

APPLICATIONS

Wire break control

For this type of applications static sensors are used. The oscillator in the sensor excites a high-frequency alternating field. The wire passes through the sensor and withdraws energy from the resonant circuit. As long as the wire is moved through the sensor without interruption the sensor excites a constant signal because the damping of the oscillator is not alternating. A wire break leads to a damping of the oscillator. The sensor switches due to the voltage fluctuation.



Object counting, presence check

In the sensor is a high-frequency alternating field. When a metallic object passes the sensor it withdraws energy from the field and leads to a voltage fluctuation in the oscillator. When the object quits the sensor, the oscillator takes its' normal value until the next object causes a new damping. Thus for example the ejection of stamping parts can be monitored. Ring sensors detect free-falling products as well as products being led in a tube through the sensor. The user can detect and count metallic objects. Ring sensors detect metallic contamination in non-metallic materials (e.g. synthetic granules). As moving parts are detected, dynamic and static sensors can be applied.

Wire gauge measuring, object identification

The wire passes through the sensor and withdraws energy from the resonant circuit. The degree of the energy loss depends on the dimension of the wire. The thicker the wire, the bigger the loss of energy and the bigger the voltage fluctuation in the sensor. The value of the voltage fluctuation provides information about the quantity of material in the field. By this it is possible to detect also other metallic objects. Depending on the size and the material of the object the sensor provides an according output voltage. Thus the user can make the distinction between different products. A possible application is a sorting device for small parts.



NORMAL SENSITIVITY (STATIC PRINCIPLE)

General data

Mounting	non shielded
Operating voltage U_b	10 ... 30V DC (KJR-D100FAN... 18 - 30V DC)
Ripple voltage U_b	$\leq 10\%$
Voltage drop U_d	$\leq 2,4V$
Max. load current	$\leq 200mA$ (KJR-Q130... $\leq 50mA$)
Off-state current I_0	KJR-D6... to KJR-D100...: $\leq 15mA$ KJR-D130... to KJR-D300...: $\leq 10mA$
Residual current	$\leq 10\mu A$
Hysteresis H	$\leq 15\%$
Operating temperature T_a	$-25^\circ C \dots +70^\circ C$
Sensitivity over temp. range	see sensitivity
Protection class	IP54
EMV-standard	according to EN 60947-5-2
Switching state	LED
Housing material	KJR-D6... to KJR-D30: Ultramid B3EG3 KJR-D50... to KJR-D300: Aluminium
Connection	connector M12 4-pole



