COGNEX

PRODUCT GUIDE 2008

The simple, powerful vision sensors from Cognex.

Actual Size

CHECKER
Vision Sensors

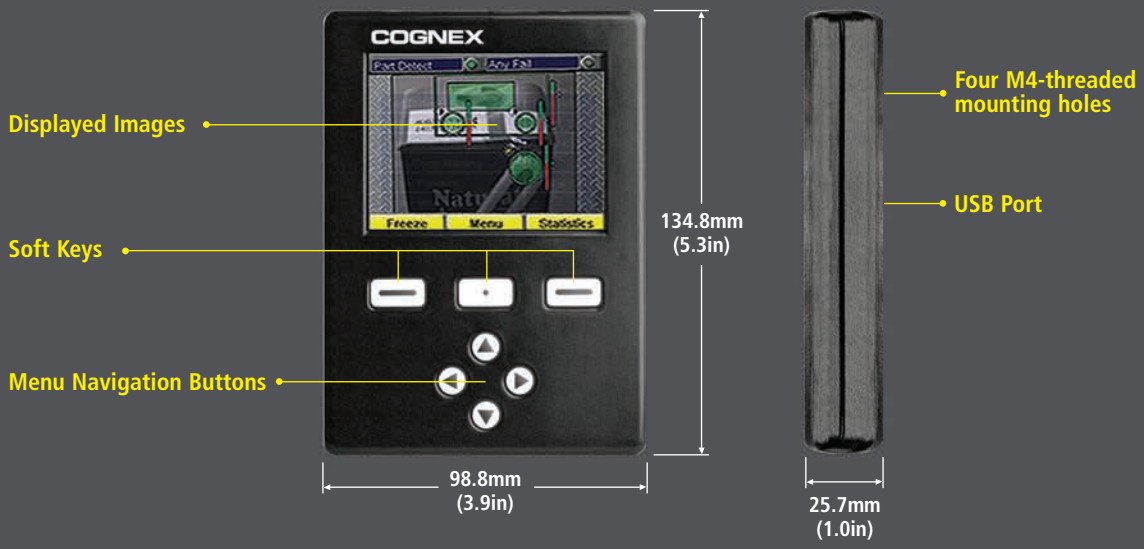
Powerful Things Come in Small Packages

Checker is an all-in-one vision sensor with built-in lighting and a variable working distance, capable of inspecting over 6000 parts per minute — all in a package small enough to fit into tight spaces.

The Checker 200 Series has four models:

- Checker 200 … part detection
- Checker 201 … part detection and inspection
- Checker 202 … ladder logic
- Checker 232 … the capabilities of Checker 202, with the ability to inspect small features

SensorView™ 350 is a compact, rugged, panel-mount display for Checker 200 Series vision sensors. More than just a display, SensorView provides production statistics and a user-definable view of the parts that Checker is inspecting. This enables operators to easily monitor their production process, change jobs, or retrain patterns without a PC.



The Smart Vision Sensor

Looking for the easiest, most affordable way to error-proof your manufacturing process?

The original Checker defined the vision sensor category, taking the best attributes of photoelectric sensors and adding so much more for manufacturers and machine builders. The new Checker 200 Series vision sensors have once again redefined their class. And, the optional panel-mounted SensorView display allows users to see what Checker sees — without a PC.

Checker detects a part by finding an actual part feature, such as the apple graphic on top of the juice boxes. This provides extremely reliable part detection, unattainable with photoelectric sensors. The optional SensorView display lets users see exactly what's being inspected, as well as production statistics.

Checker Advantages:

Inspects features that other sensors cannot.

Because Checker understands what it sees, it can inspect features that other sensors can't, such as a code printed on a label.

Inspects *multiple* part features simultaneously.

There's no limit to the number of part features you can inspect with a single Checker!

