

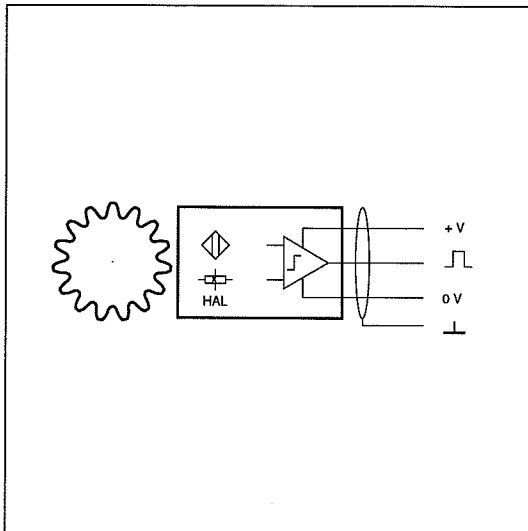


DSF...V

Hall Effect Sensors, with amplifier

(Ferrostat)

IN CHARGE OF SPEED



DSF...V ferrostat sensors are suitable for generating speed dependent signals when used with a pole wheel.

They exhibit dynamic behaviour whereby operation down to 0.05 Hz is guaranteed.

The sensing element is a magnetically biased Hall sensor followed by a short circuit proof amplifier (version V).

FUNCTION

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.

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

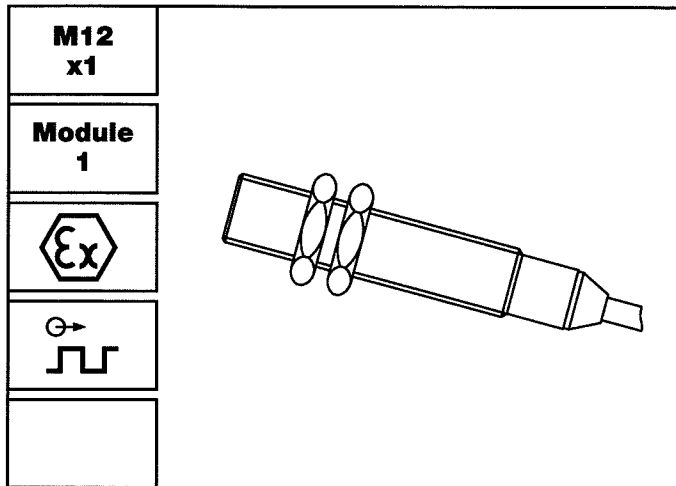
The sensor is mounted with its centre over the centre of the pole wheel. With gear wheels or slots and radial mounting, the sensor is normally fixed over the middle of the wheel. Dependent on the gear width, a degree of axial movement is permissible. The centre of the sensor must however remain a minimum 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

DSF 1210 A, S, M

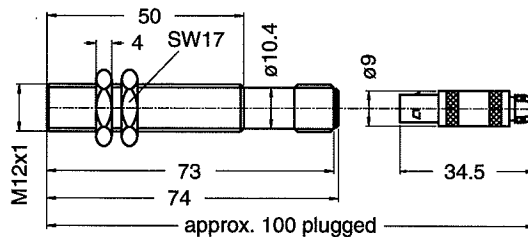


Features

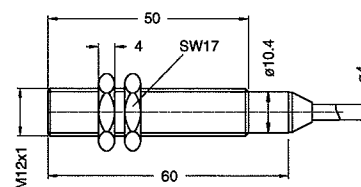
- With amplifier
- Dynamic characteristic
- Lower frequency limit 0.05 Hz
- Available as model DSF 1210.00..V Ex in intrinsically safe class EEx ia IIC T6-T1 (zone 1)
- Available in intrinsically safe class EEx ia I (with exception of types with integral connector) e.g. for the mining industry

