

Industrial Automation Guide 2016



Industrial Products & Systems

industrial.omron.eu

Targeted Technologies

Creating maximum output with minimum input

By identifying the many ways of innovation in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples on our website.

industrial.omron.eu/technologies



Welcome to our world

Our best-in-class devices for your automation system

Welcome to Omron's world of advanced industrial automation. The INDUSTRIAL AUTOMATION GUIDE is your essential tool to select best-in-class devices for your automation system. It highlights our core competences in sensing, control, visualisation, motion and panel components.

Of course, Omron offers a much larger range of products than you can find on the attached DVD. For more information on services and company competence visit our website.

Here you will find:

- Latest product news
- Technical product specifications
- 2D / 3D CAD Library
- Customer references
- Technology concepts
- Supporting product documentation
- Knowledge Base - "myOmron"
- Events Calendar
- Contact information

Find information fast!

Quick Links shortens your search. Quick Links are unique codes assigned to Omron products listed in this guide. Enter Quick Link codes in the search box on industrial.omron.eu to access detailed information on products in this guide.



industrial.omron.eu

Industrial Automation Guide 2016

	Omron at a glance	3
	The 361° Approach	4
	Sysmac: A fully integrated platform	6
	Product selection table	8
Automation systems	Machine automation controller	12
	Programmable logic controllers (PLC)	26
	Remote I/O	54
	Human machine interfaces (HMI)	68
	I/O cables and terminal blocks	82
	Ethernet cables and accessories	91
Motion & Drives	Motion controllers	96
	Servo systems	112
	Robots	170
	Frequency inverters	202
Sensing	Photoelectric sensors	236
	Mark and Color sensors	278
	Lightcurtains and area sensors	284
	Fiber optic sensors and amplifiers	292
	Inductive sensors	324
	Mechanical sensors/Limit switches	344
	Rotary encoders	358
	Cable connectors	366
Quality control & Inspection	Inspection & Ident systems	370
	Measurement sensors	426
Safety	Emergency stop and control devices	462
	Safety limit switches	472
	Safety door switches	480
	Safety sensors	506
	Safety logic control systems	544
	Safety outputs	566
Control components	Temperature controllers	574
	Power supplies	596
	Uninterruptible power supplies (UPS)	614
	Timers	622
	Counters	632
	Programmable relays	642
	Digital panel indicators	650
	Energy monitoring devices	660
	Photovoltaic	674
Switching components	Electromechanical relays	682
	Solid state relays	696
	Low voltage switchgear	706
	Monitoring products	722
	Pushbutton switches	750
Software	Software	766
	Outline of Major Standards	772
	Index	775

“To the machine the work of the machine,
to man the thrill of further creation.”

Kazuma Tateisi, founder of Omron

Omron at a glance

200.000 products ranging
input, logic and output

Sensing, Control Systems, Visualization, Drives, Robots, Safety,
Quality Control & Inspection, Control and Switching Components

7%

Investment in Research & Development

Innovation track
record of 80 years

Top 150 global patent assignee

1.200 employees dedicated to R&D

11.000 + issued and pending patents

37.000

Employees worldwide

210

Locations worldwide

22

Countries in EMEA

Working for the
benefit of society



Close to your needs

Technical training & seminars, technical support, Automation Technology Centers, online community (MyOmron), online catalogues and technical documentation, customer service & sales support, inter-operability labs (Tsunagi), safety services, repairs.

Your needs, our focus

Solutions perfectly matching your needs

We asked ourselves: 'What do you need in sensors and components?' Well, first you need reliability. Then a variety and choice of performance levels. You may also want advanced functionality, with special features defined by you – or you may want standardized solutions, with highly competitive prices.

Whatever it is, it can all add up to a wish list that is difficult to fulfil. Until now. That's because our new 361° Approach not only provides a complete all-round offer without gaps, it also puts you at the very centre of the product selection process. It's an approach that leads to a Perfect Match – one with the extra degree of confidence that comes from choosing Omron.

361° in one view



Quality



Line-up



Application



Customization



Global availability



Specs

	Quality	Line-up	Application	Customization	Global availability	Specs
PRO^{plus}	Premium	Tailored	Special	Yes	Yes	Application oriented
PRO	Premium	Complete	Advanced	Yes	Yes	Above Standard
LITE	Premium	Standard	Basic	No	No	Basic
	'Quality' refers to the standard of manufacturing and the materials used – this translates into reliability	'Line-up' refers to the number of model types	'Application' indicates the complexity of the automation	'Customization' is the possibility to modify the product		'Specs' refers to the choice of performance levels

The extra degree of advantage

Three distinct lines of sensors and components

Three distinct lines

361° Approach offers three distinct lines within each sensor or component product category. LITE products are cost-effective without any compromise in quality. PRO products represent the “install & forget” option, offering longer lifetime, higher protection, and more features. While PROplus products are designed for specific applications or customer demands.

Optimized reliability

All three lines are backed by the Omron commitment to quality, so even when you need a price-competitive advantage, you can be confident that they will never let you down.

Solutions that perfectly match your needs

The 361° Approach ensures that you can quickly and easily identify the perfect match solution to your needs – nothing more, nothing less.

Optimized costs

Your sensor and component costs are also minimized – because it eliminates over-specification.

Why an extra 1°?

The extra degree is what you get when you do business with Omron, and that means different things to different customers – all depending on their needs. For example, if you need specification advice, the extra degree is ‘service’. But ultimately, to everyone it means “an extra degree of confidence in the perfect match”.



Sysmac: A fully integrated platform

Integration and Functionality

Sysmac is an integrated automation platform dedicated to providing complete control and management of your automation plant. At the core of this platform, the Machine Controller series offers synchronous control of all machine devices and advanced functionality such as motion, robotics and database connectivity. This multidisciplinary concept allows you to simplify solution architecture, reduce programming and optimize productivity.



Machine Automation Controller

FACTORY
AUTOMATION

MACHINE
CONTROL



Motion



Filling line

- Motion Control: Integrated within the IDE, and operating in real-time
- Standard PLCopen Function Blocks plus Omron generated motion FB's
- Direct Synchronous control for Position, Speed and Torque



Safety



Assembly

- All safety related data is synchronized with the whole network
- Safety functions such as muting, guard locking, EDM and valve monitoring are simple to manage

- ✓ **One Integrated Development Environment software** for Configuration, Programming, Simulation and Monitoring



Information



- Sysmac communicates in real-time with Databases such as SQL
- Secure Data: In the event of a server going down or losing communications, data is automatically stored in internal memory
- Sysmac operates with Databases at high speed [1000 table element/ 100 ms] ensuring realistic Big Data Processing to improve productivity and aid predictive maintenance etc.

✓ Integrated Automation Control:

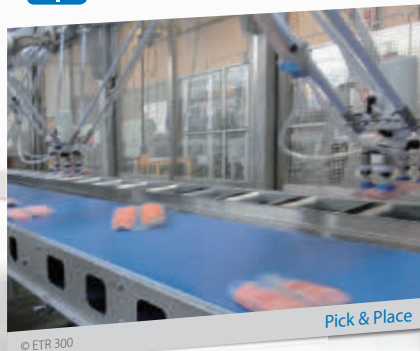
The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

Vision



- Higher resolution images available without increasing the vision processing time
- Shape search technology: Provides more stable and accurate object detection for Pick & Place projects

Robotics



- Up to 8 Delta robots with one controller
- Time-based Robotic Function Blocks make programming easier

Sensing



- Full control of the process parameter setting and predictive maintenance functions
- High precision detection and positioning data synchronized on the network

Product selection table

Automation systems				
	12 Machine automation controller	26 Programmable logic controllers (PLC)	54 Remote I/O	68 Human machine interfaces (HMI)
				
	96 Motion controllers	112 Servo systems	170 Robots	202 Frequency inverters
Sensing				
	236 Photoelectric sensors	278 Mark and Color sensors	284 Lightcurtains and area sensors	292 Fiber optic sensors and amplifiers
				
	370 Inspection & Ident systems	426 Measurement sensors		
Safety				
	462 Emergency stop and control devices	472 Safety limit switches	480 Safety door switches	506 Safety sensors
				
	574 Temperature controllers	596 Power supplies	614 Uninterruptible power supplies (UPS)	622 Timers
Switching components				
	682 Electromechanical relays	696 Solid state relays	706 Low voltage switchgear	722 Monitoring products
				
	766 Software			
Software				

Sensing

Find information fast!

