Work Inspection Camera

RICOH SC-20

RICOH
imagine. change.

Prevent Work Errors
Real-time Inspections During Works

High-precision Judgment
8 Megapixel Sensor

Traceability
Image Log Storage

Compatible with a Wide Range of Workpiece Sizes
C-mount FA Lens

Cannot conduct exterior inspections.
This camera is for manual work quality inspections.

The RICOH SC-20 is a work inspection camera that detects mistakes during the assembly process. It can conduct real-time quality checks during a work, something exterior inspection cameras are not capable of. It can perform automatic checks of assembly status such as similar parts, missing parts, and work order, and perform batch inspections after a work is completed. Because the system is easy to set up without the need for a computer, it is easy to begin digital inspections.
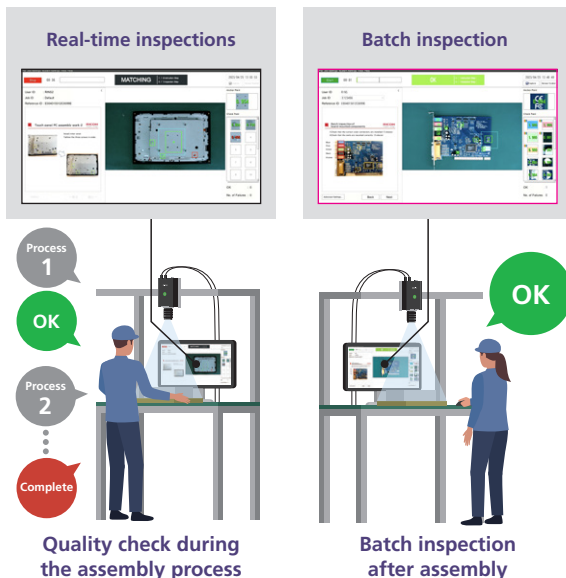
Work Inspection Camera   RICOH SC-20

Digital image inspections during or after a work   point 01

Image recognition automatically checks assembly status during the work. Digitalization of visual inspections helps maintain consistency. You can set up to 20 check points and perform batch inspections after a work is completed.

Digitalization of visual inspections helps maintain consistency

Real-time inspections	Batch inspection

Process 1

OK

Process 2

Complete

Quality check during the assembly process

OK

Batch inspection after assembly

Easy installation without the need for a computer   point 02

The camera, image recognition, and software are integrated. The system is easy to set up if you have a mouse, keyboard, and monitor. If you have a touch panel monitor, you don't need a mouse or keyboard.
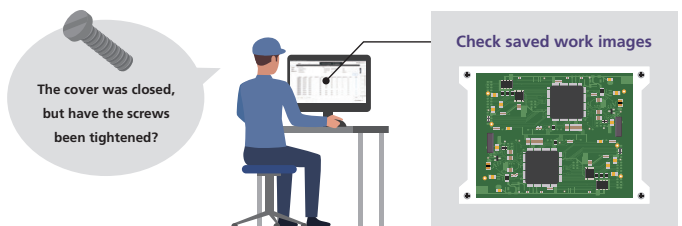
* The RICOH SC-20 main unit is not provided with a lens. A genuine RICOH C-mount lens compatible with the RICOH SC-20 must be purchased separately.

Easy setup with a monitor and camera only

Touch panel monitor   Camera
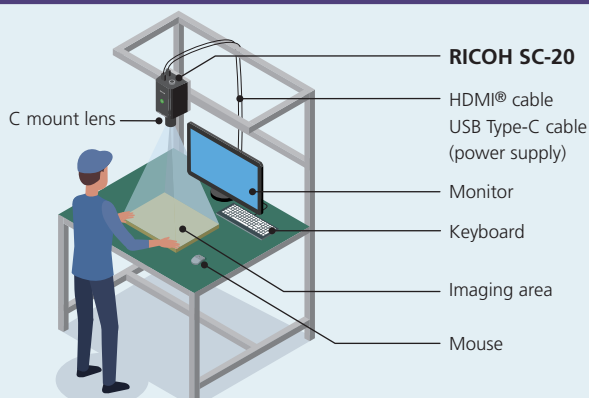
Ensure traceability   point 03