Dimensions

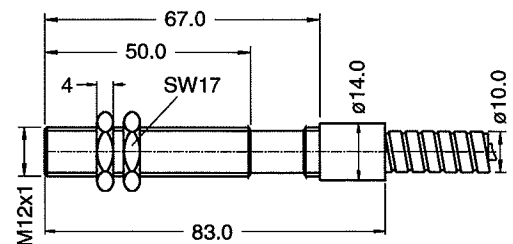
Version A



Version S



Version M



Model overview

Type	Part nr.	Connection	Housing thread	Weight [g]	Operating temperature [°C]
DSF 1210.00 AHV	374Z-03867	Plug	M12x1	35	-40...+125
DSF 1210.00 AHV Ex	374Z-03823	Plug	M12x1	35	certificate of conformity
DSF 1210.00 ATV	374Z-03868	Plug	M12x1	35	-25...+85
DSF 1210.00 MTV	374Z-03970	Protection hose 5m	M12x1	495	-25...+85
DSF 1210.00 SHV	374Z-03869	Wire 2 m	M12x1	100	-40...+125
DSF 1210.00 SHV	374Z-03880	Wire 5 m	M12x1	190	-40...+125
DSF 1210.00 SHV Ex	374Z-03788	Wire 2 m	M12x1	100	certificate of conformity
DSF 1210.00 STV	374Z-03870	Wire 5 m	M12x1	160	-25...+85
DSF 1210.00 STV Ex	374Z-03789	Wire 5 m	M12x1	160	certificate of conformity

Ferrostat Sensor with amplifier

Technical Data

Supply

Power supply

Supply voltage: 10...30 V D.C., (Ex 8...28 V D.C.), max. superimposed A.C. voltage of 25 mVpp, protected against reverse polarity. Current consumption: max. 14 mA (without load).

Input

Frequency range

0.05 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: 0.2...1.0 mm

Module 2: 0.2...2.5 mm

\geq Module 4: 0.2...4.5 mm

Output

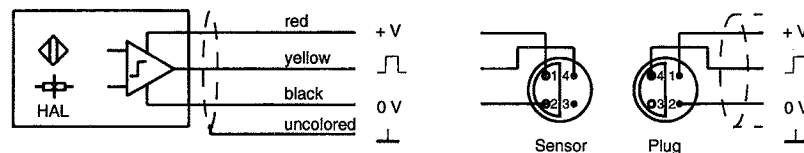
Signal output

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 and protected against reverse polarity.

Connection



Shield to be connected to 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. model overview.

Insulation

Housing, cable shield and electronics galvanically isolated (500 V/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 acc. to model overview and dimensional drawings.

Weight

Acc. model overview.

Operating instruction

374E-63710 version with integral connector, 374E-63709 version with integral cable, 374E-63901 intrinsically safe version.

Versions

Version A

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

Version ST

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

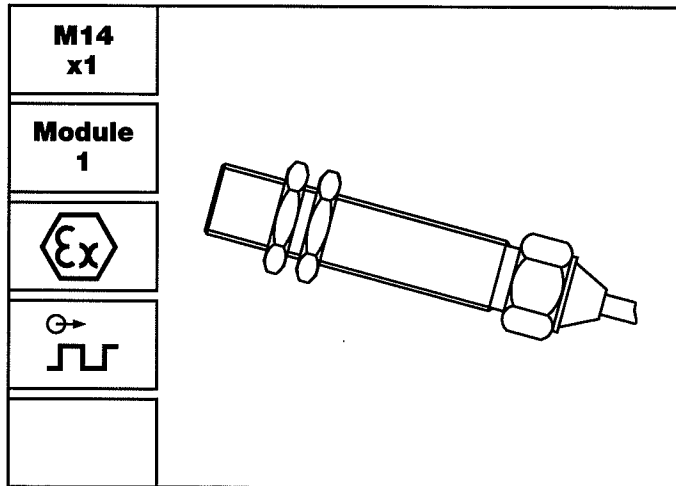
Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), wire stranded (metal net, insulated from the housing), white. Outer \varnothing max. 4.0 mm, bending radius min. 60 mm, weight 32 g/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.

