

Brooks® Models MT 3809 and 3819

Metal Tube Variable Area Flowmeters



Models MT 3809 and 3819

Models MT 3809 & 3819

DESIGN FEATURES

- Broad range of flow capacities
 - Accuracy class 1.6 acc. VDE/VDI 3513
 - Versatile construction for all gas, liquid, steam applications
 - Operable under high temperatures and pressures
 - Flanged, female and male NPT connections
 - Optional 4-20 mA and HART® programmable microprocessor transmitter (SMM) with or without alarms and pulse output for totalization
 - Optional transmitter 4-20 mA only (M420)
 - Electronics designed with either Intrinsically safe, Non Incendive or Explosion proof constructions:
 - Ⓔ II 2 G and II 2 GD EEx ia IIC T4 or T6 (IP67)
 - Ⓔ II 3 G and II 2 D EEx nA II T4 or T6 (IP67)
 - Ⓔ II 2 GD EEx d IIB T4 (IP65)
- Designs comply also with the Pressure Equipment Directive (PED) 97/23/EC. For North America cUL and cCSAus certified.
The 3800 series flowmeters comply with ATEX directive 94/9EC annex VIII, clause 3.

OPTIONAL ACCESSORIES

Needle control valves and flow controllers (available on the MT 3809 only).
For flow rate control, needle control valves or flow controllers may be externally piped into the inlet or outlet side of the instrument. Needle control valves and flow controllers can be supplied up to size 10 (1") maximum 1700 l/hr (7,5 gpm) water equivalent. Sight flow indicators are available for all flanged meters and up to size 13 (2") NPT meters.

DESCRIPTION

The Brooks models MT 3809 and MT 3819 variable area flowmeters are rugged, all metal flowmeters offering class 1.6 accuracy. The MT 3809 is constructed with stainless steel components for measuring a variety of gas, liquid and steam applications while the model MT 3819 utilizes a E/TFE lining for aggressive liquid and gas applications.

Flow rate indication is provided by means of magnetic coupling where a magnet, encapsulated in the float, is coupled to a rotatable magnet located in the rear of the indicator, thus turning the dial indicator mounted on the meter.

Optional accessories available include 4-20 mA output with HART microprocessor transmitter with or without configurable alarms and pulse output for totalization. The microprocessor electronics are based on the proprietary Smart Meter Manager (SMM) technology utilized as the basis for an array of Brooks products. Also available are front adjustable inductive alarms, high temperature or stainless steel indicator housings, valves, flow controllers, steam jacket and material certifications.

OPTIONAL ELECTRONIC EQUIPMENT

Electronic equipment available with the models MT 3809 and MT 3819 include the SMM transmitter, SMM transmitter/alarm/pulse output for totalization, inductive alarms and SMM transmitter with inductive alarms, refer to pages 6 through 12 for additional information. All models are designed to be either intrinsically safe (aluminium or stainless steel housing) or explosion proof (aluminium housing only). All electronic accessories, except the explosion proof execution options are available for high temperature applications. Refer to table 3 to determine the appropriate model for your application.

Data Sheet

DS-VA-MT3809-3819-eng-eu

April, 2008

Models MT 3809 & 3819

SPECIFICATIONS METER

Instrument type	MT 3809/3819
Measuring range	
Water at 20 °C	25 - 100.000 l/h
Air at 1,013 bar abs., 20 °C	0,78 - 1.404 m ³ / _n /h
Select measuring range from:	flow table 1A and 1B on page 4
Rangeability	10 : 1
Accuracy class to VDE/VDI 3513	1.6
Repeatability	0,25% full scale
Metering tube	
• MT 3809 standard	316/316L SS, WNR 1.4401/1.4404 (dual certified)
• MT 3809 optional	Alloy 625, Hastelloy C tm, Titanium Gr. II
• MT 3819 standard	316L SS / 316 SS (dual certified) with E/TFE lining
Scales	
• Standard	Detachable aluminium plate (single or dual scales)
• Inscriptions	Choice of direct reading units or percentage of maximum flow
Flanges and end fittings	
• MT 3809 standard	316/316L SS, WNR 1.4401/1.4404 (dual certified)
• MT 3809 optional	Alloy 625, Hastelloy C tm, Titanium Gr. II
• MT 3819 standard	316L SS / 316 SS with E/TFE lining, PVDF inserts
Connections	
• MT 3809 standard	- flanges to DIN2527/2635 DN15 - DN100
	- flanges to ANSI B16.5 ½" to 4" 150 lbs RF/300 lbs RF/600 lbs RF
	- welding neck flanges optional
	- threaded connection ½" to 1½" NPT-female
	- threaded connection 1" to 2½" NPT-male
• MT 3819 standard	- flanges to DIN2527/2635 PN40 RF
	- flanges to ANSI B16.5 150 lbs RF/300 lbs RF
• Standard flange finish	3.2 - 6.3 Ra
Floats	
• MT 3809 standard	316L stainless steel
• MT 3809 optional	Alloy 625, Hastelloy C tm, Titanium Gr. II
• MT 3819 standard	- Size 7 and 8 Hastelloy C tm
	- Size 10, 12 and 13 PVDF
• MT 3819 optional	Alloy 625, Monel K-500 tm, or Titanium Gr. II (all sizes) all PTFE internals sizes 10, 12 and 13 only
O-rings (NPT-female design only)	
• MT 3809 standard	Viton
• MT 3809 optional	PTFE
• MT 3819	None
Protection category to DIN 40050/IEC 144	IP67 or NEMA 4x (IP65 for EExd)
Indicator housing and cover	
• MT 3809 and MT 3819 standard housing	Die cast aluminium (Alloy 380), standard or epoxy paint with glass window.
• MT 3809 and MT 3819 optional housing	316 stainless steel (gritblast finished) and glass window.
Maximum fluid temperature	Refer to table 3 on page 5
Meter dimensions	Refer to figure 3 on page 11
Model code	Refer to pages 12-15
Pressure Equipment Directive (PED) 97/23/EC	Flow meter complies under Sound Engineering Practices (SEP), or categories I, II or III.
ATEX for construction	The 3800 series flow meters comply with EN 13463 part 4, December 2001 (inherent safety) refer the ATEX directive 94/9EC annex VIII, clause 3.

