

Sensors & Transducers

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Thermocouples and Probes

Thermocouple Colour Code

THERMOCOUPLE CABLE COLOUR CODING									
THERMOCOUPLE COMBINATION FOR TYPE	EXTENSION CABLE	COMPENSATING CABLE	INTERNATIONAL COLOUR CODE TO ISO 5455:1981	INTERNATIONAL COLOUR CODE TO ISO 1849	FORMER COLOUR CODING FOR THERMOCOUPLE EXTENSION & COMPENSATING CABLE				
			ISO 5455:1981	ISO 1849	BRITISH TO BS 1943	JAPANESE TO JSC 1418:1981	AMERICAN TO ANSI MC96.1	GERMAN TO DIN 4214	FRENCH TO NF 42214
K	KX		Blue	Green	Red	Blue	Yellow	Green	Purple
		KCA	Green	Blue					
		KCB	Green	Blue	Red	Blue			Brown
T	TX		Brown	Blue	Brown	Blue	Brown	Blue	Yellow
J	JX		Black	Blue	Black	Yellow	Black	Blue	Black
N	NX		Pink	Blue	Orange		Orange		
E	EX		Purple	Blue	Brown	Pink	Pink	Black	Orange
R		RCA	Orange	Blue	Green	Black	Green	Red	
		RCB	Orange	Blue	Green	Black	Green	Red	
S		SCA	Orange	Blue	Green	Black	Red	Black	Green
		SCB	Orange	Blue	Green	Black	Red	Black	Green

Thermocouple Type Letter Designations

The following letter designations are established for thermocouple wire combinations as follows:

Letter	Thermocouple	Temp Range °C
T	Copper/copper-nickel	-150 to +350
J	Iron/copper-nickel	0 to +700
K	Nickel-chromium/nickel-aluminium	0 to +1200
N	Nickel-chromium-silicon/nickel-silicon	0 to +1250
S	Platinum 10% rhodium/platinum	0 to +1500
R	Platinum 13% rhodium/platinum	0 to +1600

Types	Tolerance Class 1	Tolerance Class 2
Type T		
Temperature range	-40°C to +125°C	-40°C to +133°C
Tolerance value	±0.5°C	±1°C
Temperature range	125°C to 350°C	133°C to 350°C
Tolerance value	±0.4%	±0.75%
Type J		
Temperature range	-40°C to +375°C	-40°C to +333°C
Tolerance value	±1.5°C	±2.5°C
Temperature range	375°C to 750°C	333°C to 750°C
Tolerance value	±0.4%	±0.75%

Type K, Type N

Temperature range	-40°C to +375°C	-40°C to +333°C
Tolerance value	±1.5°C	±2.5°C
Temperature range	375°C to 1200°C	333°C to 1200°C
Tolerance value	±0.4%	±0.75%

Type R, Type S

Temperature range	0°C to 1100°C	0°C to +600°C
Tolerance value	±1°C	±1.5°C
Temperature range	1100°C to 1600°C	600°C to 1600°C
Tolerance value	±(1 + 0.3% of T - 1100)°C	±0.25%

Thermocouple application guide

Immersion depth

The required depth of probe immersion at which no incorrect reading will occur due to insufficient immersion.

Response times

The time in which the probe will attain a proportion of the final medium temperature. Normally quoted as the time taken to achieve a percentage of a step temperature change. The probe construction, i.e. isolated or grounded junction, application and environment will affect response times.

Type T

Copper/Copper-Nickel — 150 to 350°C

Widely used to measure low temperatures, and in applications where moisture is present. May be used in oxidising, or reducing atmospheres.

Type J

Iron/Copper-Nickel — 0 to 700°C

May be used in oxidising atmospheres, limited to below 500°C in sulphurous atmospheres. Iron conductor liable to rust at low temperatures (ice point and below).

Type K

Nickel-Chromium/Nickel-Aluminium — 0 to 1200°C

Widely used thermocouple with a useful measuring range. Not recommended for sulphur bearing atmospheres or reducing atmospheres, but good resistance to oxidising atmosphere.

Type N

Nickel-Chromium-Silicon/Nickel-Silicon — 0 to 1250°C

Very good resistance to oxidising atmospheres, and may be used when good stability at high temperatures is required.

Type R/S

Platinum — 10% Rhodium/Platinum 0 to 1500°C

Platinum — 13% Rhodium/Platinum 0 to 1600°C

Recommended for very high temperature use in oxidising atmospheres. For some applications a secondary ceramic protective sheath is recommended.

The application guide above gives recommendations appertaining to the primary thermocouple wire. When protected by the appropriate outer sheath, some of the limitations given can be overcome.

212223

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Thermocouples and Probes - continued

Thermocouple - Fine Wire, Welded Tip

Type K or T



- High sensitivity, exposed junction
- Thermocouples to IEC 60584
- 1/0.08mm single wires, 1m length
- PFA insulated wires, class 1
- Rated from -75 to +250°C

386285

Order Multiple=Pack of 5

Price Per Pack

Description	Mftrs. List No.	Order Code
Type K tails	ZO-PFA-K-1 X 5	859-8240
Type T tails	ZO-PFA-T-1 X 5	859-8258

Welded Tip Thermocouples - Types J, K & T

Fibre Glass Insulated and PTFE Insulated



Fibre glass insulated

PTFE insulated

- 1 metre and 2 metre long welded tip thermocouples
- Choice of insulation: varnish-impregnated fibre glass (suitable for temperatures up to 350°C) or PTFE (suitable up to 250°C) which is chemically inert
- Manufactured to international reference tables BS4937 (Part 3 for type J, Part 4 for Type K, Part 5 for Type T)

Fibre Glass Insulated

	Type J	Type K	Type T
Wire diameter	1/0.315mm	1/0.315mm	1/0.315mm
Overall diameter	1.5mm	1.5mm	1.5mm
Temperature range	-50°C to +350°C	-50°C to +350°C	-50°C to +350°C
Positive leg	Iron	Nickel chromium	Iron
Negative leg	Constantan	Nickel aluminium	Constantan

PTFE Insulated

	Type K	Type T
Wire diameter	1/0.2mm	1/0.2mm
Overall diameter	1.3mm	1.3mm
Temperature range	-50°C to +250°C	-50°C to +250°C
Positive leg	Nickel chromium	Copper
Negative leg	Nickel aluminium	Constantan

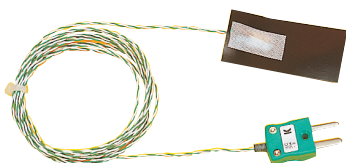
212204

Fibre Glass Insulated	Mftrs. List No.	Order Code	Price Each
Type J, 2m	Z3-J-2M (IEC)	706-9212	
Type J, 3m	Z3-J-3M (IEC)	163-3477	
Type K, 1m	Z3-K-1M (IEC)	706-9224	
Type K, 2m	Z3-K-2M (IEC)	707-6137	
Type K, 3m	Z3-K-3M (IEC)	163-3479	
Type T, 2m	Z3-T-2M (IEC)	707-6149	

PTFE Insulated	Mftrs. List No.	Order Code	Price Each
Type K, 1m	Z2-K-1M (IEC)	707-6150	
Type K, 2m	Z2-K-2M (IEC)	707-6162	
Type K, 3m	Z2-K-3M (IEC)	163-3481	
Type K, 5m	Z2-K-5M (IEC)	163-3482	
Type T, 1m	Z2-T-1M (IEC)	707-6174	
Type T, 2m	Z2-T-2M (IEC)	707-6186	
Type T, 3m	Z2-T-3M (IEC)	163-3483	
Type T, 5m	Z2-T-5M (IEC)	163-3484	

Magnetic Strip Thermocouple

Type K



Size 50 x 25, Thickness = 1

- Fast response
- Attach to any ferro-magnetic surface
- Easy and quick to position
- Can be transferred to other positions without damage

Type K surface thermocouple using a flexible magnetic strip which can be attached to any ferro-magnetic surface.

The 2m lead is terminated with a miniature thermocouple plug

Temperature range -50°C to +120°C Lead 2m PTFE insulated, twisted pair
Mftrs. List Nos: FMS-2/PLUG (IEC) = 707-7725

212147

Price Each

Order Code	Price Each
707-7725	

Copper Disc Thermocouple



- Type K thermocouple junction brazed onto 7mm dia. copper disc
- Two lead length versions available, 1m and 3m
- Supplied with adhesive tape to attach to any clean surface for semi-permanent temperature measurement
- 5 adhesive tapes supplied.
- Tapes can also be used to secure the flexible PTFE lead
- For use up to 200°C

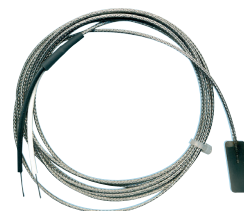
212322

Price Each

Mftrs. List No.	Order Code	Price Each
Z2-K-1M DISC (IEC)	721-8771	
Z2-K-3M DISC (IEC)	163-3485	

Leaf Thermocouple - Stainless Steel Shim

Type J or K - Up to 350°C



- Grounded tip - Fast response
- Rated at 350°C
- Glassfibre stainless steel braided extension cable, 7/0.2mm
- Stainless steel shim, 25mm long x 13mm wide

386275/406061

Price Each

Description	Mftrs. List No.	Order Code	Price Each
Type J, 2m lead	FL-J-2M	859-7928	
Type K, 2m lead	FL-K-2M	859-7936	
Type K, 3m lead	FL-K-3M	163-3486	

Thermocouple - Washer Eyelet

Type J or K - Up to 350°C



- Grounded tip - Fast response
- Rated at 350°C
- Choice of either 2m or 3m extension cable length
- Glassfibre stainless steel braided extension cable, 7/0.2mm
- Washer with 6mm clearance hole

386277/406071

Price Each

Description	Mftrs. List No.	Order Code	Price Each
Type J, 2m lead	FW-J-2M	859-7944	
Type J, 3m lead	FW-J-3M	163-3487	
Type K, 2m lead	FW-K-2M	859-7952	
Type K, 3m lead	FW-K-3M	163-3488	

Industrial Mineral Insulated Probes

Type K



- Type K mineral-insulated stainless steel sheathed probes particularly suitable for industrial applications
- Suitable for applications up to 1100 °C
- Probes can be bent to enable fitting in awkward locations
- High reliability and stability

The thermocouple junction is located at the tip and insulated from the sheath. Smaller diameter thermocouples respond to temperature changes more rapidly than larger diameters, but larger diameters are mechanically stronger. Available in a range of lengths and diameters.

Sheath material	310 stainless steel
Temperature range of probe	-40°C to 1100°C
Pot seal	M8 x 1.0mm thread L=25
Pot temperature	200°C max.
Leads	PTFE insulated 7/0.2mm, L = 100

Mftrs List No: KMI/probe dia. probe length (IEC)

FOR SUITABLE COMPRESSION GLANDS SEE ORDER CODE 708-8206

222133

Probe Dia. (mm)	Probe L (mm)	Order Code	Price Each
0.5	150	721-8898	
0.5	250	424-8170	
0.5	500	424-8181	
1	150	707-8110	
1	250	707-8122	
1	500	707-8134	
1.5	150	707-8146	
1.5	250	707-8158	
1.5	500	707-8160	
1.5	1000	707-8171	
3	150	707-8183	
3	250	707-8195	
3	500	707-8201	
3	1000	707-8213	
6	500	707-8237	

Industrial Mineral Insulated Probes Type K With Standard Plug

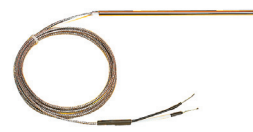


- Type K mineral insulated thermocouples
- Very rugged and flexible
- Stainless steel (310)
- Particularly suitable for high pressure, high vacuum or high vibration applications
- Max temperature of probe 1100°C (K)
- Plain pot seal (max temp 200°C)
- 7/0.2mm PFA insulated lead 2m long

449656

Probe Dia. (mm)	Probe L (mm)	Order Code	Price Each
1	100	128-9614	
1	250	128-9617	
1	500	128-9618	
1	1000	128-9619	
1.5	100	128-9620	
1.5	150	128-9621	
1.5	250	128-9622	
1.5	500	128-9623	
1.5	1000	128-9624	
1.5	2000	128-9625	
3	100	128-9626	
3	250	128-9629	
3	500	128-9630	
3	1000	128-9631	
3	2000	128-9632	
6	100	128-9633	
6	150	128-9634	

Heavy Duty Thermocouples



- Low-cost, heavy-duty, stainless steel thermocouples for a variety of applications up to 350°C
- Probes have grounded junctions for fast response
- 2 metre leads of rugged, stainless steel braided, fibreglass

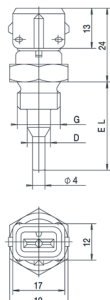
Probe L=150, Dia=4.76, Lead L=2mx7/0.2

Mfrs. List No. J-HD-150X(IEC)=707 9436, K-HD-150X(IEC)=707 9448

212221

	Order Code	Price Each
Type J	707-9436	
Type K	707-9448	

Screw-in resistance thermometer in stainless steel 902004 / 10



Shock-proof screw-in resistance thermometers enable temperature measurements under pressure up to 25bar, in motors, compressors and plant that are subject to particular stress.

- for temperatures from -50 to +300°C
- Highly shock-proof construction
- Connector locked in for reliable contact
- IP65 protection
- Connector with gold-plated contacts
- Protection tube in stainless steel X5 CrNi; 1810 M14 x 1.5
- Mating plug with 2.5m long silicone-insulated connecting cable, 0.34mm²

333872

Description	Order Code	Price Each
Screw-In Thermometer	472-4446	
Connecting Cable	472-4458	

Thermocouple Probe K Type Sensor - Swaged Tip

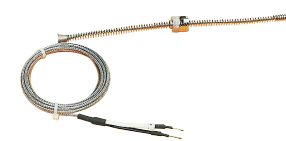


- Quick thermal response
- Rugged construction
- Industrial process construction to IP67, KNE head
- 300 x 6.35mm stainless steel probe swaged down to 50 x 3mm
- M20 cable gland

519877

Probe Length	Mfrs. List No.	Order Code	Price Each
300mm	011052TD	163-3443	

Adjustable Bayonet Thermocouple Types J and K



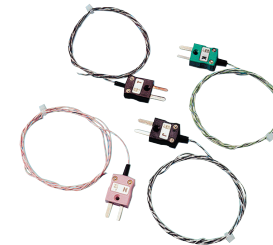
- Adjustable bayonet thermocouples designed primarily for the plastics and packaging industry, but recommended wherever spring loaded contact is required

- Thermocouple junction is housed in a rugged stainless steel tip
- Supplied with 2 metres of stainless steel braided lead fitted with a 170mm spring with adjustable fixing cap
- Separate bayonet adaptor locates via a 1/8" BSP male thread
- Fixing cap of the thermocouple is fitted to the adaptor to ensure secure spring loaded contact
- Suitable for temperatures up to 350°C

212338

	Mfrs. List No.	Order Code	Price Each
Type J	J-ABT-2 (IEC)	707-9801	
Type K	K-ABT-2 (IEC)	707-9813	
Adaptor		152-239	

Welded Tip Thermocouples with Fitted Plugs



These Welded Tip Thermocouples are available in either PTFE or Glassfibre insulation. Complete with a miniature thermocouple plug fitted, they are ready to use for most types of temperature measurement.

- Available as 1/0.2mm PTFE and 1/0.315mm Glassfibre Insulated construction
- Thermocouple types J, K, & T
- PTFE Insulation rating -75°C to +250°C
- Glassfibre Insulation rating -50°C to +350°C
- Fitted with a miniature thermocouple plug

249384

Insulation	Type	Lead	Order Code	Price Each
PTFE Insulation	Type J	- 1m lead	410-0736	
	Type J	- 3m lead	163-3489	
	Type K	- 1m lead	410-0748	
	Type K	- 3m lead	163-3490	
	Type T	- 1m lead	410-0750	
	Type T	- 3m lead	163-3492	
Glassfibre Insulation	Type J	- 2m lead	410-0761	
	Type J	- 4m lead	163-3493	
	Type K	- 2m lead	410-0773	
	Type K	- 4m lead	163-3494	

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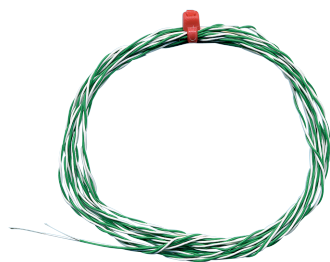
See inside front cover

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Thermocouples and Probes - continued

Thermocouple - Welded Tip

Types J, K & T



Type K, tails



Type K, mini-plug

- Fast response, exposed junction
- Thermocouples to IEC 60584
- 1/0.2mm twin twist wires
- PTFE insulated wires, class 1
- Rated from -75 to +250°C

386293

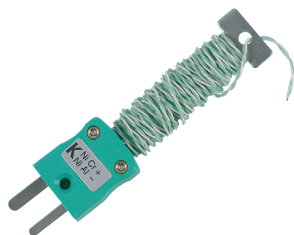
Order Multiple=Pack of 5

Price Per Pack

Description	Mfrs. List No.	Order Code
2m twin twist cable		
Type K tails	Z2-K-2 X 5	859-8150 ●
Type T tails	Z2-T-2 X 5	859-8169 ●
Type K mini-plug	Z2-K-2-MP X 5	859-8185 ●
Type T mini-plug	Z2-T-2-MP X 5	859-8193 ●
Type J mini-plug	Z2-J-2-MP X 5	859-8215 ●
1m twin twist cable		
Type K tails	Z2-K-1 X 5	859-8223 ●
Type T tails	Z2-T-1 X 5	859-8231 ●

Thermocouple - Fine Wire

Type K - 220°C



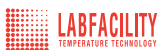
- Class 1 PFA insulated wire - High accuracy
- Rated at 220°C continuous (plug), 250°C (PFA)
- 2m wire stored on stainless steel stem with fitted mini-plug
- High sensitivity, fast response

386279

Description	Mfrs. List No.	Order Code	Price Each
Type K, 2m lead length			
Twin twist, 1/0.2mm	CT-Z2-PFA-K-2	859-8118 ●	
Flat pair, 1/0.315mm	CT-Z4-PFA-K-2	859-8126 ●	

Industrial Mineral Insulated Probes

Type K With 1m Lead



Mineral insulated thermocouples are extremely rugged and flexible, able to withstand temperatures up to 1100°C (pot seal max temp 180°C).

The probes can be bent to enable fitting in awkward locations, they are particularly suitable for industrial applications including high pressure, high vacuum, and high vibration. The thermocouple junction is located at the tip of the sensor and is insulated from the sheath

- Type K mineral insulated thermocouples
- Stainless Steel (316)
- Very Flexible
- Plain pot seal
- 1m PTFE flat pair 7/0.2mm cable
- Duplex types (2 thermocouples in one probe) available

FOR SUITABLE COMPRESSION GLANDS SEE ORDER CODE 708-8206

249373

Probe Dia. (mm)	Probe L (mm)	Order Code	Price Each
Standard Thermocouple			
1	100	128-9641 ●	
1	250	128-9642 ●	
1.5	150	424-8193 ●	
1.5	250	424-8200 ●	
1.5	2000	128-9647 ●	
3	150	424-8211 ●	
3	250	424-8223 ●	
3	500	128-9648 ●	
6	150	424-8235 ●	
6	250	424-8247 ●	
Duplex Thermocouple			
3	150	424-8259 ●	

Industrial Mineral Insulated Probes

Type K With Miniature Plug



Mineral insulated thermocouples are extremely rugged and flexible, able to withstand temperatures up to 1100°C (plug max temp 220°C). The probes can be bent to enable fitting in awkward locations, they are particularly suitable for industrial applications including high pressure, high vacuum, and high vibration. The thermocouple junction is located at the tip of the sensor and is insulated from the sheath

- Type K mineral insulated thermocouples
- Stainless Steel (316)
- Very Flexible
- Direct connection to miniature plug

FOR SUITABLE COMPRESSION GLANDS SEE ORDER CODE 708-8206

249378/406072

Probe Dia. (mm)	Probe L (mm)	Order Code	Price Each
Standard Thermocouple			
0.5	150	424-8296 ●	
0.5	250	424-8302 ●	
0.5	500	128-9600 ●	
0.5	1000	128-9601 ●	
1.5	150	424-8314 ●	
1.5	250	424-8326 ●	
1.5	500	128-9602 ●	
1.5	1000	128-9604 ●	
3	150	424-8338 ●	
3	250	424-8340 ●	

Handheld Probes - Type K

Fixed Probes



Surface, disc
Overall L=195, Probe L=80, Dia=4.7, Lead L=1.5m

Surface, coil
Overall L=220, Probe L=108, Dia=7.9, Lead L=1.5m

Air
Overall L=187, Probe L=74, Dia=4.7, Lead=1.5m

Insertion
Overall L=200
Probe L=105
Dia=3.3
Lead L=2m

- Hand-held type K thermocouple probes with stainless steel sheath
- Fitted with coiled PVC lead terminated with miniature thermocouple plug

Insertion probe: Tapered tip suitable for general purpose temperature measurement, immersion in liquids and penetration of semi-solids and solids including frozen food, grain etc. Maximum temperature 400°C.

Choice of **surface probes:** **Disc-type** features a spring-loaded thermocouple with copper 4mm diameter disc tip, operates up to 850°C. **Coil type** features a ceramic tip and coiled element for fast response, improved accuracy and maximum temperature of 900°C. Diameter of coiled element is 5.5mm.

Air probes: Thermocouple junction protected by perforated sheath allowing the free passage of gases, for fast response measurement up to 750°C.

212446

Type	Mfrs. List No.	Order Code	Price Each
Insertion	Q-K (IEC)	708-1170 ●	
Surface, disc	A-K (IEC)	708-1182 ●	
Surface, coil	C-K (IEC)	708-1194 ●	
Air	L-K (IEC)	708-1200 ●	

Thermocouple Cables

General Data

Thermocouple Extension and Compensation Cable

Extension cable has a temperature v e.m.f. relationship to the appropriate standard over the complete temperature range. It can, therefore, be used for producing a thermocouple junction and for joining thermocouples to their measuring instruments. It is limited in temperature, only by the rating of its insulation.

Compensating cable is of different composition to extension cable but has a similar temperature v e.m.f. relationship over a limited range, and **should only be used for joining thermocouples to their measuring instruments**. It can only be used in a limited ambient temperature, generally not higher than 80°C.

Ordinary copper wires and connectors should never be used to join thermocouples to instruments-substantial errors can result. Use only thermocouples compensating or extension cable and thermocouple connectors.

Guide to wire and Cable Insulation

Insulation Material	Usable Temperature Range	Application Guide
PVC	-10°C to 105°C	Good general-purpose insulation for "light" environments. Waterproof and very flexible.
PTFE	-75°C to 250/300°C	Resistant to oils, acids, other adverse agents and fluids. Good mechanical strength and flexibility.
Glass-fibre (varnished)	-60°C to 350/400°C	Good temperature range but will not prevent ingress of fluids. Fairly flexible but does not provide good mechanical protection.
Glass-fibre (varnished) stainless steel overbraid	-60°C to 350/400°C	Good resistance to physical disturbance and high temperature (up to 400°C). Will not prevent ingress of fluids.

Single or Multi-Strand?

The choice is mainly determined by the application (e.g. termination considerations and internal diameter of associated sheath). Generally, single-strand wires are used for thermocouple junctions and multi-strand or thicker single-strand for extensions of the thermocouple. The greater the effective conductor diameter, the lower the value of thermocouple loop resistance, an important consideration with long cable runs.

Source: LABFACILITY TEMPERATURE HANDBOOK- Order Code 656-069.

Thermocouple Cables Type J & K

PVC Flat Pair



Un-screened Type J



229884

Description	Mfrs. List No.	Order Code	Price Each
Unscreened 7/0.2 100m			
Type K	WK-150	859-8460	
Type J	WJ-200	859-8479	
Screened Extension Cable, 7/0.2			
Type K, 100m	WK-359	859-8487	
Type J, 100m	WJ-241	859-8495	

Extension Cable and Compensating Cable, PVC

Types J, K, T, N, R/S and Vx



Colour coded to BS4937 Part 30:1993.



386260

Extension Cable

Extension cable suitable for thermocouples. The cable is 7/0.2 twin flat with PVC covered conductors with an overall sheath of PVC. The cable is ideally suited for extending thermocouples away from the heat source via the connectors listed below.

Compensating Cable (Type K)

The Vx cable is type K compensating at ambient temperatures up to 80°C.

Mfrs. List No.	WJ-200/10M (IEC)	= 708-2289	WV-100/25M (IEC)	= 708-2370
	WJ-200/50M (IEC)	= 708-2290	WJ-200/10M (IEC)	= 708-2289
	WK-150/10M (IEC)	= 708-2307	WT-009/50M (IEC)	= 708-2368
	WK-150/50M (IEC)	= 708-2319	WV-009/100M (IEC)	= 708-2400
	WN-001/10M (IEC)	= 708-2320	WU-100/100M (IEC)	= 708-2423
	WT-200/50M (IEC)	= 708-2344		

212427

Extension Cable	Order Code	Price Each
Type J, 7 / 0.2mm 10m	708-2289	
Type J, 7 / 0.2mm 50m	708-2290	
Type K, 7 / 0.2mm 10m	708-2307	
Type K, 7 / 0.2mm 50m	708-2319	
Type N, 7 / 0.2mm 10m	708-2320	
Type T, 7 / 0.2mm 50m	708-2344	
Type T, 13 / 0.2mm 50m	708-2368	
Compensating Cable		
Type Vx (K), 7 / 0.2mm 25m	708-2370	
Type Vx (K), 13 / 0.2mm 100m	708-2400	
Type RC/SC, 13 / 0.2mm 100m	708-2423	

Extension Cable, Glass Fibre Insulated

Types J, K and T



- Suitable for high ambient temperature applications
- Each conductor insulated with silicon varnish-impregnated fibre glass
- Overall fibre glass sheath impregnated with silicon varnish

Wire diameter	Type J 1 / 0.315mm	Type K 1 / 0.315mm
Overall diameter	1.5mm	1.5mm
Max continuous temperature	350°C	350°C
Positive conductor	Iron	Nickel chromium
Negative conductor	Constantan	Nickel chromium



	Mfrs. List No.	Order Code	Price Each
Type J, 10m coil	WJ-032/10M (IEC)	708-5928	
Type K, 10m coil	WK-041/10M (IEC)	708-5930	
Type K, 50m reel	WK-041/50M (IEC)	708-5941	
Type T, 10m coil	WT-056/10M (IEC)	708-5953	

Thermocouple wire, PTFE TW-TW



- PTFE insulated, twin-twist construction
- 1/0.2mm diameter conductor
- Thermocouple types J, K, T
- High accuracy Class 1 tolerance
- Insulation rating -75°C to +250°C
- Supplied on 25m, 50m or 100m reels



212438

Thermocouple Type	Order Code	Price Each
Type J x 25M Reel	335-8150	
Type K x 25M Reel	335-8161	
Type K x 50M Reel	NEW 163-3495	
Type K x 100M Reel	NEW 163-3497	
Type T x 25M Reel	335-8173	
Type T x 50M Reel	NEW 163-3498	
Type T x 100M Reel	NEW 163-3499	

231796

Self-adhesive Attachment Pads



- Self-adhesive PTFE coated glass cloth
- Each pad has pre-cut hole through which thermocouple junction is passed and held down in contact with surface to be measured
- Temperature range -50°C to +250°C
- Supplied in pack of 20



Pad (nom.) = 18x13

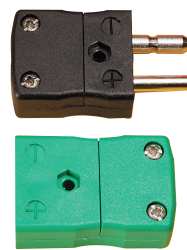
Self-adhesive pads for locating welded tip thermocouples.

212325

20 Per Pack	Order Code	Price Per Pack
Mfrs. List No.		
THERMOPADS (X20)	721-8849	

Thermocouple Connectors and Accessories

Connectors - Standard Types J, K, R/S, T and Copper



- A range of standard sized connectors with round pins to suit the thermocouple type being used
- Intended for use in more industrial applications
- All contacts are polarised to ensure correct connection
- Maximum continuous operating temperature 220°C
- Cable clamps available for securing cable to free plugs and sockets
- Colour coded to BS4937 Part30:1993



212475

Line Plug	Order Code	Price Each
Type J	148-823	
Type K	708-7925	
Type T	381-0215	
Type R	708-7950	
Line Socket		
Type J	148-824	
Type K	708-7937	
Type T	381-0240	
Type R	708-7962	

Thermocouple Connectors Standard Line Pairs



- Polarised to ensure correct connection
- 220°C continuous rating



Thermocouple Connectors and Accessories - continued

Thermocouple Connectors - continued

Standard Line Pairs - continued

Description	Mfrs. List No.	Order Code	Price Each
Type J	IS-J-M/F	859-8363	386256
Type K	IS-K-M/F	859-8371	

Thermocouple Connectors

Miniature Sockets



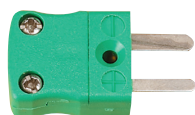
High quality, low cost, single sprung sockets which accept all types of flat pin miniature plugs

- Polarised to ensure correct connection
- 220°C continuous rating

Description	Mfrs. List No.	Order Code	Price Each
Type J	IM-J-LCF	859-8274	386246
Type K	IM-K-LCF	859-8282	

Connectors, Miniature

Types, J, K, N, T and Copper

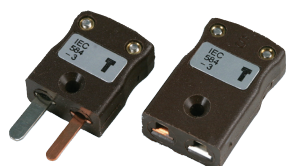


- Range of miniature thermocouple connectors with flat pins having terminal and contact material to suit the thermocouple type
- Uncompensated copper connectors also available (colour white)
- All contacts are polarised to ensure correct connection
- Connectors will accept thermocouple cable up to 3mm diameter
- Maximum operating temperature 220°C
- Cable clamps available for securing cable to free plugs and sockets

	Order Code	Price Each
Line Plug		
Type J	151-128	
Type K	708-6362	
Type N	708-6430	
Type T	708-6404	
Copper	721-8874	
Line Socket		
Type N	708-6428	
Copper	721-8862	

Thermocouple Connectors

Miniature Line Pairs

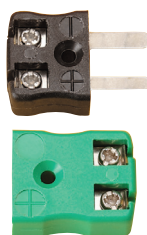


- Single sprung contact socket
- Polarised to ensure correct connection
- 220°C continuous rating
- Interchangeable with all types of flat pin miniature connectors

Description	Mfrs. List No.	Order Code	Price Each
Type T	IM-T-M/LCF	859-8320	386254/406073
Type J	IM-J-M/LCF	859-8339	
Type K	IM-K-M/LCF	859-8347	

Connectors, Miniature, Quick Wire

Types J and K



- These quick connect versions allow rapid termination
- Quick, easy 'jab-in' connection just push in wire and tighten screw
- Wide range of wire sizes
- 220°C continuous rating
- IEC colour coded bodies to BS4937 Part 30:1993

	Order Code	Price Each
Quick Wire Plug		
Type J	381-0380	
Type K	381-0392	
Type N	381-0409	
Type T	381-0410	
Copper	381-0422	
Quick Wire Socket		
Type J	381-0434	
Type K	381-0446	
Type N	381-0458	
Type T	381-0460	
Copper	381-0471	

Connectors, Panel, Clip Mount

Types J, K, N, T, R and Copper



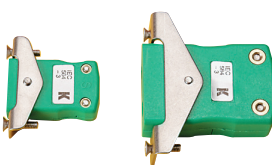
- Quick, simple fixing to panel
- Rated for use up to 220°C

Dimensions:
Miniature:- H = 23.30, W = 14.25, D = 21.50
Standard:- H = 38.10, W = 18.50, D = 31.50

	Order Code	Price Each
Miniature		
Type J	151-130	
Type K	708-6386	
Type N	708-6441	
Type T	708-6416	
Copper	721-8886	
Standard		
Type J	148-825	
Type K	708-7949	
Type T	381-0495	
Type R	708-7974	

Connectors, Panel, Stainless Steel Bracket

Types K, N and T



- These miniature sockets supplied with stainless steel brackets allow reliable fitting into panels
- Quick, simple fixing to connector
- Allows continuous use at 220°C
- Rugged fitting into panel

	Order Code	Price Each
Miniature		
Type K	381-0525	
Standard		
Type K	381-0574	

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Connectors, Miniature, PCB Type K



- Versatile, high quality, circuit board mounting miniature socket
- Specially designed for PCB's
- High reliability interconnection for high duty use
- Solid pins for direct PCB mounting
- Provision for CJC sensor
- 220°C continuous rating
- Colour coded to **BS4937 Part 30:1993**

231280

Price Each

Order Code	Price Each
Type K 381-0628	

Connector Blocks



- Blocks can be interlocked to produce required number of channels (max 5) and allowing thermocouple types to be mixed
- Each block has 2 fixing holes

Connecting blocks with single pair of positive and negative contacts of thermocouple material.

Block L = 36, W = 30, H = 13

Max. working temperature 220°C
Wire size for crimp terminals 0.5 to 1mm (0.2 to 0.8mm²), 25-19 SWG

212323

Price Each

Connector Block	Order Code	Price Each
Type J 721-8783		
Type K 721-8795		

Compression Glands Brass - BSPT Thread



- Brass compression glands suitable for fitting temperature sensor probes of various diameters
- Available in 1/8", 1/4" and 1/2" BSPT Thread sizes
- Suitable for probe diameters of 1.5, 3, 4.5 and 6mm

519811

Price Each

Bore Dia.	Mfrs. List No.	Order Code	Price Each
1/8" BSPT Thread size			
1.5mm	FC-001	708-8206	
3mm	FC-002	708-8218	
4.5mm	FC-005	163-3403	
6mm	FC-011	708-8220	
1/4" BSPT Thread size			
3mm	FC-029	163-3404	
4.5mm	FC-032	163-3406	
6mm	FC-037	163-3407	
1/2" BSPT Thread size			
6mm	FC-092	163-3408	

Thermopocket Stainless Steel



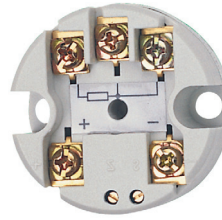
- Process connection 1/2" BSPP
- 1/8" BSPP sensor connection
- Outside diameter 7/16"
- Wall thickness 0.08"
- Sensor probe should be 50mm longer than pocket stem

519851

Price Each

Pocket Length	Mfrs. List No.	Order Code	Price Each
100mm	TP-100-X	673-961	
150mm	TP-150-X	163-3426	
250mm	TP-250-X	673-973	
350mm	TP-350-X	708-8279	
550mm	TP-550-X	163-3427	

PT100 or Thermocouple to 4-20mA



- Two transmitters, one PT100 input, one J, K or T thermocouple input (user selectable)
- Both have 4-20mA output
- Din sized for in head installation
- Screw terminals for inputs and outputs
- Corrosion resist plastic case
- 0.2°C accuracy
- Tested to **EN55011, IEC 801-2, 3, 4** for EMC compatibility

H = 23.0, Dia. = 41.8
2 Mounting holes dia. 5.5 @ 33 ctrs.
Centre hole (sensor wire entry) Dia. = 4.0mm

Output 4-20mA loop powered max. 30mA
Loop supply 10 to 30 Vdc reverse polarity protection
Loop resistance 700Ω @ 24V
Loop sensitivity 10μA/volt
Temperature stability Zero drift typ. 0.02%/°C, Span typ. 0.005%/°C
Ambient temperature 0 to 70°C, (95% humidity, max. non-condensing)

Input	PT100 Version	Thermocouple Versions (J, K, T)
Accuracy	to DIN 43760 100R @ 0°C (2 or 3 wire) ±0.2°C and +0.2% rdg.	Insulated junction J K or T sensor ±0.1% FS and cold junction errors ±100°C, solder link & potentiometer 100 to 1000°C >1MΩ
Offset adjustment	range dependant	
Gain/adjustment	25°C to 500°C	
Impedance		
Burn out	Up scale standard (downscale option)	
Cold junction	Automation 0 to 70°C ±0.2%	
Temperature range	-30°C to +400°C	J=0 to +400°C, K=0 to +1000°C, T=0 to +400°C

229914

Price Each

Sensor Type	Mfrs. List No.	Order Code	Price Each
PT100	SEM104PT100	615-675	
Thermocouple	SEM104TC	615-687	

Temperature Transmitters Push Button Calibration



A simple push button operation selects the range and calibrates the SEM203 4 - 20mA temperature transmitter, eliminating the need for soldering links, potentiometers or PC's. The devices connect to an appropriate sensor and convert the output to a linear 4 - 20mA output signal. The SEM203 is linearised to comply with all common RTD sensor standards, all common thermocouple types and up to 10kR potentiometers.

- Push button calibration
- Re-rangeable without a PC
- Drift free linearisation
- LED over-range indication

H = 21, Dia. = 43mm

Specifications

Approvals EMC Emissions to BS EN 61326
Operating temperature -20 to 80°C
Lead Length (Max.) 3m
Accuracy ±0.01% full scale
Loop Drop <4.0V @ 20 mA

Input - Sensor & Range	Order Code	Price Each
8840172 Pt100 - -200 to +850°C	8840180	
	K - 200 to 1370°C	
	J - 200 to 1200°C	
	T - 200 to 400°C	

Default Range <4.0V @ 20 mA
Input ±0.01% full scale
Default Range <4.0V @ 20 mA

386395

Input	Mfrs. List No.	Order Code	Price Each
3 wire, PT100	SEM203/P	884-0172	
K, J or T (Selectable)	SEM203/TC	884-0180	

Platinum Resistance Sensors

Platinum Resistance Thermometry

The platinum sensing resistor, Pt100 to **IEC 751**, is dominant in Europe and in many other parts of the world. Its advantages include chemical stability, relative ease of manufacture, the availability of wire in a highly pure form and excellent reproducibility of its electrical characteristic. The result is a truly interchangeable sensing resistor which is widely commercially available at a reasonable cost.

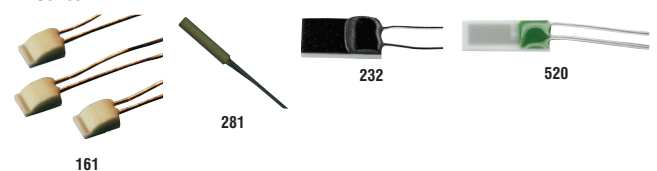
Source: LABFACILITY TEMPERATURE HANDBOOK - Part No. 656-069

224663

Platinum Thin Film Sensors



PT Series



Platinum Resistance Sensors - continued

Platinum Thin Film Sensors - continued

PT Series - continued

W	Dimensions (mm)		Lead Length	Case Style
	H	D		
1.2	1.6	0.65	10mm	161
2	2.3	0.65	10mm	232
2.8 Dia.	13 Body Length		7mm	281
2	5	0.65	10mm	520
1.5	3	0.65	N/A	1206
1.2	2	0.65	N/A	0805

Measuring Range	Resistance	Operating Temperature	Mfrs. List No.	Order Code
PT100 Series				
Up to 600°C	100Ω	-200 to 600°C	POK1.161.6W.B.010	126-6922
Up to 600°C	100Ω	-200 to 600°C	POK1.161.6W.A.010	126-6923
Up to 600°C	100Ω	-200 to 600°C	POK1.161.6W.Y.010	126-6924
up to 150 °C/C	100Ω	-50°C to +150°C	POK1.161.1E.B.200	177-8047
Up to 600°C	100Ω	-200 to 600°C	POK1.232.6W.B.010	126-6926
Up to 600°C	100Ω	-200 to 600°C	POK1.232.6W.A.010	126-6927
Up to 600°C	100Ω	-200 to 600°C	POK1.232.6W.Y.010	126-6928
Up to 200 °C/C	100Ω	-50°C to +200°C	POK1.232.2I.B.1000-3	177-8048
Up to 600 °C/C	100Ω	-200°C to +600°C	POK1.281.6W.B.007	177-8045
Up to 200 °C/C	100Ω	-50°C to +200°C	POK1.281.2K.B.150.R.S	177-8046
Up to 600°C	100Ω	-200 to 600°C	POK1.520.6W.B.010	126-6929
Up to 600°C	100Ω	-200 to 600°C	POK1.520.6W.A.010	126-6930
Up to 600°C	100Ω	-200 to 600°C	POK1.520.6W.Y.010	126-6931
Up to 200°C	100Ω	-200 to 200°C	POK1.1206.2P.B	126-6932
Up to 200°C	100Ω	-200 to 200°C	POK1.1206.2P.A	126-6933
Up to 200°C	100Ω	-200 to 200°C	POK1.0805.2P.B	126-6934
Up to 200°C	100Ω	-200 to 200°C	POK1.0805.2P.A	126-6935
PT1000 Series				
Up to 600°C	1000Ω	-200 to 600°C	P1K0.161.6W.B.010	126-6936
Up to 600°C	1000Ω	-200 to 600°C	P1K0.161.6W.A.010	126-6938
Up to 600°C	1000Ω	-200 to 600°C	P1K0.161.6W.Y.010	126-6939
Up to 600°C	1000Ω	-200 to 600°C	P1K0.232.6W.B.010	126-6940
Up to 600°C	1000Ω	-200 to 600°C	P1K0.232.6W.A.010	126-6941
Up to 600°C	1000Ω	-200 to 600°C	P1K0.232.6W.Y.010	126-6942
Up to 600°C	1000Ω	-200 to 600°C	P1K0.520.6W.B.010	126-6943
Up to 600°C	1000Ω	-200 to 600°C	P1K0.520.6W.A.010	126-6944
Up to 600°C	1000Ω	-200 to 600°C	P1K0.520.6W.Y.010	126-6945
Up to 200°C	1000Ω	-200 to 200°C	P1K0.1206.2P.B	126-6946
-200 to 200°C/C	1000Ω	-200 to 200°C	P1K0.1206.2P.A	126-6947
Up to 200°C	1000Ω	to	P1K0.0805.2P.B	126-6948
Up to 200°C	1000Ω	-200 to 200°C	P1K0.0805.2P.A	126-6949

Mfrs. List No.	Order Code	Price Each
PT100 Series		
POK1.161.6W.B.010	126-6922	
POK1.161.6W.A.010	126-6923	
POK1.161.6W.Y.010	126-6924	
POK1.161.1E.B.200	NEW 177-8047	
POK1.232.6W.B.010	126-6926	
POK1.232.6W.A.010	126-6927	
POK1.232.6W.Y.010	126-6928	
POK1.232.2I.B.1000-3	NEW 177-8048	
POK1.281.6W.B.007	NEW 177-8045	
POK1.281.2K.B.150.R.S	NEW 177-8046	
POK1.520.6W.B.010	126-6929	
POK1.520.6W.A.010	126-6930	
POK1.520.6W.Y.010	126-6931	
POK1.1206.2P.B	SMD 126-6932	
POK1.1206.2P.A	SMD 126-6933	
POK1.0805.2P.B	SMD 126-6934	
POK1.0805.2P.A	SMD 126-6935	
PT1000 Series		
P1K0.161.6W.B.010	126-6936	
P1K0.161.6W.A.010	126-6938	
P1K0.161.6W.Y.010	126-6939	
P1K0.232.6W.B.010	126-6940	
P1K0.232.6W.A.010	126-6941	
P1K0.232.6W.Y.010	126-6942	
P1K0.520.6W.B.010	126-6943	
P1K0.520.6W.A.010	126-6944	
P1K0.520.6W.Y.010	126-6945	
P1K0.1206.2P.B	SMD 126-6946	
P1K0.1206.2P.A	SMD 126-6947	
P1K0.0805.2P.B	SMD 126-6948	
P1K0.0805.2P.A	SMD 126-6949	

REACH - SVHCs



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PT100 Elements



L=25, Dia=2.8, Lead L=8.0

L=25.4, W=3.2, Thickness=0.8, Lead L=8.0

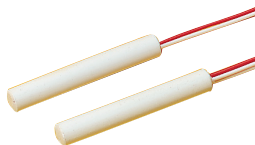
- Meets requirements of **BS1904 Class B** and **DIN43760**
- Suitable for air and gas temperature measurement
- Cylindrical wire-wound element also particularly suitable for use within protective stainless steel tubular sheath
- Flat element features thick film technology giving particularly good vibration resistance and long term stability

	Cylindrical (541-102)	Thin-film (721-8850)
Temperature range	-200°C to +800°C	-50°C to +500°C
Ice point resistance	100±0.12Ω	100±0.12Ω
Fundamental interval (0°C to 100°C)	38.5Ω (nominal)	38.5Ω (nominal)
Self heating	<.003°C/mW	Use <2mA excitation
Thermal response	0.4s	0.3s
Stability	±0.05%	±0.06%
Mfrs. List Nos.	P100/2528 = 541-102, DM503 (5) = 721-8850	

FOR SUITABLE EXTENSION CABLE (SILVER PLATED COPPER CONDUCTOR), SEE **ORDER CODE 277-095**

Order Code	Price Each
Cylindrical element	541-102
Price Per Pack	
Thin film element (Pack of 5)	721-8850

PT100 Elements with Extension Wires



High quality PT100 sensing resistor of wire-wound construction fitted with extension wires for convenient application.

- PT100 sensing element to **IEC 751 Class B**
- PTFE insulated stranded tails, 2 or 4 wire configuration
- For use from -60°C to +250°C

725-5731: L=35, Dia.=5, 2 leads L=50

725-5743: L=35, Dia.=5, 4 leads L=450

Mfr. List No.	Order Code	Price Each
2-wire 010011TD	725-5731	
4-wire 010010TD	725-5743	

Pt100 & Pt1000 Elements



Thin Film (100 Ohms)



- Pt100 & Pt1000 elements to **IEC 751 Class A & B**
- Thin Film construction
- Suitable for surface & immersion applications where protected
- Operating temperature -70°C to +600°C
- Vibration resistant

Sensor Type Construction	Pt100 (100 Ohms @ 0°C)	Pt1000 (1000 Ohms @ 0°C)
Temperature Range	-50 to 550°	-50 to 550°
Ice point resistance	100 Ω	1000 Ω
Fundamental interval (0°C to 100°C)	38.5 Ω (nominal)	385 Ω (nominal)
Self heating	<.05°C/mW	<.5°C/mW
Thermal response	0.1s	0.1 s
Stability	± 0.05%	± 0.05%

386236/406078

Description	Mfrs. List No.	Order Code	Price Each
Pt100 Elements			
1.2 x 1.6mm, Class A	DM-314	128-9670	
1.2 x 1.6mm, Class B	DM-315	128-9671	
1.2 x 4.0mm, Class A	DM-312	128-9668	
1.2 x 4.0mm, Class B	DM-313	128-9669	
2 x 2.3mm, Class A	DM-303	128-9667	
2 x 2.3mm, Class B	DM-301	859-8541	
2 x 5.0mm, Class A	DM-508	128-9666	
2 x 10mm, Class A	DM-334	859-8525	
2 x 10mm, Class B	DM-333	859-8533	
Pt1000 Elements			
2 x 10mm, Class A	DM-310	859-8550	
2 x 10mm, Class B	DM-507	774-5655	
Pt100 PCB Surface Mount with Solder Pads			
1.6 x 3.2mm, Class B	DM-317	128-9672	

PT100 Patch Sensor



- PT100 sensor to **BS1904 Class B**, mounted on the reverse side of self-adhesive foil
- Rugged sensor encapsulated within a waterproof silicone rubber
- 4 wire connection
- PTFE insulated, twisted pair lead, 4 core, 7/0.2mm
- Temperature range -50 to 150°C
- High accuracy PT100 surface temperature measurement
- Good resistance to many oils and chemicals

L = 40
W = 13
Thickness = 5

212150

Price Each

Mfrs. List No.	Order Code
RTF4-2/NAH (2m lead)	254-678
RTF4-3 (3m lead)	163-3500

PT100 Probe



Probe L=117, Dia.=4, Overall length=146, Bush thread= " BSP, Lead L=1m

- Multi-purpose fast response 2-wire platinum resistance probe
- Manufactured from seamless stainless steel tube
- Tube is fitted with a 1/8" BSP compression fitting moveable over its entire length to allow flexibility in siting the probe
- Excellent stability and resistance to vibration and shock
- Sensor meets requirements of **BS1904 Class B**

Temperature range -70°C to +200°C Thermal response 1.2s typical
Ice point resistance 100±0.1Ω

212164

Price Each

Order Code
146-885

General Purpose Temperature Sensor



Pt 100



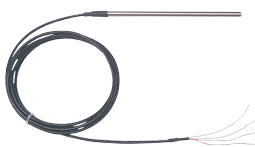
- Heavy duty, industrial probe
- Tough, silicone rubber insulated lead-out
- Class B, 4 wire
- 6mm diameter stainless steel rigid sheath
- 4 core 7/0.2mm silicone rubber insulated lead
- Sensor temperature range -50°C to +200°C

386232/406080

Price Each

Description	Mfrs. List No.	Order Code
50mm probe - 2m lead	DRG 010632A	859-8096
100mm probe - 2m lead	DRG 010632B	859-8100
50mm probe - 4m lead	DRG101632C	163-3501
100mm probe - 4m lead	DRG101632D	163-3502

PT100 Probe, PTFE Insulated



- Rigid, 6mm diameter, multi-purpose stainless steel probe
- Temperature measuring range up to 250°C
- Recommended where the superior accuracy of a PT100 sensor over a thermocouple is required
- Fitted with a PTFE lead
- Suitable for connection to any PT100 instrument - 2, 3 or 4 wire

Sensor PT100, 4 wire to **BS1904 (1984) Class B** and **DIN 43760** 100Ω @ 0°C
Temperature range -50°C to +250°C

FOR SUITABLE COMPRESSION GLAND, ORDER CODE 254-654

222144

Price Each

Dimensions		Mfrs.	Order Code
Probe Length	Probe Dia.	List No.	
1m Lead length			
150mm	6mm	PT46X150	560-170
250mm	6mm	PTE 6X250 (IEC)	708-8358
150mm	3mm	XF-314-FAR	410-0670
250mm	3mm	XF-315-FAR	410-0682
2m Lead length			
150mm	6mm	PT4 6 X150	163-3503
150mm	3mm	PT4 3 X150	163-3504
250mm	3mm	PT4 3 X250	163-3505

Industrial Probes with Terminal Head



- Strong 6mm diameter stainless steel stem
- Waterproof aluminium terminal head
- **IP67** protection
- Suitable for connection to any PT100 instrument - 2, 3 or 4 wire

The head of the probe contains a terminal block allowing connection to the measuring instrument via a M20 gland.

