KMS101W

Electromagnetic Wafer Flowmeters with 'S100'display

ideal as resettable/batching meter (sizes: 15mm to 150mm)

FEATURES

- **For ADMIXTURE Batching, Shotcrete, Mild-Recycled Water & Selected Chemical Applications (upto 20% solids)**
- K-MAGS Fully wired and custom programmed to requirement.
- PFA liner, Hastelloy C electrodes, Wafer connections
- Virtually maintenance free. No moving parts.
- Self-verifying. Accuracy: ±0.3% +1 mm/s.
- 85 - 253 vac or 11 - 31 vdc powered
- Totaliser up to 10 digits. With Flowrate display.
- Totaliser resettable via optional pushbutton.
- Display can be Remote (all sizes, 2-metres cable to flowsensor) or Integral (45° or 0° mounted)
- Empty pipe detection.
- Durable cast alloy display enclosure.
- Grounding earth ring supplied.
- Programmable via 4 push buttons or via HART to PC.
- IP68 remote flow sensor (when potted).
- Process temperature: -25 to 120 ºC.
- Measured liquid must have conductivity of at least 5 µS/cm (20 µS/cm for water)


Integral Mount '0' Degrees Display


Integral Mount 45° Degrees Display

The K-MAGS electromagnetic flowmeters are custom configured, wired, programmed, tested and supplied by ManuFlo. They offer quality performance with accuracy of ± 0.3% of rate and are capable of operating over very wide flow ranges. With no moving parts and an obstruction-less bore, this type of flowmeter guarantees the highest level of performance, unaffected by specific gravity or viscosity variations, or the most contaminated of fluids, whilst maintaining a high degree of accuracy for liquids with conductivity ≥ 5µS/cm. A unique self-verifying feature is implemented in K-mags, providing ultra-stable performance over time.

All K-mags are supplied fully wired, programmed to your specific application requirements, and tested, with Total and Flowrate display and outputs all configured. Application examples include use for measuring mining slurries, grouts, oxides, construction chemicals, food industry etc. The uses are wide and far reaching.

Size (mm)	Order Code		MINIMUM Flowrate		MAXIMUM Flowrate
	Integral	Remote	(Litres/minute) @ ±3% accuracy *	(Litres/minute) @ ±0.3% accuracy	(Litres/minute) @ ±0.3% accuracy
15	KMS101-015W	KMS101-015W-R	0.5	5	106
25	KMS101-025W	KMS101-025W-R	1.5	14	295
40	KMS101-040W	KMS101-040W-R	3.8	37	753
50	KMS101-050W	KMS101-050W-R	5.9	58	1178
80	KMS101-080W	KMS101-080W-R	15.1	150	3014
100	KMS101-100W	KMS101-100W-R	23.6	235	4711
150	KMS101-150W	KMS101-150W-R	53.0	530	10601

* will measure at lower flowrates, but at reduced accuracy.

OPTIONS

-TRB	Totaliser Reset Button	**-XC*n***	Extra cable (where *n* = **extra** cable length in metres)
-DC	11-31 VDC Powered	**-W**	WAFER SENSOR in Lieu of Flanged
ANSI-150 PVC or Galvanized Iron connection kits available			

TECHNICAL DATA

KMS102/4F

Signal converter / Display		
Design		Integral (0° & 45°) version or
		Remote version
Outputs		4-20mA & Pulse output
Input		External totaliser reset input
Counter		2 internal counter, 10 digits max
Verification		Integrated verification
		Diagnostic functions
		Empty Pipe detection
Comms interface		HART®
Graphic display		59 x 31 mm white backlit LCD
Operating elements		4 external pushbuttons
Units	Totaliser	L; mL; m^3; gal
	Flowrate	L/sec; L/min; L/h; m^3/h; gal/min
Protection category		IP65
Materials		Aluminum w/ polyester topcoat
Power supply		85 – 253 VAC @ 7 VA
		11 – 31 VDC @ 4 W
Signal cable		2 metres standard (Remote version only)
Cable entries		M20 x 1.5 (8…12mm)