Models MT 3809 & 3819

Table 1A - Model MT 3809 Capacities

SIZE	CONNECTION SIZE		FLOAT CODE	FLOAT MATERIAL STAINLESS STEEL 316L SS						P.E.D.	
	DIN	ANSI		WATER		AIR ^{1) 2)}		Press. Drop mbar	Viscosity Imm. Ceiling (cSt) ³⁾		Max. Viscosity (cSt) ³⁾
	DN mm	inches		l/h	gpm	m ³ /h	scfm				
7	15	½"	A	25	0,11	0,8	0,5	30	1	40	
			B *	65	0,29	2,0	1,3	30	1	20	
			C	135	0,59	3,8	2,4	35	1	120	
			D *	200	0,88	5,9	3,7	45	1	20	
8	15	½"	A	250	1,1	8,3	5,3	55	2	250	
			B	400	1,7	12,2	7,7	60	1	180	
			C	650	2,8	18,6	11,8	130	2	600	
			D	1.000	4,4	33,8	21,4	60	1,5	250	
10	25	1"	A	1.200	5,3	31	19,4	70	5	600	
			B	1.500	6,6	50	31,6	85	1,5	400	
			C	2.400	10,5	66	41,7	155	7	800	
			D	3.500	15,4	95	60,1	50	4	500	
12	40	1½"	A	4.000	17,6	106	67	60	50	800	
			B	6.000	26,4	150	95	150	30	800	
			C	8.000	35,2	239	151	300	2	500	
			D	10.500	46,2	335	212	50	2	500	
13	50	2"	A	6.500	29	162	102	60	50	800	
			B	9.500	42	255	161	100	50	800	
			C	12.500	55	319	202	300	2,5	500	
			D	20.000	88	620	392	110	1	500	
15	80	3"	A	20.000	88	620	392	140	8	600	
			B	30.000	132	870	550	280	7	550	
			C	40.000	176	1.186	750	160	5	500	
16	100	4"	A	50.000	220	N/A for gas service		210	15	600	
			B	70.000	308			300	10	550	
			C	100.000	440				5	500	

- Notes: 1) Air flows in scfm converted to 70°F and 14,7 psia when the meter is operated at 68°F and 14,7 psia
2) Air flows in m³/h (converted to normal conditions: 0°C and 1,013 bar abs.) when the meter is operated at 1,013 bar abs. and 20 °C
3) Viscosity ceilings are based within 2% of max. flow water (for sizing between these limits contact factory)
4) All meters have a 10:1 turndown
5) N/A=Not applicable
6) * Minimum operating press required 7 PSI 0,48 bar

Table 1B - Model MT 3819 E/TFE Lined Capacities

METER SIZE	CONNECTION SIZE		FLOAT CODE	STANDARD FLOAT MATERIAL CAPACITIES (See Note 3)				P.E.D.
	DIN	ANSI		WATER		AIR ^{1) 2) 4)}		
	DN mm	inches		l/h	gpm	m ³ /h	scfm	
7	15	½"	A	110	0,48	3,2	2,0	25
			B	170	0,75	5,0	3,2	50
8	15	½"	A	250	1,10	7,3	4,6	30
			B	420	1,85	12,2	7,7	45
			C	500	2,20	14,5	9,2	40
			D	850	3,74	24,6	15,6	130
10	25	1"	A	1400	6,2	41	26	45
			B	2000	8,8	58	37	106
			C	2400	10,6	70	44	90
			D	3000	13,2	87	55	130
12	40	1½"	A	3000	13	87	55	50
			B	4000	18	116	74	75
			C	5000	22	145	92	85
			D	6000	26	174	110	120
13	50	2"	A	6000	26	174	110	95
			B	8000	35	232	147	125
			C	12000	53	348	221	200
			D	15000	66	435	276	225

- Notes: 1) For gas application operating pressure must be above 2 bar (a).
2) Air flows in m³/h (converted to normal conditions: 0°C and 1,013 bar abs.) when the meter is operated at 1,013 bar abs. and 20 °C
3) Sizes 7 & 8 floats are Hastelloy C, Sizes 10, 12 & 13 are PVDF
4) Air flows in scfm converted to 70°F and 14,7 psia when the meter is operated at 68°F and 14,7 psia

Data Sheet

DS-VA-MT3809-3819-eng-eu

April, 2008

Models MT 3809 & 3819

Table 2 - Model MT 3809 Pressure Ratings

Flange Rating	316 Stainless Steel (bar at indicated temperature)			
	21 °C	93 °C	204 °C	315 °C
150 lb.	19	16,5	13,4	9,7
300 lb.	49,5	43	35,5	31
600 lb.	99	86	70,7	62,1
DIN PN40	40	38	31	27

Threaded NPT female	316 Stainless Steel (bar at indicated temperature)		
	21 °C	93 °C	204 °C
7 & 8	173	150	124
10	156	135	112
12	131	113	94

Threaded NPT male	316 Stainless Steel (bar at indicated temperature)			
	21 °C	93 °C	204 °C	315 °C
7 & 8	325	281	232	205
10	235	203	168	148
12	232	201	166	146

