side outputs
H-Bridge	4x 20A motor driver outputs, Isense 4x 3A continuous, 5A peak, via extension board
Relay outputs	Fused 2x, with FB detection
Micro relays	3x 20A max., fused with two mini fuses
Mini relay	1x 40A max., fused with two ATO fuses
Signal relays	2x 2A max. + 2x 2A via extender board
Fused outputs	4x 40A max. with FB detection
DAC outputs	2x total, 12-bit resolution, 0 .. 10 V (<10 mA) or 0 .. 30 mA, protected, available via extension board

OTHER FEATURES

Accelerometer	integrated 3-axis, MEMS, 12-bit digital accelerometer, +/-2, +/-4, +/-8 g, for inclination/ acceleration sensing
IMU*	3-axis accelerometer 12-bit, 3-axis gyroscope 16-bit, 3-axis magnetometer 16-bit, available via extension board
Data logger*	system information/data logging - micro SD card, optional RTC, logging with dedicated 1000 mAh onboard battery
Monitoring	Supply current, supply voltage, CPU core temperature and board temperature, watchdog functionality
Status LEDs	I/O status LEDs for all I/O pin, diagnostics, system status, power error indication
Switches	System Config. 4-way DIP, reset button, user button

ENCLOSURE

Housing Material	Aluminium + PA
Mounting	4 holes 5.4 mm diameter
Mating Conenctors	120A: Surlock Plus for wire 16 - 25 mm2 40A: Mini Fit Sr. for wires 4 - 8 mm2 8A - 25A: WR-MCP5 for wires 2.5-4 mm2 2A: WR-MCP3 for input and low-current signal, wires 0.5 mm2

SIZE & WEIGHT

W x H x D	280 x 190 x 40 mm w/o mating connectors
Indicator Weight	1 kg

*TBD

PRODUCT CODE

Ordering code example:

M	M	X	E	C	2	-	R	M	H	A			-	0	0
SYSTEM		CONTROLLER TYPE					**R**: 4x POWER RELAYS	**M**: 4x H-BRIDGES 20A	**H**: +6 x HS OUTPUTS 25A	A: ACCEL-EROME-TER	ADDITIONAL FEATURES / MODIFICATIONS			PRODUCT VERSION	

MATRIX MESSAGE BOARD

MMB-RGB 96X16

KEY FEATURES

- **Full-Matrix RGB** LED Display
- **96 x 16 Pixels** for Clear Message Presentation
- **Text, Arrows, Signs, Warnings Patterns**
- **Long Message presentation** - Scroll or Push Transitions
- Unique **In-Dash Mounting**
- **CAN Bus** Communications

The **Matrix Message Board MMB-RGB 96x16** is mainly designed to be mounted on special vehicles to warn or direct traffic, provide information and to secure danger spots on streets or in public areas. The patterns, such as text, arrows and signs are pre-programed according to the customers needs as well as the colour of the pattern itself. Default colour is amber.

The in-dash mounting of the MMB is unique on the market. The board is practically installed flat with the vehicles side to give it a modern look.

The MMB is a part of Emitter Electronics MMX family products and can be controlled by MMX LCD units, keypads or used together with customers CAN bus system.

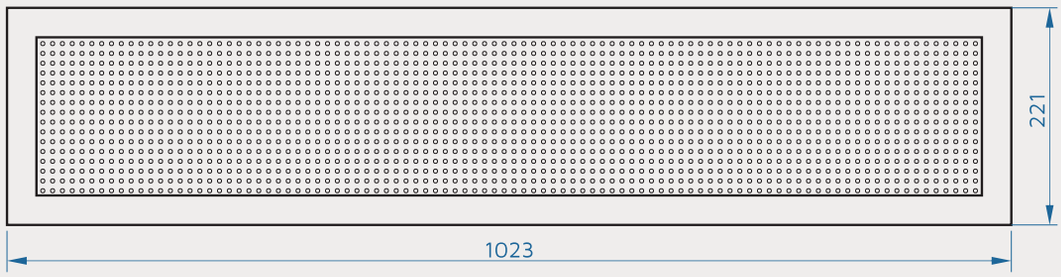
Black coated aluminium housing and UV protected polycarbonate front plate are made for long lasting operation and are highly resistant to all weather conditions.

SPECIFICATIONS

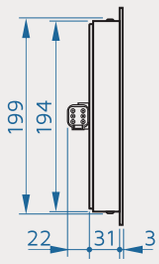
POWER	
Supply Voltage	8-32 V DC
Current	max. 0.7 A @ 24 V max. 1.4 A @ 12 V
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1x CAN, ISO 11898 2.0 A/B up to 1 Mbps, protocols SAE J1939, CAN open, free, etc.
CAN Termination	120 Ohm, DIP switch
LED MATRIX	
LED	matrix 96x16 RGB super bright SMD LEDs
Message presentation	arrows, text, signs and other patterns
Message animation	steady, scroll, push
Light sensor	optional
ENVIROMENT	
IP Class (IEC529)	IP65, front panel IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium housing - black coated, polycarbonate front plate - transparent
Mounting	in-dash with 6 screws M5 or tapping screws with max. diameter of 5 mm
Connector	Deutsch DT06-06S, automotive 6-way connector, waterproof
SIZE & WEIGHT	
W x H x D	1023 x 221 x 56 (34 without connector)
Weight	4 kg

DIMENSIONS

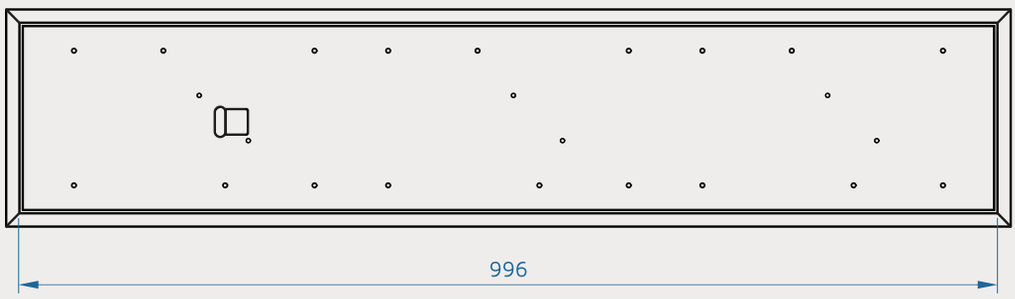
FRONT VIEW

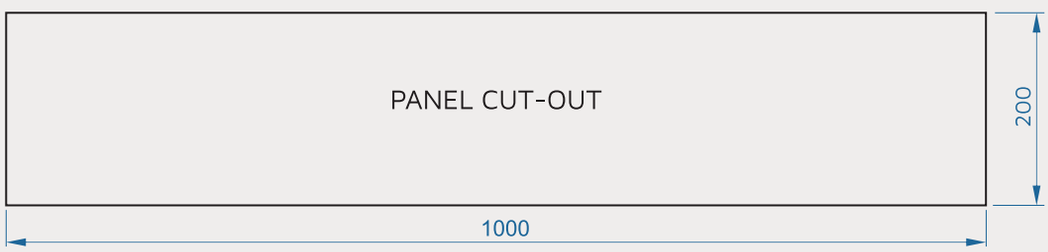


SIDE VIEW

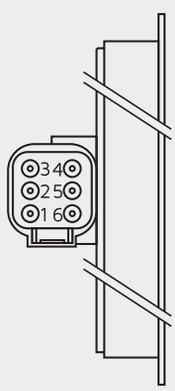


REAR VIEW





CONNECTIONS



CONNECTION DEUTSCH DT06-6S	
PIN	Description
1	BATTERY +
2	CAN L
3	CAN L, INTERNAL SHORTED TO PIN 2
4	CAN H
5	CAN H, INTERNAL SHORTED TO PIN 4
6	GND (BATTERY -)

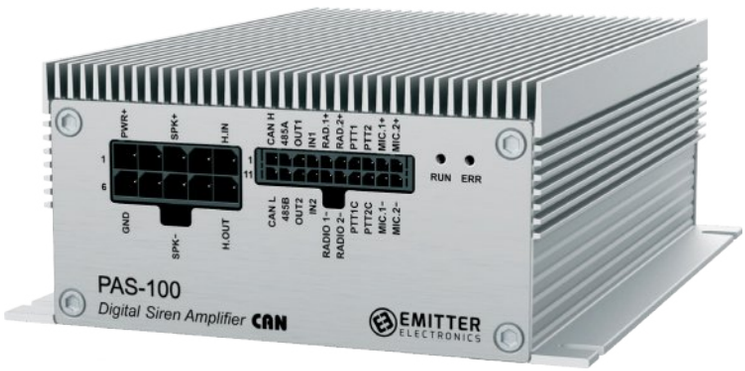
PRODUCT CODE

MMB-RGB 96X16	matrix message board, 96x16 px, RGB, CAN	Standard	Active

For more options please contact the supplier.

DIGITAL SIREN AMPLIFIER

PAS 100/ 200



KEY FEATURES

- **Power Amplifier** With PA System
- **True RMS** 100 W or 200 W (2x100 W)
- **Low Freq. Resonator**, Optional
- **Record'n'Play Function**, Optional
- **Horn Ring Cycler**
- **Full CAN Bus** Control

The **PA electronic Siren Amplifier PAS-100/200** is designed to be used in Emergency vehicles such as ambulance, firefighting, police or other law enforcement vehicles. The amplifier is available in 100 W and also in 200 W version with two independent channels of 2x 100 W True RMS. It can provide a wide range of pre-programed siren sounds that can be set according to the different country regulations and market needs. Incorporates radio broadcast - two radio inputs and PTT handheld unit with a public access (PA) override function - two mic. inputs.

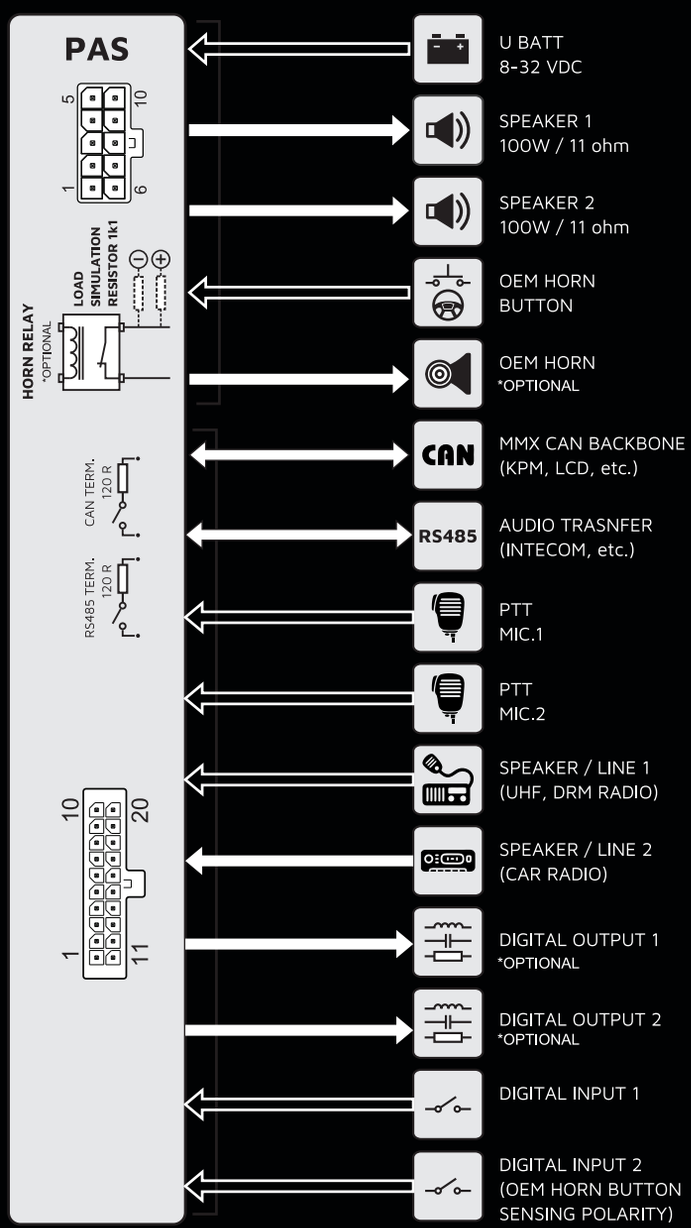
The siren sound can also be changed with the Ring horn button - Horn Ring Cycler function. It has an integrated OEM Horn Ring transfer Relay and load simulation resistor to avoid problems of displaying errors on vehicle's dashboard when the OEM Horn wire is cut. Optionally it can be supplied with extened memory used for Record'n'Play function. For additional functions, two digital high side outputs and inputs are available.

The PAS100/200 amplifier is a part of Emitter Electronics MMX family products and can be controlled by MMX LCD units, keypads or used together with customers CAN bus system.

As a special function, the Amplifier can transfer the sound via RS485 to other devices E.g. Intercom system etc

BLOCK DIAGRAM

Block Diagram of all available amplifier functions:



SPECIFICATIONS

POWER

Supply Voltage	24 V version: 20-32 V DC 12 V version: 8-16 V DC
Current	<50 mA @ IDLE
PAS-100	max. 15 A + dig. outputs @ 12 V max. 7.5 A + dig. outputs @ 24 V
PAS-200	max. 30 A + dig. outputs @ 12 V max. 15 A + dig. outputs @ 24 V
Electrical Protection	Overvoltage, under-voltage, transients, reverse polarity by breaking external fuse, load dump, over-temperature

INTERFACES

CAN	1x CAN, up to 1 Mbps, default Baud rate 250 kbps (optional ≤ 1 Mbps)
CAN Termination	120 Ohm, configurable with internal DIP switch
El. Protection	Short to GND or Ub, allowable voltage on pins 0..32V
RS485	Optional used for audio transfer, Baud rate ≤ 1 Mbps
RS485 Termination	120 Ohm, DIP switch
El. Protection	Short to GND or Ub, allowable voltage on pins 0..32V

AUDIO I/O

Inputs	
Microphone Level	2 x differential or single ended input, 100 Hz .. 10 kHz @-3dB
PTT (Push To Talk)	2 x active low logic, integrated pull-up resistor
Speaker/Line Level	2 x differential or single ended input, 100 Hz .. 10 kHz @-3dB
Speaker Outputs	
PAS-100	1 x 100 W RMS @11 Ω output
PAS-200	2 x 100 W RMS/ch @11 Ω outputs
PAS-200LF	1 x 100 W RMS @11 Ω output + 1 x 100 W RMS @4 Ω Low Freq. output for 2x 50 W/8 Ω speakers connected in parallel
El. Protection	Overload – short between pins, short to GND or Ub, over temperature

DIGITAL I/O

Inputs	2 x active high logic, integrated pull-down resistor
El. Protection	Short to GND or Ub, allowable voltage on pins 0..32V
Outputs	2 x high side switch ≤ 2.2 A
El. Protection	Overload – short between pins, short to GND or Ub, over temperature

OEM HORN CONTROL

Relay	Integrated, normally open contacts, 24 V: I ≤ 15 A, 12 V: I ≤ 30 A
OEM Horn Input	Voltage sensing, pull-down (optional pull-up) load simulation resistor

MISCELLANEOUS

Temperature range	
Storage	From -40°C to +85°C
Operation	Ambient from -40 to +65°C, internal -40 to +105°C (at full load)
IP Class (IEC529)	IP2x
EMC	Designed to EN 61000-6-2, noise immunity Designed to EN 61000-6-4, radiation of interference Designed to ISO 7637-2 pulse imm., load dump Designed to ECE-R10.5 noise immunity

ENCLOSURE

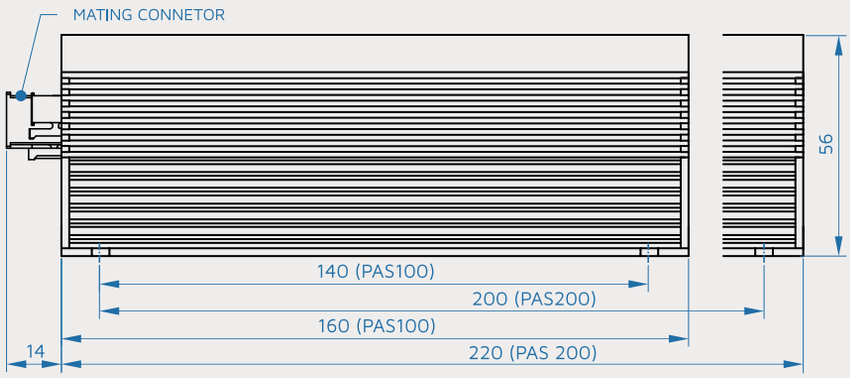
Mating Connectors	
Power Connector	Mega Fit 10-way dual row, for wires 2.5 mm2 (14 AWG)
Signal Connector	WR-MPC3 20-way dual row for wires 0.5 mm2 (24-20 AWG)
Housing material	Aluminium housing - anodised
Mounting	4 screws M4 or tapping screws with max. diameter of 4.5 mm

SIZE & WEIGHT

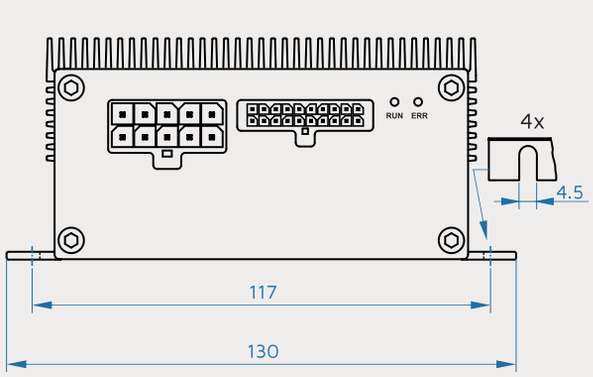
Housing dimensions	PAS-100 - 105 x 48 x 160 mm
W x H x D	PAS-200 - 105 x 48 x 220 mm
Weight	PAS-100 - 0.8 kg, PAS-200 - 1.1 kg

DIMENSIONS

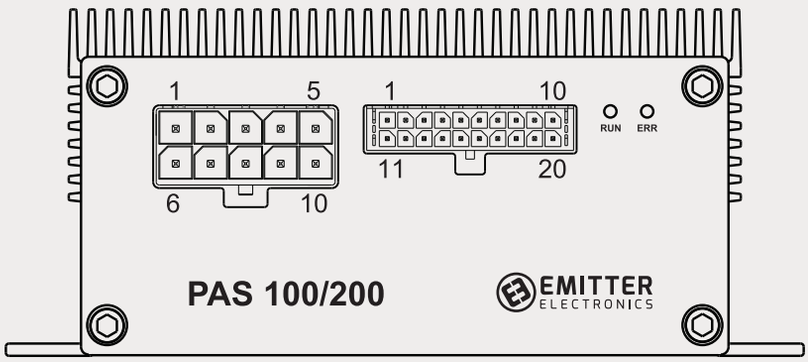
SIDE VIEW



FRONT VIEW



CONNECTIONS



SIGNAL CONNECTOR WR-MPC3 2X10- WAY	
PIN	DESCRIPTION
1	CAN H
2	RS485 A (OPTIONAL)
3	DIGITAL OUTPUT 1 (OPTIONAL)
4	DIGITAL INPUT 1
5	SPEAKER/LINE INPUT 1 +
6	SPEAKER/LINE INPUT 2 +
7	MICROPHONE PTT 1 INPUT
8	MICROPHONE PTT 2 INPUT
9	MICROPHONE INPUT 1 +
10	MICROPHONE INPUT 2 +
11	CAN L
12	RS485 B (OPTIONAL)
13	DIGITAL OUTPUT 2 (OPTIONAL)
14	DIGITAL INPUT 1
15	SPEAKER/LINE INPUT 1 -
16	SPEAKER/LINE INPUT 2 -
17	MICROPHONE PTT 1 GND
18	MICROPHONE PTT 2 GND
19	MICROPHONE INPUT 1 -
20	MICROPHONE INPUT 2 -

POWER CONNECTOR MEGA-FIT 2X5 WAY	
PIN	Description
1	BATTERY +
2	GND (BATTERY -)
3	SPEAKER 1 OUT +
4	SPEAKER 2 OUT + (ONLY PAS-200)
5	OEM HORN IN (OPTIONAL)
6	BATTERY +
7	GND (BATTERY -)
8	SPEAKER 1 OUT -
9	SPEAKER 2 OUT - (ONLY PAS-200)
10	OEM HORN OUT

HANDHELD MIC UNIT

PRODUCT CODE	DESCRIPTION	PICTURE	STATUS
HH-MIC1E-XLR-01	Handheld mic., electret condenser, PU coiled cable 0.5m, 5x0.8 mm^2 with XLR connector		Standard

PRODUCT CODE

Ordering code example:

P	A	S	-	2	0	0	S	-	L	F		

AMPLIFIER POWER	TYPE		OPTIONAL FUNCTIONS	OPTIONAL FUNCTIONS	OPTIONAL FUNCTIONS
100: 100 WATT **200**: 200 WATT	**S**: STANDARD		**LF**: LOW FREQ.RESONATOR	**R**: INTEGR. HORN RELAY	**O**: INTEGR. HSS OUTPUTS

SIREN SPEAKERS

Three types of high-performance, heavy-duty siren speakers are available, designed to deliver clear voice reproduction and withstand extreme weather conditions. All models are fully compatible with Emitter Electronics siren amplifiers.

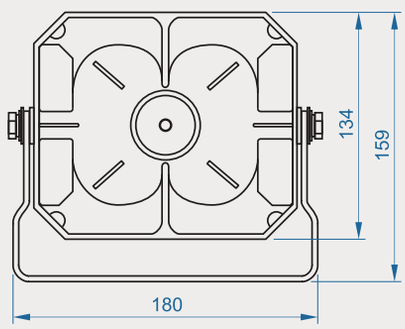
SPK –R100W11-01 Standard 100W speaker offering robust performance and reliability.

SPK-R100W11-02 A powerful, slim-profile 100W speaker with powerful acoustic performance delivering sound levels over 122 dB. Its compact design allows flexible installation options, including tight spaces such as under the vehicle hood.

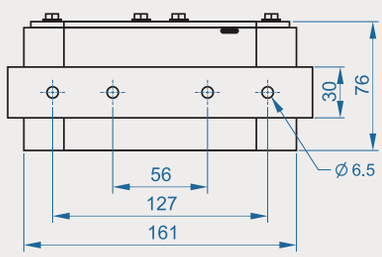
SPK-R50W8LW-01 Specialized low-frequency 50W speaker, designed to be used in pairs and connected to a single audio channel on specific siren amplifiers. This configuration generates infrasound waves that penetrate solid objects, allowing both drivers and nearby pedestrians to physically feel the alert. Perfect for use in dense urban environments and high-traffic zones.

SPK-R100W11-01

FRONT VIEW

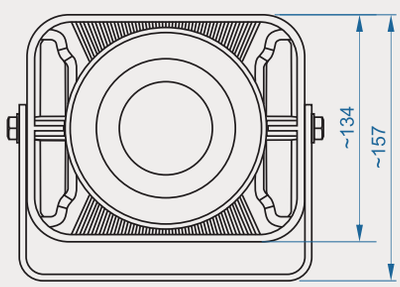


MOUNTING HOLES

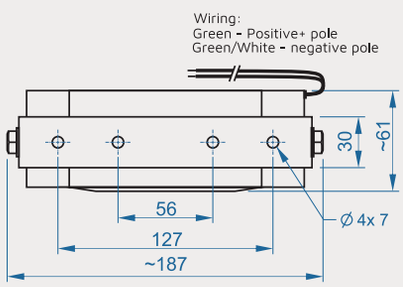


SPK-R100W11-02

FRONT VIEW

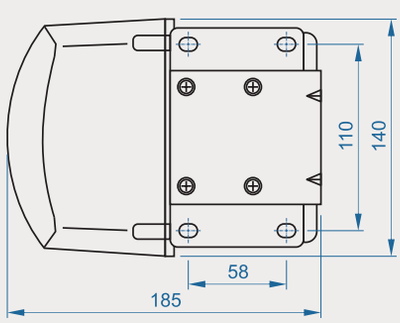


MOUNTING HOLES

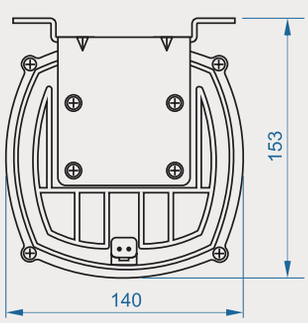


SPK-R50W8LF-01

FRONT VIEW



MOUNTING HOLES



PRODUCT CODE

SPK –R100W11-01	Speaker PA 100 W, 11 Ohm, >118 dB, 200-5.000 Hz, ~3kg
SPK-R100W11-02	Speaker PA Super Thin 100 W, 11 Ohm, >122 dB, 200-5.000 Hz, ~3kg
SPK-R50W8LW-01	Speaker Low Frequency 50 W, 8 Ohm
	For more options please contact the supplier.

INTERCOM

INTM / INTS

KEY FEATURES

- **Digital audio** processing and transmission
- **Automatic gain control** (AGC)
- Integrated **microphone**
- **RGB LED illuminated heavy-duty buttons**, suitable for operation with protective gloves
- Automatic **Key brightness**
- **Quick installation** and setup
- **Robust e-coated** aluminium enclosure

SUPREME AUDIO QUALITY, DIGITAL PROCESSING

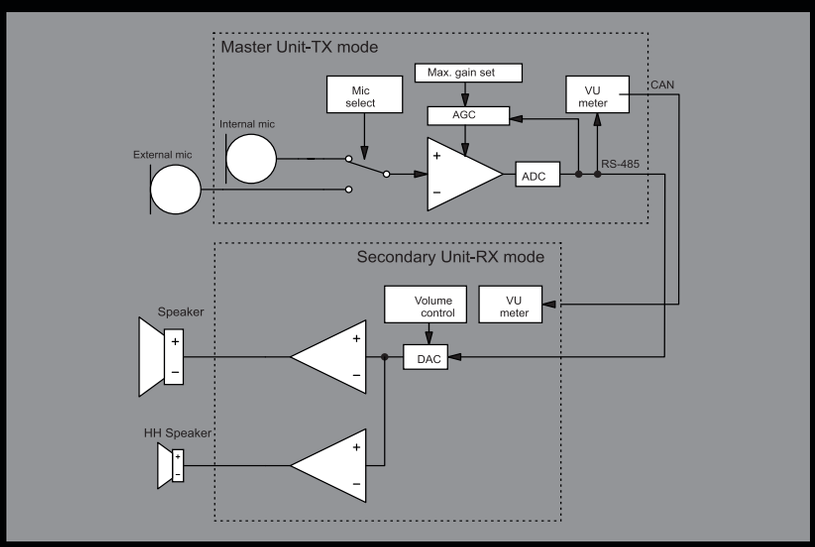
Emitter Vehicle Intercom System is engineered to solve the problem of communication in high-noise environments such as in Fire and Rescue vehicles, mobile machines, ambulances, etc. The supreme audio quality is achieved with digital audio transmission which is much more immune to electrical noise and other disturbances than analogue transmission. Digital audio processing, automatic gain control (AGC), gate functionality and digital filtering improve sound quality on all levels.

