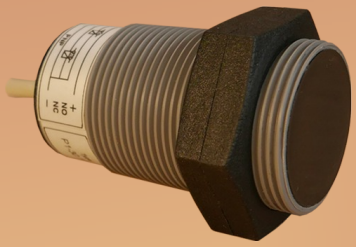
"ESA Control" Ltd

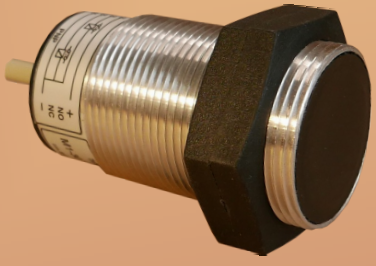


ALTERNATING CURRENT

INDUCTIVE

PROXIMITY SENSORS

2-wire, AC / U0



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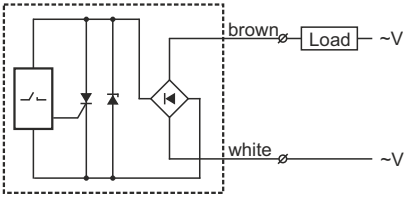
Purpose and areas of application

The presented inductive proximity sensors serve to commutate 2-wire alternating current 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.

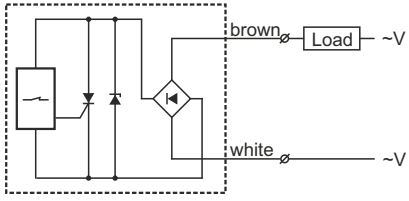
Technical parameters

Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...300 mA (5...500mA)
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption, Is	1 mA
Operating temperature range, Tamb	-25°…+70°C
Degree of protection of the sensors	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Joining - cable “LIYY” (grey)	2x0.5 mm², L=2 m, PVC
Short circuit protection	NO
Protection against reverse connection	YES

Electrical schematics

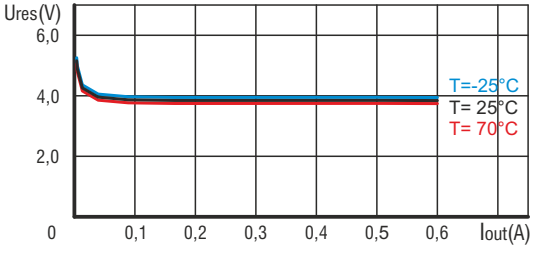


Scheme 71 (NO - normally open)



Scheme 72 (NC - normally closed)

Output characteristic /residual voltage/



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

M1-12

fig.1

Operating principle

The presented inductive proximity sensor M12 serves to switch 2-wire alternating 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.

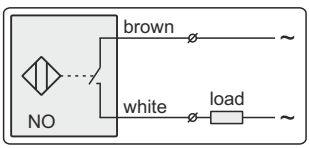
Technical parameters

Nominal sensing distance, Sn	3.5 mm ±4%
Measuring plate steel, St 37	12x12x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...300 mA
Residual voltage, Ures1	4.0 Vac & 15...300 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M12x1, L=56 mm
Housing material	CuZn (Ni plated)

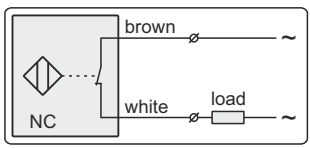
Type parameters

Type	Output function	Scheme of connection
M1-12.71.U0	NO	71
M1-12.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

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

P1-12

fig.1

Operating principle

The presented inductive proximity sensor M12 serves to switch 2-wire alternating 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.

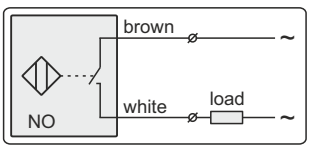
Technical parameters

Nominal sensing distance, Sn	5.0 mm ±4%
Measuring plate steel, St 37	12x12x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...300 mA
Residual voltage, Ures1	4.0 Vac & 15...300 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M12x1, L=56 mm
Housing materiall	PVC

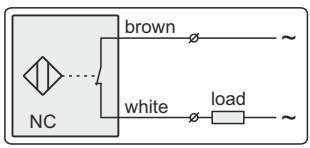
Type parameters

Type	Output function	Scheme of connection
P1-12.71.U0	NO	71
P1-12.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

M14 inductive proximity sensor for alternating current, 2-wire, shielded type

M1-14

fig.1

Operating principle

The presented inductive proximity sensor M14 serves to switch 2-wire alternating 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.

