NEON-1040/1020
New Generation x86 Quad-Core Smart Camera

Overview

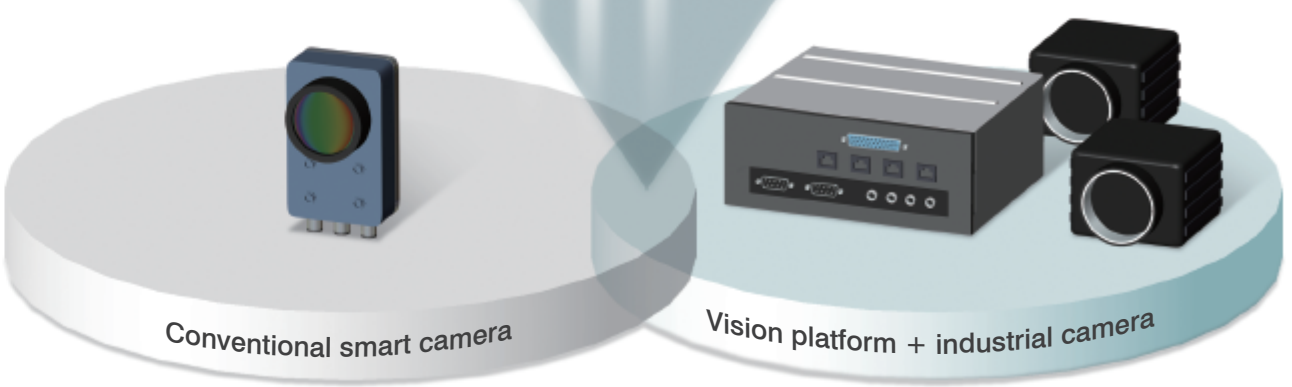
ADLINK's new generation x86 NEON-1040/1020 features 4MP 60fps global shutter sensor and the Intel® Atom™ quad core 1.9 GHz processor, featuring minimal footprint and rugged IP67-rated construction. The quad core CPU increases computing power and FPGA coprocessors and GPU deliver advanced image processing, both beyond the capabilities of conventional smart cameras. Rich software support and API compatibility enable easy migration from original x86 platforms, eliminating software and development language burdens across the platform, reducing time to market.

Breaking the boundaries of smart camera and embedded vision systems

ADLINK New Generation
x86 Smart Camera
NEON-1040/1020

Combining both high-performance, rugged, and flexible features

NOTE: NEON-1040/1020 shown with optional IP67 kit lens protector installed



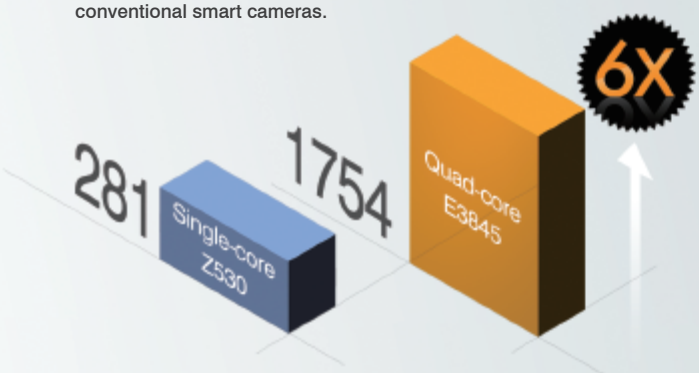
Simple, Easy Development — All-in-one solutions with compact size, moderate computing power, and limited resolution

Complex, Multiple Inspection — Multiple channel, flexible, high performance solutions featuring open architecture

High performance increases speed and capture complexity

High end quad core processor

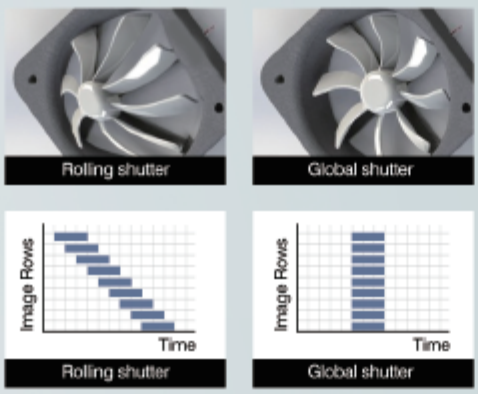
Intel® Atom™ processor E3845 at 1.91GHz improves dramatically on the performance of existing smart cameras. The high end processor provides up to 6 times the computing power of conventional smart cameras.



Performance: Passmark CPU Mark Score comparison

Improved detection sensitivity

The 4 MP 60 fps 1-inch global shutter sensor improves on rolling shutter sensors with improved raw image clarity, for high speed inspection precision.



