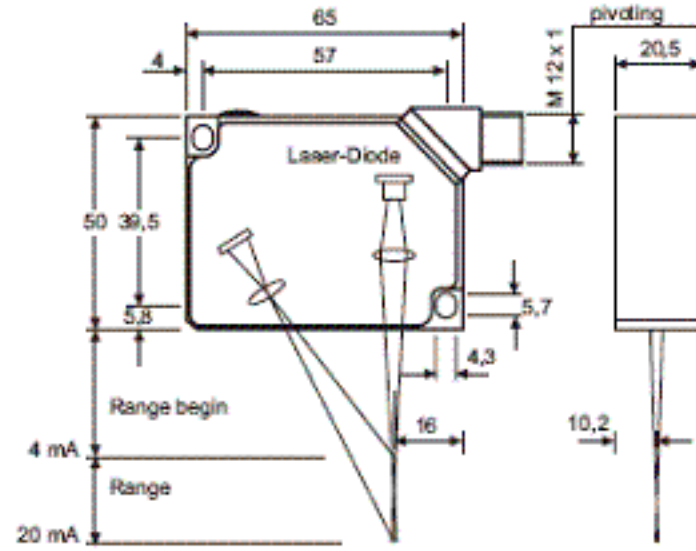


레이저 변위 센서

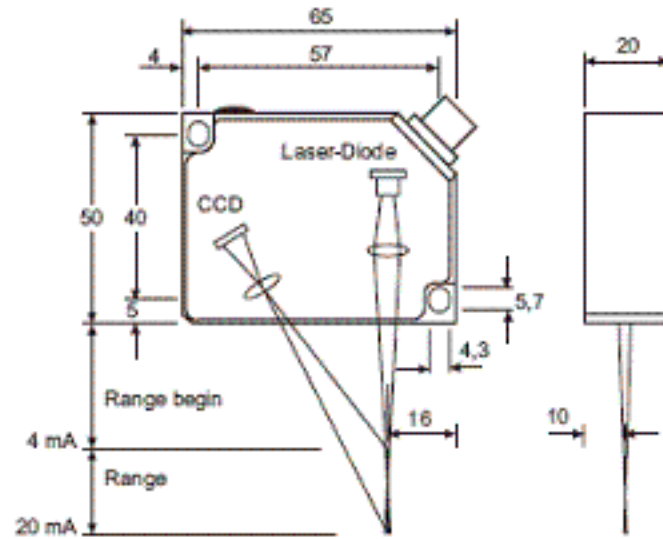
M1 레이저 변위 센서



metal case, weight 100g

		M1L/20	M1L/100	M1L/200	M1L/400
Range	(mm)	20	100	200	400
Stand-off Distance	(mm)	30	30	50	100
Linearity	± (mm)	0,1	0,2	0,9	1,5
Resolution	(mm)	0,1	0,3	0,4	0,6
Spot Diameter	(mm)	1	2	2	3
Distance Output		4 ~ 20 mA / 0 ~ 10V, optional RS485			
Reaction Time		10ms			
Bandwidth		100Hz (-3dB)			
Operation Temperature		0 ~ +50°C			
Storage Temperature		-20 ~ +70°C			
Protection Class		IP 67			
Power Supply		12 ~ 28VDC < 150mA			

M3 레이저 변위 센서

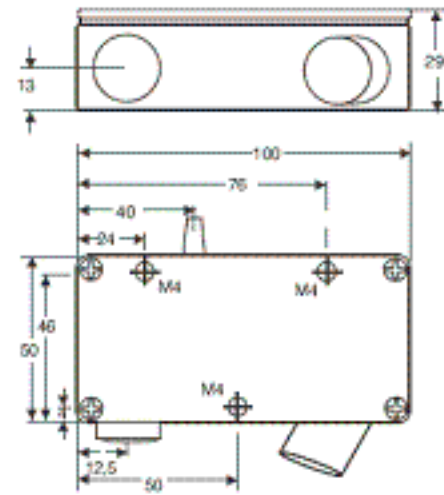
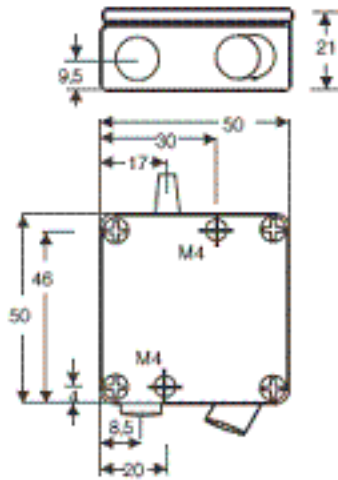


