



Level



Pressure



Flow



Temperature



Liquid Analysis



Registration



Systems Components



Services



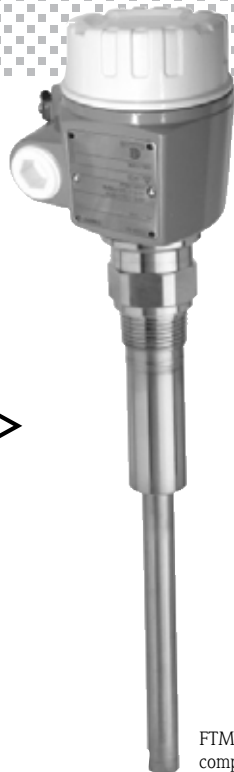
Solutions

Robust vibration limit switch for bulk solids

Soliphant T FTM20

E-direct

www.e-direct.us



FTM20
compact design

- No calibration: easy start-up
- No seize with coarse-grained material
- No moving parts
- Sensor material 316L
- FM or CSA DIP approval

Application

Soliphant T is a robust level limit switch for silos with fine-grained or coarse-grained, non-fluidized bulk solids and a bulk solids weight of $\geq 12.5 \text{ lb/ft}^3$ (200 g/l). The various designs means the device has a wide range of applications. Certificates are also available for use in dust ignition hazard areas.

Measurement principle

A piezoelectric drive excites the vibrating rod of Soliphant T FTM20 to its resonant frequency. If medium covers the vibrating rod, the rod's vibrating amplitude changes. Soliphant's electronics compare the actual amplitude with a target value and indicates whether the vibrating rod is vibrating freely or whether it is covered by medium.

Control systems, switching units, signalling systems (e.g. lamps, horns, DCS, PLC, etc.) can be directly connected. Minimum/maximum quiescent current safety can be switched at electronic insert.

Product: non-fluidized bulk solids	Probe length: compact design: 8.82 inches; with optional extension rod
Product density: $\geq 12.5 \text{ lb/ft}^3$ (200 g/l), not fluidized	
Process pressure: -14.5 to +326 psi	Product temperature: -40 to +302 °F

Soliphant T FTM20

Technical data

Output parameters

- Fail-safe mode Minimum/maximum quiescent current
- Signal on alarm Output closed
- Switching delay 0.5 s when the sensor is covered, 1 s when the sensor is exposed

Accuracy

- Reference operating conditions Temperature 73°F (23°C); medium ABS granules; grain size 0.08" to 0.14" (2 to 3.5 mm); atmospheric pressure; sensor installation: vertical from above or below; horizontal from the side
- Measuring frequency 700 to 800 Hz
- Measured error max. ≤ 0.20 " (5 mm)
- Repeatability < 0.04 " (1 mm)
- Startup setting time 3 s

Ambient conditions

- Ambient temperature -40 to +158°F (-40 to +70°C)
- Storage temperature -40 to +185°F (-40 to +85°C)
- Climate class Tropicalized as per DIN IEC 68 part 2-38
- Degree of protection NEMA 4X
- Electrical safety IEC 61010, CSA 1010.1-92, FM3600
- Vibration resistance DIN 60068-2-27/IEC 68-2-27; shock 50 g; vibration 0.05 g²/Hz
- EMC Interference emission to EN 61326, Electrical Equipment Class B; Interference immunity EN 61326 Annex A (Industrial)

Process conditions

- Density ≥ 12.5 lb/ft³ (200 g/l), not fluidized
- Process pressure -14.5 to 362 psi (-1 to +25 bar)
- Process temperature -40 to +302°F (-40 to +150°C)

Materials in contact with medium

- Sensor 316L Stainless Steel
- Process connection 1 1/4", 1 1/2" (316L) NPT
- Housing Aluminum