Quick Links shortens your search. Quick Links are unique codes assigned to Omron products listed in this guide. Enter Quick Link codes in the search box on industrial.omron.eu to access detailed information on products in this guide.



Quick Link

Sensing

Photoelectric sensors	236	Fiber optic sensors and amplifiers	292
Selection table	238	Selection table	294
Compact square		Fiber sensor heads	
Multi-purpose		E32 Standard cylindrical	296
E3Z	241	E32 Square shape	298
E3ZM	243	E32 Miniature	300
E3Z-Laser	245	E32 Longer distance	302
Special applications		E32 Chemical resistant	304
E3Z-G	246	E32 Heat resistant	305
E3ZM-B	247	E32 Vacuum resistant	307
E3Z-B	248	E32 Robot application	309
E3S-CL	249	E32 Precision detection	310
E3S-LS3	250	E32 Special application	312
E3S-DB	251	Fiber amplifiers	
E3ZM-C	239	E3X-HD	314
Miniature and Photomicro		E3X-SD	317
Multi-purpose		E3X-NA	318
E3T	253	E3NX-FA	320
E3H2	264	E3X-DAC-S	282
Special applications		E3X-NA_F	293
EE-SX47/67	255	E3X-MDA	293
Cylindrical		E3X-DAH-S	293
Multi-purpose		Fiber accessories	
E3FA/E3FB	257	E39/E32	323
E3F1	260	Inductive sensors	324
Special applications		Selection table	326
E3F_-B/-V	261	Compact – cylindrical	
E3FC	262	E2A	328
E3H2	264	E2A-S	330
E3T-C	265	E2A3	331
Square type		E2B	332
Multi-purpose		μPROX E2E Small Diameter	334
E3G-M	266	Square/block style	
E3JK	267	TL-W	335
E3JM	269	E2S	336
Special applications		E2Q5	337
E3G-M	266	Special models	
Separated amplifier		E2EH	338
E3NC	270	E2E_-U	339
Reflectors		E2FM	340
E39	274	E2C-EDA	342
Accessories		E2Q6	343
AS	276	E2FQ	326
E39/Y92E-B	277	Mechanical sensors/Limit switches	344
Mark and Color sensors	278	Selection table	347
Selection table	280	Limit switches	
Mark detection		D4N	348
E3ZM-V	281	D4B	475
E3X-DAC-S	282	WL-N	350
FQ	279	D4C	352
FZ	279	ZC	354
Color detection		Z	356
Xpectia lite	279	EE-SX47/67	255
Lightcurtains and area sensors	284	ZX-T	451
Selection table	286	D4C, D4E, X, Z, ZC	345
Lightcurtains and area sensors		D4MC, HL, WL	345
F3ET2	287	D4E, SHL, WL	345
F3E	288	D5B	347
E32 Area monitoring	289	Rotary encoders	358
E32-M21	289	Selection table	361
F3EM2	290	Rotary encoders	
E3Z	241	E6A2-C, E6B2-C	362
ZX-GT	457	E6C2-C/E6C3-C, E6F-C	363
		E6H-C	364
		E6C3-A, E6F-A	365
		Cable connectors	
		Cable connectors	
		XS2, XS3, Y92E	366

ZERO TOLERANCE ON FAILURE

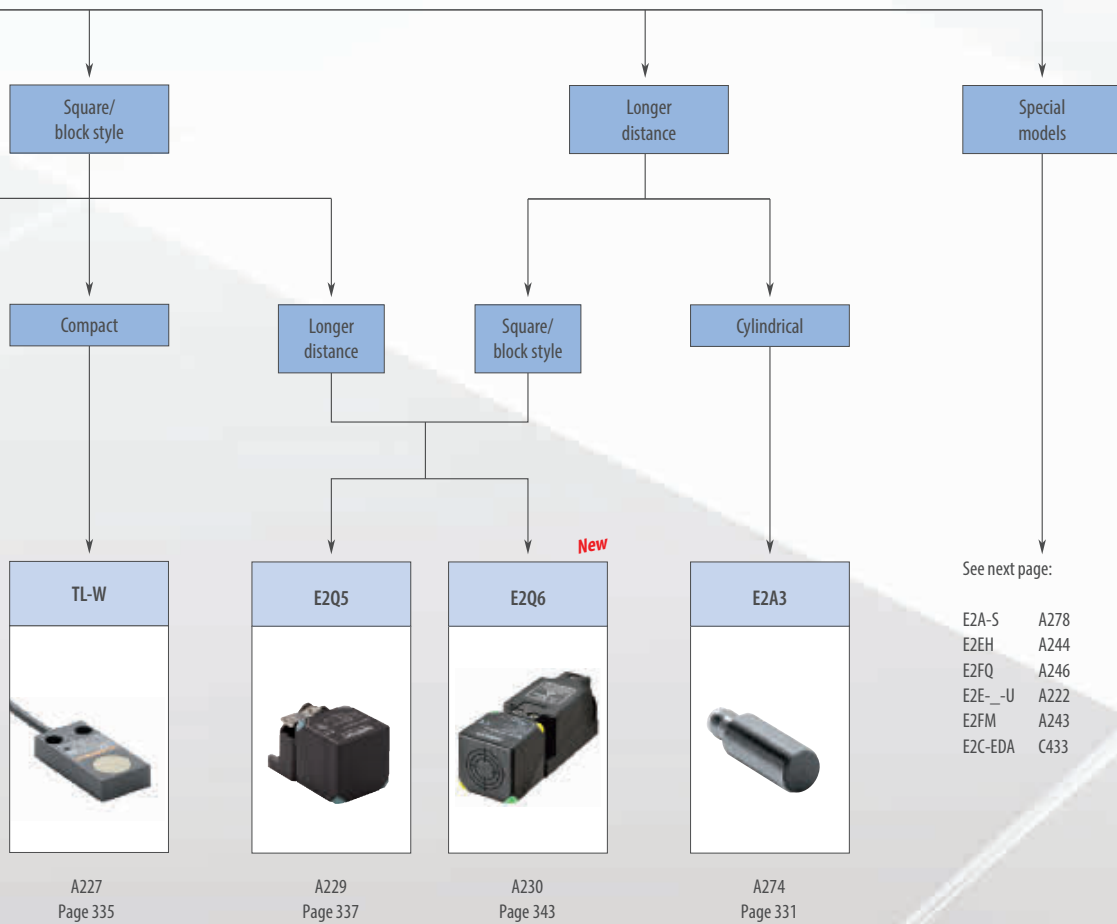
Tested reliability for demanding conditions

Our inductive sensors are designed and tested to ensure a long service life and to achieve maximum machine availability even in the harshest environments.





This trusted reliability makes the E2A one of the world's most popular and successful inductive proximity sensors with more than one million units sold every year.

- Wide portfolio and application range
- Highest reliability even in demanding environments
- Designed for flexibility - modular housing design for best performance fit









Selection table



Format		Cylindrical			
					
Model		E2A	E2A3	E2A-S	E2B
361° product line		PRO	PRO ^{plus}	PRO	LITE
Type		Compact	Long distance	Compact	Compact
Material		Brass, SUS	Brass	Stainless steel	Stainless steel
Max. sensing distance	dia. 3	—	—	—	—
	dia. 4	—	—	—	—
	M5	—	—	—	—
	dia. 6.5	—	—	—	—
	M8	2/4 mm	3 mm	2/4 mm	2/4 mm
	M12	4/8 mm	6 mm	4/8 mm	4/8 mm
	M18	8/16 mm	11 mm	8/16 mm	8/16 mm
	M30	15/30 mm	20 mm	15/20 mm	15/30 mm
	19 × 6 × 6	—	—	—	—
	22 × 8 × 6	—	—	—	—
	31 × 18 × 10	—	—	—	—
	53 × 40 × 23	—	—	—	—
	67 × 40 × 40	—	—	—	—
Mount.	Shielded	■	■	■	■
	Non-shielded	■	—	■	■
Oper. mode	NO	■	■	■	■
	NC	■	■	■	■
	NO + NC	■	—	■	—
Wiring	DC 2-wire	■	—	—	—
	DC 3-wire	■	■	■	■
	DC 4-wire	■	—	■	—
	AC 2-wire	—	—	—	—
Voltage	10 to 30 VDC	■	■	■	■
	12 to 240 VAC	—	—	—	—
IP rating	IP67	■	■	■	■
	IP69K	■	■	■	—
Page/Quick Link		328/A272	331/A274	330/A278	332/A289