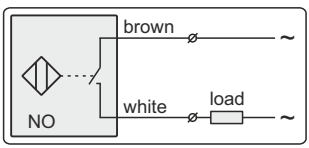
Technical parameters

Nominal sensing distance, Sn	3.5 mm ±4%
Measuring plate steel, St 37	14x14x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...300 mA
Residual voltage, Ures1	4.0 Vac & 15...300 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY"	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M14x1, L=56 mm
Housing material	CuZn (Ni plated)

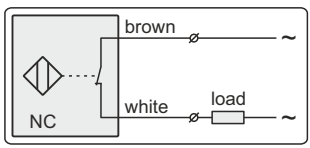
Type parameters

Type	Output function	Scheme of connection
M1-14.71.U0	NO	71
M1-14.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

M14 inductive proximity sensor for alternating current, 2-wire, unshielded type

fig.1

Operating principle

The presented inductive proximity sensor M14 serves to switch 2-wire alternating 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.

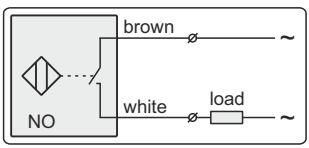
Technical parameters

Nominal sensing distance, Sn	5.5 mm ±4%
Measuring plate steel, St 37	14x14x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...300 mA
Residual voltage, Ures1	4.0 Vac & 15...300 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M14x1, L=56 mm
Housing material	PVC

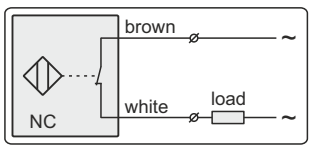
Type parameters

Type	Output function	Scheme of connection
P1-14.71.U0	NO	71
P1-14.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

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

M1-18

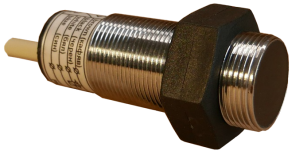


fig.1

Operating principle

The presented inductive proximity sensor M18 serves to switch 2-wire alternating 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.

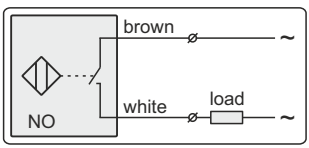
Technical parameters

Nominal sensing distance, Sn	5.0 mm ±4%
Measuring plate steel, St 37	18x18x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M18x1, L=59 mm
Housing material	CuZn (Ni plated)

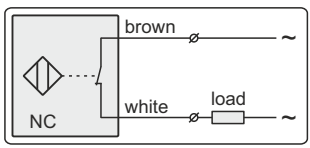
Type parameters

Type	Output function	Scheme of connection
M1-18.71.U0	NO	71
M1-18.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

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

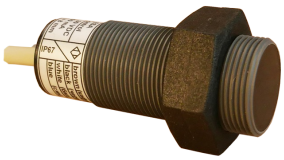


fig.1

Operating principle

The presented inductive proximity sensor M18 serves to switch 2-wire alternating 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.

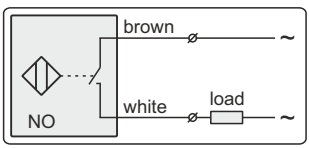
Technical parameters

Nominal sensing distance, Sn	8.0 mm ±4%
Measuring plate steel, St 37	18x18x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M18x1, L=59 mm
Housing material	PVC

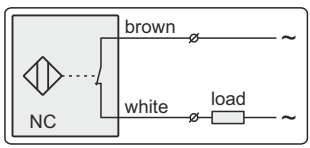
Type parameters

Type	Output function	Scheme of connection
P1-18.71.U0	NO	71
P1-18.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

M22 inductive proximity sensor for alternating current, 2-wire, shielded type

M1-22

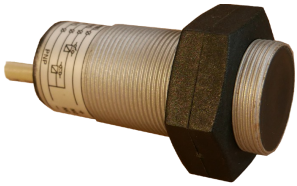


fig.1

Operating principle

The presented inductive proximity sensor M22 serves to switch 2-wire alternating 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.

