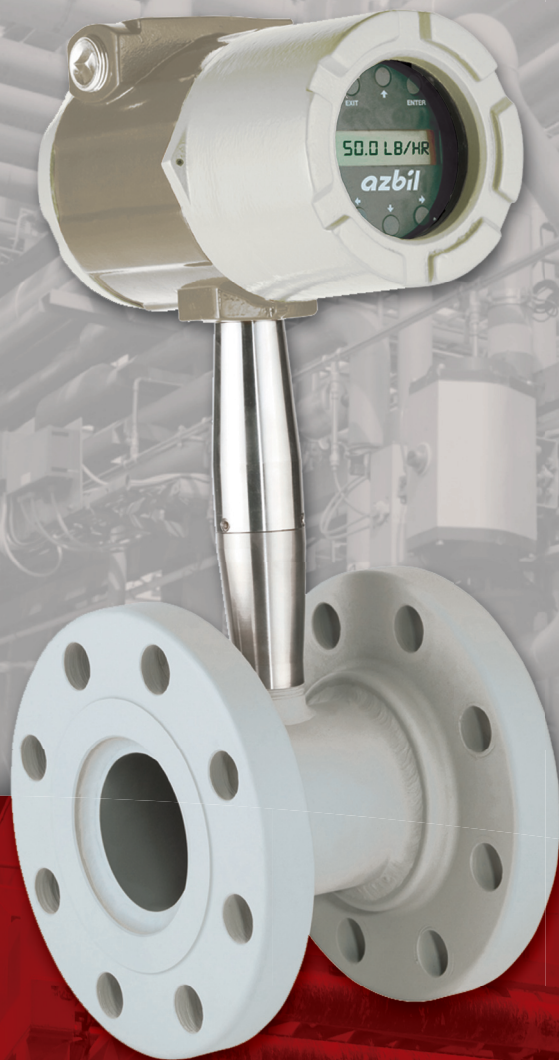


**azbil**

**AX Series  
Vortex Meters**



**The readings you  
need, right where  
you need them.**



# Multivariable function from a single meter

Vortex multivariable meters from Azbil North America employ three sensing elements in a single meter: a vortex shedding velocity sensor, an RTD temperature sensor, and a solid-state pressure transducer. Within this **single instrument**, you can measure the mass flow rates of gasses, liquids, and steam with **far more accuracy** than with external measurement techniques which may not adequately compensate for dynamic process conditions. With the flexibility to install in almost any location—including hot tapping—you can get precise measurements from nearly any location when you need it.

Multivariable capability within this single housing can also **simplify systems, reduce equipment cost, and ease installation and maintenance hassles**. The wide variety of options and configurations available ensures that there is a meter for any application requirement.



**AX 2200**

## The Readings You Want

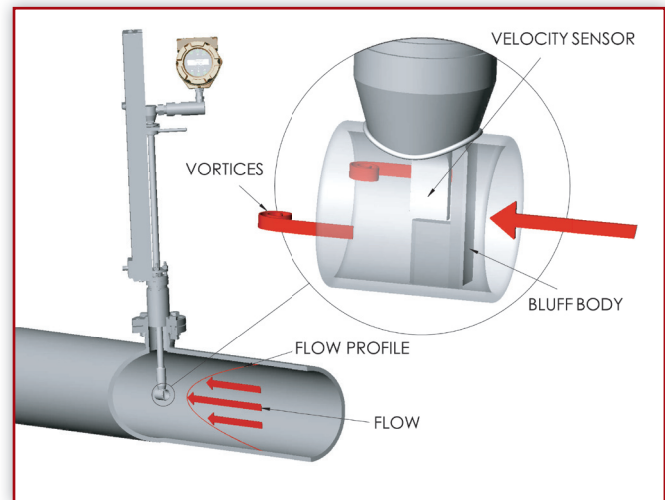
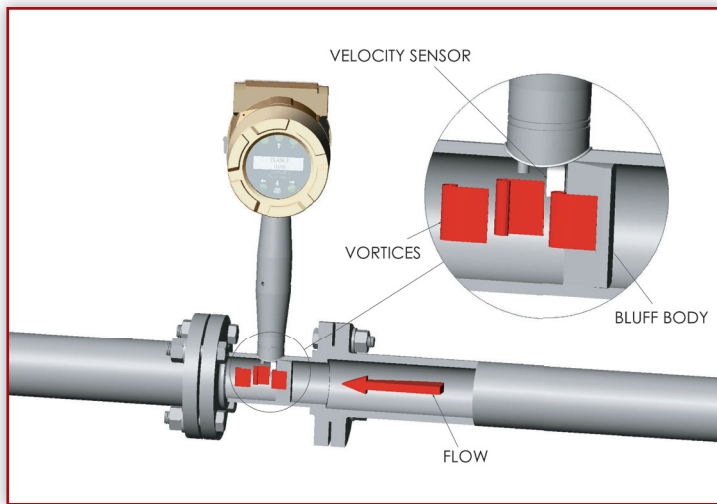
- Volumetric or mass flow monitoring of most liquids, gasses, and steam
- Delivers multiple readings from a single installed location, reducing cost and complexity
- Compensated mass flow readings
- Energy Monitoring in real time
- Simple and reliable - no moving parts, easy installation, no fluid to sensor contact
- Rangeability up to 100:1
- Temperature up to 750°F
- Pressure up to 1500 psig

## Right Where You Need Them

- Inline install in pipes from 1/2" to 8"
- Hot-tap without process shutdown in any pipe larger than 2"
- Field configurable
- Remote electronics option for harsh environments or difficult locations
- 4-20mA - loop-powered technology saves on energy costs
- HART protocol - Standard
- Modbus and BACnet communications available
- FM, FMC, ATEX, IECEx Approved



# Principles of Operation



The AX Series of Vortex inline flowmeters measure flows of liquid, gas, and steam by measuring the rate at which vortices are alternately shed from a bluff body; this rate has been shown to be directly proportional to the flow velocity.

As flow passes a bluff body in the stream, vortices create pressure differentials which are measured by a piezoelectric crystal sensor, which converts these pulses into electrical signals. The meter uses an all welded sensor design to create a strong unit and minimize potential leakage.

The AX Series can be configured to measure anything from simple volumetric flow of liquids and saturated steam up through multivariable measurements, including mass flow rate, pressure, temperature and density of liquids and steam.