Special models

Type	Detergent and heat resistant	Chemical resistant	Small diameter	Full metal face
				
Model	E2EH	E2FQ	μPROX E2E	E2FM
361° product line	PRO ^{plus}	PRO ^{plus}	PRO ^{plus}	PRO ^{plus}
Key features	<ul style="list-style-type: none"> Stainless steel housing 120°C heat resistance 	<ul style="list-style-type: none"> PTFE housing 	<ul style="list-style-type: none"> High frequency of 5 kHz: suitable for high-speed counting All sizes are also available as non-shielded types 	<ul style="list-style-type: none"> Immune to aluminum and cast iron chips on sensing surface Oil resistant
dia. 3	—	—	■	—
dia. 4	—	—	■	—
dia. 6.5	—	—	■	—
M5	—	—	■	—
M8	—	—	—	■
M12	■	■	—	■
M18	■	■	—	■
M30	■	■	—	■
Page/Quick Link	338/A244	A246	334/A286	340/A243

Format		Square			
					
Model		TL-W	E2S	E2Q5	E2Q6
Type		Compact	Miniature	Long distance	Long distance
Material		ABS	Polyarylate	PBT	PBT
Max. sensing distance	dia. 3	–	–	–	–
	dia. 4	–	–	–	–
	M5	–	–	–	–
	dia. 5.4	–	–	–	–
	M8	–	–	–	–
	M12	–	–	–	–
	M18	–	–	–	–
	M30	–	–	–	–
	19 × 6 × 6	–	1.6 mm	–	–
	22 × 8 × 6	3 mm	2.5 mm	–	–
	31 × 18 × 10	5 mm	–	–	–
	53 × 40 × 23	20 mm	–	–	–
	67 × 40 × 40	–	–	40 mm	30 mm
Mount.	Shielded	■	–	■	■
	Non-shielded	■	■	■	■
Oper. mode	NO	■	■	■	–
	NC	■	■	–	–
	NO + NC	–	–	■	■
Wiring	DC 2-wire	■	■	–	–
	DC 3-wire	■	■	■	■
	DC 4-wire	–	–	■	■
	AC 2-wire	–	–	–	–
Voltage	10 to 30 VDC	■	■	■	■
	12 to 240 VAC	–	–	–	–
IP rating	IP67	■	■	■	■
	IP69K	–	–	■	–
Page/Quick Link		335/A227	336/A234	337/A229	343/A230

Special models

Type	Oil resistant	High precision positioning
		
Model	E2E- U	E2C-EDA
361° product line	PRO ^{plus}	PRO ^{plus}
Key features	<ul style="list-style-type: none"> Tested oil resistance on commonly used lubricants 	<ul style="list-style-type: none"> Distance teaching up to μm accuracy
dia. 3	–	■
dia. 4	–	–
dia. 6.5	–	–
M5	–	–
M8	■	–
M12	■	■
M18	■	■
M30	■	–
Page/Quick Link		339/A222 342/C433



Extended sensing range inductive sensor in cylindrical brass housing

The high quality and the long-life design of the E2A extended sensing distance provide high operational reliability, accurate performance and long sensor lifetime for a wide range of applications.

- Extended (double) sensing distance
- IP67 and IP69k for highest water protection
- DC 3-wire (NO, NC)
- Wide temperature range –40 to 70°C
- 200 mA max load current
- Wide installation and connectivity range through modular concept

Ordering information











Pre-wired

Size			Sensing distance	Thread length (overall length)	Output configuration	Order code (for pre-wired types with 2 m PVC cable)		
						Operation mode NO	Operation mode NC	DC 4-wire (NO+NC-PNP models)
M8	■	–	2.0 mm	27 (40) mm	PNP ^{*1}	E2A-S08KS02-WP-B1 2M ^{*2}	E2A-S08KS02-WP-B2 2M ^{*2}	E2A-S08LS02-WP-B3 2M ^{*3}
	–	■	4.0 mm	21 (40) mm	PNP ^{*1}	E2A-S08KN04-WP-B1 2M ^{*2}	E2A-S08KN04-WP-B2 2M ^{*2}	E2A-S08LN04-WP-B3 2M ^{*3}
M12	■	–	4.0 mm	34 (50) mm	PNP ^{*1}	E2A-M12KS04-WP-B1 2M	E2A-M12KS04-WP-B2 2M	E2A-M12KS04-WP-B3 2M
	–	■	8.0 mm	27 (50) mm	PNP ^{*1}	E2A-M12KN08-WP-B1 2M	E2A-M12KN08-WP-B2 2M	E2A-M12KN08-WP-B3 2M
M18	■	–	8.0 mm	39 (59) mm	PNP ^{*1}	E2A-M18KS08-WP-B1 2M	E2A-M18KS08-WP-B2 2M	E2A-M18KS08-WP-B3 2M
	–	■	16.0 mm	29 (59) mm	PNP ^{*1}	E2A-M18KN16-WP-B1 2M	E2A-M18KN16-WP-B2 2M	E2A-M18KN16-WP-B3 2M
M30	■	–	15.0 mm	44 (64) mm	PNP ^{*1}	E2A-M30KS15-WP-B1 2M	E2A-M30KS15-WP-B2 2M	E2A-M30KS15-WP-B3 2M
	–	■	20.0 mm ^{*4}	29 (64) mm	PNP ^{*1}	E2A-M30KN20-WP-B1 2M	E2A-M30KN20-WP-B2 2M	E2A-M30KN20-WP-B3 2M



Connector types (M12)

Size			Sensing distance	Thread length (overall length)	Output configuration	Order code (for M12 connector types)		
						Operation mode NO	Operation mode NC	DC 4-wire (NO+NC-PNP models)
M8	■	–	2.0 mm	27 (43) mm	PNP ^{*1}	E2A-S08KS02-M1-B1 ^{*2}	E2A-S08KS02-M1-B2 ^{*2}	E2A-S08LS02-M3-B3 ^{*5}
	–	■	4.0 mm	21 (43) mm	PNP ^{*1}	E2A-S08KN04-M1-B1 ^{*2}	E2A-S08KN04-M1-B2 ^{*2}	E2A-S08LN04-M3-B3 ^{*5}
M12	■	–	4.0 mm	24 (48) mm	PNP ^{*1}	E2A-M12KS04-M1-B1	E2A-M12KS04-M1-B2	E2A-M12KS04-M1-B3
	–	■	8.0 mm	27 (48) mm	PNP ^{*1}	E2A-M12KN08-M1-B1	E2A-M12KN08-M1-B2	E2A-M12KN08-M1-B3
M18	■	–	8.0 mm	39 (53) mm	PNP ^{*1}	E2A-M18KS08-M1-B1	E2A-M18KS08-M1-B2	E2A-M18KS08-M1-B3
	–	■	16.0 mm	29 (53) mm	PNP ^{*1}	E2A-M18KN16-M1-B1	E2A-M18KN16-M1-B2	E2A-M18KN16-M1-B3
M30	■	–	15.0 mm	44 (58) mm	PNP ^{*1}	E2A-M30KS15-M1-B1	E2A-M30KS15-M1-B2	E2A-M30KS15-M1-B3
	–	■	20.0 mm ^{*4}	29 (58) mm	PNP ^{*1}	E2A-M30KN20-M1-B1	E2A-M30KN20-M1-B2	E2A-M30KN20-M1-B3

DC 2-Wire models

Size			Sensing distance	Thread length (overall length)	Body material	Operation mode	Order code (for pre-wired types with 2 m PVC cable)
							DC 2-wire (NO)
M8		–	2.0 mm	27 (40) mm	Stainless steel	NO	E2A-S08KS02-WP-D1 2M
	–		4.0 mm	21 (40) mm			E2A-S08KN04-WP-D1 2M
M12		–	4.0 mm	34 (50) mm	Brass-nickel plated		E2A-M12KS04-WP-D1 2M
	–		8.0 mm	27 (50) mm			E2A-M12KN08-WP-D1 2M
M18		–	8.0 mm	39 (59) mm			E2A-M18KS08-WP-D1 2M
	–		16.0 mm	29 (59) mm			E2A-M18KN16-WP-D1 2M
M30		–	15.0 mm	44 (64) mm			E2A-M30KS15-WP-D1 2M
	–		20.0 mm	29 (64) mm			E2A-M30KN20-WP-D1 2M

Gold-plated pins models

Size			Sensing distance	Thread length (overall length)	Output configuration	Connection	Body material	Operation mode	Order code
M8	■	—	2 mm	27 (40) mm	NPN	Connector M8 3 pin: gold-plated	Stainless steel	NO	E2A-S08KS02-M5-C1-4
	■	—		49 (62) mm					E2A-S08LS02-M5-C1-4
M12	■	—	4 mm	34 (48) mm	PNP	Connector M12 4 pin: gold-plated	Brass-nickel plated		E2A-M12KS04-M1-B1-4
	—	■	8 mm	E2A-M12KN08-M1-B1-4					

^{*1} NPN models are available. For ordering replace "B1", "B2", "B3" or "D1" by "C1", "C2" or "C3".