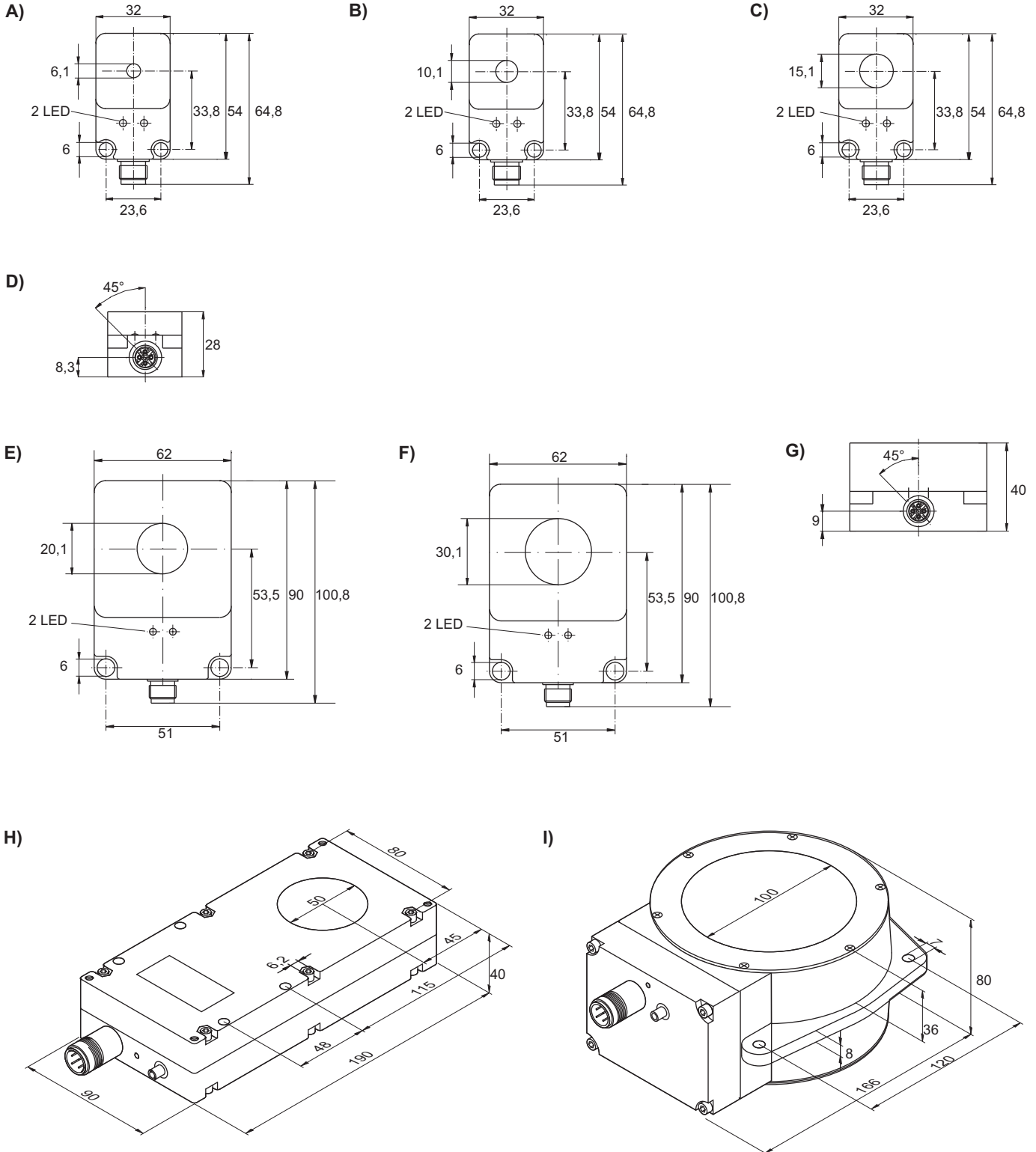
Selection chart

Article number	Designation	Output signal	Sensitivity	Max. switching frequency f	Drawing (next page)
0831000982	KJR-D6KN-DPA-V2	PNP	FE-ball D=1,5mm	600Hz	A + D
0831000983	KJR-D6KN-DNA-V2	NPN	FE-ball D=1,5mm	600Hz	A + D
0831000984	KJR-D10KN-DPA-V2	PNP	FE-ball D=1,8mm	600Hz	B + D
0831000985	KJR-D10KN-DNA-V2	NPN	FE-ball D=1,8mm	600Hz	B + D
0831000986	KJR-D15-KN-DPA-V2	PNP	FE-ball D=2,4mm	500Hz	C + D
0831000987	KJR-D15-KN-DNA-V2	NPN	FE-ball D=2,4mm	500Hz	C + D
0831000988	KJR-D20KN-DPA-V2	PNP	FE-ball D=3,0mm	400Hz	E + G
0831000989	KJR-D20KN-DNA-V2	NPN	FE-ball D=3,0mm	400Hz	E + G
0831000990	KJR-D30KN-DPA-V2	PNP	FE-ball D=4,0mm	300Hz	F + G
0831000991	KJR-D30KN-DNA-V2	NPN	FE-ball D=4,0mm	300Hz	F + G
08317050665	KJR-D50FAN-DPA-V2	PNP	FE-ball D=3,0mm	500Hz	H
08317050265	KJR-D50FAN-DNA-V2	NPN	FE-ball D=3,0mm	500Hz	H
08317080565	KJR-D100AN-DPA-V2	PNP	FE-ball D=6,0mm	500Hz	I
08317080150	KJR-D100AN-DNA-V2	NPN	FE-ball D=6,0mm	500Hz	I
08317080365	KJR-D100FAN-DPA-V2	PNP	FE-ball D=8,0mm	500Hz	J
08317080465	KJR-D100FAN-DNA-V2	NPN	FE-ball D=8,0mm	500Hz	J
08417090659	KJR-Q130AN-DPA-VE	PNP	FE-ball D=12,0mm	300Hz	K
08317090159	KJR-Q130AN-DNA-VE	NPN	FE-ball D=12,0mm	300Hz	K
08317160665	KJR-D200AN-DPA-V2	PNP	FE-ball D=15,0mm	300Hz	L
08317160165	KJR-D200AN-DNA-V2	NPN	FE-ball D=15,0mm	300Hz	L
08317070665	KJR-D300AN-DPA-V2	PNP	FE-ball D=30,0mm	300Hz	M
08317071165	KJR-D300AN-DNA-V2	NPN	FE-ball D=30,0mm	300Hz	M

Control unit and accessories on pages 15 and 16.

