



front view

## DESCRIPTION

MConn is our new generation of Connected Displays with a powerful 32-bit multi-core ARM Cortex-A9 processor, with 2D, 3D, and Vector Graphics hardware acceleration. Featuring a multitouch PCAP touchscreen, operators can take advantage of features such as pinch-to-zoom, rotation, flick, and many more. It can be programmed to run on Embedded Linux, Android, or QNX, depending on the user requirements. The display comes packed with a rich set of wired and wireless interfaces, including CAN (2x), LIN, Ethernet, USB (2x), audio, camera inputs (4x), I/O (22), 4G LTE, GPS, WiFi, and Bluetooth.

## TECHNICAL DATA

Housing	ABS Plastic
Connector	1x TE 1-776231-1 35-position (Power, GND, CAN, LIN, I/O) 1x TE 776261-1, 14-position (4x camera, audio) 1x HDMI Type A (secondary display) 2x SMA connectors (optional, GPS, Radio) 2x USB connector with optional dust cap 1x Gigabit Ethernet connector
Dimensions	200.6mm x 139.1mm x 50mm (not including connector)
Over-current Protection	Yes
Main Processor	NXP i.MX6, 32-bit Cortex-A9 ARM processor
Co-Processor	Watchdog, analog inputs, and CAN functions. CAN ready in < 0.5s from cold boot
GPU	2D, 3D, Vector Graphics Hardware Acceleration
Storage	4 GB eMMC for OS and user application
Total Inputs and outputs	22 (18 inputs 4 outputs)
Inputs	12 digital inputs 6 analog inputs 2 Thermistor inputs 2 frequency counter inputs
Outputs	4 Digital high side drivers (2A each)
Operating voltage	9-32 V DC
Interfaces	2x CAN 1x LIN Ethernet 2x USB 2.0 4x Analog Video Inputs GPS WiFi Bluetooth 4.0 AM/FM/WX Tuner

## DISPLAY

Screen Size (Diag.)	7" WSVGA is Standard (10.1", 12.3" Extra-Wide Available)
Video	1080p, 30fps, encoding and decoding
Viewing Angle	θL = 75° θR = 75° θT = 70° θB = 75°
Viewing Direction	All Direction
TFT Resolution	1024 x 600
Luminance	1000 NITS
Contrast Ratio	560:1 (7" & 10") 1000:1 (Extra-Wide)
Touch Mode	PCAP, 5-point multi touch optional
Multi-Screen Capability	Dual Screen output available, can be mirrored or independent

## SOFTWARE/PROGRAMMING

Programming System	Qt, Altia, C/C++, Android
Software Updates	USB, CAN, Over the Air (OtA): Ethernet, WiFi, Cellular

## OPERATING SYSTEM

Operating System	Linux, Android Automotive, QNX
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## MOUNTING

Mounting	VESA 50, optional mounting bracket
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**SENSORS**

Accelerometer	3-axis, $\pm 2/\pm 4/\pm 8/\pm 16$ g acceleration range. Selectable full scales
Gyroscope	3-axis, $\pm 125/\pm 245/\pm 500/\pm 1000/\pm 2000$ dps angular range. Selectable full scales
Compass	3-axis, used in conjunction with accelerometer to provide accurate heading information
Buzzer	2.3kHz Tone, PWM Capable, 85 dB
Real Time Clock	Onboard battery to keep track of time while unit is powered off

**TESTING**

EMC/EMI	ISO 10605, CISPR 25
Immunity	ISO 7637-2, ISO 16750-2
Shock	ISO 16750-3, 20G
Vibration	ISO 16750-3, Test VII
Environmental Protection	IP54 IP65 (optional)
Temperature range	Operating: -20 °C to 70 °C Storage: -30 °C to 80 °C