^{*2} M8 sized housings are only available in stainless steel (SUS 303).

^{*3} Longer housing with thread length 49 mm and overall length 62 mm.

^{*4} Models with longer sensing distances of 30 mm and 35 mm are available.

^{*5} Models with M8 4-pin connector and thread length 49 mm and overall length 61 mm.

Specifications

(Exemplary for shielded versions.)

Item		M8	M12	M18	M30
		E2A-S08KS	E2A-M12KS	E2A-M18KS	E2A-M30KS
Sensing distance		2 mm±10%	4 mm±10%	8 mm±10%	15 mm±10%
Response frequency		1,500 Hz	1,000 Hz	500 Hz	250 Hz
Power supply voltage (operating voltage)		12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)			
Protective circuits		Power supply reverse polarity protection, surge suppressor, short-circuit protection	Output reverse polarity protection, power supply reverse polarity protection, surge suppressor, short-circuit protection		
Ambient temperature	Operating	−40 to 70°C			
	Storage	−40 to 85°C (with no icing or condensation)			
Degree of protection		IP67 after IEC 60529; IP69K after DIN 40050 part 9			
Material	Case	Stainless steel	Brass-nickel plated		
	Sensing surface	PBT			

Optional features

Refer to complete datasheet or contact your OMRON representative for the below optional features

Sensing module and body

- single sensing distance (ideal for compatibility with previous machine generations)
- Long body (ideal for mounting through thicker constructions)

Connection

- M8 4-pin (for ordering replace -M1 by -M3 e.g. E2A-S08KS02-M3-B1)
- M8 3-pin (for ordering replace -M1 by -M5 e.g. E2A-S08KS02-M5-B1)
- PUR cable
- Pigtails with M8 or M12 plugs

Output

- 400 mA max. load current (ideal for switching higher load currents directly)
- DC 2-wire (ideal for reduced wiring; leakage current can be used to detect cable breakage)
- DC 4-wire (NO+NC output – ideal for reduced stock for spare parts; antivalent signal can be used to detect cable breakage)



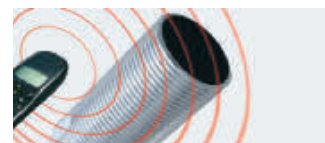
High water resistance



Cable breakage protection



High mechanical resistance



High electro-magnetic noise immunity



High resistance against temperature change



High vibration resistance



Extended sensing range inductive sensor in cylindrical stainless steel housing

The performance and operational reliability of the E2A family is also available in stainless steel housing.

- Stainless steel housing (SUS 303)



Ordering information

Pre-wired

Size			Sensing distance	Thread length (overall length)	Output configuration	Order code (for pre-wired types with 2 m PVC cable)	
						Operation mode NO	Operation mode NC
M8		–	2.0 mm	27 (40) mm	PNP ^{*1}	E2A-S08KS02-WP-B1 2M	E2A-S08KS02-WP-B2 2M
	–		4.0 mm	21 (40) mm	PNP ^{*1}	E2A-S08KN04-WP-B1 2M	E2A-S08KN04-WP-B2 2M
M12		–	4.0 mm	34 (50) mm	PNP ^{*1}	E2A-S12KS04-WP-B1 2M	E2A-S12KS04-WP-B2 2M
	–		8.0 mm	27 (50) mm	PNP ^{*1}	E2A-S12KN08-WP-B1 2M	E2A-S12KN08-WP-B2 2M
M18		–	8.0 mm	39 (59) mm	PNP ^{*1}	E2A-S18KS08-WP-B1 2M	E2A-S18KS08-WP-B2 2M
	–		16.0 mm	29 (59) mm	PNP ^{*1}	E2A-S18KN16-WP-B1 2M	E2A-S18KN16-WP-B2 2M
M30		–	15.0 mm	44 (64) mm	PNP ^{*1}	E2A-S30KS15-WP-B1 2M	E2A-S30KS15-WP-B2 2M
	–		20.0 mm ^{*2}	29 (64) mm	PNP ^{*1}	E2A-S30KN20-WP-B1 2M	E2A-S30KN20-WP-B2 2M

Connector types (M12)

Size			Sensing distance	Thread length (overall length)	Output configuration	Order code (for M12 connector types)	
						Operation mode NO	Operation mode NC
M8		–	2.0 mm	27 (43) mm	PNP ^{*1}	E2A-S08KS02-M1-B1	E2A-S08KS02-M1-B2
	–		4.0 mm	21 (43) mm	PNP ^{*1}	E2A-S08KN04-M1-B1	E2A-S08KN04-M1-B2
M12		–	4.0 mm	24 (48) mm	PNP ^{*1}	E2A-S12KS04-M1-B1	E2A-S12KS04-M1-B2
	–		8.0 mm	27 (48) mm	PNP ^{*1}	E2A-S12KN08-M1-B1	E2A-S12KN08-M1-B2
M18		–	8.0 mm	39 (53) mm	PNP ^{*1}	E2A-S18KS08-M1-B1	E2A-S18KS08-M1-B2
	–		16.0 mm	29 (53) mm	PNP ^{*1}	E2A-S18KN16-M1-B1	E2A-S18KN16-M1-B2
M30		–	15.0 mm	44 (58) mm	PNP ^{*1}	E2A-S30KS15-M1-B1	E2A-S30KS15-M1-B2
	–		20.0 mm ^{*2}	29 (58) mm	PNP ^{*1}	E2A-S30KN20-M1-B1	E2A-S30KN20-M1-B2

^{*1} NPN models are available. For ordering replace “-B1” or “-B2” by “-C1” or “-C2”.

^{*2} Models with longer sensing distances of 30 mm and 35 mm are available.

Specifications

(Exemplary for shielded versions)

Item		M8	M12	M18	M30
		E2A-S08KS	E2A-S12KS	E2A-S18KS	E2A-S30KS
Sensing distance		2 mm±10%	4 mm±10%	8 mm±10%	15 mm±10%
Response frequency		1,500 Hz	1,000 Hz	500 Hz	250 Hz
Power supply voltage (operating voltage)		12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)			
Protective circuits		Power supply reverse polarity protection, surge suppressor, short-circuit protection			
Ambient temperature	Operating	-40 to 70°C			
	Storage	-40 to 85°C (with no icing or condensation)			
Degree of protection		IP67 after IEC 60529; IP69K after DIN 40050 part 9			
Material	Case	Stainless steel (SUS 303)			
	Sensing surface	PBT			



Long (triple) distance inductive sensor in cylindrical brass housing

The E2A3 family features an optimised sensing performance to achieve triple sensing distance for quasi flush mounting requirements.

- Triple distance for enhanced sensor protection from mechanical damage
- IP67 and IP69k

Ordering information

Pre-wired

(For different cable materials and lengths, special housing length or special connectors, please refer to complete datasheet.)

