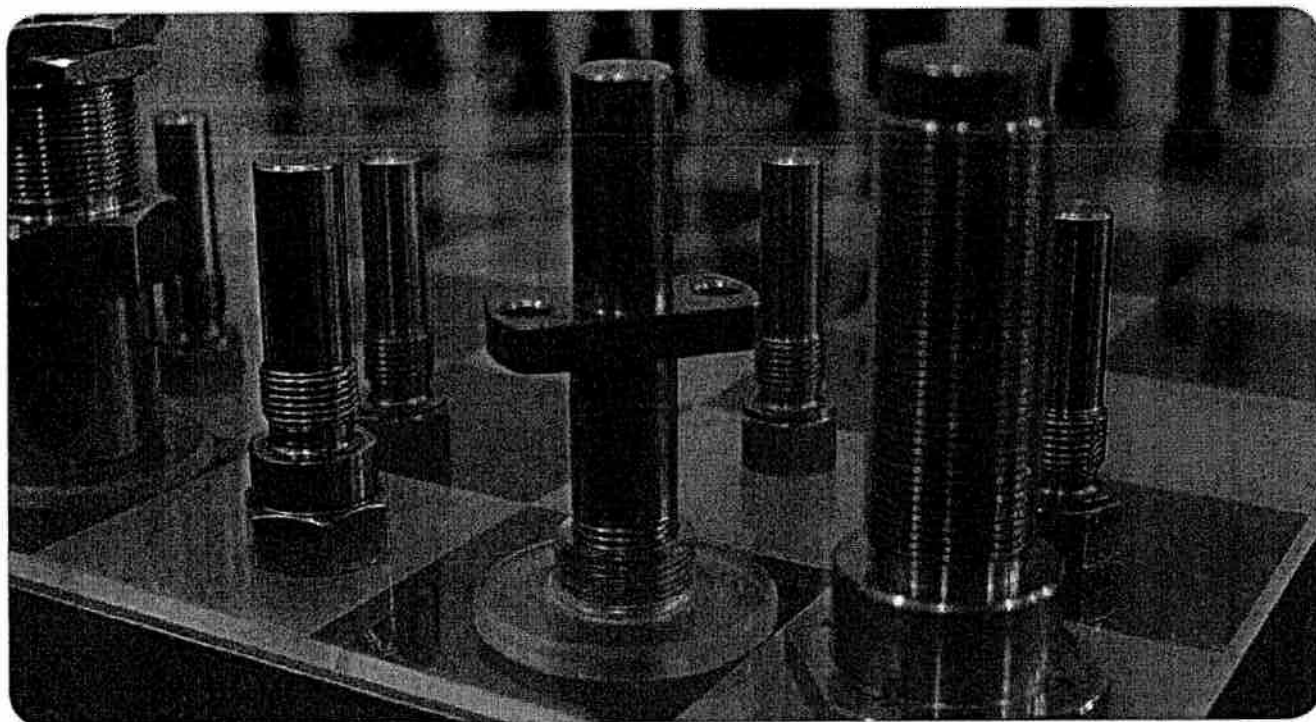


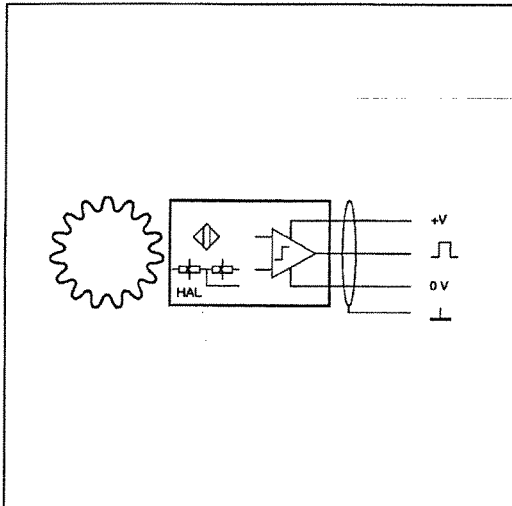
Speed sensors



DSD

Hall Effect Sensors
(Differential Ferrostat)

IN CHARGE OF SPEED



FUNCTION

DSD ferrostat sensors are suitable for generating speed dependent signals when used with a pole wheel (steel gear wheel, preferably with involute gear form).

They exhibit dynamic or static behaviour with guaranteed pulse generation down to between 5 and 0 Hz.

The sensor element is a magnetically biased differential Hall sensor followed by a short circuit proof amplifier. The sensor characteristic is not rotationally symmetrical.

Connection

The sensor connections are sensitive to interference. The following 2 points should therefore be noted:

- 1) A screened 3 core cable must be used for connections. The screen must be taken all the way to the terminal provided on the instrument and not earthed.
- 2) The sensor cables should be laid as far from large electrical machines as possible and must never be laid parallel to high current cables.

The maximum permissible cable length is a function of sensor supply voltage, cable routing along with cable capacitance and inductance and max. signal frequency.

In general it is advantageous to keep the distance between sensor and instrumentation to a minimum. The sensor cable may be lengthened via suitable IP 20 terminals and Jaquet S3 cable p/n 824L-31081.

Installation

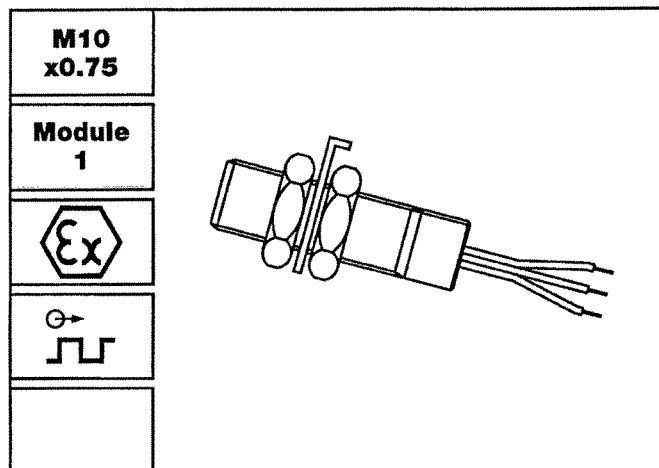
These sensors incorporate a differential Hall element. The housing must therefore be orientated to the pole wheel as shown in the dimensional diagram (note the slot, arrow or hole). Incorrect positioning of the sensor affects its correct operation and noise immunity. The sensor is mounted with its centre over the centre of the pole wheel. With gear wheels or slots and radial mounting, the sensor is normally fixed over the middle of the wheel. Dependent on the gear width, a degree of axial movement is permissible. The centre of the sensor must however remain a minimum of 3 mm from the edge of the wheel under all operating conditions.

It is important to ensure a rigid, vibration free mounting of the sensor. Sensor vibration in relation to the pole wheel may induce additional pulses.

The sensors are insensitive to oil, grease etc. and can be used in arduous conditions. If the cable is to come into contact with aggressive materials, then teflon cable should be specified. The sensor should be installed with the smallest possible air gap. This air gap must however not allow the face of the sensor to come into contact with the pole wheel. The air gap does not affect the calibration of the complete system.

