



Connect Tech Inc.

Embedded Computing Experts

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Product Change Notification

Cogswell Carrier and Vision System for NVIDIA® Jetson™ TX2 & Jetson™ TX1

| | |
|------------------------|------------|
| PCN Number: | CTIU-00010 |
| Revision: | 0.00 |
| Issue Date: | 2018-07-16 |
| Effective Date: | 2018-07-16 |
| Authors: | PD,CN |

Connect Tech Inc.

42 Arrow Road, Guelph, ON CANADA N1K 1S6

Tel: 519.836.1291 • North America: 800.426.8979 • Fax: 519.836.4878

sales@connecttech.com • <http://www.connecttech.com>

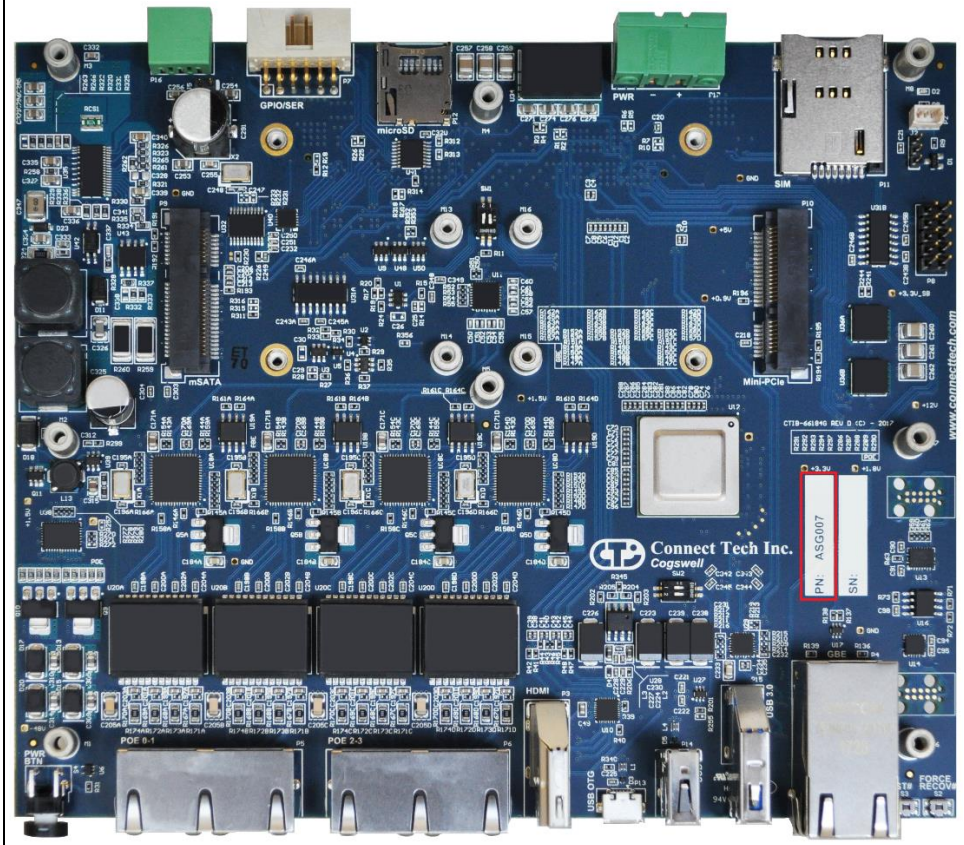
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1 Product Identification

