

ABB MEASUREMENT & ANALYTICS | DATA SHEET

# WaterMaster FEW530

Electromagnetic water meter



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## **Measurement made easy**

Cost effective and superior alternative to mechanical meters

### **Compact full-bore device in wafer design**

- available in sizes DN50 to DN250 (2 to 10 in)

### **Quick and compact installation**

- fits ASME flanges (CL150)

### **Bi-directional flow measurement**

### **No moving parts**

- increased reliability

### **Switch-mode power supply**

## Applications

- Building automation and related metering
- Irrigation, tube wells and abstraction
- Treated effluents
- Bulk water metering
- Ideal for water and waste water OEMs

## Setting the standard

Designed specifically to target water applications, WaterMaster FEW530 sets new standards of reliability and low cost of ownership. Ground-breaking design guarantees long-term calibration stability, coupled with a wide range of wafer design sizes – DN 50 to DN 250 (2 to 10 in).

### Class-leading flow performance

Based on the proven electromagnetic principle, the WaterMaster FEW530 combines the best features of the technology to create a cost-effective alternative to conventional methods.

The combination of sensors with linear magnetics, proven technology, signal processing and sensor drive results in stable performance and high turndown.

### Assured quality

WaterMaster FEW530 is manufactured in accordance with international quality procedures (ISO 9001) and all flowmeters are calibrated on traceable calibration rigs to provide the end-user with complete quality assurance. A flow tube that is free of obstructions ensures reliability under demanding flow conditions and in the presence of solids (for example, sand, weeds and leaves) in the process.

### Comprehensive features

A wide range of features and user benefits are built into this cost effective flowmeter including a graphical display with a four-key HMI for easy operation and totalizers to keep track of the volume of water flowing through the meter.

## Specification – mechanical

### Wetted parts

#### Lining

Elastomer (EPDM rubber)

#### Measurement electrode

Hastelloy C4

#### Grounding plate

Stainless steel (SS316)

### Flowmeter sensor

#### Housing – DN50 to DN250 (2 to 10 in)

Carbon steel sheet metal, painted, paint coat  $\geq 80 \mu\text{m}$  thick, RAL 9002

#### Terminal box

Cast aluminium, painted,  $\geq 80 \mu\text{m}$  thick, light gray, RAL 9002

#### Meter tube

Stainless steel

#### Cable gland

Polyamide M20

#### IP rating (according to EN 60529)

IP 67

### Temperature rating

#### Ambient temperature

$-20$  to  $60 \text{ }^\circ\text{C}$  ( $-4$  to  $140 \text{ }^\circ\text{F}$ )

#### Storage temperature

$-20$  to  $70 \text{ }^\circ\text{C}$  ( $-4$  to  $158 \text{ }^\circ\text{F}$ )

#### Process temperature

$0$  to  $80 \text{ }^\circ\text{C}$  ( $32$  to  $176 \text{ }^\circ\text{F}$ )

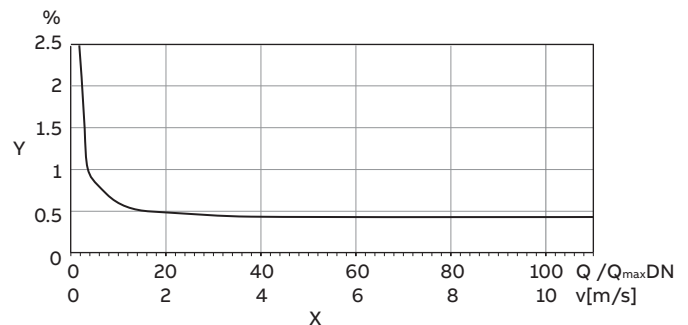
### Measuring medium conductivity

$\geq 50 \mu\text{S/cm}$

### Maximum measuring error (impulse output)

#### Advanced calibration

$\pm 0.4 \%$  of measured value



Y = Accuracy ( $\pm$  of measured value in %)