NORMAL SENSITIVITY (STATIC PRINCIPLE)

Dimensions



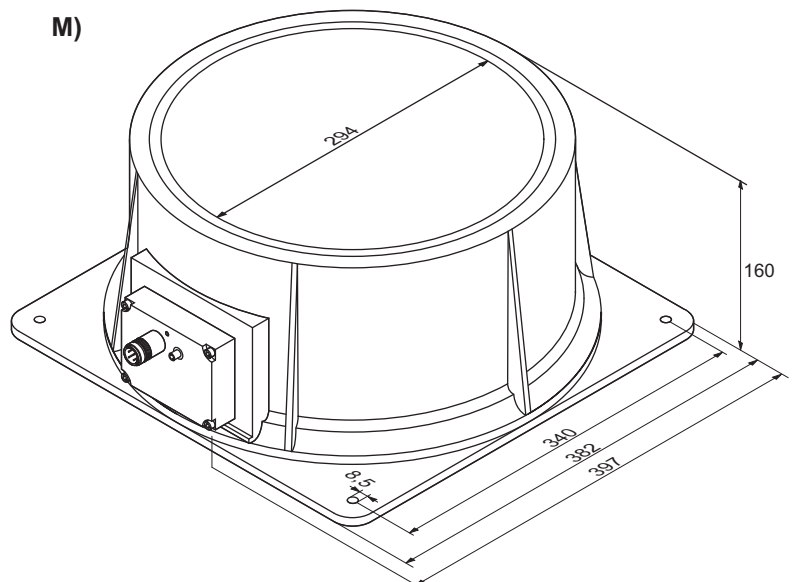
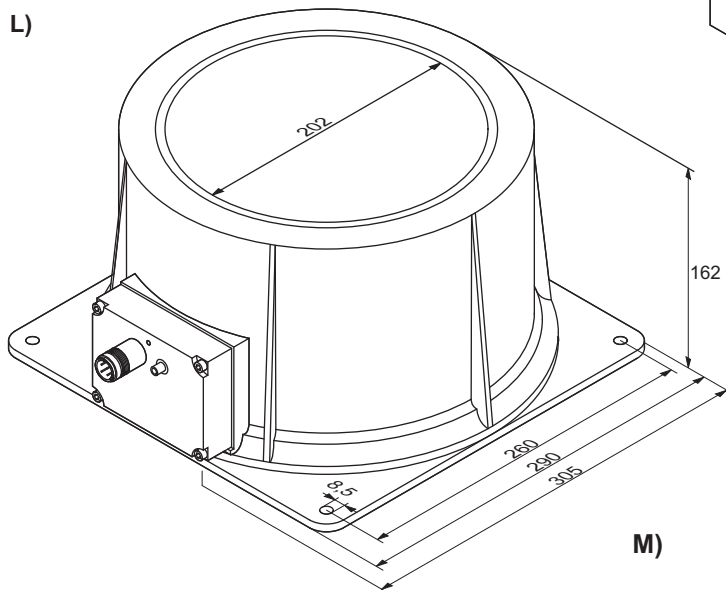
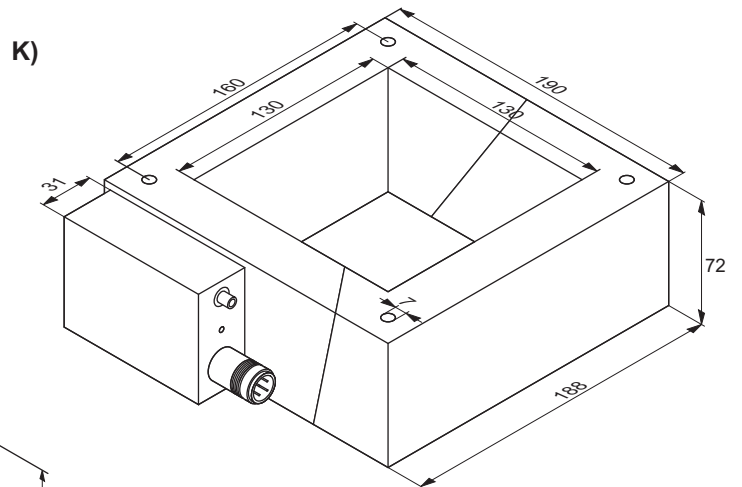
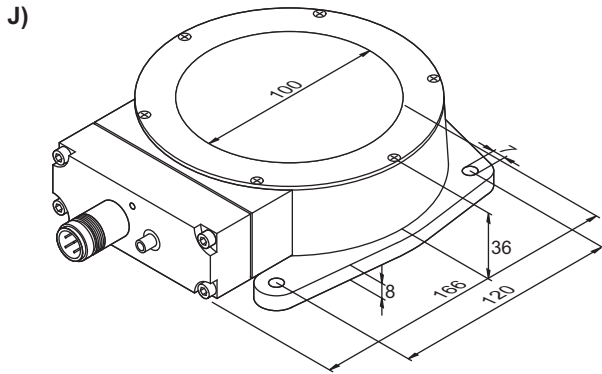
all data in mm



INDUCTIVE SENSORS RING SENSORS

NORMAL SENSITIVITY (STATIC PRINCIPLE)