Coordination among CPU, GPU and FPGA co-processor

The NEON-1040/1020's FPGA accelerates image pre-processing and reduces CPU loading, making it ideal for complex acquisitions like those in LUT (look up table), ROI (region of interest), and shading correction . Thanks for FPGA, the CPU resource can focus on algorithm and make inspection tasking more efficiency.

Raw image Edge shading, shadowing, or large image size can impair inspection result and/or occupy excessive CPU bandwidth

FPGA Pre-processing	CPU Algorithm	GPU
Shading correction can significantly rectify anomalies from non-uniform camera sensitivity.	OCR	VGA display
LUT (look up table) processes images by highlighting details in areas containing specific information and solves optical non-uniformity by improving contrast and brightness.	ADLINK TECHNOLOGY INC	
ROI (region of interest) processing allows selection of a subset of samples within a dataset to enhance inspection efficiency	Performs ***OCR (optical character recognition)*** and barcode scanning operations, as well as positioning detection, identification, and verification.	***H.264 encoding*** conserves storage space and speeds transmission, reducing TCO.

Shading Correction processing

LUT processing

ROI processing

Rugged IP67-rated housing

Rugged construction with IP67-rated housing and M12 connectors allow the NEON-1040/1020 to operate in harsh environments, impervious to moisture and contaminants.

Open architecture and easy development dramatically reduce time to market

In a real application environment, different development languages and software tools are required in machine vision, motion controller, smart camera and line scan camera stations . A platform allowing development in a single language, with easy deployment from existing platforms, conserving manpower costs and reducing time to market.

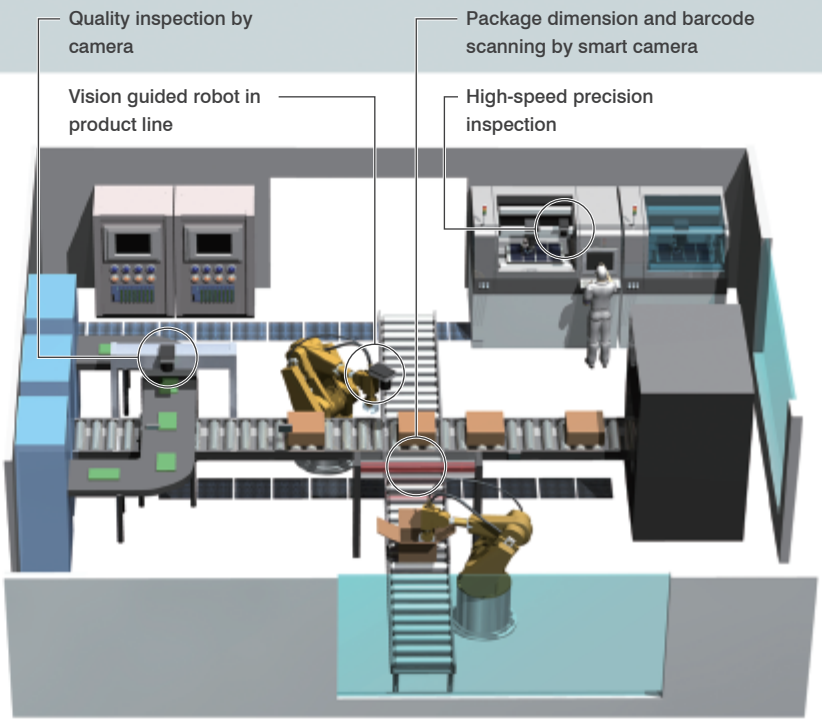
Programming in the x86 architecture

NEON-1040/1020 is based on x86 architecture, with all development environments familiar to users, for motion/HMI/IO solutions, seamless migration from the original x86 platform.

x86

Rich third party software support

The NEON-1040/1020 provides flexible software support for MVTec HALCON, STEMMER IMAGING Common Vision Blox, Adaptive Vision, Open CV, Open CL and more. As well, GeniCam and GenTL compatibility simplify communication with devices and allow third party software to control cameras and acquire image data.



▲ *Multi-inspection sites, leverage the resources software for development*

Area scan camera | Line scan camera | ADLINK NEON-1040

64-bit computing

As image analyses software have to deal with great bulk of data, most mainstream software products in this segment support 64-bit instructions. Therefore, it is better for implementers to choose a vision system that supports 64-bit computing environment.

