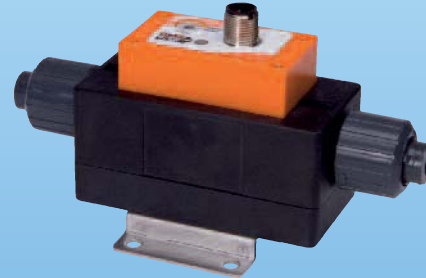


**MIK
COMPACT MAGNETO-INDUCTIVE FLOWMETER**



Flow
Pressure
Level
Temperature
Measurement
Monitoring
Control



- **Flow Ranges from 0.18-7.8 GPH through 9-180 GPM**
- **For Use with a Wide Variety of Conductive Liquids, Acids, and Caustics**
- **Magneto-Inductive Technology with No Moving Parts**
- **Ryton Body with Stainless Steel Electrodes or PVDF Body with Hastelloy C Electrodes**
- **Electronics Packages include Frequency or Current Outputs, Adjustable Switches and Integral Totalizers or Batch Controller**
- **Economically Priced**

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Rev. 7/10

Features

- Flow Ranges from 0.18-7.8 GPH through 9-180 GPM
- For Use with a Wide Variety of Conductive Liquids, Acids, and Caustics
- Magneto-Inductive Technology with No Moving Parts
- Ryton Body with Stainless Steel Electrodes or PVDF Body with Hastelloy C Electrodes
- Electronics Packages include Frequency or Current Outputs, Adjustable Switches and Integral Totalizers or Batch Controller
- Economically Priced

The MIK series magneto-inductive flowmeter is the perfect solution for measuring the flow of conductive liquids in applications where the reliability and low pressure loss of a magmeter is desired at an economical price compared to higher end models. The MIK measures flow using the magneto-inductive principle. According to Faraday's law of magnetic induction, current is induced into a conductor as it moves through a magnetic field. The amount of current induced is directly proportional to the velocity of the moving conductor. In the case of the MIK, a conductive liquid passing through the meter body acts as the conductor. The meter body contains a set of electromagnetic coils that generate the magnetic field. Electrodes mounted in the meter body collect the current whose magnitude is proportional to flowrate.

The MIK is all solid state and has no moving parts to wear, making it very reliable. Viscous and dirty liquids are measured with no accuracy degradation. The wetted materials for the flow body are either Ryton with 316L stainless steel electrodes or PVDF with Hastelloy C electrodes. A variety of fitting styles and materials are available, including PVC, PVDF, polypropylene and stainless steel.

A wide variety of electronics packages are available, including frequency or current outputs, adjustable flow switches and integrated totalizers or batch controllers. The versatility of the MIK truly makes it a great value at an economical price.



KOBOLD MIK Magneto-Inductive Flowmeter

Specifications

Available Ranges:	0.18-7.8 GPH thru 9-180 GPM water
Liquid Types:	Conductive liquids with conductivity >30 μ S/cm
Accuracy:	$\pm 2.0\%$ of full scale
Repeatability:	$\pm 1\%$ of full scale
Straight Pipe Requirement:	3X Diameter upstream and 2X downstream
Oper. Temp. Range:	32-176°F (140°F Max. with PVC fittings)
Maximum Pressure:	145 PSIG @ 70°F
Max. Pressure Drop:	3.6 PSI @ 100% rated flow
Wetted Materials	
Sensor Housing:	Ryton or PVDF depending on model
Electrodes:	316L St. steel or Hastelloy C4 depending on model
Seals:	Buna-N, FKM or FFKM depending on model
Fittings:	See "Ordering Information"