INTERCOM consists of two main units and supporting components. Up to three slave units can be connected optionally. Regarding mounting location, one unit, usually mounted in the cabin, is marked as the “indoor/master unit” and the other one as the “outdoor/slave unit”. Each unit has its own specific supporting components. The indoor/master unit has an integrated microphone, optional external gooseneck microphone and external 15 W speaker. The outdoor/slave unit has an external handheld unit with an integrated microphone and speaker, external 15 W speaker and 1 A output for external ring indication lamp or a buzzer.

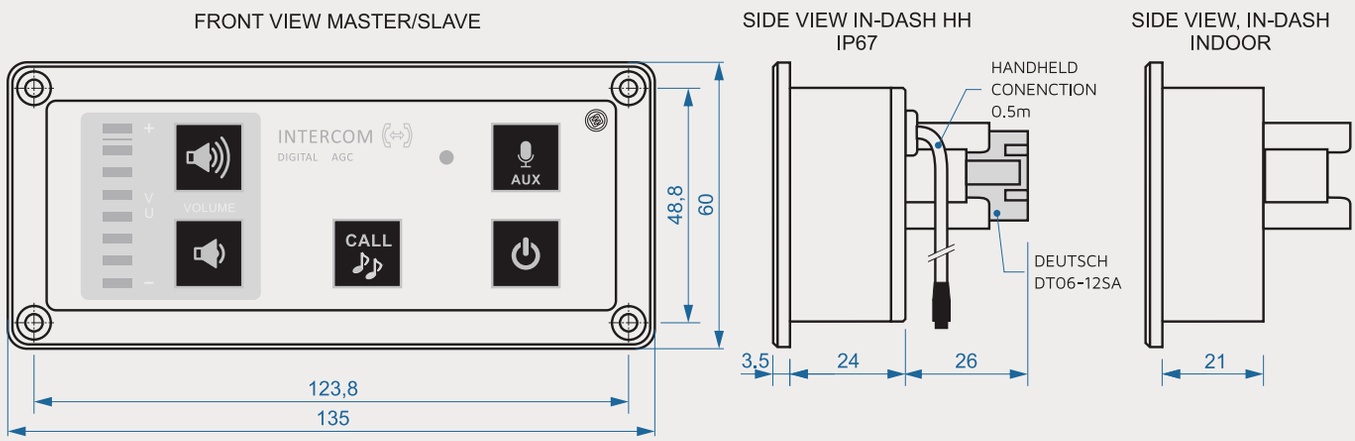
SPECIFICATIONS

POWER	
Supply Voltage	24 V version: 20-32 V DC 12 V version: 8-16 V DC
Current Consump.	24 V version: max. 1.5 A/unit 12 V version: max. 3.75 A/unit
Electrical Protection	overvoltage, transients, reverse polarity, load dump
I/O AND INTERFACES	
Output	1 x Current Sink Output, max. 1 A on outdoor/slave unit
Interfaces	1 x CAN, 1 x RS-485
Speaker	1 x RMS/PEAK power max. 15/25 W, 4 Ω
ENVIROMENT	
IP Class (IEC529)	Indoor/MasterUnit IP53 Outdoor/Slave Unit IP67
Temperature Range	Indoor/MasterUnit -20°C to +70°C Outdoor/Slave Unit -40°C to +80°C
ENCLOSURE	
Housing Material	Aluminium
Mounting	In-dash or out-dash with 4 screws M3 or 2.9 mm tapping screws
Mating Connector	Deutsch DT06-12S
WEIGHT	
Weight	0.35 kg (0.77 lbs)

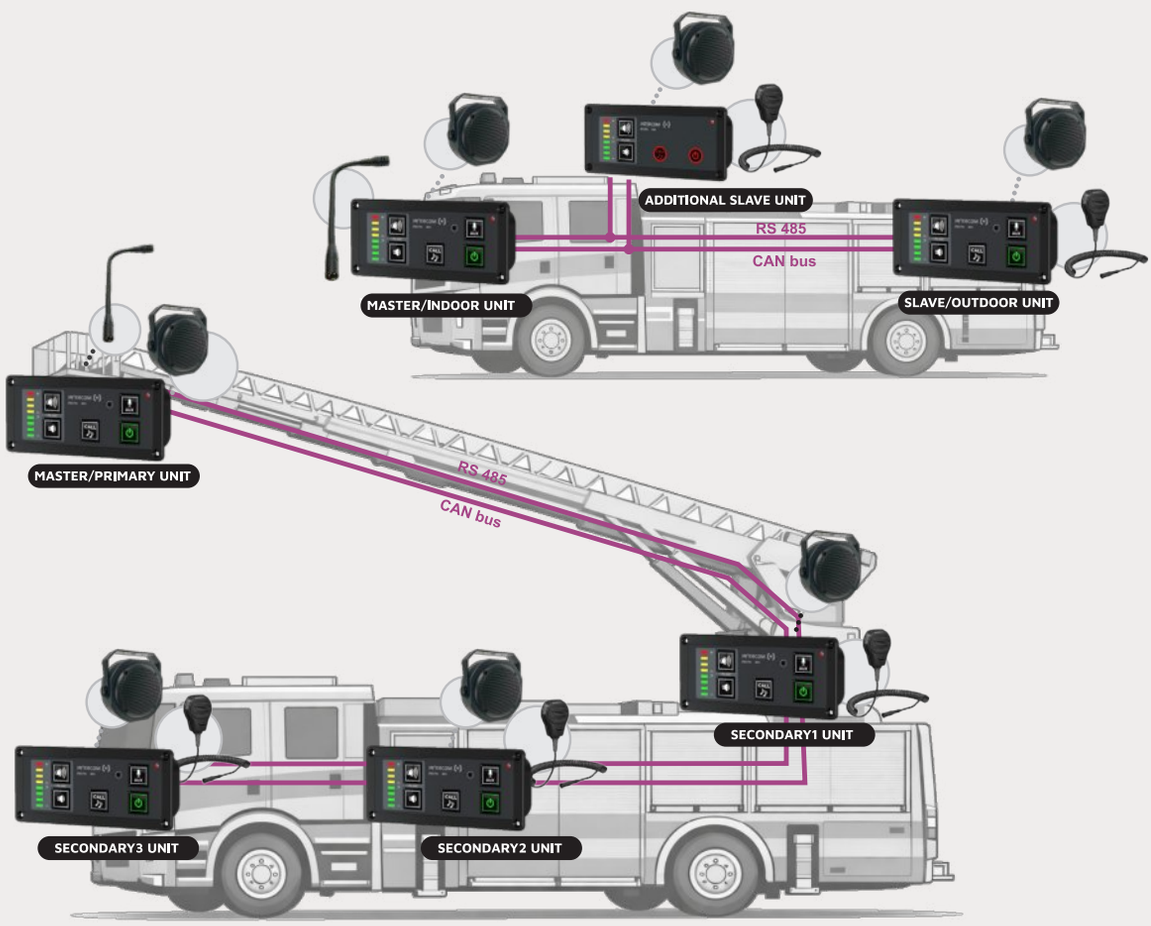
INTERNAL STRUCTURE



DIMENSIONS



TOPOLOGY



PRODUCT CODE

Intercom

Ordering code example:

I	N	T	S	1	O	-	2	4	H	M	C

INTERCOM UNIT TYPE	IP PROTECTION		SUPPLY VOLTAGE	MIC. COFIGURATION	MISCELLAN.
MI: MASTER INDASH **MO**: MASTER OUTDASH **S1**: SLAVE 1 **S2**: SLAVE 2 **S3**: SLAVE 3	**I**: INDOOR **O**: OUTDOOR, SEALED		**24**: 20..32 V **12**: 8..16 V	**HM**: HANDHELD MIC./SPEAKER WITH PTT **IM**: INTEGRATED MIC. **XM**: XLR MIC. INPUT **EM**: EXTERNAL MIC. AND PTT	**C**: SLAVE CALL

WIRELESS CAN BRIDGE

WCB-01

KEY FEATURES

- **Certified 2.4 GHz wireless communication** module
- **License-free operation** in the 2.4 GHz ISM band
- **FCC Part 15** compliant
- **RF output power up** to 19.9 dBm EIRP
- **Wireless range** up to 150 m line of sight
- **Integrated 120 Ω CAN termination**, selectable by DIP switch

The **WCB – Wireless CAN Bridge** is designed to convert CAN messages received from the CAN bus into wireless RF signals, which are then transmitted to another WCB unit mounted on a vehicle or nearby equipment. The system supports bidirectional communication and provides an operating range of up to 150 m line of sight.

The unit uses a certified 2.4 GHz Wi-Fi/Bluetooth wireless module, enabling reliable wireless communication in the license-free 2.4 GHz ISM band.

The WCB is part of the Emitter Electronics MMX product family and can be seamlessly integrated with other MMX devices, such as controllers, displays, keypads, intercom systems and other CAN-based equipment.

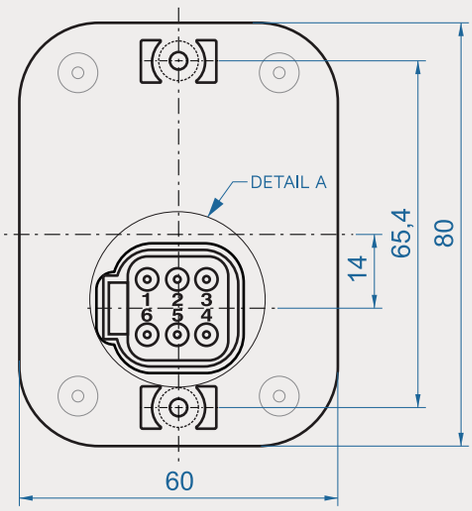
The WCB unit is equipped with an internal omnidirectional RF antenna, which radiates the signal in all directions. For optimal wireless performance, the unit should be mounted as high as possible on the vehicle or machine. The installation should provide a clear line of sight between the communicating units to maximize signal strength and reduce the risk of interference or signal attenuation

SPECIFICATIONS

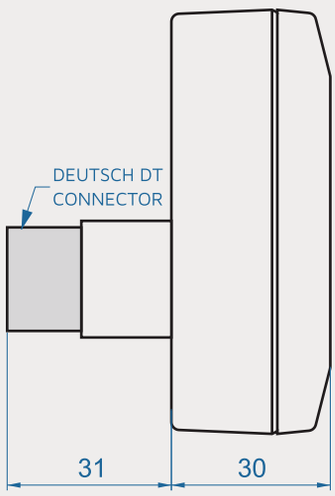
POWER	
Supply Voltage	8-32 V DC
Current	max. 30 mA @ 24 V DC max. 50 mA @ 12 V DC
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1x CAN, ISO 11898-2, CAN 2.0 A/B up to 250 kbit/s, 500 kbit/s TBD
CAN termination	120 Ohm, DIP switch
RF module	2.4 GHz ISM band
Wi-Fi	Frequency Band(s) 2412 - 2472 MHz, Transmit Power up to 19.9 dBm EIRP
Bluetooth	Frequency Band(s) 2402 - 2480 MHz, Transmit Power up to 10 dBm EIRP
OTHER FEATURES	
LED diagnostics	power state, communication status
RF Range	Up to 150 m line of sight The actual wireless range depends on installation position, antenna orientation, vehicle body structure and surrounding RF conditions.
ENVIROMENT	
IP Class (IEC529)	IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	UV-resistant ASA, white -grey
Mounting	with 2 screws max. diameter 3 mm
Mating Connector	Deutsch DT06-6S and DT06-12S
SIZE & WEIGHT	
W x H x D	60 x 80 x 30 mm
Weight	75 g with internal antenna

DIMENSIONS

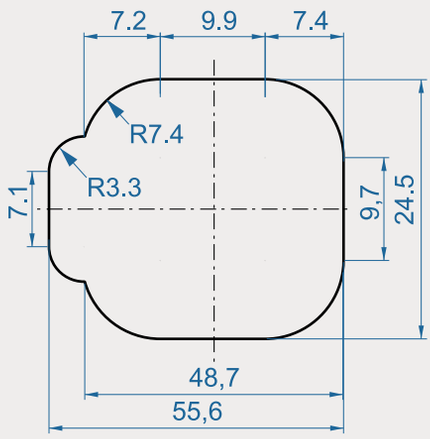
BACK VIEW



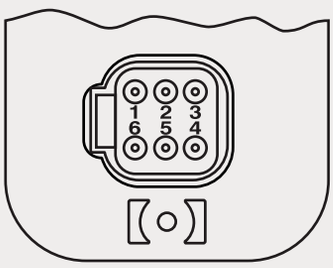
SIDE VIEW



DETAIL A, SCALED



CONNECTIONS



CONNECTION DEUTSCH DT06-6S	
PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L, INTERNAL SHORTED TO PIN 2
4	CAN H
5	CAN H, INTERNAL SHORTED TO PIN 4
6	GND (Battery -)

PRODUCT CODE

WBC-01	Wireless CAN Bridge
	For more options please contact the supplier.

PUMP CONTROL UNIT

PCU-PG

Costumizable key icons

KEY FEATURES

- **Pressure Governor** with Cavitation Warning
- Selection of Pressure by **Large Rotary Knob** (Encoder)
- Integrated **I/O Driver**
- **CAN Bus** Communications
- Alphanumeric **Super-Bright LED Display**
- Integrated **10 Warning Lights**
- **Programmable Keypad** (2 Keys)

PRECISION PRESSURE CONTROL AND MONITORING UNIT

The **PCU-PG** is an advanced electronic Pump Control Unit (PCU), designed with a variety of powerful features, including a pressure governor, manual keys for RPM adjustment (throttle increase and decrease), an idle button, two programmable keys, warning lights, and a super-bright alphanumeric LED display.

This versatile unit can also control other vehicle systems such as valves or display engine data. It also provides pump warning messages like cavitation and temperature alerts.

The unit can operate as a stand-alone device - integrated IOs, or it can be connected to the IO controller MMX EC1 to expand the IO functions.

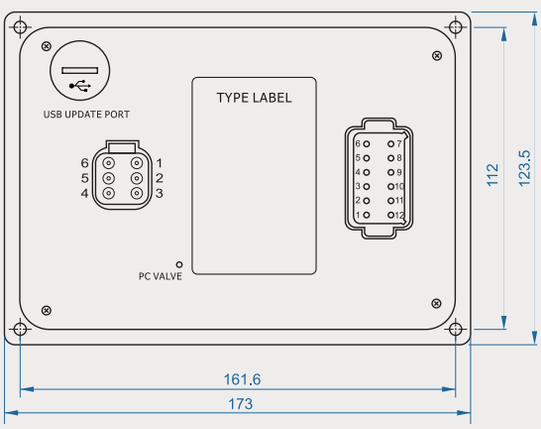
The PCU-PG is an ideal solution for automated pressure control and vehicle system management, offering durability, flexibility, and reliability, even in challenging operational environments.

SPECIFICATIONS

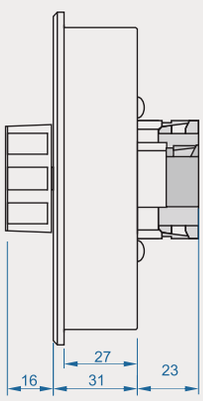
POWER	
Supply Voltage	8-32 V DC
Current	0.5 A maximum, no outputs active
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	2x CAN, CAN Link
CAN termination	120 ohm, DIP switch
USB	1x USB 2.0, for firmware update
FEATURES	
Pressure governor	automatic pressure regulation with cavitation warning
Display	alphanumeric super bright LED display, 11 digits
Warning lights	4 red, 4 amber, 2 green, total 10 LEDs
Keypad	2 soft keys (programmable) + 4 hard keys (pre-defined)
Status Indicator	super bright green LED bar
Icons	customizable key icons
Key Design	RIM-embossed keys with tactile feedback, white backlit keys, dimesion 23 x 23 mm
Operating Life	>250.000 cycles
Rotary Knob	Encoder 16 pos. / 360° with push button
Day/Night operation	automatic – integrated ambient light sensor
I/O	
Sensor input	0.5-4.5 V, sensor supply voltage Ubat.
Digital Input IN1, IN2	configurable active low/high levels 0..Ub with solder pad on PCB, freq. input (RPM sensor), protected
Digital Output OUT1 - OUT7	positive switching (high-side), max. 2 A optional negative switching (low-side), max. 0.5 A
Loads	inductive, capacitive, resistive
Miscellaneous	Protection from short circuit and overload
ENVIROMENT	
IP Class (IEC529)	IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 2.9 mm tapping screws
Mating Connector	Deutsch DT06-6S and DT06-12S
SIZE & WEIGHT	
W x H x D	173 x 123 x 54 mm, with mating connector
Weight	1 kg

DIMENSIONS

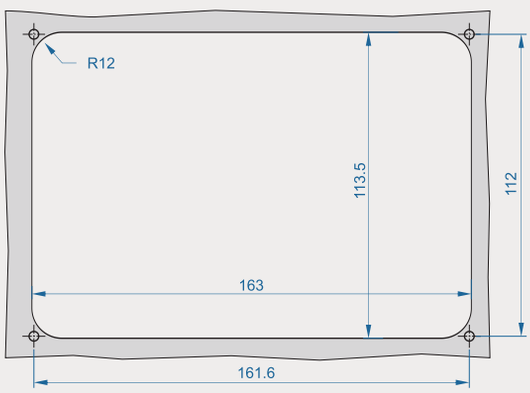
BACKVIEW



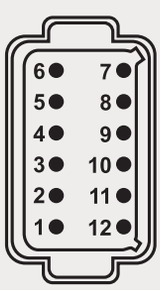
SIDE VIEW



CUT OUT FOR THE CONTROL PANEL



CONNECTIONS



CONNECTION DEUTSCH DT06-12S

PIN	Description	PIN	
1	OUT 1 (INC +)	**7**	OUT 7 (KEY 2.2)
2	OUT 2 (DEC -)	**8**	INPUT +/- (P)
3	OUT 3 (IDLE)	**9**	INPUT +/- (PTO ON)
4	OUT 4 (KEY 1.1)	**10**	Sensor [V]/[mA] VCC+
5	OUT 5 (KEY 1.2)	**11**	Sensor [V] GND
6	OUT 6 (KEY 2.1)	**12**	SENSOR [V]/[MA] SIGNAL

CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	CAN1 L
3	(J1939) CAN2 L
4	CAN2 H (J1939)
5	CAN1 H
6	BATTERY -

PRODUCT CODE

Ordering code example:

P	C	U	-	P	G	-	2	0	P	-	S

PUMP CONTROL UNIT		PRESSURE GOVERNOR		MAX. PRESSURE	OUTPUTS POLARITY		SENSOR OPTION
	-	**PG**: PG FUNCTION	-	**20**: 4 .. 20 BAR **40**: 4 .. 40 BAR	**P**: POSITIVE VOLTAGE CONTROL SIGNALS **N**: NEGATIVE VOLTAGE CONTROL SIGNALS **/**: NO OUTPUTS, ONLY CAN	-	**S**: PRESSURE SENSOR INCLUDED

PUMP CONTROL UNIT

PCU-WPG

Costumizable key icons

KEY FEATURES

- **Pressure Governor** With Cavitation Warning
- Alphanumeric **Super Bright Led Display**
- Integrated **Water Tank Level Indicator**
- Integrated Keypad - **12 Keys**
- Integrated **10 Warning Lights**
- Selection of Pressure by **Rotary Knob** - Encoder
- **Acoustic Signal** - Integrated Buzzer

PRECISION PRESSURE CONTROL AND MONITORING UNIT

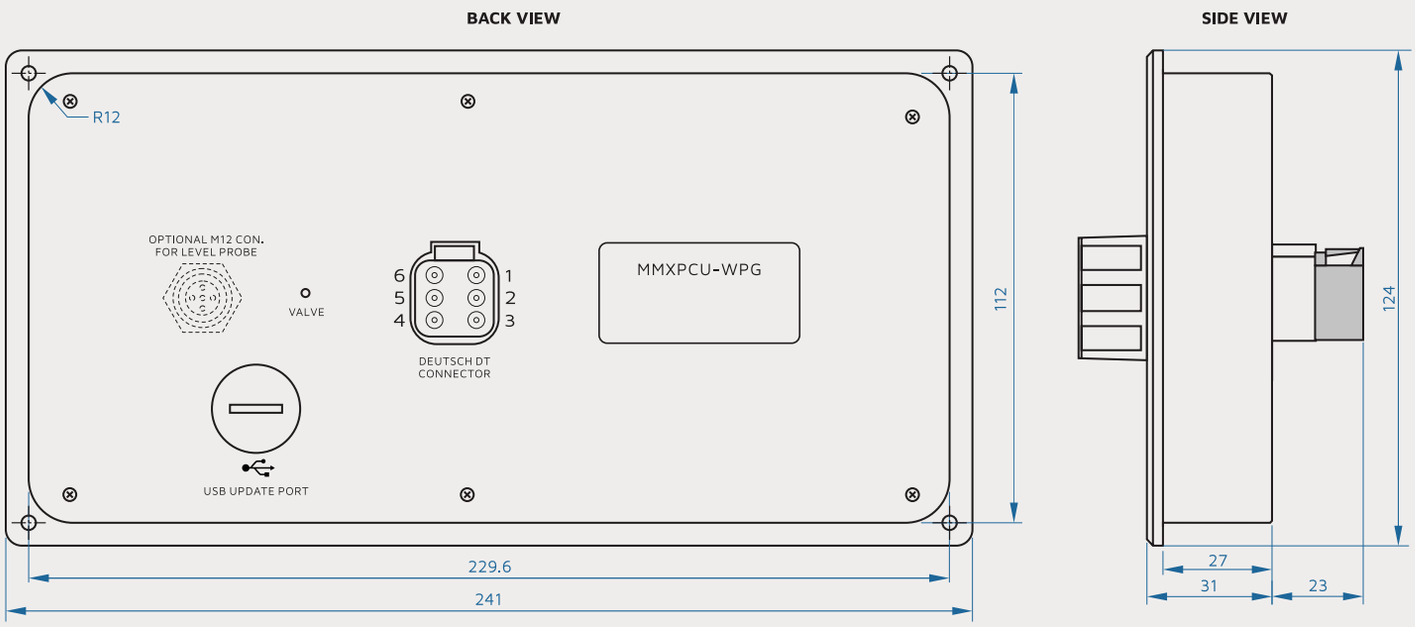
The **PCU-WPG** is an electronic Pump Control Unit with an integrated pressure governor, water tank level gauge, keypad, warning lights and super bright alphanumeric LED display. It can also be used to control other vehicle systems such as valves, lighting, display engine data and water pump data, display pump warning messages as cavitation temperature, etc. The main function of PCU is Pressure Governor which allows automated regulation of the engine RPMs according to the pressure fluctuations in the pump. The automatic pressure regulation is turned ON by turning the rotation switch - encoder.

The integrated keypad is programmable. Each key can be configured to operate as a switch, push button or both as a special feature. Key label graphics are customizable and coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label.

SPECIFICATIONS

POWER	
Supply Voltage	8-32 V DC
Current	1 A maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1x CAN
CAN termination	120 ohm, DIP switch
USB	1x USB 2.0, for firmware update
FEATURES	
Pressure governor	automatic pressure regulation with cavitation warning
Display	alphanumeric super bright LED display, 11 digits
Warning lights	4 red, 4 amber, 2 green, total 10 LEDs
Tank Level Indicator	1x, blue/red LED
Indicator increments	1/8
Keypad	8 soft keys (programmable) + 4 hard keys (pre-defined)
Status Indicator	super bright green LED bar
Icons	customizable key icons
Key Design	RIM-embossed keys with tactile feedback, white backlit keys, dimesion 23 x 23 mm
Operating Life	>250.000 cycles
Rotary Knob	Encoder 16 pos. / 360° with push button
Day/Night operation	automatic – integrated ambient light sensor
Acoustic Signal	Integrated Buzzer 100 dB
ENVIROMENT	
IP Class (IEC529)	IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 2.9 mm tapping screws
Mating Connector	Deutsch DT06-6S
SIZE & WEIGHT	
W x H x D	241 x 123 x 38 mm, without mating connector
Weight	1 kg

DIMENSIONS



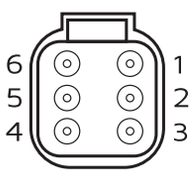
INFO DISPLAY

- GOVERNOR SET VALUE
- PUMP RPM
- PUMP TEMPERATURE
- PUMP WORKING HOUR
- VEHICLE BATTERY VOLTAGE
- ENGINE RPM
- OIL PRESSURE
- ENGINE TEMPERATURE
- ERROR MESSAGES
- SETTINGS
- ETC ...

CONNECTIONS

CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L, int. shorted to PIN 2
4	CAN H
5	CAN H, int. shorted to PIN 4
6	BATTERY -



PRODUCT CODE

PCU-WPG	Pump control unit with pressure governor, water tank level gauge, keypad, warning lights
PCU-W	Pump control unit with water tank level gauge, keypad, warning lights
	For more options please contact the supplier.

