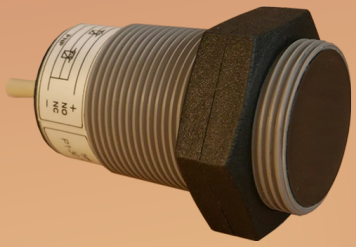
"ESA Control" Ltd

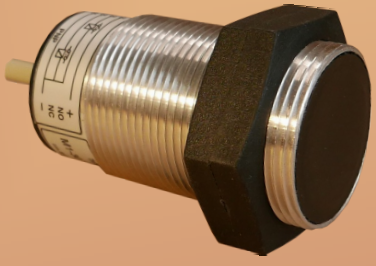


DIRECT CURRENT

INDUCTIVE

PROXIMITY SENSORS

DC, 2-wire



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Inductive proximity sensors for direct current /2-wire/

DC

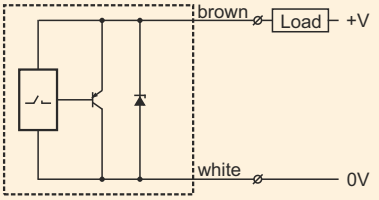
Purpose and areas of application

The presented inductive proximity sensors serve to commutate direct current 2-wire electric circuits. They act on the basis of induction - if a metal piece is brought to the active surface, the output switches over - the electric circuit opens or shuts. Lack of physical contact between object and inductive proximity sensors ensures their high reliability and long-lasting exploitation. They are used for automatic transfer lines, metalworking machines, textile, wood working, packaging and other machines. They find place in solving automation problems, especially in conditions of: high quantity of dust, moisture, lubricants and oils, under vibrations and prolonged regime of working.

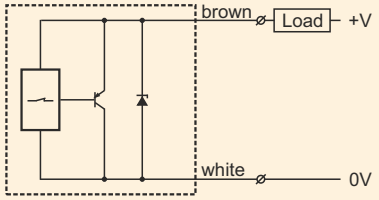
Technical parameters

Supply voltage, *Us*	8...30VDC (Ripple ±10%)
Residual voltage, *Ures*	3,6V
Load current, *Iout*	1...80mA
Current consumption, *Is*	0,2mA
Protection of output (scanning), *Iprot*	125mA (25°C)
Fall time and Rise time, *tf / tr*	400µs / 20µs
Hysteresis, *h*	15%
Operating temperature range, *Tamb*	-25…+70°C
Degree of protection of the sensors	IP67 (IEC144)
Output indicator	LED
Joining cable	2x0,25mm^2, PVC, L=2m

Schemes of connection

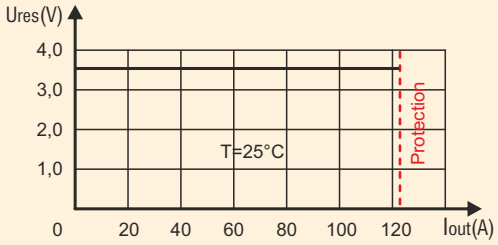


Scheme 61 (NO)



Scheme 62 (NC)

Output characteristic /residual voltage/



M12 inductive proximity sensor for direct current, 2-wire, shielded type

M1-12

fig.1

Operating principle

The presented M12 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	3.5 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	1000 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	M12x1, L = 45 mm
Housing - metallic	CuZn (Ni plated)

Features:

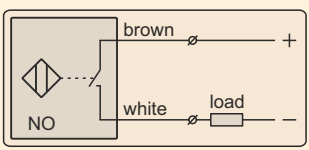
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

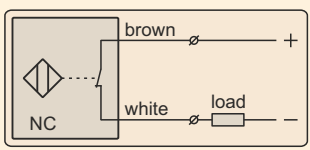
Type parameters

Type	Output function	Scheme of connection
M1-12.61.K	NO	61
M1-12.62.K	NC	62

Schemes of connection



Scheme 61



Scheme 62

M12 inductive proximity sensor for direct current, 2-wire, unshielded type

P1-12

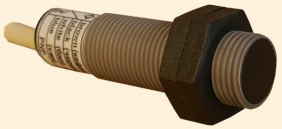


fig.1

Operating principle

The presented M12 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	5.0 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	800 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	M12x1, L = 45 mm
Housing - plastic	PVC

Features:

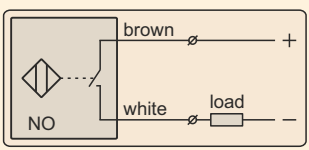
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

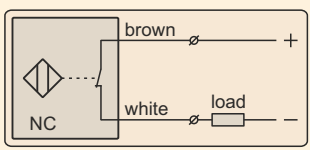
Type parameters

Type	Output function	Scheme of connection
P1-12.61.K	NO	61
P1-12.62.K	NC	62

Schemes of connection



Scheme 61



Scheme 62

M18 inductive proximity sensor for direct current, 2-wire, shielded type

M1-18

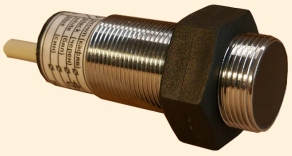


fig.1

Operating principle

The presented M18 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	5.0 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	600 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	M18x1, L = 49 mm
Housing - metallic	CuZn (Ni plated)

