Industrial Automation Products Master Selection Guide





An Industry Leader Makes a Great Automation Partner

Trust your automation needs to Omron, a global leader and innovator in industrial automation controls and systems. Your investment in Omron systems and training repays itself quickly with improved productivity, continued profitability and competitive manufacturing advantage.

What Makes Omron Different?

Quality

- All products 100% quality-tested before shipping
- Designed and manufactured to the highest ISO 9001, IPC and JIS standards

Stability

- Over 70 years in the controls business, founded in 1933
- \$6 billion USD global technology leader
- 40% of business comes from industrial automation; social systems, electronic components, automotive components and healthcare make up the balance

Technology

- 7% of sales reinvested annually in R&D ensures leading edge solutions that improve our customers' productivity and profits
- Products offer security features to prevent tampering

Ease of use

- Simple menus enable quick setup, operation and changeover for controllers, inspection systems and communications
- Helpful software tools provide data tracking and production monitoring
- One software package programs all Omron PLCs

Flexibility

- More than 300,000 products help you design a complete automation solution from one source
- Easy forward/backward migration maintains the value of your automation investment

Support

- Global, regional and local support in 65 countries through 1,500 offices
- Documentation available on-line
- Training, phone support, 24/7 emergency services give you peace of mind

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Omron Delivers End-to-End Automation from a Single Source

Our large global installed base of plant automation solutions combine sensors, programmable controllers, human machine interface terminals, RFID and other track-and-trace code readers, motion control and products to complete control panel installation.

Only the Best Products

This Master Selection Guide contains our latest and most popular products, and represents a fraction of what is available.

For More Information...

Internet

Visit www.components.omron,com For Data sheets and technical bulletins call phone number below.

Phone

Call us: **847.882.2288** Monday through Friday, 7:30 AM to 6:00 PM Central Time for more detailed product information, the location of your local sales office or Omron distributor.

email: components@omron.com

Photoelectric Sensors

Omron Smart Solutions

E3Z-B

Subminiature low-cost sensor with builtin amplifier detects positioning and presence/ absence in space-confined installations.

E3NT

Accurately detect PET bottles and transparent material. Omron offers sensors to solve many packaging-related problems.

Save space with two fiber-optic amplifiers in a slim body; it offers large digital display and one-button teaching; over 100 sensing head/cables available.

E3X-MDA

Rugged IP67-rated diffuse sensor detects objects of any color, texture or glossiness from any direction using programmable foreground and background suppression.

E31

		PHOTOELECT			
		E3Z	E3Z-LS	E3Z-B	E3T
	Dimensions mm (in)	31 H x 10.8 W x 20 D (1.22 x 0.43 X 0.79)	31 H x 10.8 W x 20 D (1.22 x 0.43 x 0.79)	31 H x 10.8 W x 20 D (1.22 x 0.43 x 0.79)	19 H x 12 W x 4 D (0.74 x 0.47 x 0.15)
	Amplifier type	Built-in DC amplifier	Built-in DC amplifier	Built-in DC amplifier	Built-in DC amplifier
	Features	 Sub-miniature sensor offers long sensing distances and high noise immunity IP67 rated Connector models available 	 Foreground/background suppression Pre-wired 2 m cable or M8 connector Distance settable Stable sensing regardless of target's color 	Detects PET bottles	 Micro-miniature space saving Watertight IP67 Pinpoint beam for detection of extremely small targets 1 meter range Hyper LED smallest visible red LED Flat and rectangular body styles CE conformance
	Through-beam sensing distance	15 m (49.2 ft)	-	-	1 m (3.28 ft)
	Retroreflective sensing distance	4 m (13.12 ft)	-	500 mm – 2 m depends on reflector	Polarized: 200 mm (7.88 in)
	Diffuse reflective sensing distance	1 m (3.28 ft) or 5 to 100 mm (0.2 to 3.94 in)	20 mm to 200 mm (BGS) 40 mm to 200 mm (FGS)	-	30 mm (1.18 in) 15 mm on certain convergent beam models
)	Color sensing	-	-	-	-
	Supply voltage	12 to 24 VDC	12 to 24 VDC	12 to 24 VDC	12 to 24 VDC
	AC control output	-	-	-	-
	DC control output type	NPN or PNP	NPN or PNP	NPN or PNP	NPN or PNP
	Max. load	100 mA	100 mA max.	100 mA max.	50 mA max. at 24 VDC
)	Alarm	-	-	-	-
	Response time Materials: Lens	1 ms max.	Operation or reset: 1 ms max.	Operation or reset: 1 ms max.	2 ms ON/OFF
	Materials: Lens Case Bracket	Denatured polyallylate PBT plastic –	Denatured polyallylate PBT plastic –	Denatured polyallylate PBT plastic –	Polycarbonate PBT plastic -
í	Cover	-	-	-	Polycarbonate
	Enclosure rating	IP67, 1200 PSI (NEMA ICS5, ANNEXF)	IEC 60529 IP67, 1200 PSI (NEMA ICS5, ANNEXF)	IEC 60529 IP67, 1200 PSI (NEMA ICS5, ANNEXF)	IP67
	Light source	Pulse modulated infrared LED (860 nm) or visible red LED (680 nm)	Red LED (680 nm)	Red LED (680 nm)	Red "Pin Point" LED (670 nm)
	Circuit protection	Load short circuit and reverse polarity	Reverse polarity, output short-circuit	Reverse polarity, output short-circuit	Load short circuit and reverse polarity
	Mutual interference protection	On all except through-beam models	Yes	Yes	On all except through-beam models
	Operation mode	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON separate models
	Applications	General purpose sensing; Sub-miniature, long detection distances, noise immunity; IP67 rated; CE approved	General purpose; Material handling; Packaging; Background suppression	PET bottles and transparent objects	Flat or rectangular micro- miniature package; Washdown environments; Pinpoint beam for extremely small target detection; CE conformance; Latest generation technologies

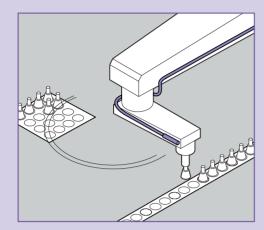
	PHOTOELECTRIC SENSORS			
	E3NT	E3F2	E3G-L1/L3	E3S-A
Dimensions mm (in)	88.7 H x 27 W x 65.1 D (3.49 x 1.06 x 2.56)	18.5 dia. x 65 L (0.73 x 2.56)	40 H x 18.4 W x 27 D (1.57 x 0.72 x 1.06)	22.3 H x 12.4 W x 44 or 50 D (0.88 x 0.49 x 1.73 or 1.97)
Amplifier type	Built-in DC amplifier	Built-in AC or DC amplifier	Built-in DC amplifier	Built-in DC amplifier
Features	 Programmable BGS/FGS diffuse sensor Digital, software configurable Detects any color, texture, or glossiness from any direction Double-triangulated optics Rugged housing withstands extreme environment 	 Rugged stainless, nickel plate brass, and plastic models are chemical resistant Wide operating voltage range AC/DC UL, CSA, CE certified Connector models available 	 Distance settable pinpoint beam TEACH mode for reliable detection of minute objects any color, material, or glossiness IP67; NEMA 4; CE approved 	 Fast response time Selectable Light-ON / Dark-ON operation Alarm output indicates deteriorating sensing conditions Timer versions available
Through-beam sensing distance	-	To 7 m (22.97 ft)	-	7 m (23 ft)
Retroreflective sensing distance	-	To 2 m (6.56 ft)	-	Polarized: 0.1 to 2 m (0.33 to 6.56 ft)
Diffuse reflective sensing distance	0.2 m to 2 m	To 300 mm (11.81 in)	5 to 200 mm (0.19 to 7.87 in)	0 to 100 mm (0 to 3.94 in) 10 to 200 mm (0.04 to 7.87 in) 0 to 700 mm (0 to 27.56 in)
Color sensing	-	-	-	-
Supply voltage	10 to 30 VDC	24 to 240 VAC 50/60 Hz. or 10 to 30 VDC	10 to 30 VDC	10 to 30 VDC
AC control output	-	SCR 200 mA max.	-	-
DC control output type	NPN or PNP or complementary	NPN/PNP separate models	NPN or PNP	NPN or PNP
Max. load	100 mA max.	100 mA max. at 30 VDC	100 mA max. at 30 VDC	100 mA max. at 30 VDC
Alarm	Yes	-	-	50 mA max. NPN/PNP
Response time	≤ 2.5 ms	30 ms AC models; 2.5 ms DC models	1.5 ms or 2.5 ms model dependent	0.5 ms max.
Materials: Lens Case Bracket Cover	Housing: Powder-coated aluminum Front pane: Glass Keyboard: HTV silicone Seals: RTV silicone	Plastic ABS or nickel-plated brass or stainless steel -	Acrylic (PMMA) PBT plastic Stainless steel 304 –	Denatured polyarylate PBT plastic Stainless steel –
Enclosure rating	IP67 (EN 60529/IEC 529)	NEMA 1, 2, 4 (indoor) IP66 AC models; IP67 NEMA 6 Metal versions, IP66 NEMA 4 Plastic	IP67 NEMA 4	NEMA 4X, 6, IP67
Light source	Infrared LED (850-880 nm)	Infrared LED or Red LED	Infrared LED (860 nm) or red LED (670 nm)	Pulse modulated red and infrared LED
Circuit protection	Reverse polarity, overload, short-circuit	Reverse polarity, short circuit on DC power supply models only	Short-circuit, reverse polarity	Load short circuit and reverse polarity
Mutual interference protection	Yes	-	Yes	On all except through-beam models
Operation mode	Light-ON / Dark-ON programmable	Light-ON / Dark-ON selectable with control wire	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON switch selectable
Applications	Extreme conditions; Food & Beverage; Packaging; Material Handling; Car wash	General purpose sensing; Chemical resistant ABS version; Stainless or nickel-plated brass versions; Connector types; Cylindrical design; M18 mounting	Food and Bev, material handling, packaging applications; Multiple object detection	General purpose sensing; Washdown environment; Miniature size; High speed sensing 0.5 ms; Timers, vertical or horizontal mount versions

		Photoelectric Sensors			
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		E3X-DAN/DAB	E3X-DA-S	E3X-MDA	E3X-NA
Dimensions mm (in)		31.5 H x 10 W x 64.3 D (1.24 x 0.39 x 2.53)	32 H x 10 W x 70 D (1.26 x 0.39 x 2.75)	32 H x 10 W x 70 D (1.26 x 0.39 x 2.75)	-NA□□, -NA□□F, -NAG□□: 31.5 H × 10 W × 64.3 D (1.24 × 0.39 × 2.53) -NA□□V: 33 H × 12 W × 81.5 D (1.29 × 0.47 × 3.21)
	Amplifier type	All purpose fiber-optic amplifier	All purpose fiber-optic amplifier	All purpose fiber-optic amplifier	Fiber-optic amplifier
	Features	 User selectable displays: digital, percentage and analog display Available in digital or dual analog/digital output Digital display can be read right-side-up regardless of amplifier orientation 	 Power tuning Dual digital display 4 element LED 2 independent outputs Counter function 	 Power tuning Dual digital display 4 element LED 2 channel amplifier AND/OR control output 	 Master/slave connector design affords connectivity up to 16 amplifiers Wire saving amplifiers reduce installation time and minimize space requirements LED bar display Mutual interference protection Excellent response time M8 connector ready models and water resistant models
	Through-beam sensing distance	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen
0 2	Retroreflective sensing distance	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen
06700	Diffuse reflective sensing distance	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen	Varies depending on the model and fiber chosen
	Color sensing	Yes	Yes	Yes	Yes (E3X-NAG11/NAG41)
0	Supply voltage	12 to 24 VDC	12 to 24 VDC ±10%, Ripple (P–P) 10% max.	12 to 24 VDC ±10%, Ripple (P–P) 10% max.	12 to 24 VDC
-	AC control output	-	-	-	-
ב	DC control output type	NPN or PNP	NPN or PNP	NPN or PNP	NPN or PNP
ر	Max. load	50 mA max.	50 mA max.	50 mA max.	50 mA max.
	Alarm	-	-	-	-
С С С С	Response time	Standard mode: 1 ms High-speed mode: 250 µs Long-distance mode: 4 ms	48 µs	Standard mode: 1 ms	-ΝΑ□□, -ΝΑ□□V, -ΝΑG□□: 200 μs; -ΝΑ□□F: 50 μs
) C	Materials: Lens Case	– PBT plastic	– PBT plastic	– PBT plastic	– PBT plastic
	Bracket Cover	– Polycarbonate	Polycarbonate Polycarbonate		– Polycarbonate (-NA□□) Polyethersulfone (E3X-NA□□V)
	Enclosure rating	IP50/IP66	IP50	IP50	-NADD, -NADDF, -NAGDD: IP50; -NADDV: IP66
	Light source	Red LED	Red, green and blue LEDs available	Red LED	-NADD, -NADDV, -NADDF: Red LED; -NAGDD: Green LED
	Circuit protection	Short circuit, Reverse polarity	Short circuit, reverse polarity	Short circuit, reverse polarity	Reverse polarity; Output short- circuit; Mutual interference; -NA□□F: Reverse polarity; Output short-circuit
	Mutual interference protection	Yes	Yes	Yes	Yes
	Operation mode	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON selectable	Light-ON / Dark-ON (switch selectable)
	Applications	All purpose, high speed, mark sensing, transparency detection, color discrimination, delicate level difference, minute object, high-precision positioning	All purpose, high speed, mark sensing, transparency detection, color discrimination, delicate level difference, minute object, high- precision positioning	All purpose, high speed, mark sensing	General purpose, high speed, mark sensing
4					

Over 100 Fiber-Optic Sensor Cables

One exactly matches your requirements

Constant Flexing Applications



The special construction of these fiber-optic cables resists breaking and enables them to withstand the punishing effects of constant flexing or tight bending. The stranded fiber core can be bent to a radius as small as 4 mm with no loss in light intensity. They are ideal for use on moving and articulating equipment such as robotic arms.

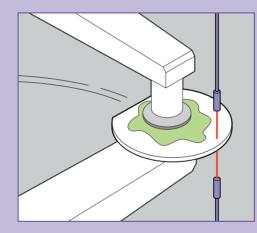


Through-Beam

E32-T11 (680 mm sensing distance, M4 threaded head) E32-T21 (200 mm sensing distance, M3 threaded head) E32-T22B (200 mm sensing distance, 1.5 mm dia. head) Diffuse

E32-D11 (170 mm sensing distance, M6 threaded head) E32-D21 (30 mm sensing distance, M3 threaded head) E32-D21B (70 mm sensing distance, M4 threaded head) E32-D22B (30 mm sensing distance, 1.5 mm dia. head)

Chemical Resistant Applications



Teflon[®] coated fiber optic cables provide long lasting reliability in sensing environments where corrosive fluids and gasses are present. They are designed for use where strong chemicals are manufactured or being used for processing or cleaning.

AVAILABLE MODELS

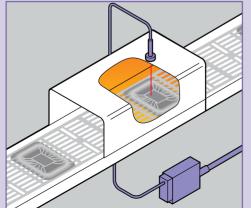


Through-Beam

E32-T11F (2000 mm sensing distance, 7.2 mm dia. head) E32-T12 F (3000 mm sensing distance, 5 mm dia. head) E32-T14F (400 mm sensing distance, 5 mm dia., side view head) E32-T81F-S (700 mm sensing distance, 6 mm dia. head, to 200°C) **Diffuse**

E32-D12F (95 mm sensing distance, 6 mm dia. head)

High Temperature Applications



Omron offers a variety of heat resistant fiber optic cables that can operate reliably in temperatures up to 400°C (752°F). The fluororesin and armored stainless steel sheaths protect the fibers for use in ovens and other high heat applications.

AVAILABLE MODELS



Through-Beam

E32-T51 (760 mm sensing distance, M4 threaded head, to 150°C) E32-T54 (230 mm sensing distance, 2 mm dia., side view head, to 150°C) E32-T61-S (450 mm sensing distance, M4 threaded head, stainless steel sheath, to 350°C)

E32-T84S-S (1300 mm sensing distance, 3 mm dia. L-shaped head, to 200°C) Diffuse

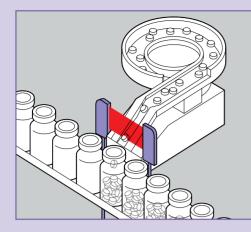
E32-D51 (230 mm sensing distance, M6 threaded head, to 150°C)

E32-D61-S (90 mm sensing distance, M6 threaded heads, stainless steel sheath, to 350 $\!^{\circ}\mathrm{C})$

E32-D73-S (60 mm sensing distance, M4 threaded head, stainless steel probe, to $400^{\circ}\!C)$

E32-D81R-S (90 mm sensing distance, M6 threaded head, to 200°C)

Wide Area Sensing Applications



Applications that require a larger target area for sensing small, randomly positioned objects are ideal for Omron's wide area sensing fiber optic cables. They project a wide plane of light that can detect very small objects anywhere within the width of the beam. Use them for detecting pills in packaging and similar applications.

AVAILABLE MODELS

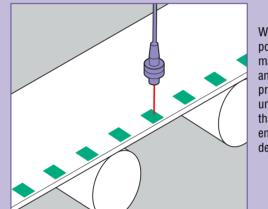


Through-Beam

E32-M21 (610 mm sensing distance, four M3 heads) E32-T16 (2800 mm sensing distance, 10 mm wide beam) E32-T16P (1100 mm sensing distance, 11 mm wide beam) E32-T16W (1800 mm sensing distance, 30 mm wide beam) E32-T16J (1000 mm sensing distance, 11 mm wide beam, side view) Diffuse

E32-D36P1 (100 mm sensing distance, 10.85 mm wide beam)

Precise Positioning Applications



When it is critical to position objects or machinery accurately and consistently, Omron provides a solution with a unique coaxial cable design that surrounds the light emitting fiber with light detection fibers.

