EX-Q Wafer Mapping Sensor

The EX-Q wafer mapping sensor, featuring reflective laser technology, enables quick and reliable detection of semiconductor wafers and slotting errors in cassettes or FOUPs.
Available in four standoff distances — 1.5", 2.2", 3.0" and 4.5" — the EX-Q easily mounts on robots and is adaptable to a wide array of mapping applications, offering both on-and off-center wafer scans. It can accommodate mixed wafer batches — for example, dark or coated wafers can be combined with bright wafers — and is compatible with flatted or notched wafers of any size, including 300mm.

Note: Photo is reflective of the EX-43Q and EX-73Q. The EX-83Q and EX-93Q have only one laser diode.

Key Features

Excels at detecting dark or coated wafers at factory gain setting
- Laser transmitters and receivers fine-tuned for maximum sensitivity while still maintaining Class 1 status

Reliably detects cross-slotted and ultra-thin wafers
- Thin laser stripe (0.05mm) combined with multiple apertures and spatial filtering reduces noise, improving mapping accuracy

Insensitive to interference from the mapping environment
- Beam geometry and built-in ambient light filter minimize stray reflections and ambient lighting influences

Accommodates all SEMI® standard wafers, regardless of size or edge geometry, through Patented Dual and Wide Beam technologies

Easy to use "off-the-shelf" direct interface requires no amplification or signal conditioning and reduces tool total cost of ownership

Available in four standoff distances
EX-43Q 1.5"
EX-73Q   2.2"
EX-83Q   3.0"
EX-93Q 4.5"

Non-intrusive wafer mapping solution protects valuable wafers from inadvertent crashes

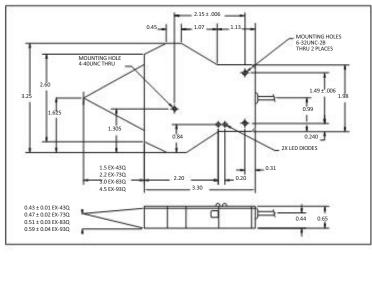No moving parts that can result in particulate contamination

EX-Q Specifications

	EX-43Q	EX-73Q	EX-83Q	EX-93Q
Method of detection	Dual Wide Beam		Wide Beam	
Optimum Detecting distance	1.5"	2.2"	3.0"	4.5"
Maximum detecting range	1.4" to 1.6"	2.05" to 2.35"	2.8" to 3.2"	4.2" to 4.8"
Supply voltage	9 to 24 V DC			
Current consumption	130 mA typical, 200 mA max.			
Light source	2 X 850 nm diode lasers		1 X 850 nm diode lasers	
at exit port	2 X 0.600 mW max.		1 X 0.600 mW max.	
at CDRH aperture	0.077 mW max.		0.077 mW max.	
Laser class	Class 1 (CDRH)			
Detectable objects	Transparent, opaque and mirror-surfaced objects			
Laser spot size	10mm x 0.05mm	16mm x 0.06mm	15mm x 0.09mm	22mm x 0.14mm
Working angle range	± 16 degrees relative to the sensor front surface	± 11 degrees relative to the sensor front surface	-4 to +8 degrees relative to the sensor front surface	
Operation	Light-ON/Dark-ON switch, Enable, Gain setting			
Response time	400-µs max.			
Minimum pulse width	5 msec. (Options available)			
Indicator	Laser power - RED led, Signal OUT - GREEN led			
Control output	MOSFET open drain, Low-True, 80mA max @24V DC			
Connections	16", 4 conductor cable (Options available)			
Temperature limits	Operating: 32 to 104ºF (0 to 40ºC) Storage: -20 to 130ºF (-30 to 55ºC)			
Materials	Lenses: glass, plastic; Case: aluminum			
Weight	4.3 oz (122g)			

Dimensions

Careful alignment and adjustment of the sensor is required for optimal performance. Read the instructions before installation. Failure to properly install, align, or use the EX-Q wafer mapping sensor may reduce its performance.

EX-Q laser photoelectric sensors contain no user-serviceable parts. Refer all servicing to an authorized CyberOptics Semiconductor agent. Semiconductor lasers used in the EX-Q wafer mapping sensor generate Class 1 invisible laser radiation. Avoid looking directly at the laser beam.

These sensors conform to IEC 60825-1 (2001-08) (laser safety) and to the laser safety requirements of SEMI S2-0200.

Contact CyberOptics today.

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For information about CyberOptics' offices and global support network, please visit www.cyberoptics.com.