

FLOW MONITORS

SELECTION GUIDE

Housing	Style	Technology	Advantage	Page
	FCMI Magnetic Inductive	Magnetic Inductive	■ Meter for electrically conductive fluids ■ ±2% of reading accuracy ■ 0-9.9 GPM or 0-20 GPM models	C3
	FTCI Digital Read Out	Calorimetric	■ Displays flow and temperature ■ Linearized, output for water, water/glycol mixtures, Galden® HT, ZT ■ Set points for flow & temperature ■ Outputs: 2 analogs, 4 setpoints, 2 setpoints, 1 analog, 1 setpoint	C7
	FCI Inline	Calorimetric	■ Intrinsically safe models (ATEX approved) ■ Faster response time than probes ■ Remote mounting options ■ Low flow rates detection down to 1 ml/min	C11
	FCS Probe	Calorimetric	■ Probe lengths vary for larger pipes ■ Remote mounting options (requires remote amplifier) ■ Intrinsically safe models (ATEX approval) ■ Chemically resistant models available	C21
	FCS.../A Airflow	Calorimetric	■ Can monitor air and other inert gases ■ Probes and inlines available	C41
Remote Amplifiers			■ Signal processors for remote probes	C51
Flow Conversion Chart			■ Allows flow rate conversions from linear flow to volumetric flow and vice versa for liquids and gases	C53

FCI INLINE FLOW MONITOR

PRODUCT OVERVIEW

WHAT IS THE FCI INLINE FLOW MONITOR?

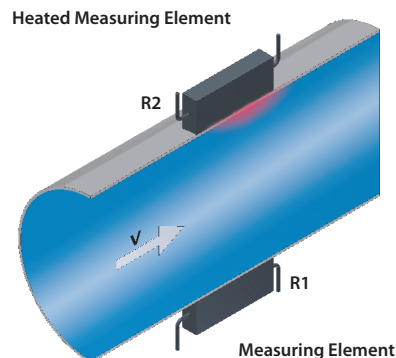
The FCI inline flow monitor operates using the calorimetric flow principle, which detects the transfer of heat in thermally conductive fluids. The temperature detecting elements are platinum RTDs. One of the elements (R1) detects the temperature of the fluid in the pipe and the resistor (R2) is connected to a heater. The heating element heats R2 to a temperature that is slightly above the temperature of the surrounding fluid. When there is no fluid flow, the difference between R1 and R2 remains constant. As the fluid moves through the sensor, heat is conducted away from the heated element causing the temperature of R2 to decrease. This heat loss causes the differential resistance input to the amplifier where the various outputs are generated. With FCI flow monitors, the temperature elements are bonded directly to the outside of a flow through tube. See probe section for more information about the calorimetric flow monitors.

WHY CHOOSE THE FCI INLINE FLOW MONITOR?

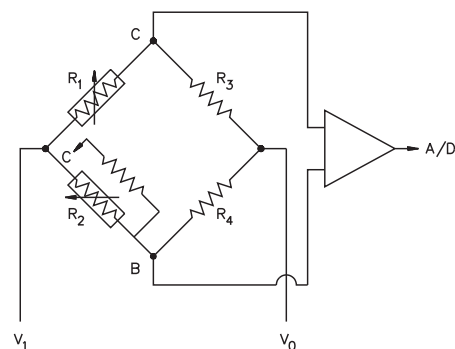
- No pressure loss
- Wide range of flow rates
- Fast response time
- Low flow rate detection and pulsed flow monitoring.
- Stackable
- Viscous fluids can flow freely through the fully ported sensor, since the flow does not need to be disrupted to be detected.

WHERE CAN I USE THE FCI INLINE FLOW MONITOR?

- Flow/no flow
- Dispensing applications
- Viscous fluids
- Low and/or pulsing flows
- Set point applications



The resistance difference is measured by a Wheatstone bridge circuit. A change in resistance difference causes a change in bridge voltage. The flow set point is determined by comparing the bridge voltage to a reference voltage.