Size			Sensing distance	Thread length (overall length)	Output configuration	Order code (for pre-wired types with 2 m PVC cable)	
						Operation mode: NO	Operation mode: NC
M8	■	–	3.0 mm	27 (40) mm	PNP	E2A3-S08KS03-WP-B1 2M	E2A3-S08KS03-WP-B2 2M
					NPN	E2A3-S08KS03-WP-C1 2M	E2A3-S08KS03-WP-C2 2M
M12	■	–	6.0 mm	34 (50) mm	PNP	E2A3-M12KS06-WP-B1 2M	E2A3-M12KS06-WP-B2 2M
					NPN	E2A3-M12KS06-WP-C1 2M	E2A3-M12KS06-WP-C2 2M
M18	■	–	11.0 mm	39 (60) mm	PNP	E2A3-M18KS11-WP-B1 2M	E2A3-M18KS11-WP-B2 2M
					NPN	E2A3-M18KS11-WP-C1 2M	E2A3-M18KS11-WP-C2 2M
M30	■	–	20.0 mm	44 (65) mm	PNP	E2A3-M30KS20-WP-B1 2M	E2A3-M30KS20-WP-B2 2M
					NPN	E2A3-M30KS20-WP-C1 2M	E2A3-M30KS20-WP-C2 2M

Connector types (M12)

Size			Sensing distance	Thread length (overall length)	Output configuration	Order code (for M12 connector types)	
						Operation mode: NO	Operation mode: NC
M8	■	–	3.0 mm	27 (44) mm	PNP	E2A3-S08KS03-M1-B1	E2A3-S08KS03-M1-B2
					NPN	E2A3-S08KS03-M1-C1	E2A3-S08KS03-M1-C2
M12	■	–	6.0 mm	34 (49) mm	PNP	E2A3-M12KS06-M1-B1	E2A3-M12KS06-M1-B2
					NPN	E2A3-M12KS06-M1-C1	E2A3-M12KS06-M1-C2
M18	■	–	11.0 mm	39 (54) mm	PNP	E2A3-M18KS11-M1-B1	E2A3-M18KS11-M1-B2
					NPN	E2A3-M18KS11-M1-C1	E2A3-M18KS11-M1-C2
M30	■	–	20.0 mm	44 (59) mm	PNP	E2A3-M30KS20-M1-B1	E2A3-M30KS20-M1-B2
					NPN	E2A3-M30KS20-M1-C1	E2A3-M30KS20-M1-C2

Specifications

Item		M8	M12	M18	M30
		E2A3-S08KS03	E2A3-M12KS06-	E2A3-M18KS11	E2A3-M30KS20
Sensing distance		3 mm±10%	6 mm±10%	11 mm±10%	20 mm±10%
Response frequency		700 Hz	350 Hz	250 Hz	80 Hz
Power supply voltage (operating voltage)		12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)			
Protective circuits		Power supply reverse polarity protection, surge suppressor, short-circuit protection	Output reverse polarity protection, power supply reverse polarity protection, surge suppressor, short-circuit protection		
Ambient temperature	Operating	-25 to 70°C			
	Storage				
Degree of protection		IP67 after IEC 60529; IP69K after DIN 40050 part 9			
Material	Case	Stainless steel	Brass-nickel plated		
	Sensing surface	PBT			



The ideal solution for standard industrial conditions

Thanks to the simple construction and Omron's innovative "hot melt" production process, the E2B sensors embody two characteristics: value-for-money and high reliability.

- All-round-visible indicator
- The laser printed part number
- Vibration shock resistance: IEC 60947-5-2 (10 to 55 Hz)
- Operating temperature: -25 to 70°C
- Water resistance: IP67

Ordering information

Pre-wired

Size			Sensing distance	Output configuration	Order code (for pre-wired types with 2 m PVC cable)	
					Operation mode NO	Operation mode NC
M8		–	2.0 mm	PNP ^{*1}	E2B-S08KS02-WP-B1 2M ^{*2}	E2B-S08KS02-WP-B2 2M ^{*2}
	–		4.0 mm	PNP ^{*1}	E2B-S08KN04-WP-B1 2M ^{*2}	E2B-S08KN04-WP-B2 2M ^{*2}
M12		–	4.0 mm	PNP ^{*1}	E2B-M12KS04-WP-B1 2M	E2B-M12KS04-WP-B2 2M
	–		8.0 mm	PNP ^{*1}	E2B-M12KN08-WP-B1 2M	E2B-M12KN08-WP-B2 2M
M18		–	8.0 mm	PNP ^{*1}	E2B-M18KS08-WP-B1 2M	E2B-M18KS08-WP-B2 2M
	–		16.0 mm	PNP ^{*1}	E2B-M18KN16-WP-B1 2M	E2B-M18KN16-WP-B2 2M
M30		–	15.0 mm	PNP ^{*1}	E2B-M30KS15-WP-B1 2M	E2B-M30KS15-WP-B2 2M
	–		30.0 mm	PNP ^{*1}	E2B-M30LN30-WP-B1 2M	E2B-M30LN30-WP-B2 2M

Connector types

Size			Sensing distance	Output configuration	Order code	
					Operation mode NO	Operation mode NC
M8		–	2.0 mm	PNP ^{*1}	E2B-S08KS02-MC-B1 ^{*2}	E2B-S08KS02-MC-B2 ^{*2}
	–		4.0 mm	PNP ^{*1}	E2B-S08KN04-MC-B1 ^{*2}	E2B-S08KN04-MC-B2 ^{*2}
M12		–	4.0 mm	PNP ^{*1}	E2B-M12KS04-M1-B1	E2B-M12KS04-M1-B2
	–		8.0 mm	PNP ^{*1}	E2B-M12KN08-M1-B1	E2B-M12KN08-M1-B2
M18		–	8.0 mm	PNP ^{*1}	E2B-M18KS08-M1-B1	E2B-M18KS08-M1-B2
	–		16.0 mm	PNP ^{*1}	E2B-M18KN16-M1-B1	E2B-M18KN16-M1-B2
M30		–	15.0 mm	PNP ^{*1}	E2B-M30KS15-M1-B1	E2B-M30KS15-M1-B2
	–		30.0 mm	PNP ^{*1}	E2A-M30LN30-M1-B1	E2B-M30LN30-M1-B2

^{*1} NPN models are available. For ordering replace "–B1" or "–B2" by "–C1" or "–C2".

^{*2} M8 sized housings are only available in stainless steel (SUS 303).

Optional features

Refer to complete datasheet or contact your OMRON representative for the below optional features

Sensing module and body

- Single sensing distance (ideal for compatibility with previous machine generations)
- Long body (ideal for mounting through thicker constructions)

Connection

- M8 3-pin -MC e.g. E2B-S08KS02-MC-B1

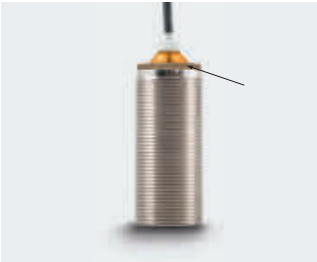
Output

- 200 mA max. load current

Specifications

(Exemplary for shielded versions.)

Item		M8	M12	M18	M30
		E2B-S08KS	E2B-M12KS	E2B-M18KS	E2B-M30KS
Sensing distance		2 mm±10%	4 mm±10%	8 mm±10%	15 mm±10%
Response frequency		1,500 Hz	1,000 Hz	500 Hz	250 Hz
Power supply voltage (operating voltage)		12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)			
Protective circuits		Output reverse polarity protection, Power source circuit reverse polarity protection			
Ambient temperature	Operating and storage	-25 to 70°C			
Degree of protection		IP67 after IEC 60529			
Material	Case	Stainless steel	Brass-nickel plated		
	Sensing surface	PBT			



High-visibility ring LED indicator



Laser printing part number

























Small diameter proximity sensors for high precision detection

Omron's latest inductive technology has now been applied to a new range of small diameter inductive sensors. The new μPROX E2E provides precision detection and allows installation in even the most confined spaces. The portfolio has been extended to include non-shielded types and versions with pig-tail connector leads.

