

AL-Series Force Measuring Sensor

Compact Design with advantageous shape

Adaptable in machines with tight installation dimensions

Flexible Mounting Concept

Compatible with various commercially available sensors

Accuracy Class 0.5 %

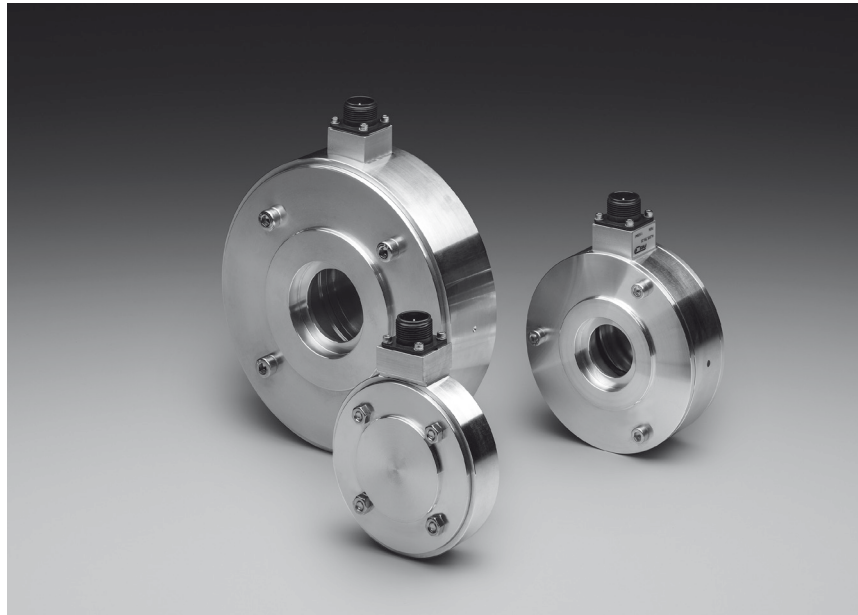
Highest accuracy even at low loads

**Nominal Forces from 125 – 3000 N
[28 – 674 lbf]**

Covers wide range of applications

Sensor Body of High Quality Aluminium

Heavy Duty, Durable Product with Long Term Stability



- **AL Series**

The AL Series Force Measuring Sensors are for use in live shaft roller applications. Their slim design and flexible mounting concept provide new options in machines with very tight installation conditions.

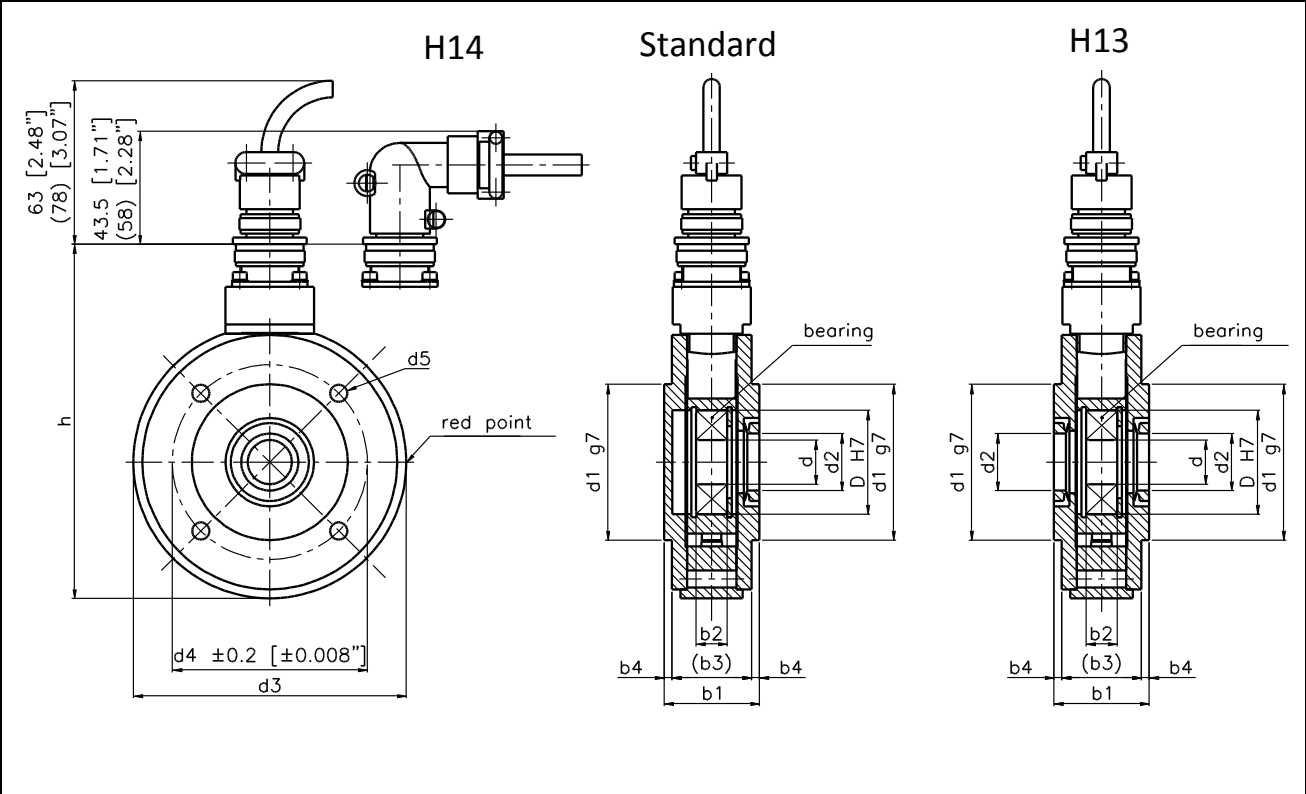
The AL Sensors are with regards to the mounting holes compatible with various other commercially available sensor brands. Replacements are possible without costly changes of machine frame or mounting supports. The installation is simply accomplished with only using 4 or 3 screws.