Table 3 - Minimum and Maximum Fluid Temperatures at 40 °C Ambient

size	Indicator only		Indicator with alarm ¹⁾		Indicator with transmitter ^{1) 2)}	
	standard	heatshield	standard	heatshield	standard	heatshield
MT 3809						
7 & 8	-50° thru 215°	325°	-30° thru 160°	230°	-30° thru 90°	150°
10	-50° thru 215°	325°	-30° thru 160°	325°	-30° thru 90°	200°
12	-50° thru 215°	325°	-30° thru 160°	325°	-30° thru 90°	200°
13	-50° thru 215°	325°	-30° thru 160°	325°	-30° thru 90°	200°
15	-50° thru 215°	325°	-30° thru 160°	325°	-30° thru 90°	200°
16	-50° thru 215°	325°	-30° thru 160°	325°	-30° thru 90°	200°
MT 3819						
All	-30 thru 150°	150°	-30 thru 150°	150°	-30 thru 90°	150°

Note 1) High Temperature execution not available in EEx d

Note 2) For both, SMM and M420 transmitter

Minimum/Maximum Ambient Temperature in °C

Meter	Indicator only	Inductive alarm and or transmitter ¹⁾ for both Eexi and Eexd execution
MT3809	-50 thru 65°	-30 thru 65°
MT3819	-50 thru 65°	-30 thru 65°

Note 1) For both, SMM and M420 transmitter

Models MT 3809 & 3819

Table 4 - Meter & Connection Size

METER SIZE	CODE	FLANGED		THREADED NPT-F or NPT-M			
		CONNECTION	LENGTH	CONNECTION	LENGTH	CONNECTION	LENGTH
7	1	½" FLANGED	250 mm	½" FEMALE	225 mm	1" MALE	200 mm
8	2	½" FLANGED	250 mm	½" FEMALE	225 mm	1" MALE	200 mm
10	3	1" FLANGED	250 mm	1" FEMALE	300 mm	1½" MALE	250 mm
12	4	1½" FLANGED	250 mm	1½" FEMALE	300 mm	2½" MALE	250 mm
13	5	2" FLANGED	250 mm	--	--	--	--
15	6	3" FLANGED	250 mm	--	--	--	--
16	7	4" FLANGED	350 mm	--	--	--	--
OVERSIZED							
7	A	1" FLANGED	250 mm	--	--	--	--
8	B	1" FLANGED	250 mm	--	--	--	--
10	C	1½" FLANGED	250 mm	--	--	--	--
12	D	2" FLANGED	250 mm	--	--	--	--
13	E	3" FLANGED	250 mm	--	--	--	--
15	F	4" FLANGED	250 mm	--	--	--	--

Table 5 - Connection Type

CODE	CONNECTION TYPE
1	NPT-female with Viton O-rings
2	NPT-female with Teflon O-rings
3	NPT-male no O-rings oversized
4 *	Rc-female (ISO R7, JIS B0203) with Viton O-Rings
5 *	Rc-female (ISO R7, JIS B0203) with Teflon O-Rings
6 *	R-male (ISO R7, JIS B0203) no O-Rings oversized

CODE	CONNECTION TYPE
A	ANSI 150# RF
B	ANSI 300# RF
C	ANSI 600# RF (not for oversized)
D	DIN PN40 RF

Note: * Rc-female is interchangeable with British Standard Pipe threads (BSPT)

Table 6 - Accessories Series 3809

CODE	DESCRIPTION	MAX. FLOW AT WATER EQUIVALENT
A	None	
B	High temperature design	
D	8802 Flow controller	= 88 l/h
E	8805 Flow controller	
F	8902 Flow controller	
G	8905 Flow controller	
H	8812 Flow controller	= 570 l/h
J	8815 Flow controller	
K	8912 Flow controller	
L	8915 Flow controller	
M	8830 Flow controller	= 1.820 l/h
N	¼" valve on inlet	= 260 l/h *
P	¼" valve on outlet	
Q	½" valve on inlet	= 1000 l/h *
R	½" valve on outlet	
S	1" valve on inlet	= 3.500 l/h *
T	1" valve on outlet	
W	1½" valve on inlet	= 10.500 l/h *
X	1½" valve on outlet	

Note : Valves and flow controllers not with male connection

Note * : Max. T 210°C (Optional Temperature: Consult Factory)

Data Sheet

DS-VA-MT3809-3819-eng-eu

April, 2008

Models MT 3809 & 3819

OPTIONAL ELECTRONIC EQUIPMENT

SMM TRANSMITTER WITH OR WITHOUT ALARMS AND PULSE OUTPUT

DESIGN FEATURES

- A 2-wire, loop-powered device for ease of wiring and installation
- 4-20 mA analog output for flowrate, with Bell-202 modulated HART communication channel
- User selectable 0% and 100% analog output ranges with optional smoothing
- Flexible (mix & match) units of measure for flowrates, totals, temperatures, densities, etc.
- Two flow totalizers: resettable and inventory totalization
- User configurable, scaleable pulse output for various engineering units
- Comprehensive alarms for both process flow and internal diagnostic checks
- Easily configured and compatible with other plant equipment
- Unique magnetic pick-up sensor

“Smart Inside” best defines the Brooks transmitter with optional alarms and pulse output for totalization. The transmitter (with or without the alarms and pulse output) is a compact microprocessor device designed to interface directly with the models MT 3809 and MT 3819 flowmeters. The microprocessor electronics are based on the Brooks Smart Meter Manager (SMM™) technology common to other Brooks flowmeters. The SMM transmitter is HART-programmable for numerous variables such as flow rate, totalization, calibration factors, and high-low alarm parameters. It is programmable with easy-to-use hand held configurators such as the HART communicator. Prior to shipment, commonly used default values are

programmed by Brooks to ensure ease of operation and quick startup. However, parameters can be reprogrammed by the user if needed. The 2-wire electronics system is easy to install and interface with other existing equipment, such as process management systems or maintenance control packages, refer to figure 1.

In operation the SMM transmitter converts the measured process flow rate into a 4-20 mA output with HART communication data. The float is constructed with an integral magnet that activates a patented magnetic sensor that is part of the transmitter. This same float magnet also drives the mechanical pointer. Flow rate information may be viewed locally at the meter scale or displayed remotely (along with other flow data) as a function of external support systems through analog/pulse outputs or multiple digital communications.