Sensor PT100, 4 wire to **BS1904 (1984) Class B** and **DIN 43760** 100Ω @ 0°C
Temperature head Die cast aluminium, epoxy coated, Screwed lid with retaining chain **IP67** rated
Temperature range -50°C to +450°C
Mfr. List Nos. PT4 6 x 150 = 560-157, PT4 6 x 300-KNE = 560-169
PT4 6 x 400 = 708-8449

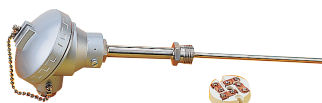
FOR SUITABLE COMPRESSION GLAND SEE ORDER CODE 254-654

222145

Price Each

Probe Length	Order Code
150mm	560-157
300mm	560-169
400mm	708-8449

Industrial Process Probes



- Accurate rugged construction
- Pt100 sensor to **IEC 751 Class B**
- Terminal head can accommodate DIN form transmitter or DIN terminal block
- Wide temperature range: -100°C to +450°C
- For use with 4, 3 or 2 wire instruments

Probes: Dia.=6, L=100, 150, 200
Mounting: 1/2" BSP male thread
Lagging extension: Dia.=12.7, L=75

- All stainless steel below aluminium head
- DIN terminal block is made of high temperature white plastic and has 4 terminals
- Suitable for many industrial applications
- **IP67** rated

This industrial Pt100 assembly is mounted into the process via 1/2" BSPP male thread below which the probe length is measured. Above the thread hexagon is a stainless steel lagging extension. The sensor has a fitted aluminium terminal head with a captive threaded cover.

FOR SUITABLE PT100 4 - 20MA TRANSMITTER, SEE ORDER CODE 615-675

222175

Price Each

Probe Length	Mfrs. List No.	Order Code
100mm	010007TD	725-5421
150mm	010008TD	725-5433
200mm	010009TD	725-5445
Terminal Block	HT-054	725-5457

Clean Room Pt100 Assembly



- Wall mounting Pt100 sensor, mounts on standard electrical conduit
- Pt100 to **IEC 751 Class B**
- Suitable for use with any 2, 3 or 4 wire instrument
- Flame retardant vented moulded case

H=85, W=85, D=30

212383

Price Each

Mfrs. List No.	Order Code
010014TD	725-5720

Thermal Switches

Bi-Metallic, Auto Reset



Style A
H=21 (overall), W=31, D=19
Fixing centres = 24 (holes M3)

Style B
H=16 (overall), W=30, D=17
Fixing centres=24 (hole dia 3.7)

- Automatically re-setting thermal switches with snap action bi-metallic SPST contacts
- Contacts are isolated from the mounting base
- Reset level is specified to within a close tolerance band
- All types are **UL** and **VDE** approved. Style A types also **CSA** approved
- Indication of switch temperature is given on base of switch

Normally closed (opening on temperature rise) and normally open (closing on temperature rise) types are available. All the switches reset when the temperature falls to the reset level. Connection is by 1/4" (6.3 x 0.8mm) terminals.

Thermal Switches - continued

Bi-Metallic, Auto Reset - continued

Contact rating (all types) 10A 250V ac, 15A 125Vac (100,000 cycles)
 Body material Phenolic (style A), Thermoplastic (style B)
 Base material Aluminium
 Mounting flange material Stainless steel (style A), aluminium (style B)

Normally Closed Types		Mfrs. List No.		Order Code
Opening Temp.	Reclosing Temp.	Style	List No.	
15°C ± 3°C	5°C ± 4°C	A	A 15 03EN 175	732-400
20°C ± 3°C	10°C ± 3°C	A	03EN15T044(20/10)	732-412
30°C ± 3°C	20°C ± 3°C	A	03EN15T044(30/20)	606-686
40°C ± 3°C	25°C ± 4°C	A	03EN15T044(40/25)	491-445
50°C ± 3°C	35°C ± 4°C	B	T23A050ASR2-15	100-6842
70°C ± 3°C	55°C ± 4°C	B	T23A070ASR2-15	100-6843
90°C ± 3°C	70°C ± 4°C	B	T23A090ASR2-20	100-6844
100°C ± 3°C	85°C ± 4°C	B	T23A100ASR2-15	100-6845
112°C ± 3°C	97°C ± 4°C	B	T23A112ASR2-15	100-6846
125°C ± 3°C	110°C ± 4°C	B	T23A125BSR2-15	100-6847
150°C ± 3°C	135°C ± 4°C	B	T23A150BSR2-15	100-6849
Normally Open Types		Mfrs. List No.		Order Code
Closing Temp.	Reopening Temp.	Style	List No.	
± 4°C	30°C ± 5°C	A	03EN35T044(20/30)	732-424
40 ± 3°C	°C ± 4°C	A	03EN35T044(25/40)	491-524
± 3°C	50°C ± 4°C	A	T23B050ASR2-15	100-6851
45 ± 3°C	°C ± 4°C	A	T23B060ASR2-15	100-6852
55 ± 3°C	°C ± 4°C	A	T23B070ASR2-15	100-6853
70 ± 3°C	°C ± 4°C	A	T23B090ASR2-20	100-6854

Price Each

Type	Order Code
Normally Closed Types	
15°C N/C	732-400
20°C N/C	732-412
30°C N/C	606-686
40°C N/C	491-445
50°C N/C	100-6842
70°C N/C	100-6843
90°C N/C	100-6844
100°C N/C	100-6845
112°C N/C	100-6846
125°C N/C	100-6847
150°C N/C	100-6849
Normally Open Types	
N/O	732-424
N/O	491-524
50 N/O	100-6851
45 N/O	100-6852
55 N/O	100-6853
70 N/O	100-6854

Bi-Metallic, Auto Reset, High Temperature

MICROTHERM



H=21 (overall), W=31, D=19
 Fixing centres = 24 (holes M3)

- Automatically re-setting thermal switches with snap-action bi-metallic SPST contacts
- Contacts are normally closed, and are isolated from the mounting base
- Range of switching temperatures from 170°C to 250°C
- Indication of switch temperature is given on base of switch

Contact rating (all types) 10A 250V ac, 15A 125Vac (100,000 cycles) (UL/CSA)
 Connections 6.3 x 0.8 (1/4") spade terminals

Opening Temp.	Reclosing Temp.	Body Material	Mfrs List No.	Order Code
170°C ± 5°C	140°C ± 10°C	Ryton	21EN15T044(170/150)	732-436
200°C ± 10°C	160°C ± 10°C	Ceramic	52N12T944(200/160)	732-450
225°C ± 10°C	175°C ± 10°C	Ceramic	52N12T044(225/175)	732-461
250°C ± 10°C	200°C ± 10°C	Ceramic	55H12T944(250/200)	732-473

Price Each

Type	Body	Order Code
170°C N/C	Ryton	732-436
200°C N/C	Ceramic	732-450
225°C N/C	Ceramic	732-461
250°C N/C	Ceramic	732-473

Bi-Metallic, Manual Reset

MICROTHERM



- Snap-action bi-metallic SPST contacts are isolated from the mounting base
- Horizontal tab connections allow easy access to reset pin
- UL Recognised and CSA approved

The switches are normally closed and open on temperature rise, then remain open until manually reset. Connection is by 6.3 x 0.8 (1/4") spade terminals.

Contact rating (UL, CSA) 10A 250Vac (10,000 cycles), 15A 120Vac (6,000 cycles)
 Contact material Silver alloy

Operating Temp.	Mfrs. List No.	Order Code	90°C ± 5°C	05EN1034(90/M)	732-552
45°C ± 4°C	05EN1034(45/M)	732-515	100°C ± 4°C	05EN1034(100/M)	732-564
55°C ± 4°C	05N1034(55/M)	732-527	115°C ± 5°C	05EN1034(115/M)	732-576
65°C ± 4°C	05EN1034(65/M)	732-539	130°C ± 5°C	05EN1034(130/M)	732-588
80°C ± 5°C	05EN1034(80/M)	732-540	150°C ± 5°C	05EN1034(150/M)	732-590

212352

Price Each

Order Code	Price Each
All Order Codes	

Solid State

MICROTHERM



Style B3 Style C3

Solid state MOXIE® thermal sensors are effectively NTC thermistors with a highly specific transition region. When heated, the sensor has a high resistance until the transition temperature is reached, at which temperature the resistance falls rapidly from about 100KΩ to about 100Ω for approximately a 10°C change. The reverse characteristic is followed on cooling, with little hysteresis.

Lead L = 12.7 Mounting tab style B3 L = 14, W = 6.5, H = 4.2
 Lead spacing = 2.54 Hole dia = 3.5 Mounting tab style C3 L = 5.5, W = 6.5, H = 14

- Very specific transition region
- High sensitivity and reliability
- Low noise and low shunt capacitance
- TO-18 housing with choice of mounting tab style

Transition Temp (centre)	Mfrs. List No.	C3 Mtg. Tab	B3 Mtg. Tab	Order Code	C3 Mtg. Tab
57°C	TS3-57-B3	TS3-57-C3	151-597	151-600	151-600
75°C	TS3-75-B3	TS3-75-C3	151-598	151-601	151-601
85°C	TS3-85-B3	TS3-85-C3	151-599	151-602	151-602

212188

Transition Temp.	Order Code	Price Each
B3 Mounting Tab		
57°C	151-597	
75°C	151-598	
85°C	151-599	
57°C	151-600	
75°C	151-601	
85°C	151-602	

Bi-Metallic Thermal Switch

MICROTHERM

Manual Reset - Normally Closed



- Snap-action bi-metallic strip operated switch
- SPST contacts - isolated from mounting base
- 1/4" Quick connect terminals with positive lock

The switches are normally closed and open on temperature rise, then remain open until manually reset. Connection is by 1/4" (6.3 x 0.8mm) Quick Connect terminals, which have a positive lock facility.

H = 27.6, W = 31 (across terminals), D = 36.5mm (across terminals),
 Dia. = 16.2, Fixing centres = 24.5 (hole dia. 3.2 x 3.7mm)

555053

Opening	Mfrs. List No.	Order Code	Price Each
45°C	23ENT234(45/M)	178-1398	
56°C	23ENT234(56/M)	178-1393	
67°C	23ENT234(67/M)	178-1394	
80°C	23ENT234(80/M)	178-1395	
90°C	23ENT234(90/M)	178-1401	
100°C	23ENT234(100/M)	178-1396	
112°C	23ENT234(112/M)	178-1399	
132°C	23ENT234(132/M)	178-1397	
150°C	23ENT234(150/M)	178-1400	

2455R Series Thermostats

Honeywell

B203S Mounting Bracket and T146 Terminals



- Open on rising temperature and close on falling temperature versions available
- Standard mounting bracket: B203S
- Horizontal T146 terminals
- Operating temperatures in 10°C steps
- Up to 15A and up to 250V ac
- Silver contact system

419439/436284

Temperature (°C)	Mfrs. List No.	Order Code	Price Each
Normally Closed - Open on rising temperature Contacts			
Opening Closing			
30	15	2455R-100-84	108-2187
40	25	2455R-100-72	108-2189
50	35	2455R-100-73	108-2191
60	45	2455R-100-85	108-2192
70	55	2455R-100-74	108-2193
80	65	2455R-100-75	108-2194

Price Each

Temperature (°C)	Mfrs. List No.	Order Code
Normally Closed - Open on rising temperature Contacts		
Opening Closing		
90	75	2455R-100-76 108-2195
100	80	2455R-100-77 108-2196
110	90	2455R-100-86 108-2197
120	98	2455R-100-98 108-2198
130	110	2455R-100-88 108-2199
140	115	2455R-100-89 108-2200
150	120	2455RC-9100-373 108-2201
Normally Open - Close on rising temperature Contacts		
Closing Opening		
50	35	2455R-100-78 108-2202
60	45	2455R-100-79 108-2203
80	65	2455R-100-92 108-2204
90	75	2455R-100-93 108-2205
100	80	2455R-100-94 108-2207
120	100	2455R-100-95 108-2208
140	115	2455R-100-96 108-2209

Bi-Metallic, TO-220



- Automatically resetting thermal switches with snap-action bi-metallic SPST contacts
- High temperature epoxy sealed TO-220 package
- Ideal for PC boards, direct mounting on heatsinks etc.
- UL recognised, CSA certified

H=30 (incl pins), W=10.2, D=4.6, Hole dia=3.6, Pin spacing=5.1

The switches are available as either normally closed (opening on temperature rise) or normally open (closing on temperature rise).

Contact rating: 1A @ 120V, 48V dc, (30,000 operations)
20mA (down to 1mA @ 5V dc (100,000 operations))

Contact material: Gold plated Silver cross bar

Normally Closed Types

Opening Temp. (±5°C)	Reclosing Temp. (min)	Differential (min)	Mfrs. List No.	Order Code
70°C	50°C	4°C	67L070	152-4711
80°C	55°C	6°C	67L080	152-4704
90°C	60°C	6°C	67L090	152-4705
100°C	70°C	6°C	67L100	152-4706
110°C	80°C	6°C	67L110	152-4712

Normally Open Types

Closing Temp. (±5°C)	Opening Temp. (min)	Differential (min)	Mfrs. List No.	Order Code
50°C	30°C	4°C	67F050	152-4708
70°C	50°C	4°C	67F070	152-4709
90°C	60°C	6°C	67F090	152-4710
110°C	80°C	6°C	67F110	152-4713

Example: A 152-4711 thermal switch will open (break contact) on a rising temperature between 65°C and 75°C and will reset (make contact) on a falling temperature no less than 4°C lower than the actual opening temperature and no lower than 50°C.

Price Each

Order Code
All Order Codes

Bi-Metallic, Insulated



Normally closed bi-metal thermal cut-outs fully insulated with an epoxy coating.

- Suitable for over-temperature protection and temperature control in a wide range of electrical and electronic equipment
- Approved to VDE, CSA, OVE, SEMKO and BEAB
- UL Recognised

H=14.0, W=10.0, D=6.0, Lead L=100

Voltage rating: 250V ac
Current rating: resistive 2.5A cos φ = 1.0, inductive 1.6A cos φ = 0.6
Sealing insulation: 160 type = polyolefine (blue), other types = textile/lacquer (yellow)

Temperature tolerance: ±5°C
Contact resistance: 40mΩ
Operating temperature: -30°C to +180°C

Mfrs. List No.	Order Code	Mfrs. List No.	Order Code
T11V 100 05U112L520100	= 152-227,	T11V 110 05U112L520100	= 152-228,
T11V 125 05U112L520100	= 152-229,	T11V 140 05U112L520100	= 152-230,
T11V 150 05U112L529100	= 606-728,	T11V 070 05U112L520100	= 732-606,
T11V 080 05U112L520100	= 732-618,	T11V 160 05U112L531100	= 732-620

Price Each

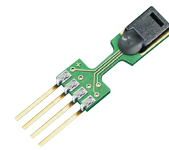
Opening Temperature	Order Code
70°C	732-606
80°C	732-618
100°C	152-227
110°C	152-228
125°C	152-229
140°C	152-230
150°C	606-728
160°C	732-620

Humidity and Temperature Sensors



Humidity and Temperature Sensor

SHT11, 15, 71 & 75

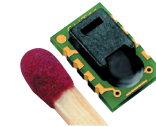


SHT 71/75

- Relative humidity & temperature
- Precise dew point calculation
- Individually calibrated
- Fully interchangeable, no re-calibration
- Ultra fast response time
- Excellent long term stability
- Pin-Type Package (pluggable)
- Thermally isolated
- For High-End applications

SHT 71 & 51

H = 3.1, W = 5.08, D = 19.5mm

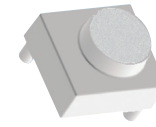


SHT 11/15

- Relative humidity & temperature
- Precise dew point calculation
- Fully calibrated
- Ultra fast response time
- Excellent long term stability
- Fully immersible
- Digital 2-wire interface
- Ultra small size
- Cost-effective

SHT 11 & 51

H = 3.1, W = 5.08, D = 7.62mm



SF1

- Low cost filter solution
- Provides IP67 protection for SHT11 & SHT15
- Facilitates mounting of SHT11 & SHT15
- 99.99% filtration efficiency @ 0.05 m/s air velocity
- Response time of 30s in slow moving air

SF1

H = 8.2, W = 9.38, D = 10.12mm

Relative Humidity (RH)

Range: 0 to 100 % RH
Accuracy: ±3.5 % RH (SHT11 / 71), ±2% RH (SHT15 / 75)
Response time: ≤4 sec.
Reproducibility: ±0.1 % RH
Resolution: 0.03 % RH

Temperature (T)

Range: -40 to 120 °C
Accuracy: ±0.5 °C @ 25°C
Reproducibility: ±0.1 °C
Resolution: 0.01 °C
Operating temperature: -40°C to 120°C

Electrical Data

Power consumption: Typ. 30 μW (@ 5V, 12-bit, measure every 2 sec.)
Typ. 1 μW (@ 2.4V, 8-bit, measure every 2 min.)

Supply voltage range

Input current: 0.5 mA
During measurement: 0.5 mA
In standby: ≤0.3 μA

Type

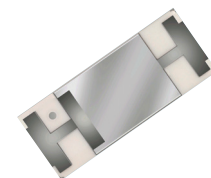
Type	Mfrs. List No.	Order Code
SMT. Standard	SHT11	159-0511
SMT. High accuracy	SHT15	159-0512
4-pin single-in-line. Standard	SHT71	159-0513
4-pin single-in-line. High accuracy	SHT75	159-0514

Price Each

Mfrs. List No.	Order Code
SHT11	SMD159-0511
SHT15	SMD159-0512
SHT71	159-0513
SHT75	159-0514
Filter Cap	
SF1	139-9624

Capacitive Humidity Sensor

P14 Series



- Excellent long term stability
- Dewing resistant
- Fast recovery after dewing
- Very high dewpoint temperatures
- High resistance to various chemicals
- Wide temperature operating range

Humidity - H = 0.4, W = 6.35, D = 2.54mm
Humidity & Temp. - H = 0.4, W = 4, D = 2mm

	177-8041	177-8042	177-8044
Temperature Sensor			Pt1000 Ω DIN Kl. B
Humidity operating range	0 to 100% RH	0 to 100% RH	0 to 100% RH
Operating Temp. range	-50 to +150 °C	-50 to +150 °C	-50 to +150 °C
Capacity	180pF ± 50pF	180 ± 50pF	180 ± 50pF
Sensitivity	0.3 pF / % RH	0.3 pF / % RH	0.3 pF / % RH
Loss Factor	< 0.10	< 0.10	< 0.10
Accuracy	< 1.5 %RH	< 1.5 %RH	< ±1.5 %RH
Hysteresis	< 1.5 %RH	< 1.5 %RH	< 1.5 %RH
Response time	< 5 sec	< 3 sec	3 s
Frequency range	1 to 100 kHz	1 to 100 kHz	1 to 100 kHz
Operating Voltage (Max.)	< 12 V _{pp} AC	< 12 V _{pp} AC	< 12 V _{pp} AC

Humidity and Temperature Sensors - continued

Capacitive Humidity Sensor - continued

P14 Series - continued

Sensor Type	Mfrs. List No.	Order Code	Price Each
Humidity	P14 SMD-G	177-8041	553001
Humidity	P14 FEMTOCAP-G	177-8042	
Humidity and Temperature	P14 FEMTO-THERMO-G	177-8044	

Humidity and Temperature Sensor Evaluation Kit EK-H2

SENSIRION
THE SENSOR COMPANY



Sensirion
Supplied with European power supply only

The EK-H2 evaluation kit offers a plug-and-play environment to demonstrate the unique features of all Sensirion humidity and temperature sensors. It can easily be adapted to your specific application and therefore provides an outstanding development and demonstration tool for your future product, enabling fast prototyping.

- Including:
- 2 x SHT11, 2 x SHT15 & 2 x SHT7 humidity sensors (incl. connecting cables)
 - Serial interface cable (9-pole)
 - Power supply 230 VAC/ 9 VDC for board
 - Microprocessor and display board ASD11
 - Humi Viewer (visualization) software on CD ROM documentation
 - Packed in a handy box

For Technical Humidity Sensor Data see Order Codes 159-0511, 159-0512, 159-0513 & 159-0514

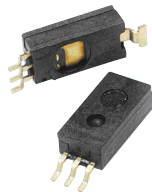
	Order Code	Price Each
Evaluation Kit V2.1	120-7219	234885

Humidity Sensors

Low Voltage Humidity Sensors

Honeywell

HIH-5030/5031 Series - SMD



- Molded thermoset plastic housing
- Near linear voltage output vs %RH
- Laser trimmed interchangeability
- Low power design
- Enhanced accuracy
- Fast response time
- Stable, low drift performance
- Chemically resistant

H = 8.59, W = 4.17, D = 2.67mm

The HIH-5030/5031 Series Low Voltage Humidity Sensors operate down to 2.7V dc, often ideal in battery-powered systems where the supply is a nominal 3V dc. Direct input to a controller or other device is made possible by this sensor's near linear voltage output. With a typical current draw of only 200 µA, the HIH-5030/5031 Series is ideally suited for many low drain, battery operated systems. The HIH-5030/5031 Series delivers instrumentation-quality RH (Relative Humidity) sensing performance in a solderable SMD package. The HIH-5030 is a covered integrated circuit humidity sensor. The HIH-5031 is a covered, condensation-resistant, integrated circuit humidity sensor that is factory-fitted with a hydrophobic filter allowing it to be used in many condensing environments including industrial, medical and commercial applications. The RH sensor uses a laser trimmed, thermoset polymer capacitive sensing element with on-chip integrated signal conditioning. The sensing element's multilayer construction provides excellent resistance to most application hazards such as condensation, dust, dirt, oils and common environmental chemicals.

Description	Mfrs. List No.	Order Code	Price Each
Covered IC	HIH-5030-001	178-4720	610251
Covered IC with Filter	HIH-5031-001	178-4721	

Spotted an error?

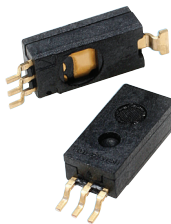


Now you can update our product information online. Simply search for the order code at www.element14.com and look for this logo to notify us of an error.

Humidity Sensor - SMD

Analog voltage output

Honeywell



- Low voltage supply requirements
- Near linear voltage output
- Fast response time
- Moulded thermoset plastic housing
- Stable, low drift performance
- Chemically resistant
- HIH-4031 is fitted with a hydrophobic filter allowing it to be used in condensing environments

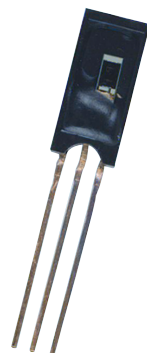
H = 2.67, W = 8.59, D = 4.17mm

Supply Voltage	4 to 5.8V DC
Supply Current	200µA
Response time	5s
Operating Temperature	-40 to 85°C

Mfrs. List No.	Order Code	Price Each
HIH-4031-001	SMD 156-6263	505703

HIH-4000 Series Humidity Sensors

Honeywell



- Moulded thermoset plastic housing with cover
- Linear voltage output vs %RH
- Laser trimmed interchangeability
- Low power design
- High accuracy
- Fast response time
- Stable, low drift performance
- Chemically resistant
- Typical applications: refrigeration, drying, meteorology and OEM assemblies

Package Style	Solderable SIP
RH Accuracy	3.5 %
RH Interchangeability	±5% RH, 0-60% ±8% @ 60-100% RH Typ.
RH Hysteresis	3% of RH Span Maximum
RH Repeatability	0.5% RH
RH Response Time, 1/e	15 s in slow moving air @ 25°C
RH Stability	± 0.2% RH Typical @ 50% RH in 1 Year
Supply Voltage	4.0 to 5.8V DC
Supply Current	500µA Max.
Operating Humidity Range	0 to 100% RH, non-condensing
Operating Temperature Range	-40 to 85°C

Lead Pitch	Mfrs. List No.	Order Code	Price Each
2.54mm	HIH-4000-001	118-7547	447994
1.27mm	HIH-4000-002	118-7548	

Humidity Sensor - SIP

Analog voltage output

Honeywell



- Polymer sensing for enhanced resistance to contamination
- Reduced temperature dependence
- Low hysteresis
- Enhanced sensitivity and response
- Long term stability
- High operating temperature

Uncased - H = 7, W = 5, D = 0.65mm
Cased - H = 10.18, W = 6.52, D = 2.96mm

The HCH-1000 Series humidity sensor is a capacitive polymer sensor designed for relative humidity measurement. The sensor converts humidity value into capacitance, which can be measured electronically. Polyimide is used as a humidity sensing material in these devices because of its inherent IC processing compatibility, reduced temperature dependence and resistance to contamination. The sensor consists of a grid top electrode, a polyimide layer and a bottom electrode. This construction provides enhanced sensitivity when compared to the standard structure. Two versions are available, a cased version for enhanced dust protection and an un-cased version.

Sensitivity	0.55 to 0.65 pF / %RH
Operating humidity range	0% to 100% RH
Response time	15s
Operating Temperature	-40 to 120°C

Case Style	Mfrs. List No.	Order Code	Price Each
Un-Cased	HCH-1000-001	156-6264	505708
Cased	HCH-1000-002	156-6265	

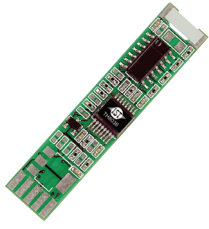
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www.element14.com

Analogue humidity module

LinPICCO™ basic series



- For accurate relative humidity measurement
- Low power consumption, current loop version supplied from current loop
- Temperature-compensated
- Rapid response
- Good linearity
- Drift-stable
- Low hysteresis
- Very small dimensions
- Mechanically robust

Sensor Type: P14 SMD
 Measurement principle: Capacitive humidity sensor
 Specification range: 15...85 % RH
 Accuracy: < 3 %F @ 23°C
 Humidity range: 0...99.9 % RH, non condensing
 Operating temperature range: -25...+85 °C
 Humidity measurement range: +85 °C
 Current consumption: < 3 mA
 Storage temperature range: -40...+100 °C @ max. 95 % RH, non condensing
 Dimensions: L=47.0 x W=10.0 x H=2.8 mm
 Terminal connectors: Soldering terminals for VCC, Analog Out, Loop-through of optional temperature sensor

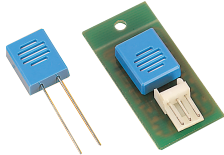
Type	Order Code	Output signal 0...100% RH	Input Voltage
LINPICCO (TM) BASIC A01	959-6100	0...1V	8...32V=
LINPICCO (TM) BASIC A05	959-6119	0...5V	8...32V=
LINPICCO (TM) BASIC A0545	959-6127	10...90% Vcc	4.5...5.5V
LINPICCO (TM) BASIC A420	959-6135	4...20mA	8...32 V

408198/436281

Price Each

Type	Order Code
LINPICCO (TM) BASIC A01	959-6100
LINPICCO (TM) BASIC A05	959-6119
LINPICCO (TM) BASIC A0545	959-6127
LINPICCO (TM) BASIC A420	959-6135

Resistive Sensor and Module, 20-100% RH Range



- Sensor measures up to 100% relative humidity
 - Can be used in conditions liable to dew condensation
 - Module is temperature compensated
 - Module is easy to install and connect.
- Sensor: H = 15, W = 12, D = 4.5, Leads = 24, Lead pitch = 5
 Module: L = 35, W = 20, H = 75 (above PCB), Mounting hole dia = 3.2

The module incorporates the 732-837 sensor to give a ready-to-use unit. Resistance of the sensor decreases with increasing RH. Output voltage of the module (1.5V to 3.1Vdc) corresponds linearly to RH (25 to 100%)

Sensor/Module	Module
Operating humidity range	25% to 100% RH
Operating temperature range	0°C to +50°C
Measurement accuracy	±5% RH
Working voltage	5.0 ±0.2Vdc
Storage temperature	-40°C to +85°C
Storage humidity	0 to 100% RH
Measurement range	25 to 100% RH
Current	2mA max.
Output voltage	1.5 to 3.1 V
Drive voltage, rated power	5Vac, 0.3mW
Measuring frequency	10 to 100% RH
Impedance (25°C, 50% RH)	K _Ω ±30K _Ω

212358

Price Each

Order Code
Module

Pressure Sensors

Honeywell

Pressure Sensors

24PC SMT Series



- Alignment pins for position accuracy
- Small package size
- 3.18mm diameter pick up feature for use in pick and place machines
- Max peak reflow temperature of 260°C
- True wet/wet differential sensing
- Proven elastomeric interconnections of the 20PC family
- Sensor consists of only five components
- Elastomeric construction
- Wide operating temperature range -40 to 85°C

Excitation Voltage: 10V DC Typ. Storage Temperature Range: -55 to 100°C
 Max. Excitation Voltage: 12V DC Vibration: 150g half sine 11ms
 Input Resistance: 5 k Ω Shock: Qualification tested to 150g
 Output Resistance: 5 k Ω Weight: 0.5g
 Operating Temperature Range: -40 to 85°C

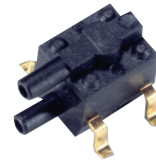
Pressure Range	Max. Overpressure	Mftrs. List No.	Order Code
0 to 1psi	20psi	24PC01SMT	122-5330
0 to 5psi	20psi	24PC05SMT	122-5331
0 to 15psi	45psi	24PC15SMT	122-5332

449821

Mftrs. List No.	Order Code	Price Each
24PC01SMT	122-5330	
24PC05SMT	122-5331	
24PC15SMT	122-5332	

Pressure Sensors

26PC SMT Series



- Alignment pins for position accuracy
- Small package size
- 3.18mm diameter pick up feature for use in pick and place machines
- Max peak reflow temperature of 260°C
- True wet/wet differential sensing
- Proven elastomeric interconnections of the 20PC family
- Temperature compensation
- End point calibration

- Sensor consists of only five components
- Elastomeric construction
- Wide operating temperature range -40 to 85°C

Excitation Voltage: 10V DC Typ. Storage Temperature Range: -55 to 100°C
 Max. Excitation Voltage: 16V DC Vibration: 150g half sine 11ms
 Input Resistance: 7.5 k Ω Shock: Qualification tested to 150g
 Output Resistance: 2.5 k Ω Weight: 0.5g
 Operating Temperature Range: -40 to 85°C

Pressure Range	Max. Overpressure	Mftrs. List No.	Order Code
0 to 1psi	20psi	26PC01SMT	122-5333

449825

Mftrs. List No.	Order Code	Price Each
26PC01SMT	122-5333	

Amplified Low Cost

Honeywell



A2 Package H=17 W=14 D=16.8
 D4 Package H=11.1 W=14 D=24.8
 D4 - ASDX Package. H=11.1, W=14, D=24.8
 D4 - ASDXL Package. H=17, W=14, D=16.9

- Miniature PCB mount dual in line package
- Temperature compensated
- Precision ASIC conditioning
- Amplified voltage output
- Single 5V supply
- Suitable for measuring Differential, Gauge and absolute pressures
- Differential devices allow pressure to either side of the sensing diaphragm and can be used for differential or gauge measurements

The ASDX/ASDXL are amplified versions of the industry leading SDX series. This family is fully calibrated and compensated using an on-board ASIC offering high level (4V span) output. Designed for use with non-corrosive, non ionic media e.g. air and dry gases.

Supply Voltage: 4.75 to 5.25V DC
 Output: 0.5 to 4.5V DC (Ratio metric within supply voltage range)
 Full Scale Output: 4.5 Vdc (±80 μ V-ASDX, ±100mV-ASDXL)
 Zero Pressure Output: 0.5 Vdc (±80 μ V-ASDX, ±100mV-ASDXL)

ASDX: 0.440-2.5V(±80 μ V), ASDXL: 0.440-2.5V(±100mV)
 ASDX \pm 2%, ASDXL \pm 2.5%
 Operating Temperature Accuracy: ASDX: -20°C to 105°C, ASDXL 0°C t +70°C
 Response Time: 8 ms
 Quantization Step: 3 mV
 Proof Pressure: ±5" H₂O = 180 "H₂O
 Proof Pressure: ±10" H₂O = 180 "H₂O
 Proof Pressure: 0 to 10" H₂O = 20psi
 Proof Pressure: 1 and 5 psi = 20psi
 Proof Pressure: 15 and 30psi = 2 x rated pressure
 Proof Pressure: 100psi = 1.5 x rated pressure

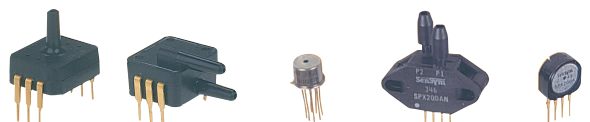
249419

Price Each

Operating Pressure	Mftrs. List No.	Order Code
Differential / Gauge		
0 to 5psid(g)	ASDX005D44R	419-7604
0 to 15psid(g)	ASDX015D44R	419-7616
0 to 30psid(g)	ASDX030D44R	419-7628
0 to 100psid(g)	ASDX100D44R	419-7630
0 to ± 1psid(g)	ASDX001D44D	419-7641
0 to ± 15psid(g)	ASDX015D44D	419-7653

Basic Sensors - SX Series

Honeywell



Pressure Sensors - continued

Basic Sensors - SX Series - continued

Single Port SX...AD2/SX...GD2 H= 13.84, W=13.97 D=11.94 Pressure Port O/D = 2.6 Pin Spacing = 15.24 x 2.54	Dual Port SX...DD4 H=9.65, W= 13.97 D= 11.94 Pressure Port O/D = 2.28	Sx...N Series H= 27.2, W=29.2, D = 10.2 Pressure ports O/D = 4.83 Fixing Centers = 22.9 Pin Spacing = 2.54
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- Easy pressure connection using plastic tubing
- DIP package for easy PCB mounting
- Standard differential types can be used for gauge or differential pressure measurements

Pressure sensors featuring only the basic shear stress IC pressure sensor element. The sensors are for use with non-corrosive and non-ionic media, eg. air, dry gases.

Reference conditions	Vs = 5V dc, TA = 25°C	Repeatability	0.5% FS typ
Supply voltage	12V dc max.	Output impedance	4.5kΩ
Linearity & hysteresis	0.2% FS typ., 0.5% FS max	Operating temp. range	-40°C to +85°C

Operating Pressure Range	Maximum Pressure	Full Scale Span (typ)	Operating Pressure Range	Maximum Pressure	Full Scale Span (typ)
0 to 1psig	20psi	20mV	0 to 100psig	150psi	150mV
0 to 5psig	20psi	75mV	0 to 150psid	200psi	150mV
0 to 15psia	30psi	110mV			

Operating Pressure	Mfrs. List No.	Order Code	Price Each
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Dip Package			
0 to 1psig	SX01GD2	674-229	
0 to 1psid	SX01DD4	674-230	
0 to 5psig	SX05GD2	674-242	
0 to 100psig	SX100GD2	674-308	

Standard Package			
0 to 1psid	SX01DN	414-773	
0 to 15psid	SX15DN	414-797	
0 to 30psid	SX30DN	414-803	
0 to 100psid	SX100DN	414-815	
0 to 150psid	SX150DN	414-827	

Basic Sensors - SCC Series

Temperature Compensated, Constant Current Drive

- Low cost pressure sensors offering a temperature stable output when driven with a constant current source
- Temperature coefficients for span and resistance effectively cancel each other out between 0°C and 50°C
- For use with non-corrosive and non-ionic media, eg. air, dry gases

The sensors are housed in the same DIP and standard packages as SX series (see above) and have the same pin connections.

Reference conditions	I _s = 1.0mA, T _A = 25°C
Supply current	1.5mA max
Linearity, hysteresis and repeatability	0.25% FS typ, 0.5% FS max
Output impedance	5kΩ typ.
Compensated temp. range	0°C to 50°C
Operating temp. range	-40°C to +85°C

Operating Pressure Range	Maximum Pressure	Full Scale Span
0 to 5psid	20psi	25 to 65mV
0 to 15psia	30psi	40 to 95mV
0 to 100psig (g)	150psi	85 to 225mV

Operating Pressure	Mfrs. List No.	Order Code	Price Each
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Dip Package			
0 to 15psia	SCC15AD2	674-310	
0 to 5psid	SCC05DD4	674-333	

Standard Package			
0 to 15psia	SCC15AN	179-275	
0 to 5psid (g)	SCC05DN	179-276	
0 to 100psig (g)	SCC100DN	179-279	

Temperature Compensated Sensors - SCX Series



- 1 Temp output +
- 2 VS
- 3 Output +
- 4 Ground
- 5 Output-
- 6 Temp output-

H=25.4, W=27.9, D=26.2,
Pressure ports O/D=4.83,
Fixing centres=21.6, Pin spacing=2.54

Reference V _s	12V dc
Reference Temp	25°C
Supply voltage, V _s	+30Vdc max.
Linearity & hysteresis	0.1% FS typ, 0.5% FS max (precision) 0.2% FS typ, 1% FS max (low cost)

This low cost range is designed for applications where the user can typically provide fine adjustment of zero and span in external circuitry.

- Very tight offset and full scale calibration
- Guaranteed temperature compensation to max 1% over a 70°C temperature range
- For non-corrosive, non-ionic fluids, eg. dry gases
- Rugged plastic package
- Differential types can be used for gauge or differential pressure measurement

Repeatability	0.2% FS typ, 0.5% FS max (precision)
Span shift with temp (0°C to 70°C)	0.2% FS typ, 1.0% FS max (precision)
Offset shift with temp (0°C to 70°C)	0.4% FS typ, 2.0% FS max (low cost) ±0.1mV typ, ±0.5mV max (precision) ±0.2mV typ, ±1.0mV max (low cost)
Output impedance	4kΩ typ
Operating temp range	-40°C to +85°C
Offset calibration	0 ± 0.3mV (precision), 0 ± 1.0mV max (low cost)

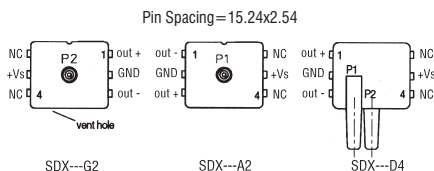
Pressure	Order Code	Price Each
0 to 15psia	414-839	
0 to 1psid	414-840	
0 to 15psid	414-852	
0 to 15psia	414-864	
0 to 1psid	414-888	
0 to 5psid	414-890	
0 to 15psid	414-906	
0 to 30psid	414-918	
0 to 100psid	414-920	
0 to 150psid	414-931	

Temperature Compensated Sensors **SenSym** Honeywell

DIP Package — SDX Series

Single Port
SDX A2 Series
SDX G2 Series
H=15.1, W=13.97,
D=11.94
Pressure port O/D=2.67

Dual Port
SDX D4 Series
H=9.65, W=13.97,
D=11.94
Pressure port O/D=2.28



The polarity indicated is for pressure applied to:

SDX---G2 : P2 (backward gage)
SDX---A2 : P1 (forward gage)
SDX---D4 : P2 (backward gage)

This family of compensated and calibrated sensors is the second generation of Honeywell SCX Series. Incorporating "constraint-wafer" technology the SDX Series provides:-

- Up to 5 times improvement of long term stability and repeatability
- Greater immunity to package stress
- Tight calibration of offset and span
- Temperature compensation of offset and span, giving an accurate and stable output over 0-50°C range
- New DIP package features standard IC dimensions and pin spacing for easy PCB mounting
- For use with non-corrosive, non-ionic media, eg. air and dry gases

Reference conditions	V _s = 12V, T _A = 25°C
Max. supply voltage	V _s = 20V
Linearity & hysteresis	±0.2% FS typ, ±1% FS max
Repeatability	±0.2% FS typ, ±0.5% FS max
Span shift with temp. (0°C to 50°C)	±0.4% FS typ, ±2% FS max
Offset shift with temp. (0°C to 50°C)	±0.2mV typ, ±1mV max
Output impedance	SDX = 4kΩ typ, SDXL = 6kΩ typ.
Operating temp. range	-40°C to +85°C
Offset calibration	0 ± 1mV
Common mode voltage	1.5V min, 3.0V typ, 5V max

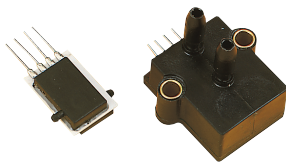
Operating Pressure Range	Proof Pressure	Full Scale Span	Operating Pressure Range	Proof Pressure	Full Scale Span
0 to 10" H ₂ O	5 psi	25mV	0 to 15psig	30 psi	90mV
0 to 1psig	20 psi	18mV	0 to 100psig	150 psi	100mV
0 to 5psig	20 psi	60mV			

Operating Pressure	Mfrs. List No.	Order Code	Price Each
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Low Pressure			
0 to 5" H ₂ O	SDX005IND4	434-6063	
0 to 10" H ₂ O	SDX010IND4	434-6075	

Standard Pressure			
0 to 15psia	SDX15A2	674-114	
0 to 1psig	SDX01G2	674-126	
0 to 1psid	SDX01D4	674-138	
0 to 5psig	SDX05G2	674-140	
0 to 15psig	SDX15G2	674-163	
0 to 15psid	SDX15D4	674-175	
0 to 100psig	SDX100G2	674-205	

Ultra Low Pressure Sensors - Sursense™



- Differential or Gauge pressure
- Self-compensating
- Small outline dimensions
- Superior linearity
- Almost no position sensitivity
- Exceptional stability
- Pressure media must be clean, non-corrosive and non-ionising, i.e. dry gases

DUXL: H=7.1, W=19.1 (excl. pins), D =12.7
DCXL & DCAL: H=26.2 (incl. ports), W = 27.4(excl. pins), D=20.3

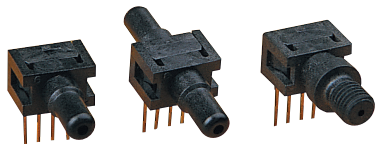
The SURSENSE™ family of low-pressure sensors is based upon proprietary, DSC (Dynamic Self-Compensation), technology designed to reduce all output offsets and common mode errors. Changes in output due to temperature, warm-up, long term stability and position sensitivity have all been significantly reduced when compared with conventional sensors. In addition, all models utilise a stress relieving construction that reduces zero offset and linearity errors due to mounting induced stresses.

DUXL differential & gauge	310-6986	Temp. effect on offset (0-50°C)	100µV
	1" H ₂ O	Temp. effect on span (0-50°C)	100µV
Supply voltage	≤8	Combined linearity and hysteresis	0.1% nom.
Output span (Ratiometric @ 4.5V)	4-8mV	Input resistance	1-3KΩ
Offset voltage	<10	Storage temperature	-40°C to +125°C
Offset warm-up shift (first 10secs.)	±10µV	Common mode pressure	50psig
Offset position sensitivity (±1g)	±15µV		

Amplified, PCB Mounting Differential, bidirectional gauge	310-6883	310-6895
Pressure range	±1 in H ₂ O	±5 in H ₂ O
Supply voltage	5V dc	5V dc
Full scale span	±2V	±2V
Null offset	2.25V dc	2.25V dc
Sensitivity	0.4 V/in H ₂ O	0.8 V/in H ₂ O
Combined linearity and hysteresis error	≤±0.25% Span	≤±0.25% Span
Storage Temperature	-40 to +125°C	-40 to +125°C
Media - P1	Wetted materials	Wetted materials
Media - P2	DRY Gasses only	DRY Gasses only
Operating temperature	-25 to +85°C	-25°C to +85°C

Operating Pressure	Mfrs. List No.	Order Code	Price Each
Differential and Gauge			
0 to 1" H ₂ O	DUXL01D	310-6986	
Amplified, PCB Mounting Differential			
0 to 1" H ₂ O	DC001NDC4	310-6883	
0 to 5"H ₂ O	DC005NDC4	310-6895	

Basic Sensors - 24PC Series



Gauge, Absolute: H=8.0 (excl. pins), W=12.7, D =21.8, Pressure port O/D=5.1
Differential: H=8.0 (excl. pins), W=12.7, D =34.4, Pressure ports O/D =5.1
High pressure gauge: H=8.0 (excl. pins), W=12.7, D =23.8, Pressure port= 1/4-28UNF, flange dia.=9.14

Connections (2.5 spacing): 1=V_s (+) (notched pin), 2=Output (+), 3 = Ground (-), 4= Output (-)

- Measure vacuum or positive pressures in air, gas or liquids
 - High pressure gauge types (100psig and 250psig) have threaded ports
- A range of miniature low cost basic sensors. The sensors have wet/wet capability, incorporating a seal either side of the diaphragm, one of which is unique conductive seal offering improved reliability for the product range.

Supply voltage	10V dc (nom.), 12V dc (max.)
Linearity (typ.)	Gauge, differential=0.25% span, 15 psia = 15mV/psia typ, 30 psia = 11mV/psi typ. (see note below)
Repeatability and hysteresis	Gauge, differential = ±0.15%, absolute = 0.5%
Input/output resistance	5kΩ
Temperature range	-40°C to +85°C
Media	Wet or dry, compatible with polyetherimide,

Note: Although non-compensated, these sensors exhibit extremely good temperature stability(0.5% of span) when driven by current rather than voltage (1.6 to 2.0mA recommended).

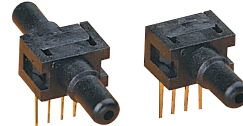
Operating Pressure	Mfrs. List No.	Order Code	Price Each
Absolute			
2 to 15psia	24PCCFA6A	723-7753	
2 to 30psia	24PCDFA6A	723-7765	
Differential			
0 to 0.5psid	24PCEFA6D	731-626	
0 to 1psid	24PCFA6D	731-638	
0 to 5psid	24PCBFA6D	731-640	
0 to 15psid	24PCCFA6D	731-651	
0 to 30psid	24PCDFA6D	731-663	

Mfrs. List No.	Order Code	Price Each
Gauge		
0 to 0.5psig	24PCEFA6G	731-675
0 to 1psig	24PCFA6G	731-687
0 to 5psig	24PCBFA6G	731-699
0 to 15psig	24PCCFA6G	731-705
0 to 30psig	24PCDFA6G	731-717
0 to 100psig	24PCFFM6G	731-729
2 to 15psia	24PCCFA6A	723-7753
2 to 30psia	24PCDFA6A	723-7765

Temperature Compensated Sensors



- 26 PC Series



Differential: H=8.0 (excl. pins), W=12.7, D =34.4, Pressure ports O/D=5.1

Gauge: H=8.0 (excl. pins), W=12.7, D =21.8, Pressure port O/D = 5.1

Connections (2.5 spacing)
 1=Vs (+) (notched pin) 2=output (+)
 3=Ground (-) 4=output (-)

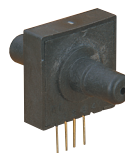
- Calibrated null and span
 - Temperature compensated for span
 - Can be used to measure vacuum or positive pressures in air, gas or liquids
- Miniature low cost pressure sensors with compensated outputs. Wet/wet capability of the sensor incorporates a seal either side of the diaphragm, one of which is a unique conductive seal offering improved reliability for the product range.
- | | | | |
|------------------------------|----------------------------|-------------------|---|
| Supply voltage | 10v dc(nom)
16v dc(max) | Input resistance | 7.5kohm |
| | | Output resistance | 2.5kohm |
| Null offset | ±1.5mV | Temperature range | -40°C to +85°C |
| Linearity | 0.25% span | | (0-50°C compensated) |
| Sensitivity shift (0-50°C) | ±1.0% span | Media | Wet or dry, compatible with polyetherimide, silicon and |
| Repeatability and hysteresis | 0.2% span | | |
| Response time | 1ms (max.) | | |

Mfrs. List No.	Order Code	Price Each
Differential		
0 to 1psid	26PCFA6D	731-742
0 to 5psid	26PCBFA6D	731-754
0 to 15psid	26PCCFA6D	731-766
0 to 30psid	26PCDFA6D	731-778
Gauge		
0 to 1psig	26PCFA6G	731-780
0 to 5psig	26PCBFA6G	731-791
0 to 15psig	26PCCFA6G	731-808

Low Pressure Differential Sensors



Temperature Compensated - 176 PC Series



- Miniature package
- Low pressure measurement
- Calibrated null and span
- Temperature compensated for span over 0 °C- 50°C

This range of very low pressure sensors utilizes the latest silicon technology to achieve a higher sensitivity and lower null shift than was previously achievable.

Higher sensitivity requires less amplification and improves the signal to noise ratio.

H=21.5, W=21.5, D= 34.3 (overall).
 Pressure port O/D = 7

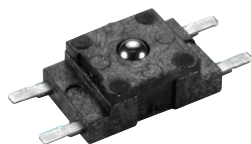
Supply voltage	10V dc (nom.), 16V dc (max.)
Null offset	±2mV
Linearity	0.25% FS
Sensitivity shift (0-50°C)	4.0% span (0-14"), ±3.5% span (0-28")
Repeatability and hysteresis	0.25% span
Temperature range	-40°C to +85°C (0°C to 50°C compensated)
Media	Port 2: wetted compatible with polyester housing, epoxy adhesive silicon, borosilicate and silicon-to-glass bond.

