PROTON-LVDS

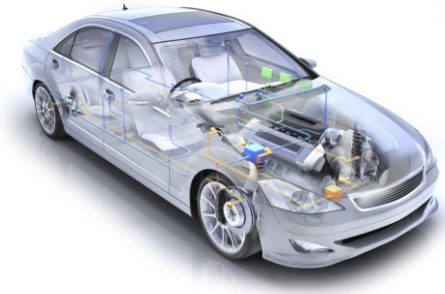
Video Gateway
Generator/Analyzer

Avin **FPD-Link II** **APIX**
DVI In **CAN** **DVI Out**

PROTON-LVDS
a user programmable video generator analyzer with gateway functionality for implementing automated and supervised test procedures of LVDS transmission video

Applications

RGB Displays testing
LVDS Gigabit Channels
Video Generation/monitoring
Test Automation
Hardware in the loop
Video Timing analyser
Video format conversion/retiming



In the field

Powered by a nominal 12VDC, can be installed in a vehicle and be linked to the infotaintment sub system in transparent/bypass mode, where the input LVDS video signal is redirected to the LVDS primary output channel. In this mode PROTON-LVDS will be able to analyse incoming video stream timing, add graphic symbols/sprites to the video, replace the video stream completely or distribute the incoming video stream to other video output channels like DVI out or LVDS secondary channel. Via an embedded GUI the system can be reconfigured in the field and with a single GUI touch or CAN bus message the present incoming video frame will be stored in non-volatile memory in PNG format. User scripts can be activate enabling in the field test procedures.

In the Lab

System resources can be controlled/accessed remotely via ethernet by means of a windows dynamic library **lvdslib.dll** encapsulates all communication routines to program the system from standard software like MATLAB and LabView, or open source scripting environments like OCTAVE and PYTHON.
An embedded operating system provides integrated GUI on a QVGA RGB display

Customer Specific

Flexible and versatile hardware/Software allows the system to be transformed into a custom product with low effort. Application development may be based on a mixture of embedded C , Python scripting and HDL.
C language and PYTHON targeted for embedded Linux running 500MHz ARM processor integrated in PROTON-LVDS. Prefered HDL targeted for two diferent Xilinx FPGA dynamically programmable via Xilinx Select Map mode.

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*"PROTON-LVDS is a variant of **PROTONV2-3M07**, a powerful and versatile digital signal processing platform that is a competitive starting point for developing customer specific applications"*

Features

- 4 FPGA based independent programmable video timing generators with independent pixel clocks (1MHz-130Mhz in steps of 100KHz).
- 25 swapping frame buffers of 2048x2048 pixels 24bpp.
- 128 user configurable display types.
- National DS90UR241/DS90UR124 LVDS interface.
- INOVA INAP125T24/INAP125R24 LVDS interface.
- Up to 200 patterns in embedded non volatile memory in BMP and PNG formats.
- Embedded video player MPEG2, MPEG4 and AVI format support.
- Programmable RGB assignment on LVDS channels.
- Frame grabber functionality stores LVDS video in non-volatile, USB stick or network share.
- Timing analyzer of LVDS video signals.
- Picture difference calculator for LVDS transmission error detection.
- Embedded PYTHON interpreter and libraries with access to all resources of PROTON-LVDS system.
- User programmable monochrome sprites on every video channel.
- Video Gateway. National LVDS, INOVA LVDS, DVI, RGB and analog video (Composite, S-Video and components) inputs to National LVDS, INOVA, DVI and RGB outputs.
- Cyclic CAN generator of up 16 different configurable messages. CAN trace and bus learning functionality.
- Logic analyzer functionality on raw LVDS video data and side band communication channels with storage of 512MB.
- Embedded graphical interface for lab applications.
- User programmable scripting (PYTHON language) for stand alone applications (loops, hook points, predefined libraries).
- PC based windows GUI for remote control and system configuration.
- PC based dll with documented API for remote control over Ethernet.
- System Start up files data base.

Contact

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Specifications

Architecture
32bit ARM processor + 2xFPGA
CAN
1 CAN channels, CAN bus 2.0A/B interface.
Ethernet
10/100 Base-T, Shielded RJ-45
1,5kV isolation transformer
Ethernet IEEE 802-3, 802-2
USB
1.1 Full speed host
LVDS-NSC TX/RX
Fully programmable NATIONAL Semiconductors LVDS channels DS90UR241/DS90UR124 with digitally controlled pre-emphasis set up.
LVDS-INOVA TX/RX
Fully programmable INOVA Semiconductors LVDS channels INAP125T24/INAP125R24 with digitally controlled pre-emphasis set up.
DVI out
Up to 1280x1024 24bpp 60Hz output
DVI in
Up to 160MHz pixel clock
Analog video
Composite, component and S-Video integrated decoder (PAL/NTSC/SECAM) 10 bit resolution @86 Mhz sampling rate
NonVolatile Memory
1GB Solid State storage
Video Memory
900MB SDRAM
User Interface
Embedded 320x240 TFT display and rotary encoders
Power Supply
8-24VDC, MAX 20W.
Dimensions
90mmx170mmx180mm.