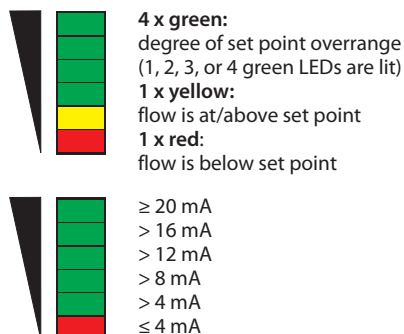
R1 - Monitors fluid temperature
R2 - Heated by heating element
R3 - Internal resistor
R4 - Internal resistor

Setup – Operating and Display Functions

Self Contained Inline



6 LEDs for flow rate status indication:



Switch Point Versions
Potentiometer for adjustment of flow switch point

Analog Versions
Potentiometer for adjusting the 4 mA to the medium

Potentiometer for adjusting the span to 20 mA (not all applications may reach 20 mA)

Flow Monitors

Inline Flow Sensor Part Number Key

FCI - TC D04 A4P - AP8X - H1141 **Special Option Codes**

Sensor Type

FCI = Inline Flow Sensor

Fluid Connection

TC = Tubing Connection
 N1/8 = 1/8 NPT
 N1/4 = 1/4 NPT
 N3/4 = 3/4 NPT
 Blank = G1/4

Inline Diameter (millimeters)

D03 = 3 mm
 D04 = 4 mm
 D06 = 6 mm
 D08 = 8 mm
 D09 = 9 mm
 D10 = 10 mm
 D11 = 11 mm
 D20 = 20 mm

Electrical Connection

H1141 = *eurofast*®, 4-pin
 H1140 = *eurofast*, 4-pin
 H1160 = *eurofast*, 6-pin

Circuitry

AP8X = N.O. PNP
 AN8X = N.O. NPN
 ARX = N.O. Relay
 RRX = N.C. Relay
 LIX = 4-20 mA
 NA = Requires Remote Amplifier
 NAEX = Intrinsically Safe Requires Remote Amplifier

Housing

A4 = 316 Stainless Steel
 A4P = 316 Stainless Steel with PBT Housing
 CTP = Ceramic / PTFE / PBT
 HC22 = Hastelloy C22

Special Option Codes

/D..

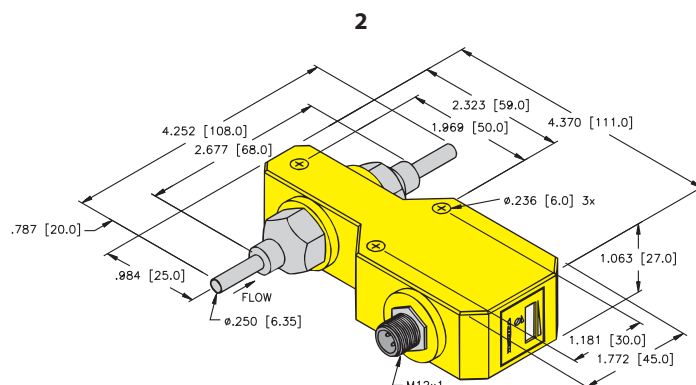
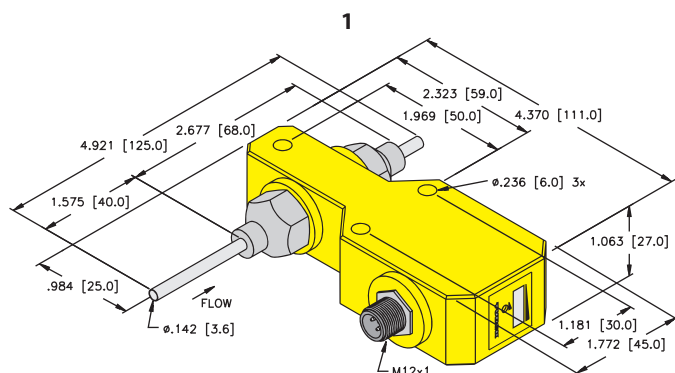
D Number