CONNECTION AND INSTALLATION

DSD 1010 K, P

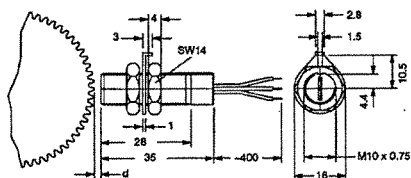


Features

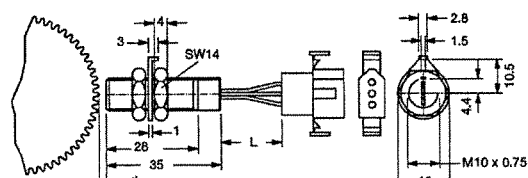
- With amplifier
- Static function
- Lower frequency limit: 0 Hz
- Available as models FTG 1089.00 Ex and FTG 1089.01 Ex in intrinsically safe class EEx ia II C T5/T6
- Sensor housing must be aligned to the pole wheel

Dimensions

Version K



Version P



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating temperature [°C]	Notes
DSD 1010.00 KTV	343Z-03831	Wire	M10x0.75	20	-25...+85	previously FTG 1089.00
DSD 1010.00 KTV Ex	343Z-03832	Wire	M10x0.75	20	-25...(T5)+75, (T6)+60	previously FTG 1089.00 Ex
DSD 1010.00 PTV	343Z-03990	Connector	M10x0.75	23	-25...+85	previously FTG 1089.01
DSD 1010.00 PTV Ex	343Z-03837	Connector	M10x0.75	23	-25...(T5)+75, (T6)+60	previously FTG 1089.01 Ex

Technical data

Supply

Power Supply

Supply voltage: 5V $\pm 10\%$, max. load 12 V, reverse polarity protection.
Current consumption: max. 16 mA.

Input

Frequency range

0 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel i.e. Ust37-2, involute gear form preferred.

Module ≥ 1 , min. tooth width 3 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

Pole wheel-sensor gap with

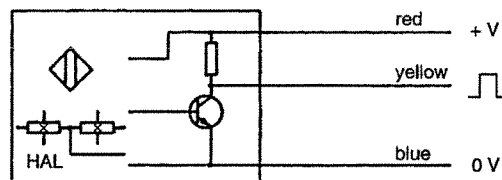
Module 1.0: 0.1...0.5 mm
Module 2.0: 0.1...1.3 mm
 \geq Module 4.0: 0.1...1.5 mm

Output

Signal output

Square wave signals, mark space approx. 1:1, D.C. coupled to the supply, signal-amplitude corresponding to power supply (max. allowed sink current = 25 mA at a saturation voltage < 0.4 V). The output is connected through a pull-up 1.8 k Ω to the plus pole of the power supply.

Connections



Mechanical

Protection class

IP68 (head), IP67 (wire connection), IP50 (jack connection).

Vibration immunity

3 g_r in the range 4...100 Hz.

Shock immunity

20 g_r during 11 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing and electronics galvanically isolated (500 V/50 Hz/1 min).

Housing

Argentan (German silver) CuNi10Zn42Pb DIN 2.0770, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin.

Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

343E-63726

Versions

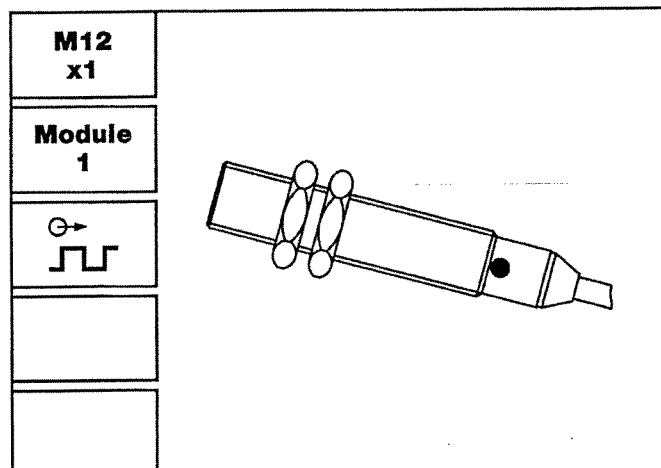
Version K

Wires teflon insulated, length 400 mm, 0.22 mm² (AWG 24).

Version P

Connector, part nr. 343C-72577.

DSD 1210 A, S, M

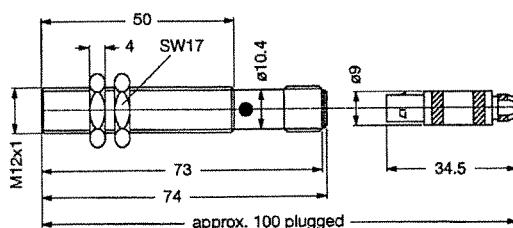


Features

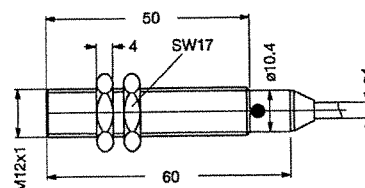
- With amplifier
- Static function
- Lower frequency limit: 0 Hz
- Sensor housing must be aligned to the pole wheel

Dimensions

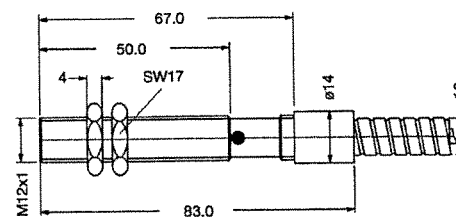
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating temperature [°C]	Notes
DSD 1210.01 STV	374Z-03712	Cable 5 m	M12x1	160	-25...+85	Standard
DSD 1210.01 SHV	374Z-03716	Cable 2 m	M12x1	100	-40...+125	Standard
DSD 1210.01 SHV	374Z-03762	Cable 5 m	M12x1	195	-40...+125	Standard
DSD 1210.01 ATV	374Z-04059	Connector	M12x1	35	-25...+85	Standard
DSD 1210.01 AHV	374Z-04163	Connector	M12x1	35	-40...+125	Standard
DSD 1210.01 MTV	374Z-04136	Protective hose 5 m	M12x1	680	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 16 mA (without load).

Input

Frequency range

0 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

Pole wheel

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred.
Module ≥ 1 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

Pole wheel-sensor gap with

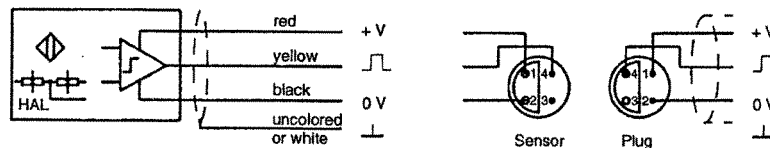
Module 1:	0.1...0.5 mm
Module 2:	0.1...1.3 mm
\geq Module 4:	0.1...1.5 mm

Output

Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,
Output voltage-HI: > (supply voltage - 2.5 V) at $I = 25$ mA,
Output voltage-LO: < 1.5 V at $I = 25$ mA,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_r in the range 5...2000 Hz.

Shock immunity

50 g_r during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel 1.4305, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin.

Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63870, version with integral cable; 374E-63805, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey. Outer \varnothing max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from the housing), white. Outer \varnothing max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m. Standard length for version SH: 2 m, 5 m.

