Double-speed camera system

F160 VISION SENSOR

for fast, general-purpose inspection

Advanced Industrial Automation

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Omron's F160 is the industry's first high-speed vision sensor in its class capable of delivering top-quality inspection performance for demanding vision applications. This general-purpose vision system features a high-speed, two-camera set-up for ultra-fast image capture. An advanced vision algorithm enables more precise and sophisticated processing to be performed, which optimises the inspection quality in automated production processes. In addition, the F160's flash-RAM card slot enhances the system's memory capacity to handle multiple product lines.

The fastest general-purpose vision system in its class!

The F160 extends Omron's family of intelligent vision sensors and uses the same, familiar, user-interface platform as the other vision systems, which makes it very easy to set up and use. It is the ideal vision system for providing highly reliable, high-speed quality inspection in the automotive, pharmaceutical, packaging and food industries.

F160 VISION SENSOR

Easy-to-use GUI

Like all of Omron's vision systems, the F160 features a straightforward, easy-to-use Graphical User Interface (GUI) that simplifies the system's set-up and configuration for vision inspection tasks. There's no need for external programming; a wizard-like prompted menu option helps new users with auto set-up routines, while the expert menu option lets those with more experience set configuration parameters directly.

### Double-speed camera system with partial scan function

The F160's double-speed camera technique enables images to be acquired up to 4 times faster than with regular cameras. These cameras feature eight user-selectable shutter speeds and an intelligent lighting interface. In addition, with the new partial scan functionality you have the option of acquiring a selectable number of lines (from 12 of the full image), which reduces the image acquisition time to as low as 2ms. This makes the system one of the fastest in its class.
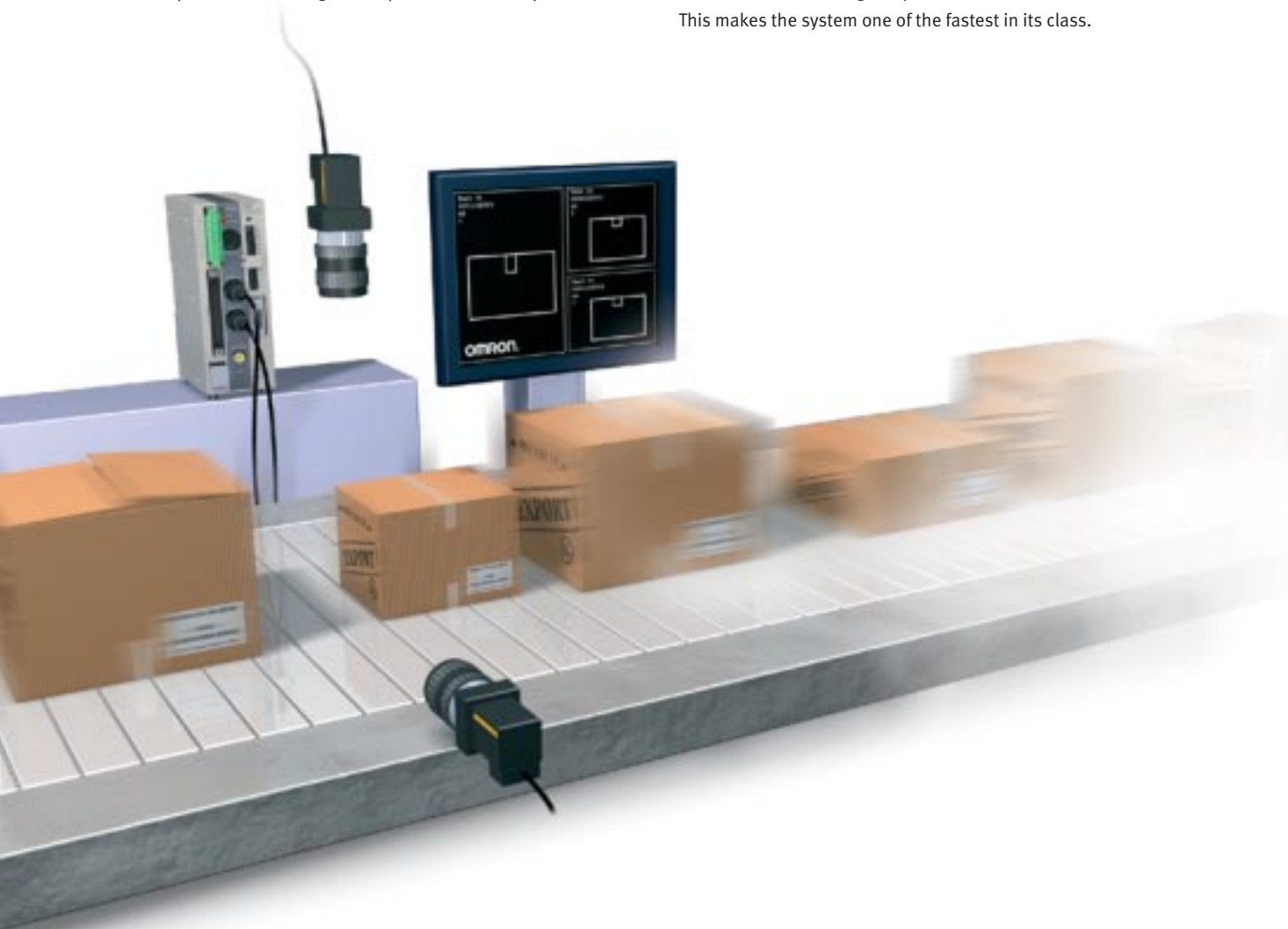
Advanced search options