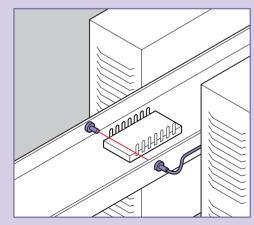
AVAILABLE MODELS



Diffuse

E32-CC200 (300 mm sensing distance, M6 threaded head, 16 receivers) E32-D32L (150 mm sensing distance, 3 mm dia. head, 16 receivers) E32-D32 (75 mm sensing distance, 2 mm dia. head, 4 receivers) E32-C31 (75 mm sensing distance, M3 threaded head, 4 receivers) E32-C41 (35 mm range, M3 threaded head, 6 receivers) E32-C42 (35 mm range, 2 mm dia. head, 6 receivers)

Detect Minute Objects



Detect extremely small objects, as small as 0.5 mm, in very spacerestricted areas. Most are available with bendable "probe" tips that let you mount the head away from the detection area and bend the probe tip to the precise sensing area.



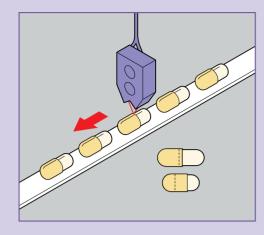


Through-Beam

E32-T22 (220 mm sensing distance, 2 mm dia. head) E32-TC200B (760 mm sensing distance, 1.2 mm dia. head, probe tip) E32-TC200E (220 mm sensing distance, M3 threaded head) E32-TC200F (220 mm sensing distance, 0.9 mm dia. head, probe tip) Diffuse

E32-DC200B (300 mm sensing distance, 2.5 mm dia. head, probe tip) E32-DC200E (80 mm sensing distance, M3 threaded head) E32-DC200F (80 mm sensing distance, 1.2 mm dia. head, probe tip) E32-D33 (16 mm sensing distance, 0.8 mm dia. head, probe tip) E32-D331 (3 mm sensing distance, 0.5 mm dia. head, probe tip)

Background Suppression Applications



Fiber optic cables with convergent beam head configurations solve the problem of background reflections in spacerestricted areas. These special cables can also be used for precise positioning of objects or machinery. Left- and right-side emitter models eliminate interference when using two or more E32-L56 sensing heads.

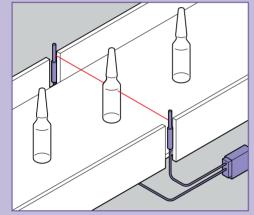
AVAILABLE MODELS



Convergent Beam

E32-L24L (4±2 mm range, side view head, to 105°C) E32-L24S (0-4 mm range, side view head) E32-L25 (3.3 mm range, side view head) E32-L25L (7.2±1.8 mm range) E32-L25A (3.3 mm range) E32-L56E□ (4-12 mm range) E32-L66 (5-18 mm range, sensing head to 300°C)

Long Range Detection of Small Objects



A wide variety of fiber optic cables with special sensing heads and lenses are available for detecting small objects over longer distances in space-confined areas. They are available in through-beam or diffuse versions with threaded and non-threaded heads for more versatile mounting.

AVAILABLE MODELS



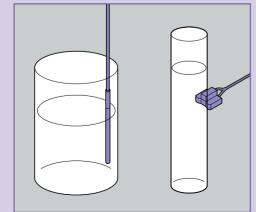
Through-Beam

E32-T11L (1330 mm sensing distance, M4 threaded head) E32-T12L (1330 mm sensing distance, 3 mm dia. head) E32-T14L (460 mm sensing distance, 3 mm dia., side view head) E32-T17L (20,000 mm sensing distance, M14 threaded head) E32-T21L (440 mm sensing distance, M3 threaded head) E32-T22L (440 mm sensing distance, 2 mm dia. head)

Diffuse

E32-D11L (400 mm sensing distance, M6 threaded head) E32-D12 (230 mm sensing distance, 3 mm dia. head) E32-D16 (40 to 700 mm sensing distance, 17.5 mm square head) E32-D21L (130 mm sensing distance, M4 threaded head) E32-D22L (130 mm sensing distance, 3 mm dia. head)

Fluid Level Detection



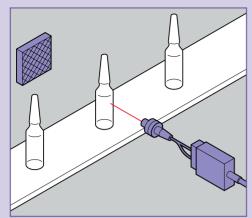
Omron offers two fiber optic sensing solutions for fluid level detection in space-confined areas: immersion style sensing heads can be submerged in the fluid to be monitored, and a tube-mounted sensing heads that can sense fluids through a clear tube.



E32-D82F1 (Immersion type, 150 mm length) E32-D82F2 (Immersion type, 350 mm length) E32-A01 (External mount; 3.2, 6.4, 9.5 mm clear tube) E32-A02 (External mount; 6 to 13 mm clear tube) E32-L25T (External mount; 6 to 10 mm clear tube) E32-D36F (External mount; clear tube, no diameter restriction)

Also consider EE-SPX613 Amplified Photomicrosensor

Transparent Object Detection



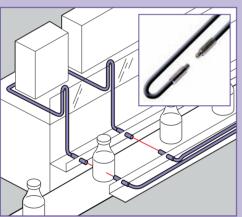
Sensing transparent objects is always a challenge. Omron solves this problem with fiber optic cables that are polarized and reflectors specially designed for sensing small transparent objects in tight spaces. They are ideal for sensing lenses, clear plastics, and transparent packaging materials.

AVAILABLE MODELS



E32-R21 (Retroreflective, 10–250 mm range) E32-R16 (Retroreflective, 150–1,500 mm range)

Extreme Bending Applications



For machine applications that require extreme bending of fiber optic cables to conform to tight spaces, Omron offers a variety of cables that feature a unique multi-core construction. Unlike singlecore cables that can lose their light transmission capability when bent tightly, the multi-core design ensures optimal light transmission even when bent 180° with a bending radius of 1 mm.

AVAILABLE MODELS

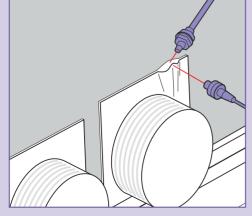
Through Beam

E32-T11R (530 mm sensing distance, M4 threaded head) E32-T12R (530 mm sensing distance, 3 mm dia. head) E32-T14LR (210 mm sensing distance, 3 mm dia. head) E32-T21R (130 mm sensing distance, M3 threaded head) E32-T16WR (1300 mm sensing distance, 30 mm wide beam) E32-T16JR (750 mm sensing distance, 11 mm wide beam, side view) E32-T16PR (840 mm sensing distance, 11 mm wide beam) E32-T22R (130 mm sensing distance, 2 mm dia. head) E32-T24R (50 mm sensing distance, 1 mm dia. head, side view)

Diffuse

E32-D11R (170 mm sensing distance, M6 threaded head) E32-D12R (170 mm sensing distance, 3 mm dia. head) E32-D14LR (45 mm sensing distance, 6 mm dia. head, side view) E32-D21R (30 mm sensing distance, 3 mm dia. head) E32-D22R (30 mm sensing distance, 3 mm dia. head) E32-D24R (15 mm sensing distance, 2 mm dia. head, side view)

General-Purpose Industrial Applications



For most sensing applications, the spacesaving combination of a fiber-optic amplifier and general-purpose fiber unit provides an economical solution.

AVAILABLE MODELS



 Through-Beam

 E32-TC200 (760 mm sensing distance, M4 threaded head)

 E32-TC200A (680 mm sensing distance, M3 threaded head)

Diffuse E32-DC200 (300 mm sensing distance, M6 threaded head)

	PHOTOELEGT			
	E3XA analog fiber-optic E3S-CL		E3JK	E3JM
	40 H x 20.4 W x 30 D (1.57 x 0.80 x 1.18)	42.6 H x 15.5 W x 40 D (1.7 x 0.61 x 1.57)	50 H x 17.6 W x 50 D (1.97 x 0.69 x 1.97)	65 H x 25 W x 75 D (2.56 x 0.98 x 2.95)
Amplifier type F	Fiber-optic amplifier	Built-in amplifier	Built-in AC/DC amplifier	Built-in AC/DC amplifier
	 Ideal for detecting size, color and surface characteristics Four turn controls allow fine adjustment of sensitivity and operating point 	 Background suppression Stable detection regardless of material color or size of object Sensing unaffected by dirty lens IP67 water resistant housing 	Complimentary relay output 1NO & 1NC or NPN/PNP Slim housing ideal for narrow installation spaces Universal AC/DC supply voltage	 Relay or transistor output available Built-in timers available Easy to wire terminal block Universal AC/DC supply voltage
	Varies depending on the model and fiber chosen	-	5 m (16.4 ft)	10 m (32.8 ft)
	Varies depending on the model and fiber chosen	-	0 to 3 m (9.8 ft) 0 to 5 m (16.4 ft)	Polarized 0 to 4 m (13.1 ft)
	Varies depending on the model and fiber chosen	E3S-CL1: 5 to 200 mm E3S-CL2: 5 to 500 mm	0 to 300 mm (11.8 in)	0 to 700 mm (2.3 ft)
Color sensing Y	Yes	-	-	-
Supply voltage 1	12 to 24 VDC	10 to 30 VDC	24 to 240 VAC 50/60 Hz. and 12 to 240 VDC	24 to 240 VAC 50/60 Hz. and 12 to 240 VDC
AC control output 4	4 to 20 mA	-	Relay 3 A, 250 VAC	Relay 3 A, 250 VAC
DC control output type N	NPN	NPN or PNP (switch selectable)	NPN/PNP wire selectable	NPN or PNP separate models
	Analog: 20 to 21.55 mA Digital: 100 mA max.	100 mA max.	100 mA at 300 VDC	100 mA at 48 VDC
Alarm –	-	-	-	-
Response time 2	2 ms max. ON/OFF	2 ms max ON/OFF	30 ms relay output; 3 ms for transistor output	30 ms relay output; 5 ms for transistor output
	Plastic Plastic -	Acrylic Zinc die cast Operating Panel: Sulfonated polyether Stainless Steel	Plastic PMMA Plastic ABS – Plastic PMMA	Plastic PMMA Plastic ABS – Plastic PMMA
Enclosure rating	IP66	IP67	NEMA 1, 2, 12, IP64	IP66
	Red LED	E3S-CL1: Red LED; E3S-CL2: IR LED	Pulse modulated infrared LED; Pulse modulated red LED	Infrared LED; Polarized red LED on retro
Circuit protection S	Short-circuit, reverse polarity	Short-circuit, reverse polarity	Reverse polarity on DC power supply only	Load short circuit on transistor output models only
Mutual interference – protection	-	Yes	-	-
-	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON separate models	Light-ON / Dark-ON switch selectable
h e	Food and Bev, material handling, semiconductor, electronics packaging applications	Food and Bev, material handling, packaging applications, rugged applications	Relay or transistor output; Detect shiny objects; Universal supply AC/DC	UL CSA; Easy to wire terminal block; Relay or transistor output models available; Built- in timers available; Universal supply AC/DC

		Photoelectric Sensors				
			AND COMPANY			
		E3L	E3HT	E3X-NT/NM	E3X-NL	
_	Dimensions mm (in)	55 H x 17 W x 50 D (2.17 x 0.67 x 1.97)	8.5 dia. x 41.5 L (0.33 x 1.63)	Single Channel: 32.5 H x 10 W x 59 D (1.28 x 0.39 x 2.32) Four Channel: 32.5 H x 32.2 W x 59 D (1.28 x 1.27 x 2.32)	Amplifier: 33 H x 32.2 W x 59 D (1.29 x 1.27 x 2.32) Sensing Head (short): 29 H x 10.4 W x 29 D (1.14 x 0.41 x 1.14) (long): 42 H x 20.4 W x 47 D (1.65 x 0.80 x 1.85)	
-	Amplifier type	Built-in DC amplifier	Built-in DC amplifier	Fiber-optic amplifier	Fiber-optic amplifier	
	Features	 Laser beam provides long distance spot sensing Class 1 versions require no additional protection Stability indicator signals upon deteriorating conditions 	 Ideal for space-confined installation 8 mm housing Cost effective Nickel plate brass construction CE certified Connector models available 	 Remote teach function Four fiber-optic cables can be mounted directly next to each other without mutual interference 	 Ideal for sensing glossy objects • Easy-to-use TEACH function Remote TEACH function Mutual interference protection 	
	Through-beam sensing distance	10 m (32.8 ft) 2 m (6.56 ft)	To 1 m (3.28 ft)	Varies depending on the model and fiber chosen	-	
	Retroreflective sensing distance	-	-	Varies depending on the model and fiber chosen	-	
	Diffuse reflective sensing distance	200 to 500 mm (7.90 to 19.7 in)	To 35 mm (1.38 in)	Varies depending on the model and fiber chosen	Short range: 10 ±3 mm Long range: 20 ±7 mm	
)	Color sensing	-	-	-	-	
Í	Supply voltage	12 to 24 VDC	12 to 24 VDC	12 to 24 VDC	12 to 24 VDC	
1	AC control output	-	-	-	-	
)	DC control output type	NPN open collector or NPN constant current source or PNP open collector	NPN & TTL logic	NPN, PNP	NPN	
	Max. load	NPN 100 mA; NPN type: Load (relay, sink) logic: 80 mA Voltage (source) logic: 3 mA PNP type: Load (relay, source) logic: 80 mA	Relay (sink) 80 mA max.	100 mA max. at 30 VDC 100 mA max. at 40 VDC (E3X-VG)	100 mA	
)	Alarm	NPN or PNP 50 mA at 24 VDC.	-			
	Response time	1 ms ON/OFF or 3 ms ON/OFF	10 ms ON/OFF through-beams; 6 ms ON/OFF diffuse models	500 µs	1 ms max.	
	Materials: Lens Case Bracket Cover	Plastic (PMMA) Zinc die cast –	Plastic Nickel-plated brass –	– PBT plastic – Polycarbonate	– PBT plastic – Polycarbonate	
-	Enclosure rating	NEMA 4, IP67	NEMA 1, 3, 4X, 6, 12 IP66	IP50	IP50	
	Light source	Infrared pulse modulated laser diode (780 nm) or visible red pulse modulated laser diode (670 nm)	Pulse modulated infrared LED	Pulse modulated red LED	Red LED	
	Circuit protection	Load short circuit and reverse polarity	Reverse polarity and load short circuit	Short circuit and reverse polarity	-	
	Mutual interference protection	Standard level	-	Provided	Yes	
	Operation mode	Light-ON / Dark-ON wire selectable	Light-ON / Dark-ON separate models	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON switch selectable	
	Applications	Laser Photoelectric Prewired Sensor; Provides long distance detection of objects down to 0.1 mm dia.	CE certified; 8 mm cylindrical housing fits in compact spaces; Connector types available; Dual output NPN & TTL	General purpose, background suppression	Luster detection, tight space application	

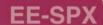
	PHOTOELECTRIC SENSORS				
	E3S-C	E3S-CR	E3MC	E3M-V	
Dimensions mm (in)	Horizontal: 23 H x 20.4 W x 57.5 D (0.91 x 0.80 x 2.24) Vertical: 57.5 H x 20.4 W x 23 D (2.24 x 0.80 x 0.91)	Horizontal: 57 H x 20.4 W x 23 D (2.24 x 0.80 x 0.91)	53.2 H x 30.4 W x 98 D (2.09 x 1.19 x 3.85)	68.5 H x 21 W x 47.7 D (2.70 x 0.83 x 1.46)	
Amplifier type	Built-in DC amplifier	Built-in DC amplifier	Self-contained	Self-contained	
Features	 Rugged metal body 6 times normal sensing distance NEMA 4X, 6P, IP67 Vertical and horizontal body styles Fuzzy logic mutual interference protection CE conformance 	 Clear material detection specially tuned for glass and plastic bottles Compensates for "lens effects" IP67 rating, versatile NPN/PNP, L.O., D.O., in one unit Rugged die cast metal housing 	pecially tuned for glass and lastic bottles ompensates for "lens effects" 267 rating, versatile NPN/PNP, .O., D.O., in one unit ugged die cast metal housing		
Through-beam sensing distance	30 m (98.43 ft)	-	Varies depending on the model and fiber chosen	-	
Retroreflective sensing distance	Polarized: 3 m (9.84 ft)	250 mm (9.84 in) or 1 m (3.28 ft)	-		
Diffuse reflective sensing distance	700 mm (27.56 in) and 2 m (6.56 ft)	-	Varies depending on the model and fiber chosen	10 mm ±3 mm	
Color sensing	-	-	Yes	Yes	
Supply voltage	10 to 30 VDC	10 to 30 VDC	24 to 240 VDC	10 to 30 VDC, 10% Ripple max.	
AC control output	-	-	-	-	
DC control output type	NPN or PNP selectable	NPN/PNP switch selectable	NPN, PNP	NPN/PNP	
Max. load	100 mA max. at 30 VDC	100 mA at 30 VDC	100 mA	100 mA	
Alarm	-	-	-	-	
Response time	1 ms ON/OFF (2 ms ON/OFF for short range diffuse models)	2 ms ON/OFF	s ON/OFF 1 output: standard - 3 ms high-speed - 1 ms 4 output: standard - 6 ms high-speed - 2 ms		
Materials: Lens Case Bracket Cover	Acrylic Zinc die cast Stainless steel Op. panel: Sulfonated Polyether	Acrylic Zinc die cast Stainless steel Panel: Sulfonated polyether	– Zinc-diecast Fiber Head: -X/MX: ABS PES	Acrylic PBT - -	
Enclosure rating	NEMA 1,4X, 6P, 12, 13, IP67	NEMA 6P, IP67	IP66 w/ protective cover in place	IP67	
Light source	Pulse mod. infrared (880 nm) Red LED (700 nm) on retro	Red LED (670 nm)	Red, green, and blue LED	Green LED	
Circuit protection	Load short circuit and reverse polarity	Reverse polarity and load short circuit	Reverse polarity, short-circuit	Short circuit, reverse polarity	
Mutual interference protection	On all except through-beam models	Provided	-	-	
Operation mode	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON switch selectable	Light-ON / Dark-ON, switch selectable	
Applications	Washdown environments; Long range sensing 30 m; NPN /PNP selectable; CE conformance requirements; Highly shock resistant 100 g; Metal body	Clear material sensor; Rugged; Detects clear bottles reliably even with "lens effects"; Connector versions available	Color differentiation, Food and Bev, material handling, packaging applications	High-speed mark detection	