Operating Pressure	Mfrs. List No.	Order Code	Price Each
0 to 7"H ₂ O	176PC07HD2	731-821	
0 to 14" H ₂ O	176PC14HD2	731-833	

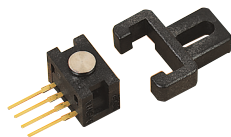
Pressure Sensors - continued

Force Sensor

Honeywell



SMD Version
H = 3.75, W = 9.14, D = 5.59mm



PCB Mount and Bracket
Body - H = 9, W = 12.7, D = 8mm

- Robust performance characteristics
- Extremely low deflection, typically 30 microns at full scale
- Precise force sensing
- Electrically ratiometric output
- Mounting brackets available separately

Piezo-resistive sensing element in Wheatstone bridge circuit. Force is applied through stainless steel plunger directly to sensing element. Applications include load and compression sensing, variable tension control, contact sensing, robotic end effectors, medical.

Supply voltage	721-6671	310-7620
Force range	10V dc (nom.)	5V dc (nom.)
Overforce	1500grams	0 to 1500g
Span	5500 grams (max.)	4500 grams (max.)
Response time	290 to 430mV (360mV typ.)	60mV (at 5V dc)
Temperature range	1m sec	-40°C to +85°C
	-40°C to +85°C	-40°C to +85°C

212310

	Order Code	Order Code	Price Each
Force sensor	FSG-15N1A	721-6671	
Force sensor - SMD	FSS1500NSB	SMD310-7620	
Mounting brackets, pack of 5	PC-15132	721-6683	

Differential Pressure Sensor

SENSIRION THE SENSOR COMPANY

SDP1000 / SDP2000 Series



H = 22, W = 30, L = 44 (incl. ports),
Port ctrs. = 16, Port dia. = 3.4,
Pin spacing = 2.54

The Differential Pressure Transducer SDP1000/SDP2000 measures the mass flow caused by a differential pressure. Suppose that the gas is known and leakage is allowed smallest pressure differences can be reliably detected due to its outstanding characteristics based upon Sensirion's CMO-Sens™ technology.

- For cost sensitive OEM applications in HVAC
- Detects ultra low differential pressure
- Zero drift, offset & hysteresis free
- Outstanding accuracy and reproducibility (even below 10 Pa)
- Ultra fast response time
- CMO-Sens™ technology driven
- Fully calibrated & temperature compensated

- Not sensitive to mounting orientation
- Direct PCB mounting with simple snap-on system
- Linear or square root extracted output characteristics
- Analogue voltage output

Parameter	Condition	Min.	Max.	Units.
Accuracy / Linearity	@ 23°C/ 73°F	-	0.5	FS
		-	3	%m.v.
Ambient temperature	Working	-10°C	60°C	°C
Power supply	DC	4.75	5.5	V
Operating current (max.)	VDD=5.0V, no load	-	5	mA
	VDD=5.0V, loaded	-	10	mA
Output voltage @ 0	RI=100kΩ	0.243	0.257	V DC
Output voltage @ FS	RI=100kΩ	3.93	4.07	V DC
Recommended load		10	∞	kΩ

Connecting tubes - Recommended inner diameter 3/16"

Output	Mfrs. List No.	Order Code	Price Each
Linear			
0.25 - 4.0V	SDP1000-L	120-7221	
0.25 - 4.0V	SDP1000-L05	122-5681	
0.25 - 4.0V	SDP2000-L	120-7224	
0.20 - 4.0V	SDP1000-L025	NEW 169-6083	
Square root			
0.25 - 4.0V	SDP1000-R	120-7223	

311245

Powerful and affordable solutions for PCB design



CadSoft's EAGLE software offers a user-friendly, powerful and affordable solution for PCB design, including three modules embedded in a single user interface; Schematic Capture, Board Layout, and Autorouter. Find out more at www.element14.com

Differential Pressure Meter - ASP1400

SENSIRION THE SENSOR COMPANY



The Differential Pressure Meter ASP1400 measures the mass flow caused by a differential pressure. Suppose that the gas is known and leakage is allowed smallest pressure differences can be reliably detected due to its outstanding characteristics.

- Detects ultra low differential pressure
- Zero drift & offset free
- Outstanding accuracy
- Ultra fast response time
- CMO-Sens™ technology driven
- Calibrated & temperature compensated
- Digital output signal (RS 232 & SPI)
- CE - certified

Measurement Range:	0.002 to 100 Pa (bi-directional)
Lowest detect. Press:	0.002 Pa
Resolution:	0.001 to 0.04 Pa
Reproducibility:	0.002 % full scale or 0.08 % measured value
Accuracy:	0.05 % full scale or 1.5 % measured value
Response time:	142 ms
Flow rate:	400 sccm @ 100 Pa
Max. overpressure:	2.0 bar
Operating temperature:	0 °C to 70 °C
Electrical Data	
Supply voltage range:	7 to 18 V
Input current:	20 mA @ 9 V (typical), 27 mA @ 9 V (max.)
Output signal:	RS 232 or SPI compliant

234888

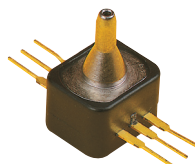
Order Code	Price Each
120-7218	

Pressure Transducers and Transmitters

Transducers, Signal Conditioned

Honeywell

Miniature



- Excellent liquid media compatibility
- Fully signal conditioned (4V output)
- 6 pin DIP package
- Operating temperature -40°C to +125°C
- Smallest amplified sensor package

H=19.1, W=11.2 (pin 30.9), D=13.2

The smallest fully signalled pressure transducer with excellent temperature stability. These 6 pin DIP gauge packages are available in pressure ranges from ±50mm Hg to 250 psi.

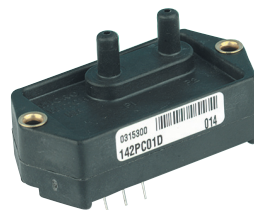
Pressure Range	Over Pressure	Null	Supply Current	Excitation	Hysteresis	Repeatability	Mfrs. List No.	Order Code
± 50mm Hg	170mm Hg	2.5V dc	10mA	5V dc ±0.25	0.15% Span		40PC001B1A	310-7425
0 to 15psi	45psi	0.5V	10mA	5V dc ±0.25	0.15% Span		40PC015G1A	310-7437
0 to 100psi	200psi	0.5V	10mA	5V dc ±0.25	0.15% Span		40PC100G1A	310-7449
0 to 150psi	300psi	0.5V	10mA	5V dc ±0.25	0.15% Span		40PC150G1A	310-7450
0 to 250psi	500psi	0.5V	10mA	5V dc ±0.25	0.15% Span		40PC250G1A	310-7462

212421

Pressure Range	Order Code	Price Each
± 50mm Hg	310-7425	
0 to 15psi	310-7437	
0 to 100psi	310-7449	
0 to 150psi	310-7450	
0 to 250psi	310-7462	

Transducers 5V Output - 140PC Series

Honeywell



- High level voltage output and complete calibration and temperature compensation
- For use with non-corrosive, non-ionic gases and liquids
- Differential devices can be used as gauge or differential sensors

Pins
1 Output
2 Ground
3 Supply +

L=59.8, W=30.0, D=18.5 (excl.pins)
Port O/D=5.00, Ctrs. = 52.4.

Supply current Typ.	8mA	Operating temperature range	-40°C to +85°C
Supply current Max.	20mA	Storage temperature range	-55°C to +125°C
Current sourcing output	10mA	Response time	1.00ms

Operating Pressure Range (psi)	Linearity, B.F.S.L.	Repeatability & Hysteresis	Sensitivity (V/psi)	% Span	Mfrs. List No.	Order Code
0 to 15	--- ±	±0.15	0.333	Typ.	142PC15A	438-8045

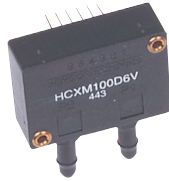
310980

Operating Pressure	Order Code	Price Each
0 to 15	438-8045	

Transducers, 0.5 - 4.5V Output
Low Profile - HCX Series



H=13, W=35, D=39
(including ports)
Pressure Port O/D=5



Connections
1 Voltage output
2 Internal connection
3 -V_s (GND)
4 Internal connection
5 +V_s
6 Internal connection

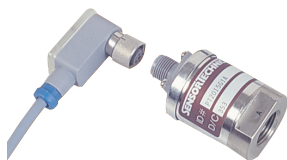
- Compensated, calibrated and amplified pressure transducers
- Small low-profile package with in-line pinning for easy PCB mounting
- Internal voltage regulation allows a calibrated output for a supply voltage ranging from 4.8 to 15V
- Suitable for measuring differential gauge and absolute pressures
- Designed for use with non-corrosive, non-ionic media eg. dry air and gases

Supply voltage	4.8V to 15V dc
Output	0.5 to 4.5V
Full scale output (FSO)	4.5V ± 50mV
Operating temperature range	-10°C to +70°C
Linearity and hysteresis (BSL)	0.5%
Zero pressure output	0.5V ± 50mV
Thermal stability	±5 mBar devices at 50 mBar 0.2% FSO/°C (0°C TO +50°C) at 100 mBar 0.12% FSO/°C (0°C TO +50°C) at 100 mBar 0.10% FSO/°C (0°C TO +50°C) at other pressures 0.05% FSO/°C (0°C TO +50°C)
Long term stability (1 yr)	±0.20% FSO typ.
Proof pressure	5-20 mBar devices 350 mBar at 50/100/350 mBar 1.40 Bar at 1 Bar and 5 Bar 2 rated pressure

212183

Operating Pressure	Mftrs. List No.	Order Code	Price Each
0 to ± 5mbar	HCXPM005D6V	306-9540	
0 to 10mbar	HCXM010D6V	306-9552	
0 to ± 10mbar	HCXPM010D6V	306-9564	
0 to 50mbar	HCXM050D6V	540-638	
0 to 100mbar	HCXM100D6V	540-640	
0 to 350mbar	HCXM350D6V	540-651	
0 to 1bar	HXC001D6V	540-663	
0 to 1bar Absolute	HXC001A6V	540-687	

Transducers & Transmitters - PTE2000
Stainless Steel Housing



Dia = 31.8mm (25.4 across flats), Fitting 3/8" NPT
L = 62mm (body excl. connector), Cable L = 2m

- Fully temperature compensated and signal conditioned gauge pressure transducer
- 4 to 20mA or 1 to 6V output
- Rugged stainless steel housing
- Designed for the measurement of hostile media in harsh environments
- 12 to 36V dc supply voltage
- Internal voltage regulator allows use of unregulated power sources
- Included right-angle plug-in connector gives protection to IP67 and reduces the installation and maintenance time

222176

Operating Pressure	Mftrs. List No.	Order Code	Price Each
4 to 20mA Output			
0 to 5psig	PTE2005G4A.	704-9109	
0 to 15psig	PTE2015G4A	678-600	
0 to 30psig	PTE2030G4A	678-612	
0 to 100psig	PTE2100G4A	678-624	
1 to 6V Output			
0 to 100psig	PTE2100G1A	678-582	

Transducers & Transmitters - BTE6000
Stainless Steel, Flush Diaphragm and High Pressure



High Pressure
H = 35, W = 48, D = 160
(including connector)
Dia. = 27, Thread = 1/2" BSP



Flush
H = 35, W = 48, D = 135
(including connector)
Dia. = 27, Thread = 3/4" BSP

- Pressures up to 350 bar
- Flush mount versions
- Designed for use with any corrosive or non-corrosive media compatible with 303 stainless steel
- 1 to 6V and 4 to 20mA outputs
- Field interchangeable
- Protected against reverse polarity and sealed to IP65
- Suitable for harsh environments
- Flush diaphragm type transducers avoid the problem of particulate build up and minimise dead volume
- Flush diaphragm types are particularly suitable in the food industry and applications using thick liquids and semi-solids

Fully temperature compensated, signal conditioned transducers offering flush mounted stainless steel diaphragms for gauge and absolute pressure and DIN standard 'manometer thread' versions for high pressure.

Connections	Connections
1 - 6V output	4 - 20mA output
1 +V _s	1 +V _s
2 -V _s	2 -V _s
3 V out	3 NC
≠ case	≠ case
	4 to 20mA Output

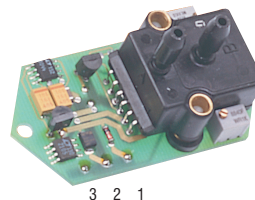
Supply voltage	12 to 30V dc
Zero offset	1.0V ± 150mV
Full scale span	5.0V ± 100mV
Operating temperature	-40°C to +100°C
Linearity and hysteresis	± 0.2% FSO nom.
Repeatability	± 0.1% FSO nom.
Thermal stability (0 to +70°C)	0.05% FSO/°C
Long term stability (1 year)	±0.2% FSO
Proof pressure	2 rated pressure
FSO = Full Scale Output	

Operating Pressure	Mftrs. List No.	Order Code	Mftrs. List No.	Order Code
Flush diaphragm style				
0 to 1 Bar A			BTE6001A4-FL	678-697
0 to ± 1bar G	BTE6N01G1-FL	678-650	BTE6N01G1-FL	678-703
0 to 5bar G			BTE6005G4-FL	678-715
0 to 10bar G			BTE6010G4-FL	678-727
0 to 16bar G			BTE6016G4-FL	678-739

High pressure style

Operating Pressure	Order Code	Price Each
Voltage Output		
0 to ± 1bar G	678-650	
Flush Diaphragm, 4 to 20mA Output		
0 to 1bar A	678-697	
0 to ± 1bar G	678-703	
0 to 5bar G	678-715	
0 to 10bar G	678-727	
0 to 16bar G	678-739	

Barometric Pressure Transducer



Connections:
1 +V_s H=32 (including ports)
2 GND W=30, D=60
3 V out Fixing centres 52.4mm, 3.5mm dia.

- Transducer covers barometric pressures 800mBar to 1100mBar
- Calibrated and signal conditioned 0 to 5V output
- Applications in barometry, weather stations, absolute pressure compensation in sensitive equipment

The transducer provides a true 0 to 5V output over the barometric pressure range. Internal voltage regulation allows the device to operate from a single rail power supply between 7 and 24V. A potentiometer is provided to adjust for changes in altitude. The transducer is designed for use with non-corrosive, non-ionic media eg. dry air and gases.

Reference conditions	V _s = 8V, T (ambient) = 25°C, RL = 100KΩ
Supply voltage	7 to 24V dc
Operating pressure	800 to 1100mbar
Proof pressure	2 bar
Voltage output (span)	5V ± 500mV
Operating temperature	-40°C to +85°C
Compensated range	-10°C to +60°C
Non-linearity and hysteresis	0.1% FSO (max.)
Repeatability	0.2% FSO (typ.)
Temperature shift (-10°C to +60°C)	0.3% FSO/10°C (max)
Response time	1ms (typ.)
Long term stability	0.1% FSO (typ.)

Mftrs. List No. 144SC0811-BARO

212180

Operating Pressure	Order Code	Price Each
800 to 1100mbar	540-894	

Biodegradable ESD packaging, unique to element14

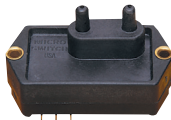


We now despatch over 3.6 million products per year in our new static dissipative, biodegradable packaging. Try them yourself - purchase online at www.element14.com

Very Low Pressure Differential Transducers

Honeywell

Signal Conditioned - 160PC Series



- High sensitivity pressure transducers enabling pressures as low as 0 to ±2.5" H₂O to be measured
- Transducers are temperature compensated and fully signal conditioned, with calibrated null and FSO

Utilising the latest silicon technology, a higher sensitivity and lower null shift is achievable. Higher sensitivity requires less amplification and improves the signal to noise ratio.

L=59.8, W=30.0, D=33.7 (excl. pins)
Pressure port O/D=5.0
Fixing centres=52.4

Pins:
1. OUT,
2. GND,
3. IN+

Supply voltage 8V dc (nom.), 6V dc (min.), 16V dc (max.)
Supply current 20mA max.
Null offset 1.0 ± 0.05V (162/164PC), 3.50 ± 0.05V (163PC)
Output at full pressure/vacuum 6.0 ± 0.1V (162/164PC), 1.0 ± 0.2V (163PC)
Span 5V
Ratiometric error 7-8V and 8-9V ±0.5% span, 9-12V ± 2.0% span
Repeatability and hysteresis ±0.25% span (162 type ±0.15% span)
Temperature range -40°C to +85°C (-18°C to +63°C compensated)
Media Port 2: wetted compatible with polyester housing, epoxy adhesive, silicon, borosilicate glass and silicon-to-glass bond.

Operating Pressure	Mfrs. List No.	Order Code	Price Each
0 to 28" H ₂ O	162PC01D	731-857	
0 to 10" H ₂ O	164PC01D37	731-870	
0 to ±2.5" H ₂ O	163PC01D75	731-882	
0 to 5" H ₂ O	164PC01D76	731-894	

212247

Miniature Transducers and Transmitters



Stainless Steel — 0-100mV/0-5Vdc/4-20mA Output — 21R Series



- Three output options - 0 to 100mV and 0 to 5V dc transducers, 4 to 20mA transmitters
- 316L stainless steel wetted parts, compatible with most corrosive media
- Good repeatability and linearity, and negligible hysteresis
- Fitted G1/4" male port with integral pressure seal
- Supplied with mating mPm micro-connector
- Sealed to **IP65**

Precision piezo-resistive silicon sensor available to measure gauge or absolute pressures.

Body L = 76 (excl. connector), Dia = 17, Fitting = G1/4 (1/4" BSP) male port

Signal output 0-100mV ±0.1% 0-5V dc ±1% 4-20mA ±1%
Zero balance ±0.1% 1% 1%
Supply 8-28V dc unregulated (4 wire) 8-28V dc (3 wire) 8-28V dc (2 wire)
Non-linearity and hysteresis 0.2% max. 0.5% max. 0.5% max.
Total error band★ 2.5 max. 2.5% typ., 4% max. 2.5% typ., 4% max.
Operating temperature -20°C to +80°C -20°C to +80°C -20°C to +80°C
Over-pressure 2 range or 1100 bar, whichever is less

★Total error band includes hysteresis, zero and span effects, temperature effects and repeatability

212355

Output	0-5Vdc	4-20mA	Price Each
Pressure Range			
0 to 2.5bar G	709-9472	710-0723	
0 to 10bar G	709-9484	710-0735	
0 to 25bar G	709-9496	710-0747	
0 to 250bar G	709-9514	710-0760	
0 to 400bar G	709-9526		
0 to 1bar A	709-9540	710-0796	
0 to 2.5bar A	709-9551		

Transducers, 50mV Output

Honeywell

Stainless Steel Housing - MM Series



- Miniature vented gauge pressure transducer with case and wetted parts made from 300 series stainless steel
- Suitable for a wide variety of corrosive media, eg. freon, ammonia, water and hydraulic fluids
- Fully temperature compensated, with a high degree of unit-to-unit interchangeability
- Supplied with a mating Hirschmann connector (miniature DIN type)

L=70 (including connector) Dia.=25.4
Fitting : Port with 1/8" BSP (parallel) thread 14mm hex. nut
Connections: 1 +Signal 2 -Supply 3 -Signal 4 +Supply

Excitation voltage 5V dc recommended (6.0V dc maximum)
Span 50 ± 1mV dc
Zero balance ±2.5mV dc @ 25°C
Non linearity/repeatability and hysteresis ±1% FSO from best fit straight line

Operating temperature range -40°C to 90°C (with connector)
Compensated temperature range -1°C to 80°C
Thermal effect on zero ≤1±FSO (any 55°C over comp. range)
Thermal effect on span ≤±1% reading (any 55°C over comp. range)
Proof pressure 2 rated range without damage (0-15,25,50,100,200 psig)
1.5 rated range without damage (0-500,1000,2000,5000 psig)
10 rated range without bursting (0-15,25,50,100,200 psig)
5 rated range without bursting (0-500,1000,2000,5000 psig)

Operating Pressure	Mfrs. List No.	Order Code	Price Each
0 to 100psig	9307604	615-754	

212211

Pressure Switches

Miniature Pressure Switches

25.4mm Square Body



PSF100A Body - H = 9.2mm



PSF102 Body - H = 7.9mm

- External (PSF100A Series) or Recessed (PSF102 Series) Quick Connect terminals
- Miniature size
- Quick response time
- Dependable long life

Case Material Polycarbonate
Material Polyurethane Diaphragm ★
★ 173-4671 has PTFE
Switch Type SPST - NO
Contact Rating - Current 40mA - 30V ac/dc - Resistive Load
Operating Temperature 4.5°C - 65.5°C (40°F to 150°F)
Switching Medium Air, compatible fluids on "High" side
Porting Two - 0.2" Diameter barbed ports for use with 3/16" ID Tubing

540686

Set Point Pressure	Mfrs. List No.	Order Code	Price Each
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PSF 100A Series - Patented shock and vibration resistant			
0.004 - 0.018psi	PSF100A-0.5	173-4664	
0.054psi	PSF100A-1.5	173-4665	
0.108psi	PSF100A-3.0	173-4666	
0.217psi	PSF100A-6.0	173-4667	
0.361psi	PSF100A-10.0	173-4668	
0.541psi	PSF100A-15.0	173-4669	
1.804psi	PSF100A-50.0	173-4670	

PSF 102 Series - Field adjustable set point			
0.004 - 0.018psi	PSF102-7652-710	173-4671	
0.018 - 0.072psi	PSF102-7651-711	173-4673	
0.072 - 0.541psi	PSF102-7651-712	173-4674	
0.541 - 2.17psi	PSF102-7651-713	173-4675	
2.17 - 3.6psi	PSF102-7651-723	173-4676	
3.6 - 25psi	PSF102-7651-714	173-4677	

Pressure Switch - High Current



PSF 103 Series - Adjustable Set Point



- Controllable Hysteresis (Deadband)
- Field adjustable pressure point
- Snap action basic switch @ 125 / 250V ac
- Small, lightweight size
- Dependable long life of 10 million cycles

OA - H = 45.7, W = 25.4, D = 43.2mm

Case Material Polycarbonate
Material Polyurethane Diaphragm
★ 173-4671 has PTFE
Switch Type SPST - NO and NC Contacts
Contact Rating - Voltage 125 / 250V AC
Operating Temperature 40°F to 150°F (40°F to 150°F)
Porting Two types available - Smooth Port, 0.156" Dia. and 1/8" NPT port

540732

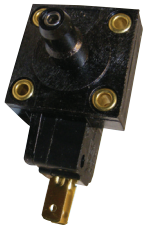
Set Point Pressure	Current Switching	Mfrs. List No.	Order Code	Price Each
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Smooth Port, 0.156" Dia. for 1/8" ID tubing				
0.11 - 0.4psi	3A	PSF103-9011-902	173-4678	
0.4 - 1psi	10A	PSF103-9011-903	173-4679	
1 - 4psi	15A	PSF103-9011-904	173-4680	
1/8" NPT port				
4 - 15psi	15A	PSF103-9061-905	173-4681	
15 - 60psi	15A	PSF103-9061-906	173-4682	

Over 500 000 products available online



Vacuum Switch - High Current
PSF 109S Series - Adjustable Set Point



- Controllable Hysteresis (Deadband)
 - Field adjustable pressure point (Inside port)
 - Snap action basic switch @ 125 / 250V ac
 - Small, lightweight size
 - Dependable long life of 10 million cycles
- Case Material Polycarbonate
Material Polyurethane Diaphragm
Switch Type SPST - NO and NC Contacts
Contact Rating - Voltage 125 / 250V AC
Operating Temperature 40°F to 150°F (40°F to 150°F)
Porting 0.25" (6.4mm) Diameter

OA - H = 45.7, W = 25.4, D = 43.2mm

540764

Set Point Pressure	Current	Mfrs. Switching List No.	Order Code	Price Each
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Smooth Port, 0.156" Dia. for 1/8" ID tubing				
-0.3 to -0.1psi	3A	PSF109S-3-8	173-4683	
-2.9 to -0.3psi	10A	PSF109S-9-80	173-4685	
-11.9 to -2.9psi	15A	PSF109S-81-330173	173-4686	

Pressure Switch
GT Series - Adjustable Set Point



- Large diameter silicon diaphragm
- Snap action switch
- Multi-barb port connections
- 1/4" x 0.03" Quick Connect terminals
- Proof pressure 1 psi, burst pressure 3.5 psi

OA - H = 45.75, Dia. = 80, D = 99mm

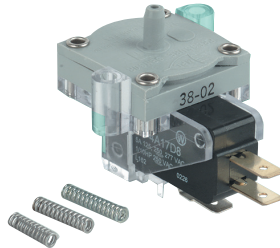
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- Case Material Noryl (PPD)
Material Silicon Diaphragm
Switch Type SPDT
Contact Rating 5A @ 125 / 250V AC
Operating Temperature -25°C to +105°C (40°F to 150°F)
Porting Multi-barb - For 1/4" and 5/16" inside diameter flexible plastic or rubber tubing

Set Point Pressure	Mfrs. List No.	Order Code	Price Each
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0.003 - 0.005psi	GT27012(PSF117)	173-4687	
0.007 - 0.036psi	GT27027(PSF117)	173-4688	
0.036 - 0.18psi	GT27028(PSF117)	173-4689	

Sensitive Pressure Switches



Sensitive, pressure, vacuum and differential pressure measurement switches, housed in a glass filled polyester case.

- Externally adjustable
- Can be mounted in any orientation
- Suits a wide variety of applications
- UL and CSA recognised

Series 1: Adjustable miniature pressure, vacuum and differential switch for air measurement

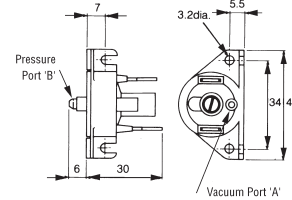
Series 2: Gauge pressure only, supplied with 4 colour coded springs, 1 fitted, to cover pressure ranges from 0.07 bar and full setting instructions

	Series 1	Series 2
Case Material	Glass filled polyester	Glass filled polyester
Electrical	SPST Momentary NO	SPDT (N/O or N/C)
Contact Rating	20 mA, 250 Vac	5 A, 250 Vac
Fluid Medium	Air / Gases	Wide range of Media
Burst Pressure	1.75 Bar	3.1Bar
Mechanical Life	10 ⁶	10 ⁶
Operating Temperature	-40°C to 120°C	-40°C to 85°C
Contact Material	Phosphor Bronze / 18 ct Gold	Phosphor Bronze / 18 ct Gold
Diaphragm	Polyurethane	Polyurethane
Weight	10g	18g
Mounting	Lugs or pressure stub	Lugs or pressure stub

249526

Pressure Range	Mfrs. List No.	Order Code	Price Each
Series 1			
25 to 125mbar	6101-0021	427-6530	
0.25 to 1.35bar	6101-0019	427-6553	
Series 2			
0.025 to 2.75bar	6101-0018	427-6565	

Low Pressure 1" - 16" H₂O



- Miniature pneumatic switch for very sensitive pressure, vacuum and differential pressure switching
- Housed in a glass filled nylon 12 surface mounting body with neoprene diaphragm
- Switch can be set for normally open or normally closed operation
- Sensitivity can be adjusted from 1" to 16" H₂O
- Supplied with 1 metre of PVC connecting tube
- Air bleed version has adjustable air bleeds on both sides of the diaphragm

- Pressure/Vacuum range 25mm (2") H₂O (min), 400mm (16") H₂O (max/max. differential)
Pressure, factory setting 0.34 Bar (5 psi) max.
Differential between pressure connection 1.0 Bar (14.7 psi)
Body withstand pressure -5°C to +50°C
Temperature Range SPST N/O, N/C
Switch 0.5A, 250V ac (resistive)
Contact rating 5mA, 4V dc
Dry switching, minimum 50mΩ
Contact resistance 4mm dia. spouts

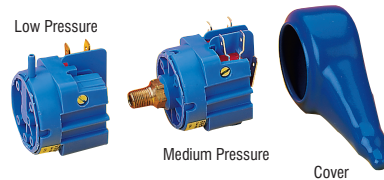
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Type	Mfrs. List No.	Order Code	Price Each
Standard	6753-AEJA-A000	731-912	
Air Bleed	6753-OF	723-0497	

Low/Medium Pressure



5 to 25" H₂O, 3 to 5.5 psi, 8 to 18 psi



Low pressure: H=38, Dia.=43, Fixing holes=5 to suit No. 4 self-tap screws
Medium pressure: H=38 (body), 58 (overall), W=40, D=43, Fixing holes=4 to suit No. 4 self-tap screws

- Robust pressure switches suitable for industrial applications
- Pressure fully adjustable throughout range
- All types suitable for use with butane, compressed air, water, citric acid, etc.
- Low pressure types also suitable for use with mineral and fuel oils, detergent solution, etc.
- Plastic cover available to protect electrical terminals

- Pressure range Low pressure type: 127 to 635mm water gauge (5" to 25" water gauge)
Medium pressure types: 3 to 5.5psi(0.20 to 0.37 Bar) 8 to 18psi(0.54 to 1.22 Bar)
- Electrical switch Low pressure type: SPCO 10(3)A 250V ac
Medium pressure type: DPCO 21(8)A 250V ac
- Pressure connection Low pressure type: Side Entry Spout 4mm O/D
Medium pressure types: 1/8" BSPT brass
- Temperature range -5°C to +70°C
Materials Nylon 12 body, neoprene diaphragm, steel spring

212380

Pressure Range	Mfrs. List No.	Order Code	Price Each
5" to 25" water gauge	6731-06	723-0450	
Medium Pressure			
3 to 5.5psi	6742-30	723-0461	
8 to 18psi	6742-50	723-0473	
Plastic Protective			
Cover	6819-01	723-0485	

Pressure Switches - continued

Industrial



- Connections
 1. Common
 2. N.C., opens on pressure rise
 3. N.O., closes on pressure rise

H=130, W=82, D=38
 Fixing centres
 (2 holes dia. = 4) = 45x69, Pressure input = 1/4" BSP brass

- Pressure switching can be set externally
- Switching hysteresis between rising and falling pressure can be preset
- Double insulated GFS nylon housing, sealed to IP65
- Pressure setting can be made tamper-proof by 1.5mm A/F Hex. key
- Approximate pressure setting may be seen through a window in the cover

Industrial pressure switch supplied with 3 colour coded springs to give 3 pressure ranges covering 20 psi to 200 psi, the mid-range spring being supplied ready fitted. Switching is through two separate SPCO V3-style microswitches with 1/4" fast-on spade connections, and cable entry is via M20 tapped conduit hole.

Brass and nitrile rubber are the only materials in contact with the pressure system, making the pressure switch suitable for most commonly used operating fluids, for example in regulating water flow lines or in factory air systems.

Operating pressure ranges (on rising pressure)
 Red spring: 20 to 50 psi (1.4 to 3.5 bar)
 White spring: 40 to 100 psi (2.7 to 6.9 bar)
 Blue spring: 80 to 200 psi (5.5 to 13.8 bar)
 Adjustable 20% to 50% of operating pressure
 Switching hysteresis ±2 psi @ 50 psi rising pressure
 Switch setting accuracy 500 psi
 Withstand pressure 15A 250V ac (resistive)
 Contact rating 500 psi
 Operating temperature -5°C to +70°C

Mfrs.	Order Code	Price Each
List No.		
6702-0002	213-317	

Extended Duty Pressure Switch 5000 Series



- 1/2-27 NPT male thread
- 1/4" blade terminals with 8-32 screws
- Plated steel base
- Glass reinforced polyester cover
- Direct action blade contact
- Silver alloy contact, gold plated

The 5000 Series switch is specifically designed to stand up to demanding pressure applications. The switch is factory set but capable of customer adjustment. It features a Kapton diaphragm for compatibility with a wide variety of fluids.

Dia. = 37.34mm (1.47"), H = 58.42mm (2.3")

Contact rating - Resistive 15A @ 6V DC, 4A @ 24V DC
 Contact rating - Inductive 1A @ 120V AC, 0.5A @ 240V AC
 Proof pressure 500 psi
 Burst pressure - 4 to 15 psi Set pressure range 750 psi
 Burst pressure - 35 & 60 psi Set pressure range 1250 psi
 Temperature range -40 to 250°C

Pressure	Mfrs.	Price Each	
Pre-set	Range	List No.	Order Code
4psi	3.1 to 7psi	76575	160-5366
4psi	3.1 to 7psi	76577	160-5368
10psi	8 to 13psi	76578	160-5370
15psi	14 to 24psi	76052	160-5371
35psi	25 to 50 psi	76053	160-5373
35psi	25 to 50 psi	76063	160-5374
60psi	51 to 90psi	76054	160-5375
60psi	51 to 90psi	76064	160-5376

Industrial - 0184 Series



L=90 (overall), Dia.=34,
 Mounting=27 hex., Thread= G1/4
 (1/4" BSP)

- EPDM seal material type suitable for use with water, hydrogen, sea water, acetylene
- Stainless steel body versions suitable for process and chemical industries and pharmaceutical, agricultural applications etc.

- Rugged industrial pressure switches with a wide range of possible setting pressures
- Adjustable switching hysteresis of 10 to 30% between rising and falling pressure
- Switch output by 4A/250VAC changeover contacts
- Connection by industry standard DIN connector
- When used in conjunction with the connector the switch is sealed to IP65
- NBR seal material type suitable for use with hydraulic oil, gasoline, engine oil, heating oil, turpentine and air

Output Rating 4A
 Maximum operation 200 operations/min
 Hysteresis 10%
 Mechanical Life 1000000 operations
 Temperature range -30°C to +100°C
 Body Material Zinc plated steel
 Adjustment Range 0.3 to 1.5bar
 Tolerance at Room Temp. ±0.2 bar
 Over Pressure 100bar
 1 to 10bar ±0.5 to 1.0 bar 300bar
 10 to 50bar ±3.0 bar 300bar
 10 to 100bar ±3.0 to 5.0 bar 300bar
 50 to 200bar ±5.0 bar 600bar

Operating Pressure Range	Mfrs. List No.	Order Code	Price Each
Zinc Plated Steel Body, NBR Diaphragm			
0.3 to 1.5bar	0184-45703-1-003	679-057	
1 to 10bar	0184-45803-1-042	679-069	
10 to 50bar	0184-45903-1-009	679-070	
10 to 100bar	0184-46103-1-012	679-082	
50 to 200bar	0185-46003-1-003	679-094	
Zinc Plated Steel Body, EPDM Diaphragm			
0.3 to 1.5bar	0184-457032-003	721-3086	
1 to 10bar	0184-458032-042	721-3098	
10 to 50bar	0184-459032-009	721-3104	
Stainless Steel Body, NBR Diaphragm			
0.5 to 5bar	0184-457031-SS	721-3037	
1 to 10bar	0184-458031-SS	721-3049	
10 to 50bar	0184-459031-SS	721-3050	
10 to 100bar	0184-461031-SS	721-3062	

Load Cells

Single Point, Aluminium, 3-50Kg (30-500N) 5/10/20/50/100kg



- Off-centre loading capability
- Easy to mount and use
- Versatile for use in test equipment
- Ideal for supporting weighing platforms
- High sensitivity and high accuracy



Low profile, aluminium single-point load cells, with industry standard mounting dimensions. Off-centre loading capability allows ease for use in force measurement applications or for weighing platforms.

Rated capacity in Kg 3/5/10/20/50
 Rated capacity in Newtons (approx.) 30/50/100/200/500
 Output at rated capacity 2.0 to ±0.2%
 Total errors 0.02
 Temperature range: operating -30 to +70
 Temperature range: compensated -10 to +40
 Safe overload 150
 Ultimate overload 300
 Excitation: recommended 10
 Excitation: maximum 15
 Input impedance 415± 15
 Output impedance 350± 3
 Deflection at rated capacity ≤0.4
 Threaded mounting holes M6x1.0
 Environmental protection 1022 Series = IP66, 1040 = IP54
 Cable types 1022 Series = 4-Wire 1040 = 6-Wire
 Cable length 1022 Series = 0.5, 1040 = 1
 Maximum platform size 1022 Series = 350 x 350, 1040 = 400 x 400
 Dimensions L x W x H 725-6139, 725-6140 10x25x22 mm
 725-6152, 725-6164 130x30x22
 700-0911: 150x29.4x40

Capacity	Mfrs. List No.	Order Code	Price Each
3kg	1022M-3M-F-106	725-6139	
5kg	1022M-5M-F-106	725-6140	
10kg	1022M-10M-F-106	725-6152	
20kg	1022M-20M-F-106	725-6164	
50kg	1040M-50M-F	700-0911	

'S' Type, Tension/Compression 250-1000 Kg (2.5 - 10KN)



- Designed for tension or compression operation
- Versatile and adaptable
- Compact, rugged designs
- Simple to mount and use
- Rod-end bearings available

601/616

620

Designed to tolerate either tension or compression forces, 'S' type load cells are easy to mount and use. The threaded mounting holes allow easy adaptation to force measurement applications such as pneumatic/hydraulic actuators, and the self-aligning capability when used with rod-end bearings results in high accuracies, suitable for mechanical scale conversions or reaction torque measurements.

	300	500	1000	kg
Rated capacity in Kg	300	500	1000	kg
Rated capacity in Newtons (approx.)	2500	5000	10000	N
Output at rated capacity	2.0 ±0.1%	2.0 ±0.1%	2.0 ±0.1%	mV/V
Total error	0.025	0.03	0.025	% of applied load
Operating temp. range	-30 to +70	-30 to +70	-30 to +70	°C
Compensated temp. range	-10 to +40	-10 to +40	-10 to +40	°C
Safe overload	150	150	150	Capacity % of rated
Ultimate overload	300	300	300	Capacity % of rated
Excitation: recommended	10	10	10	V ac or dc
Excitation: maximum	15	15	15	V ac or dc
Input impedance	415± 15	385± 15	400± 20	ohms
Output impedance	350± 3	350± 3	350± 3	ohms
Deflection at rated capacity	<±0.4	<±0.4	< ±0.4	mm
Environmental protection	IP65	IP67	IP68	
Cable type	4 Wire, PVC, Single Floating Screen		6 Wire, Polyurethane Dual Floating Screen	
Cable length	3	3	5	m
Dimensions L x W x H	70 x 34 x 76	62 x 26 x 80	70 x 32 x 90	mm
Threaded mounting holes	M12 x 1.75	½" 20 UNF	M16 x 2.0	2 places
Mfrs. List No.	614-300M-D2	616-500U-F	620-1000M-F	
Order Code	704-3820	704-3831	704-3843	213401

	Capacity	Order Code	Price Each
Load Cells	300kg	704-3820	
	500kg	704-3831	
	1000kg	704-3843	

Accelerometers

Acceleration/Vibration Sensing



Piezo-Electric Accelerometers

These units have a crystal of piezo-electric material to which is attached a seismic mass. When the crystal is stressed in tension or compression, it generates an electrical charge which is proportional to the acceleration or vibration level it is experiencing. Internal circuitry converts this signal into a voltage or current 4 to 20mA output for data collectors or process control loops. These robust sensors have no moving parts and offer long-term stability and reliability. They have a wide frequency range and signals can be integrated to give velocity and displacement values.

Piezo-Resistive Accelerometers

These models have a seismic mass attached to a cantilever beam. The beam is deflected whilst experiencing 'g' forces and this movement is converted to an electrical signal by resistance changes in a semiconductor sensing unit element. Internal circuitry provides amplification of the signal and temperature compensation. The frequency range of these devices is lower than the piezo-electric models, having the advantage of being able to monitor static or DC acceleration levels.

ACCELEROMETERS - SELECTION TABLE

Vibration Sensitivity	Supply	Mounting Connection	Monitran List No.	Order Code
Industrial - Process Control 4-20mA Loop 0-10mm/sec	10-32V (smoothed)	M8 male 5m armoured cable	MTN/1185CM8-10	706-8219
0-25mm/sec	10-32V (smoothed)	M8 male 5m armoured cable	MTN/1185CM8-25	706-8268
Industrial / Laboratory, Light Weight 100mV/g @ ±10g	As above	Bonding 5m cable with 50W BNC connector	MTN/1800	707-7415
Industrial / Laboratory, Low Frequency 100mV/g @ 5g	10-24V dc @ 7ma 4 holes,	3mm ∅ 5m armoured cable	MTN/7000-5	707-7555
50mV/g @ 50g	10-24V dc @ 7ma 4 holes,	3mm ∅ 5m armoured cable	MTN/7000-50	707-7567

224692

Low-Frequency



- Capable of monitoring static or DC acceleration levels
- Frequency range DC to 1kHz
- Ideal for laboratory or process control

Piezo-resistive accelerometer suitable for laboratory and R and D applications.

H=26 (overall), Base=25x25, Mounting: 4 ∅3.1 on 19.5 square pitch

Measurement ranges	± 5g, ± 50g
Frequency response	5g type = DC to 500Hz, 50g type = DC to 1kHz
Resonant frequency	5g type = 500Hz, 50g type = 1800Hz
Overload limits	20 in any direction
Sensitivity	5g type = 100mV/g, 50g type = 50mV/g
Operating temp. range	-25°C to +85°C
Temperature coefficient	Span 1% up to 50°C, Zero 1% up to 50°C

Supply Voltage	10 to 24 Volts DC @ 7mA
Case material	Stainless Steel
Weight	40g (nom.)
Sealing	IP65
Connection	5 metres 4-core armoured cable

212339

Sensitivity	Mfrs. List No.	Order Code	Price Each
100mV/g @ 5g	MTN/7000-5	707-7555	
50mV/g @ 50g	MTN/7000-50	707-7567	

Process Control, 4-20mA



- Direct velocity output
- Two wire 4 to 20mA industrial standard
- Easy process control loop interface
- Stand-alone use with digital meter

H=42 (excl. stud), Hex=28 A/F

Output	4 to 20mA	Electrical noise	0.3mg max.
Frequency response	2Hz to 1kHz ±10%	Transverse Sensitivity	Less than 5%
Mounted resonance	18kHz min.	Supply voltage	10-32 volts (smoothed)
Measurement range	50g peak	Standard cable	5 metres armoured PVC
Sensitivity	0-10mm/sec or 0-25mm/sec	Case material	Stainless Steel
	Base isolated	Weight	150g
Isolation	-25°C to +80°C	Sealing	IP67
Operating temp. range	0.08%/°C	Mounting thread	M8
Temperature Sensitivity			

212340

Sensitivity	Mfrs. List No.	Order Code	Price Each
0-10mm/sec	MTN/1185CM8-10	706-8219	
0-25mm/sec	MTN/1185CM8-25	706-8268	

Float Switches

Vertical Float



Magnetic Level Sensor



- The world's smallest magnetic Level Sensor
- Ruthenium (Ru) contact material
- Operating temperature -20°C to +80°C
- Polypropylene case, float and nut
- Suitable for use in water and/or dilute acids
- Designed for applications such as coffee machines, tank level control and water dispensers

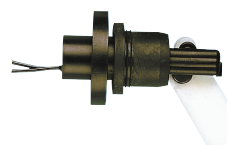
155-5936 155-5937 155-5938 177-5048 177-5049 177-5050 177-5051

Contact style	Form A	Form A	Form A	Form A	Form B	Form A	Form A
Travel - Float	3.5mm	8.5mm	18.5mm	5.5mm	8.5mm	8.5mm	18.5mm
Switching current	0.7A	1.5A	1.5A	0.7A	1.5A	1A	1A
Carry current	1.0A	2.0A	2.0A	1A	2A	1.2A	1.2A
Contact power rating	10VA	50VA	50VA	10VA	50VA	10VA	10VA
Switching voltage (Max.) dc	180V	200V	200V	180V	200V	200V	200V
Switching voltage (Max.) ac	130V	250V	250V	130V	250V	140V	140V

502073

Mfrs. List No.	Order Code	Price Each
MCPLS-020-A-3	155-5936	
MCPLS-031-A-6	155-5937	
MCPLS-041-A-6	155-5938	
MCPLS-020-B-3	NEW 177-5048	
MCPLS-031-B-6	NEW 177-5049	
MCPLS-031-A-3	NEW 177-5050	
MCPLS-041-A-3	NEW 177-5051	

Horizontal



Float dia = 15.5
Mounting hole dia = 20.6

Typical Sensing Applications

- Windscreen washer bottles
- Recycled water systems
- Condensate level alarm
- Level rise or fall sensing (rotate housing 180)
- Temperature range to 60°C
- Specific Gravity to 0.8
- External fitting
- Repeatability and reliability due to Reed Switch characteristics

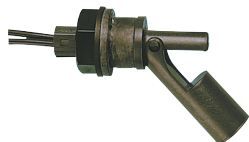
Switching voltage	100-6773
Switching current	100Vdc, 250Vac
Switching power	1A
Min S.G	15VA
Material	0.80
Temperature Range	Acetal Copolymer (Housing), Foamed Polypropylene (Float Material)
Sealing Components	-30°C to +60°C
Cable	EPDM
	2 x 22AWG PVC insulated, 0.1m long

Float Switches - continued

Horizontal - continued

Description	Mfrs. List No.	Order Code	Price Each
Float switch 85.5mm	FLCS-01	100-6773	233624

Horizontal



- Specific Gravity to 0.65
- Temperature range to 130°C
- Suitable for a wide range of liquids
- Level rise or fall sensing (rotate housing 180)
- International Standards Approvals and recognition (UL, WRC, EN)
- Repeatability and reliability due to Reed Switch characteristics



Float dia = 17.3
Mounting hole dia = (16.5 internal, 23 external fitting)

Typical Sensing Applications

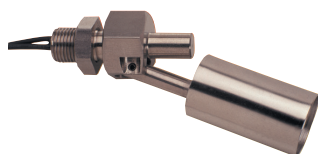
- Vending machines - water level
- Coolant level indication - automotive
- Boiler heating - element protection
- Drinking water level - fountain
- Fuel level - engine
- Oil level - engine

Switching voltage	120Vdc, 120Vac
Switching current	1A
Switching power	15VA
Min S.G	0.65
Material	Glass Filled Polypropylene
Temperature Range	0°C to +80°C
Sealing Components	Silicone
Cable	2 x 18AWG PVC insulated

Type	Mfrs. List No.	Order Code	Price Each
Polypropylene(120V)	FLS801-51	100-6780	233603

Horizontal Float - Model SSF211

Internal Fitting



- 304 Grade stainless steel
- Internal mounting
- Compact design
- Temperature range to 120°C
- User configurable N/O or N/C action
- Reversible switch action

L = 95, Float dia. = 17

Contact type	NO or NC	Max.temperature	120°C
Max. switching voltage	300V AC/dc	Mounting Style	Internal
Max. switching current	0.5A	Mounting thread	1/8" BSP NPT
Max. switching power	50 VA	Lead length	500mm
Min. S.G. of liquid	0.80	Max. wall thickness	17mm
Material	Stainless steel		

Mfrs. List No.	Order Code	Price Each
SSF211X050	424-9100	249053

Horizontal Float - Model SSF212

External Fitting



- 304 Grade stainless steel
- External mounting
- Compact design
- Temperature range to 120°C
- User configurable N/O or N/C action
- Reversible switch action

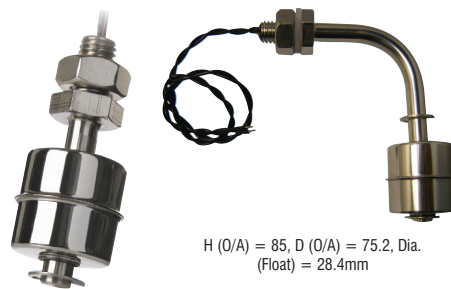
L = 102, Float dia. = 17

Contact type	NO or NC	Max.temperature	120°C
Max. switching voltage	300V AC/dc	Mounting Style	Internal
Max. switching current	0.5A	Mounting thread	1/2" NPT
Max. switching power	50 VA	Lead length	500mm
Min. S.G. of liquid	0.80	Max. wall thickness	10mm
Material	Stainless steel		

Mfrs. List No.	Order Code	Price Each
SSF212X050	424-9112	249054

Level Sensors - Internal Mount

Stainless Steel



H (O/A) = 85, D (O/A) = 75.2, Dia. (Float) = 28.4mm

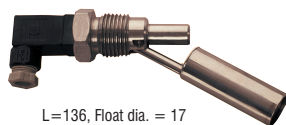
H (O/A) = 59.5, H (Float) = 28.5, Dia. (Float) = 28.4mm

Order Code	177-5046	177-5047	177-5052
Contact type	Form A	Form A	Form A
Max. switching voltage	140V ac / 200V dc	300V ac / 350V dc	300V ac / 350V dc
Max. switching current	500mA	500mA	500mA
Max. carry current	1000mA	2500mA	500mA
Max. switching power	10W / 10VA	50W / 50VA	50W / 70VA
Material	V2A 304 Stainless steel	Stainless steel	SUS304 Stainless steel
Max.temperature	125°C	125°C	125°C
Mounting Style	Internal	Internal	Internal
Mounting thread	M10	M10	M10

Mfrs. List No.	Order Code	Price Each
Vertical Float		
MCPLS-045A-3VAI	177-5046	
MCPLS-045A-6VAI	177-5047	
Horizontal Float		
MCPLS-080A-6VAL	177-5052	

Horizontal Float - Model SSF212P

External Fitting



L = 136, Float dia. = 17

- 304 Grade stainless steel
- External mounting
- Compact design
- Temperature range to 120°C
- User configurable N/O or N/C action
- Reversible switch action
- Plug-in connection

Contact type	NO or NC	Max.temperature	120°C
Max. switching voltage	300V AC	Mounting Style	Internal
Max. switching current	0.5A	Mounting thread	1/2" NPT
Max. switching power	50 VA	Connection	Plug
Min. S.G. of liquid	0.80	Max. wall thickness	10mm
Material	Stainless steel		

Mfrs. List No.	Order Code	Price Each
SSF212XP	424-9124	249055

Horizontal Float - Model SSF24

Internal Fitting



H = 75, L = 55, Float dia. = 28

- 316 Grade stainless steel
- Internal mounting
- Compact design
- Temperature range to 120°C
- User configurable N/O or N/C action
- Reversible switch action

Contact type	NO or NC	Max.temperature	120°C
Max. switching voltage	300V AC	Mounting Style	Internal
Max. switching current	0.5A	Mounting thread	1/8" BSP
Max. switching power	50 VA	Lead length	350mm
Min. S.G. of liquid	0.80	Max. wall thickness	10mm
Material	316 Grade Stainless steel		

Mfrs. List No.	Order Code	Price Each
SSF24X035	424-9150	249138

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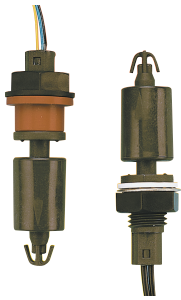
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Vertical



- SPST Switching
- Repeatability and reliability due to Reed Switch characteristics
- Top or bottom entry
- 500mm connecting lead
- Internal or External fitting
- Level rise or fall sensing (rotate housing 180)
- Suitable for a wide range of liquids
- Nylon 6.6 or Glass Filled Polypropylene case
- UL Recognised

H=89(58 into vessel)
Float dia = 22.2
Mounting hole dia = (16.5 internal, 23 external fitting)

Typical Sensing Applications

- Deionised water
- Vending machines - Drinking water
- Food processing
- Boiler heating element protection
- Drinking water level - Hot and cold
- Irrigation systems
- Oil level
- Photographic chemicals

	100-6798	100-6797	100-6799
Switching voltage	100V DC	250V AC	250V AC
Switching current	1A	1.0A	1.0A
Switching power	15W	15W	15W
Min S.G	0.7	0.85	0.7
Material - Case	Polypropylene	Nylon 6.6	Polypropylene
Temperature Range	0°C to +80°C	-30°C to +130°C	-30°C to +110°C

233606

Body Colour	Mfrs. List No.	Order Code	Price Each
Charcoal	VS801-51	100-6798	
Blue	VS303-51N	100-6797	
Charcoal	VS803-51	100-6799	



Vertical



Typical Sensing Applications

- Franking equipment
- Oil tanks
- Agricultural equipment
- Condensate level - alarm system

H = 59mm (45 into vessel), Float dia. = 22mm
Mounting hole dia = 8.5mm, Max. Container wall thickness = 3.5mm

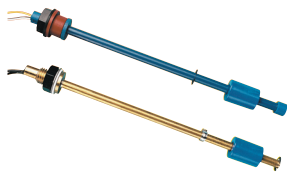
- Level rise or fall sensing (rotate float 180)
- Suitable for a wide range of liquids
- Temperature range to 70°C
- Specific Gravity to 0.7
- Polypropylene housing
- M8 internal fitting
- Foamed or hollow float (foamed float maintains buoyancy if punctured)
- Top or bottom entry
- Repeatability and reliability due to Reed Switch characteristics

	100-6795	100-6796
Switching voltage	250V AC	250V AC
Switching current	1A	1A
Switching power	15W	15W
Min S.G	0.65	0.65
Float Type	Foam	Hollow
Material - Housing	Polypropylene	Polypropylene
Temperature Range	-30 to +60°C	-30 to +70°C
Sealing Components	Silicone	Silicone
Cable	2 x 22AWG PVC insulated, 0.1m long	2 x 22AWG PVC insulated, 0.1m long

233612

Model Type	Mfrs. List No.	Order Code	Price Each
Foamed Polypropylene (float Material)	VCS-02	100-6795	
Polypropylene (Housing), Hollow Polypropylene (Float Material)	VCS-04	100-6796	

Extended Vertical Float



H=260(224 into vessel), Float dia = 30
Mounting hole dia = 16.5 internal, 23 external fitting
Max wall thickness = 10 internal, 4 external fitting

- Two position level switch
- High and low level sensing
- Suitable for a wide range of liquids
- Temperature range to 130°C
- Specific Gravity to 0.8
- Nylon 6.6 or Brass housing
- M8 internal or external fitting
- Top or bottom entry
- Both switches closed with float down
- High repeatability and reliability due to Reed Switch characteristics

Typical Sensing Applications

- Water level, high and/or low
- Boiler heating element protection
- Coolant level indication
- Waste water level
- Cooking oil level
- Sump level

Switch Specifications - (When mounted from the top)

Contact Form	Form B - SPST
Switching voltage	100V dc
Switching current	0.3 A
Switching power	3W
Min S.G	0.8
Cable	3 x 18AWG PVC insulated, 0.5m long
Cable Colours	Black/White

233615

Price Each

Type	Mfrs List No.	Order Code
Nylon 6.6	FEVS312-51	100-6764
Brass	FEVS722-51	100-6765

Dual Position Float - RSF66 Series



Internal Fitting



- WRAS Approved
- Simple to mount and use
- PPS material
- Switching capability to 240VAC

Material	PPS	Switching voltage	DC : 120 V - AC : 240V
Temp. range	-10 °C to 85 °C	Switching power	25VA
colour	Grey	Switching current	0.6A
Min. Fluid SG	0.85	All ratings are for resistive load only	

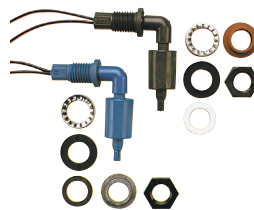
Order Code	Upper Switch Level	Lower Switch Level	Total Length
424-9318	25mm	75mm	102mm
424-9320	25mm	100mm	127mm
424-9331	25mm	125mm	152mm
424-9343	25mm	150mm	177mm
424-9355	25mm	175mm	202mm

Notes: Upper switch is open when level is low, closing when level rises to 25mm from top. Lower switch is open when level is high, closing when level falls to the lower switch level as indicated in the chart.

