

Application

The Coperion K-Tron Smart Flow Meter is used in industries that need reliable metering, registering or feeding of bulk materials. For example: plastics, chemicals, animal feed, cement, coal, glass, aluminum, grain, etc. Particle size 0.02 mm up to 10 mm. Flow characteristics: very good to good. Angle of repose: smaller or equal to 40 degrees, measured from the horizontal line. The bulk material can be granules, chips or fibers. Application examples: material flow control within a production line, measuring filling or discharge quantities, materials management and inventory management.

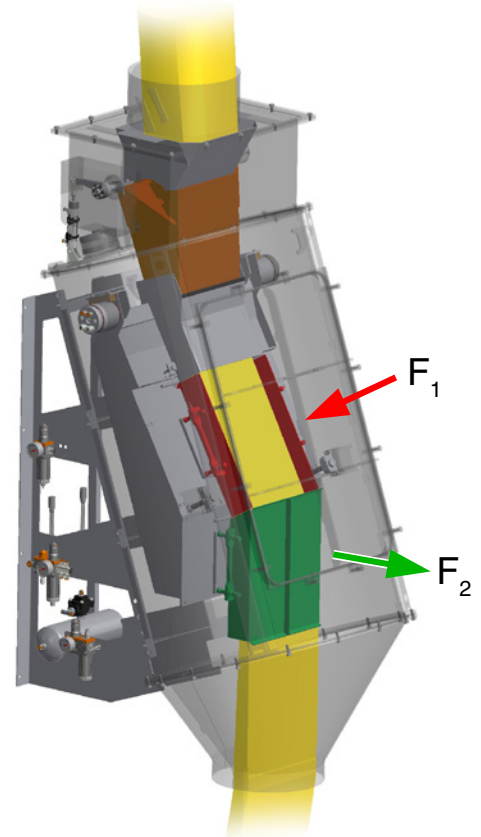
Design

The Smart Flow Meter has no moving parts. The bulk material flows through two channels mounted on load cells that have no mechanical effect on the material whatsoever. Depending on the operating range, a choice of four measuring channels (A, B, C or D) of varying dimensions are available.

This equipment conforms to all applicable European Directives (e.g. Machinery, EMC).

Function

The Smart Flow Meter uses the principles of Newtonian physics: $F=ma$. Bulk material flows by gravity into the upper measuring channel, an inclined chute mounted on a load cell where the force F_1 acting perpendicularly on the chute is measured as mass. The bulk material then flows into the lower, vertical channel, where the impact is measured by a second load cell to determine the velocity or acceleration rate (Force F_2). From the signals of these two sensors the flow rate is determined per unit of time.



Operating range

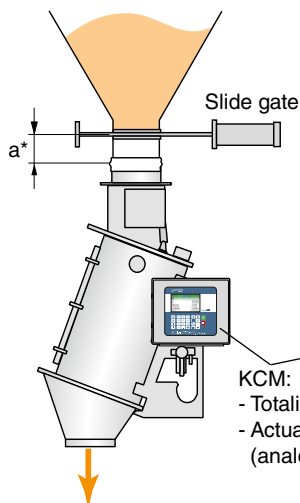
	Measuring Channel A (S)		Measuring Channel B (M)		Measuring Channel C (L)		Measuring Channel D (XL)	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max. **
metric t/h	5	36	10	60	15	120	25	210
m³/h [ft³/h]	8.3 [293]	60 [2119]	16 [565]	100 [5297]	25 [883]	200 [7062]	42 [1483]	350 [12360]

- For bouncing material an H 1/2 inlet channel is available. The minimum throughput of the channel remains the same but the maximum is reduced to half.
- Care must be taken to minimize counterflow gas from downstream processes (such as pressure conveying) from flowing back up through the K-SFM or maximum rates may be reduced.

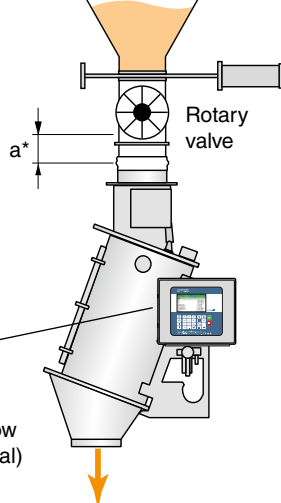
** For rates above 150 t/h or 250 m³/h [8829 ft³/h] an external diverter valve is needed for bypass/tare cycles.

Installation examples

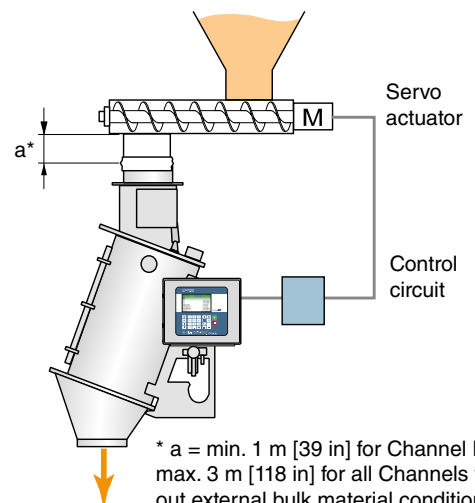
Directly on the silo for batch feeding
(only for free flowing material)



In a conveyor system as a
meter, with rotary valve



As a sensor in a controlled system
with a screw as prefeeder



KCM:
- Totalizer
- Actual mass flow
(analog or digital)