/D038 = 3/8 in. Tubing Connection
 /D014 = Tri-Clamp Connection
 /A = Airflow

FLOW

Flow Monitors

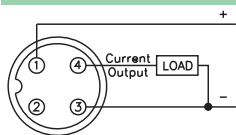
Drawings



FLOW

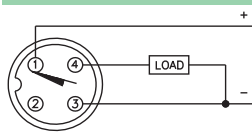
Wiring Diagrams

Diagram 1



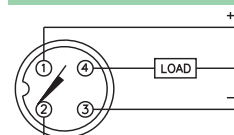
Mating Cordset:
RK 4T-*

Diagram 2



Mating Cordset:
RK 4T-*

Diagram 3



Mating Cordset:
RK 4.4T-*

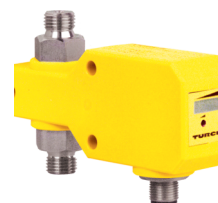
TURCK

Flow Monitors

Inline Flow Monitors

- Great for water and Oil
- IP67
- LED visualization of flow rate
- Great for Stamping Press Lubrication Oil Monitoring,

Weld Tip Protection, Pump Run Dry Protection, and other monitoring applications

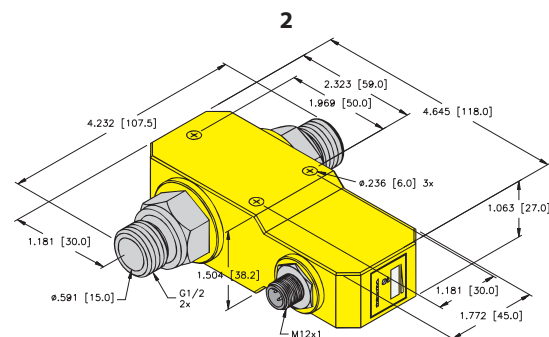
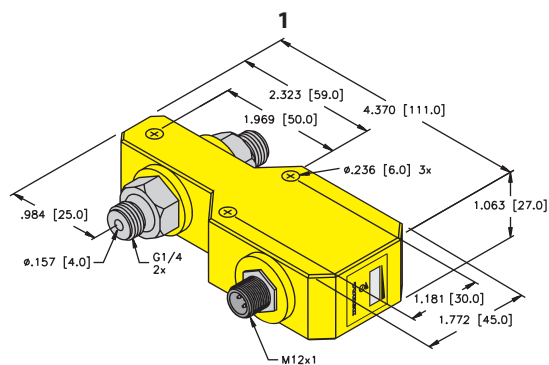


Part Number	Flow Detection Range Water (lpm)	Flow Detection Range Oil (lpm)	Fluid Connection	Media Temperature (°C)	Output: Flow	Current Consumption	Wiring	Adapter Color Code	Drawing
FCI-D04A4P-AP8X-H1141	.015-1	Consult Factory	G 1/4"	0 to 80	PNP N.O.	<50 mA	1		1
FCI-D04A4P-LIX-H1141	.015-1	Consult Factory	G 1/4"	0 to 80	4-20 mA Non-Linear Analog	<50 mA	2		1
FCI-D08A4P-ARX-H1140/D038	1-6	Consult Factory	3/8" swage	0 to 80	Relay N.O.	<50 mA	3		4
FCI-D10A4P-AP8X-H1141	1-6	Consult Factory	G 1/4"	0 to 80	PNP N.O.	<50 mA	1		1
FCI-D10A4P-ARX-H1140	1-6	Consult Factory	G 1/4"	0 to 80	Relay N.O.	<50 mA	3		1
FCI-D10A4P-LIX-H1141	1-6	Consult Factory	G 1/4"	0 to 80	4-20 mA Non-Linear Analog	<50 mA	2		1
FCI-D15A4P-AP8X-H1141	3-20	Consult Factory	G 1/2"	-20 to 80	PNP N.O.	<50 mA	1		2
FCI-D15A4P-ARX-H1140	3-20	Consult Factory	G 1/2"	-20 to 80	Relay N.O.	<50 mA	3		2
FCI-D15A4P-LIX-H1141	3-20	Consult Factory	G 1/2"	-20 to 80	4-20 mA Non-Linear Analog	<50 mA	2		2
FCI-N3/4D20A4P-AP8X-H1141	4-30	Consult Factory	3/4" NPT	0 to 80	PNP N.O.	<60 mA	1		3
FCI-N3/4D20A4P-LIX-H1141	4-30	Consult Factory	3/4" NPT	0 to 80	4-20 mA Non-Linear Analog	<60 mA	2		3
FCI-N3/4D20A4P-ARX-H1140	4-30	Consult Factory	3/4" NPT	0 to 80	Relay N.O.	<60 mA	3		3