Electrical Specifications

Output S300/S30D, Adjustable Relay	
Power Supply:	24 VDC $\pm 20\%$
Switch Type	
S300:	SPDT relay, Max. 1 amp @ 30 VDC
S30D:	PNP out 24 VDC with N/O and N/C outputs
Switch Adjustment:	Via external potentiometer
Electrical Connection	
S300:	Micro-DC, 5-pin male
S30D:	Micro-DC, 4-pin male
Electrical Protection:	NEMA 4X/IP 65
Output F300/F390, PNP Frequency	
Power Supply:	24 VDC $\pm 20\%$
Output:	PNP open collector, 200 mA Max.
Frequency Range	
F300:	0-500 Hz
F390:	User specified, factory set range: 0-50 Hz thru 0-1000 Hz
Electrical Connection	
Connection:	Micro-DC, 4-pin male
Electrical Protection:	NEMA 4X/IP 65

MIK — Compact Magneto-Inductive Flowmeter

Electrical Specifications *(continued)*

Output L343, L443 Analog

Power Supply: 24 VDC \pm 20%
Output: 4–20 mA, 3-wire
Max. Load: 500 Ω

Electrical Connection

L343: Micro-DC, 4-pin, male
L443: DIN 43650 Plug

Electrical Protection: NEMA 4X/IP 65

Output C34N, C34P, C30M, and C30R Compact Electronics

Power Supply: 24 VDC \pm 20%

Output

C34N: 4–20 mA, 3-wire and 1-NPN open collector
C34P: 4–20 mA, 3-wire and 1-PNP open collector
C30M: 2-NPN open collector switches
C30R: 2-PNP open collector switches

Max. Loop Load: 500 Ω

Switch Rating: 300 mA

Programming: Switch setpoint, reset point, switch logic, 4–20 mA span & zero, dampening & lockout code via 2-button keypad

Electrical

Connection: Micro-DC 5-pin, male

Electrical Protection: NEMA 4X/IP 65

Integral Totalizer, E14R, E34R, E94R

Power Supply Requirement: 24 VDC \pm 20%, 150 mA
Display Type: Backlit LCD, 2-line flowrate and total (8 digits) with user-selectable units

Analog Output: 4–20 mA, 3-wire, 500 Ω Max. loop load

Relays: 2x SPDT, Max. 250 VAC/5 Amp/1000 VA, assignable to switch on rate or total

Functions: Totalizer reset, peak/valley indication, adjustable relay setpoints, indicator language (7 available), measuring units

Electrical

Connection: Pigtail cable

Electrical Protection: NEMA 4X/IP 65

Integral Batch Controller, G14R, G34R, G94R

Power Supply Requirement: 24 VDC \pm 20%, 150 mA

Display Type: Backlit LCD, 2-line flowrate and total (8 digits) with user-selectable units

Analog Output: 4–20 mA, 3-wire, 500 Ω Max. loop load

Relays: 2x SPDT, Max. 250 VAC/5 Amp/1000 VA, relay 1 assignable to switch on flowrate, total or batch prewarn; relay 2 assignable to batch total

Functions: Totalizer reset, peak/valley indication, adjustable relay setpoints, indicator language (7 available)

Electrical

Connection: Pigtail cable

Electrical Protection: NEMA 4X/IP 65

Estimated Weight (see ordering information for flow range codes and electronics option codes)

Sensor Weight			Electronics Weight	
Flow Range Code	Ryton	PVDF	Model Code	Weight
MIK-...U1/U2	0.5 LB	0.6 LB	F300, F390, S300, S30D, L343, L443	0.25 LB
MIK-...U4/U5	0.6 LB	0.7 LB		
MIK-...U7/U8	0.7 LB	0.8 LB		
MIK-...UA/UB	1.0 LB	1.2 LB	C30R, C30M, C34N, C34P	0.75 LB
MIK-...UD/UE	TBD	TBD		
MIK-...UG/UH	TBD	TBD	E14R G14R	0.6 LB

Total Weight = Sensor Weight + Electronics Weight



Ordering Information (Example: MIK-5NAU4MS300)