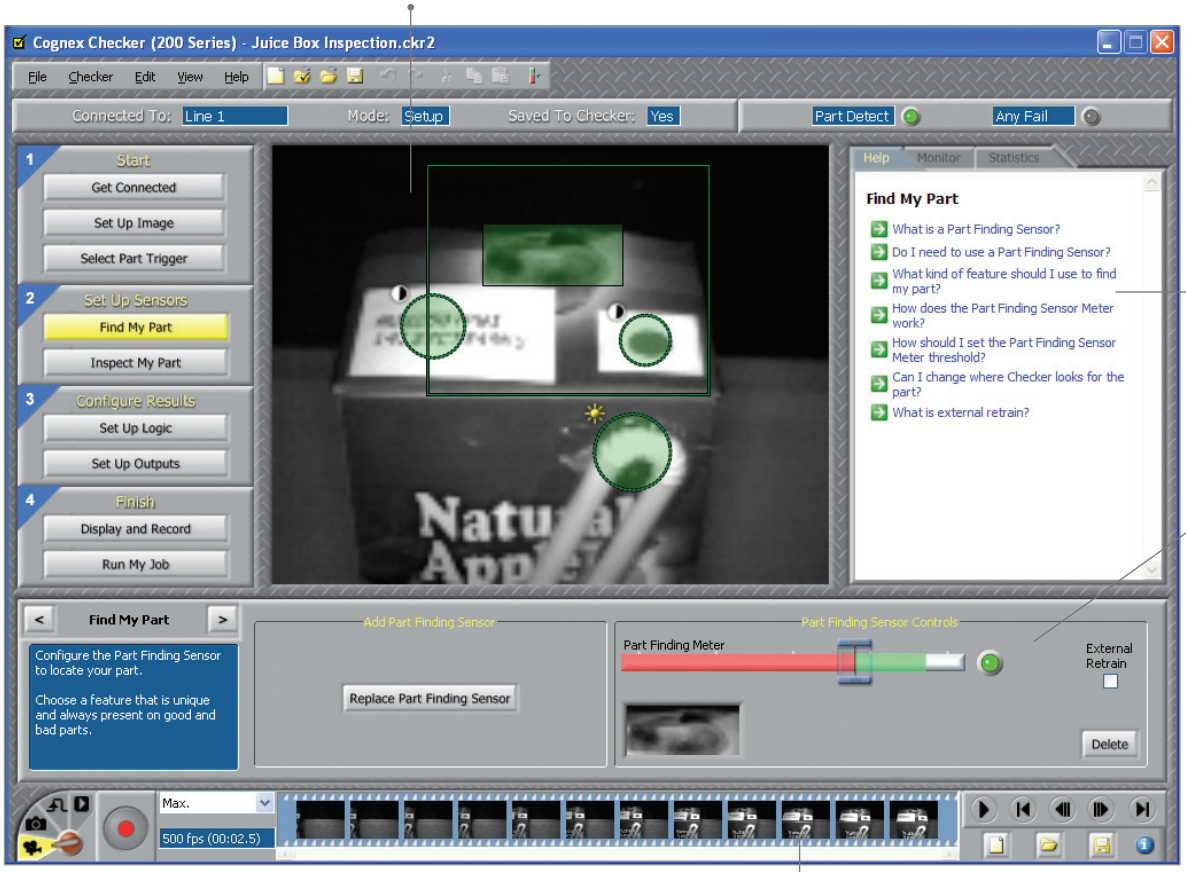
Overcomes varying part positions.

Parts on a line typically vary in position, and Checker tracks all of them without requiring precise part handling.

Simple Setup

Checker is simple to set up and operate. Even a first time user can have it up and running in minutes — without training. Simply select the built-in part finding sensor … place inspection sensors on the features to inspect … then check it with Checker!

The **image display** simplifies setup by enabling you to see what the sensor sees



Four simple steps walk you through setup

Dynamic help is always available

Simple sensor controls are pass/fail — no data or parameters to enter

Play a filmstrip back in slow motion, or review recent part failures
Like a video recorder, Checker actually records video of parts!