PUMP CONTROL UNIT

PCU-WFPG

Costumizable key icons

KEY FEATURES

- **Pressure Governor** With Cavitation Warning
- Alphanumeric **Super Bright Led Display**
- Integrated **Water & Foam Tank Level Gauge**
- Integrated Keypad - **15 Keys**
- Integrated **10 Warning Lights**
- Selection of Pressure by **Rotary Knob** - Encoder
- **Acoustic Signal** - Integrated Buzzer

PRECISION PRESSURE CONTROL WITH WATER AND FOAM LEVEL INDICATION

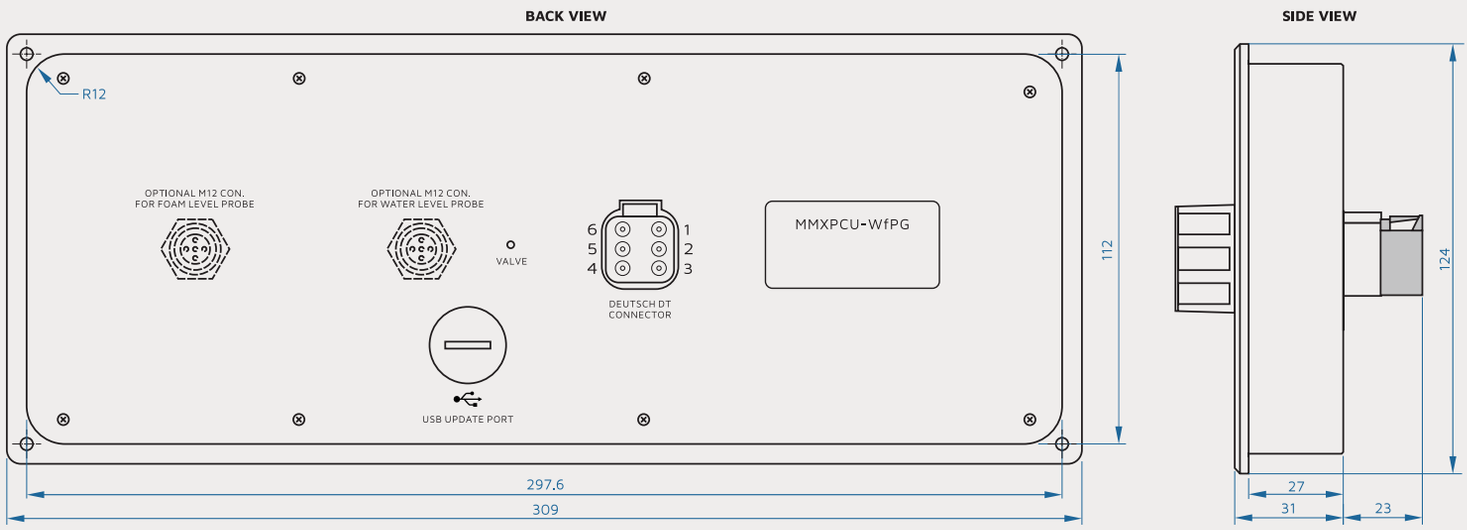
The **PCU-WFPG** is an electronic Pump Control Unit with an integrated pressure governor, water and foam tank level gauge, keypad, warning lights and super bright alphanumeric LED display. It can also be used to control other vehicle systems such as valves, lighting, display engine data and water pump data, display pump warning messages as cavitation temperature, etc. The main function of PCU is Pressure Governor which allows automated regulation of the engine RPMs according to the pressure fluctuations in the pump. The automatic pressure regulation is turned ON by turning the rotation switch - encoder.

The integrated keypad is programmable. Each key can be configured to operate as a switch, push button or both as a special feature. Key label graphics are customizable and coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label.

SPECIFICATIONS

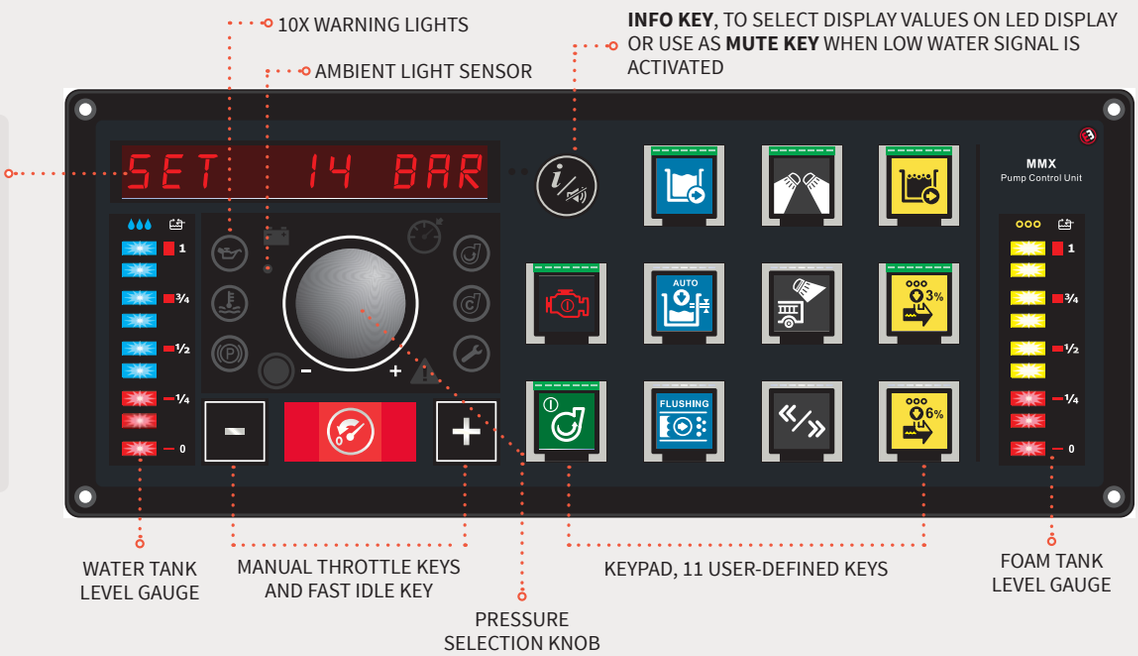
POWER	
Supply Voltage	8-32 V DC
Current	1 A maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1x CAN
CAN termination	120 ohm, DIP switch
USB	1x USB 2.0, for firmware update
FEATURES	
Pressure governor	automatic pressure regulation with cavitation warning
Display	alphanumeric super bright LED display, 11 digits
Warning lights	4 red, 4 amber, 2 green, total 10 LEDs
Tank Level Gauge	1x, blue/red LED
Indicator increments	1/8
Keypad	11 soft keys (programmable) + 4 hard keys (pre-defined)
Status Indicator	super bright green LED bar
Icons	customizable key icons
Key Design	RIM-embossed keys with tactile feedback, white backlit keys, dimesion 23 x 23 mm
Operating Life	>250.000 cycles
Rotary Knob	Encoder 16 pos. / 360° with push button
Day/Night operation	automatic – integrated ambient light sensor
Acoustic Signal	Integrated Buzzer 100 dB
ENVIROMENT	
IP Class (IEC529)	IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 2.9 mm tapping screws
Mating Connector	Deutsch DT06-6S
SIZE & WEIGHT	
W x H x D	241 x 123 x 38 mm, without mating connector
Weight	1 kg

DIMENSIONS



INFO DISPLAY

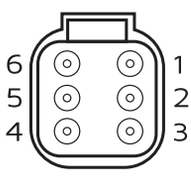
- GOVERNOR SET VALUE
- PUMP RPM
- PUMP TEMPERATURE
- PUMP WORKING HOUR
- VEHICLE BATTERY VOLTAGE
- ENGINE RPM
- OIL PRESSURE
- ENGINE TEMPERATURE
- ERROR MESSAGES
- SETTINGS
- ETC ...



CONNECTIONS

CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L, int. shorted to PIN 2
4	CAN H
5	CAN H, int. shorted to PIN 4
6	BATTERY -



PRODUCT CODE

PCU-WFPG	Pump control unit with pressure governor, water tank level gauge, keypad, warning lights
PCU-WF	Pump control unit with water tank level gauge, keypad, warning lights
	For more options please contact the supplier.

PUMP CONTROL UNIT

PCU-WKPG

Costumizable key icons

KEY FEATURES

- **Pressure Governor** With Cavitation Warning
- Alphanumeric **Super Bright Led Display**
- Integrated **Water & Foam Tank Level Gauge**
- Integrated Keypad - **18 Keys**
- Integrated **10 Warning Lights**
- Selection of Pressure by **Rotary Knob** - Encoder
- **Acoustic Signal** - Integrated Buzzer

PRECISION PRESSURE CONTROL WITH ADDITIONAL CONTROL KEYS

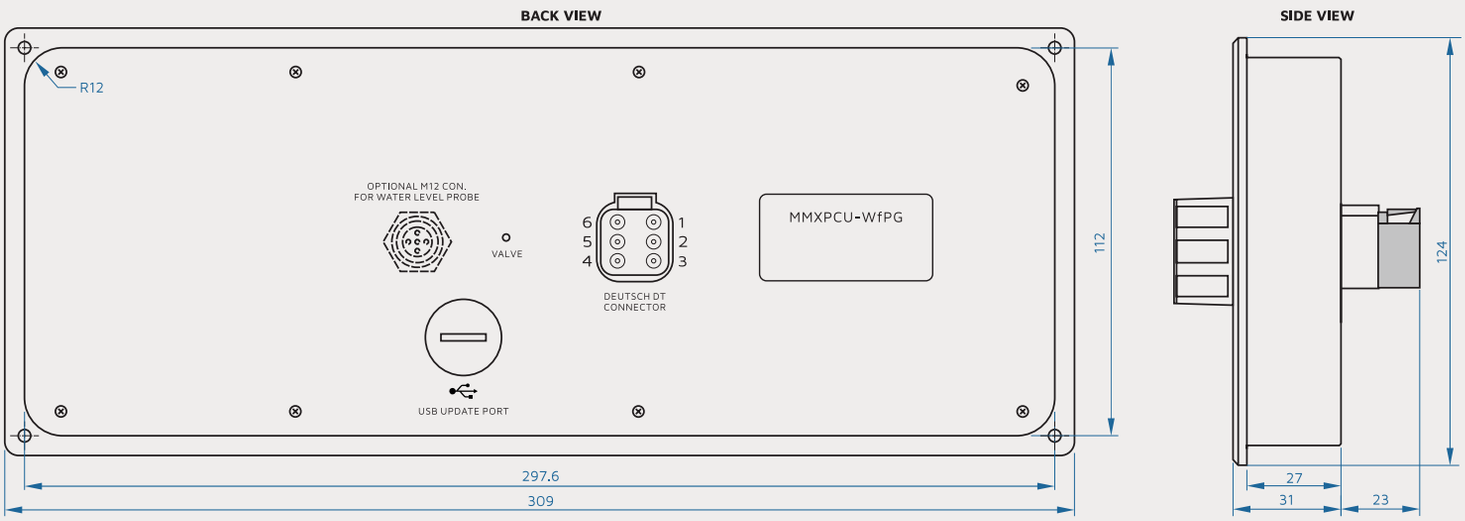
The **PCU-WKPG** is an electronic Pump Control Unit with an integrated pressure governor, water tank level gauge, keypad, warning lights and super bright alphanumeric LED display. It can also be used to control other vehicle systems such as valves, lighting, display engine data and water pump data, display pump warning messages as cavitation temperature, etc. The main function of PCU is Pressure Governor which allows automated regulation of the engine RPMs according to the pressure fluctuations in the pump. The automatic pressure regulation is turned ON by turning the rotation switch - encoder.

The integrated keypad is programmable. Each key can be configured to operate as a switch, push button or both as a special feature. Key label graphics are customizable and coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label.

SPECIFICATIONS

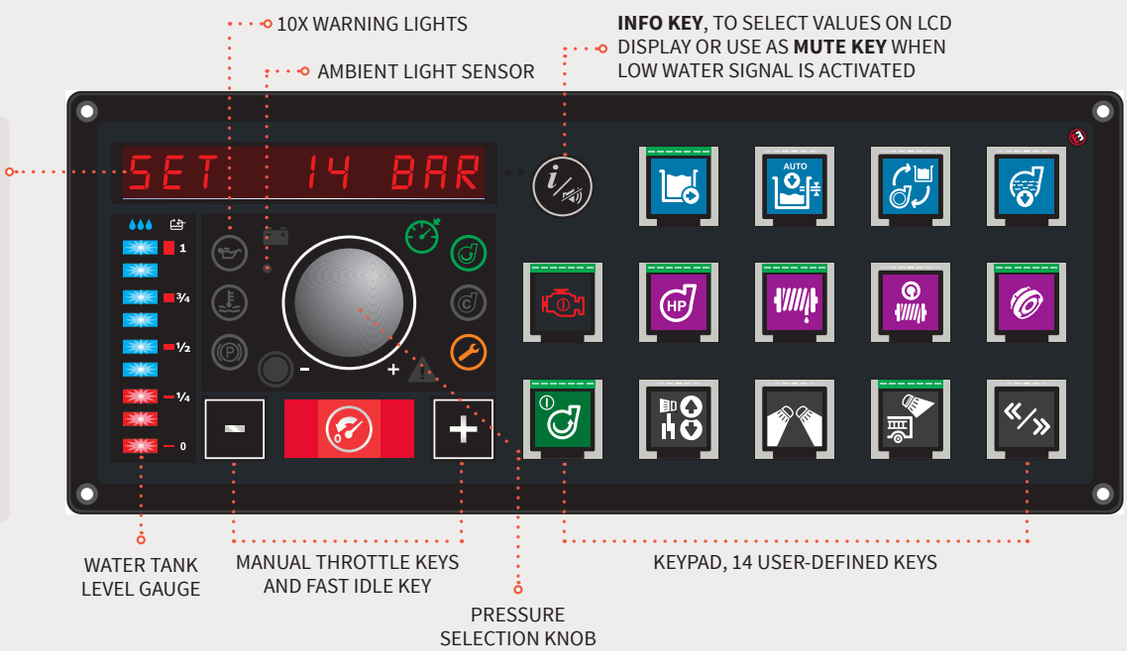
POWER	
Supply Voltage	8-32 V DC
Current	1.2 A maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1x CAN
CAN termination	120 ohm, DIP switch
USB	1x USB 2.0, for firmware update
FEATURES	
Pressure governor	automatic pressure regulation with cavitation warning
Display	alphanumeric super bright LED display, 11 digits
Warning lights	4 red, 4 amber, 2 green, total 10 LEDs
Tank Level Gauge	1x, blue/red LED
Indicator increments	1/8
Keypad	14 soft keys (programmable) + 4 hard keys (pre-defined)
Status Indicator	super bright green LED bar
Icons	customizable key icons
Key Design	RIM-embossed keys with tactile feedback, white backlit keys, dimesion 23 x 23 mm
Operating Life	>250.000 cycles
Rotary Knob	Encoder 16 pos. / 360° with push button
Day/Night operation	automatic – integrated ambient light sensor
Acoustic Signal	Integrated Buzzer 100 dB
ENVIROMENT	
IP Class (IEC529)	IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 2.9 mm tapping screws
Mating Connector	Deutsch DT06-6S
SIZE & WEIGHT	
W x H x D	309 x 123 x 38 mm, without mating connector
Weight	1.2 kg

DIMENSIONS



INFO DISPLAY

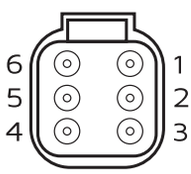
- GOVERNOR SET VALUE
- PUMP RPM
- PUMP TEMPERATURE
- PUMP WORKING HOUR
- VEHICLE BATTERY VOLTAGE
- ENGINE RPM
- OIL PRESSURE
- ENGINE TEMPERATURE
- ERROR MESSAGES
- SETTINGS
- ETC ...



CONNECTIONS

CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L, int. shorted to PIN 2
4	CAN H
5	CAN H, int. shorted to PIN 4
6	BATTERY -



PRODUCT CODE

PCU-WKPG	Pump control unit with pressure governor, water tank level gauge, keypad, warning lights
PCU-WK	Pump control unit with water tank level gauge, keypad, warning lights
	For more options please contact the supplier.

KEYPAD MODULE

KPM-G21 / KPM-G21O

KEY FEATURES

- **White Backlit Keys** With Green Status Indicator
- **Customizable** Key Icons
- **Can Bus** Communications
- **Super Bright Leds**, Wide Viewing Angle
- **Integrated I/O Driver** – Optional
- **Waterproof** Aluminium Housing

SPECIFICATIONS

POWER	
Supply Voltage	8-32 V DC
Current	100 mA maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN (only type without I/O driver)
CAN termination	120 ohm, DIP switch
ENVIROMENT	
IP Class (IEC529)	IP67, waterproof
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
KEYS	
Key Backlite	white LED
Status Indicator	super bright green LED bar
Icons	customizable key icons
Key Design	RIM-embossed keys with tactile feedback, dimesion 23 x 23 mm
Operating Life	>250.000 cycles
ENCLOSURE	
Housing Material	Aluminium
Mounting	in-dash, with 4 screws M3 or 3.5 mm (#8) tapping screws
Connector	Deutsch DT06-06S
I/O - ONLY VERSION WITH INTEGRATED IO DRIVER	
Digital Inputs	2 x active low level
Digital Outputs	2 x negative switching (low-side), max. 2 A
Loads	inductive, capacitive, resistive
Miscellaneous	outputs not protected
SIZE & WEIGHT	
W x H x D	60 x 84 x 33 mm without connector
Weight	0.21 kg

Keypad module KPM-G21 uses two distinct keys, it is highly resistant to weather conditions and can survive extreme environments, what makes it perfect for installation outside or inside driver cabin. The keys are large, well-spaced and embossed, allowing a reliable pressure sensation with a tactile feedback even when wearing protective gloves. Each key has a large green LED Status Indicator above the icon.

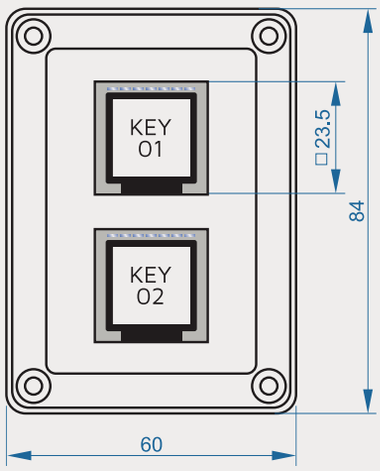
Type KPM-G21O has an integrated I/O controller with two low side power outputs and two inputs that can be useful if the keypad is used as a stand-alone device, not connected to the MMX system.

Keypad is programmable. Each key can be configured to operate as a switch or push button. Key label graphics are customizable, white backlit and coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label.

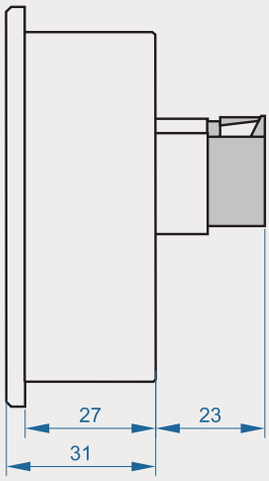
Labels are inserted at the inner side of the front panel of the keypad. Several keypads located on different places can be connected over CAN BUS to collaborate. Keypad modules series KPM-G are a perfect solution in automotive, nautical, agriculture, utility vehicles and industrial sectors.

DIMENSIONS

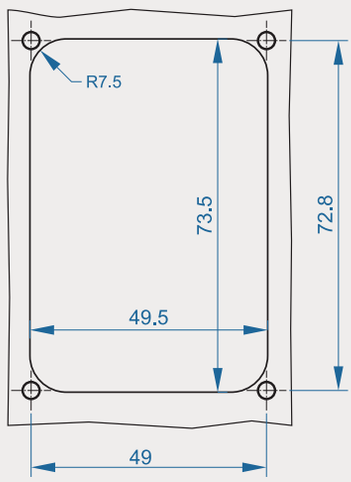
FRONT VIEW



SIDE VIEW



PANEL CUT-OUT

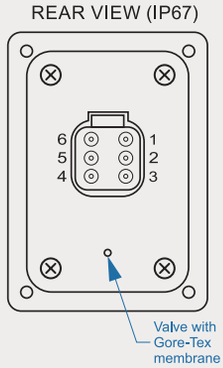


CONNECTIONS

CAN BUS MODULE
CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L, int. shorted to PIN 2
4	CAN H
5	CAN H, int. shorted to PIN 4
6	BATTERY -

REAR VIEW (IP67)



STAND-ALONE MODULE WITH I/O
CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	INPUT 1
3	OUTPUT 1
4	OUTPUT 2
5	INPUT 2
6	BATTERY -

PRODUCT CODE

Ordering code example:

K	P	M	-	G	2	1	O					

	SIGNAL INDIC.	KEY CONFIGURATION	I/O	SPECIAL FEATURES / APPLICATION
	G: GREEN	**21**: 2-ROW, 1-COLUMN	**O**: I/O INTEGRATED	

KEYPAD MODULE

KPM-G26 / KPM-GC26

KEY FEATURES

- **White Backlit Keys** With Green Status Indicator
- Used Also As **Warning Lights** (RGB LEDs Optional)
- **Customizable** key icons
- **CAN Bus** Communications
- **Super Bright LEDs**, Sunlight Readable
- **Waterproof** Aluminium Housing

Keypad module KPM-GC26 uses twelve distinct keys, it is highly resistant to weather conditions and can survive extreme environments, what makes it perfect for installation outside or inside driver cabin.

The keys are large, well-spaced and embossed, allowing a reliable pressure sensation with a tactile feedback even when wearing protective gloves. Each key has a large green LED Status Indicator above the icon. Since the KEY backlit LED are white and RGB (colour) the keypad can be used as a combination of buttons and warning light indicators.

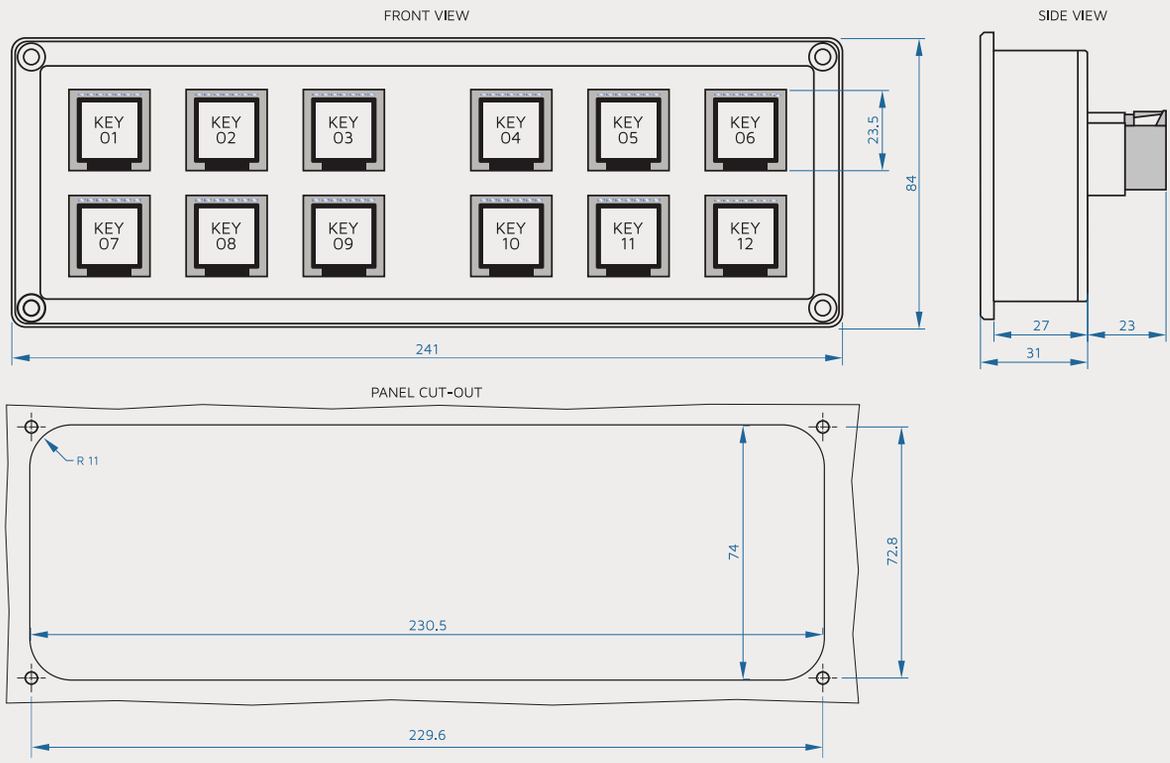
Keypad is programmable. Each key can be configured to operate as a switch or push button. Key label graphics are customizable, white backlit and coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label. Labels are inserted at the inner side of the front panel of the keypad. Several keypads located on different places can be connected over CAN BUS to collaborate.

Keypad modules series KPM-GC are a perfect solution in automotive, nautical, agriculture, utility vehicles and industrial sectors.

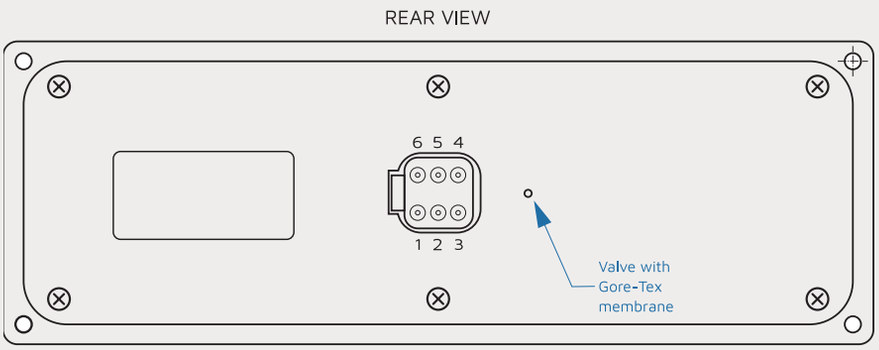
SPECIFICATIONS

POWER	
Supply Voltage	8-32 V DC
Current	0.5 A maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN (only type without I/O driver)
CAN termination	configurable termination 120 ohm via DIP switch
CAN Link	T-connection, node ID definition via software
ENVIROMENT	
IP Class	IP67, waterproof
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
KEYS	
Key Backlite	first row RGB and white backlit, second row white backlit
Status Indicator	Super bright green LED bar
Icons	customizable key icons
Key Design	RIM-embossed keys with tactile feedback, dimesion 23 x 23 mm
Operating Life	>250.000 cycles
ENCLOSURE	
Housing Material	Aluminium
Mounting	in-dash, with 4 screws M4 or 3.5 mm (#8) tapping screws
Connector	Deutsch DT06-06S
SIZE & WEIGHT	
W x H x D	241 x 84 x 33 mm without connector
Weight	0.70 kg

DIMENSIONS



CONNECTIONS



CONNECTION DEUTSCH DT06-6S	
PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L - shorted to PIN 2
4	CAN H
5	CAN H - shorted to PIN 4
6	BATTERY -

PRODUCT CODE

Ordering code example:

K	P	M	-	G	2	6						

	SIGNAL INDIC.	KEY CONFIGURATION	I/O	SPECIAL FEATURES / APPLICATION
	G: GREEN	**26**: 2-ROW, 6-COLUMN	**O**: I/O INTEGRATED	

KEYPAD MODULE

KPM-G22J2

KEY FEATURES

- **Integrated Dual 4 way Joysticks** - with Limiter
- **White Backlit Keys** With Green Status Indicator
- **Customizable** key icons
- **CAN Bus** Communications
- **Super Bright LEDs**, Sunlight Readable
- **Waterproof** Aluminium Housing

Keypad module KPM-GC4J2 uses two 4-way Joysticks specifically engineered for demanding vehicle applications and 4 distinct keys. It is highly resistant to weather conditions and can survive extreme environments, what makes it perfect for installation outside or inside driver cabin. The keys are large, well-spaced and embossed, allowing a reliable pressure sensation with a tactile feedback even when wearing protective gloves. Each key has a large green LED Status Indicator above the icon. Since the KEY backlit LED are white and RGB (colour) the keypad can be used as combination of buttons and warning light indicators.

