

CMS HDR mirror

Groundbreaking Automotive Camera Monitor System.



The flexible camera monitor system CMS HDR Mirror from manufacturer Kappa optronics has taken the lead position in the hypercar and super sports car market. The mirror replacement system consists of a camera, a controller, and a display. It combines state-of-the-art camera technology and expertise gleaned from numerous automotive projects. Its hardware and software were designed to comply with the ISO 26262 (ASIL B) functional safety standard.

Vehicle-specific customer requests can be configured quickly and efficiently. The extremely small camera head gives designers almost limitless freedom. Improved aerodynamics provide maximum performance and increased range. There are even more technical characteristics that will impress users, such as perfect, latency-free and low-flicker HDR imaging that can utilize more residual light than the human eye can. Groundbreaking demonstration videos, with sun low on the horizon and inside tunnels, bear witness to this phenomenal dynamic.

Strong COTS System Concept

-  Exchangeable modules
-  Extremely small camera head
-  Display size 5", 800x480 pixel
-  CAN communication to vehicle
-  The field of view is tilted for reverse gear driving
-  HDR quality images with 120 dB dynamic range
-  Ultra low latency
-  Flicker mitigation
-  EMC immunity to interference and low power consumption
-  Quick and easy individual configurable: cable length, housing design, glasses, design requirements...

Functional Safety

-  Homologation to ECE-R46
-  ISO 26262, ASIL B
-  Benchmark Kappa – even better than the regulations
-  Increased safety compared to other systems

References | On the road

Aston Martin | Valkyrie
 KTM | X-Bow GT2
 VW Volkswagen | XL1

We are constantly checking the accuracy of the technical data. We are prepared to provide more detailed information on request. Technical data are subject to change without notice!

Headquarters

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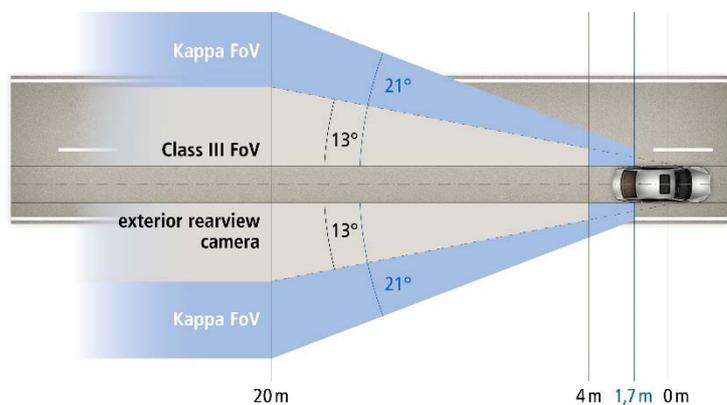
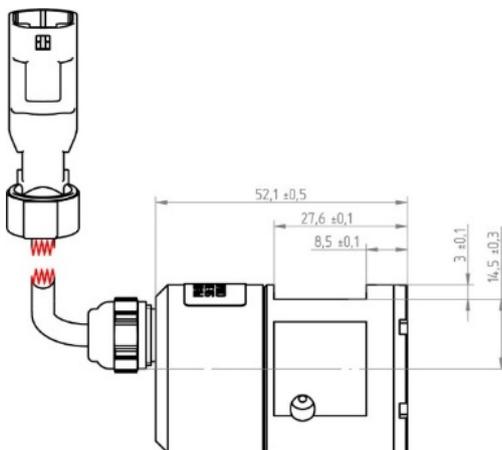
Groundbreaking Automotive Camera Monitor System.

Camera Optics Module | COM

Video standard	WVGA – wide VGA 800x480 taken from 1304 x 980
Data format	24 bit RGB (8, 8, 8)
Sensor technology	CMOS
Minimum light sensitivity	1 m lux
Automatic gain control	yes
Dynamic range	up to 132 dB
SNR	42 dB
Active range of white balance	covered color temperature range 2300-7500K
Description of the optics	Focal length 8mm, IR cut off at 740nm, antireflective coating on camera entrance window
Framerate day / night	60fps day + night (800x480)
Protection class	IP 67K
Dimension, weight	52.1 (210mm incl. cable) x 35 Ø mm; 150g

Camera Optics Module | COM

Camera angle reverse mode	The field of view is tilted for reverse gear driving	
Default view Class III	Horizontal	Vertical
Camera overall viewing angle	34.0°	25.9°
Camera overall pixel resolution	1304 pixel	980 pixel
Camera field of view α camera (portion taken for monitoring)	21.2°	12.8°
Camera pixel resolution N camera (portion taken for monitoring)	800 pixel	480 pixel