		PHOTOELECT	RIC SENSORS			
		E3S-LS3N	E3C-V	E3HF	F3C-AA41	
	Dimensions mm (in)	19.0 H x 10.0 W x 34.0 D (0.79 x 0.39 x 1.33)	E3C-VS1G/ E3C-VS3R: 15 H x 10 W x 28 D (0.59 x 0.39 x 1.10) E3C-VM35R/ E3C-VS7R: 20 H x 10 W x 47 D (0.78 x 0.39 x 1.85)	28 H x 50 W x 7 D (1.10 x 1.97 x 0.28)	90 H x 18 W x 45 D (3.54 x 0.70 x 1.77)	
_	Amplifier type	Printed circuit board sensor	Pinpoint/mark sensing head (Use separate amplifier)	Built-in DC amplifier	Roller conveyor sensor	
	Features	 Stable detection without being affected by holes or notches Will detect any color PC board 	 Accurately detects color marks against many different backgrounds Pinpoint beam enables it to detect small objects, marks and wires as small as 0.2 mm 	 Thin profile 7 mm thick flat pack style sensor Can detect 0.5 mm (0.02 in) objects with included slits Light-ON or Dark-ON versions Top and side through holes for easy mounting 	 Detects objects from underneath roller conveyor M12 connector Unique optical system for setting distance, eliminates background influences 	
	Through-beam sensing distance	-	-	1 m (3.28 ft)	-	
0	Retroreflective sensing distance	-	-	-	- 0 to 750 mm	
VENUCK	Diffuse reflective sensing distance	10 – 60 mm	E3C-VS1G: 10 ±2 mm E3C-VS3R: 30 ±5 mm E3C-VM35R: 35 ±5 mm (mark) 20 to 80 mm (spot) E3C-VS7R: 70 ±10 mm (mark) 40 to 110 mm (spot)	50 mm (1.97 in)		
	Color sensing	Yes	Yes	-	-	
7	Supply voltage	12 to 24 VDC ±10% Ripple max.	See E3C amplifiers	12 to 24 VDC	10 to 30 VDC	
רבכואוכ	AC control output	-	See E3C amplifiers	-	-	
ך ח	DC control output type	NPN	See E3C amplifiers	NPN with pull-up resistor	NPN or PNP	
	Max. load	50 mA	See E3C amplifiers	NPN 80 mA relay sink logic NPN 3 mA voltage source logic	150 mA	
2	Alarm		See E3C amplifiers	-	-	
	Response time	1 ms	See E3C amplifiers	6 ms ON/OFF or 10 ms ON/OFF on some models	10 ms max.	
ר	Materials: Lens	Acrylic	E3C-VS1G/VS3R: Plastic, polycarb.; E3C-VM35R/VS7R: Glass	Plastic	Acrylic	
	Case Bracket	ABS -	Plastic _	Plastic -	ABS -	
	Cover		-	-	-	
_	Enclosure rating	IP40	E3C-VS1G/VS3R: IP64 E3C-VM35R/VS7R: IP50	NEMA 1, 3, 4X, 12 IP64	IP40	
	Light source	Red LED	E3C-VS1G: Pulse modulated Green LED E3C-VS3R/VM35R/VS7R: Pulse modulated Red LED	Pulse modulated infrared LED	Infrared LED	
	Circuit protection	-	See E3C amplifiers	Reverse polarity and load short circuit	Load short circuit and reverse polarity	
	Mutual interference protection	-	See E3C amplifiers	-	Yes	
	Operation mode	Light-ON	See E3C amplifiers	Light-ON / Dark-ON separate versions	Light-ON / Dark-ON selectable	
	Applications	PC board detection	Color mark applications, inspection and accurate positioning	Thin profile 7 mm photoelectric sensor; Ideal for space constrained applications; Good for small object detection	Packaging, roller conveyor object detection, material handling	
2						

	Photoelectric Sensors				
	F3C-AL	E3C-LDA	E3C-		
Dimensions mm (in)	90 H x 18 W x 45 D (3.54 x 0.70 x 1.77)	Amplifier: 32 H x 10 W x 82.7 D (1.25 x 0.393 x 3.25) Sensing Head: 25 H x 12.8 W x 33 D (0.98 x 0.50 x 1.29)	Sensor Heads: -S10: $14 H \times 5.8 W \times 10 D (0.55 \times 0.22 \times 0.39)$ -S20W: $12.5 H \times 2.8 W \times 20 D (0.49 \times 0.11 \times 0.78)$ -S30T: $15 H \times 3 W \times 7.85 D (0.59 \times 0.11 \times 0.31)$ -S30W: $8.4 H \times 3 W \times 15 D (0.33 \times 0.11 \times 0.59)$ -S50: $13 H \times 7 W \times 11 D (0.51 \times 0.28 \times 0.43)$ -1: $12 H \times 8 W \times 25 D (0.47 \times 0.31 \times 0.98)$ -2: $16 H \times 12.4 W \times 36 D (0.63 \times 0.49 \times 1.42)$ -DS5W: $19.5 H \times 2.8 W \times 18 D (0.77 \times 0.11 \times 0.71)$ -DS10: $15 H \times 10 W \times 28 D (0.59 \times 0.39 \times 1.10)$ Amplifiers: -A/C: $82.5 H \times 49 W \times 48 D (3.24 \times 1.93 \times 1.89)$ -JB4P/JC4P: $32.5 H \times 14 W \times 60 D (1.28 \times 0.55 \times 2.36)$ -GE4/GF4: $35.5 H \times 20.7 W \times 27.2 D (1.39 \times 0.81 \times 1.07)$ -WH4F: $75 H \times 22.5 W \times 80 D (2.95 \times 0.88 \times 3.15)$		
Amplifier type	Distance setting laser photoelectric sensor	Separate amplifier	Separate amplifier		
Features	 Laser diode M12 connector Spot diameter 1.5 x 4 mm at 700 mm 	 Laser heads Three beam types: spot, line and area Beam focusable and adjustable optical alignment Same programming as E3X-DA 	Sensor Heads: • Miniature interchangeable sensing heads • Remote sensitivity adjustment Amplifiers: • Multiple sizes • Track mountable models, slim • 1/16 DIN size socket mount amplifier		
Through-beam sensing distance	-	-	-S10: 100 mm (3.94 in); -S20W: 200 mm (7.87 in); -S30W: 300 mm (11.81 in); -S30T: 300 mm (11.81 in); -S50: 500 mm (19.7 in); -1: 1 m (3.28 ft); -2: 2 m (6.56 ft)		
Retroreflective sensing distance	-	2 to 7 m	-		
Diffuse reflective sensing distance	120 to 700 mm	30 to 1000 mm	-DS5W: 50 mm (1.97 in); -DS10: 100 mm (3.94 in)		
Color sensing	-	-	-		
Supply voltage		12 to 24 VDC	12 to 24 VDC; -A/C: 100 to 240 VAC		
AC control output		-	-A/C: SPDT relay		
DC control output type		NPN or PNP	-JB4P/GF4: PNP; -JC4P/GE4: NPN; -WH4F: NPN and PNP		
Max. load	150 mA	50 mA max.	-JB4P/JC4P/GF4: 100 mA at 24 VDC -WH4F: 100 mA at 40 VDC; -GE4: 80 mA at 24 VDC		
Alarm	-	-	-JB4P/JC4P: 50 mA at 24 VDC		
Response time	10 ms max.	Standard mode: 1 ms High-speed mode: 100 µs High-resolution mode: 4 ms	-JB4P/JC4P: 2 ms or 41 ms max ON/OFF (Switch selectable) -GE4/GF4/WH4F: 2 ms or 4 ms max ON/OFF (Switch selectable)		
Materials: Lens Case Bracket Cover	Acrylic ABS – –	– PBT – Polycarbonate	Sensor Heads: Lens: Plastic, polycarbonate; Case: Plastic, polycarbonate; -2: Zinc die cast; Cable Sheath: Plastic, polyethylene - Amplifiers: Plastic case		
Enclosure rating	IP40	IP50	Sensor Heads: -S10/S50/DS10: NEMA 1, 2, 12, IP64 -S20W/DS5W: NEMA 1, IP50; -S30: NEMA 1, IP60 -1/2: NEMA 1,2, 4, 4X, 12, IP66 Amplifiers: NEMA 1, IP20; -JB4P: NEMA 1, 2, IP50		
Light source	Laser, Class 2, Red 670 nm	Laser, Class 2, Red diode 650 nm	Pulse modulated IR LED		
Circuit protection	Load short circuit and reverse polarity	Short circuit and reverse polarity	Short circuit, and reverse polarity -A/C: Not available		
Mutual interference protection	Yes	Yes	-		
Operation mode	Light-ON / Dark-ON selectable	Light-ON / Dark-ON selectable	Light-ON / Dark-ON; switch or jumper selectable		
Applications	General purpose, minute object detection, material handling, packaging	All purpose, high-speed, mark sensing, transparency detection, color discrimination, minute object, high-precision positioning	Space constraint applications NOTE: Consult Omron for other models		

Amplified Photomicrosensors

Omron Smart Solutions



PH B

Slotted sensors provide end-of-travel and home position signals for positioning tables and assembly robots. Choose connector-ready or pre-wired models with pulse-modulated or non-pulsemodulated light source in a wide range of mounting shapes.

EE-SPY

Use diffuse sensors with pulse

modulated light source to detect passing target objects; connector ready for easy installation.

EE-SPX613

sensitivity selector to allow for pipe discoloration over time.

Liquid level sensor easily mounts to clear clear sight glass; equipped with

	PHOTOMICROSENSORS					
	Amplified	Amplified Amplified Amplified		Amplified		
Sub-category	Slotted, non-pulse modulated, connector ready	Slotted, non-pulse modulated, pre-wired	Slotted, pulse modulated, connector ready	Slotted, pulse modulated, pre-wired		
Model numbers	EE-SX472, EE-SX473, EE-SX772, EE-SX870, EE-SPX401, EE-SPX40 EE-SX474, EE-SX670, EE-SX871, EE-SX872, EE-SPX303-1, EE-SPX303-1, EE-SPX303-1, EE-SPX303-1, EE-SPX303-1, EE-SPX303-1, EE-SPX304, EE-SX671, EE-SX672, EE-SX770A, EE-SX771A, EE-SPX840, EE-SPX304-1, EE-SPX30		EE-SPX301, EE-SPX303, EE-SPX401, EE-SPX403, EE-SPX303-1, EE-SPX740, EE-SPX840, EE-SPX741, EE-SPX841, EE-SPX742, EE-SPX842, EE-SPX743, EE-SPX843	EE-SPX302-W2A, EE-SPX304-W2A, EE-SPX305-W2A, EE-SPX402-W2A, EE-SPX402-W2A, EE-SPX404-W2A, EE-SPX405-W2A, EE-SPX406-W2A		
Connection type	Connector or soldering terminals Available connectors:** Solder connector EE-1001, Connector with 2 m cable EE-1006/EE-1006A bracket	inals Pre-wired cable Connector or soldering terminals Available connectors:** Solder connector EE-1001, Connector with 2 m cable EE-1006/EE-1006A bracket Connector with 1 m cable for 740/840 series EE-1013		Pre-wired cable • Compact sensing heads		
Features	 Standard, L-shaped, T-shaped and close mounting models Built-in indicator 	 Standard, L-shaped, and T-shaped models UL, EMC and CE approvals Compact size Built-in indicator and optical axis guide 	 Easily connects to TTLs, relays and PLCs Range of slot widths Built-in indicator Light modulation reduces external light interference Output of SPX301 / SPX401 / SPX303 / SPX403 can be converted to PNP 	 Compact sensing heads Built-in indicator Light modulation reduces external light interference 		
Slot width/sensing distance mm (in)	5 (0.20)	5 (0.20)	3.6 (0.14) 5 (0.20) 13 (0.51)	3.6 (0.14) 5 (0.20)		
Output logic	Light-ON/Dark-ON*	Light-ON or Dark-ON models	Light-ON or Dark-ON models	Light-ON or Dark-ON models		
Supply voltage	5 to 24 VDC	5 to 24 VDC	5 to 24 VDC			
Output type	NPN or PNP models	NPN or PNP models	NPN	NPN		
Max. load current output	100 mA (NPN); 50 mA (PNP)	100 mA (NPN); 50 mA (PNP)	80 mA; 50 mA (SPX74/SPX84)	80 mA		
Response frequency	1 kHz (3 kHz typical)	1 kHz	500 Hz	500 Hz		
Enclosure ratings	IP50	IP60	IP50	IP50 except terminals		
Ambient operating temperature	-25° to 55°C	-25° to 55°C	-10° to 55°C	-10° to 55°C		
Ambient operating humidity	5% to 85% RH	5% to 85% RH	35% to 85% RH; 5% to 85% RH (SPX74/SPX84)	35% to 85% RH		
	*The EE-SX67□ Series can be used as Light-ON when the L terminal and positive (+) are connected. For Dark-ON, do not connect the L terminal.					

	Рнотоміся	OSENSORS			
	Amplified	Amplified	Amplified	Amplified	
Sub-category	Diffuse, non-pulse modulated, connector ready	Diffuse, pulse modulated, connector ready	Convergent reflective, pulse modulated, connector ready	Diffuse retro-reflective, pulse modulated, connector ready	
Model numbers	EE-SY671, EE-SY672, EE-SB5M, EE-SB5MC, EE-SB5V, EE-SB5VC, EE-SB5V-E	EE-SPY301, EE-SPY302, EE-SPY401, EE-SPY402	EE-SPY311, EE-SPY312, EE-SPY411, EE-SPY412	EE-SPZ301-A, EE-SPZ401-A	
Connection type	Connector or soldering terminals Solder connector: EE-1001 Connector with 2 m cable: EE-1006/EE-1006A bracket	Connector or soldering terminals Solder connector: EE-1002 Connector with 1 m cable: EE-1003	Connector or soldering terminals Solder connector: EE-1001 Connector with 2 m cable: EE-1006/EE-1006A bracket PNP output conversion connector EE-2002	Connector or soldering terminals Solder connector: EE-1002 Connector with 1 m cable: EE-1003	
Features	 Built-in sensitivity adjuster Selectable Light-ON or Dark-ON operation Output can be converted to PNP 	 Easy connection to TTLs, relays and PLCs Light-ON indicator simplifies adjustment and optical axis monitoring Output can be converted to PNP 	 Detects objects placed at least 20 mm in front of shiny backgrounds Detects objects as thin as 0.05 mm-dia. copper wire Detects dark-color objects Output can be converted to PNP 	 Long sensing distance Easy sensitivity adjustment and optical axis monitoring with built-in indicator Use with optional reflector or highly reflective target 	
Slot width/sensing distance mm (in)	1 to 5 (0.04 to 0.20) 5 (0.20) 19 (0.75)	5 (0.20)	2 to 6 (0.08 to 0.24) 5 (0.20)	200 (7.87) with E39-R1 reflector	
Output logic	Light-ON or Dark-ON*	Light-ON or Dark-ON	Light-ON or Dark-ON models	Light-ON or Dark-ON models	
Supply voltage	5 to 24 VDC (EE-SY) 5 to 12 VDC (EE-SB)	5 to 24 VDC	5 to 24 VDC	5 to 24 VDC	
Output type	NPN	NPN	NPN	NPN	
Max. load current output	100 mA (EE-SY) 80 mA (EE-SB)	80 mA	80 mA	80 mA	
Response frequency	50 Hz	100 Hz	100 Hz	100 Hz	
Enclosure ratings	IP50	IP50	IP50 except terminals	IP50 except terminals	
Ambient operating temperature	-10° to 55°C (EE-SY) -25° to 55°C (EE-SB)	-10° to 55°C	-10° to 55°C	-10° to 55°C	
Ambient operating humidity	45% to 85% RH	35% to 85% RH	35% to 85% RH	35% to 85% RH	
	*EE-SY671 and EE-SY672 models can be used as Light- ON when the L terminal and positive (+) is connected. For Dark-ON, do not connect the L terminal.				

