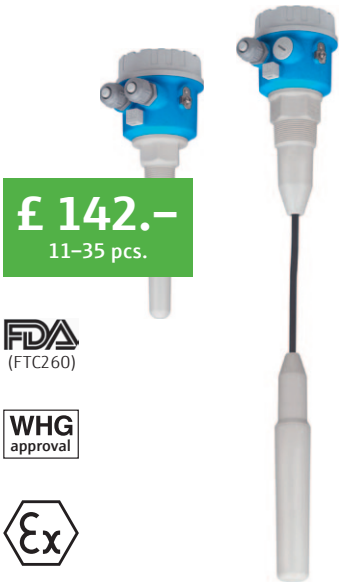
Capacitive point level switch for bulk solids

Minicap FTC260 / FTC262



£ 142.–
11–35 pcs.

FDA (FTC260)

WHG approval

Ex

Complete product information:
www.e-direct.endress.com/ftc26x

- No calibration required
- Active buildup compensation
- Maintenance-free
- Easily shortened rope version

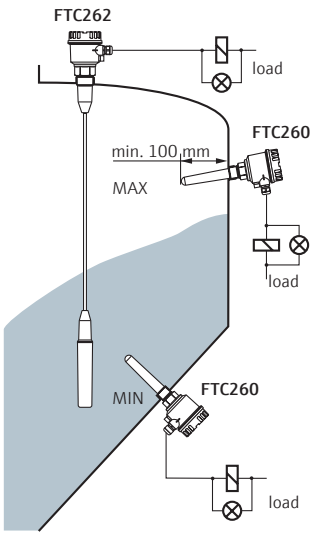
Specs at a glance:

- **Product:**
  Bulk solids
- **Grain size:**
  Diameter ≤30 mm (1.18″)
- **Process pressure:**
  −1 to +25 bar
  (−14.5 to +363 psi)
- **Product dielectric constant:**
  ε_r ≥1.6
- **Product temperature:**
  FTC260: −40 to +120 °C
  (−40 to +248°F)
  FTC262/Ex: −40 to +70 °C
  (−40 to +158°F)
- **Probe length:**
  Rod/FTC260: 140 mm (5.51″)
  Rope/FTC262:
  1.5; 2.5 and 6 m
  (4.9; 8.2 and 19.69 ft)

Application The Minicap is suitable for the level detection of powdery and fine-grain bulk solids, such as grain, flour, powdered milk, mixed feed, cement, chalk or gypsum and is suitable for use in dust explosive areas (ATEX II 1/3 D). The Minicap has two output options:
Relay output (SPDT) or
PNP output

Function The Minicap is an electronic switch. When the limit is exceeded or the load falls below the limit, a switching signal is output. A switch housing or signal output device (e.g. lights, horns, programmable logic sequencer, stored program control, etc.) can be connected to the Minicap. It has an in-built switch-over facility for minimum/ maximum safety. It detects the formation of deposits on the probe, and compensates for the effects of this so that the switching point is maintained. The Minicap comes with factory settings. Other sensitivity adjustments can be made on the housing.

Application Example



Level detection in silos with bulk goods. The silos can be made of various materials (e.g. metal, plastic, concrete), as these do not affect measurement.
The filling stream should not be directed onto the probe.

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People for Process Automation

Technical data FTC260

Output	
Output signal	**DC-PNP:** I_{max} 200 mA, secure against overload and shorting, residual voltage at transistor at I_{max} <2.9 V **AC/DC-SPDT:** AC: I_{max} = 4 A, I_{min} = 1 mA, U_{min} = 6 V, U_{max} = 253 V, P_{max} = 1000 VA DC: I_{max} 4 A up to 30 V, I_{max} 0.2 A up to 253 V
Malfunction signal	**DC-PNP:** <100 µA **AC/DC-SPDT:** relay de-energised
Switching delay	0.5 s upon release/covering

Power supply	
Supply voltage	**DC-PNP:** 10.8 to 45 V DC, short pulse up to 55 V DC, current input 30 mA (max.), reverse polarity protection **AC/DC-SPDT (relay contact):** 20 to 253 V AC or 20 to 55 V DC, max. current input: 130 mA
Terminal compartment	Stranded wires max. 1.5 mm² in end sleeves, Electric wire max. 2.5 mm²