Electrical connection

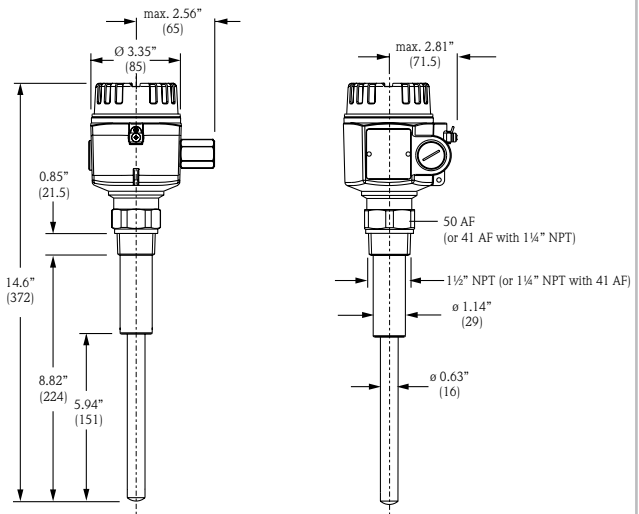
- Cable specification Use a standard commercial cable 18 AWG (2.5 mm²)
- Cable entries 3/4" NPT

Approvals

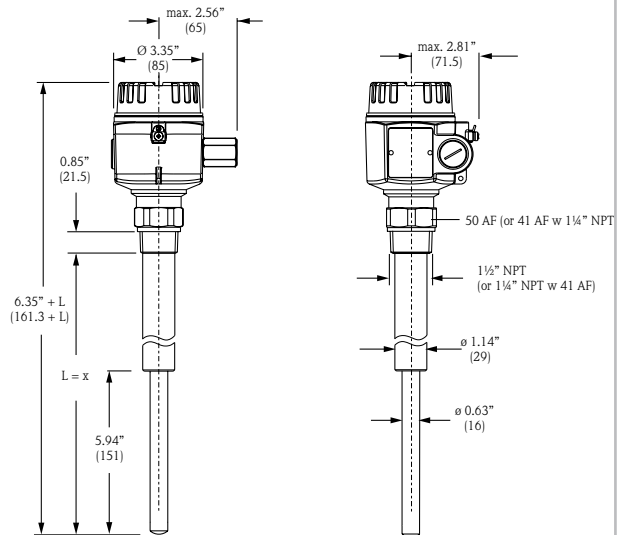
- FM DIP and CSA DIP, Class II, III; Div. 1 and 2, Group E-G optional
- CSA GP/CSA CUS (to UL61010-1, 2nd)

Dimensions in inches (mm)

FTM20 compact version



FTM21 pipe extension



Note: Extension units are available for shipment with longer lead times. Consult factory for pricing and availability.

Soliphant T FTM20

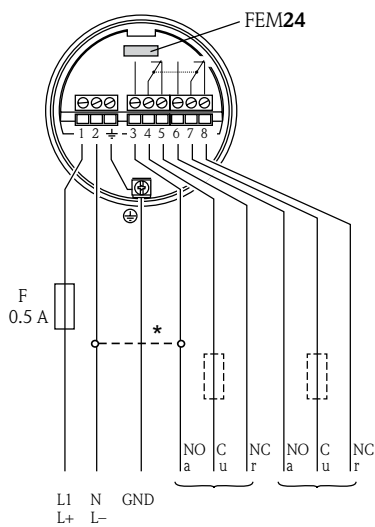
Technical data

Electronic insert FEM24 (AC/DC with relay output)

Universal current connection with relay output

- Power supply 19 to 253 VAC 50/60 Hz
 19 to 55 VDC
- Power consumption max. 1.3 VA
- Reverse polarity protection
- Output Loads switched via 2 floating change-over contacts (DPDT)
 I~ max. 6 A, U~ max. 253 V;
 P~ max. 1500 VA, $\cos \varphi = 1$
 P~ max. 750 VA, $\cos \varphi > 0.7$
 I- max. 6 A to 30 V
 I- max. 0.2 A to 125 V

Both relay contacts switch simultaneously.