	Photomicrosensors				
	Amplified	Amplified	Amplified	Amplified	Amplified
Sub-category	Through-beam, pulse modulated	Reflective displacement sensor, non-pulse modulated	Inductive unshielded proximity sensor, connector ready	Liquid level sensor, pulse modulated, pre- wired	Fiber-optic, pulse modulated, connector ready
Model numbers	EE-SPW311, EE-SPW321, EE-SPW321-A, EE-SPW411 EE-SPW421, EE-SPW421-A	Z4D-F04A, Z4D-F04D	E2R-A01	EE-SPX613	*EE-SPZ301, *EE-SPZ401, EE-SPZ401Y-01 EE-SPZ401Y-01, EE-SPZ301W-02 EE-SPZ401W-02, EE-SPZ301W-01 EE-SPZ401W-01
Connection type	Connector with 2 m cable for EE-SPW311/411 Emitter: EE-1006L Receiver: EE-1006D EE-SPW321/421 Pre-wired with 2 m cable	Connector with 1 m cable: EE-1010D	Connector with 1 m cable: E22-01	Pre-wired, 1 m cable	Solder terminal or connector: Solder terminal EE-1002 Connector with 1 m wire EE-1003
Features	 Provides long sensing distance in compact size EE-SPW321/421 feature a cable amplifier with 0.5 or 1 m cable between amp and sensing heads 	 Compact, micro- displacement sensor provides resolution to 5 mm Analog or digital output models Ideal for double- sheet detection, material remaining on a web or roll 	 Non-contact unshielded inductive proximity sensor detects metal targets regardless of color or surface texture Low profile space- saving shape 	 Detects clear liquid presence by refraction Easy to install: straps to clear or translucent tubing Set sensitivity to match older pipe tinted by contents 	 Sensing heads fit space-confined installations Visible indicator simplifies optical axis adjustment and monitoring
Slot width/sensing distance mm (in)	EE-SPW311/411 1 m (3.28 ft) EE-SPW321/421 30 cm (11.81 in)	4±1.25 (0.16±0.05)	5 (0.20)	6 to 13 (0.24 to 0.52) OD tubing with minimum 1 (0.04) thick walls	EE-SPZ301/401: 20 (0.79) with E32-TC200 cable 1 to 6 (0.04 to 0.24) with E32-DC200 cable EE-SPZ□01W-01: 30 (1.18) EE-SPZ□01W-02: 5 (0.20) EE-SPZ□01Y-01: 1 to 3 (0.04 to 0.12)
Output logic	Light-ON or Dark-ON models	Light-ON	Normally open	Light-ON or Dark-ON, selectable	Light-ON or Dark-ON models
Supply voltage	5 to 24 VDC 12 to 24 VDC	12 to 24 VDC	5 to 24 VDC	12 to 24 VDC	5 to 24 VDC
Output type	NPN	1 to 5 V analog or NPN discrete	NPN	NPN	NPN
Max. load current output	100 mA	50 mA (NPN)	100 mA	100 mA	80 mA
Response frequency	1 ms max.	5 ms max. analog 1.5 ms max. NPN	5 kHz	-	100 Hz
Enclosure ratings	IP60 (311/411) IP64 (321/421)	IP50	IP50	IP50	IP50
Ambient operating temperature	-10° to 55°C (311/411) -20° to 55°C (321/421)	-10° to 55°C	-10° to 55°C	-10° to 55°C	-10° to 55°C
Ambient operating humidity	45% to 85% RH (311/411) 35% to 85% RH (321/421)	35% to 85% RH	35% to 85% RH	5% to 85% RH	35% to 85% RH
		E39-L69 mounting bracket is optional.		Includes cable ties and rubber anti-slip bands.	*Order E32-Series fiber- optic cables separately.

Proximity Sensors

Omron Smart Solutions

E2A

Cost-effective extended range proximity sensor features one-piece, threaded barrel construction with wrench flats. Choose connector or pre-wired versions; wide range of sizes and lengths.

> America's best-selling capacitive sensor detects objects regardless of material or color. Can be tuned to ignore a container wall.

> > E2K-C

Inductive proximity sensors feature rugged thick barrel. Choose from standard sizes; DC 2-wire, DC-3-wire and AC 2-wire models; shielded and unshielded versions, pre-wired and connector-ready.

E2AW

Weld field immune inductive proximity sensors that can withstand current at only 1 inch away from the 20,000amp welding electrode. Available in cylindrical and square form factors.

E2E

INDUCTIVE PROXIMITY SENSORS



	E2E	E2E2	E2A	
Product type	Short Barrel Cylindrical	Long Barrel Cylindrical	Extended Range OEM Proximity Sensor	
Dimensions mm (in)	Dia. 4 x 25 (0.16 x 0.98); M5 x 25 (0.20 x 0.98); Dia. 5.4 x 25 (0.21 x 0.98); M8 x 26 (0.31 x 1.02); M12 x 33 (0.47 x 1.30); M18 x 38 (0.71 x 1.50); M30 x 43 (1.18 x 1.69)	M12 x 55 (0.47 x 2.17); M18 x 60 (0.71 x 2.36); M30 x 65 (1.18 x 2.56)	M8 Long and short barrel M12 Long and short barrel M18 Long and short barrel M30 Long and short barrel	
Features	 Omron's flagship highest quality proximity sensor family Vacuum potted internal circuitry Multiple connector versions Wrench flats for easy installation Superior barrel thickness and highest tightening torques available Pre-wired 2 m or 5 m cables Multiple pigtail versions Highly visible LED 	 Vacuum potted internal circuitry Multiple connector versions Same solid construction and high quality as E2E with long barrel bodies Fully threaded body Pre-wired 2 m or 5 m cables Multiple pigtail versions Highly visible LED indication 	 Extended sensing distances Economical large quantity OEM pricing Vacuum potted internal circuitry One-piece housing Stainless steel M8 barrel versions Wrench flats for easy installation Superior barrel thickness and highest tightening torques available Easily customized Pre-wired or connector versions 	
Shielded sensing distances	0.8, 1, 1.5, 2, 3, 5, 7, and 10 mm	2, 3, 5, 7, and 10 mm	2, 4, 8, and 15 mm	
Unshielded sensing distances	2, 4, 5, 8, 10, 14, 18, and 20 mm	5, 8, 10, 14, 18, and 20 mm	4, 8, 16, 20, and 30 mm	
DC supply voltage	12 to 24 VDC (10-30 VDC operating)	12 to 24 VDC (10-55 VDC operating)	12 to 24 VDC (10-32 VDC operating)	
AC supply voltage	24 to 240 VAC or 90 to 140 VAC 50/60 Hz	24 to 240 VAC 50/60 Hz	N/A	
2-wire DC output 3-wire DC output	NO, NC; 100 mA max. NPN-NO, NPN-NC, PNP-NO, PNP-NC; 100 or 200 mA max.	NO, NC; 100 mA max. NPN-NO, NPN-NC Open Collector PNP-NO, PNP-NC Open Collector 200 mA max.	N/A NPN-NO, NPN-NC Open Collector PNP-NO, PNP-NC Open Collector 200 mA max	
AC 2-wire output	NO, NC; 300 mA max.	NO, NC; 200 or 300 mA max.	N/A	
Response frequency	25 Hz to 3 kHz	25 Hz to 1.5 kHz	100 Hz to 1.5 kHz	
Connections	PVC Cables / Robotic Cables; Multiple M12 Micro Change [®] or M8 Nano Change [®] connectors; Multiple pigtail connectors	PVC Cable 2 m or 5 m; M12 Micro Change [®] connector	PVC Cable 2 m or 5 m; M12 Micro Change [®] connectors 4 Pin; M8 Nano Change [®] connectors 3 Pin; M8 only stainless steel or NPB barrel	
Enclosure	Nickel plated brass barrel; Stainless steel barrel on M8 and smaller models; Sensing face is PBT; IEC IP67 / 1200 PSI Washdown; NEMA 1, 3, 4, 6, 12, 13	Nickel plated brass barrel; Sensing face is PBT; IEC: IP67/ 1200 PSI Washdown; NEMA: 1, 4, 6, 12, 13	Nickel plated brass barrel; Sensing face is PBT; IEC IP67	
Agency approvals	UL, CSA, CE	UL, CSA, CE	UL, CSA, CE	
Circuit protection	Output short circuit, surge absorber, reverse polarity specific model dependent	Output short circuit, surge absorber, reverse polarity specific model dependent	Output short circuit, surge absorber, power source reverse polarity, and output reverse polarity	
Other	Self diagnostic versions; AC/DC versions; Alternate frequency versions; Custom cable lengths and connectors	Alternate frequency versions; Custom cable lengths and connectors	Yellow LED 4 x 90° on connector types; Highly visible yellow LED on pre-wired types; World standard prox	
Application	Use when high quality, high reliability is needed; Standard distance inductive prox for ferrous metal sensing; 1200-PSI Washdown rated; Connector or pigtail versions; Easily customized; DC2W, DC3W, AC2W, AC/DC	Use when high quality, high reliability is needed in a long barrel body; Standard distance inductive prox for ferrous metal sensing; 1200-PSI Washdown Rated; DC2W, DC3W, AC2W	Use when extended range general purpose sensing is required; Extended distance inductive prox for ferrous metal sensing; Large quantity OEM pricing available Easily customized; DC3W	

		XIMITY SENSORS	
	THREADED CYLINDRIGAL	WELD FIELD IMMUNE	
	E2F	E2AW	E2QW
Product type	Threaded Plastic Cylindrical	Weld Field Immune Inductive	Weld Field Immune 9-Way Configurable Inductive
Dimensions mm (in)	M8 x 40 (0.31 x 1.57) M8 x 30 (0.31 x 1.18) M12 x 40 (0.47 x 1.57) M12 x 35 (0.47 x 1.38) M18 x 40 (0.71 x 1.57) M30 x 50 (1.18 x 1.97)	M12 x 76 M18 x 76 M30 x 76 M30 x 67	40 mm wide x 68.5 mm high
Features	 IP68 watertight construction withstands washdown Plastic cylindrical inductive AC 2-wire or DC 3-wire-NPN models DC models have short-circuit protection and reverse polarity protection 	 Weld field and noise immune WFI circuitry is designed to operate within 1 inch of a resistance welding electrode at 20,000 Amperes RMS NEMA 1, 3, 4, 6, 13 AC/DC2W or DC3W-PNP type M12, M18 M30 Barrel Sizes 	 Weld field and noise immune IP67 AC/DC2W or DC3W-PNP type Extended Range WFI Proximity Rotatable head configurable in 9 different sensing directions 15 mm to 35 mm sensing ranges
Shielded sensing distances	1.5, 2, 5, 10 mm	M12-2 mm, M18-5 mm, M30-10 mm	15 mm, 20 mm, 25 mm
Unshielded sensing distances	N/A	M12-4 mm, M18-8 mm, M30-15 mm	25 mm, 35 mm
DC supply voltage	12 to 24 VDC (10-30 VDC operating)	10 to 30 VDC	10 to 30 VDC
AC supply voltage	24 to 240 VAC (20 to 264 VAC operating)	20 to 230 VAC/DC	20 to 150 VAC/DC
2-wire DC output	N/A	-	-
3-wire DC output	NPN-NO, NPN-NC, PNP-NO, PNP-NC; 200 mA max.	PNP-NO, 200 mA max.	PNP-NO, 200 mA max.
AC 2-wire output	NO, NC; 100, 300 or 500 mA max.	N.O. 500 mA max.	N.O. 200 mA max.
Response frequency	25 Hz to 2 kHz	16 Hz	AC/DC-10 Hz, DC3W-150 Hz
Connections	PVC Cable 2 m standard, 5 or 10 m optional	4 Pin Euro for DC3W models 4 Pin Micro for DC3W models 3 Pin Micro for AC/DC models	4 Pin Euro for DC3W models 3 Pin Micro for AC/DC models
Enclosure	Polyallylate; IEC IP68; NEMA: 1, 3, 4, 6, 12, 13	Weld flash proof, hard coated metal housing; High temperature abrasion-resistant sensing face; NEMA: 1, 3, 4, 6, 13	Weld flash proof, hard coated metal housing; High temperature abrasion-resistant sensing face; NEMA: 1, 3, 4, 6, 13
Agency approvals	UL (on US models), CSA	UL, CSA	UL, CSA
Circuit protection	DC Models: Output short circuit, surge absorber, reverse polarity; AC Models: Add –53 for short circuit protection and add –US for UL listed version	DC models have non-latching short-circuit protection and reverse polarity protection; AC/DC2W models are latching SCP type with reverse polarity protection	DC models have non-latching short-circuit protection and reverse polarity protection; AC/DC2W models are latching SCP type with reverse polarity protection
Other	Alternate frequency versions; 5 m or 10 m cable lengths; Optional short circuit protection models; Optional UL listed AC versions	Cordsets available 2M, 5M, 10M straight or 90's PVC with E-coated or SS coupling nuts; PUR Black with E-coated or SS coupling nuts; TPE coated cables with E-coated or SS coupling nuts	Cordsets available 2M, 5M, 10M straight or 90's PVC with E-coated or SS coupling nuts; PUR Black with E-coated or SS coupling nuts; TPE coated cables with E-coated or SS coupling nuts
Application	Use when IP68 rating is needed; Use where metal barrels will corrode; Standard distance inductive prox for ferrous metal sensing DC3W or AC2W	Standard sensing distance; Weld field immune inductive proximity sensors for automotive weld lines and extremely harsh environments	Extended sensing distance; Weld field immune inductive proximity sensors for automotive weld lines and extremely harsh environments

	INDUCTIVE PRO	KIMITY SENSORS	MINIATURE	
			MINIATURE	
Product type	E2EQ Teflon-Coated Cylindrical Inductive	E2KQ Teflon Cylindrical Capacitive	E2EC Subminiature Prox with	E2S Subminiature Rectangular Inductive Prox
Dimensions mm (in)	M12 x 38 (0.47 x 1.50) M18 x 47 (0.71 x 1.85) M30 x 56 (1.18 x 2.20)	M18 x 61.8 (0.71 x 2.43)	In-Line Amp Dia. 3 x 12 (0.12 x 0.47) Dia. 5.4 x 18 (0.21 x 0.71) Dia. 8 x 18 (0.31 x 0.71) M12 x 18 (0.47 x 0.71)	5.5 x 5.5 x 19 (0.22 x 0.22 x 0.75) 7.4 x 8 x 23 (0.29 x 0.31 x 0.91) 8 x 8 x 26 (0.31 x 0.31 x 1.02)
Features	 Teflon-coated metal housing ensures high-tightening torque Prewired versions available Resistant to weld spatter DC 2-wire M12, M18, M30 barrel sizes Long sensing distance type available: 4 mm to 15 mm 	Oil-resistant cable Sensitivity adjustment allows sensing range from 6 to 10 mm Teflon mounting nuts and brass washers allow easy installation/maintenance	 Subminiature cylindrical inductive prox with in-line amplifier Robot cable for high-flex applications DC 2-wire version reduces wiring time Operation and stability indicator allows easy set-up and monitoring 	 Extended sensing distances Economical large quantity OEM pricing Vacuum potted internal circuitry One-piece housing Stainless steel M8 barrel versions Wrench flats for easy installation Superior barrel thickness and highest tightening torques available Easily customized Pre-wired or connector versions
Shielded sensing distances	3, 7, 10 mm (standard)	-	0.5, 0.8, 1.5, 2.5, 3, 4 mm	2, 4, 8, and 15 mm
Unshielded sensing distances	-	6 to 10 mm	N/A	4, 8, 16, 20, and 30 mm
DC supply voltage	12 to 24 VDC	12 to 24 VDC	12 to 24 VDC	12 to 24 VDC (10-32 VDC operating)
AC supply voltage	-	-	N/A	N/A
2-wire DC output	NO; 100 mA max.	-	NO, NC; 100 mA max.	NO, NC; 50 mA max.
3-wire DC output	-	NPN-NO; 100 mA max.	NPN-NO, NPN-NC, PNP-NO, PNP-NC; 100 mA max.N/A	NPN-NO, NPN-NC, PNP-NO,PNP-NC; 50 mA max.
AC 2-wire output	-	-	N/A	N/A
Response frequency	0.4 kHz, 0.5 kHz, 1 kHz	-	1 kHz to 1.5 kHz	1 kHz
Connections	PVC cable, 2 m M12 Micro Change [®] connector	PVC cable, 2 m	Robotic Cable 2 m or optional 5 m; Optional pigtail versions	1 m cable standard
Ambient operating temperature	-13°F to 158°F	-13°F to 158°F	-13°F to 135°F	-13°F to 135°F
Enclosure	IEC: IP67	IEC: IP66	IEC: IP67 (IP64 for DC 3-wire); NEMA: 1, 3, 4, 6, 12, 13 (for DC 2-wire only)	IEC: IP67
Agency approvals	-	-	-	-
Circuit protection	Surge absorber and output short circuit	Reverse polarity connection and surge absorber	Surge absorber and output short circuit (DC 2-wire); Surge absorber (DC 3-wire)	Reverse polarity connection and surge absorber
Other	-	-	Alternate frequency versions	Alternate frequency versions; Front and end sensing models
Application	Automotive welding, machine tool	Oil and chemical resistant for use in metal cutting, chemical hardening and welding operations	Sub-miniature sensing head with in-line separate amplifier; Use when space is confined; Use in high-flex applications like robotic grippers; DC2W or DC3W	Smallest rectangular sensor available; Extremely economical; Use when space is confined DC2W or DC3W