Insertion style vortex meters measure flow by detecting the local velocity at a strategically located position within the pipe. Using local velocity, calculated by measuring the rate at which vortices are alternately shed from a bluff body within the sensor, the AX2300 uses parameters such as fluid type, pipe size, and Reynolds number to calculate accurate measurements.

The AX2300 offers flow computer functionality in a compact, hot-tappable field device. It can be configured to deliver up to three analog 4-20mA outputs of five process measurements, including volumetric flow rate, mass flow rate, pressure, temperature and density. With the Energy Monitoring option, the AX2200 and AX 2300 can also be configured to measure energy consumption within a process or plant.

## Many Configurations

Depending on your needs, these meters are available in the following configurations:

**AX2200/2300** - Delivers direct readings of volumetric flow rate in applications ranging from general water flows to hydrocarbon fuel flow measurement.

**AX2211/2311** - Integrates a precision 1000  $\Omega$  platinum RTD temperature sensor for output of a compensated mass reading, typically for flow rates of saturated steam.

**AX2222/2322** - Flow computing functionality in a compact field device. This multivariable instrument features both temperature and pressure sensors to provide instantaneous reading of compensated mass flow rates of gasses, liquids and steam. Offers basic output and alarm as well as up to

three 4-20 mA outputs of live process measurements. These output selections are field configurable. The AX2233/2333 offers the same functionality using an external pressure input.

**AX2244/2344** - Allows for real-time measurement of energy consumption for a facility or process in steam, hot water, or chilled water. Uses the input from a second sensor on the opposite leg of the process to calculate the change in energy. Can be configured to read in Btu, joules, calories, Watt-hours, Megawatt- hours, and horsepower hours. Local or remote electronics indicate two temperatures, delta T, mass total and energy total.

# Excellent field performance

## Repeatability

Mass Flow Rate	±0.2% of rate
Volumetric Flow Rate	±0.1% of rate
Temperature	±0.2°F (±0.1°C)
Pressure	±0.05% of full scale
Density	±0.1% of reading

## Stability Over 12 Months

Mass Flow Rate	±0.2% of rate
Volumetric Flow Rate	± negligible
Temperature	±0.9°F (±0.5°C)
Pressure	±0.1% of full scale
Density	±0.1% of reading

## Response Time

Adjustable from 1 to 100 seconds.

## Operating Specifications

Any gas, liquid or steam compatible with 316L stainless steel. Consult factory for other materials or construction. Not recommended for multi-phase fluids.

## Process and Ambient Temperature

Process Standard Temperature: -330 to 500°F (-200 to 260°C)  
 Process High Temperature: to 750°F (400°C)  
 Ambient Operating: -40 to 185°F (-40 to 85°C)  
 Ambient Storage: -40 to 185°F (-40 to 85°C)

## Pressure Transducer Ratings

Full Scale Operating Pressure		Max. Over-Range Pressure	
psia	bara	psia	bara
30	2	60	4
100	7	200	14
300	20	600	40
500	35	1000	70
1500	100	2500	175

## AX 2200 Accuracy

Process Variables	Liquids	Gas & Steam
Volumetric Flow Rate	±0.7% of Rate	±1% of Rate
Mass Flow Rate	±1% of Rate	±1.5% of Rate
Temperature	±2°F (±1°C)	±2°F (±1°C)
Pressure	±0.3% of Full Scale	±0.3% of Full Scale
Density	±0.3% of Reading	±0.5% of Reading

Mass flow rate accuracy for gas and steam based on 50-100% of pressure range.

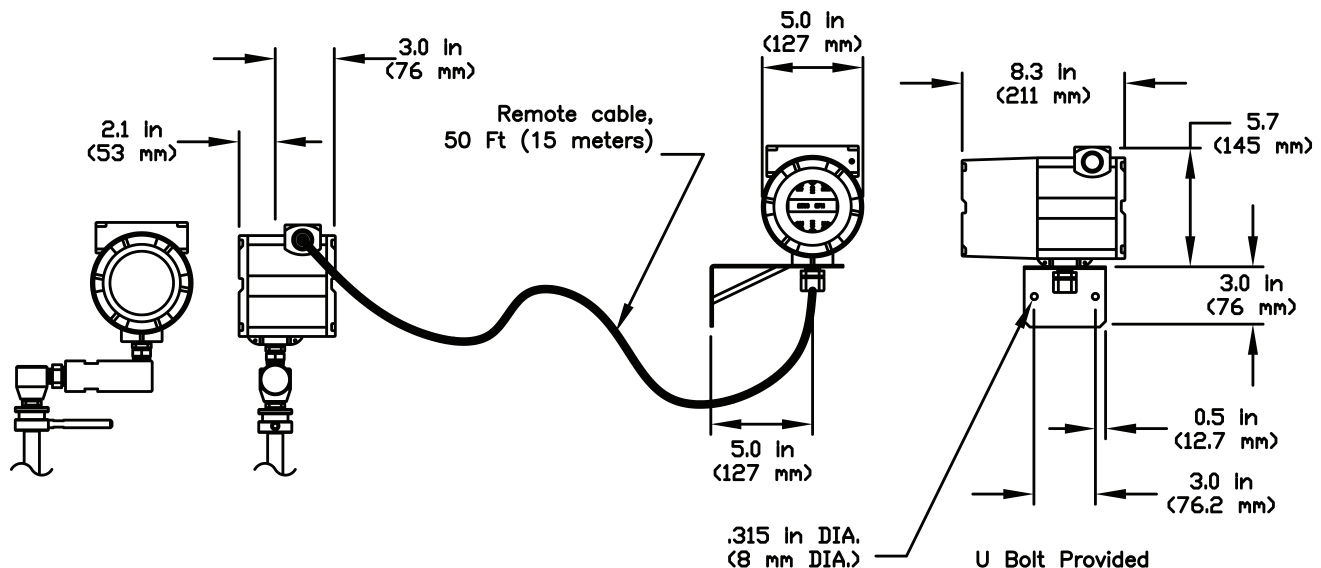
## AX 2300 Accuracy

Process Variables	Liquids	Gas & Steam
Volumetric Flow Rate	±1.2% of Rate	±1.5% of Rate
Mass Flow Rate	±1.5% of Rate	±2.0% of Rate
Temperature	±2°F (±1°C)	±2°F (±1°C)
Pressure	±1.5% of Full Scale	±0.3% of Full Scale
Density	±0.3% of Reading	±0.5% of Reading

Mass flow rate accuracy for gas and steam based on 50-100% of pressure range.

