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ELMA A new family of Small Form Factor Systems

Your Solution Partner

Whether it's a Military UAV, machine vision system, a blood analyser, measurement analysis tool, advanced sensors, or other precision instrument, ELMA's innovative and intelligently designed platforms are based on extensive packaging expertise. With a focus on Size, Weight and Power (SWaP) these platform are engineered to the highest performance. This powerful combination of proven design expertise and products enables ELMA to offer a platform perfectly tailored to meet numerous project needs.

Take for example the **S51E PC/104 Platform with Removable Storage Bay.**



The Type S51E rugged computing platform combines the reliability and power thrifty performance of an Intel Atom CPU with high capacity removable storage. Packing over 2TB of capacity, the S51E enables easy mission data transport and secure erasure capability for vehicular and avionics applications. With Intel's Gen 3.5 graphics core, the S51E handles a variety of vision applications while meeting SWaP requirements.

Continue on page 2.



Distributor
Intelligent Platforms

mCOM10-K1 Mini COM Express - NVIDIA® Tegra® K1 GPU

Based on the NVIDIA® Tegra® K1 system-on-chip (SoC), GE's Mini COM Express module delivers 326 GFLOPS of performance in a 11 Watt budget, well beyond the performance typically associated with COM Express, to SWaP-constrained environments. The mCOM10-K1 delivers a tremendous opportunity to exploit GPGPU technology on a scale that was previously unimaginable.



The mCOM10-K1 reduces development costs through its scalable, code-compatibility from "GPU in the Cloud" down to mobile deployable hardware. It is ideal for applications where very high performance in data-intensive applications, rugged reliability in harsh environments and very compact size need to be combined.

- ⇒ NVIDIA Tegra K1 SOC
- ⇒ 4 Core ARM Cortex-A15 @ 2.0 GHz, <10W TDP
- ⇒ 192 Kepler GPU cores
- ⇒ 2GB of DDR3; 4GB of eMMC flash
- ⇒ Integrated graphics interface HDMI, LVDS
- ⇒ Stereo line out / Stereo line in
- ⇒ 1x Gigabit Ethernet port
- ⇒ 1x serial ATA interfaces (3 Gb/s)
- ⇒ 5x USB 2.0 1x USB 3.0 ports
- ⇒ PCIe, 1 port x2 Gen 2
- ⇒ 8x GPIO ports
- ⇒ Pre-mounted heat sink/spreader for optimal cooling
- ⇒ Input: 12V; **11 Watts**
- ⇒ Operating: 0° to +65° C (standard)
- ⇒ Operating: -40° to +75° C (extended; CPU dependent)
- ⇒ Operating humidity: 10% to 90%
- ⇒ Shock: 40 g, 11 ms
- ⇒ Vibration: 15 – 2000 Hz, 0.1 g_{rms} / Hz.
- ⇒ **55 mm x 84 mm**
- ⇒ COM Express mini form factor; Type 10
- ⇒ Linux; CUDA 6.0; VisionWorks

[Find more information here.](#)

[NVIDIA's Tegra K1: A Game-Changer for Rugged Embedded Computing](#) (RTC Magazine Article)

A ready balance of optimal performance and minimal size, the S51E is a rugged system suitable for deployment in hostile environments.

Optional I/O choices and CPU upgrades allow customisation for your specific application. Based on PC/104 architecture the S51E has room for one additional card and many undedicated connector pins for ample I/O expansion.

- ⇒ Low power Intel® Atom N455 1.66 GHz Single Core Processor
- ⇒ Over 2TB of removable SSD storage via SATA II, 3Gbps interface
- ⇒ 1GB DDR 800MHz memory
- ⇒ Intel Gen 3.5 graphic core
- ⇒ DX9 compliant, MPEG2 Hardware Acceleration, 200 MHz
- ⇒ Dual USB 2.0 ports, one GigE port, 1 VGA port
- ⇒ Supports multiple military secure-erase methods via quick-erase pushbutton
- ⇒ Additional serial and GPIO ports optional
- ⇒ Optional high definition audio interface
- ⇒ SWaP optimised (dimensions and weight)
- ⇒ Room for additional I/O expansion



Rear view

[Find more information here.](#)



SL1-COMBO—CPCI Serial 7-Port Gigabit Ethernet Switch

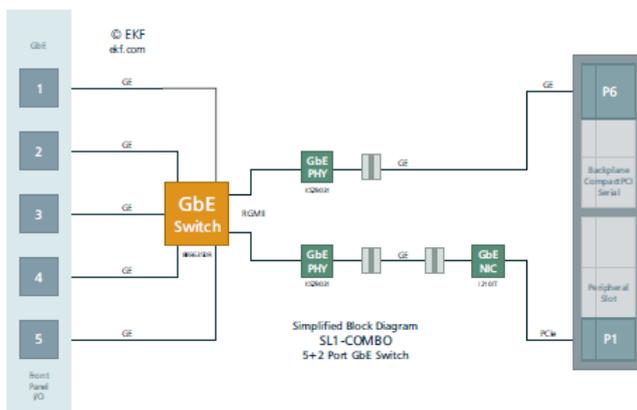
The SL1-COMBO is equipped with a Marvell® 88E6350R Gigabit Ethernet switch. This device provides 5 ports with integrated Ethernet transceivers (PHY) and another two digital interfaces (RGMII).