metal case, weight 90g

		M3L/5	M3L/10	M3L/20	M3L/50	M3L/100	M3L/200	M3L/250
Range	(mm)	5	10	20	50	100	200	250
Stand-off Distance	(mm)	20	20	30	45	50	60	100
Linearity	± (mm)	0,01	0,002	0,04	0,1	0,2	0,8	1,2
Resolution	(mm)	0,005	0,01	0,02	0,05	0,2	0,3	0,3
Spot Diameter	(mm)	1	1	1	1	1	2	4
Light source		Laser 670nm, red visible						
Laser protection class		2						
Distance output		4 ~ 20mA / RS232 / optional with connection cable						
Reaction time		4ms						
Bandwidth		max 1kHz (-3dB)						
Operation time		50000h for Laser-Diode						
max Vibration		5g						20g
Operation temperature		0 ~ 50°C						
Storage temperature		-20 ~ 70°C						
Protection		IP 67						
Supply		12 ~ 28VDC < 150mA						

레이저 변위 센서

M5 시리즈

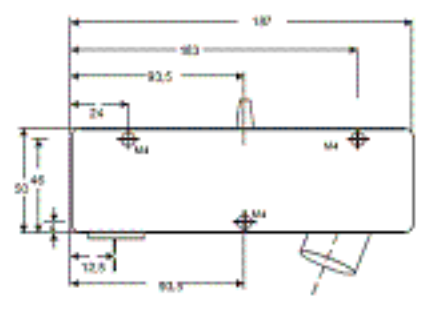
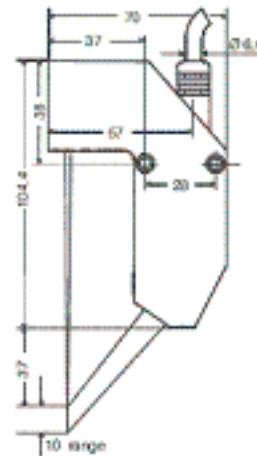
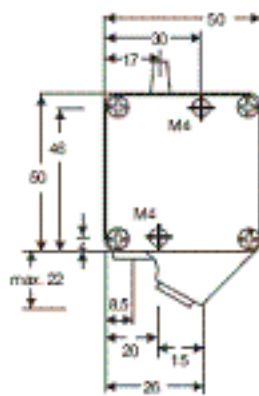
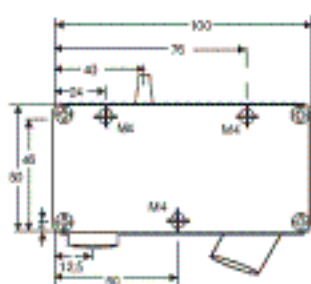
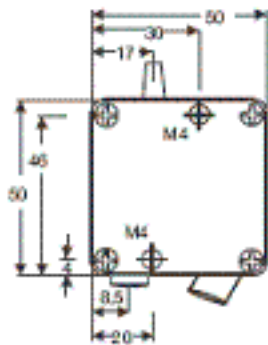


Sensor head type 2/4/10/20

Sensor head type 100/200

	M5/2	M5/4	M5/10	M5/20	M5/100	M5/200
Range (mm)	2	4	10	20	100	200
Range begin (mm)	23	22	40	55	170	240
Linearity \pm (mm)	0,004	0,008	0,02	0,04	0,2	0,4
Resolution (mm)	0,0005	0,001	0,003	0,006	0,03	0,06
Spot Diameter (mm)	0,8	0,8	2	3	8	10
Light source	LED, wavelength infrared 900nm - invisible					
Sampling frequency	2,5kHz					
Distance output	$\pm 10V$, optional: $\pm 5V / 0 \sim 10V / 4 \sim 20mA / RS232 / RS485$					
Reaction time	1ms, 2ms oder 20ms, adjustable					
Bandwidth	500Hz, 200Hz or 20Hz (-3dB)					
Intensity output	0 ~ 10V					
Operation time	50,000h for LED					
Isolation voltage	200VDC, 0V against case					
max. Vbration	5g bis 1kHz (sensor head, 20g optional)					
Operation temperature	0 ~ 70°C					
Storage temperature	-20 ~ 70°C					
Protection	Sensor: IP 64, Electronic module: IP 40					

