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iPORT NTx-U3 Embedded Video Interface

Rapidly add high-performance USB3 Vision connectivity to systems and cameras

Overview

Pleora's iPORT™ NTx-U3 Embedded Video Interface hardware provides system and camera manufacturers with a straightforward way to integrate USB 3.0 video connectivity into their products. With the NTx-U3 Embedded Video Interface, manufacturers can shorten time-to-market, reduce development and deployment risk, and lower design and system costs.

For manufacturers requiring deeper levels of integration, Pleora's NTx-U3 is also available as an Intellectual Property (IP) package that includes an FPGA IP core and a hardware reference design, complete with expert design review services.

Pleora's NTx-U3 Embedded Video Interface interacts seamlessly with Pleora's other products in networked or point-to-point digital video systems. It also complies fully with the USB3 Vision™ and GenICam® standards, ensuring interoperability with third-party equipment in a multi-vendor environment. The embedded hardware converts video data to packets at throughputs up to 3 Gb/s. The packetized video is then sent with low, consistent latency over a USB 3.0 link to receiving software.

Related Products

The iPORT NTx-GigE, together with the iPORT NTx-U3 for USB3 Vision™ connectivity family, are pin-compatible hardware solutions that provide manufacturers with a cost effective approach to support all video interface needs.

Features

- Compact and low power
- USB3 Vision and GenICam compatible
- Throughput of up to 3 Gb/s
- Up to 32-bit, 120 MHz parallel LVTTTL/LVCMOS video input, and 4 interleaved taps
- Line scan and area scan modes
- 120 MB frame buffer to accommodate multi-mega pixel sensor sizes
- Can support either USB-powered or externally-powered options
- Updateable firmware via the USB 3.0 port for ease of manufacturing and feature upgrades in the field
- Record and Playback
- Programmable Logic Controller

Pleora's iPORT NTx-U3 Embedded Video Interface is supported by:

- A development kit to help speed time-to-market by enabling the rapid design of prototypes and proof-of-concept demonstrations, often without requiring hardware development;
- eBUS™ SDK, a feature-rich application development toolkit for manufacturers to rebrand and distribute with their end-products;
- The AutoGen XML generation tool and a firmware reference design, which makes it fast and easy for manufacturers to create a user-friendly GenICam interface for their products.



iPORT NTx-U3 Embedded Video Interface

Hardware

User Circuitry Interface	100-pin Samtec connector: LSHM-150-04.0-L-DV-A-N-TR
External Interface	12-pin Hirose connector: HR10A-10R-12PB(71)
USB 3.0 Interface	10-pin USB 3.0 Micro-B receptacle
USB 3.0 Controller	Cypress FX3
FPGA	Altera Cyclone V
Image Buffer	120 MB 16-bit wide DDR3
Persistent Memory	128 Mb serial FLASH
Clock Generator	Included
JTAG Header	Connection to FPGA

Inputs/Outputs on User Circuitry Interface

Video Input	2.5 V LVTTTL/LVCMOS
GPIO Inputs	4 x 2.5 V LVTTTL/LVCMOS
GPIO Outputs	4 x 2.5 V LVTTTL/LVCMOS
Serial (Bulk) Inputs	3 x 2.5 V LVTTTL/LVCMOS
Serial (Bulk) Outputs	3 x 2.5 V LVTTTL/LVCMOS
Camera Control Outputs	4 x 2.5 V LVTTTL/LVCMOS

GPIO on 12-Pin Circular Connector

GPIO Inputs	4 connections routed to User Circuitry Interface
GPIO Outputs	3 connections routed to User Circuitry Interface
Serial Communications Input	Connection routed to User Circuitry Interface
Serial Communications Output	Connection routed to User Circuitry Interface

Frame Grabber

Number of Channels	1
Scan Modes	Area Scan (Progressive) and Line Scan
Pixel Depth (bits)	8, 10, 12, 14, 16, 24, 32
Pixel Clock	<ul style="list-style-type: none"> Min: 20 MHz Max: 120 MHz
Taps per Data Channel	Up to 4
Image Width (pixels)	<ul style="list-style-type: none"> Min: 8 Default: 640 Max: 16,376 Increment: 8
Image Height (pixels)	<ul style="list-style-type: none"> Min: 1 Default: 480 Max: 16,383 Increment: 1
Windowing/Region of Interest	Yes
Tap Reconstruction	Interleaved only

Characteristics

Size (LxWxD)	37.0 mm x 37.0 mm x 23.1 mm (approximate, excluding external interface connector)
Weight	25 grams
Operating Temperature	<ul style="list-style-type: none"> 0°C to 70°C* -40°C to 85°C* (NTx-U3 industrial models only)
Storage Temperature	-40°C to 85°C
Power Supply	<ul style="list-style-type: none"> USB-powered: 5 Volts nominal Externally-powered: 4.8 to 16 Volts nominal
Power Consumption	Less than 2 Watts when streaming at 3 Gbps
MTBF at 40°C	1,277,505 hours

*The product is specified for operation within the stated ambient and case temperature range of its components.

iPORT NTx-U3 Embedded Video Interface

Ordering Information

903-0001	<ul style="list-style-type: none"> iPORT NTx-U3 OEM Basic Board Set, USB-powered without 12-pin circular connector. 	903-0004	<ul style="list-style-type: none"> iPORT NTx-U3 OEM Basic Board Set, externally-powered without 12-pin circular connector.
903-0002	<ul style="list-style-type: none"> iPORT NTx-U3 OEM Board Set, USB-powered includes 12-pin circular connector, soldered on with metal flange. 	903-0005	<ul style="list-style-type: none"> iPORT NTx-U3 OEM Board Set, externally-powered includes 12-pin circular connector, soldered on with metal flange.
903-0003	<ul style="list-style-type: none"> iPORT NTx-U3 Development Kit, USB-powered includes 903-0002, NTx-Mini adapter board with 3 flat flex cables, prober board, USB 3.0 cable, and eBUS SDK USB stick. 	903-0006	<ul style="list-style-type: none"> iPORT NTx-U3 Development Kit, externally-powered includes 903-0005, NTx-Mini adapter board with 3 flat flex cables, prober board, power supply, USB 3.0 cable, and eBUS SDK USB stick.
903-0022	<ul style="list-style-type: none"> iPORT NTx-U3-IND OEM Basic Board Set, USB-powered without 12-pin circular connector. 	903-0025	<ul style="list-style-type: none"> iPORT NTx-U3-IND OEM Basic Board Set, externally-powered without 12-pin circular connector.
903-0023	<ul style="list-style-type: none"> iPORT NTx-U3-IND OEM Board Set, USB-powered includes 12-pin circular connector, soldered on with metal flange. 	903-0026	<ul style="list-style-type: none"> iPORT NTx-U3-IND OEM Board Set, externally-powered includes 12-pin circular connector, soldered on with metal flange.
903-0024	<ul style="list-style-type: none"> iPORT NTx-U3-IND Development Kit, USB-powered includes 903-0023, NTx-Mini adapter board with 3 flat flex cables, prober board, USB 3.0 cable, and eBUS SDK USB stick. 	903-0027	<ul style="list-style-type: none"> iPORT NTx-U3-IND Development Kit, externally-powered includes 903-0026, NTx-Mini adapter board with 3 flat flex cables, prober board, power supply, USB 3.0 cable, and eBUS SDK USB stick.