**PIN ASSIGNMENT MATING CONNECTOR: AMPSEAL 776164-1**

Pin	Function	Pin	Function	Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	Digital In	7	Digital Out	13	VCC_LIN	19	Analog In	25	Digital In	31	Digital In
2	Digital In	8	Digital In	14	LIN	20	Analog In	26	CAN1_L	32	CAN2_L
3	Digital Out	9	Analog In	15	GND	21	GND	27	CAN1_H	33	CAN2_H
4	Digital Out	10	Analog In	16	VCC	22	Analog In	28	Digital In	34	Digital In
5	Digital In	11	Digital In	17	Analog In	23	VCC	29	Digital In	35	Digital In
6	Digital Out	12	Digital In	18	GND	24	GND	30	Ignition		

**PIN ASSIGNMENT MATING CONNECTOR: AMPSEAL 776273-1**

Pin	Function	Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	Video1+	4	Audio L	7	Video3-	10	Video4+	13	Audio Mic
2	Video1-	5	Audio R	8	Video2+	11	Video4-	14	GND
3	Video3+	6	GND	9	GND	12	Video2-		

## INTERFACES

CAN	2x CAN, 20 kbps – 1Mbps
LIN	1x LIN, 1 kbps – 20 kbps
Ethernet	Gigabit Ethernet, 10/100/1000 Base-T
USB	2x USB 2.0
Camera	4x Analog video inputs NTSC or PAL, Single-Ended or Differential
Audio	Stereo out, Mic in
Inputs	12 digital inputs 6 analog inputs 2 Thermistor inputs 2 frequency counter inputs
Cellular	3G fallback (UMTS/HSPA) 4G LTE
GPS	NMEA data, dedicated GPS antenna connection
WiFi	802.11 bgn, +20 dBm TX, -97 dBm RX
Bluetooth	Bluetooth 4.0, +20 dBm TX, -94 dBm RX
Radio Tuner	AM/FM/WX Tuner with RDS decoder
Power Supply	9-32 VDC. CPU operational down to 7 VDC
Ignition	Ignition input for CPU