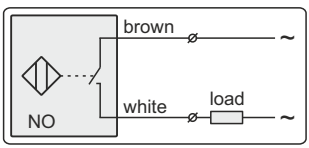
Technical parameters

Nominal sensing distance, Sn	6.5 mm ±4%
Measuring plate steel, St 37	22x22x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY"	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M22x1, L=59 mm
Housing material	CuZn (Ni plated)

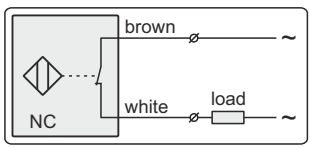
Type parameters

Type	Output function	Scheme of connection
M1-22.71.U0	NO	71
M1-22.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

M22 inductive proximity sensor for alternating current, 2-wire, unshielded type

P1-22

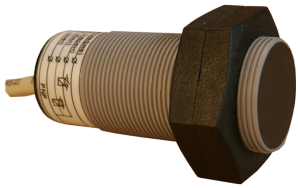


fig.1

Operating principle

The presented inductive proximity sensor M22 serves to switch 2-wire alternating 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.

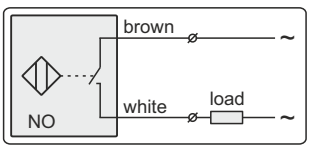
Technical parameters

Nominal sensing distance, Sn	10.0 mm ±4%
Measuring plate steel, St 37	22x22x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M22x1, L=59 mm
Housing material	PVC

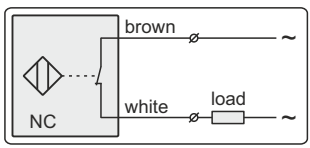
Type parameters

Type	Output function	Scheme of connection
P1-22.71.U0	NO	71
P1-22.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

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

M1-30

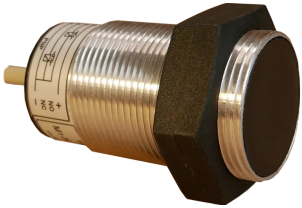


fig.1

Operating principle

The presented inductive proximity sensor M30 serves to switch 2-wire alternating 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.

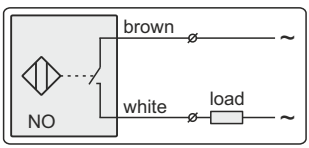
Technical parameters

Nominal sensing distance, Sn	9.5 mm ±4%
Measuring plate steel, St 37	30x30x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M30x1.5, L=61 mm
Housing material	Al (Aluminum)

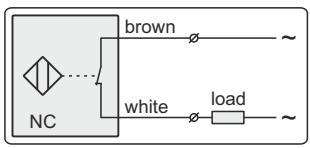
Type parameters

Type	Output function	Scheme of connection
M1-30.71.U0	NO	71
M1-30.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

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

P1-30

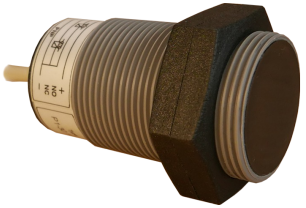


fig.1

Operating principle

The presented inductive proximity sensor M30 serves to switch 2-wire alternating 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.

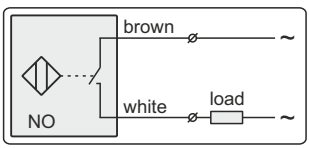
Technical parameters

Nominal sensing distance, Sn	14.0 mm ±4%
Measuring plate steel, St 37	30x30x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M30x1.5, L=61 mm
Housing material	PVC

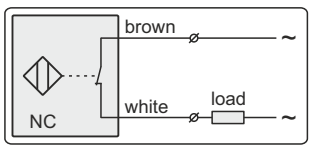
Type parameters

Type	Output function	Scheme of connection
P1-30.71.U0	NO	71
P1-30.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

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

M1-40

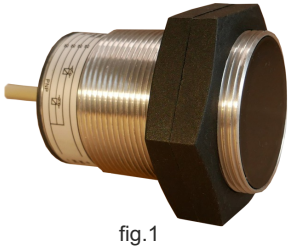


fig.1

Operating principle

The presented inductive proximity sensor M40 serves to switch 2-wire alternating 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.