- Miniature size: 3, 4, 6.5 mm and M4, M5 diameters
- High frequency of 5 kHz: suitable for high-speed counting
- All sizes are also available as non-shielded types
- IP67 water ingress protection
- Highly visible indicators for easy operation confirmation

Ordering information

Size			Sensing distance	Connection	Output configuration	Order code	
						Operation mode NO	Operation mode NC
dia 3 mm			0.8 mm	PW	PNP	E2E-C03SR8-WC-B1 2M OMS	E2E-C03SR8-WC-B2 2M OMS
			2 mm	PW	NPN	E2E-C03SR8-WC-C1 2M OMS	E2E-C03SR8-WC-C2 2M OMS
			0.8 mm	PW	PNP	E2E-C03N02-WC-B1 2M OMS	E2E-C03N02-WC-B2 2M OMS
			2 mm	PW	NPN	E2E-C03N02-WC-C1 2M OMS	E2E-C03N02-WC-C2 2M OMS
M4			0.8 mm	PW	PNP	E2E-S04SR8-WC-B1 2M OMS	E2E-S04SR8-WC-B2 2M OMS
			2 mm	PW	NPN	E2E-S04SR8-WC-C1 2M OMS	E2E-S04SR8-WC-C2 2M OMS
			0.8 mm	PW	PNP	E2E-S04N02-WC-B1 2M OMS	E2E-S04N02-WC-B2 2M OMS
			2 mm	PW	NPN	E2E-S04N02-WC-C1 2M OMS	E2E-S04N02-WC-C2 2M OMS
dia 4 mm			1.2 mm	PW	PNP	E2E-C04S12-WC-B1 2M OMS	E2E-C04S12-WC-B2 2M OMS
			3 mm	PW	NPN	E2E-C04S12-WC-C1 2M OMS	E2E-C04S12-WC-C2 2M OMS
			1.2 mm	PW	PNP	E2E-C04N03-WC-B1 2M OMS	E2E-C04N03-WC-B2 2M OMS
			3 mm	PW	NPN	E2E-C04N03-WC-C1 2M OMS	E2E-C04N03-WC-C2 2M OMS
M5			1.2 mm	PW	PNP	E2E-S05S12-WC-B1 2M OMS	E2E-S05S12-WC-B2 2M OMS
			3 mm	PW	NPN	E2E-S05S12-WC-C1 2M OMS	E2E-S05S12-WC-C2 2M OMS
			1.2 mm	PW	PNP	E2E-S05N03-WC-B1 2M OMS	E2E-S05N03-WC-B2 2M OMS
			3 mm	PW	NPN	E2E-S05N03-WC-C1 2M OMS	E2E-S05N03-WC-C2 2M OMS
dia 6.5 mm			2 mm	PW	PNP	E2E-C06S02-WC-B1 2M OMS	E2E-C06S02-WC-B2 2M OMS
					NPN	E2E-C06S02-WC-C1 2M OMS	E2E-C06S02-WC-C2 2M OMS
				M8(3P)	PNP	E2E-C06S02-MC-B1 OMS	E2E-C06S02-MC-B2 OMS
					NPN	E2E-C06S02-MC-C1 OMS	E2E-C06S02-MC-C2 OMS
			4 mm	PW	PNP	E2E-C06N04-WC-B1 2M OMS	E2E-C06N04-WC-B2 2M OMS
					NPN	E2E-C06N04-WC-C1 2M OMS	E2E-C06N04-WC-C2 2M OMS
				M8(3P)	PNP	E2E-C06N04-MC-B1 OMS	E2E-C06N04-MC-B2 OMS
					NPN	E2E-C06N04-MC-C1 OMS	E2E-C06N04-MC-C2 OMS

Specifications

Item		dia. 3/M4		dia. 4/M5		dia. 6.5	
		E2E-C03S/-S04S	E2E-C03N/-S04N	E2E-C04S/-S05S	E2E-C04N/-S05N	E2E-C06S	E2E-C06N
Sensing distance		0.8 mm±10%	2.0 mm±10%	1.2 mm±10%	3.0 mm±10%	2.0 mm±10%	4 mm±10.0%
Setting distance		0 to 0.56 mm	0 to 1.4 mm	0 to 0.84 mm	0 to 2.1 mm	0 to 1.4 mm	0 to 2.8 mm
Response frequency		5 kHz	3 kHz	4 kHz	2 kHz	3 kHz	4 kHz
Supply voltage		10 to 30 VDC					
Current consumption		≤10 mA					
Max. control output		≤50 mA		≤100 mA		≤200 mA	
Residual output voltage		≤2 V					
Ambient temperature range		-25 to 70°C					
Ambient temperature fluctuation		≤15%					
Degree of protection		IEC 60529 IP67					
Material	Case	Stainless steel (SUS303)					
	Sensing surface	Heat-resistant ABS					



Flat shape inductive sensor in compact plastic housing

The TL-W family offers a wide range of block style inductive sensors for simple mounting on flat surfaces. With sensing distances from 1.5 mm to 20 mm the TL-W is the ideal solution for all standard applications.

- IP67
- DC 2-wire and DC 3-wire models
- Sensing distances from 1.5 mm to 20 mm
- Side facing sensing face

Ordering information

DC 2-wire

Size in mm (H × W × D)			Sensing distance	Order code (for pre-wired types with 2 m PVC cable)	
				Operation mode normally open (NO)	Operation mode normally closed (NC)
31 × 18 × 10	—	■	5 mm	TL-W5MD1	TL-W5MD2

DC 3-wire

Size in mm (H × W × D)			Sensing distance	Order code (for pre-wired types with 2 m PVC cable)			
				PNP-NO	PNP-NC	NPN-NO	NPN-NC
25 × 8 × 5	—	■	1.5 mm	TL-W1R5MB1	—	TL-W1R5MC1	—
22 × 8 × 6			3 mm	TL-W3MB1	TL-W3MB2	TL-W3MC1	TL-W3MC2
31 × 18 × 10			5 mm	TL-W5MB1	TL-W5MB2	TL-W5MC1	TL-W5MC2
53 × 40 × 23			20 mm	—	—	TL-W20ME1	TL-W20ME2
31 × 18 × 10	■	—	5 mm	TL-W5F1	TL-W5F2	TL-W5E1	TL-W5E2

Specifications

Item	TL-W5MD_	TL-W1R5M_1	TL-W3M_	TL-W5M_	TL-W5E_/F_	TL-W20ME_
Sensing distance	5 mm±10%	1.5 mm±10%	3 mm±10%	5 mm±10%		20 mm±10%
Response frequency	500 Hz	1 kHz min.	600 Hz min.	500 Hz min.	300 Hz min.	40 Hz min.
Power supply voltage (operating voltage)	12 to 24 VDC (10 to 30 VDC) ripple (p-p): 10% max.				10 to 30 VDC with a ripple (p-p) of 20% max.	12 to 24 VDC (10 to 30 VDC) ripple (p-p): 10% max.
Protective circuits	Surge absorber; short-circuit protection	Surge suppressor; power supply reverse polarity protection				
Ambient temperature	Operating	-25 to 70°C (with no icing or condensation)				
	Storage					
Degree of protection	IEC60529 IP67					
Material	Case	Heat-resistant ABS resin			Diecast aluminum	Heat-resistant ABS resin
	Sensing surface	Heat-resistant ABS resin				







Miniature square inductive sensor in plastic housing

The E2S family features miniature block style plastic housings for simple mounting on flat surfaces. The durable plastic housing with front or side facing sensing surfaces, provide best value-performance ratio for machine part movement detection.





- Miniature housing
- Front and side facing sensing faces
- Models with simple one-screw mounting
- IP67

Ordering information

DC 2-wire

Size in mm (H × W × D)			Sensing distance	Sensing face		Order code (pre-wired types with 1 m cable length)	
						Operation mode NO	Operation mode NC
19 × 6 × 6	-	■	1.6 mm	■	-	E2S-W11 1M	E2S-W12 1M
				-	■	E2S-Q11 1M	E2S-Q12 1M
23 × 8 × 8			2.5 mm	■	-	E2S-W21 1M	E2S-W22 1M
				-	■	E2S-Q21 1M	E2S-Q22 1M

DC 3-wire

Size in mm (H × W × D)			Sensing distance	Sensing face		Output specifications	Order code (pre-wired types with 1m cable length)	
							Operation mode NO	Operation mode NC
19 × 6 × 6	-	■	1.6 mm	■	-	NPN	E2S-W13 1M	E2S-W14 1M
				-	■		E2S-Q13 1M	E2S-Q14 1M
27 × 8 × 8			2.5 mm	■	-		E2S-W23 1M	E2S-W24 1M
				-	■		E2S-Q23 1M	E2S-Q24 1M
19 × 6 × 6	-	■	1.6 mm	■	-	PNP	E2S-W15 1M	E2S-W16 1M
				-	■		E2S-Q15 1M	E2S-Q16 1M
23 × 8 × 8			2.5 mm	■	-		E2S-W25 1M	E2S-W26 1M
				-	■		E2S-Q25 1M	E2S-Q26 1M

Specifications

Item		E2S-W1 E2S-Q1	E2S-W2 E2S-Q2
Sensing distance		1.6 mm±10%	2.5 mm±15%
Response frequency		1 kHz min.	
Power supply voltage (operating voltage)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.	
Protective circuits		Surge suppressor; power supply reverse polarity protection	
Ambient temperature	Operating	-25 to 70°C	
	Storage	-40 to 85°C (with no icing or condensation)	
Degree of protection		IEC60529 IP67	
Material	Case	Polyarylate	



Long distance inductive proximity sensor in plastic housing

The long sensing distance and simple installation on flat surfaces make the E2Q5 ideal for the detection of large metal objects for example in automotive assembly lines.