		XIMITY SENSORS
	RECTANGULAR	RING SENSOR
		0
	TL-W	F2LP-W
Product type	Miniature Rectangular Inductive	Ring-Shaped Inductive Sensing Head
Dimensions mm (in)	27 x 10 x 6 (1.06 x 0.39 x 0.24); 30 x 18 x 10 (1.18 x 0.71 x 0.39); 50 x 25 x 10 (1.97 x 0.98 x 0.39); 53 x 40 x 23 (2.09 x 1.57 x 0.91);	Amp: 75 x 67.5 x 74 (2.95 x 2.66 x 2.91) Sensors: 10 (0.39) JD: 37 x 24 x 10 (1.46 x 0.94 x 0.39) 20 (0.79) ID: 65 x 50 x 16 (2.56 x 1.97 x 0.63) 50 (1.97) ID: 96 x 110 x 26 (3.78 x 4.33 x 1.02) 75 (2.95) ID: 155 x 130 x 40 (6.10 x 5.12 x 1.57) 100 (3.94) ID: 185 x 170 x 45 (7.28 x 6.69 x 1.77)
Features	 Space-saving, flat-pack DC sensor fits tight spaces Rugged diecast metal or low-profile plastic housing models available Mounts directly to metal base or rail DC 3-wire and DC 2-wire models 	 Detects moving metal objects anywhere inside of the ring Separate amplifier, can be surface or track mounted Ideal for counting parts
Shielded sensing distances	5 mm	0.3, 2, 2.5, 3 mm min.
Unshielded sensing distances	3, 5, 20 mm	-
DC supply voltage	10 to 30 VDC	-
AC supply voltage	-	120 to 240 VAC
2-wire DC output	-	-
3-wire DC output	NPN-NO, NPN-NC, PNP-NO,PNP-NC; 100 or 200 mA max.	-
AC 2-wire output	-	SPDT relay; 3A max. NPN-NO; 100 mA max.
Response frequency	40 Hz to 600 Hz	75 to 125 ms between objects
Connections	2 m cable standard	Amp: Screw terminals; Sensors: 3 m cable standard
Ambient operating temperature	-13°F to 158°F	Amp: 14°F to 131°F Sensors: -13°F to 158°F
Enclosure	IEC: IP67 NEMA: 1, 2, 3, 4X, 6, 12, 13	IEC: IP67 (IP30 for amplifier)
Agency approvals	UL, CSA, CE	UL, CSA
Circuit protection	Reverse polarity connection and surge absorber (DC 3-wire); short circuit protection (DC 2-wire)	-
Other	-	Amplifier has 40 ms OFF delay and one-shot timing functions
Application	Space confined installations in conveyor rails, and end-of-travel and home position robotic applications	Small parts assembly, electronics assembly, automotive applications

	CAPACITIVE PROXIMITY SENSORS					
	E2K-F	E2K-X	E2K-C	E2J		
Product type	Flat-Pack Rectangular Capacitive	Threaded Cylindrical Capacitive	Adjustable Cylindrical Capacitive	Adjustable Flat Rectangular Capacitive		
Dimensions mm (in)	50 x 20 x 10 (1.97 x 0.79 x 0.39)	M12 x 80 (0.47 x 3.15); M18 x 80 (0.71 x 3.15); M30 x 80 (1.18 x 3.15)	34 Dia. x 82 (1.34 x 3.23)	Amp: 59 x 12 x 29 (2.32 x 0.47 x 1.14) Sensors: 30 x 20 x 5.5 (1.18 x 0.79 x 0.22) 40 x 30 x 5.5 (1.57 x 1.18 x 0.22)		
Features	 Flat, thin capacitive sensor fits space confined installations Ideal for mounting directly to metal walls Detects glass, plastic, wood, water, oil and metals Fixed distance or adjustable models 	 Threaded-body sensors detect glass, wood, water oil, plastic and metal Fixed sensitivity for simple installation Operation indicator, all models AC 2-wire and DC 3-wire models 	 Built-in amplifier allows adjustable detecting distances Allows indirect detection of objects inside non-metallic containers AC 2-wire and DC 3-wire models 	 Separate amplifier with adjustable sensitivity Compact sensing heads Highly flexible robotic-grade cable DC 3-wire NPN open collector 		
Shielded sensing distances	-	-	_	-		
Unshielded sensing distances	10 mm	4, 8, 15 mm	3 to 25 mm adjustable	10 mm, 20 mm		
DC supply voltage	10 to 30 VDC	10 to 30 VDC	10 to 40 VDC	24 VDC		
AC supply voltage	-	90 to 250 VAC	90 to 250 VAC	-		
2-wire DC output	_	_	_	-		
3-wire DC output	NPN-NO, NPN-NC; 100 mA max.	NPN-NO, NPN-NC, PNP-NO,PNP-NC; 200 mA max.	NPN-NO, NPN-NC, PNP-NO, PNP-NC; 200 mA max.	NPN-NO/NC; 100 mA max.		
AC 2-wire output	-	NO, NC; 200 mA max.	NO, NC; 200 mA max.	-		
Response frequency	100 Hz	10 Hz to 100 Hz	10 Hz to 70 Hz	70 Hz		
Connections	3 m cable standard	2 m cable	2 m cable	Amp: 2 m cable; Sensor: 1 m cable		
Ambient operating temperature	14°F to 131°F	-13°F to 158°F	-13°F to 158°F	14°F to 131°F		
Enclosure	IEC: IP66 NEMA: 1, 4, 12, 13	IEC: IP66 NEMA: 1, 4, 12, 13	IEC: IP66 NEMA: 1, 4, 12, 13	IEC: IP66 (IP50 for amplifier)		
Agency approvals	-	UL	UL	-		
Circuit protection	Reverse polarity connection	AC2W: Surge absorber; DC3W: Reverse polarity connection and surge absorber	AC2W: Surge absorber; DC3W: Reverse polarity connection and surge absorber	Output short circuit, surge absorber, reverse polarity connection		
Other	New adjustable sensing distance models available	-	Mounting bracket included	-		
Application	Sensing non-metallic target, ideal for semiconductor and plastics, level control applications	General purpose type for plastics, level control	Tank sight glass for level control; non-metallic container fill inspection	Ideal for robot hands and various built-in applications for material handling and assembly verification such as CD-ROMs in jewel cases		

Limit Switches

D44-N

0

Omron Smart Solutions

Heavy-duty, general-purpose limit switches feature plug-in construction for easy installation and long service life. Compact enclosed switch is triple sealed for reliable operation, and comes connectorready for quick servicing or replacement without rewiring. D4CC

6

ZE/ZV/ZV2

Enclosed limit switch with large breaking capacity with wide range of actuators, also available in sealed versions.

	LIMIT SWITCHES		
	D4A-N	WL	D4C
Dimensions mm (in)	104.5 H x 42.0 W x 44 D (4.11 x 1.65 x 1.73)	94.1 H x 40.0 W x 41.5 D (3.70 x 1.57 x 1.63)	55 H x 40 W x 16 D (2.17 x 1.58 x 0.63)
Features	 Heavy-duty, general-purpose limit switch Convenient plug-in construction for easy installation and field maintenance Waterproof and oil-tight 	 CE approved General-purpose single pole/double break limit switch Wide variety of standard, high-precision and overtravel types Waterproof, oil-tight and dust-proof construction 	 CE approved Compact, high-precision prewired enclosed limit switch Slim-line body design ideal for limited access areas and gang mounting
Switching capacity	10 A continuous – 120, 240, 480, 600 VAC, NEMA A600 (SPDT without indicator); 10 A continuous - 120, 240 VAC NEMA A300 (SPDT with indicator); 5 A continuous – 120, 240, 480 600 VAC NEMA B600 (DPDT, without indicator)	10 A, 125 VAC inductive load; NEMA A600	5 A, 125 VAC, resistive load; NEMA B300
Contact configuration	SPDT or DPDT double break	SPDT double break	SPDT (form C)
Mechanical service life (operations)	50 million minimum (SPDT); 30 million minimum (DPDT)	15 million minimum	10 million minimum
Connection	1/2-14 NPT conduit entrance, terminal screws	1/2-14 NPT conduit entrance, terminal screws	
Enclosure rating	UL 3, 4, 4X, 6P and 13; NEMA 1, 2, 3, 3R, 4X, 5, 6P, 12 and 13; IP67	UL 3, 4 and 13; NEMA 1, 2, 3, 3R, 4X, 5 6P, 12 and 13; IP67	UL 3, 4 and 13; NEMA 1, 3, 3R, 4, 5, 6, 12 and 13; IP67
Actuators	Side rotary, use separate levers; Plain side plunger; Vertical side roller plunger; Horizontal side roller plunger; Adjustable side plunger; Plain top plunger; Top roller plunger; Adjustable roller plunger; Spring wire wobble lever; Plastic rod wobble lever; Cat whisker wobble lever; Coil spring wobble lever	Short, medium and long roller levers; Flush mounting roller lever; Flange mounting roller lever; Adjustable roller lever; Adjustable rod lever; Fork roller levers; Plain top plunger; Top roller plunger; Top ball plunger; Plain side plunger; Side roller plunger; Side ball plunger; Steel wire wobble lever; Nylon rod wobble lever; Coil spring wobble levers	Pin plunger; Sealed plunger; Roller plunger; Sealed roller plunger; Crossroller plunger; Sealed cross roller plunger; Bevel plunger; Coil spring; Roller lever

	LIMIT SWITCHES		
	D4CC	ZE/ZV/ZV2	ZC
Dimensions mm (in)	73.2 H x 40 W x 16 D (2.88 x 1.58 x 0.63)	102.1 H x 25.4 W x 86 D (4.02 x 1.00 x 3.39)	65.4 H x 21.5 W x 60 D (2.58 x 0.85 x 2.36)
Features	 Compact, connector-ready enclosed limit switch Triple sealed construction Quickly replace or service the switch without rewiring 	 Enclosed limit switch with a large breaking capacity Choose among side-mounting (ZE), diagonal side mounting (ZV2) and base-mounting (ZV) housings 	 Ideal for gang mounting Small high-precision limit switch that responds to small operating force Models available with rubber seal boot to protect the actuator
Switching capacity	1 A, 125 VAC resistive load; 1 A, 30 VDC resistive load	15 A, 125 VAC, inductive load	10 A, 125 VAC, inductive load; NEMA A300
Contact configuration	SPDT (form C)	SPDT (form C)	SPDT (form C)
Mechanical service life (operations)	10 million minimum	10 million minimum	10 million minimum
Connection	MicroChange [™] connector cordsets	1/2-14 NPT conduit entrance, terminal screws	Terminal screws or prewired with 1 m (3.28 ft) cable
Enclosure rating	UL 3, 4 and 13 (pending for DC types); NEMA 1, 3, 3R, 4, 5, 6, 12 and 13; IP67	NEMA 1, 2, 3, 4, 5, (-N type); 1 (-Q type); IP60 (-Q); IP65 (-N)	NEMA 1, 2, 3, 4, 5, 13; IP67
Actuators	Center rotary roller lever; Pin plunger; Roller plunger; Crossroller plunger; Bevel plunger; Low operating force roller lever; Sealed plunger; Sealed roller plunger; Sealed crossroller plunger; Panel mount pin plunger; Panel mount roller plunger; Panel mount crossroller plunger; Plastic rod lever	Top plunger; Roller plunger; Crossroller plunger; Roller arm lever; One-way action arm lever; Rod lever; Coil spring (ZE, ZV); Maintained contact plunger (ZE, ZV); Sealed versions of all actuators available	Pin plunger; Panel mount plunger; Panel mount roller plunger; Panel mount cross roller plunger; Sealed roller plunger; Sealed cross roller plunger; Short hinge lever; Hinge lever; Short hinge roller lever; Hinge roller lever; One-way action short hinge roller lever; One-way action hinge roller lever

Other Sensor Solutions

Omron Smart Solutions

Pressure

OMRON

OUT 1

ADJ C

E8Y

Compact sensors with or without digital displays help monitor gauge pressure, vacuum and differential pressure conditions.

E8F2-B10C

Detect products regardless of color, texture or glossiness at long range. Also detects powder in storage tanks.





Encoders

Incremental and absolute encoders provide reliable positioning feedback for motors, lifts and other rotating equipment.

	PRESSURE SENSORS		
	E8Y	E8F2	E8M/E8MS
Dimensions mm (in)	31 x 30 x 29.8 (1.22 x 1.18 x 1.17)	28 x 28 x 29 (1.10 x 1.10 x 1.14)	29.7 H x 15 dia. (max.) (1.17 x 59 dia. [max.]) 26 H x 19 W x 42.5 D (1.02 X 0.75 X 1.67) 31 H x 27.5 dia. (1.22 x 1.08)
Features	 Cube, miniature package Easy-to-read LED display Programmable teach modes CE approved 	 Mini-cube Miniature and light weight Digital and analog display CE approved 	 Miniature Separate controller Small and light weight Programmable multi-channel outputs
Display units	psi or kPa	kPa, torr, psi	E8M = None, K3C = kPa, kgf/cm2, mmHg, mmH ₂ O
Pressure range available			
Differential pressure	0 to 0.29 psi (0 to 2 kPa) 0 to 0.725 psi (0 to 5 kPa)	-	0 to 0.145 psi (0 to 1kPa) [E8M-A1]
Positive pressure	-	0 to 14.5 psi (0 to 100 kPa) 0 to 145 psi (0 to 1 MPa)	0 to 14.5 psi (0 to 100kPa) [E8MS-01] 0 to 145 psi (0 to 1MPa)
Negative pressure	-	0 to -14.6 psi (0 to -101 kPa)	0 to -14.5 psi (0 to -101kPa)
Applicable material	Non-corrosive, non-flammable gases or air	Non-corrosive, non-flammable gases or air	Non-corrosive, non-flammable gases or air
Pressure port	4.5 mm dia. resin pipe or NPT 1/8	NPT 1/8 or M5	PT 1/8 or M5
Supply voltage	12 to 24 VDC	12 to 24 VDC	12 VDC sensor, 24 VDC controller
Output			
Analog	4 to 20 mA	1 to 5 V	1 to 5 V
On / Off	100 mA, NPN open collector	30 mA, NPN open collector	30 mA, NPN open collector
Enclosure	IP40	IP50	IP50

	PRESSURE SENSORS		
	E8CB	E8CC	E8EB
Dimensions mm (in)	15 x 26.8 x 52.5 (0.59 x 1.06 x 2.07)	15 x 29.5 x 67 (0.59 x 1.16 x 2.64)	17.5 x 30 x 44 (0.69 x 1.18 x 1.73)
Features	 Flat pack Slim package, just 15 mm wide Two-turn pressure adjustment 	 Display flat pack Slim package – 15 mm wide DIN rail mount compatible LCD display 	 General purpose Analog and digital outputs NPN and PNP outputs available
Display units	None	kPa, kgf/cm ² , cmHg	None
Pressure range available			
Differential pressure			_
Positive pressure	0 to 14.2 psi (0 to 98 kPa)	0 to 14.2 psi (0 to 98 kPa) 0 to 142.1 psi (0 to 980 kPa)	0 to 14.2 psi (0 to 98 kPa) 0 to 142.1 psi (0 to 980 kPa)
Negative pressure	0 to -14.6 psi (0 to -101 kPa)	0 to -14.6 psi (0 to -101 kPa)	0 to -14.2 psi (0 to -98 kPa)
Applicable material	Non-corrosive, non-flammable gases or air	Non-corrosive, non-flammable gases or air	Non-corrosive, non-flammable gases or air
Pressure port	NPT 1/8 or M7	NPT 1/8 or M8	NPT 1/8
Supply voltage	12 to 24 VDC	12 to 24 VDC	24 VDC
Output			
Analog	1 to 5 V	1 to 5 V	1 to 5 V
On / Off	80 mA, NPN open collector	80 mA, NPN open collector	80 mA, NPN or PNP open collector
Enclosure	IP50	IP50	IP54

	ENCODERS				
	E6A2	E6B2	E6C2-C	E6C3-CWZDDH	
Dimensions mm (in)	25 dia. x 29 L (0.98 x 1.14)	40 dia. x 39 L (1.57 x 1.54)	50 dia. x 60 L (1.97 x 2.36)	50 dia. x 38 L (1.97 x 1.50)	
Shaft diameter mm (in)	4 (0.16)	6 (0.24)	6 (0.24)	8 (0.32)	
Туре	Incremental	Incremental	Incremental	Incremental	
Features	 CE approved miniature sized encoder Small operating torque Ideal for small and high-density equipment Zero index function for positioning applications available 	 CE approved Ideal for most general-purpose applications Extended signal transmission distances Zero phase can be easily adjusted using origin indicating function Line driver output available 	 Drip-proof construction Shaft withstands heavy loads, 5 kgf radially, 3 kgf thrust (axially) Short circuit protection Space-saving, A-slant cable protrusion for ease of mounting 	 CE approved and available with complimentary outputs for interfacing to NPN or PNP inputs Drip-proof construction Surge protection Ideal for tough environments 	
Resolution	10 to 360 pulses/revolution	10 to 2,000 pulses/revolution	10 to 2,000 pulses/revolution	100 to 3,600 pulses/revolution	
Output phase(s)	Output A; Outputs A & B (100, 200 pulses/rev only); Outputs A, B & Z (100, 200 pulses/rev only)	Outputs A, B and Z (reversible)	Outputs A, B, and Z (reversible) Line driver AĀ, BB, and ZZ	Outputs A, B and Z (reversible)	
Output phase difference	90°±45°	90°±45°	90°±45°	90°±45°	
Maximum response frequency	300 kHz (30,000 pulses/sec)	100 kHz (100,000 pulses/sec)	100 kHz (100,000 pulses/sec)	100 kHz (100,000 pulses/sec)	
Maximum rpm	5,000 rpm	3,000 rpm	6,000 rpm	6,000 rpm	
Supply voltage	5 to 12 VDC, 12 to 24 VDC	5 to 12 VDC; 5 to 24 VDC; 5 VDC	5 to 12 VDC; 5 to 24 VDC; 5 VDC; 12 to 24 VDC	5 to 24 VDC	
Current consumption	50 mA max.	50 mA max.	160 mA max.	100 mA	
Output form and capacity	2 kΩ output impedance (voltage output); 30 mA (NPN open collector output)	2 kΩ output impedance (voltage output); 35 mA (NPN open collector output); -20 to 20 mA (line driver)	35 mA max. (NPN or PNP open collector); 2 kΩ output impedance (voltage output); -20 to 20 mA (line driver)	35 mA max. (NPN or PNP open collector)	
Shaft loading: radial	1 kgf (7.2 ft-lbs.)	3 kgf (21.7 ft-lbs.)	5 kgf (11.0 ft-lbs.)	80 N	
Shaft loading: axial	0.5 kgf (3.6 ft-lbs.)	2 kgf (14.5 ft-lbs.)	3 kgf (21.7 ft-lbs.)	50 N	
Starting torque	10 g-cm (0.14 ozinch)	10 g-cm (0.14 ozinch)	100 gf x cm (9.8 mN x m) max. (7.2 m ft x lbf)	, ,	
Degree of protection: IEC 144	IP50	IP50	IEC IP64	IEC60925 IP65	
Ambient operating temperature	-10° to 55°C (14° to 131°F)	-10° to 70°C (14° to 158°F)	-10° to 70°C (14° to 158°F) with no icing	-10° to 70°C (14° to 158°F)	
Shaft coupler	E69-C04B supplied; two 4 mm dia. shafts	E69-C06B supplied, two 6 mm dia. shafts. Optional couplers for 8 and 10 mm dia. shafts	Order separately. E69-C06B 6 mm; E69-C68B 6 to 8 mm; E69-C06M metal 6 mm	Order separately. Choose E69-C08B for the 8 mm dia. shaft	