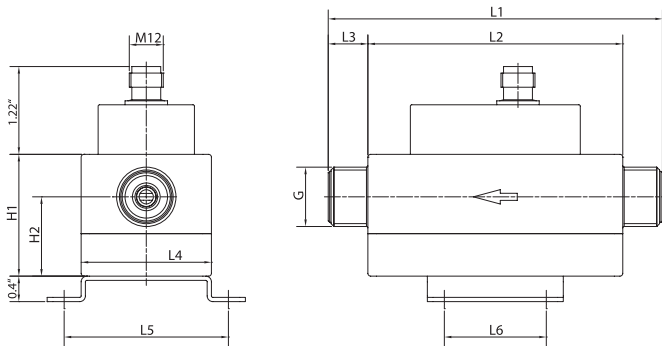
Body Material	Measuring Range	Fitting Set	Output/Electronics
<p>MIK-5NA... = Ryton body Buna-N Seal 316 L Electrode</p> <p>MIK-5VA... = Ryton body FKM Seal 316 L Electrode</p> <p>MIK-6FC... = PVDF body FFKM Seal Hastelloy C4 Electrode</p>	<p>..U0 = 0.18-7.8 GPH ..U1 = 0.78-15.6 GPH ..U2 = 2.4-48.0 GPH</p>	<p>For range U0, U1 & U2 ...A... = No fitting set (1/2" BSPP male) ...N... = PVC, 1/4" NPT female ...P... = PVC 1/2" hose barb</p>	<p>Frequency Output ...F300 = 500Hz Max, PNP ...F390 = 50 ... 1000Hz Max. (user specified, factory set range), PNP</p> <p>Adjustable Flow Switch ...S300 = SPDT relay ...S30D = PNP transistor</p> <p>Analog Output ...L343 = 4-20 mA, 3-wire with micro-DC plug ...L443 = 4-20 mA, 3-wire with DIN 43650 plug</p> <p>Compact Electronics ...C30M = Display with 2 NPN switches ...C30R = Display with 2 PNP switches ...C34N = Display with 4-20 mA +1 NPN switch ...C34P = Display with 4-20 mA +1 PNP switch</p> <p>Totalizing Electronics ...E14R = Display, 4-20 mA out +2 adjustable relays</p> <p>Batch Controller ...G14R = Display, 4-20 mA out +2 adjustable relays</p>
	<p>...U4 = 0.13-2.6 GPM ...U5 = 0.2-4.0 GPM</p>	<p>For range U4 & U5 ...A... = No fitting set (3/4" BSPP male) ...M... = PVC, 3/8" glue socket ...N... = PVC, 3/8" NPT female ...P... = PVC 3/4" hose barb ...R... = Polypro, 3/8" NPT female ...V... = PVDF, butt weld 16mm O.D. tube</p>	
	<p>...U7 = 0.4-8.0 GPM ...U8 = 0.65-13 GPM</p>	<p>For range U7 & U8 ...A... = No fitting set (1" BSPP male) ...H... = PVDF, 1/2" NPT female ...M... = PVC, 1/2" glue socket ...N... = PVC, 1/2" NPT female ...P... = PVC 1" hose barb ...R... = Polypro, 1/2" NPT female ...V... = PVDF, butt weld 20mm O.D. tube ...W... = 316L SS, 1/2" NPT female ...X... = Brass, 1/2" NPT female</p>	
	<p>...UA = 0.8-16 GPM ...UB = 1.3-26 GPM</p>	<p>For range UA & UB ...A... = No fitting set (1 1/2" BSPP male) ...H... = PVDF, 1" NPT female ...M... = PVC, 1" glue socket ...N... = PVC, 1" NPT female ...R... = Polypro, 1" NPT female ...V... = PVDF, butt weld 32mm O.D. tube</p>	
	<p>...UD = 2.0-40 GPM ...UE = 4.0-80 GPM</p>	<p>For range UD & UE ...A... = No fitting set (2" BSPP male) ...H... = PVDF, 1 1/4" NPT ...M... = PVC, 1 1/4" glue socket ...N... = PVC, 1 1/4" NPT female ...R... = Polypro, 1 1/4" NPT female</p>	
	<p>...UG = 6.5-130 GPM ...UH = 9-180 GPM</p>	<p>For range UG & UH ...A... = No fitting set (2 3/4" BSPP male) ...H... = PVDF, 2" NPT ...M... = PVC, 2" glue socket ...N... = PVC, 2" NPT female ...R... = Polypro, 2" NPT female</p>	