A total of 7 GbE ports is available on-board, wired to the front panel (5) and the CompactPCI® Serial backplane connector P6 (1). Another port is connected to the on-board Gigabit Ethernet controller.

While the front panel RJ45 jacks are provided with integrated magnetics, the remaining two internal GbE ports are isolated by on-board magnetics modules and

equipped with a discrete GbE PHY each.

The SL1-COMBO can be inserted into any CompactPCI® Serial peripheral slot. A single PCI Express® lane would be sufficient for communication via the on-board Gigabit Ethernet controller.



[Find more information here.](#)



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ICS-8580 and daq8580 Video Compression Platforms

ICS-8580 XMC Board



The ICS-8580 responds to the rapid growth in unmanned vehicles and their requirement to deliver high quality mission video over links that are often bandwidth-constrained. It is designed to be a simple, plug-and-play solution that requires minimal integration or software development.

The ICS-8580 is a rugged XMC module designed to process and route video as well as perform multichannel H.264 compression/decompression. Flexible video connectivity allows interfacing to a variety of video inputs and outputs. These video connections support standard definition, high definition, and computer resolutions up to 1600x1200. The combination of a versatile FPGA device coupled with powerful dual DSP signal processors provides unparalleled compute power for video applications. The FPGA enables video switching, format conversions, scaling, blending and a variety of other processing functions while the Dual DSP processors enable multichannel video compression and decompression for over 100x reduction in bandwidth without sacrificing video quality. An Ethernet interface is used to access the encoded UDP bitstream and can also be used for issuing control and status commands. A higher bandwidth PCIe interface also enables transmission of multiple uncompressed video streams for processing or storage in addition to control and command functionality.

daq8580 Multi Channel Compression System

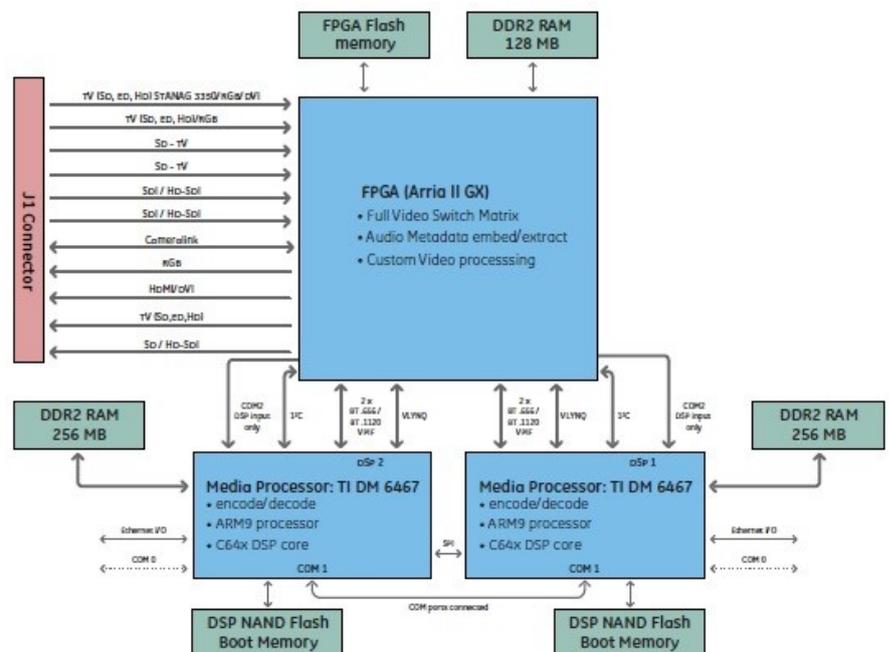
The daq8580 provides a rugged standalone solution designed to address the challenges of processing, transporting and storing full motion video through video encoding. The rugged appliance can interface with a wide variety of analog and digital I/O and can process standard video formats up to 1080p30 as well as computer resolutions up to 1600x1200. A versatile FPGA device combined with dual DSP signal processors provides unparalleled compute power for video compression/decompression, video switching and video processing capabilities. The FPGA enables video switching, format conversions, scaling, blending and many other processing functions while the Dual DSP processors enable multichannel video compression and decompression for over 100x reduction in bandwidth without sacrificing video quality. An Ethernet interface is used to stream the encoded UDP bitstream and is also used for issuing control and status commands. Running embedded Linux on dual Arm processors, the device can be configured for various applications and is contained in a small rugged form factor targeted at SWaP (size, weight and power) constrained deployments such as UAVs.