Measuring sensor / Tube	
Accuracy	±0.3% @ 1 mm/s
Repeatability	±0.1%
Temperature	-25 to 120 °C
Pressure rating	See sensor dimensions & weight
Conductivity	Water: ≥ 20 µS/cm
	Other media: ≥ 5 µS/cm
Solid content (volume)	≤ 20%
Protection category	IP65 or IP68 when potted
Materials	PTFE or Polypropylene liner
	Hastelloy C electrodes
Cable entries	M20 x 1.5 (8…12mm)

Basic Input and Outputs (I/Os)	
Analog 4-20mA Output	Active: R_L≤750Ω; I ≤ 22mA
	Passive: U_{ext} ≤ 32VDC; I≤ 22mA
Digital Pulse Output	Passive:U_{ext} ≤ 32VDC;I≤ 100mA
Pulse rate	0.25 to 10KHz
Pulse width	Symmetric (50% duty cycle)
	Fixed (0.05 up to 2000mS)
Totaliser Reset Input	Passive: 12 – 32 VDC

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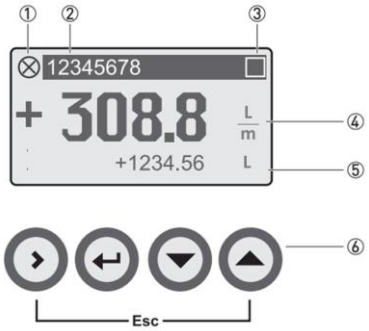
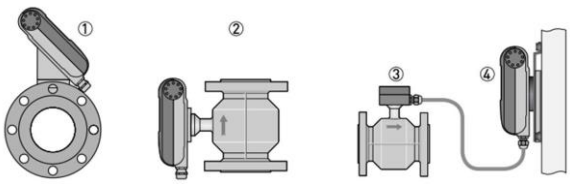
DISPLAY AND OPERATING ELEMENTS

KMS102/4F



Display example:
Flow indication in Litres per minute (L/m) and totaliser in Litres (L)

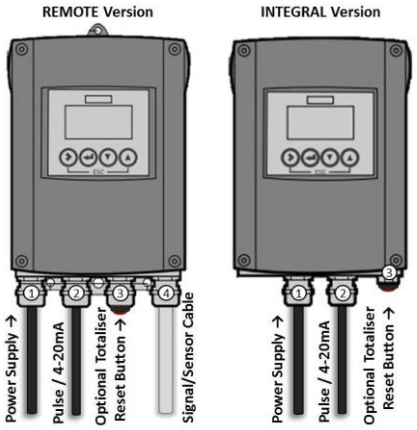
(1) Indicates a possible status message in the status list
(2) Tag number (is only indicated if this number was entered previously by the operator)
(3) Indicates when a key has been pressed
(4) Flowrate in large representation
(5) Forward totalizer
(6) Keys for accessing menu and settings



Display versions:

• Integral version (the signal converter is mounted directly on the measuring sensor)
• Remote version (electrical connection to the measuring sensor via field current and signal cable)

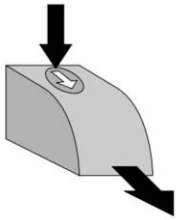
(1) Integral version as 45° version
(2) Integral version as 0° version
(3) Measuring sensor with connection box
(4) Wall version

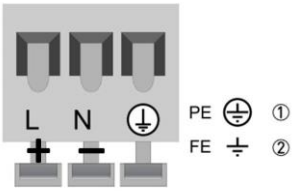


Cable connections:

(1) Power supply input (AC or DC) version
(2) Pulse or 4-20ma output
(3) Optional totalizer reset button (can also be used as Pulse or 4-20mA output if reset button not needed)
(4) Signal/Sensor cable for remote version only