Dimensions



all data in mm

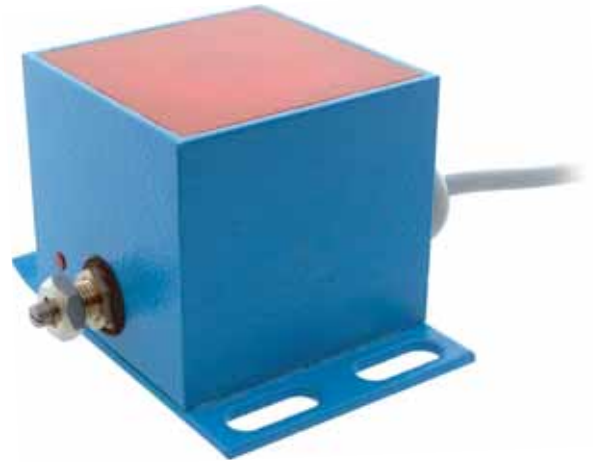


INDUCTIVE SENSORS SQUARE DC

SQUARE Q50

General data

Operating voltage U_b	10 ... 30V DC
Ripple voltage U_r	$\leq 10\%$
Voltage drop U_d	$\leq 2,4V$
Max. load current	400mA
Off-state current I_o	$\leq 18mA$
Residual current I_r	$\leq 10\mu A$
Max. switching frequency f	300Hz
Hysteresis H	$\leq 15\%$
Repeatability R	$\leq 2\%$
Operating temperature T_a	-25°C ... +70°C
Temperature drift	$\leq 10\%$
Protection class	IP67
EMV-standard	according to IEC 60947-5-2
Switching state	LED
Housing material	aluminium
Front cap	drovidur



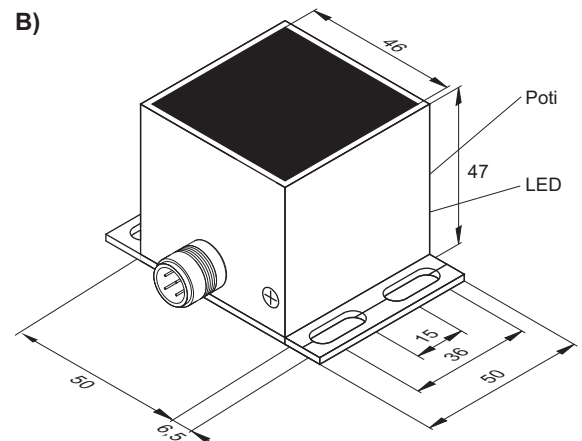
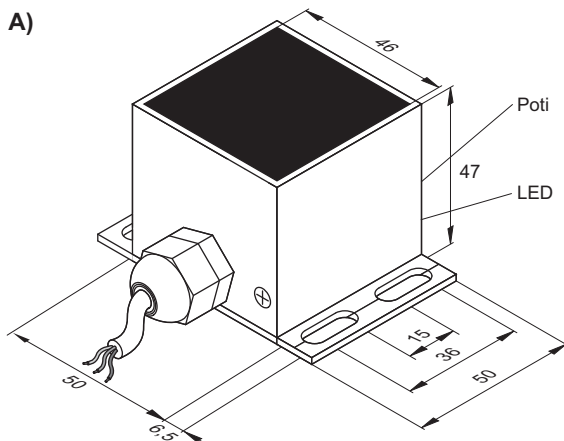
Switching distance adjustable via potentiometer.

Selection chart

Article number	Designation	Mounting	Output signal	Switching distance in mm	Connection	Drawing
08317070900	KJ40-Q50AB-DPS	shielded	PNP	40	2m cable PVC 3 x 0,34mm ²	A
08317070100	KJ40-Q50AB-DNS	shielded	NPN	40	2m cable PVC 3 x 0,34mm ²	A
08317070965	KJ40-Q50AB-DPS-V2	shielded	PNP	40	connector M12 4-pole	B
08317070165	KJ40-Q50AB-DNS-V2	shielded	NPN	40	connector M12 4-pole	B

Other cable lengths as requested.

Dimensions



connector M12 x 1

all data in mm



INDUCTIVE SENSORS SQUARE DC

SQUARE Q100

General data

Mounting	non shielded
Operating voltage U_b	10 ... 30V DC
Ripple voltage U_b	$\leq 10\%$
Voltage drop U_d	$\leq 2,4V$
Max. load current	400mA
Off-state current I_0	$\leq 12mA$
Residual current I_r	$\leq 10\mu A$
Max. switching frequency f	300Hz*
Hysteresis H	$\leq 15\%$
Repeatability R	$\leq 2\%$
Operating temperature T_a	-25°C ... +70°C
Temperature drift	$\leq 10\%$
Protection class	IP67
EMV-standard	according to IEC 60947-5-2
Switching state	LED
Housing material	aluminium



* For parallel mounting these sensors are available in 5 different frequencies.