In addition to transmitter features, this unit can also be ordered with optional alarms and pulse output provided by open collector switches. One or two alarms may be programmed prior to shipment of the unit or at the customer site with a hand-held communicator.

TRANSMITTER ACCESSORIES

General purpose and intrinsically safe HART compatible power supplies are available in 24Vdc, 110Vac and 220Vac.

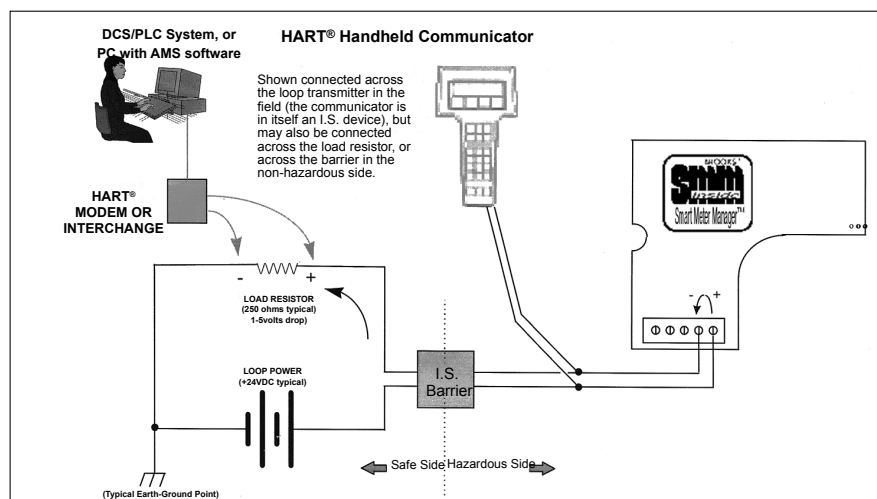





Figure 1 Typical SMM transmitter analog output and power wiring

Models MT 3809 & 3819

SPECIFICATIONS TRANSMITTER

Transmitter type	SMM Transmitter with or without alarm and pulse output
Electrical classification	
Certified	<p>CE Mark; EMC Directive 89/336/EEC</p> <p><u>Ex ia</u> Intrinsically Safe KEMA 01ATEX1235X II 2 G EEx ia IIC T4 IP 67 II 2 D T135C</p> <p></p> <p><u>Ex nA</u> Non Incendive KEMA 01ATEX1236 II 3 G EEx nA II T4 IP 67 II 2 D T135C</p> <p></p> <p><u>Ex d</u> Flame-proof / Explosion-proof KEMA 01ATEX2207X II 2 G EEx d II B T4 IP 65 II 2 D T135C</p> <p></p> <p>UL/cUL listed Intrinsically Safe Division 1, Class I, II and III, Groups A, B, C, D, E, F, G for all enclosure options. Enclosure 4X.</p> <p>UL/cUL listed - non - incendive Division 2, Class I, II and III, Groups A, B, C, D, E, F, G for all enclosure options. Enclosure 4X.</p> <p>UL/cUL listed Hazardous locations, explosion proof Class I, Division 1, Groups C, D, Class II, Division 1, Groups E, F, G; Class III. Enclosure 4X, for optional explosion proof housing.</p>
Power supply	21 to 30 Vdc: (2-wire current loop transmitter)
Transmitter	4-20 mA analog output with HART data. Update rate: 4 times per sec. Range: 3,8 to 22,0 mA.
Two alarm outputs (open collector)	Optically isolated outputs assignable to alarms. <ul style="list-style-type: none"> • Max. off-state voltage: 30 Vdc • Max. off-state current: 0,05 mA • Max. on-state voltage: 1,2 Vdc • Max. on-state current: 20 mA
One pulse output (open collector)	Optically isolated. Scaleable to a variety of engineering unit systems (pulses per liter, gallons, etc.). <ul style="list-style-type: none"> • Range: 1 Hz to 1 kHz • Max. off-state voltage: 30 Vdc • Max. off-state current: 0,05 mA • Max. on-state voltage: 1,2 Vdc • Max. on-state current: 20 mA
Temperature specification	See table 3
Electrical connector	M20 x 1,5 according to ISO (1/2" NPT (F) or cable gland 8-12 mm optional)
Linearity	Less than 1% at max. current.
Temperature influence	Less than 0,04% per °C.
Voltage influence	Less than 0,002% / Vdc.
Load resistance influence	± 0,1% full scale.

Data Sheet

DS-VA-MT3809-3819-eng-eu

April, 2008

Models MT 3809 & 3819

OPTIONAL ELECTRONIC EQUIPMENT INDUCTIVE ALARM SWITCHES

DESIGN FEATURES

- 1 or 2 normally open inductive sleeve initiators
- Optional intrinsically safe power supply/amplifier/ relay unit
- For low or high limit signalling/switching
- Front adjustable




One or two electronic limit switches can be installed in the indicator housing to allow initiation of signalling or switching functions on a preset flow value. The limit switch operates as a slot initiator that is inductively actuated by a disc mounted on the pointer shaft. Any flow value can be used for setting the limit value by

40% of full scale. The position of the initiator also serves to visually indicate the set value. Settings can be adjusted by removing the indicator cover, loosening, moving and retightening of the alarm indication needle, and replacement of the indicator cover.

Alarm Accessories

Amplifier power supply (approved isolated barrier)
1 or 2 channel approved for intrinsically safe application, remotely mounted, 110 or 220 Vac power. Single pole with double throw (SPDT) relay standard. For other configurations, consult factory.