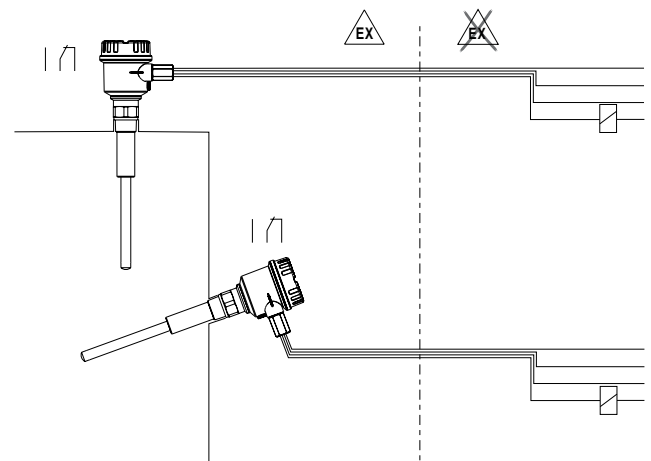


* When jumpered, the relay output works with NPN logic.

Measuring system

Thus, the entire measuring system only consists of:

- Soliphant T FTM20 or FTM21 with FEM24 electronic insert
- the connected control systems, switching units, signalling systems (e. g. lamps, horns, DCS, PLC, etc.)



Soliphant T FTM20

Product	Version	Order no.	Price/piece in \$			we hereby order:	total price:
			1 to 5	6 to 15	16 to 35		
FTM20	Compact design/standard						
	AC/DC/relay, aluminum housing, 1¼" process conn.	FTM20-AM46A	\$464.00	\$418.00	\$376.00	pcs	\$
	AC/DC/relay, aluminum housing, 1½" process conn.	FTM20-AN46A	\$464.00	\$418.00	\$376.00	pcs	\$
	AC/DC/relay, aluminum housing, CSA GP, 1¼" process conn.	FTM20-CM46A	\$488.50	\$440.00	\$396.00	pcs	\$
	AC/DC/relay, aluminum housing, CSA GP, 1½" process conn.	FTM20-CN46A	\$488.50	\$440.00	\$396.00	pcs	\$
	Compact design/Ex version						
	AC/DC/relay, aluminum housing, FM/DIP, 1¼" process conn.	FTM20-DM46A	\$586.00	\$528.00	\$475.00	pcs	\$
AC/DC/relay, aluminum housing, FM/DIP, 1½" process conn.	FTM20-DN46A	\$586.00	\$528.00	\$475.00	pcs	\$	

FTM21	With extension/standard – NOTE: Units are not stocked						
	AC/DC/relay, aluminum housing, 1¼" process conn.	FTM21-AM846A	Consult factory			pcs	\$
	AC/DC/relay, aluminum housing, 1½" process conn.	FTM21-AN846A	Consult factory			pcs	\$
	AC/DC/relay, aluminum housing, CSA GP, 1¼" process conn.	FTM21-CM846A	Consult factory			pcs	\$
	AC/DC/relay, aluminum housing, CSA GP, 1½" process conn.	FTM21-CN846A	Consult factory			pcs	\$
	With extension/Ex version – NOTE: Units are not stocked						
	AC/DC/relay, aluminum housing, FM/DIP, 1¼" process conn.	FTM21-DM846A	Consult factory			pcs	\$
AC/DC/relay, aluminum housing, FM/DIP, 1½" process conn.	FTM21-DN846A	Consult factory			pcs	\$	

Net excluding cost of shipping and taxes.

Acceptance per our Standard Terms and Conditions (find at www.e-direct.us).

Total price:

FOB Greenwood, IN; shipped pre-paid; shipping charges and applicable taxes added to invoice.

\$_____

E-direct catalog (free)

Shipping method

Ground

Priority One Day

Priority Two Day



E-direct
Endress+Hauser, Inc.
2350 Endress Place
Greenwood, IN 46143

(For customers in the USA only)

Online Shop www.e-direct.us

Order: by phone **888-EH DIRECT**
(343-4732)

by fax **800-321-7754**

For special requests, e-mail us: e-direct@us.endress.com

Warranty

Should an instrument fail during the 1 year warranty period, a replacement unit will be provided.

Delivery

Shipment from receipt of order for quantities 1–3 within 2 business days.

Endress+Hauser

People for Process Automation