POSSIBLE FEATURE OPTIONS

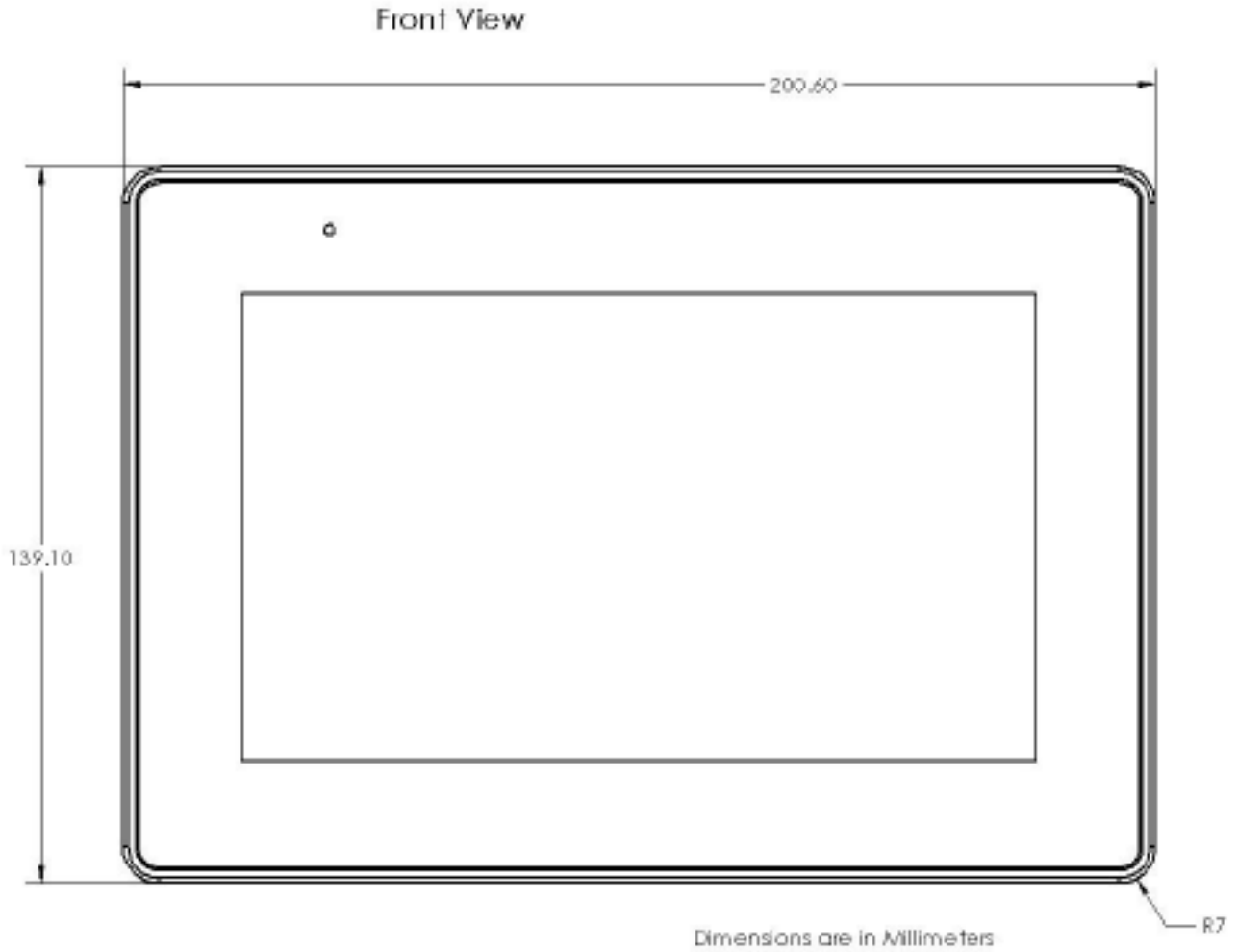
FEATURE	STANDARD EDITION	CAMERAS EDITION	INFOTAINMENT EDITION	CONNECTIVITY EDITION*	FULL FEATURE EDITION
WIFI	-	-	✓	✓	✓
BLUETOOTH	-	-	✓	✓	✓
GPS/GNSS	-	-	✓	✓	✓
LTE (4G) / 3G / 2G	-	Optional	Optional	Optional	✓
AUDIO IN / OUT	-	-	✓	-	✓
AM / FM TUNER OPTIONAL	-	-	✓**	-	✓**
VIDEO IN 4-CH	-	✓	✓	✓	✓
ETHERNET	✓	✓	✓	✓	✓
RAM	512MB	1GB			4 GB
CPU	SINGLE CORE	QUAD CORE			
I/O	-	22			
USB 2.0	-	✓			
DUAL SCREEN	-				✓
IP65	Optional				
LINUX OS	✓				
TOUCH SCREEN	Optional				
SCREEN RESOLUTION	1024 x 600				
SD-STORAGE	32 GB OR 64 GB**				