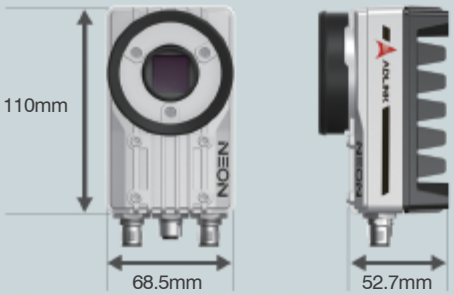
Maximum integration reduces TCO

Built-in PWM lighting control

The NEON-1040/1020's built-in PWM lighting control module eliminates the need for additional lighting controller equipment, reducing TCO.

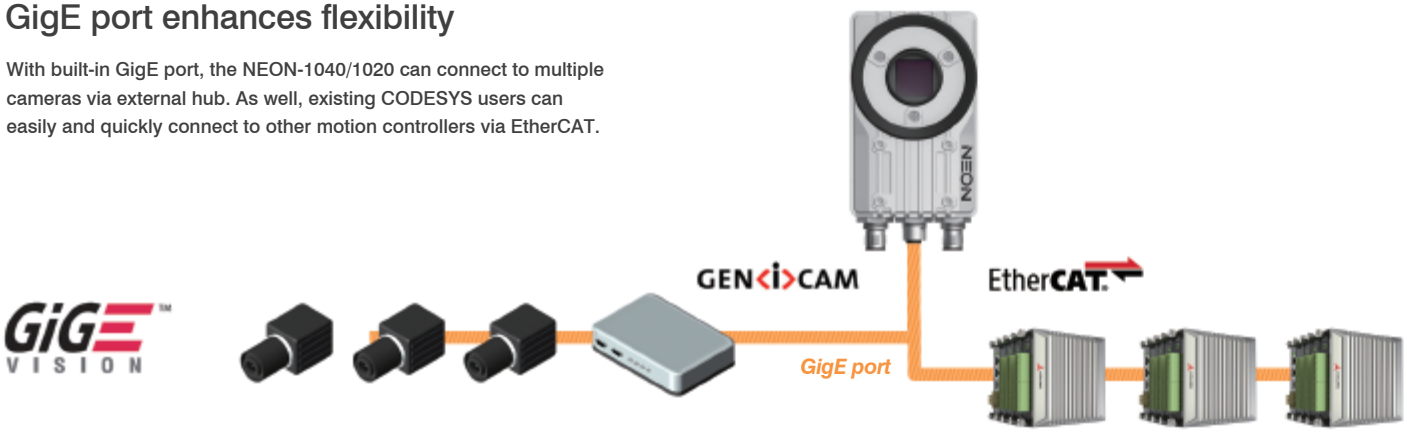
Compact footprint

Small footprint enables easy integration into existing lines, saving space and simplifying configuration



