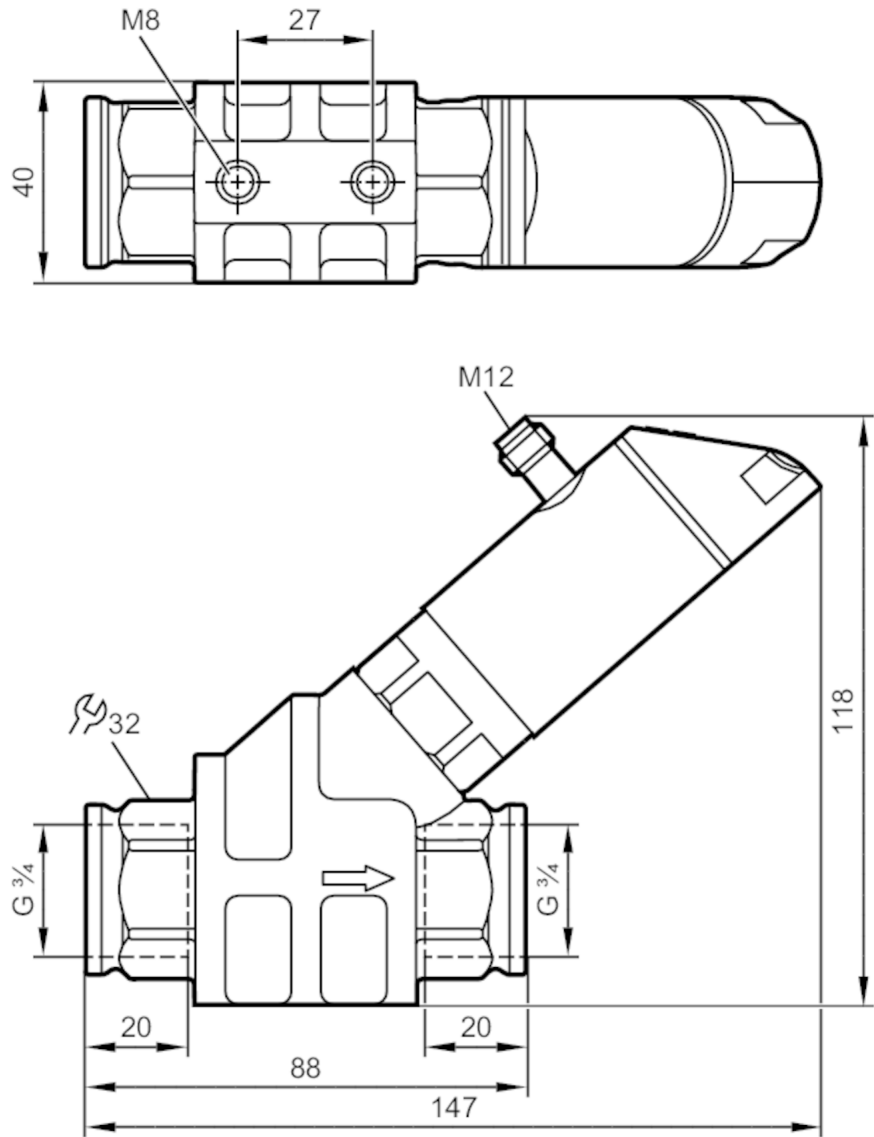


SB0301



Flow meter with fast response and display

SBG34KL0FRKG



Product characteristics				
Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Process connection	threaded connection G 3/4 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 5 mm²/s at 40 °C)			
Medium temperature	[°C]	-10...100		
Pressure rating	100 bar	10 MPa		
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa			
MAWP (for applications according to CRN)	79 bar	7.9 MPa		
Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		



Flow meter with fast response and display

SBG34KL0FRKG

Current consumption	[mA]	< 50			
Protection class		III			
Reverse polarity protection		yes			
Power-on delay time	[s]	< 3			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analog signal; frequency signal; IO-Link			
Max. voltage drop switching output DC	[V]	2			
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)			
Analog current output	[mA]	4...20			
Max. load	[Ω]	500			
Short-circuit protection		yes			
Overload protection		yes			
Frequency of the output	[Hz]	0...10000			
Measuring/setting range					
Measuring range		0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Display range		0...18 l/min	0...1.08 m³/h	0...285.4 gph	0...4.755 gpm
Resolution		0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP		0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph	0.025...3.965 gpm
Reset point rP		0...14.9 l/min	0...0.894 m³/h	0...236.2 gph	0...3.935 gpm
Frequency end point, FEP		1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph	0.265...3.965 gpm
In steps of		0.01 l/min	0.001 m³/h	0.2 gph	0.005 gpm
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Measuring dynamics		1:50			
Temperature monitoring					
Measuring range		-10...100 °C		14...212 °F	
Display range		-32...122 °C		-25.6...251.6 °F	
Resolution		0.1 °C		0.1 °F	
Set point SP		-9.3...100 °C		15.2...212 °F	
Reset point rP		-10...99.3 °C		14...210.8 °F	
In steps of		0.1 °C		0.2 °F	
Frequency start point, FSP		-10...78 °C		14...172.4 °F	
Frequency end point, FEP		12...100 °C		53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000			
Accuracy / deviations					
Flow monitoring					
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)			
Repeatability		± 1 % MEW			
Temperature monitoring					
Temperature drift		0,029 °C / K			
Accuracy	[K]	3 K (25°C; Q > 1 l/min)			



Flow meter with fast response and display

SBG34KL0FRKG

Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	1048
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	145
Pressure equipment directive	sound engineering practice	
Mechanical data		
Weight	[g]	994

SB0301



Flow meter with fast response and display

SBG34KL0FRKG

Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM
Process connection	threaded connection G 3/4 Internal thread
Switching cycles mechanical	10 million

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.
	All data refer to oil with the following nominal viscosity: 5 mm ² /s, 40 °C
	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

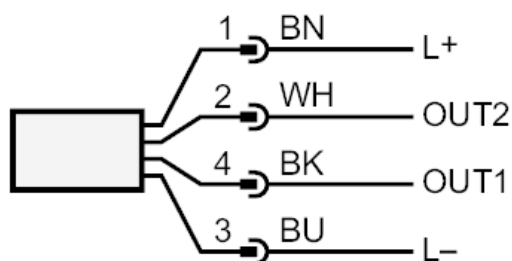




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

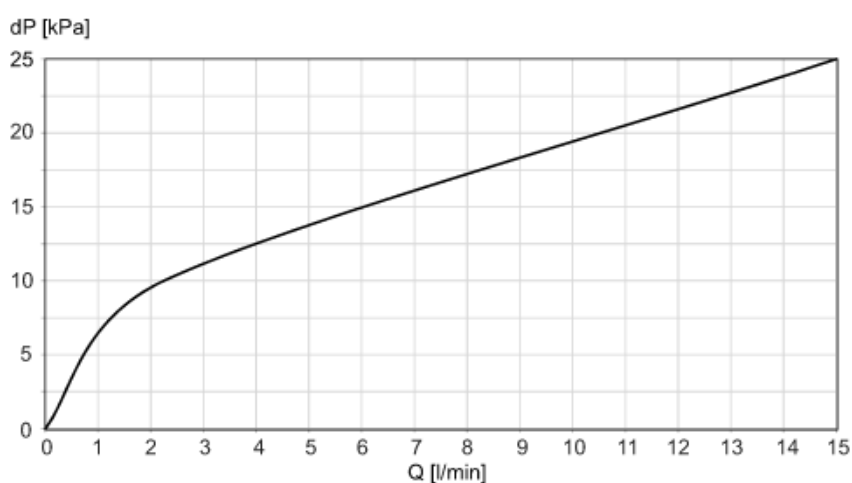
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
- BN = brown
- BU = blue
- WH = white

Diagrams and graphs

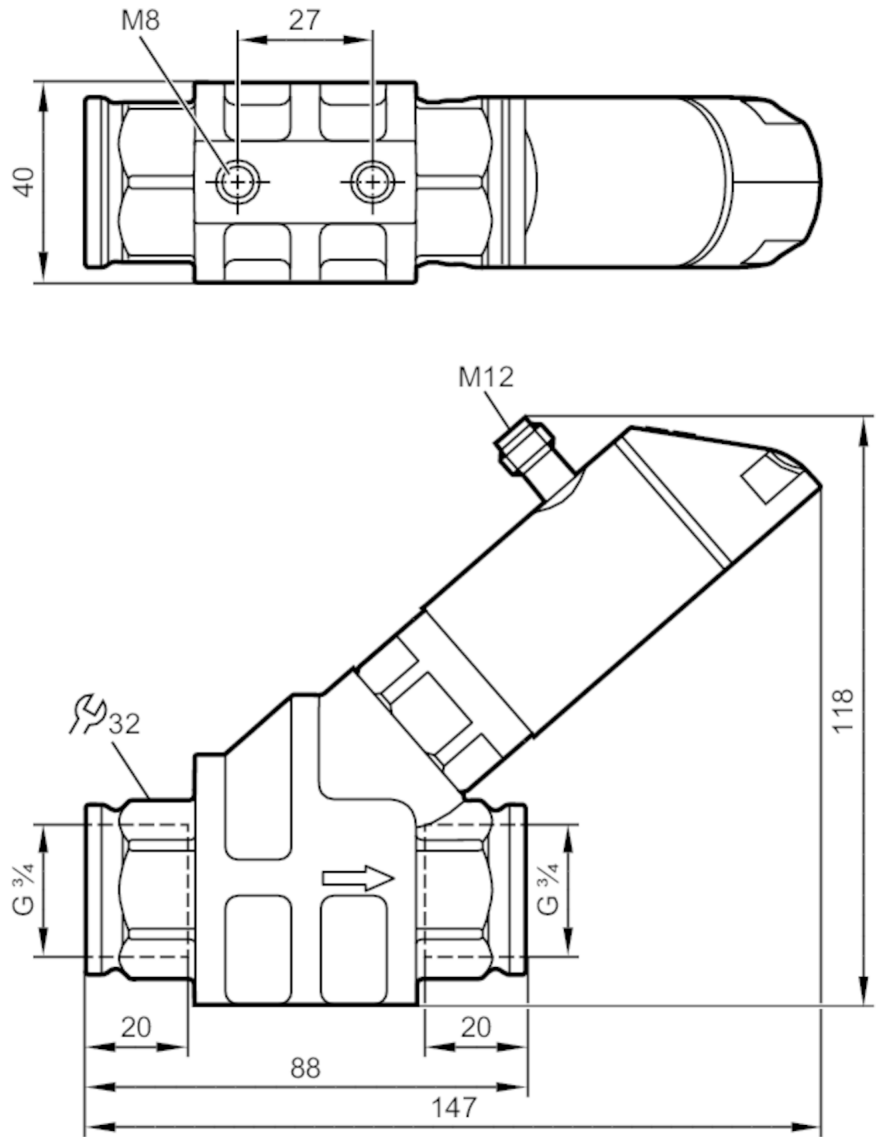


SB1232



Flow meter with fast response and display

SBG34KL0FRKG



CRN



IO-Link

Product characteristics

Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Process connection	threaded connection G 3/4 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 10 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)			
Current consumption [mA]	< 50			



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Display range	0...18 l/min	0...1.08 m³/h	0...285.4 gph	0...4.755 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP	0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph	0.025...3.965 gpm
Reset point rP	0...14.9 l/min	0...0.894 m³/h	0...236.2 gph	0...3.935 gpm
Frequency end point, FEP	1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph	0.265...3.965 gpm
In steps of	0.01 l/min	0.001 m³/h	0.2 gph	0.005 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,029 °C / K
Accuracy [K]	3 K (25°C; Q > 1 l/min)



Flow meter with fast response and display

SBG34KL0FRKG

Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1043
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	145
UL approval	UL approval number	I005
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