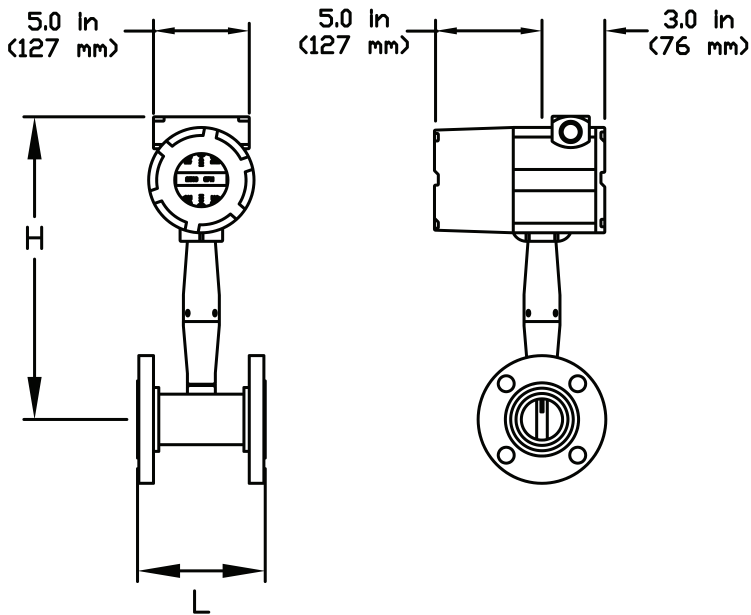
# Remote Electronics Option

## Available on all models

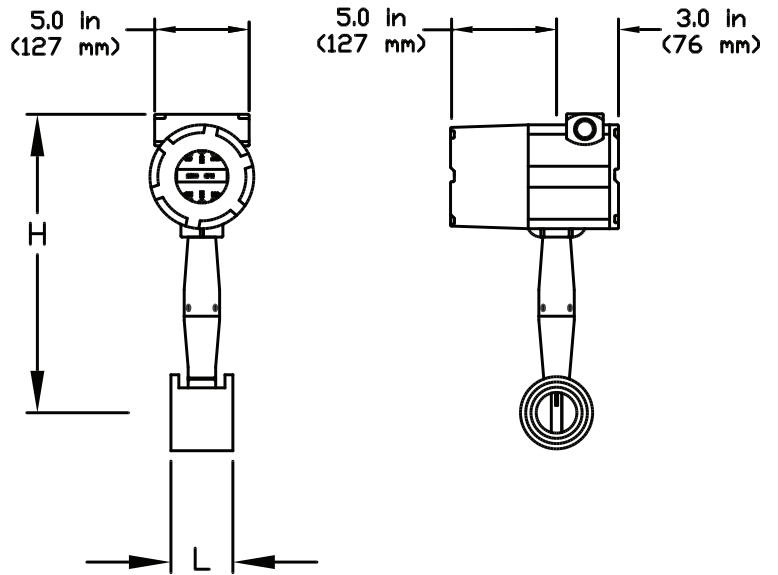


# Dimensional Outline - AX 2200

## Flange Install



## Wafer Install



### AX 2200 Flange Installation

Flow Meter Nominal Size	L	H	Weight		
			ANSI 150 (PN 16)	ANSI 300 (PN 40)	ANSI 600 (PN 64)
0.5 in (15 mm)	4.56 in (116mm)	14.8 in (376mm)	12 lb (5.5 kg)	12.5 lb (5.7 kg)	13 lb (5.9 kg)
0.75 in (20 mm)	4.8 in (122 mm)	15 in (381 mm)	13 lb (5.9 kg)	14 lb (6.4 kg)	14.5 lb (6.6 kg)
1 in (25 mm)	4.94 in (126 mm)	15 in (381 mm)	13.4 lb (6.1 kg)	16.3 lb (7.4 kg)	16.3 lb (7.4 kg)
1.5 in (40 mm)	5.5 in (140mm)	15 in (384 mm)	14.5 lb (6.6 kg)	22.7 lb (10.3 kg)	24.6 lb (11.2 kg)
2 in (50 mm)	6.0 in (153 mm)	15.3 in (389 mm)	19.4 lb (8.8 kg)	26.8 lb (12.2 kg)	33.2 lb (15.1 kg)
3 in (80 mm)	6.9 in (175 mm)	15.8 in (401 mm)	27.5 lb (12.5 kg)	39.4 lb (17.9 kg)	56.1 lb (25.5 kg)
4 in (100 mm)	8.0 in (203 mm)	16.2 in (411 mm)	43.3 lb (19.7 kg)	60.3 lb (27.4 kg)	96 lb (43.6 kg)
6 in (150 mm)	9 in (229 mm)	17.3 in (439 mm)	48.4 lb (22 kg)	96 lb (43.6 kg)	178 lb (80.8 kg)
8 in (200 mm)	10.5 in (267 mm)	18.2 in (462 mm)	71 lb (32.2 kg)	148 lb (67.4 kg)	299 lb (136 kg)

