CHARM-100CL

Video Processing Board 121mm x 114mm x 20mm (4.76” x 4.49” x 0.8”)

The Vision4ce CHARM-100CL is a standalone video processing board for embedded video and image processing applications which is designed to host the Vision4ce CHARM software. The CHARM software includes the field proven DART video tracking software. The CHARM-100CL is based on a NVIDIA Jetson embedded processor which incorporates a multicore ARM processor and powerful GPU. Video interfaces are provided for HD-SDI and CameraLink video.

Tracking a jet-ski using IR video

CHARM 100CL

Video Interfaces
The CHARM-100CL has the following video interfaces
Video Inputs
- 2 x SD/HD/3G SDI
- 1 x CameraLink (Base / Medium / Full)
- 2 x USB3.0

Video Outputs
- 2 x SD/HD/3G SDI

The CHARM-100CL features a mezzanine board for input of the CameraLink video. This mezzanine board provides a simple path to implementation of other video standards such as CoaXPress.

The CHARM-100CL has been designed with test range applications in mind and as such includes precision timing capabilities including an IRIG DCLS input and a 1-PPS output.

CHARM Software
The CHARM 100 hosts the Vision4ce CHARM software which is a comprehensive real time video processing software suite.

The standard CHARM software capabilities supplied with the CHARM 100 are:
- Video detection and tracking using Vision4ce DART library
- Video streaming
  - MPEG-TS (STANAG 4609)
  - RTSP

The following optional capabilities are also available:
- Electronic image stabilization
- Image enhancement
- Camera control
- Servo platform control
- Dual processing channels

Architecture
The CHARM-100CL uses a FPGA for high speed, low latency video interfacing and processing combined with the flexibility of the Jetson embedded processing which includes the following resources:
- Quad core ARM A57 CPU
- 256 CUDA core GPU
- Video accelerator for video encode/decode

The CHARM-100CL can process two concurrent streams of standard definition or high definition video selected from the multiple digital video inputs. The output video is genlocked to the input video and is comprised of low latency video from the selected input combined with processed video and graphics from the Jetson.

Applications
- Security and surveillance
- UAV & UGV
- Unmanned vehicles
- Test ranges

Enclosure
A rugged enclosure is available for the CHARM-100CL. The enclosure includes an input power supply which allows the CHARM-100CL to be powered directly from vehicle and aircraft power sources.

CHARM-100CL with attached heat spreader

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- The CHARM-100CL is a high-performance standalone video processing board. Video interfaces are provided for HD and SD video in digital formats. The primary host interface is through an Ethernet port. Multiple serial links are also provided. The Mini PCIe slot can be used to add up to 2 additional Ethernet ports.
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- Video Inputs
- • 2 x HD digital video inputs
- – SD-SDI, HD-SDI, 3G-SDI
- – 480i60, 576i50, 720p50/59.94/60, 1080p25/29.97/30, 1080i50/59.94/60, 1080p50/59.94/60)
- • 1 x CameraLink video input
- – Base, Medium, Full and Deca configurations supported
- – Includes support for the serial interface to the camera
- • 2 x USB3.0
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- Video Outputs
- • 2 x HD digital video outputs
- – SD-SDI, HD-SDI, 3G-SDI
- – 480i60, 576i50, 720p50/59.94/60,
- – 1080p25/29.97/30,1080i50/59.94/60,
- 1080p50/59.94/60)
  – Selectable symbology overlay on two outputs

Data Interfaces

- 1 x Ethernet
  – 1000 Base-T
- 3 x Serial RS422
- 1 x CANbus
- IRIG DCLS

Power

- 12VDC +/-5%
- <25W

Expansion

- 1 x mini PCIe slot

Mechanical

- Dimensions 121 x 114 x 20mm (4.76” x 4.49” x 0.8”)

Environmental

- Temperature
  – Operating -25C to +71C
  – Non-operating -40C to +85C
- Humidity
  – 5% to 95% non-condensing
  – Optional conformal coating available
- Shock
  – 30g, 11ms

Designed and manufactured in the UK