Accuracy	
Long-term drift	Horizontal ±3 mm (±0.12"), vertical ±6 mm (±0.24")
Hysteresis	Horizontal 4 mm (0.16"), vertical 7 mm (0.28")
Switchpoint	Horizontal at centre of probe −5 mm (−0.2"), vertical 40 mm (1.58") above probe tip

Operating conditions	
Ambient temperature	−40 to +80 °C (−40 to +176°F) (to +60 °C/140 °F Dust Ex)
Climate class	As per EN 60068 part 2-38
Protection system	IP 66
EMC	Interference Emission to EN 61326, Electrical Equipment Class B; Interference Immunity to EN 61326, Annex A (Industrial) and NAMUR Recommendation NE 21 (EMC)
Process temperature	−40 to +130 °C (−40 to +266 °F) (to +80 °C/176 °F Dust Ex)
Process pressure	−1.0 to +25 bar (−14 to +363 psi)

Material	
Wetted parts	Probe: PPS GF40; FDA: FCN No. 000040

General	
Medium	Bulk solids with grain size up to 30 mm (1.18"), relative dielectric constant ε_r ≥1.6
Flexural strength	1400 N (at tip of probe)
Process connection	R1 DIN 2999/ISO 7
Adapter	Inner thread R1 DIN 2999 ISO 7: for R1½ DIN 2999/ISO 7 for G1½ DIN ISO 228

Approvals	
Ex approval	ATEX II 1/3 D
WHG approval	Overspill protection to §19 WHG (Germany)

Sensor material is FDA registered

Technical data FTC262

Output	
Output signal	**DC-PNP:** I_{max} 200 mA, secure against overload and shorting, residual voltage at transistor at I_{max} <2.9 V **AC/DC-SPDT:** AC: I_{max} = 4 A, I_{min} = 1 mA, U_{min} = 6 V, U_{max} = 253 V, P_{max} = 1000 VA DC: I_{max} 4 A up to 30 V, I_{max} 0.2 A up to 253 V
Malfunction signal	**DC-PNP:** <100 µA **AC/DC-SPDT:** relay de-energised
Switching delay	0.8 s upon release/covering

Power supply	
Supply voltage	**DC-PNP:** 10.8 to 45 V DC, short pulse up to 55 V DC, current input 30 mA (max.), reverse polarity protection **AC/DC-SPDT (relay contact):** 20 to 253 V AC or 20 to 55 V DC, max. current input: 130 mA
Terminal compartment	Stranded wires max. 1.5 mm² in end sleeves, Electric wire max. 2.5 mm²

Accuracy	
Longterm drift	Vertical ±6 mm (0.24")
Hysteresis	Vertical 5 mm (0.2")
Switch point	Vertical 35 mm (1.38") above probe tip

Operating conditions	
Process temperature	−40 to +80 °C (−40 to +176 °F)
Process pressure	−1.0 to +6 bar (−14.5 to +87 psi)
Ambient temperature	−40 to +80 °C (−40 to +176°F) (to +60 °C/140 °F Dust Ex)
Climate class	As per EN 60068 part 2-38
Protection system	IP 66
EMC	Interference Emission to EN 61326, Electrical Equipment Class B; Interference Immunity to EN 61326, Annex A (Industrial) and NAMUR Recommendation NE 21 (EMC)

Material	
Wetted parts	– Probe: PPS GF40; FDA: FCN No. 000040 – Probe rope: PE-HD – Probe rope seal: VMQ; FDA: 21 CFR 177.2600

General	
Medium	Bulk solids, grain size up to 30 mm (≥1.18"), relative dielectric constant ε_r ≥1.6
Tensile strength	Max. 3000 N up to 40 °C (104 °F)
Process connection	R1½ DIN 2999/ISO 7
Length reduction	Shortening kit