DSF 1410 A, S, M

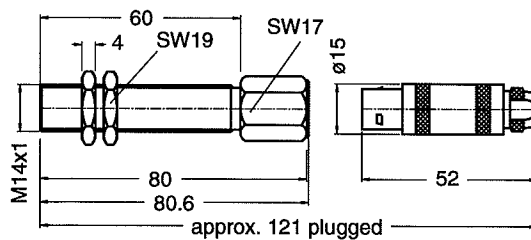


Features

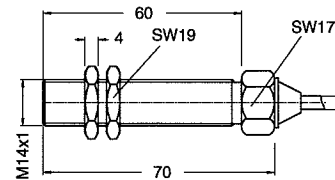
- With amplifier
- Dynamic characteristic
- Lower frequency limit 0.05 Hz
- Available as model DSF 1410.00..V Ex in intrinsically safe class EEx ia IIC T6-T1 (zone 1)
- Available in intrinsically safe class EEx ia I (with exception of types with integral connector) e.g. for the mining industry

Dimensions

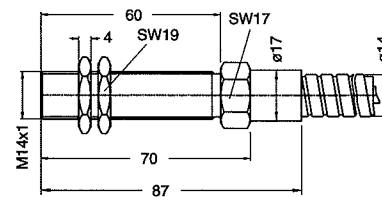
Version A



Version S



Version M



Model overview

Type	Part nr.	Connection	Housing thread	Weight [g]	Operating temperature [°C]	Notes
DSF 1410.00 AHV	374Z-03940	Connector	M14x1	90	-40...+125	—
DSF 1410.00 ATV	374Z-03939	Connector	M14x1	90	-25...+85	—
DSF 1410.00 MTV	374Z-03972	Protection hose 5m	M14x1	835	-25...+85	—
DSF 1410.00 SHV	374Z-03927	Cable 2 m	M14x1	150	-40...+125	—
DSF 1410.00 SHV	374Z-03928	Cable 5 m	M14x1	240	-40...+125	—
DSF 1410.00 STV	374Z-03925	Cable 5 m	M14x1	210	-25...+85	—
DSF 1410.00 AHV Ex	374Z-03994	Connector	M14x1	90	certificate of conformity	—
DSF 1410.00 SHV Ex	374Z-03992	Cable 2 m	M14x1	150	certificate of conformity	—
DSF 1410.00 STV Ex	374Z-03993	Cable 5 m	M14x1	210	certificate of conformity	—

Technical Data

Supply

Power supply

Supply voltage: 10...30 V D.C., (Ex 8...28 V DC), max. superimposed A.C. voltage of 25 mVpp, protected against reverse polarity. Current consumption: max. 14 mA (without load).

Input

Frequency range

0.05 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: 0.2...1.0 mm

Module 2: 0.2...2.5 mm

≥ Module 4: 0.2...4.5 mm

Output

Signal output

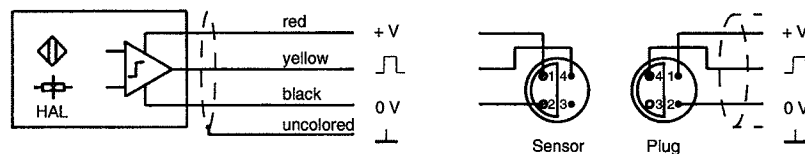
Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,

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 and protected against reverse polarity.

Connection



Shield to be connected to 0 V of power supply.

Mechanical

Protection class

IP68 (head), IP67 (cable connection), IP (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. model overview.

Insulation

Housing, cable shield and electronics galvanically isolated (500 V/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 acc. to model overview and dimensional drawings.

Weight

Acc. model overview.

Operating instruction

374E-63710 version with integral connector, 374E-63709 version with integral cable, 374E-63901 Ex-version.

Versions

Version A

Connection type: Part nr. 820A-35731; Connection plug: Part nr. 829A-35732.