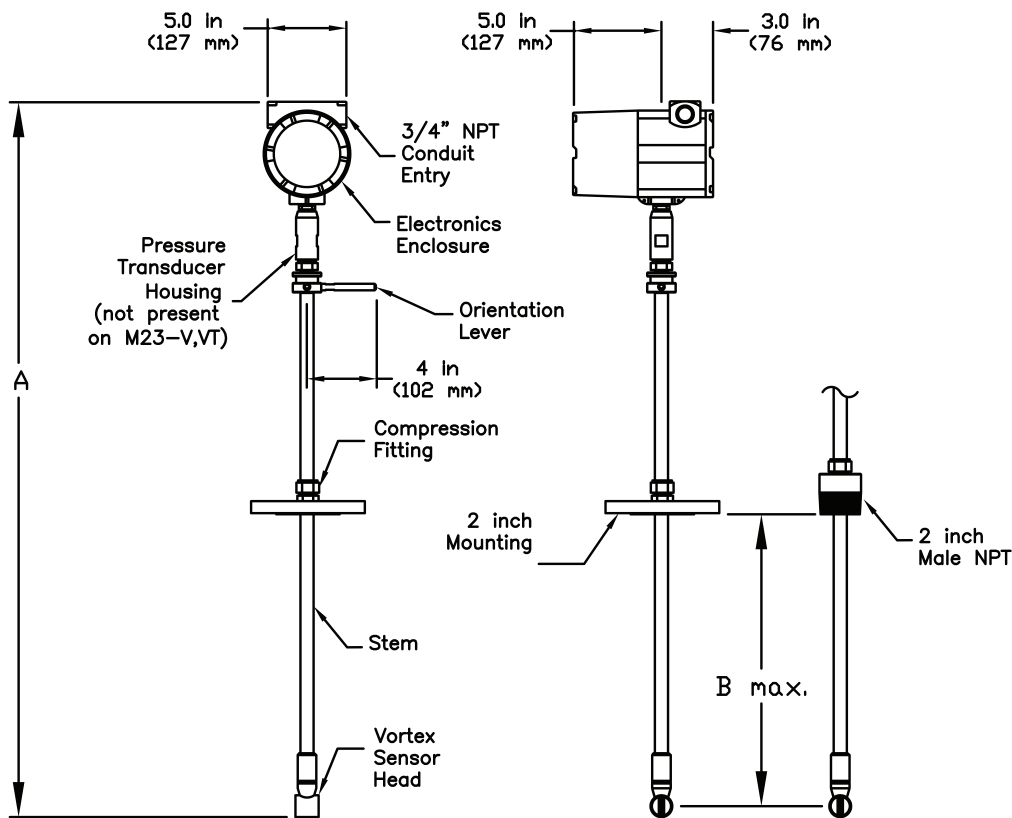
### AX 2200 Wafer Installation

L	H	Weight
4.56 in (116mm)	14.8 in (376mm)	9.8 lb (4.4 kg)
4.8 in (122 mm)	15 in (381 mm)	10 lb (4.6 kg)
2.8 in (71 mm)	14.8 in (376 mm)	10.1 lb (4.6 kg)
2.8 in (71 mm)	15.1 in (384 mm)	11.9 lb (5.4 kg)
3.0 in (76 mm)	15.3 in (389 mm)	14.1 lb (6.4 kg)
4 in (102 mm)	15.8 in (401 mm)	22.7 lb (10.3 kg)
4.7 in (119 mm)	16.2 in (411 mm)	33 lb (15 kg)

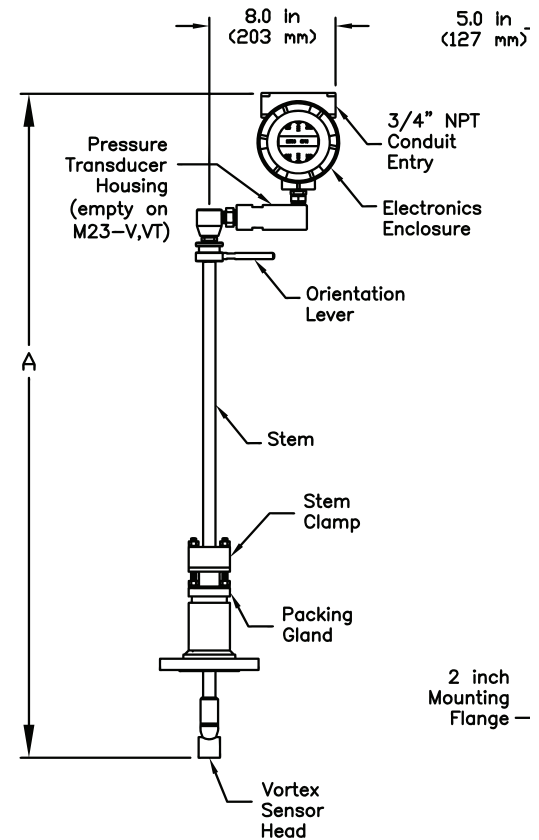
Add 11 lb (5 kg) for remote electronics.

# Dimensional Outline - AX 2300

## Compression Installation



## Packing



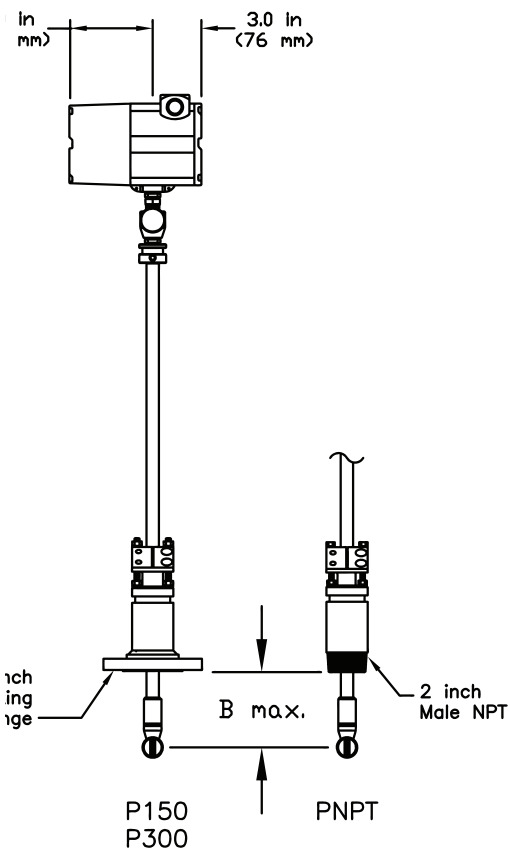
AX 2300 Compression Installation						
	CL/Compact Length		SL/Standard Length		EL/Extended Length	
	A	B	A	B	A	B
Male NPT	21.6 in (549 mm)	9.8 in (249 mm)	38 in (965 mm)	26.2 in (665 mm)	50 in (1270 mm)	38.2 in (970 mm)
150 lb Flange	21.6 in (549 mm)	10.9 in (277 mm)	38 in (965 mm)	27.3 in (693 mm)	50 in (1270 mm)	38.3 in (998 mm)
300 lb Flange	21.6 in (549 mm)	10.8 in (274 mm)	38 in (965 mm)	27.2 in (601 mm)	50 in (1270 mm)	39.2 in (996 mm)
600 lb Flange	21.6 in (549 mm)	10.4 in (264 mm)	38 in (965 mm)	26.8 in (681 mm)	50 in (1270 mm)	38.8 in (986 mm)

Approximate Weight*			
Compression Fitting			
CL	SL	EL	
13 lb (5.7 kg)	14 lb (6.2 kg)	15 lb (6.7 kg)	
15 lb (6.8 kg)	16 lb (7.3 kg)	17 lb (7.8 kg)	
17 lb (7.8 kg)	18 lb (8.3 kg)	19 lb (8.8 kg)	
18 lb (8.2 kg)	19 lb (8.7 kg)	20 lb (9.2 kg)	