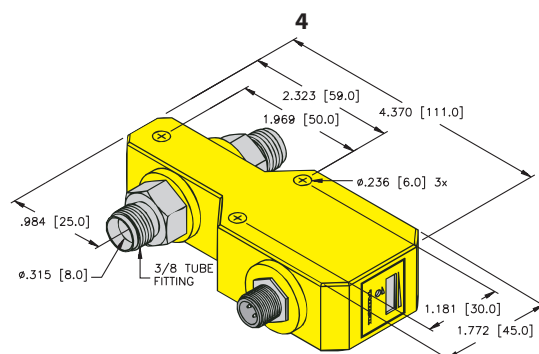
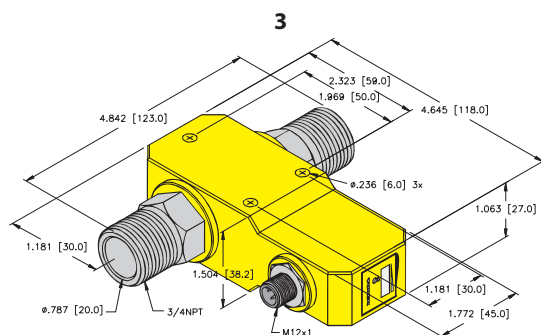
Specifications:

Electrical	
Operating Voltage	21.6-26.4 VDC
Switching Current PNP outputs	200 mA
Analog Load 4-20 mA outputs	200-500Ω
Switching Current/Voltage Relay Outputs	<1A at 30 VDC, <1A at 36 VAC
Environmental	
Protection	IP67
Pressure Rating	290 PSI
Ambient Temperature	0 to 60 °C
Materials	
Housing	PBT
Cable Connector	303 Stainless Steel
Wetted Parts:	
Tubing	316 TI Stainless Steel
Operational	
Time Delay before Availability	5-15 seconds 8 seconds typical
Response time	0.5-3 seconds
Maximum Temperature Change	6.6 °C/second

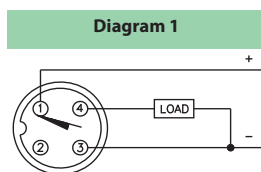
Drawings



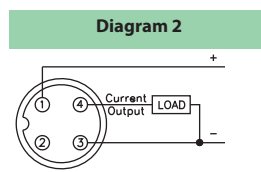
FLOW



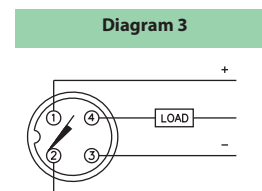
Wiring Diagrams



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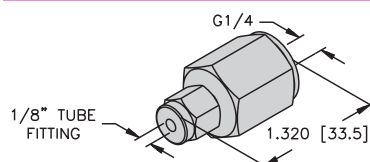
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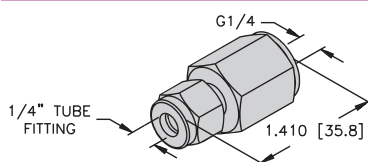
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RK 4.4T-*

Adapter Options

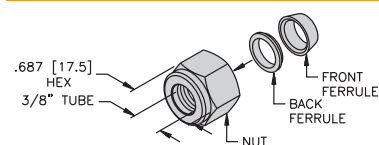
FSV-SS-1/8x1/4 KIT
(A2535)



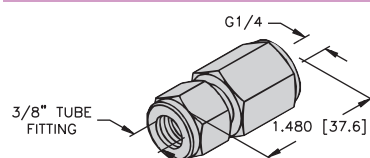
FSV-SS-1/4x1/4 KIT
(A2534)



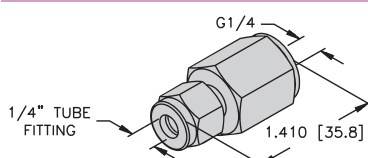
FSV-SS 3/8 KIT (2 sets)
(A9183)



FSV-SS-3/8x1/4
(A2533)



FSV-SS-1/2x1/4
(A2536)



FSV-SS 3/8 TS-NPT
(A9307)