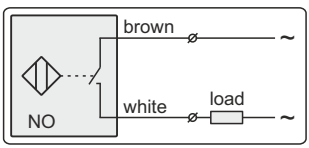
Technical parameters

Nominal sensing distance, Sn	14.0 mm ±4%
Measuring plate steel, St 37	40x40x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M40x1.5, L=55 mm
Housing material	Al (Aluminum)

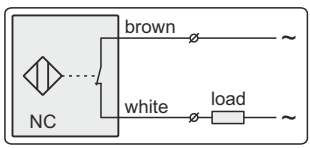
Type parameters

Type	Output function	Scheme of connection
M1-40.71.U0	NO	71
M1-40.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

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

P1-40

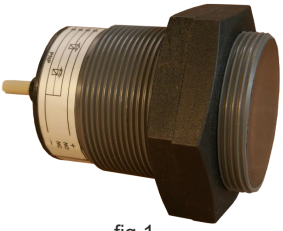


fig.1

Operating principle

The presented inductive proximity sensor M40 serves to switch 2-wire alternating 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.

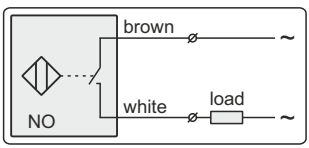
Technical parameters

Nominal sensing distance, Sn	24.0 mm ±4%
Measuring plate steel, St 37	40x40x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY“	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	M40x1.5, L=55 mm
Housing material	PVC

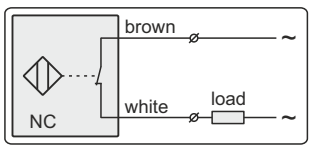
Type parameters

Type	Output function	Scheme of connection
P1-40.71.U0	NO	71
P1-40.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

P3-40 inductive proximity sensor for alternating current, 2-wire, unshielded type

P3-40

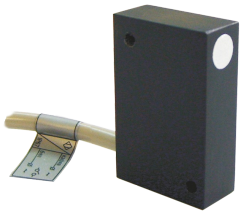


fig.1

Operating principle

The presented inductive proximity sensor P3-40 serves to switch 2-wire alternating 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.

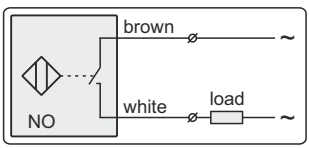
Technical parameters

Nominal sensing distance, Sn	4.0 mm ±4%
Measuring plate steel, St 37	12x12x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...300 mA
Residual voltage, Ures1	4.0 Vac & 15...300 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY"	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	26x12x40 mm
Housing material	PVC

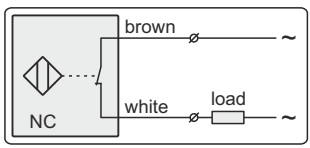
Type parameters

Type	Output function	Scheme of connection
P3-40.71.U0	NO	71
P3-40.72.U0	NC	72

Schemes of connection



Scheme 71



Scheme 72

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

P3-60

fig.1

Operating principle

The presented inductive proximity sensor P3-60 serves to switch 2-wire alternating 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.

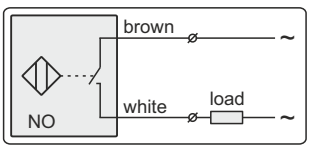
Technical parameters

Nominal sensing distance, Sn	12.5 mm ±4%
Measuring plate steel, St 37	30x30x1 mm
Hysteresis, h	5...12%
Temperature drift, (max)	±15% (Sn)
Supply voltage, Us	12…250 Vac / 40...60 Hz
Load current, Iout	5...500 mA
Residual voltage, Ures1	4.0 Vac & 15...500 mA
Residual voltage, Ures2	5.5 Vac & 5...15 mA
Current consumption (max), Is	1 mA
Switching frequency (max), fo	25 Hz
Operating temperature range, Tamb	-25°…+70° C
Degree of protection	IP67 (IEC144)
Output element	Thyristor
Light output indicator	LED
Short circuit protection	NO
Protection against reverse connection	YES
Joining - cable "LIYY"	2x0.5 mm², L=2 m, PVC, grey
Overall dimensions	60x30x15 mm
Housing material	PA6 (Polyamide)