- M12 Plug-in connection
- Integrated short circuit and reverse polarity protection
- Sensing face positioning: Y-axis 15°, X-axis 90° increments

Ordering information

Connector types (M12)

Size in mm (H × W × D)			Sensing distance	Sensing face	Output configuration	Order code (for M12 connector types)	
						Operation mode NO	Operation mode NO + NC
67 × 40 × 40		—	20 mm	Changeable	NPN	E2Q5-N20E1-M1	E2Q5-N20E3-M1
					PNP	E2Q5-N20F1-M1	E2Q5-N20F3-M1
	—		40 mm		NPN	E2Q5-N40ME1-M1	E2Q5-N40ME3-M1
					PNP	E2Q5-N40MF1-M1	E2Q5-N40MF3-M1

Specifications

Item		E2Q5-N20_ _ -M1	E2Q5-N40M_3-M1
Sensing distance		20 mm±10%	40 mm±10%
Response frequency		150 Hz	
Power supply voltage		10 to 30 VDC	
Protective circuits		Output reverse polarity protection, short-circuit protection	
Ambient temperature	Operating	-25 to 85°C	
Degree of protection		IEC 60529 IP 67; IP69k after DIN 40050 part 9	
Material	Case	PBT	
	Sensing face	PBT	



Heat and detergent resistant inductive sensor in cylindrical stainless steel housing









The heat and detergent resistant inductive sensors allow reliable metal object or machine part detection in demanding environments such as food processing.

- Temperature resistant up to 120°C
- SUS316L housing with heat resistant plastic sensing face
- IP69k for highest water resistance
- ECOLAB tested and certified detergent resistance











Ordering information

Pre-wired

Size			Sensing distance	Output configuration	Order code (for pre-wired types with 2 m heat resistant PVC cable)	
					Operation mode NO	Operation mode NC
M12			3 mm	PNP	E2EH-X3B1 2M	E2EH-X3B2 2M
				NPN	E2EH-X3C1 2M	E2EH-X3C2 2M
				DC 2-wire	E2EH-X3D1 2M	E2EH-X3D2 2M
M18			7 mm	PNP	E2EH-X7B1 2M	E2EH-X7B2 2M
				NPN	E2EH-X7C1 2M	E2EH-X7C2 2M
				DC 2-wire	E2EH-X7D1 2M	E2EH-X7D2 2M
M30			12 mm	PNP	E2EH-X12B1 2M	E2EH-X12B2 2M
				NPN	E2EH-X12C1 2M	E2EH-X12C2 2M
				DC 2-wire	E2EH-X12D1 2M	E2EH-X12D2 2M

Connector types (M12)

Size			Sensing distance	Output	Order code (for M12 connector types)	
					Operation mode NO	Operation mode NC
M12			3 mm	PNP	E2EH-X3B1-M1	E2EH-X3B2-M1
				NPN	E2EH-X3C1-M1	E2EH-X3C2-M1
				DC 2-wire	E2EH-X3D1-M1G	E2EH-X3D2-M1G
M18			7 mm	PNP	E2EH-X7B1-M1	E2EH-X7B2-M1
				NPN	E2EH-X7C1-M1	E2EH-X7C2-M1
				DC 2-wire	E2EH-X7D1-M1G	E2EH-X7D2-M1G
M30			12 mm	PNP	E2EH-X12B1-M1	E2EH-X12B2-M1
				NPN	E2EH-X12C1-M1	E2EH-X12C2-M1
				DC 2-wire	E2EH-X12D1-M1G	E2EH-X12D2-M1G

Specifications

Item	M12	M18	M30
	E2EH-X3__	E2EH-X7__	E2EH-X12__
Sensing distance	3 mm±10%	7 mm±10%	12 mm±10%
Response frequency (average)	500 Hz	300 Hz	100 Hz
Power supply voltage (operating voltage range)	12 to 24 VDC, ripple (p-p): 10% max. (10 to 32 VDC) (24 VDC max. at 100°C or higher)		
Protective circuits	Surge suppression, short circuit protection, power supply reverse polarity protection, output reverse polarity protection		
Ambient temperature ^{*1}	DC 3-wire models: 0 to 100°C (0 to 120°C for 1,000 hours), DC 2-wire models: 0 to 100°C (0 to 110°C for 1,000 hours)		
Degree of protection	IEC 60529 IP67, IP69k after DIN 40050-9		
Material	Case, clamping nuts	Stainless steel (SUS316L)	
	Sensing surface	PBT (polybutylene terephthalate)	
	Cable	Heat-resistant PVC	

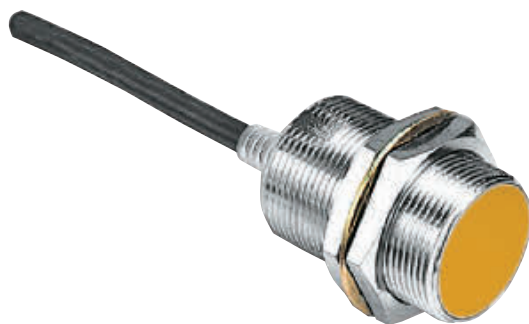
^{*1} Operation with power supplied for 1,000 h has been verified at 120°C for DC 3-wire models and at 110°C for DC 2-wire models. Do not bend the cable repeatedly at 100°C or higher.



Enhanced temperature resistance



Enhanced detergent resistance







Oil resistant inductive sensor in cylindrical brass housing

The E2E-_-U offers tested oil resistance on commonly used oils in the automotive industry for reliable long-life operation in automotive assembly lines.





- Oil resistant PUR cable
- M8, M12, M18 and M30 standard sizes
- IP67g (water and oil resistance)

Ordering information

DC 2-wire (pre-wired)

Size			Sensing distance	Order code (for pre-wired types with 2 m PUR cable)	
				Operation mode NO	Operation mode NC
M8			2 mm	E2E-X2D1-U	E2E-X2D2-U
M12			3 mm	E2E-X3D1-U	E2E-X3D2-U
M18			7 mm	E2E-X7D1-U	E2E-X7D2-U
M30			10 mm	E2E-X10D1-U	E2E-X10D2-U

DC 2-wire (pre-wired with M12)

Size			Sensing distance	Order code (for pre-wired types with 30 cm PUR cable and M12 plug))	
				Operation mode NO	Operation mode NC
M8			2 mm	E2E-X2D1-M1TGJ-U 0.3M	E2E-X2D2-M1TGJ-U 0.3M
M12			3 mm	E2E-X3D1-M1TGJ-U 0.3M	E2E-X3D2-M1TGJ-U 0.3M
M18			7 mm	E2E-X7D1-M1TGJ-U 0.3M	E2E-X7D2-M1TGJ-U 0.3M
M30			10 mm	E2E-X10D1-M1TGJ-U 0.3M	E2E-X10D2-M1TGJ-U 0.3M

Specifications

Item		M8	M12	M18	M30
		E2E-X2D_	E2E-X3D_	E2E-X7D_	E2E-X10D_
Sensing distance		2 mm±10%	3 mm±10%	7 mm±10%	10 mm±10%
Response frequency		1.5 kHz	1.0 kHz	0.5 kHz	0.4 kHz
Power supply voltage (operating voltage)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.			
Protective circuits		Surge suppressor, output short-circuit protection (for control and diagnostic output)			
Ambient temperature	Operating	-25 to 70°C			
	Storage	-40 to 85°C (with no icing or condensation)			
Degree of protection		IEC 60529 IP67 (JEM standard IP67g (waterproof and oil-proof))			
Material	Case	Stainless steel (SUS303)	Brass-nickel plated		
	Sensing surface	PBT (polybutylene terephthalate)			
	Cable	PUR for jacket, PE			



Inductive sensor in cylindrical full metal housing (case + sensing face)

The high durability stainless steel sensing face provides more than 20 times longer protection against mechanical damage than conventional sensors. The high mineral oil and coolant resistance and the immunity against small metal chips on the surface make this sensor ideal for metal cutting or drilling applications.