Keypad is programmable. Each key can be configured to operate as a switch or a push button. Key label graphics are customizable, white backlit and coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label. Labels are inserted at the inner side of the front panel of the keypad. Several keypads located on different places can be connected over CAN BUS to collaborate.

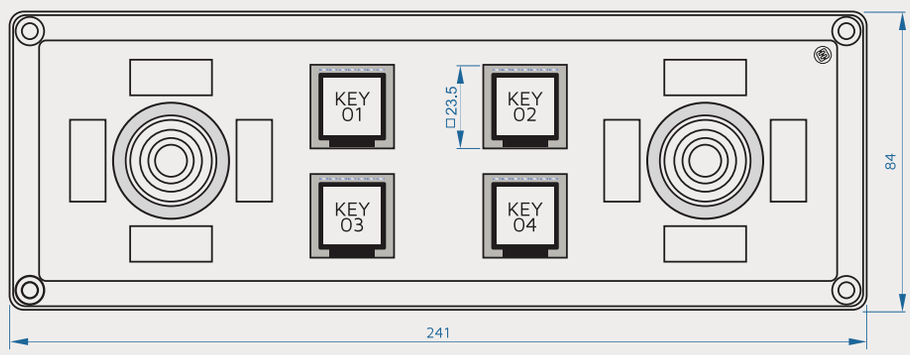
Keypad modules series KPM-GC42J are a perfect solution for agriculture and municipal vehicles as well as in industrial sectors.

SPECIFICATIONS

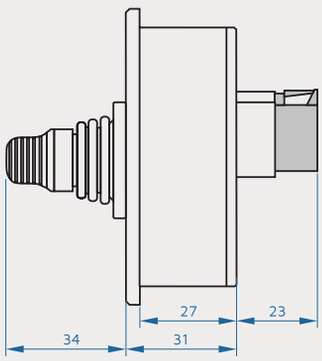
POWER	
Supply Voltage	8-32 V DC
Current	0.5 A maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN
CAN termination	configurable termination 120 ohm via DIP switch
CAN Link	T-connection, node ID definition via software
ENVIROMENT	
IP Class	IP67, waterproof
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
KEYS	
Key Backlite	white LED
Status Indicator	Super bright green LED bar
Icons	customizable key icons
Key Design	RIM-embossed keys with tactile feedback, dimesion 23 x 23 mm
Operating Life	>250.000 cycles
JOYSTICKS	
Level Action	4-way with 4-way Limiter, spring centering
Operating Force	5 N +/- 1N
Max. Load	Vertical 200 N, Horizontal 150 N
Angle of Movement	+/- 15°
Operating Life	>300.000 cycles
ENCLOSURE	
Housing Material	Aluminium
Mounting	in-dash, with 4 screws M4 or 3.5 mm (#8) tapping screws
Connector	Deutsch DT06-06S
SIZE & WEIGHT	
W x H x D	241 x 84 x 33 mm without connector
Weight	0.75 kg

DIMENSIONS

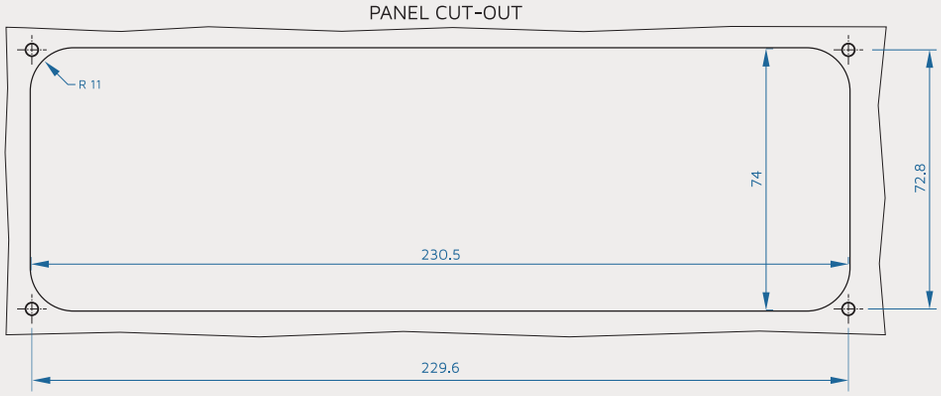
FRONT VIEW



SIDE VIEW

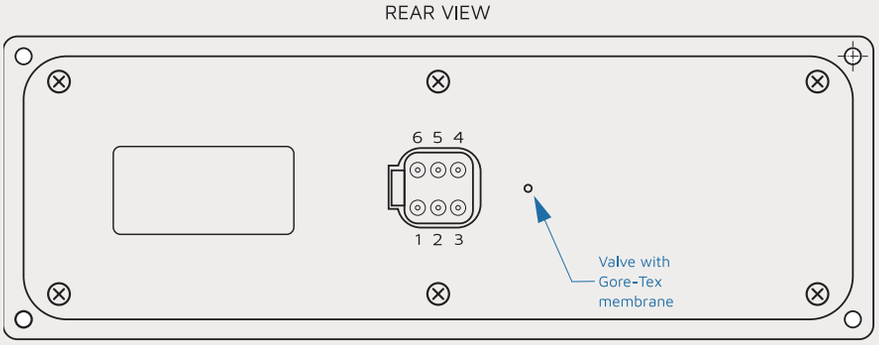


PANEL CUT-OUT



CONNECTIONS

REAR VIEW



CONNECTION DEUTSCH DT06-6S	
PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L - shorted to PIN 2
4	CAN H
5	CAN H - shorted to PIN 4
6	BATTERY -

PRODUCT CODE

Ordering code example:

K	P	M	-	G	2	2	J	2				

	SIGNAL INDIC.	KEY CONFIGURATION	JOYSTICKS	SPECIAL FEATURES / APPLICATION
	G: GREEN	**22**: 2-ROW, 2-COLUMN	**J2**: 2 JOYSTICKS	

KEYPAD MODULE

KPM-C22 / KPM-C22D

KEY FEATURES

- **RGB Backlit Keys** with Customizable Icons
- **Ambient Light Sensor**
- **Adjustable Key** Brightness
- **CAN Bus** Communications
- **Low** Installation Depth
- **“RIM”** Embossing Keys
- **Waterproof** Aluminium Housing

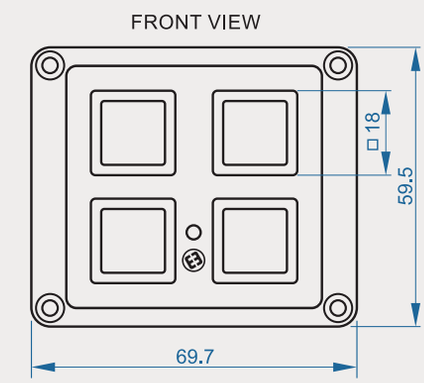
Keypad module KPM-C22 uses four distinct keys, it is highly resistant to weather conditions and can survive extreme environments, what makes it perfect for installation outside or inside driver cabin. The keys are large, well-spaced and “RIM” embossed, allowing a reliable pressure sensation with a tactile feedback even when wearing protective gloves. The keys can also be used in combination as warning lights.

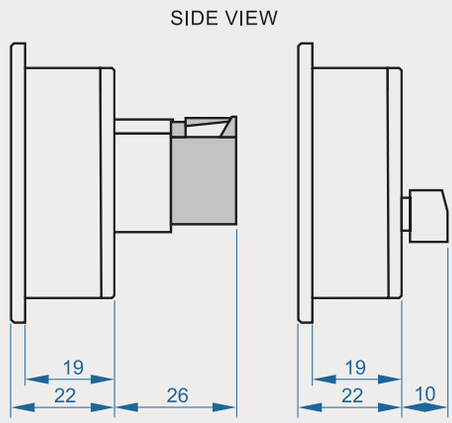
Keypad is programmable. Each key can be configured to operate as a switch or push button. Corresponding key LED is fully configurable, colour and luminance are adjustable. Key label graphics are customizable and backlit coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label. Labels are inserted at the inner side of the front panel of the keypad. Several keypads located on different places can be connected over CAN BUS to collaborate. Keypad modules series KPM-C are a perfect solution in automotive, nautical, agriculture, utility vehicles and industrial sectors.

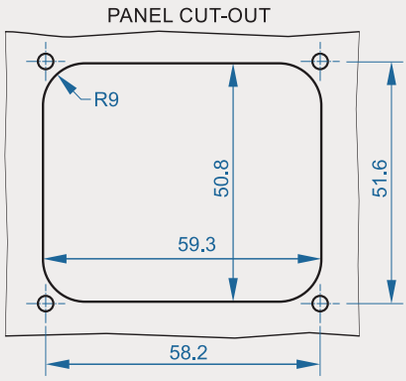
SPECIFICATIONS

POWER	
Supply Voltage	8-32 V DC
Current	60 mA maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN
CAN termination	120 ohm, DIP switch
ENVIROMENT	
IP Class (IEC529)	
with terminal block	front panel - IP67, back - IP51
with Deutsch DT06	complete IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
KEYS	
Key Backlite	RGB LED
Icons	customizable key icons
Brightness	individually adjustable key luminous intensity, ambient light sensor
Key Design	RIM-embossed keys with tactile feedback, dimesion 18 x 18 mm
Operating Life	>250.000 cycles
ENCLOSURE	
Housing Material	Aluminium
Mounting	in-dash with 4 screws M3 or 2.9 mm tapping screws
Connectors	
Power Supply/Can	4 way terminal block or Automotive - Deutsch DT06-6
I/O	14 way Terminal Block
SIZE & WEIGHT	
W x H x D	69.7 x 59.8 x 19 without connector
Weight	0.12 kg (IP51), 0.14 kg (IP67)

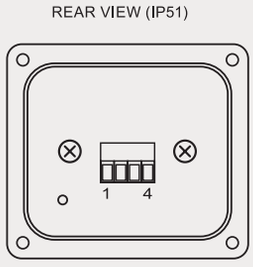
DIMENSIONS

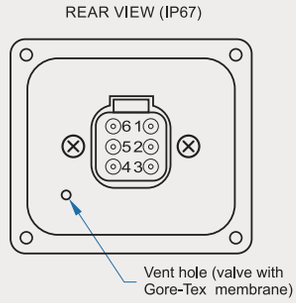






CONNECTIONS





CONNECTION TERMINAL BLOCK 4 WAY	
PIN	Description
1	CAN H
2	BATTERY -
3	BATTERY + (“15”)
4	CAN L

CONNECTION DEUTSCH DT06-6S	
PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	N/A
4	N/A
5	CAN H
6	BATTERY -

PRODUCT CODE

Ordering code example:

K	P	M	-	C	2	2	D					

	SIGNAL INDIC.	KEY CONFIGURATION	SEALING	SPECIAL FEATURES / APPLICATION
	C: COLOR -RGB	**22**: 2-ROW, 2-COLUMN	**D**: DEUTSCH CONN. IP67	

KEYPAD MODULE

KPM-C24 / KPM-C240

KEY FEATURES

- **RGB Backlit Keys** with Customizable Icons
- **Integrated I/O Driver** - Optional
- **Ambient Light Sensor**, Buzzer
- **Adjustable Key** Brightness
- **CAN Bus** Communications
- **Low** Installation Depth
- **Waterproof** Aluminium Housing

Keypad module KPM-C24 uses eight distinct keys, it is highly resistant to weather conditions and can survive extreme environments, what makes it perfect for installation outside or inside driver cabin. The keys are large, wellspaced and “RIM” embossed, allowing a reliable pressure sensation with a tactile feedback even when wearing protective gloves. The keys can also be used in combination as warning lights.

Type KPM-C24O has an integrated I/O controller with high side power outputs and several inputs that can be useful if the keypad is used as a stand-alone device or as an extension of IO ports for controllers used in the MMX system.

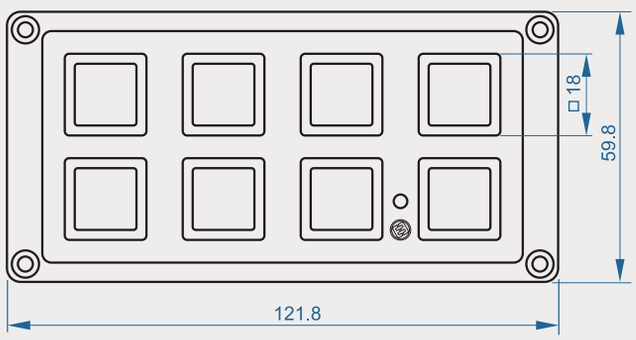
Keypad is programmable. Each key can be configured to operate as a switch or push button. Corresponding key LED is fully configurable, colour and luminance are adjustable. Key label graphics are customizable and backlit coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label. Labels are inserted at the inner side of the front panel of the keypad. Several keypads located on different places can be connected over CAN BUS to collaborate. Keypad modules series KPM-C are a perfect solution in automotive, nautical, agriculture, utility vehicles and industrial sectors.

SPECIFICATIONS

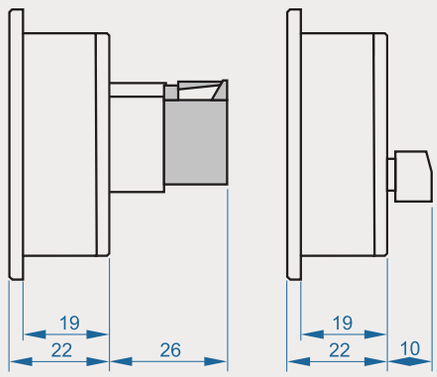
POWER	
Supply Voltage	8-32 V DC
Current	100 mA maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN
CAN termination	120 ohm, DIP switch
ENVIROMENT	
IP Class (IEC529)	
with terminal block	front panel - IP67, back - IP51
with Deutsch DT06	complete IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6-4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
KEYS	
Key Backlite	RGB LED
Icons	customizable key icons
Brightness	individually adjustable key luminous intensity, ambient light sensor
Key Design	RIM-embossed keys with tactile feedback, dimesion 18 x 18 mm
Operating Life	>250.000 cycles
ENCLOSURE	
Housing Material	Aluminium
Mounting	in-dash with 4 screws M3 or 2.9 mm tapping screws
Connectors	
Power Supply/Can	4 way terminal block or Automotive - Deutsch DT06-6
I/O	14 way Terminal Block
I/O - ONLY VERSION WITH INTEGRATED IO DRIVER	
Digital Inputs	1x configurable active low/high levels via software, 0 .. Ub, integrated pull-up/down resistor, protected 3 x positive – active high, 0..Ub, switch on level >4.6V,integrated pull-down resistor
Digital Outputs	8x positive switching (high-side), max. 1.5 A, total output from the unit may not exceed 8 A
Loads	inductive, capacitive, resistive
Miscellaneous	protection from short circuit and overload
SIZE & WEIGHT	
W x H x D	121.8 x 59.8 x 19 without connector
Weight	0.18 kg (IP51), 0.22 kg (IP67)

DIMENSIONS

FRONT VIEW



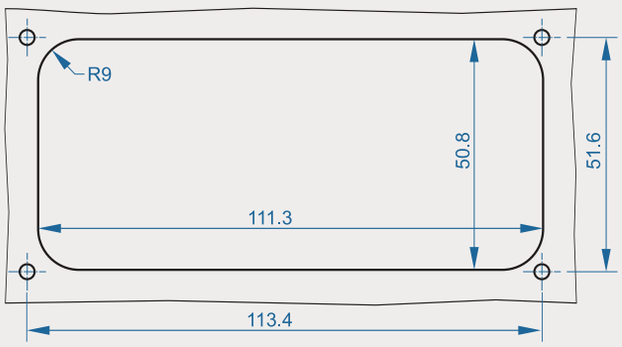
SIDE VIEW



IP67 VERSION

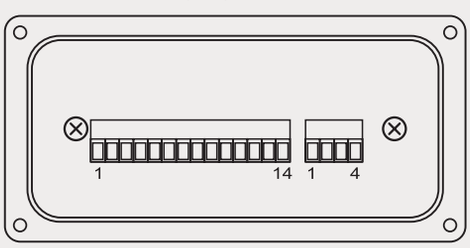
IP51 VERSION

PANEL CUT-OUT

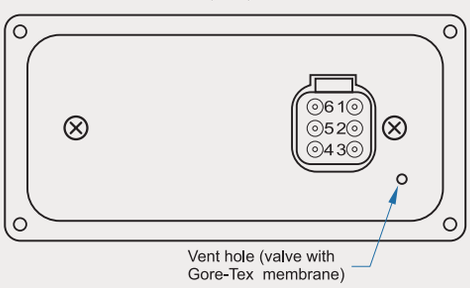


CONNECTIONS

REAR VIEW (IP51) WITH I/O CONNECTOR



REAR VIEW (IP67)



CONNECTION TERMINAL BLOCK 14 WAY	
PIN	Description
1-8	HIGH-SIDE OUTPUT
9	INPUT - CONFIGURABLE
10-12	INPUT - POSITIVE
13-14	N/A

CONNECTION TERMINAL BLOCK 4 WAY	
PIN	Description
1	CAN H
2	BATTERY -
3	BATTERY + (“15”)
4	CAN L

CONNECTION DEUTSCH DT06-6S	
PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	N/A
4	N/A
5	CAN H
6	BATTERY -

PRODUCT CODE

Ordering code example:

K	P	M	-	C	2	4	O					

	SIGNAL INDIC.	KEY CONFIGURATION	I/O	SEALING	SPECIAL FEATURES / APPLICATION
	C: COLOR -RGB	**24**: 2-ROW, 4-COLUMN **26**: 2-ROW, 6-COLUMN	**O**: I/O INTEGRATED	**D**: DEUTSCH CONN. IP67	

KEYPAD MODULE

KPM-C26 / KPM-C260

KEY FEATURES

- **RGB Backlit Keys** with Customizable Icons
- **Integrated I/O Driver** - Optional
- **Ambient Light Sensor**, Buzzer
- **Adjustable Key** Brightness
- **CAN Bus** Communications
- **Low** Installation Depth
- **Waterproof** Aluminium Housing

Keypad module KPM-C26 uses twelve distinct keys, it is highly resistant to weather conditions and can survive extreme environments, what makes it perfect for installation outside or inside driver cabin. The keys are large, wellspaced and “RIM” embossed, allowing a reliable pressure sensation with a tactile feedback even when wearing protective gloves. The keys can also be used in combination as warning lights.

Type KPM-C26O has an integrated I/O controller with high side power outputs and several inputs that can be useful if the keypad is used as a stand-alone device or as an extension of IO ports for controllers used in the MMX system.

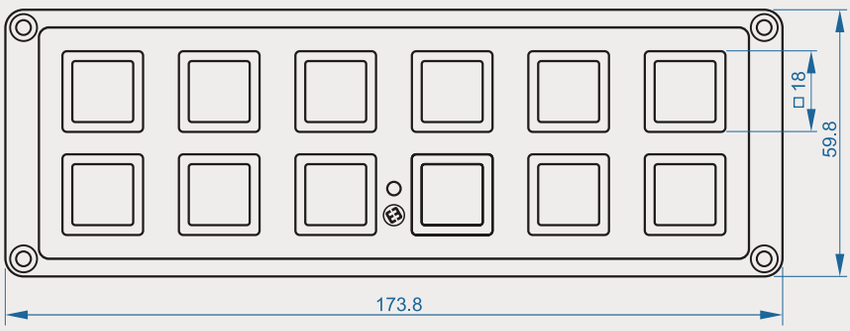
Keypad is programmable. Each key can be configured to operate as a switch or push button. Corresponding key LED is fully configurable, colour and luminance are adjustable. Key label graphics are customizable and backlit coloured according to function groups for easy recognition. Unused keys can be screened off with a dark label. Labels are inserted at the inner side of the front panel of the keypad. Several keypads located on different places can be connected over CAN BUS to collaborate. Keypad modules series KPM-C are a perfect solution in automotive, nautical, agriculture, utility vehicles and industrial sectors.

SPECIFICATIONS

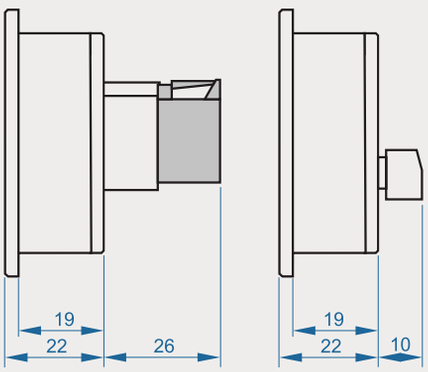
POWER	
Supply Voltage	8-32 V DC
Current	130 mA maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN
CAN termination	120 ohm, DIP switch
ENVIROMENT	
IP Class (IEC529)	
with terminal block	front panel - IP67, back - IP51
with Deutsch DT06	complete IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6-4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
KEYS	
Key Backlite	RGB LED
Icons	customizable key icons
Brightness	individually adjustable key luminous intensity, ambient light sensor
Key Design	RIM-embossed keys with tactile feedback, dimesion 18 x 18 mm
Operating Life	>250.000 cycles
ENCLOSURE	
Housing Material	Aluminium
Mounting	in-dash with 4 screws M3 or 2.9 mm tapping screws
Connectors	
Power Supply/Can	4 way terminal block or Automotive - Deutsch DT06-6
I/O	14 way Terminal Block
I/O - ONLY VERSION WITH INTEGRATED IO DRIVER	
Digital Inputs	6x configurable active low/high levels via software, 0 .. Ub, switch on level >4.6V, switch off level <2V, integrated pull-up/down resistor, protected
Digital Outputs	12 x positive switching (high-side), max. 1.5 A, total output from the unit may not exceed 8 A
Loads	inductive, capacitive, resistive
Miscellaneous	protection from short circuit and overload
SIZE & WEIGHT	
W x H x D	173.8 x 59.8 x 19 without connector
Weight	0.23 kg (IP51), 0.3 kg (IP67)

DIMENSIONS

FRONT VIEW



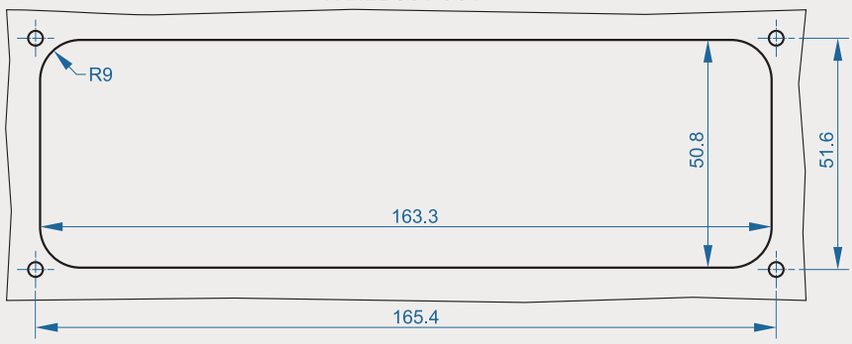
SIDE VIEW



IP67 VERSION

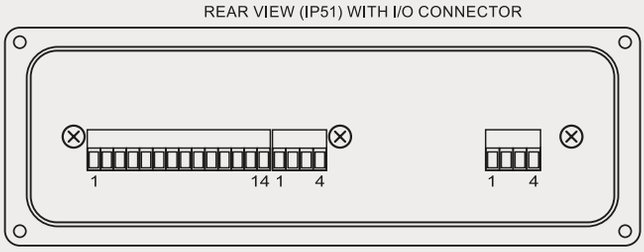
IP51 VERSION

PANEL CUT-OUT

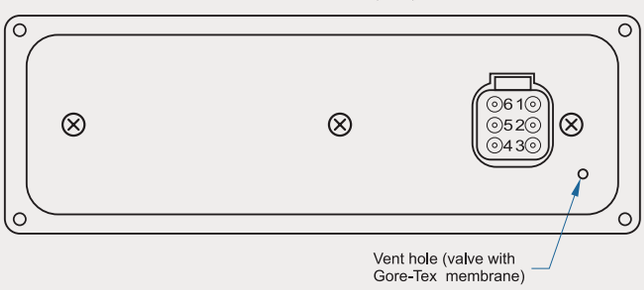


CONNECTIONS

REAR VIEW (IP51) WITH I/O CONNECTOR



REAR VIEW (IP67)



CONNECTION TERMINAL BLOCK 14 WAY + 4 WAY

PIN	Description
1-12	HIGH-SIDE OUTPUT
13-14	INPUT - CONFIGURABLE
1-4	INPUT - POSITIVE

CONNECTION TERMINAL BLOCK 4 WAY

PIN	Description
1	CAN H
2	BATTERY -
3	BATTERY + (“15”)
4	CAN L

CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	N/A
4	N/A
5	CAN H
6	BATTERY -

PRODUCT CODE

Ordering code example:

K	P	M	-	C	2	6	O					

	SIGNAL INDIC.	KEY CONFIGURATION	I/O	SEALING	SPECIAL FEATURES / APPLICATION
	C: COLOR -RGB	**24**: 2-ROW, 4-COLUMN **26**: 2-ROW, 6-COLUMN	**O**: I/O INTEGRATED	**D**: DEUTSCH CONN. IP67	

HMI DISPLAY PANELS

HMI-04K5

Optional Accessories

KEY FEATURES

- **Sunlight** Readable
- **Anti-Reflective** Glass
- 5 **Soft Keys**
- **Video** Input
- **Cabin Or Panel** Mount
- **CAN Bus** Communications

MMX LCD4 Display unit is very modern looking, cost-efficient, rugged 4.3" operator control panel for use on heavy-duty vehicles and work machines that must operate outdoor in harsh conditions. It is fully equipped with five soft-function keys, integrated buzzer, CAN bus and video inputs.