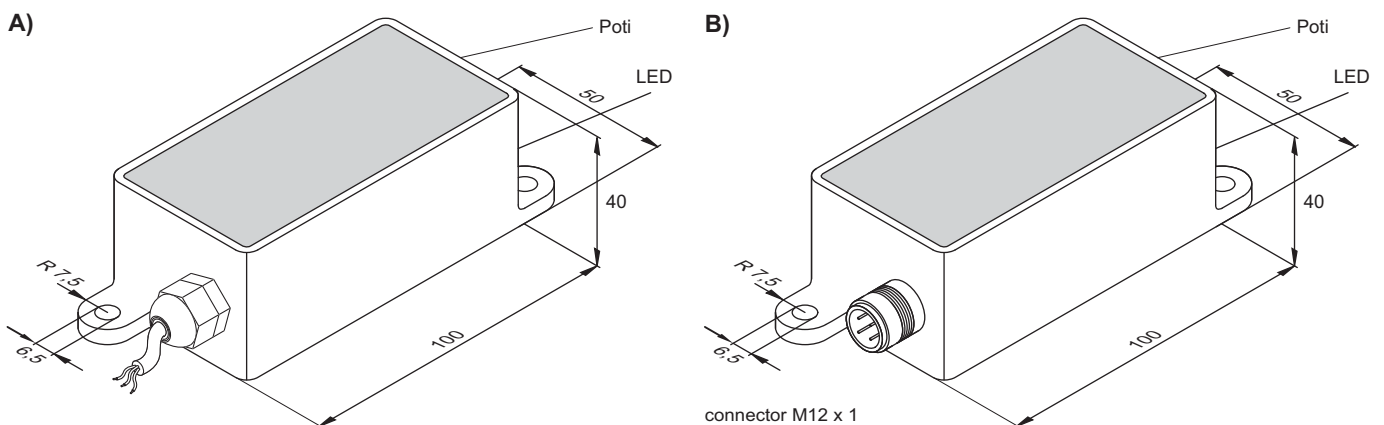
Switching distance adjustable via potentiometer.

Selection chart

Article number	Designation	Output signal	Switching distance in mm	Connection	Drawing
08316090100	KJ70-Q100AN-DPS-F1	PNP	70	2m cable PVC 3 x 0,34mm ²	A
08316090300	KJ70-Q100AN-DNS-F1	NPN	70	2m cable PVC 3 x 0,34mm ²	A
08316090165	KJ70-Q100AN-DPS-V2-F1	PNP	70	connector M12 4-pole	B
08316090365	KJ70-Q100AN-DNS-V2-F1	NPN	70	connector M12 4-pole	B

Other cable lengths as requested.

