

Intelligent
Camera Sensor

AGD and DCI: Area Gloss Detection and Date Code Inspection



ideal for checking the presence of codes on food packaging, bottles and pharmaceutical products.

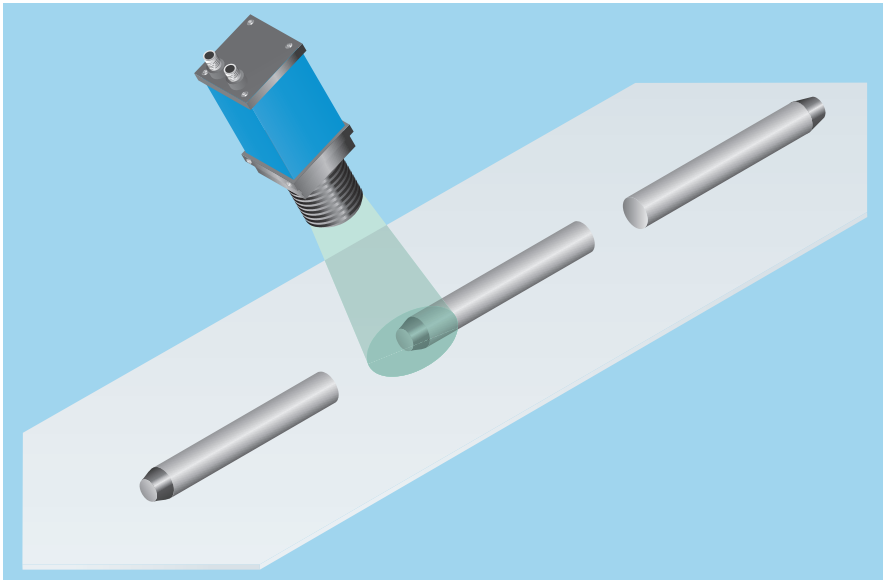
The AGD detects surface reflections to provide valuable process information. It looks for reflections caused by the shape of a feature or a change in the surface finish from shiny or dull. This helps solve problems to detect product presence or orientation such as checking for chamfered edges and presence of grip mouldings.

The AGD and DCI camera sensors each perform one task exceptionally well, Area Gloss Detection and Date Code Inspection. Optimised to perform these tasks, the camera sensors are easy to operate using a simple teach process to set-up.

The DCI is used for simple presence checks and more demanding tasks such as on-line monitoring of printed code quality. It does this by comparing the number of dark pixels in a search field against a taught-in example and the applied tolerances. The DCI is

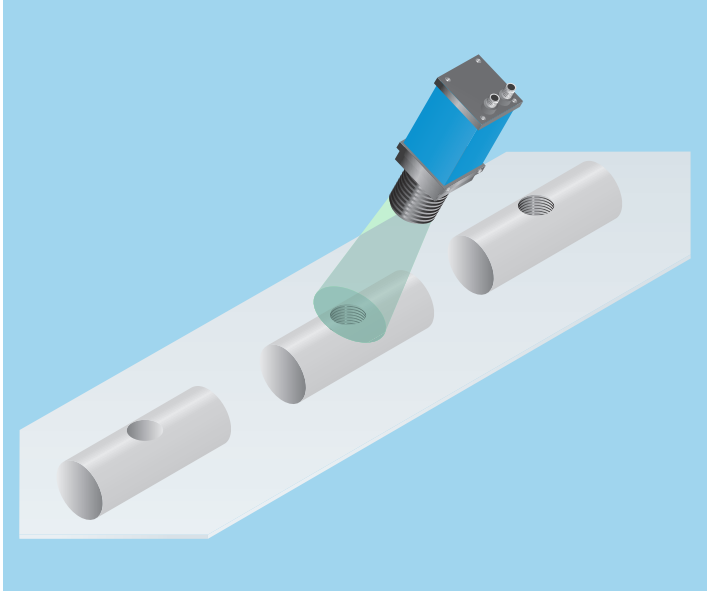
Alignment of the camera sensors are easy using a keypad display and are set-up by using a two page menu. Once they have been set the sensors can be quickly changed to new products via a teach signal.

Both the AGD and DCI are very reliable in operation. The evaluation algorithms are so sturdy that rotation and shifts of objects have little influence on their operation. This is especially important for ensuring a high degree of system reliability and problem-free operation at clock rates of more than 200 images per second.