According to ECE-R46 and ISO 16505
Kappa FoV

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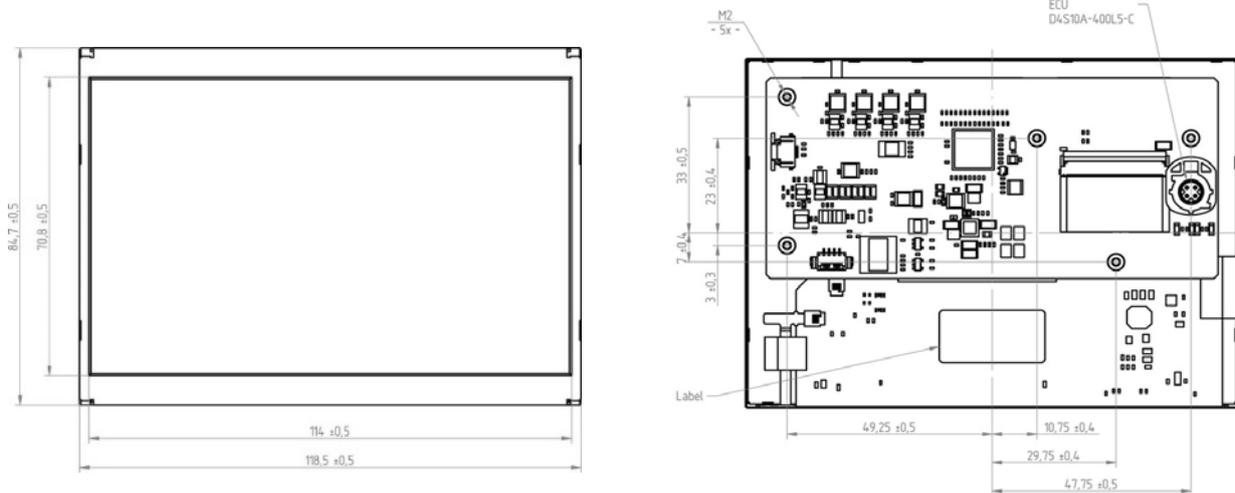
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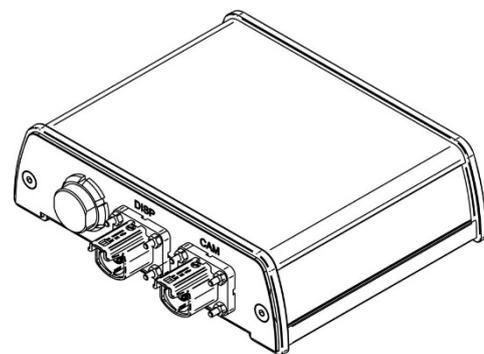
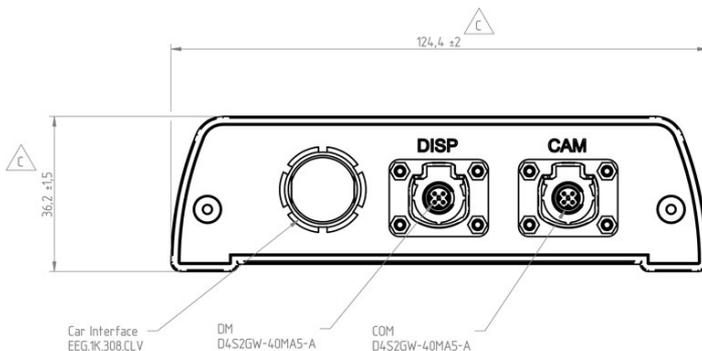
Display Module DM

Play-back	RGB Colour
Technology	IPS TFT-LCD
Display panel	AA050MG03
Number of pixels (horizontal x vertical)	800 x 480
Pixel size (horizontal x vertical)	0.135 x 0.135 mm
Antireflective treatment	LUXAR NG
Image refresh rate	60 Hz
Description of the brightness adjustment	Controlled via CAN bus by vehicle manufacturer
Front glass/coating	Antireflective coating
Dimension, weight	120 x 85 x 25 mm, 150g (with housing, excl. cable)



Electronics Control Unit | ECU

Gateway	Controlling and power
Interface	Inter-module: FPD-Link III, MIPI/CSI-2, I2C, GPIO, APIX-2; External: CAN bus, RS422 (Maintenance access)
Supply voltage	12 VDC nominal (8V .. 18V transient)
Max. consumption	Low power 1mA at 12 V, any other state 12 W (15 W with camera window heater)
Protection class	IP 65
Dimension, weight	125 x 125 x 37 mm (without cable)



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Cameras and Vision System

for Anything that Drives or Flies



Rugged & certifiable: When lives and safety are at stake, Kappa delivers the best, most reliable, and most precise vision solutions.

Kappa has 40 years of experience with application-specific cameras and vision systems in rugged and certifiable design – in small and mid-sized series.

We offer innovative vision solutions for day and night operations, ensuring maximum performance of higher level systems. Our solutions are especially suitable for safety-critical applications. We provide on-site consulting, dynamic project management, and a highly experienced development team. Special signal processing, mechanical modifications and customer-specific interface configuration are all part of the Kappa concept, as are integration of optical components, illumination and video management.

We are leaders in technology. Moreover, we meet all safety requirements on design assurance procedures in hardware and software development, qualification and certification (up to SIL 2/ASIL-B/ DAL-B, ISO 26262, DO-254, DO-160, DO-178, MIL STD 810/704, Nato-Supplier Code C4792).

Your benefits at a glance

Extremely rugged design | High integration capability | ITAR free | Certifiable maximum safety | Vision (sub-) systems, glass-to-glass, board level cameras | Latency-free images | Long-term availability & functional warranty | Day & night vision, 24/7

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