SB1232



Flow meter with fast response and display

SBG34KL0FRKG

Mechanical data		
Weight	[g]	993.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	
Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit
Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 10 mm²/s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	
Electrical connection		
Connector: 1 x M12; coding: A; Contacts: gold-plated		
		

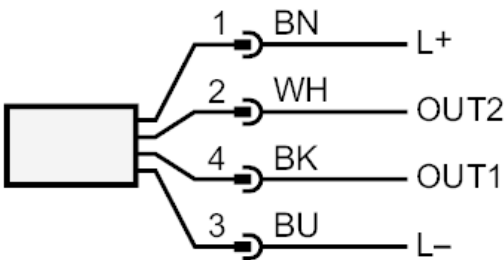




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

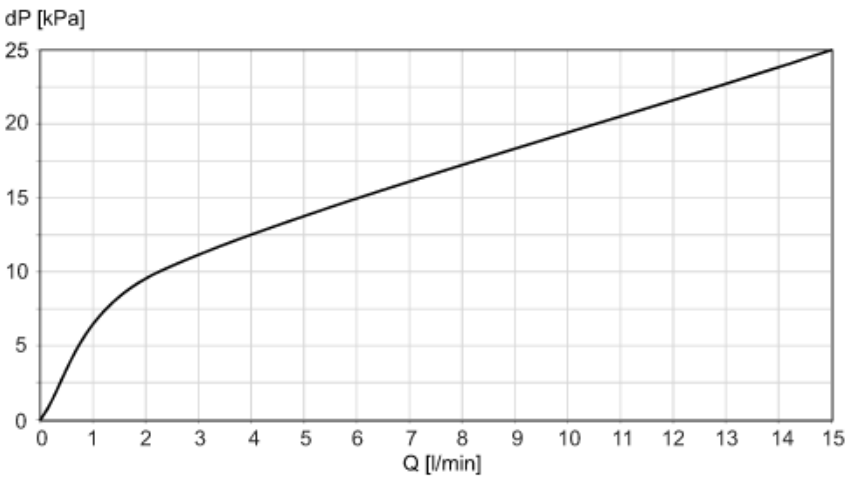
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

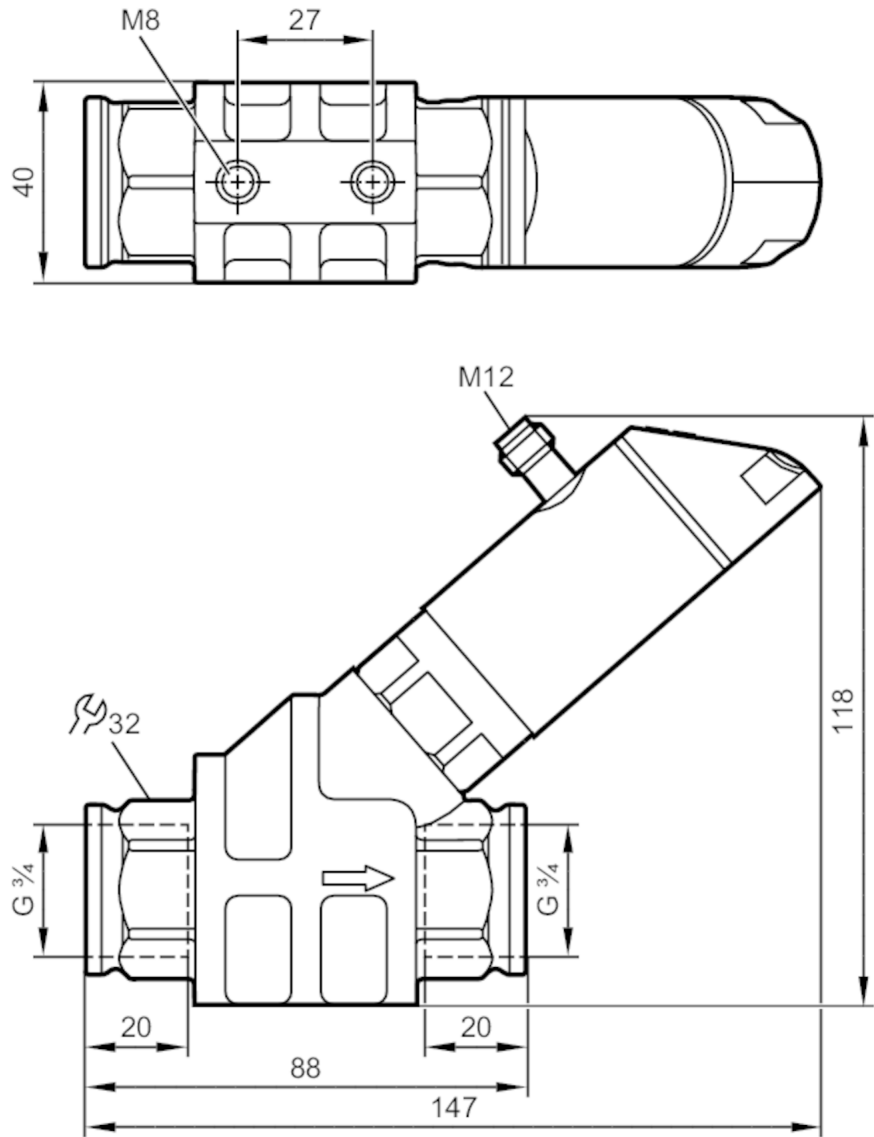


SB1233



Flow meter with fast response and display

SBG34KL0FRKG



CRN



IO-Link

Product characteristics				
Measuring range	0.5...25 l/min	0.03...1.5 m³/h	8...396.5 gph	0.13...6.6 gpm
Process connection	threaded connection G 3/4 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 10 mm²/s at 40 °C)			
Medium temperature	[°C]	-10...100		
Pressure rating	100 bar	10 MPa		
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa			
Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Output function	configurable
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	0.5...25 l/min	0.03...1.5 m³/h	8...396.5 gph	0.13...6.6 gpm
Display range	0...30 l/min	0...1.8 m³/h	0...475.5 gph	0...7.93 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.01 gpm
Set point SP	0.16...25 l/min	0.01...1.5 m³/h	2.5...396 gph	0.04...6.6 gpm
Reset point rP	0...24.84 l/min	0...1.49 m³/h	0...393.5 gph	0...6.56 gpm
Frequency end point, FEP	1.66...25 l/min	0.1...1.5 m³/h	26.5...396 gph	0.44...6.6 gpm
In steps of	0.02 l/min	0.002 m³/h	0.5 gph	0.01 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	
In steps of [Hz]	10	

Accuracy / deviations

Flow monitoring	
Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW
Temperature monitoring	
Temperature drift	0,029 °C / K



Flow meter with fast response and display

SBG34KL0FRKG

Accuracy	[K]	3 K (25°C; Q > 1 l/min)	
Reaction times			
Flow monitoring			
Response time	[s]	0.01	
Damping process value dAP	[s]	0...5	
In steps of	[s]	0.1	
Damping for the analog output dAA	[s]	0...5	
In steps of	[s]	0.1	
Temperature monitoring			
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)	
Software / programming			
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor		
Interfaces			
Communication interface	IO-Link		
Transmission type	COM2 (38,4 kBaud)		
IO-Link revision	1.1		
SDCI standard	IEC 61131-9 CDV		
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor	
	Function	Device identification	
	Function	Process data variable	
	Function	Device diagnosis	
SIO mode	yes		
Required master port class	A		
Process data analog	2		
Process data binary	2		
Min. process cycle time	[ms]	3.2	
Supported DeviceIDs	Type of operation	DeviceID	
	default	1044	
Operating conditions			
Ambient temperature	[°C]	0...60	
Note on ambient temperature	medium temperature < 80 °C		
	medium temperature < 100 °C: 0...40 °C		
Storage temperature	[°C]	-15...80	
Protection	IP 65; IP 67		
Tests / approvals			
EMC	DIN EN 61000-6-2		
	DIN EN 61000-6-3		
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)	
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)	
MTTF	[years]	145	
UL approval	UL approval number	I005	
	File number UL	E174189	



Flow meter with fast response and display

SBG34KL0FRKG

Pressure equipment directive	sound engineering practice
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Mechanical data

Weight	[g]	995
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 10 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

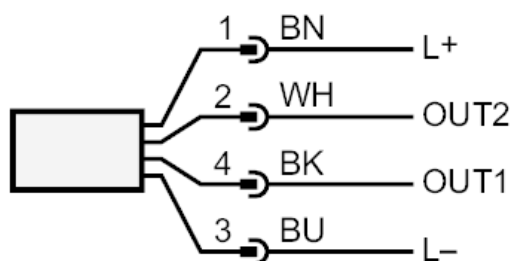




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

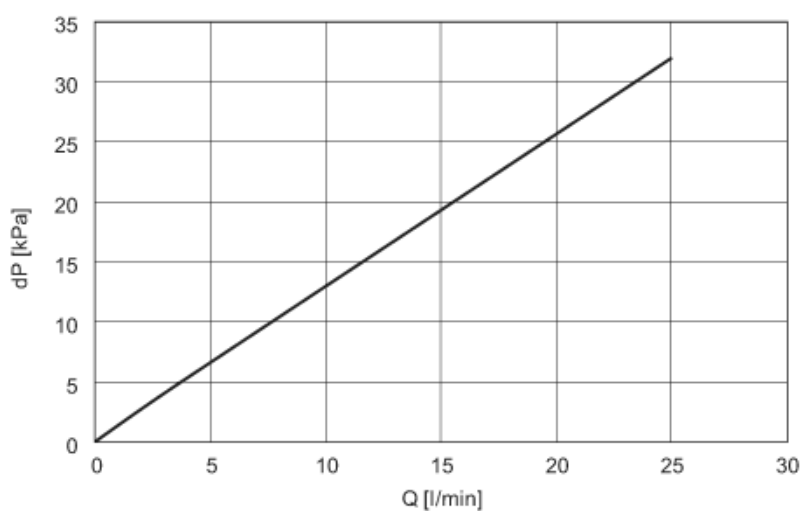
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

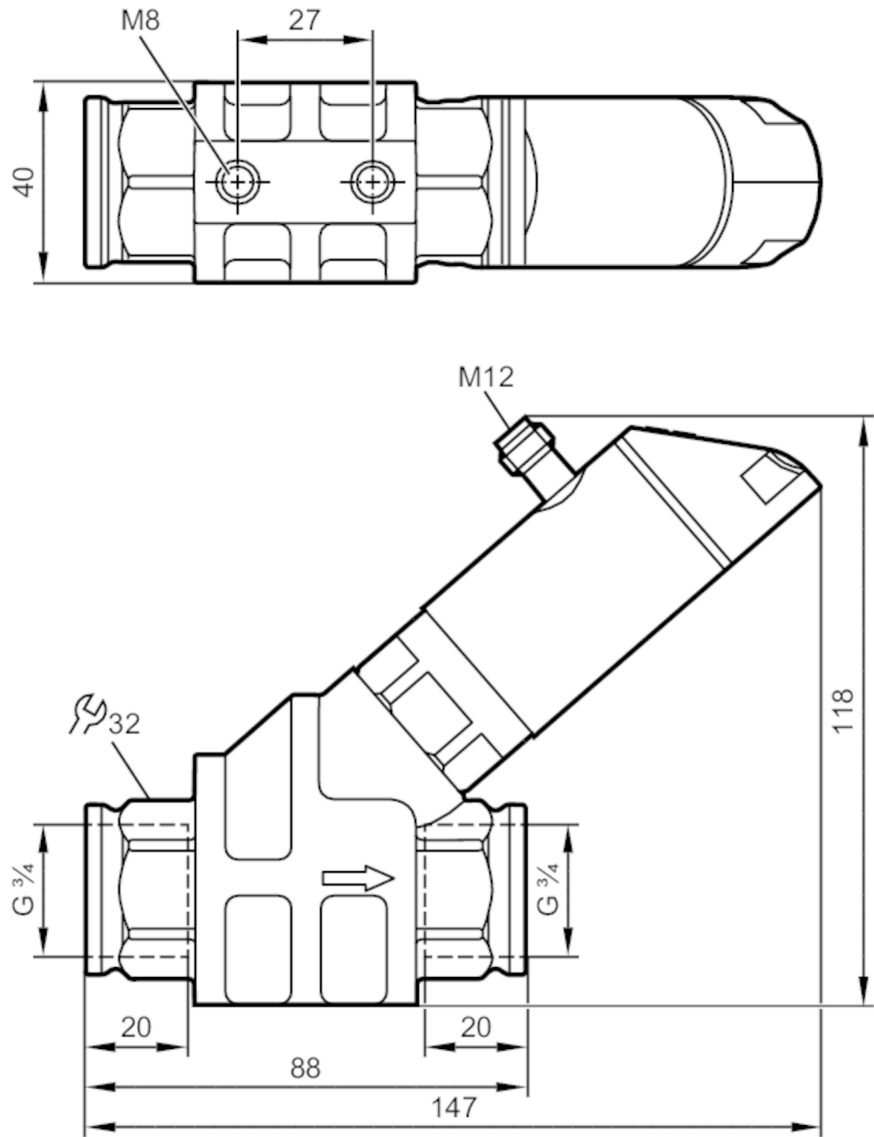


SB1234



Flow meter with fast response and display

SBG34KL0FRKG



CRN



IO-Link

Product characteristics

Measuring range	1...50 l/min	0.06...3 m³/h	16...793 gph	0.26...13.2 gpm
Process connection	threaded connection G 3/4 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 10 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)			
Current consumption [mA]	< 50			

