

## **PRELIMINARY - Product Brief**

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### **3D-Surround-View System Solution**

TES' **MAGIK-2 family** of platforms comprises various COM (Computer-on-Module) products as well as application specific carrier cards and associated software packages. Dedicated system solutions targeting certain application areas are composed of these aforementioned components and represent market ready but still customizable platforms. In particular, the following application areas are addressed:

- Human Machine Interface (HMI)
- Audio processing
- Video processing
- Video combined with graphics
- Network and Connectivity
- Wireless Remote Controls

These system solutions are reducing time-to-market and the risk of a product development significantly and are therefore the ideal basis for such endeavors.

All Magik-2 System Solutions are available as complete packages consisting of hardware and associated ready-to-go software. All software components are alternatively also offered as IP cores for use on existing hardware. Porting can be offered on request.

Standard operating system is Linux, but versions for Windows Embedded Compact 7 / 2013 or Android are available on request.

Product development made easy, with the industry leading, complete system solution packages from TES !

The **3D-Surround-View System Solution** consists of the following components:

- SMARC module based on an i.MX 6 applications processor from Freescale either with dual core (M2-SM6-2D) or quad core (M2-SM6-4Q) ARM Cortex A9 CPUs
- Application specific carrier card with 8 inputs for analog video cameras, 4 interfaces for digital / IP video cameras and a large variety of interfaces that allow the integration of the solution into a larger system context like e.g. in a commercial vehicle or transportation environment
- Ready-to-go software package with Linux OS, optimized BSP, middleware, media suites, GUI, Surround View Application (details below)
- Mechanical enclosure (optional)

The **3D-Surround-View System Solution** leverages TES' outstanding expertise in graphics and video technologies which enables a market leading system performance.

One key value of TES' system solutions is the ready-to-go software package described above.

The application software components are TES' 3D-Surround-View software, the Guiliani HMI framework and associated application specific GUI libraries.

The 3D-Surround-View solution supports up to 8 analog camera inputs and 4 IP camera inputs. The solution offers up to 4 times MJPEG or H.264 HD video decoding support.

On the video output side, analog video (TV Out) and digital (HDMI or LVDS) outputs are available.

TES' **3D-Surround-View system solution** is a state-of-the-art platform with industry leading video processing performance. It is ideal for use in any kind of vehicles and use cases where a surround view system can bring huge safety improvements for pedestrians, workers, the driver and the vehicle itself.

The video streams coming from up to 8 cameras are combined and stitched together into a 3D representation with a dedicated algorithm that

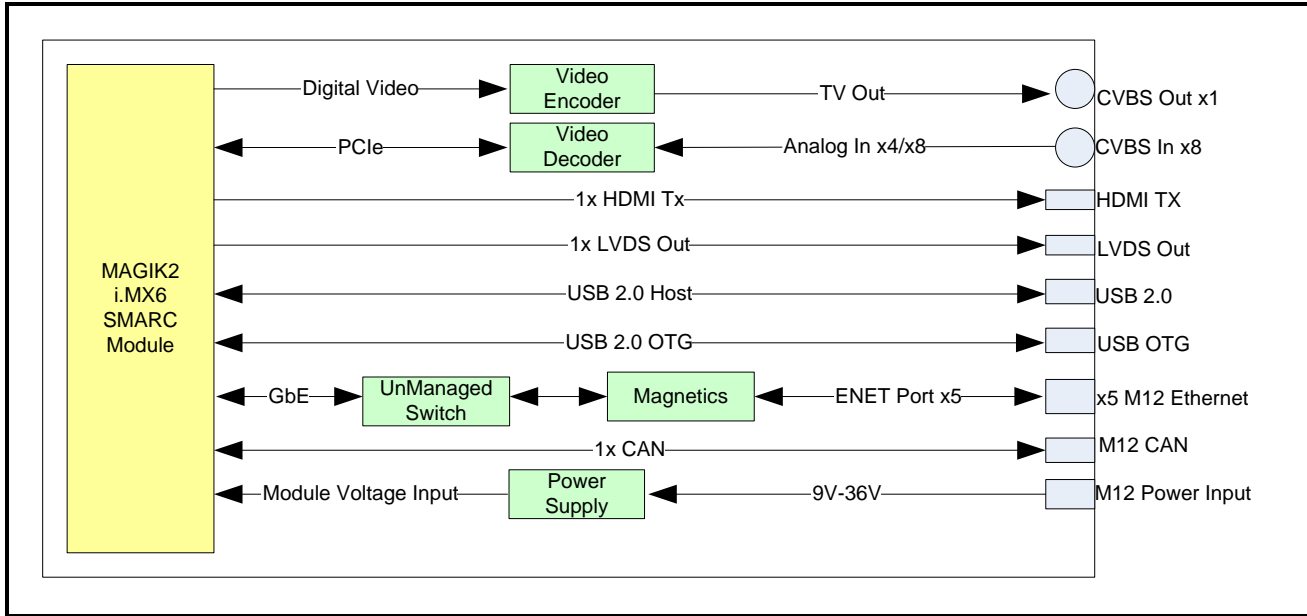
eliminates artifacts and distortions as much as possible and also avoids blind spots. The resulting video is then sent to the video output. A key differentiator versus many systems on the market today is the 3D video representation of the vehicle surroundings on a bowl that allows the driver to see everything in close vicinity of the vehicle in one panoramic view without split screen and without blind spots.