M7L 시리즈



Sensor head type 2/4/10/20

Sensor head type 50/100/200

Sensor head type 0,5

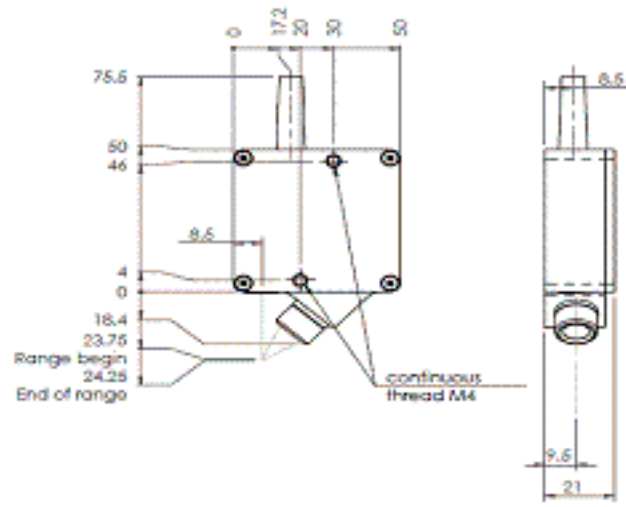
Sensor head type M7L 37/10

Sensor head type 400

Sensor M7L/	0,5	2	4	10	20	50	100	200	400	37/10
Range (mm)	0,5	2	4	10	20	50	100	200	400	10
Range begin (mm)	23,75	23	22	40	55	95	170	240	480	37
Linearity \pm (mm)	0,001	0,004	0,008	0,02	0,004	0,1	0,2	0,4	0,7	0,02
Resolution (mm)	0,0002	0,0004	0,001	0,005	0,009	0,03	0,06	0,2	0,6	0,003
Light spot diameter (mm)	0,1	0,2	0,3	0,6	0,9	1,5	1,5	2	4	0,2
Laser protection class	2	2	2	2	2	2	2	2	3R	2
Sampling frequency	54kHz									
Distance output	$\pm 10V$ (optional 0 ~ 10V / 0 ~ 5V / $\pm 5V$), RS232 / 4 ~ 20mA (optional 0 ~ 20mA)									
Reaction time	0,1 ~ 67ms									
Bandwidth	0,015 ~ 10kHz (-3dB)									
Intensity output	0 ~ 10V									
max. Vbration	5g up to 1kHz (Sensor head, 20g optional)									
Operation temperature	0 ~ 50°C									
Storage temperature	-20 ~ 70°C									
Protection	Sensor: IP 64, Electronic module: IP 40									

레이저 변위 센서

M7LL 시리즈



적용 분야

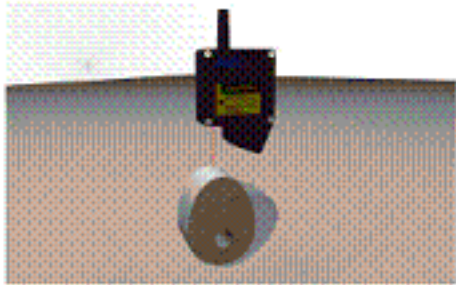
- Roundness 측정
- IC check : IC pin의 불량 측정
- Thickness 측정 : 두 개의 센서를 이용한 측정
- Vibration 측정 : 10 kHz까지 측정

Sensor head M7LL/0,5

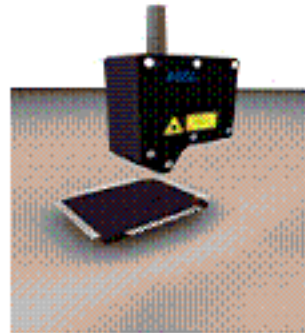
Sensor M7LL/		0,5	2	4	10	20	50	100	200	400
Measuring range	(mm)	0,5	2	4	10	20	50	100	200	400
Range begin	(mm)	23,75	23	22	40	55	115	170	240	480
Linearity	± (mm)	0,001	0,004	0,008	0,02	0,04	0,1	0,2	0,4	0,7
Resolution	(mm)	0,0003	0,0013	0,0026	0,0065	0,013	0,0325	0,065	0,2	0,6
Spot Diameter	(mm)	0,1	0,2	0,3	0,6	0,9	1,5	1,5	2	4
Light source	Laser, wavelength 670nm, red visible									
Sampling frequency	54kHz									
Distance output	4 ~ 20 mA; ±10V (optional 0 ~ 20 mA, 0 ~ 10V, 0 ~ 5V, ±5V)									
Interface	Ethernet									
Measuring rate	10 kHz									
Intensity output	0 ~ 10V									
Operation time	50,000h for laser diode									
Isolation voltage	200VDC, 0V against casing									
max. Vibration	5g up to 1kHz									
Operation temperature	0°C ~ +50°C									
Storage temperature	-20°C ~ +70°C									
Protection	Sensor: IP 64, Electronic module: IP 40									

