iPORT NTx-Mini Embedded Video Interface

Rapidly add high-performance GigE Vision connectivity to cameras

Overview

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

NTx-Mini embedded hardware interacts seamlessly with Pleora's other products in networked or point-to-point digital video systems. The hardware also complies fully with the GigE Vision® and GenICam™ standards, enabling interoperation with third-party equipment in multi-vendor environments. The embedded hardware converts video data to packets at GigE's full, 1 Gb/s throughput rate and sends it with low, consistent latency over a GigE link to receiving software or hardware.

To speed time-to-market, Pleora offers a Development Kit for the NTx-Mini. This kit allows manufacturers to produce system or camera prototypes and proof-of-concept demonstrations easily and rapidly, often without undertaking hardware development.

Pleora's iPORT NTx-Mini Embedded Video Interface also includes a sophisticated on-board programmable logic controller (PLC), which allows users to precisely measure, synchronize, trigger, and control the operation of vision system elements such as strobe lights and rotary encoders.

Pleora's AutoGEV XML generation tool is available, which makes it fast and easy for manufacturers to create a user friendly GenICam interface for their products.

Features

- Compact and low power
- GigE Vision version 1.2 and GenICam compliant
- Throughput up to Gigabit Ethernet's full 1 Gb/s rate
- Up to 24-bit, 90 MHz parallel LVTTL/ LVCMOS video input, and 2 interleaved taps
- Line scan and area scan modes
- 32 MB frame buffer for store-and-forward applications
- Updateable firmware via the GigE port for ease of manufacturing and feature upgrades in the field

GENICAM GIGE VISION

Pleora Technologies

iPORT NTx-Mini Embedded Video Interface

Connectors

FlexEBoard	• 12-pin (Hirose HR10A-10R-12PB(71)) • 20-pin (Hirose FH12-20S-0.5SH)
AdaptRBoard	40-pin (Hirose DF12NB(3.5)-40DP-0.5V(51))
Network	Available with horizontally or vertically mounted RJ-45 on the NTx-Mini Main Board
Camera head interface	60-pin (Molex 501951-6000)
PLC	20-pin (Wurth 687120149028)

Characteristics

Size (L x W x H)	• 42.0 x 42.0 x 21.14 mm (horizontal version) • 42.0 x 42.0 x 24.0 mm (vertical version)
Weight	19.2 grams approximately (without AdapRBoard, FlexEBoard, and flat flex cable)
Operating Temperature	Commercial temperature grade components are used, temperature performance will vary depending on the user's thermal design*
Storage Temperature	-40°C to 85°C
Power Supply	4.5V to 16V
Power Consumption	< 1.5W (input voltage and temperature dependent)
ECC	5A991.b
MTBF @ 40°C	4,418,454 hours

Networked Video Connectivity Solutions

iPORT Embedded Video Interfaces	• Highly reliable, 1 Gb/s data transfer rate with low, end-to-end latency • OEM, in-camera board • 32 MB of DDR2 RAM
eBUS SDK	• **eBUS SDK:** Single API to receive video over GigE, 10 GigE, and USB that is portable across Windows, Linux x86 and Linux ARM • **eBUS Edge:** Software implementation of a full device level GigE Vision transmitter • **eBUS Receive:** High-speed reception of images or data for hand-off to the end application • **eBUS Player Toolkit:** View streams and develop, test and evaluate advanced features
AutoGEV™ XML Generation Tool	Serial control of camera and other devices via PC application over the GigE link
GigE Vision®	Connection to low-cost, easy-to-use equipment

Networking Features

GigE-based	• 10/100/1000 Mb/s • IEEE 802.3 (Ethernet), IPv4, IGMPv.2, UDP and ICMP (ping) • **Long reach:** 100 m point-to-point, further with Ethernet switches or fiber
GigE Vision protocol	• Guarantees delivery of all packets • Comprehensive data transfer diagnostics
Unconditional streaming	Continue streaming when the controlling application becomes unavailable or when the state of the network changes
Multi-cast capability	Enables advanced distributed processing and control architectures

Programmable Logic Features

4 inputs (TTL) 3 outputs (TTL) 4 outputs (LVCMOS/LVTTL to camera head connector)	• Provides a flexible, general-purpose interface with the AdaptRBoard in the In-Camera Set and Development Kit • Users can design their own AdaptRBoard for additional flexibility • Allows synchronization of multiple devices or system elements • Flexible triggering capabilities, including Boolean combinations, deserialized Camera Link control signals, encoders, and time stamps • Built-in debouncers
1 RS-232 serial link	• Serial control of external devices via PC application over the GigE link • Can be bridged to an internal UART serial link with a user designed AdaptRBoard
2 UART serial links (LVCMOS/LVTTL)**	Serial control of camera and other devices via PC application over the GigE link
Delayer, rescaler, general-purpose counter	Allows full synchronization of line scan cameras and other system elements
Timestamp trigger, counter, and reset	• Allows system actions to be triggered based on timestamps • Allows resets to be broadcast to all iPORT IP engines in system from host