Interfacing to allow more flexible interfacing to other deviceswith 10-bit resolution • Direp-profo construction • High resistance to shock • Direp-profoconstruction • Heavy duty absolute encoderwith 10-bit resolution • Direct connections to high- speed counters, position control modules for PLCs or Omron's H8PS cam positioneResolution720 to 6,000 pulses/revolution256, 360, 720, 1,024 pulses/ revolution256 pulses/revolution256 or 360 pulses/revolutionOutput phase(s)Outputs A, B, and Z (reversible)Gray codeGray code binary crevolutionGray code binary or BCD (detects in gray-codes; convert to BCD)Output phase difference90°±25°Maximum response second)200 kHz (200,000 pulses/sec)200 kHz (20,000 pulses per second)5 kHz (5,000 pulses per second)5 (E6F-AB3C) or 10 (E6F-AG5C) kHz (5,000 or 10,000 pulses per sec.)Maximum rpm12,000 rpm5,000 rpm1,000 rpm5,000 rpmSupply voltage5 VDC (voltage output); 12 VDC (open collector output)12 to 24 VDC to 12 VDC (A6CP-AG3C); 70 mA (E6CP-AG3C); 70 mA (E6CP-AG3C);		ENCODERS					
Dimensions mm (in) 55 dia x 50 L (2.17 x 1.97) 50 dia x 38 L (1.97 x 1.50) 56 dia x 50 L (2.21 x 1.97) 60 dia x 60 L (2.36 x 2.36) Shaft diameter mm (in) 6 (0.24) 10 (0.39) Absolute Absolute Absolute Absolute Features * loger accuracy and high response frequency Car growtee hard now available with PNP outputs for devices * loger accuracy and high response frequency Car growtee hard now available with PNP outputs for devices * loger accuracy and high gray code binary output * loger accuracy and high or resolution or BCD output with 1-0-bit resolution or BCD output with 1-0-bit resolution * loger accuracy and high gray code binary output * loger accuracy and high gray codes; convert to BCD) Output phase(if) Output phase(if) Output gray code; and gray code binary output Car gray code; and							
Shaft diameter mm (in) 6 (0.24) 8 (0.32) 6 (0.24) H0 (0.39) Type Incremental Absolute Absolute Absolute Absolute Absolute Features • Super accuracy and high response frequency • CE approved and now available with PMP outputs for devices • Fealuble 8-bit resolution or BCD output with B-bit resolution or BCD output with events instracting to other devices • Fealuble 8-bit resolution available with PMP outputs for High resistance to shock • Direp-croot construction • High resistance to shock • Direc connections to high- speed counters, position • Output phase difference second) 256 or 360 pulses/revolution Output phase difference second) Output shess(revolution counters, position • Direct connections to high- second) 5 kHz (5.000 pulses/revolution frequency (pulses per second) 5 kHz (5.000 pulses/revolution • Direct counters, position • Direct counters		E6D	E6C3-A	E6CP	E6F		
Type Incremental Absolute Absolute Absolute Absolute Features Super accuracy and high response frequency • CE appreved and now available with PNP outputs for interfacing to allow more devices • Feliable 5-bit resolution and gray code binary output with to-bit resolution area • Fire youtput the bit resolution of the bit resolution • Fire youtput the bit resolution area • Field bit 6-bit resolution area	Dimensions mm (in)	55 dia x 50 L (2.17 x 1.97)	50 dia. x 38 L (1.97 x 1.50)	56 dia. x 50 L (2.21 x 1.97)	60 dia. x 60 L (2.36 x 2.36)		
Features • Super accuracy and high response frequency • CE approved and now available with PNP outputs for interfacing to allow more flexible interfacing to other devices • Reliable 8-bit resolution and gray code binary output with 8-bit resolution or BCD output 9-Direct connections to high- sed counters, position 0-Direct connections to high- sed counters, position • CE approved and now available with PNP outputs for interfacing to other devices • Reliable 8-bit resolution and gray code binary output with 8-bit resolution • Gray code binary output with 8-bit resolution 0-Direct connections to high- sed counters, position 0-Direct connections to high- second) Resolution 720 to 6.000 pulses/revolution 226 or 360 pulses/revolution revolution 256 pulses/revolution Gray code binary or BCD (detects in gray-codes; convert to BCD) Output phase difference second) 90°#25° 200 kHz (200.000 pulses/sec) - - Maximum response reguency (pulses per second) 200 kHz (200.000 pulses/sec) 20 kHz (20,000 pulses per second) 5 kHz (5.000 pulses per second) 5 to 12 VDC (E6F-ABSC); 12 to 24 VDC (E6F-ABSC); 20 drug to 24 VDC (E6F-ABSC); 70 mA (E6F-ABSC); Quert torm and capacity open collector output) 12 to 24 VDC (E6F-ABSC); 70 mA	Shaft diameter mm (in)	6 (0.24)	8 (0.32)	6 (0.24)	10 (0.39)		
response frequency available with PNP outputs for interfacing to other devices gray code binary output 8-bit resolution or BCD output speed counters, position control modules for PLOs or Durants HBPS cam positioned Resolution 720 to 6,000 pulses/revolution 256, 300, 720, 1,024 pulses/ revolution 256 pulses/revolution 256 or 360 pulses/revolution Output phase(s) Outputs A, B, and Z (reversible) Gray code Gray code binary Gray code binary Gray code binary Gray code binary or BCD (detexts in gray-codes; convert to BCD) Output phase difference 90°±25° - - - Maximum response frequency (pulses per second) SkHz (20,000 pulses/sec) SkHz (5,000 or 10 (E6F-AB3C); 12 to 24 VDC 5 kHz (5,000 or 10 (E6F-AB3C); 12 to 24 VDC (E6F-AB3C)	Туре	Incremental	Absolute	Absolute	Absolute		
Image: constraint of the constra	Features		available with PNP outputs for interfacing to allow more flexible interfacing to other devices • High resistance to shock • Drip-proof construction		 8-bit resolution or BCD output with 10-bit resolution Direct connections to high- speed counters, position 		
Output phase difference 90°±25° - - - Maximum response frequency (pulses per second) 200 kHz (200,000 pulses/sec) 20 kHz (20,000 pulses per second) 5 kHz (5,000 pulses per second) 5 (E6F-AB3C) or 10 (E6F-AB3C) kHz (5,000 or 10,000 pulses per sec.) Maximum rpm 12,000 rpm 5,000 rpm 1,000 rpm 5,000 rpm Supply voltage 5 VDC (voltage output); 12 VDC (open collector output) 12 to 24 VDC 5 to 12 VDC (A6CP-AG3C); 12 to 24 VDC (E6F-AB3C); 12 to 24 VDC (E6F-AB3C); 12 to 24 VDC (E6F-AB3C); 70 mA (E6F-AG5C) 5 to 12 VDC (E6F-AB3C); 12 to 24 VDC (E6F-AB3C); 70 mA (E6F-AG5C) Output form and capacity 35 mA max. (voltage and NPN open collector output) 35 mA (NPN and PNP open collector) 16 mA (NPN open collector transistor) 35 mA (NPN open collector transistor) Shaft loading: radial 5 kqf (14.5 ft-lbs.); 1 kgf (7.2 ft-lbs.); 1 kgf (7.2 ft-lbs.) typical 80 N 3 kgf (21.7 ft-lbs.) 10 kgf (72.3 ft-lbs.) Shaft loading: axial 8 kgf (21.7 ft-lbs.); 1 kgf (7.2 ft-lbs.) typical 50 N 2 kgt (14.5 ft-lbs.) 3 kgf (21.7 ft-lbs.) Begree of protection: EC 144 IPS0 IEC60925 IP65 IP50 IP52 Ambient operating -10° to 70°C -10° to 70°C -10° to 70°C -10° to 70°C It megreature <td< th=""><th>Resolution</th><th>720 to 6,000 pulses/revolution</th><th></th><th>256 pulses/revolution</th><th>256 or 360 pulses/revolution</th></td<>	Resolution	720 to 6,000 pulses/revolution		256 pulses/revolution	256 or 360 pulses/revolution		
Maximum response frequency (puises per second) 20 kHz 20 kHz (20,000 puises per second) 5 kHz (5,000 puises per second) 5 kHz (A,000 puises pe	Output phase(s)	Outputs A, B, and Z (reversible)	Gray code	Gray code binary	(detects in gray-codes; converts		
frequency (pulses per second)(200,000 pulses/sec)second)second)second)kHz (5,000 or 10,000 pulses per sec.)Maximum rpm12,000 rpm5,000 rpm1,000 rpm5,000 rpm5,000 rpmSupply voltage5 VDC (voltage output); 12 VDC (open collector output)12 to 24 VDC5 to 12 VDC (A6CP-AG3C); 12 to 24 VDC (E6CP-AG3C); 70 mA (E6CP-AG3C); 70 mA (E6CP-AG3C); 70 mA (E6F-AG3C); 70 mA (E6F-AG3C); <br< th=""><th>Output phase difference</th><th>90°±25°</th><th>-</th><th>-</th><th>-</th></br<>	Output phase difference	90°±25°	-	-	-		
Supply voltage5 VDC (voltage output); 12 VDC (open collector output)12 to 24 VDC5 to 12 VDC (A6CP-AG3C); 12 to 24 VDC (E6CP-AG5C)5 to 12 VDC (E6F-AB3C); 12 to 24 VDC (E6F-AG3C); 12 to 24 VDC (E6F-AG3C); 70 mA (E6F-	frequency (pulses per				· · · · ·		
(open collector output)12 to 24 VDC (E6CP-AG5C)12 to 24 VDC (E6F-AG5C)Current consumption150 mA max.70 mA90 mA max. (A6CP-AG5C); 70 mA (E6CP-AG5C)50 mA max (E6F-AB3C); 70 mA (E6F-AG5C)Output form and capacity35 mA max. (voltage and NPN open collector output)35 mA (NPN and PNP open collector)16 mA (NPN open collector transistor)35 mA (NPN open collector transistor)Shaft loading: radial5 kgf (36.2 ft-lbs.); 2 kgf (14.5 ft-lbs.) typical80 N3 kgf (21.7 ft-lbs.)10 kgf (72.3 ft-lbs.)Shaft loading: axial3 kgf (21.7 ft-lbs.); 1 kgf (7.2 ft-lbs.) typical50 N2 kgt (14.5 ft-lbs.)3 kgf (21.7 ft-lbs.)Starting torque100 g-cm (1.39 oz-inch)100 g-cm (1.39 oz-inch)10 g-cm (0.14 oz-inch)100 g-cm (1.39 oz-inch)Degree of protection: IEC 144IP50IEC60925 IP65IP50IP52Ambient operating temperature-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)Shaft couplerE69-C08B supplied, two 6 mm dia. shaftsOrder separately. Choose E69-C08B for the 8 mm dia. shaftE6CP-AG3C - E-69-C06B supplied, two 6 mm dia. shafts. Optional couplers for 6, 8, 10 mm dia. shafts. Optional couplers for 6, 8, 10 mm dia. shafts. Optional couplers for 6, 8, 10 mm dia. shafts. Optional couplers for 6, 8, 10 mm dia. shafts. Optional couplers for 8, 8, 10 mm dia.	Maximum rpm	12,000 rpm	5,000 rpm	1,000 rpm	5,000 rpm		
Output form and capacity35 mA max. (voltage and NPN open collector output)35 mA (NPN and PNP open collector)16 mA (NPN open collector transistor)35 mA (NPN open collector transistor)Shaft loading: radial5 kgf (36.2 ft-lbs.); 2 kgf (14.5 ft-lbs.) typical80 N3 kgf (21.7 ft-lbs.)10 kgf (72.3 ft-lbs.)Shaft loading: axial3 kgf (21.7 ft-lbs.); 1 kgf (7.2 ft-lbs.) typical50 N2 kgt (14.5 ft-lbs.)3 kgf (21.7 ft-lbs.)Starting torque100 g-cm (1.39 ozinch)100 g-cm (1.39 ozinch)10 g-cm (0.14 ozinch)100 g-cm (1.39 ozinch)Degree of protection: IEC 144IP50IEC60925 IP65IP50IP52Ambient operating temperature-10° to 70°C (14 to 158°F)-10° to 70°C (14° to 158°F)-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)2 options: For E6F-AG5C, order separately. Choose E69-C08B for the 8 mm dia. shaft2 options: For E6F-AG5C, order separately. Choose 6 mm dia. couplers for 6, 8, 102 options: For E6F-AG5C, order separately. Choose 6 mm dia. shafts. Optional couplers for 6, 8, 102 options: For E6F-AG5C, order separately. Choose 6 mm dia. shafts. Optional couplers for 6, 8, 102 options: For E6F-AB3C, E69- CO6B supplied, two 6 mm dia. shafts. Optional couplers for 6, 8, 10	Supply voltage		12 to 24 VDC				
open collector output)collector)transistor)transistor)Shaft loading: radial5 kgf (36.2 ft-lbs.); 2 kgf (14.5 ft-lbs.) typical80 N3 kgf (21.7 ft-lbs.)10 kgf (72.3 ft-lbs.)Shaft loading: axial3 kgf (21.7 ft-lbs.); t kgf (7.2 ft-lbs.) typical50 N2 kgt (14.5 ft-lbs.)3 kgf (21.7 ft-lbs.)Starting torque100 g-cm (1.39 ozinch)100 g-cm (1.39 ozinch)10 g-cm (0.14 ozinch)100 g-cm (1.39 ozinch)Degree of protection: IEC 144IP50IEC60925 IP65IP50IP52Ambient operating temperature-10° to 70°C (14 to 158°F)-10° to 70°C (14° to 158°F)-10° to 70°C (14' to 158°F)-10° to 70°C (14' to 158°F)-10° to 70°C (14' to 158°F)Shaft couplerE69-C06B supplied, two 6 mm dia. shaftsOrder separately. Choose E69-C08B for the 8 mm dia. shaftE6CP-AG3C - E-69-C06B supplied, two 6 mm dia. shafts. Optional couplers for 6, 8, 10 mm dia. couplers for 6, 8, 102 options: For E6F-AG3C, 60- coBF supplied, Two 6 mm dia. shafts. Optional couplers for 6, 8, 10	Current consumption	150 mA max.	70 mA				
2 kgf (14.5 ft-lbs.) typical2 kgt (14.5 ft-lbs.)Shaft loading: axial3 kgf (21.7 ft-lbs.); 1 kgf (7.2 ft-lbs.) typical50 N2 kgt (14.5 ft-lbs.)3 kgf (21.7 ft-lbs.)Starting torque100 g-cm (1.39 ozinch)100 g-cm (1.39 ozinch)10 g-cm (0.14 ozinch)100 g-cm (1.39 ozinch)Degree of protection: IEC 144IP50IEC60925 IP65IP50IP52Ambient operating temperature-10° to 70°C (14 to 158°F)-10° to 70°C (14° to 158°F)-10° to 70°C (14° to 158°F)-10° to 70°C (14° to 158°F)-10° to 70°C (14° to 158°F)Shaft couplerE69-C06B supplied, two 6 mm dia. shaftsOrder separately. Choose E69-C08B for the 8 mm dia. shaftE6CP-AG3C - E-69-C06B supplied, two 6 mm dia. shafts. Optional couplers for 8 and 10 mm dia. shafts. E6CP-AG5C - Order separately. Choose 6 mm dia. couplers for 6, 8, 102 options: For E6F-AG5C, order sep. Choose 6 mm dia. shafts. Optional couplers for 6, 8, 10	Output form and capacity						
1 kgf (7.2 ft-lbs.) typical0 trueStarting torque100 g-cm (1.39 ozinch)100 g-cm (1.39 ozinch)100 g-cm (1.39 ozinch)Degree of protection: IEC 144IP50IEC60925 IP65IP50IP52Ambient operating temperature-10° to 70°C (14 to 158°F)-10° to 70°	Shaft loading: radial		80 N	3 kgf (21.7 ft-lbs.)	10 kgf (72.3 ft-lbs.)		
Degree of protection: IEC 144IP50IEC60925 IP65IP50IP52Ambient operating temperature-10° to 70°C (14 to 158°F)-10° to 70°C (14' to 158°F)-10° to 70°C (14' to 158°F)-10° to 70°C (14' to 158°F)-10° to 70°C (14' to 158°F)Shaft couplerE69-C06B supplied, two 6 mm dia. shaftsOrder separately. Choose E69-C08B for the 8 mm dia. shaftE6CP-AG3C - E-69-C06B supplied, two 6 mm dia. shafts. Optional couplers for 8 and 10 mm dia. shafts. E6CP-AG5C - Order separately. Choose 6 mm dia. couplers for 6, 8 & 10 mm dia. shafts. Optional couplers for 6, 8, 102 options: For E6F-AB3C, E69- C06B supplied, two 6 mm dia. shafts. For E6F-AB3C, E69- C06B supplied, Two 6 mm dia. shafts. Optional couplers for 6, 8, 10	Shaft loading: axial	.	50 N	2 kgt (14.5 ft-lbs.)	3 kgf (21.7 ft-lbs.)		
Ambient operating temperature-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)-10° to 70°C (14 to 158°F)Shaft couplerE69-C06B supplied, two 6 mm dia. shaftsOrder separately. Choose E69-C08B for the 8 mm dia. shaftE6CP-AG3C - E-69-C06B supplied, two 6 mm dia. shafts. Optional couplers for 8 and 10 mm dia. shafts. E6CP-AG5C - Order separately. Choose 6 m dia. couplers for 6, 8 & 10 mm dia. shafts. Optional couplers for 6, 8, 102 options: For E6F-AG5C, order sep. Choose 6 mm dia. shafts. For E6F-AB3C, E69- C06B supplied, Two 6 mm dia. shafts. Optional couplers for 6, 8, 10	Starting torque	100 g-cm (1.39 ozinch)	100 g-cm (1.39 ozinch)	10 g-cm (0.14 ozinch)	100 g-cm (1.39 ozinch)		
temperature(14 to 158°F)(14 to 158°F)(14 to 158°F)(14 to 158°F)Shaft couplerE69-C06B supplied, two 6 mm dia. shaftsOrder separately. Choose E69-C08B for the 8 mm dia. shaftE6CP-AG3C - E-69-C06B supplied, two 6 mm dia. shafts. Optional couplers for 8 and 10 mm dia. shafts. E6CP-AG5C - Order separately. Choose 6 - Order separately. Choose 6 m dia. couplers for 6, 8, 10 mm dia. shafts. Optional couplers for 6, 8, 102 options: For E6F-AG5C, order sep. Choose 6 mm dia. couplers for 6, 8 & 10 mm dia. shafts. For E6F-AB3C, E69- C06B supplied, two 6 mm dia. shafts. For E6F-AB3C, E69- order separately. Choose 6 mm dia. couplers for 6, 8, 10							
Shaft coupler E69-C06B supplied, two 6 mm dia. shafts Order separately. Choose E69-C08B for the 8 mm dia. shaft E6CP-AG3C - E-69-C06B supplied, two 6 mm dia. shafts. 2 options: For E6F-AG5C, order sep. Choose 6 mm dia. Order separately. Order separately. Choose E69-C08B for the 8 mm dia. shaft Corder separately. Couplers for 8 and 10 mm dia. shafts. E6CP-AG5C – Order separately. Choose 6 mm dia. couplers for 6, 8, 10 2 options: For E6F-AG5C, order sep. Choose 6 mm dia.	• •						
	·	E69-C06B supplied,	Order separately. Choose E69-C08B for the 8 mm	E6CP-AG3C - E-69-C06B supplied, two 6 mm dia. shafts. Optional couplers for 8 and 10 mm dia. shafts. E6CP-AG5C – Order separately. Choose 6 mm dia. couplers for 6, 8, 10	2 options: For E6F-AG5C, order sep. Choose 6 mm dia. couplers for 6, 8 & 10 mm dia. shafts. For E6F-AB3C, E69- C06B supplied, Two 6 mm dia. shafts. Optional couplers for 8		