M70LL 시리즈

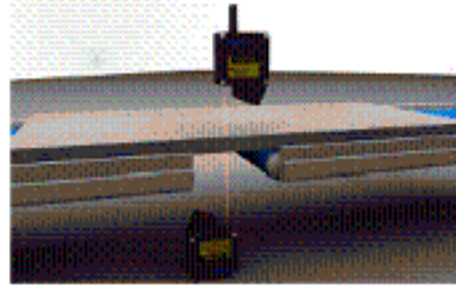
적용 분야



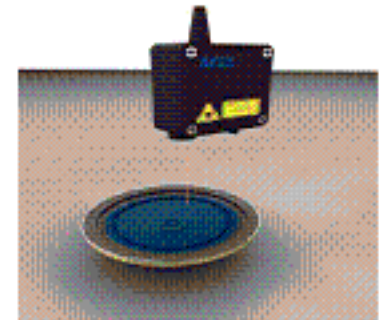
Roundness 측정



IC check



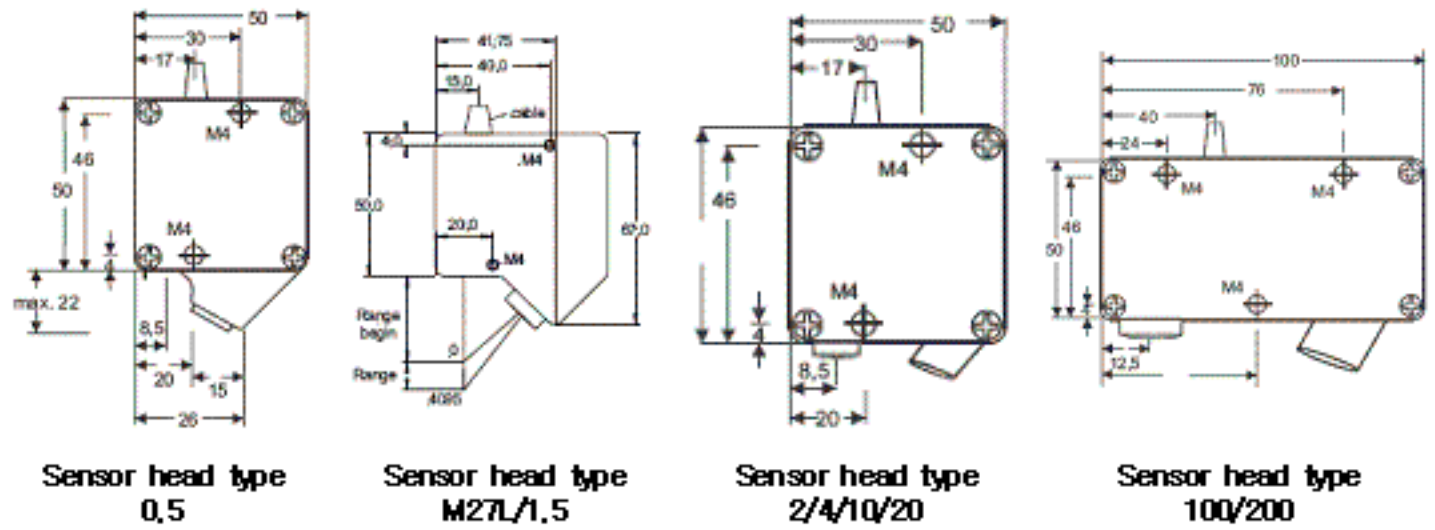
두께 측정



Vibration 측정

Sensor M7LL/		0,5	2	4	10	20	50	100	200	400
Range	(mm)	0,5	2	4	10	20	50	100	200	400
Range begin	(mm)	23,75	23	22	40	55	115	170	240	480
Linearity	± (mm)	0,0015	0,006	0,012	0,03	0,06	0,15	0,3	0,6	1,2
Resolution	(mm)	0,0008	0,0035	0,007	0,0175	0,035	0,05	0,1	0,33	0,99
Light spot diameter	(mm)	0,1	0,2	0,3	0,6	0,9	1,5	1,5	2	4
Laser protection class	class 2 according to DIN EN 60825-1: 2001-11, optional: enhanced laser power									
Sampling frequency	400kHz									
Distance output	±10V (optional 0 ~ 10V / 0 ~ 5V / ±5V), RS232 / 4 ~ 20mA (optional 0 ~ 20mA)									
Interface	Ethernet									
Measuring rate	100kHz (-3dB)									
Intensity output	0 ~ 10V									
max. Vibration	5g up to 1kHz									
Operation temperature	0°C ~ +50°C									
Storage temperature	-20°C ~ 70°C									
Protection	Sensor: IP 64, Electronic module: IP 40									