AL Sensors ensure even with different materials and web sizes highly accurate measuring results. Their durability and operational reliability is excellent.

- **Functional Description**

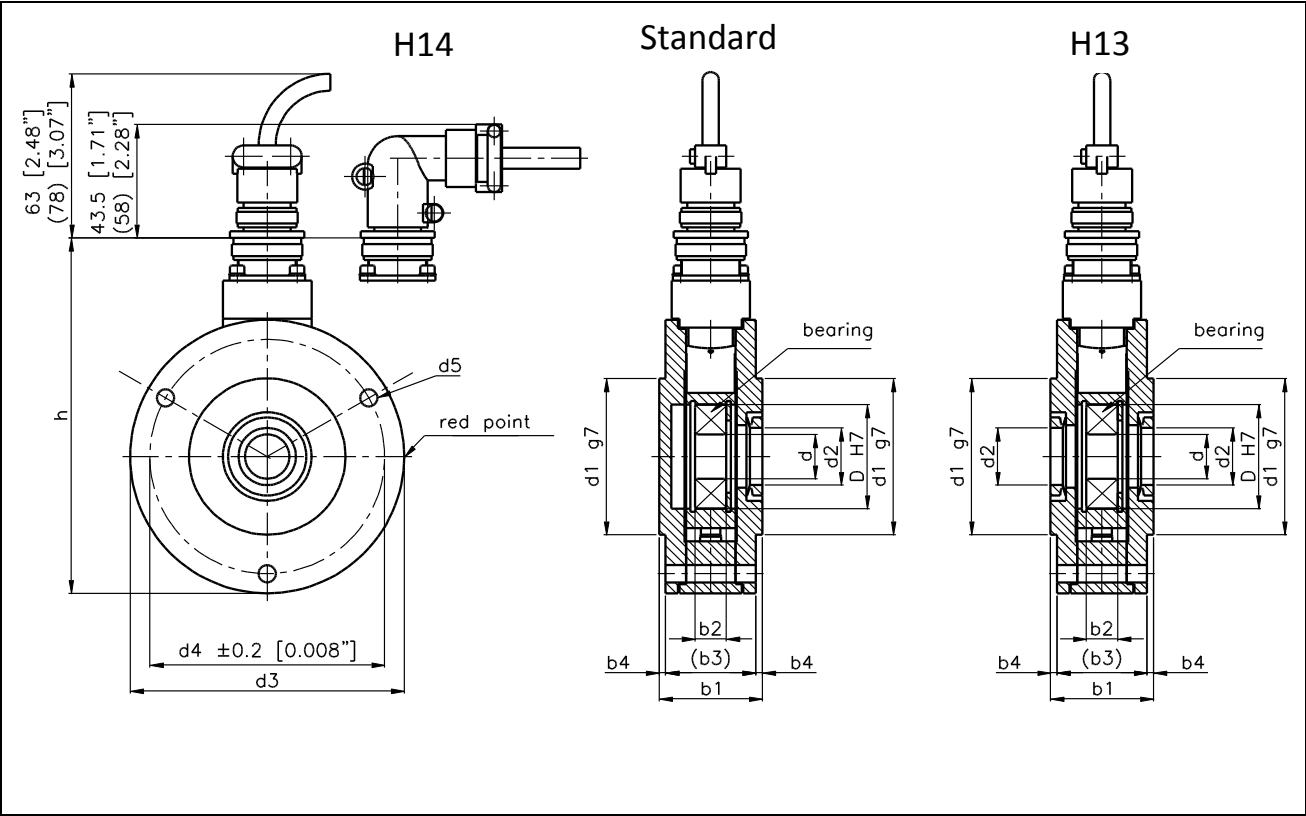
AL Sensors combine the live shaft bearings with the sensor body in order to minimise machine space. A Wheatstone full-bridge circuit, containing four foil-based strain gauges, measures the current web tension. This signal is received in the FMS measuring amplifier for further processing. The red point located at the sensor body indicates the positive force measuring direction. The used measuring principle ensures tension measurement with the highest accuracy and reliability even at low wrap angles and low loads. The UN-22 connector enables straightforward wiring with the amplifier. The AL Series is compatible with the full line of FMS electronics.