Version ST

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

Version SH

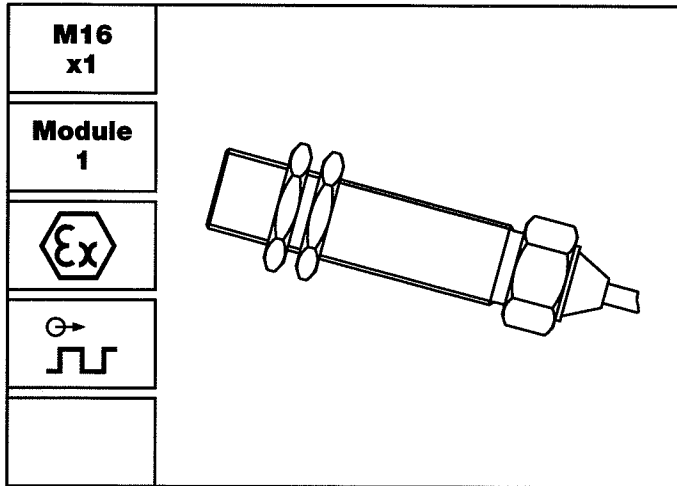
Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), wire stranded (metal net, insulated from the housing), white.

Outer Ø max. 4.0 mm, bending radius min. 60 mm, weight 32 g/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 Ø 14 mm, bending radius min. 40 mm, weight 130 g/m.

DSF 1610 A, S, M

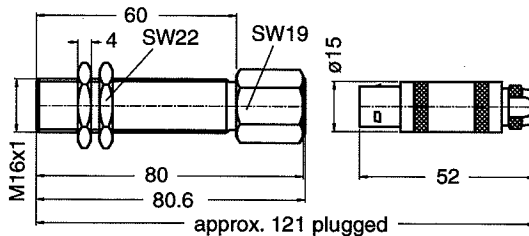


Features

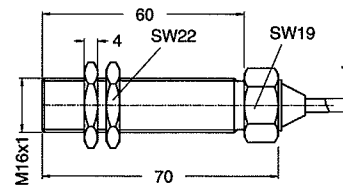
- With amplifier
- Dynamic characteristic
- Lower frequency limit 0.05 Hz
- Available as model DSF 1610.00..V Ex in intrinsically safe class EEx ia IIC T6-T1 (zone 1)
- Available in intrinsically safe class EEx ia I (with exception of types with integral connector) e.g. for the mining industry

Dimensions

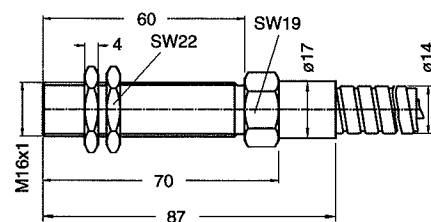
Version A



Version S



Version M



Model overview

Type	Part nr.	Connection	Housing thread	Weight [g]	Operating temperature [°C]
DSF 1610.00 AHV	374Z-03942	Connector	M16x1	95	-40...+125
DSF 1610.00 ATV	374Z-03941	Connector	M16x1	95	-25...+85
DSF 1610.00 MTV	374Z-03974	Protection hose 5 m	M16x1	840	-25...+85
DSF 1610.00 SHV	374Z-03932	Cable 2 m	M16x1	155	-40...+125
DSF 1610.00 SHV	374Z-03933	Cable 5 m	M16x1	245	-40...+125
DSF 1610.00 STV	374Z-03930	Cable 5 m	M16x1	215	-25...+85
DSF 1610.00 AHV Ex	374Z-03998	Connector	M16x1	95	certificate of conformity
DSF 1610.00 SHV Ex	374Z-03996	Cable 2 m	M16x1	155	certificate of conformity
DSF 1610.00 STV Ex	374Z-03997	Cable 5 m	M16x1	215	certificate of conformity

Technical Data

Supply

Power supply

Supply voltage: 10...30 V D.C., (Ex 8...28 V DC), max. superimposed A.C. voltage of 25 mVpp, protected against reverse polarity. Current consumption: max. 14 mA (without load).

Input

Frequency range

0.05 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: 0.2...1.0 mm

Module 2: 0.2...2.5 mm

\geq Module 4: 0.2...4.5 mm

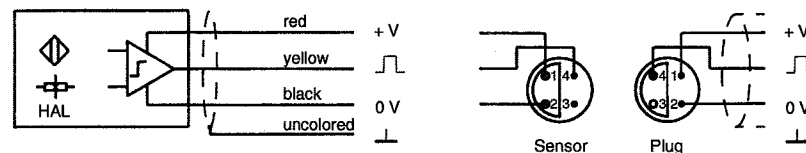
Output

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 and protected against reverse polarity.