Model search

This method uses several reference models to perform a grey scale search. Objects with slight variations in features and shapes can be inspected accurately with just one tool.
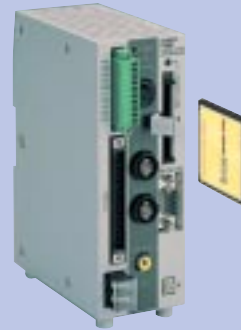
Labelling

Objects with irregular shapes (blobs) can be detected and counted inside a measurement region.
Detected objects are then sorted according to area or centre of gravity and labelled accordingly.

Rotation search

Rotation Search can be performed on an object to detect rotation up to 360°. The F160 performs this measurement 10 times faster than before and, using angle interpolation, detection angles can be detected with a degree of precision.

QUEST optical character recognition

Customising the display

The F160's display can be customised for ease of use. Menus, for example, can be masked to simplify set-up operations. Frequently used operations can be assigned to specific console keys. Menus can be switched at the touch of a single console button. Figures such as lines, boxes, circles and crosses can be drawn and positioned on-screen at measurement positions or pre-set co-ordinates. And display colours can be used to indicate an alarm situation or process change.

Password protection

The password protection feature prevents unauthorised use of the F160, and eliminates the possibility of changes being made to the system's parameters without the use of a password. Passwords can be set to restrict access to operational levels.

Enhanced data storage facility

The F160 features a compact flash-RAM card slot that enables inspection results, configurations, images or screen shots to be stored for later evaluation or for referencing.

Ultra-fast, ultra-precise inspection

Advanced algorithms in the F160 ensure that the inspection performance is fast and ultra-precise.
These algorithms include:

QUEST Optical Character Recognition/Verification

Omron's unique QUEST Optical Character Recognition and Verification algorithm enhances the detection of printed alphanumeric characters regardless of their shape or size. QUEST technology has built-in character libraries of commonly used factory automation fonts stored for reference.
There's no need to register characters as models, or to teach or create font or character libraries. This makes set-up time during installation fast and easy.

Our goal – your success in vision applications

Getting the lights and camera right

Omron's compact shutter camera is ideal for high-speed inspection applications and can be fitted with several different light sources, including those that support the Intelligent Light Source specification, depending on the application.

Unique, Intelligent Light Sources (ILS)

Omron's ILS integrated cameras are designed to enhance and simplify your vision applications. These cameras use a hood shape that reduces external interference, making conditions ideal for highly accurate inspections. The combination of red and green LEDs also enables the F160 to inspect a wide range of objects. One ILS version offers adjustable coaxial vertical lighting in addition to the adjustable ring light. The adjustable ring light allows you to adjust brightness and light direction based on the application requirements.

Maximising lighting control

With an ILS camera and an appropriate light source the F160's controller menus take the guesswork out of proper lighting. With these menus, operators can control the illuminated area and light intensity. Settings are easily changed without directly adjusting the light source. Lighting positioning can be stored with other scene data, enabling operators to change the lighting conditions to match different operating environments. And because settings are stored as numeric data, it is possible to recreate the lighting conditions from machine to machine.

Service and support to meet your requirements

Omron's image processing specialists can fully support you in specifying your application and will suggest suitable solutions for your project, including the optimal lighting and the integration of the system in your production process, either locally or world-wide. Together with competent system partners, we are able to deliver complete turnkey solutions. Workshops and product- and application-specific training are just part of the complete service package that we can offer.

A complete family of vision products

Omron can provide the right system for your application, however simple or complex it may be. The F10 is an advanced sensor that offers a complete vision system in a sensor format with simple and quick start-up through an automatic teaching system. The F150, F160, F210 and F400 and V530-R150/V530-R160 sensors offer varying degrees of intelligence to allow the most suitable solution to be selected for the application. Completing the range is the F250, a high-end system that combines fast processing with simple operation.