Part serial numbers, work times, etc., and inspection results such as OK/FAIL can be saved as image logs for use in work analysis and traceability.
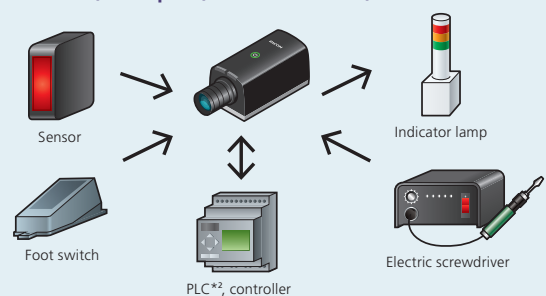
Logs can be viewed for work tracing

The cover was closed, but have the screws been tightened?

Check saved work images

System Configuration

RICOH SC-20

C mount lens

HDMI® cable
USB Type-C cable (power supply)

Monitor

Keyboard

Imaging area

Mouse

Easily connect to external devices using the external connector, LAN port, wireless LAN*1, or Bluetooth®*1

Sensor

Indicator lamp

Foot switch

PLC*2, controller

Electric screwdriver

*1 Wireless LAN and Bluetooth are supported only on the models with a wireless communication system.
*2 Programmable Logic Controller

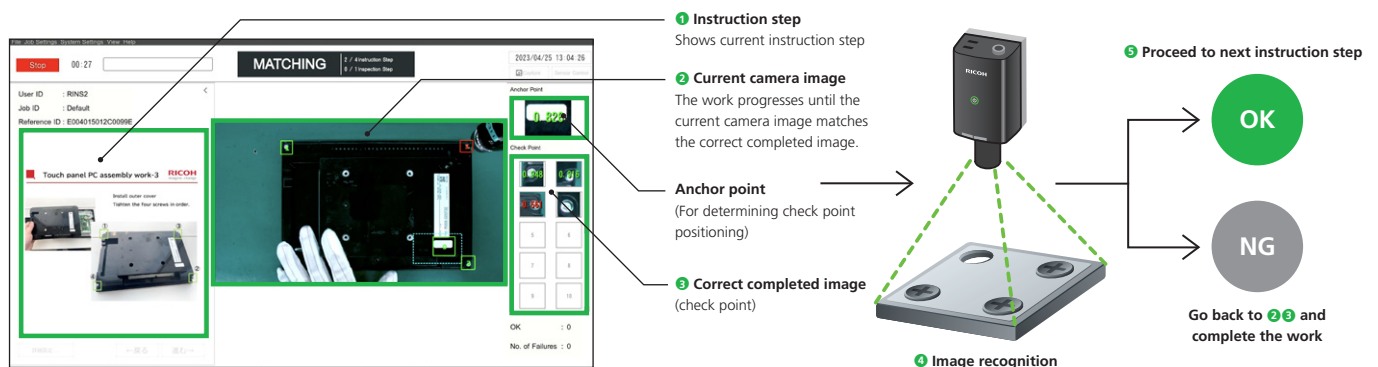* A mouse and keyboard are not necessary when using a touch panel monitor.

Compatible with C-mount FA lenses and a wide variety of workpiece sizes and focal lengths

The camera uses an interchangeable C mount lens. 5 high-resolution, RICOH FA lens focal lengths that offer minimal distortion are available. Select from 5 focal lengths to match the size of your workpiece.
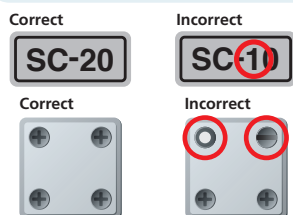
Real-time inspections during a work

Instruction steps are linked with image recognition. The worker follows the instruction steps displayed on the left side of the screen and the system uses image recognition to automatically check that the work has been carried out in the correct order, including screw tightening, etc. The system prevents the worker from proceeding to the next step in the process until the camera image matches the completed image, helping prevent mistakes and improve quality. The system helps workers learn proper work procedures.