\* Available as evaluation displays

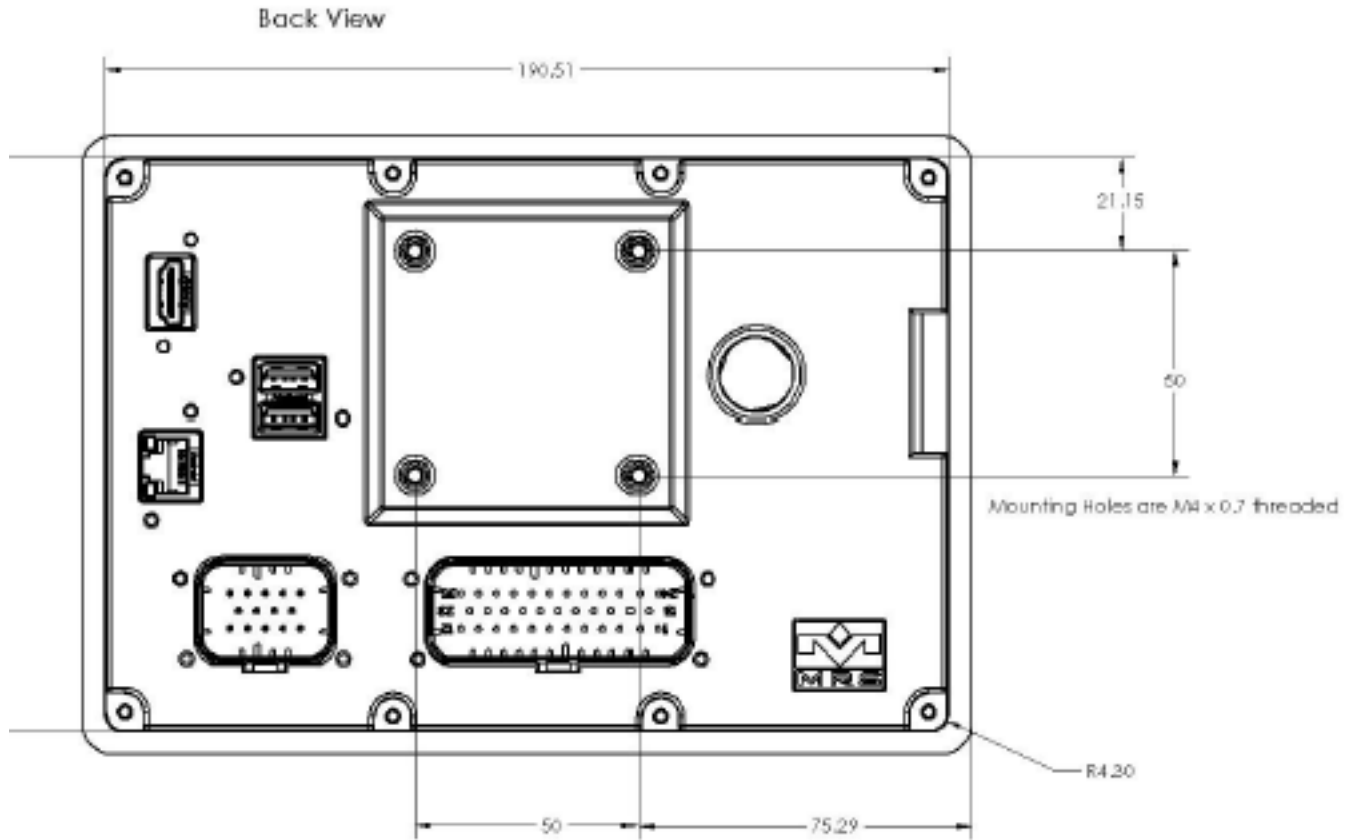
\*\* Subject to consultation between customer and supplier.

- Indicates feature is not compatible with other options

TECHNICAL DRAWING (IN MM)



TECHNICAL DRAWING (IN MM)



## SAFETY AND INSTALLATION INFORMATION

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

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

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

### SAFETY

- ! WARNING! Danger as a result of a malfunction of the entire system.**  
Unforeseen reactions or malfunctions of the entire system may jeopardise the safety of people or the machine.
- Ensure that the device is equipped with the correct software and that the wiring and settings on the hardware are appropriate.

- ! WARNING! Danger as a result of unprotected moving components.**  
Unforeseen dangers may occur from the entire system when putting the device into operation and maintaining it.
- Switch the entire system off before carrying out any work and prevent it from unintentionally switching back on.
  - Before putting the device into operation, ensure that the entire system and parts of the system are safe.
  - The device should never be connected or separated under load or voltage.

- ! CAUTION! Risk of burns from the housing.**  
The temperature of the device housing may be elevated.
- Do not touch the housing and let all system components cool before working on the system.

### PROPER USE

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

- ! WARNING! Danger caused by incorrect use.**  
The device is only intended for use in motor vehicles and machines.
- Use in safety-related system parts for personal protection is not permitted.
  - Do not use the device in areas where there is a risk of explosion.

#### Correct use:

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

#### Obligations of the manufacturer of entire systems

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

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

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

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

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

#### Installation

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

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

#### Putting into operation

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

## FAULT CORRECTION AND MAINTENANCE

- i NOTE The device is maintenance-free and may not be opened.**
- If the device has damage to the housing, latches, seals or flat plugs, it must be taken out of operation.

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

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

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