# SMART CAMERA NVIDIA JETSON TX2

## Product family GPU-based Smart Cameras

DKGPU_01 Machine Vison, Deep Learning and Image Processing

### Description

The DKGPU_01 is the first model in a series of specially configured GPU-based smart cameras from the ABS GmbH. It is an off-the-shelf camera concept with an open programming infrastructure for the cost-effective implementation of both conventional and complex image processing solutions directly inside of the hardware!
Based on the existing optimized housing design, the ABS also offers design customizations and the production of the carrier boards. Saving on development effort with the use of neural networks, artificial intelligence and existing libraries to implement machine learning, image processing tasks and intelligent control with a short time-to-market - classic image processing can be implemented in hardware without a PC.

**Additional Information regarding TX2-Module**

- TX2-standard module and industrial grade TX2i.
- The CUDA library uses the 256 existing graphic processors (GPUs) in the TX2 module: BAcceleration of sophisticated algorithms using the CUDA library
- Advanced development of embedded modules from NVIDIA: Jetson AGX Xavier platform with higher performance..

**Further SW-Packages / Integration in NVIDIA-TX2-SDK**

- TensorRT, cuDNN → Deep Learning
- VisionWorks, OpenCV → Computer Vision
- Vulkan, OpenGL → Graphics
- libargus, Video API → Media
- HALCON → Deep Learning-Technologies
- ISAAC-Plattform with SDK → Robotics applications
- Special software development kit „Deepstream SDK"

### Fields of application

- Automotive industry, robotics applications, production
- Construction, agriculture, security and inspection
- Intelligent parking, intelligent transport systems,
- Access control, logistics, retail analysis,
- Social area, autonomous UAV, etc.

### Image Sensors / Lenses

The camera can be equipped with a variety of MIPI image sensor modules available worldwide. The connection of various image sensors or sensor modules is possible on customer request.
The MIPI image sensor modules can be combined with lenses of the connection standards C-mount, CS-mount and M12.

### Drivers / Integration

ABS GmbH offers the development of special customized drivers. The integration of modern Sony image sensors with SLVS-EC interface is prepared.

The long-term availability of the NVIDIA Jetson TX2 module is assured by the manufacturer up to at least 2022. The TX2i module until at least 2028.

### Technical specification

| | |
|---|---|
| Powerful Multi-GPU accelerated processor platform | (256-core NVIDIA Pascal GPU, hex-core ARMv8 64-bit CPU complex, dual-core NVIDIA Denver 2, quad-core ARM Cortex-A57, 8GB 128-bit LPDDR4)<br>- with scalable power consumption<br>- operable with up to 6 image sensors (4 Full-HD streams possible) |
| TensorRT as high-performance Softwareinterface | for frameworks like eg. TensorFlow, Caffe2, PaddlePaddle, Chainer, Pytorch, mxnet, theano or Microsoft Cognitive Toolkit |
| Interfaces (on the housing) | 1x USB type C (USB 3.0)<br>2x USB 2.0<br>1x HDMI 2.0a/b (6 Gbps)<br>1x RJ45 (10/100/1000 BASE-T Ethernet)<br>1x Hollow socket for power<br>WLAN IEEE 802.11a/b/g/n/ac dual-band 2x2 MIMO<br>Bluetooth 4.1 |
| Optional connections on the basic module | 1x opto-isolated input<br>1x opto-isolated output<br>1x RS232 |
| Further connection options of the TX2 module | further USB 3.0 \| MIPI-DSI (1.5 Gbps/lane) \|<br>Displayport DP 1.2a (HBR2 5.4 Gbps) \|<br>eDP 1.4 (HBR2 5.4 Gbps) \|<br>5-lane PCIe x1 and x4 controller \| SATA (1 port) \|<br>SD/MM controller \| SD/SDIO at connector \|<br>5x UART \| 3x SPI \| 8x I²C \| 2x CAN \|<br>4x I2S audio inputs \| GPIOs , ... |
| Housing | robust, climatically and thermally optimized Housing construction for industrial usage |
| Temperature range | -25 °C - +80 °C (TX2) TTP*<br>-40 °C - +85 °C (TX2i) TTP* |
| Dimensions | 132 mm × 74 mm × 66 mm (BxHxT)<br>without lenses |
| Weight | approx. 750 g (without lenses) |

**thermal transfer plate*

### Assembly dimensions

DSH_DKGPU_01

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