Accessories: P/N 807.037 = 4-Pin Micro-DC connector with 6-foot cable for output types F300, F390, L343, S30D
P/N 807.007 = 5-Pin Micro-DC connector with 6-foot cable for output types C3xx, S300

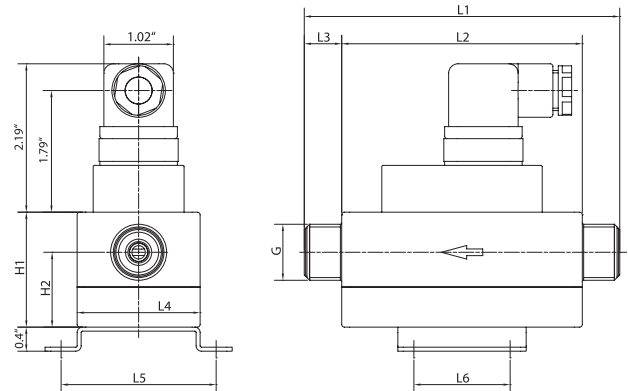
Dimensions (inches)

Model	G (BSPF male)	L1	L2	L3	L4	L5	L6	H1	H2
MIK-...U1A... MIK-...U2A...	½"	4.65	3.54	0.55	1.81	2.28	1.42	1.69	1.10
MIK-...U4A... MIK-...U5A...	¾"	4.80	3.54	0.63	1.81	2.28	1.42	1.69	1.10
MIK-...U7A... MIK-...U8A...	1"	4.96	3.54	0.71	1.81	2.28	1.42	1.69	1.10
MIK-...UAA... MIK-...UBA...	1½"	5.27	3.54	0.87	2.68	3.15	1.42	2.60	1.24
MIK-...UDA... MIK-...UEA...	2"	5.43	3.54	0.95	2.68	3.15	1.42	2.83	1.42
MIK-...UGA... MIK-...UHA...	2¾"	7.95	5.90	1.02	3.78	4.33	2.95	4.09	2.05