Dimensions



all data in mm

Ring- und Schlauchsensoren Drahtbruchsensoren

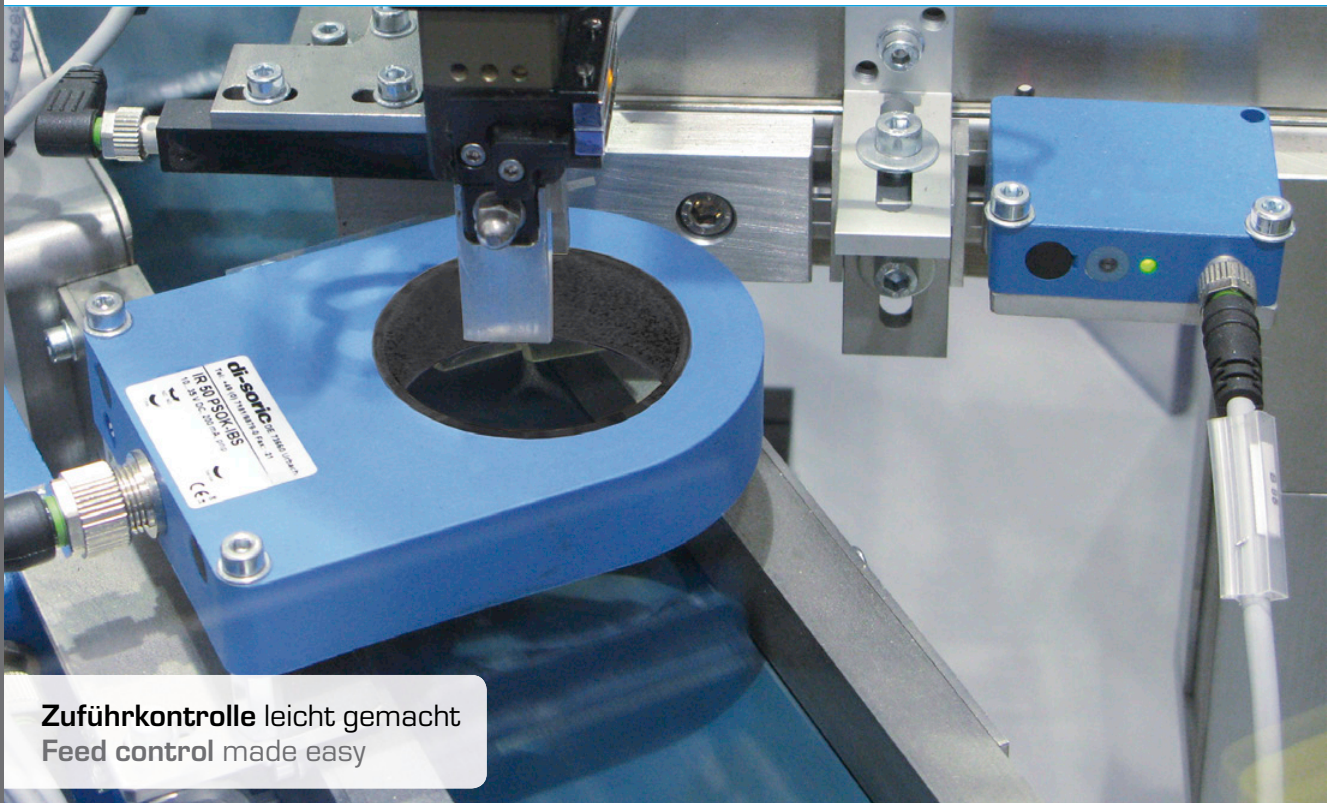
Ring and tube sensors

Wire break sensors



Made in Germany

P r o d u k t s e r i e



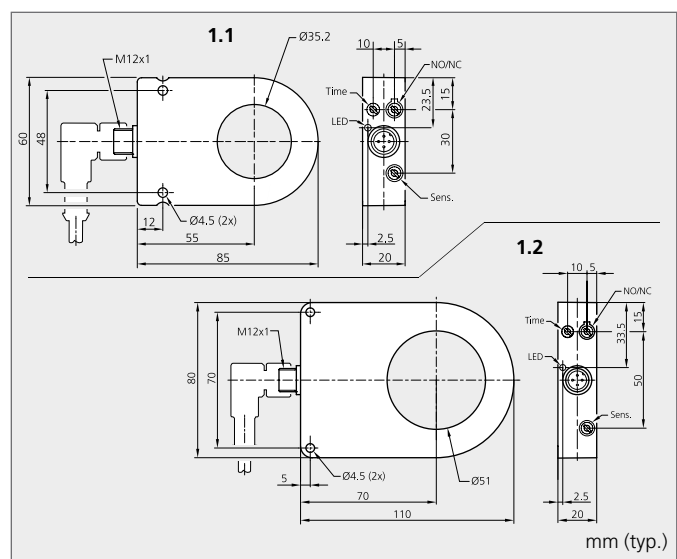
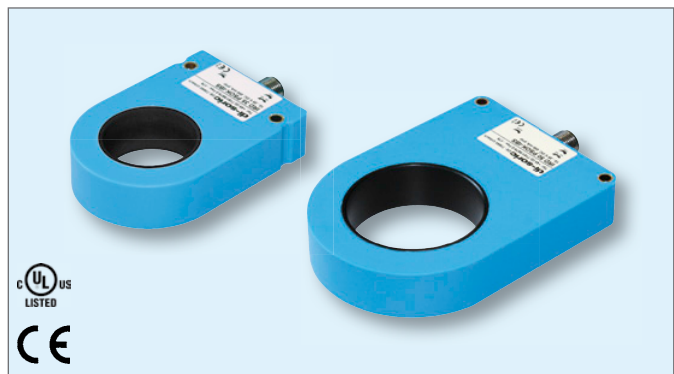
Zuführkontrolle leicht gemacht
Feed control made easy

Induktive Ringsensoren mit statischer/dynamischer Auswertung

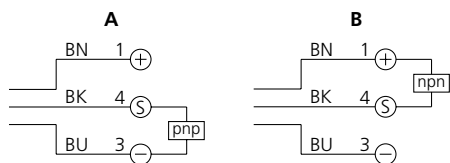
Inductive ring sensors with static / dynamic operating principle

- ◆ Kompakte Bauform
 - ◆ Statisches oder dynamisches Arbeitsprinzip
 - Hohe Auflösung
 - Kurze Ansprechzeit
 - Empfindlichkeit und Impulsverlängerung einstellbar
 - Schmutzunempfindlich
 - Metallanschlussstecker
 - Hohe Schutzart
-
- ◆ Compact design
 - ◆ Static or dynamic operating principle
 - High resolution
 - Short response time
 - Sensitivity and pulse stretching adjustable
 - Insensitivity to dirt
 - Metal connector
 - High protection class