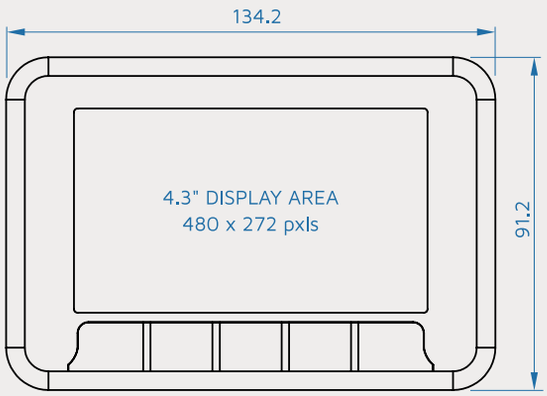
The display can be installed in-dash or out-dash with its specific articulated support.

SPECIFICATIONS

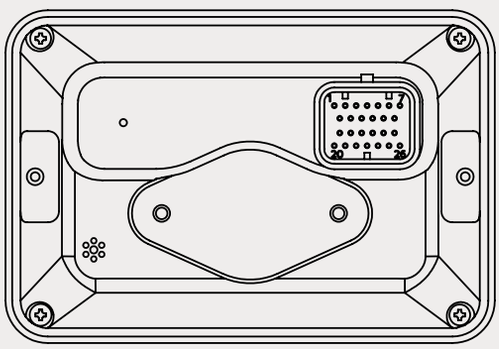
POWER	
Supply Voltage	8-32 V DC
Current	500 mA maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	2 x CAN BUS ISO 11898, 2.0B high speed
Video	1 x PAL/NTSC
CAN termination	120 ohm, DIP switch
DISPLAY	
Display type	Active matrix colour TFT LCD 4.3 inch, 16.2M colours, sunlight-readable, anti-reflective glass
Resolution	480 x 272 pixels, dot pitch 0.198,16:9
Viewing angle	80°
Luminance	800 cdm
Contrast ratio	600:1
Boot time	< 3 sec.
MISCELLANEOUS	
Keys	5 soft keys, backlit
Touch	resistive - optional
Acoustic signal output	integrated buzzer max 85 dB
Inputs	2 Software configurable
Outputs	4 digital high side, 2 A max, optional
Operating system	Linux embedded
Kernel	ARM 32-bit uP, 2 MB Flash memory, 16 MB serial Flash
ENVIROMENT	
IP Class	IP65
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	black rubber housing
Mounting	in-dash with springs or out-dash with articulated support
Mating Connector	Tyco-AMP Ampseal 1437288-6, 26 way
SIZE & WEIGHT	
W x H x D	134 x 91 x 33 without connector
Weight	250 g

DIMENSIONS

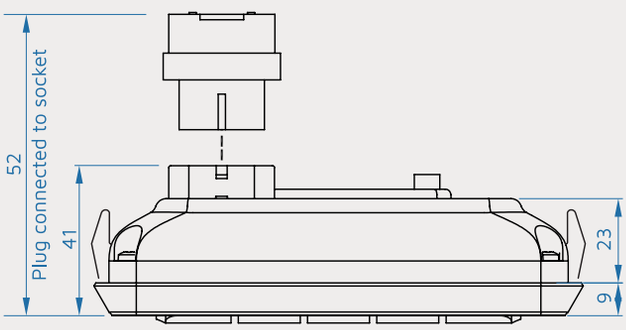
FRONT VIEW



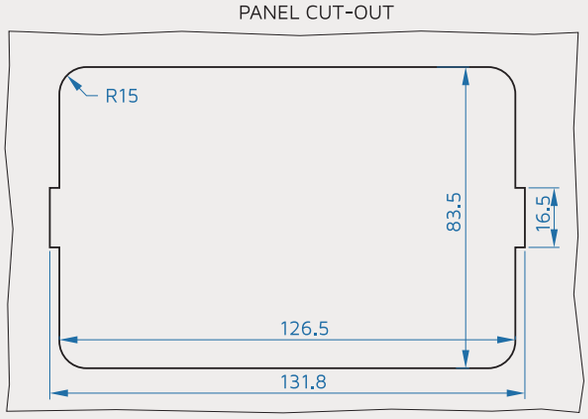
BACK VIEW



SIDE VIEW

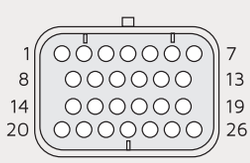


PANEL CUT-OUT



CONNECTIONS

AMP AMPSEAL 26-WAY	
PIN	Description / wire colour
1	U BATT + (Ignition)
2	U BATT - „31” (GND)
3	U BATT + „15” (Ignition)
4	Shorted to PIN 3 - Camera Supply+ (Red)
5	CAN H line 1
6	CAN L line 1
7	Ground signal
8	CAN H line 2
9	CAN L line 2
10	Ground signal
11	Input 1
12	Input 2
13	Ground signal



AMP AMPSEAL 26-WAY	
PIN	Description / wire colour
14	Video Input (Yellow)
15	Video Camera GND (Black + Shield)
16	UART TX
17	UART RX
18	Ground signal
19	Output 1, optional
20	Output 2, optional
21	Output 3, optional
22	Output 4, optional
23	USB V Bus
24	USB Data - line
25	USB Data + line
26	USB Ground

PRODUCT CODE

HMI-04K5	HMI 4.3” LCD Control Panel with 5 soft keys, Video In, CAN
	For more options please contact the supplier.

HMI DISPLAY PANELS

HMI-07xx-02

Optional Accessories

KEY FEATURES

- **7” High-Resolution** TFT Display
- **High-Brightness IPS Panel** with Wide Viewing Angle 178
- 10 Soft **Keys** + PCAP **Touch**
- Automatic **Brightness Control**
- **Robust** Automotive Design
- **IP Video** for Multiple Cameras
- **CAN Bus** Communications

The HMI-07xx-02 is a 7-inch industrial Human Machine Interface designed for control and monitoring applications in special vehicles and mobile machinery. The unit features a high-brightness TFT IPS display, robust front protection and CAN-based communication interface for integration with Emitter control systems - MMX. Includes integrated ambient light sensor for automatic brightness control. One or multiple IP cameras can be connected via Ethernet input.

Ideal for cabin and machine-side operation

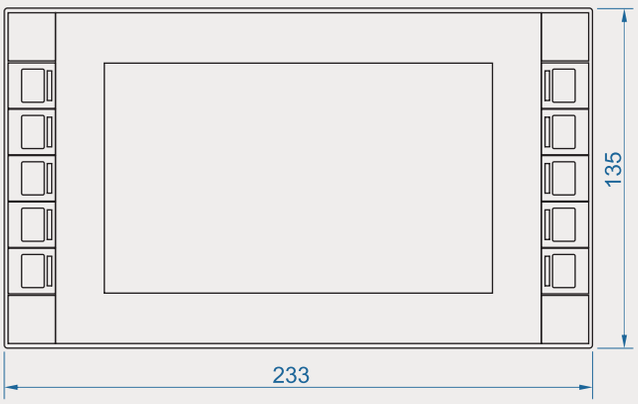
Suitable for installation inside the vehicle cabin or on the external operator panel, enabling direct control of pump systems, pressure governors, superstructure indicators and parameters, valve actuation, lighting control and system diagnostics, ensuring intuitive and reliable operation in all working conditions.

SPECIFICATIONS

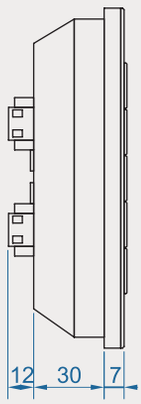
POWER	
Supply Voltage	6-36 V DC (nominal 12 VDC or 24 VDC)
Current	0.85 A @ 12V and 0.45 A @ 24V maximum, no outputs active
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	2x CAN
USB	1x USB 2.0, for firmware update
ETHERNET	10/100 Mbps for IP video cameras
FEATURES	
Kernel	NXP™ ARM 64-bit 1200Mhz, 8 Gbyte
Display	TFT IPS 7”, 1000:1, Brightness 800 cd/m2, 800x480, viewing angle ±88°
Protective glass	1.8 mm Anti-Glare, Hardness 6H
Touch screen	multi-touch PCAP touch screen
Keypad	10 soft keys (programmable), backlit
Buzzer	Yes
Day/Night operation	automatic – integrated ambient light sensor
I/O	
Config. Inputs IN1-IN2	5 V/32 V, 0-30 mA, 0-2.4 kΩ, Frequency measurement 1 Hz-50 kHz
Digital Outputs OUT1 – OUT 2	Positive switching (high-side), max. 1 A, PWM 1-5 kHz
ENVIROMENT	
IP Class (IEC529)	IP65, IP66 and IP67
EMC Conformity	ISO 7637-2:2011, ISO 16750-2:2012, ISO 10605:2008, ESD Immunity
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	PBT + PC plastic, flame retarded
Mounting	RAM mount arm or mounting bracket
Mating Connector	Deutsch DT06-12SA and DT06-12SB
SIZE & WEIGHT	
W x H x D	233 x 135 x 49 mm, without mating connector
Weight	0.7 kg

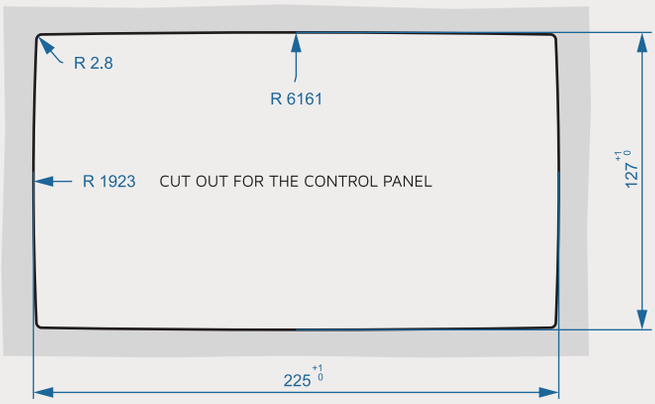
DIMENSIONS

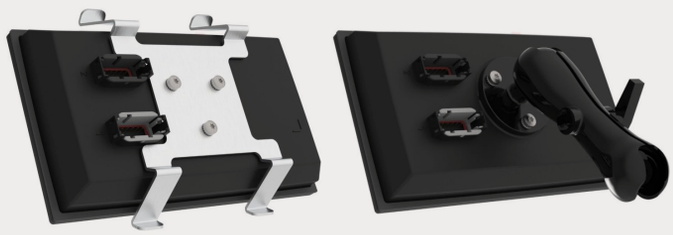
FRONT VIEW



SIDE VIEW



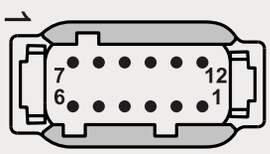




The HMI can be installed in-dash using a fixation bracket or mounted on a RAM mount arm.

CONNECTIONS

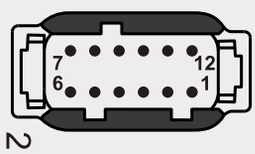
Connector Pinout for **CONNECTOR-1** Grey



DEUTSCH DT06-12SA

PIN	Description	PIN	Description
1	POWER +12/24 V	12	USB VBUS
2	POWER GROUND	11	USB DATA +
3	IGNITION +12/24 V	10	USB DATA –
4	SWITCHED OUTPUT 1	9	USB Ground
5	SWITCHED OUTPUT 2	8	CAN 1L
6	CAN 1 SHIELD	7	CAN 1H

Connector Pinout for **CONNECTOR-2** Black



DEUTSCH DT06-12SB

PIN	Description	PIN	Description
1	CONFIGURABLE INPUT 1	12	ETHERNET TD– / RD–
2	CONFIGURABLE INPUT 2	11	ETHERNET TD+ / RD+
3	-	10	ETHERNET RD– / TD–
4	-	9	Ethernet RD+ / TD+
5	GROUND	8	CAN 2L
6	CAN 2 SHIELD	7	CAN 2H

PRODUCT CODE

Ordering code example:

H	M	I	-	0	7	P	U	M	P

HMI - LCD

LCD SIZE	APPLICATION	
04: 4 INCH **07:** 7 INCH **10:** 10 INCH	**CAB**: CABIN CONTROL **PUMP**: PUMP CONTROL **FJ**: FOAMJET CONTROL	**DF**: DIGIFOAM CONTROL **CAFS**: CAFS SYSTEM CONTROL / : GENERAL USE

HMI DISPLAY PANELS

HMI-10xx-01

Optional Accessories

KEY FEATURES

- **Wide Viewing Angle** 170° (IPS)
- **Sunlight Readable**, Anti-Reflective Glass
- 9 **Soft Keys**
- Capacitive **Multitouch Screen**
- **Two Video Input**, optinal four
- **Cabin Or Panel** Mount
- **Acoustic Signal**-Integrated Buzzer
- **CAN Bus** Communications

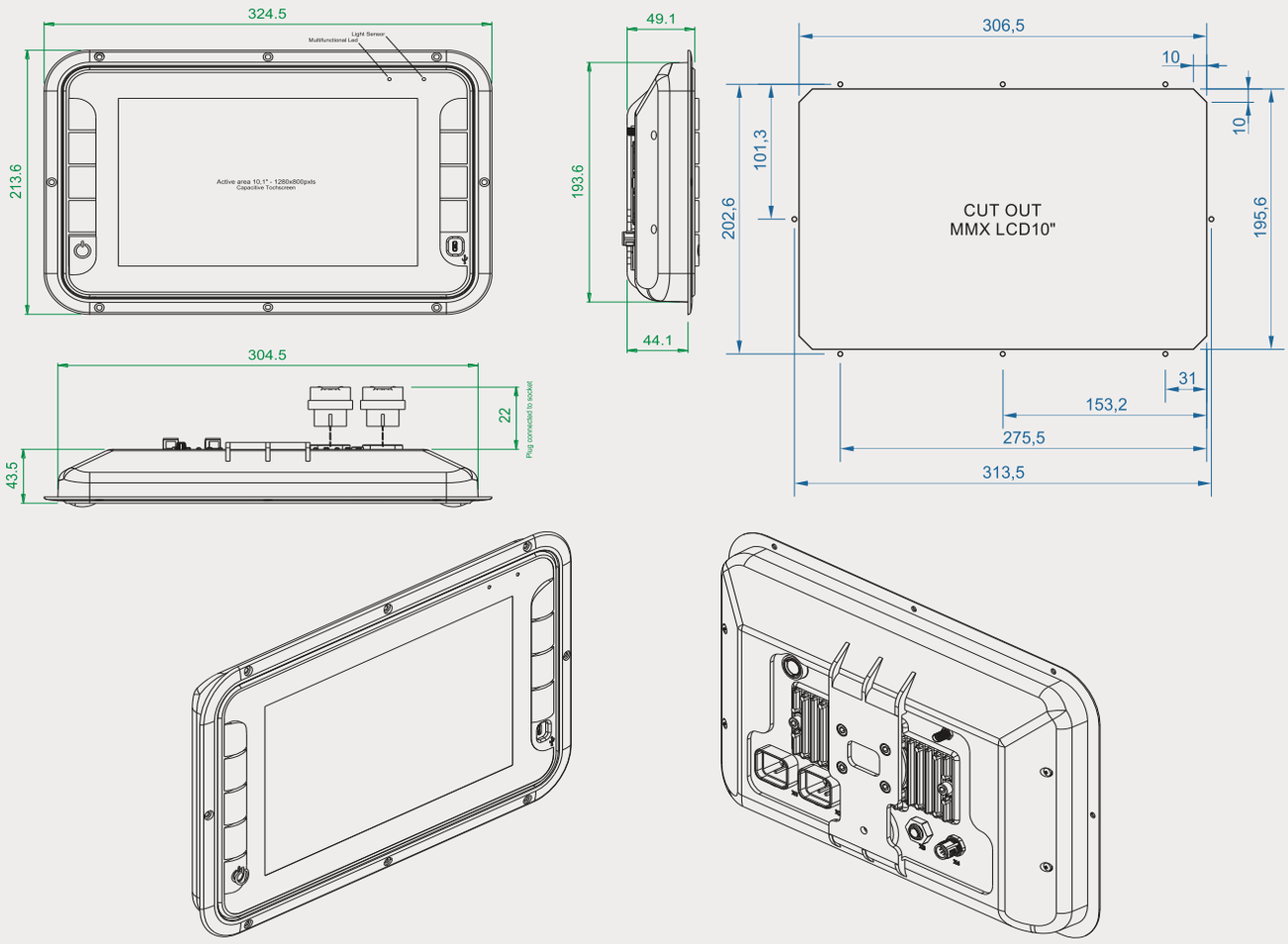
MMX LCD10 is a high-end display solution, a rugged operator control panel for use on heavy-duty vehicles and work machines that must operate outdoor in harsh conditions. It is fully equipped with touch screen and nine soft-function keys, integrated buzzer, CAN bus and video inputs. It is a perfect solution for pump control outside the vehicle or for superstructure control from the cabin.

The display can be installed both in-dash or out-dash with its specific articulated support.

SPECIFICATIONS

POWER	
Supply Voltage	8-32 V DC
Current	1.5 A maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	2 x CAN BUS ISO 11898, 2.0B high speed
Video	4 x PAL/NTSC simultaneous
USB	1x USB 2.0, for firmware update
DISPLAY	
Display type	active matrix colour TFT LCD 10 inch, 16.2M colours, sunlight-readable, anti-reflective glass
Resolution	1280 x 800 pixels, dot pitch 0.1695 mm, 16:10
Viewing angle	horizontal 170°, Vertical 170° (IPS)
Luminance	850 cdm
Contrast ratio	800:1
MISCELLANEOUS	
Keys	9 soft keys, backlit
Touch	integrated buzzer max 93 dB
Acoustic signal output	detect the intensity of the light in the environment
Digital Output	Low side, 0.7 A max, optional
Operating system	Linux embedded
Kernel	dual ARM Cortex A9, 32-bit uP, 8 GB Flash memory eMMC
ENVIROMENT	
IP Class (IEC529)	IP65
EMC Conformity	EN61000-6-2 noise immunity EN61000-6-4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Mounting	in-dash with 8 screws M3 or 2.9 mm tapping screws or out-dash with articulated support
Mating Connector	Tyco-AMP Ampseal 1437288-6, 26 way M12 8-way for two video cameras
SIZE & WEIGHT	
W x H x D	324 x 213 x 43, without Mating connector
Weight	1.5 kg

DIMENSIONS

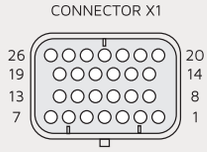


CONNECTIONS

CONNECTOR X1

PIN	Description / wire colour
1	U BATT + (Ignition-15, optionally 30)
10	CAN1 H
11	CAN1 L
14	CAN2 H
20	CAN2 L
21	U batt – (GND-31)
22	U batt+ (Ignition -15)

CONNECTOR X1



View from rear side of the LCD

CONNECTOR M12-8way

CONNECTOR M12 A-CODING MALE 8-WAY

PIN	Description / wire colour
1	U batt +, positive power supply for external camera (Ignition ”15”)
2	U batt -, negative power supply for external camera (GND “31”)
3	VIDEO IN1, PAL/NTSC video input
4	VIDEO GND, ground signal
5	U batt +, positive power supply for external camera (Ignition-15)
6	U batt -, negative power supply for external camera (GND-31)
7	VIDEO IN2, PAL/NTSC video input
8	VIDEO GND, ground signal

PRODUCT CODE

Ordering code example:

H	M	I	-	1	0	P	U	M	P

HMI - LCD

LCD SIZE	APPLICATION	
04: 4 INCH **07:** 7 INCH **10:** 10 INCH	**CAB**: CABIN CONTROL **PUMP**: PUMP CONTROL **FJ**: FOAMJET CONTROL	**DF**: DIGIFOAM CONTROL **CAFS**: CAFS SYSTEM CONTROL / : GENERAL USE

SHUTTER + LIGHT MONITOR

SLM-XS / SLM-XS-W / SLM-XS-WF

KEY FEATURES

- **22 Digital Inputs**, positive or negative
- **Ambient Light Sensor**
- **Colour** LEDs
- **Integrated Warning Buzzer**
- **Selectable Remote** Water/Foam Tank Level Indicator
- **CAN Bus** Communications

The **S&L Monitor** is designed to monitor open side lockers (roller shutters), roof boxes, ladder and displays the status of different kinds of emergency and other lights on special vehicles.

Key advantage: Integrated Water and Foam remote level indicator as optional feature. State of monitored devices will be indicated with LED warning lights in different colours.

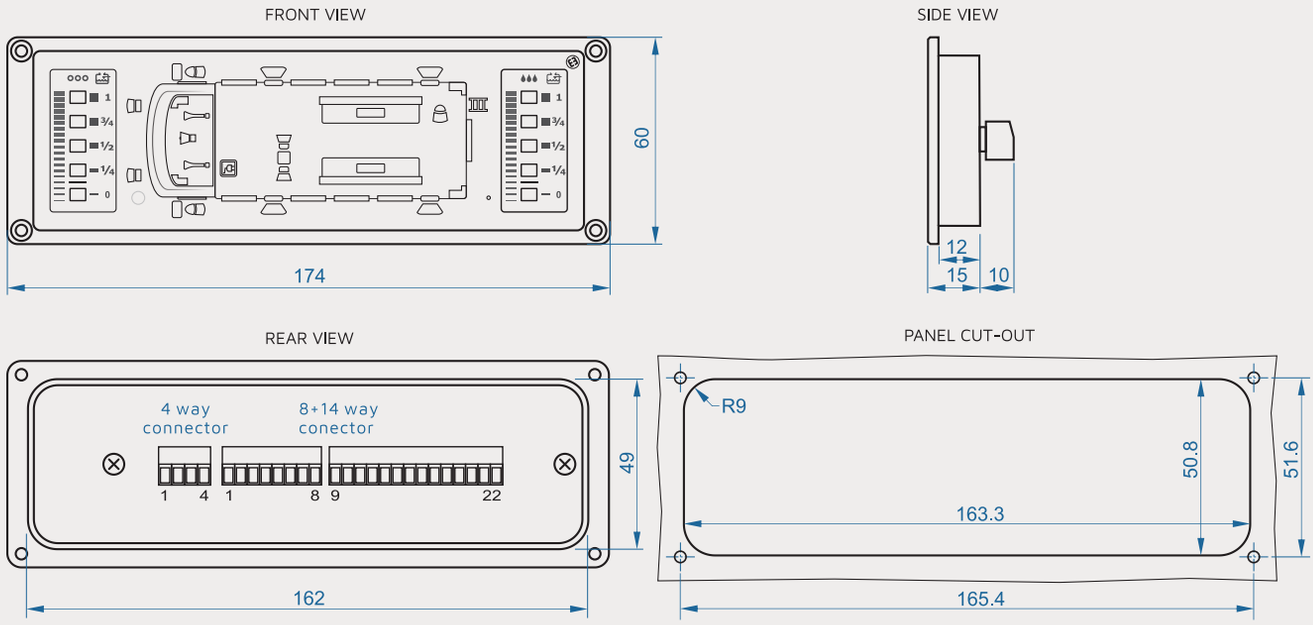
Integrated buzzer can signalize raised light mast, open roof boxes and open ladder to draw special attention to the driver at the moment that the parking brake has been released.

Monitoring is provided through 22 digital inputs. Digital inputs are connected via uP to altogether 37 LED lights. Digital inputs can be connected to GND or +UBatt signal, to detect the status of connected lamps, shutters or other equipment. An integrated photo sensor detects the ambient light and automatically adjusts the LED intensity for day or night operation.