The Checker Part Finding Sensor has three important advantages:

- Detects a part by locating a feature on the part, not just an edge
- Tracks parts in varying positions along the production line, overcoming imprecise part positioning
- Does not require additional sensors to determine if a part is present

Checker's unique inspection sensors provide the most reliable way to inspect your part:

Brightness sensors look for dark or light areas on the part

Contrast sensors look for areas on the part that contain both bright and dark areas: date codes, threads, and many other part features.

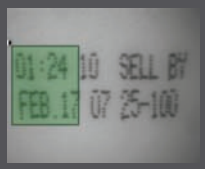
Pattern sensors understand what your part features look like. When a pattern sensor sees a feature that looks like what it was trained on, it lets you know.

Reliable Error-Proofing for All Industries

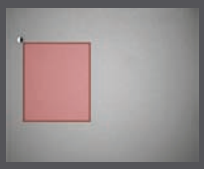
No matter what the industry, Checker delivers reliable inspection results for manufacturers and machine builders.

Food and beverage

- Presence of inkjet and laser-printed codes
- Assurance that all bottles are in case
- Presence of caps, labels, and tamper seals
- Verification that bag is closed before sealing
- Detection of registration graphics



Date code present



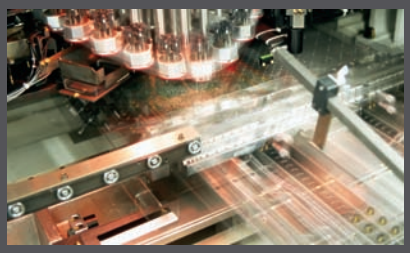
Date code missing

Consumer products

- Presence of spray nozzles
- Orientation of bottles, containers and flip caps
- Assembly of cosmetic applicators
- Verification of product packaging

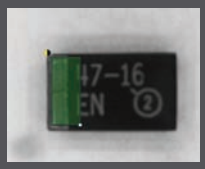
Safety seal present

Safety seal missing



Electronics

- Orientation of connectors on feeder bowls
- Verification of connector assembly
- Orientation of components
- Presence of components after assembly
- Verification of LED illumination
- Assembly of batteries

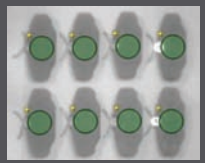


Capacitor oriented correctly

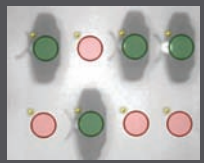
Capacitor oriented backwards

Automotive

- Machine builder component inspection systems
- Presence of weld nuts, springs, fasteners, and sealants
- Detection of double bearings
- Orientation of parts on feeder bowls
- Verification that parts are shot-peened, threaded, or staked



All brake pads in tray



Several pads missing

Specifications

CHECKER VISION SENSORS

LIGHTING

Illumination	Integrated red, green, and cyan LEDs

EXTERNAL TRIGGER INPUT

Input ON	> 10VDC (> 6mA)
Input OFF	< 2VDC (< 1.5mA)
Protection	Opto-isolated, polarity-independent

OUTPUTS

Output	Solid state switch
Rating	100mA, 24VDC
Max voltage drop	3.5VDC @ 100mA
Max load	100mA
Protection	Opto-isolated, protected from short circuit, overcurrent, and reverse polarity

ENCODER INPUTS

Encoder type	300 kHz (max) quadrature encoder. Open collector and differential output
ON/OFF	50% nominal
Load	50% encoder maximum

TERMINATION

12-Pin M12 connector, USB Mini-B receptacle

POWER

Voltage	+24VDC (22-26VDC)
Current	250mA max

MECHANICAL

Dimensions	67mm (2.64in) H x 41mm (1.61in) W x 60mm (2.36in) D
Weight	100g (3.5oz)