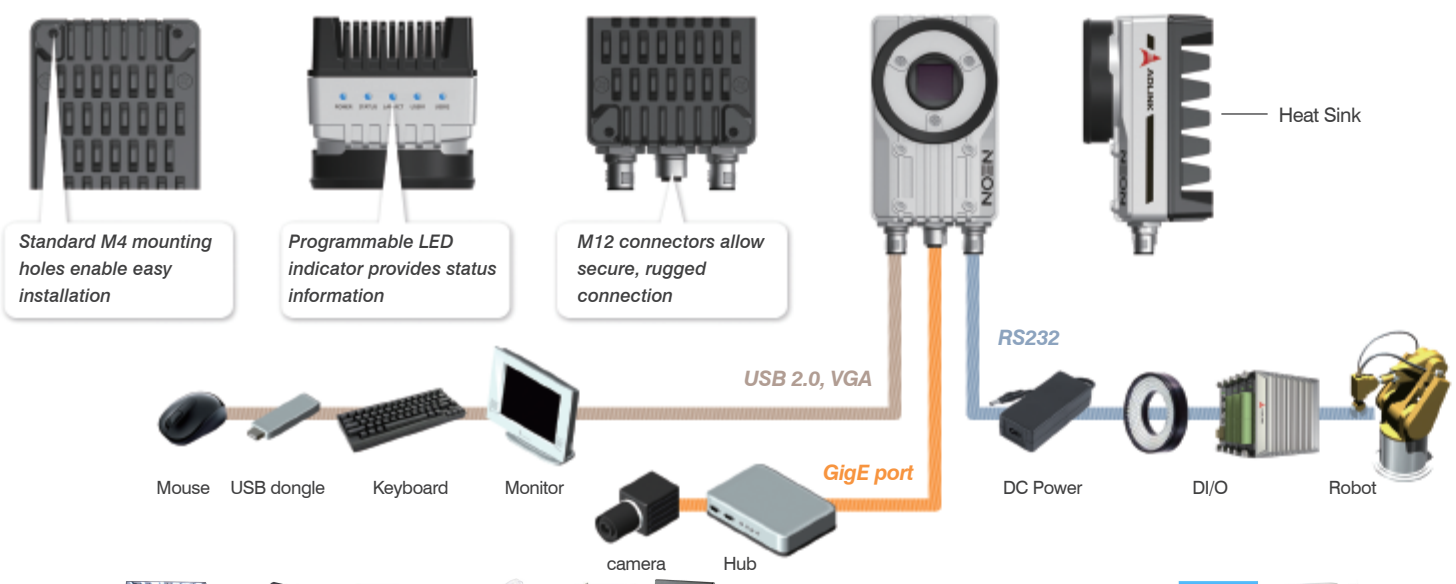
GigE port enhances flexibility

With built-in GigE port, the NEON-1040/1020 can connect to multiple cameras via external hub. As well, existing CODESYS users can easily and quickly connect to other motion controllers via EtherCAT.



Versatile I/O for external device connection

NEON-1040/1020 provides 4x digital inputs, 4x digital outputs, USB 2.0 port, and RS-232 ports, supporting connection to a monitor, USB mouse and keyboard, enabling program and application development directly in smart camera.



Applications

High Speed Pharmaceutical Inspection

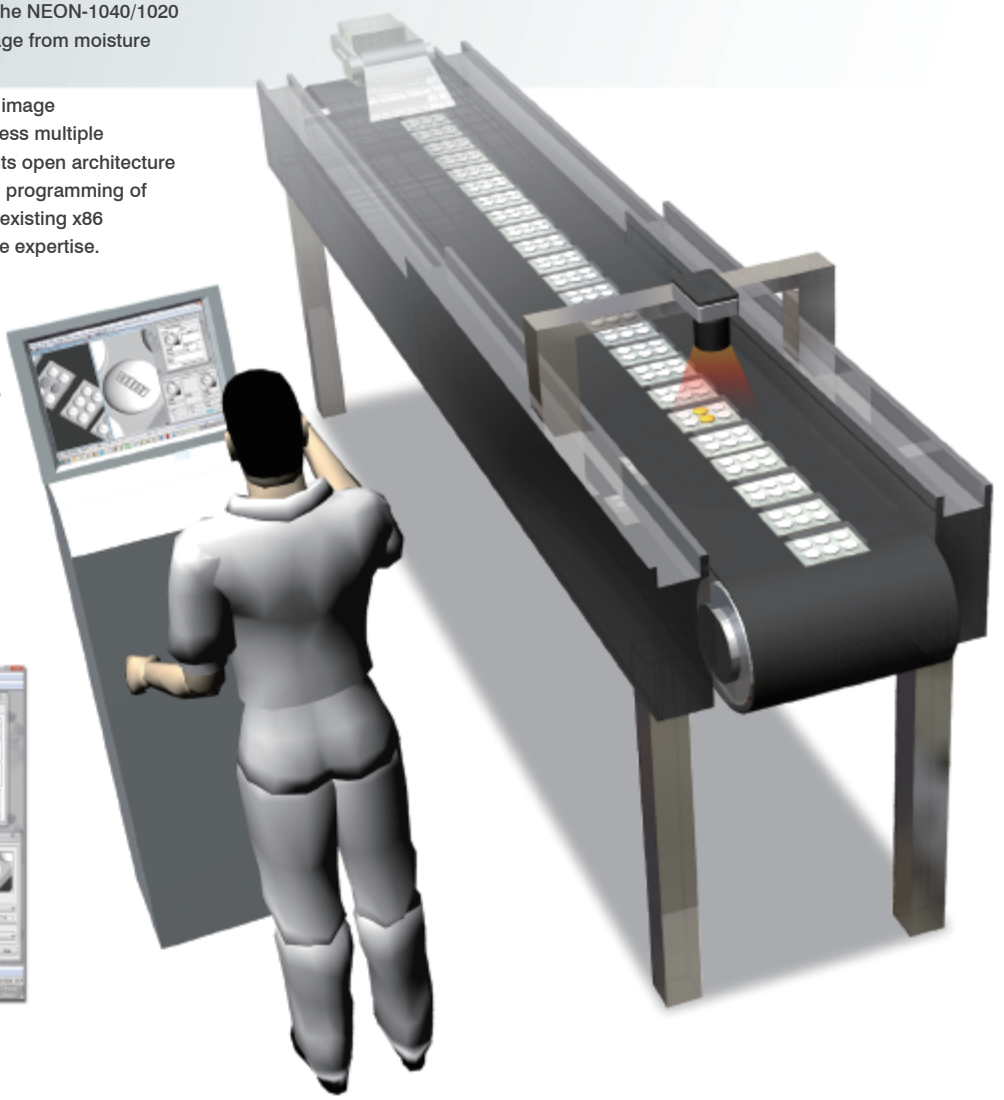
Pharmaceutical inspection, including inspection for visual defects, package labels, pattern matching or scanning barcodes on a high-speed folding machine or product line, demands high resolution captures with powerful processing to manage large image data. Global shutter sensors deployed in a fast moving product line provide clear and stable images for image. To manage the variety of inspection methods used, a flexible and programmable inspection platform is ideally suited to pharmaceutical applications.