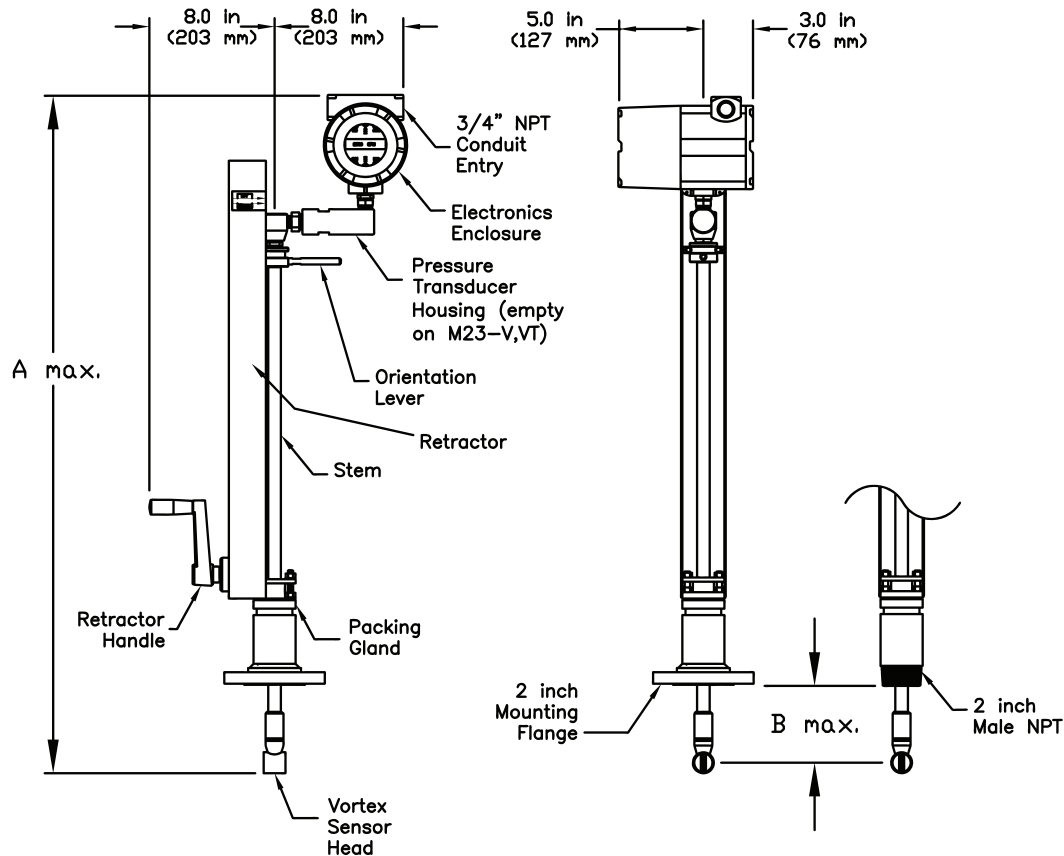
\*Add 11 lb (5 kg) for remote electronics.

AX 2322 Compression Installation						
	CL/Compact Length		SL/Standard Length		EL/Extended Length	
	A	B	A	B	A	B
Male NPT	24.6 in (625 mm)	9.8 in (249 mm)	41 in (1041 mm)	26.2 in (665 mm)	53 in (1346 mm)	38.2 in (970 mm)
150 lb Flange	24.6 in (625 mm)	10.9 in (277 mm)	41 in (1041 mm)	27.3 in (693 mm)	53 in (1346 mm)	38.3 in (998 mm)
300 lb Flange	24.6 in (625 mm)	10.8 in (274 mm)	41 in (1041 mm)	27.2 in (601 mm)	53 in (1346 mm)	39.2 in (996 mm)
600 lb Flange	24.6 in (625 mm)	10.4 in (264 mm)	41 in (1041 mm)	26.8 in (681 mm)	53 in (1346 mm)	38.8 in (986 mm)

## Gland



## Packing Gland - Permanent Retractor



### AX 2300 Packing Gland Installation

	SL/Standard Length		EL/Extended Length	
	A	B	A	B
Male NPT	40.5 in (1029 mm)	21.5 in (546 mm)	52.5 in (1334 mm)	33.5 in (851 mm)
150 lb Flange	40.5 in (1029 mm)	21.5 in (546 mm)	52.5 in (1334 mm)	33.1 in (841 mm)
300 lb Flange	40.5 in (1029 mm)	21.5 in (546 mm)	52.5 in (1334 mm)	33.1 in (841 mm)
600 lb Flange*	40.5 in (1029 mm)	21.5 in (546 mm)	52.5 in (1334 mm)	33.1 in (841 mm)

### Approximate Weight\*

Removable Retractor		Permanent Retractor	
SL	EL	SL	EL
16 lb (7.1 kg)	17 lb (7.6 kg)	25 lb (11.5 kg)	32 lb (14.5 kg)
21 lb (9.4 kg)	22 lb (9.9 kg)	30 lb (13.7 kg)	37 lb (16.7 kg)
25 lb (11.3 kg)	26 lb (11.8 kg)	34 lb (15.5 kg)	41 lb (18.5 kg)
n/a	n/a	35 lb (16.0 kg)	42 lb (19.0 kg)



### AX 2300

shown with optional permanent retractor

\*Add 11 lb (5 kg) for remote electronics.