249264

Mfrs. List No.	Order Code	Price Each
RSF66A25B75	424-9318	
RSF66A25B100	424-9320	
RSF66A25B125	424-9331	
RSF66A25B150	424-9343	
RSF66A25B175/538	424-9355	

Right Angle



- Level rise or fall sensing (rotate float 180°)
- Suitable for a wide range of liquids
- Temperature range to 80°C
- Specific Gravity to 0.7
- Glass Filled Polypropylene
- UL Recognised
- Side tank entry
- Internal or External fitting
- Repeatability and reliability due to Reed Switch characteristics

Float dia = 22.2
Mounting hole dia = 16.5mm internal, 23mm external fitting
Max wall thickness = 10mm internal, 4mm external fitting

Typical Sensing Applications

- Coolant level indication
- Condensate level alarm
- Vending machines - Drinking water
- Boiler heating element protection
- Drinking water level - (WRC approved for Cold)

	100-6791	100-6792
Switching voltage	100Vac/dc	250V AC, 100V DC
Switching current	1A	1A
Switching power	15W	15W
Min S.G	0.65	0.65
Material	Polypropylene	Polypropylene
Temperature Range	-30 to +80°C	-30°C to +80°C
Sealing Components	Silicone	Silicone
Approvals	UL	UL
Cable	2 x 18AWG PVC insulated	2 x 18AWG PVC insulated

Float Switches - continued

Right Angle - continued

Colour	Mfrs. List No.	Order Code	Price Each
Charcoal	RS801-51	100-6791 ●	
Blue	RS803-51	100-6792 ●	

Reed Level Sensor Water or Dilute Acid



LS02 - L (overall) = 75, Dia. (float) = 23.5mm
 LS03 - L (overall) = 80, Dia. (float) = 17.2mm

Standard liquid level sensors for water applications and dilute acids. The shaft, nut and float are manufactured from black polypropylene, the seal from nitrile rubber. They are terminated by a PVC cable with across section of 0.14mm² and a length of 500mm. The LS02 has to be mounted vertically; the LS03 version should be mounted horizontally.

Contact Form	1A / 1B	Switching current A (max)	0.5
Contact resistance mR (max)	150	Switch carry current A (max)	1
Switch power W (max)	10	Breakdown voltage V dc	240
Switch voltage V dc (max)	200	Temperature, operating °C	-20 to +90

Mfrs. List No.	Order Code	Price Each
LS02-1A71-PP-500W	107-9489 ●	
LS02-1B71-PP-500W	107-9490 ●	
LS03-1A71-PP-500W	107-9491 ●	

Horizontal Float - RSF40 Series

Internal Fitting



Compact
151-643 L=73 (overall), 60 (actuator), Mtg. hole dia=12.7
151-644 L=70 (overall), 57 (actuator), Mtg. hole dia=16.5
732-709 L=88 (overall), 55 (actuator), Mtg. hole dia=16.5
 Max. vessel wall thickness=4
Standard
146-300 L=116 (overall), 94 (actuator), Mtg hole dia=12.7
 Max vessel wall thickness=6

- Use to indicate either high or low levels
- Choice of materials and sizes for different applications

The units are supplied with normally open contacts, but by inverting the float bobbin the contacts become normally closed.

Liquid level float switches designed to be mounted on the side of a vessel from the inside. Contacts close when the pivoted actuator magnet comes close to the reed switch in the main body. Supplied with fixing nut and sealing ring and 1m of PVC cable.

(607-320 = 0.5m)

151-643: Compact size suitable for use with non-corrosive fluids with temperatures varying up to 100°C.

151-644: Compact size, giving a significantly longer life at sustained temperatures of 80°C to 100°C. It is also compatible with a variety of industrial chemicals.

732-709: Compact size. Material is PPS (polyphenylene sulphide). 120°C max. operating temperature, ideal for applications with continuous exposure to boiling water. Good resistance to wide range of chemicals and to water absorption. **UL** and **WRC** approval.

146-300: Standard size with higher contact rating, suitable for non-corrosive fluids and **WBAS** approved for use with drinking water, suitable for food industry equipment.

Order Code	151-643	151-644	732-709	146-300
Style	Compact	Compact	Compact	Standard
Case material	Nylon	Polypropylene	PPS	Nylon
Mtg. hole dia.	12.7mm	16.5mm	16.5mm	12.7mm
Max. switch current	0.5A	0.5A	1A	2A
Max. switch voltage	250V AC/ 140V DC	440V AC/ 1000V DC	440V AC/ 1000V DC	250V AC/ 120V DC
Contact rating	15VA	15VA	25VA	100VA
Min SG of liquid	0.85	0.85	0.85	0.80
Temperature range °C	-20° to +75°	-20° to +100°	-10° to +120°	-20° to +75°
Case colour	Dull Black	Opaque	Grey	Dull Black

212428

Compact Size	Mfrs. List No.	Order Code	Price Each
Nylon	RSF43Z100JC032	151-643	
Polypropylene	RSF44Z100JF035	151-644	
PPS	RSF46Y050TG515	732-709	
Standard size			
Nylon	RSF33W100NC	146-300	

Horizontal Float - RSF70 Series External Fitting



- UK Water Research Council Approved
 - **UL** Recognised
 - Rotate 180°, rise or fall to operate
- L=88 (overall), 55 (actuator),
 Mounting hole dia.=23.0,
 Max. wall thickness=4.0, Leads L=0.5m

Horizontal liquid level switches similar to RSF40 (Compact) Series, but incorporating a compression seal to permit fitting from outside the vessel. SPST switch action using reed switch.

	730-609	730-610	732-722
Max. switching voltage	240V AC, 120V DC	240V AC, 120V DC	240V, 120V
Max. switching current	0.6A	0.6A	0.6A
Max. power	25W	25W	25W
Min. S.G. of liquid	0.85	0.85	0.85
Material	GFS Nylon	GFS Polypropylene	PPS
Temperature range	-20°C to +75°C	-20°C to +100°C	-10°C to +120°C
Case colour	Black	Opaque	Grey

212280

Mfrs. List No.	Order Code	Price Each
GFS Nylon	RSF73Y050RM	730-609
GFS Polypropylene	RSF74Y050RM	730-610
PPS	RSF76Y050TV518	732-722

Vertical Float - RSF50 Series



- **UL** recognition on N/O contact versions
- High 25W rating on N/O versions
- Float reversal, rise or fall to operate (N/O versions)
- Nylon, polypropylene or PPS (polyphenylene sulphide) body
- Normally open or changeover contacts
- PPS type withstands continuous exposure to boiling water
- PPS type gives good chemical and water absorption resistance

H=70 (overall), 44 (inside vessel)
 Float dia.=27, Mtg. hole dia.=12.2
 Cable L=1m

	730-646	730-658	730-660	730-671	732-710
Contacts	N/O (Form A)	C/O (Form C)	N/O (Form A)	C/O (Form C)	N/O (Form A)
Case material	Nylon	Nylon	Polypropylene	Polypropylene	PPS
Switching current @ 0-30V	0.6A ac/ 0.5A dc	--	0.6A ac/ 0.5A dc	--	0.6A ac/ 0.5A dc
Switching current 120V	0.2A ac/ 0.15A dc	--	0.2A ac/ 0.15A dc	--	0.2A ac/ 0.15A dc
Switching current 240V	0.1A ac	--	0.1A ac	--	0.1A ac
Max. switch current	--	0.25A	--	0.25A	--
Max. switch voltage	--	48V ac/28V dc	--	48V ac/28V dc	--
Max. power	25VA	3VA	25VA	3VA	25VA
Min. S.G. of liquid	0.80	0.80	0.80	0.80	0.80
Temperature range °C	-20 to +75	-20 to +75	-20 to +100	-20 to +100	-10 to +120
Case colour	Black	Black	Opaque	Opaque	Grey

212278

Mfrs. List No.	Order Code	Price Each
Nylon N/O	RSF53Y100RC	730-646
Nylon C/O	RSF53V100MC	730-658
Polypropylene N/O	RSF54Y100RC	730-660
Polypropylene C/O	RSF54V100MC	730-671
PPS N/O	RSF56Y050TB516	732-710

Vertical Float



- Liquid level float switch for vertical mounting, suitable for either high or low level indication
- Suitable for use in fresh and salt water, diesel oil, paraffin and various dilute acid and alkaline solutions

The units are supplied with normally open contacts, but by inverting the float bobbin the contacts become normally closed. Supplied with a 1m PVC cable.

Max. switching current	1A
Max. switching voltage	240V AC, 300V DC
Max. switching power	24VA
Min. S.G. of liquid	0.80
Temperature range	-10°C to +75°C
Case Material	Polypropylene

L=48 (overall), Mtg dia = 3/8",
Float travel = 9.5, Float dia = 25

212429

Price Each

Order Code
103-846

Stainless Steel, Vertical Float

Horizontal/Vertical Mounting



Stainless steel liquid level sensors with vertical float, versions available for vertical mount and horizontal mount with right angle stem. Designed to operate in a wide range of environments. SPST switch action.

- Internal vessel mounting
- 50W switching capability
- Float reversal, rise or fall to operate
- UL Recognised
- Top or bottom tank mounting
- Silicone sealing washer

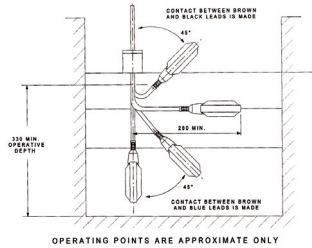
Mounting hole dia. = 10, Leads L = 0.3m

Switching Capacity	50W	Min. S.G. of liquid	0.75
Switching Voltage	240V AC/200V DC	Case material	Stainless Steel 304
Switching/Carry current	0.5A/1A	Operating pressure	10 Bar
Operating temperature	-10°C to +120°C (intermittant to 200°C)		

212238

Type	Mfrs. List No.	Order Code	Price Each
Vertical mount	RF3001A/VFS30	730-180	
Horizontal mount	RF3002A/HFS30	730-191	

Level Regulators - Overview of Operation



The sealed float chamber swings vertically about a weight attached to the cable, which causes the contacts to change as the liquid level falls and rises.

234882

Level Regulators - LR02 & LR02IS - ATEX Approved

5m, 10m, 20m cable

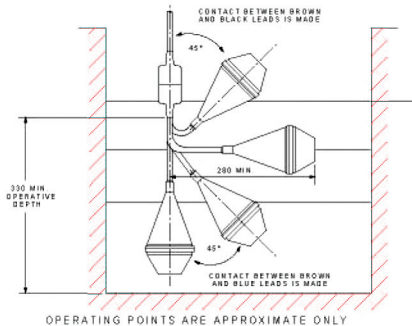


Sealed float chamber in synthetic rubber housing. Float swings vertically about weight. Contacts change state as liquid level falls or rises.



- Chemical-resistant HYPALON rubber housing
- Changeover contacts, three core cable
- Simple to install
- Trouble-free operation

Float: L=170, Dia.=90



Contact rating	LR02 = 250V.5A
Max. temperature	70°C
Specific Gravity	0.80 to 1.3
Max. submerged depth	20 metres
Actuation	LR02 : Internal roller ball and microswitch arrangement
Position of weight	Fixed, 120mm from float

WARNING: MERCURY SWITCHES SHOULD NOT BE OPENED

212313

Cable Length	Mfrs. List No.	Order Code	Price Each
Non-mercury Regulators			
5m	LR02-L05M	706-3830	
10m	LR02-L10M	706-3842	
20m	LR02-L20M	706-3854	
ATEX Rated			
5m	LR02IS-L05M-ATEX	129-9548	
10m	LR02IS-L10M-ATEX	129-9549	
20m	LR02IS-L20M-ATEX	129-9550	

Level Regulators - LR03, LR06, LR07

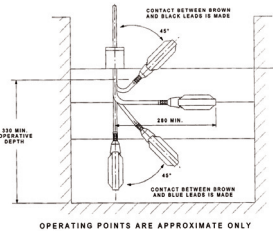
PVC, CPE, PUR and EPDM cable



Sealed float chamber in plastic housing. The float swings vertically about a weight attached to the cable or the cable attachment point on the side of the vessel, which causes the contacts to change as the liquid level drops or rises.

Change over contacts, three core cable available with:

- LR03, PVC cable for general use
- LR03, CPE cable for use in sewerage
- LR06, PUR cable for use in DIESEL OIL
- LR07, WRAS Approved EPDM cable for use in POTABLE WATER
- Easy to install and inexpensive
- Non mercury construction
- Trouble-free operation
- Optional adjustable ballast weight
- Non-mercury level regulator



Float: L=103, W=81 Weight: L=57, Dia.=50

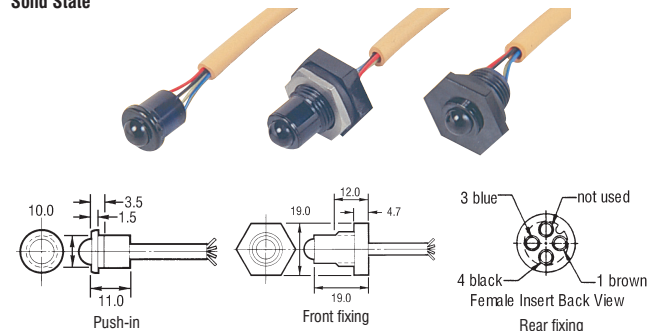
Contact rating	250V, 15A
Max. temperature	70°C
Specific Gravity	0.90 to 1.3
Max. submerged depth	20 metres
Actuation	Internal steel roller ball and microswitch arrangement
Position of weight	Adjustable, 280mm minimum from end of float

212312

Cable Length	Cable Type	Mfrs. List No.	Order Code	Price Each
5m	PVC	LR03-L05M.	706-4263 ▲	
10m	PVC	LR03-L10M.	706-4275 ▲	
5m	PUR	LR06 L05M.	388-9841 ▲	
10m	PUR	LR06 L10M.	388-9853 ▲	
5m	EPDM	LR07 L05M.	388-9877 ▲	
10m	EPDM	LR07 L10M.	388-9889 ▲	
5m	CPE	LR03-L05M-CPE	129-9545 ●	
10m	CPE	LR03-L10M-CPE	129-9546 ●	
Weight LR03/LR06		LR03-W.	706-4287 ▲	
Weight LR07		LR07-W.	390-6541 ▲	

Optical Level Switches

Optical Liquid Level Sensor Solid State



Solid state liquid level sensors incorporate an optoschmit trigger which provides a digital output that denotes the present or absence of a liquid. The plastic dome contains an LED and the optoschmit sensor, arranged so that when it is not covered by a liquid, a light path is established between them by total internal reflection.

Three mounting styles are available. The two threaded styles have a stainless steel fixing nut and flourosilicone rubber gasket supplied, which fix the sensor from on one type and from the rear on the other. The push-in style may be fitted into metal housings or plastic bodies, in some cases an O-ring is recommended to help in the sealing of the finished product.

- Solid state reliability
- Fast response
- Wide temperature range -25°C to +100°C
- Polysulphone body compatible with most industrial liquids
- Suitable for venting machines, food processing and tank level applications

Optical Level Switches - continued

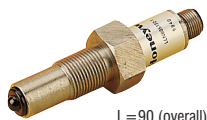
Optical Liquid Level Sensor - continued

Solid State - continued

Power Supply	Optoschmitt LED	4.5V DC to 12V DC (5V dc above 85°C) 200mA 5V dc, 30 to 40mA (1.1 to 1.4V dc typ) 200mA max sinking -40°C to +125°C	250mm flying leads	383310/406083
Output current				
Mounting thread				
Connections				

Type	Mfrs. List No.	Order Code	Price Each
Push-in	LLE105100	868-8303▲	
Front fixing	LLE102101	868-8311▲	
Rear fixing	LLE103101	868-8320▲	

Solid State, Industrial



L=90 (overall)

Thread=3/8" BSP, Hex=24 A/F,
Connection thread = M12 1

- Solid state reliability, no moving parts
- Stainless steel, high pressure housing with IP67 protection
- Wide temperature range -40°C to +125°C
- Designed for industrial environment, exposed to extremes of temperature, pressure, vibration and shock
- Polysulphone sensor dome suitable for hygiene applications
- 3-pin M12 plug-in connection

● TTL-compatible 200mA sinking output, fast response

Industrial version of Honeywell solid state liquid level sensor, working on principle of total internal reflection and providing a digital output that denotes the presence or absence of liquid.

Supply voltage	10V to 40V dc	Hysteresis	1mm dependent on liquid
Supply current	35mA (LED), 8mA typ. (opto-Schmitt)	Repeatability	±1mm

Mfrs. List No.	Order Code	Price Each
LLN865172-1	723-4612	

Conductive Level Controllers

Miniature Controller - 61FGPN



H = 50,
W = 38, D = 70

- Space saving version of the 61F-GP general purpose conductive level controller
- Suitable for single or two point level control of conductive materials (liquid or solid)

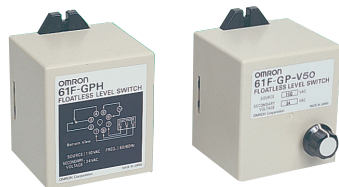
Electrical connections are via a plug-in octal base.

Operating voltage	110V AC or 240V ac (-15%, +10%)
Electrode voltage	8V ac
Output changeover relay	5A @ 240V AC/24V
Dielectric strength	1500V ac 50/60Hz
Power consumption	3.2VA max.
Temperature range	-10°C to +55°C

Operating Voltage	Mfrs. List No.	Order Code	Price Each
110V AC	61F-GPN2 110AC	177-887	
240V ac	61F-GPN2 240AC	177-888	

Surface/DIN	Mfrs. List No.	Order Code	Price Each
	PF083A-E	134-0949●	

Controllers - 61FGP Series



H = 92 (overall), W = 64, D = 68

- Plug-in conductive level controllers ideally suited to control top and/or bottom levels of fluids
- For use in conjunction with appropriate electrode assembly

General Purpose Type: Single point or differential level control of all conductive liquids. Also suited for refrigeration as an ice bank controller.

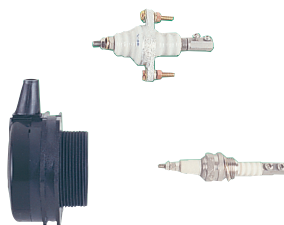
High Sensitivity Type: For liquids having very high specific resistance of the order of 10 5 Ω/cm, such as boiler condensation, distilled water and damp sand.

Operating voltage	24V AC to 240V AC 50/60Hz
Operating voltage range	85 to 110%
Contact rating	3A @ 250V ac (Resistive load), 1A @ 250V ac (Inductive load)
Insulation resistance	100Mohm @ 500V dc
Dielectric strength	2000V AC
Power consumption	3.5VA max.
Temperature range	-10°C to +55°C

Type	Probe Voltage	Operate Resistance	Release Resistance (Max.)
General purpose	8V ac	4kW	15kW
High sensitivity	24V ac	70kW	300kW

Operating Voltage	Mfrs. List No.	Order Code	Price Each
ac	61FGPN8110AC	160-3070●	
ac	61FGPN8240AC	160-3071●	
High Sensitivity			
240V AC ac	61FGPN8H240AC	160-3072●	
Screw terminal base			
	8PFA1	160-3074●	

Electrode Holders



Electrode Order Code 103-275 is suitable for the above holders.

- Single electrode holder for low specific resistance liquid applications, suitable for acids, alkalis and seawater. Electrode holders will operate correctly when they are up to 1 metre apart
- Triple electrode holder, suitable for three electrodes, has protective terminal cover. Suitable for city water and other general applications
- Single electrode holder available for temperatures up to 250°C and pressures up to 20kg/cm² at the lower portion of the electrode screw. Withstand temperature at the upper portion of the screw is 150°C

Type	Mfrs. List No.	Order Code	Price Each
Single	BF1	103-268	
Triple	PS3S	160-3075●	
Single (high temp./pressure)	BS1	160-3076●	

Mass Airflow Sensors

Digital Airflow Sensor



Zephyr - HAF Series



Body - H = 12.8, W = 26,
D = 19.8mm

- High accuracy
- Full calibration and temperature compensation
- High sensitivity at low flows
- High stability
- Low pressure drop
- Linear output
- Fast response time
- High 12-bit resolution
- Low 3.3V dc operating voltage

- ASIC-based I²C digital output
- Bidirectional flow sensing capability
- Inensitive to altitude
- Inensitive to mounting orientation
- Small size

Mfrs. List No.	Order Code	Price Each
Short Port - Snap Mount		
HAFBSS0200C2AX3	182-3264●	

MEMS Uni-directional Mass Flow Sensor



Dust Resistant



H = 27.2, W = 23.3,
D = 10mm (body)

- Unique Dust Segregation System (DSS)
- Cyclone flow structure diverts particulate from sensor element
- PCB Mounted and Connector models available
- High accuracy, reliable mass flow measurement
- Alternative to differential pressure sensing
- Measure over 200 l/m with a bypass set-up

Supply voltage - V DC	5V DC to 10V DC
Current Consumption	15mA
Operating Humidity	Under 85% RH
Operating Temperature	-10°C to 60°C

Connection Type	Mfrs. List No.	Order Code	Price Each
PCB Terminals	D6F-P0010A1	157-3150●	
3 Pin Connector Version	D6F-P0010A2	157-3151●	

Premium service without a premium price



With thousands of prices already reduced, go online to see our most up-to-date pricing at www.element14.com

Mass Flow Sensor



D6F-01A1
H = 33, W = 33, D = 9mm



D6F-05N2
H = 22.1, W = 62, D = 21.6mm

These small mass flow sensors combine high accuracy with fast response. Therefore they have many applications sensing air, non-corrosive gas and Liquid Natural Gas (LNG) in medical apparatus, combustion control and analysis equipment. Output is via a Molex 3 pin connector. The devices are supplied complete with the connector and 100mm lead.

Supply voltage - V DC	Min. 10.8	Max. 26.4	Operating Humidity	Min.	Max. Under 85% RH
Current Consumption		60mA	Operating Temperature	-25°C	+55°C

418055

Gas	Mfrs. Type	List No.	Order Code	Price Each
Air, 0 - 1 L/min	D6F-01A1-110		100-7612	
LNG, 0 - 5 L/min	D6F-05N2-000		100-7614	

MEMS Flow Sensor

Dust Resistant



- Dust resistant design
- Incorporates the patent pending Dust Segregation System (DSS)
- 99.5% of dry airborne particulates separated
- Consistent air velocity measurement

Supply voltage - V DC	3.45
Current Consumption	15mA
Operating Humidity	Under 85% RH
Operating Temperature	-10°C to 60°C

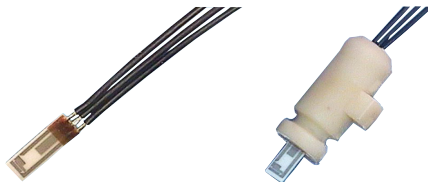
H = 13, W = 8, D = 22mm

518055

Flow Range	Mfrs. List No.	Order Code	Price Each
0 to 3m/s	D6F-V03A1	157-3149	

Thermal Mass Flow Sensor

FS1 & FS5 Series



Standard Body - H = 0.15, W = 2.4, D = 7mm
Lead = 195mm
Molded Body - Dia. = 6, L = 14mm
Lead = 184mm

The flow sensor element consists of two temperature dependent platinum resistors, both deposited on one chip. The low resistance resistor, with a small area, is used as a heater. The other resistor serves to measure the reference temperature. Using a bridge circuit, the differing resistance value of the two elements leads to different (self) heating. The (self) heating is dependent upon the applied voltage, the mass flow and the media in which the sensor is located. Higher voltage increases self heating, a higher flow rate increases cooling. If the self heating is kept constant by a suitable controller, the voltage increases with higher flow rates and therefore becomes a measure of the mass flow.

The FS5 is characterised by a thermally more efficient sensor structure which exhibits the same electrical connected loads and a higher chip temperature and is thus more sensitive.

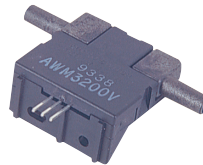
- Easy adaptable for different applications or into housings
- Simple signal processing and calibration
- Insensitive to contamination
- Excellent reproducibility
- Excellent long-term stability
- Ideal for HVAC, medical devices, food industry etc.
- Measuring range up to 100 m/s
- Sensitivity 0.01 m/s
- Temperature range -20°C to +150°C
- Temperature sensitivity <0.1%K (dependent on electronic)

453906

Body Style	Mfrs. List No.	Order Code	Price Each
Gas Sensors			
Standard	FS1.0.1L.195	126-6952	
Molded	FS1.A.1L.195	126-6953	
Standard	FS5.0.1L.195	NEW 177-8049	
Molded	FS5.A.1L.195	NEW 177-8050	
Liquid Sensors			
Standard	FS1L.0.1L.195	126-6954	
Molded	FS1L.A.1L.195	126-6955	

Microbridge

0 - 0.2 l/min to 0 - 1 l/min



- Sensors give signal-conditioned output proportional to the air/gas flow through the device
- Wide range of applications

Connections
1 Output voltage
2 +ve supply voltage
3 Ground

H = 31.5 (excl pins), W = 20.5 (excl ports), D = 15.5 Port O/D = 5.08, Pin spacing = 2.54, Fixing centres = 12.7

Microbridge mass airflow sensors give a signal conditioned output (1V to 5V dc for a 10V dc supply) proportional to the air/gas flow through the device. They are sensitive to flows up to 1 litre/min (0 - 1000 standards cc's/min). The transducers are uni-directional, the air flow going from P1 to P2.

Applications: Air conditioning (variable air volume), medical ventilation/anaesthesia control, gas analysers, gas metering, fume cabinet and process control.

Excitation voltage	10V DC±10mV DC
Output voltage	5V at full span
Null voltage	1.00V dc±50mV dc
Repeatability and hysteresis	±0.5% of reading
Response time	3ms (max.)
Operating temperature	-25°C to +85°C
Overpressure	25 psi

	147-0604	147-0602
Operating range	0 to 200 sccm (0 to 0.2 litres/min)	0 to 1000 sccm (0 to 1 litre/min)
Mfrs. List No.	AWM3100V	AWM3300V

Flow Range	Mfrs. List No.	Order Code	Price Each
0 to 200 sccm		147-0604	
0 to 1000 sccm		147-0602	

Microbridge

0 - 5 l/min to 0 - 20 l/min



L = 163 (overall), W = 32, D = 35, Fixing centres = 43.2 20.3

- Flow ranges from 0 to 5 litres/min. up to 20 litres/min.
- Device has two 1/4" NPT snap-on fittings enabling simpler connection

Microbridge uni-directional mass airflow sensors featuring higher flow ranges. Electrical connection is via 4-pin connector (3 pins on device), the mating connector being supplied with the sensor.

Applications: Mass flow testing/calibration systems, medical insufflators, environmental sampling equipment, oxygen concentrators and patient monitors.

Excitation voltage	10V DC ±10mV DC	Response time	60ms (max.)
Output voltage	5V dc at full span	Operating temperature	-25°C to +85°C
Null voltage	1.00V dc ± 50mV dc	Overpressure	50 psi
Repeatability and hysteresis	±0.5% of reading	Calibration	Nitrogen N ₂

Flow Range	Mfrs. List No.	Order Code	Price Each
0 to 5 litres/min	AWM5101VN	516-090	
0 to 10 litres/min	AWM5102VN	516-107	
0 to 15 litres/min	AWM5103VN	516-119	
0 to 20 litres/min	AWM5104VN	516-120	

Mass Air-flow Sensor - AWM 720



H=80, W=37, D=40

- Port Style; Tapered 22mm
- Flow rates upto 200 Standard Litres per minute (SLPM)
- Highly stable null and full scale
- Extremely low hysteresis and repeatability errors, less than 0.35% of reading
- Fast response time, 6ms typical
- Low power consumption, less than 65mW
- Low pressure drop 2.5 cms H2O at full scale

The AWM 720P1 Microbridge mass air - flow sensor provides inline flow measurement with a specifically designed bypass flow housing

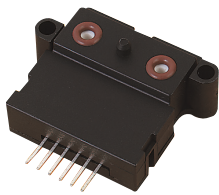
Supply Voltage	8 Vdc min, 15 Vdc max	Span Offset	4 Vdc
Output Voltage	1 - 5V DC	Operating Temperature	-25°C to 85°C
Null Shift over temp	± 0.025 Vdc	Media Compatability	Dry gas only
Output Shift over temp	-2% -25°C to 10°C & +2% 25°C to 40°C	Weight	34g
Null Offset	1V, ± 0.05 Vdc	Shock	100g peak

Mfrs. List No.	Order Code	Price Each
AWM 720P1	424-5568	

Mass Airflow Sensors - continued

Microbridge - Manifold Mount

Honeywell



H = 30.2 (excl pins),
W (body) = 30.5, F.C. = 34.0
Pressure ports: bore:2.3,
O-ring dia. = 6.2

- Manifold mount/O-ring sealed
- Unamplified sensors have 6-pin bridge output and ceramic flow tube
- Choice of flow range on unamplified sensors: 0±25 sccm (standard c.c.'s/min.) and 0±1000 sccm
- Low flow ±25 sccm sensor is suitable for hydrogen and helium
- Amplified sensors have 3-pin signal conditioned outputs
- Choice of flow range on amplified sensors: 0 to +1000 sccm with ceramic flow tube and 0 to +6 slpm (standard litres per minute) with plastic flow tube
- Sensors may be used in high common mode pressure range of 150 psi

Mass airflow sensors for manifold mounting, using dual Wheatstone bridge technology for controlling airflow measurement.

	721-6695	721-6713	721-6725
Flow range (full scale)	0 to 25 sccm	0 to +1 litres/min	0 to +6 litres/min
Output voltage (full scale)	8.5±1.5mV dc	5±0.15mV dc	5±0.15mV dc
Null shift	±0.20mV dc	±0.025mV dc	±0.025mV dc
Output voltage shift			
-25°C to +25°C	+2.5% reading	-5% reading	-5% reading
+25°C to +85°C	-2.5% reading	+6% reading	+6% reading
Power consumption (max.)	60mW	60mW	60mW
Repeatability and hysteresis	±0.35% reading	±0.50% reading	±1.00% reading
Pressure drop (in H ₂ O)		1.02 typ	8.0 typ
Excitation voltage	10V DC±10mV	Calibration gas	Nitrogen
Operating temperature	-25 to +85°C		

212311

Flow Range	Mfrs. List No.	Order Code	Price Each
Unamplified Sensors			
0 to 25 sccm	AWM42150VH	721-6695	
Amplified Sensors			
0 to +1 litres/min	AWM43300V	721-6713	
0 to +6 litres/min	AWM43600V	721-6725	

Electromechanical

Mass Flow Meter

Evaluation Kit EK-F3



The EK-F3 Evaluation kit offers an easy to use environment to illustrate the unique features of the sensor system and to adapt it to your specific application.

The Kit contents (see list below) include one EMI meter to the flow rate of your choice, a serial interface cable, various standard fittings for an easy flow connection and a Viewer Software to make the measurement results visible on a PC.

Contents

1. Mass Flow Meter EM1
2. Serial interface cable (sub-D 9pin) with power supply (Euro connector)
3. Legris Flow Connector (No.3101 1217; G3/8; Tube OD=12mm)
4. Hausmann Flow Connector (No. 38.131; G3/8; Tube ID=10mm)
5. Power Adapter for US-style plugs
6. Flow Viewer software on CD

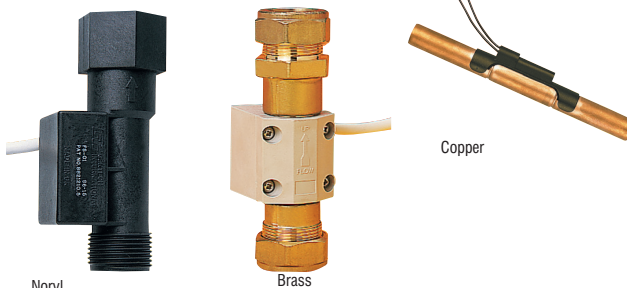
For EM1 Technical Specifications See Order Code 120-7226

337769

Mfrs. List No.	Order Code	Price Each
EK-F3-V	120-7229	
EK-F3-R	120-7230	
EK-F3-L	120-7231	

Liquid Flow Sensors and Flow Switches

Liquid and Air Flow Switches



- Operates from a small head of liquid
- Maximum pressure 10 Bar @ 20°C
- Low pressure drop
- Vertical mount ±15°
- Suitable for various pipe sizes
- Triac switching (AC)
- Reed Switch switching (DC)
- Suitable for liquid and air

- #### Typical Sensing Applications
- Power shower
 - Central heating systems
 - Mains water control
 - Flow sensing
 - Leak detection
 - Cooling systems

	100-6766	100-6767	100-6768	100-6771	100-6772
Switching voltage	250V rms	300V DC	250V AC	300V DC	300V DC
Cotnact	Form A - Triac	Form A - SPST	Form A - Triac	Form A - SPST	Form A - SPST
Switching current	3A	1A	3A	1A	1A
Switching power		15W		15W	15W
Material	Noryl	Noryl	Brass	Brass	Copper
Temperature Range	-30°C to +100°C	-30°C to +85°C	-30°C to +100°C	-30°C to +100°C	-30°C to +80°C
Flow Rate	1l/min	1l/min	1l/min	1l/min	0.5litre / minute
Fitting	3/4" BSP	3/4" BSP Male/Female	22mm compression	15mm pipe	15mm pipe

233632

Connection Type	Mfrs. List No.	Order Code	Price Each
3/4" BSP	FS-01	100-6766	
3/4" BSP Male/Female	FS-02	100-6767	
22mm compression	FS-05	100-6768	
22mm compression	FS-06	100-6771	
15mm pipe	FS-10	100-6772	

Liquid Flow Switches

1.5l/min and 3.5l/min



- Flow switches in Acetal resin housing, **WRC** approved for use in potable water systems
- Suitable for use with hot or cold water and alcohol or dilute (including organic) acids up to 5% concentration
- Flow switches can be mounted vertically or horizontally, with the cap upwards

- 15mm types:** L=107, W=56 (standard type), Dia.=15, Cable L=250
- 22mm types:** L=114, W=58 (standard type), Dia.=22, Cable L=250

Available 15mm and 22mm diameter for 1.5 litre/min and 3.5 litre/min flows respectively. Greater sensitivity is achieved with vertical installation.

crydom

Sensors & Transducers

Bidirectional Mass Flow Meter

ASF1430

SENSIRION
THE SENSOR COMPANY



The Mass Flow Meter enables extremely accurate measurement of fast changing gas flow over 4 orders of magnitude. The performance is based on CMOSens™ sensor technology, which combines a high precision sensor element with the amplification and A/D converter circuit on one single CMOS chip. This results in high resolution, fast response time and a large dynamic range at very low power consumption. All measurement data is fully calibrated and temperature compensated by means of an internal microcontroller.

Mounted in a rugged, chemically inert PBT housing the ASF1430 is suitable for such applications as mass flow metering for process control, medical applications, heating ventilation and air conditioning solutions as well as gas flow metrology.

The sensor housing provides two inlets for measuring the gas flow and withstands overpressures of 2 bar (29 psi). The unit requires a supply voltage of between 7 and 18V dc and provides an RS-232 and SPI compliant electrical interface.

- Total mass flow integrator
- Data rates up to 200 Hz
- Dynamic range 0.01 sccm to 400 sccm
- Calibrated and temperature compensated
- RS-232 and SPI digital interface

Measurement Range:	-400 to 400 sccm (bi-directional)
Resolution:	0.1 sccm
Repeatability:	0.0025 % full scale or 0.025 % measured value
Accuracy:	0.05 % full scale or 1 % measured value
Response time:	5 ms (min) to 640ms (max)
Operating temperature:	0 °C to 70 °C

Electrical Data

Supply voltage range:	7 to 18V dc
Input current:	20 mA @ 9 V (typical), 27 mA @ 9 V (max.)
Output signal:	RS 232 or SPI compliant

243055

Price Each

Sensor ASF1430	Order Code	Price Each
Sensor ASF1430	120-7220	

Over 500 000 products available online



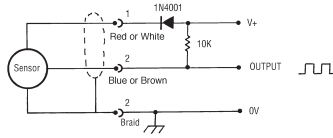
Switch point	1.2 to 1.5/min (15mm types), 3.0 to 3.5/min (22mm types)
Switch off flow (max.)	0.5 litres/min. (15mm types), 1.0 litres/min. (22mm types)
Operating temperature	85°C (max.)
Switching voltage	240V rms/dc
Max. full cycle on state surge	1.0A @ 50Hz (standard types)
Max. full cycle continuous	1.0A @ 50Hz (standard types)
Max. switching power	15VA (standard types)

212240

Mfrs.	List No.	Order Code	Price Each
	FS15	730-889	
	FS22	730-890	

Liquid Flow Sensor

0.05 - 1.67ℓ/min.



H=78, W=32.5, D=27, Lead L=1.9 metres

- Ideal for use with water, petrol etc.
- Bi-directional inlet and outlet
- Use for flow ratio measurement, flow safety, automotive applications etc.

This accurate flow sensor uses Hall effect technology to give a variable frequency pulsed output proportional to the liquid flow rate. The sensor has a POM (Hostaform C) and stainless steel housing, and accepts hoses of either 6mm or 8mm inside diameter. Connection is via a 2 core, screened cable supplied connected to the unit.

Flow range	3 to 100 litres/hour	Sensor to sensor variation	±5%
Output frequency	22Hz @ 10 litres/hour 133Hz @ 60 litres/hour	Power supply	4.5 to 24V (V _{CC})
Viscosity range	0.8 to 10 centistokes	Output	100mV to V _{CC}
Design pressure	10 Bar	Current consumption	20mA
Signal reproducibility	±1%	Temperature range	-25°C to +85°C

212431

Price Each

Order Code
178-923

Water and Air Flowmeters - 'Loflow'



- Gives accurate indication of low rates of fluid flow
- Easy wall or panel mounting

'Loflow' flowmeters use the principle of variable area flow measurement, utilising the movement of a float inside a calibrated tapered tube. The float is displaced upwards with increasing flow rate until the weight of the float balances the upward force of the fluid. The top of the float then indicates the flow rate on the calibrated scale.

Construction:	
Body	Grillon-TR55
Black body half/ball retainer	ABS 7020
Black panel	PVC
Max. working pressure	10 bar
Max. working temperature	60°C
Accuracy	±2%
Repeatability	±1%

Media	Inlet Port	Flow Rate	Float Material	Order Code
	BSPT Male	Litres/minute		
Water	3/4"BSPT	0.2-2	Acetal	541-266
Water	3/4"BSPT	1.5-10	Stainless Steel	541-278
Water	3/4"BSPT	2-22	Stainless Steel	541-280
Air	1/4" BSPT (male)	1.0-7.5	Acetal	731-092
Air	1/4" BSPT (male)	3-21	Stainless Steel	731-109
Air	3/4"BSPT	5-50	Acetal	731-110
Air	3/4"BSPT	20-135	Acetal	731-122
Air	3/4"BSPT	60-720	Stainless Steel	731-146

Note: These units must be used in the vertical plane

224716

Flow Range	Mfrs.	Order Code	Price Each
(Litres/min)	List No.		
Water			
0.2-2	LF.2020	541-266	
1.5-10	LF.211	541-278	
2-22	LF.2220	541-280	
Air			
1.0-7.5	LF3007E	731-092	
3-21	LF3021E	731-109	
5-50	LF3050E	731-110	
20-135	LF3135E	731-122	
60-720	LF3720E	731-146	

Water Flow Meters - 'Easiflow'

1 to 100 ℓ/min.



- Calibrated specifically for use with water
- Suitable for installation in any plane
- Flow rate indicated on viewing window
- Wide range of flow rates available, either indication only or with switching facility from either ac or dc supply

'Easiflow' flowmeters use the principle of difference pressure to give a positive and repetitively accurate indication of flow rate on the calibrated scale.

Construction:	Body: Polyester	Connections	1" BSP (female)
Viewing area	Borosilicate glass	Max. working pressure	10 bar
Cone	Acetyl	Temperature range	+5°C to +80°C
Spring	Stainless Steel	Viscosity range	10 to 200 centistokes
Seal	Nitrile	Accuracy	±5% f.s.d.
Dimensions (mm)	H (overall) = 196, Ø = 60	Repeatability	±1% f.s.d.

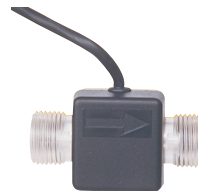
224717

Flow Range	List No.	Order Code	Price Each
(Litres/min)			
Flowmeters			
1 to 15	EFW.0152	541-291	
2 to 30	EFW.0302	541-308	
4 to 50	EFW.0502	731-160	
5 to 100	EFW.1002	541-310	

Flow Transducers

Compact, Pulse Output

1 - 25ℓ/min.



'Dataflow Compact' is for monitoring low flows of liquids with an electronic output signal at low cost. Fluid impacts on a twin-vaned turbine which rotates at a speed proportional to the flow rate. The rotation is detected optically and converted to a pulse output signal suitable for display or control of flow rate, totalising or batch control.

Electrical connections, 3 wire H = 29, W = 52 overall, D = 27
 Red = +5V Connections 3/8" BSP
 Green = output signal Cable L = 300
 Blue = 0V

- Pulse output signal for flows up to 25ℓ/min.
- Lightweight, robust and suitable for most liquids
- Operates in any plane
- Simple to install
- Negligible pressure drop
- Accepts reverse flow
- Low cost flow measurement

Construction	Body: Grilamid - TR55	Shaft retainers	Grilamid - TR55
Rotor	18% PTFE filled nylon	Max. working pressure	20 bar
Shaft	Stainless Steel	Pressure drop (max.)	0.1 bar @ 15ℓ/min.
Calibration	'K' Factor: 752 pulses/litre	Temperature range	+5°C to +70°C
Accuracy	±2% typ.	Power supply	+5V DC
Repeatability	±1%	Flow range	1 to 25ℓ/min.