DANGER! The device must be grounded in accordance with regulations in order to protect personnel against electric shocks.
CAUTION! Observe connection polarity

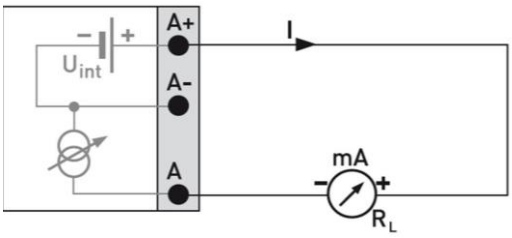




Power supply connection

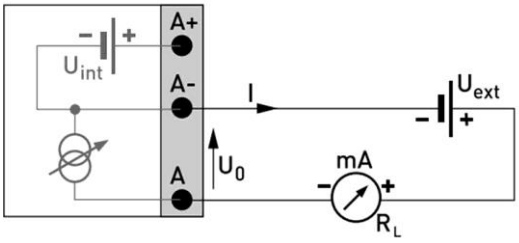
(1) 85 – 253 VAC @ 7 VA
(2) 11 – 31 VDC @ 4 W

• Open the cover of the electrical terminal compartment by pressing down and pulling forwards at the same time.



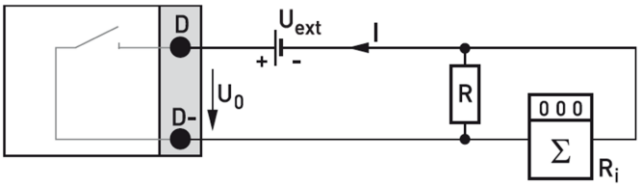
Current output active (HART®)

• U_{int}, nom = 20 VDC
• I ≤ 22 mA
• RL ≤ 750 Ω
• HART® at connection terminals A



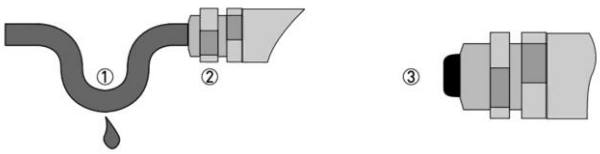
Current output passive (HART®)

• Uint, nom = 20 VDC
• Uext ≤ 32 VDC
• I ≤ 22 mA
• U0 ≥ 2 V at I = 22 mA
• RL ≤ (Uext - U0)/Imax
• HART® at connection terminals A



Pulse output passive (standard)

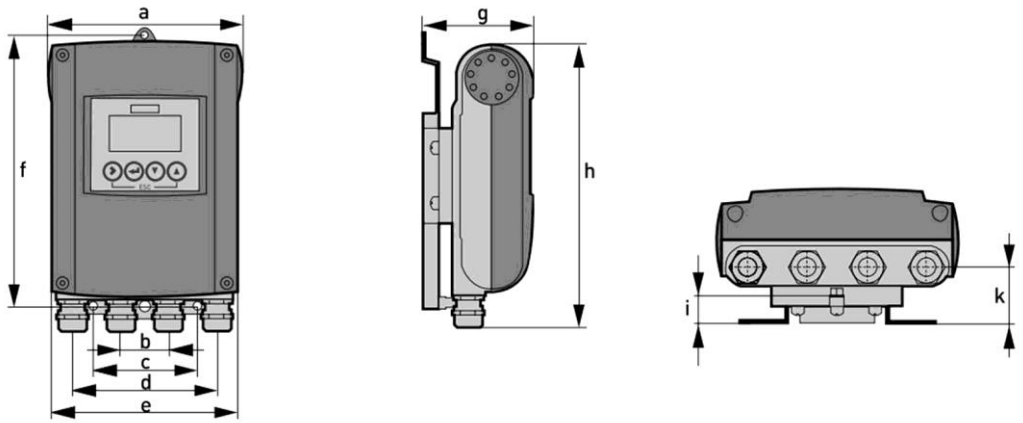
• Uext ≤ 32 VDC
• fmax in operating menu set to 100 Hz < fmax ≤ 10 kHz:
(over range up to fmax ≤ 12 kHz)
I ≤ 20 mA
RL ≤ 10 kΩ for f ≤ 1 kHz
RL ≤ 1kΩ for f ≤ 10 kHz
closed:
U0 ≤ 5 V at I = 20 mA
open:
I ≤ 0.05 mA at Uext = 32 V
• The minimum load impedance RL, min is calculated as follows: RL, min = (Uext - U0)/Imax
• The output is open if the device is de-energised.