M27 레이저 변위 센서

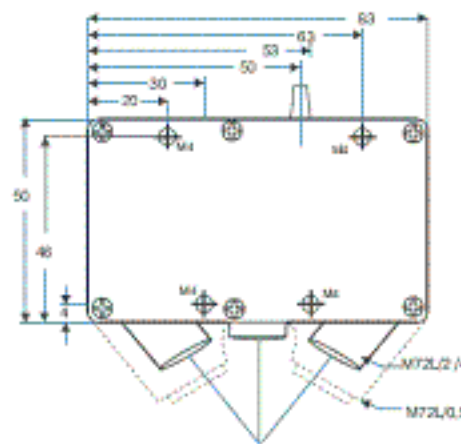


		M27L/0,5	M27L/1,5	M27L/2	M27L/4	M27L/10	M27L/20	M27L/100	M27L/200
Range	(mm)	0,5	1,5	2	4	10	20	100	200
Range begin	(mm)	23,75	32,75	23	22	40	55	170	240
Linearity	± (mm)	0,001	0,004	0,004	0,008	0,02	0,04	0,2	0,4
Resolution*	(mm)	0,0015	0,0045	0,006	0,012	0,3	0,06	0,5	1
Resolution**	(mm)	0,0075	0,0225	0,03	0,06	0,15	0,3	2	4
Light spot diameter	(mm)	0,1	0,1	0,2	0,3	0,6	0,9	1,5	2
Laser protection class		2						3R	
Sampling frequency		136kHz							
Distance output		±10V (optional 0 ~ 10V / 0 ~ 5V / ±5V), RS232 / 4 ~ 20mA (optional 0 ~ 20mA)							
Reaction time		27 ~ 400µs							
Bandwidth		2,5 ~ 37kHz (-3dB)							
Intensity output		0 ~ 10V							
Max. ambient light		20000 Lux							
max. Vibration		5g, 0 ~ 1kHz (sensor head, 20g optional)							
Operation temperature		0 ~ 50°C							
Storage temperature		-20 ~ 70°C							
Protection		Sensor: IP 64, Electronic system: IP 40							
Supply		+24VDC / 200mA (10 ~ 30V)							

* Measurement on object color white - frequency range 2,5kHz

** Measurement on object color white - frequency range 37kHz

M72 레이저 변위 센서

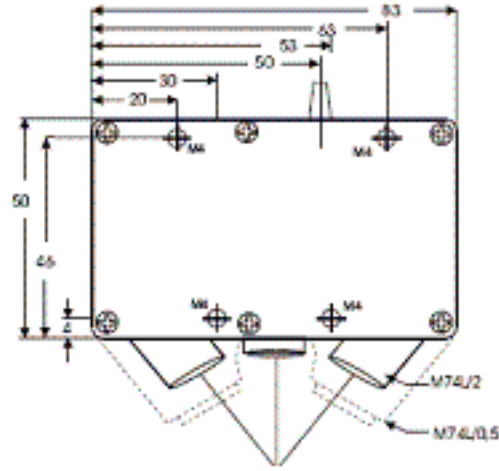


Sensor head M72 type 0,5/2/4

		M72L/0,5	M72L/2	M72L/4
Range	(mm)	0,5	2	4
Range begin	(mm)	23,75	23	22
Linearity	± (mm)	0,001	0,004	0,008
Resolution	(mm)	0,0001	0,0005	0,001
Light spot diameter	(mm)	0,1	0,2	0,3
Laser protection class		2		
Sampling frequency		54kHz		
Distance output		±10V (optional 0 ~ 10V / 0 ~ 5V / ±5V), RS232 / 4 ~ 20mA (optional 0 ~ 20mA)		
Reaction time		0,1 ~ 67ms		
Bandwidth		0,015 ~ 10kHz (-3dB)		
Intensity output		0 ~ 10V		
Ambient light		20000 Lux		
max. Vibration		5g bis 1kHz (sensor head, 20g optional)		
Operation temperature		0 ~ 50°C		
Storage temperature		-20 ~ 70°C		
Protection		Sensor: IP 64, Electronic module: IP 40		
Supply		+24VDC / 200mA (10 ~ 30V)		