X = Flow velocity v in m/s, Q / QmaxDN [%]

QmaxDN: see table on page 4

#### Advanced version error

- $\pm 0.4 \%$  of measured value
- $\pm 0.02 \%$  QmaxDN

## ...Specification – mechanical

### Flowmeter sizes, flow range

Bore DN in		Min. flow range	$Q_{\max DN}$	Max. flow range
		end value $0.02 \times Q_{\max DN}$ ( $\approx 0.2$ m/s)	0 to $\approx 10$ m/s	end value $2 \times Q_{\max DN}$ ( $\approx 20$ m/s)
50	2	1.2 m <sup>3</sup> /h (5.28 US gal/min)	60 m <sup>3</sup> /h (264 US gal/min)	120 m <sup>3</sup> /h (528 US gal/min)
80	3	3.6 m <sup>3</sup> /h (15.9 US gal/min)	180 m <sup>3</sup> /h (793 US gal/min)	360 m <sup>3</sup> /h (1585 US gal/min)
100	4	4.8 m <sup>3</sup> /h (21.1 US gal/min)	240 m <sup>3</sup> /h (1057 US gal/min)	480 m <sup>3</sup> /h (2113 US gal/min)
125	5	8.4 m <sup>3</sup> /h (37 US gal/min)	420 m <sup>3</sup> /h (1849 US gal/min)	840 m <sup>3</sup> /h (3698 US gal/min)
150	6	12 m <sup>3</sup> /h (52.8 US gal/min)	600 m <sup>3</sup> /h (2642 US gal/min)	1200 m <sup>3</sup> /h (5283 US gal/min)
200	8	21.6 m <sup>3</sup> /h (95.1 US gal/min)	1080 m <sup>3</sup> /h (4755 US gal/min)	2160 m <sup>3</sup> /h (9510 US gal/min)
250	10	36 m <sup>3</sup> /h (159 US gal/min)	1800 m <sup>3</sup> /h (7925 US gal/min)	3600 m <sup>3</sup> /h (15850 US gal/min)

## Specification – electrical

### Output

Current output

4 to 20 mA DC

Digital output

2 (configurable for pulse and alarm)