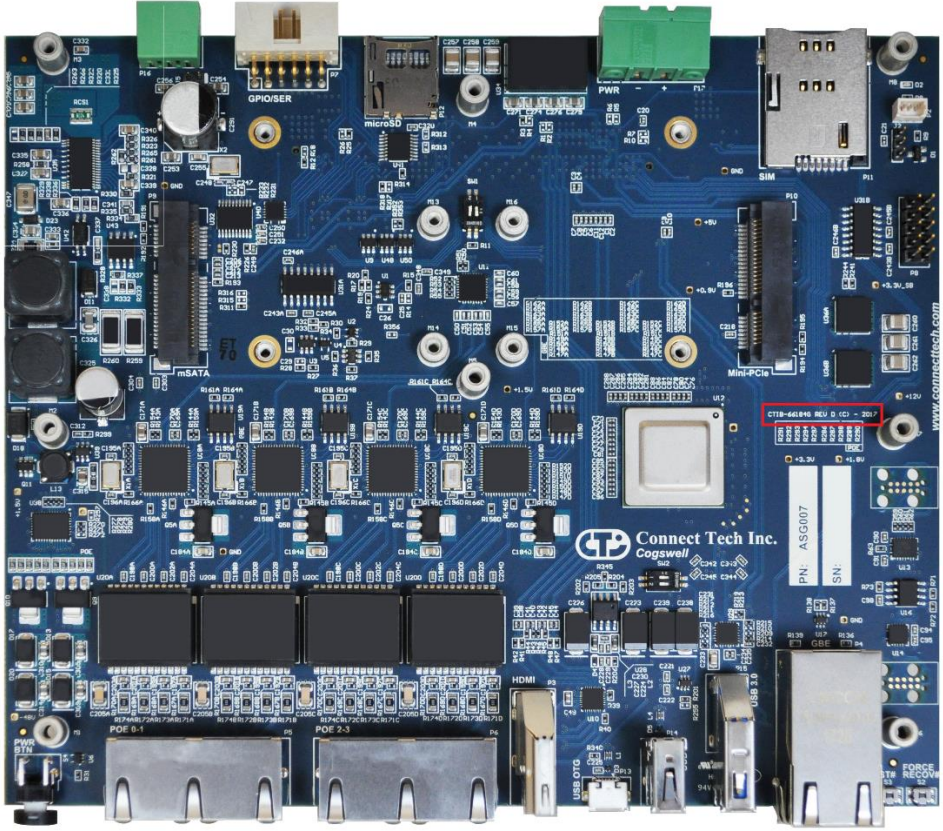
1.1 Product Data

| | Previous Version | New Version |
|--------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Product Name | Cogswell Carrier and Vision System for NVIDIA® Jetson™ TX2 & Jetson™ TX1 Cogswell Vision System | Cogswell Carrier and Vision System for NVIDIA® Jetson™ TX2 & Jetson™ TX1 Cogswell Vision System |
| CTI Part Numbers | ASG007, CVS001 | ASG007, CVS001 |
| Hardware Revision | D and older | E |

1.2 Means of Distinguishing Changed Products

| | Remark |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Number | <input checked="" type="checkbox"/> Product number on PCB silkscreen  |



| | | |
|--------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hardware Revision</p> | <input checked="" type="checkbox"/> | <p>See board number and revision on PCB silkscreen.</p>  |
| <p>Lot Code</p> | <input type="checkbox"/> | |
| <p>Label</p> | <input type="checkbox"/> | |
| <p>Other</p> | <input type="checkbox"/> | |

2 Description and Reason of Change

| | | | |
|--------------------|--------------------------|---------------------|-------------------------------------|
| AVL | <input type="checkbox"/> | Product Improvement | <input checked="" type="checkbox"/> |
| Material | <input type="checkbox"/> | BIOS Release | <input type="checkbox"/> |
| Assembly Process | <input type="checkbox"/> | Firmware Release | <input type="checkbox"/> |
| Assembly BOM | <input type="checkbox"/> | Datasheet / Manual | <input type="checkbox"/> |
| Testing | <input type="checkbox"/> | DFM | <input type="checkbox"/> |
| Manufacturing Site | <input type="checkbox"/> | Other | <input type="checkbox"/> |
| Equipment | <input type="checkbox"/> | | |

CTI has found pipelined bandwidth limitations and inefficiencies with the ARM Linux4Tegra ethernet drivers associated with the Intel 82574 ethernet chipsets present on Cogswell hardware revisions A through D. These driver bandwidth limitations will affect the maximum achievable FPS (frames per second) that users will be able to capture when utilizing 4 concurrent high-resolution GbE (GigE Vision) camera streams.

See the figures below for data on the Maximum Achievable FPS for each configuration.

Cogswell Supported Configurations

| Number of Camera Streams | Resolution | Cogswell REV A - D Max. FPS | Cogswell REV E (and above) Max. FPS |
|--------------------------|-------------------------|--------------------------------|-------------------------------------------|
| 4 | 2448 x 2048p (or above) | 0-1 ^[1] | 24 ^[2] |
| | 1920 x 1080p | 10 | 35 ^[2] |
| | 1280 x 720p | 23 | 50 ^[2] |
| | 640 x 480p | 65 | 86 ^[2] |
| 3 | 2448 x 2048p | 5 | 24 ^[2] |
| | 1920 x 1080p | 15 | 35 ^[2] |
| | 1280 x 720p | 40 | 50 ^[2] |
| | 640 x 480p | 86 ^[2] | 86 ^[2] |
| 2 | 2448 x 2048p | 19 | 24 ^[2] |
| | 1920 x 1080p | 24 | 35 ^[2] |
| | 1280 x 720p | 50 ^[2] | 50 ^[2] |
| | 640 x 480p | 86 ^[2] | 86 ^[2] |

[1] When utilizing 4 camera streams at high-resolution, CPU utilization then becomes 100% and packets are dropped

[2] These numbers are only limited from either the physical Gigabit Ethernet port bandwidth, or camera sensor output

Note: Achievable FPS may vary depending on cameras, setting and system CPU utilization.

As shown above, the Cogswell hardware Revision E and onward will have increased bandwidth for multiple camera streams. This is due to CTI moving to an alternate Ethernet Chipset (Intel I210 series) which utilizes an alternate driver for ARM Linux4Tegra that does not exhibit these pipelined bandwidth limitations.

Ethernet Chipset Details

Cogswell REV A through D

- Intel 82574

- <https://www.intel.com/content/dam/doc/datasheet/82574l-gbe-controller-datasheet.pdf>

Cogswell REV E and above

- Intel I210IT

- <https://www.intel.com/content/dam/www/public/us/en/documents/datasheets/i210-ethernet-controller-datasheet.pdf>

3 Impact of change (positive or negative) on fit, form, function & reliability

3.1 Quality and Reliability

The changes listed in Section 2 will improve the features of the product allowing 4x concurrent GbE cameras streams at high resolutions.

3.2 Software Compatibility

Cogswell Revisions A through D will utilize the e1000 driver set. (Pre-installed in Linux4Tegra)
Future revisions E and beyond will utilize the igb driver set. (Pre-installed in Linux4Tegra)

3.3 Hardware Compatibility

Customers using the Cogswell revision D or older will have no issues moving to the newer revision.

3.4 Mechanical Compatibility

N/A

4 Product / Revision Discontinuation

The bandwidth limitations associated with the driver will be ratified in Cogswell Revision E. Please contact sales@connecttech.com for availability.

5 Contact Information

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|--------------|-----------------------|
| Phone | +1-519-836-1291 |
| Email | sales@connecttech.com |