System configuration

Cameras with intelligent lighting

Double-speed camera

F160-SLC20

F160-SLC50

All F150 type cameras can be used as well

Camera cable*

Camera
F160-S1/S2

Camera cable*

*Camera cable
F150-VS (3m, double-speed camera),
other cable length on request

Power supply

Recommended model:
OMRON S82K-05024

Controllers

F160-C10E (NPN input/output)
F160-C15E (PNP input/output)

F160

Parallel cable**

Console

F160-KP   F150-KP

Memory card

F160-N64S (S) (64MB)

Personal computer

RS-232C/422

RCA/BNC Video cable***

Monitor

Colour LCD Monitor
F150-M05L

***F150-VM RCA/BNC Video cable
Monitor cable (2m)

Synchronous sensor

Programmable controller

**Parallel cable
F160-VP (2m, loose-wire cable for parallel I/O connectors)
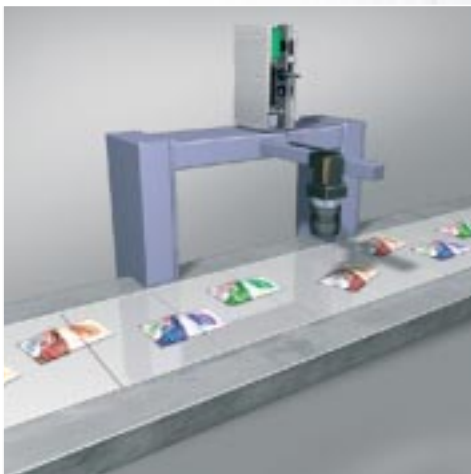
Product sorting
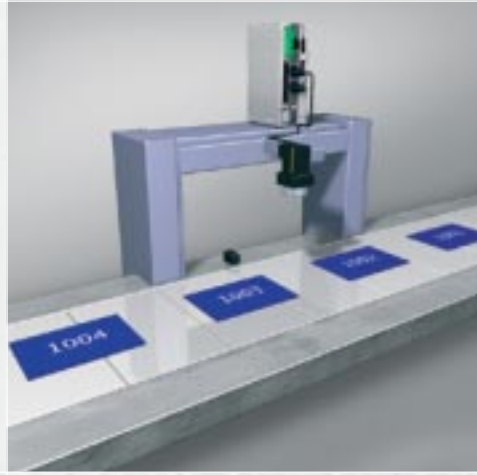
Optical character recognition

High-speed bottle inspection
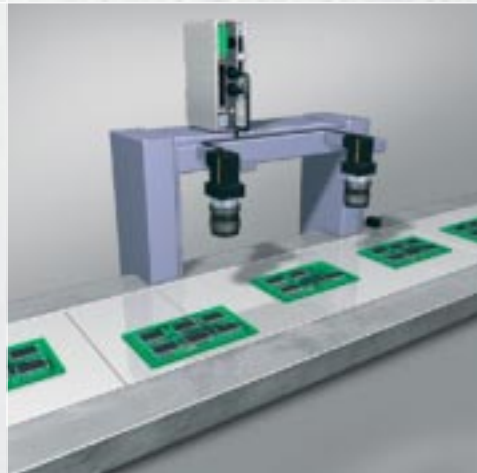
PCB inspection

Position reference

High-speed robotic tool guidance

The right system for your application - Omron's family of vision systems

	F10	F150	F400	F160	F210	F250	V530-R150	V530-R160
Grey search, precise search, pattern matching	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Rotation search	No	Optional	No	Yes	Yes	Yes	No	No
Grey edge position	No	Yes	Yes	Yes	Yes	Yes	No	No
Position compensation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OCR/OCV	No	No	No	Yes	Yes	Yes	No	No
Edge pitch	No	Yes	No	Yes	Yes	Yes	No	No
Defect, plain measurement	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Edge-code technology	No	No	No	No	Yes	Yes	No	No
Fine matching (print-quality)	No	No	No	No	Yes	Yes	No	No
Colour filter	No	No	Yes	No	No	No	No	No
2-D code	No	No	No	No	No	No	Yes	Yes
Gravity, area, axis	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Conditional inspections (branching)	No	Optional	No	No	Yes	Yes	No	No
Customisable menus and display	No	No	No	Yes	Yes	Yes	No	No
Macro programming option	No	No	No	No	Yes*	Yes*	No	No

* Optional with Macro Functions software option.

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• Panel indicators • Level controllers • Industrial switches • Pushbutton switches

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• Safety relays • Safety sensors

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