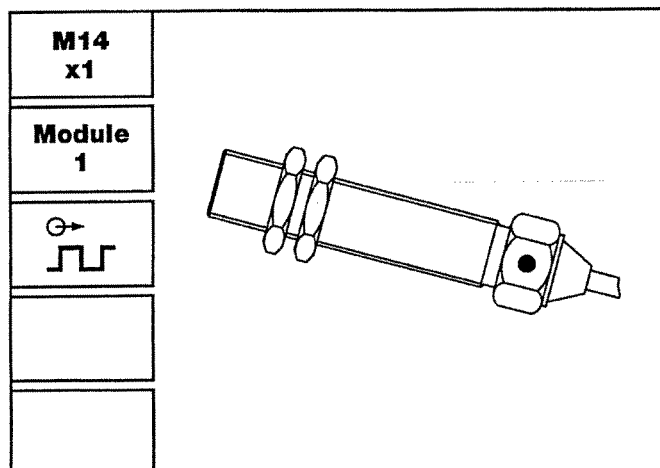
Version MT

Protection hose over PVC cable: Tube 825G-36148 made of profile milled steel plate with PUR cover, blue. Weather and waterproof, conditionally oil and acid resistant. Outer \varnothing 10 mm, bending radius = min. 32 mm, weight 75 g/m. Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35922; Connection plug: Part nr. 820A-35921.

DSD 1410 A, S, M

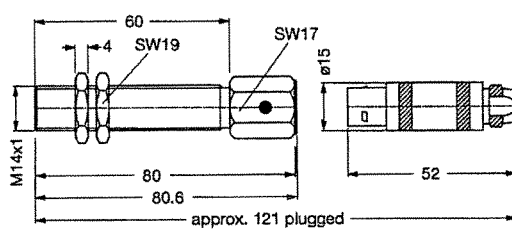


Features

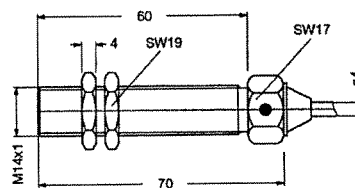
- With amplifier
- Static function
- Lower frequency limit: 0 Hz
- Sensor housing must be aligned to the pole wheel

Dimensions

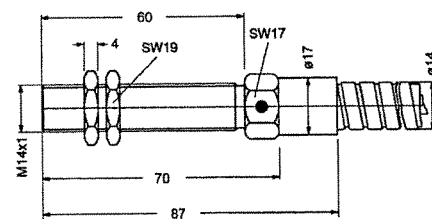
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating temperature [°C]	Notes
DSD 1410.01 STV	374Z-04182	Cable 5 m	M14x1	210	-25...+85	Standard
DSD 1410.01 SHV	374Z-04183	Cable 2 m	M14x1	155	-40...+125	Standard
DSD 1410.01 ATV	374Z-04164	Connector	M14x1	90	-25...+85	Standard
DSD 1410.01 AHV	374Z-04165	Connector	M14x1	90	-40...+125	Standard
DSD 1410.01 MTV	374Z-04139	Protective hose 5 m	M14x1	920	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 16 mA (without load).

Input

Frequency range

0 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel (i.e. Ust37-2), involute gear form preferred.
Module ≥ 1 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

Pole wheel-sensor gap with

Module 1:	0.1...0.5 mm
Module 2:	0.1...1.3 mm
\geq Module 4:	0.1...1.5 mm

Output

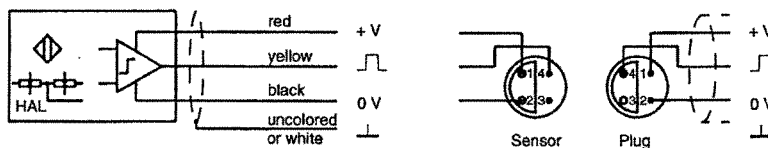
Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,

Output voltage-HI: > (supply voltage - 2.5 V) at $I = 25$ mA,

Output voltage-LO: < 1.5 V at $I = 25$ mA,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_n in the range 5...2000 Hz.

Shock immunity

50 g_n during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel 1.4305, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin.

Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63870, version with integral cable; 374E-63805, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey. Outer \varnothing max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from the housing), white. Outer \varnothing max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m. Standard length for version SH: 2 m, 5 m.

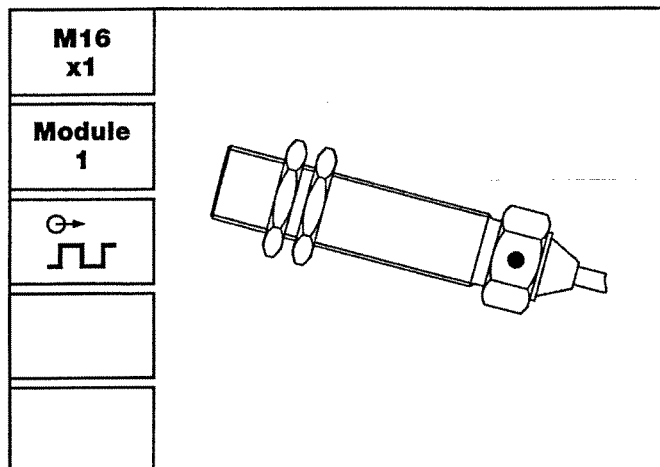
Version MT

Protection hose over PVC cable: Tube 825G-30924 made of profile milled steel plate with PVC cover, grey. Weather and waterproof, conditionally oil and acid resistant. Outer \varnothing 14 mm, bending radius = min. 40 mm, weight 130 g/m. Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 820A-35732.

DSD 1610 A, S, M

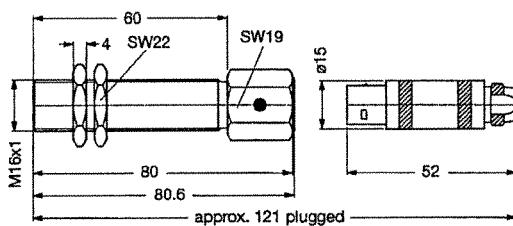


Features

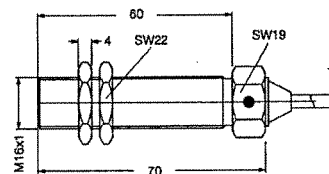
- With amplifier
- Static function
- Lower frequency limit: 0 Hz
- Sensor housing has to be aligned to the pole wheel

Dimensions

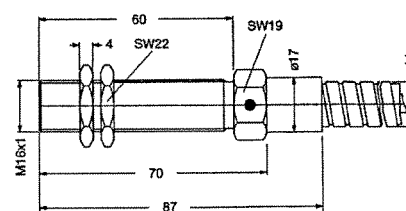
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 1610.01 STV	374Z-04185	Cable 5 m	M16x1	215	-25...+85	Standard
DSD 1610.01 SHV	374Z-04186	Cable 2 m	M16x1	155	-40...+125	Standard
DSD 1610.01 ATV	374Z-04166	Connector	M16x1	95	-25...+85	Standard
DSD 1610.01 AHV	374Z-04167	Connector	M16x1	95	-40...+125	Standard
DSD 1610.01 MTV	374Z-04142	Protective hose 5 m	M16x1	925	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 15 mA (without load).