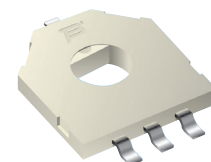
212177

Mfrs.	List No.	Order Code	Price Each
	DFC.9000	560-121	

Encoders - Incremental

Rotary Position Sensor

3382 Series - Surface Mount



- Surface mount
- Dustproof
- One million rotational cycles
- Thin profile



H = 2.11, W = 11, D = 12.04mm
 Shaft Diameter = 5mm

- Applications:**
- Volume control on audio equipment
 - Dishwasher control systems
 - Motion controllers
 - Automotive temperature range

537881

Mfrs.	List No.	Order Code	Price Each
	3382G-1-103G	SMD171-7387	

Encoders - Incremental - continued

EM14 Series - Rotary Optical Encoder with Switch **BOURNS®**



- HCMOS, CMOS and TTL compatible
- Compact package size
- High rotational cycle life
- Standard or high force push switch option
- Optional detent
- Splashproof shaft seal
- Recommended for human/machine interface applications (HMI)
- Cable/connector option
- Optional bracket

Voltage rating 5V DC
 Maximum operating speed 120 rpm
 Rotational life 1000000 Cycles (Non-Detent)
 1000000 Cycles (Detent)

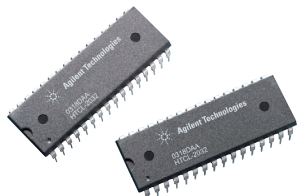
Operating temperature -40°C to 70°C

Pulses Per Revolution	Detents	Switch Option	Mfrs List No.	Order Code
32	No Detent	No Switch	EM14A0D-C24-L032N	147-0246
8	32	Push Switch	EM14A1D-C24-L008S	147-0247
64	No Detent	Push Switch	EM14A0D-C24-L064S	147-0248
64	No Detent	No Switch	EM14A0D-C24-L064N	147-0249

Price Each

Mfrs List No.	Order Code
EM14A0D-C24-L032N	147-0246
EM14A1D-C24-L008S	147-0247
EM14A0D-C24-L064S	147-0248
EM14A0D-C24-L064N	147-0249

Quadrature Decoder/Counter Interface IC's



- Interfaces encoder to microprocessor
- 33 MHz clock operation
- Programmable count modes (1x, 2x or 4x)
- Single or dual axis support
- Index channel support
- High noise immunity
- Schmitt trigger inputs and digital noise filter
- 32-bit binary up/down counter
- Latched outputs
- 8-bit tristate interface

- 8, 16, 24 and 32-bit operating modes
- Quadrature decoder output signals up/down and count
- Cascade output signals, up/down and count
- Substantially reduced system software
- 5 V operation (V_{DD} - V_{SS})
- TTL/CMOS compatible I/O
- Operating temperature: -40 to 100°C
- 32-pin PDIP or 20-pin PDIP

Mfrs.	Order Code	Price Each
HCTL-2022	116-1110	
HCTL-2032	116-1111	

Quick Assembly Two and Three Channel Optical Encoder



- Two channel quadrature output with optional index pulse
- Quick and easy assembly
- No signal adjustment required
- Low cost
- Resolutions up to 512 counts per revolution
- Small size
- -40 to 100°C operating temperature
- TTL compatible
- Single 5V supply

Channel	CPR	Shaft Size	Mfrs. List No.	Order Code
HEDM55xx Series				
2		8mm	HEDM-5500#B13	116-1163
HEDM5500 Series				
2		3mm	HEDS-5500#A02	116-1181
2	500	3.175mm	HEDS-5500#A03	116-1182
2	500	4mm	HEDS-5500#A11	116-1184
2	500	6mm	HEDS-5500#A12	116-1185
2	100	5mm	HEDS-5500#C14	116-1189
2	512	6.35mm	HEDS-5505#I06	116-1202
3		2mm	HEDS-5540#A01	116-1203
3		3mm	HEDS-5540#A02	116-1204
3		5mm	HEDS-5545#A14	116-1208
2		6.35mm	HEDS-5600#C06	116-1211
3		8mm	HEDS-5645#G13	116-1218

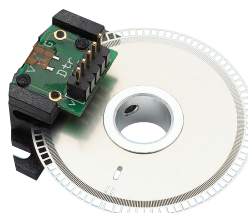
442936

Mfrs.	Order Code	Price Each
List No.		
HEDM-5500#B13	116-1163	
HEDS-5500#A02	116-1181	
HEDS-5500#A03	116-1182	
HEDS-5500#A11	116-1184	
HEDS-5500#A12	116-1185	
HEDS-5500#C14	116-1189	
HEDS-5505#I06	116-1202	
HEDS-5540#A01	116-1203	
HEDS-5540#A02	116-1204	
HEDS-5545#A14	116-1208	
HEDS-5600#C06	116-1211	
HEDS-5645#G13	116-1218	

Three Channel Optical Incremental Encoder



Module with Codewheel



- Two channel quadrature output with index pulse
- Resolution from 100 to 500 CPR (Counts Per Revolution)
- Low cost
- Easy to mount
- No signal adjustment required
- Small size
- -10 to 85°C operating temperature
- TTL compatible
- Single 5V supply

CPR	Shaft Size	Codewheel Rop	Mfrs. List No.	Order Code
500	6.35mm	11.00mm	AEDB-9140-A06	116-1085
500	6mm	11.00mm	AEDB-9140-A12	116-1086
500	8mm	11.00mm	AEDB-9140-A13	116-1087
500	5mm	11.00mm	AEDB-9140-A14	116-1089
360	6.35mm	11.00mm	AEDB-9140-G06	116-1094

442943

Mfrs.	Order Code	Price Each
List No.		
AEDB-9140-A06	116-1085	
AEDB-9140-A12	116-1086	
AEDB-9140-A13	116-1087	
AEDB-9140-A14	116-1089	
AEDB-9140-G06	116-1094	

Reflective Surface Mount Optical Encoder



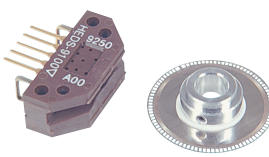
- Reflective technology
- Surface mount small outline leadless package
- Single channel incremental output
- Two channel quadrature outputs for direction sensing
- TTL compatible output
- Single 5V supply
- -20 to 85°C absolute operating temperature

No. of Channels	LPI	Mfrs. List No.	Order Code
2	75	AEDR-8300-1K2	116-1101
2	150	AEDR-8300-1P2	116-1102
2	180	AEDR-8300-1Q2	116-1103
1	75	AEDR-8310-1K2	116-1105

442950

Mfrs.	Order Code	Price Each
List No.		
Two Channel		
AEDR-8300-1K2	116-1101	
AEDR-8300-1P2	116-1102	
AEDR-8300-1Q2	116-1103	
One Channel		
AEDR-8310-1K2	116-1105	

Encoder Module



The module consists of a lensed LED source and a detector IC enclosed in a small C-shaped plastic package.

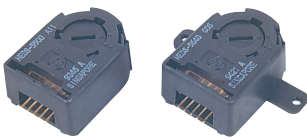
The two channel module and code wheel gives two outputs in quadrature, and the three channel module and code wheel also gives an index output.

Encoder: H=10.2, W=26.7, D=11.7 (excl. pins), Slot width=1.78	● High performance low cost optical incremental encoder modules and code wheels
Code Wheel: O/D=50	● Module designed to be tolerant to mounting misalignment
For shaft dia 1/4" or 6mm	● Modules operate from a single 5V supply
Count frequency (guaranteed max.) 100kHz	
Code wheel set screw 2.56 (use 0.035" hex wrench)	

212434

Description	Resolution Mftrs.		Order Code	Price Each
	(PPR)	List No.		
Encoder Modules				
3 ch.	256	HEDS-9140#F00	165-4867	
2 ch.	2000	HEDS-9000#T00	165-4866	
2 ch. - Flange Mount	500	HEDS-9730#A50	165-4865	
3 ch.	500	HEDS-9140#A00	165-4868	
3 ch.	1024	HEDS-9040#J00	165-4869	
2 ch.	2000	HEDS-9000#T00	165-4866	
Code Wheels				
2 ch., 6mm	200	HEDS-5120#E12	165-4870	
3 ch., 6mm	256	HEDS-5140#F12	165-4875	
3 ch., 1/4"	1024	HEDS-6140#J06	165-4878	
2 ch., 1/4"	500	HEDS-5120#A06	165-4872	
2 ch., 4mm	500	HEDS-5120#A11	165-4873	
3 ch., 1/4"	500	HEDS-5140#A06	165-4876	
3 ch., 4mm	500	HEDS-5140#A11	165-4877	
2 ch., 6mm	2000	HEDM-6120#T12	165-4874	
Assembly Tools				
		HEDS-8906	165-4879	

360/500 Pulses/Rev



H=41.1, W=30.0, D=18.3
 Mounting: Standard types - 2 screw M2.5 on 19.05 PCD or 3 screw M1.6 on 20.90 PCD
 Types with external mounting ears - Overall W=52.1 with 2 fixing holes for M2.5 screws on 46.0 PCD.

A series of two and three channel optical encoders incorporating an HEDS9100/9140 series encoder module and an HEDS5120/5140 series code wheel. The outputs of the two channel version are two square waves in quadrature. The three channel version gives one additional index output pulse per revolution.

The standard encoders (without mounting ears) are available for a 4mm or 1/4" dia shaft and can be mounted to a motor using either the two screw or three screw mounting options on the lid. The encoders with external mounting ears are designed for larger diameter motors and 1/4" dia shafts. The use of an alignment tool or aligning pins is recommended for 2 channel encoders and is essential for 3 channel encoders. Suitable alignment tools and also connecting leads (length 152mm) are available.

- High reliability
- Quick and easy assembly
- High resolution
- Single 5V supply

212435

Type	Mftrs. List No.	Order Code	Price Each
Standard - 4mm Shaft Dia.			
3 ch., 500ppr	HEDS-5540#A11	165-4885	
Standard - 1/4" Shaft Dia.			
2 ch., 500ppr	HEDS-5500#A06	165-4880	
3 ch., 200ppr	HEDS-5540#E06	165-4881	
3 ch., 500ppr	HEDS-5540#A06	165-4882	
External Mounting Ears - 1/4" Shaft Dia.			
2 ch., 500ppr	HEDS-5600#A06	165-4888	
2 ch., 360ppr	HEDS-5600#G06	165-4887	
3 ch., 500ppr	HEDS-5640#A06	165-4889	
2 ch., 200ppr	HEDS-5605#E06	165-4886	
Connecting Leads			
2 ch.	HEDS-8902	165-4890	
3 ch.	HEDS-8903	165-4891	
Alignment Tools			
1/4" shaft dia.	HEDS-8910#006	165-4892	
4mm shaft dia.	HEDS-8910#011	165-4893	

Panel Mount, 256/360/500 Pulses/Rev



Optical incremental encoders designed primarily for panel mounting. Connections by colour coded flying leads.

- Encoders operate from a single 5Vdc supply
- Two channel TTL quadrature output to provide resolution and direction information

Connections: Ch.A=white, Ch.B=brown, VCC=red, Gnd=black
 H=41.1, W=30.0, D=18.3 (body)
 Shaft dia.=6.35, L=12.7
 Leads L=150

Supply voltage 4.5V - 5.5V
 Supply current 17mA typ, 40mA max.
 Operating temperature -20°C to +85°C
 Output voltage 2.4High level min., V low level 0.4V max.

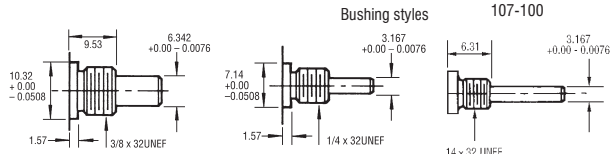
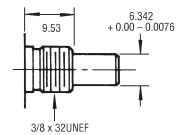
212243/406086

Mftrs. List No.	Order Code	Price Each
256 ppr HEDS-5701#F00	165-4859	
360 ppr HEDS-5701#G00	165-4861	
500 ppr HEDS-5701#A00	165-4862	

EN Series Rotary Optical Encoder



Body
 H=21.21,
 W=15.88,
 D=18.50,
 Spindle L=22.23



- Suitable for digital systems where both magnitude and direction of adjustment must be provided
- 2 bit gray code output produced, channel A leads channel B by 90° (clockwise)
- Ideal as a digital panel control or as position sensing devices in applications where long life, high resolution and precise linearity are critical.

Supply voltage	5V dc ±0.25V dc	Connections	1 Ground
Supply current	26mA max		2 NC
Mechanical rotation	Continuous		3 Output A
Resolution	128 pulses per revolution		4 +Vcc
(935-8242, 935-8277, 9358250)	256 pulses per revolution		5 Output B
(935-8629)	-40°C to +85°C		
Operating temperature			
Mftrs. List No.	ENA1J-B28-L00128L = 935-8242, ENS1J-B28-L00256L = 935-8269,	ENC1J-D28-L00128L = 935-8250,	

207180

Price Each

Order Code	Price Each
935-8242	
935-8269	
935-8250	

120EN Series Rotary Optical Encoder



Ribbon Cable Horizontal PCB Vertical PCB
 Shaft=22 (incl. bush), dia.=6.35
 Mounting bush=3/8" x 32 NEF
 Ribbon cable length=190

- Manually or motor operated rotary optical encoder
- 2 channel quadrature output, channel A leads channel B by 90° electrically, CCW rotation
- Stainless steel spindle, nickel plated bush
- Ribbon cable, horizontal or vertical PCB mounting versions

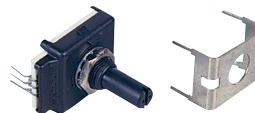
Supply voltage	5V dc ±0.25V dc	Maximum rotational speed	300 rpm
Supply current	30mA max.	Rotational life	10 million revolutions
Mechanical rotation	Continuous	Operating temperature	-40°C to +65°C
Resolution	128 pulses per revolution		
Connections		Yellow	Output A
Ribbon cable	Red 5V dc, Green Ground	Orange	Output B
		Pin 1	Pin 4
		Pin 2	Output A
		Pin 3	Ground
		Pin 4	Output B

207364

Price Each

Style	Mftrs. List No.	Order Code
Ribbon cable	120EN128CBLB25	114-4747
Horizontal PCB	120EN128B66B25	114-4748
Vertical PCB	120EN128C24B25	114-4749

EC Series Digital Contacting Encoder



Body D=27.6, W=22.2, H=7.4
 Shaft=19.0 (inc bush) x 6.32 dia,
 Bush=M9 x 0.75

- Low cost digital contacting encoders, long operating life and high operating temperature characteristics
- 2 bit gray code output is produced, channel A leads channel B by 90° (clockwise)
- Optional snap-on PCB mounting bracket

Contact rating	10mA @ 10V, or 0.1W	Maximum operating speed	120 rpm
Voltage rating	350V ac (or limited by power dissipation whichever <)	Rotational life	200000 revs
		Mechanical rotation	Continuous
		Insulation resistance	>1000Mohm
		Operating temperature	+1°C to +125°C

Cycles Per Revolution	Detents	Mftrs List No.	Order Code
6	24	ECW0J-B24-AC0006	109-111
24	24	ECW1J-B24-AC0024	120-0080

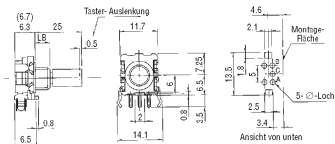
Encoders - Incremental - continued

EC Series Digital Contacting Encoder - continued

207187/406088

	Order Code	Price Each
Encoder, 6 cycles	109-111	
Encoder, 24 cycles	120-0080	
PCB mounting bracket	219-113	

Low Profile 11mm sq



Bush=M7 x 0.75

- Low profile, high precision audio type encoder
- PCB or chassis mounting with momentary switch

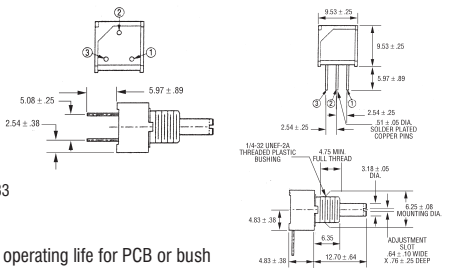
Mfrs. List No. EC11B15242= 119-1733
EC11B15244= 119-1734

Voltage rating 5V d.c. Output signal Channel A leads Channel B by 60° +/-30°
Maximum current 10mA
Rotational life 15000 cycles clockwise rotation

207244

	Order Code	Price Each
Horizontal	119-1733	
Vertical	119-1734	

3315 Series Conductive Plastic



Body H=9.53, W=9.53, D=4.83
Shaft=12.7 (inc bush) x 3.18
Bush=1/4-32 UNEF-2A

- Miniature package, long operating life for PCB or bush mounting
- On clockwise rotation of the shaft a 2 bit gray code output is produced where channel A leads channel B by 90°.

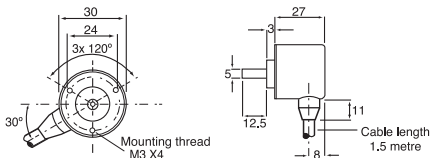
Contact rating 100mA @ 16Vd.c. or 0.1W Mechanical rotation Continuous
Dielectric strength 900V a.c. Insulation resistance >1000MΩ
Maximum operating speed 120 rpm Operating temperature -40°C to + 125°C
Rotational life 100000 cycles Pulses per revolution 6

224004

	Order Code	Price Each
Encoder 6 cycles 3315C	935-4018	
Encoder 6 cycles 3315Y	935-4034	
Encoder 16 cycles 3315C	935-4026	
Encoder 16 cycles 3315Y	935-4042	

100 to 1000ppr with Opto-ASIC - RI32-0 Series HENGSTLER

Solid 5mm Dia. Shaft



- Self-test alarm system continuously monitors for disc contamination, disc breakage, over-temperature, under-voltage and excessive LED ageing
- Short circuit and overload protection
- Ingress protected to IP50

High quality 30mm diameter incremental miniature encoders. All have 2 channels and marker pulse outputs.

Supply voltage 5V dc or 10 to 30V dc
Max. pulse frequency 5V=300kHz, 10-30V=200kHz
Current consumption 30mA (24V dc), 40mA (5V dc)
Output voltage 5V input high ≥2.5V, low ≤0.5V
10 to 30V input high=supply -3V, low ≤2V
Alarm output NPN open collector 5mA

Maximum output load 5V supply ±10mA, 10 to 30V supply ±30mA
Maximum shaft loading Radial 10N, Axial 5N
Absolute max. speed 4000 rpm
Operating temperature -10°C to 60°C
Storage temperature -25°C to 85°C
Shock resistance 100g

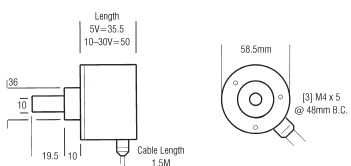
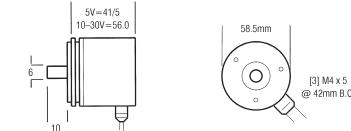
FOR SUITABLE FLEXIBLE COUPLINGS ORDER CODES 730-981 & 730-993

222178

	Mfrs. List No.	Order Code	Price Each
Push-Pull 5V			
100ppr	RI32-0/100AR.14KB	615-936	
360ppr	RI32-0/360AR.14KB	615-948	
1000ppr	RI32-0/1000AR.14KB	615-950	
Push-Pull 10-30V			
100ppr	RI32-0/100ER.14KB	615-961	
360ppr	RI32-0/360ER.14KB	615-973	
1000ppr	RI32-0/1000ER.14KB	615-985	

1000 to 5000ppr with Opto-ASIC - RI58-0 Series HENGSTLER

Solid 6mm/10mm Dia. Shaft



- Short circuit and overload protection
- Maximum pulse frequency: TTL 300kHz, push pull 200kHz
- IP65 protection
- Set of 3 clamping eccentrics included with synchro flange version
- 2 channels, marker pulse and complimentary line driver outputs
- Self-test alarm continuously monitors for disc contamination, disc breakage, over temperature, under voltage, electrical overload and excessive LED ageing. It provides an open collector NPN output if any of these conditions occur
- Available with 5V TTL or 10 to 30V push pull outputs

A range of high quality 58mm diameter incremental encoders with solid 6mm diameter shafts.

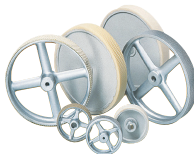
Supply voltage 5V dc TTL or 10 to 30V push pull
Current consumption TTL - 40mA
push pull 60mA (10V dc), 30mA (24V dc)
Output voltage TTL high ≥2.5V, low ≤0.5V
push pull high=supply -3V, low ≤2V
Alarm output NPN open collector 5mA
Max. output load ±30mA
Max. loadings, 6mm shaft Radial 110N, axial 60N
Absolute max. speed 10000rpm
Operating temperature -10°C to +70°C
Storage temperature -25°C to +85°C
Shock resistance 100g

222163

	Supply	Mfrs. List No.	Order Code	Price Each
Solid 6mm Dia. Shaft, Synchro Flange				
2000	5V TTL	RI58-0/2000AS.41RB	615-882	
5000	5V TTL	RI58-0/5000AS.41RB	615-894	
Solid 10mm Dia. Shaft, Clamping Flange				
1000	5V TTL	R158-0/1000AK.42RB	723-4480	
5000	5V TTL	R158-0/5000AK.42RB	723-4508	
1000	10 - 30V push-pull	R158-0/1000EK.42IB	723-4510	

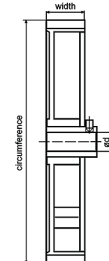
Encoders - Accessories

Measuring Wheels



- High quality
- Suitable for measuring a variety of materials

Circumference (mm)	Width (mm)	Bore Dia (mm)	Coating	Mfrs. List No.	Order Code
200	12	10	Pimpled rubber	9109-10	377-8253
500	25	10	Pimpled rubber	9102-10	377-8228



234118

Circumference	Coating	Order Code	Price Each
200mm	Pimpled Rubber	377-8253	
500mm	Pimpled Rubber	377-8228	

Flexible Couplings

HENGSTLER

Flexible couplings suitable for Hengstler and similar encoders to protect them against excessive mechanical stresses.



Plastic
L=20.5, Dia.=15



Helical
L=28, Dia.=19.2

Type	Plastic	Helical
Absolute max. speed	10000rpm	6000rpm
Torque max.	0.2N-m	0.8N-m
Max. angular misalignment	±2.5 degrees	±4 degrees
Max. shaft misalignment radial/axial	±0.3mm/±0.2mm	±0.25mm/±0.4mm
Material	Polyamide 6.6 glass-fibre reinforced RI32 Series (5mm shaft)	AlCuMgPb, chromed RI58-0 Series (6mm shaft)

212244

Type	Hub Diameters	Mftrs. List No.	Order Code	Price Each
Plastic	5/5mm	3.520.034	730-981	
Plastic	5/6mm	3.520.003	730-993	
Helical	5/6mm	3.520.035	731-006	
Helical	6/6mm	0.070.653	731-018	

Flexible Couplings

PEPPERL+FUCHS



Helical 6x6 L=35, Dia=16
Helical 10x10 L=50, Dia=26



Precision L=25, Dia=25

	Helical 6x6	Helical 10x10	Precision
Maximum rpm	3000	3000	12000
Nominal torque	0.5Nm	1.5Nm	0.4Nm
Max radial mismatch	1mm	1.5mm	±0.4mm
Max. angle error	5.0°	5.0°	±2.5°
Max. axial mismatch	±1mm	±1mm	±0.4mm
Binding posts	M4	M5	M4
Max. starting torque	120Ncm	120Ncm	80Ncm
Maximum rpm	Nickel-faced spring steel, zinc diecast	Nickel-faced spring steel, zinc diecast	Flange:zinc diecast, Housing:polyamide 6.6
Weight	28g	120g	23g

234119

Type	Order Code
Helical	
6x6	377-8277
10x10	377-8265
Precision	
6x10	377-8290
10x10	377-8307

Displacement Sensors

SMART Position Sensor



Honeywell

75mm Linear Configuration



Sensor and Magnet

The SMART Position Sensor, 75 mm linear configuration, is a non-contacting sensing solution for linear absolute position sensing with enhanced speed and accuracy. It senses the position of a magnet relative to the sensor from 0 mm to 75 mm [0° to 3.0°]. Why is the SMART Position Sensor smart? SMART means that this is a sensor that can essentially think for itself. The SMART Position Sensor has the ability to self-calibrate because it uses a patented combination of an

ASIC (Application-Specific Integrated Circuit) and an array of MR (magnetoresistive) sensors to accurately and reliably determine the position of a magnet attached to a moving object (e.g., elevator, valve, machinery, etc.) so that the object's position can be determined.

- Resolution of up to 16 bits provides enhanced accuracy
- Non-contacting technology can provide enhanced product life and durability with less downtime
- Combined patented MR sensor and ASIC technology provide enhanced differentiation and performance
- Air gap of up to 3 ±2.5 mm (0.118 ±0.098") between sensor and magnet expands application opportunities
- Self-diagnostics feature can reduce equipment downtime
- Small size, taking up less space than most competitive technologies, allows for use where space is at a premium
- IP67 and IP69K sealing allow use in a variety of harsh applications

610250

Termination	Mftrs. List No.	Order Code	Price Each
575mm Leadwire	SPS-L075-HALS	178-4725	

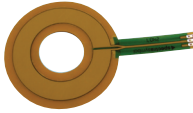
Position Sensors



Membrane - Self Adhesive



Rectilinear



Rotary

- Extremely flat - 0.5mm
- Adhesive film
- 1 Watt max. @ 25°C
- Greater than 1 million cycles life



Length (mm)	Width (mm)	Mftrs. List No.	Order Code	Price Each
Rectilinear				
65.86	20.32	SP-L-0050-ST	173-4690	
115.86	20.32	SP-L-0100-ST	173-4691	
215.86	20.32	SP-L-0200-ST	173-4692	
515.86	20.32	SP-L-0500-ST	173-4693	
Rotary				
56mm OD of Track SP-R-0046/353-103-ST				173-4694
Accessories				
Wiper, M6 x 0.75 WIPER 1-3N			173-4695	

540860

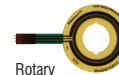
Position Sensors



Linear MagnetoPots



Rectilinear



Rotary



- Contactless Linear Sensor
- IP64 Debris Proof, Splash Proof
- Ideal for Hydraulic and Pneumatic Position Sensing
- Liquid Level Capability
- Life Cycle is >1 million
- Height: 3.50mm (0.138")
- Operating Temperature up to +85°C
- IP Rating of Active Area is IP64
- Crimpflex Solder Tab (ST)
- Requires MAGNET

The MagnetoPot is simple, yet elegant in its ability to track motion in a contactless manner. A magnet on the inside of a cylinder, or a magnet on the opposing side of a motion device will guide the built-in magnetics of the MagnetoPot for position location through a potentiometric output.

The MagnetoPot is a sealed potentiometer, in the membrane potentiometer tradition, yet it does not require a wiper/actuator to connect the collector and the resistor. Instead, the MagnetoPot is controlled by an outside magnet, which attracts the magnetic forces within the MagnetoPot to connect to the linear resistor and give linear potentiometer feedback. The wiper inside the sealed pot is magnetic or ferromagnetic, and will only perform if connected with an exterior magnet.

As opposed to a magnetically-based Reed Switch, which gives simply open or close signals, the MagnetoPot gives the full linear travel of a hydraulic or pneumatic cylinder.

In liquid level applications, the MagnetoPot can attach to the outside of a liquid tank and give position of the magnet inside the float. No water ingress, no wearing of the part by environment, because the MagnetoPot is outside of the tank.

The MagnetoPot is made of polyester, fiberglass and kapton, depending on the specification required. It functions as a voltage divider, a resistor or rheostat, as desired by the end-user. By bringing the exterior magnet into a proximity necessary to connect with the internal magnetic attractors, the operator can obtain linear position sensing based on the location of the exterior magnet. As the exterior magnet moves, so does the electrical output of the MagnetoPot.

N.B. The MagnetoPot should not be mounted to a ferromagnetic surface.

608983

Active Length	Mftrs. List No.	Order Code	Price Each
Rectilinear			
25mm	MP1-L-0025-103-5%-ST	181-8274	
50mm	MP1-L-0050-103-5%-ST	181-8275	
100mm	MP1-L-0100-103-5%-ST	181-8276	
150mm	MP1-L-0150-103-5%-ST	181-8277	
300mm	MP1-L-0300-103-5%-ST	181-8278	
500mm	MP1-L-0500-103-5%-ST	181-8279	
Rotary			
Center of Active of Track			
45.57mm	MP1-R-0046-353-103-5%-ST	181-8280	

Miniature Precision Linear Transducers



34L Series



- Rugged and accurate ideally suited for industrial applications
- High accuracy ±0.1%
- Essentially infinite resolution
- Long life
- Double ball joint shaft terminations

Displacement Sensors - continued

Miniature Precision Linear Transducers - continued

34L Series - continued

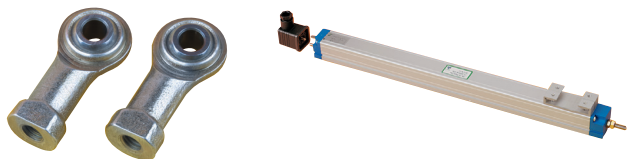
Independent linearity	≥±0.1%
Operating temperature range	-55°C to 125°C
Total resistance	10KΩ
Resistance tolerance	±20%
Maximum Power Rating	0.05W/cm@70°C
Dimensions	366-6724 Housing: L=182.8 Ball joint fixing centres =251.6 366-6736 Housing: L=304.8 Ball joint fixing centres =373.6

233671

Measuring Range	Mftrs. List No.	Order Code	Price Each
100mm	34L 4D 103 W03263	366-6724	
200mm	34L 8D 103 W03263	366-6736	

Precision Linear Transducers

115L Series



- Rugged compact and accurate, for use in many industrial applications
- High accuracy +/- 0.05%
- Essentially infinite resolution
- Long life
- Not sensitive to temperature variations
- Moveable mounting brackets
- Ball joint can be ordered separately for greater flexibility

Independent linearity	≥±0.1%	Resistance tolerance	±20%
Operating temperature range	-55°C to 125°C	Maximum Power Rating	0.05W/cm@70°C
Total resistance	5KΩ	Dimensions	Housing: L = measuring range + 75 Shaft: L = 25 (retracted)

233680

Measuring Range	Mftrs. List No.	Order Code	Price Each
130mm	115L 5,2E 502 W06017	366-6750	
225mm	115L 9E 502 W06017	366-6761	
350mm	115L 14E 502 W06017	366-6773	
750mm	115L 30E 502 W06017	366-6803	
Ball Joint (pair)	320 371	366-6815	

Tilt Sensors

Tilt Sensor



This compact tilt sensor is intended for use in systems such as portable heaters and HVAC equipment. The sensor acts as a safety cut-out to prevent operation when knocked out of a fully vertical position. The D7E-3 has an operating angle of 50° to 80°, minimising the risk of false triggering by small vibrations and knocks. It is self-resetting with a return angle of 25°. This allows the system to be repositioned and restarted without further intervention. The sensor features 10mm pitch, 5mm quick connect terminals for ease of installation.

H=23, W=36.5, Dia.=22mm

Contact Form	Single Pole Single Throw NC	Operating Humidity	25 to 85% RH
Rating	5V dc, 0.1mA to 30V dc, 100mA	Operating Temperature	-25°C to 60°C
Contact Resistance	300mR	Insulation Resistance	100 MR Min.

418089

Mftrs. List No.	Order Code	Price Each
D7E-3	100-7618	

Subminiature Tilt Sensor



PCB Mounting - Discriminating Left or Right



- Subminiature SMD PCB mounting
- Detects the inclination of the sensor between 40° and 80° (Left and Right)
- Reset angle range between 50° and 10°
- Utilizes a highly reliable solid state Hall effect IC
- Low power consumption

H = 7, W = 7, D = 2mm

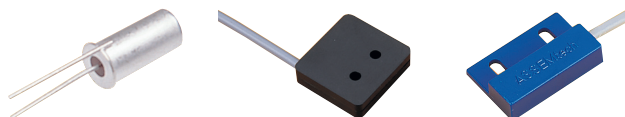
This Hall effect tilt sensor is ideally suited for vertical or horizontal discrimination of digital cameras, PDA's, cellular phones, picture viewers and general orientation detection.

Angle - Activate	40 to 80° (Left and right)
Angle - Reset	50 to 10°
Supply Voltage	2.4 to 3.6V DC
Current Consumption	10µA
Operating Temperature	-10°C to 60°C

508847

Mftrs. List No.	Order Code	Price Each
D6BN-1	SMD 157-3143	

Non-Mercury



540-614 L=10.2, Dia.=4.7, Leads L=12, Dia.=0.51, Lead spacing=2.9	730-221 H=25.0, W=27.0, D=7.0, Fixing centres=10.0 (Dia 3.3) Cable L=300	732-825 L=30, W=20, D=7, Cable L=300 Fixing slots=6x3.3, Fixing centres=16.0
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- Hermetically sealed tilt switches using non-toxic materials
- 540-614 is designed to meet a wide range of low level switching applications
- 730-221 will switch up to 10VA
- 732-825 has fixing slots for fine adjustment in alignment
- Suitable for safety and security systems, limit, position and level sensing

Switching voltage	540-614 60V ac	730-221 240V ac	732-825 60V ac
Switching current	0.25A	0.5A	0.25A
Switching power	3VA	10VA	3VA
Contact resistance, (max)	30Ω	150Ω	30Ω
Max. differential angle	15°	90°	16°
Max. 'break' angle above horizontal	10°	45°	10°
Max. 'make' angle below horizontal	10°	45°	10°
Operating temperature	-40°C to +150°C	-20°C to +70°C	-20°C to +70°C

212169

Mftrs. List No.	Order Code	Price Each
CW1300-1	540-614	
MTA240	730-221	
TSW30/60	732-825	

Tilt/Movement



L=10.2, Dia=4.7, Leads L=16.8, Dia=0.46, Lead spacing=1.27

Switching current	200mA @ 240V AC	Operating modes	Max. 'break' 15° above horizontal
Switching voltage	240V AC, 168V DC		Max. 'make' 5° below horizontal
Switching power	10hm	Operating temperature	-37°C to +100°C

WARNING: THIS SWITCH SHOULD NOT BE OPENED AS IT CONTAINS MERCURY, A TOXIC SUBSTANCE

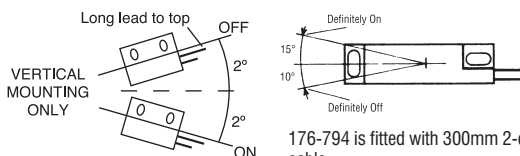
212441

Mftrs. List No.	Order Code	Price Each
CM13R-0	178-338	

Surface Mounting



607-265: L=30, W=20, D=7, Pin L=20, Fixing slots=6x3.3. Fixing centres 16	176-794: L=47, W=12, D=11, Lead L=300, Fixing slots=6x3.2. Fixing centres=39x3
--	---



176-794 is fitted with 300mm 2-core PVC insulated cable.

607-265 has two 20mm wire leads and has transparent housing giving visual indication of switch position.

- Encapsulated mercury switches for surface mounting applications
- Fixing slots allow for fine adjustment in alignment

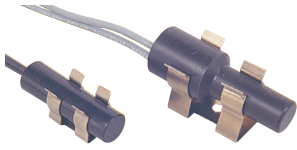
Switch Current	1A max. 0.25A max.	Switch Voltage	240V rms max. 240V rms max.	Switch Power	100W max. 10W max.	Contact Resistance	0.3Ω 0.25Ω	Order Code	176-794 607-265
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WARNING: THESE SWITCHES SHOULD NOT BE OPENED AS THEY CONTAIN MERCURY, A TOXIC SUBSTANCE

Mfrs.	Price Each
List No.	Order Code
S1039	176-794
TSM4/240	607-265

212215

Insulated Steel



170-853
L=46, Dia=13.5,
Lead length=150

170-854
L=60.3, Dia=21.4,
Lead length=150

- Steel cased tilt switches insulated overall with PVC giving compact size and high structural strength
- Designed for horizontal mounting
- Fast switch action with no bounce
- High current switching capability for direct motor control
- Use for tilt sensing, level control, inertia or rotation sensing and in security applications



The mercury-to-mercury contacts close when the switch is tilted below horizontal. The switches have silicone rubber leads and are supplied with mounting clips.

Min Tilt from Horiz.	Rating	Order Code
16°	240V ac 13AA	240V dc 8A 170-853
13°	19A	10A 170-854

WARNING: THESE SWITCHES SHOULD NOT BE OPENED AS THEY CONTAIN MERCURY, A TOXIC SUBSTANCE

212442

Contact Rating	Mfrs. List No.	Price Each	Order Code
13A	S1016		170-853
19A	S1017		170-854

Tip-Over Switches



607-241
Body dia.=28, H=29
Fixing centres 42, Dia.=4.2

170-888
Flange dia.=24, Body dia.=19.5
H=9.2, (22.1 overall)
W(overall incl. terminals)=31.8

Hermetically sealed mercury tip-over switches designed for a variety of level sensitive equipment. Switch contacts are closed when vertical as shown and open when tilted in any direction.



607-241: Switch in polypropylene housing, contacts are closed and open when tilted in any direction 35° from vertical. Fixing holes allow easy fitting. Fitted with silicon rubber coated tin/copper leads.

170-888: Nickel plated steel bodied switch has contacts which open at 25° to 45° from vertical. Connection by 6.35mm spade terminals.

Contact Rating	Contact Resistance	Order Code
15A @ V ac/50V dc, 15A @ 240V ac	1Ω typ.	170-888
15A @ 240V ac	0.3Ω max.	607-241

WARNING: THESE SWITCHES SHOULD NOT BE OPENED AS THEY CONTAIN MERCURY, A TOXIC SUBSTANCE

212217

Mfrs.	Price Each
List No.	Order Code
CM15-T5	170-888
S1116	607-241

Tip-Over Switch, Non-Mercury



L=7.6, Body dia.=5.7mm,
Leads: L=8.6, Dia.=0.5

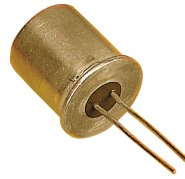
- Hermetically sealed switch
- Switch contacts are closed when vertical as shown and open when tilted in any direction
- Non-mercury contacts

Switching voltage	Contact resistance	5mΩ
60V ac	Operating temperature	-37°C to +100°C
Switching current 0.25A	Case material	Steel Tin Plated (case)
Switching capacity 3VA		
Operating angle 60°±10°		

212408

Mfrs.	Price Each
List No.	Order Code
CW1260	309-4790

Tip-Over/Jitter Switch



Flange dia.=9.5, Body dia.=8.2,
H=9.5, Pin L=11.8, Pin spacing=2.0

Miniature mercury switch with tin plated steel body. Contacts are closed in vertical position, opening when tipped over. Switch may also be used to sense movement or vibration.

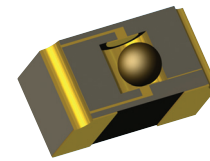
Contacts 'must open' angle	60° from vertical
Contacts 'must close' angle	30° from vertical
Contacts rating	0.5A, 120V ac
Contacts resistance	3Ω

WARNING: THIS SWITCH SHOULD NOT BE OPENED AS IT CONTAINS MERCURY A TOXIC SUBSTANCE

Mfrs.	Price Each
List No.	Order Code
CM1421-0	723-745

Motion Sensors

Micro Vibration Sensor Omnidirectional



- Silent sphere motion
- SMD mount
- Gilded sphere and contact areas
- No mercury
- R_ON < 100 Ohm
- R_OFF > 30 Mega Ohm
- Max. +15V dc operation
- Response level approx. 50 mg
- Temperature range -20°C to +70°C

H = 1.7, W = 2.85, D = 2.45mm

The micro vibration sensor is used for the detection of slight movements and vibrations by means of a mobile micro sphere.

With the aid of tool-specific evaluation electronics, the micro vibration sensor controls the operation of movement-sensitive tools. The micro vibration sensor is utilised for converting many systems to environmentally friendly devices by implementing wake-up and power-down logic to conserve battery power and bringing energy consumption to a minimum, pushing the availability of green technology and green electronics into new areas of design and application. The sensor is typically used for applications such as front and rear bicycle lights, bike computers, remote controls, electronic lock systems, transponders, mobile GPS systems, bluetooth-car-kits, wireless sensor networks, wireless PC mice and headsets, digital multimeters and tools provided with digital displays that are only switched on when in motion.

Mfrs.	Price Each
List No.	Order Code
MVS0608.02	SMD 176-8152

Movement - Miniature



L = 5, Dia = 5.5

This miniature sensor has been specifically designed for the detection of movement and vibration. The sensor is non position sensitive offering a similar level of sensitivity whatever its position and has been designed for use with analogue or digital circuitry.

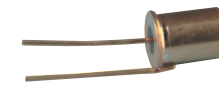
The sensor reacts when disturbed by giving a fleeting change of state (ie NO to NC). The time taken to settle depends on the amount of energy absorbed by the device, the settled state will be random unless mounting attitude is chosen for a NC output.

- Hermetically sealed non toxic metal cased switch with gold contacts
- Designed to meet a wide range of low level switching applications
- Suitable for security, limit, keyfob activation, position and level sensing
- Can also be used as a tilt switch
- Miniature size
- Non-Mercury content

Switching Voltage	24 Vac	Contact resistance	>10 Ω
Current Rating	0.02 A	Operating temperature	-37°C to 100°C
Switching Power	5 VA	Case Material	Steel -Gold Plated

Mfrs.	Price Each
List No.	Order Code
MS24M	422-9046

Shock / Linear Acceleration Switches



L = 6.8, Dia = 4.6

- Robust construction with sealed gold plated contacts
- Easy fitting and proven reliability
- Particularly suited for use in monitoring of centrifugal forces and controlling spin speeds

- Industrial and Medical centrifuge applications
- Electrical generating windmill applications
- Shock sensing in automotive and security applications etc



Over 500 000 products available online

Motion Sensors - continued

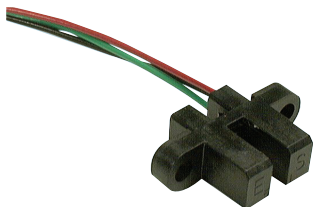
Shock / Linear Acceleration Switches - continued

Contact	1 N/O	Operating temperature	-25°C to 85°C
Switching Voltage	24 Vac	Activation level	499-90582 to 4.9 g
Current Rating	0.25A		499-906010 to 14.9 g
Switching Power	5 VA		499-907115 to 19.9 g
Contact resistance	10Ω		

249447

Activation Level	Mfrs. List No.	Order Code	Price Each
2 to 4.9 g	ASLS2	422-9058	
10 to 14.9 g	ASLS10	422-9060	
15 to 19.9 g	ASLS15	422-9071	

SR16C-J6 Digital Vane Sensor



- Compact, robust package
- Mechanically interchangeable with standard optical style sensors
- Operated by a 'Ferrous Vane' interrupter for pulse counting or position sensing
- Current sinking (open collector) output
- 3.8V dc to 30V dc power supply
- Medium level magnetic switching to reduce stray field interference
- Internally sealed packages for moderate environment applications

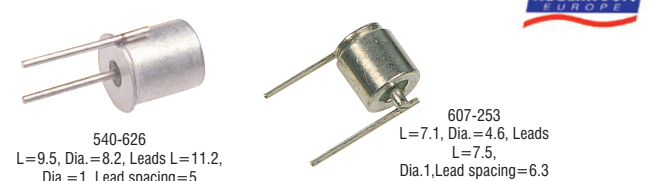
- No mechanical contacts; eliminates product wear
- Non-contact position sensing

Package Style	Dual Tower Wire Exit
Supply Voltage	3.8 to 30V DC
Output Type	Sink
Termination Type	26 Gauge 7 Strand Lead Wire
Operating Temperature	-20 to 85°C
Output Voltage	0.4V DC
Vibration	10g/10Hz to 500Hz
Humidity	95% RH/40°C 100 h
Vane and Geartooth	Low Carbon Steel, High Permeability, Low Residual Induction
Target Material	
Output Current (Max.)	40mA
Supply Current (Max. @ 25°C)	10mA
Vane Thickness	1.14mm
Minimum Tooth Depth	6.35mm

419622

Mfrs. List No.	Order Code	Price Each
SR16C-J6	108-2266	

Vibration/Motion Switches



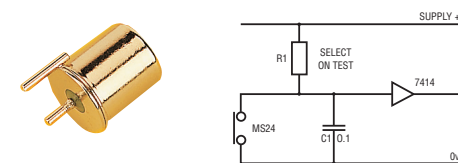
Hermetically sealed switches which make contact when subject to vibration or motion.
540-626: A non-position sensitive switch whose contacts are open when at rest.
607-253: This switch is position sensitive and will be either open or closed depending on the centre electrode. Sensitivity can be varied by the position of the switch.

Contact Rating	0.75A @ 240V ac, 1A @ 110V ac	Temperature Range	-40°C to +260°C	Order	540-626
	0.1A @ V ac		-40°C to +260°C		607-253

WARNING: THESE SWITCHES SHOULD NOT BE OPENED AS THEY CONTAIN MERCURY, A TOXIC SUBSTANCE

Mfrs. List No.	Order Code	Price Each
CM4400-1.	540-626	
CM1800-1.	607-253	

Vibration/Movement Switch - High Sensitivity Non-mercury



- H=9.5, Dia=8.2, Leads L=4.5, Dia=1 Lead spacing=4.7
- Very high sensitivity detection of movement or vibration
 - Non-position sensitive, offers a similar level of sensitivity whatever its position
 - Long life and high reliability in a wide range of environments
 - Ideal for anti-tamper and interference detection



A patented design non-mercury switch in hermetically sealed body with gold contacts. The contacts in their normal mode can be closed or open. When subjected to any small movement or vibration, the contacts will vibrate on and off repeatedly. The output may be damped if less sensitivity is required.

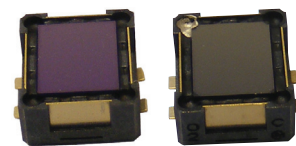
Applications: Movement detection - starting or running of motors, process equipment, detecting unusual levels of movement or vibration, detecting intrusion into control panels and security systems, anti-theft mobile systems in cars, laptop computers.

Switching voltage	24V ac	Contact resistance, initial	2Ω
Switching current	24mA	Operating temperature	-37°C to +100°C
Contact style	change of state	Case material	Steel, Gold Plated

212357

Mfrs. List No.	Order Code	Price Each
MS24	732-795	

Infrared Sensor Pyroelectric



These SMD type pyroelectric infrared sensors exhibit high sensitivity and reliable performance made possible by the use of new ceramic material.



- High sensitivity and signal to noise ratio
 - High resistance to temperature changes
 - High immunity to external noise, vibration and RFI
- Applications**
- Security
 - Lighting
 - Household appliances

	177-7662	177-7663
Size (mm)	2.6 x 6.5 x 6.7	
Channels	Dual	Quad
Responsivity @ 500K, 1Hz	3.8mV _{p-p} (Typ)	3.8mV _{p-p} (Typ)
Supply voltage	2V to 15V	2V to 15V
Field of View	±50°	±50°
Optical filter	5µm long pass	5µm long pass
Operating Temperature	-40 to +70°C	-40 to +70°C

552984

Case Style	Mfrs. List No.	Order Code	Price Each
Dual	IRS-A200ST01-R1	177-7662	
Quad	IRS-A330ST02-R1	177-7663	

Accessories - Fresnel Lens

3m to 5m - Wall Mount	IML-0642	177-7664
5m to 7m - Wall Mount	IML-0658	177-7665
6m to 7m - Ceiling Mount	IML-0669	177-7666

Shock/Linear Acceleration Switch



984-541, 984-553: L=10.9, Dia=4.85, Lead ∅=0.5

The switches are fitted with a spring loaded contact which closes when the switch detects shock or acceleration above its activation level. The contact will open again when acceleration decreases.

- Robust construction with sealed contacts
- Easy fitting and proven reliability
- Particularly suited for use in monitoring of centrifugal forces and controlling spin speeds
- Industrial and medical centrifuge applications
- Electrical generating windmill applications
- Power switching in automotive applications, etc.

Switching voltage	24V ac	Contact resistance	10Ω max.
Switching current	0.25A max.	Operating temperature	-20°C to +85°C

212282

Activation Level	Mfrs. List No.	Order Code	Price Each
5.0 ± 1.5 g	ASLS5	730-210	

PIR-Motion Sensor AMN



- Very small dimensions: ∅10 x 13.5mm (Standard Type)
- Built-in amplifier for direct connection to µ-controller
- Two colours: black and white
- 4 detection types: standard, slight motion, spot, 10m
- Ambient temperature: -20°C to +60°C

Power Supply Voltage Vdd	3 - 6V DC
Output Voltage	Vdd - 0.5V
Output Current	100µA
Circuit Stability Time	7s (Typ.)
Detection Performance	Standard - 5m, 100° horizontal, 82° vertical Slight Motion - 2m, 91° horizontal, 91° vertical Spot - 5m, 38° horizontal, 22° vertical 10m Type - 10m, 110° horizontal, 93° vertical

475764

Detection	Mfrs. List No.	Order Code	Price Each
White Lens			
Standard	AMN31112J	137-3711	
Slight Motion	AMN32112J	137-3713	
Spot	AMN33112J	137-3715	
10m Type	AMN34112J	137-3718	
Black Lens			
Standard	AMN31111	137-3710	
Slight Motion	AMN32111J	137-3712	
Spot	AMN33111J	137-3714	
10m Type	AMN34111J	137-3716	

Pyroelectric Infra-Red Detector



- Movement sensor, for example in infra-red intruder alarms
- Sensor incorporates an optical filter to reflect white or visible light
- Improved sensitivity and reduced white noise
- Suitable Fresnel lens arrays also available

Dual element infra-red detectors housed in metal can package.

731-950: H=4.7, Dia=9.1

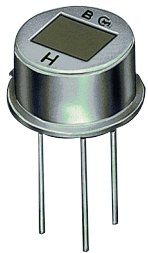
Detector	4.3mVpp(typ.)	Supply voltage	2-15V dc
Sensitivity @ 500°K, 1Hz	10% max	Viewing angle	45°x45°
Sensitivity balance	200mVpp max	Element size	(2.0x1.0mm)x2
White noise level	0.2-2.5V	Operating temperature	-40°C to +70°C
Source voltage			
Mfrs. List No.	IRA-E700St0=100-6209		

212444

Price Each

Order Code	Price Each
Detector	100-6209

Pyroelectric Infrared Sensor



- High sensitivity and excellent Signal to Noise ratio
- High stability, immunity to temperature changes
- Slight movement is detectable
- High immunity to external noise (Vibration, RFI etc.)

This pyroelectric infrared sensor exhibits high sensitivity and reliable performance made possible by ceramic technology and the hybrid IC techniques employed during fabrication. The Fresnel lens is used to decide the detection distance and the detection area (angle) of the sensor.

