

Fibre Optic Sensors

Omron's fibre optic portfolio contains hundreds of sensor heads designed to cover virtually any fibre application requirement, this guide simplifies choosing by listing the most commonly used types that will solve most applications. This makes choosing a fibre to solve your problem easier (the full range of fibre sensors is available on our website www.omron.co.uk where datasheets can be downloaded).

The choice of amplifier and sensor head combination will determine the sensing range, this information has been listed alongside the sensor head along with useful information for example fixing size and bending radius.

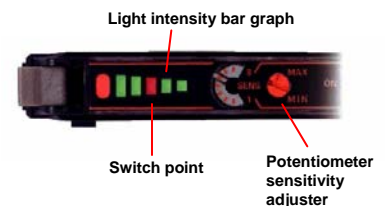
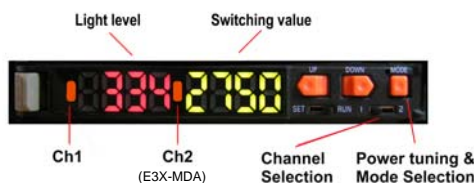


Amplifiers

The amplifiers are split into two types, digital or manual. Digital amplifiers are multifunction devices that have a display that gives a numerical display of the light value, the switching point is set digitally.

Manual types have a simplified bar graph display to show the light intensity and the switch point is set via a potentiometer.

	DIGITAL		MANUAL
Light source	Red (Green, Blue, Infrared LED also available)		Red (Green LED also available)
Functions	Dual display - light intensity level and switch point Teaching or manual setting Power tuning function Timer functions - on, off, one shot (1ms to 5s) 2m cable (Easy wiring options available) Optical communication bus		LED bar graph, 5 levels 8 turn sensitivity adjuster Off delay timer (fixed at 40ms) 2m cable (Easy wiring options available) Optical communication bus
	1 fibre channel	2 fibre channel (2 amplifiers in one body)	1 fibre channel
Response time	48us, 1ms (standard mode), or 4ms	100us, 1ms (standard mode) or 4ms	200uS
NPN	E3X-DA11S	E3X-MDA11	E3X-NA11
PNP	E3X-DA41S	E3X-MDA41	E3X-NA41



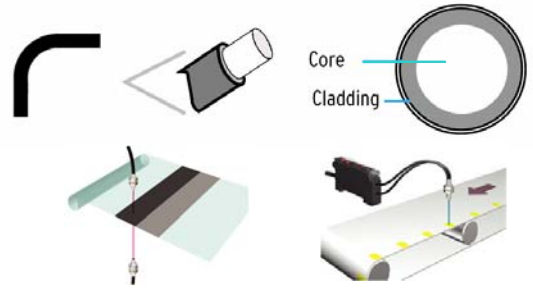
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Through beam (transmitter & receiver heads)

Diffuse (target reflects light to sensor head)

STANDARD FIBRES

These six sensor heads will solve a multitude of applications having longer sensing ranges. They are able to be bent with a 25mm minimum bending radius that will cover most installations.



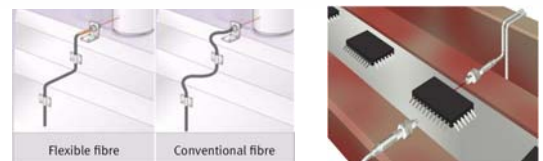
	Part reference	Description	Size		Range (mm)	Bending radius	Minimum Object size
	E32-TC200	General purpose	M4	E3X-NA	400 (3000)	25	0.005 dia
				E3X-DAS	760 (4000)		
	E32-TC200E	General purpose	M3	E3X-NA	400 (3000)	10	
				E3X-DAS	760 (4000)		
	E32-TC200A	General purpose, Long range	M3	E3X-NA	360	25	
				E3X-DAS	680		

NB Values in brackets indicate distances with additional focussing lens E39-F1 fitted

	Part reference	Description	Size		Range (mm)	Bending radius	Minimum Object size
	E32-DC200	General purpose	M6	E3X-NA	150	25	0.005 dia
				E3X-DAS	300		
	E32-DC200E	General purpose	M3	E3X-NA	36	10	
				E3X-DAS	80		
	E32-CC200	Coaxial	M3	E3X-NA	150	25	
				E3X-DAS	300		

FLEXIBLE FIBRES

For applications where mounting space is very confined we offer versions of the standard fibres that can be bent with a bend radius of 1mm. This is achieved with multicore fibres. Sensing ranges are lessened using this fibre type.