Input

Frequency range

0 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),

2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),

2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred. Module ≥ 1 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

Pole wheel-sensor gap with Module 1: 0.1...0.5 mm

Module 2: 0.1...1.3 mm

\geq Module 4: 0.1...1.5 mm

Output

Signal output

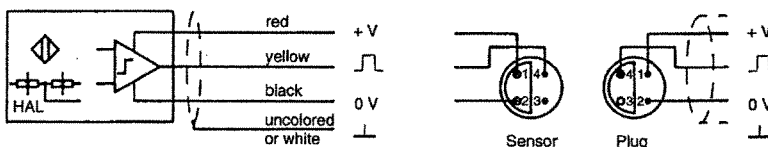
Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,

Output voltage-HI: $>$ (supply voltage - 2.5 V) at $I = 25$ mA,

Output voltage-LO: < 1.5 V at $I = 25$ mA,

short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_n in the range 5...2000 Hz.

Shock immunity

50 g_n during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin.

Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63870, version with integral cable; 374E-63805, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey. Outer \varnothing = max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from housing), white. Outer \varnothing = max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m. Standard length for version SH: 2 m, 5 m.

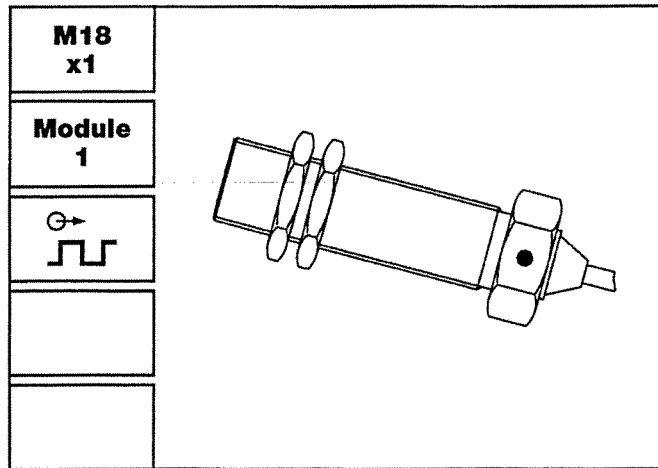
Version MT

Protection hose over PVC cable: Tube 825G-30924 made of profile milled steel plate with PVC cover, grey. Weather and waterproof, conditionally oil and acid resistant. Outer \varnothing = 14 mm, bending radius = min. 40 mm, weight 130 g/m. Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 820A-35732.

DSD 1810 A, S, M

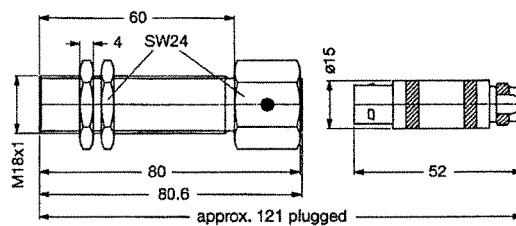


Features

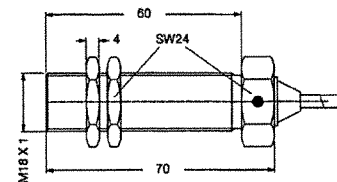
- With amplifier
- Static function
- Lower frequency limit: 0 Hz
- Sensor housing has to be aligned to the pole wheel

Dimensions

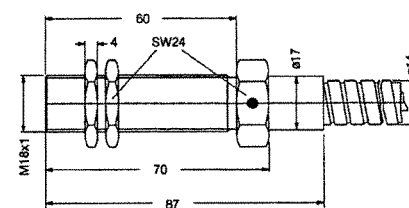
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 1810.01 STV	374Z-04188	Cable 5 m	M18x1	220	-25...+85	Standard
DSD 1810.01 SHV	374Z-03991	Cable 2 m	M18x1	160	-40...+125	Standard
DSD 1810.01 ATV	374Z-04168	Connector	M18x1	100	-25...+85	Standard
DSD 1810.01 AHV	374Z-04169	Connector	M18x1	100	-40...+125	Standard
DSD 1810.01 MTV	374Z-04145	Protective hose 5 m	M18x1	930	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 15 mA (without load).

Input

Frequency range

0 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred. Module ≥ 1 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

Pole wheel-sensor gap with

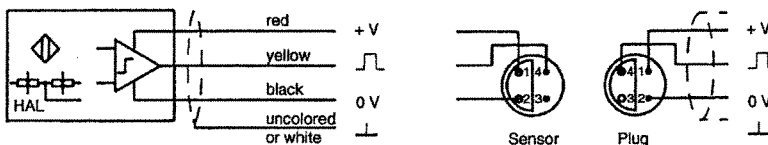
Module 1:	0.1...0.5 mm
Module 2:	0.1...1.3 mm
\geq Module 4:	0.1...1.5 mm

Output

Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,
Output voltage-HI: $>$ (supply voltage - 2.5 V) at $I = 25$ mA,
Output voltage-LO: < 1.5 V at $I = 25$ mA,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_r in the range 5...2000 Hz.

Shock immunity

50 g_r during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin.

Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63870, version with integral cable; 374E-63805, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey. Outer \varnothing = max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from housing), white. Outer \varnothing = max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m. Standard length for version SH: 2 m, 5 m.

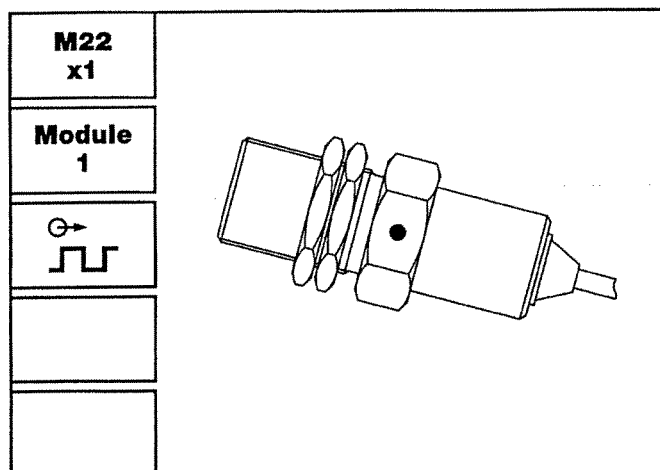
Version MT

Protection hose over PVC cable: Tube 825G-30924 made of profile milled steel plate with PVC cover, grey. Weather and waterproof, conditionally oil and acid resistant. Outer \varnothing = 14 mm, bending radius = min. 40 mm, weight 130 g/m. Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 820A-35732.