AL Series • Dimensions in mm [in]



AL. Series 4-hole covers / 90°

AL_001us



AL Series 3-hole covers / 120° CO_Options

AL_002us

AL Series • Nominal Forces / Dimensions in mm

Sensor Type	Nominal Force [N]	Bearing	d	D	d1	d2	d3	d4	d5	b1	b2	b3	b4	h
AL 203	125/250/ 500/1000	1203	17	40	60	22	105	75	6.6	37	12	31	3	137
AL 203.C01								90		39.5		34.5	2.5	
AL 205	375/750/ 1500	1205 ¹⁾ 1304	25 20	52	70	31	125	95	6.6	48	15	40	4	157
AL 205.C01								105				42	3	
AL 307	750 1500 3000	1307 ¹⁾ 1208	35 40	80	100	44	186	135	9	66	21	58	4	219
AL 307.C01								152		68		60		
AL 307.C02								155						
AL 307.C03								167						

AL Series • Nominal Forces / Dimensions in inch

Sensor Type	Nominal Force [lbf]	Bearing	d	D	d1	d2	d3	d4	d5	b1	b2	b3	b4	h
AL 203	28/ 56/ 112/225	1203	0.67	1.57	2.36	0.87	4.13	2.95	0.26	1.46	0.47	1.22	0.12	5.39
AL 203.C01								3.54		1.56		1.36	0.99	
AL 205	84/ 168/ 337	1205 ¹⁾ 1304	0.98 0.79	2.05	2.76	1.22	4.92	3.74	0.26	1.89	0.59	1.58	0.16	6.18
AL 205.C01								4.13				1.65	0.12	
AL 307	168 337 674	1307 ¹⁾ 1208	1.38 1.57	3.15	3.94	1.73	7.32	3.32	0.35	2.60	0.83	2.28	0.16	8.62
AL 307.C01								5.98		2.68		2.36		
AL 307.C02								6.10						
AL 307.C03								6.55						

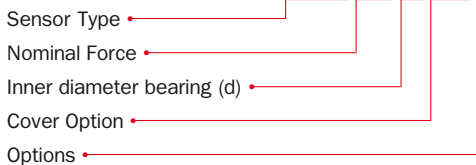
¹⁾ Standard bearing

AL Series • Technical Data

Sensitivity	1.8 mV/V ± 2 %		
Accuracy Class	± 0.5 % (F _{nominal})		
Force measuring range	20 : 1		
Temperature Coefficient	± 0.1 % / 10 K		
Temperature Range	– 10...+ 60 °C [14...140°F]		
Input Resistance	350 Ω		
Supply Voltage	1...12 VDC		
Protection Class	IP 42		
Electrical Connection	Amphenol Connector UN 22		
Sensor Material	Special aluminium alloy		
Overload Protection	10 times Nominal Force		
Weight	AL 203	AL 205	AL 307
	0.63 kg [1.39 lbs]	1.15 kg [2.54 lbs]	3.3 kg [7.28 lbs]

Order Code (example):