	Part reference	Description	Size		Range (mm)	Bending radius	Minimum Object size
	E32-ET11R	Flexible	M4	E3X-NA	280 (2100)	1	0.005 dia
				E3X-DAS	530 (3700)		
	E32-ET21R	Flexible	M3	E3X-NA	60		
				E3X-DAS	130		
	E32-ED11R	Flexible	M6	E3X-NA	90		
				E3X-DAS	170		
	E32-ED21R	Flexible	M4	E3X-NA	15		
				E3X-DAS	30		

NB All fibres have 2m cable which can be cut and are IP67 unless specified.

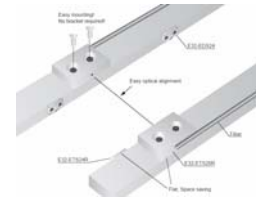
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SIMPLE FIXING

Made from Aluminium with through fixing holes these sensing heads are quick and easy to install.



	Part reference	Description	Size		Range (mm)	Bending radius	Minimum Object size
	E32-ETS10R	End face beam	15x10x4mm	E3X-NA	420	1	0.005 dia
				E3X-DAS	560		
	E32-ETS14R	Side view	15x9x4mm	E3X-NA	280		
				E3X-DAS	480		
	E32-ETS20R	End face beam	15x8x3mm	E3X-NA	100		
				E3X-DAS	190		
	E32-ETS24R	Side view	13x6x2.3mm	E3X-NA	50		
				E3X-DAS	180		
	E32-EDS24R	Side view	13x6x2.3mm	E3X-NA	15		
				E3X-DAS	30		

RIGHT ANGLE HEADS

For where space is very restrictive.



	Part reference	Description	Size		Range (mm)	Bending radius	Minimum Object size
	E32-T14L	side view cylindrical	3mm dia.	E3X-NA	60	10	0.005 dia
				E3X-DAS	130		
	E32-D14L	side view cylindrical	6mm dia.	E3X-NA	90	25	
				E3X-DAS	170		
	E32-D24	side view cylindrical	2mm dia.	E3X-NA	15	10	
				E3X-DAS	30		

'CURTAIN' BEAM

A range of through beam sensors with wide beams to detect height or objects anywhere within the 'curtain'



	Part reference	Description	beam width		Range (mm)	Bending radius	Minimum Object size
	E32-T16	Curtain beam	10mm	E3X-NA	1500	25	0.6
				E3X-DAS	2800		
	E32-T16P		11mm	E3X-NA	600	10	0.2
				E3X-DAS	1100		
	E32-T16W		30mm	E3X-NA	690	10	0.3
				E3X-DAS	1800		
	E32-ET16R2		50mm	E3X-NA		1	2.5
				E3X-DAS	2000		
	E32-ET16R1		70mm	E3X-NA		1	6
				E3X-DAS	2340		

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SMALL SPOT

In order to get a small spot a focussing lens is required and is usually used with a coaxial type of sensing head. This combination determines the spot size and focus distance.



E3X-NA / E3X-DAS / E3X-MDA

E32-EC41 + E39-F3A-5 lens	E32-EC31 + E39-F3B lens	E32-D32 + E39-F3A lens
M3 with screw on lens, fixed focus 7mm with 0.1mm spot size	M3 with screw on lens, fixed focus 17mm with 0.5mm spot size	2mm diameter with adjustable lens position for 6-12mm focus, 0.5-1mm spot size



25mm bend radius

PROTECTIVE TUBING

Stainless steel tubing for when the fibre may be mechanically damaged

Stainless steel spiral tube, heads screw into threaded hole	head size	Applicable fibre head	Part reference
	M3	E32-DC200E, E32-ED21R	E39-F32A 1m
	M3 (PAIR)	E32-TC200E, E32-ET21R	E39-F32B 1m
	M4	E32-TC200, E32-ET11R	E39-F32C 1m
	M6	E32-DC200, E32-CC200, E32-ED11R	E39-F32D 1m



For the full range of products and technical data visit or website www.omron.co.uk or call us on 0870 752 0861