Approvals	
Ex approval	ATEX II 1/3 D

Applications

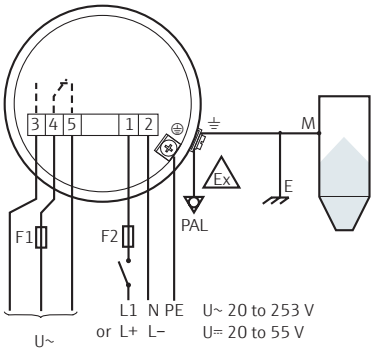
Examples	ρ in g/l (approx.)	ε_r (approx.)	Function
Grain, seed, legumes and their products			
Rice	770	3.0	yes
Cornstarch (packed)	680	2.6	yes
Flour (wheat)	580	2.4	yes
Corn grist	500	2.1	yes
Sunflower seeds	380	1.9	yes
Noodles	370	1.9	yes
Bran (wheat)	250	1.7	yes
Popcorn	30	1.1	no
Minerals, inorganic materials			
Cement	1050	2.2	yes
Plaster	730	1.8	yes
Chalk (packed)	540	1.6	(yes)
Chalk (loose)	360	1.4	no
Plastics			
ABS granulate	630	1.7	yes
PA granulate	620	1.7	yes
PE granulate	560	1.5	no
PVC powder	550	1.4	no
PU dust	80	1.1	no

Grey background:
Application limits of Minicap exceeded.

In general: If the dielectric constant of the solid is not known, then the density of the solid is a deciding factor. Under normal conditions the Minicap functions in foodstuffs with a density of 250 g/l and above or in plastic or mineral materials with a density of 600 g/l and above.

Electrical connection

AC/DC-SPDT

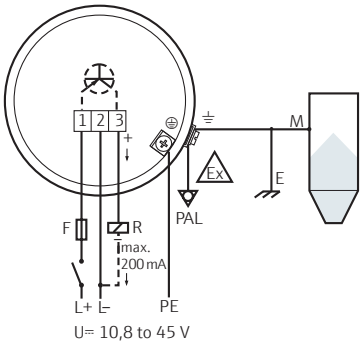


U~
max. 253 V / 4 A
max. 1000 VA, cos φ = 1

U=
max. 30 V / 4 A
max. 253 V / 0,2 A

Minicap FTC260/262 with AC or DC connection and relay output (SPDT)
F1: fine-wire fuse for protection of relay contact depending on the connected load
F2: fine-wire fuse, 500 mA
M: earth connection to silo or to metal parts of silo
E: earthing

DC-PNP

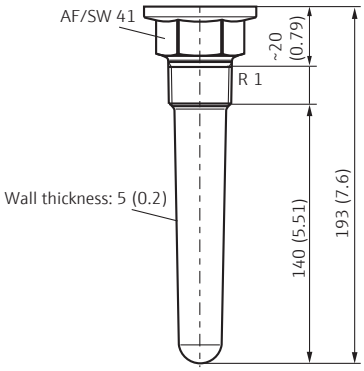


Minicap FTC260/262 with PNP DC connection:
F: fine-wire fuse 500 mA
R: connected load, e.g. stored programme control, programmable logic sequencer, relay
M: earth connection to silo or to metal parts of silo
E: earth

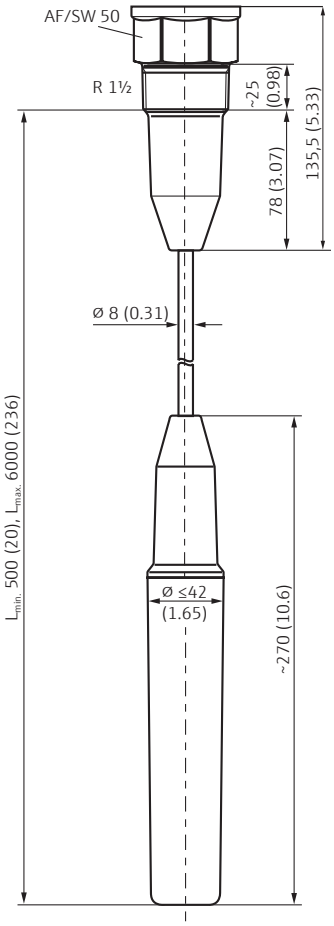
- The Minicap system is protected against reverse polarity.
- If the connections are reversed, then the green light goes out.
- No grounding lines (PE) or potential matching lines (PAL) are required with FTC260.
- The PAL line has to be connected according to local Ex-guidelines