DSD 2210 A, S, M

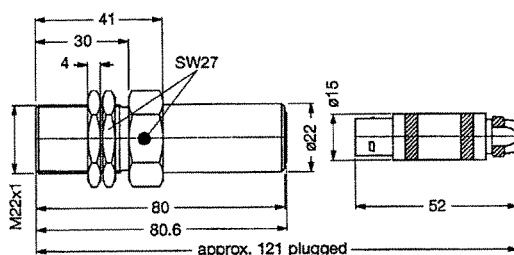


Features

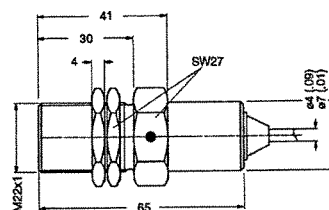
- With amplifier
- Static function
- Lower frequency limit: 0 Hz
- Sensor housing has to be aligned to the pole wheel

Dimensions

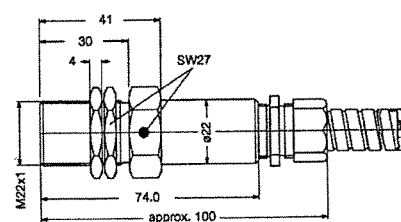
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 2210.01 STV	374Z-03750	Cable 5 m	M22x1	565	-25...+85	Standard
DSD 2210.01 SHV	374Z-03782	Cable 2 m	M22x1	229	-40...+125	Standard
DSD 2210.01 ATV	374Z-04170	Connector	M22x1	130	-25...+85	Standard
DSD 2210.01 AHV	374Z-04171	Connector	M22x1	130	-40...+125	Standard
DSD 2210.01 MTV	374Z-04146	Protective hose 5 m	M22x1	1000	-25...+85	Standard
DSD 2210.09 STV	374Z-04120	Cable 5 m	M22x1	250	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp;
reverse polarity protection.
Current consumption: max. 15 mA (without load).

Input

Frequency range

0 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred. Module ≥ 1 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

Pole wheel-sensor gap with

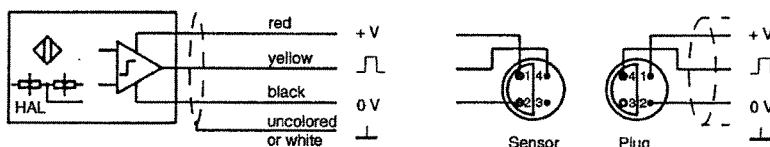
Module 1:	0.1...0.5 mm
Module 2:	0.1...1.3 mm
\geq Module 4:	0.1...1.5 mm

Output

Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply
(negative pole = reference voltage), max. load 25 mA,
Output voltage-HI: > (supply voltage - 2.5 V) at $I = 25$ mA,
Output voltage-LO: < 1.5 V at $I = 25$ mA,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_n in the range 5...2000 Hz.

Shock immunity

50 g_n during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin.

Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63870, version with integral cable; 374E-63805, version with integral connector.

Versions

Version ST (.01)

PVC cable: Part nr. 824L-31081, 3wire, 3 x 0.75 mm², stranded wire
(Metal net insulated from housing), grey. Outer \varnothing = max. 7.4 mm,
bending radius = min. 110 mm, weight 80 g/m.
Standard length for version ST: 5 m.

Version ST (.09)

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire
(thermoplastic screening with continuity conductor, insulated from housing), grey.
Outer \varnothing = max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m.
Standard length for version ST: 5 m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire
(Metal net insulated from housing), white. Outer \varnothing = max. 4.0 mm, bending radius = min. 60 mm,
weight 32 g/m. Standard length for version SH: 2 m, 5 m.

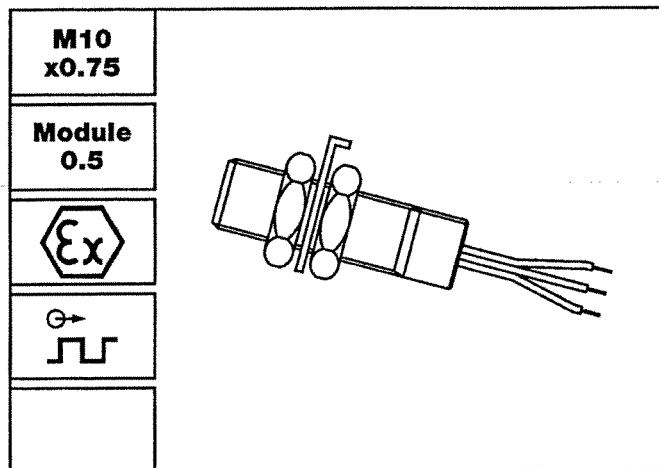
Version MT

Protection hose over PVC cable: Tube 825G-30924 made of profile milled steel plate
with PVC cover, grey. Weather and waterproof, conditionally oil and acid resistant.
Outer \varnothing = 14 mm, bending radius = min. 40 mm, weight 130 g/m.
Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 820A-35732.

DSD 1005 K, P

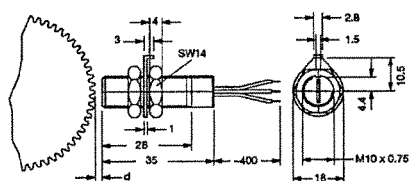


Features

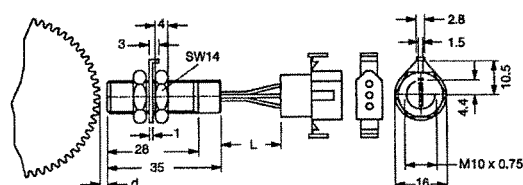
- With amplifier
- Dynamic characteristic
- Available as models FTG 1088.00 Ex and FTG 1088.01 Ex in intrinsically safe class EEx ia II C T5/T6
- Sensor housing must be aligned to the pole wheel

Dimensions

Version K



Version P



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 1005.00 KTV	343Z-03828	Wire	M10x0.75	20	-25...+85	previously FTG 1088.00
DSD 1005.00 KTV Ex	343Z-03772	Wire	M10x0.75	20	-25...(T5)+75,(T6)+60	previously FTG 1088.00 Ex
DSD 1005.00 PTV	343Z-03835	Connector	M10x0.75	23	-25...+85	previously FTG 1088.01
DSD 1005.00 PTV Ex	343Z-03770	Connector	M10x0.75	23	-25...(T5)+75,(T6)+60	previously FTG 1088.01 Ex

Technical data

Supply

Power Supply

Supply voltage: 5 V $\pm 10\%$, max. load 12 V, reverse polarity protection.
Current consumption: max. 16 mA.

Input

Frequency range

5 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel (i.e. Ust37-2), involute gear form preferred. Module ≥ 0.5 ,
min. tooth width 3 mm, side offset with min. tooth width: < 0.2 mm,
eccentricity < 0.2 mm,

Pole wheel-sensor gap with

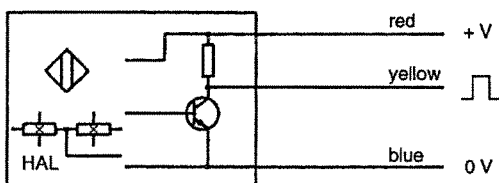
Module 0.5:	0.1...0.4 mm
Module 1.0:	0.1...1.0 mm
\geq Module 2.0:	0.1...1.3 mm

Output

Signal output

Square wave voltage, mark-space approx 1:1, D.C. coupled to the supply, signal-amplitude corresponding to supply voltage. (max. allowed sink current = 25 mA at a saturation voltage < 0.4 V).
The output is connected through a pull-up resistor of 1.8 k Ω to the plus pole of the power supply.

Connections



Mechanical

Protection class

IP68 (head), IP67 (wire connection), IP50 (jack connection).

Vibration immunity

3 g_r in the range 4...100 Hz.