### Human machine interface (HMI)

Graphic LCD, four-key navigation

### Power supply

24 V AC and DC, 110 to 220 V AC, 50/60 Hz

### Transmitter configuration

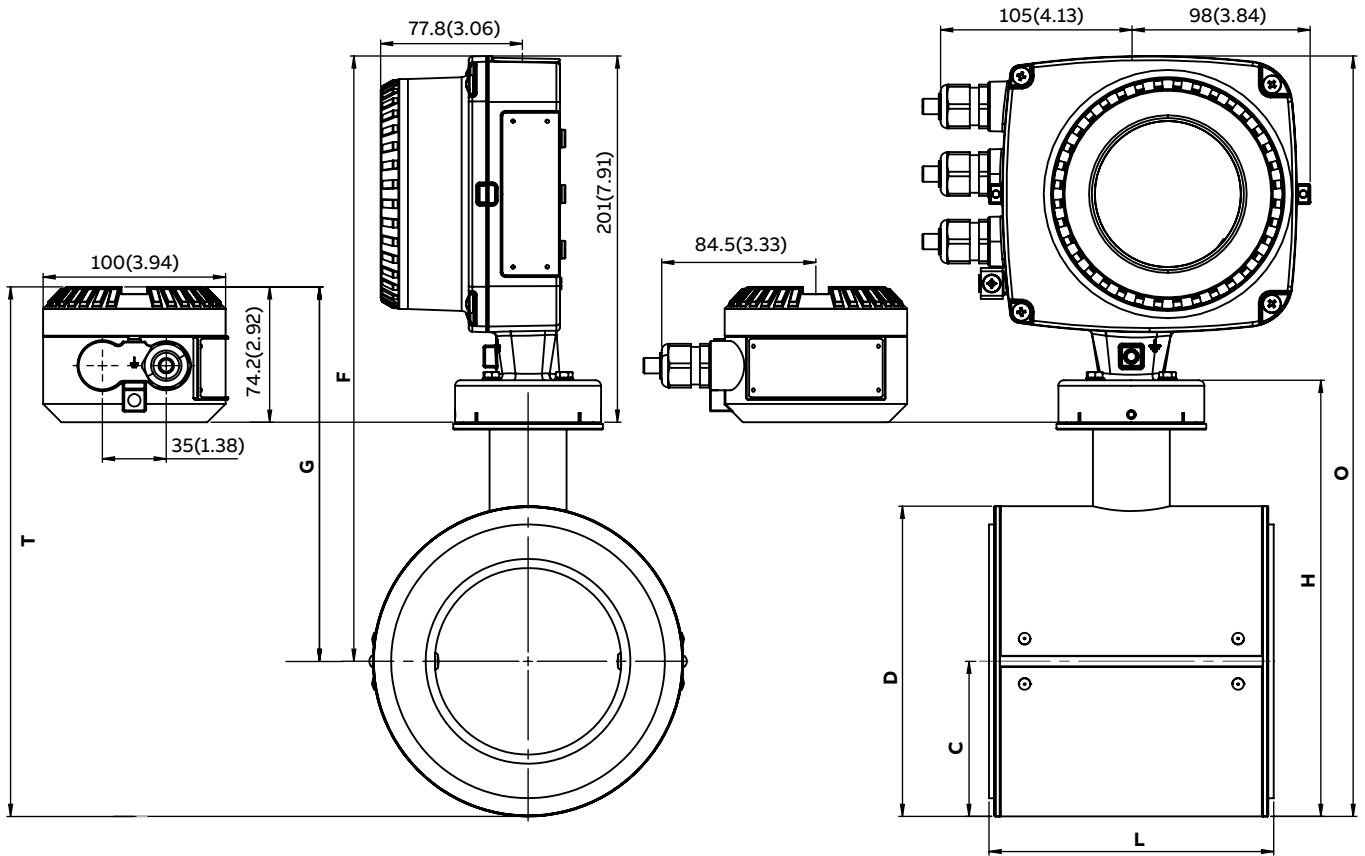
- Integral to sensor
- Remote version available as option

### Signal cable (for remote versions only)

Length up to 50 m (165 ft)