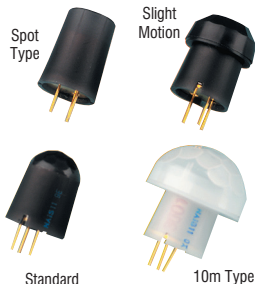
Supply Voltage	Total Resistance	White Noise	Detection Width (mm)	Operating Temperature	Description	Order Code
2 to 15V	47k to 200kΩ	200mVp-p Max.	4.7±0.1	-40 to 70°C	PIR	100-6207
-	-	-	6.6	-25 to 60°C	Fresnel Lens	100-6208

338804

Price Each

Mfrs. List No.	Description	Order Code
IRA-E712ST3	Module	100-6207
IML-0636	Fresnel Lens	100-6208

Motion Sensor, PIR - MP Series



- Extremely compact
- Built in amplifier, can be connected directly to a microprocessor
- Dual lens colours available to match equipment
- 4 detection types: Standard, Slight Motion, Spot Type, 10m Type

Voltage	3V DC to 6V DC	Standard	5m 100° Horizontal, 82° Vertical
Output	Vdd -0.5V, 100µA	Slight	2m 91° Horizontal, 91° Vertical
Circuit stability time	7s (typ)	Spot	5m 38° Horizontal, 22° Vertical
Detection Performance		10m	10m 110° Horizontal, 93° Vertical

249101

Lens Colour	Mfrs. List No.	Order Code	Price Each
Standard			
Black	AMN11111	416-0253	
White	AMN11112	416-0265	
Slight Motion			
Black	AMN12111	416-0277	

Lens Colour	Mfrs. List No.	Order Code	Price Each
Spot Type			
Black	AMN13111	416-0290	
White	AMN13112	416-0307	
10m Type			
Black	AMN14111	416-0319	
White	AMN14112	416-0320	

Stopped Motion Monitor - ROTASTOP3



Self-contained



- Self-contained, no moving parts
- Universal voltage, two wire operation
- Simple, low-cost installation
- No contact with moving parts

L=95, Dia.=M18 (overall)

The ROTASTOP SU1MZ is ideal for monitoring chain- or gear-driven machinery such as gearbox drives, screw conveyors etc. but is suitable for almost any application where stoppage detection is needed.

Supply	24 to 240V ac/dc	Target	18mm dia. target for
Ambient temperature	-15°C to +60°C	Maximum range	
Operating speed	15 to 3600 ppm	Time delay	4 sec.
Protection	IP65	Start up delay	4 sec.
Output	Normally closed	Cable	2 core, PVC sheathed, 2m length
Output rating	When running 1.6mA min, 200mA max. (volt drop 8V)	Indication	LED indication of input pulsed and output energised
Operating distance	8mm ferrous metal	Enclosure	Moulded polycarbonate

212318

Mfrs. List No.	Order Code	Price Each
SU1MZ(A)	705-9220	

Hall Effect Vane Sensors



H=10.9, W=13.2, D=19.1, Slot W=2.5, Slot D=7.4, Fixing centres=14 (dia=2.8)

Hall effect vane sensors include a Hall effect transducer and a magnet, and are operated by passing a ferrous vane through the gap between the two. The sensor is housed in a miniature and rugged sealed package.

- Useful as limit switch by operating with single large vane
- Useful as tachometer sensor by operating with toothed wheels
- Wide temperature range
- Suitable in dusty or high ambient light environment where an optical sensor would be suitable
- Transient and reverse polarity protection

Supply voltage	4.5 to 26.5V dc	Current output	50mA
Supply current	5 to 18mA	Temperature range	-40°C to +150°C

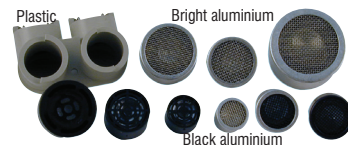
212443

Mfrs. List No.	Order Code	Price Each
Termination	4AV16F	178-877
Leadwire		

Ultrasonic Transducers

Ultrasonic Transducer

Standard - Open Air Type



The Standard (S) Open Air type transducers consist of a piezo-ceramic disc bender mounted at the node of its fundamental resonant frequency, a quarter wavelength conical metal resonator bonded in the centre of the disc, acting as a rigid piston movement. This special construction provides high sensitivity and Sound Pressure Level (SPL), wider bandwidth, excellent temperature and humidity durability and stable electrical and mechanical characteristics. The S type transducers are suitable for continual driving circuits, such as Doppler motion detectors.

Applications

- Alarm systems
- Liquid level measurement
- Anti-collision devices
- Moving object detectors/counters
- Remote control devices
- Robotics

Centre Freq. (kHz)	SPL (dB)	Sensitivity (dB)	Drive Voltage Max. (rms)	Dimensions H x Dia. (mm)	Mfrs. List No.	Order Code
25	112	112dB	20	12 x 16.2	250ST160	100-7326
25		-62dB	20	12 x 16.2	250SR160	100-7327
25	112	112dB	20	14.2 x 18.2	250ST180	100-7328
25		-62dB	20	14.2 x 18.2	250SR180	100-7329
32.8	115	115dB	20	9.6 x 16.2	328ST160	100-7330

Ultrasonic Transducers - continued

Ultrasonic Transducer - continued

Standard - Open Air Type - continued

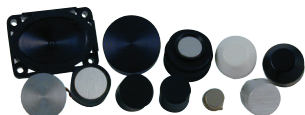
Centre Freq. (kHz)	SPL (dB)	Sensitivity (dB)	Drive Voltage Max. (rms)	Dimensions H x Dia. (mm)	Mftrs List No.	Order Code
32.8		-67dB	20	9.6 x 16.2	328SR160	100-7331
40	120	120dB	20	12 x 16.2	400ST160	100-7332
40		-65dB	20	12 x 16.2	400SR160	100-7333
40		-65dB	20	12 x 16.2	400SR16P	100-7338
40	115	115dB	20	12 x 16.2	400ST120	100-7339
40		-67dB	20	12 x 12.7	400SR120	100-7340
40	112	112dB	10	6.7 x 9.7	400ST100	100-7341
40		-70dB	10	6.7 x 9.7	400SR100	100-7342
40		-70dB	10	6.7 x 9.7	400SR10B	100-7344

415216

Case Type	Mftrs. List No.	Order Code	Price Each
Bright Aluminium	250ST160	100-7326	
Bright Aluminium	250SR160	100-7327	
Bright Aluminium	250ST180	100-7328	
Bright Aluminium	250SR180	100-7329	
Bright Aluminium	328ST160	100-7330	
Bright Aluminium	328SR160	100-7331	
Bright Aluminium	400ST160	100-7332	
Bright Aluminium	400SR160	100-7333	
Plastic	400SR16P	100-7338	
Bright Aluminium	400ST120	100-7339	
Bright Aluminium	400SR120	100-7340	
Bright Aluminium	400ST100	100-7341	
Bright Aluminium	400SR100	100-7342	
Black Aluminium	400SR10B	100-7344	

Ultrasonic Transducer

Standard - Enclosed Air Type



The Standard Enclosed (E) Type Transducers can be used for outdoor installation, or, because of its special dust-proof construction, can be used in a dusty atmosphere. The transducers consist of a metal housing with integral diaphragm, which operates at resonance on the first harmonic overtone. The backs of the transducers are completely sealed with resin, protecting from exposure to the environment. Although they are of a watertight construction, it is not recommended that they be used underwater. Due to its free vibration and un-damping characteristics, the (E) type transducers are suitable for continual drive circuits, such as Doppler motion detectors.

nance on the first harmonic overtone. The backs of the transducers are completely sealed with resin, protecting from exposure to the environment. Although they are of a watertight construction, it is not recommended that they be used underwater. Due to its free vibration and un-damping characteristics, the (E) type transducers are suitable for continual drive circuits, such as Doppler motion detectors.

Applications

- Alarm systems
- Moving object detection/counters
- Liquid level measurement
- Remote control devices
- Anti-collision devices
- Robotics

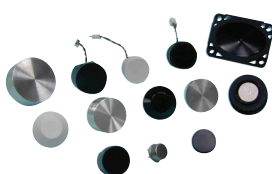
Centre Freq. (kHz)	SPL (dB)	Sensitivity (dB)	Drive Voltage Max. (rms)	Dimensions H x Dia. (mm)	Mftrs List No.	Order Code
32.8	113	113dB	20	12 x 25	328ET250	100-7345
32.8		-67dB	20	12 x 25	328ER250	100-7346
40	115	115dB	15	12 x 18	400ET180	100-7347
40		-70dB	15	12 x 18	400ER180	100-7349
40	100	100dB	15	4.6 x 9.1	400ET080	100-7351
40		-80dB	15	4.6 x 9.1	400ER080	100-7352

415217

Case Type	Mftrs. List No.	Order Code	Price Each
Bright Aluminium	328ET250	100-7345	
Bright Aluminium	328ER250	100-7346	
Bright Aluminium	400ET180	100-7347	
Bright Aluminium	400ER180	100-7349	
Bright Aluminium	400ET080	100-7351	
Bright Aluminium	400ER080	100-7352	

Ultrasonic Transducer

Pulse Transit



The Pulse/Tone Burst type transducers include two groups, open type (PT) and enclosed type (EP). Construction is similar to the standard air types, but an extra mechanical damper is added on the cone surface to minimise vibrations and hence reduce ringing. These types of transducer are specially designed for echo ranging systems with several transducers having asymmetric beam patterns designed specially to minimizing

unwanted reflections being picked up from the ground.

- Car reversing aids
- Moving object detection/counters
- Alarm systems
- Remote control devices
- Liquid level measurement
- Robotics
- Anti-collision devices

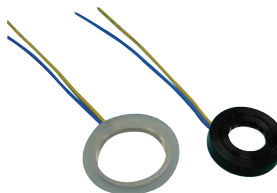
Centre Freq. (kHz)	SPL (dB)	Sensitivity (dB)	Drive Voltage Max. (rms)	Dimensions H x Dia. (mm)	Mftrs List No.	Order Code
40	98	-80dB	20	9.5 x 12.5	400EP125	177-4942
40	117	-65 dB	20	12 x 16.2	400PT160	100-7353
40	115	-68 dB	20	10 x 12.7	400PT120	100-7354
40	108	-75 dB	20	12 x 18	400EP18A	100-7355
40	103	-78 dB	20	9.1 x 14.1	400EP14D	100-7356
40	113	-72 dB	20	12 x 25	400EP250	100-7357

415218

Type	Mftrs. List No.	Order Code	Price Each
Bright aluminium	400EP125	NEW 177-4942	
Bright aluminium	400PT160	100-7353	
Bright aluminium	400PT120	100-7354	
Black aluminium	400EP18A	100-7355	
Black - Asymmetrical beam	400EP14D	100-7356	
Bright aluminium	400EP250	100-7357	

Ultrasonic Transducers

Piezoelectric Atomiser



The ultrasonic atomizing transducer uses a high Q hard type piezoelectric ceramic element and is ideal for atomizing liquids. A very fine mist, having a particle diameter of only a few microns, can be generated. The process also sterilizes water.

- Piezoelectric ceramic element clad with stainless steel for corrosion resistance
- Fine and consistent particle size of less than 3µm

- High atomizing efficiency >400 cc / hour
- High stability and durability

Applications

- Humidification in refrigerated food displays and displays
- Humidification in living environments and air conditioning plants
- Inhalation and disinfecting equipment
- Humidification in industrial process control for lubrication and coating
- Nebulisers

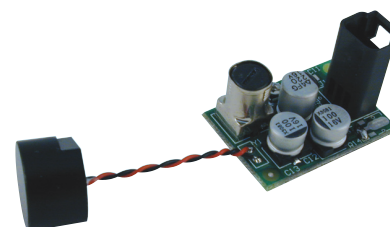
Operational Life (Hrs)	Atomising Quality (cc/hr)	Water Level (mm)	Input Power (W)	Resonant Freq. (MHz)	Dimensions H x W x D. (mm)	Mftrs List No.	Order Code
>6000	400	45	30	1.65	H = 5.5, Dia = 30.5	M165D25	100-7369

415223

Mftrs. List No.	Order Code	Price Each
M165D25	100-7369	

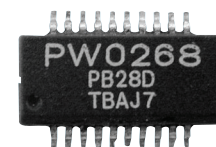
Sonar Ranging Module

Ultrasonic Development Kit



Dia.=3, L(body)8mm, L(lead)=10mm

W = 27.5, D = 19mm



H=1.45, W=8.66, D=3.91mm

Ultrasonic ranging development module The SRM400 Development Kit is an ultrasonic sonar ranging module, designed specially to work with the Prowave PT or EP type transducers. This module provides a short learning curve for the development of car reversing systems, and other distance measurement systems, for design engineers who are not very familiar with analog circuits and/or the operation of ultrasonic transducers. The SRM400 module contains a module board, a 400EP14D enclosed transducer and a detailed electrical schematic.

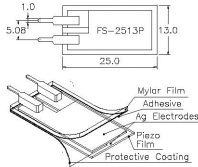
Ultrasonic Sonar ranging IC This chip consists of an external tunable RC oscillator with a special feature of automatic frequency tracing, which compensates the resonant frequency shift of the transducer due to temperature changes. A fixed gain pre-amplifier can be tailored to compensate for varying transducer sensitivities. The 32 steps time controlled variable gain amplifier slope can be modified by adjusting the frequency of the system clock. The onboard comparator converts the analog signal of the returning echo to a TTL level digital signal for use with an external microprocessor.

- Operating Voltage 6 - 10Vdc
- Broadband output up to 250KHz
- Built-in variable RC oscillator to match transducers with different frequencies
- High gain amplifier - time controlled 32 steps
- Integrated band pass filter to reduce external component count
- Bi-direction I/O pins to simplify control function when transmitting or receiving
- Adjustable system clock

415060

Module	Mftrs. List No.	Order Code	Price Each
SRM400		100-7370	
IC	PWO268	SMD 100-7371	
Crystal - 40 kHz	S40000	100-7372	

Piezoelectric Film Sensors
Motion / Vibration / Impact



The polymer film of polyvinylidene fluoride (PVF2) provides superior performance to many other piezo crystal or ceramic materials. The strain constant (g value) is 10 - 20 times larger than normal piezo ceramic and is therefore ideal for converting mechanical to electrical energy.

- High mechanical-electrical coefficient
- Low mechanical and acoustic impedance
- High resistance to moisture
- Pliant, flexible, tough and lightweight
- Self generated voltage, non-contact, rustless and free of sparking

Applications

- Vibration and motion sensors
- Coin and impact sensors
- Low weight accelerometer
- Pressure or force sensors
- Keyboards, keypads and touch panels
- Microphone and headset speakers

Voltage Sensitivity	Transverse Sensitivity	Resonant Frequency	Capacitance Sensitivity	Dimensions H x W . (mm)	Mfrs List No.	Order Code
70 mV/ms ⁻²	80	80Hz ±10	1.5nF ±30%	13 x 25	FS-2513P	100-7374

Mfrs. List No.	Order Code	Price Each
FS-2513P	100-7374	415224

Ultrasonic Sensor
Piezoelectric Ceramic - PIEZOTITE®



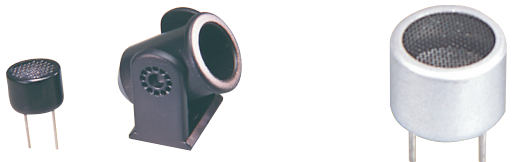
- Compact
- Light weight
- High sensitivity
- High reliability
- Nominal frequency 40 kHz
- Directivity 80°
- 2550 pF capacitance
- Temperature range -40 to +85°C
- Detectable range from 0.2m to 4m



Body - Dia. = 9.9, H = 7.1mm
Pins - Dia. = 0.64, L = 10mm

Function	Mfrs. List No.	Order Code	Price Each
Ultrasonic Transmitter	MA40S4S	177-7667	553081
Ultrasonic Receiver	MA40S4R	177-7668	

Ultrasonic Transducers



10mm Dia. Type
H=6.6, dia.=9.8
Leads L=8.5, dia.=0.5
Lead spacing=4.8

10mm Housing Bracket
H=19, W=12, D=16
Mtg=4.5 dia.

16mm Dia. Type (Open)
H=12, Dia.=16
Leads L=10, Dia.=1.2
Lead spacing=10

Ultrasonic transmitters and high sensitivity receivers designed for sending and receiving ultrasonic sound in the form of continuous or modulated waves through the air at 40kHz.

- Typical applications: remote control, proximity sensors, intruder alarms, motion detectors and data transmission
- Pair of housings are suitable for mounting 10mm dia. transducers. The housing enables the transducer to be aligned in a number of fixed positions relative to its mounting bracket, and is ideal for non-PCB applications

	10mm Dia. Open	16mm Dia. Open
Sensitivity, transmitter	110dB	106dB
Sensitivity, receiver	-70dB	-65dB
Resonant frequency	40± 1KHz	40± 1KHz
Typical operating distance	5m	5m
Direction angle	30°	30°
Input voltage (max), transmitter	10V rms	20V rms
Capacitance (typ.)	2000pF	1100pF
Operating temperature	-20°C to +60°C	-20°C to +60°C

212433

10mm Dia. (Open)	Mfrs. List No.	Order Code	Price Each
Transmitter	SQ-40-T-10B	213-214	
Receiver	SQ-40-R-10B	213-226	
Housings (pair)	QHP10	213-238	
16mm Dia. (Open)			
Transmitter	SCS-401T. 40KHZ	118-1092	
Receiver	SCM-401R. 40KHZ	118-1093	

Matching Transformers
Sonar Ranging Circuits



H = 10, W = 8.3, D = 7.9mm

Order Code	Mfrs. List No.	Operating Frequency	Variable Inductance (Min.)	Unloaded Q (Min.)	Turns Ratio
177-4945	177-4949	177-4946	177-4947	177-4948	
K4000001	K4000002	K4000003	K4000004	K4000005	
40kHz	40kHz	40kHz	40kHz	125kHz	
10.6mH	5.3mH	1mH	6mH	1.5mH	
70	100	25	47	80	
1:10	1:10	1:10	1:10	1:20	

Mfrs. List No.	Order Code	Price Each
M2313500	177-4944	
K4000002	177-4949	
K4000003	177-4946	
K4000004	177-4947	
K4000005	177-4948	

Magnetic Sensors



Magnetic Sensor
3-Axis Electronic Compass



- 3 axis magnetic sensors and an ASIC in a single package
- I²C serial bus interface
- 12-bit analog-to-digital converter
- Offset and Set-Reset / De-gaussing Straps
- Adjustable Gain Settings
- Built in Self Test
- 4 x 4 x 1.3 mm QFN package
- 1.8V digital, 2.5V analog
- Sleep, standby & operating mode supported



HMC5843 and Evaluation Board

The **HMC5843 IC** offers a more inclusive product for design engineers who need more than an analog output magnetic sensor and who need to utilize an existing microprocessor for compass algorithms. The inclusion of the sensor conditioning electronics, 12-bit A/D and the I²C digital output, with Honeywell's high accuracy magnetic sensors in the new HMC5843, also eases implementation of a compassing function into consumer products. Used with a MEMS accelerometer, the whole system becomes capable of performing applications like electronic map orientation, vehicle dead reckoning, location-based services, and pedestrian navigation.

The **Evaluation Board** contains the HMC5843 IC mounted on a 0.8" x 0.8" plug-board with wide-DIP spaced (0.6") pins for solder less breadboard compatibility. The evaluation board also contains the two capacitors and I²C pullup resistors needed for typical function for the retrieval of the XYZ magnetic field information. Both single and dual supply configurations of the HMC5843 are supported.

The **Demonstration board** for the 3-axis Compass IC provides the HMC5843 plus serial bus conversion circuits to convert the I²C data to USB interfacing for personal computers. Includes a 6-foot USB cable, software, user manual & 5 samples of the HMC5843.

Mfrs. List No.	Order Code	Price Each
HMC5843	178-4722	805156
HMC5843-EVAL	178-4724	
HMC5843-DEMO	178-4723	

Hall-Effect Gear Tooth Sensor



- Senses ferrous metal targets
- Digital current sinking output (open collector)
- Better signal-to-noise ratio than variable reluctance sensors
- Excellent low speed performance
- Output amplitude not dependant on RPM
- Sensor electronically self adjusts to slight variations

- in runout and variation in temperature
- Fast operating speed - over 100 kHz
- EMI resistant
- Reverse polarity protection and transient protection (integrated into Hall IC)
- Wide continuous operating temperature range

Magnetic Sensors - continued

Hall-Effect Gear Tooth Sensor - continued

Product Type	Hall Effect Gear Tooth Sensor
Supply Voltage	4.5 to 24V DC
Output Type	Sink
Termination Type	Lead Wire
Operating Temperature Range	-40 to 150°C
Output Voltage	0.4V DC Max.
Vane & Gear Tooth Target Material	Cold Rolled Steel, 1018 or Low in Carbon (Annealed)
GT Target RPM	10 RPM Min, 3600 RPM Max.
Switching Time Rise (10% to 90%)	15 µs Max.
Switching Time Fall (90% to 10%)	1.0 µs Max.
Operate Point	3.3° ±1.25°
Release Point	4.4° ±2.50°
Supply Current (Max. @ 25°C)	20mA
Output Current (Max.)	40mA
GT Target Min Tooth Height	5.06mm
GT Target Min Tooth Width	2.54mm
GT Target Min. Tooth Spacing	10.16mm
GT Target Thickness	6.35mm
GT Target Thickness	101.6mm
GT Airgap	1.02mm to 2.03mm
Leakage Current Max.	10 µA
Differential	8.4° ±3.70°

449158

Mfrs.	Order Code	Price Each
List No.		
1GT101DC	122-5630	

Hall-Effect Gear Tooth Sensor

Dual Differential



- Enhanced target resolution
- Dynamic offset self calibration
- Near zero speed
- EMI hardened
- Short circuit protection
- Reverse voltage protection
- Open collector output
- Low jitter output
- Wide continuous operating temperature range

Product Type	Dual Differential - Hall-effect
Supply Voltage	4.5 to 18V DC
Supply Current	13.6mA
Output Type	Square Wave
Output High	≥Vs - 0.5V
Output Low	≤ 0.5V
Output Current (Max.)	20mA
Termination Type	Axial Leaded - 555mm
Sensing air gap	0 to 2mm
Operating Temperature - Continuous	-40 to 150°C

505698

Mfrs.	Order Code	Price Each
List No.		
SNDH-T4L-G01	156-6216	

Bipolar Hall-Effect Sensor



- Miniature construction: 2.4mm x 4.5mm plastic package
- Power consumption of only 5 mA Max at 4.5V dc for energy efficiency
- Digital current sinking output

- Bipolar magnetics for ring magnet applications
- High output current capability (20 mA)
- High speed - Operates from 0 kHz to over 100 kHz
- Broad temperature range of -40 to 125°C
- Built-in reverse polarity protection

Product Type	Bipolar Hall-Effect Sensor	Operate Point @ 25°C	45 G typ.
Package Style	Surface Mount	Release Point @ 25°C	-45 G typ.
Supply Voltage	4.5 to 24V DC	Leakage Current Max.	10 µA
Output Type	Sink	Response Time	4µs (typ.)
Magnetic Actuation Type	Bipolar	Supply Current	6.5mA
Operating Temperature Range	-40 to 125°C	Operate Point -40°C to 85°C	110G
Output Voltage	0.4V DC Max.	Release Point -40°C to 85°C	-110G
Supply Current (max @ 25°C)	10mA	Differential (typ. @ 25°C	90G
Output Current (Max.)	20mA		

448949

Mfrs.	Order Code	Price Each
List No.		
SS50AT	SMD 122-5623	

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Magnetic Speed / Position Sensor

Magnetoresistive



H = 3, W = 4.06,
D = 1.57mm
Leads = 14.98mm

- Wide operating temperature range
- 2-wire operation means less wiring
- Enhanced sensitivity, ±7 gauss typical
- Output pattern independent of gap between target and sensor

Applications

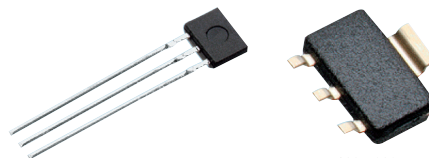
- Speed encoding using a multipole ring magnet
- Enhanced accuracy cam and crank position sensing
- Wheel speed sensing
- Window lift applications

The VF401 is a 2-wire MR (magnetoresistive) bridge array in a miniature plastic package, designed for sensing fine pitch ring magnets. The VF401 allows a greater air gap between the target and the sensor with reduced loss in sensor signal or accuracy. Patent number 6,297,628.

605399

Mfrs.	Order Code	Price Each
List No.		
VF401	181-1313	

Linear Position Sensor



122-5624

122-5626

The SS49E and SS59ET series economical linear hall-effect sensors are small, versatile linear hall-effect devices that are operated by the magnetic field from a permanent magnet or an electro magnet. The linear sourcing output voltage is set by the supply voltage and varies in proportion to the strength of the magnetic field. The integrated circuitry features low noise output, which makes it unnecessary to use external filtering. It also includes thin film resistors to provide increased temperature stability and accuracy. These linear hall sensors have an operating range of -40 to 100°C, appropriate for commercial, consumer and industrial environments.

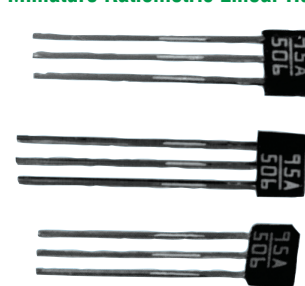
- Miniature construction
- Power consumption of 6 mA @ 5V dc for energy efficiency
- Low voltage operation down to 3V dc
- Single current sourcing output
- Linear output for circuit design flexibility
- Low noise output virtually eliminates the need for filtering
- Thin film resistors for a stable and accurate output
- Temperature range from -40 to 100°C
- Responds to either positive or negative gauss

Product Type	Hall-Effect Linear Position Sensor
Supply Voltage	3.0 to 6.5V DC
Output Type	Source
Magnetic Actuation Type	Analog
Sensitivity @ 25°C	1.0 mV/G min., 1.4mV/G typ., 1.75mV/G max.
Operating Temperature Range	-40 to 100°C
Output Voltage	1.0mV/Gauss min., 1.4mV/Gauss typ., 1.75mV Max.
Linearity (% of span)	-0.007
Temperature Error (@ 25°C)	0.10 max./-0.10 min
Null Shift (%/°C)	
Supply Current (max @ 25°C)	10mA
Response Time	3µs
Null (@ 0 Gauss, 25°C)	2.25 V dc min., 2.50V dc typ., 2.75 V dc max.
Supply Current (typ. @ 25°C)	6mA
Temperature Error (≥25°C)	0.05 max. , -0.15 min.
Sensitivity (%/°C)	
Temperature Error (≤25°C)	0.185 max., -0.04 min.
Sensitivity (%/°C)	
Magnetic Range	± 650 Gauss min, ± 1000 Gauss typ.
Output Voltage Span	1.05 V dc to (Vs - 1.05V dc) min. 0.95V dc to (Vs - 0.95V dc) typ.
Output Current	1.0 mA (Vs 3.0 V) min 1.5 mA (Vs 3.0V) typ.

449071

Connection	Mfrs.	Order Code	Price Each
Type	List No.		
Radial Lead IC	SS49E	122-5624	
Surface Mount	SS59ET	SMD 122-5626	

Miniature Ratiometric Linear Hall-Effect Sensor



The SS490 Series MRL (Miniature Ratiometric Linear) sensors have a ratiometric output voltage, set by the supply voltage. IKt takes in proportion to the strength of the magnetic field.

- Small size
- Low power consumption
- Single current sinking or current sourcing linear output
- Built in Thin-Film resistors, laser trimmed for precise sensitivity and temperature compensation
- Rail-to-rail operation provides more useable signal for higher accuracy

- Responds to either positive or negative gauss
- Quad hall sensing element for stable output

Product Type	Hall-Effect Linear Position Sensor	
Supply Voltage	4.5 to 10.5V DC	
Output Type	Sink / Source	
Magnetic Actuation Type	Ratiometric	
Operating Temperature Range	-40 to 150°C	
Output Voltage	0.2V DC to (V _s - 0.2 V dc) typ. 0.4 V DC to (V _s - 0.2 V dc) min.	
Linearity (% of span)	-0.1 % typ., -1.5% max.	
Output Voltage Span (min.)	0.4 V dc to (V _s - 0.4 V dc)	
Supply Current (max @ 25°C)	8.7mA @ 5 V dc	
Output Voltage Swing (Negative G)	0.4 V dc	
Output Voltage Swing (Positive G)	V _s - 0.4 V dc	
Response Time	3µs	
Output Current Typical Source (V _s < 4.5 V dc)	1.5 mA	
Output Current Minimum Source (V _s < 4.5 V dc)	1 mA	
Output Current Minimum Sink (V _s < 4.5 V dc)	0.6 mA	
Output Current Minimum Sink (V _s < 5 V dc)	1 mA	
Output Voltage Span (typ.)	0.2 V dc to (V _s - 0.2 V dc)	
Response Time	3µs	
Null (Output @ 0G)	2.50 V dc ± 0.075 V dc	

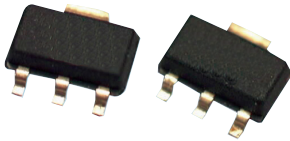
	122-5627	147-0592
Sensitivity	3.125 mV ± 0.125 mV/G	3.125 mV ± 0.094 mV/G
Temperature Error (@ 25°C	-0.06% Min.,	-0.04% Min.,
Null Shift (%/°C)	0.06% Max.	0.04% Max.
Temperature Error (@ 25°C	-0.01% Min.,	-0.01% Min.,
Sensitivity (%/°C)	0.05% Max.	0.05% Max.
Magnetic Range (typ.)	-67 mT to 67mT (-670G to 670G)	-67 mT to 67mT (-670G to 670G)
Magnetic Range (min.)	-60 mT to 60 mT (-600G to 600G)	-60 mT to 60 mT (-600G to 600G)

Price Each

Mfrs. List No.	Order Code
SS495A	122-5627
SS495A1	147-0592

Hall-Effect Digital Position Sensor

Honeywell



- Quad hall design virtually eliminates mechanical stress effects
- Temperature compensated magnetics
- Super high sensitivity available
- Symmetry of operate/release points about zero gauss (bipolar/latching)
- Low current consumption
- High output current capability

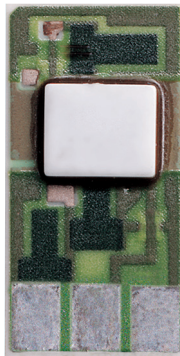
Package Style	122-5620
Supply Voltage	Surface Mount Device
Output Type	3.8 to 30.0V DC
Operating Temperature Range	Sink
Output Voltage	-40 to 150°C
Switching Time Rise (10% to 90%)	0.4V DC Max.
Switching Time Fall (90% to 10%)	1.5µs Max.
Supply Current (max @ 25°C)	1.5µs Max.
Output Current (Max.)	7.5mA typ.
Operate Point @ 25°C	20mA
Release Point @ 25°C	8.5 mT [85 G] typ.
Leakage Current Max.	5.5 mT [55 G] typ.
Differential	10 µA
	3.0 mT [30 G] Typ.

Price Each

Magnetic Actuation	Mfrs. List No.	Order Code
Unipolar	SS541AT	SMD122-5620

Hall-Effect Linear Position Sensor

Honeywell



- Single current sinking or current sourcing linear output
- Improved temperature stability
- Standard mounting centers
- Laser trimmed thin film and thick film resistors minimize sensitivity variations and compensate for temperature variations

Package Style	122-5622
Supply Voltage	Ceramic
Output Type	6.6 to 12.6V DC
Magnetic Actuation Type	Sink / Source
Operating Temperature Range	Ratiometric
Linearity (% of span)	-40 to 125°C
Supply Current (max @ 25°C)	-0.8% typ., -1.5% max.
Output Current (Max.)	30mA typ.
Sensitivity @ 25°C	1mA
Temperature Error (@ 25°C)	25 mV ± 5 mV/G
Null Shift (%/°C)	-0.1% min., 0.1% max.
Temperature Error (@ 25°C)	-0.055% min., 0.02% max.
Sensitivity (%/°C)	
Magnetic Range (min.)	-10 mT to 10 mT [-100 G to 100 G]
Response Time	3µs (typ.)
Output Voltage (0 G @ 25°C)	4.0V DC ± 0.08V dc

448296

Mfrs. List No.	Order Code	Price Each
SS94A1F	122-5622	

Digital Hall Effects Sensors

Honeywell



- Negative temperature coefficient for temperature stability
- High current capability to 50mA
- Quad Hall design to eliminate mechanical stress
- Operating temperature -40°C to +150°C
- SS400 - TO92E Package

SS400 Series

Description	Mag. Characteristic @ 25°C			Mfrs. List No.	Order Code
	Max. Op.	Min. Rel.	Min. Dif.		
Bi-Polar ± 60 Gauss	60	-60	15	SS411A	311-1465
Unipolar 115 Gauss@25°C	115	20	20	SS441A	311-1477
Latching Bi-Polar ± 115 Gauss	50	85	-85	SS461A	311-1489
Latching Bi-Polar ± 180 Gauss	180	-180	200	SS466A	311-1490
Unipolar 180 Gauss@25°C	180	75	25	SS443A	311-1507

212423/406092

Price Each

Description	Package	Order Code	Price Each
Bi-Polar ± 60 Gauss	TO92E	311-1465	
Unipolar 115 Gauss@25°C	TO92E	311-1477	
Latching Bi-Polar ± 115 Gauss	TO92E	311-1489	
Latching Bi-Polar ± 180 Gauss	TO92E	311-1490	
Unipolar 180 Gauss@25°C	TO92E	311-1507	

SS40A Bipolar Hall-Effect Sensor

Honeywell



- Miniature construction: 3.0x4.0mm package
- Power consumption of only 5mA Max. @ 4.5V dc for energy efficiency
- Digital current sinking output
- Bipolar magnetics for ring magnet applications
- High output current capability (20mA)
- High speed - operates from 0 KHz to over 100 KHz

- Broad temperature range of -40 to 125°C
- Built-in reverse polarity protection

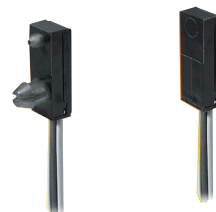
Package Style	Radial Lead IC	Leakage Current Max.	10 µA
Supply Voltage	4.5 to 24.0V DC	Output Current (Max.)	20mA
Output Type	Sink	Supply Current (Max. @ 25°C)	10mA
Magnetic Actuation Type	Bipolar	Supply Current (Typ. @ 25°C, 24V dc)	6.5mA
Operating Temperature	-40 to 125°C	Response Time	4 µs (Typ.)
Output Voltage	0.4V DC	Operate Point -40°C to 85°C	110G Max.
Operate Point @ 25°C	45 G Typ.	Release Point -40°C to 85°C	-110G Max.
Release Point @ 25°C	-45 G Typ.	Differential (Typ. @ 25°C)	90G

419647

Mfrs. List No.	Order Code	Price Each
SS40A	SMD108-2268	

SR13/15 Series Solid State Position Sensors

Honeywell



Snap-in: L=20, W=10.7, D=7.6
Flat Mount: L=20, W=4.3, D=7.6

This range of snap-in and flat mount sensor packages incorporate Honeywell's proven SS400 series solid state sensors.

- 3.8 to 30V dc supply voltage
- Digital current sinking output
- Snap-in or flat mount packages
- Quad hall design eliminates stress effects
- Temperature compensated magnetics
- Bipolar, unipolar and latching magnetics
- High output capability, 50mA absolute maximum
- Operating temperature: -40°C to +150°C
- 24AWG radox lead wire

	SR13C-A1	SR13D-A1	SR13R-A1	SR15C-A3
	Unipolar Snap-in	Unipolar Snap-in	Latching Snap-in	Unipolar Flat Pack
Max. Operating Force	215	135	110	215
Min. Release Force	60	15	-110	60
Min. Differential Force	10	8	50	10

233135

	Mfrs. List No.		Order Code	Price Each
Unipolar Snap-in	SR13C-A1		389-0156	
Unipolar Snap-in	SR13D-A1		389-0168	
Latching Snap-in	SR13R-A1		389-0170	
Unipolar Flat Pack	SR15C-A3		389-0181	

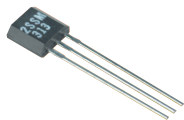
Over 500 000 products available online



Magnetic Sensors - continued

Magneto-Resistive Digital Sensor

Honeywell



Magneto-resistive material integrated on silicone. Can achieve large sensing distances when used with conventional magnets.

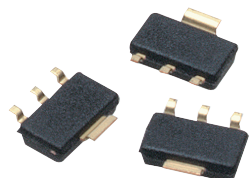
- Low gauss operation (typical op. 15 gauss)
- Digital current sinking
- Omni polar (N & S pole sensing)
- 0-100KHz
- Miniature package
- 3 pin in-line 0.1" centre
- Operating temperature -40°C to +125°C
- Supply voltage 6 to 24V dc

212412

Mfrs.	List No.	Order Code	Price Each
	2SS52M	311-1519	

SS552MT Surface Mount Sensor

Honeywell



SS552MT is a digital position sensor in an SOT-89 style surface-mount package with omnipolar magnetic action. The sensor has magnetoresistive material integrated on silicon and encapsulated in a plastic package. The integrated circuit provides a digital output in response to very low magnetic fields.

Package Style	Surface Mount	Output Voltage	0.4V DC
Supply Voltage	3.8 to 30.0V DC	Switching Time Rise (10 to 90%)	0.2µs Typ.; 1.5µs Max.
Output Type	Sink	Switching Time Fall (90 to 10%)	0.1µs Typ.; 1.5µs Max.
Magnetic Actuation Type	Omnipolar	Output Current (Max.)	20mA
Operating Temperature	-40 to 150°C	Supply Current (Typ. @ 25°C)	10mA

419608

Mfrs.	List No.	Order Code	Price Each
	SS552MT	SMD108-2265	

Magnetic Displacement Sensor

Honeywell

High Resolution



Honeywell's APS00B High Resolution Magnetic Displacement Sensor is a miniature surface mount sensor for linear, angular, or rotary displacement designed for magnetic saturating field sensing. The APS00B creates an analog output voltage that varies with the direction of the magnetic flux passing over the sensor surface. It contains dual, saturated-mode Wheatstone bridges that generate quadrature (sine and cosine) signals to provide an extended range of angular measurements up to 180°. This sensor is a cost-effective and space-efficient solution for high-volume OEM designs. Potential applications include position sensing, rotary speed and angle detection, and non-contact precision location measurement systems. APS00B sensor uses Honeywell's Anisotropic Magneto-Resistive (AMR) technology that provides advantages over Hall-effect-based magnetic sensors. They are designed to resolve better than a tenth of a degree or a tenth of a millimeter, to withstand large variations in magnet-to-sensor gaps, and to exhibit insensitivity to shocks and vibrations. These surface mount devices are mounted directly on the electrical traces on a PC (Printed Circuit) board. They are attached by an automatic solder reflow operation which requires no hole, so it may help reduce the cost of the PC board.

New

H = 1.37, W = 4.8, D = 3.91mm

605393

Mfrs.	List No.	Order Code	Price Each
	APS00B	SMD181-1312	

High Sensitivity Magnetic Sensors

Honeywell



Key features are:

- ±6 Gauss Field Range for HMC10xx
- 80 Gauss Saturation field for HMC15xx
- ±20mV unamplified full scale output
- 0 to 10 MHz frequency response
- -55°C to +125°C operating temperature

Key benefits are:

- Embedded set/reset function nulls out effects of unwanted ambient magnetic fields
- Miniature surface mount package enables automated assembly onto printed circuit boards
- Solid state construction provides high reliability

Use these high sensitivity Magnetic Sensors to easily obtain accurate compass heading (HMC10xx models) direction, or for precise, non-contact measurement of linear/angular position (HMC15XX models) in many applications. HMC10xx models are ideal for handheld, battery powered appliances such as position intelligent cellular telephone handsets, GPS receivers, short range walkie talkies, or wrist watches. Products excel in compasses embedded in automobile rear view mirrors as well. Detailed applications information describes required signal conditioning electronics.

HMC15xx models are affordable solutions for non-contact valve position measurement in food and beverage applications. The high sensitivity enables use of a small low cost magnet that can be positioned up to 2cm away from sensor. Ideal solution for rotary position measurement in engine control applications such as measuring engine valve position or accelerator pedal position in electronic throttle control assembly.

232414

Mfrs.	List No.	Order Code	Price Each
Single axis, 8 pin SOIC	HMC1501	SMD389-0120	
Dual axis, 8 pin SOIC	HMC1512	SMD389-0132	

Proximity Switches - Magnetic

HAMLIN

Firecracker Reed Sensor



L = 36mm
Ø = 6.22mm

- 2 part magnetically operated position sensor
- N/O, N/C and C/O contact options
- Hermetically sealed
- 300mm wires

Typical Sensing Applications

- Security systems
- Position, limit and Level
- Linear actuator

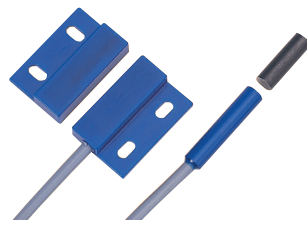
Contact	5540665	5540690
Power	10W	5W
Switching voltage	200V dc	175V dc
Breakdown voltage	250V DC	200V DC
Switching current	0.5A	0.25A
Carry current	1.2A	1.5A
Operating temperature	-40°C to +105°C	-40°C to +105°C

Type	Mfrs.	List No.	Order Code	Type	Mfrs.	List No.	Order Code
Sensor	59025-1	S-02-A	554-0665	Actuator	57025-000		178-2630
Sensor	59025-4	S-02-A	554-0690				

341355

Type	Contacts	Order Code	Price Each
Sensor	NO	554-0665	
Sensor	NC	554-0690	
Actuator		178-2630	

Reed, Plastic Housing



Rectangular switch: 30x20x7, Fixing centres=16 (slots 6x3.3)
Rectangular actuator: 30x20x7, Fixing centres=16 (slots 6x3.3)
Cylindrical switch: L=28, Dia.=6, Cylindrical actuator: L=19, Dia.=6

- No maintenance required
- Rectangular version has two slotted fixing holes for easy fitting

Switch contacts operate when the magnet actuator moves in close proximity to the switch, 8mm min. for rectangular version and 5m min. for cylindrical version.

Switching current	SPNO	5VA, SPCO, SPNC	20VA, SPCO
Switching voltage	0.5A max.	0.25A max.	1A max.
Switching capacity	240V ac max.	175V ac max.	150V dc max.
Operating temperature	10VA max.	5VA max.	20VA max.
	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C

Changeover contacts = white-common, green-normally open, brown-normally closed

212213

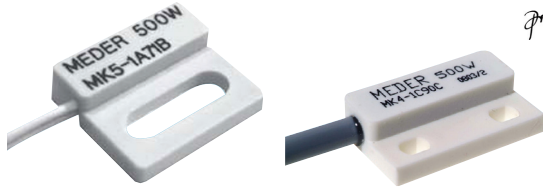
Switches	Mfrs.	List No.	Order Code	Price Each
Rectangular SPNO		PSA240/30	607-186	
Rectangular SPNC		PSB175/30	721-3440	
Rectangular SPCO		PSC175/30	607-198	
Rectangular SPCO, 20VA		PSC150/30.	732-000	
Cylindrical SPNO		PRA/240/30	607-216	
Cylindrical SPCO		PRC/175/30	607-228	

Magnets	Mfrs.	List No.	Order Code	Price Each
Rectangular	PSM		607-204	
Cylindrical	PRM		607-230	

Reed Sensor
Magnet Detection



Products for tomorrow...



H = 5.9, W = 23, D = 19.4mm

H = 5.9, W = 23, D = 13.9mm

MK04 / MK05 sensors are magnetically operated Reed proximity switches designed for screw mounting. The sensor should be mounted on a fixed surface with the actuating magnet on the moving surface. Introduction or removal of the magnetic field determines the closing and opening of the Reed Switch.

Contact Form	Contact Form		
Contact resistance mR (max)	150	Switch carry current A (max)	1.5
Switch power W (max)	10	Breakdown voltage V dc	200
Switch voltage V dc (max)	180	Temperature, operating °C	-20 to +85
Switching current A (max)	0.5		

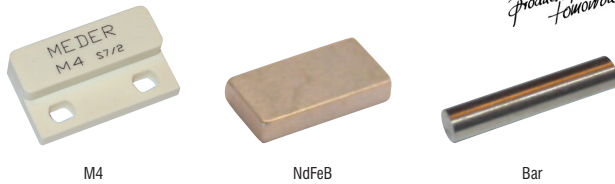
417779

Mfrs.	List No.	Order Code	Price Each
	MK4-1A66B-500W	107-9477	
	MK05-1A66B-500W	107-9478	

Sensor Magnets



Products for tomorrow...



M4

NdFeB

Bar

AlNiCo bar magnets are suitable for the operation of most Reed Switches and should ideally be the moving part of the sensing application. The selection of the magnet and the sensitivity of the Reed Switch will determine the Pull-In and Drop-Out distances.

SmCo (samarium cobalt) and **NdFeB** (neodymium iron boron) magnets are made from rare earth materials and have especially good magnetic properties concerning stability and energy product.

Dimensions	H (mm)	W (mm)	D (mm)	Dimensions	H (mm)	W (mm)	D (mm)
Order Code				107-9496	22	5	
107-9492	5.9	23	13.9	107-9497	4	3	
Order Code	L (mm)	Dia. (mm)		107-9498	4	5	
107-9493	27	7.5		107-9500	15	8	
107-9494	12	3		Order Code	H (mm)	W (mm)	D (mm)
107-9495	19	4		107-9501	5	10	1.9

417861

Mfrs.	List No.	Order Code	Price Each
		AINiCo500	
	MAGNET M4	107-9492	
	ALNiCO500 7.5X27MM	107-9493	
	ALNiCO500 3X12MM	107-9494	
	ALNiCO500 4X19MM	107-9495	
	ALNiCO500 5X22MM	107-9496	
		SmCo	
	SMCO5 3X4MM	107-9497	
	SMCO5 5X4MM	107-9498	
		NdFeB	
	NDFeB 8X15MM	107-9500	
	NDFeB 10X5X1.9MM	107-9501	

Proximity Switch



Contact Style	Normally Open	Switching Distance	10mm Min.
Switching Capacity (Resistive)	10 W/VA Max.	Operating Temperature Range	-20 to 85°C
Switching Voltage	400V AC Max.	Storage Temperature Range	-25 to 90°C
Switching Current	0.5A Max.	Case Material	Blue Nylon 6.6
Carry Current	1.0A Max.	Dimensions (WxHxD)	14x6x20mm
Breakdown Voltage	600V DC Min.	Cable	2 x Round 0.14mm ² PVC covered grey and insulated brown/white

Contact Resistance 150 mΩ Max. 449876

Mfrs.	List No.	Order Code	Price Each
	Proximity Switch	MMPSA 240/100	117-3767
	Magnet	MMPSM	117-3768

Reed, Plastic Housing
Miniature



Switch: 20 x 15 x 7
Actuator: 20 x 15 x 7
Fixing centres=10 (slots 6 x 3.3)

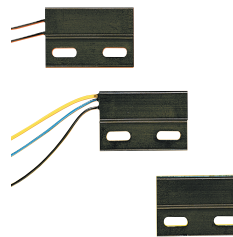
Switch contact operates when the magnet actuator moves in close proximity to the switch, typically 5mm.