Shock immunity

20 g_r during 11 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Argentan (German silver) CuNi10Zn42Pb DIN 2.0770, front side hermetically sealed,
sensor components moulded in chemical- and age-proof synthetic resin.
Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

343E-63725

Versions

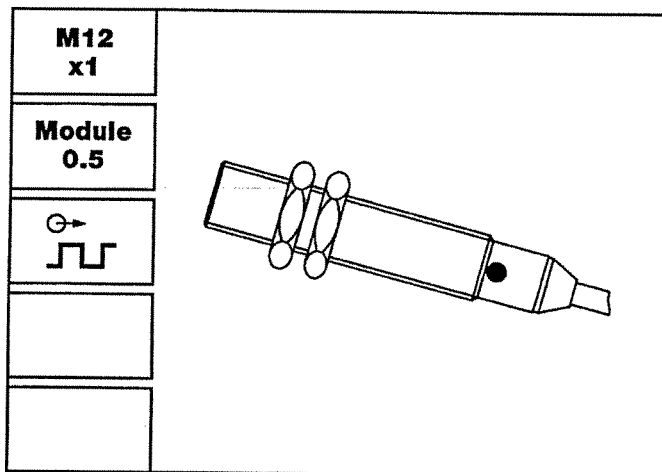
Version K

Wires teflon insulated, length 400 mm, 0.22 mm² (AWG 24).

Version P

Connector, Part nr. 343C-72577.

DSD 1205 A, S, M

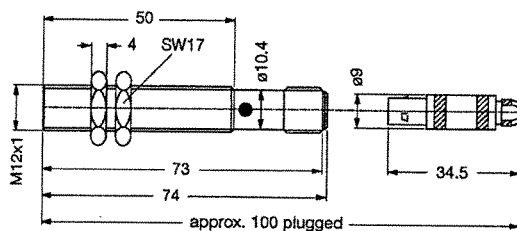


Features

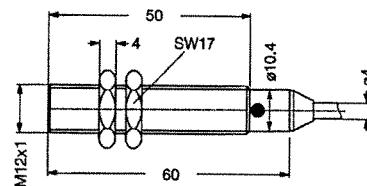
- With amplifier
- Dynamic characteristic
- Lower frequency limit: 5 Hz
- Sensor housing must be aligned to the pole wheel

Dimensions

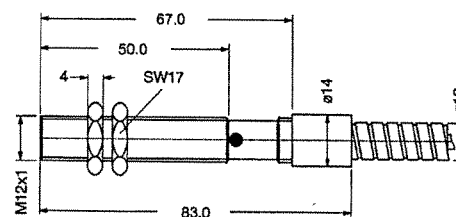
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 1205.22 STV	374Z-03784	Cable 5 m	M12x1	160	-25...+85	Standard
DSD 1205.22 SHV	374Z-03781	Cable 2 m	M12x1	100	-40...+125	Standard
DSD 1205.22 ATV	374Z-04162	Connector	M12x1	35	-25...+85	Standard
DSD 1205.22 AHV	374Z-04172	Connector	M12x1	35	-40...+125	Standard
DSD 1205.22 MTV	374Z-04055	Protective hose 5 m	M12x1	680	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 15 mA (without load).

Input

Frequency range

5 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred. Module ≥ 0.5 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

Pole wheel-sensor gap with

Module 0.5:	0.1...0.3 mm
Module 1.0:	0.1...1.5 mm
\geq Module 2.0:	0.1...2.0 mm

Output

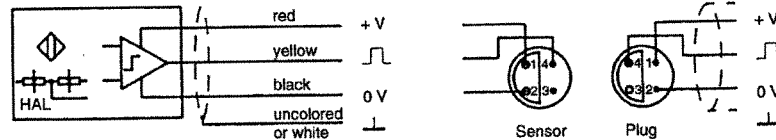
Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,

Output voltage-HI: > (supply voltage - 2.5 V) at $I = 25$ mA,

Output voltage-LO: < 1.5 V at $I = 25$ mA,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_n in the range 5...2000 Hz.

Shock immunity

50 g_n during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin. Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63871, version with integral cable; 374E-63878, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey. Outer \varnothing = max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m. Standard length for version ST: 5 m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from housing), white. Outer \varnothing = max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m. Standard length for version SH: 2 m, 5 m.

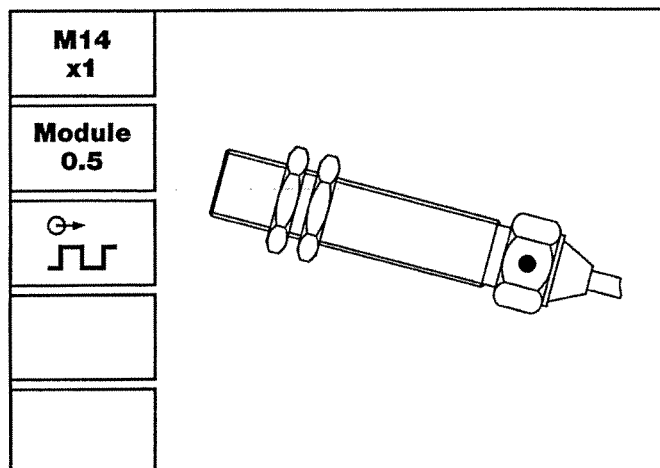
Version MT

Protection hose over PVC cable: Tube 825G-36148 made of profile milled steel plate with PUR cover, blue. Weather and waterproof, conditionally oil and acid resistant. Outer \varnothing = 10 mm, bending radius = min. 32 mm, weight 75 g/m. Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35922; Connection plug: Part nr. 820A-35921.

DSD 1405 A, S, M

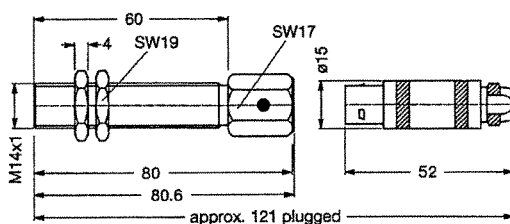


Features

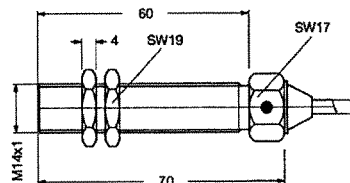
- With amplifier
- Dynamic characteristic
- Lower frequency limit: 5 Hz
- Sensor housing must be aligned to the pole wheel

Dimensions

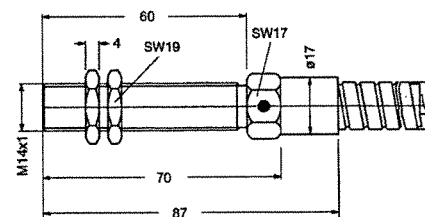
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 1405.22 STV	374Z-04192	Cable 5 m	M14x1	210	-25...+85	Standard
DSD 1405.22 SHV	374Z-04193	Cable 2 m	M14x1	150	-40...+125	Standard
DSD 1405.22 ATV	374Z-04173	Connector	M14x1	90	-25...+85	Standard
DSD 1405.22 AHV	374Z-04174	Connector	M14x1	90	-40...+125	Standard
DSD 1405.22 MTV	374Z-04152	Protective hose 5 m	M14x1	920	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 15 mA (without load).