❶ **Instruction step**
Shows current instruction step

❷ **Current camera image**
The work progresses until the current camera image matches the correct completed image.

Anchor point
(For determining check point positioning)

❸ **Correct completed image**
(check point)

❹ **Image recognition**

❺ **Proceed to next instruction step**

OK

NG

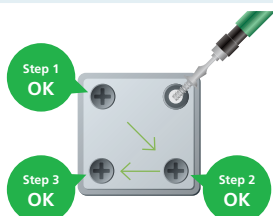Go back to ❷❸ and complete the work

Prevent mistakes with image recognition (matching)

Pattern matching checks product numbers and similar parts with slightly different shapes, and checks for missing parts. Color recognition can detect differences in color among similar parts to ensure that they are assembled in the correct orientation Image recognition can also differentiate between smooth and uneven surface materials such as non-woven fabric, sponge, ensuring that they are attached to the product.
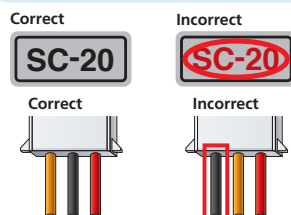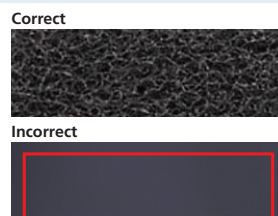
Check for similar or missing parts

Correct — SC-20   Incorrect — SC-10

Correct   Incorrect

Work order

Step 1 OK
Step 3 OK
Step 2 OK

Color check

Correct — SC-20   Incorrect — SC-20
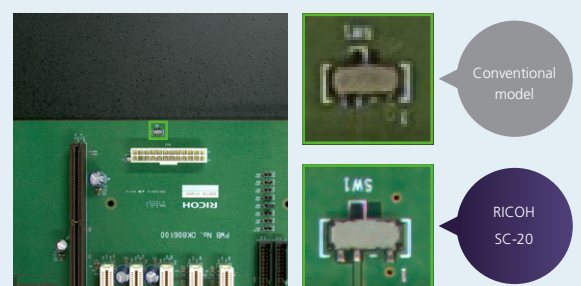
Correct   Incorrect

Texture check

Correct

Incorrect

High-precision judgments thanks to 8 megapixel high-resolution imaging

This camera is equipped with a 1/1.8 inch, 8 megapixel CMOS color sensor. High-precision inspection thanks to high-resolution digital imaging enables checks of minuscule differences not detectable by the human eye.
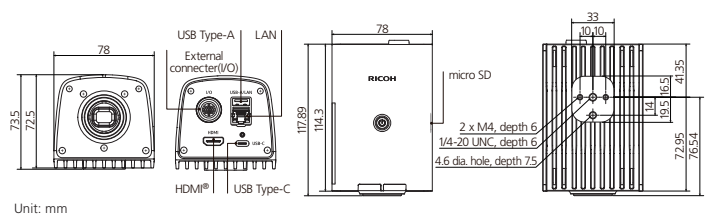