SB1234



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Output function	normally open / closed; (configurable)
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	1...50 l/min	0.06...3 m³/h	16...793 gph	0.26...13.2 gpm
Display range	0...60 l/min	0...3.6 m³/h	0...951 gph	0...15.86 gpm
Resolution	0.01 l/min	0.001 m³/h	1 gph	0.01 gpm
Set point SP	0.35...50 l/min	0.02...3 m³/h	5...793 gph	0.08...13.2 gpm
Reset point rP	0...49.65 l/min	0...2.98 m³/h	0...787 gph	0...13.12 gpm
Frequency end point, FEP	3.35...50 l/min	0.2...3 m³/h	53...793 gph	0.88...13.2 gpm
In steps of	0.05 l/min	0.005 m³/h	1 gph	0.02 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	
In steps of [Hz]	10	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,029 °C / K
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Flow meter with fast response and display

SBG34KL0FRKG

Accuracy	[K]	3 K (25°C; Q > 1 l/min)	
Reaction times			
Flow monitoring			
Response time	[s]	0.01	
Damping process value dAP	[s]	0...5	
In steps of	[s]	0.1	
Damping for the analog output dAA	[s]	0...5	
In steps of	[s]	0.1	
Temperature monitoring			
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)	
Software / programming			
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor		
Interfaces			
Communication interface	IO-Link		
Transmission type	COM2 (38,4 kBaud)		
IO-Link revision	1.1		
SDCI standard	IEC 61131-9 CDV		
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor	
	Function	Device identification	
	Function	Process data variable	
	Function	Device diagnosis	
SIO mode	yes		
Required master port class	A		
Process data analog	2		
Process data binary	2		
Min. process cycle time	[ms]	3.2	
Supported DeviceIDs	Type of operation	DeviceID	
	default	1045	
Operating conditions			
Ambient temperature	[°C]	0...60	
Note on ambient temperature	medium temperature < 80 °C		
	medium temperature < 100 °C: 0...40 °C		
Storage temperature	[°C]	-15...80	
Protection	IP 65; IP 67		
Tests / approvals			
EMC	DIN EN 61000-6-2		
	DIN EN 61000-6-3		
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)	
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)	
MTTF	[years]	145	
UL approval	UL approval number	I005	
	File number UL	E174189	

SB1234



Flow meter with fast response and display

SBG34KL0FRKG

Pressure equipment directive	sound engineering practice
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Mechanical data

Weight	[g]	989
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 10 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated



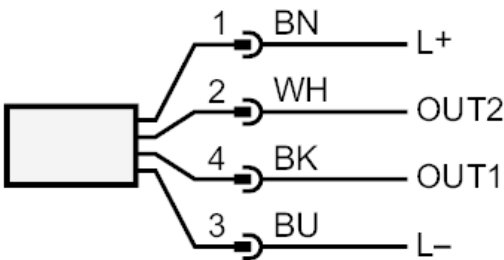
SB1234



Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

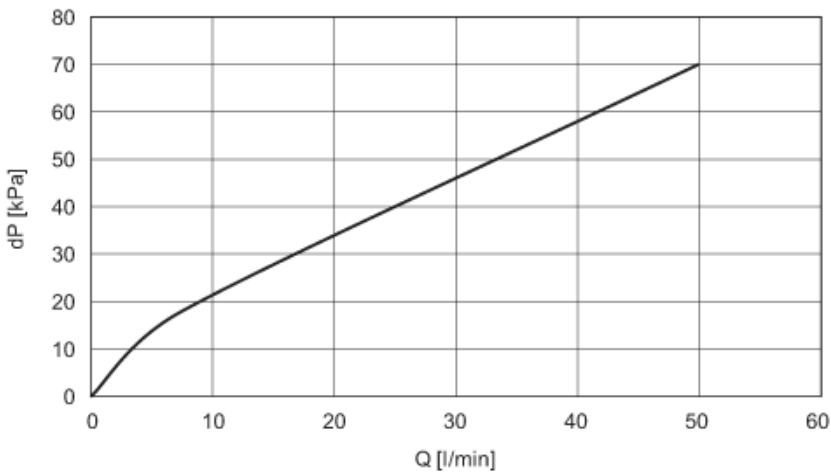
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

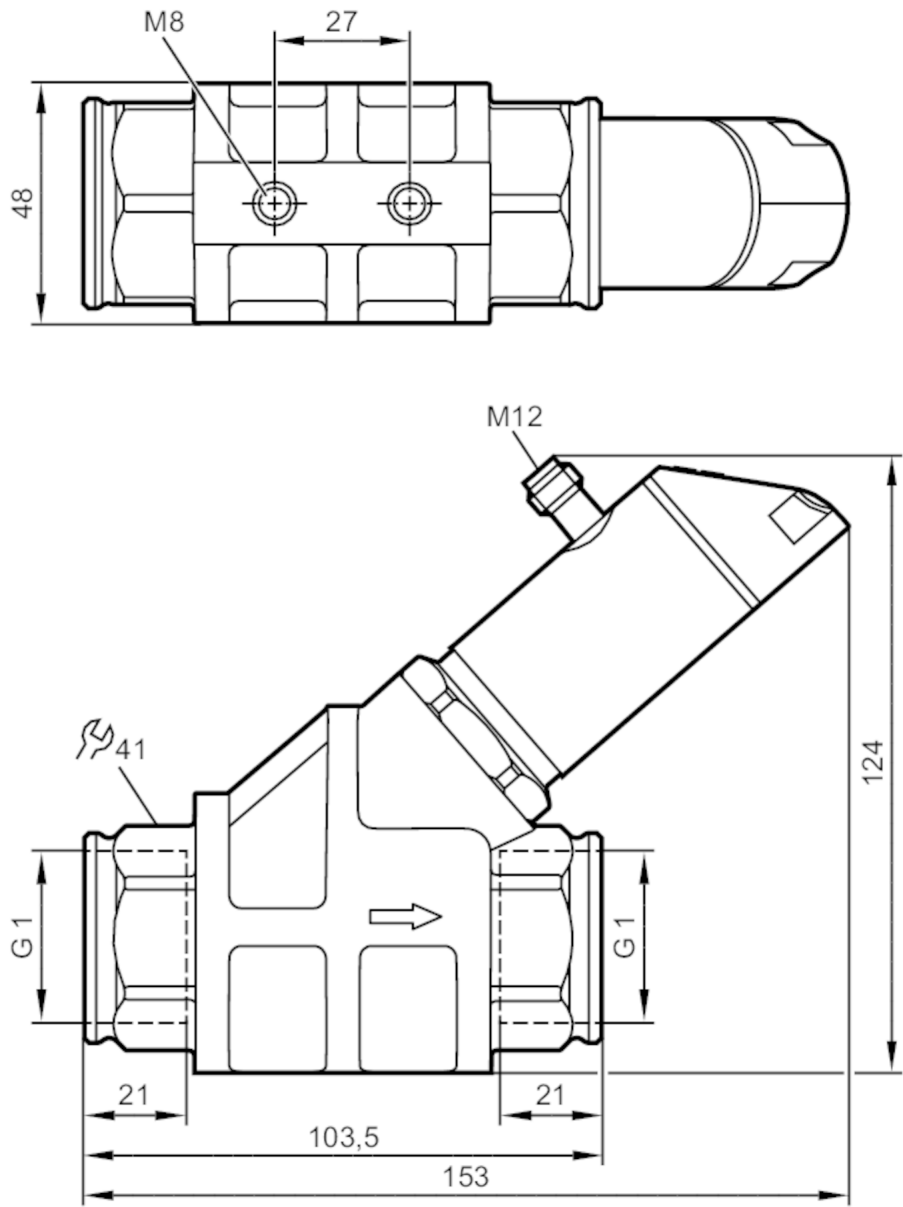


SB1246



Flow meter with fast response and display

SBG11KL0FRKG



Product characteristics

Measuring range	2...100 l/min	0.12...6 m³/h	32...1586 gph	0.55...26.4 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 10 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	

SB1246



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		2...100 l/min	0.12...6 m³/h	32...1586 gph 0.55...26.4 gpm
Display range		0...120 l/min	0...7.2 m³/h	0...1902 gph 0...31.7 gpm
Resolution		0.1 l/min	0.01 m³/h	1 gph 0.01 gpm
Set point SP		0.7...100 l/min	0.04...6 m³/h	10...1586 gph 0.15...26.4 gpm
Reset point rP		0...99.3 l/min	0...5.96 m³/h	0...1574 gph 0...26.25 gpm
Frequency end point, FEP		6.7...100 l/min	0.4...6 m³/h	106...1586 gph 1.75...26.4 gpm
In steps of		0.1 l/min	0.01 m³/h	2 gph 0.05 gpm
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C	14...212 °F	
Display range		-32...122 °C	-25.6...251.6 °F	
Resolution		0.1 °C	0.1 °F	
Set point SP		-9.3...100 °C	15.2...212 °F	
Reset point rP		-10...99.3 °C	14...210.8 °F	
In steps of		0.1 °C	0.2 °F	
Frequency start point, FSP		-10...78 °C	14...172.4 °F	
Frequency end point, FEP		12...100 °C	53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG11KL0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1046
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB1246



Flow meter with fast response and display

SBG11KL0FRKG

MTTF	[years]	145
UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	1586.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 10 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