## Dimensions

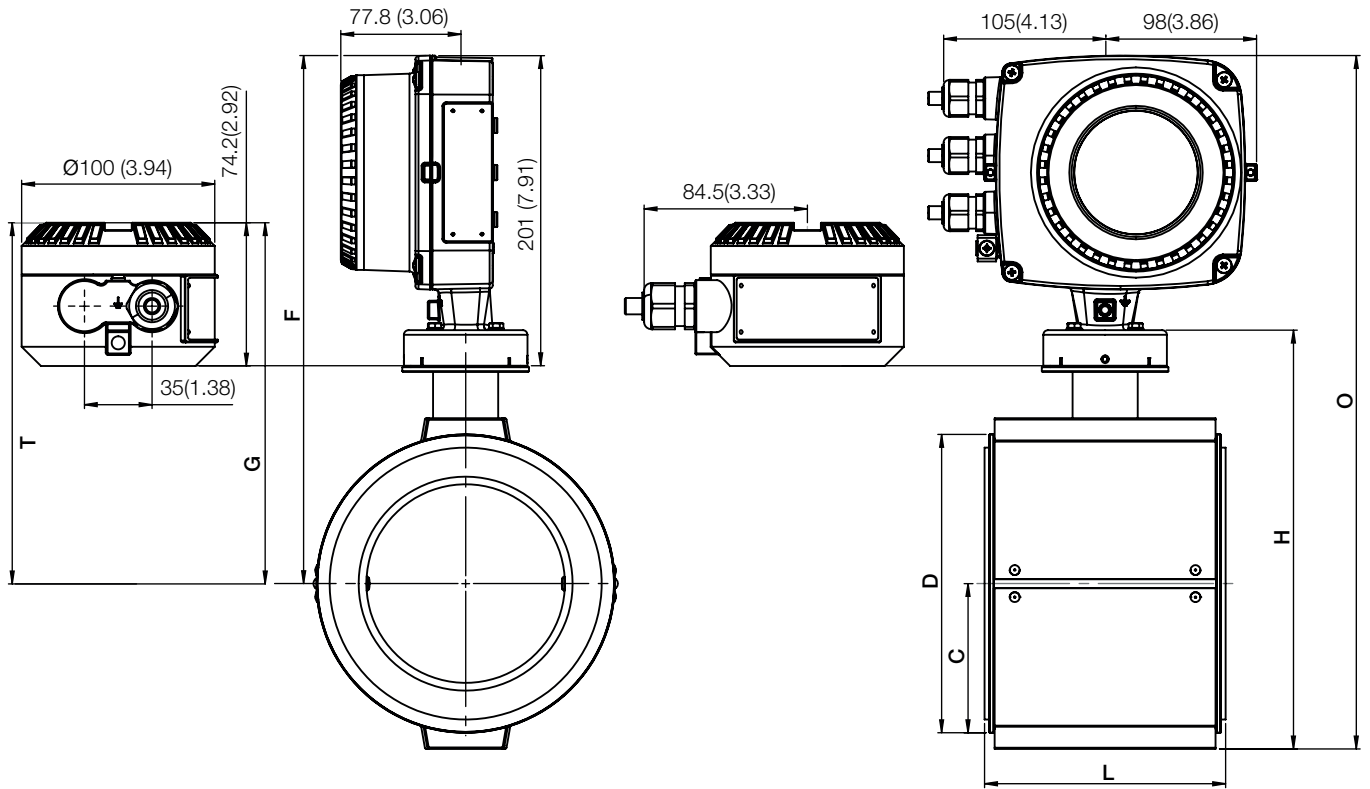
DN 50 to 100 (2 to 4 in)



Meter size	Dimensions in mm (in)								Weight in kg (lbs)	
	D	C	L	F	G	O	H	T	Integral	Remote
DN50 (2 in)	100 (3.93)	50 (1.96)	88 (3.46)	291 (11.45)	164.2 (6.46)	341 (13.42)	154.5 (6.08)	214.2 (8.43)	8.12 (17.9)	6.08 (13.4)
DN80 (3 in)	132 (5.19)	66 (2.59)	126 (4.96)	317.5 (12.5)	190 (7.48)	383.5 (15.09)	197 (7.75)	256.7 (10.1)	9.93 (21.89)	7.44 (16.4)
DN100 (4 in)	170 (6.7)	85 (3.34)	156 (6.14)	331 (13.03)	204 (8.03)	416 (16.37)	229.5 (9.05)	289.2 (11.38)	12.66 (27.9)	10.16 (22.39)