	ULTRASONIC				
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	E4A	E4B	E4C	E4E	E4R
Dimensions mm (in)	104 H x 50 W x 150 D (4.09 x 1.97 x 5.91)	61 H x 35 W x 79 D (2.40 x 1.38 x 3.11)	18 Dia. x 75 L (0.71 x 2.95)	36 H x 18 W x 25 D (1.42 x 0.71 x 0.98)	80 H x 46 W x 52D (3.15 x 1.81 x 2.05)
Amplifier type	Built-in amplifier	Built-in amplifier	Separate amplifier	Built-in amplifier	Separate amplifier
Features	Ultrasonic reflective; Mutual interference protection; Clear material detection; Photo sensitive film sensing	Ultrasonic through-beam and reflective; Narrow 8 degree beam; Zone and setting distance models	Ultrasonic through-beam and reflective; Compact threaded body; Mutual interference protection; Zone setting mode	Extremely compact self-contained ultrasonic sensor; Through-beam; Separate NO and NC models	Ultrasonic reflective sensor; Wide beam angle for granular and high viscosity materials
Detection method and sensing distance					
Through-beam type	-	1 m, 500 mm	500 mm	300 mm	-
Reflective	0.3 to 3 m	200 to 700 mm, 50 to 200 mm	100 to 350 mm	-	2.5 m
Supply voltage	120 and 240 VAC 12 to 24 VDC	12 to 24 VDC	12 to 24 VDC	12 to 24 VDC	12 VDC
Control outputs	3 A Relay, SPDT	_	_	_	4 A Relay, SPDT
DC	-	100 mA NPN or PNP open collector	100 mA, NPN/PNP open collector, selectable	100 mA, NPN open collector, NO or NC	-
Alarm	-	-	-	-	-
Response time	250 ms	10 ms	10 ms (200 Hz)	25 ms	150 ms
Materials	Plastic, ABS	Plastic, ABS	Plastic, ABS	Plastic, ABS	Plastic, ABS
Enclosure rating	IP60	IP66	IP66 sensor; IP40 amp.	IP66	IP10

Pushbuttons, Switches and Pilot Devices

Omron Smart Solutions

Pushbuttons

Easy-to-install illuminated and non-illuminated switches are available with momentary and alternate action types.

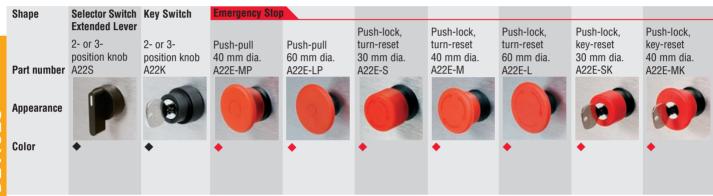
Switches

Selector switches and key switches are available in twoand three-position versions.

Pilot Devices

Indicator lights and buzzers help operators monitor status effectively.

NON-ILLUMINATED Shape Pushbutton Selector Switch Round 30 mm 40 mm 2- or 3-Round Round Round Square Square Flush Extended Full-Guard Half-Guard Mushroom Mushroom Extended Full-Guard position knob Part number A22-F A22-D . A22S A22-T A22-G A22-H A22-S A22-M A22-C Appearance Color



ILLUMINATED

Pushbutton Selector Switch Pilot Light Shape Emergency Stop Push-lock. turn-reset 2- or 3-Round Round Round Square Square 40 mm dia. Extended Half-Guard Full-Guard Extended Full-Guard position knob Round Square A22W A22EL-M A22L-H A22L-C . M22-C Part number A22L-T A22L-G A22L-D M22-F Appearance Color

Shape	Pushbutton			Selector Switch	1		Key Switch		
				Round	Square	Rectangular	Round	Square	Rectangular
	Round	Square	Rectangle	2- or 3- position knob					
Part number	A165-T	A165-A	A165-J	A165S-T	A165S-A	A165S-J	A165K-T	A165K-A	A165K-J
Annoaranao	6						-		-
Appearance	-							() E	Cher .
Color	****	*** **	*** **	•	•	•	•	•	•
Shape	Buzzer	Emergency Stop	NOTE:						
	Rectangular		A16 - IP	40					
	Standard and high sound	Push-lock, turn-reset		P65 oiltight					
Part number	M2BJ	A165E-S							
Appearance	((((1 1))))								

NON-ILLUMINATED

ILLUMINATED

Also available: 40 mm dia. A165E-M

Color

Shape	Pushbutton			Selector Switch		
	Round	Square	Rectangle	Round 2- or 3- position knob	Square 2- or 3- position knob	Rectangular 2- or 3- position knob
Part number	A165L-T	A165L-A	A165L-J	A165W-T	A165W-A	A165W-J
Appearance	0					
Color	***	* • • • •	*** *	* • •	* • •	* • •

Shape	Pilot Lights Round	Square	Rectangle	Emergency Stop Push-lock, turn reset 30 mm dia.	NOTE: A16 - IP40 A165 - IP65 oiltight
Part number	M165-T	M165-A	M165-J	A165E-LS	
Appearance	0				
Color	$\bullet \bullet \bullet \bullet \bullet$	* ***	$\bullet \bullet \bullet \bullet \bullet$	•	
				Also available: 40 mm dia. A165E-LM	

Power Supplies

Omron Smart Solutions

FIL

Slim DIN track-mounting power supplies from 15 to 240 W are UL508 listed for operation at full rating. Digital display and preventive maintenance output available for load duration and power supply service life.

S82K

Versatile power supplies offer 3 W to 100 W output in a wide range of voltages for general industrial applications. DIN track and bolt-on mounting.

S8VS

S8TS

Block-type power supply allows multiple configurations for custom voltages or mixed output loads using a few easily stocked parts.

1000

1

	Power Supplies			
	S8VS	S82K	S8PS	S8TS
Features	 Small sized, DIN rail mount power supply with LED display Suitable for any application and any environment Digital displays to predict and schedule maintenance for improved uptime 	 DIN rail mount power supply with a wide power range Suitable for general purpose and rugged industrial applications Lightweight for easy DIN rail mount installation 	 Compact DIN rail mounting industrial power supply with high power capacity Slim metal housing designed for rugged industrial application A versatile unit that could be installed in many different ways 	 High-end, block type power supply easily connects with multiple units and offers many output configurations Ideal for applications where increase of power may be required
Mounting	DIN rail	DIN rail / Bolt-on	DIN rail / Bolt-on	DIN rail
Product type	Enclosed frame with metal and plastic housing	Enclosed frame with plastic housing	Open or covered frame with metal housing	Plastic housing, block-style configuration
Output	Single output	Single and dual output	Single output	Configures to user's choice
Power ratings	15, 30, 60, 90, 120, 180 and 240 W	3, 7.5, 15, 30, 50, 90 and 100 W	50, 100, 150, 300 and 600 W	25 W, 30 W, and 60 W per single unit; Expandable up to 240 W by ganging the units together
Output voltage/current	24 V: 2.5 A, 3.75 A, 5 A, 7.5 A, 10 A	5 V: 0.6A, 1.5A, 2.5A, 5.0A; 12 V: 0.25A, 0.6A, 1.2A, 2.5A; 15 V: 0.2A, 0.5A; 24 V: 0.13A, 0.3A, 0.6A, 1.3A, 2.1A, 3.75A, 4.2A, ±12 V/+0.3/-0.2A; ±15 V/+0.2/-0.2A	5 V: 10 A; 12 V: 4.2 A; 24 V: 2.1 A, 4.5 A, 6.5 A, 14 A, 27 A	5 V: 5 A, 12 V: 2.5 A, 24 V: 2.5 A (this is per unit values); When ganged together, values could go up to 12 V: 10 A, 24 V: 10 A
Input voltage	85 to 264 VAC, 47 to 450 Hz	85 to 264 VAC, 47 to 450 Hz; 85 to 132 VAC, 170 to 264 VAC (selectable), 85 to 253 VAC, 47 to 450 Hz (selectable)	85 to 264 VAC, 47 to 450 Hz	85 to 264 VAC, 47 to 63 Hz
Dimensions mm (in)	$\begin{array}{c} 60 \text{ W:} \\ 95 \text{ H} \times 40 \text{ W} \times 108.3 \text{ D} \\ (3.74 \times 1.57 \times 4.26) \\ 90 \text{ W:} \\ 115 \text{ H} \times 50 \text{ W} \times 121.3 \text{ D} \\ (4.53 \times 1.97 \times 4.78) \\ 120 \text{ W:} \\ 115 \text{ H} \times 50 \text{ W} \times 121.3 \text{ D} \\ (4.53 \times 1.97 \times 4.78) \\ 180 \text{ W:} \\ 115 \text{ H} \times 75 \text{ W} \times 125.3 \text{ D} \\ (4.53 \times 2.95 \times 4.93) \\ 240 \text{ W:} \\ 115 \text{ H} \times 100 \text{ W} \times 125.3 \text{ D} \\ (4.53 \times 3.94 \times 4.93) \end{array}$	3 W, 7.5 W: 75 H × 37.5 W × 65 D (2.95 × 1.48 × 2.56); 15 W: 75 H × 45 W × 96 D (2.95 × 1.77 × 3.78); 30 W, 50 W: 75 H × 90 W × 96 D (2.95 × 3.54 × 3.78); 90 W, 100 W: 75 H × 145 W × 96 D (2.95 × 5.71 × 3.78)	50 W: 85 H × 40 W × 127 D (3.35 x 1.57 x 5.0); 100 W: 92 H × 50 W × 145 D (3.62 x 1.97 x 5.71); 150 W: 92 H × 50 W × 163 D (3.62 x 1.97 × 6.42); 300 W: 92 H × 110 W × 175 D (3.62 x 4.33 x 6.89); 600 W: 92 H × 170 W × 179 D (3.62 x 6.69 x 7.05)	120 H x 43 W x 120 D (4.72 x 1.69 x 4.72)
Display/indication	3-digit, 7-segment LED; LED status displays for output voltage, output current, peak current, lifetime years, run time hours	Two LED lights; one for power- on indicator and the other for output-on indicator	LED light for output-on indicator	Two LED lights; one for power- on indicator and the other for output-on indicator
Alarm output	90, 120, 180, 240 W models with display have NPN outputs	Relay output available on 90 and 100 W models.	None	NPN output for when the output voltage drops
Approvals	cULus, UL508 listed, Class 2 output (60 W only), CE, SEMI F47-0200	UL508 listed, Class 2 output (up to 90 W), CSA, CE	UL508 listed, CSA, VDE, CE	cULus, UL508 listed, VDE, CE

POWER SUPPLIES

Timers, Counters, and Panel Meters

<u> Omron Smart Solutions</u>



Digital 1/16 DIN counter with preset,

total, batch and dual counting

Display the results of analog inputs and get control outputs indicating good/ no good status with Omron's 1/8 DIN size process, temperature, rate and weight meters.

Digital multifunction timer in 1/16 DIN size has a shallow mounting depth and NEMA 4/IP66 front panel without additional protection. Bi-color present value display can change from red to green to alert changes in output status.

H5CX

Timers

Digital Panel Meters



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	TIMERS				
				B	
	H5CX	H3CA	H5BR	H3CR-A	H3CR-F
Dimensions mm (in)	48 H x 48 W x 100 D (1.89 x 1.89 x 3.94)	48 H x 48 W x 63.7 D (1.89 x 1.89 x 2.51)	72 H x 72 W x 100 D (2.83 x 2.83 x 3.94)	48 H x 48 W x 68 D (1.89 x 1.89 x 2.68)	48 H x 48 W x 66 D (1.89 x 1.89 x 2.62)
Features	 Advanced programmable display with twin timer function PNP/NPN input Programmable via front or dip switches on back NEMA 4 front 	 Digital set, solid-state timer LCD time remaining bar graph and output status indicators Switch selectable time unit, control mode and time limit setting 1/16 DIN plug-in unit 	 Batch counting function records the number of completed cycles Nine field-selectable timing modes Scroll-through menus access from front panel 	 Shallow mounting depth and wide range of panel covers Analog set, 1/16 DIN sized solid-state timer NPN/PNP input Wide AC/DC supply voltage 	 Analog set, solid-state timer with combinations of independent ON/OFF time settings in a compact 1/16 DIN size Models with ON start or OFF start operating functions Fits standard 8- or 11-pin sockets
Product type	Multi-mode	ON-delay/Multi-mode	Multi-mode	ON-delay and one-shot Interval/Multi-mode	Twin timer
Control outputs	Time limit - SPDT, 5A at 250 VAC, Transistor, NPN, 100 mA at 30 VDC	Time limit - DPDT or SPDT, 3A 250 VAC; Instantaneous - SPDT, 3A, 250 VAC (H3CA-8H only)	1 SPDT relay and 2 NPN open collector transistor outputs	Time limit - DPDT, 5A, 250 VAC Transistor, 100 mA, 30 VDC (PNP/NPN) Instantaneous - DPDT, 5A, 250 VAC Transistor, 100 mA, 30 VDC (NPN/ PNP)	Time limit - DPDT, 5A, 250 VAC; Instantaneous - DPDT, 5A, 250 VAC
Operation modes	12 selectable modes including ON-delay, repeat cycle, signal OFF-delay, interval, cumulative, ON/OFF duty adjustable cycle, twin timer	8 selectable modes including ON-delay only or multi-mode model with ON-delay, repeat cycle, signal interval/ OFF-delay, 2 types of signal OFF-delay, interval, cycle and signal ON-delay/OFF-delay	9 selectable modes including ON-delay, repeat cycle, signal OFF-delay, interval, cumulative	Select 2-4-6 function models including ON- delay and one-shot, interval or selectable ON-delay, repeat cycle (two types), signal ON/OFF delay, signal OFF delay, interval	Repeat cycle: Independent ON or OFF time
Ranges	0.001 second to 9999 hours	0.1 second to 9990 hours (field selectable time units from 0.1 sec to 10 h x 3 digits)	0.001 second to 9999 hours (field selectable)	0.05 second to 300 hours or 0.1 second to 600 hours	0.05 second to 30 hours; 1.2 second to 300 hours
Display/indication	4-digit negative transmissive LCD; Programmable display color for output indication	LCD output status and percent time remaining bar graph	Alphanumeric 4-digit LCD display has 12 mm high characters and built-in backlight	Power ON, Output ON LEDs	Output ON and Output OFF LEDs
Supply voltage	100 to 240 VAC or 24 VAC / 12 to 24 VDC	24 to 240 VAC, 50/60 Hz and 12 to 240 VDC (8-pin model) 24, 100/110/120, 200/220/240 VAC, 50/60 Hz 12, 24, 48, 110 VDC	100 to 240 VAC, 50/60 Hz or 24 VAC, 50/60 HZ and 12 to 24 VDC	AC 100 – 240/ DC 100-125; DC 24 to 48/ DC 12 - 48	100 to 240 VAC, 50/60 Hz 12 VDC; 24 VAC/VDC
Mounting	Panel, track, surface	Panel, track, surface	Panel	Panel, track, surface	Panel, track, surface
Accessories	Sockets, panel mounting adapter, DIN rail	Sockets, protective covers, adapters for panel mounting, DIN rail	NEMA 4 waterproof cover, soft cover, shock prevention terminal cover	Sockets, panel covers in three colors, time setting ring, protective covers, adapters for panel mounting, DIN rail	Sockets, panel covers in three colors, time setting ring, protective covers, adapters for panel mounting, DIN rail
Approvals	cULus, cURus, CE	UL, CSA, SEV	UL, CSA, SEV, CE	UL, CSA, SEV, CE, VDE	UL, CSA, CE (LV)