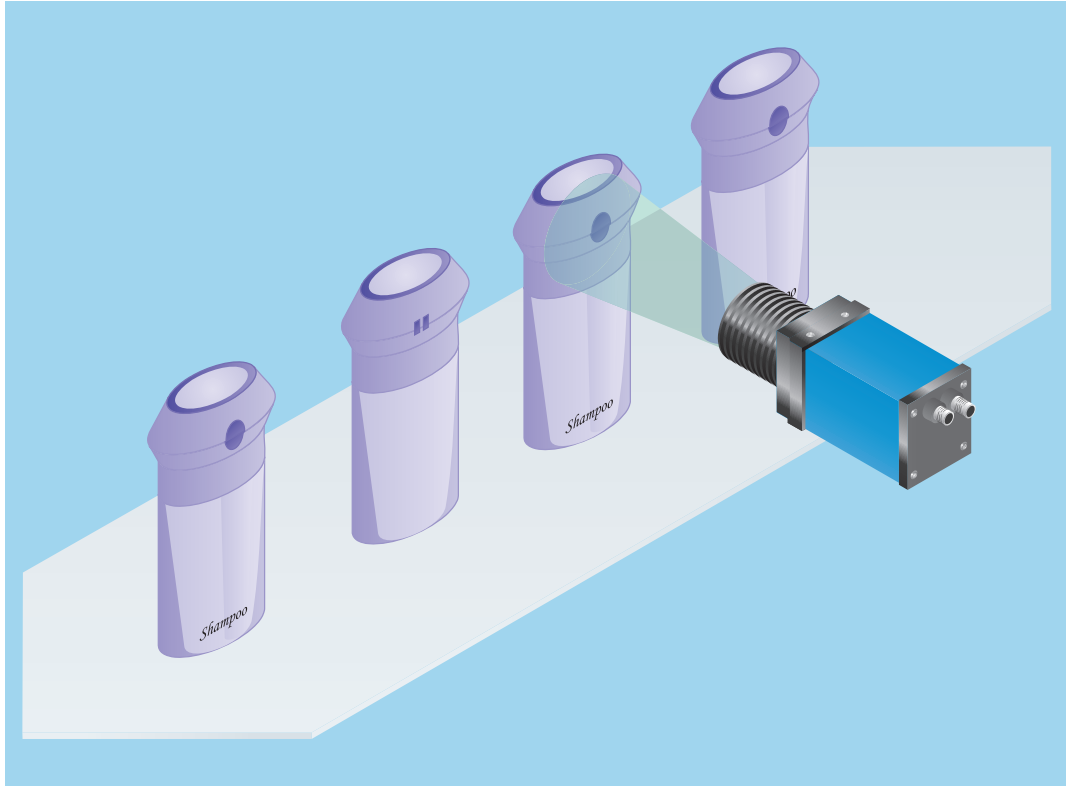
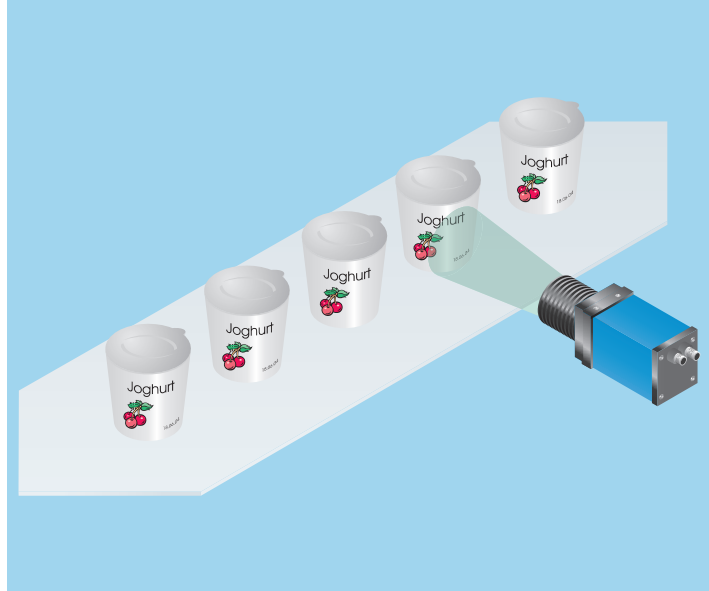


◀ The AGD detects chamfered edges which can be used to check the position and orientation of machined objects.

▼ Is the date print present and complete? The DCI easily answers this question.



▲ Threads generate characteristic reflections which the AGD detects.



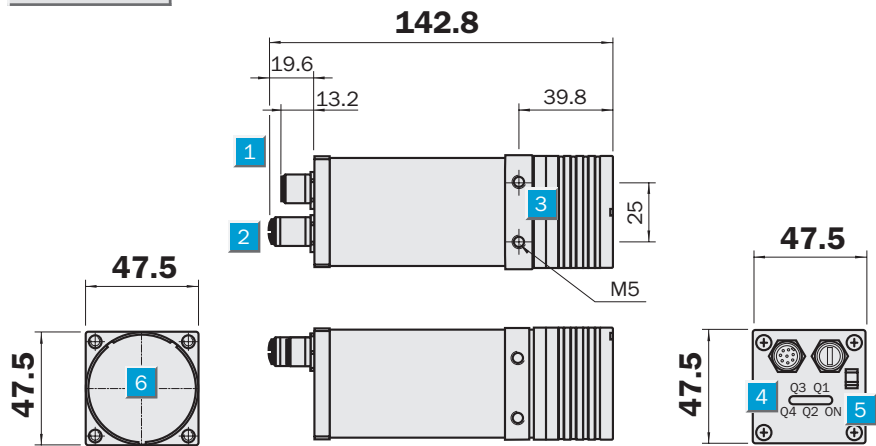
► Features such as grip mouldings, which reveal themselves by their reflective properties, can be used to control position.