# Specifications and Requirements

## Power Requirements

DCL Option: 12-36 VDC loop powered (single output)  
 DCH Option: 12-36 VDC, 300 mA mx (multiple outputs)  
 AC Option: 85-240 VAC, 50.60Hz, 2 Watts (multiple outputs)

## Display

Alphanumeric 2 line x 16 character LCD digital display  
 Six pushbuttons can be operated with magnetic wand without removal of enclosure covers  
 Display can be mounted in 90° intervals for better viewing

## Output Signals

Analog: 4-20 mA  
 Alarm: Solid state relay, 40 VDC  
 Totalizer Pulse: 50 millisecond pulse, 40 VDC  
 Volumetric or Loop Powered Mass: One analog, one totalizer pulse, HART  
 Multivariable option: Up to three analog signals, three alarms, one totalizer pulse, HART  
 Multivariable option: Modbus process monitoring

## Wetted Materials

Standard 316L Stainless Steel, plus  
 • Optional Carbon Steel or Hastelloy C  
 • DuPont Teflon® based thread sealant on models with pressure transducer

## Approvals

FM, FMC	Class I, DIV. 1, Groups B,C,D Class II/III, DIV. 1, Groups E,F,G IP66, Type 4x, T6 Ta=60°
ATEX	II 2 G Ex d IIB + H2 T6 II 2 D EX tD A21 IP66 T85°C Ta=60°C
IECEX	Ex d IIB + H2 T6 Ext tD A21 IP66 T85°C Ta=60°C

## Velocity Range

Maximum velocity, liquid: 30 ft/sec (9 m/sec)  
 Minimum velocity, liquid: 1 ft/sec (.3 m/sec)  
 Maximum velocity, gas or steam: 300 ft/sec (90 m/sec)  
 Minimum velocity, gas or steam:

$$\frac{5}{\sqrt{\text{density (lb/ft}^3)}} \quad \frac{6}{\sqrt{\text{density (kg/m}^3)}}$$

Consult your Azbil representative for assistance with calculating flow range.

Piping Conditions		
Condition	Pipe Diameters (D)	
	Upstream	Downstream
One 90° elbow before meter	10D	5D
Two 90° elbows before meter	15D	5D
Two 90° elbows before meter, out of plane	25D	5D
Reduction before meter	10D	5D
Expansion before meter	20D	5D
Partially open valve	25D	5D

Water Min and Max Flow Rates - AX 2200									
Rate	Nominal Pipe Size (in)								
	0.5	0.75	1	1.5	2	3	4	6	8
GPM min	0.9	1.4	2.2	5.5	9.2	21	36	81	142
GPM max	22	40	67	166	276	618	1076	2473	4270
	Nominal Pipe Size (mm)								
	15	20	25	40	50	80	100	150	200
M³/hr min	0.2	0.3	0.5	1.3	2.1	4.7	8.1	18	32
M³/hr max	5	9	15	38	63	140	244	554	970

Water Min and Max Flow Rates - AX 2300						
Rate	Nominal Pipe Size (in)					
	3	6	8	12	16	24
GPM min	20.6	81.3	142	317	501	1138
GPM max	618	2473	4270	9501	15043	34144
	Nominal Pipe Size (mm)					
	80	150	200	300	400	600
M³/hr min	5.2	20.4	35.4	79.2	125	284
M³/hr max	157	614	1062	2337	3753	8537





# AX 2200

Typical Saturated Steam Minimum and Maximum Flow Rates (lb/hr)									
Pressure	Nominal Pipe Size (in)								
	0.5	0.75	1	1.5	2	3	4	6	8
5 psig	6.5 52	12 122	20 265	49 650	82 1087	183 2431	318 4231	722 9594	1264 16806
100 psig	15 271	27 639	46 1386	112 3405	187 5690	419 12729	728 22156	1652 50233	2893 87998
200 psig	20 493	37 1163	62 2525	151 6203	253 10365	565 23184	983 40354	2229 91494	3905 160279
300 psig	24 716	45 1688	74 3664	182 9000	304 15040	680 33642	1184 58556	2685 132763	4704 232575
400 psig	28 941	51 2220	85 4816	209 11831	349 19770	780 44222	1358 76971	3079 174516	5393 305717
500 psig	31 1170	57 2760	95 5988	233 14711	389 24582	870 54987	1514 95710	3433 217001	6014 380148

Typical Saturated Steam Minimum and Maximum Flow Rates (kg/hr)									
Pressure	Nominal Pipe Size (mm)								
	15	20	25	40	50	80	100	150	200
0 barg	3 18	5 42	8 91	19 224	32 375	72 838	126 1459	286 3309	500 5797
5 barg	6 95	11 224	18 485	45 1192	75 1992	176 4455	290 7754	658 17581	1153 30799
10 barg	8 168	15 397	24 862	59 2118	99 3539	222 7915	387 13777	877 21327	1537 54270
15 barg	9 241	17 569	29 1236	71 3036	119 5073	266 11347	463 19750	1050 44779	1840 78444
20 barg	11 314	20 742	33 1610	81 3956	136 6611	304 14787	529 25738	1199 58355	2100 102226
30 barg	13 463	24 1092	40 2370	99 5822	165 9729	369 21763	642 37880	1455 85884	2548 150451

Typical Air Minimum and Maximum Flow Rates (lb/hr)									
Pressure	Nominal Pipe Size								
	0.5	0.75	1	1.5	2	3	4	6	8
5 psig	1.8 18	3 41	5 90	13 221	22 369	50 826	87 1437	198 3258	347 5708
100 psig	5 138	9 325	15 704	38 1730	63 2890	141 6466	245 11254	555 25515	972 44698
200 psig	7 258	13 609	21 1322	52 3248	86 5427	193 12140	335 21131	761 47911	1332 83931
300 psig	8 380	15 896	25 1944	63 4775	104 7978	234 17847	407 31064	922 70431	1615 123375
400 psig	10 502	18 1183	29 2568	72 6309	120 10542	269 23580	467 41043	1060 93057	1857 163000
500 psig	11 624	20 1472	33 3195	80 7849	134 13115	300 28034	521 51063	1182 115775	2071 203000

Typical Air Minimum and Maximum Flow Rates (kg/hr)									
Pressure	Nominal Pipe Size (mm)								
	15	20	25	40	50	80	100	150	200
0 barg	3 28	5 66	9 142	21 250	36 584	79 1307	138 2275	313 5157	549 9034
5 barg	7 165	13 390	21 847	52 2080	87 3476	194 7775	337 13533	764 30682	1339 53749
10 barg	9 304	17 716	29 1554	70 3819	117 6381	262 14273	457 24844	1035 56329	1814 98676
15 barg	11 442	21 1044	34 2265	85 5565	142 9299	317 20801	551 36205	1250 82087	2190 143801
20 barg	13 582	24 1373	40 2979	97 7318	162 12229	363 27354	632 47612	1434 107949	2511 189105
30 barg	16 862	29 2034	48 4414	118 10843	198 18119	442 40529	770 70544	1745 159942	3057 280187