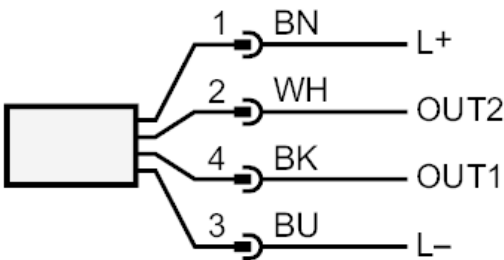




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

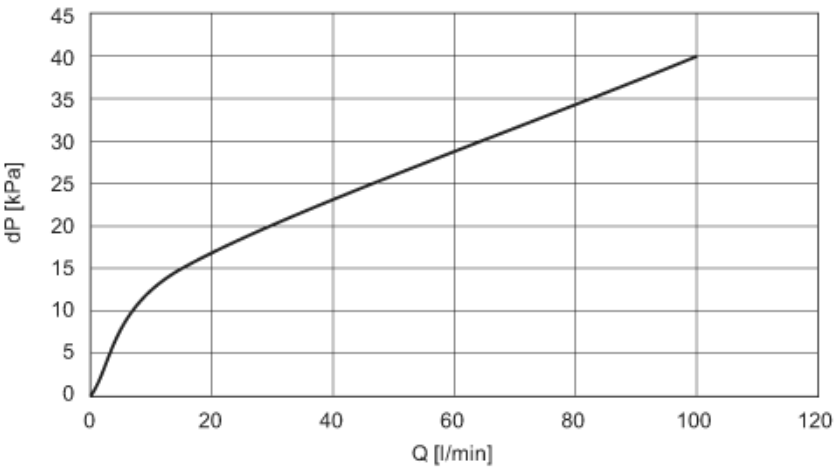
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

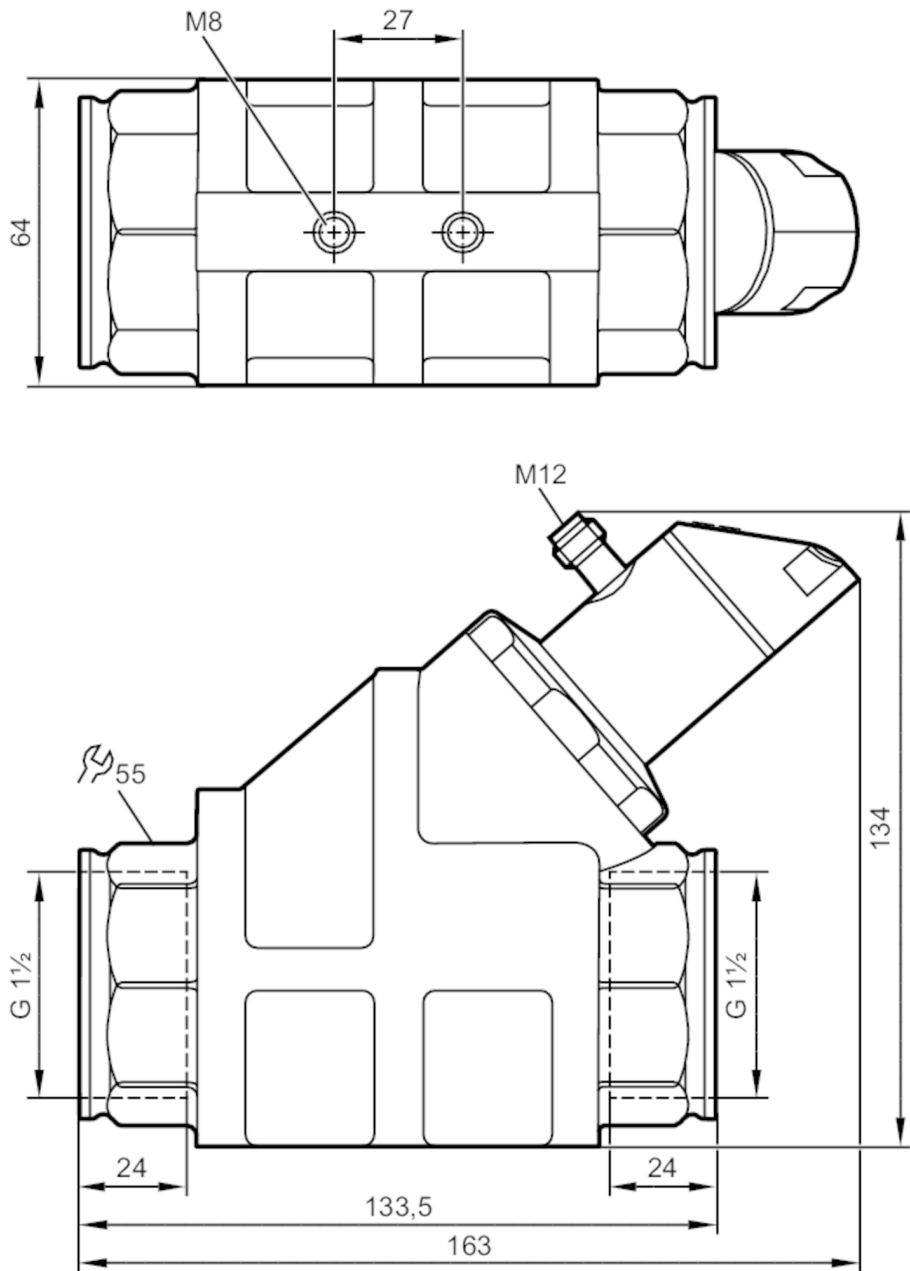


SB1257



Flow meter with fast response and display

SBG32KM0FRKG



Product characteristics				
Measuring range	4...200 l/min	0.24...12 m³/h	65...3170 gph	1.1...52.8 gpm
Process connection	threaded connection G 1 1/2 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 10 mm²/s at 40 °C)			
Medium temperature	[°C]	-10...100		
Pressure rating	63 bar	6.3 MPa		
Note on pressure rating	at medium temperature >70°C: 50 bar / 5 MPa			

SB1257



Flow meter with fast response and display

SBG32KM0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		4...200 l/min	0.24...12 m³/h	65...3170 gph
Display range		0...240 l/min	0...14.4 m³/h	0...3805 gph
Resolution		0.1 l/min	0.01 m³/h	1 gph
Set point SP		1.4...200 l/min	0.08...12 m³/h	20...3170 gph
Reset point rP		0...198.6 l/min	0...11.92 m³/h	0...3150 gph
Frequency end point, FEP		13.4...200 l/min	0.8...12 m³/h	210...3170 gph
In steps of		0.02 l/min	0.02 m³/h	5 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C	14...212 °F	
Display range		-32...122 °C	-25.6...251.6 °F	
Resolution		0.1 °C	0.1 °F	
Set point SP		-9.3...100 °C	15.2...212 °F	
Reset point rP		-10...99.3 °C	14...210.8 °F	
In steps of		0.1 °C	0.2 °F	
Frequency start point, FSP		-10...78 °C	14...172.4 °F	
Frequency end point, FEP		12...100 °C	53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG32KM0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1047
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB1257



Flow meter with fast response and display

SBG32KM0FRKG

MTTF	[years]	145
UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	2796.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 1/2 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 10 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

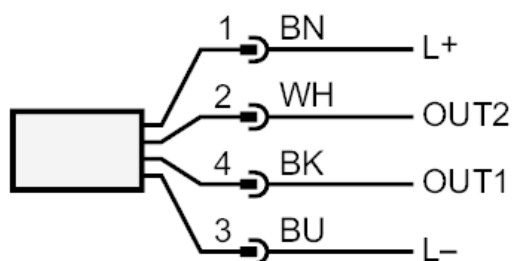




Flow meter with fast response and display

SBG32KM0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

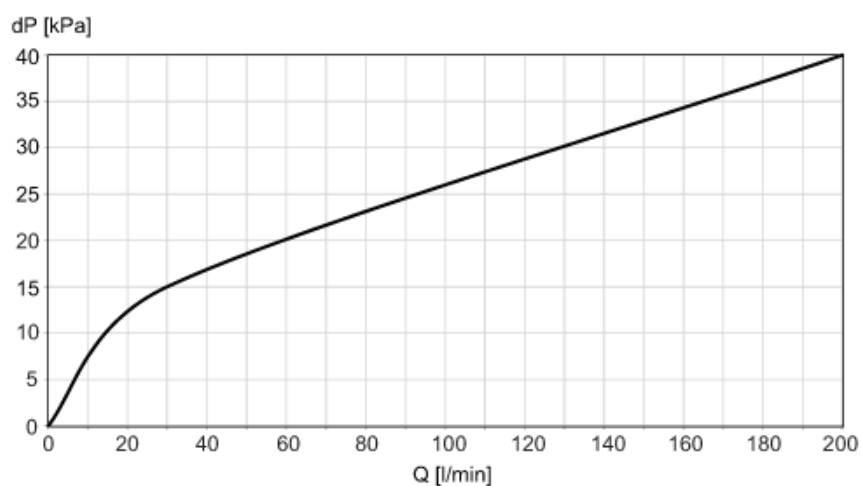
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

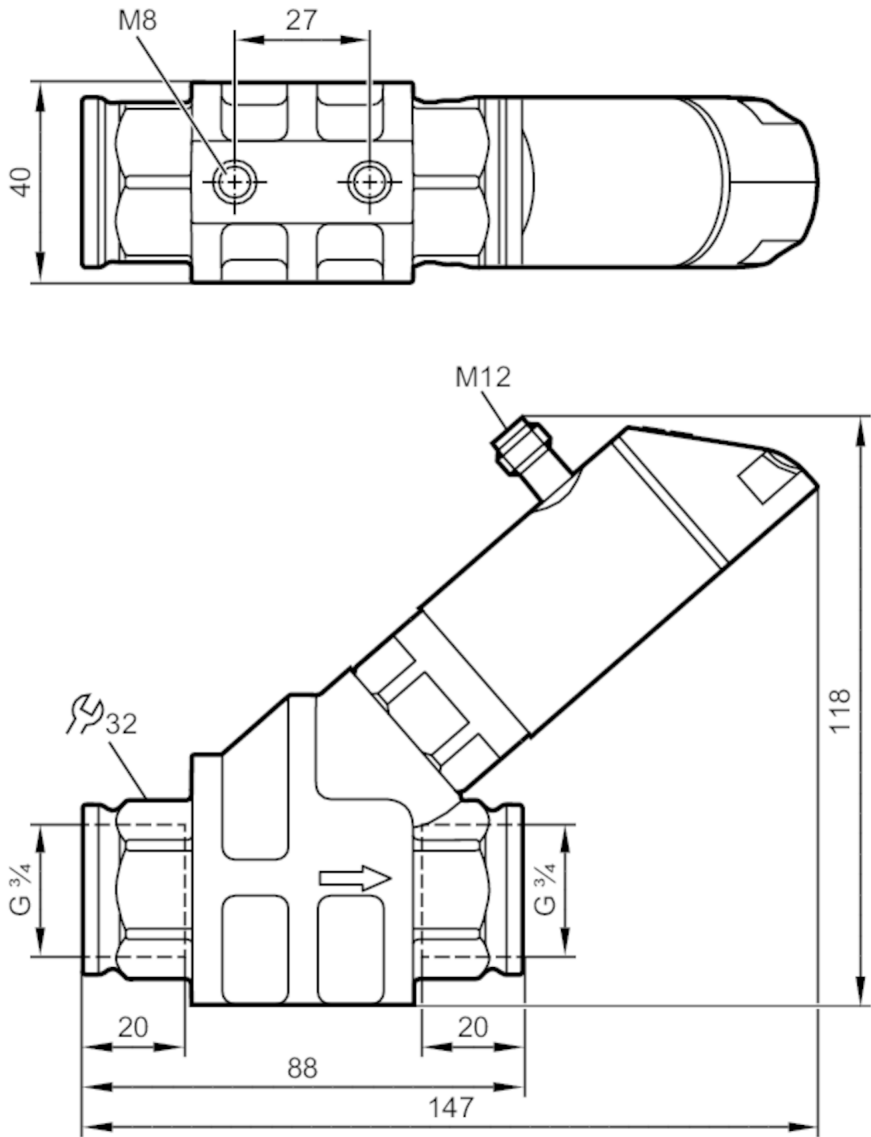


SB2232



Flow meter with fast response and display

SBG34KL0FRKG



Product characteristics				
Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Process connection	threaded connection G 3/4 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 46 mm²/s at 40 °C)			
Medium temperature	[°C]	-10...100		
Pressure rating	100 bar	10 MPa		
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa			
Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Display range	0...18 l/min	0...1.08 m³/h	0...285.4 gph	0...4.755 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP	0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph	0.025...3.965 gpm
Reset point rP	0...14.9 l/min	0...0.894 m³/h	0...236.2 gph	0...3.935 gpm
Frequency end point, FEP	1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph	0.265...3.965 gpm
In steps of	0.01 l/min	0.001 m³/h	0.2 gph	0.005 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,029 °C / K
Accuracy [K]	3 K (25°C; Q > 1 l/min)