	Fields of view 20 x 20 mm ²
Intelligent Camera Sensor	

- Simple set-up and operation
- High clock cycle rate for fast processes
- Sturdy evaluation procedure
- DCI 10: warning in advance if pixel number is near the tolerance limit
- Reflections can be detected on shiny objects

Dimensional drawing

AGD10
DCI10



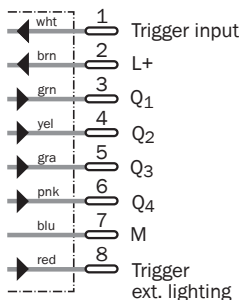
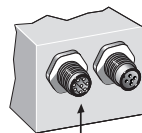
VSC100 7



- 1 Power connection (external thread), 8-pin, M12
- 2 Operating part connection (internal thread), 5-pin, M12
- 3 Fixing hole M5
- 4 Switch output indicator (Q1-Q4)
- 5 Power indicator
- 6 Optical axis sender, optical axis receiver
- 7 VSC 100: WxHxD = 150 x 82 x 31 mm³
- 8 LC Display
- 9 Keyboard

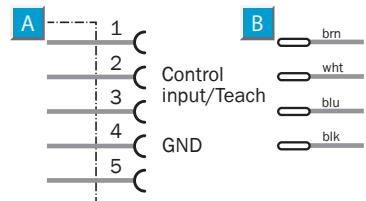
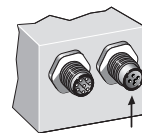
Connection type AGD 10 and DCI 10

8-pin, M12 (output)



Cable, 2 m with receptacles M12, 8-pin
Order no. 6020633

5-pin, M12 setup unit/Teach input



A Cable AGD-VSC, 2 m with plug M12, 5-pin
Order no. 6025931

B Connection cable for control input, 2 m, plug M12, 4-pin
Order no. 6028077



Technical data		AGD10	DCI10	VSC100						
		-B1111	-B1111							
Nominal scanning distance/	70 mm/20 x 20 mm ²									
Field of view										
Filters – lens	Green (filter: 450 ... 550 nm)									
Light source ¹⁾	15 x LED; focused green									
Image sensor	CMOS; 512 x 512 Pixel									
Real resolution	320 x 320 Pixel									
Test mode	Pixel sum									
	Minimum pixel sum									
Teach field, search field	Size can be changed									
	Position can be changed									
Supply voltage V _S ²⁾	24 V DC									
Residual ripple ³⁾	< 5 V _{pp}									
Current consumption ⁴⁾	< 450 mA									
Switched outputs	B (NPN/PNP)									
	Q1: Value in tolerance range									
	Q2: Value outside of tolerance									
	Q3: Value near to or below lower tolerance limit									
	Q4: Value near to or above upper tolerance limit									
Output currents I _A max. ⁵⁾	< 100 mA									
Response time/cycle time ⁶⁾	3 ms ... 6.4 ms									
Max. image frequency	Approx. 285/s									
Trigger input ⁷⁾	HIGH corresp. ≥ 10 V ... 28.8 V									
Trigger output for ext. light.	TTL; LOW = active									
I/O + V _S connection	M12, 8-pin									
VSC – AGD/DCI connection	M12, 5-pin									
Ambient temperature	Operation: 0 °C ... +50 °C									
	Storage: –25 °C ... +75 °C									
	Storage: –20 °C ... +60 °C									
Shock load	15 g, 6 directions									
Enclosure rating	IP 64									
	IP 40									
Weight	240 g									
	350 g									
Housing material	Aluminium and brass									
	Plastic									

¹⁾ Average service life 50,000 h at T_A = +25 °C
²⁾ Limit values ± 20 %
³⁾ May not exceed or fall short of V_S tolerances

⁴⁾ Without load
⁵⁾ Total amount for all four outputs
⁶⁾ Signal transit time with resistive load
⁷⁾ Falling edge; pulse length ≥ 0.5 ms; reaction time = 3.5 ms

Test mode	Process ⁸⁾
Pixel sum	Check of the number of pixels at exceeding or falling below the limit values
Minimum pixel sum	Checking pixel number exceeding a limit

⁸⁾ All procedures are used in the binary image.
 A comparison is made each time between the taught-in reference image and the image to be checked.

Order information			
Intelligent Camera Sensor		Mounting technology	
Type	Order no.	Type	Order no.
AGD10-B1111	1026384	Bracket mounting (set) ICS100/110	2027839
DCI10-B1111	1026385	Universal rod mount clamp ICS100/110	2022464
VSC100	2025857		