Specifications Alarm Switches

Alarm type	Inductive
Electrical classification	EMC Directive 89/336/EEC
Certified	<p><u>EEx ia</u> Intrinsically Safe KEMA 01ATEX1235X II 2 G EEx ia IIC T6 IP 67 II 2 D T135C</p> <p></p> <p><u>EEx nA</u> Non Incendive KEMA 01ATEX1236 II 3 G EEx nA II T6 IP 67 II 2 D T135C</p> <p></p> <p><u>EEx d</u> Flame-proof / Explosion-proof KEMA 01ATEX2207X II 2 G EEx d II B T4 IP 65 II 2 D T135C</p> <p></p> <p>UL\cUL listed Intrinsically Safe Division 1, Class I, II and III, Groups A, B, C, D, E, F, G For all enclosure options. Enclosure 4X.</p> <p>UL\cUL listed - non - incendive Division 2, Class I, II and III, Groups A, B, C, D, E, F, G For all enclosure options. Enclosure 4X.</p> <p>UL\cUL listed Hazardous locations, explosion proof Class 1, Division 1, Groups C, D, Class II, Division 1, Groups E, F, G; Class III Enclosure 4X, for optional explosion proof housing.</p>
Power supply	5 - 25 Vdc (8 Vdc nominal)
Impedance	- Approximately 1 kohm with cam absent - Approximately 8 kohm with cam present
Ambient and Operating temperature	See table 3
Electrical connector	M20 x 1,5 according to ISO (1/2" NPT (F) or cable gland 8-12 mm optional)

Models MT 3809 & 3819

Optional Electronic Equipment SMM Transmitter with Inductive Alarms

This combined system provides both the sophistication of the SMM transmitter along with the simplicity of one or two alarms. Specifications for the transmitter and the front adjustable inductive alarms are as stated previously. The combined system has the great advantage to have two independent signalling systems (fail safe system).

Optional Cable Glands:

M20 x 1,5 threaded x 8-12 mm cord (brass or stainless steel).
EEx d housing: Reducing adapter to 1/2" NPT and M20 x 1,5 Female are available.

Optional Electronic Equipment Basic Analogue Transmitter M420

Transmitter 3809 and 3819

The transmitter provides accurate magnet angle detection and conversion to a 4-20 mA industry standard output signal, based on the position of a float assembly in the flowmeter. This rugged,

compact, microprocessor driven device is capable of providing accurate flow information to your external support systems. The patented magnetic sensor with automatic gain control enables an extremely high dynamic capture range without sacrificing accuracy.

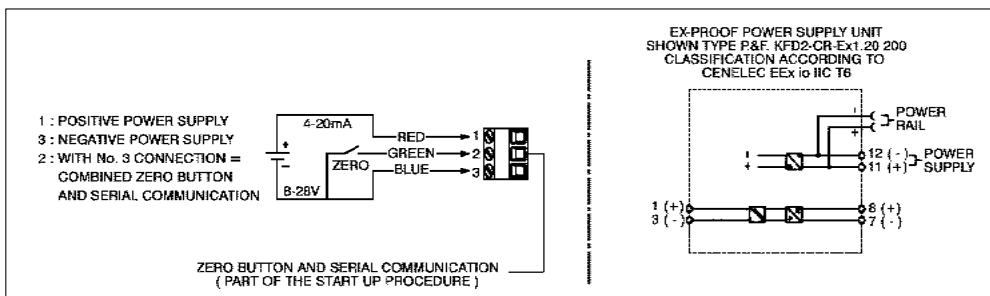


Figure 2 - Wiring Diagram

Specifications Transmitters

Transmitter type	M420
Electrical Certification	E.M.C. Directive 89/336/EEL according to EN 61326 (1997)
Certified	<p>EEx ia Intrinsically Safe KEMA 01ATEX1235X II 2 G EEx ia IIC T4 IP 67 II 2 D T70C</p> <p>EEx nA Non Incendive KEMA 01ATEX1236 II 3 G EEx nA II T4 IP 67 II 2 D T70C</p> <p>CSA Approval Class I, II, III Division I Groups A thru G Ex ia IIC T6; Class I, zone 0 and 1 Class I, II, III Division 2 Groups A thru G Ex nA IIC T6; Class I Zone 2</p>
Power supply	8 - 28 Vdc
Transmitter output	4 - 20 mA analog
Temp. spec.	See table 3
Electrical connector	M20 x 1,5 according to ISO or cable gland optional