Connection



Shield to be connected to 0 V of power supply.

Mechanical

Protection class

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

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. model overview

Insulation

Housing, cable shield and electronics galvanically isolated (500 V/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 acc. to model overview and dimensional drawings.

Weight

Acc. model overview.

Operating instruction

374E-63710 version with integral connector, 374E-63709 version with integral cable, 374E-63901 Ex-Version.

Versions

Version A

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

Version ST

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

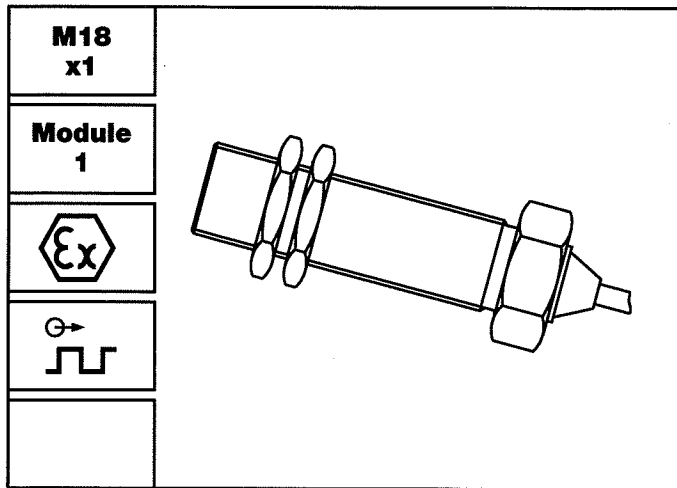
Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), wire stranded (metal net, insulated from the housing), white. Outer \varnothing max. 4.0 mm, bending radius min. 60 mm, weight 32 g/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.

DSF 1810 A, S, M

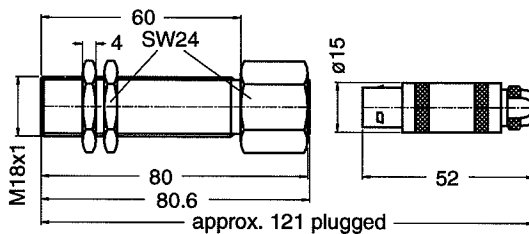


Features

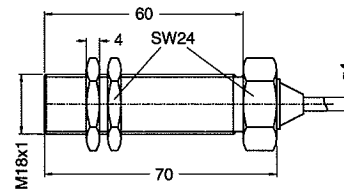
- With amplifier
- Dynamic characteristic
- Lower frequency limit 0.05 Hz
- Available as model DSF 1810.00..V Ex in intrinsically safe class EEx ia IIC T6-T1 (zone 1)
- Available in intrinsically safe class EEx ia I (with exception of types with integral connector) e.g. for the mining industry

Dimensions

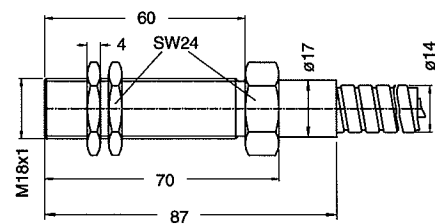
Version A



Version S



Version M



Model overview

Type	Part nr.	Connection	Housing thread	Weight [g]	Operating temperature [°C]
DSF 1810.00 AHV	374Z-03887	Connector	M18x1	100	-40...+125
DSF 1810.00 AHV Ex	374Z-03824	Connector	M18x1	100	certificate of conformity
DSF 1810.00 ATV	374Z-03886	Connector	M18x1	100	-25...+85
DSF 1810.00 MTV	374Z-03976	Protection hose 5 m	M18x1	845	-25...+85
DSF 1810.00 SHV	374Z-03871	Cable 2 m	M18x1	160	-40...+125
DSF 1810.00 SHV	374Z-03882	Cable 5 m	M18x1	250	-40...+125
DSF 1810.00 SHV Ex	374Z-03799	Cable 2 m	M18x1	160	certificate of conformity
DSF 1810.00 STV	374Z-03872	Cable 5 m	M18x1	220	-25...+85
DSF 1810.00 STV Ex	374Z-03798	Cable 5 m	M18x1	220	certificate of conformity

Ferrostat Sensor with amplifier

Technical Data

Supply

Power supply

Supply voltage: 10...30 V D.C., (Ex 8...28 V D.C.), max. superimposed A.C. voltage of 25 mVpp, protected against reverse polarity. Current consumption: max. 14 mA (without load).