Flow meter with fast response and display

SBG34KL0FRKG

Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1043
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	145
UL approval	UL approval number	I005
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

SB2232



Flow meter with fast response and display

SBG34KL0FRKG

Mechanical data		
Weight	[g]	996.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	
Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit
Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 46 mm²/s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	
Electrical connection		
Connector: 1 x M12; coding: A; Contacts: gold-plated		
		

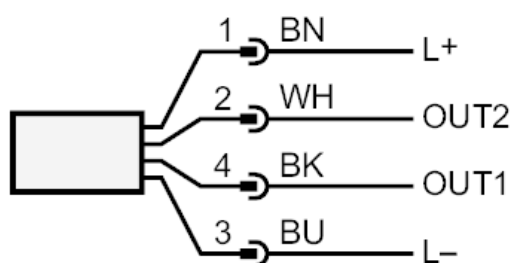




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

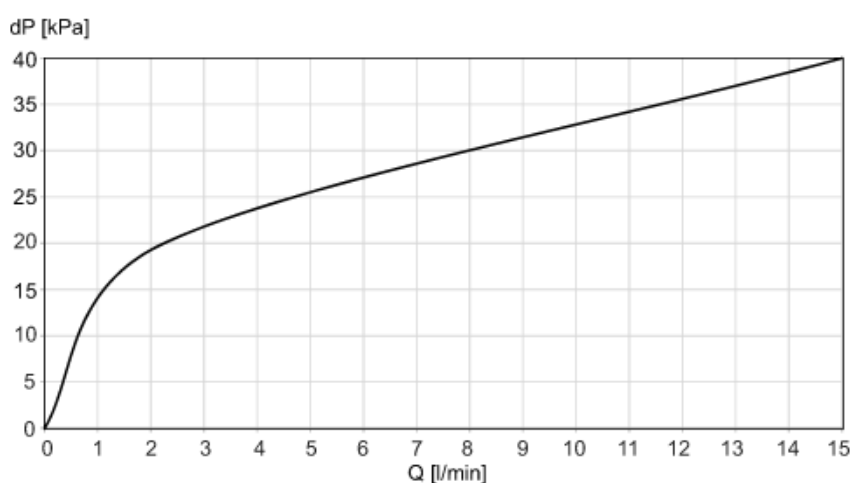
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

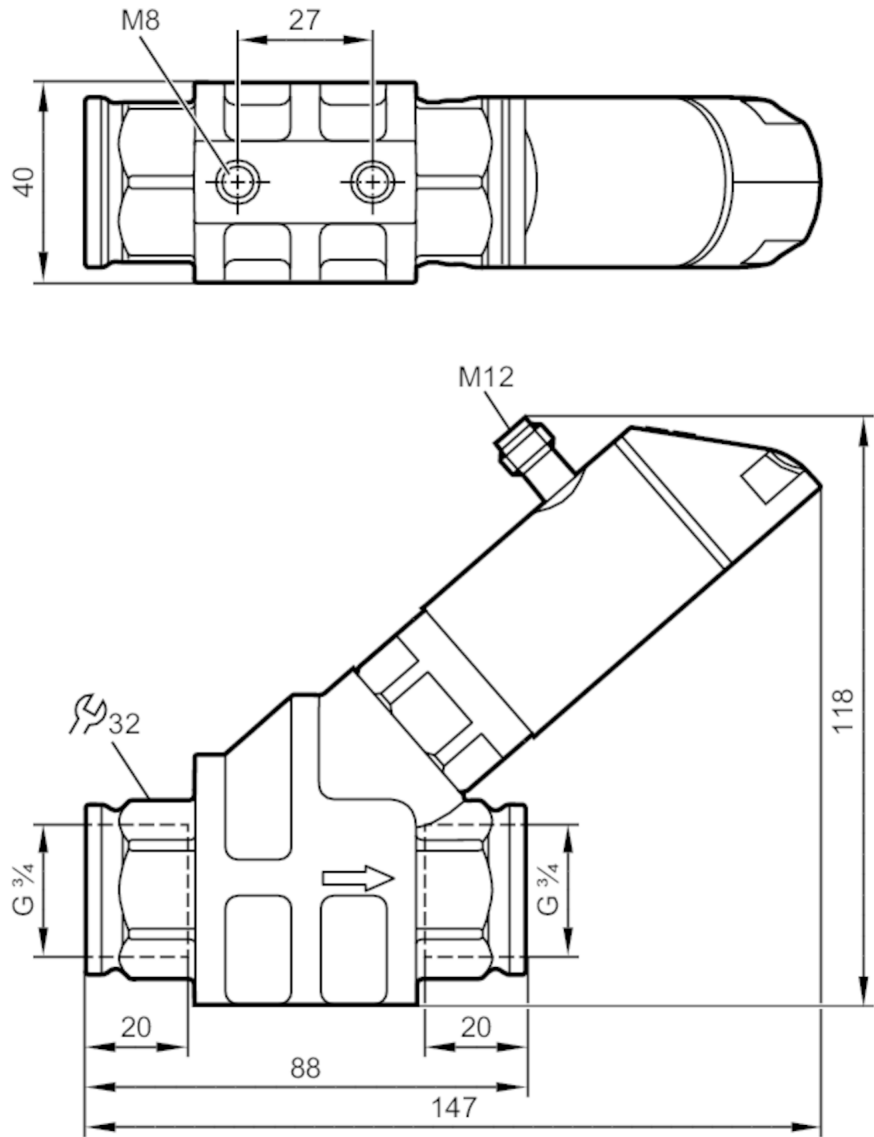


SB2233



Flow meter with fast response and display

SBG34KL0FRKG



Product characteristics				
Measuring range	0.5...25 l/min	0.03...1.5 m³/h	8...396.5 gph	0.13...6.6 gpm
Process connection	threaded connection G 3/4 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 46 mm²/s at 40 °C)			
Medium temperature	[°C]	-10...100		
Pressure rating	100 bar	10 MPa		
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa			
Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Output function	configurable
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	0.5...25 l/min	0.03...1.5 m³/h	8...396.5 gph	0.13...6.6 gpm
Display range	0...30 l/min	0...1.8 m³/h	0...475.5 gph	0...7.93 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.01 gpm
Set point SP	0.16...25 l/min	0.01...1.5 m³/h	2.5...396 gph	0.04...6.6 gpm
Reset point rP	0...24.84 l/min	0...1.49 m³/h	0...393.5 gph	0...6.56 gpm
Frequency end point, FEP	1.66...25 l/min	0.1...1.5 m³/h	26.5...396 gph	0.44...6.6 gpm
In steps of	0.02 l/min	0.002 m³/h	0.5 gph	0.01 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	
In steps of [Hz]	10	

Accuracy / deviations

Flow monitoring	
Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW
Temperature monitoring	
Temperature drift	0,029 °C / K



Flow meter with fast response and display

SBG34KL0FRKG

Accuracy	[K]	3 K (25°C; Q > 1 l/min)	
Reaction times			
Flow monitoring			
Response time	[s]	0.01	
Damping process value dAP	[s]	0...5	
In steps of	[s]	0.1	
Damping for the analog output dAA	[s]	0...5	
In steps of	[s]	0.1	
Temperature monitoring			
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)	
Software / programming			
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor		
Interfaces			
Communication interface	IO-Link		
Transmission type	COM2 (38,4 kBaud)		
IO-Link revision	1.1		
SDCI standard	IEC 61131-9 CDV		
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor	
	Function	Device identification	
	Function	Process data variable	
	Function	Device diagnosis	
SIO mode	yes		
Required master port class	A		
Process data analog	2		
Process data binary	2		
Min. process cycle time	[ms]	3.2	
Supported DeviceIDs	Type of operation	DeviceID	
	default	1044	
Operating conditions			
Ambient temperature	[°C]	0...60	
Note on ambient temperature	medium temperature < 80 °C		
	medium temperature < 100 °C: 0...40 °C		
Storage temperature	[°C]	-15...80	
Protection	IP 65; IP 67		
Tests / approvals			
EMC	DIN EN 61000-6-2		
	DIN EN 61000-6-3		
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)	
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)	
MTTF	[years]	145	
UL approval	UL approval number	I005	
	File number UL	E174189	



Flow meter with fast response and display

SBG34KL0FRKG

Pressure equipment directive	sound engineering practice
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Mechanical data

Weight	[g]	995.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 46 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

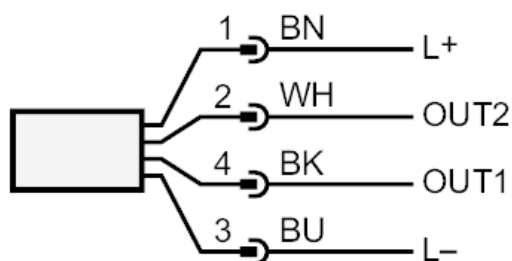




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

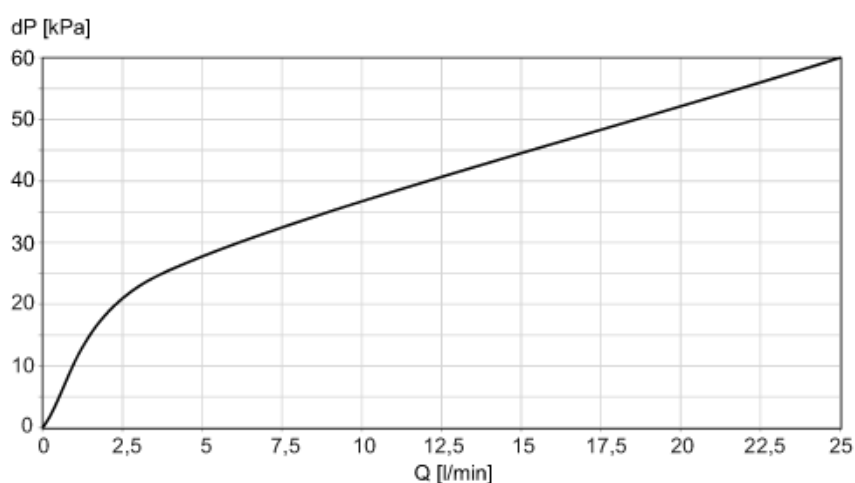
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