SPECIFICATIONS

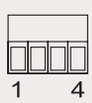
POWER	
Supply Voltage	8-30 V DC
Current	0.2 A maximum, no outputs active
Electrical Protection	overvoltage, reverse polarity
INTERFACES	
CAN	1 x CAN
CAN termination	configurable termination 120 ohm via DIP switch
INPUTS	
Digital Input	22 configurable-active low/high, levels 0 .. Ub
MISCELLANEOUS	
Level Indication	Water and Foam level optional, remote type
Indicator increments	1/4
Day/Night operation	automatic – integrated ambient light sensor
LED indication	colour LED (white, blue, red, yellow)
ENVIROMENT	
IP Class (IEC529)	front panel – IP65
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium-black coated
Mounting	in-dash, with 4 screws M3 or 2.9 tapping screws
Connector	Terminal block 4 way, 8 way and 14 way connector, 0,5 to 1,5 mm2 (AWG 28-16)
SIZE & WEIGHT	
W x H x D	174 x 60 x 15 mm without connector
Weight	0.2 kg

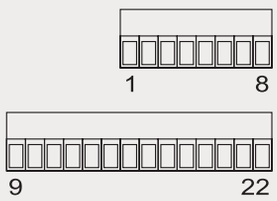
DIMENSIONS



CONNECTIONS

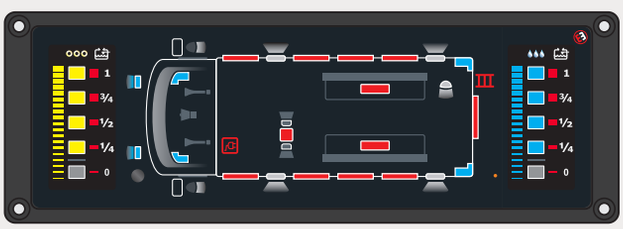
CONNECTION TERMINAL BLOCK 4 WAY	
PIN	Description / wire colour
1	BATTERY + (“15”)
2	BATTERY -
3	CAN L
4	CAN H



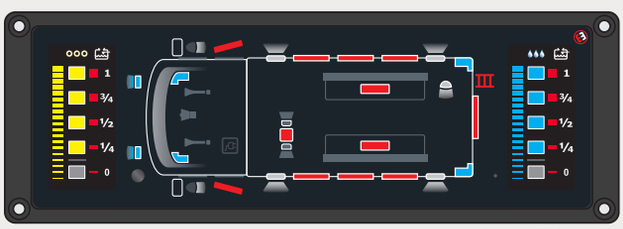


CONNECTION TERMINAL BLOCK 8 WAY + 14 WAY	
PIN	Description / wire colour
1-22	INPUT (configurable)

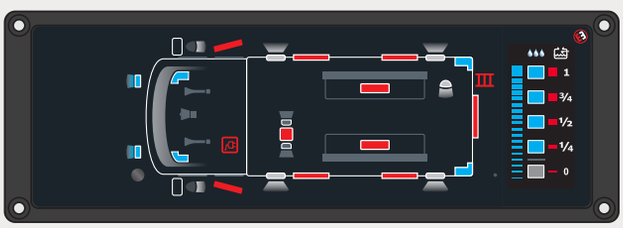
EXAMPLE OF DESIGN OPTIONS



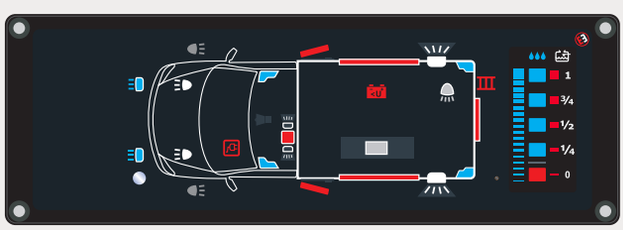
SLM-9S-WF



SLM-7S-WF



SLM-5S-W



SLM-3S-W

PRODUCT CODE

Remote Indicator - Small

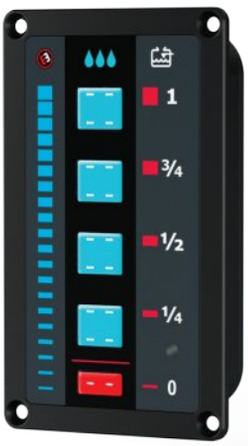
Ordering code example:

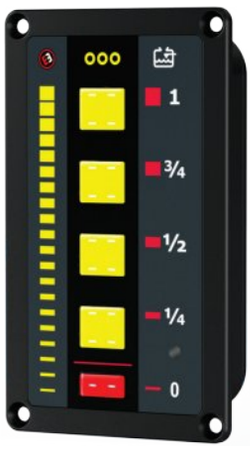
S	L	M	-	7	S	-	W	F

3S: 3 SHUTTERS (2+1) **5S:** 5 SHUTTERS (2+2+1) **7S:** 7 SHUTTERS (3+3+1) **9S:** 10 SHUTTERS (4+4)		**W:** INTEGARTED WATER LEVEL INDICATOR	**F:** INTEGARTED FOAM LEVEL INDICATOR

TANK LEVEL GAUGES S

INS-04/RIS-04/RTSS-04





KEY FEATURES

- **180°** Viewing Angle
- **I/O Driver** For Low Water Warning, Autofill-Hysteresis, Mute input, Etc.
- **CAN Bus** Interface
- **Super Bright** LEDs
- **Abmient Light Sensor**, Backlit
- **Low** Installation Depth
- **Conductive** Probe Input

INS-04 types of Tank Level Gauges are designed to display liquid's volume at an accuracy of 1/4 of the tank level using 5 ultra-bright LEDs. The gauge operates on basis of the conductance of the measured liquid using the conductive probe. The electrodes are placed at each quarter length of the probe.

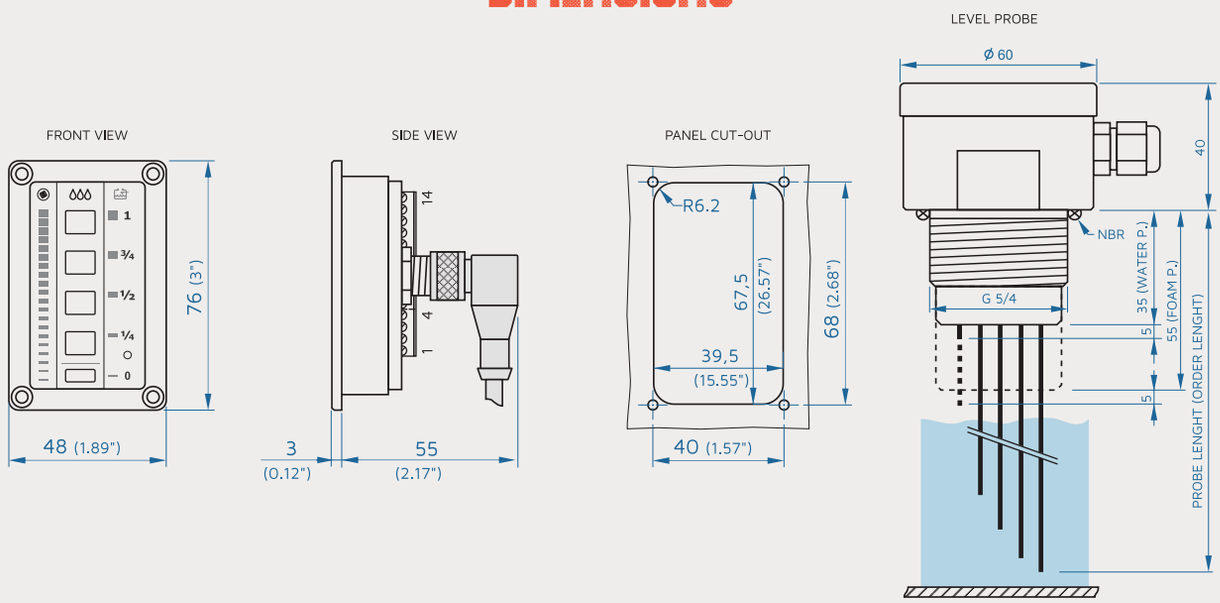
Optional I/O driver can be integrated for low level warning output, autofill-hysteresis output, mute input, etc.

The Tank Level Gauge can be used as a stand-alone system or as a part of MMX system connected via CAN bus to IO Controller. Several slave indicators (small remote - RIS) can be connected to a master indicator INS to show the same value on different locations or in combination with a XL remote indicator (RIXL) for the vehicle sides.

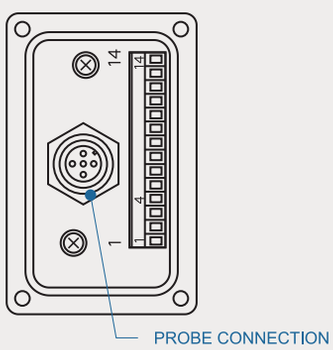
SPECIFICATIONS

POWER	
Supply Voltage	8-30 V DC
Current	0.5 A maximum, no outputs active
Electrical Protection	overvoltage, reverse polarity
INTERFACES	
CAN	1 x CAN, CAN termination 120 ohm DIP switch
I/O	
Probe input	Conductive probe with max. 5 rods
Digital Input IN1	configurable active low/high levels 0..Ub with solder pad on PCB, protected
IN2	active low level, config. input
Digital Output	**Only version with integrated I/O driver*
OUT1	positive switching (high-side), max. 2 A (Low water warning)
OUT2	positive switching (high-side), max. 2 A (Autofill-Hyst.)
OUT3-OUT4	positive switching (high-side), max. 2 A
OUT5	negative switching (low-side), max. 0.5 A
Loads	Inductive, capacitive, resistive
PROBE-OEM	
Detection method	conductive
Probe length	250-2000 mm
Probe material	rods in stainless steel 316 (1.4305)
ENVIROMENT	
IP Class (IEC529)	front panel IP67, back IP20, probe IP67
EMC Conformity	EN61000-6-2 noise immunity EN61000-6-4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 3.5 mm (#8) tapping screws
Connector	terminal block 4 or 14-way depending of options selected, probe connector M12
MISCELLANEOUS	
Indicator increments	1/4
Day/Night operation	automatic – integrated ambient light sensor
Front panel	backlit, colour coded for water and foam
Detectable substances	water, fire-smothering foam, gasoline, etc
SIZE & WEIGHT	
W x H x D	48 x 76 x 26 mm with connector
Weight	0.10 kg

DIMENSIONS

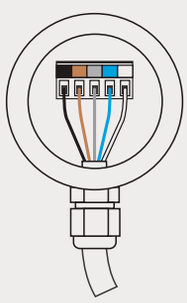


CONNECTIONS



CONNECTION TERMINAL BLOCK 4 OR 14-WAY	
PIN	Description / wire colour
1	BATTERY + (“15”)
2	BATTERY - / GND
3	CAN L
4	CAN H
5	SENSOR [V]/[MA] VCC+
6	SENSOR [V]/[MA] SIGNAL
7	SENSOR [V] GND
8	DIGITAL IN1
9	OUT1 HIGH SIDE 2 A (LOW W/F)
10	OUT2 HIGH SIDE 2 A (HYST.)
11	OUT3 HIGH SIDE 2 A
12	OUT4 HIGH SIDE 2 A
13	OUT5 LOW SIDE 0.5 A
14	CONFIG/MUTE

PROBE CONNECTION



PRODUCT CODE

SET of master indicator small INS, conductive probe, sensor cabl

Ordering code example:

R	T	S	S	-	0	4	W	-	0	5	R	H	L	M
					04 DISPLAY INCREM. 1/4		**W**: WATER **F**: FOAM		CABLE LENGTH, METERS (INCH) **05**: 5 M (20”) **10**: 10 M (40”) **15**: 15 M (60”)		OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**: AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3 - OUT6 **L**: LLD5 DRIVER OUTPUTS	INPUT IN1 **M**: MUTE OUT1

Remote Indicator - Small

Ordering code example:

R	I	S	-	0	4	W	-	R	H		M
				04 DISPLAY INCREM. 1/4		**W**: WATER **F**: FOAM		OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**: AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3 - OUT6 **L**: LLD5 DRIVER OUTPUTS	INPUT IN1 **M**: MUTE OUT1

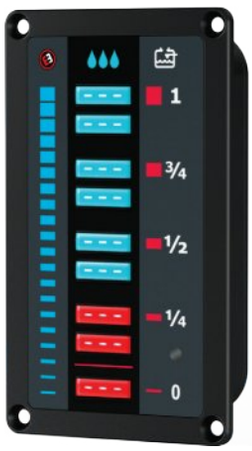
Master Indicator - Small

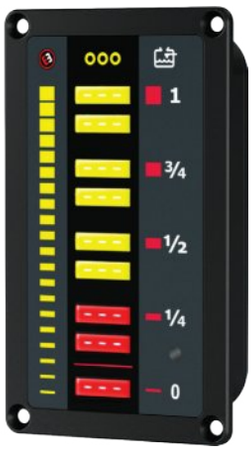
Ordering code example:

I	N	S	-	0	4	W	P	R	R	H	L	M
				04 DISPLAY INCREM. 1/4		**W**: WATER **F**: FOAM	LEVEL PROBE INPUT **PR**: CONDUCTIVE PROBE		OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**: AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3 - OUT6 **L**: LLD5 DRIVER OUTPUTS	INPUT IN1 **M**: MUTE OUT1

TANK LEVEL GAUGES S

INS-08/RIS-08/TLGS-08





KEY FEATURES

- **180°** Viewing Angle
- **I/O Driver** For Low Water Warning, Autofill-Hysteresis, Mute input, Etc.
- **CAN Bus** Interface
- **Super Bright** LEDs
- **Ambient Light Sensor**, Backlit
- **Low** Installation Depth
- **Multiple** sensor input

INS-08 types of Tank Level Gauges are designed to display liquid's volume at an accuracy of 1/8 of the tank level using ultra-bright LEDs. The transducer measures the column of the liquid in the tank above the sensor process input and provides a signal that is proportional to the tank high. The unit standardly uses a pressure transducer with output 0.5-4.5 V. The sensor input is widely configurable and it can also be used for 0-10 V transducers, 4-20 mA transmitters or even resistive probe.

Optional I/O driver can be integrated for low level warning output, autofill-hysteresis output, mute input, etc.

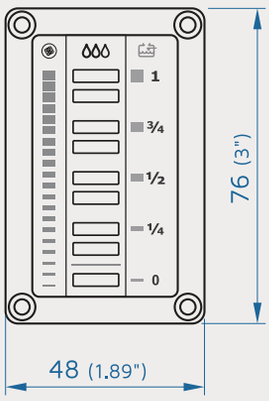
The Tank Level Gauge can be used as a stand-alone system or as a part of MMX system connected via CAN bus to IO Controller. Several slave indicators (small remote - RIS) can be connected to a master indicator INS to show the same value on different locations or in combination with a XL remote indicator (RIXL) for the vehicle sides.

SPECIFICATIONS

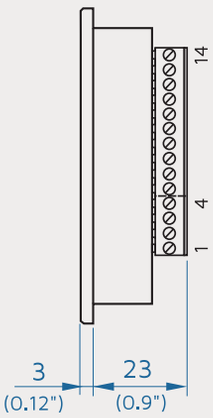
POWER	
Supply Voltage	8-30 V DC
Current	0.5 A maximum, no outputs active
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN
CAN termination	120 ohm, DIP switch
I/O	
Sensor input	0.5-4.5 V, 0-5V, 0-10V, 4-20 mA, resistive probe
Digital Input	
IN1	configurable active low/high levels 0..Ub with solder pad on PCB, protected
IN2	active low level, config. input
Digital Output	**Only version with integrated I/O driver*
OUT1	positive switching (high-side), max. 2 A (Low water warning)
OUT2	positive switching (high-side), max. 2 A (Autofill-Hysteresis xx/xx%)
OUT3-OUT4	positive switching (high-side), max. 2 A
OUT5	negative switching (low-side), max. 0.5 A
Loads	Inductive, capacitive, resistive
ENVIROMENT	
IP Class (IEC529)	front panel IP67, back IP20
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 3.5 mm (#8) tapping screws
Connector	terminal block 4 or 14-way depending of options selected
MISCELLANEOUS	
Indicator increments	1/8 Standardly, 1/4 Optional
Day/Night operation	automatic – integrated ambient light sensor
Front panel	backlit, colour coded for water and foam
Detectable substances	water, fire-smothering foam, gasoline, etc
SIZE & WEIGHT	
W x H x D	48 x 76 x 26 mm (1.9" x 3" x 1") with connector
Weight	0.10 kg (0.55 lbs)

DIMENSIONS

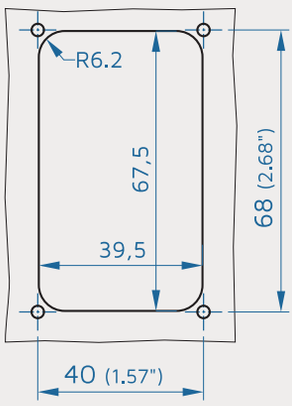
FRONT VIEW



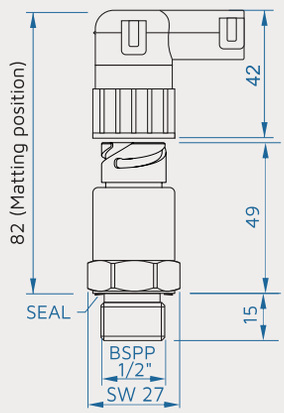
SIDE VIEW



PANEL CUT-OUT

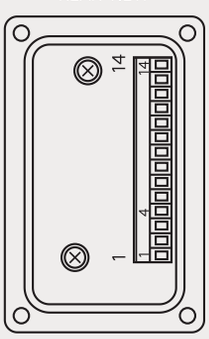


PRESSURE SENSOR
PT05-BWK, PT02-BWK



CONNECTIONS

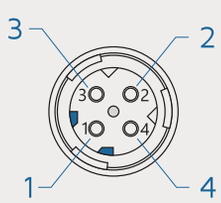
REAR VIEW



CONNECTION TERMINAL BLOCK 4 OR 14-WAY

PIN	Description / wire colour
1	BATTERY + (“15”)
2	BATTERY - / GND
3	CAN L
4	CAN H
5	SENSOR [V]/[MA] VCC+
6	SENSOR [V]/[MA] SIGNAL
7	SENSOR [V] GND
8	DIGITAL IN1
9	OUT1 HIGH SIDE 2 A (LOW W/F)
10	OUT2 HIGH SIDE 2 A (HYST.)
11	OUT3 HIGH SIDE 2 A
12	OUT4 HIGH SIDE 2 A
13	OUT5 LOW SIDE 0.5 A
14	CONFIG/MUTE

TRANSDUCER OEM



CONNECTION TWIST LOCK (ISO 15170)

PIN	VOLTAGE SENSOR	CURRENT SENSOR
1	BATTERY +	BATTERY +
2	GND	SIGNAL 4-20 MA
3	SIGNAL 0.5-4.5V	N/C
4	N/C	N/C

PRODUCT CODE

SET of master indicator small INS, sensor PT06-U4, sensor cable

Ordering code example:

T	L	G	S	-	0	8	W	-	0	5	R	H	L	M
					08 DISPLAY INCREM.1/8 **04** DISPLAY INCREM.1/4		**W**: WATER **F**: FOAM		CABLE LENGTH, METERS (INCH) **05**: 5 M (20”) **10**: 10 M (40”) **15**: 15 M (60”)		OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**: AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3 - OUT6 **L**: LLD5 DRIVER OUTPUTS	INPUT IN1 **M**: MUTE OUT1

Remote Indicator - Small

Ordering code example:

R	I	S	-	0	8	W	-	R	H	L	M
				08 DISPLAY INCREM.1/8 **04** DISPLAY INCREM.1/4		**W**: WATER **F**: FOAM		OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**: AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3 - OUT6 **L**: LLD5 DRIVER OUTPUTS	INPUT IN1 **M**: MUTE OUT1

***NOTE**: Selection of all three options R, H and L for the same indicator is standardly not possible. Options that are available are R, H, L and the combination RH

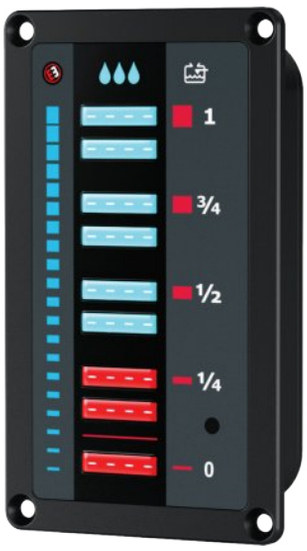
Master Indicator - Small

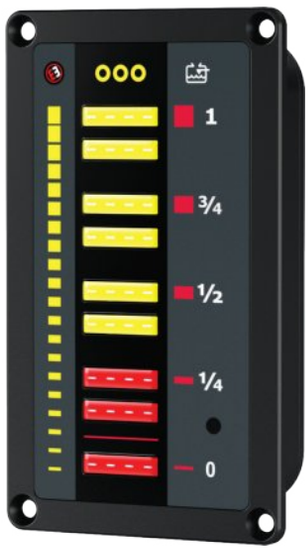
Ordering code example:

I	N	S	-	0	8	W	U	4	R	H	L	M
				08 DISPLAY INCREM.1/8 **04** DISPLAY INCREM.1/4		**W**: WATER **F**: FOAM	SENSOR INPUT / PROBE **U4**: 0,5-4,5V **U1**: 0-10 V **I2**: 4-20 MA		OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**: AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3 - OUT6 **L**: LLD5 DRIVER OUTPUTS	INPUT IN1 **M**: MUTE OUT1

TANK LEVEL GAUGES L

INL-08 / RIL-08 / TLGL-08





KEY FEATURES

- **180°** Viewing Angle
- **I/O Driver** For Low Water Warning, Autofill-Hysteresis, Mute input, Etc.
- **CAN Bus** Interface
- **Super Bright** LEDs
- **Ambient Light Sensor**
- **Low** Installation Depth
- **Washable**, Waterproof Aluminium Housing

INL-08 types of Tank Level Gauges are designed to display liquid's volume at an accuracy of 1/8 of the tank level using ultra-bright LEDs. The transducer measures the column of the liquid in the tank above the sensor process input and provides a signal that is proportional to the tank high. The unit standardly uses a pressure transducer with output 0.5-4.5 V.

The sensor input is widely configurable and it can also be used for 0.5-4.5 V, 0-10 V, 4-20 mA sensors and conductive or resistive probes.

Optional I/O driver can be integrated for low level warning output, autofill-hysteresis output, mute input, etc.

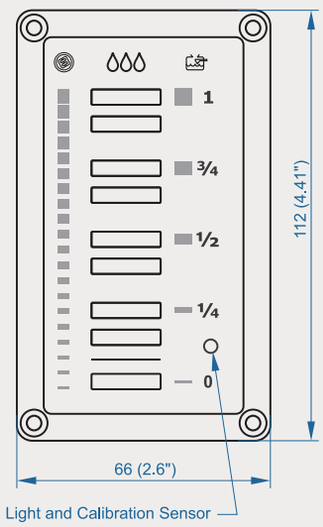
The Tank Level Gauge can be used as a stand-alone system or as a part of MMX system connected via CAN bus to IO Controller. Several slave indicators (large remote - RIL) can be connected to a master indicator INL to show the same value on different locations or in combination with a small remote indicator (RIS) for the cabin and XL remote indicator (RIXL) for the vehicle sides.

SPECIFICATIONS

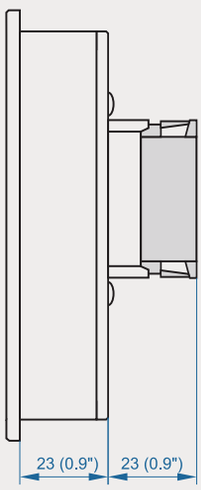
POWER	
Supply Voltage	8-30 V DC
Current	0.5 A maximum, no outputs active
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN
CAN termination	120 ohm, DIP switch
I/O	
Sensor input	0.5-4.5 V, 0-5V, 0-10V, 4-20 mA, resistive probe, conductive probe throught extra M12 connector
Digital Input	configurable active low/high levels 0..Ub, protected
Digital Output	**Only version with integrated I/O driver*
OUT1	positive switching (high-side), max. 3 A (Low water warning)
OUT2	positive switching (high-side), max. 1.5 A (Autofill-Hysteresis xx/xx%)
OUT3-OUT4	positive switching (high-side), max. 1.5 A
OUT5	negative switching (low-side), max. 0.5 A
Loads	Inductive, capacitive, resistive
Miscellaneous	protection from short circuit and overload
ENVIROMENT	
IP Class (IEC529)	IP67, waterproof
EMC Conformity	EN61000-6-2 noise immunity EN61000-6-4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 3.5 mm (#8) tapping screws
Mating Connector	Deutsch DT06-12S
MISCELLANEOUS	
Indicator increments	1/8
Day/Night operation	automatic – integrated ambient light sensor
Front panel	backlit, colour coded for water and foam
Detectable substances	water, fire-smothering foam, gasoline, etc
SIZE & WEIGHT	
W x H x D	66 x 112 x 23 mm (2.6"x4.41"x0.9") without connector
Weight	0.25 kg

DIMENSIONS

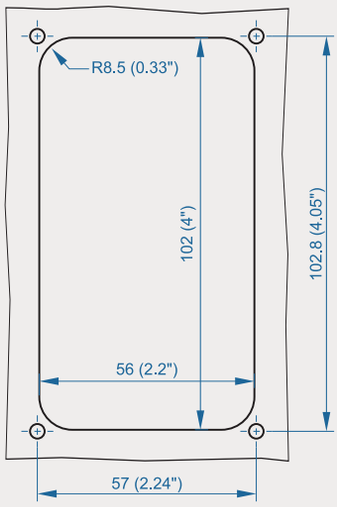
FRONT VIEW



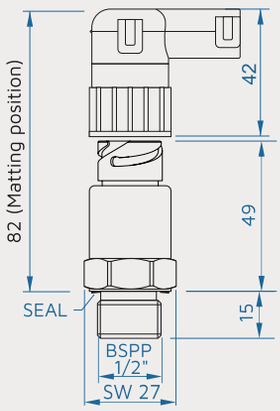
SIDE VIEW



PANEL CUT-OUT

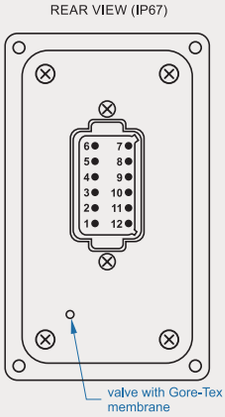


PRESSURE SENSOR
PT05-BWK, PT02-BWK



CONNECTIONS

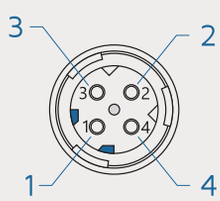
REAR VIEW (IP67)



CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN H
4	SENSOR [V]/[MA] VCC+
5	SENSOR [V] GND
6	SENSOR [V]/[MA] SIGNAL
7	OUT1 (OPTIONAL), e.g. LOW WATER
8	OUT2 (OPTIONAL), e.g. AUTOFILL
9	OUT3 (OPTIONAL)
10	OUT4 (OPTIONAL)
11	INPUT (OPTIONAL
12	BATTERY -

TRANSDUCER OEM



CONNECTION TWIST LOCK (ISO 15170)

PIN	VOLTAGE SENSOR	CURRENT SENSOR
1	BATTERY +	BATTERY +
2	GND	SIGNAL 4-20 MA
3	SIGNAL 0.5-4.5V	N/C
4	N/C	N/C

PRODUCT CODE

SET of Master Indicator - Large INL, Sensor PT06-U4, Sensor cable

Ordering code example:

T	L	G	L	-	0	8	W	-	0	5	R	H		

08 DISPLAY INCREM. 1/8	**W**: WATER **F**: FOAM		CABLE LENGTH, METERS (INCH) **05**: 5 M (20”) **10**: 10 M (40”) **15**: 15 M (60”)	OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**:AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3, OUT4 **O**:1X 1.5A POSITIVE 1X 0.5A NEGATIVE	INPUT NEGATIVE **M**:MUTE OUT1

Remote Indicator - Large

Ordering code example:

R	I	L	-	0	8	W	-	R	H		

08 DISPLAY INCREM. 1/8	**W**: WATER **F**: FOAM		OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**:AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3, OUT4 **O**:1X 1.5A POSITIVE 1X 0.5A NEGATIVE	INPUT NEGATIVE **M**:MUTE OUT1

***NOTE**: Selection of all three options R, H and L for the same indicator is standardly not possible. Options that are available are R, H, L and the combination RH

Master Indicator - Large

Ordering code example:

I	N	L	-	0	8	W	U	4	R	H		

08 DISPLAY INCREM. 1/8	**W**: WATER **F**: FOAM	SENSOR INPUT / PROBE **U4**: 0,5-4,5V **U1**: 0-10 V **I2**: 4-20 MA **R0**:RESISTIVE IN	OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**:AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT	OUT3, OUT4 **O**:1X 1.5A POSITIVE 1X 0.5A NEGATIVE	INPUT NEGATIVE **M**:MUTE OUT1

TANK LEVEL GAUGES

INS-20/RIS-20/TLGS-20

KEY FEATURES

- **Super Bright** 2 ½ -Digit LED Display
- **I/O Driver** For Low Water Warning, Autofill-Hysteresis, Mute input, Etc.
- **CAN Bus** Interface
- **Multiple** sensor input
- **Low** Installation Depth
- **Wide** Viewing Angle

INS-20 types of Tank Level Gauges are designed to display liquid's volume at an accuracy of 1/20 (5%) of the tank level, using ultra-bright 7-segment LED Displays. The transducer measures the column of the liquid in the tank above the sensor process input and provides a signal that is proportional to the tank height. The unit standardly uses pressure transducer with an output 0.5-4.5 V by which also broken sensor cable can be detected. The sensor input is widely configurable and can also be used for 0-10 V or 4-20 mA output signal.