Contacts	(Form A)	Switching distance, min.	5mm
Switching voltage, max.	ac	Operating temperature	-20°C to 85°C
Switching current, max.		Case material	ABS
Switching capacity, resistive	VA	Cable length	1m, PVC insulated
Contact resistance, max.	mΩ		

212399

Mfrs.	List No.	Order Code	Price Each
	MMPSA 240/100	117-3767	
	MMPSM	117-3768	

Reed, Plastic Housing
Miniature



- Robust housing
- Nylon 6.6
- UL approved option
- Temperature range to 105°C
- Repeatability and reliability due to Reed Switch characteristics

Typical Sensing Applications

- Posting franking machines
- Door interlocks
- Hook switches
- Machinery interface
- Material handling

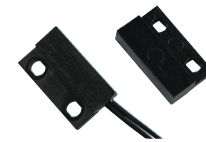
H = 19.5, W = 28.5, D = 6.4mm
Fixing Centres = 21mm, (PM102 magnet = 16mm. Slots 90° against body)

	100-6783	100-6784	100-6785
Switch Action	SPST N/O - SPST	SPST N/O, N/C - SPST	SPST N/O - SPST
Switching voltage	250V AC	100V AC	250V AC
Switching current	1.0A	0.3A	1.0A
Switching power	15W	3W	15W
Material	Nylon 6.6	Nylon 6.6	Nylon 6.6
Temperature Range	-30 to +105°C	-30 to +105°C	-30 to +105°C
Cable	2 x 24AWG PVC insulated	2 x 24AWG PVC insulated	2 x 24AWG PVC insulated

233625

Type	Mfrs.	Order Code	Price Each
Sensor	List No.		
SPST NO	PS1011	100-6783	
SPST CO	PS1031	100-6784	
SPST NO (UL Recognised)	PS2011	100-6785	
Magnet	PM101	372-0913	
Magnet	PM102	372-0925	

Reed Sensor - Mini Flange Mount



L = 23.01mm
W = 14.0mm
D = 5.99mm
Ctrs = 14.0mm

- 2 part magnetically operated position sensor
- N/O and N/C contact options
- Hermetically sealed
- 300mm wires

Typical Sensing Applications

- Security system switch
- Position and limit
- Linear actuator
- Door switch

Type	Mfrs.	Order Code	Type	List No.	Order Code
Contact		5541141		5541177	
Power		NO		NC	
Switching voltage		10W		5W	
Breakdown voltage		200V dc		175V dc	
Switching current		250V DC		200V DC	
Carry current		0.5A		0.25A	
Operating temperature		1.2A		1.5A	
		-40°C to +105°C		-40°C to +105°C	

Proximity Switches - Magnetic - continued

Reed Sensor - Mini Flange Mount - continued

Type	Contacts	Order Code	Price Each
Sensor	NO	554-1141	341398
Sensor	NC	554-1177	
Actuator		178-2770	

Reed Sensor - Flange Mount



L = 28.57mm
W = 19.05mm
D = 6.35mm
Ctrs = 15.88mm

- 2 part magnetically operated position sensor
- N/O and N/C contact options
- Hermetically sealed
- 300mm wires exit from **RH side**

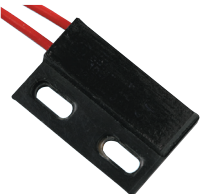
Typical Sensing Applications

- Security system switch
- Position and limit
- Linear actuator
- Door switch

Contact	Power	Switching voltage	Breakdown voltage	Switching current	Carry current	Operating temperature
NO	10W	200V dc	250V DC	0.5A	1.2A	-40°C to +105°C
NO	10W	300V dc	450V DC	0.5A	1.5A	-20°C to +105°C
NC	5W	175V dc	200V DC	0.25A	1.5A	-40°C to +105°C

Type	Order Code	Price Each
Sensor	554-1189	341399
Sensor	554-1190	
Sensor	554-1219	

Reed Sensor - High Temperature Flange Mount



L = 28.57mm
W = 19.05mm
D = 6.35mm
Ctrs = 15.88mm

- 2 part magnetically operated position sensor
- N/O contacts
- Hermetically sealed
- 300mm high temperature wires

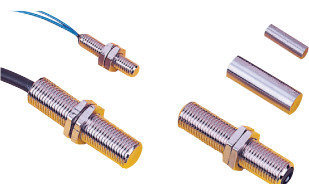
Typical Sensing Applications

- Security system switch
- Position and limit
- Linear actuator
- Door switch

Contact	Power	Switching voltage	Breakdown voltage	Switching current	Carry current	Operating temperature
NO	10W	200V dc	250V DC	0.5A	1.2A	-40°C to +150°C
NO	10W	300V dc	450V DC	0.5A	1.5A	-40°C to +150°C

Type	Contacts	Order Code	Price Each
Sensor	NO	554-1104	341397
Sensor	NO	554-1116	
Actuator		178-2691	

Reed, Threaded Barrel



730-208: L=28, Ø=M6
732-734: L=50, Ø=M12
732-746: L=90, Ø=M18
607-230: L=19, Ø=6
732-758: L=30, Ø=10
732-771: L=40, Ø=12.5
732-760: L=50, Ø=M12
Cable L=300 (all types)



- Threaded barrel housings for easy fitting and adjustment
- High switching capacity - up to 60VA and 120VA
- Suitable for a wide range of position sensing applications

Barrel size	M6	M12	M18
Contacts	SPNO (form A)	SPNO (form A)	SPNO (form A)
Switching voltage, max.	470Vac	230Vac	1500Vac
Switching current, max.	0.5A	3A	3A
Switching capacity, resistive	10VA max.	60VA max.	120VA max.
Contact resistance, max.	150mΩ	80mΩ	80mΩ
Switching distance, min	5 mm	8 mm	15 mm
Operating temperature		-20°C to 85°C	
Case material	Brass, nickel plated		
Order Code	730-208	732-734	732-746

Switches	Mfrs. List No.	Order Code	Price Each
M6 threaded	PTA470/30	730-208	212356
M12 threaded	PTA230/30.	732-734	
M18 threaded	PTA1500/30.	732-746	

Magnets - High Strength Discs
Miniature, Nickel Plated



- Disc magnets made from strongest permanent magnet material
- Exceptional magnetic strength from small size
- All magnets nickel plated to reduce the onset of corrosion when used under normal conditions
- Suitable for use at temperatures up to 120°C
- Ideal for proximity sensor triggering or biasing where space is a premium

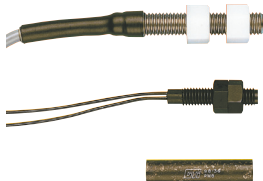
Distance (mm) at which magnets measure 1000 gauss	M1219-1=4.1, M1219-2=2.2, M1219-3=1.8, M1219-4=1.2, M1219-5=0.6
Surface flux measurement (gauss)	M1219-1=1500, M1219-2=2500, M1219-3=3200, M1219-4=2500, M1219-5=3500
Magnet material	Neodymium Iron Boron
Grade/Energy density	Grade N30H, max. energy density 30 MGOe (M1219-4 Grade N35H, energy density 35 MGOe)
Operating temperature	120°C max.

Note: M1219-4 has north-seeking pole identified with a dimple

Mfrs. List No.	M1219-1=723-0345, M1219-2=723-0357,	M1219-3=723-0369, M1219-4=723-0370,	M1219-5=723-0382	Price Each	
Size (mm)	723-0345	723-0357	723-0369	723-0370	723-0382 ●

Size (mm)	Order Code	Price Each
Dia.=3, W=1	723-0345	212390/406096
Dia.=3, W=2	723-0357	
Dia.=4, W=3	723-0369	
Dia.=6, W=2	723-0370	
Dia.=10, W=5	723-0382 ●	

Reed Threaded Barrel



- Threaded housing
 - Robust housing
 - Adjustable fit using supplied mounting nuts
 - Temperature range to 120°C
 - Stainless Steel or Nylon 6.6
 - Normally open
 - Repeatability and reliability due to Reed Switch characteristics
- 100-6786 L=65, Dia = M10
100-6787 L=38.2, Dia = M8
730-841 L=45, Dia = M10

Typical Sensing Applications

- Security device
- Interlocked systems
- Food cutting machines
- Valve positioning
- Material handling
- Conveyor systems

Switching voltage	250V AC	250V AC
Switching current	1A	1A
Switching power	15W	15W
Material	Stainless Steel	Nylon 6.6
Temperature Range	-30°C to +120°C	-30°C to +105°C
Cable	1 x 16/0.2mm PVC insulated	1 x 16/0.2mm PVC insulated

Type	Mfrs. List No.	Order Code	Price Each
Sensor, Stainless Steel	PS-801	100-6786 ●	233611
Sensor, Nylon 6.6	PS811	100-6787 ●	
Magnet	FPM8	730-841	

Reed Sensor - M8 Plastic threaded barrel

HAMLIN



- 2 part magnetically operated position sensor
- N/O and N/C contact options
- Hermetically sealed
- 300mm wires

Typical Sensing Applications

- Security system switch
- Position and limit
- Linear actuator
- Industrial process control

L Barrel = 38.10mm
L Thread = 31.75mm
Ø = M8

	554-0859	554-0860	554-0884
Contact	NO	NO	NC
Power	10W	10W	5W
Switching voltage	200V dc	300V dc	175V dc
Breakdown voltage	250V DC	450V DC	200V DC
Switching current	0.5A	0.5A	0.25A
Carry current	1.2A	1.5A	1.5A
Operating temperature	-40°C to +105°C	-20°C to +105°C	-40°C to +105°C

	Mfrs.		Mfrs.	
Type	List No.	Order Code	Type	List No.
Sensor	59070-1-S-02-A	554-0859	Sensor	59070-4-S-02-A
Sensor	59070-2-T-02-A	554-0860		554-0884

Price Each

Type	Contacts	Order Code
Sensor	NO	554-0859
Sensor	NO	554-0860
Sensor	NC	554-0884

Reed Sensor Magnet Detection



The MK11 sensor is a magnetically operated Reed Sensor with screw thread enclosure supplied with a 500mm long interconnect cable. The sensor should be mounted on a fixed surface with the actuating magnet on the moving surface. Introduction or removal of the magnetic field determines the closing and opening of the Reed Switch.

L (overall) = 25, Thread = M5 x 0.5mm

Contact Form	150	Switch carry current A (max)	1.5
Contact resistance mR (max)	10	Breakdown voltage V dc	200
Switch power W (max)	180	Temperature, operating °C	-20 to +85
Switch voltage V dc (max)	0.5		
Switching current A (max)			

	Mfrs.	Price Each
Pull in Range	List No.	Order Code
10 to 15mm	MK11-1A71B-500W	107-9483

Reed Threaded Barrel



L = 28, Dia = M6

- Brass - nickel plated body
- Threaded barrel housings for easy fitting and adjustment
- Robust sealed construction ideal for harsh environments
- High switching capacity - up to 60VA and 120VA
- Suitable for a wide range of position sensing applications

Contact	130 Vac	Contact resistance	150 mΩ
Switching Voltage	0.25A	Operating temperature	-25°C to 85°C
Current Rating	3 VA	Switching Distance	3 mm
Switching Power			

	Mfrs.	Price Each
Switch	PTC130/30	422-9083
Magnet	PRM	607-230

Reed, Threaded Barrel



L=28mm; Dia. thread=M8; Head Hex=11mm A/F

- Threaded barrel housings for easy fitting and adjustment
- High switching capacity - up to 120VA
- Suitable for a wide range of position, proximity and limit sensing applications
- Low cost CTI version for easy fitting
- Contacts closed with magnet position

- Good protection in harsh environments up to IP65

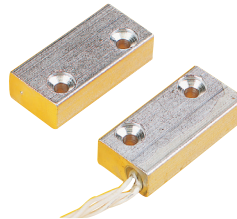
Applications

- Process control systems
- Intruder alarm, limit and proximity applications

Barrel size	M8 (coarse)	Contact resistance, max.	200mΩ
Contacts	SPNO (form A)	Switching distance, min	10 mm
Switching voltage, max.	230Vac	Operating temperature	-20°C to 85°C
Switching current, max.	0.5A	Case material	Brass
Switching capacity, resistive	10VA max.		

Mfrs.	Price Each
List No.	Order Code
CTI 302.	309-4820
CTI302M	309-4832

Reed, Metal Housing



Switch: 32x15x8
Actuator: 32x15x8
Fixing centres=20,
Fixing hole, 3.3 dia. csk

- Magnetic proximity switch with hermetically sealed contacts
- Suitable for position, level sensing and security/anti-tamper
- Contacts closed with magnet present
- Compact aluminium housing
- Good protection in harsh environments up to IP65

Applications:

- Process control systems
- Intruder alarm, limit and proximity applications

Switch contact operates when the magnet actuator moves in close proximity to the switch, typically 10mm.

Contacts	SPNO (form A)	Switching distance, min	10 mm
Switching voltage, max.	230Vac	Operating temperature	-20°C to 70°C
Switching current, max.	0.5A	Case material	Aluminium
Switching capacity, resistive	10VA	Cable length	280mm, PVC insulated
Contact resistance, max.	300mΩ		

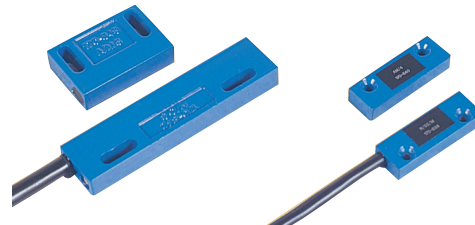
	Mfrs.	Price Each
List No.	Order Code	
CTC 012.	309-4868	
CTCM	309-4870	

Reed, Metal Housing



Electromechanical

28



Standard

Miniature

Standard switch: 79.5 x 19.3 x 9.8,
Standard actuator: 38.1 x 25.4 x 9.8,
Miniature switch: 38.3 x 12.7 x 7.7,
Miniature actuator: 38.3 x 12.7 x 7.7,

Fixing centres=50 (slots 14 x 4.7)
Fixing centres=28 (slots 14 x 4.7)
Fixing centres=25 (hole dia 3.1)
Fixing centres=25 (hole dia 3.1)

- Magnetically operated reed proximity switches encapsulated in pressure die castings with a blue powder coated finish
- Solid construction gives protection in harsh environments, IP64 rating
- Suitable for many applications with resistive loads
- Intruder alarm and limit switch, micro-switch and proximity switch applications
- Normally open or changeover contacts available

Connection is by integral PVC cable, 0.5m for miniature and 0.7m length for standard switches.

Size	Contact Form (earthed*)	Max dc Contact Ratings			Order Code
Switches	V	V.A.	A		
Miniature	SPNO	220	15	0.5	170-838
Miniature	SPO	175	3	0.25	170-839
Standard	SPNO*	250	100	3	170-842
Standard	SPO*	250	50	1.5	170-841

Order Code Used with Order Code Distance - face to face Min. (mm) Max. (mm)

170-840	170-838	7	13
	170-839	5	13
170-843	170-842	13	22
	170-841	13	25

	Mfrs.	Price Each
Switches	Order Code	
Miniature SPNO	170-838	
Miniature SPO	170-839	
Standard SPNO	170-842	
Standard SPO	170-841	
Magnets		
Miniature	170-840	
Standard	170-843	

Sensors & Transducers

Proximity Switches - Magnetic - continued

55100 Series, Mini Flange Mount Hall Effect Sensor

HAMLIN



- Cost effective
- Magnetically operated position sensor
- 3 wire (voltage output)
- Reverse/over voltage protection
- Digital, latching or programmable analogue types available
- Built in temperature compensation

Description	Supply Voltage	Output High Voltage	Output Low Voltage	Output Current	Switching Speed	Order Code
Analogue	4.5 - 5.5V DC	4.65V dc	0.35V dc	1.0mA (max)	2 kHz	
Programmable High	3.8 - 24V DC	4.65V dc	0.35V dc	10mA (max)	10 kHz	505-2592
Sensitivity Medium	3.8 - 24V DC	4.65V dc	0.35V dc	10mA (max)	10 kHz	505-2567
Sensitivity						505-2580

Mfrs. List No.	Order Code	Price Each
55100 AP 02 A	505-2592	
55100 3H 02 A	505-2567	
55100 3M 02 A	505-2580	

55110 Series, LED Flange Mount Hall Effect Sensor

HAMLIN



- Cost effective
- Magnetically operated position sensor
- 3 wire (voltage output)
- Reverse/over voltage protection
- Digital or latching types available
- Built in temperature compensation
- Integral LED indicator

Description	Supply Voltage	Output High Voltage	Output Low Voltage	Output Current	Switching Speed	Order Code
3 Wire High Sensitivity	3.8 - 24V DC	VDD-2 @ 0.1mA (sinking output with integral pull up)	0.4V dc @ 10mA (max)	10mA (max)	10 kHz	
Medium Sensitivity	3.8 - 24V DC	VDD-2 @ 0.1mA (sinking output with integral pull up)	0.4V dc @ 10mA (max)	20mA (max)	10 kHz	505-2609
						505-2622

Mfrs. List No.	Order Code	Price Each
55110 3H 02 A	505-2609	
55110 3M 02 A	505-2622	

Solid State - Long Range Sensing

SICK



M8: L=50 (cable type), 59 (plug-in type)
 M18: L=50 (cable type), 65 (plug-in type)
 Rectangular: H=16, W=10, D=28 (body)

Magnets:
 M3.0: Dia.=20, H=6.5, Hole dia.=4.3
 M5.0: Dia.=31, H=15, Hole dia.=5.3

- Can be installed flush and non-flush in metal
- Long sensing ranges, even with small size sensors
- Can be used to detect magnets behind surfaces such as wood, plastic or non-ferrous metal
- High switching frequency
- Short circuit and reverse polarity protection
- Barrel sensors in robust metal housings
- Plastic rectangular housing similar to V3 style microswitch
- Prewired 2m cable or plug-in connector options
- LED status indication
- IP67 enclosure rating
- Suitable magnets available, centre drilled and countersunk

Sensing range, axial (using M4.0 magnet)	M8=60, M8=60, Rectangular=60
In non-magnetisable material	M8= 20, M8= 55, Rectangular= 30
Flush in magnetisable material	10-30V dc
Operating voltage	PNP, normally open, 300mA max.
Switching output	M8/M18: brass, nickel plated; Rectangular: plastic
Case material	M8/Rectangular: M8 screw lock; M18: M12
Connection, plug-in	Magnet material
Magnet material	Barium ferrite

Mfrs. List No.	MM08-60APS-ZTO=722-9501,	MM18-70APS-ZUO=722-9513,	MM18-70APS-ZCO=722-9525,	MQ10-60APS-KUO=722-9537,	M3.0=722-9550,	M5.0=722-9562
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FOR SUITABLE SENSOR CONNECTORS SEE **ORDER CODE 131-7876.**

222167

Proximity

Price Each

Switches	Connection	Order Code	Price Each
M8 barrel	Plug-in	722-9501	
M18 barrel	Cable	722-9513	
M18 barrel	Plug-in	722-9525	
Rectangular	Cable	722-9537	
Magnets			
Dia.=20, H=6.5 (drilled)		722-9550	
Dia.=31, H=15 (drilled)		722-9562	

Proximity Switches - Capacitive

Low Profile, dc - E2K-F

OMRON



- For detection of metallic or non-metallic objects
- Flat-pack construction allows a 10mm sensing range in a comparatively small space
- LED operation indicator fitted
- Protection to IP66

H=10.1, W=50 (overall), 34 (face), D=20, Fixing centres=42 (3.5 dia.), Cable L=2m

A plastic body capacitive proximity switch. The switch can be mounted directly onto a metal panel, though care should be taken with regard to surrounding metal, since the switch is of non-shielded construction and is side sensitive.

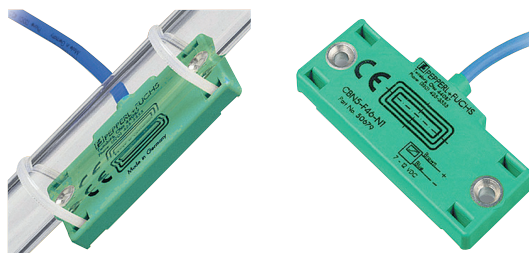
Sensing distance	10mm (max.)	Current consumption	10mA max. @ 24V dc
Operating voltage	10 to 30V DC dc, 10% ripple (max.)	Response frequency	100Hz
Output	NPN	Temperature range	-10°C to +55°C

212192

Mfrs. List No.	Order Code	Price Each
E2KF10MC1	160-3020	

Low Profile, DC - CBN Series

PEPPERL+FUCHS



Low Cost Level Solution

H=50, W=20 D=5

Supply Voltage	10 to 30Vdc	Switching Frequency	10Hz
Connection	2m PVC cable	Temperature range	-25°C to 70°C
Operating Current	0 to 100mA		

233748

Sensing Distance	Output	Mfrs. List No.	Order Code	Price Each
5mm	NPN	CBN5-F46-E0	372-6113	
5mm	PNP	CBN5-F46-E2	372-6125	

M30 ac/dc, Extended Sensing - 'Tripleshield'

Prewired and M12 Plug-in

CARLO GAVAZZI



L=72.6 (non-flush), 60.6 (flush), Thread=M30

- Outstanding high immunity against ESD, interference and transients, exceeding all industry norm requirements
- Adjustable extended sensing distances to 25mm
- Elevated temperature range -25°C to +80°C
- DC types available NPN or PNP with NO/NC dual output
- AC types have SCR output with programmable NO/NC switching
- DC types have reverse polarity and short-circuit protection
- Senses most materials
- IP67 protection

M30 sensors in thermoplastic polyester housing, triple protected against environmental disturbances, fitted with 2m PUR cable or M12 connector.

Operating voltage	Output type	Mounting style	Mfrs. List No.	Order Code	Mfrs. List No.	Order Code
10-40V DC	NPN	Non-flush	EC 30 25 NPAPL	711-3201		
10-40V DC	PNP	Non-flush	EC 30 25 PPAPL	711-3213	EC3025 PPAPL-1	721-3001
20-250V AC	Thyristor	Non-flush	EC 30 25 TBAPL	711-3249	EC3025 TBAPL-6	721-3025
10-40V DC	NPN	Flush	EC 30 16 NPAPL	711-3225		
10-40V DC	PNP	Flush	EC 30 16 PPAPL	711-3237		

222156

Voltage	Output	Order Code	Price Each
Prewired, Non-flush Mounting			
10 to 40V DC	NPN	711-3201	
10 to 40V DC	PNP	711-3213	
20 to 250V AC	Thyristor	711-3249	
Prewired, Flush Mounting			
10 to 40V DC	NPN	711-3225	
10 to 40V DC	PNP	711-3237	
20 to 250V AC	Thyristor	711-3250	
Plug-in, Non-flush Mounting			
10 to 40V DC	PNP	721-3001	
20 to 250V AC	Thyristor	721-3025	

Proximity Switches - Inductive - Pepperl + Fuchs

Prewired and Plug-in AC and DC



- 3 wire normally open NPN and PNP output options.
- 2 wire normally open AC output options
- Protection Degree **IP67**
- Yellow LED indicator
- Short circuit/overload protected
- Cable connector versions
- Sensing range 1.5 to 15mm

Temperature range -25° to 70°C

Type	Operating Voltage	Current (mA)	Response Frequency (Hz)
NBB 1.5	10 to 30Vdc	100	1500
NBB2	10 to 30Vdc	200	1500
NBB5	10 to 30Vdc	200	800
NBB10	10 to 30Vdc	200	20
NBN2	10 to 30Vdc	100	1500
NBN4	10 to 30Vdc	200	1200
NBN8	10 to 30Vdc	200	500
NBB,NBN...WS	20 to 253Vac	5 to 200	20

Nomenclature	Nomenclature
NJ Inductive, Initiator	E0 NPN normally open
NBB Inductive, base line, embeddable	E2 PNP normally open
NBN Inductive, base line, non-embeddable	WS Normally open ac
1.5 Sensing range mm	V1 M12 connector (cable version)
8 Housing size (8mm diameter)	V3 2m PVC no reference)
GM Metal thread	M8 connector 3 pin
50 Housing length mm	

Sensing Distance mm	Mfrs. List No.	Order Code	Price Each
Prewired - 3 wire dc, 2 wire ac-embeddable and non embeddable			
Embeddable			
1.5	NBB1,5-8GM50-E2	356-5166	
2	NBB2-12GM50-E0	356-5178	
2	NBB2-12GM50-E2	356-5180	
5	NBB5-18GM50-E0	356-5191	
5	NBB5-18GM50-E2	356-5208	
Non-Embeddable			
2	NBN2-8GM50-E0	356-5233	
4	NBN4-12GM50-E0	356-5257	
4	NBN4-12GM50-E2	356-5269	
8	NBN8-18GM50-E0	356-5270	
8	NBN8-18GM50-E2	356-5282	
Embeddable, NO AC			
8	NJ2-12GM50-WS	356-5350	
5	NBB5-18GM60-WS	356-5361	
5	NBB10-30GM50-WS	356-5373	
Non-Embeddable, NO AC			
8	NBN8-18GM60-WS	356-5397	
Plug-in - M8 and M12, 3 Wire dc, embeddable and non-embeddable			
Embeddable + M8 Connector			
1.5	NBB1,5-8GM40-E0-V3	NEW 169-2790	
1.5	NBB1,5-8GM40-E2-V3	356-5427	
Non-Embeddable + M8 Connector			
2	NBN2-8GM40-E2-V3	356-5520	
Embeddable + M12 Connector			
1.5	NBB1,5-8GM40-E0-V1	356-5439	
1.5	NBB1,5-8GM40-E2-V1	356-5440	
2	NBB2-12GM50-E0-V1	532-710	
2	NBB2-12GM50-E2-V1	532-721	
5	NBB5-18GM50-E0-V1	356-5476	
5	NBB5-18GM50-E2-V1	532-745	
Non-Embeddable + M12 Connector			
4	NBN4-12GM50-E2-V1	356-5567	

Extended Range, Prewired and Plug-in 3 wire dc, Embeddable

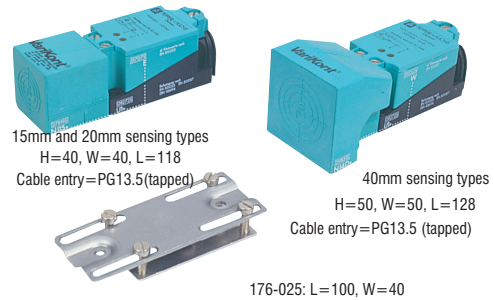


- Yellow LED indicator
- Short circuit/overload protected
- Cable connector versions
- Sensing range 1.5 to 15mm
- 3 wire normally open NPN and PNP output options.
- Protection Degree **IP67**

Temperature range -25° to 70°C
Supply Voltage 10 to 30Vdc
Response Frequency ≥300Hz
Output rating 100mA

Sensing Distance (mm)	Output	Thread Mfrs. Size	List No.	Order Code	Price Each
Embeddable-Prewired					
4	NPN	M12	NBB4-12GM50-E0	372-5844	
4	PNP	M12	800734	372-5856	
8	NPN	M18	NBB8-18GM50-E0	372-5868	
8	PNP	M18	NBB8-18GM50-E2	372-5870	
Embeddable-Plug in, M12					
4	NPN	M12	NBB4-12GM50-E0-V1	372-5900	
4	PNP	M12	NBB4-12GM50-E2-V1	372-5911	
8	NPN	M18	NBB8-18GM50-E0-V1	372-5923	
8	PNP	M18	NBB8-18GM50-E2-V1	372-5935	

5 Position Turret Head Range - 2 Wire ac, 3 Wire dc



- Sensing head may be set in one of 5 positions mutually at right angles
- Main body of unit plugs into base and may therefore be replaced easily
- Key-way pin prevents connection of a dc unit into an ac base
- LED indication of operation and supply (dc versions)
- Connection is to terminals within the base of the unit
- 15mm types are flush mountable
- Conforms to **DIN43694**, **EN50025** and **EN50037**
- All bases now supplied with metric sleeves

Output ac: NO or NC, dc: NO
Output rating ac: 500mA 45 to 65Hz (2-wire thyristor)
dc: 200mA (3-wire NPN or PNP transistor)
Response frequency ac: 25Hz, dc: 300Hz
Temperature range -25°C to +70°C

Inductive proximity switches for detection of metallic objects without physical contact at a distance dependent on the ferrous content within the object. The indicated sensing distances are based upon ferrous material.

The switch mounting bracket is a two part kit to allow easy mounting and setting of the above switches. It gives 30mm lengthwise adjustment.

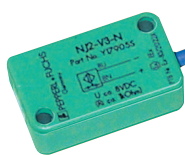
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NJ15+U1+E2=179-262 NJ40+U1+W=176-023 MH4-2057=176-025
NJ20-U1-W=254-435

Sensing Distance	Voltage	Order Code	Price Each
15mm	20 to 250V ac	176-021	
15mm	10 to 30V dc/PNP	179-262	
20mm	20 to 250V ac	254-435	
20mm	10 to 30V dc/PNP	179-264	
40mm	20 to 250V ac	176-023	
40mm	10 to 30V dc/PNP	179-265	
Switch mounting bracket		176-025	

Over 500 000 products available online

Proximity Switches - Inductive - Pepperl + Fuchs - continued

Miniature V3 Style Sensors



- 3 wire dc with yellow LED operation indicator
- Fully Shielded
- Miniature V3 style housing
- Prewired 100mm
- NPN or PNP normally open outputs
- Housing protected to IP67

Switching Frequency 1000Hz
 Output Rating 100mA
 Temperature Range -25°C to 70°C

NBB2-V3-EO 372-5753 NBB2-V3-E2 372-5765

233706

Prewired 3 wire dc, 2 wire ac-embeddable and non embeddable

Sensing Distance (mm) Voltage Order Code Price Each

Prewired

Distance (mm)	Voltage	Order Code	Price Each
2	10 to 30Vdc/NPN	372-5753	
2	10 to 30Vdc/PNP	372-5765	

Proximity Switches - Inductive - Omron

Miniature, 3-Wire dc - TLW Series



- Side mounted LED indicates output on
- Reverse polarity protected
- Protection to IP67
- Prewired with 2m cable
- ABS body ideal for chemical plant and food processing applications

A miniature inductive proximity switch of flat construction and side sensing. Cable entry is perpendicular to the sensing direction.

160-3082 & 179-258 H=27, W=10, D=5.5
 160-3081 & 177-886 H=30.5, W=18, D=10
 fitted with mtg bracket

Output Normally Open Output rating 3mm 100mA
 Sensing distance 3mm, 5mm 5mm 50mA at 12V dc, 100mA at 24V dc

Operating voltage 10 to 30V DC, 10% ripple Operating temperature -25°C to +70°C

Mfrs. List No: Order Code Mfrs. List No: Order Code
 TLW3MC1 160-3082 TLW5MC1 160-3081
 TL-W3MB1 179-258 TLW5MB12MOMC 177-886

212450

Sensing Distance Output Order Code Price Each

Distance	Output	Order Code	Price Each
3mm	NPN	160-3082	
3mm	PNP	179-258	
5mm	NPN	160-3081	
5mm	PNP	177-886	

High Performance

E2A Series



- Improved sensing range increasing reliability
- Long sensing range aiding mechanical protection
- IP67 for environmental protection
- Rugged construction and improved cable protection
- Clear, visible indicator of operation

Control Output PNP or NPN Open collector, load current 200mA max.
 Operation mode NO for all types
 Power Supply 12 to 24V DC
 Enclosure rating IP67
 Response frequency M12 - 1kHz, M18 - 500Hz, M30 - 250Hz
 Temperature range -40°C to +70°C

Sensing Distance	Thread Size	Thread Length	Overall Length	Output	Mfrs. List No.	Order Code
Pre-wired						
4mm	M12	34	50	PNP	E2AM12KS04WPB12M	160-3083
4mm	M12	34	50	NPN	E2AM12KS04WPC12M	160-3084
8mm	M18	39	59	NPN	E2AM18KS08WPC12M	160-3088
15mm	M30	44	64	PNP	E2AM30KS15WPB12M	160-3091
M12 Connector						
4mm	M12	34	48	PNP	E2AM12KS04M1B1	160-3086
4mm	M12	34	48	NPN	E2AM12KS04M1C1	160-3087
8mm	M18	39	53	PNP	E2AM18KS08M1B1	160-3089
15mm	M30	44	58	PNP	E2AM30KS15M1B1	160-3092

337918

Sensing Size Distance Output Order Code Price Each

Size	Distance	Output	Order Code	Price Each
Pre-wired				
M12	4mm	PNP	160-3083	
M12	4mm	NPN	160-3084	
M18	8mm	NPN	160-3088	
M30	15mm	PNP	160-3091	
M12 Connector				
M12	4mm	PNP	160-3086	
M12	4mm	NPN	160-3087	
M18	8mm	PNP	160-3089	
M30	15mm	PNP	160-3092	

Prewired Range - 3-Wire dc, 2-Wire ac and dc E2E Series



Asian Selection



M12 shielded M18 unshielded

- Choice of shielded or non-shielded construction
- Non-shielded types offer longer sensing distances
- All dc 3-wire types are protected against reverse polarity connection
- All dc 3-wire types offer overload/short-circuit protection
- 2-wire ac and dc types are particularly suitable for PLC connection

- All types feature LED operation indicator
- Standard length of wire is 30cm
- DC types are UL approved

DIN inductive proximity switches for detection of metallic objects without physical contact at a distance dependent upon ferrous content within object. The indicated sensing distances are based upon ferrous material.

DC 3-wire types include NPN and PNP outputs and shielded or non-shielded construction. Non-shielded types offer longer sensing distances than shielded, but are side sensitive and hence may mutually interfere.

2-wire ac and dc types are particularly suitable for PLC connection, since they will take their supply directly from the PLC and their very low leakage current will not cause the PLC input to turn on when the proximity switches are in the off state.

Supply voltage 3-wire dc 12 to 24V dc
 2-wire dc 12 to 24V dc
 2-wire ac to V ac

Output Normally open, NPN or PNP
 Output rating 2-wire dc 100mA, 3-wire dc 200mA, 2-wire ac 200mA
 Sealing IP67

Response times dc 1mm 0.1ms, 2mm 1ms, 5/10mm 5ms, ac: 5/10mm 0.10ms
 Operating temperature -40°C to +85°C(3-wire dc and ac), -25°C to +70°C(2-wire dc)

Sensing Distance	Thread Size	Thread Length	Overall Length	Output	Mfrs. List No.	Order Code
3-wire dc, shielded						
1mm	M8	26	30	NPN	E2EX1R5E1	160-3038
1mm	M8	26	30	PNP	E2EX1R5F1	160-3045
2mm	M12	33	38	NPN	E2EX2E1	160-3039
5mm	M18	38	43	NPN	E2EX5E1	160-3040
5mm	M18	38	43	PNP	E2EX5F1	160-3044
3-wire dc, unshielded						
5mm	M12	26	38	NPN	E2EX5ME1	160-3046
5mm	M12	26	38	PNP	E2EX5MF1	160-3049
2-wire dc, shielded						
3mm	M12	33	38	—	E2E-X3D1	160-3051
7mm	M18	38	43	—	E2E-X7D1	160-3052
2-wire ac, shielded						
5mm	M18	38	43	—	E2EX5Y1	160-3041
10mm	M30	43	48	—	E2EX10Y1	160-3042

212453

Sensing Size Distance Output Order Code Price Each

Size	Distance	Output	Order Code	Price Each
3-wire dc, shielded				
M8	1mm	NPN	160-3038	
M8	1mm	PNP	160-3045	
M12	2mm	NPN	160-3039	
M18	5mm	NPN	160-3040	
M18	5mm	PNP	160-3044	
3-wire dc, unshielded				
M12	5mm	NPN	160-3046	
M12	5mm	PNP	160-3049	
2-wire dc, shielded				
M12	3mm	—	160-3051	
M18	7mm	—	160-3052	
2-wire ac, shielded				
M18	5mm	—	160-3041	
M30	10mm	—	160-3042	

Proximity Switches - Inductive - Telemecanique

Osiprox Universal Proximity Switches - IP67 M12



- Extended Sensing range
- 2X nominal sensing distance
- Flush mountable in metal
- Fast switching frequency

Nominal sensing distance 4mm
 Output PNP N/O
 Contact rating 10 - 36V DC
 Switching Capacity 200mA
 Max. switching frequency 2500 Hz
 Operating temperature -25°C to 70°C
 Protection IP67

dia=M12, L=50

246769

Description	Mftrs.List No.	Order Code	Price Each
Metal Body			
Pre-cabled 3 wire dc	XS612B1PAL2	425-4715	
M12 Connector 3 wire dc	XS612B1PAM12	425-4727	

Osiprox Universal Proximity Switches - IP67 M18



- Extended Sensing range
- 2X nominal sensing distance
- Flush mountable in metal
- Fast switching frequency

Nominal sensing distance 8mm
 Output PNP N/O
 Contact rating 10 - 36V DC
 Switching Capacity 200mA
 Max. switching frequency 1 kHz
 Operating temperature -25°C to 70°C
 Protection IP67

dia.=M18, L=60

246770

Description	Mftrs.List No.	Order Code	Price Each
Metal Body			
Pre-cabled 3 wire dc	XS618B1PAL2	425-4739	
M18 Connector 3 wire dc	XS618B1PAM12	425-4740	
Pre-cabled 2 wire ac/dc	XS608B1PAL2	425-4790	
M18 Connector 2 wire ac/dc	XS618B1MAU20	425-4806	

Extended Sensing, Prewired



Short Case, 3 Wire dc



- 3-wire dc inductive proximity switches with extended sensing range
 - Multi-direction LED operation indication
 - Fully shielded
 - Over-load and short-circuit protection
- 530-293: Thread M8, L=33
 530-300: Thread M12, L=33
 530-311: Thread M18, L=33.5

Output Normally Open, PNP Response frequency M8=350Hz
 Output rating 200mA M12=300Hz
 Supply voltage 12 to 24V dc M18=60Hz
 Voltage limits (incl. ripple) 10 to 38V dc Temperature range -25°C to +50°C
 Sealing IP67

212175

Sensing		Price Each	
Size	Distance	Mftrs. List No.	Order Code
M8	2mm	XS1N08PA349	530-293
M12	3.2mm	XS1N12PA349	530-300
M18	8mm	XS1N18PA349	530-311

Proximity Switches - Inductive - Balluff

Inductive Proximity Sensors



3 - Wire Connection



- Cylindrical housing sizes M8, M12 and M18
- Sensing distances available from 1.5mm to 8mm
- PVC cable connection
- Short circuit and polarity reversal protected
- LED output indicator
- Double insulated
- IP67 sealing specification



Housing material Nickel plated brass
 Rated operating voltage 24V DC
 Operating voltage range 12V DC to 30V DC dc
 Operating temperature range -25°C to 70°C

Sensing range with steel square target size of face dia x 1mm thick

231059

Size	Sense Dist.	Mftrs. List No.	Order Code	Price Each
NPN Output				
M8	1.5mm	BESM08MI-NSC15B-BV03	160-6702	
M12	2mm	BESM12MI-NSC20B-BV03	160-6704	
M18	5mm	BESM18MI-NSC50B-BV03	160-6706	
M8	2mm	BESM08MI-NSC20B-BV03	160-6708	
M12	4mm	BESM12MI-NSC40B-BV03	160-6710	
M18	8mm	BESM18MI-NSC80B-BV03	160-6713	
PNP Output				
M8	1.5mm	BESM08MI-PSC15B-BV03	160-6703	
M12	2mm	BESM12MI-PSC20B-BV03	160-6705	
M18	5mm	BESM18MI-PSC50B-BV03	160-6707	
M8	2mm	BESM08MI-PSC20B-BV03	160-6709	
M12	4mm	BESM12MI-PSC40B-BV03	160-6711	
M18	8mm	BESM18MI-PSC80B-BV03	160-6714	
M8	2mm	BESM08MH1-PSC20B-S04G	160-6715	
M12	4mm	BESM12MI-PSC40B-S04G	160-6716	
M18	8mm	BESM18MI-PSC80B-S04G	160-6717	

HyperPROX



Extended Sensing Range



- Extended sensing range
- Cylindrical housing sizes M5, M8, M12 and M18
- Short circuit and polarity reversal protected
- LED for visual indication of output state
- High IP67 rating for arduous environments

Hyperprox inductive proximity sensors with up to 4 x standard sensing distance. No matter how reliable your existing sensor, it is unlikely to withstand collision with metal objects. Revolutionary new technology combined with extremely high component specification has allowed Balluff to develop this problem solving family of sensors to allow the sensor to be mounted further away from the danger area and thus avoid expensive breakdowns.

Operating Voltage 24V DC Current load 200mA
 Voltage range 10 to 30V DC dc Connection 3 pin metric connector

241639

Size	Sense Dist.	Mftrs. List No.	Order Code	Price Each
M8	4mm	BESM08MI-PSC40B-S49G	160-6774	
M12	8mm	BESM12MI-PSH80B-S04G	160-6775	
M18	12mm	BESM18MG1-PSC12B-S04G	160-6776	
M8	6mm	BESM08MG1-PSC60F-S49G	160-6777	
M12	10mm	BESM12MF1-PSC10F-S04G	160-6778	
M18	20mm	BESM18ME1-PSC20F-S04G	160-6779	
M5 *	5mm	BESM05ED-PSC50F-EP05	160-6780	

* Supplied complete with 3mm diameter, 3 core, connecting cable

Proximity Switches - Inductive

Proximity Switch Tester



- Suitable for testing 2 and 3 wire proximity switches, including inductive, photo-electric, capacitive and ultrasonic
- Ideally suited to 'point of use' testing
- Audio and visual indication
- Supplied and fitted with batteries, ready for use

H=104, W=60, D=29

Indication of proximity switch function NPN or PNP, normally closed or normally open, light-on or dark-on operation
 Auto-on/off feature Unit is powered only when a proximity switch is connected
 Battery DC = 2.9V (PP3)

Proximity Switches - Inductive - continued

Proximity Switch Tester - continued

Mfrs.	Price Each
List No. Order Code	
MU2-DC	721-3803

Proximity Switches - Ultrasonic

Compact, Switch Output

Adjustable Switch Point and Time Delay



- User adjustment of delay time
- User adjustment of range 100 to 500 mm
- Housing protected to **IP67**
- Small compact design
- Easy mounting options:- M4 thru-holes or M18 thread
- Switch status LED
- Detection of small poorly reflecting objects
- Detection unaffected by dust, waterdrops, strong sunlight etc.
- Distance measurement unaffected by target material
- Input protected against power reversal

Body H=46, W=18, D=30,
Overall W=40, Cable L=1.5m
Mounting: Thread=M18,
2x4.1 dia thru-holes, F.C=20

Versatile ultrasonic proximity switch in compact polyamide (glass fibre filled) case for object detection regardless of size, colour and target material.

Operating voltage V_s	12 to 24V
Scanning range	100 to 500mm
Switching point	Adjustable 100 to 500 mm
Time delay	Adjustable 0.2 to 7 secs
Resolution	±1.6 mm typ.
Detection sensitivity	100% @ $V_s=24V$, 80 to 90% @ $V_s=15V$
Carrier frequency	175kHz
Output	PNP or NPN open collector 100mA, short-circuit proof
Operating temperature	-15°C to +60°C

Output	Mfrs. List No.	Order Code	Price Each
PNP	UPX500 PVPS 24	732-801	
NPN	UPX500PVNS 24.	732-813	

Distance Sensors

Ultrasonic



Cylindrical M30 SKS Type ZWS Type

- Cylindrical M30 versions with digital display
- High resolution for maximum precision
- Temperature compensation for accurate measurement in fluctuating temperatures
- Automatic switchover between current and voltage output for simple operation
- Teach-in for rapid commissioning
- Operating voltage of up to 30V with reverse polarity protection for application in various supply networks
- IP 65 Protection class



Operating Range	Output Type	Mfrs. List No.	Order Code	Price Each
Cylindrical M30				
200 - 1300 mm	PNP - Switching	MIC+130/D/TC	177-5722	●
200 - 1300 mm	4-20 mA / 0-10V	MIC+130/IU/TC	177-5723	●
350 - 3400mm	PNP - Switching	MIC+340/D/TC	177-5724	●
350 - 3400mm	4-20 mA / 0-10V	MIC+340/IU/TC	177-5725	●
600 - 6000mm	PNP - Switching	MIC+600/D/TC	177-5726	●
600 - 6000mm	4-20 mA / 0-10V	MIC+600/IU/TC	177-5727	●
SKS Type				
20 - 150mm	PNP - Switching	SKS-15/D	177-5729	●
ZWS Type				
20 - 150mm	PNP - Switching	ZWS-15/CD/QS	177-5731	●
20 - 150mm	0-10V	ZWS-15/CU/QS	177-5732	●
120 - 700mm	PNP - Switching	ZWS-70/CD/QS	177-5733	●
120 - 700mm	4-20 mA	ZWS-70/CI/QS	177-5735	●

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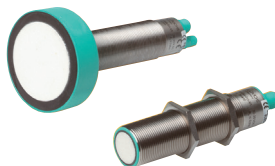


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M30, Analogue Output, Stainless Steel



4-20mA/0-10V, Temperature Compensated



The sensor has a four position insert to program the limit values of the analogue output and also to compensate for temperature drift.

- User-defined analogue outputs (current or voltage)
- Stainless steel **IP65** housing
- Temperature compensation

UC300, UC500, UC2000:L=114, Head dia.=M30,
UC4000:L=125, Head dia.=M40, UC6000:L=132,
Head dia.=73, All types: Thread size M30x1.5

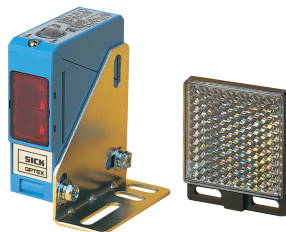
Operating voltage	10 to 30V DC	LED indicators	
Repeatability	0.1% of full scale	Dual-Green	Power on
Linearity	0.1% of full scale	Dual-Red	Object not detected/disturbance
Current output	4 to 20mA	Yellow	Limit value 1
Voltage output	0 to 10V	Yellow	Limit value 2

Sensing Range (mm)	Mfrs. List No.	Order Code	Price Each
15 to 300	UC300-30GM-IU-R2-V15	372-6241	
30 to 500	UC500-30GM-IU-R2-V15	709-8029	
80 to 2000	UC2000-30GM-IU-R2-V15	709-8030	
200 to 4000	UC4000-30GM-IUR2-V15	709-8042	
350 to 6000	UC6000-30GM-IUR2-V15	709-8054	

Photoswitches - Optical- Sick



W260 Series



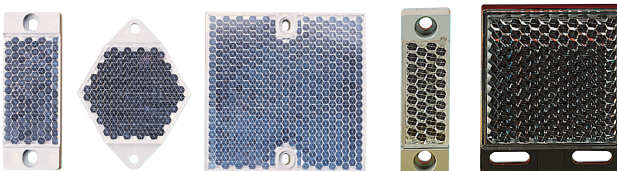
H=77.5, W=25, D=63,
Reflector (overall)=60.9 x 50.9

- SPNO relay output
- Light/dark operation (switch selectable)
- Protection to **IP66**
- Mounting bracket and cable gland supplied
- Adjustable sensitivity
- **UL** Recognised and **CSA** approved
- Reflector supplied with reflex types
- Reflex types use polarised red light thereby eliminating risk of malfunction due to shiny surfaces
- Terminal chamber connection with 2-position cable entry gland
- Polarised reflex type available with or without time delays

Sensing distance	Diffuse=2m
Supply voltage	12-240V dc, 24-240V
Output	SPCO Relay 3A @ 240VAC / 30VDC
Power consumption	2VA
Response time	20ms
Time delays (timer version)	OFF-delay/ON-delay (switch selectable), delay adjustable 0.1-5s

	Mfrs. List No.	Order Code	Price Each
Diffuse	WT260-S280	723-4594	
Polarised reflex	WL260-S270	730-282	
Polarised reflex with timer	WL260-R270	730-294	

Reflectors



	730-427	730-439	730-440	722-9653	722-9665
Overall dims:	730-427 H=82, W=30, D=7.2, Fixing centres=71 (Dia. 4.5)	730-439 H=78, W=60, D=8, Fixing centres=68 (Dia. 4.8)	730-440 H=84, W=84, D=8.5, Fixing centres=71 (Dia. 4.5)	722-9653 H=60, W=18, D=7.3, Fixing centres=50 (Dia. 4.6)	722-9665 H=60.9, W=50.9, D=8.5, Fixing centres=30 (Dia. 4.3)

High performance prismatic reflectors.

Mfrs. List No.	PL30A = 730-427, PL20A = 722-9653,	PL50A = 730-439, P250 = 722-9665	PL80A = 730-440,
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	Order Code	Price Each
Rectangular, 82 x 30mm	730-427	
Hexagonal, 78 x 60mm	730-439	
Square, 84 x 84mm	730-440	
Rectangular, 60 x 18mm	722-9653	
Square, 61 x 51mm	722-9665	

Photoswitches - Optical - Omron

M18 Diffuse and Reflex – E3F2 Series



- Light-on/dark-on operation is wire selectable (dc types)
- Short-circuit and reverse connection protection (dc types)
- AC type is **UL** Recognised and **CSA** approved
- DC type is **UL** Recognised
- **IP66** sealing
- LED output indication

ac type: M18 x 80, dc types: M18 x 65
Reflector supplied with reflex type

- Potentiometer sensitivity adjustment on long range (300mm) diffuse sensors
- Reflector supplied with reflex types

A range of compact cylindrical photoswitches in M18 ABS resin housings.

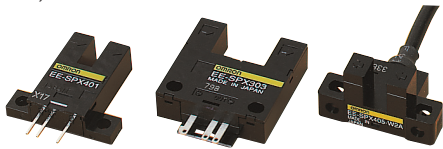
Mfrs. List No.	Order Code	Mfrs. List No.	Order Code
E3F2DS10B4N	160-3060	E3F2DS10Z1	160-3053
E3F2DS30B4	160-3056	E3F2R4C4 2M	160-3057
E3F2DS10C4N	160-3059	E3F2R4B4 2M	160-3058
E3F2DS30C4	160-3055	E39R1	160-3054

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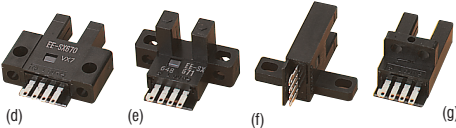
Sensing Distance		Output	Order Code	Price Each
Diffuse				
100mm	12 to 30V dc	PNP	160-3060	
300mm	12 to 30V dc	PNP	160-3056	
100mm	10 to 30V DC dc	NPN	160-3059	
300mm	10 to 30V DC dc	NPN	160-3055	
100mm	22 to 264V ac	Thyristor	160-3053	
Reflex				
2m	12 to 30V dc	NPN	160-3057	
2m	12 to 30V dc	PNP	160-3058	
Spare Reflector			160-3054	

Subminiature - Through-beam (Slotted)

EE-SPX, EE-SX Series



(a) EE-SPX301/401: H=24, W=26, D=7, F.C.=20
(c) EE-SPX305/405-W2A: H=15.5, W=27.2, D=15.5, Cable L=1m



(d) EE-SX670: H=22.2, W=25.4, D=7, F.C.=19
(e) EE-SX671: H=15.5, W=26.2, D=14.5, F.C.=19
(f) EE-SX672: H=22.2, W=13.4, D=26, F.C.=19
(g) EE-SX673: H=22.2, W=13.4, D=12.8, F.C.=7

- Built-in amplifier circuitry allows direct switching of PLC and relay outputs
- Applications include robot control, cam timer switching, general position and object detection
- All slotted sensors have light-on indication
- Variety of slot widths, mounting and termination styles
- Mating connectors and connecting leads available

Slot Width	Output	Load	Supply Voltage	Connector Code	Mfrs. List No.	Order Code
Modulated light, PCB mountable						
3.6mm	Light - Off	80mA	12 - 24V DC	3 or 4	EE-SPX301	721-3992
Dust-proof slit, 100mA switching						
5mm	Light - On/Off	100mA	5 - 24V DC	1 or 2	EE-SX671	162-7015
5mm	Light - On/Off	100mA	12 - 24V DC	1 or 2	EE-SX672	721-4030
Modulated light, prewired 1m leads						
5mm	Light - On	80mA	12 - 24V DC	N/A	EE-SPX405-W2A	721-4080

212306

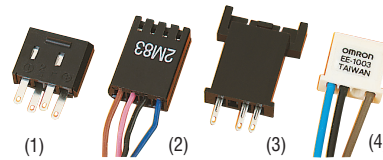
Mfrs. List No.	Order Code	Price Each
EE-SPX301	721-3992	
EE-SX671	162-7015	
EE-SX672	721-4030	
EE-SPX405-W2A	721-4080	

Technical information at your fingertips



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Connectors for EE Subminiature Photoswitches



Connectors and connecting leads for Omron EE subminiature photoswitches.