Input

Frequency range

5 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred. Module ≥ 0.5 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

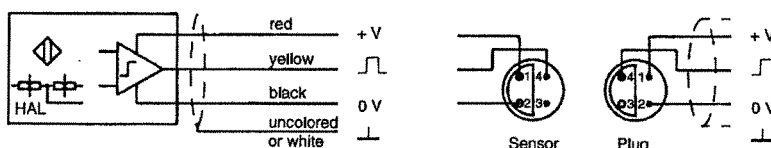
Pole wheel-sensor gap with
Module 0.5: 0.1...0.3 mm
Module 1.0: 0.1...1.5 mm
 \geq Module 2.0: 0.1...2.0 mm

Output

Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,
Output voltage-HI: $>$ (supply voltage - 2.5 V) at $I = 25$ mA,
Output voltage-LO: < 1.5 V at $I = 25$ mA,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_r in the range 5...2000 Hz.

Shock immunity

50 g_r during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin. Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63871, version with integral cable; 374E-63878, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey. Outer \varnothing = max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m. Standard length for version ST: 5 m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from housing), white. Outer \varnothing = max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m. Standard length for version SH: 2 m, 5 m.

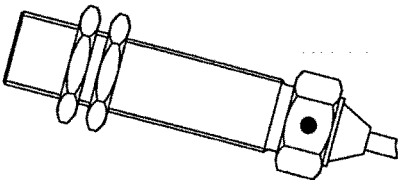

Version MT

Protection hose over PVC cable: Tube 825G-30924 made of profile milled steel plate with PVC cover, grey. Weather and waterproof, conditionally oil and acid resistant. Outer \varnothing = 14 mm, bending radius = min. 40 mm, weight 130 g/m. Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 820A-35732.

DSD 1605 A, S, M

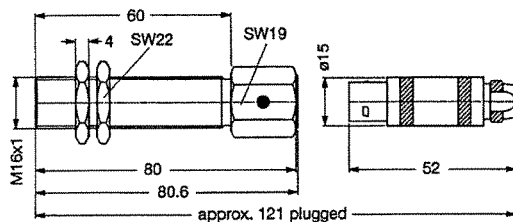
M16 x1	
Module 0.5	
	

Features

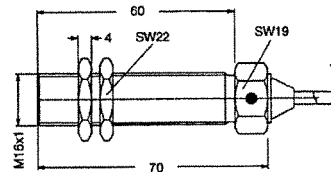
- With amplifier
- Dynamic characteristic
- Lower frequency limit: 5 Hz
- Sensor housing must be aligned to the pole wheel

Dimensions

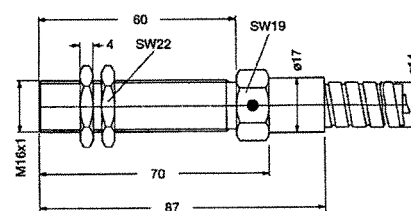
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 1605.22 STV	374Z-04195	Cable 5 m	M16x1	215	-25...+85	Standard
DSD 1605.22 SHV	374Z-04196	Cable 2 m	M16x1	155	-40...+125	Standard
DSD 1605.22 ATV	374Z-04175	Connector	M16x1	95	-25...+85	Standard
DSD 1605.22 AHV	374Z-04176	Connector	M16x1	95	-40...+125	Standard
DSD 1605.22 MTV	374Z-04155	Protective hose 5 m	M16x1	925	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 15 mA (without load).

Input

Frequency range

5 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred. Module ≥ 0.5 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

Pole wheel-sensor gap with

Module 0.5:	0.1...0.3 mm
Module 1.0:	0.1...1.5 mm
\geq Module 2.0:	0.1...2.0 mm

Output

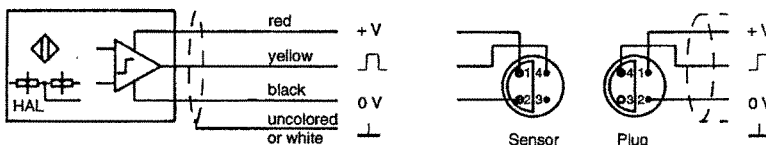
Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage-), max. load 25 mA,

Output voltage-HI: $>$ (supply voltage - 2.5 V) at $I = 25$ mA,

Output voltage-LO: < 1.5 V at $I = 25$ mA,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_r in the range 5...2000 Hz.

Shock immunity

50 g_r during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin. Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63871, version with integral cable; 374E-63878, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey. Outer \varnothing = max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m. Standard length for version ST: 5 m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from housing), white. Outer \varnothing = max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m. Standard length for version SH: 2 m, 5 m.

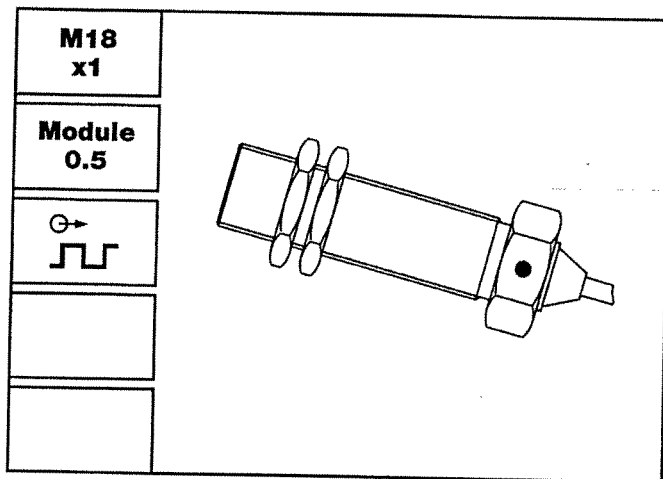
Version MT

Protection hose over PVC cable: Tube 825G-30924 made of profile milled steel plate with PVC cover, grey. Weather and waterproof, conditionally oil and acid resistant. Outer \varnothing = 14 mm, bending radius = min. 40 mm, weight 130 g/m. Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 820A-35732.

DSD 1805 A, S, M

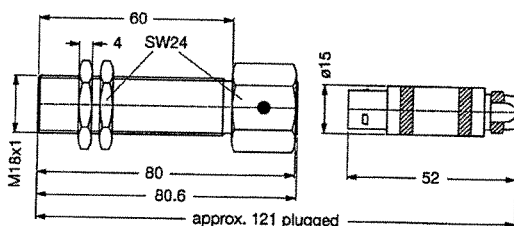


Features

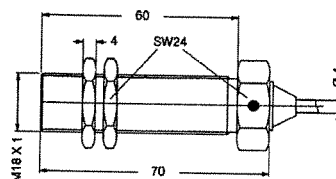
- With amplifier
- Dynamic characteristic
- Lower frequency limit: 5 Hz
- Sensor housing must be aligned to the pole wheel

Dimensions

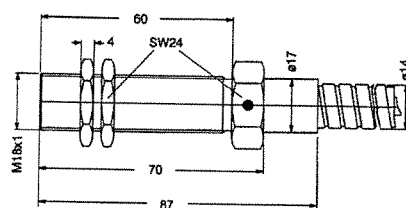
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 1805.22 STV	374Z-04198	Cable 5 m	M18x1	220	-25...+85	Standard
DSD 1805.22 SHV	374Z-04199	Cable 2 m	M18x1	160	-40...+125	Standard
DSD 1805.22 ATV	374Z-04177	Connector	M18x1	100	-25...+85	Standard
DSD 1805.22 AHV	374Z-04178	Connector	M18x1	100	-40...+125	Standard
DSD 1805.22 MTV	374Z-04158	Protective hose 5 m	M18x1	930	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 15 mA (without load).