Optionally, an I/O driver can be integrated for low level warning output, autofill-hysteresis output, mute input, etc.

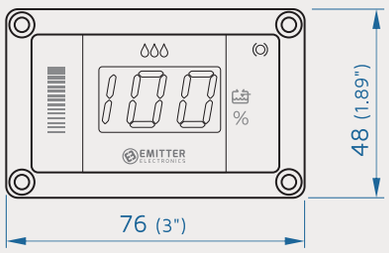
The Tank Level Gauge can be used as a stand-alone system or as a part of MMX system connected via CAN bus to IO Controller. Several slave - remote indicators (RIS) can be connected to a master indicator INS to show the same value on different locations or in combination with a XL remote indicator (RIXL) for the vehicle sides.

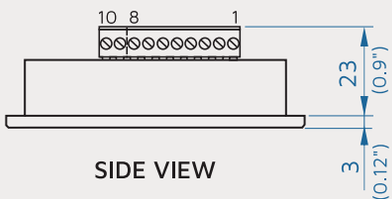
SPECIFICATIONS

POWER	
Supply Voltage	8-30 V DC
Current	0.5 A maximum, no outputs active
Electrical Protection	overvoltage, transients, reverse polarity
INTERFACES	
CAN	1 x CAN
CAN termination	120 ohm, DIP switch
I/O	
Sensor input	0.5-4.5 V standardly, 0-5V, 0-10V, 4-20 mA, resistive
Digital Input	configurable active low/high levels 0..Ub with solder pad on PCB, protected
Digital Output	**Only version with integrated I/O driver*
OUT1	positive switching (high-side), max. 2 A (Low water warning)
OUT2	positive switching (high-side), max. 2 A (Autofill-Hysteresis)
Loads	Inductive, capacitive, resistive
Miscellaneous	protection from short circuit and overload
ENVIROMENT	
IP Class (IEC529)	IP67 front panel, IP20 from the back
EMC Conformity	EN61000-6-2 noise immunity EN61000-6-4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 3.5 mm (#8) tapping screws
Mating Connector	Terminal block 8- or 10-way depending of options selected
MISCELLANEOUS	
Indicator increments	1/20 of tank height (5%)
Day/Night operation	automatic – integrated ambient light sensor
Front panel	backlit, colour coded for water and foam
Detectable substances	water, fire-smothering foam, gasoline, etc
SIZE & WEIGHT	
W x H x D	48 x 76 x 26 mm with connector
Weight	0.10 kg

DIMENSIONS

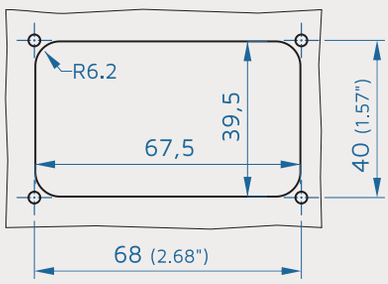
FRONT VIEW



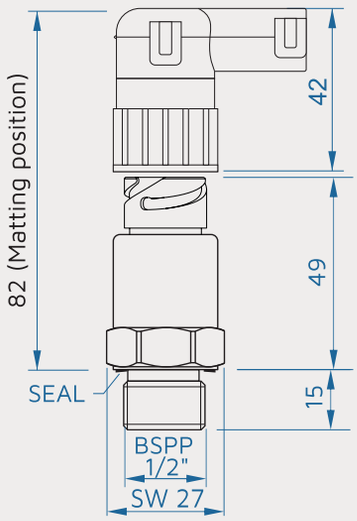


SIDE VIEW

PANEL CUT-OUT

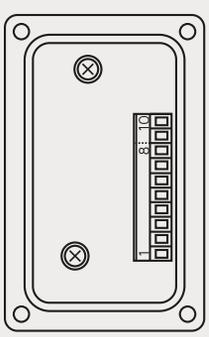


PRESSURE SENSOR
PT05-BWK, PT02-BWK



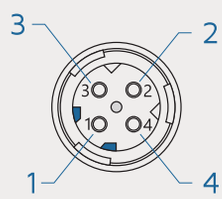
CONNECTIONS

REAR VIEW



CONNECTION TERMINAL BLOCK 8/10-WAY	
PIN	Description
1	BATTERY + (“15”)
2	BATTERY - (GND)
3	CAN L
4	CAN H
5	SENSOR [V]/[MA] VCC+
6	SENSOR [V]/[MA] SIGNAL
7	SENSOR [V] GND
8	DIGITAL IN1 +/-
9	OUT1 HIGH SIDE 2 A (OPTIONAL)
10	OUT2 HIGH SIDE 2 A (OPTIONAL)

TRANSDUCER OEM



CONNECTION TWIST LOCK (ISO 15170)		
PIN	VOLTAGE SENSOR	CURRENT SENSOR
1	BATTERY +	BATTERY +
2	GND	SIGNAL 4-20 MA
3	SIGNAL 0.5-4.5V	N/C
4	N/C	N/C

PRODUCT CODE

SET of indicator small INS-20, sensor PT05-U4 and mating connectors Ordering code example:

T	L	G	S	-	2	0	W	-	0	5	R	H

20 DISPLAY INCREM. 1/20 (5%)	**W**: WATER **F**: FOAM		CABLE LENGTH, METERS (INCH) **05**: 5 M (20”) **10**: 10 M (40”) **15**: 15 M (60”)	OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**: AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT

Indicator Small Ordering code example:

I	N	S	-	2	0	W	U	4	R	H

20 DISPLAY INCREM. 1/20 (5%)	**W**: WATER **F**: FOAM	SENSOR INPUT / PROBE **U4**: 0,5-4,5V **U1**: 0-10 V **I2**: 4-20 MA **R0**: RESISTIVE IN	OUT1 **R**: LOW LEVEL WARNING	OUT2 **H**: AUTOFILL HYST. xx/xx % **R**: ADD. OUTPUT

REMOTE INDICATOR XL-NARROW

RIXLN-W, RIXLN-F

KEY FEATURES

- **Powerful** Luminous Flux
- **Colour-Coded** LED For Water And Foam Display
- Five **Different Level Patterns**
- **Can Bus** Communications
- **Low** Installation Depth
- **Waterproof** Aluminium Housing

The XL **Remote Tank Indicator RIXLN** types are designed to display water or foam tank level, possible to be seen from a long distance. Blue, yellow and red LEDs are used for displaying water level and amber, yellow and red LEDs for foam. When the tank level is critical (liquid level less than 1/4) both indicators signalize the level with red colour LEDs, when the liquid level is less than 1/8 lights are running from top to bottom to signalize an empty tank.

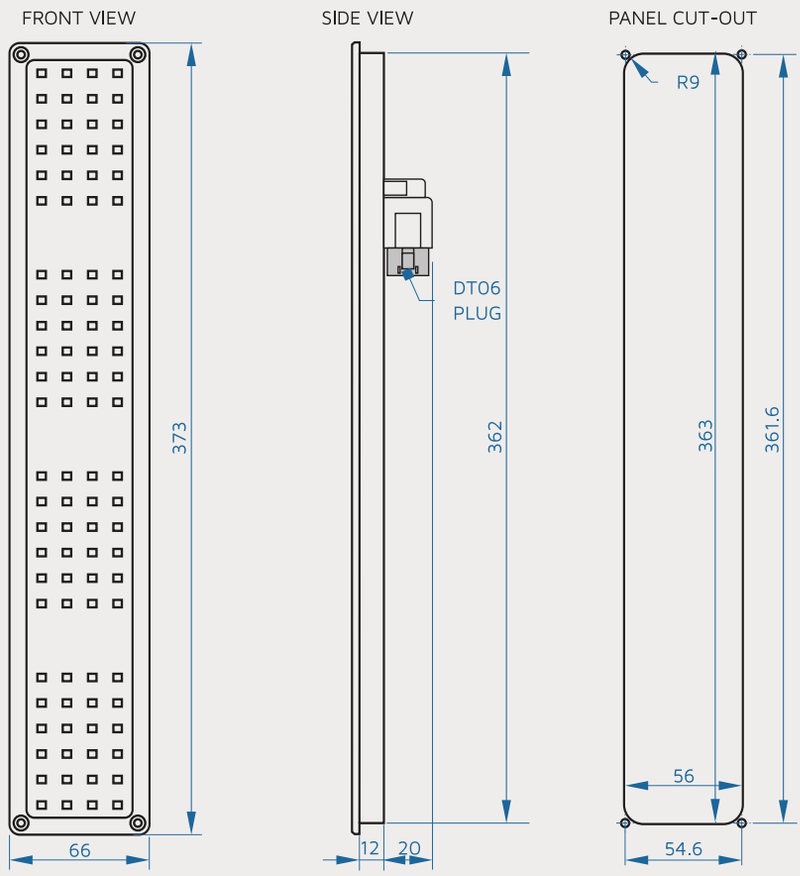
The RIXLN needs to be connected either to a master indicator or to an IO node/controller when used in MMX configuration. Large tank indicator is a slave device. Several slave indicators can be connected over Can bus Communications to show the same value on different locations.

Housing is made of Aluminium, highly resistant to weather conditions (IP67) and can survive extreme environments, what makes it perfect for installation outside the vehicles. The level bars are large and well-spaced, allowing a reliable reading of level in bright viewing angle and direct sunlight.

SPECIFICATIONS

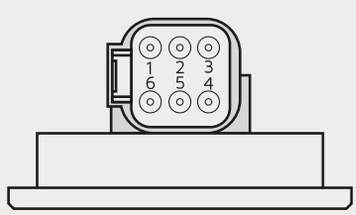
POWER	
Supply Voltage	10-30 V DC
Current	1.5 A maximum
Power	16 A maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN
ENVIROMENT	
IP Class (IEC529)	IP67, waterproof
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium, glass
Mounting	in-dash, with 4 screws M3 or 3.5 mm (#8) tapping screws
Connector	Deutsch DT06-6S
MISCELLANEOUS	
Indicator increments	0, 1/4, 1/2, 3/4, Full
LEDs colour water type	24 red and 72 blue
LEDs colour foam type	24 red and 72 amber
SIZE & WEIGHT	
W x H x D	66 x 373 x 15 without connector
Weight	0.60 kg

DIMENSIONS



CONNECTIONS

TYPE WITH CAN BUS CONNECTION DEUTSCH DT06-6S	
PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L, int. shorted to PIN 2
4	CAN H
5	CAN H, int. shorted to PIN 4
6	BATTERY -

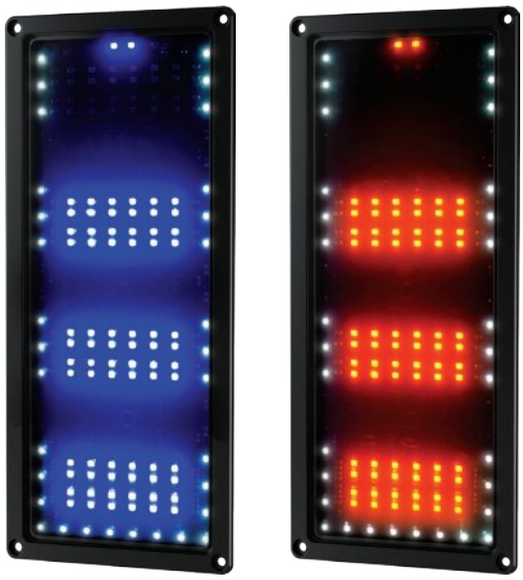


PRODUCT CODE

RIXLN-WRYBB-C	XL remote indicator narrow, for water, red, yellow, blue LEDs Can-bus Communications
RIXLN-FRYYY-C	XL remote indicator narrow, for foam, red, yellow LEDs, Can-bus Communications
	For more options please contact the supplier.

REMOTE INDICATOR XL-WIDE

RIXLW-W, RIXLW-F, RIXLW-A



KEY FEATURES

- **Powerful** Luminous Flux
- **Colour-Coded** LED For Water And Foam Display
- Six **Different Level Patterns**
- **Can Bus** Communications
- **Low** Installation Depth
- **Waterproof** Aluminium Housing

The XL **Remote Tank Indicator RIXLW** types are designed to display water or foam tank level, possible to be seen from a long distance. Blue LEDs are used for displaying water level and yellow LEDs for foam. When the tank level is critical (liquid level less than 1/4) both indicators signalize the level with red colour LEDs, when the liquid level is less than 1/8 lights are running from top to bottom to signalize an empty tank.

The RIXLW needs to be connected either to a master indicator or to an IO node/controller when used in MMX configuration. Large tank indicator is a slave device. Several slave indicators can be connected over Can bus Communications to show the same value on different locations.

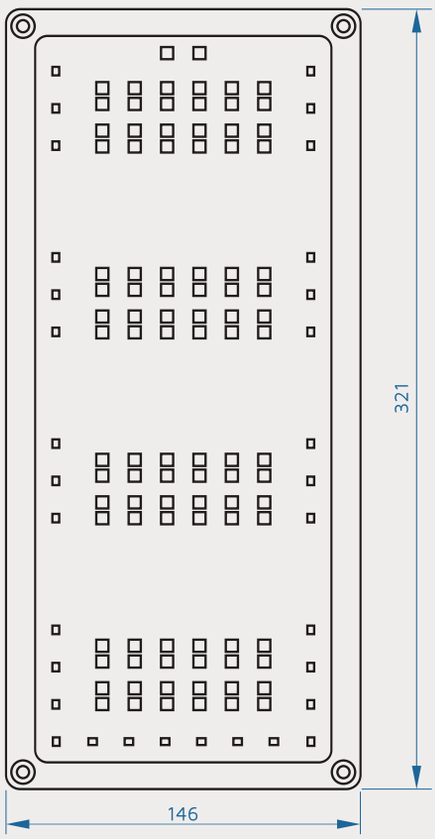
Housing is made of Aluminium, highly resistant to weather conditions (IP67) and can survive extreme environments, what makes it perfect for installation outside the vehicles. The level bars are large and well-spaced, allowing a reliable reading of level in bright viewing angle and direct sunlight.

SPECIFICATIONS

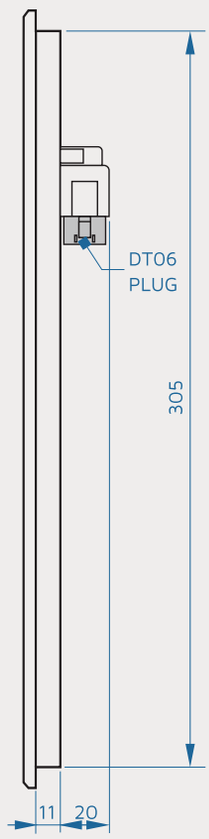
POWER	
Supply Voltage	10-30 V DC
Current	1.5 A maximum
Power	16 A maximum
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1 x CAN
ENVIROMENT	
IP Class (IEC529)	IP67, waterproof
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium, glass
Mounting	in-dash, with 4 screws M5 or 4.8 mm tapping screws
Connector	Deutsch DT06-6S
MISCELLANEOUS	
Indicator increments	0, 1/4, 1/2, 3/4, Full
LEDs colour water type	96 blue, 24 red and 32 white for surround
LEDs colour foam type	96 yellow, 24 red and 32 white for surround
SIZE & WEIGHT	
W x H x D	146 x 321 x 15 without connector
Weight	1 kg

DIMENSIONS

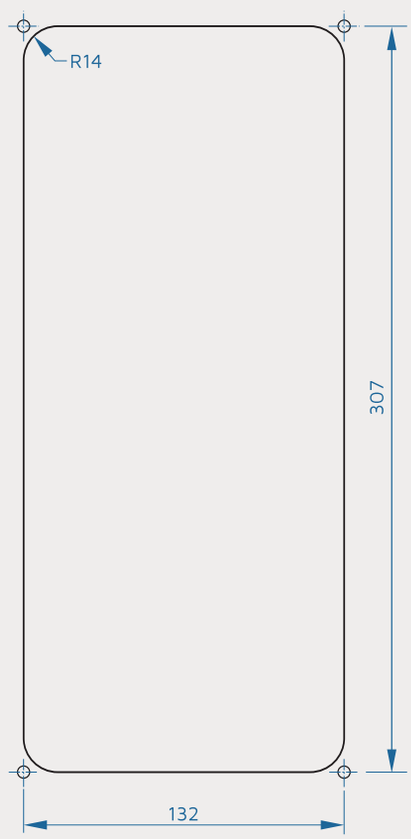
FRONT VIEW



SIDE VIEW



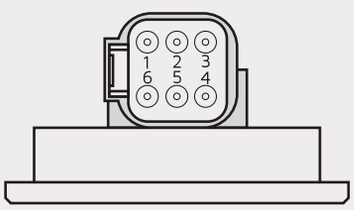
PANEL CUT-OUT



CONNECTIONS

TYPE WITH CAN BUS CONNECTION DEUTSCH DT06-6S

PIN	Description
1	BATTERY + (“15”)
2	CAN L
3	CAN L, int. shorted to PIN 2
4	CAN H
5	CAN H, int. shorted to PIN 4
6	BATTERY -



PRODUCT CODE

RIXLW-WBR-C	XL remote indicator wide, for water, blue/red LEDs, Can-bus Communications
RIXLW-FYR-C	XL remote indicator wide, for foam, yellow/red LEDs, Can-bus Communications
	For more options please contact the supplier.

DIGITAL PRESSURE INDICATOR

3 DIGITS - DPI / RPI / DPG

KEY FEATURES

- **Vacuum, Low** and **High** Pressure Indication options
- **3-Digit** Super Bright LED Display
- **Ambient Light Sensor**
- **I/O Driver** integrated for Alarms, Regulation, Etc. – Optional
- **CAN Bus** Communications
- **Multiple** sensor input
- **Wide** Viewing Angle

DPI types of Digital Pressure Indicators are designed to display system pressure using a 3 - digit ultra-bright LED display where multiple pressure sensors can be connected.

The unit standardly uses -1..24 bar, 0..25 bar or 0..60 bar pressure sensors. The sensor input is widely configurable and can be used for 0.5-4.5 V and 0-10 V transducers or 4-20 mA transmitters.

Optionally, an I/O driver can be integrated for activating warning output, regulating the system pressure, etc.

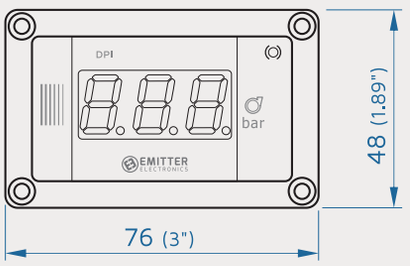
The Digital Pressure Indicator can be used as a stand-alone system or as a part of MMX system connected via CAN bus to IO Controller. Several slave-remote pressure indicators (RPI) can be connected to a master indicator (DPI) to show the same value on different locations.

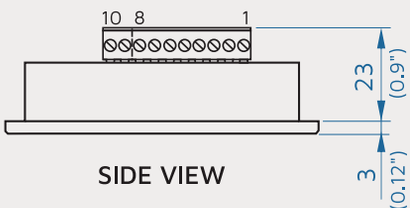
SPECIFICATIONS

POWER	
Supply Voltage	8-32 V DC
Current	0.5 A maximum, no outputs active
Electrical Protection	overvoltage, transients, reverse polarity
INTERFACES	
CAN	1 x CAN
CAN termination	120 ohm, DIP switch
I/O	
Sensor input	0.5-4.5 V standardly, 0-5V, 0-10V, 4-20 mA, resistive
Digital Input	configurable active low/high levels 0..Ub with solder pad on PCB, protected
Digital Output	**Only version with integrated I/O driver*
OUT1	positive switching (high-side), max. 2 A (Low water warning)
OUT2	positive switching (high-side), max. 2 A (Autofill-Hysteresis)
Loads	Inductive, capacitive, resistive
Miscellaneous	protection from short circuit and overload
ENVIROMENT	
IP Class (IEC529)	IP67 front panel, IP20 from the back
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with 4 screws M3 or 3.5 mm (#8) tapping screws
Mating Connector	Terminal block 8- or 10-way depending of options selected
MISCELLANEOUS	
LED display	3 - digit
Reading resolution	@P<30 bar: 0.1 bar, @P>30 bar: 1 bar
Day/Night operation	automatic – integrated ambient light sensor
SIZE & WEIGHT	
W x H x D	48 x 76 x 26 mm with connector
Weight	0.10 kg

DIMENSIONS

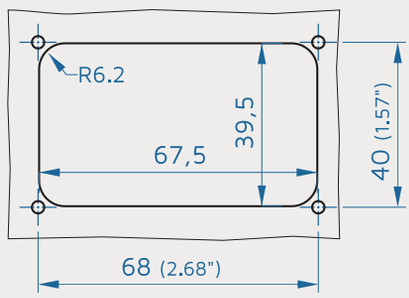
FRONT VIEW



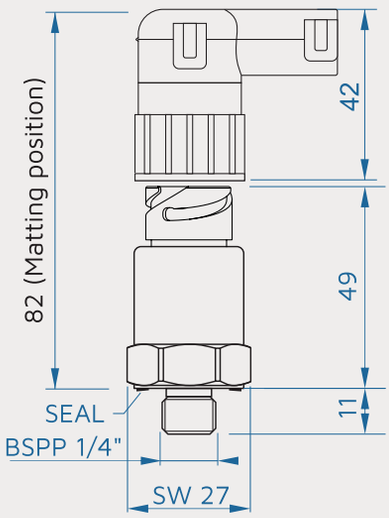


SIDE VIEW

PANEL CUT-OUT

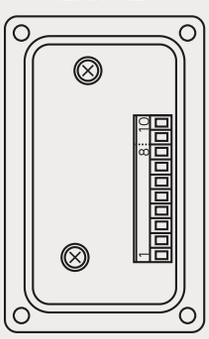


PRESSURE SENSOR S-PTXX



CONNECTIONS

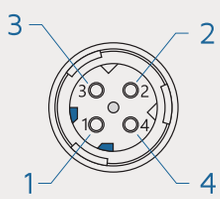
REAR VIEW



CONNECTION TERMINAL BLOCK 8/10-WAY

PIN	Description
1	BATTERY + (“15”)
2	BATTERY - (GND)
3	CAN L
4	CAN H
5	SENSOR [V]/[MA] VCC+
6	SENSOR [V]/[MA] SIGNAL
7	SENSOR [V] GND
8	DIGITAL IN1 +/-
9	OUT1 HIGH SIDE 2 A (OPTIONAL)
10	OUT2 HIGH SIDE 2 A (OPTIONAL)

TRANSDUCER OEM



CONNECTION TWIST LOCK (ISO 15170)

PIN	VOLTAGE SENSOR	CURRENT SENSOR
1	BATTERY +	BATTERY +
2	GND	SIGNAL 4-20 MA
3	SIGNAL 0.5-4.5V	N/C
4	N/C	N/C

PRODUCT CODE

SET of DPI-master indicator, pressure sensor, sensor cable) Ordering code example:

D	P	G	-	0	0	2	5	-	R	H	

MEASURING RANGE		OUT1	OUT2	SPECIAL
0024: -1 .. 24 BAR **0025:** 0 .. 25 BAR **0060:** 0 .. 60 BAR		**R:** OUTPUT 1	**H:** HYST. xx/xx % **R:** ADD. OUTPUT	MODIFICATION

Master Indicator

D	P	I	-	0	0	2	5	U	4	R	H

MEASURING RANGE	SENSOR INPUT / PROBE	OUT1	OUT2
0024: -1 .. 24 BAR **0025:** 0 .. 25 BAR **0060:** 0 .. 60 BAR	**U4:** 0,5-4,5V **U1:** 0-10 V **I2:** 4-20 MA	**R:** OUTPUT 1	**H:** HYST. xx/xx % **R:** ADD. OUTPUT

Remote Indicator

R	P	I	-	0	0	2	5	-	R	H	

MEASURING RANGE		OUT1	OUT2	SPECIAL
0024: -1 .. 24 BAR **0025:** 0 .. 25 BAR **0060:** 0 .. 60 BAR		**R:** OUTPUT 1	**H:** HYST. xx/xx % **R:** ADD. OUTPUT	MODIFICATION

DIGITAL PRESSURE INDICATOR

4 DIGITS - DPI / RPI / DPG

KEY FEATURES

- **Vacuum**, **Low** and **High** Pressure Indication
- **4-Digit [kPa]** Display Version
- **I/O Driver** integrated for Alarms, Regulation, Etc. – Optional
- **CAN Bus** Or One Wire Communications
- **Multiple** sensor input
- **Super Bright** LED Display

DPI types of Digital Pressure Indicators are designed to display system pressure using 3 or 4-digit ultra-bright LED display where multiple pressure sensors can be connected. The unit standardly uses a -1..24 bar, 0..25 bar and 0..60 bar pressure sensors. The sensor input is widely configurable and it can be used for 0.5-4.5 V and 0-10 V transducers or 4-20 mA transmitters.