* a = min. 1 m [39 in] for Channel D /
max. 3 m [118 in] for all Channels with-
out external bulk material conditioner

Technical Data

Measuring accuracy:	±0.5% to ±1% depending on application
Ambient temperature:	0... 40°C [32...104°F]
Product temperature range:	0... 50°C [32...122°F]
Max. humidity:	95%
Pressure range:	±0.2 bar [2.9 PSI]
Compressed air supply bypass flap:	pressure 5-10 bar [72-145 PSI], filtered, unlubricated
Ingress protection:	IP65, NEMA 4
Material:	Stainless steel EN 1.4404/1.4435 (AISI 316L)
Weight:	365 kg [805 lb]

Main features

- No moving parts, ie. the bulk material is handled gently
- Easy to service, i.e. easy accessibility
- Rugged and simple design
- Function largely independent of bulk material
- Reliable and accurate force transducer system
- Stable long term behaviour
- Cost effective solution for in-line weighing
- Low headroom solution

Bypass channel

A bypass channel at the inlet allows the flow meter to be tared at any time during the measuring process. A bypass valve diverts the bulk material flow into a separate channel, allowing retaring without interruption of the process. The bypass device can either be operated manually or programmed through the controls. Trigger factors may be time period, temperature, etc.

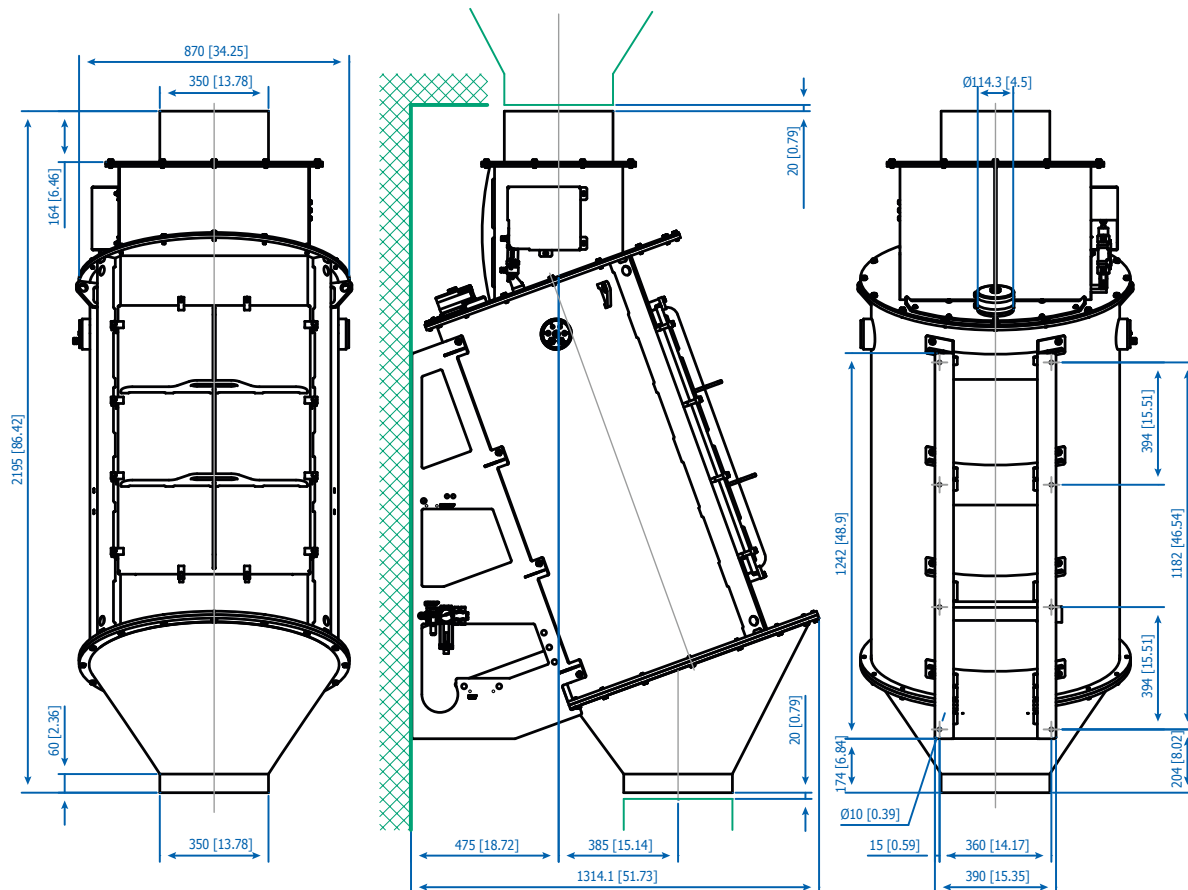
Options:

- High-temperature version
(required for material temperatures > 50°C [122°F] at the inlet)
Bulk material temp. max 150°C [300°F]
Bulk material temp. max 120°C [250°F] for ATEX
- Polished material contact surfaces Ra 0.4 µm with polished bypass material contact surfaces Ra 0.8 µm
- Jet tubes to remove dust at the gaps between weighing chutes

Hazardous Location Options: (see sheet I-000002)

NEC	Class II, Div. 2, Groups F & G / Class II, Div. 1, Groups F & G Class I, Div. 2, Groups C & D
ATEX	3D/3D, 3G/3G, 2D/2D, 2G/2G (outside/inside)

Dimensions [mm(in)]



Caution: these measurements are for general reference only. Please consult dimensional drawing for exact measurements