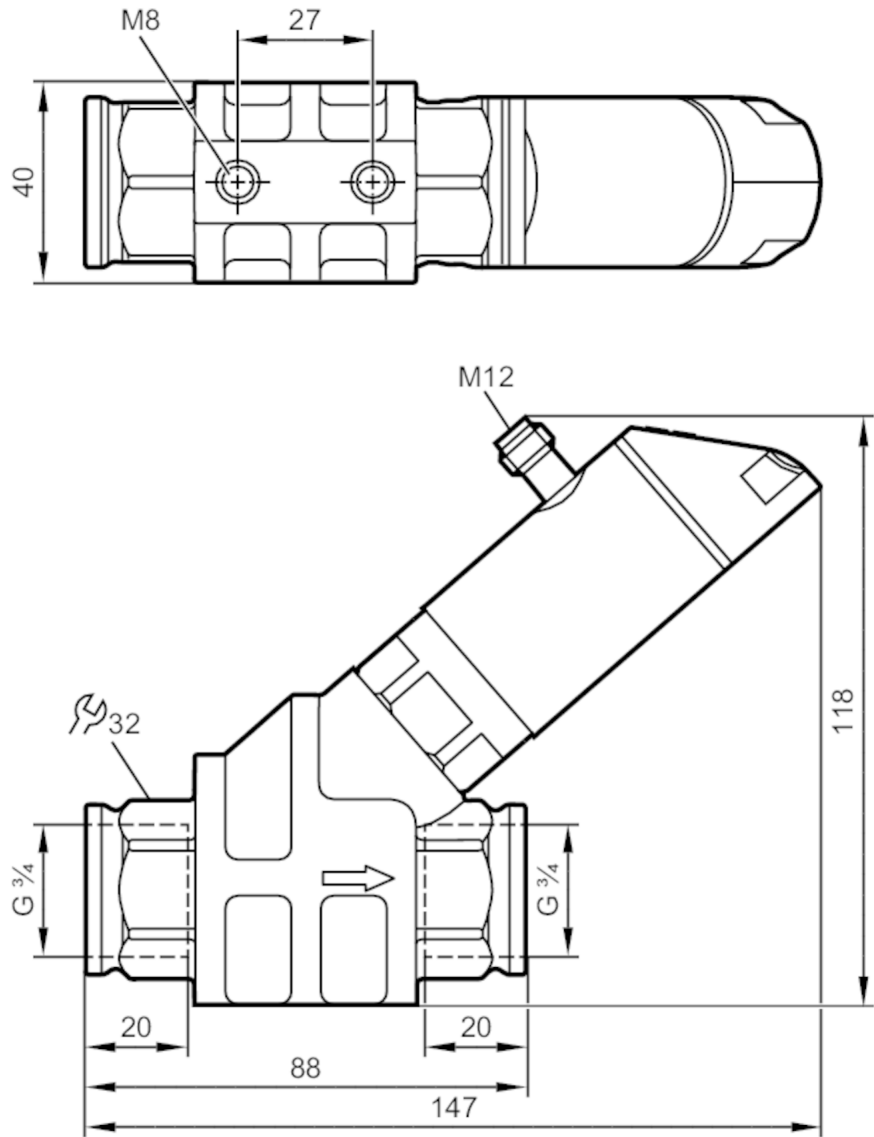


SB2234



Flow meter with fast response and display

SBG34KL0FRKG



Product characteristics				
Measuring range	1...50 l/min	0.06...3 m³/h	16...793 gph	0.26...13.2 gpm
Process connection	threaded connection G 3/4 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 46 mm²/s at 40 °C)			
Medium temperature	[°C]	-10...100		
Pressure rating	100 bar	10 MPa		
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa			
Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		

SB2234



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Output function	normally open / closed; (configurable)
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	1...50 l/min	0.06...3 m³/h	16...793 gph	0.26...13.2 gpm
Display range	0...60 l/min	0...3.6 m³/h	0...951 gph	0...15.86 gpm
Resolution	0.01 l/min	0.001 m³/h	1 gph	0.01 gpm
Set point SP	0.35...50 l/min	0.02...3 m³/h	5...793 gph	0.08...13.2 gpm
Reset point rP	0...49.65 l/min	0...2.98 m³/h	0...787 gph	0...13.12 gpm
Frequency end point, FEP	3.35...50 l/min	0.2...3 m³/h	53...793 gph	0.88...13.2 gpm
In steps of	0.05 l/min	0.005 m³/h	1 gph	0.02 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	
In steps of [Hz]	10	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,029 °C / K
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Flow meter with fast response and display

SBG34KL0FRKG

Accuracy	[K]	3 K (25°C; Q > 1 l/min)	
Reaction times			
Flow monitoring			
Response time	[s]	0.01	
Damping process value dAP	[s]	0...5	
In steps of	[s]	0.1	
Damping for the analog output dAA	[s]	0...5	
In steps of	[s]	0.1	
Temperature monitoring			
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)	
Software / programming			
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor		
Interfaces			
Communication interface	IO-Link		
Transmission type	COM2 (38,4 kBaud)		
IO-Link revision	1.1		
SDCI standard	IEC 61131-9 CDV		
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor	
	Function	Device identification	
	Function	Process data variable	
	Function	Device diagnosis	
SIO mode	yes		
Required master port class	A		
Process data analog	2		
Process data binary	2		
Min. process cycle time	[ms]	3.2	
Supported DeviceIDs	Type of operation	DeviceID	
	default	1045	
Operating conditions			
Ambient temperature	[°C]	0...60	
Note on ambient temperature	medium temperature < 80 °C		
	medium temperature < 100 °C: 0...40 °C		
Storage temperature	[°C]	-15...80	
Protection	IP 65; IP 67		
Tests / approvals			
EMC	DIN EN 61000-6-2		
	DIN EN 61000-6-3		
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)	
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)	
MTTF	[years]	145	
UL approval	UL approval number	I005	
	File number UL	E174189	

SB2234



Flow meter with fast response and display

SBG34KL0FRKG

Pressure equipment directive	sound engineering practice
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Mechanical data

Weight	[g]	991.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 46 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

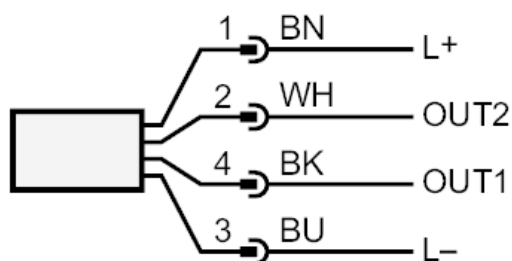




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

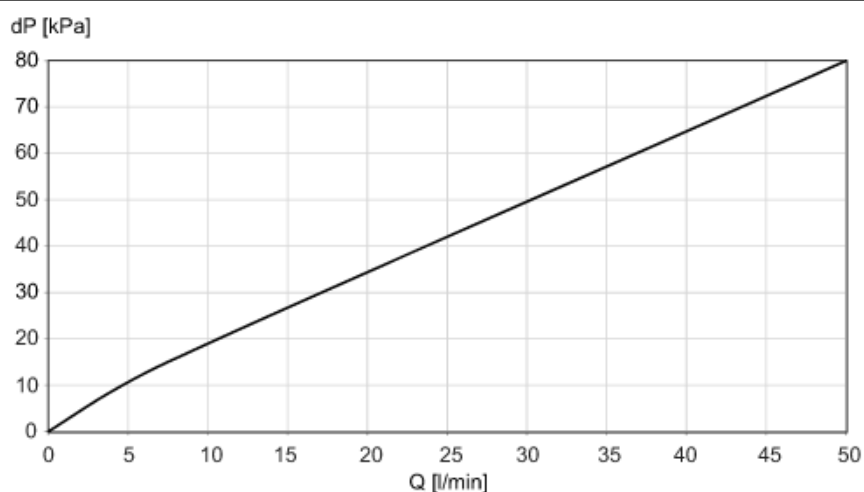
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs



SBG11KL0FRKG



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SB2246



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data					
Operating voltage	[V]	18...30 DC; (to SELV/PELV)			
Current consumption	[mA]	< 50			
Protection class		III			
Reverse polarity protection		yes			
Power-on delay time	[s]	< 3			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analog signal; frequency signal; IO-Link			
Output function		normally open / closed; (configurable)			
Max. voltage drop switching output DC	[V]	2			
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)			
Analog current output	[mA]	4...20			
Max. load	[Ω]	500			
Short-circuit protection		yes			
Overload protection		yes			
Frequency of the output	[Hz]	0...10000			
Measuring/setting range					
Measuring range		2...100 l/min	0.12...6 m³/h	32...1586 gph	0.55...26.4 gpm
Display range		0...120 l/min	0...7.2 m³/h	0...1902 gph	0...31.7 gpm
Resolution		0.1 l/min	0.01 m³/h	1 gph	0.01 gpm
Set point SP		0.7...100 l/min	0.04...6 m³/h	10...1586 gph	0.15...26.4 gpm
Reset point rP		0...99.3 l/min	0...5.96 m³/h	0...1574 gph	0...26.25 gpm
Frequency end point, FEP		6.7...100 l/min	0.4...6 m³/h	106...1586 gph	1.75...26.4 gpm
In steps of		0.1 l/min	0.01 m³/h	2 gph	0.05 gpm
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Measuring dynamics		1:50			
Temperature monitoring					
Measuring range		-10...100 °C		14...212 °F	
Display range		-32...122 °C		-25.6...251.6 °F	
Resolution		0.1 °C		0.1 °F	
Set point SP		-9.3...100 °C		15.2...212 °F	
Reset point rP		-10...99.3 °C		14...210.8 °F	
In steps of		0.1 °C		0.2 °F	
Frequency start point, FSP		-10...78 °C		14...172.4 °F	
Frequency end point, FEP		12...100 °C		53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Accuracy / deviations					
Flow monitoring					
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)			



Flow meter with fast response and display

SBG11KL0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1046
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)



Flow meter with fast response and display

SBG11KL0FRKG

MTTF	[years]	145
UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	1575
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 46 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

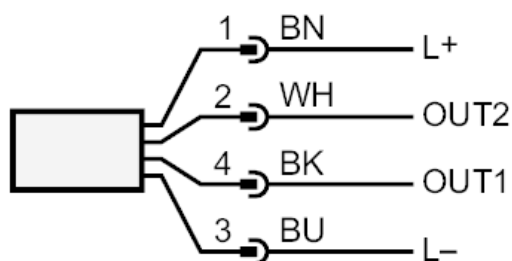




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

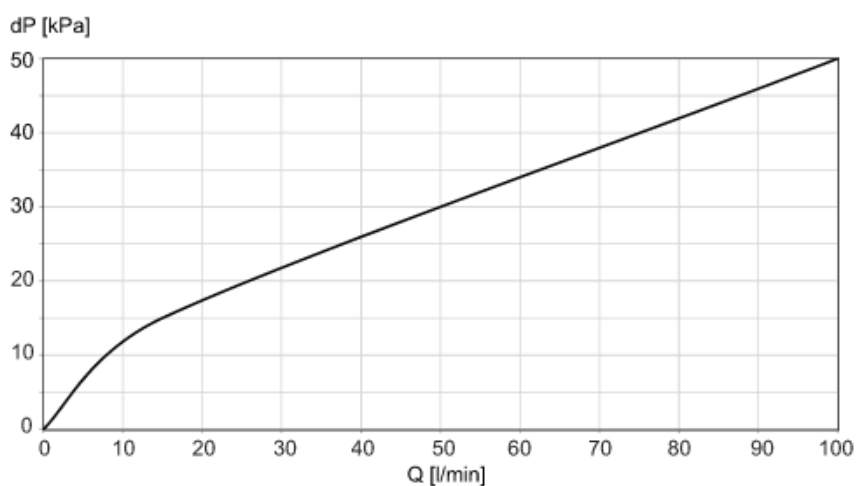
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