Ring-Ø35,2 - 51 mm



Anschlusschema
Connection diagram



BN = Braun / brown
BK = Schwarz / black
BU = Blau / blue

Technische Daten (typ.)	Technical data (typ.)	+20 °C, 24 VDC
Ringdurchmesser	Ring-diameter	Siehe gegenüberliegende Seite/see opposite page
Betriebsspannung	Service voltage	10 ... 35 VDC
Ausgang	Output	NO/NC umschaltbar/switchable
Empfindlichkeitseinstellung	Sensitivity adjustment	Potentiometer
Strombelastbarkeit	Maximum rating	200 mA, kurzschlussfest, verpolgeschützt / short-circuit-proof, polarity-save
Spannungsfall	Voltage drop	2,0 V
Eigenstromaufnahme	Internal power consumption	11 mA (nur / only IR ...) 20 mA (nur / only IRD ...)
Teilegeschwindigkeit	Speed of parts	< 35 m/s
Impulsverlängerung	Pulse stretching	10 ... 150 ms (nur / only IR ...) 0,1 ... 150 ms (nur / only IRD ...)
Umgebungstemperatur	Ambient temperature	-25 ... +70 °C
Isolationsspannungsfestigkeit	Insulation voltage endurance	1.000 V
Schutzart	Protection class	IP 67
Schutzklasse	Protection degree	III, Betrieb an Schutzkleinspannung / Operation with class 2 supply voltage
Gehäusematerial	Casing material	Polyamid, Ring POM

Ringdurchmesser D (mm) Ring-diameter D (mm)														
Bauform (siehe gegenüberliegende Seite) Size (see opposite page)														
Statische Auswertung Static operating principle														
Dynamische Auswertung Dynamic operating principle														
Auflösung / Resolution (mm) Stahlkugel / steel ball (mm)														
Ansprech-/ Abfallzeit (ms) Response / release time (ms)														
Min. horizontaler Montageabstand X (mm) Min. mounting distance X (mm)														
Min. vertikaler Montageabstand Y (mm) Min. mounting distance Y (mm)														
Min. Montageabstand zu Metall Z (mm) Min. mounting distance to metal Z (mm)														
Bohrungsdurchmesser D1 (mm) Hole diameter D1 (mm)														
Ausgang Output														
Anschlusschema (siehe gegenüberliegende Seite) Connecting diagram (see opposite page)														
Steckverbinder Connector														
Anschlusskabel (sep. Datenblatt) Connecting cable (sep. data-sheet)														
Induktive Ringsensoren / Inductive ring sensors													Bestelltabelle Purchase Order Table	
35,2	1.1	■	4,5	0,5/10	10	50	7	50,0	pnp npn	A B	M12	VK...	IR 35 PSOK-IBS IR 35 NSOK-IBS	
		■	2,0	0,2/0,2	40	100	0	50,0	pnp npn	A B	M12	VK...	IRD 35 PSOK-IBS IRD 35 NSOK-IBS	
51	1.2	■	6,0	1,0/10	60	180	40	70,0	pnp npn	A B	M12	VK...	IR 50 PSOK-IBS IR 50 NSOK-IBS	
		■	2,5	0,2/0,2	230	250	0	70,0	pnp npn	A B	M12	VK...	IRD 50 PSOK-IBS IRD 50 NSOK-IBS	