Optional I/O driver can be integrated for activating warning output, regulating the system pressure, etc.

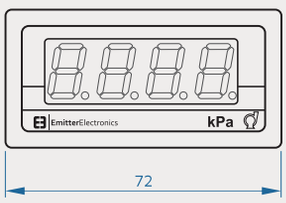
The Digital Pressure Indicator can be used as a stand-alone system or as a part of MMX system connected via CAN bus to IO Controller. Several slave-remote pressure indicators (RPI) can be connected to a master indicator DPI to show the same value on different locations.

SPECIFICATIONS

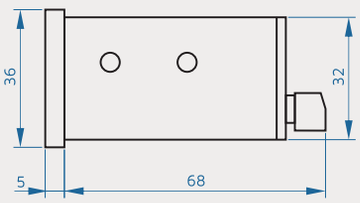
POWER	
Supply Voltage	9-30 V DC
Current	0.5 A maximum, no outputs active
Electrical Protection	overvoltage, transients, reverse polarity
INTERFACES	
CAN	1 x CAN
CAN termination	120 ohm, solder pad on PCB
Serial communication	1 x T (1 Wire), optional
I/O	
Sensor input	0.5-4.5 V Standardly, 0-5V, 0-10V, 4-20 mA
Digital Input	GND, only with CAN bus device
Digital Output	**Only version with integrated I/O driver*
OUT1	positive switching (high-side), max. 6 A (Low water warning)
OUT2	
OUT3-OUT7	positive switching (high-side), max. 1.5 A (Autofill-Hysteresis) negative switching (low-side), max. 1.8 A (large light driver)
Loads	Inductive, capacitive, resistive
ENVIROMENT	
IP Class (IEC529)	IP67 front panel, IP20 from the back
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	aluminium
Mounting	in-dash, with clips or springs
Mating Connector	Terminal block 4, 8 or 13 way depending on selected options
MISCELLANEOUS	
LED display	4 digit (kPa)
Reading resolution	@P<30 bar: 0.1 bar (10 kPa), @P>30 bar: 1 bar
SIZE & WEIGHT	
W x H x D	36 x 72 x 68 mm with connector
Weight	0.10 kg

DIMENSIONS

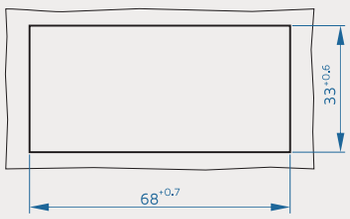
FRONT VIEW



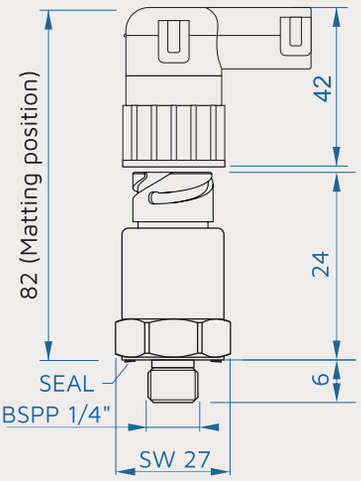
SIDE VIEW



PANEL CUT-OUT

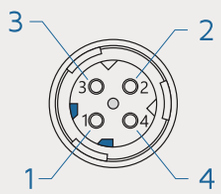


PRESSURE SENSOR
S-PTXX -BWK



FRONT VIEW

SENSOR CONENCTOR



CONNECTIONS

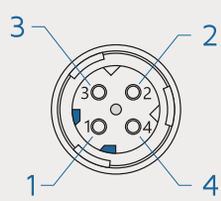
CONNECTION STANDARD DEVICE

PIN	Description
1	BATTERY + (“15”)
2	BATTERY -
3	OUT1 (OPTIONAL)
4	T-COMMUNICATION
5	SENSOR [V] GND
6	SENSOR [V]/[MA] SIGNAL
7	SENSOR [V]/[MA] VCC+
8	OUT2 (OPTIONAL)
9	OUT3 (OPTIONAL)
10	OUT4 (OPTIONAL)
11	OUT5 (OPTIONAL)
12	OUT6 (OPTIONAL)
13	OUT7 (OPTIONAL)

CONNECTION CAN BUS DEVICE

PIN	Description
1	BATTERY + (“15”) / SENSOR SUPPLY (OPTIONAL)
2	BATTERY - / SENSOR GND (OPTIONAL)
3	OUT1 (OPTIONAL)
4	T-COMMUNICATION / OUT3 (OPTIONAL)
5	IN1
6	SENSOR [V]/[MA] SIGNAL
7	OUT5 (OPTIONAL)
8	SENSOR [V]/[mA] VCC+ / OUT4 (OPTIONAL)
9	OUT5 (OPTIONAL)
10	SENSOR [V] GND / OUT6 (OPTIONAL)
11	OUT7 (OPTIONAL)
12	CAN L
13	CAN H

TRANSDUCER OEM



CONNECTION TWIST LOCK (ISO 15170)

PIN	VOLTAGE SENSOR	CURRENT SENSOR
1	BATTERY +	BATTERY +
2	GND	SIGNAL 4-20 MA
3	SIGNAL 0.5-4.5V	N/C
4	N/C	N/C

PRODUCT CODE

SET of DPI - master Indicator, pressure sensor, sensor cable

Ordering code example:

D	P	G	-	0	0	2	5	T	-	0	5	R	R	

MEASURING RANGE			CABLE LENGTH, METERS (INCH)	OUT1	OUT2	SPECIAL MODIFICATION
0024: -1 .. 24 BARS **0025**: 0 .. 25 BARS **0060**: 0 .. 60 BARS **2200**: 0 .. 2200 KPA	**T**: 1 WIRE **C**: CAN BUS		**05**: 5 M (20”) **10**: 10 M (40”) **15**: 15 M (60”)	**R**: OUTPUT 1	**H**: HYSTERESIS **R**: ADD. OUTPUT	

Remote Indicator

Ordering code example:

R	P	I	-	B	T	I	R	R	

UNITS:		LED BRIGHTNESS	OUT1	OUT2
B: BAR **P**: KPA	**T**: 1 WIRE **C**: CAN BUS	**I**: INSIDE **O**: OUTSIDE	**R**: OUTPUT 1	**H**: HYSTERESIS **R**: ADD. OUTPUT

Master Indicator

Ordering code example:

D	P	I	-	0	0	2	5	I	2	T	R	R	

MEASURING RANGE	SENSOR INPUT / PROBE			OUT1	OUT2	SPECIAL MODIFICATION
0024: -1 .. 24 BARS **0025**: 0 .. 25 BARS **0060**: 0 .. 60 BARS **2200**: 0 .. 2200 KPA	**U4**: **U1**: **I2**: 4-20 MA	0,5-4,5V 0-10 V	**T**: 1 WIRE **C**: CAN BUS	**R**: OUTPUT 1	**H**: HYSTERESIS **R**: ADD. OUTPUT	

BATTERY PROTECTOR

BP01

KEY FEATURES

- **Maximizes Battery Lifespan** by Preventing Deep Discharge
- Automatic **Undervoltage Disconnect**
- Instant **Overvoltage Protection**
- **Control of Mono- or Bi-Stable** Power Relay (Zero Standby Consumption)
- Dedicated **Alarm Output**
- **Single or Dual** Battery Setups

The **Battery Protector** is a microprocessor-controlled protection system designed to prevent vehicle auxiliary batteries from being discharged below or charged above their permissible operating limits. The device continuous monitors system voltage and ensures reliable power availability for superstructure equipment while maximising battery lifetime.

High-current power relay, available either as a bi-stable (latched) solenoid or an mono-stable version – both supplied separately – serving as the primary power disconnect element for the superstructure equipment.

Alarm output, used for signalling critical voltage conditions (configurable for buzzer, lamp or other low-current signalling devices).

SPECIFICATIONS

POWER	
Supply Voltage	8-32 V DC
Current	0.2 A maximum, no outputs active
Electrical Protection	overvoltage, transients, reverse polarity, load dump
INTERFACES	
CAN	1x CAN
CAN termination	120 ohm, DIP switch
ON BOARD CONFIGURATIONS	
Rotary switch	10 pos.
DIP switch	8 pos.
I/O	
Analog Input AIN1	0-32 V
Digital Input IN1-IN2	active high levels 0..Ub protected
Digital Output OUT1 - OUT4	positive switching (high-side), max. 2 A
Loads	inductive, capacitive, resistive
Miscellaneous	Protection from short circuit and overload
ENVIROMENT	
IP Class (IEC529)	IP20
EMC Conformity	EN61000-6-2 noise immunity EN61000-6·4 radiation of interference
Temperature Range	storage -40° to +85°C (-40° to 185°F) operating -40° to +85°C (-40° to 185°F)
ENCLOSURE	
Housing Material	GP ABS
Mounting	4 mounting holes for screws M4 or max. 4.5 mm tapping screws
Mating Connector	Deutsch DT06-12S
SIZE & WEIGHT	
W x H x D	125 x 38 x 50 mm, 46 mm height with mating connector
Weight	0.1 kg

Undervoltage Protection
The controller monitors the battery terminal voltage in real time with high-resolution A/D conversion. When the battery voltage drops to the predefined undervoltage threshold, the Battery protector triggers Alarm output activation (buzzer or indicator lamp) and Start of the protection countdown.

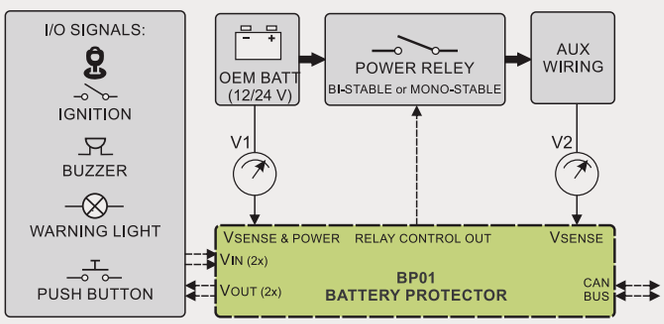
Delayed Power Disconnect - If the voltage remains below the threshold for the next 60 seconds (configurable on request), the controller commands the bi-stable solenoid to disconnect the auxiliary load from the vehicle batteries. After disconnection the alarm output is deactivated and the load remains disconnected until a manual reset or a defined recovery condition.

Overvoltage Protection
The system also protects connected equipment from excessive charging voltage: If the measured voltage exceeds the defined overvoltage limit, the controller immediately activates the alarm output and Instantly disconnects the auxiliary consumers. This protects sensitive electronic equipment from alternator or charger malfunctions.

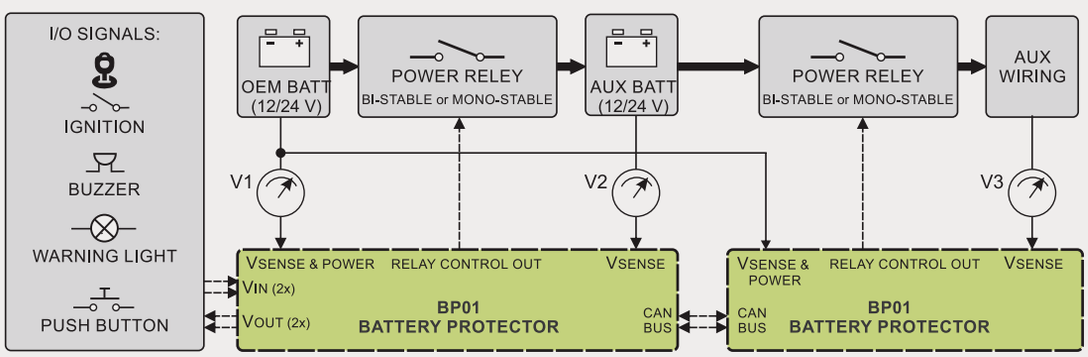
Depending on configuration, reconnecting the superstructure power can be done by manual reset (external push button), ignition signal logic or automatic reconnection when voltage returns to a safe range (optional feature).

DIMENSIONS

Single battery setup example



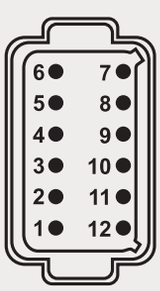
Dual battery setup example



CONNECTIONS

CONNECTION DEUTSCH DT06-12S

PIN	Description	PIN	
1	BATT+ POWER	**7**	OUT 4 (ALARM BUZZER)
2	CAN L	**8**	INPUT 1 (KEY)
3	N/A	**9**	INPUT 2 (IGNITION)
4	OUT 1 (RELAY CLOSE)	**10**	AIN1 [BATT SENSE V]
5	OUT 2 (RELEY OPEN)	**11**	CAN H
6	OUT 3 (WARN. LAMP)	**12**	BATT-/GND



PRODUCT CODE

BP01-BS	Battery protector, bi-stable operation mode
BP01-MS	Battery protector, mono-stable operation mode
	For more options please contact the supplier.

PRESSURE TRANSMITTERS/TRANSDUCERS

KEY FEATURES

- **Standard output signal** 0.5 … 4.5 V, 4-20mA or 0-10V
- Silicon based diaphragms – **high sensitivity**
- Automotive Heavy-duty **ISO15170 sealed circular connector**, twist lock
- **Robust and compact** design
- **Non-linearity**: < 1 % FS
- **Over-pressure** safety: x 5
- Material: **316L**
- **Vacuum** resistant
- **Universal Supply Voltage**: 8 .. 30 VDC

The **PTxx** series pressure transmitters have been designed for a wide range of industrial applications. They are capable of measuring pressure in water, gases, or vapors in systems such as liquid level monitoring, pump control, and machine building.

The gauge sensors use silicon-based sensing diaphragms with high elasticity, combined with semiconductor strain gauges implanted into the silicon substrate. This configuration provides excellent sensitivity, high overpressure resistance, and precise measurement characteristics with low non-linearity, minimal hysteresis, and high repeatability.

The relative pressure models rated for 25 bar and 60 bar employ ceramic capacitive measuring cells, ensuring robust performance in demanding environments.

Thanks to their technical specifications, reliability, and cost-effectiveness, these pressure transmitters are especially well suited for OEM applications.

SPECIFICATIONS

POWER

Supply Voltage	9-30 V DC
Voltage output Signal	0.5-4.5 V standard 0-10 V optionally
Current output Signal	4 .. 20 mA optionally
Load in ohm	<(Ubatt-9V)/0.02A

ELECTRICAL CONNECTION

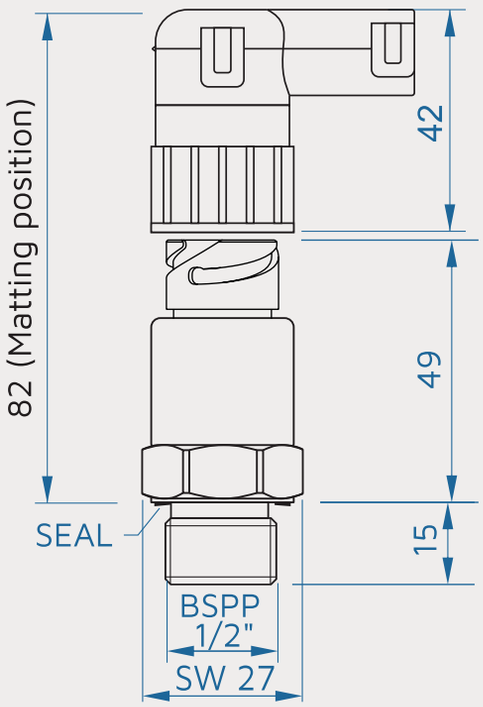
CAN	1 x CAN
Pin assignment 0.5 .. 4.5 V signal, type PTxx-U4-BWK	1: U batt + 2: GND 3: Signal out 0.5 .. 4.5V 4: N/C
Pin assignment 4..20 mA signal type, PTxx-I2-BWK	1: U batt + 2: Signal out 4..20mA 3: N/C, 4: N/C

ENVIROMENT

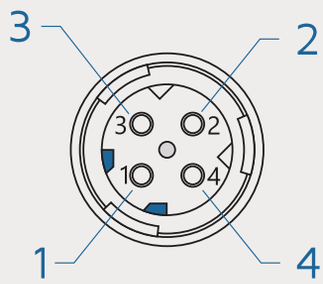
Temperature range	operating from -20°C to +70°C (temp. compensation range) storage from -45°C to +85°C
Ingress protection (IEC60529)	IP67 (mated position)
Mating connector	ISO15170 2.5mm system, Key1, Twist Lock, angled, for corrugated tube NW 8.5 with 2 or 3 conatcts and one or two seal plug
Current sensors P/N	CKIT ISO2-9NW8.5
Voltage sensors P/N	CKIT ISO3-9NW8.5
Wire cross-section	0.5 .. 1 mm2
Wire insulation diameter	1.2 mm .. 2.1 mm

DIMENSIONS AND CONNECTIONS

PRESSURE SENSOR PT05-BWK, PT02-BWK



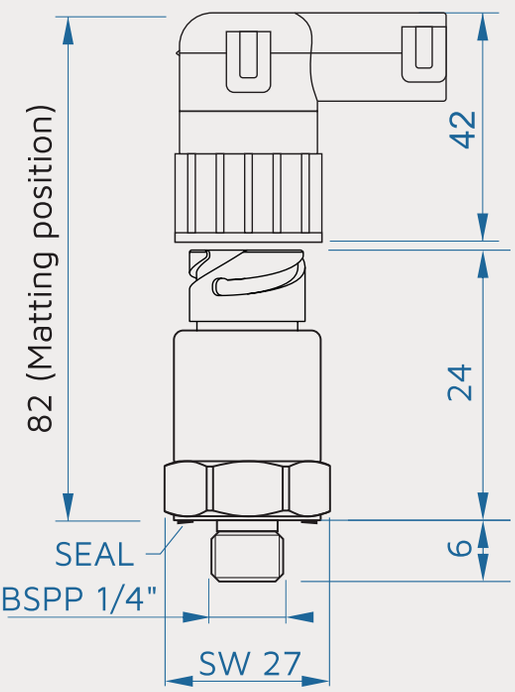
SENSOR CONENCTOR



CONNECTION TWIST LOCK (ISO 15170)

PIN	VOLTAGE SENSOR	CURRENT SENSOR
1	BATTERY +	BATTERY +
2	GND	SIGNAL 4-20 MA
3	SIGNAL 0.5-4.5V	N/C
4	N/C	N/C

PRESSURE SENSOR S-PTXX -BWK



GAUGE SENSOR PRESSURE RANGE

Measuring range	
• PT02-xx-BWK	0 .. 200 mBar
• PT05-xx-BWK	0 .. 500 mBar
Overpressure and burst limit	
- 200 mbar transducers	1000 mBar
- 500 mbar transducers	2500 mBar
Vacuum tightness	Yes

ACCURACY

Accuracy	< 0.5 % FS

CONNECTION

Process connection	G 1/2", BSPP

RELATIVE SENSOR PRESSURE RANGE

Measuring range	
• PT24-xx-BWK	-1 .. 24 bar
• PT25-xx-BWK	0 .. 25 bar
• PT60-xx-BWK	0 .. 60 bar
Overpressure and burst limit	
4 bar, 25 bar and 60 bar sensors	100 bar
Vacuum tightness	Yes

ACCURACY

Accuracy	< 1 % FS

CONNECTION

Process connection	G 1/4", BSPP

PRODUCT CODE

SET of pressure sensor and Mating conenctor

Ordering code example:

S	-	P	T		0	5	-	U	4	-	B	W	K

SET	SENSOR TYPE	PRESSURE RANGE		OUTPUT SIGNAL		CONNECTOR AND INDETIFIER
S: SET WITH MATING CONNCTOR		**02**: 0-200 mBAR **05**: 0-500 mBAR **24**: -1-24 BAR **25**: 0-25 BAR **60**: 0-60 BAR, ETC		**U4**: 0.5-4.5V **U1**: 0-10V **I2**: 4-20MA		**BWK**: BAYONET-TWIST LOCK

FLASHER

KEY FEATURES

- **2 Channels**
- **High Current Low Side Mosfet** Outputs
- Powered by either **12 or 24V**
- Factory **Programmable**
- Ready for **Immediate Operation**

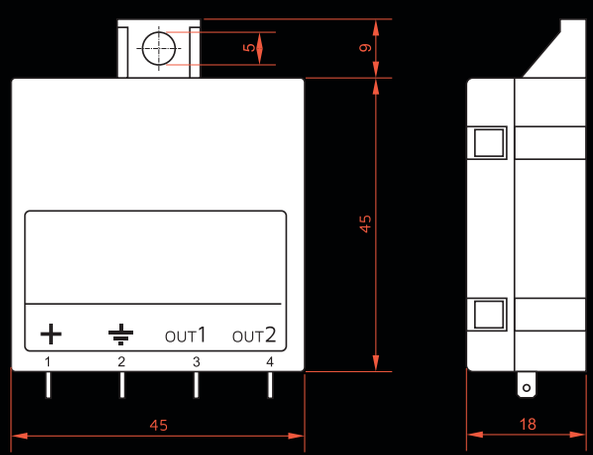
Flasher is an electronic device with two independent low side output signals which can control for e.g flash lamps mounted on the front, rear or on the vehicle sides, warning for open steps etc.

The flasher can be programmed to different flashing user patterns.

SPECIFICATIONS

POWER	
Supply Voltage	8-30 V DC
Current	0.1 A maximum, no outputs active
Electrical Protection	reverse polarity
I/O AND INTERFACE	
Digital Output	1 x CAN
OUT1	negative switching (low-side), max. 2 A
OUT1	negative switching (low-side), max. 2 A
Loads	inductive, resistive
ENVIROMENT	
IP Class (IEC259)	IP20
Temperature Range	storage from -40° to +85°C operating from -40° to +85°C
ENCLOSURE	
Housing Material	ABS
Mounting	with 1 screw
Connector	faston 2.8 x 0.8
SIZE AND WEIGHT	
W x H x D	45 x45 x 18 mm without connector
Weight	0.1 kg

DIMENSIONS

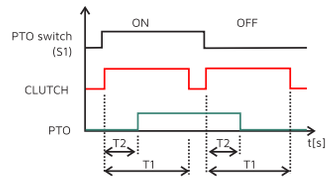


PRODUCT CODE

FLASHER 2N	Flasher 2x Output GND, 1A, 10-30V DwC, fact. programmable

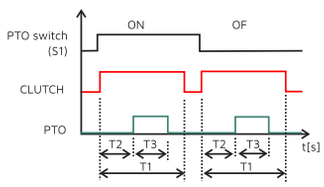
PTO TIMER

PERMANENT PTO SIGNAL



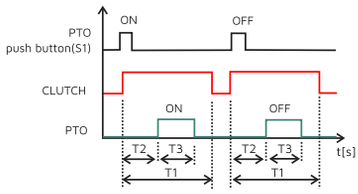
T1, T2 = factory programmable

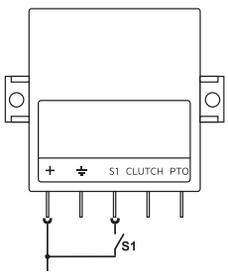
PULSE PTO SIGNAL



T1, T2, T3 = factory programmable

PULSE ON / PULSE PTO SIGNAL





S1... switch activate the PTO procedure

KEY FEATURES

- **2 Channels** – Clutch and PTO control
- Positive or Negative **Relay Outputs**
- **Pulse or Permanent** PTO engagement procedure
- Powered by either **12 or 24V**
- Factory **Programmable**
- Ready for **Immediate Operation**

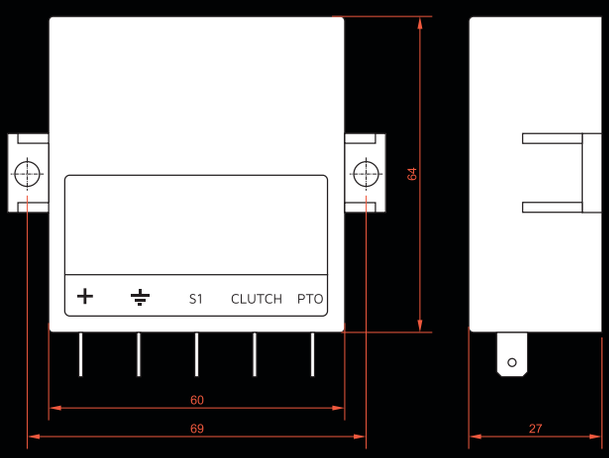
The vehicle **PTO** engagement and disengagement action uses the main transmission clutch and a control mechanism which physically engage the PTO itself. Typically, an air valve is used to engage the PTO. There are a number of different types of PTO and different engagement procedures.

The PTO TIMER is designed to manage the properly engagement of PTO with two control signals, one for clutch and another for PTO valve. It is factory programmed to specific chassis brands and types. The control and activation signal can be permanent or pulse and positive or negative.

SPECIFICATIONS

POWER	
Supply Voltage	8-30 V DC
Current	0.2 A maximum, no outputs active
Electrical Protection	reverse polarity, overvoltage
I/O AND INTERFACE	
Relay Output	1 x CAN
OUT1	negative or positive switching, max. 1 A
OUT1	negative or positive switching, max. 1 A
Loads	inductive, resistive
ENVIROMENT	
IP Class (IEC259)	IP20
Temperature Range	storage from -40° to +85°C operating from -40° to +85°C
ENCLOSURE	
Housing Material	ABS
Mounting	with 2 screw
Connector	faston 6.3 x 0.8
SIZE AND WEIGHT	
W x H x D	60 x 60 x 27 mm without connector
Weight	0.1 kg

DIMENSIONS



PRODUCT CODE

PTO24I+-I	PTO-TIMER-24-I-8+/3/4-, clutch +, pto -(pulse), switch input-permanent, Renault
PTO24P+-	PTO-TIMER-24-P-5+/3, clutch +, pto -, Scania/Iveco
PTO24P++	PTO-TIMER-24-P-5+/3, clutch +, pto +, MAN/ Mercedes

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