Besides a "free-fly" viewing mode any number of predefined viewing-positions is supported. Those can be either selected via a dedicated user interface or - automatically - based on the CAN bus information representing the maneuver situation.

Technical Information	3D Surround View System Solution
Processing Unit	<ul style="list-style-type: none"> <li>• TES i.MX6 System on Module</li> <li>• SMARC Complaint</li> <li>• MJPEG / H.264 Video Decoder</li> </ul>
Video Input	<ul style="list-style-type: none"> <li>• 8x Channel Analog Camera Input</li> <li>• 12V Camera Power supply Out</li> <li>• 4x IP camera inputs</li> </ul>
Video Output	<ul style="list-style-type: none"> <li>• 1x Analog Out (CVBS)</li> <li>• 1x HDMI Out (HDMI 1.4a)</li> <li>• 1x LVDS Out (Single Channel 18/24 bits)</li> </ul>
Ethernet	<ul style="list-style-type: none"> <li>• 5x 10/100/1000 Mbps</li> <li>• 4x Port PoE support</li> <li>• M12 Ethernet Connectors</li> </ul>
CAN	<ul style="list-style-type: none"> <li>• CAN 2.0B Support</li> <li>• M12 CAN Connector</li> </ul>
USB Host	<ul style="list-style-type: none"> <li>• Standard USB 2.0 Host</li> <li>• Type A Connector</li> </ul>
USB OTG	<ul style="list-style-type: none"> <li>• Standard USB 2.0 OTG</li> <li>• micro AB Connector</li> </ul>
SDIO	<ul style="list-style-type: none"> <li>• Standard SD Card Support (SDXC)</li> </ul>
Wireless Connectivity	<ul style="list-style-type: none"> <li>• Wi-Fi 802.11n + BT 3.0 ( optional)</li> </ul>
Power Input	<ul style="list-style-type: none"> <li>• 9V-36V</li> <li>• M12 Connector</li> </ul>
Temperature Range	<ul style="list-style-type: none"> <li>• Industrial</li> </ul>
IP Rating	<ul style="list-style-type: none"> <li>• IP54</li> </ul>
RoHS	<ul style="list-style-type: none"> <li>• The hardware is RoHS compliant</li> </ul>



**Preliminary Block Diagram\***



\*Block diagram details are subject to change without notice. Check with TES for updated information.

Ordering Information		
Article	Part No.	Description
<b>3D Surround View Carrier Board</b>	M2-CB-8CH-3DSV-ANA-IT	3D Surround View Carrier Board With 8 Channel Analog Input, HDMI Output Industrial Temperature Range
SMARC Module alternatives		
<b>MAGIK-2 SMARC Module</b> (quad core)	M2-SM6-4Q1G-1G-4G-IT-S	i.MX6 Quad, 1GHz, 1GB RAM, 4GBytes Flash, Industrial Grade, 80mmx52mm
<b>MAGIK-2 SMARC Module</b> (dual core)	M2-SM6-2D1G-1G-4G-IT-S	i.MX6 Dual, 1GHz, 1GB RAM, 4GBytes Flash, Industrial Temperature, 80mmx52mm

Refer to MAGIK 2 SMARC Module Product Brief for more possible combinations of Computer on Module part numbers

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## **Sales Offices**

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### Germany / DACH Region

TES Electronic Solutions GmbH  
Zettachring 8  
70567 Stuttgart  
Germany

Phone: +49 (0)711 7287 7450  
Email: info@tes-dst.com

### UK & Nordics

TES Electronic Solutions  
Building 33  
26 Research Avenue North  
Heriot Watt University Research Park  
Riccarton  
Edinburgh EH14 4AP  
UK

Phone: +44 131 603 5100  
Email: info@tes-dst.com

### France & Italy

TES Electronic Solutions  
c/o Elsys Design  
David Mudard  
23 rue Jules Vallès  
69100 Villeurbanne / Lyon  
France

Phone: +33 (0)472 7460 32  
Email: info@tes-dst.com

### India & AsiaPac

TES Electronic Solutions  
#65, 35th Main, BTM 2nd Stage  
100ft Ring Road  
Bangalore, Karnataka-560068  
India

Phone: +91-80-66995800 / +91-80-26686460  
Email: info@test-dst.com

*For inquiries from all other countries / regions, please contact our HQ in Germany*