Laying electrical cables correctly

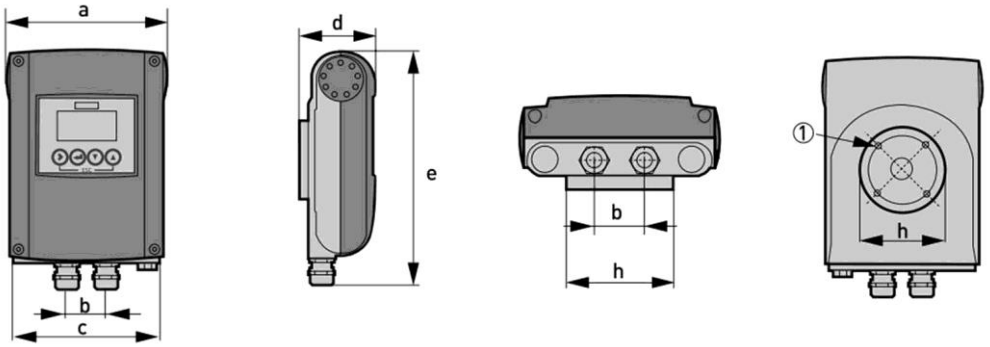
(1) For compact versions with nearly horizontally-oriented cable entries, lay the necessary electric cables with a drip loop as shown in the illustration.
(2) Tighten the screw connection of the cable entry securely.
(3) Seal cable entries that are not needed with a plug.

REMOTE Version



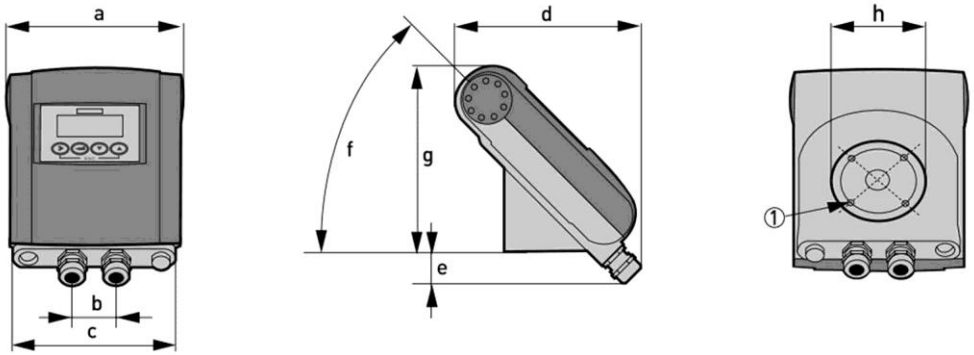
	Dimensions [mm]										Weight [kg]
	a	b	c	d	e	f	g	h	i	k	
Wall-mounted version	161	40	87.2	120	155	241	95.2	257	19.3	39.7	Std: 1.9 Ex: 2.4