Data Sheet

DS-VA-MT3809-3819-eng-eu

April, 2008

Models MT 3809 & 3819

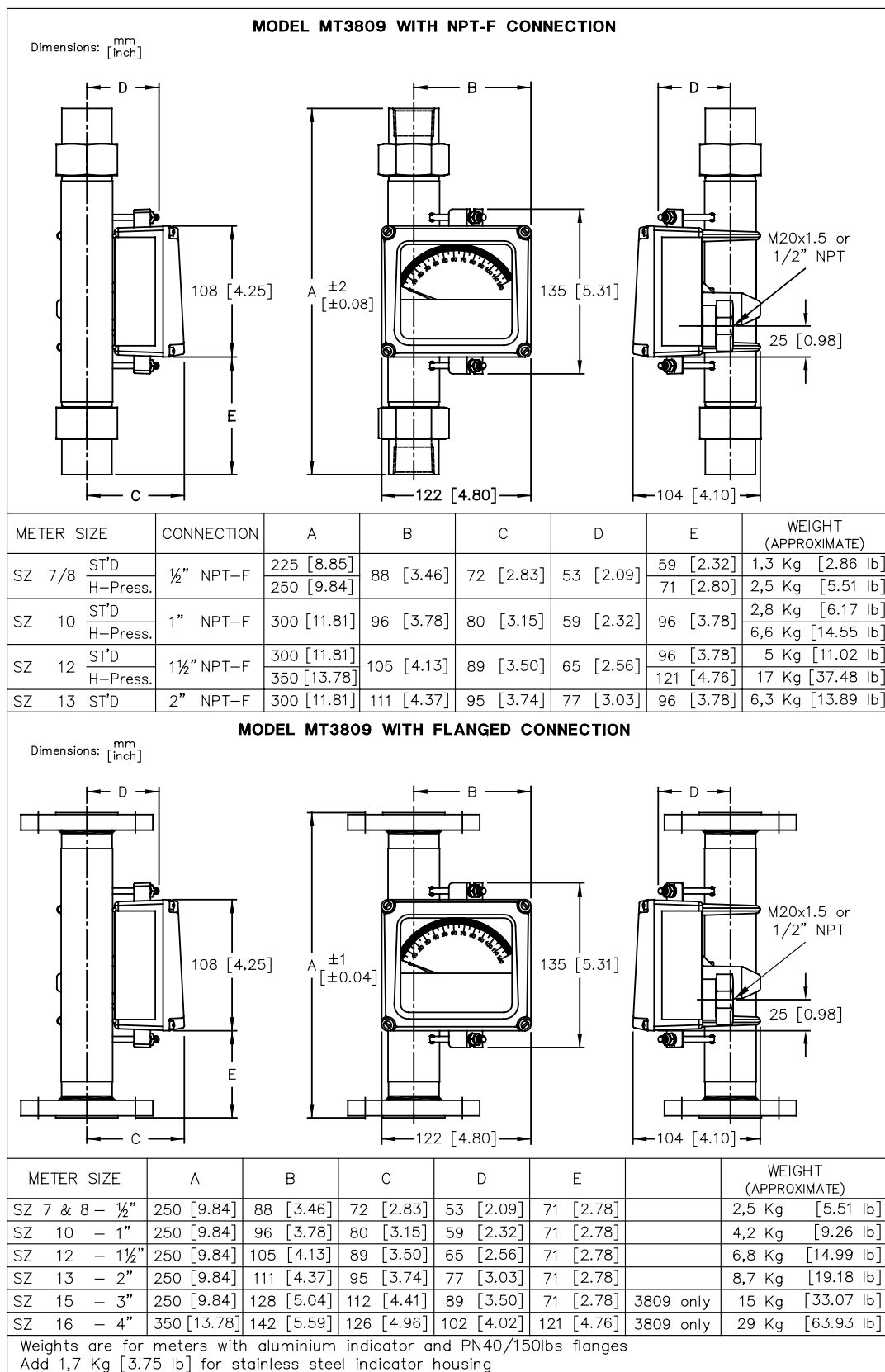


Figure 3 - Models MT 3809 and MT 3819 dimensions

Models MT 3809 & 3819

Model code MT 3809

MODEL NUMBER		DESCRIPTION			
3809/E		METAL TUBE FLOWMETER (VERTICAL INLET, VERTICAL OUTLET)			
MATERIAL OF CONSTRUCTION					
1		316 L SS			
A		316 L SS WITH DIN 2.2 CERTIFICATION			
B		316 L SS WITH DIN 3.1.B CERTIFICATION			
METER & CONNECTION SIZE					
X		TO BE SELECTED FROM TABLE 4			
FLOAT (MAXIMUM FLOW WATER)					
x		TO BE SELECTED FROM TABLE 1A			
CONNECTION TYPE					
X		TO BE SELECTED FROM TABLE 5			
		METER ACCURACY	SCALE INSCR.	FLUID	
A		1,6 VDI	% - SCALE	LIQUID	
B		1,6 VDI	DR - SCALE	LIQUID	
C		1,6 VDI	% - SCALE	GAS	
D		1,6 VDI	DR - SCALE	GAS	
E		1,6 VDI	% - SCALE	VISC. INFLUENCE	
F		1,6 VDI	DR - SCALE	VISC. INFLUENCE	
INDICATOR CONFIGURATION					
		HOUSING	MATERIAL	FINISH	INDICATOR FUNCTION
A		"	ALUMINIUM	STANDARD	INDICATOR ONLY
B		"	"	"	INDUCTIVE ALARM, 1 SWITCH (P&F)
C		"	"	"	INDUCTIVE ALARM, 2 SWITCHES (P&F)
D		"	"	"	μ P SMM TRANSMITTER 4 - 20 mA / HART COMPATIBLE
E		"	"	"	μ P SMM TRANSMITT. 4 - 20 mA / HART COMP./ 1 ALARM
F		"	"	"	μ P SMM TRANSMITT. 4 - 20 mA / HART COMP./ 2 ALARM
X		"	"	"	μ P M420 TRANSMITTER 4 - 20 mA
H		"	ALUMINIUM	EPOXY	INDICATOR ONLY
J		"	"	"	INDUCTIVE ALARM, 1 SWITCH (P&F)
K		"	"	"	INDUCTIVE ALARM, 2 SWITCHES (P&F)
L		"	"	"	μ P SMM TRANSMITTER 4 - 20 mA / HART COMPATIBLE
M		"	"	"	μ P SMM TRANSMITT. 4 - 20 mA / HART COMP./ 1 ALARM
N		"	"	"	μ P SMM TRANSMITT. 4 - 20 mA / HART COMP./ 2 ALARM
Y		"	"	"	μ P M420 TRANSMITTER 4 - 20 mA
Q		"	ST. STL.	GRIT BLAST	INDICATOR ONLY
R		"	"	"	INDUCTIVE ALARM, 1 SWITCH (P&F)
S		"	"	"	INDUCTIVE ALARM, 2 SWITCHES (P&F)
T		"	"	"	μ P SMM TRANSMITTER 4 - 20 mA / HART COMPATIBLE
U		"	"	"	μ P SMM TRANSMITT. 4 - 20 mA / HART COMP./ 1 ALARM
V		"	"	"	μ P SMM TRANSMITT. 4 - 20 mA / HART COMP./ 2 ALARM
8		"	"	"	μ P M420 TRANSMITTER 4 - 20 mA

Data Sheet

DS-VA-MT3809-3819-eng-eu

April, 2008

Models MT 3809 & 3819

Model code MT 3809 (continued)