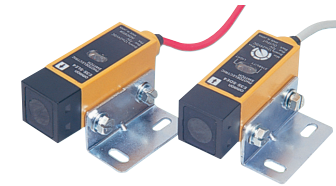
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Connector Code	Lead Length	Mfrs. List No.	Order Code	Price Each
1	—	EE-1001	721-4091	
2	1 mtr	EE-1006	721-4108	

Diffuse and Separate - E3S Series



Horizontal Appearance



160-3063, 175-728: H = 21, W = 15, D = 50
160-3062, 1603436: H = 19, W = 15, D = 50
Reflector H = 60, W = 40, D = 7
Cable L = 2m

- LED indication of output and stability status
- Operation mode selectable by changing power supply polarity
- **UL** listed
- Diecast housed types protected to **IP67**
- Plastic housed types protected to **IP65**
- Reflector supplied with reflex type

Sensing distance	Current consumption
Diffuse	Diffuse 40mA
300mm (diecast housed)	Separate 50mA
Separate	Load current NPN types 80mA
2m (plastic housed)	PNP types 100mA
5m (diecast housed)	Response time
Supply voltage	Diffuse 1ms
12V DC -10% to 24V DC +10%	Separate 1ms
(230V ac using S3 or S3D2 controller)	Temperature range -25°C to +55°C

Mfrs. List No.	Order Code	Mfrs. List No.	Order Code	E3S-2B4	160-3436
E3S-DS10E4	103-362	E3S2E4	160-3062	E39R1	160-3054

212466

Housing	Output	Order Code	Price Each
Diffuse Type			
Plastic	NPN	160-3063	
Separate Type			
Plastic	NPN	160-3062	
Plastic	PNP	160-3436	
Separate Reflector		160-3054	

Clear Glass Sensor - E3S-CR67-C



Metal Housing



Sensor: H=57 (body), 75 (overall), W=20.4, D=23
Reflector: H=59.9, W=40.3, D=7.5

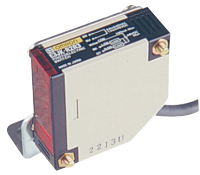
Supply voltage	10 to 30V dc
Sensing distance	0 to 250mm, using E39-R6 reflector
	250 to 1000mm, E39-R1 reflector
Control output	30V dc x 100mA max, NPN or PNP (selectable)
	Open collector, light-ON/dark-ON (selectable)
Indication	Stability (Green), light reception (Red)
Protection	IP67
Ambient temperature	-25°C to +55°C

222173

Mfrs. List No.	Order Code	Price Each
Clear glass sensor	E3S-CR67-C	722-6550
Reflector, 0 to 250mm	E39R1	160-3054
Reflector, 250 to 1000mm	E39-R6	722-6573

Photoswitches - Optical - Omron - continued

Polarised Reflex - E3JK



- Polarised light gives reliable detection of shiny objects
- Light-on/Dark-on operation and NPN/PNP outputs selectable
- Light received indicator
- ABS plastic housing protected to IP64
- Bracket, fixings and reflector supplied

H=50, W=17.6, D=50 (without bracket), Cable L=2m

Sensing range 2m
Supply voltage 12 to 240V dc +10%
Control output Open Collector NPN / PNP 100mA @30Vdc

Mfrs. List No. E3JK-R2R3=177-895, E39-R1=177-866

212471

Price Each

	Order Code
Photoswitch	177-895
Spare reflector	160-3054

Diffuse, Polarised Reflex and Separate - E3JM Series



- SPCO relay output
- LED alignment indication
- Light-on/dark-on operation is switch selectable
- Connections via screw terminals under screw-down cover
- PG13.5 conduit entry
- Protection to IP66
- Polarised reflex types give reliable detection of shiny objects
- All types available with multi-function adjustable timer

H=65, W=25, D=75

Note: Mounting bracket 179-874 allows these E3JM Series photoswitches to fit the same bracket mounting holes as obsolete E3A Series and OA5N photoswitches.

	Diffuse	Reflex
Sensing distance	700mm	4m
Supply voltage	20 to 240V ac, 50/60Hz ±10% or 12 to 240V dc ±10%	
Power consumption	2W (max.)	2W (max.)
Output	SPDT 3A 230VAC(max.), 5VDC(min.)	
Sensitivity	Adjustable	Fixed
Timer version	One-shot or on-delay or off-delay adjustable 0.1 to 5s	

212473

Price Each

Type	Order Code
Diffuse	178-472
Polarised reflex	178-473
Polarised reflex with timer	178-474
Spare reflector	160-3054

Retroreflective Sensors



E3G-MR19 Series



- Sensing distance up to 10 m
 - Operation stability monitor
 - Relay output
 - Mutual interference prevention function
 - PBT case material
 - IP67 protection
 - Terminal block connection
- Voltage Supply 24V AC to 240V AC, 12V DC to 24V DC
Power consumption 2W
Output relay switching - Voltage (Max.) 250V AC, 30V AC
Output relay switching - Current 3A
Response time - 160-3438 30ms
Response time - 160-3439 0 to 5s
Temperature range -25°C to +55°C

H = 84.95, W = 29, D = 68mm

510541

Price Each

Type	Mfrs. List No.	Order Code
Retroreflective	E3G-MR19G	160-3438
Retroreflective - Timed	E3G-MR19TG	160-3439
Spare Reflector	E39R1	160-3054

Photoswitches - Optical - Datasensor

M18 Tubular Optical Sensor



Type S15 - Cable Output



- Short length
- Cable output
- M18 x 1 threaded body
- Pre-set sensitivity
- IP69K Mechanical protection
- CE Approval, UL Recognised

Body - L = 40mm, Dia. = M18



Sensing Range	Output	Optic Function	Mfrs. List No.	Order Code
0.1 to 4m	PNP	Retroreflex	S15-PA-2-A00-PK	177-4932
1 to 10cm	PNP	Short diffuse proximity	S15-PA-2-C10-PK	177-4933
1 to 35cm	PNP	Long diffuse proximity	S15-PA-2-C00-PK	177-4934
0.1 to 4m	NPN	Retroreflex	S15-PA-2-A00-NK	177-4935
1 to 10cm	NPN	Short diffuse proximity	S15-PA-2-C10-NK	177-4936
1 to 35cm	NPN	Long diffuse proximity	S15-PA-2-C00-NK	177-4937

550855

Mfrs. List No.	Order Code	Price Each
S15-PA-2-A00-PK	177-4932	
S15-PA-2-C10-PK	177-4933	
S15-PA-2-C00-PK	177-4934	
S15-PA-2-C10-NK	177-4936	
S15-PA-2-C00-NK	177-4937	

M18 Diffuse and Polarised Reflex - 90° Viewing S5 Series



Thread=M18x80 Cable L=2m
Reflector supplied with reflex type

- Available AC or DC versions
- Red LED output indication
- Plastic housing giving IP67 protection
- Viewing optics turned through 90°
- DC versions have wire selectable NPN/PNP, light-on/dark-on output
- AC version is multi-voltage 15-264V ac with light-on output
- Long range DC version has sensitivity trimmer and green stability LED

Sensing distance Diffuse = 80, Diffuse adjustable=0-300, Polarised reflex=1500
Operating temperature -15°C to +55°C

	DC versions	AC version
Power supply	10 to 30V dc	15 to 264V, ac 48 to 62Hz
Output	NPN/PNP selectable	Thyristor + bridge rectifier
Output current	150mA max.	100mA max.
Response time	1ms max.	20ms max.

Mfrs. List No. S5-5-C10-35 = 179-356, S5-5-C35-35 = 179-358, S5-1-C8-25 = 179-357, S5-5B3-35 = 731-500

212462

Price Each

Type	Output	Order Code
Diffuse	NPN / PNP	179-356
Diffuse	Thyristor	179-357
Diffuse, adjustment	NPN / PNP	179-358
Polarised reflex	NPN / PNP	731-500

Photoswitches - Optical - Telemecanique

Osiris



Universal Optical Proximity Switches - IP67



- Extended sensing range
- Self teach multimode detection
- 4 modes of detection from the same sensor
- Diffuse mode range 2m
- Pol Reflex " reflector accessory 11m
- Background suppression mode 1.3m
- Thru-Beam "with accessory" 40m
- Programmable NO/NC switching
- Quick wire terminal chamber
- Relay or solid state output

PNP or Relay

H = 91 W = 30 D = 69

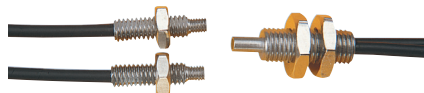
	Relay	Relay
Output	20 - 264V	20 - 264V
Supply voltage	3mA	3A
Switching Capacity	250 Hz	30 Hz
Max. switching frequency	-15°C to 55°C	-15°C to 55°C
Operating temperature	0.02-15 sec mono + 1 shot	
Time Delay		
Protection	IP67	IP67

247117

Body		Mfrs. List No.	Order Code	Price Each
Plastic	Terminal chamber (relay output)	XUXOARCTT16	425-5100	
Reflector accessory				
	Reflector 50 X 50	XUZC80	541-096	

Fibre Optic Photoswitches

Fibre Leads for WLL160 Amplifiers



Thread=M4x0.7, L=15

Thread=M6x0.75, L=20

Diffuse and through-beam fibre leads for use with Sick WLL160 amplifiers and similar. The leads have threaded sensing heads fitted and can be cut to length with the guillotine supplied.

Fibre length	2m (may be shortened)
Bending radius	25mm
Operating temperature	-40°C to +70°C

212261

	Mfrs List No.	Order Code	Price Each
Diffused	LL3-DB01	730-403	
Separate	LL3-TB01	730-415	

Fibre Optic Amplifier



212-260 Thread=M6x1

212-271 Threads=M4x0.7



Fibre Optic Leads

Fibre optic leads to plug into fibre optic amplifier above. The diffused type is for direct detection of an object, and the separate (through-beam) type is for light barrier operation. The leads can be cut to the required length with the tool supplied.

L = 80, Thread = M18,
Cable L = 2m

Fibre Optic Amplifier Unit

- Sensor for small object detection or when access is difficult using conventional sensor
- Adjustable sensitivity
- Proximity detection (OF18) fibre 22mm
- Through beam detection (OF19) 85cm
- Accepts any 2.2mm diameter fibre optic cable
- LED indication of output status & stability
- Transistor output PNP or NPN (selectable on the cable)
- Dark/Light (selectable on cable)
- Rugged ABS housing with min. IP67 protection

Supply voltage	10 to 30V dc, reverse polarity protected	Temperature range	-15°C to +55°C
Output current	150mA max. with short circuit protection	Light source	Visible red LED
Setting	Trimmer	Connection	2m cable
Response time	1ms max.		

Sensing distance	13mm (diffused), 50mm (separate)	Fibre length	1m
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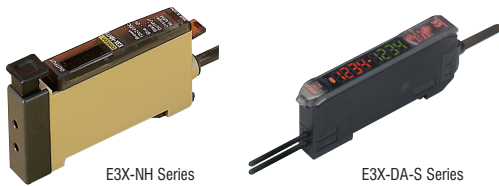
Mfrs. List No. S5-5-E1-30=179-361, S5-1-E1-20=179-362, OF18=212-260, OF19=212-271

212479

Supply	Output	Order Code	Price Each
Amplifier Units			
10 to 30V dc	NPN or PNP	179-361	
Fibre Optic Leads			
Diffused		212-260	
Separate		212-271	

Fine Tuning

E3X-NH & E3-DA-S Series



E3X-NH Series
H=32.5, W=10, D=59
Cable L=2m

E3-DA-S Series
H = 32, W = 70, D = 10mm
L (Cable) = 2m

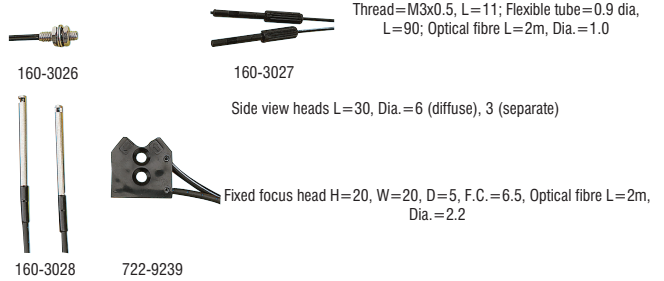
- High precision sensing with manual and auto tuning (teach function)
- Suitable for high precision positioning using fine sensitivity adjustment function
- Manual tuning allows threshold adjustments while sensed objects are moving
- Automatic sensitivity compensation function
- Offers longest sensing distance
- 16 bit resolution
- Mutual interference prevention
- 8-level incident and 13-level threshold indication

Supply voltage	12 to 24V DC ±10%
Light source	Red LED (680nm)
Current consumption	75mA
Output load	50mA max., NPN or PNP versions
Response time	1ms max.
Sensitivity setting	Teaching method
Fine sensitivity adjustment	Automatic or manual fine threshold adjustment
Time function (timer models)	Off-delay timer set to 40ms
Sensing distance	150mm with E32-DC200, 400mm with E32-TC200

212385

Type	Output	Mfrs. List No.	Order Code	Price Each
E3X-NH Series				
General purpose	NPN	E3X-NH11	722-9148	
General purpose	PNP	E3X-NH41	722-9150	
E3X-DA-S Series				
General purpose	NPN	E3XDA11S	160-3434	
General purpose	PNP	E3XDA41S	160-3435	

Fibre Leads - Alternative Sensor Heads



Thread=M3x0.5, L=11; Flexible tube=0.9 dia, L=90; Optical fibre L=2m, Dia.=1.0

160-3026

160-3027

Side view heads L=30, Dia.=6 (diffuse), 3 (separate)



160-3028



722-9239

Fixed focus head H=20, W=20, D=5, F.C.=6.5, Optical fibre L=2m, Dia.=2.2

Fibre leads for use with Omron fibre optic amplifiers and similar.

All fibres are 2m long and may be cut to required length with tool supplied.

Sensing distance (with E3X-A amplifier)	E32-DC200E = 18mm, E32-TC200E = 50mm, E32-T14L = 120mm, E32-L25 = 3.3mm
Optical fibre	Black polyethylene, 25mm bending radius
Operating temperature	-40°C to +70°C

212364

	Mfrs List No.	Order Code	Price Each
Small Object Sensing (M3)			
Diffuse	E32DC200E	160-3026	
Separate	E32TC200E	160-3027	
Side View, Long Distance			
Separate	E32T14L	160-3028	

Contrast Scanners

Contrast Sensors

Microprocessor Based with LED Emission



28



- Fully automatic touch to teach set-up
- Red/Green or White LED emission
- 10 to 30V dc supply with reverse protection
- Operating distance 6 to 12mm
- Response time 50µs max.
- Sealed to IP67
- Reference standard EN 60947-5-2
- Certifications CE, EX II3D



Body - H = 58, W = 81.2, D = 31mm

The TLU series microprocessor based setting can be either Teach-in or Remote by cable with the possibility of rapid memorising and recall of 4 different formats. The LED emission can be red/green with automatic selection, or white offering the possibility of operating on all contrasts, also amongst same-coloured objects and backgrounds, presenting different surface treatments or workings.

Emission	Spot	Connection	Output	Mfrs. List No.	Order Code
Red /Green	Vertical	Cable	NPN	TLU-011	177-4922
Red /Green	Vertical	M12 Connector	PNP	TLU-115	177-4923
White	Circular	M12 Connector	PNP	TLU-511C	177-4924
White	Circular	Cable	PNP	TLU-515C	177-4925

550796

Mfrs. List No.	Order Code	Price Each
TLU-011	177-4922	
TLU-115	177-4923	
TLU-511C	177-4924	
TLU-515C	177-4925	

REACH - SVHCs



We've checked over **200,000 products** for **Substances of Very High Concern** under REACH and are continuing to check more every day. Easily identify these products online and access supporting safety datasheets when you see this logo. Visit www.element14.com to stay up-to-date.

Sensors & Transducers

Sensor Connectors

M8 Sensor Connectors

IP 67



- Compact round connectors
- Water resistive, meets IP67 requirements
- Conventional M8 screw mounting and S8 snap in models that connect and disconnect with one touch
- Ideal for a wide variety of FA and OA applications
- Connectors on both cable ends require no harness work



- Vibration proof robot cable provided as a standard feature

Connector Shape	Cable Length	Mfrs. List No.	Order Code	Price Each
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M8 Screw Double ended Connectors - Vibration proof robot cable

Straight / Straight	1m	XS3W-M421-401-R	171-5587	●
Straight / Straight	2m	XS3W-M421-402-R	171-5588	●
Straight / Straight	5m	XS3W-M421-405-R	171-5589	●
L Shaped / L Shaped	2m	XS3W-M422-402-R	171-5590	●
Straight / L Shaped	5m	XS3W-M422-405-R	171-5591	●
Straight / L Shaped	2m	XS3W-M423-402-R	171-5592	●
Straight / L Shaped	5m	XS3W-M423-405-R	171-5593	●
L Shaped / Straight	2m	XS3W-M424-402-R	171-5594	●
L Shaped / Straight	5m	XS3W-M424-405-R	171-5595	●

S8 Snap-in Double ended Connectors - Vibration proof robot cable

Straight / Straight	1m	XS3W-S421-401-R	171-5596	●
Straight / Straight	2m	XS3W-S421-402-R	171-5597	●
Straight / Straight	5m	XS3W-S421-405-R	171-5599	●
L Shaped / L Shaped	2m	XS3W-S422-402-R	171-5600	●
L Shaped / L Shaped	5m	XS3W-S422-405-R	171-5601	●
Straight / L Shaped	2m	XS3W-S423-402-R	171-5602	●
Straight / L Shaped	5m	XS3W-S423-405-R	171-5603	●
L Shaped / Straight	2m	XS3W-S424-402-R	171-5605	●
L Shaped / Straight	5m	XS3W-S424-405-R	171-5606	●

M8 Screw Single-ended Connector - Standard cable

Straight	2m	XS3F-M421-402-A	171-5607	●
Straight	5m	XS3F-M421-405-A	171-5608	●
M8 90° Plug	2m	XS3F-M422-402-A	171-5612	●
M8 90° Plug	5m	XS3F-M422-405-A	171-5613	●

M8 Screw Single-ended Connector - Vibration proof robot cable

Straight	1m	XS3F-M421-401-R	171-5609	●
Straight	2m	XS3F-M421-402-R	171-5610	●
Straight	5m	XS3F-M421-405-R	171-5611	●
M8 90° Plug	1m	XS3F-M422-401-R	171-5614	●
M8 90° Plug	2m	XS3F-M422-402-R	171-5615	●
M8 90° Plug	5m	XS3F-M422-405-R	171-5617	●

M8 Screw Single-ended Connector - Standard cable SUS316L cable lock

M8 Straight Plug	2m	XS3F-E421-402-A	171-5618	●
M8 Straight Plug	5m	XS3F-E421-405-A	171-5619	●
M8 90° Plug	2m	XS3F-E422-402-A	171-5620	●
M8 90° Plug	5m	XS3F-E422-405-A	171-5621	●

S8 Snap-in Single ended Connectors - Vibration proof robot cable

S8 Straight Plug	1m	XS3F-S421-401-R	171-5622	●
S8 Straight Plug	2m	XS3F-S421-402-R	171-5623	●
S8 Straight Plug	5m	XS3F-S421-405-R	171-5624	●
S8 90° Plug	1m	XS3F-S422-401-R	171-5625	●
S8 90° Plug	2m	XS3F-S422-402-R	171-5626	●
S8 90° Plug	5m	XS3F-S422-405-R	171-5627	●

Single ended Connectors - Vibration proof robot cable

M8 Straight Socket	0.3m	XS3H-M421-4C3-R	171-5629	●
M8 Straight Socket	1m	XS3H-M421-401-R	171-5631	●
M8 90° Socket	0.3m	XS3H-M422-4C3-R	171-5632	●
M8 90° Socket	1m	XS3H-M422-401-R	171-5633	●
S8 Straight Socket	0.3m	XS3H-S421-4C3-R	171-5634	●
S8 Straight Socket	1m	XS3H-S421-401-R	171-5635	●

M8 Screw Panel / PCB mount connectors

Front or Rear lock - DIP pins	XS3P-M421-1	171-5636	●
Front or Rear lock - Solder cup	XS3P-M421-2	171-5637	●
Rear lock - Solder cup	XS3P-M422-2	171-5638	●

S8 Snap in Panel / PCB mount connectors

Front or Rear lock - DIP pins	XS3P-S421-2	171-5639	●
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Embedded Connectors

M8 Screw - DIP pins	XS3M-K421-1	171-5640	●
M8 Screw - Solder cup	XS3M-K421-2	171-5642	●

Connector Shape	Cable Length	Mfrs. List No.	Order Code	Price Each
Y Splitter with cable - Connectors on both ends - Standard cable				
M8 Screw / M8 Screw	0.5m	XS3R-M426-1C51-A	171-5646	●
M8 Screw / M8 Screw	1m	XS3R-M426-1011-A	171-5643	●
M8 Screw / M8 Screw	2m	XS3R-M426-1021-A	171-5644	●
M8 Screw / M8 Screw	3m	XS3R-M426-1031-A	171-5645	●
Y Splitter with cable - Connectors on one end - Standard cable				
M8 Screw	2m	XS3R-M426-1020-A	171-5647	●
M8 Screw	5m	XS3R-M426-1050-A	171-5648	●
Y Splitter no cable - M8 Screw connectors on both ends				
2 x 3 Ways to 1 x 4 Way		XS3R-M426-1	171-5649	●
2 x 4 Ways to 1 x 4 Way		XS3R-M426-5	171-5650	●

M12 Molded Sensor Connectors

IP 67



- Surpasses IP67 and ensures 94V-0 fire retardant rating
- Quick connect / disconnect
- Extension cable with one female socket, one male plug
- Single-end I/O connector has one female socket attached to the cable
- Double-ended connector has a female socket on one end and a male plug on the other



Connector Shape	No. of Conductors	Cable Length	Mfrs. List No.	Order Code	Price Each
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Single-ended Connectors - DC

Straight	3	2m	XS2F-D421-DC0-A	171-5572	●
Straight	3	5m	XS2F-D421-GC0-A	171-5573	●
Straight	4	2m	XS2F-D421-D80-A	171-5577	●
Straight	4	5m	XS2F-D421-G80-A	171-5578	●
Right Angle	3	5m	XS2F-D422-GC0-A	171-5579	●
Right Angle	4	2m	XS2F-D422-D80-A	171-5580	●
Right Angle	4	5m	XS2F-D422-G80-A	171-5581	●

Single-ended Connectors - AC

Straight	4	2m	XS2F-A421-D90-A	171-5575	●
Straight	4	5m	XS2F-A421-G90-A	171-5576	●

Extension Cable, Double ended

Straight	4	2m	XS2W-D421-D81-A	171-5582	●
Straight	4	5m	XS2W-D421-G81-A	171-5583	●

Plug and Socket Connectors

Straight - Screw on	Socket	XS2G-D4S1	171-5584	●
Straight - Screw on	Plug	XS2C-D4S1	171-5585	●

M8 Connector System



- Single end terminated cable assemblies
- Straight or right angle cable entry
- Overmoulded construction offers IP67 protection
- Panel mount products for solder termination
- 5m cable length
- PVC sheath

No. Of Ways	Cable Entry	Mfrs. List No.	Order Code
Male - Single End Terminated			
3	Straight	1838286-3	141-3681
4	Straight	1838288-3	141-3682
3	Right Angle	1838290-3	141-3683
Female - Single End Terminated			
3	Straight	1838282-3	141-3677
4	Straight	1838284-3	141-3678
3	Right Angle	1838296-3	141-3679
4	Right Angle	1838298-3	141-3680
Male Solder Panel Mount Terminals			
3	N/A	1838838-1	141-3704
4	N/A	1838838-2	141-3705
Female Solder Panel Mount Terminals			
3	N/A	1838839-1	141-3701
4	N/A	1838839-2	141-3702

476139

Mfrs. List No.	Order Code	Price Each
Male - Single End Terminated		
1838286-3	141-3681	
1838288-3	141-3682	
1838290-3	141-3683	
Female - Single End Terminated		
1838282-3	141-3677	
1838284-3	141-3678	
1838296-3	141-3679	
1838298-3	141-3680	
Male Solder Panel Mount Terminals		
1838838-1	141-3704	
1838838-2	141-3705	
Female Solder Panel Mount Terminals		
1838839-1	141-3701	
1838839-2	141-3702	

M12 Connector System



- Single end terminated cable assemblies
- Straight or right angle cable entry with LED indication option
- Overmoulded construction offers IP67 protection

No. Of Ways	Cable Entry	Mfrs. List No.	Order Code
Male - Single End Terminated			
3	Straight	1838236-3	141-3692
4	Straight	1838238-3	141-3693
5	Straight	1838240-3	141-3694
Female - Single End Terminated			
3	Straight	1838242-3	141-3686
4	Straight	1838244-3	141-3687
5	Straight	1838246-3	141-3688
3	Right Angle	1838254-3	141-3689
4	Right Angle	1838256-3	141-3690
5	Right Angle	1838258-3	141-3691
Female with LED Indication			
3	Right Angle	1838264-3	141-3699
4	Right Angle	1838266-3	141-3700

476146

Mfrs. List No.	Order Code	Price Each
Male - Single End Terminated		
1838236-3	141-3692	
1838238-3	141-3693	
1838240-3	141-3694	
Female - Single End Terminated		
1838242-3	141-3686	
1838244-3	141-3687	
1838246-3	141-3688	
1838254-3	141-3689	
1838256-3	141-3690	
1838258-3	141-3691	
Female with LED Indication		
1838264-3	141-3699	
1838266-3	141-3700	

M12 Connector System



- Field Serviceable products allow on site rewiring
- Panel mount products for solder termination

No. Of Ways	Mfrs. List No.	Order Code
M16 Thread, Double D Cutout, Hexagonal Front Flange		
Male Solder Terminals		
4	1838893-2	141-3710
5	1838893-3	141-3711
Field Serviceable Connectors		
Male Metal		
4	1838275-2	141-3717
5	1838275-3	141-3718
Female Metal		
4	1838274-2	141-3713
5	1838274-3	141-3714

476147

Mfrs. List No.	Order Code	Price Each
Male Solder Terminals		
1838893-2	141-3710	
1838893-3	141-3711	
Female Solder Terminals		
1838891-2	141-3707	
1838891-3	141-3708	
Metal Male Field Serviceable Connectors		
1838275-2	141-3717	
1838275-3	141-3718	
Metal Female Field Serviceable Connectors		
1838274-2	141-3713	
1838274-3	141-3714	

Proximity Switch Tester



- Suitable for testing 2 and 3 wire proximity switches, including inductive, photo-electric, capacitive and ultrasonic
- Ideally suited to 'point of use' testing
- Audio and visual indication
- Supplied and fitted with batteries, ready for use

H=104, W=60, D=29

Indication of proximity switch function: NPN or PNP, normally closed or normally open, light-on or dark-on operation
 Auto-on/off feature: Battery
 Unit is powered only when a proximity switch is connected
 DC = 2.9V (PP3)

Mfrs. List No.	Order Code	Price Each
MU2-DC	721-3803	

Nano-change 3 & 4 pole, Female Connectors

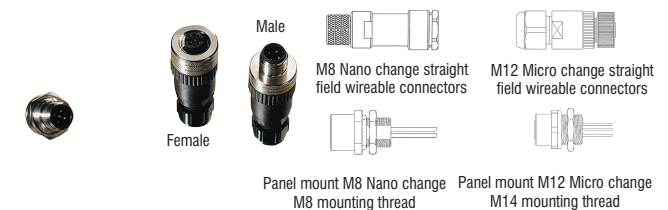


Nano-change (M8) straight

Nano-change (M8) 90°

Description	Mfrs. List No.	Order Code	Price Each
Nano-change (M8) straight			
2m-PVC-3pole	403000E03M020	160-6718	
2m-PUR-3pole	403000P03M020	160-6719	
5m-PVC-3pole	403000E03M050	160-6720	
2m-PUR-3pole	403000P03M050	160-6721	
2m-PVC-4pole	404000E03M020	160-6722	
5m-PVC-4pole	404000E03M050	160-6723	
5m-PUR-4pole	404000P03M050	160-6725	
Nano-change (M8) 90°			
2m-PVC-3pole	403001E03M020	160-6726	
5m-PVC-3pole	403001P03M020	160-6727	
2m-PUR-3pole	403001E03M050	160-6728	
5m-PUR-3pole	403001P03M050	160-6729	
2m-PVC-4pole	404001E03M020	160-6730	
5m-PVC-4pole	404001E03M050	160-6731	

Receptacles - M8 & M12 Threaded



Female

Male

M8 Nano change straight field wireable connectors

M12 Micro change straight field wireable connectors

Panel mount M8 Nano change M8 mounting thread

Panel mount M12 Micro change M14 mounting thread

Mfrs. List No.	Order Code	Price Each
M8 Nano change straight field wireable connectors		
Socket, M8, 3 Way	N03FA03124	160-6732
Socket, M8, 4 Way	N04FA03124	160-6733
Plug, M8, 3 Way	N03MA03124	160-6734
Plug, M8, 4 Way	N04MA03124	160-6735

Sensor Connectors - continued

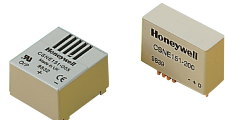
Receptacles - M8 & M12 Threaded - continued

Mfrs.	List No.	Order Code	Price Each
M12 Micro change straight field wireable connectors			
Socket, M12, 4 Way, PG7	8A4000-315	160-6737	
Socket, M12, 4 Way, PG9	8A4000-325	160-6738	
Socket, M12, 5 Way, PG7	8A5000-315	160-6739	
Socket, M12, 5 Way, PG9	8A5000-325	160-6740	
Plug, M12, 4 Way, PG7	8A4006-315	160-6741	
Plug, M12, 4 Way, PG9	8A4006-325	160-6742	
Plug, M12, 5 Way, PG7	8A5006-315	160-6743	
Plug, M12, 5 Way, PG9	8A5006-325	160-6744	
Panel Mount M8 Micro change M8 mounting thread			
Socket, M8, 3 Way	4R3F30E02C3003	160-6745	
Panel Mount M12 Micro change M14 mounting thread			
Socket, M12, 4 way	8R4E30E03C3003	160-6746	
Socket, M12, 5 Way	8R5E30E03C3003	160-6747	
Plug, M12, 4 Way	8R4E36E03C3003	160-6749	
Plug, M12, 5 Way	8R5E36E03C3003	160-6751	

Current Transducers

Multirange - 25/12/8/6/5A

Honeywell



- Fast response current sensing using Hall effect technology
- Multiple ranges in compact PCB mounting packages
- AC, DC and impulse current measurement
- Improved measurement accuracy at lower currents
- 25A sensor in small-footprint housings
- UL Recognised and CSA approved

723-4727 & 118-7543: H=16.8, W=26, D=28
 723-4739: H=20.3, W=31.8, D=12.7

Multiple primary connection pins permit a range of currents to be measured, giving a nominal output current that can be used to derive a voltage output.

Mfrs. List No.	CSNE151-005	CSNE151-100	CSNE151
Supply voltage (±5%)	±15V dc	±15V dc	±15V dc
Turns ratio	1-2-3-4-5 : 1000	1-2-3-4 : 1000	1000
Nom. primary current	25/12/8/6/5A	25/12/8/6A	25/12/8/6A
Peak current measurement	36A	90A	36A
Output current	25mA	25mA	25mA
Accuracy	±0.5%	±0.5%	±0.5%
Linearity	± 0.2%	± 0.2%	±0.2%
Response time	<1µs	<200ns	<1µs

Mfrs. List No. CSNE151-005=723-4727, CSNE151-100=723-4739, CSNE151 = 1187543.

Nominal/Peak	Current	Order Code	Price Each
		723-4727	
		118-7543	
		118-7543	

0 to 50A, 0 to 100A

Honeywell



- Closed loop current sensors using Hall effect technology
- AC, DC and impulse current measurement
- Fast response time
- Range of measurement ranges up to 150A peak in small PCB mounted housing
- 50A/90A transducer available with bus-bar for use where the primary current is required on the PCB
- UL Recognised and CSA approved

H=29.8, W=36.5, D=14.5,
 Through-hole=13.5x10
 Bus-bar fixing centres=25

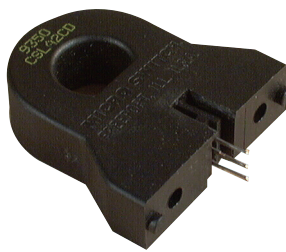
Supply voltage ±12 to ±5V (±5%) Accuracy ±0.5% of nom. current @ 25°C
 Linearity ± 0.1% Operating temperature -40°C to +85°C
 Response time <500ns

Nominal Primary Current	Peak Current Range	Turns Ratio	Current Output	Offset Current	Mfrs. List No.
50A	90A	1000	50mA	±0.20mA	CSNP661 (-002)
100A	150A	1000	100mA	±0.20mA	CSNF161
10A	10A	1000	100mA	±0.20mA	CSNF661

Nominal/Peak	Current DC	Order Code	Price Each
		723-4752	
		723-4764	
		723-4788	
		118-7544	

CSLA2CD Linear Current Sensor

Honeywell



- Linear output
- AC or DC current sensing
- Through-hole design
- Fast response time
- Output voltage isolation from input
- Minimum energy dissipation
- Maximum current limited only by conductor size
- Adjustable performance and built-in temperature compensation assures reliable operation
- Accurate, low cost sensing
- Operating temperature range -25 to 85°C
- PBT polyester housing

Parameter	Value
Sensor Type	Open Loop Linear
Package Style	PCB Bottom Mount
Supply Voltage	5.4 to 13.2V DC
Sensed Current Range	0 to 72A
Output Type	Voltage
Operating Temperature	-25 to 85°C
Sensitivity	32.7mV N ±3.0 @ 8V dc
Supply Current (Max. @ 25°C)	20mA
Offset Voltage	Vcc/2 ± 2%
Offset Shift	± 0.02
Response Time	3µs
Mounting	PCB on 3 Pins
Pinout Style	3 Pin

Mfrs.	List No.	Order Code	Price Each
	CSLA2CD	108-2269	

0-8A to 0-25A, LTS Series

LEM



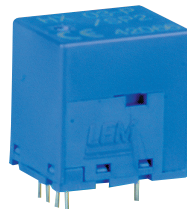
- Development Kit contains three transducers with PCB mounts
- Unique ASIC design
- Improved linearity
- Excellent accuracy
- Extended measuring range
- Unipolar supply
- Voltage output

Output voltage ±I_{PN} 2.5V ± 0.625V Thermal drift if gain TC_{EG} Typically <50ppm

Nominal Peak/Power	Current Range	Supply	Mfrs. List No.	Order Code	Price Each
	LTS 15-NP PRESENTATION KIT				161-7407
	15/45A	+5V	LTS 15-NP	161-7409	
			LTS 25-NP KIT	161-7408	
	25/80A	+5V	LTS 25-NP	161-7410	

0-3A to 0-20A, HX P/SP2Series

LEM



- Galvanic isolation between primary and secondary circuit
- Hall effect measuring principle
- Isolation voltage 3000V
- Low power consumption
- Extended measuring range (3 x I_{PN})
- Single Supply from +12V to +15V
- Material according to UL94-V0

H = 20, W = 19, D = 15.4mm

Output voltage ±0.625V @ ±I_{PN}, R_L = 2kΩ
 Output impedance ≤50 Ω
 Supply voltage +12 to +15V
 Current consumption ≤15mA

Current	Mfrs.	Primary	Measuring	List No.	Order Code	Price Each
3	± 9 A	HX 03-P/SP2			161-7419	
5	± 15 A	HX 05-P/SP2			161-7420	
10	± 30 A	HX 10-P/SP2			161-7421	
15	± 45 A	HX 15-P/SP2			161-7422	
20	± 60 A	HX 20-P/SP2			161-7423	

5A to 50A, Low Currents

LEM

HXS Series



H = 10, W = 16.5, D = 18.5mm

These transducers have been specifically designed for the measurement of a wide range of current types including dc, ac, pulsed, and mixed. The devices have a galvanic isolation between the primary (high power) circuit and the secondary (electronic) circuit. For the complete HXS range, the fastening & connection of the secondary is by means of four 0.5 x 0.25mm pins.

The **HSX 10-NP/SP3** has the option of selecting Serial or Parallel primary connections by utilising the four 1.3mm fastening & connection pins.

The **HSX 20** range have 8 x 1.3mm primary & connection pins that enable the selection of 1, 2 or 4 primary turns.

- Hall effect measuring principle
- Multi-range current transducer
- Galvanic isolation between primary and secondary
- Isolation test voltage 2.5kV
- Fixed offset and gain
- Only occupies 3.05 cm³ on PCB

Order Code	Primary Current		
	Serial	Parallel	
Primary connections 913-5588	10A Nom. 30A Max.	20A Nom. 60A Max.	
Number of Primaries	1	2	4
913-5596	20A Nom. 60A Max.	10A Nom. 30A Max.	5A Nom. 15A Max.
913-5600	20A Nom. 60A Max.	10A Nom. 30A Max.	5A Nom. 15A Max.
913-5618	20A Nom. 60A Max.	10A Nom. 30A Max.	5A Nom. 15A Max.
913-5626	50A Nom. 150A Max.	25A Nom. 75A Max.	12.5A Nom. 37.5A Max.
913-5634	50A Nom. 150A Max.	25A Nom. 75A Max.	12.5A Nom. 37.5A Max.

Analogue output voltage @ I_p
 Analogue output voltage @ I_p = 0
 Internal Reference - Output voltage, V_{REF}
 Output impedance, R_{out}
 Supply voltage, V_c
 Current consumption, I_c
 Operating temperature range

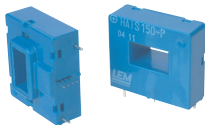
$V_{REF} \pm (0.625V \times I_{(Max)} / I_{(Min)})$
 $V_{REF} \pm 0.0125V$
 $2.5V \pm 0.025$
 $<10 \Omega$
 $+5V \pm 5\%$
 $22mA @ V_c = 5V$
 -40 to $85^\circ C$

403270

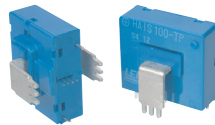
Mfrs.	Order Code	Price Each
List No.		
HXS 10-NP/SP3	913-5588	
HXS 20-NP	913-5596	
HXS 20-NP/SP2	913-5600	
HXS 20-NP/SP2	913-5618	
HXS 50-NP	913-5626	
HXS 50-NP/SP2	913-5634	

50A - 400A Rating, 150A - 600A Measuring Ranges

HAIS Series



P Models - H = 29, W = 33, D = 14mm



TP Models - H = 29, W = 33, D = 25.9mm



- Galvanic isolation between primary and secondary circuit
- Hall effect measuring principle
- Isolation voltage 2500V
- Low power consumption
- Fixed offset and gain
- Single +5V Power Supply

Primary Current I _{pn}	Primary Current Measuring Range	Mfrs. List No.	Order Code
50A	± 150A	HAIS 50-P	161-7433
100A	± 150A	HAIS 100-TP	161-7429
100A	± 300A	HAIS 100-P	161-7428
100A	± 300A	HAIS 100-TP	161-7429
150A	± 450A	HAIS 150-P	161-7430
200A	± 600A	HAIS 200-P	161-7431
400A	± 600A	HAIS 400-P	161-7432

Analogue output voltage @ I_p
 Analogue output voltage @ I_p = 0
 Internal Reference - Output voltage, V_{REF}
 Output impedance, R_{out}
 Supply voltage, V_c
 Current consumption, I_c
 Operating temperature range

$V_{REF} \pm (0.625V \times I_{(Max)} / I_{(Min)})$
 $V_{REF} \pm 0.0125V$
 $2.5V \pm 0.025$
 $<10 \Omega$
 $+5V \pm 5\%$
 $22mA @ V_c = 5V$
 -40 to $85^\circ C$

403271

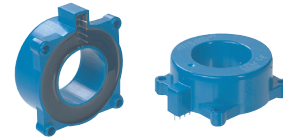
Mfrs.	Order Code	Price Each
List No.		
HAIS - TP Versions		
HAIS 50-TP	161-7434	
HAIS 100-TP	161-7429	
HAIS - T Versions		
HAIS 50-P	161-7433	
HAIS 100-P	161-7428	
HAIS 150-P	161-7430	
HAIS 200-P	161-7431	
HAIS 400-P	161-7432	

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200A - 800A Rating, 300A - 1200A Measuring Ranges

HTFS Series



H = 16.5, W (Dia.) = 40, D = 46mm



- Galvanic isolation between primary and secondary circuit
- Hall effect measuring principle
- Isolation voltage 2500V
- Low power consumption
- Ratiometric offset
- Single +5V power supply
- Fixing to PCB by either solder pins or 4 x M3 nuts and screws
- 22mm diameter aperture for primary conductor

Primary Current I _{pn}	Primary Current Measuring Range	Mfrs. Type
200A	± 300A	HTFS 200-P
400A	± 600A	HTFS 400-P
800A	± 1200A	HTFS 800-P

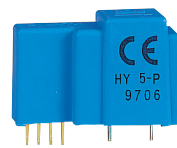
Analogue output voltage @ I_p
 Analogue output voltage @ I_p = 0
 Internal Reference - Output voltage, V_{REF}
 Output impedance, R_{out}
 Supply voltage, V_c
 Current consumption, I_c
 Operating temperature range

$V_{REF} \pm (0.625V \times I_{(Max)} / I_{(Min)})$
 $V_{REF} \pm 0.0125V$
 $2.5V \pm 0.025$
 $<10 \Omega$
 $+5V \pm 5\%$
 $22mA @ V_c = 5V$
 -40 to $105^\circ C$

403272

Mfrs.	Order Code	Price Each
List No.		
HTFS - P Models with M3 Screw fixing to PCB		
HTFS 200-P	913-5715	
HTFS 400-P	913-5731	
HTFS 800-P	913-5758	
HTFS - P/SP2 Models with Solder Pin fixing to PCB		
HTFS 200-P/SP2	913-5723	
HTFS 400-P/SP2	913-5740	
HTFS 800-P/SP2	913-5766	

0-5A to 0-25A, HY...P Series



H=21, W=35, D=12

- In-line PCB pinouts
- Potted construction for maximum protection
- Minimum footprint design
- Wide choice of current ratings

Pin arrangement
 1 = +15V, 2 = -15V, 3 = V_{OUT}
 4 = 0V, 5 = I_pIN, 6 = I_pOUT



Nominal primary current	0-5A, 0-10A, 0-15A, 0-20A, 0-25A	Power supply	±15V
Measuring range	3 nominal primary current	Output voltage	±4V
Accuracy	±1%		

212291

Normal	Primary	Mfrs.	Order Code	Price Each
5A	HY 5-P		161-7399	
10A	HY 10-P		161-7401	
15A	HY 15-P		161-7402	
20A	HY 20-P		161-7403	

0-50A, LAS Series



- Cost Effective
- Utilises New ETA Technology
- High Performance
- PCB Mounting
- Tolerant of high levels of EMI
- Unipolar Voltage Supply
- Wide Frequency Bandwidth
- Extended Measuring Range
- Small Footprint
- Low Power Consumption

H = 21, W = 33.9, D = 11.53mm

Primary Nominal RMS Current	0 to 50 A	Power Supply	5 V	Output Voltage	2.5 ± 0.625V	Accuracy	± 0.5%
	LAS 50-TP		5V	Vref ± 0.625V	± 0.5%		
	LAS 50-TP/SP1		5V	Vref ± 0.625V	± 0.5%		

234892

Mfrs.	Order Code	Price Each
List No.		
LAS 50-TP	161-7417	
LAS 50-TP/SP1	161-7418	

Current Transducers - continued

0-50A, 0-125A, Current Output



161-7405 H=27.6, W=36.5, D=14.4 Hole=7x12.7
 161-7406 H=33.6, W=48.4, D=21.4
 161-7404 H= 15.1, W=15.24, D=29.2mm

- Through-hole primary
- Wide frequency range
- Fast response time



	161-7405	161-7406	161-7404
Normal primary current	50A	125A	25A
Measure range	70A	200A	36A
Power supply	±15V	±15V	±15V
Current output	50mA	125mA	25mA
Accuracy	±0.65%	±0.6%	±0.5=2,169

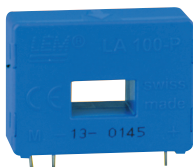
212293

Primary Current	Mfrs. List No.	Order Code	Price Each
50A	LA 55-P	161-7405	
125A	LA 125-P	161-7406	

Pcb Mount

25A	LA 25-NP	161-7404	
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0-100A, LA 100-P/SP13 Series



- Closed loop (compensated) current transducer using hall effect technology
- PCB mounted
- Insulated plastic case to UL94-V0
- Excellent accuracy
- Very good linearity
- No insertion losses
- Wide frequency bandwidth



Primary nominal r.m.s. current	100 A	Supply voltage	±12 to ±15V
Primary current, measuring range	0 to ±160 A	Current consumption	10 mA @ ±15V + I _S
Secondary nominal r.m.s current	100 mA	Operating temperature	-25°C to 70°C

249553

Current Range	Mfrs. List No.	Order Code	Price Each
0 to 100A	LA 100-P/SP13	161-7427	

0-50A to 0-400A, HAL Series



- Base-mounted package
- Wide selection of current ratings available
- Instantaneous analogue voltage output
- Compact design
- Low power consumption from auxiliary power supply
- Potted construction for maximum protection
- Output connector facility for ease of connection

H = 41, W = 41.27, D = 24.57mm

Current Rating	Measuring Range	Power Supply	Output Voltage	Mfrs. List No.	Order Code
50A	0 to ± 150A	±15V	±4V	HAL 50-S	161-7411
100A	0 to ± 300A	±15V	±4V	HAL 100-S	161-7413
200A	0 to ± 600A	±15V	±4V	HAL 200-S	161-7414
400A	0 to ± 1000A	±15V	±4V	HAL 400-S	161-7415

230495

Current Rating	Order Code	Price Each
50A	161-7411	
100A	161-7413	
200A	161-7414	
400A	161-7415	

Current Transducer DC and AC Primary Input



H = 7, W = 90, D = 25mm

These transducers are designed for the measurement of DC and distorted AC waveform current. They have galvanic isolation between the primary (High power) and secondary (Electronic circuit) circuits. There is a choice of 3 output types, 0 - 5V, 0 - 10V and 4 to 20mA.



- Large aperture for cable up to 32mm Dia.
- High isolation between primary and secondary circuits
- Easy to mount
- Eliminates insertion loss

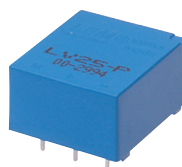
Load Resistance	≥ 10 KΩ	Measurement Bandwidth	DC and 20 to 6kHz
Supply Voltage	to	Operating Temperature	-40 to 70°C
Current Consumption	30mA	Protection	IP20
Accuracy	<=1%	Flammability Rating	UL94V-0

418017

Primary Current	Mfrs. List No.	Order Code	Price Each
5 - 0V DC analogue output signal			
200A dc/ac (rms)	DHR 200 C5	100-2690	
500A dc/ac (rms)	DHR 500 C5	100-2700	
1000A dc/ac (rms)	DHR 1000 C5	100-2707	
10 - analogue output signal			
100 A dc/ac (rms)	DHR 100 C10	100-2688	
200A dc/ac (rms)	DHR 200 C10	100-2691	
300A dc/ac (rms)	DHR 300 C10	100-2694	
400A dc/ac (rms)	DHR 400 C10	100-2698	
500A dc/ac (rms)	DHR 500 C10	100-2701	
600A dc/ac (rms)	DHR 600 C10	100-2705	
1000A dc/ac (rms)	DHR 1000 C10	100-2708	
4 - 20 mA dc analogue output signal			
100 A dc/ac (rms)	DHR 100 C420	100-2689	
200A dc/ac (rms)	DHR 200 C420	100-2692	
300A dc/ac (rms)	DHR 300 C420	100-2695	
400A dc/ac (rms)	DHR 400 C420	100-2699	
500A dc/ac (rms)	DHR 500 C420	100-2702	
600A dc/ac (rms)	DHR 600 C420	100-2706	
1000A dc/ac (rms)	DHR 1000 C420	100-2709	

Voltage Transducer

Voltage Transducer PCB Mount



A PCB mounting voltage transducer based on the Hall effect. The unit provides galvanic isolation between primary and secondary circuits. To enable a voltage to be measured a current proportional to the measured voltage must be collected through an external resistor, selected by the user, in series with the primary circuit of the unit.



H = 15.1, W = 26, D = 29.2mm

- Suitable for the electronic measurement of voltages associated with DC, AC and impulse circuits
- Provides galvanic isolation between primary and secondary circuits
- Applications:- AC and DC voltage sensing, including power supplies, UPS, instrumentation, metering and relay systems

Supply voltage	± 15V (±5%)	Overall accuracy @ 25°C	± 0.6% of I _N
Input current I _N	10mA (nom.)	Isolation	2.5kV rms
Analogue output current	25mA (nom.)	Linearity	0.2%
Turns ratio	2500 : 1000	Operating temperature	0°C to +70°C

230500

Mfrs. List No.	Order Code	Price Each
LV 25-P	161-7416	

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