[Watch the ICS-8580 Video here.](#)

[Download the ICS-850 Data Sheet.](#)

[Download the daq850 Data Sheet.](#)



SureLock—New Series of Expandable PCB Retainers

The new **325 Series** is the first in a new family of rugged PCB Retainers and securely holds in place printed circuit boards (PCBs) mounted directly to the board and slid into a channel in the cold plate.

A simple turn of a screw enables SureLock to expand and securely hold the card assembly in place, eliminating tooling costs in most implementations. This provides a uniform retention force across SureLock's entire length to continually protect cards subject to extreme shock and vibration typically found in rugged and harsh computing environments.

The superior, lightweight design facilitates conduction cooling by transferring heat from a circuit card to a cold plate or to an enclosure's extruded side walls, and makes the 325 Series highly useful in compact, mobile applications as well.

The first of several models and styles, the **325 Series** features a 0.250" X 0.260" nominal cross-section, with a guaranteed minimum expansion to 0.325". The new series is available in custom lengths from 2.15" to 12.99". Other options include hex drive style, mounting holes and types, length and finishes as well as a visual indicator, a locking element or a captive feature, if required.

The **480 series** features a 0.365" X 0.375" nominal cross section with guaranteed minimum expansion to 0.480" .

The **290 series** features a 0.225" X 0.225" nominal cross section with guaranteed minimum expansion to 0.290" .

All Elma SureLocks are designed to conform to the DLA standard DSCC-DWG-89024 and are DFARS specialty metal compliant in their native state.



[Find more information here.](#)

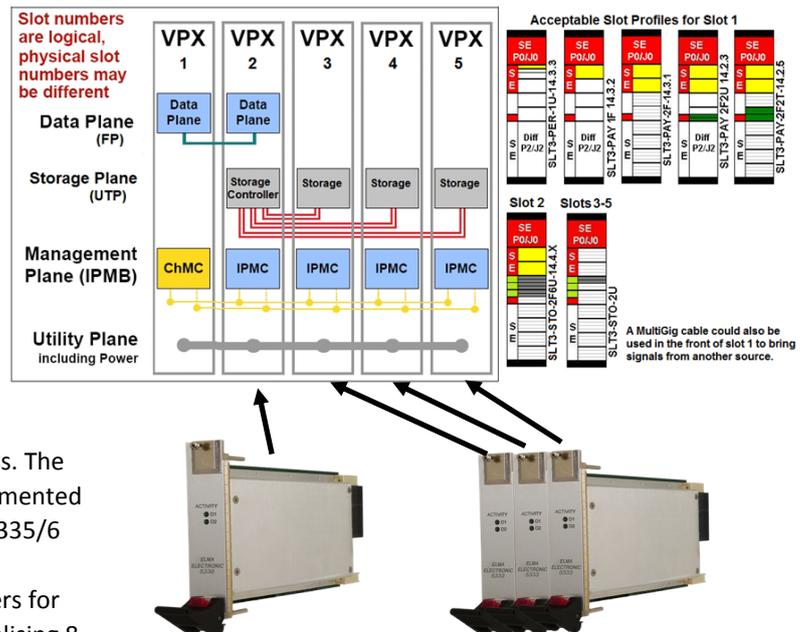
3U OpenVPX Storage Array up to 8TB

The **Model 5335/6** provides a PCIe Gen2 x 8 connection to the host and forms the heart of a storage array where capacities exceed 8TB across 4 slots

with maximum data bandwidth exceeding 1GB/s. It is ideal for applications demanding extremes in both capacity and read write performance. With RAID 0/1/5/10 support, an array system can be configured to maximise bandwidth or provide data redundancy for critical applications. The controller provides 6 SATA III 6Gbps backplane ports for building an array using Model 5332/3 dual drive SATA III storage carriers across 4 total slots.

The **5332/33** supports storage volumes surpassing 2TB in a single 3U slot, with increasing capacities as drive technologies progress. The 5332/33 holds 2 on board drives and can be implemented as part of a multi-slot storage array using Elma's 5335/6 controller / carrier card .

ELMA's **3U 5 Slot OpenVPX storage backplane** caters for one 5335/6 plus up to three 5332/33 modules, realising 8 SATA drives on four 3U slots.



[Find more information here.](#)