레이저 변위 센서

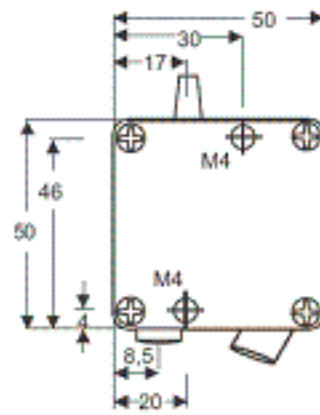
M74 레이저 변위 센서



Sensor head M74 type 0,5/2

		M74L/0,5	M74L/2
Range	(mm)	0,5	2
Range begin	(mm)	23,75	23
Linearity	± (mm)	0,001	0,004
Resolution	(mm)	0,0003	0,001
Light spot diameter	(mm)	0,1	0,1
Laser protection class		2	
Light source		Laser, wavelength 670nm, red visible	
Sampling frequency		54kHz	
Distance output		±10V (optional 0 ~ 10V / 0 ~ 5V / ±5V), RS232 / 4 ~ 20mA (optional 0 ~ 20mA)	
Reaction time		m0,1 ~ 67ms	
Bandwidth		0,015 ~ 10kHz (-3dB)	
Intensity output		0 ~ 10V	
Ambient light		20000 Lux	
Operation time		50000h for Laser diode	
Isolation voltage		200VDC, 0V against case	
max. Vbration		5g bis 1kHz (sensor head, 20g optional)	
Operation temperature		0 ~ 50°C	
Storage temperature		-20 ~ 70°C	
Protection		Sensor: IP 64, Electronic module: IP 40	
Supply		+24VDC / 200mA (10 ~ 30V)	

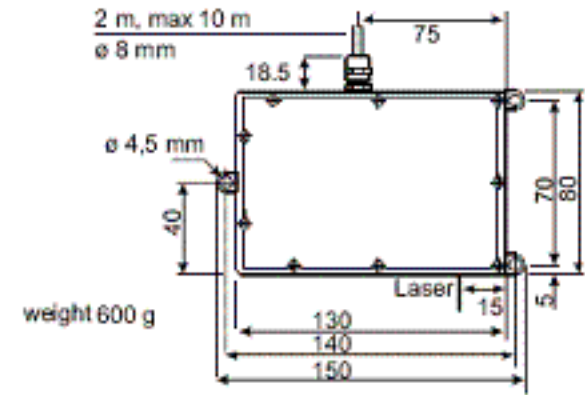
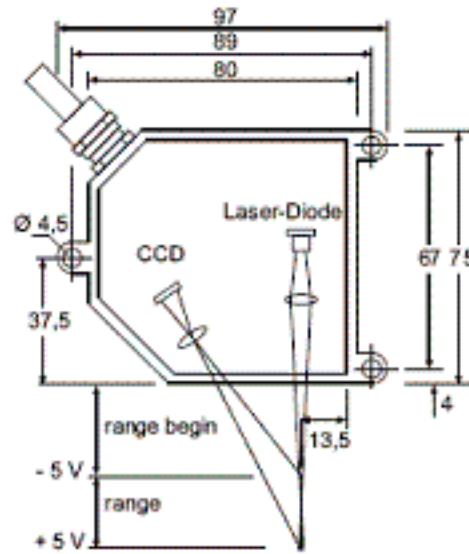
M500 레이저 변위 센서



Sensor head type 2/8

		M500L/2	M500L/8
Range	(mm)	2	8
Range begin	(mm)	23	47,5
Linearity	± (mm)	0,004	0,016
Resolution	(mm)	0,04	0,1
Light spot diameter	(mm)	0,06	0,3
Light source		Laser, wavelength 670nm, Red visible	
Sampling frequency		DC	
Laser protection class		3R	
Reaction time		1,2 µsec	
Bandwidth		500kHz (-3dB)	
Intensity output		0 ~ 5V	
Ambient light		500 Lux - only continuous light, no artificial light (50Hz)	
max. Vbration		5g up to 1kHz	
Operation temperature		10 ~ 50°C	
Storage temperature		-20 ~ 70°C	
Protection		Sensor: IP 64, Electronic module: IP 40	
Supply		+24VDC / 350mA (18 ~ 28V)	

M9 레이저 변위 센서

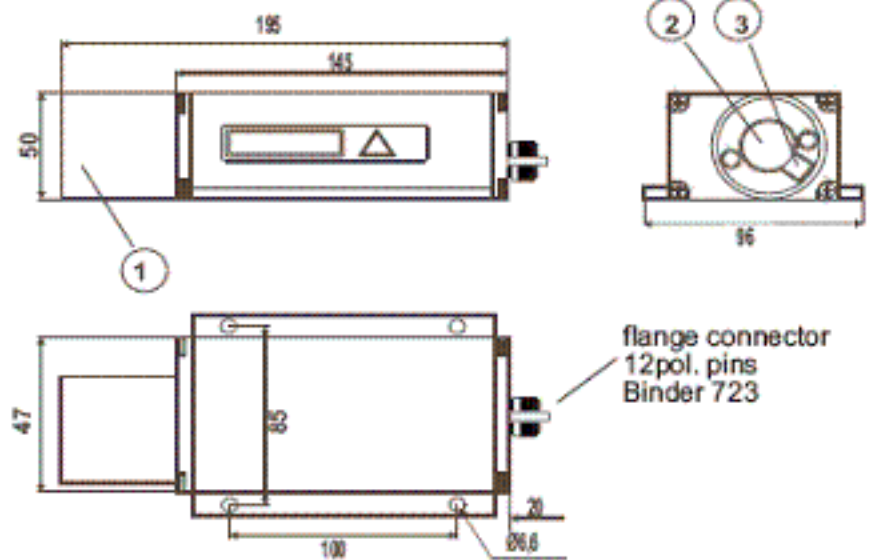
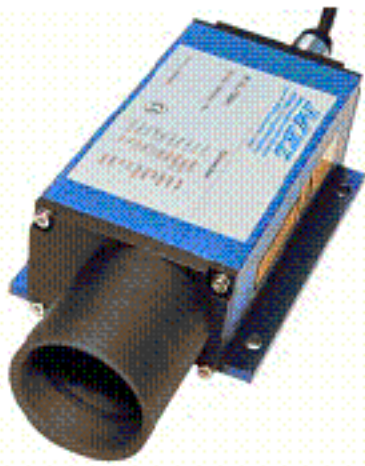