Data Acquisition Features

Accepts LVCMOS/LVTTL signals	Compatible with internal camera signal levels
Integrated acquisition engine	• Area scan and line scan • Pixel clock: 20 MHz to 90 MHz • Pixel depth: 8, 10, 12, 14, 16 and 24 bits • Pixel formats: Mono, BayerGR/RG/GB/BG, RGB, BGR, YUV, Raw • Image height: 1 to 16,383 pixels • Image width: 1 to 16,376 pixels • Tap support: 1 and 2 taps • Tap reconstruction: interleaved only • Windowing/region of interest
Free running or externally triggered	• Flexible acquisition modes • Continuous • SingleFrame • Multiframe • ContinuousRecording • ContinuousReadout • SingleFrameRecording • SingleFrameReadout
Static configuration	Configuration settings are saved to on-board Flash memory leveraging User Sets from GenICam

* Please refer to the User Guide for thermal management information

** One UART serial link (UART0) is available for use with the AutoGEV XML generation tool.

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ITEM ID	Item Description
904-3019	**iPORT NTx-Mini Main Board (Vertical RJ45 Jack).** • An external power supply is required. Does not include power supply. • **Note:** Recommended replacement for 904-3011
904-3032	**iPORT NTx-Mini Main Board (Vertical RJ45 Jack - 3.3V VCCIO).** An external power supply is required. Does not include power supply
904-3020	**iPORT NTx-Mini Board Set (Vertical RJ45 Jack)** including NTx-Mini main board (vertical RJ45 jack) with AdaptRBoard. • An external power supply is required. Does not include power supply. • **Note:** Recommended replacement for 904-3012
904-3021	**iPORT NTx-Mini In-Camera Set (Vertical RJ45 Jack)** including NTx-Mini main board (vertical RJ45 jack) with AdaptRBoard, and FlexEBoard. • The 12-pin circular connector is not included and must be ordered separately, see 200-0016 under Accessories. • An external power supply is required. Does not include power supply. • **Note:** Recommended replacement for 904-3013
904-3022	**iPORT NTx-Mini Development Kit (Vertical RJ45 Jack)** including NTx-Mini main board (vertical RJ45 jack) with AdaptRBoard, prober board, flat flex cables, power supply, Gigabit Ethernet desktop NIC, Ethernet cable, 12-pin circular connector soldered on FlexEBoard, and eBUS SDK USB stick. (The eBUS SDK provided on the USB stick with development kits is for use as-is, is not supported, and does not provide access to maintenance releases or runtime licenses for your workstations. The eBUS SDK Seat License (990-1024) – purchased separately – includes the latest version of eBUS SDK, a one-year subscription to Basic Maintenance and Support, and eBUS Edge, GEV-Rx and U3V-Rx runtime licenses.) **Note:** Recommended replacement for 904-3014

ITEM ID	Item Description
904-3222	**iPORT NTx-Mini Main Board (Horizontal RJ45 Jack).** • An external power supply is required. Does not include power supply. • **Note:** Recommended replacement for 904-3213
904-3225	**iPORT NTx-Mini Main Board (Horizontal RJ45 Jack - 3.3V VCCIO).** • An external power supply is required. Does not include power supply. • **Note:** Recommended replacement for 904-3217
904-3223	**iPORT NTx-Mini Board Set (Horizontal RJ45 Jack)** including NTx-Mini main board (horizontal RJ45 jack) with AdaptRBoard. • An external power supply is required. Does not include power supply. • **Note:** Recommended replacement for 904-3214
904-3224	**iPORT NTx-Mini Development Kit (Horizontal RJ45 Jack)** including NTx-Mini main board (horizontal RJ45 jack) with AdaptRBoard, prober board, flat flex cables, power supply, Gigabit Ethernet desktop NIC, Ethernet cable, 12-pin circular connector soldered on FlexEBoard, and eBUS SDK USB stick. (The eBUS SDK provided on the USB stick with development kits is for use as-is, is not supported, and does not provide access to maintenance releases or runtime licenses for your workstations. The eBUS SDK Seat License (990-1024) – purchased separately – includes the latest version of eBUS SDK, a one-year subscription to Basic Maintenance and Support, and eBUS Edge, GEV-Rx and U3V-Rx runtime licenses.) **Note:** Recommended replacement for 904-3216

iPORT NTx-Mini Embedded Video Interface main board with horizontal RJ-45 connector and soldered 12-pin circular connector on the FlexEBoard

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