Features:

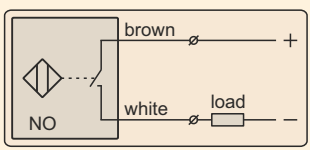
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

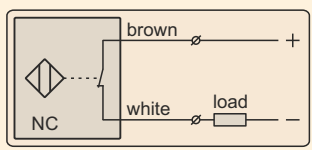
Type parameters

Type	Output function	Scheme of connection
M1-18.61.K	NO	61
M1-18.62.K	NC	62

Schemes of connection



Scheme 61



Scheme 62

M18 inductive proximity sensor for direct current, 2-wire, unshielded type

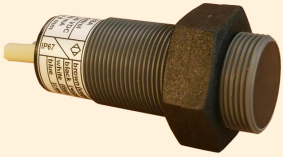


fig.1

Operating principle

The presented M18 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	8.0 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	400 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	M18x1, L = 49 mm
Housing - plastic	PVC

Features:

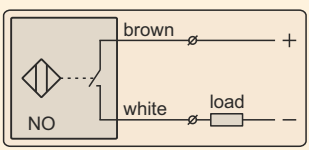
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

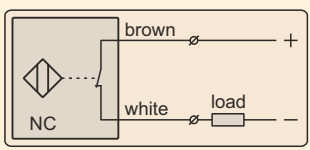
Type parameters

Type	Output function	Scheme of connection
P1-18.61.K	NO	61
P1-18.62.K	NC	62

Schemes of connection



Scheme 61



Scheme 62

M30 inductive proximity sensor for direct current, 2-wire, shielded type

M1-30

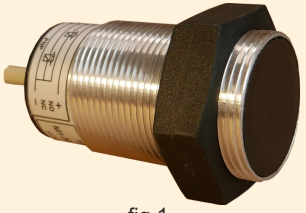


fig.1

Operating principle

The presented M30 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	9.5 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	300 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	M30x1.5, L = 53 mm
Housing - metallic	Al (aluminum)

Features:

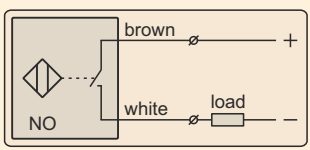
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

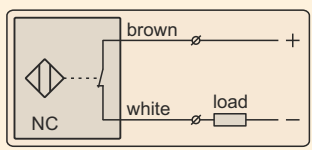
Type parameters

Type	Output function	Scheme of connection
M1-30.61.K	NO	61
M1-30.62.K	NC	62

Schemes of connection



Scheme 61



Scheme 62

M30 inductive proximity sensor for direct current, 2-wire, unshielded type

P1-30

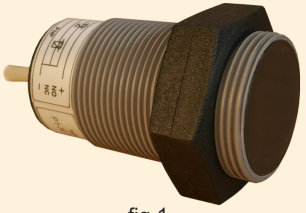


fig.1

Operating principle

The presented M30 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	14.0 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	150 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	M30x1.5, L = 53 mm
Housing - plastic	PVC

Features:

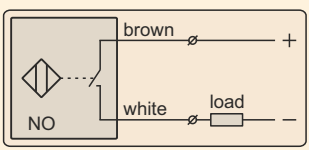
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

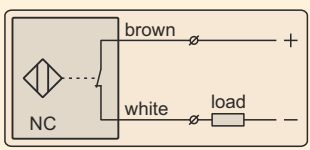
Type parameters

Type	Output function	Scheme of connection
P1-30.61.K	NO	61
P1-30.62.K	NC	62

Schemes of connection



Scheme 61



Scheme 62

M40 inductive proximity sensor for direct current, 2-wire, shielded type

M1-40

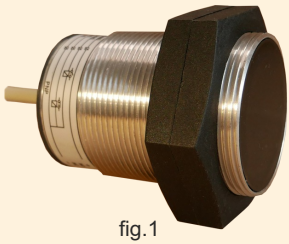


fig.1

Operating principle

The presented M40 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	14.0 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	150 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	M40x1.5, L = 55 mm
Housing - metallic	Al (aluminum)

Features:

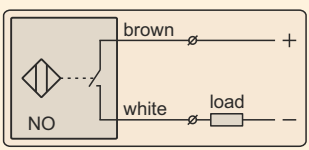
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

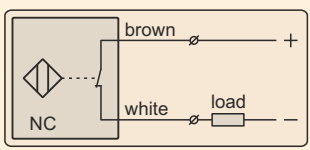
Type parameters

Type	Output function	Scheme of connection
M1-40.61.K	NO	61
M1-40.62.K	NC	62

Schemes of connection



Scheme 61



Scheme 62

M40 inductive proximity sensor for direct current, 2-wire, unshielded type

P1-40

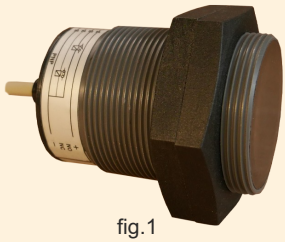


fig.1

Operating principle

The presented M40 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	24.0 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	100 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	M40x1.5, L = 55 mm
Housing - plastic	PVC