INTEGRAL 0° Version



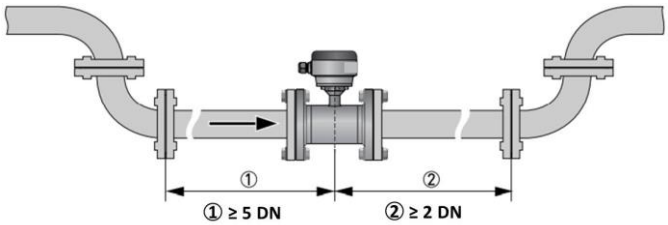
	Dimensions [mm]								Weight [kg]
	a	b	c	d	e	f	g	h	
0° version	161	40	155	81.5	257	-	-	Ø72	Std: 1.9 Ex: 2.4

INTEGRAL 45° Version



	Dimensions [mm]								Weight [kg]
	a	b	c	d	e	f	g	h	
45° version	161	40	155	184	27.4	45°	186	Ø72	Std: 2.1 Ex: 2.6

Straight Pipe Requirements



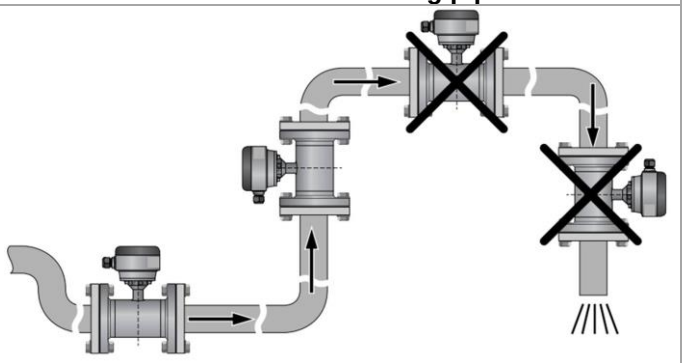
To ensure accurate measurement:

- Pipe must be full at all times
- Must have straight pipe of length > 5x pipe diameter upstream of sensor and also straight pipe of length > 2x pipe diameter downstream of sensor.

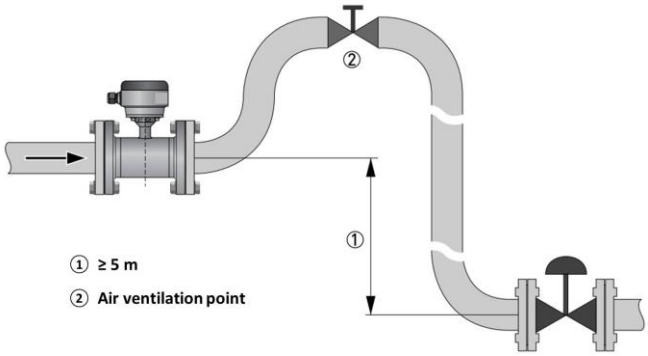
e.g. 50mm flowmeter requires

at least 250mm of straight 50mm Ø pipe upstream, and
at least 100mm of straight 50mm Ø pipe downstream