		HOUSING	MATERIAL	FINISH	INDICATOR FUNCTION						
1	A	Ex. PROOF	ALUMINIUM	EPOXY	INDUCTIVE ALARM, 1 SWITCH (P&F)						
2		"	"	"	INDUCTIVE ALARM, 2 SWITCHES (P&F)						
3		"	"	"	μ P SMM TRANSMITTER 4 - 20 mA / HART COMPATIBLE						
4		"	"	"	μ P SMM TRANSMITT. 4 - 20 mA / HART COMP./ 1 ALARM						
5		"	"	"	μ P SMM TRANSMITT. 4 - 20 mA / HART COMP./ 2 ALARM						
I.S. RELAY / POWER SUPPLY OPTIONS											
A		NONE									
B		I.S. POWER SUPPLY RELAY UNIT, 1 CHANNEL, 230 VAC (For inductive alarm only) (KFA6-SR2-Ex1-W)									
C		I.S. POWER SUPPLY RELAY UNIT, 2 CHANNEL, 230 VAC (For inductive alarm only) (KFA6-SR2-Ex2-W)									
D		I.S. POWER SUPPLY RELAY UNIT, 1 CHANNEL, 115 VAC (For inductive alarm only) (KFA5-SR2-Ex1-W)									
E		I.S. POWER SUPPLY RELAY UNIT, 2 CHANNEL, 115 VAC (For inductive alarm only) (KFA5-SR2-Ex2-W)									
F		GENERAL PURPOSE POWER SUPPLY, 24 VDC INPUT (For 4-20 mA x-mitter only) (811-11-B 00000)									
G		GENERAL PURPOSE POWER SUPPLY, 115 VAC INPUT (For 4-20 mA x-mitter only) (811-12-B 00000)									
H		GENERAL PURPOSE POWER SUPPLY, 230 VAC INPUT (For 4-20 mA x-mitter only) (811-12-B-00000)									
J		I.S. POWER SUPPLY UNIT, 24 VDC INPUT (For 4-20 mA/HART x-mitter only) (9303/15-22-11)									
K		I.S. POWER SUPPLY UNIT, 115 VAC INPUT (For 4-20 mA/HART x-mitter only) (244 1B-120 VAC)									
L		I.S. POWER SUPPLY UNIT, 230 VAC INPUT (For 4-20 mA/HART x-mitter only) (244 1B-240 VAC)									
CERTIFICATIONS											
1		NONE									
E		ZONE 1, ATEX, EEx ia , (Intrinsically Safe), IP 67									
F		ZONE 2, ATEX, EEx nA (non Incendive), IP 67									
K		ZONE 1, ATEX, EEx d , (Flame proof / Explosion proof), IP 65									
L		UL / cUL or CSA APPROVAL (Intrinsically Safe, non Incendive, or, Explosion proof)									
ACCESSORIES											
X		TO BE SELECTED FROM TABLE 6									
SOFTWARE REVISION											
1		NONE									
A		INITIAL RELEASE (SMM ONLY)									
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	SELECT "Z" IF SPECIAL AND SPECIFY
3809 / E 1 1 D A B A A 1 D 1 = TYPICAL MODEL NUMBER											

Models MT 3809 & 3819

Model code MT 3819

MODEL NUMBER		DESCRIPTION			
3819/B		METAL TUBE FLOWMETER (VERTICAL INLET, VERTICAL OUTLET)			
MATERIAL OF CONSTRUCTION					
1		316 L SS / E/TFE LINED			
A		316 L SS / E/TFE LINED WITH DIN 2.2 CERTIFICATION			
B		316 L SS / E/TFE LINED WITH DIN 3.1.B CERTIFICATION			
METER & CONNECTION SIZE					
1		METER SIZE 7, 1/2" (DN15) FLANGED			
2		METER SIZE 8, 1/2" (DN15) FLANGED			
3		METER SIZE 10, 1" (DN25) FLANGED			
4		METER SIZE 12, 1½" (DN40) FLANGED			
5		METER SIZE 13, 2" (DN50) FLANGED			
FLOAT (MAXIMUM FLOW WATER)					
X		TO BE SELECTED FROM TABLE 1B			
CONNECTION TYPE					
A		ANSI 150 LBS RF			
B		ANSI 300 LBS RF			
D		DIN PN 40 RF			
		METER ACCURACY	SCALE INSCR.	FLUID	
A		1,6 VDI	% - SCALE	LIQUID	
B		1,6 VDI	DR - SCALE	LIQUID	
E		1,6 VDI	% - SCALE	VISC. INFLUENCE	
F		1,6 VDI	DR - SCALE	VISC. INFLUENCE	
G		2.5 VDI	% - SCALE	LIQUID	
H		2.5 VDI	DR - SCALE	LIQUID	
L		2.5 VDI	% - SCALE	VISC. INFLUENCE	
M		2.5 VDI	DR - SCALE	VISC. INFLUENCE	
INDICATOR CONFIGURATION					
		HOUSING	MATERIAL	FINISH	INDICATOR FUNCTION
A		STANDARD	ALUMINIUM	STANDARD	INDICATOR ONLY
B		"	"	"	INDUCTIVE ALARM, 1 SWITCH (P&F)
C		"	"	"	INDUCTIVE ALARM, 2 SWITCHES (P&F)
D		"	"	"	µP SMM TRANSMITTER 4 - 20 mA / HART COMPATIBLE
E		"	"	"	µP SMM TRANSMITT. 4 - 20 mA / HART COMP./ 1 ALARM
F		"	"	"	µP SMM TRANSMITT. 4 - 20 mA / HART COMP./ 2 ALARM
X		"	"	"	µP M420 TRANSMITTER 4 - 20 mA
H		STANDARD	ALUMINIUM	EPOXY	INDICATOR ONLY
J		"	"	"	INDUCTIVE ALARM, 1 SWITCH (P&F)
K		"	"	"	INDUCTIVE ALARM, 2 SWITCHES (P&F)
L		"	"	"	µP SMM TRANSMITTER 4 - 20 mA / HART COMPATIBLE
M		"	"	"	µP SMM TRANSMITT. 4 - 20 mA / HART COMP./ 1 ALARM
N		"	"	"	µP SMM TRANSMITT. 4 - 20 mA / HART COMP./ 2 ALARM
Y		"	"	"	µP M420 TRANSMITTER 4 - 20 mA