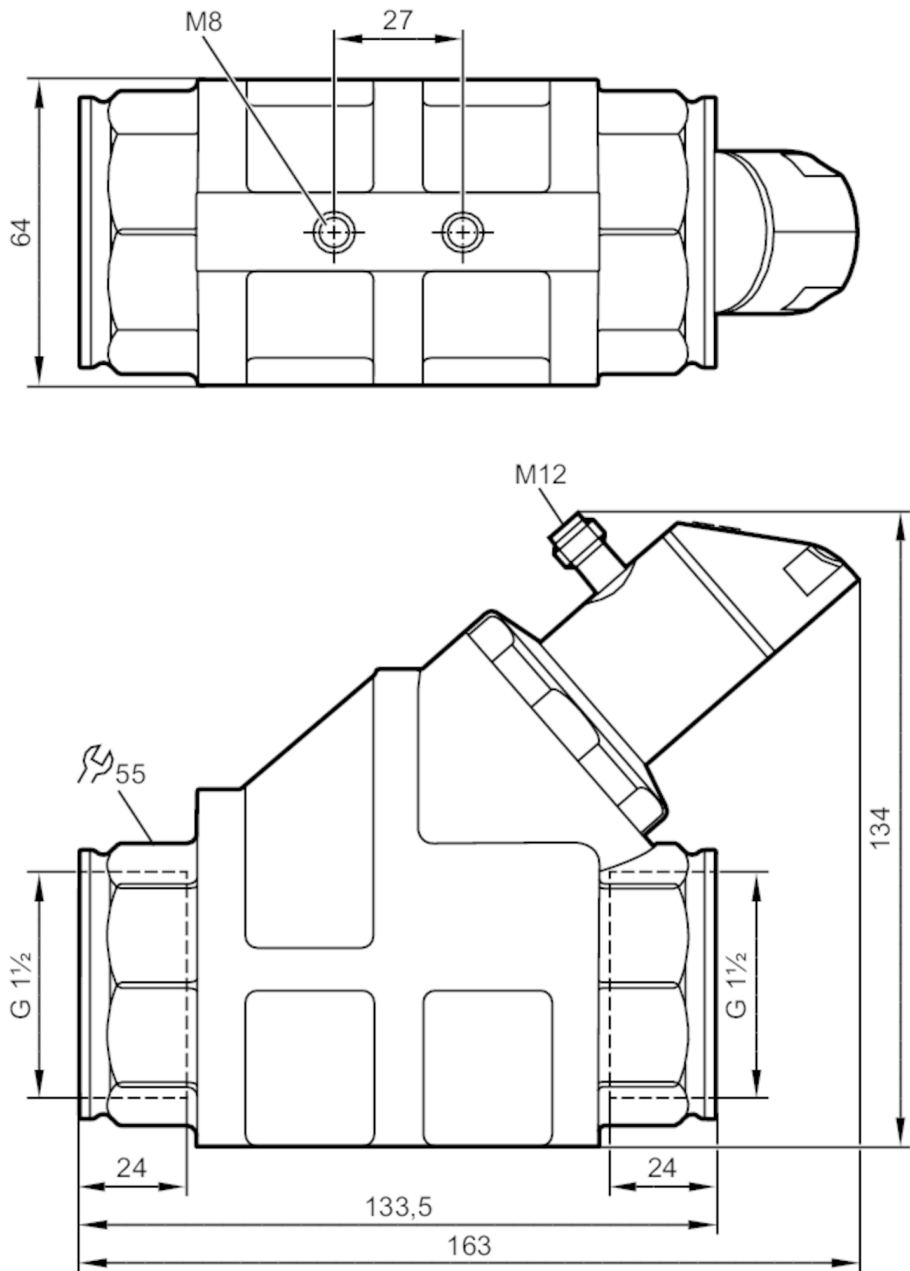


SB2257



Flow meter with fast response and display

SBG32KM0FRKG



Product characteristics				
Measuring range	4...200 l/min	0.24...12 m³/h	65...3170 gph	1.1...52.8 gpm
Process connection	threaded connection G 1 1/2 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 46 mm²/s at 40 °C)			
Medium temperature	[°C]	-10...100		
Pressure rating	63 bar	6.3 MPa		
Note on pressure rating	at medium temperature >70°C: 50 bar / 5 MPa			

SB2257



Flow meter with fast response and display

SBG32KM0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		4...200 l/min	0.24...12 m³/h	65...3170 gph
Display range		0...240 l/min	0...14.4 m³/h	0...3805 gph
Resolution		0.1 l/min	0.01 m³/h	1 gph
Set point SP		1.4...200 l/min	0.08...12 m³/h	20...3170 gph
Reset point rP		0...198.6 l/min	0...11.92 m³/h	0...3150 gph
Frequency end point, FEP		13.4...200 l/min	0.8...12 m³/h	210...3170 gph
In steps of		0.02 l/min	0.02 m³/h	5 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C		14...212 °F
Display range		-32...122 °C		-25.6...251.6 °F
Resolution		0.1 °C		0.1 °F
Set point SP		-9.3...100 °C		15.2...212 °F
Reset point rP		-10...99.3 °C		14...210.8 °F
In steps of		0.1 °C		0.2 °F
Frequency start point, FSP		-10...78 °C		14...172.4 °F
Frequency end point, FEP		12...100 °C		53.6...212 °F
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG32KM0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1047
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)



Flow meter with fast response and display

SBG32KM0FRKG

MTTF	[years]	145
UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	2809.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 1/2 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 46 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

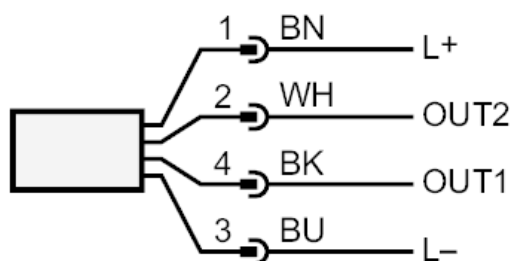




Flow meter with fast response and display

SBG32KM0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

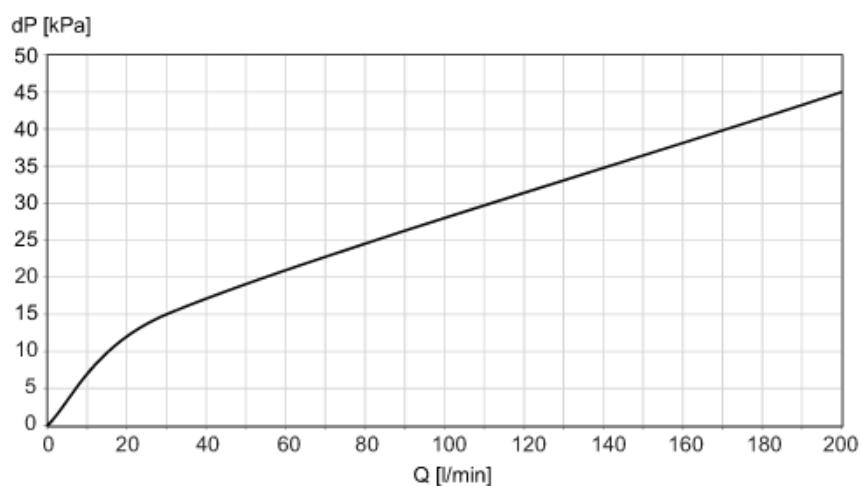
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

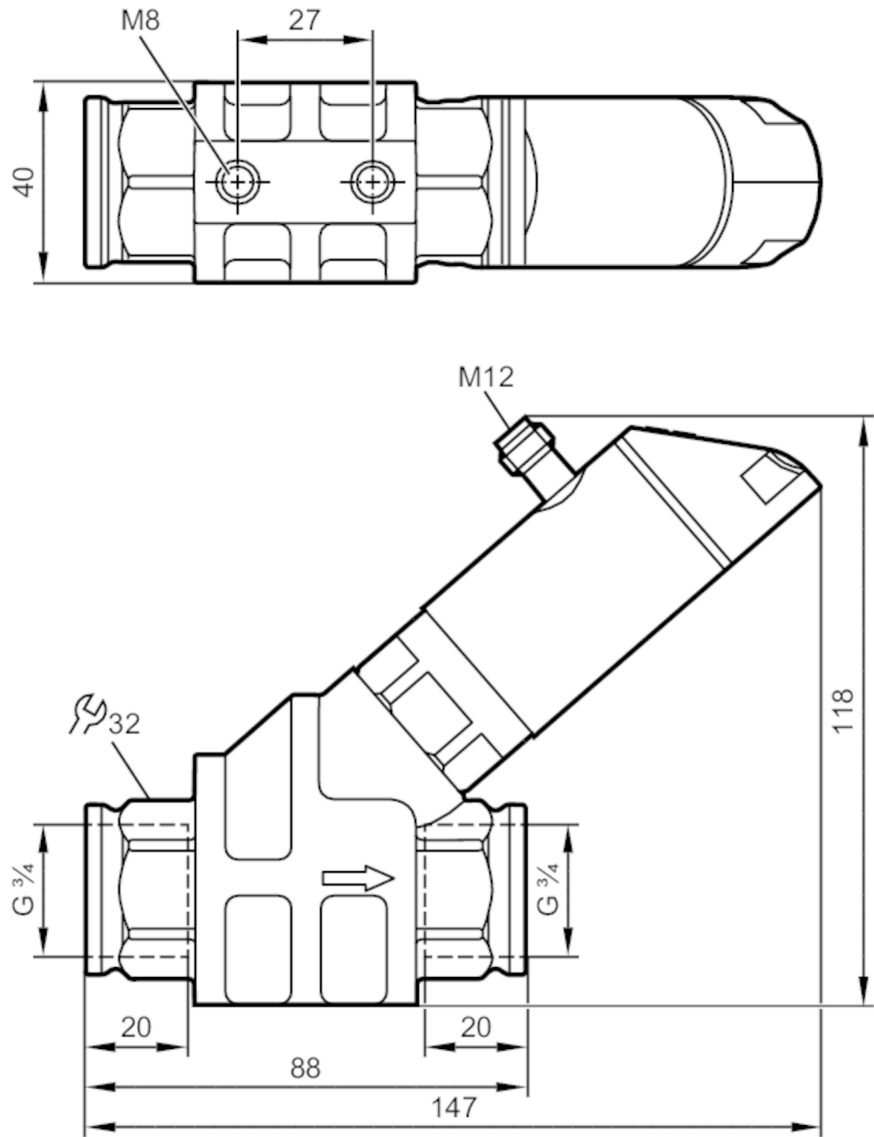


SB3232



Flow meter with fast response and display

SBG34KL0FRKG



Product characteristics				
Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Process connection	threaded connection G 3/4 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 68 mm²/s at 40 °C)			
Medium temperature	[°C] -10...100			
Pressure rating	100 bar		10 MPa	
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa			
Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Display range	0...18 l/min	0...1.08 m³/h	0...285.4 gph	0...4.755 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP	0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph	0.025...3.965 gpm
Reset point rP	0...14.9 l/min	0...0.894 m³/h	0...236.2 gph	0...3.935 gpm
Frequency end point, FEP	1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph	0.265...3.965 gpm
In steps of	0.01 l/min	0.001 m³/h	0.2 gph	0.005 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,029 °C / K
Accuracy [K]	3 K (25°C; Q > 1 l/min)



Flow meter with fast response and display

SBG34KL0FRKG

Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1043
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	145
UL approval	UL approval number	I005
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

SB3232



Flow meter with fast response and display

SBG34KL0FRKG

Mechanical data		
Weight	[g]	994
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	
Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit
Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 68 mm²/s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	
Electrical connection		
Connector: 1 x M12; coding: A; Contacts: gold-plated		
		

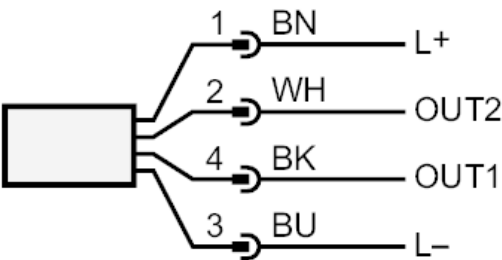




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

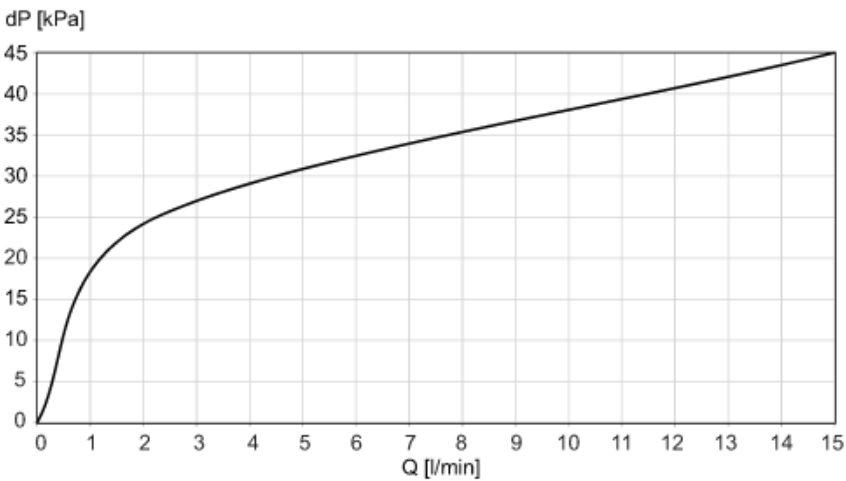
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