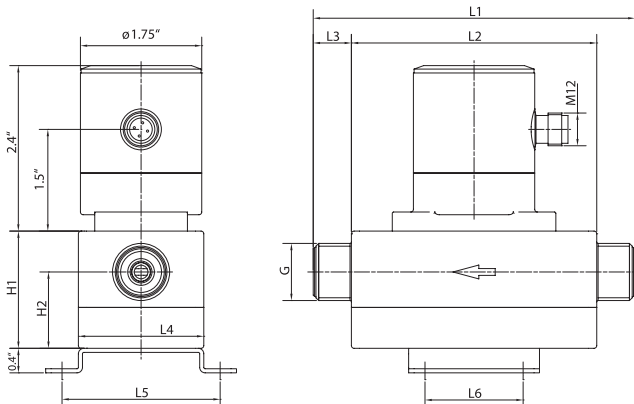
MIK-...F3x0, MIK-...S30x, MIK-...L3x3



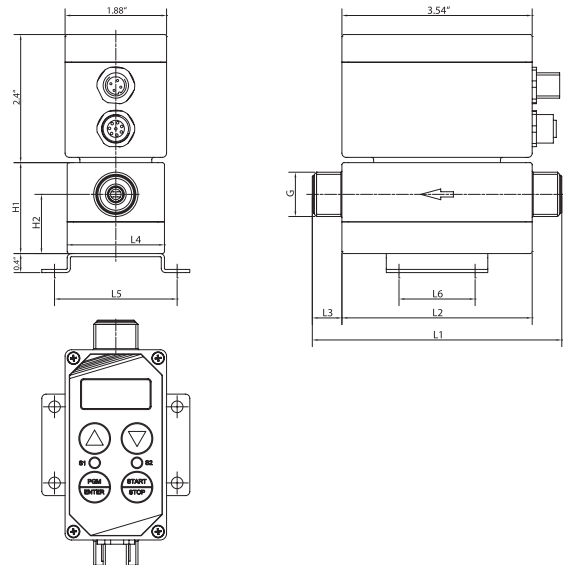
MIK-...L443



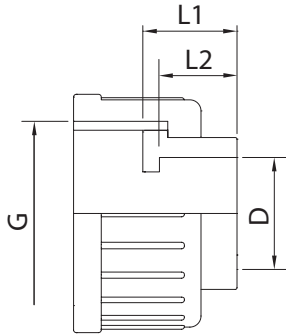
MIK-...C3xx



MIK-...Ex4R, MIK-...Gx4R



Dimensions for Fitting Type H, M, N, R, W, X



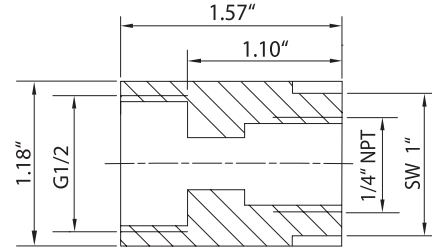
Fitting: "H" — PVDF Threaded connections

G	L1	L2	D — Nominal NPT
1	0.96	0.79	1/2"
1 1/2	1.09	0.83	1"
2	1.46	1.18	1 1/4"
2 3/4	1.65	1.22	2"

Fitting: "M" — Glue Socket connections

G	L1	L2	D — Nominal IPS
3/4	0.87	0.79	3/8"
1	1	0.89	1/2"
1 1/2	1.24	1.14	1"
2	1.16	0.89	1 1/4"
2 3/4	1.61	1.50	2"

Dimensions for Fitting Type N (1/4" NPT only)



Fitting: "N" — PVC Threaded connections

G	L1	L2	D — Nominal NPT
1/2	refer to outline drawing		1/4"
3/4	0.68	0.52	3/8"
1	0.76	0.68	1/2"
1 1/2	0.98	0.87	1"
2	1.46	1.18	1 1/4"
2 3/4	1.61	0.98	2"

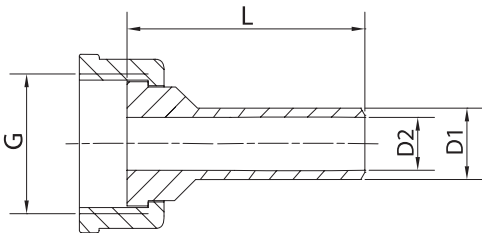
Fitting: "R" — PP Threaded connections

G	L1	L2	D — Nominal NPT
3/4	0.68	0.55	3/8"
1	0.98	0.79	1/2"
1 1/2	1.24	0.94	1"
2	1.46	1.18	1 1/4"
2 3/4	1.68	1.22	2"

Fitting: "W," "X" — SS/Brass Threaded connections

G	L1	L2	D — Nominal NPT
1	1.18	0.63	1/2"

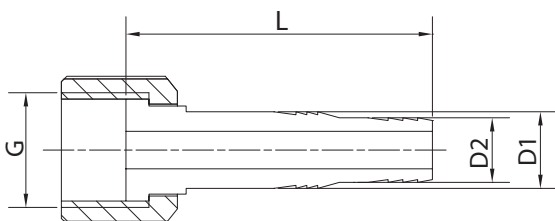
Dimensions for Fitting Type V



Fitting: "V" — PVDF Butt Weld connections

G	L	D1	D2
3/4	n/a	0.63	n/a
1	2.09	0.79	0.62
1 1/2	2.32	1.26	1.05

Dimensions for Fitting Type P



Fitting: "P" — PVC Hose Barb connections

G	L	D1	D2
1/2	2.2	0.55	0.47
3/4	2.36	0.71	0.63
1	2.64	0.87	0.79