Data Sheet

DS-VA-MT3809-3819-eng-eu

April, 2008

Models MT 3809 & 3819

Model code MT 3819 (continued)

		HOUSING	MATERIAL	FINISH	INDICATOR FUNCTION						
Q		STANDARD	ST. STL.	GRIT BLAST	INDICATOR ONLY						
R		"	"	"	INDUCTIVE ALARM, 1 SWITCH (P&F)						
S		"	"	"	INDUCTIVE ALARM, 2 SWITCHES (P&F)						
T		"	"	"	μP SMM TRANSMITTER 4 - 20 mA / HART COMPATIBLE						
U		"	"	"	μP SMM TRANSMITT. 4 - 20 mA / HART COMP./ 1 ALARM						
V		"	"	"	μP SMM TRANSMITT. 4 - 20 mA / HART COMP./ 2 ALARM						
8		"	"	"	μP M420 TRANSMITTER 4 - 20 mA						
1		Ex. PROOF	ALUMINIUM	EPOXY	INDUCTIVE ALARM, 1 SWITCH (P&F)						
2		"	"	"	INDUCTIVE ALARM, 2 SWITCHES (P&F)						
3		"	"	"	μP SMM TRANSMITTER 4 - 20 mA / HART COMPATIBLE						
4		"	"	"	μP SMM TRANSMITT. 4 - 20 mA / HART COMP./ 1 ALARM						
5		"	"	"	μP SMM TRANSMITT. 4 - 20 mA / HART COMP./ 2 ALARM						
I.S. RELAY / POWER SUPPLY OPTIONS											
A		NONE									
B		I.S. POWER SUPPLY RELAY UNIT, 1 CHANNEL, 230 VAC (For use with inductive alarms only)									
C		I.S. POWER SUPPLY RELAY UNIT, 2 CHANNEL, 230 VAC (For use with inductive alarms only)									
D		I.S. POWER SUPPLY RELAY UNIT, 1 CHANNEL, 115 VAC (For use with inductive alarms only)									
E		I.S. POWER SUPPLY RELAY UNIT, 2 CHANNEL, 115 VAC (For use with inductive alarms only)									
F		GENERAL PURPOSE POWER SUPPLY, 24 VDC INPUT (For use with 4-20 mA transmitter only)									
G		GENERAL PURPOSE POWER SUPPLY, 115 VAC INPUT (For use with 4-20 mA transmitter only)									
H		GENERAL PURPOSE POWER SUPPLY, 230 VAC INPUT (For use with 4-20 mA transmitter only)									
J		I.S. POWER SUPPLY UNIT, 24 VDC INPUT (For use with 4-20 mA/HART transmitter only)									
K		I.S. POWER SUPPLY UNIT, 115 VAC INPUT (For use with 4-20 mA/HART transmitter only)									
L		I.S. POWER SUPPLY UNIT, 230 VAC INPUT (For use with 4-20 mA/HART transmitter only)									
CERTIFICATIONS											
1		NONE									
E		ZONE 1, ATEX, EEx ia , (Intrinsically Safe), IP 67									
F		ZONE 2, ATEX, EEx nA (non Incendive), IP 67									
K		ZONE 1, ATEX, EEx d , (Flame proof / Explosion proof), IP 65									
L		UL / cUL or CSA APPROVAL (Intrinsically Safe, non Incendive, or, Explosion proof)									
ACCESSORIES											
A		NONE									
B		HIGH TEMPERATURE DESIGN WITH PROTECTION SHIELD									
SOFTWARE REVISION											
1		NONE									
A		INITIAL RELEASE (SMM ONLY)									
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	SELECT "Z" IF SPECIAL AND SPECIFY
3819 / B 1 1 A A B A A 1 A 1 = TYPICAL MODEL NUMBER											

Models MT 3809 & 3819

BROOKS LOCAL AND WORLDWIDE SUPPORT

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration. The primary standard calibration equipment to calibrate our flow products is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required. For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

CUSTOMER SEMINARS AND TRAINING

Brooks Instrument can provide customer seminars and dedicated training to engineers, end users and maintenance persons. Please contact your nearest sales representative for more details.

HELP DESK

In case you need technical assistance:

Americas	☎ 1-888-554-FLOW	
Europe	☎ +(31) 318 549 290	Within Netherlands ☎ 0318 549 290
Asia	☎ +011-81-3-5633-7100	

Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

TRADEMARKS

Brooks Brooks Instrument, LLC
HART HART Communications Foundation
Hastelloy C E.I. DuPont de Nemours & Co.
Inconel Inco Alloy International Inc.
Smart Meter Manager Brooks Instrument, LLC
SMM Brooks Instrument, LLC
Teflon E.I. DuPont de Nemours & Co.
Tefzel E.I. DuPont de Nemours & Co.
Viton DuPont Performance Elastomers



Brooks Instrument
407 West Vine Street
P.O. Box 903
Hatfield, PA 19440-0903 USA
T (215) 362-3700
F (215) 362-3745
E-Mail BrooksAm@BrooksInstrument.com
www.BrooksInstrument.com

Brooks Instrument
Neonstraat 3
6718 WX Ede, Netherlands
T 31-318-549-300
F 31-318-549-309
E-Mail BrooksEu@BrooksInstrument.com

Brooks Instrument
1-4-4 Kitasuna Koto-Ku
Tokyo, 136-0073 Japan
T 011-81-3-5633-7100
F 011-81-3-5633-7101
E-Mail BrooksAs@BrooksInstrument.com