Conventional model

RICOH SC-20

RICOH SC-20 Main Specifications

Item			Specifications
Lens mount			C-mount (The RICOH SC-20 main unit is not provided with a lens. A genuine RICOH C-mount lens compatible with the RICOH SC-20 must be purchased separately.)
Image sensor			1/1.8 inch 4K (QFHD) progressive color CMOS
	Number of pixels		3840 (H) x 2160 (V)
	Cell size		2.0 (H) x 2.0 (V) µm
Instruction step	Instruction step file		JPG format (610 (H) x 680 (V))
Matching	Method		Shape, color, texture
	Area setting (ROI)		Specify area with absolute position
	Position correction		Relative position correction from reference position
	Position rotation correction		±180° (shape only)
	Number of simultaneous registrations		Maximum 20 places
Data input	Number of characters check		Check whether matches set number of characters
	Character string check		Check whether matches set character string on left
Result logging	Output method		Saved in CSV format to the specified path
	Log information		Work ID, reference ID, user ID, instruction step, inspection step, date/time, standard time, elapsed time, process item, judgment result, final judgment result, image log file name, process data
Image logging	Output method		Saved in JPG format to the specified path
	Setting method		Image logging can be enabled or disabled for each inspection step.
External interfaces	HDMI		1920 (H) x 1080 (V)/60 Hz * Voice output is not supported.
	USB		Type-A x 1: USB 3.0 Super Speed supported (Host) Type-C x 1: USB 3.0 Super Speed supported (Host) USB PD supported, USB DP Alt Mode not supported * Supported class: USB-HID, USB-Mass Storage, USB-Audio
	Ethernet		RJ-45 x1 100Base-TX / 1000Base-T
	microSD card		microSD / SDHC / SDXC x1 High Speed / UHS-I supported
	External GPIO		OUT (insulated): 6 pieces IN (insulated): 10 pieces OUT/IN (insulated) power: 5 V to 24 V ±10%
	Wireless LAN (Models with a wireless communication system only)		IEEE802.11a/b/g/n/ac (2.4 GHz/5 GHz) compliant
	Bluetooth (Models with a wireless communication system only)		Bluetooth 5.0 BR/EDR Class 2 * Supported profile: SDP, L2CAP, GAP, A2DP, HID
I/O	Buzzer		Electromagnetic (Volume: high, low, mute)
	LED indicator lamps		Power, OK, FAIL
	Switch		Power
Ratings	Power voltage		12 V DC ±10% 3A or more (USB PD) 12/24 V DC ±10% (external connector) * Power must not be supplied from both connectors at the same time.
	Power consumption		8.6 W or less
Storage area	Area accessible by user		25 GB
Environmental resistance	Operating temperature range		0 to 40°C
	Storage temperature range		-20 to +60°C
	Ambient humidity range		30 to 80% RH * No condensation
External dimensions			78 (W) x 73.5 (H) x 117.9 (D) mm (excluding attached lens and connectors)
Weight			Approx. 460 g
Mounting holes			Tripod screw hole (ISO 1222 compliant), M4 screw hole x 2
AC adapter (models including an AC adapter only)	Product name		D-AC166-SC
	Manufacturer		Adapter Technology Co., Ltd.
	Ratings	Input voltage	100 to 240 V AC / 50 to 60 Hz
		Output voltage	+12 V ±5%
		Output current	3 A max.
	External dimensions		33 (W) x 50 (H) x 99 (D) mm (excluding cable)
	Weight		Approx. 210 g

● **RICOH SC-20 Work Instructions Editor (PC software) recommended operating conditions**

This PC software is used to create instruction step files optimized for the RICOH SC-20.
[Supported OS] Windows® 10 (32-bit/64-bit) Ver. 1607 and later, Windows® 11 (64-bit)
[Software requirements] Microsoft® .NET Framework 4.8 or later version package and a version of one of the following Microsoft® Office applications (Microsoft® Office: Word, PowerPoint®, Excel®) installed Microsoft® Office 2019 or Microsoft® Office 2021
[Hard drive space] 1.0 GB or more
[Display] 1024 x 768 or higher screen resolution

● **RICOH SC-20 exterior dimension drawing**

Unit: mm

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⚠ **For safe product use**	•Carefully read the user guide and use the product correctly. •Use the correct power supply and voltage as indicated. •Do not install or use the products in locations with excessive water, humidity, steam, dust, smoke, etc.

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