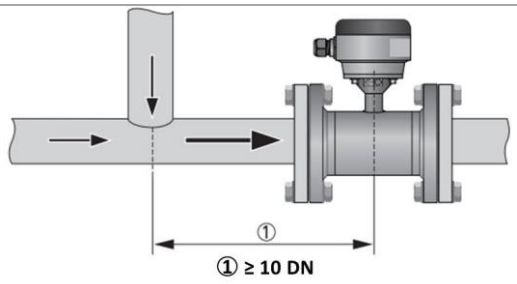
Installation on bending pipes



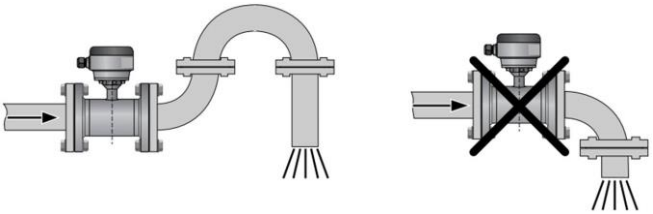
Air venting



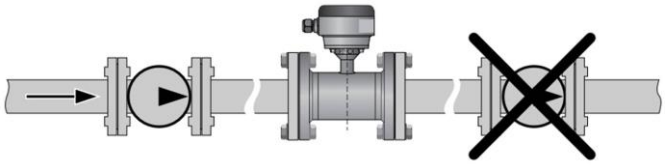
T - section



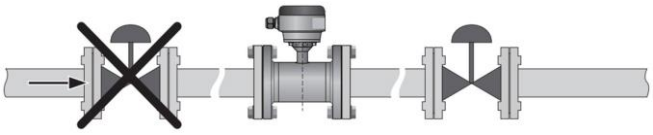
Installation in front of an open discharge



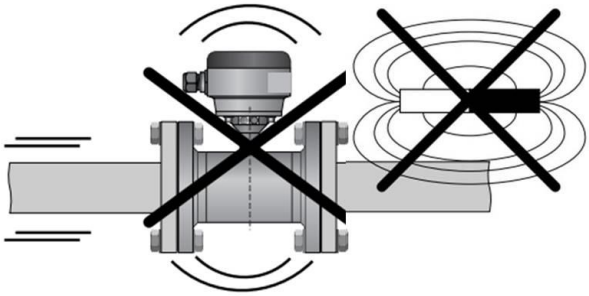
Installation behind a pump



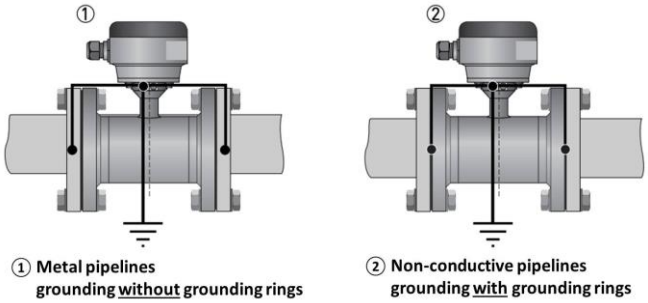
Installation in front of a control valve



Avoid vibrations and magnetic field



Grounding



KMS Electromagnetic Flowmeter Installation Guide and Checklist

LOCATION	
To avoid vibration that may hinder correct flow readings, **support the weight** of the flowmeter sensor.	☐
Mount the flowmeter's display box in an area that allows **easy access** for reading.	☐
If mounted outdoors: • Install a **sunshade**, to protect the display box from direct sunlight; and • Consider if you need to install a lockable vandal-proof enclosure, preferably with a window for reading the display.	☐
To ensure correct flow readings, **avoid** installing the flowmeter sensor in the vicinity of strong **electromagnetic fields**, and avoid areas where there is **excessive vibration**.	☐
Ensure that the chosen location will allow the flowmeter to operate within its **environmental rating**.	☐
ELECTRICAL	
Have the appropriate **power supply** (e.g 85-253vac or 11 -31 VDC) available.	☐
Units in most cases come prewired between sensor and transmitter/display box, otherwise ensure proper colour coding is used when wiring signal cable.	☐
If unsure regarding wiring of outputs – call ManuFlo. Use cable glands provided and make sure they are properly tightened and sealed. Allow for a drip loop before the gland to prevent ingress into the transmitter.	☐
PLUMBING	
Install the flowmeter sensor in a section of pipe that is **full at all times,** to ensure correct flow readings.	☐
To prevent turbulence in the flow that may hinder correct flow readings, ensure that there is **straight pipe before and after the sensor**, of length at least: • 5x pipe diameter before (upstream of) sensor; and • 2x pipe diameter after (downstream of) sensor. e.g. for 50mm diameter pipe, the lengths of straight pipe required are at least 5x50mm=250mm before sensor, and 2x50mm=100mm after sensor.	☐
Install any **gaskets and bonding cables** according to the type of pipe.	☐

Note: detailed installation instructions are in the Manual provided with the flowmeter.

Due to continuous product improvement, specifications are subject to change without notice.