Input

Frequency range

5 Hz...20 kHz

Noise immunity

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

Pole wheel

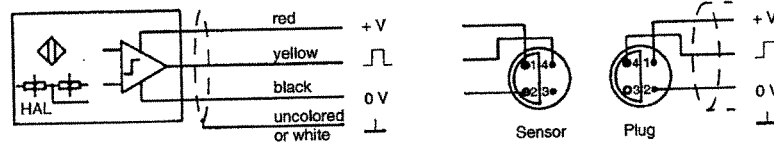
1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).
Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred. Module ≥ 0.5 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.
Pole wheel-sensor gap with
Module 0.5: 0.1...0.3 mm
Module 1.0: 0.1...1.5 mm
 \geq Module 2.0: 0.1...2.0 mm

Output

Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,
Output voltage-HI: $>$ (supply voltage - 2.5 V) at $I = 25$ mA,
Output voltage-LO: < 1.5 V at $I = 25$ mA,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP50 (jack connection).

Vibration immunity

5 g_r in the range 5...2000 Hz.

Shock immunity

50 g_s during 20 ms, half-sine wave.

Operating temperature

Acc. to model overview.

Insulation

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Housing

Stainless steel, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin. Dimensions according to model overview and dimensional drawing.

Weight

Acc. to model overview.

Operating instructions

374E-63871, version with integral cable; 374E-63878, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey. Outer \varnothing = max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m. Standard length for version ST: 5 m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from housing), white. Outer \varnothing = max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m. Standard length for version SH: 2 m, 5 m.

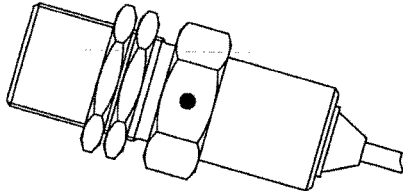

Version MT

Protection hose over PVC cable: Tube 825G-30924 made of profile milled steel plate with PVC cover, grey. Weather and waterproof, conditionally oil and acid resistant. Outer \varnothing = 14 mm, bending radius = min. 40 mm, weight 130 g/m. Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 820A-35732.

DSD 2205 A, S, M

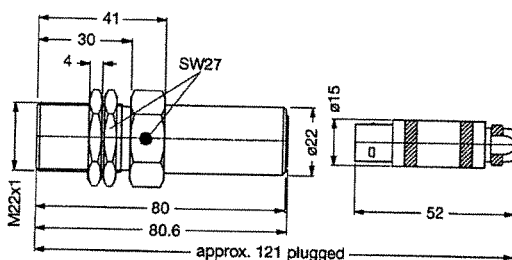
M22 x1	
Module 0.5	
	

Features

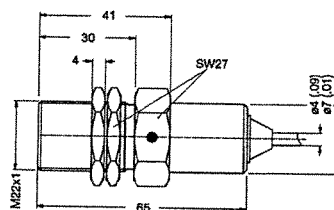
- With amplifier
- Dynamic characteristic
- Lower frequency limit: 5 Hz
- Sensor housing must be aligned to the pole wheel

Dimensions

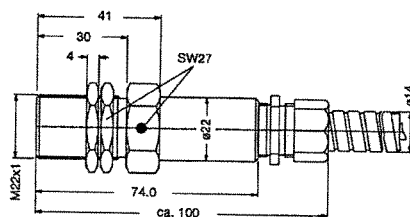
Version A



Version S



Version M



Model overview

Type	Part nr.	Connections	Housing thread	Weight [g]	Operating [°C]	Notes
DSD 2205.22 STV	374Z-04201	Cable 5 m	M22x1	250	-25...+85	Standard
DSD 2205.22 SHV	374Z-04202	Cable 2 m	M22x1	230	-40...+125	Standard
DSD 2205.22 ATV	374Z-04179	Connector	M22x1	130	-25...+85	Standard
DSD 2205.22 AHV	374Z-04180	Connector	M22x1	130	-40...+125	Standard
DSD 2205.22 MTV	374Z-04161	Protective hose 5 m	M22x1	1000	-25...+85	Standard

Technical data

Supply

Power Supply

Supply voltage: 8...30 V D.C., max. superimposed A.C. voltage 25 mVpp, reverse polarity protection.
Current consumption: max. 15 mA (without load).

Input

Frequency range
Noise immunity

5 Hz...20 kHz

Cable shield connected to the supply negative pole. Noise generator between housing and electronics.

1.5 kV/1.5 ms/max. 5 Hz (source resistance 500 Ω),
2.0 kV/HF-bursts (level 4 in accordance with IEC 801-4),
2.5 kV/1 MHz damped resonance (class III in accordance with IEC 255-4).

Pole wheel

Ferromagnetic toothed wheel, i.e. Ust37-2, involute gear form preferred. Module ≥ 0.5 , min. tooth width 6 mm, side offset with min. tooth width: < 0.2 mm, eccentricity < 0.2 mm.

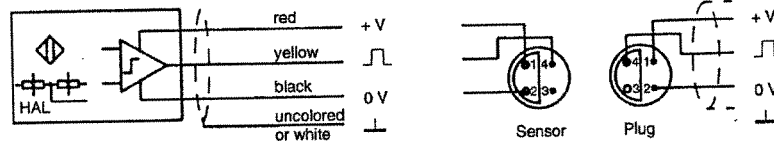
Pole wheel-sensor gap with
Module 0.5: 0.1...0.3 mm
Module 1.0: 0.1...1.5 mm
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Output

Signal output

Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,
Output voltage-HI: $> (\text{supply voltage} - 2.5 \text{ V})$ at $I = 25 \text{ mA}$,
Output voltage-LO: $< 1.5 \text{ V}$ at $I = 25 \text{ mA}$,
short circuit proof with reverse polarity protection.

Connections



Shield to be connected with 0 V of power supply.

Mechanical

Protection class
Vibration immunity
Shock immunity
Operating temperature
Insulation
Housing
Weight
Operating instructions

IP68 (head), IP67 (cable connection), IP50 (jack connection).

5 g_n in the range 5...2000 Hz.

50 g_n during 20 ms, half-sine wave.

Acc. to model overview.

Housing, cable screening and electronics galvanically isolated (500V/50 Hz/1 min).

Stainless steel, front side hermetically sealed, electronic components potted in a chemical- and age-proof synthetic resin. Dimensions according to model overview and dimensional drawing.

Acc. to model overview.

374E-63871, version with integral cable; 374E-63878, version with integral connector.

Versions

Version ST

PVC cable: Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), stranded wire (thermoplastic screening with continuity conductor, insulated from housing), grey.
Outer \varnothing = max. 4.2 mm, bending radius = min. 60 mm, weight 25 g/m.
Standard length for version ST: 5 m.

Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), stranded wire (Metal net insulated from housing), white.
Outer \varnothing = max. 4.0 mm, bending radius = min. 60 mm, weight 32 g/m.
Standard length for version SH: 2 m, 5 m.

Version MT

Protection hose over PVC cable: Tube 825G-30924 made of profile milled steel plate with PVC cover, grey. Weather and waterproof, conditionally oil and acid resistant.
Outer \varnothing = 14 mm, bending radius = min. 40 mm, weight 130 g/m.
Standard length for version MT: 5 m.

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 820A-35732.