AL203.250.17.C01.H13.H14



Options:

- C0_** = Cover options
- H 13** = Open covers on both sides
- H 14** = Right angle connector

Scope of delivery:

1 Force Sensor, 1 Snap Ring, 1 V-Ring, 1 Connector (f), Operation Manual.

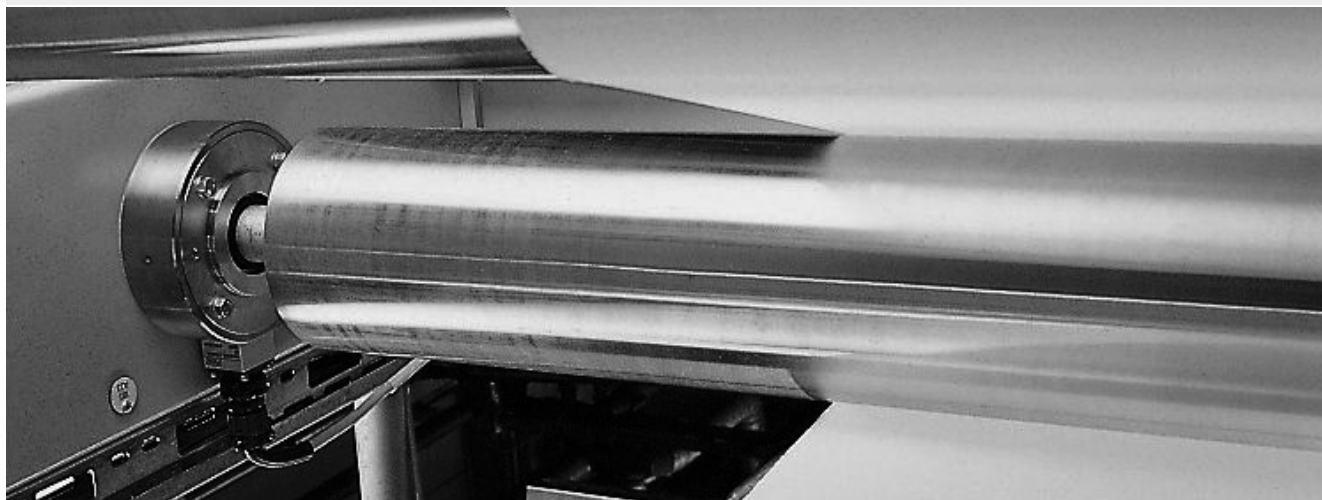
Not included:

Bearing, Mounting Screws, Sensor Cable.

Accessories AL Series

Bearing Type	1203	1205	1208	1304	1307
Order number	71210035	71210052	71210054	71210001	71210053

• Application Example Force Sensor AL 203



FMS Electronic Units

Series 310



ExMGZ 100/200



Series 309



Series 490 PROFINET®



Series 321 EtherNet/IP



FMS electronic units are available in many different versions as measuring amplifiers in analog or digital form or with a wide range of fieldbus interfaces (PROFIBUS®, PROFINET®, EtherNet/IP, CanOpen, etc.)

They can be fitted on rails, onto control panels or walls. They are also available in waterproof and vibration resistant versions. All FMS electronic units have been specially developed for **easy fitting and operating.**

FMS electronic units benefit from the advantages of the latest SMD and high-end microprocessor technologies for web tension measurement. Each electronic unit provides **output signals of 0...10 V / ± 10 V and 0...20 mA / 4...20 mA and has an integrated signal-filtering system.**

FMS also offer **an ATEX certified intrinsically safe barrier card** (ExMGZ 100/200) for the use in explosion proof environment.

World Headquarters:**FMS Force Measuring Systems AG**

Aspstrasse 6
8154 Oberglatt (Switzerland)
Phone + 41 44 852 80 80
Fax + 41 44 850 60 06
info@fms-technology.com

FMS USA, Inc.

2155 Stonington Avenue
Suite 119
Hoffman Estates, IL 60169
Phone + 1 847 519 4400
Fax + 1 847 519 4401
fmsusa@fms-technology.com

FMS UK

Highfield, Atch Lench Road
Church Lench
Evesham WR 11 4UG
Phone + 44 1386 871023
Fax + 44 1386 871021
fmsuk@fms-technology.com

FMS Italy

Via Baranzate 67
20026 Novate Milanese
Phone + 39 02 39487035
Fax + 39 02 39487035
fmsit@fms-technology.com