The ADLINK Solution

The NEON-1040/1020 features a 4 MP 60 fps, 1-inch global shutter sensor, ideal for precise high-speed moving object inspection, ideal for verification of pill or tablet quality, blister pack contents, and label information and/or bar codes.

With IP67-rated housing and M12 connectors, the NEON-1040/1020 resists harsh environments, withstanding damage from moisture and contaminants.

With powerful quad core computing and FPGA image pre-processing, the NEON-1040/1020 can process multiple complex inspection tasks simultaneoulsy, and its open architecture x86 based application ready platform simplifies programming of customized inspection applications and use of existing x86 software without requiring new coding language expertise.



■ Food packaging

■ Automotive

■ Produce

■ Robot Guidance

■ Machine Tooling

Specification

		NEON-1020	NEON-1040
Processing & Memory			
Processor		Intel Atom E3845 Processor, Quad Core @ 1.91 GHz	
Display		VGA output, max. 2048 x 1152 at 60 Hz	
RAM		4 GB DDR3L	
Storage		16 to 32 GB solid state drive	
Advanced Processing		ROI, LUT, Shading Correction	
Sensor			
Image Sensor		CMOSIS CMV2000	CMOSIS CMV4000
Resolution		2048 x 1088	2048 x 2048
Sensor Size		2/3"	1"
Format		Monochrome	
Pixel Size (μm)		5.5	
Frame Rate (fps)		120	60
Shutter		Global	
Trigger Mode		External trigger, software trigger, free run	
I/O Interface			
Trigger Input		1x Opto-isolated trigger input	
Digital Output		4 x sink type output, max sink 100mA sink voltage max 30VDC	
Digital Input		4 x TTL level input	
PWM Lighting Control	Drive Method	Constant current max 500mA	
	Applicable Light Units	24 VDC illuminators	
	Dimming Resolution	1000:1	
Ethernet		1 x GbE	
Serial Communication		1 x RS-232 (TX and RX only)	
USB		1 x USB 2.0	
Mechanical			
Dimensions		68.5mm W x 110mm D x 52.7 mm H / 2.70" W x 4.33" D x 2.08" H (68.5mm x 110mm x 42.7mm reduced size option)	
Lens mount		C mount	
Connectors		1xM12 8-pin (Female), 1xM12 17-pin (Male), 1x M12 12-pin (Male)	
Software Support			
Operation System		Windows 7, Windows Embedded Standard 7	
Environmental & Electrical			
Power Consumption		24VDC +/-10%, 13W (Typical)	
Operating Temperature		Standard: 0˚ to 50 ˚C (32˚ F to 122˚ F) Extended temperature option: 0˚ to 60 ˚C (32˚ F to 140˚ F) (w/ industrial SSD)	0˚ to 50 ˚C (32˚ F to 122˚ F)
Vibration		Operating, 5 Grms, 5-500 Hz, 3 axes	
Certification		IP67, CE, FCC Class A	

Order Information

Model Number	*Description*
NEON-1040/SSD32G	4MP 60fps smart camera with SSD 32GB
NEON-1040/SSD16G	4MP 60fps smart camera with SSD 16GB
NEON-1020/SSD32G	2MP 120fps smart camera with SSD 32GB
NEON-1020/SSD16G	2MP 120fps smart camera with SSD 16GB

Optional Accessories

- GigE cable 5m
- Power & DI/O cable 3m
- VGA & USB cable 3m
- IP67 kits lens protector
- DIN-1040 terminal board
- 16mm C-mount lens
- 15˚ angled high density annular white LED array

Starter Kit

Start your inspection right away!

Includes all the complements you need

- NEON-1040 ADLINK Smart Camera
- GigE cable 5m
- Power & DI/O cable 3m
- VGA & USB cable 3m
- IP67 kits lens protector
- DIN-1040 terminal board
- 16mm C-mount lens
- 15˚ white LED lighting
- Windows Embedded Standard 7