Input

Frequency range

0.05 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: 0.2...1.0 mm

Module 2: 0.2...2.5 mm

\geq Module 4: 0.2...4.5 mm

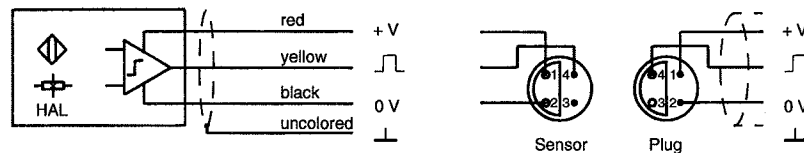
Output

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 and protected against reverse polarity.

Connection



Shield to be connected to 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. model overview.

Insulation

Housing, cable shield and electronics galvanically isolated (500 V/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 acc. to model overview and dimensional drawings.

Weight

Acc. model overview.

Operating instruction

374E-63710 version with integral connector, 374E-63709 version with integral cable, 374E-63901 intrinsically safe version.

Versions

Version A

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

Version ST

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

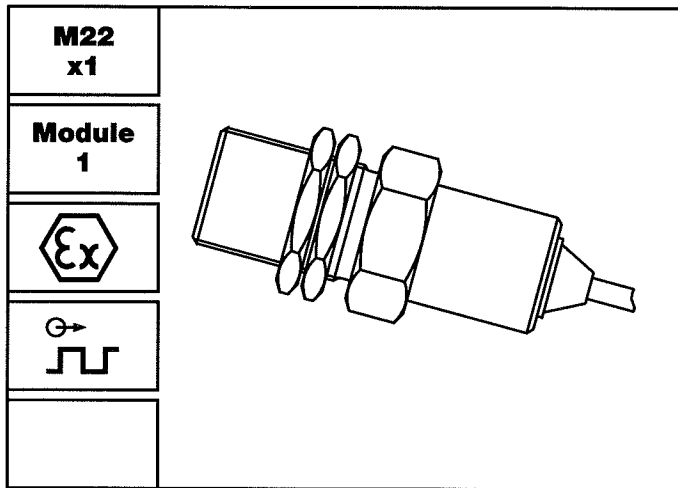
Version SH

Teflon cable: Part nr. 824L-35053, 4wire, 4 x 0.24 mm² (AWG 24), wire stranded (metal net, insulated from the housing), white. Outer \varnothing max. 4.0 mm, bending radius min. 60 mm, weight 32 g/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.

DSF 2210 A, S, M

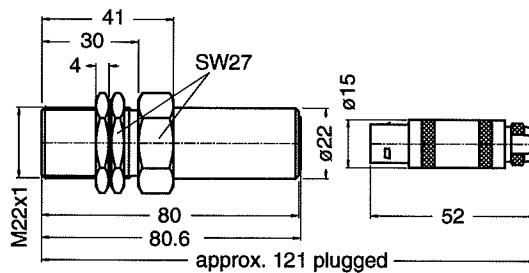


Features

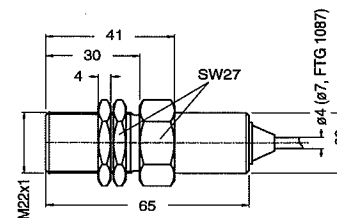
- With amplifier
- Dynamic characteristic
- Lower frequency limit 0.05 Hz
- Available as model DSF 2210.00..V Ex in intrinsically safe class EEx ia IIC T6-T1 (zone 1)
- Available in intrinsically safe class EEx ia I (with exception of types with integral connector) e.g. for the mining industry