# AX 2300

Typical Saturated Steam Minimum and Maximum Flow Rates (lb/hr)						
Pressure	Nominal Pipe Size (in)					
	3	6	8	12	16	24
5 psig	205 2721	800 10633	1385 18412	3099 41196	4893 65039	11132 147954
100 psig	468 14246	1831 55674	3170 96407	7092 215703	11197 340546	25472 774698
200 psig	632 25948	2471 101405	4278 175595	9572 392880	15111 620268	34377 1411029
300 psig	762 37652	2976 147145	5153 254799	11530 570093	18203 900047	41410 2047489
400 psig	873 49494	3412 193420	5908 334930	13219 749382	20870 1183103	47477 2691404
500 psig	974 61543	3805 240507	6588 416468	14741 931816	23272 1471125	52742 3346615

Typical Saturated Steam Minimum and Maximum Flow Rates (kg/hr)						
Pressure	Nominal Pipe Size (mm)					
	80	150	200	300	400	600
0 barg	81 938	316 3667	548 6350	1226 14209	1936 22432	4404 51039
5 barg	187 4986	729 19486	1263 33742	2826 75495	4461 119189	10151 271187
10 barg	249 8859	972 34620	1683 59949	3767 211332	5947 121764	13530 481821
15 barg	298 12700	1164 49629	2016 85939	4510 192283	7120 303570	16200 690705
20 barg	340 16550	1329 64676	2301 111995	5148 250581	8128 395609	18493 900119
30 barg	413 24357	1612 95187	2791 164827	6246 368789	9860 582234	22435 1324739

Typical Air Minimum and Maximum Flow Rates (lb/hr)						
Pressure	Nominal Pipe Size					
	3	6	8	12	16	24
5 psig	56 924	220 3611	381 6253	852 13991	1345 22089	3059 50250
100 psig	157 7236	615 28279	1065 48969	2383 109564	3763 172977	8560 393500
200 psig	216 13588	843 53101	1460 91950	3266 205732	5156 324804	11729 738886
300 psig	262 19974	1022 78059	1770 135169	3960 302430	6251 477467	14221 1086176
400 psig	301 26391	1175 103136	2034 178593	4551 399588	7186 630859	16346 1435121
500 psig	335 32834	1310 128314	2269 222191	5077 497135	8015 784856	18233 1785464

Typical Air Minimum and Maximum Flow Rates (kg/hr)						
Pressure	Nominal Pipe Size (mm)					
	80	150	200	300	400	600
0 barg	89 1463	347 5716	601 9897	1345 22145	2124 34962	4833 79547
5 barg	217 8702	847 34006	1467 58885	3282 131751	5181 208004	11788 473266
10 barg	294 15975	1148 62430	1987 108105	4446 241878	7020 381870	15972 868857
15 barg	355 23280	1385 90979	2399 157542	5386 352487	8474 556497	19282 1266162
20 barg	407 30615	1589 119642	2751 207175	6156 463539	9718 731823	22112 1665095
30 barg	495 45361	1934 177268	3349 306961	7493 686801	11829 1084302	26915 2467081

Model Selection Guide - AX2200 In-Line Vortex Meter

AX2200 015 S FA R3 D 1 A S 2 MCPT

**Parent Mode Code**  
 In-Line Multivariable Mass Vortex Flow Meter  
 AX2200 Volumetric Flow Meter for Liquid, Gas and Steam  
 AX2211 Velocity and Temperature Sensors  
 AX2222 Velocity, Temperature and Pressure Sensors  
 AX2233 Velocity, Temperature and External Pressure Input  
 AX2244 Energy Output Options  
 AX2255 Energy Options with Pressure Sensor

**Feature 2: Flow Body Line Size**  
 015 1/2-inch Nominal Bore (15mm)  
 020 3/4-inch Nominal Bore (20mm)  
 025 1-inch Nominal Bore (25mm)  
 040 1.5-inch Nominal Bore (40mm)  
 050 2-inch Nominal Bore (50mm)  
 080 3-inch Nominal Bore (80mm)  
 100 4-inch Nominal Bore (100mm)  
 150 6-inch Nominal Bore (150mm)  
 200 8-inch Nominal Bore (200mm)  
 250 10-inch Nominal Bore (250mm)  
 300 12-inch Nominal Bore (300mm)

**Feature 3: Meter Body Material**  
 C Carbon Steel  
 S Stainless Steel  
 H Hastelloy

**Feature 4: Process Connection**  
 FA ANSI 150# Flange  
 FB ANSI 300# Flange  
 FC ANSI 600# Flange  
 D1 DIN PN 16 Flange  
 D2 DIN PN 40 Flange  
 D3 DIN PN 64 Flange  
 WC Wafer ANSI 600#

Option Code	Length (meters)
1	3
2	5
3	10
4	15
6	20
Y	Custom Length

**Feature 5: Electronics Enclosure**  
 LE NEMA 4X, IP66 Enclosure (Integral)  
 R\_ Remote NEMA 4X, IP66 Enclosure (Specify cable length as second character from Table A)

**Feature 6: Display Option**  
 D Digital Display and Programming Buttons  
 X No Display

**Feature 7: Input Power**  
 1 12-36 VDC, 25mA, 1W max, required on loop powered meters, Output Code "A" only  
 2 12-36 VDC, 300mA, 9W max. - use with Output Codes "B", "C", "D" and "E"  
 3 100-240 VAC, 50/60Hz line power, 5W max. - use with Output Codes "B", "C", "D" and "E"

**Feature 8: Output Options**  
 A Loop powered option - one analog output (4-20mA), one alarm, one pulse, HART (Input Power Option Code "1" only)  
 B One analog output (4-20mA), one alarm, one pulse, HART Comm. (Input Power Option Code "2" or "3" only)  
 C One analog output (4-20mA), one alarm, one pulse, MODBUS Comm. (Input Power Option Code "2" or "3" only)  
 D Three analog outputs (4-20mA), three alarms, one pulse, HART (AX2222 & AX2233 only), Input Power Option Code "2" or "3" only  
 E Three analog outputs (4-20mA), three alarms, one pulse, MODBUS Comm. (AX2222 & AX2233 only), Input Power Option Code "2" or "3" only  
 F One analog output (4-20mA), one alarm, one pulse, BACnet Comm. (Input Power Option Code "2" or "3" only)  
 G Three analog outputs (4-20mA), three alarms, one pulse, BACnet Comm. (AX2222 & AX2233 only), Input Power Option Code "2" or "3" only

**Feature 9: Temperature Options**  
 S Standard Temperature Process Temperature -330° to 500°F (-200° to 260°C)  
 H High Temperature Preprocess Temperature 750°F (400°C)