Features:

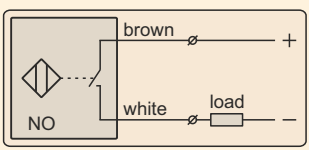
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

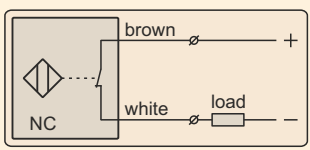
Type parameters

Type	Output function	Scheme of connection
P1-40.61.K	NO	61
P1-40.62.K	NC	62

Schemes of connection



Scheme 61



Scheme 62

P3-60 inductive proximity sensor for direct current, 2-wire, unshielded type

P3-60

fig.1

Operating principle

The presented P3-60 inductive proximity sensor serves to switch 2-wire direct current circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

Technical parameters

Operating distance, Sn	12.5 mm
Hysteresis, *h*	4...15%
Supply voltage, *Us*	8…30 Vdc (Ripple ±10 %)
Residual voltage, *Ures*	3.6 V
Load current (max), *Iout*	1...80 mA
Protection of output (scanning), *Iprot*	125 mA (25°C)
Current consumption, *Is*	0.2 mA
Switching frequency (max), *fo*	100 Hz
Time of fall / rise, *tf / tr*	400 µs / 20 µs
Operating temperature range, *Tamb*	-25°…+70° C
Degree of protection of the sensors	IP67 (IEC144)
Light output indicator	LED
Joining - cable	2x0.25 mm^2, L=2 m, PVC
Overall dimensions	60x30x15 mm
Housing	PA6 (polyamide)

Features:

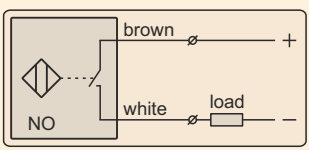
Protection from reverse inclusion of the supply voltage.

Protection of the output from overcurrent and short circuit.

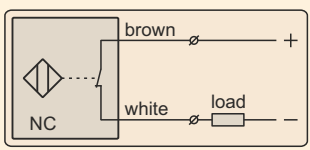
Type parameters

Type	Output function	Scheme of connection
P3-60.61.K	NO	61
P3-60.62.K	NC	62

Schemes of connection

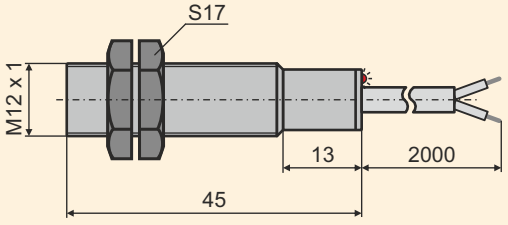


Scheme 61

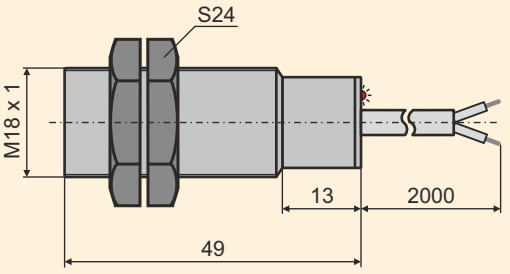


Scheme 62

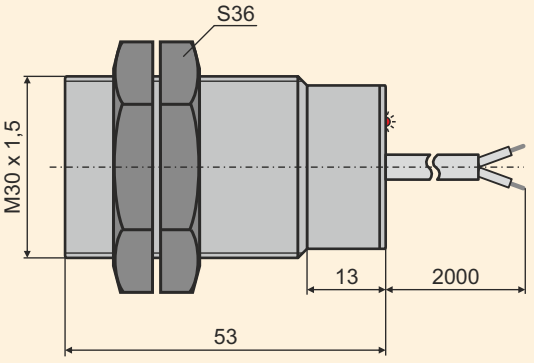
M12



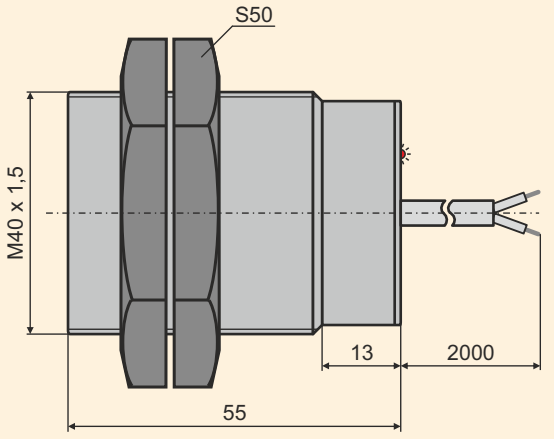
M18



M30



M40



P3-60