	TIMERS			
		COLUMN TO A		
	H3DE	H3YN	H5S	H5L
Dimensions mm (in)	75 H x 22.5 W x 100 D (2.95 x 0.89 x 3.94)	28 H x 21.5 W x 56.6 D (1.10 x 0.85 x 2.23)	72 H x 72 W x 49 D (2.83 x 2.83 x 1.93)	96 H x 96 W x 56.5 D (3.78 x 3.78 x 2.22)
Features	 Slim analog set timers with field-selectable ranges and multiple operation modes Built-in DIN rail clamp for easy track mounting 	 Subminiature analog solid- state time delay relay Multiple time ranges and operating modes Track solder terminal or wire- wrap terminal mounting via sockets Fits MY socket 	 AM/PM display with 24 program steps and quartz accuracy ON/OFF, cycle and pulse operations LCD shows output status and current or next program step 	 Two independent 15-amp circuits Manual override of outputs Simple prompted programming Fits 1/4 DIN panel cut out
Product type	Multi-mode	ON-delay/Interval/Repeat Cycle	Weekly timer	Weekly timer
Control outputs	Time limit - SPDT, 5A, 250 VAC or SPDT x 2 - programmable between time limiting and instantaneous	Time limit - DPDT, 5A, 250 VAC; 4PDT, 3A, 250 VAC	Time limit - SPST x 2, 15A, 250 VAC	Time limit - 15A, 125 VAC
Operation modes	ON-delay, Repeat cycle/signal OFF start, Repeat cycle/signal ON start, Signal ON/OFF-delay, Signal OFF-delay, Interval, one shot	ON-delay/Interval/Repeat Cycle	ON/OFF, repeat cycle, pulse	Repeat cycle, individual program for each circuit
Ranges	0.1 second to 120 hours	0.1 second to 10 minutes or 0.1 minute to 10 hours	1 week	1 minute to 23 hours 59 minutes
Display/indication	Power and Output ON LEDs	Power ON LED; Time UP LED	LCD; time, day, output status, program step	LCD; day, time, program, circuit status
Supply voltage	24- 230 VAC/VDC	24, 100/120, 200/230 VAC; 50/60 Hz; 12, 24 VDC	100 to 240 VAC, 50/60 Hz	100 to 240 VAC, 50/60 Hz
Mounting	Track	Panel, track, surface	Panel, surface, track	Panel, track, surface
Accessories	DIN rail	Sockets, panel mounting adapter, DIN rail	Protective cover, track adapter, DIN rail	Protective cover, DIN rail
Approvals	UL, CSA, CE	UL, CSA, CE (LV)	UL, CSA	UL, CSA, SEV

	COUNTERS				
	REAL PROPERTY AND A CONTRACT OF A CONTRACT O		REVISOR		
	H7CX	H7BR	H7EC	H7ET	H7ER
Dimensions mm (in)	48 H x 48 W x 100 D (1.89 x 1.89 x 3.94)	72 H x 72 W x 100 D (2.83 x 2.83 x 3.94)	24 H x 48 W x 53.5 D (0.94 x 1.89 x 2.11)	24.0 H x 48 W x 53.5 D (0.94 x 1.89 x 2.11)	24.0 H x 48 W x 53.5 D (0.94 x 1.89 x 2.11)
Features	 Advanced programmable display PNP/NPN input Prescaling function Up/down counting Programmable via front or dip switches on back NEMA 4 front 	 Multi-function digital counter with backlit LCD display Single and double preset and ± range Batch counter Contact and transistor outputs available 	 7 segment LCD with or without backlight Large display height 8.6 mm (0.338 in.) NEMA 4 front 	 7 segment LCD with or without backlight Large display height 8.6 mm (0.338 in.) NEMA 4 front 	 7 segment LCD with or without backlight Large display height 8.6 mm (0.338 in.) NEMA 4 front
Number of digits	4 or 6	6	8	7	4 or 5
Operation modes	UP, DOWN, reversible, tachometer, totalizer, dual-counter, batch, single or dual presets	UP, DOWN, reversible	UP counting	UP counting	UP counting
Counter input	NPN/PNP selectable	No voltage or voltage	PNP/NPN DC voltage; AC voltage; No-voltage contact	PNP/NPN DC voltage; AC voltage; No-voltage contact	PNP/NPN DC voltage; No voltage contact
Count speed	30 cps, 5 Kcps, 10 Kcps (prescale)	30 cps, or 1, 5, or 10 Kcps	20 cps (AC/DC voltage); 30 cps/1 Kcps selectable (NPN/PNP DC voltage)	1 sec.	1 Kcps or 10 Kcps; 1 pulse/rev., 60 pulses/ rev., or 600 pulses/rev.
Ranges	0 to 9999 (4 digits) 0 to 999,999 (6 digits)	0 to 999,999 for preset models, and -99,999 to 999,999 for ±	0 to 99,999,999	Selectable between 999,999.9 hrs. and 3,999 days 23.9 hrs.; 999 hrs. 59 min. 59 sec. and 9,999 hrs. 59.9 min.	0 to 1,000 rps; 1,000.0 rpm; 1,000.0 rps; 10,000 rpm
Supply voltage	100-240 VAC or 24 VAC / 12 to 24 VDC	100 to 240 VAC, 50/60 Hz or 24 VAC/ 12 to 24 VDC	Not required for non- backlight models; 24 VDC required for backlight models	Not required for non- backlight models; 24 VDC required for backlight models	Not required for non- backlight models; 24 VDC required for backlight models
Control output	Contact, transistor or both (programmable)	Contacts: 3A, 250 VAC; Transistor: Open collector, 100 mA at 30 VDC max. Residual voltage 2 V Max.	-	-	-
Connections	Screw terminals or 11-pin socket	Screw terminals	Screw terminals or wire wrap; 8 solder terminals	Screw terminals or wire wrap	Screw terminals
Mounting	Panel, track or surface	Flush mount	Panel	Panel	Panel
Approvals	cULus, cURus, CE	UL, CSA, CE	UL, CE, CSA, VDE	UL, CE, CSA, VDE	UL, CSA, CE, VDE

	DIGITAL PAR			
		- 19999:	B150	123451
	K3HB-S	КЗНВ-Х	КЗНВ-Н	K3HB-V
Dimension	48 H x 96 W x 95 D (1.89 x 3.78 x 3.74)	48 H x 96 W x 95 D (1.89 x 3.78 x 3.74)	48 H x 96 W x 95 D (1.89 x 3.78 x 3.74)	48 H x 96 W x 95 D (1.89 x 3.78 x 3.74)
Features	 Advanced inspection controller with high speed response of 2,000 times per second This is ideal for high-speed measurement with discrimination from 1 or 2 independent analog inputs Sampling period is measured at 0.5 ms with an output response time of 1 ms max. 	 Intelligent signal processor for AC or DC signal or voltage Multiple ranges can be covered by a single meter Programmable via serial communications or front panel Field replaceable output 	 High-speed temperature indicator with high accuracy input resolution for both Platinum resistance and Thermocouples This unit is also equipped with simple input shift using two points, hysteresis, peak/hold value, and more 	 Ideal weighing indicator for making good/no-good judgments Could measure pressure, load, torque, and weight by using load cell signal input
Product type	Linear Sensor Indicator	Process Meter	Temperature Meter	Weighing Meter
Input type	Dual analog inputs: DC current: 0-20 mA, 4-20 mA DC voltage: 0-5 V, 1-5 V, ±5 V, ±10 V	DC voltage: 199.99 V, 19,999 V, 1.9999 V, 1.0000 to 5.0000 V; AC voltage: 0.0 to 400.0 V, 0.00 to 199.99 V, 0.000 to 19.999 V, 0.0000 to 1.9999 V; DC current: 199.99 mA, 19.999 mA, 1.9999 mA, 4.000 to 20.000 mA; AC current: 0.000 to 10.000 A, 0.0000 to 1.9999 A, 0.00 to 199.99 mA, 0.000 to 19.999 mA	Thermocouples: K, J, T, E, L, U, N, R, S, B, W; Platinum resistance: Pt100	DC voltage: 0.00 to 199.99 mV, 0.000 to 19.999 mV, ±100.00 mV, ±199.99 mV
Display	5-digit, 7-segment Negative Transmissive LCD	5-digit, 7-segment Negative Transmissive LCD	5-digit, 7-segment Negative Transmissive LCD	5-digit, 7-segment Negative Transmissive LCD
Setting Options	Front pushbuttons or Serial communications	Front pushbuttons or Serial communications	Front pushbuttons or Serial communications	Front pushbuttons or Serial communications
Event Inputs	5 point NPN; 8 point NPN; 5 point PNP; 8 point PNP	5 point NPN; 8 point NPN; 5 point PNP; 8 point PNP	5 point NPN; 8 point NPN; 5 point PNP; 8 point PNP	5 point NPN; 8 point NPN; 5 point PNP; 8 point PNP
<i>Control outputs</i> Combination output boards with Power Supply (PS)	SPDT and 12 VDC PS; SPDT and 10 VDC PS; 0-20 mA and 12 VDC PS; 0-20 mA and 10 VDC PS; 0-5, 0-10 VDC and 12 VDC PS; RS-232C and 12 VDC PS; RS-232C and 10 VDC PS; RS-485 and 12 VDC PS; RS-485 and 10 VDC PS;	SPDT and 12 VDC PS; SPDT and 10 VDC PS; 0-20 mA and 12 VDC PS; 0-20 mA and 10 VDC PS; 0-5, 0-10 VDC and 12 VDC PS; RS-232C and 12 VDC PS; RS-232C and 10 VDC PS; RS-485 and 12 VDC PS; RS-485 and 10 VDC PS;	SPDT and 12 VDC PS; SPDT and 10 VDC PS; 0-20 mA and 12 VDC PS; 0-20 mA and 10 VDC PS; 0-5, 0-10 VDC and 12 VDC PS; RS-232C and 12 VDC PS; RS-232C and 10 VDC PS; RS-485 and 12 VDC PS; RS-485 and 10 VDC PS;	SPDT and 12 VDC PS; SPDT and 10 VDC PS; 0-20 mA and 12 VDC PS; 0-20 mA and 10 VDC PS; 0-5, 0-10 VDC and 12 VDC PS; RS-232C and 12 VDC PS; RS-232C and 10 VDC PS; RS-485 and 12 VDC PS ; RS-485 and 10 VDC PS
Power Supply	12 VDC only or 10 VDC only	12 VDC only or 10 VDC only	12 VDC only or 10 VDC only	12 VDC only or 10 VDC only
Relay	2-SPDT; 4-SPST	2-SPDT; 4-SPST	2-SPDT; 4-SPST	2-SPDT; 4-SPST
Transistor	5-NPN; 5-PNP	5-NPN; 5-PNP	5-NPN; 5-PNP	5-NPN; 5-PNP
DeviceNet	Yes	Yes	Yes	Yes
Approvals	cULus, CE	cULus, CE	cULus, CE	cULus, CE

	DIGITAL PANEL METERS		
	1234	1234	
	КЗМА-Ј	K3MA-L	КЗМА-F
Dimensions mm (in)	48 H x 96 W x 97 D (1.89 x 3.78 x 3.81)	48 H x 96 W x 97 D (1.89 x 3.78 x 3.81)	48 H x 96 W x 97 D (1.89 x 3.78 x 3.81)
Features	 Multi-range DC voltage/current input Front-panel key operation Scaling, front-panel forced-zero, zero-limit functions Short 80 mm depth front panel Water and dust-proof NEMA 4X front panel 2-color LEDs 	 Wide input range 2 types of platinum-resistance thermometers and 10 types of thermocouples Front-panel key operation Water and dust-proof NEMA 4X front panel 2-color LEDs Temperature input shift and temperature unit selection functions Short 80 mm depth front panel 	 Wide input range: contact, NPN, PNP, or voltage pulse Front-panel key operation Scaling, auto-zero time, startup compensation time functions Short 80 mm depth front panel Water and dust-proof NEMA 4X front panel 2-color LEDs
Product type	Process meter	Temperature meter	Frequency/rate meter
Input type	DC voltage: 1.000 to 3.000 V, 0.000 to 5.000 V, -5.000 to 5.000 V, -10.000 to 10.00 V; DC current: 4.00 to 20.00 mA, 0.00 to 20.00 mA	Thermocouple: K, J, T, E, L, U, N R, S, B RTD: Pt100, JPt100	Rotary pulse
Display	7-segment LCD backlit, red and green LEDs	7-segment LCD backlit, red and green LEDs	7-segment LCD backlit, red and green LEDs
Setting options	Front-panel key	Front-panel key	Front-panel key
Control outputs Relay	2 SPST-NO	1 SPDT	2 SPST-NO
Transistor	N/A	N/A	N/A
BDC	N/A	N/A	N/A
Linear	N/A	N/A	N/A
Alarm	N/A	N/A	N/A
Serial communications outputs	N/A	N/A	N/A
PC software	N/A	N/A	N/A
Approvals	cULus, CE	cULus, CE	cULus, CE

Terms and Conditions of Sales

- 1. Definitions: The words used herein are defined as follows
 - (a)Terms: These terms and conditions
 - (b)Seller: Omron Electronic Components LLC and its subsidiaries
 - (c)Buyer: The buyer of Products, including any end user in section III through VI (d)Products: Products and/or services of Seller
- (e)Including: Including without limitation
- <u>Offer: Acceptance:</u> These Terms are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of Products by Seller. Seller hereby objects to any Terms proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- <u>Distributor</u>: Any distributor shall inform its customer of the contents after and including section III of these Terms.

<u>1. Prices; Payment</u>: All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at time of shipment. Payments for Products received are due net 30 days unless otherwise stated in the invoice. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice.

- 2. Discounts: Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (a) the invoice is paid according to Seller's payment terms and (b) Buyer has no past due amounts owing to Seller.
- 3. Interest: Seller, at its option, may charge Buyer 1.5% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
- 4. Orders: Seller will accept no order less than 200 U.S. dollars net billing.
- 5. Currencies: If the prices quoted herein are in a currency other than U.S. dollars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dollars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
- <u>Governmental Approvals</u>: Buyer shall be responsible for all costs involved in obtaining any government approvals regarding the importation or sale of the Products.
- <u>7. Taxes</u>: All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
- 8. Financial: If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
- <u>9. Cancellation: Etc.</u> Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
- 10. Force Majeure: Seller shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
- 11. Shipping: Delivery: Unless otherwise expressly agreed in writing by Seller:
- (a) All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Products shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Products until the full purchase price is paid by Buyer;
- (b) Delivery and shipping dates are estimates only; and
- (c) Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
- 12. Claims: Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier must be presented in detail in writing to Seller within 30 days of receipt of shipment.

1. Suitability: IT IS THE BUYER'S SOLE RESPOINSIBILITY TO ENSURE THAT ANY OMRON PRODUCT IS FIT AND SUFFICIENT FOR USE IN A MOTORIZED VEHICLE APPLICATION. BUYER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING APPROPRIATENESS OF THE PARTICULAR PRODUCT WITH RESPECT TO THE BUYER'S APPLICATION INCLUDING (A) ELECTRICAL OR ELECTRONIC COMPONENTS, (B) CIRCUITS, (C) SYSTEM ASSEMBLIES, (D) END PRODUCT, (E) SYSTEM, (F) MATERIALS OR SUBSTANCES OR (G) OPERATING ENVIRONMENT. Buyer acknowledges that it alone has determined that the Products will meet their requirements of the intended use in <u>all</u> cases. Buyer must know and observe all prohibitions of use applicable to the Product/s.

Use with Attention: The followings are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible use of any Product, nor to imply that any use listed may be suitable for any Product:

 (a) Outdoor use, use involving potential chemical contamination or electrical interference.
 (b) Use in consumer Products or any use in significant quantities.

- (c) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- (d) Systems, machines, and equipment that could present a risk to life or property.
- 3. Prohibited Use: NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
- 4. Motorized Vehicle Application: USE OF ANY PRODUCT/S FOR A MOTORIZED VEHICLE APPLICATION MUST BE EXPRESSLY STATED IN THE SPECIFICATION BY SELLER.
- <u>Programmable Products</u>: Seller shall not be responsible for the Buyer's programming of a programmable Product.

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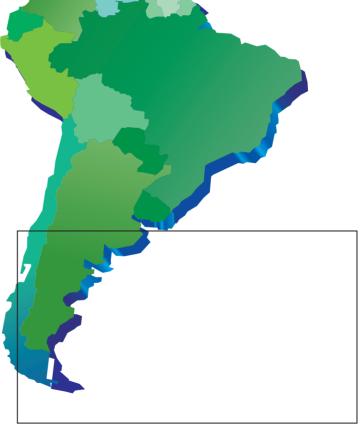
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