**Feature 10: Pressure Options**  
 X No Pressure Sensor  
 A Maximum 30 psia (2 bara), Proof 60 psia (4 bara)  
 B Maximum 100 psia (7 bara), Proof 200 psia (14 bara)  
 C Maximum 300 psia (20 bara), Proof 600 psia (41 bara)  
 D Maximum 500 psia (34 bara), Proof 1000 psia (64 bara)  
 E Maximum 1500 psia (100 bara), Proof 2500 psia (175 bara)

**Feature 11: Certification Documents**  
 MC Material Certificates - US Mill certs on all wetted parts  
 PT Pressure Test Certificate  
 CC Certificate of Conformance  
 NC NACE Certification  
 O2 Oxygen Cleaning  
 PD PED certified bodies  
 A1 25' Armored Cable with Glands(ATEX, IECEX) V meter only - Adder to Remote option  
 A2 50' Armored Cable with Glands(ATEX, IECEX) V meter only - Adder to Remote option  
 A3 25' Armored Cable with Glands(ATEX, IECEX) VT, VTP meter only - Adder to Remote option  
 A4 50' Armored Cable with Glands(ATEX, IECEX) VT, VTP meter only - Adder to Remote option  
 XX Future Hazardous Location Approvals (two digit code for each)

**Model Selection Guide - AX2300 Insertion Vortex Meter**

**AX2300 S R3 D 1 A S 2 CF150 MCPT**

**Parent Mode Code**  
 Insertion Multivariable Mass Vortex Flow Meter  
 AX2300 Volumetric Flow Meter for Liquid, Gas and Steam  
 AX2311 Velocity and Temperature Sensors  
 AX2322 Velocity, Temperature and Pressure Sensors  
 AX2333 Velocity, Temperature and External Pressure Input  
 AX2344 Energy Output Options  
 AX2355 Energy Options with Pressure Sensor

**Feature 2: Probe Length**  
 S Standard Length  
 C Compact Length  
 E Extended Length

Table A	
Option Code	Length (meters)
1	3
2	5
3	10
4	15
6	20
Y	Custom Length

**Feature 3: Electronics Enclosure**  
 LE NEMA 4X, IP66 Enclosure (Integral)  
 R\_ Remote NEMA 4X, IP66 Enclosure (Specify cable length as second character from Table A)

**Feature 4: Display Option**  
 D Digital Display and Programming Buttons  
 X No Display

**Feature 5: Input Power**  
 1 12-36 VDC, 25mA, 1W max, required on loop powered meters, Output Code "A" only  
 2 12-36 VDC, 300mA, 9W max. - use with Output Codes "B", "C", "D" and "E"  
 3 100-240 VAC, 50/60Hz line power, 5W max. - use with Output Codes "B", "C", "D" and "E"

**Feature 6: Output Options**  
 A Loop powered option - one analog output (4-20mA), one alarm, one pulse, HART (Input Power Option Code "1" only)  
 B One analog output (4-20mA), one alarm, one pulse, HART Comm. (Input Power Option Code "2" or "3" only)  
 C One analog output (4-20mA), one alarm, one pulse, MODBUS Comm. (Input Power Option Code "2" or "3" only)  
 D Three analog outputs (4-20mA), three alarms, one pulse, HART (AX2222 & AX2233 only), Input Power Option Code "2" or "3" only  
 E Three analog outputs (4-20mA), three alarms, one pulse, MODBUS Comm. (AX2222 & AX2233 only), Input Power Option Code "2" or "3" only  
 F One analog output (4-20mA), one alarm, one pulse, BACnet Comm. (Input Power Option Code "2" or "3" only)  
 G Three analog outputs (4-20mA), three alarms, one pulse, BACnet Comm. (AX2222 & AX2233 only), Input Power Option Code "2" or "3" only

**Feature 7: Temperature Options**  
 S Standard Temperature Process Temperature -330° to 500°F (-200° to 260°C)  
 H High Temperature Preprocess Temperature 750°F (400°C)

**Feature 8: Pressure Options**  
 X No Pressure Sensor  
 A Maximum 30 psia (2 bara), Proof 60 psia (4 bara)  
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 C Maximum 300 psia (20 bara), Proof 600 psia (41 bara)  
 D Maximum 500 psia (34 bara), Proof 1000 psia (64 bara)  
 E Maximum 1500 psia (100 bara), Proof 2500 psia (175 bara)

**Feature 9: Process Connections**

Code	Code	Code	Code
CFNPT	Compression, 2 inch NPT	PG300	Packing Gland, 2 inch ANSI 300# Flange
CF150	Compression, 2 inch ANSI 150# Flange	PGP40	Packing Gland, DIN DN50 PN 40 Flange
CFP16	Compression, DIN DN50 PN16 Flange	PGNPR	Packing Gland, 2 inch NPT, Retractor
CF300	Compression, 2 inch ANSI 300# Flange	PG15R	Packing Gland, 2 inch ANSI 150# Flange, Retractor
CFP40	Compression, DIN DN50 PN40 Flange	PGP1R	Packing Gland, DIN DN50 PN16, Retractor
CF600	Compression, 2 inch ANSI 600# Flange	PG30R	Packing Gland, 2 inch ANSI 300# Flange, Retractor
CFP64	Compression, DIN DN59 PN64 Flange	PGP4R	Packing Gland, DIN DN50 PN 40 Flange, Retractor
PGNPT	Packing Gland, 2 inch NPT	PG60R	Packing Gland, 2 inch ANSI 600# Flange, Retractor
PG150	Packing Gland, 2 inch ANSI 150# Flange	PGP6R	Packing Gland, DIN DN50 PN64 Flange, Retractor
PGP16	Packing Gland, DIN DN50 PN16		

**Feature 10: Certification Documents**  
 MC Material Certificates - US Mill certs on all wetted parts  
 PT Pressure Test Certificate  
 CC Certificate of Conformance  
 NC NACE Certification  
 O2 Oxygen Cleaning  
 PD PED certified bodies  
 A1 25' Armored Cable with Glands(ATEX, IECEX) V meter only - Adder to Remote option  
 A2 50' Armored Cable with Glands(ATEX, IECEX) V meter only - Adder to Remote option  
 A3 25' Armored Cable with Glands(ATEX, IECEX) VT, VTP meter only - Adder to Remote option  
 A4 50' Armored Cable with Glands(ATEX, IECEX) VT, VTP meter only - Adder to Remote option  
 XX Future Hazardous Location Approvals (two digit code for each)



# AX 2200/2300

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