Sensor head type 2/10/20/50/100/200

Sensor head type M9L/500

	M9L/2	M9L/10	M9L/20	M9L/50	M9L/100	M9L/200	M9L/500
Range (mm)	2	10	20	50	100	200	500
Range begin (mm)	24	30	40	45	70	70	200
Linearity ± (mm)	0,002	0,008	0,015	0,04	0,08	0,2	0,4
Resolution (mm)	0,0002	0,002	0,004	0,01	0,02	0,04	0,05
Light spot diameter (mm)	0,2	0,4	0,3	0,5	0,6	1,2	1,5
Light source	Laser, wavelength 670nm						
Laser protection class	2						
Distance output	±5V / optional RS232						
Reaction time	1,5ms						3ms
Bandwidth	5kHz (-3dB)						2,5kHz
ambient light	10000 Lux						
max. Vibration	5g up to 1kHz						
Operation temperature	0 ~ 50°C						
Storage temperature	-20 ~ 70°C						
Protection class	Sensor IP 65, Controller: IP 50						
Supply	21 ~ 27VDC < 500mA						

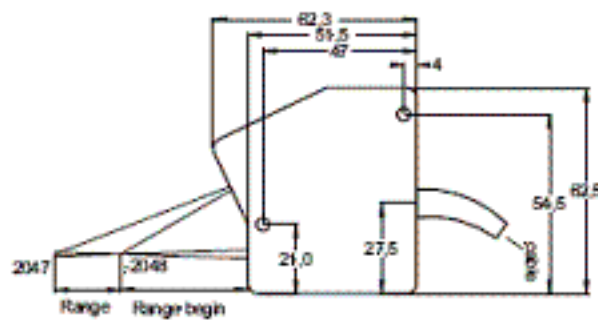
M10 레이저 변위 센서



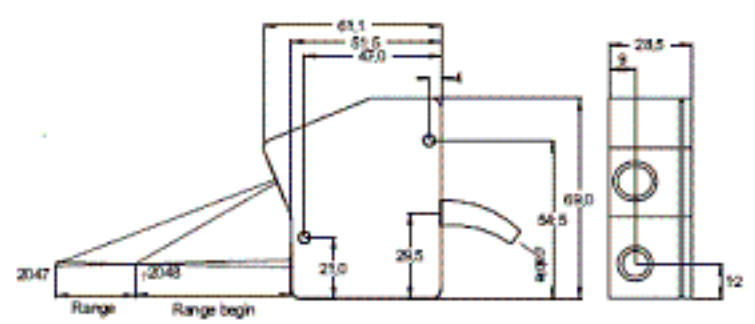
Model	M10L/100
Measuring range	0,2 ~ 35m on white and most natural surfaces, up to 150m possible with target plate
Linearity	±2mm for ranges up to 35m; ±3mm for ranges >35m
Resolution	depending on scale factor: 1mm at SF=1; 0,001mm at SF=1000
Light spot diameter	<11mm at 10m, <35mm at 50m, <65mm at 100m
Measuring frequency	10 Hz or 50 Hz (please state when ordering)
Light source	Laser, wavelength 650nm, red visible
Laser classification	≤ 1mW under IEC 825-1, laser class 2
Analog output	programmable distance range, 4 ~ 20mA
Interface	RS232 or RS422(optional), Baudrate 9,6kBaude Format 8N1 selection of measuring time, output of measured values, inner temperature, error codes, single measurement mode
Operation temperature	-10°C ~ +50°C
Storage temperature	-20°C ~ +70°C
Protection	IP 65
Supply voltage	10 ~ 30V ; < 1,5W (no Alarm)