Dimensions in mm (inches)

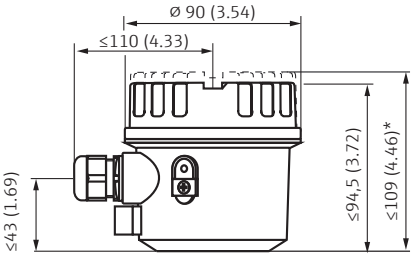
Minicap FTC260



Minicap FTC262

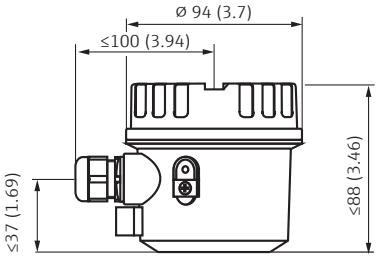


Aluminum housing, IP66

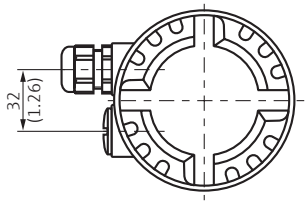


* Height for cover with sight glass

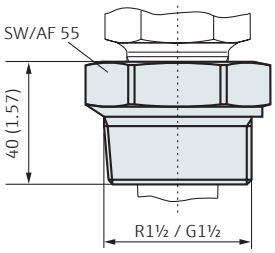
Polyester PBT-FR housing, IP66



Top view, FTC260 / FTC262



Adapter for FTC260



Installation according to instruction manual.

Price table

Minicap FTC260 (Rod version)			Order no.	Price/pcs. in £		
Length	Electronics	Version		1 to 3	4 to 10	11 to 35
140 mm (5.51")	DC-PNP	Non-Ex	FTC260-AA2D1	161.–	150.–	142.–
		Ex	FTC260-BA2J1	219.–	203.–	192.–
	Universal relay	Non-Ex	FTC260-AA4D1	182.–	169.–	160.–
		Ex	FTC260-BA4J1	239.–	222.–	211.–

Minicap FTC262 (Rope version)			Order no.	Price/pcs. in £		
Length	Electronics	Version		1 to 3	4 to 10	11 to 35
1500 mm (59.06")	DC-PNP	Non-Ex	FTC262-AA32D1	283.–	263.–	249.–
		Ex	FTC262-BA32J1	339.–	315.–	298.–
	Universal relay	Non-Ex	FTC262-AA34D1	303.–	282.–	267.–
		Ex	FTC262-BA34J1	359.–	334.–	316.–
2500 mm (98.43")	DC-PNP	Non-Ex	FTC262-AA42D1	293.–	272.–	258.–
		Ex	FTC262-BA42J1	348.–	324.–	306.–
	Universal relay	Non-Ex	FTC262-AA44D1	313.–	291.–	275.–
		Ex	FTC262-BA44J1	368.–	343.–	324.–
6000 mm (236.22")	DC-PNP	Non-Ex	FTC262-AA62D1	323.–	300.–	284.–
		Ex	FTC262-BA62J1	379.–	352.–	333.–
	Universal relay	Non-Ex	FTC262-AA64D1	343.–	319.–	302.–
		Ex	FTC262-BA64J1	399.–	371.–	351.–

Accessories		Order no.	Price/pcs. in £
Transparent cover (not for dust-Ex)		943 201-1001	28.99
Only for FTC260	Adapter for R 1½	943 215-1001	9.69
	Adapter for G 1½	943 215-1021	9.69
Only for FTC262	Shortening kit for ropes	52005918	22.21

Prices are valid for the UK until 30.09.2017 in £ per unit. Net excluding cost of packaging and despatch.
Delivery according to our Conditions of Sale – please check www.e-direct.endress.com for exact delivery times.

Complete product information:
www.e-direct.endress.com/ftc26x

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