MODES OF OPERATION

Internal part trigger, external part trigger, free running

ENVIRONMENTAL

Operating temperature	0° to 50°C (32° to 122°F)
Storage temperature	-30° to 80°C (-22° to 176°F)
Operating humidity	0%-90%, non-condensing
Operating altitude	4000m maximum
Shock	80Gs for 5ms on each axis (per IEC 68-2-2)

ENVIRONMENTAL (continued)

Vibration	10Gs (10-500Hz) per IEC 68-2-6
Protection	IP67

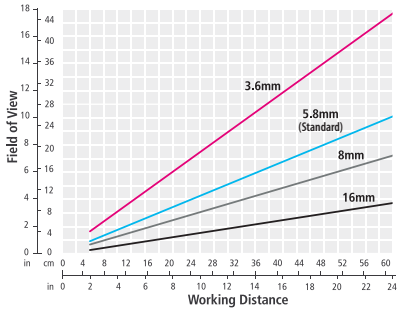
CERTIFICATIONS

CE, c**CSA**us, FCC, RoHS

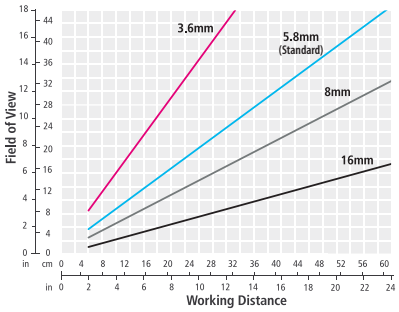
MINIMUM PC REQUIREMENTS (Only required for setup)

Operating systems	Microsoft® Windows® Vista™, XP™, or 2000™ SP4
RAM	128 MB RAM
USB	USB 1.1 (2.0 recommended for best performance)
Screen resolution	1024 x 768 (96 DPI) or 1280 x 1024 (120 DPI) display

Field of View for Checker 200/201/202 Vision Sensors
Curves show the field of view for standard and optional lenses.
Each grid square = 1in (2.54cm)



Field of View for Checker 232 Vision Sensor
Curves show the field of view for standard and optional lenses.
Each grid square = 1in (2.54cm)



For more information, please visit
www.cognex.com

CHECKER SENSORS

Model	Part Number	I/O Cable Included
200	CKR-200-001	Flying Leads
201	CKR-201-001	Flying Leads
	CKR-201-002	I/O Box
202	CRK-202-001	Flying Leads
	CRK-202-002	I/O Lead
232	CKR-232-001	Flying Leads
	CKR-232-002	I/O Box

Included accessories

- 5.8mm lens
- Standard USB cable
- Quick Start Guide
- Allen wrench (for focus lock)
- Checker software CD
- USB connector cover
- Mounting screws

Optional Accessories

CKR-200-IOBOX	Checker I/O box
CKR-200-BKT	Adjustable bracket
CKR-200-LENSKIT	Lens Kit
CKR-200-CBL-USB	IP67 USB cable
CKR-200-CBL-EXT	I/O extension cable (5m)

SENSORVIEW 350 VIEWER

Models Supported	Checker 201, 202, 232
User-Selectable Languages	English, German, Italian, French, Spanish, Japanese, Chinese (Simplified), Chinese (Traditional), Korean

POWER

Operating voltage	+24VDC (22-26VDC)
Power consumption	275mA @ +24VDC

ENVIRONMENTAL

Operating temperature	0°C to 50°C (32°F to 122°)
Operating humidity	0 to 90%, non-condensing
Storage temperature	-20°C to 80°C (-4°F to 176°F)
Storage humidity	0 to 90%, non-condensing
Shock	80G x 5ms (IEC 68-2-2)
Vibration	10Gs (10-500Hz) per IEC 68-2-6
Altitude	4000m
Protection	IP65

CERTIFICATIONS

CE, c**CSA**us, FCC, RoHS

MODELS

Part Number	Description
SV-350-000	SensorView 350 panel-mount display

COGNEX

Companies around the world rely on Cognex vision to optimize quality and drive down costs.

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