Dimensions

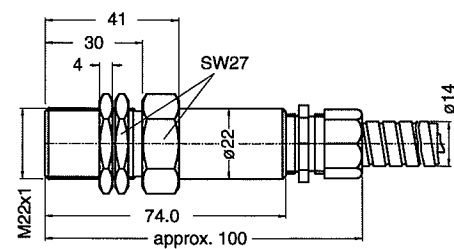
Version A



Version S



Version M



Model overview

Type	Part nr.	Connection	Housing thread	Weight [g]	Operating temperature [°C]
DSF 2210.00 AHV	374Z-03873	Connector	M22x1	130	-40...+125
DSF 2210.00 AHV Ex	374Z-03825	Connector	M22x1	130	certificate of conformity
DSF 2210.00 ATV	374Z-03888	Connector	M22x1	130	-25...+85
DSF 2210.00 MTV	374Z-03978	Protection hose 5 m	M22x1	870	-25...+85
DSF 2210.00 SHV	374Z-03874	Cable 2 m	M22x1	190	-40...+125
DSF 2210.00 SHV	374Z-03877	Cable 5 m	M22x1	280	-40...+125
DSF 2210.00 SHV Ex	374Z-03797	Cable 2 m	M22x1	190	certificate of conformity
DSF 2210.00 STV	374Z-03875	Cable 5 m	M22x1	250	-25...+85
DSF 2210.00 STV Ex	374Z-03796	Cable 5 m	M22x1	250	certificate of conformity
DSF 2210.87 STV	374Z-03853	Cable 5 m	M22x1	500	-25...+85 FTG 1087.00 S
DSF 2210.87 STV Ex	374Z-03826	Cable 5 m	M22x1	500	certificate of conformity FTG 1087.00 S Ex

Technical Data

Supply

Power supply **Supply voltage:** 10...30 V D.C., (Ex 8...28 V D.C.), max. superimposed A.C. voltage of 25 mVpp, protected against reverse polarity. **Current consumption:** max. 14 mA (without load).

Input

Frequency range 0.05 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

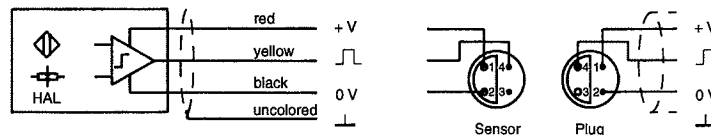
Module 1:	0.2...1.0 mm
Module 2:	0.2...2.5 mm
≥ Module 4:	0.2...4.5 mm

Output

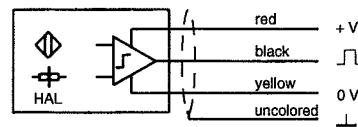
Signal output Square wave signals from push-pull stage, D.C. coupled to the supply (negative pole = reference voltage), max. load 25 mA,
Output voltage-HI: > (supply voltage - 2.5 V) at I = 25 mA, **Output voltage-LO:** < 1.5 V at I = 25 mA, short circuit proof and protected against reverse polarity.

Connection

DSF



FTG 1087



Shield to be connected to 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. model overview.
 Insulation Housing, cable shield and electronics galvanically isolated (500 V/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 acc. to model overview and dimensional drawings.
 Weight Acc. model overview.
 Operating instruction 374E-63710 version with integral connector, 374E-63709 version with integral cable, 374E-63901 intrinsically safe version.

Versions

Version A **Connection type:** Part nr. 820A-35731; **Connection plug:** Part nr. 820A-35732.
 Version ST **PVC cable:** Part nr. 824L-35665, 3wire, 3 x 0.22 mm² (AWG 24), wire stranded (thermoplastic screening with continuity conductor, insulated from the housing), grey, Outer Ø 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), wire stranded (metal net, insulated from the housing), white. Outer Ø max. 4.0 mm, bending radius min. 60 mm, weight 32 g/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 Ø 14 mm, Bending radius min. 40 mm, weight 130 g/m.
 FTG 1087 **PVC cable:** Part nr. 824L-31081, 3wire, 3 x 0.75 mm², 5 m long, wire stranded (metal net, insulated from the housing), grey. Outer Ø max. 7.4 mm, bending radius min. 110 mm, weight 80 g/m.