- Full body stainless steel housing for highest mechanical protection
- Low frequency modulation for metal chip immunity
- Flame retardant cable for high protection against welding spatter damage (pigtail models)

Ordering information

DC 2-wire (with M12 pigtail connector)

Size			Sensing distance	Order code ^{*1} (for pre-wired types with 30 cm PVC cable and M12 plug)
M8	■	—	1.5 mm	E2FM-X1R5D1-M1TGJ
M12			2 mm	E2FM-X2D1-M1TGJ
M18			5 mm	E2FM-X5D1-M1TGJ
M30			10 mm	E2FM-X10D1-M1TGJ

DC 3-wire, M12 Connector types

Size			Sensing distance	Order code ^{*1} (for M12 connector types)	
				PNP	NPN
M8	■	—	1.5 mm	E2FM-X1R5B1-M1	E2FM-X1R5C1-M1
M12			2 mm	E2FM-X2B1-M1	E2FM-X2C1-M1
M18			5 mm	E2FM-X5B1-M1	E2FM-X5C1-M1
M30			10 mm	E2FM-X10B1-M1	E2FM-X10C1-M1

DC 3-wire, pre-wired types

Size			Sensing distance	Order code ^{*1} (for pre-wired types with 2 m PVC cable)	
				PNP	NPN
M8	■	—	1.5 mm	E2FM-X1R5B1 2M	E2FM-X1R5C1 2M
M12			2 mm	E2FM-X2B1 2M	E2FM-X2C1 2M
M18			5 mm	E2FM-X5B1 2M	E2FM-X5C1 2M
M30			10 mm	E2FM-X10B1 2M	E2FM-X10C1 2M

^{*1} Output configuration normally open (NO)

Specifications)

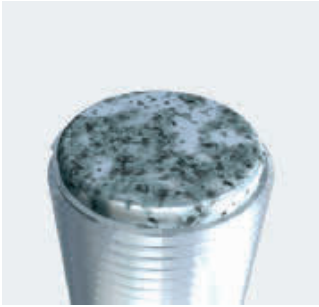
Item		M8	M12	M18	M30
		E2FM-X1R5	E2FM-X2	E2FM-X5	E2FM-X10
Sensing distance		1.5 mm±10%	2 mm±10%	5 mm±10%	10 mm±10%
Response frequency		200 Hz	100 Hz	100 Hz	50 Hz
Power supply voltage (operating voltage range)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.			
Protective circuits		E2FM-_D1: Surge suppressor, output short-circuit protection E2FM-_B1/C1: Output reverse polarity protection (not E2FM-X1R5B1-M1), power supply reverse polarity protection, surge suppressor, short-circuit protection			
Ambient temperature	Operating	-25 to 70°C (with no icing or condensation)			
	Storage				
Degree of protection		IEC60529 IP67, IP69k after DIN 40050 part 9			
Material	Case	Stainless steel (SUS303)			
	Sensing surface	Stainless steel (SUS303)			
	Cable	PVC (flame retardant)			



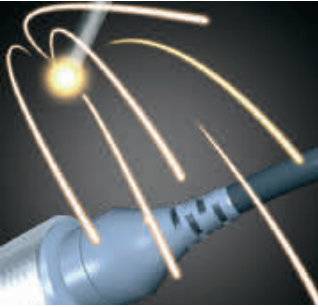
E2FM extra strong sensing face



Conventional metal face product



No interference by small metal chips on sensing surface



Cable resistant to welding spatter



High precision positioning inductive proximity sensor with separate amplifier

The separate amplifier inductive sensor family E2C-EDA offers high precision distance positioning and detection. The teach-in function allows simple installation, and with the window function (2 outputs) production tolerance checks can easily be set up and modified.

- Typically several hundred μm detection precision
- Precision distance teaching
- Window function (2 outputs) for production tolerance checks



Ordering information

Sensor heads

Appearance				Sensing distance	Repeat accuracy	Order code
Cylindrical	3 dia. \times 18		—	0.6 mm	1 μm	E2C-EDR6-F
	5.4 dia. \times 18			1 mm	1 μm	E2C-ED01 ^{*1}
	8 dia. \times 22			2 mm	2 μm	E2C-ED02 ^{*1}
Screw	M10 \times 22		—	2 mm	2 μm	E2C-EM02 ^{*1}
Flat	30 \times 14 \times 4.8			5 mm	2 μm	E2C-EV05 ^{*1}
Screw	M18 \times 46.3			7 mm	5 μm	E2C-EM07M ^{*1}
Screw (heat resistant)	M12 \times 22		—	2 mm	2 μm	E2C-EM02H

^{*1} For models with cut-to-length cables add "F" for example E2C-ED01-F
For models with protective stainless steel spiral tubes add "S" for example E2C-ED01-S

Amplifier units with cables

Item	Functions	Order code	
		NPN output	PNP output
Twin-output models	Area output, open circuit detection, differential operation	E2C-EDA11	E2C-EDA41
External-input models	Remote setting, differential operation	E2C-EDA21	E2C-EDA51

Amplifier units with connectors^{*1}

Item	Functions	Order code	
		NPN output	PNP output
Twin-output models	Area output, open circuit detection, differential operation	E2C-EDA6	E2C-EDA8
External-input models	Remote setting, differential operation	E2C-EDA7	E2C-EDA9

^{*1} Order fitting connector (E3X-CN21_) separately from accessories.

Specifications

Sensor heads

Item		3 dia.	5.4 dia.	8 dia.	M10	M18	30 \times 14 \times 4.8 mm	M12
		E2C-EDR6-F	E2C-ED01(-_)	E2C-ED02(-_)	E2C-EM02(-_)	E2C-EM07(-_)	E2C-EV05(-_)	E2C-EM02H
Ambient temperature	Operating	-10 to 60°C (with no icing or condensation)						-10 to 200°C
	Storage							
Degree of protection		IEC60529 IP67						IEC60529 IP60
Material	Case	Brass	Stainless steel	Brass			Zinc	Brass
	Sensing surface	Heat-resistant ABS						PEEK

Note: For amplifier specifications refer to complete datasheet







Rectangular proximity sensor with free wire connection terminal

The E2Q6 family of rectangular inductive proximity sensors provides longer sensing distances and includes an innovative modified connected terminal for free wire connection.

- Conduit M20 with terminal block for free wire connection
- Change between any of five sensing directions: front or 90° up, down, left, or right
- Four indicators show the operating status of the sensor from all directions

Ordering information

Shielded/Unshielded	Sensing distance	Connection method	Operation mode	Order code	
				NPN output	PNP output
Shielded 	 20 mm	Terminal block	NO + NC	E2Q6-N20E3-H	E2Q6-N20F3-H
Unshielded 	 30 mm			E2Q6-N30ME3-H	E2Q6-N30MF3-H

Specifications

Item		E2Q6-N20_3-H	E2Q6-N30M_3-H
Shielding		Shielded	Unshielded
Sensing distance		20 mm ±10%	30 mm ±10%
Response frequency ^{*1}		150 Hz	100 Hz
Power supply voltage (operating voltage range)		10 to 30 VDC, including 10% ripple (p-p)	
Current consumption		20 mA max.	
Control output	Load current	200 mA max.	
	Residual voltage	2 V max. (at 200 mA load current)	
Operation mode		NO + NC	
Ambient temperature range		Operating and storage: -25 to 70°C (with no icing or condensation)	
Ambient humidity range		Operating and storage: 35% to 95% (with no condensation)	
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case	
Degree of protection		IEC IP67 ^{*2}	
Connection method		Terminal block	
Materials	Case	Polyamide (PA)	
	Sensing surface	Polyamide (PA)	
	Terminal base	Polyamide (PA)	
Accessories		Instruction manual	

^{*1} The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

^{*2} When the recommended cable gland is used.