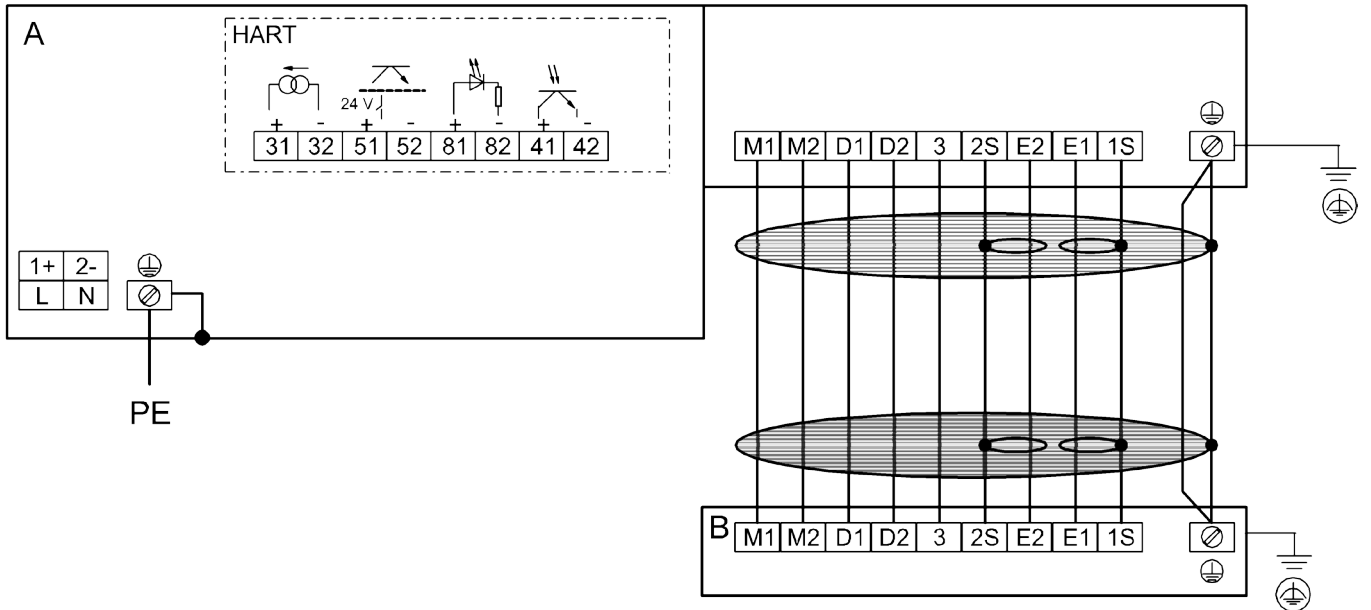
## ...Dimensions

DN 125 to 250 (5 to 10 in)



Meter size	Dimensions in mm (in)								Weight in kg (lbs)	
	D	C	L	F	G	O	H	T	Integral	Remote
DN125 (5 in)	193 (7.6)	108.5 (4.27)	156 (6.14)	341 (13.42)	214 (8.43)	422.5 (16.63)	236 (9.29)	295.7 (11.64)	13.7 (30.2)	11.5 (23.35)
DN150 (6 in)	218 (8.58)	119.5 (4.7)	171 (6.73)	361 (14.21)	234 (9.21)	480.5 (18.91)	294 (11.57)	353.7 (13.92)	15.15 (33.4)	12.8 (28.21)
DN200 (8 in)	275 (10.82)	148 (5.82)	206 (8.11)	376 (14.8)	249 (9.81)	514 (20.62)	337.5 (13.28)	397.2 (15.63)	17.8 (39.24)	15.6 (34.39)
DN250 (10 in)	335.5 (13.2)	178.5 (7.02)	226 (8.89)	421 (16.57)	294 (11.58)	599.5 (23.6)	413 (16.25)	472.7 (18.61)	21.5 (47.39)	18.7 (41.22)

## Electrical connections – FET3



A = transmitter, B = sensor

### Power supply connections

AC power supply

Terminal	Function
L	Live / Phase
N	Neutral
PE	Protective earth (PE)

DC power supply

Terminal	Function
1+	+
2-	-
PE	Protective earth (PE)

### Sensor cable terminal connections (remote mount versions only)

Terminal	Function	Cable color
M1	Magnet coil	Brown
M2	Magnet coil	Red
D1	Data line	Orange
D2	Data line	Yellow
SE	Shield	-
E1	Signal line	Violet
1S	Shield for E1	-
E2	Signal line	Blue
2S	Shield for E2	-
3	Measurement potential	Green

### Output connections

Terminal	Function
31 / 32	<b>Current / HART output</b> Current output is available in 'active' or 'passive' mode
51 / 52	<b>Digital output DO1 active / passive</b> May be configured locally as 'pulse output' (factory default) or 'digital output'
81 / 82	<b>Digital input / contact input</b> May be configured locally as 'external output switch-off', 'external totalizer reset', 'external totalizer stop' or 'other'
41 / 42	<b>Digital output DO2 passive</b> May be configured locally as 'pulse output' or 'digital output' (factory default). Flow direction signalling.