레이저 변위 센서

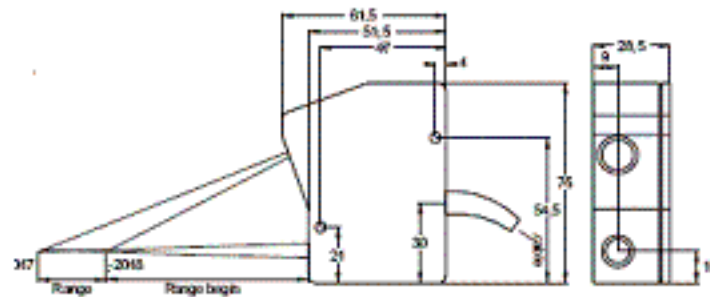
M11 레이저 변위 센서



Sensor head type M11L/20



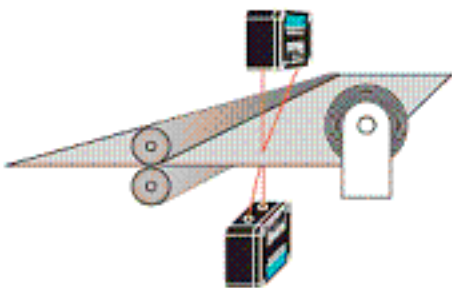
Sensor head type M11L/50



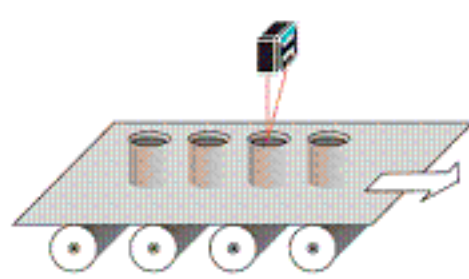
Sensor head type M11L/100

		M11L/20	M11L/50	M11L/100
Range	(mm)	20	50	100
Range begin	(mm)	40	55	75
Linearity	± (mm)	0,01	0,025	0,05
Resolution	(mm)	0,005	0,0125	0,025
Light spot diameter	(mm)	0,9	1	1,1
Laser protection class		2	2	2
Light source		Laser, wavelength 670nm, red visible		
Sampling frequency		500Hz up to 10kHz		
Distance output		±10V (optional 0 ~ 10V / 0 ~ 5V), 4 ~ 20mA / RS232 (optional 0 ~ 20mA)		
Impedance		approx. 0 Ohm (10mA max)		
Reaction time		200µs		
Bandwidth		0,5 x sampling frequency		
Intensity output		0 ~ 10V		
max. Vibration		5g up to 1kHz		
Operation temperature		0 ~ 50°C		
Storage temperature		-20 ~ 70°C		
Protection class		IP 64		
Supply		24VDC / 280mA (10 ~ 28V)		

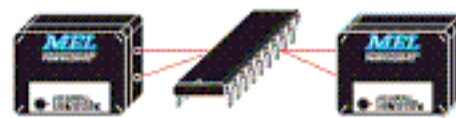
응용 분야



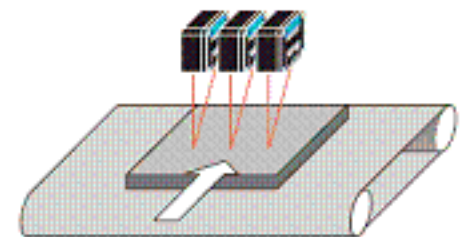
두께 측정



액체 레벨 제어



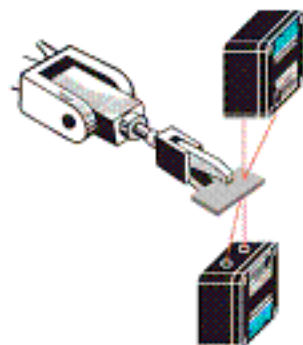
IC칩의 크기 및 정밀도 테스트



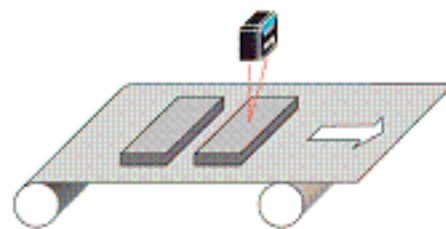
제품의 표면 제어



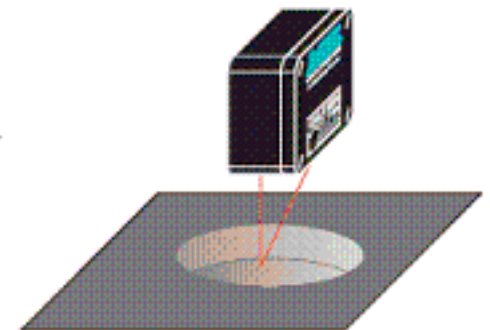
톱날의 표면 테스트



대상의 위치 인식 및 제어



물체의 이동 및 수량 제어



구멍의 깊이 및 위치 테스트