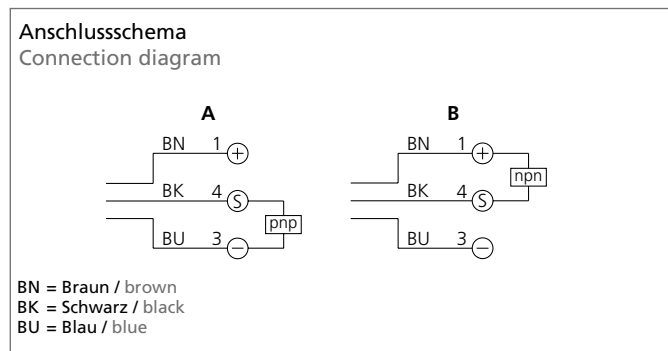
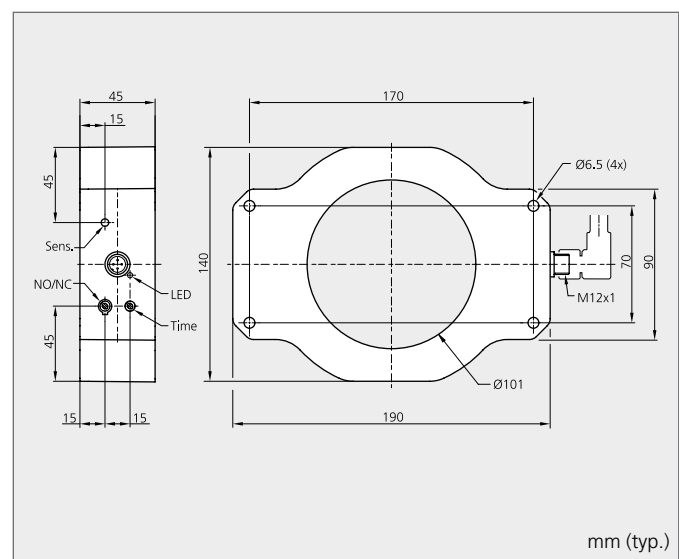
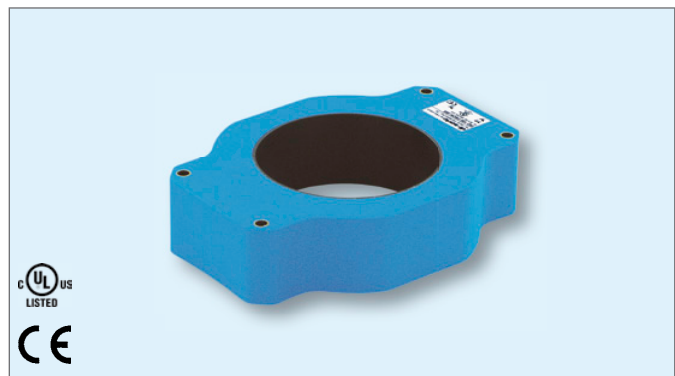
Montageabstände / Mounting distances 	Montageart / Mounting method A: Durchgangsbohrung Blech = Ringdurchmesser D: Der minimale Montageabstand Z ist zu beachten. Sheet passage hole = ring diameter D: The minimum mounting spacing Z should be noted. \varnothing Blech = Ringdurchmesser D \varnothing sheet = ring diameter D	Montageart / Mounting method B: Bündig auf Metallplatte: Der Mindestdurchmesser D1 der Durchgangsbohrung ist zu beachten. Flush on metal plate: The minimum diameter D1 of the passage hole should be noted.
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Induktive Ringsensoren mit statischer/dynamischer Auswertung

Inductive ring sensors with static / dynamic operating principle

- Kompakte Bauform
 - Statisches oder dynamisches Arbeitsprinzip
 - Hohe Auflösung
 - Kurze Ansprechzeit
 - Empfindlichkeit und Impulsverlängerung einstellbar
 - Schmutzunempfindlich
 - Metallanschlussstecker
 - Hohe Schutzart
-
- Compact design
 - Static or dynamic operating principle
 - High resolution
 - Short response time
 - Sensitivity and pulse stretching adjustable
 - Insensitivity to dirt
 - Metal connector
 - High protection class

Ring-Ø 101 mm



Technische Daten (typ.)	Technical data (typ.)	+20 °C, 24 VDC
Ringdurchmesser	Ring-diameter	Siehe gegenüberliegende Seite/see opposite page
Betriebsspannung	Service voltage	10 ... 35 VDC
Ausgang	Output	NO/NC umschaltbar/switchable
Empfindlichkeitseinstellung	Sensitivity adjustment	Potentiometer
Strombelastbarkeit	Maximum rating	200 mA, kurzschlussfest, verpolgeschützt / short-circuit-proof, polarity-save
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Umgebungstemperatur	Ambient temperature	-25 ... +70 °C
Isolationsspannungsfestigkeit	Insulation voltage endurance	1.000 V
Schutzart	Protection class	IP 67
Schutzklasse	Protection degree	III, Betrieb an Schutzkleinspannung / Operation with class 2 supply voltage
Gehäusematerial	Casing material	Polyamid, Ring POM

<i>Ringdurchmesser D (mm)</i> <i>Ring-diameter D (mm)</i>														<i>Statische Auswertung</i> <i>Static operating principle</i>														<i>Dynamische Auswertung</i> <i>Dynamic operating principle</i>														<i>Auflösung / Resolution (mm)</i> <i>Stahlkugel / steel ball (mm)</i>														<i>Ansprech-/ Abfallzeit (ms)</i> <i>Response / release time (ms)</i>														<i>Min. horizontaler Montageabstand X (mm)</i> <i>Min. mounting distance X (mm)</i>														<i>Min. vertikaler Montageabstand Y (mm)</i> <i>Min. mounting distance Y (mm)</i>														<i>Min. Bohrungsabstand zu Metall Z (mm)</i> <i>Min. hole diameter D1 (mm)</i>														<i>Ausgang</i> <i>Output</i>														<i>Anschlussschema (siehe gegenüberliegende Seite)</i> <i>Connecting diagram (see opposite page)</i>														<i>Steckverbinder</i> <i>Connector</i>														<i>Anschlusskabel (sep. Datenblatt)</i> <i>Connecting cable (sep. data-sheet)</i>																																																							
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														■														5,0																												0,2/0,2														10														30														0														130														pnp														A														M12														VK...														IRD 100 PSOK-IBS														IRD 100 NSOK-IBS													