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## Ordering information

### WaterMaster wafer flowmeter – integral transmitter

- FEW531.Y0.V4.F.0050.W1.E2.U.1.D.0.D.70.A.2.G0.B.FET3+3KXF271100U0084-1
- FEW531.Y0.V4.F.0080.W1.E2.U.1.D.0.D.70.A.2.G0.B.FET3+3KXF271100U0084-2
- FEW531.Y0.V4.F.0100.W1.E2.U.1.D.0.D.70.A.2.G0.B.FET3+3KXF271100U0084-3
- FEW531.Y0.V4.F.0125.W1.E2.U.1.D.0.D.70.A.2.G0.B.FET3+3KXF271100U0084-4
- FEW531.Y0.V4.F.0150.W1.E2.U.1.D.0.D.70.A.2.G0.B.FET3+3KXF271100U0084-5
- FEW531.Y0.V4.F.0200.W1.E2.U.1.D.0.D.70.A.2.G0.B.FET3+3KXF271100U0084-6
- FEW531.Y0.V4.F.0250.W1.E2.U.1.D.0.D.70.A.2.G0.B.FET3+3KXF271100U0084-7

### WaterMaster wafer flowmeter – remote transmitter

- FEW532.Y0.A2.K1.F.0050.W1.E2.U.1.D.0.D.70.A.2.G0.B.SC2.FET3+3KXF271100U0084-1
- FEW532.Y0.A2.K1.F.0080.W1.E2.U.1.D.0.D.70.A.2.G0.B.SC2.FET3+3KXF271100U0084-2
- FEW532.Y0.A2.K1.F.0100.W1.E2.U.1.D.0.D.70.A.2.G0.B.SC2.FET3+3KXF271100U0084-3
- FEW532.Y0.A2.K1.F.0125.W1.E2.U.1.D.0.D.70.A.2.G0.B.SC2.FET3+3KXF271100U0084-4
- FEW532.Y0.A2.K1.F.0150.W1.E2.U.1.D.0.D.70.A.2.G0.B.SC2.FET3+3KXF271100U0084-5
- FEW532.Y0.A2.K1.F.0200.W1.E2.U.1.D.0.D.70.A.2.G0.B.SC2.FET3+3KXF271100U0084-6
- FEW532.Y0.A2.K1.F.0250.W1.E2.U.1.D.0.D.70.A.2.G0.B.SC2.FET3+3KXF271100U0084-7



## Accessories

Description	Part number
High accuracy FET3	FET3 *
Sensor installation kits	
DN 50 (2 in)	3KXF271100U0084-1
DN 80 (3 in)	3KXF271100U0084-2
DN 100 (4 in)	3KXF271100U0084-3
DN 125 (5 in)	3KXF271100U0084-4
DN 150 (6 in)	3KXF271100U0084-5
DN 200 (8 in)	3KXF271100U0084-6
DN 250 (10 in)	3KXF271100U0084-7
Earth contact flange, 316 stainless steel	
50 mm (2 in)	3KXF271100U0086-1
80 mm (3 in)	3KXF271100U0086-2
100 mm (4 in)	3KXF271100U0086-3
125 mm (5 in)	3KXF271100U0086-4
150 mm (6 in)	3KXF271100U0086-5
Earth contact ring, 316 stainless steel	
200 mm (8 in)	3KXF271100U0086-6
250 mm (10 in)	3KXF271100U0086-7

\* Additional ordering code (mandatory) – FET3

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## Notes







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