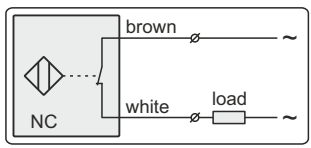
Type parameters

Type	Output function	Scheme of connection
P3-60.71.U0	NO	71
P3-60.72.U0	NC	72

Schemes of connection

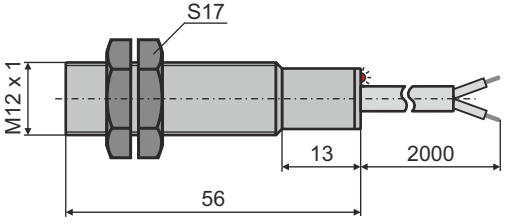


Scheme 71

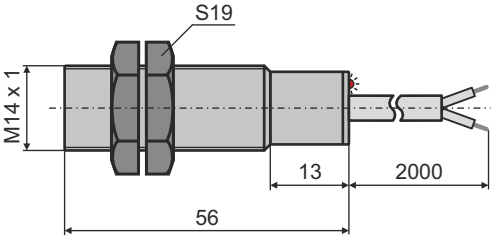


Scheme 72

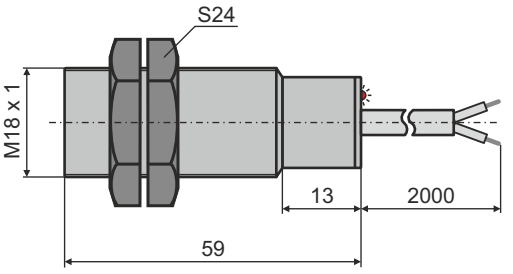
M12



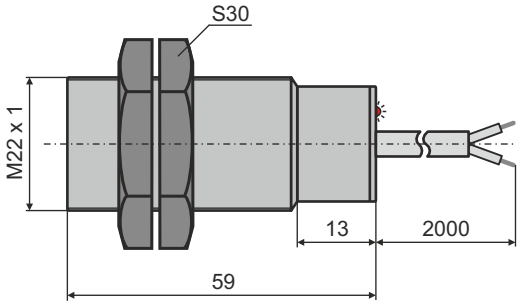
M14



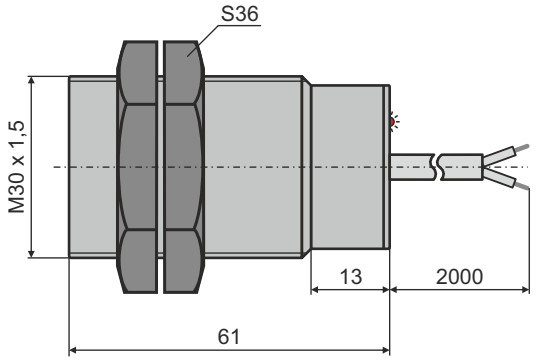
M18



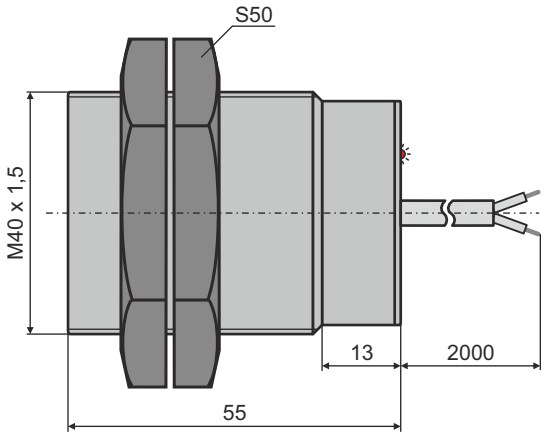
M22



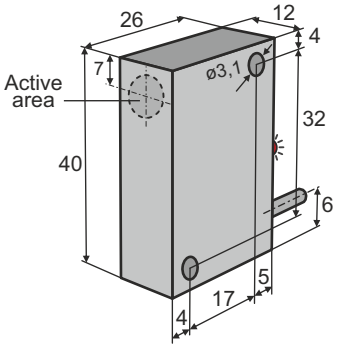
M30



M40



P3-40



P3-60