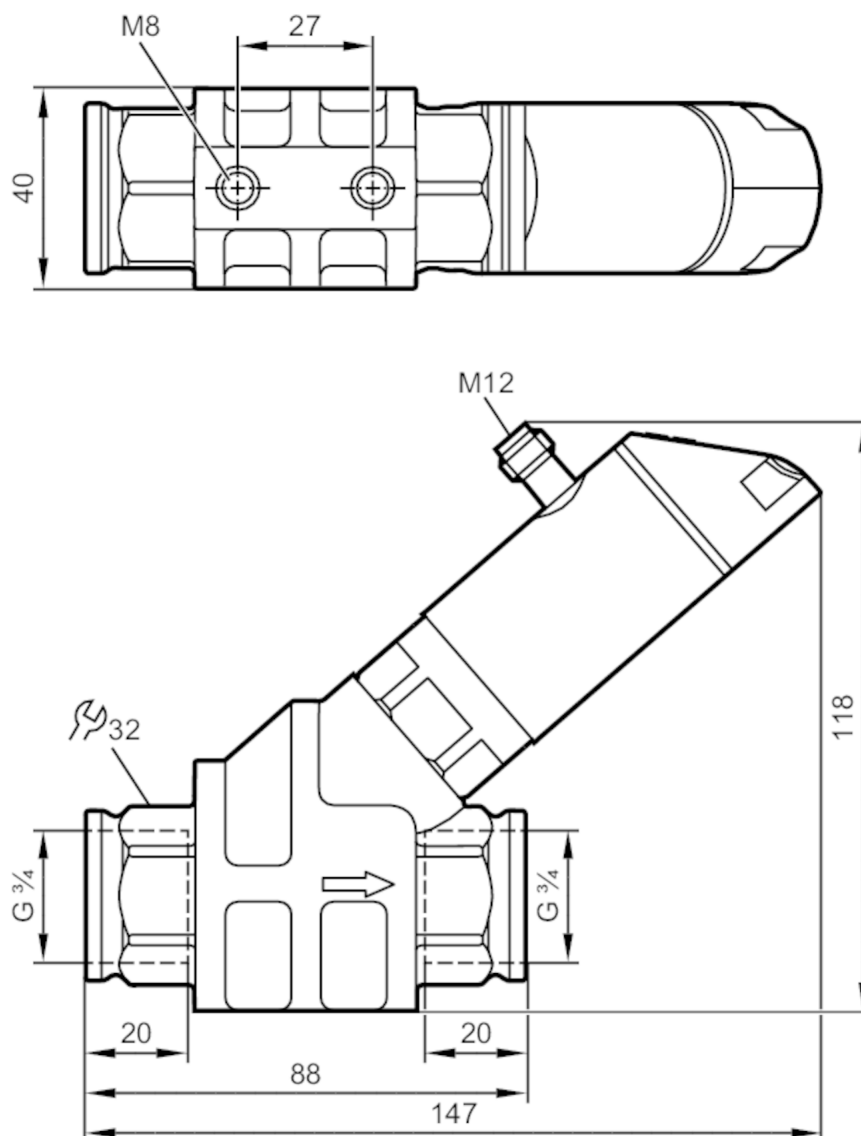


SB3233



Flow meter with fast response and display

SBG34KL0FRKG



Product characteristics

Measuring range	0.5...25 l/min	0.03...1.5 m³/h	8...396.5 gph	0.13...6.6 gpm
Process connection	threaded connection G 3/4 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 68 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)			
Current consumption [mA]	< 50			



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Output function	configurable
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	0.5...25 l/min	0.03...1.5 m³/h	8...396.5 gph	0.13...6.6 gpm
Display range	0...30 l/min	0...1.8 m³/h	0...475.5 gph	0...7.93 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.01 gpm
Set point SP	0.16...25 l/min	0.01...1.5 m³/h	2.5...396 gph	0.04...6.6 gpm
Reset point rP	0...24.84 l/min	0...1.49 m³/h	0...393.5 gph	0...6.56 gpm
Frequency end point, FEP	1.66...25 l/min	0.1...1.5 m³/h	26.5...396 gph	0.44...6.6 gpm
In steps of	0.02 l/min	0.002 m³/h	0.5 gph	0.01 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	
In steps of [Hz]	10	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,029 °C / K
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Flow meter with fast response and display

SBG34KL0FRKG

Accuracy	[K]	3 K (25°C; Q > 1 l/min)	
Reaction times			
Flow monitoring			
Response time	[s]	0.01	
Damping process value dAP	[s]	0...5	
In steps of	[s]	0.1	
Damping for the analog output dAA	[s]	0...5	
In steps of	[s]	0.1	
Temperature monitoring			
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)	
Software / programming			
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor		
Interfaces			
Communication interface	IO-Link		
Transmission type	COM2 (38,4 kBaud)		
IO-Link revision	1.1		
SDCI standard	IEC 61131-9 CDV		
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor	
	Function	Device identification	
	Function	Process data variable	
	Function	Device diagnosis	
SIO mode	yes		
Required master port class	A		
Process data analog	2		
Process data binary	2		
Min. process cycle time	[ms]	3.2	
Supported DeviceIDs	Type of operation	DeviceID	
	default	1044	
Operating conditions			
Ambient temperature	[°C]	0...60	
Note on ambient temperature	medium temperature < 80 °C		
	medium temperature < 100 °C: 0...40 °C		
Storage temperature	[°C]	-15...80	
Protection	IP 65; IP 67		
Tests / approvals			
EMC	DIN EN 61000-6-2		
	DIN EN 61000-6-3		
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)	
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)	
MTTF	[years]	145	
UL approval	UL approval number	I005	
	File number UL	E174189	



Flow meter with fast response and display

SBG34KL0FRKG

Pressure equipment directive	sound engineering practice
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Mechanical data

Weight	[g]	995.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 68 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

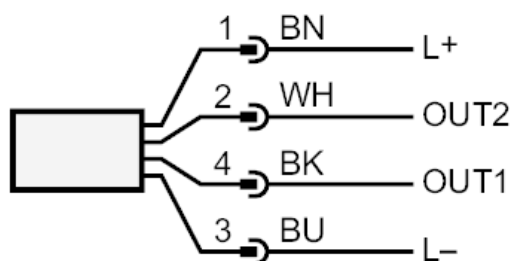




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

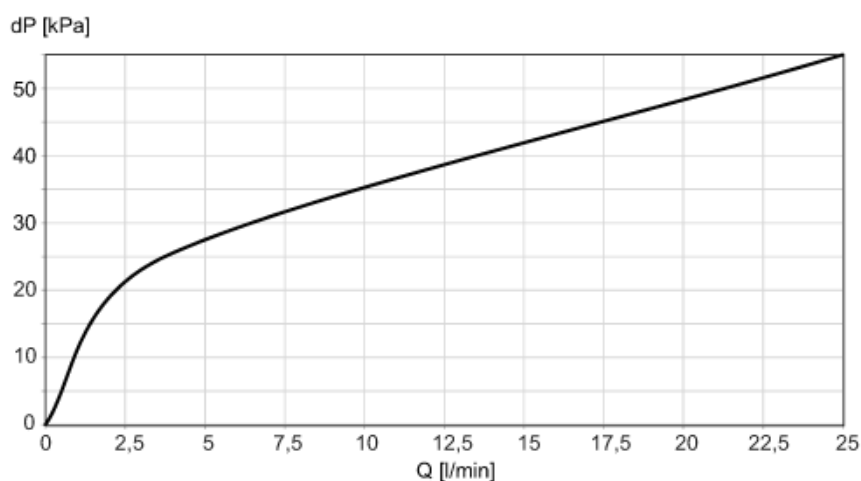
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
- BN = brown
- BU = blue
- WH = white

Diagrams and graphs

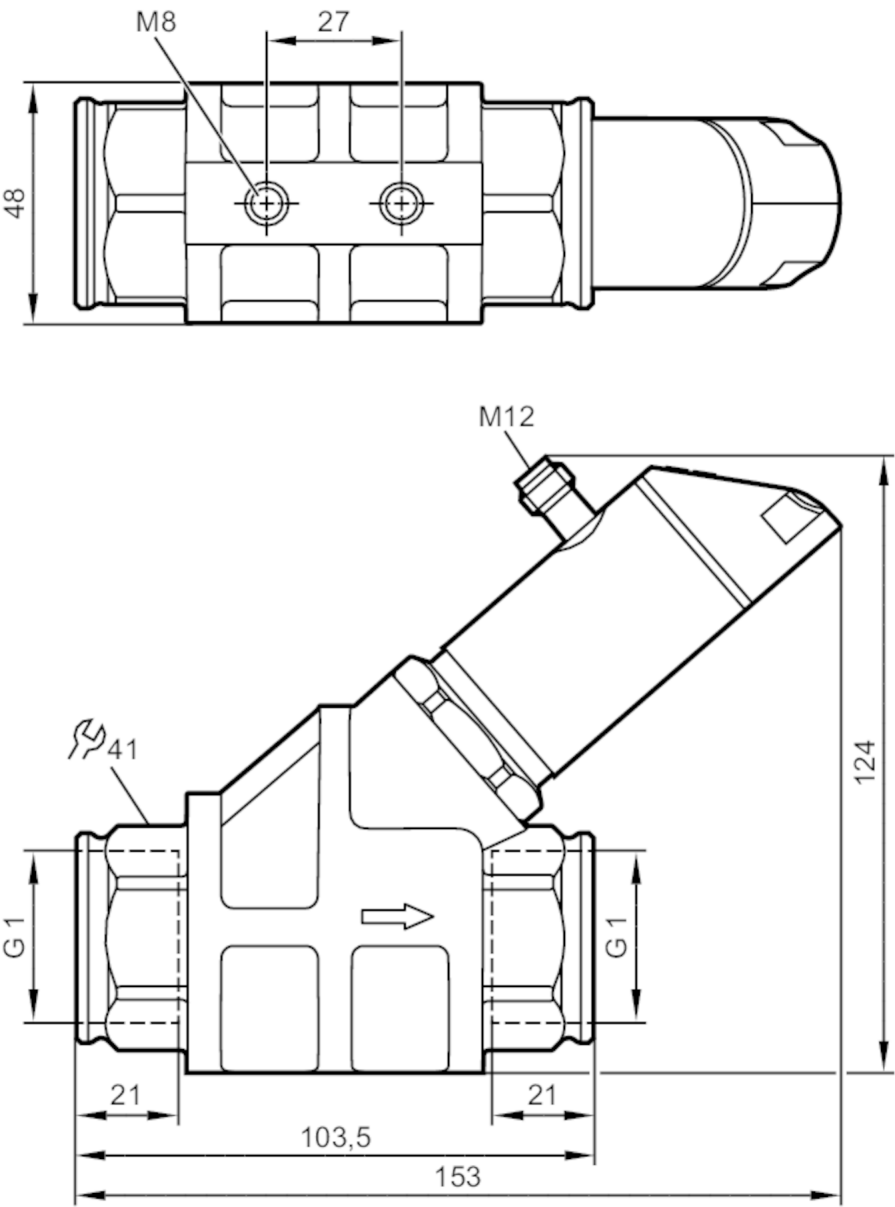


SB3244



Flow meter with fast response and display

SBG11KL0FRKG



CRN



IO-Link

Product characteristics

Measuring range	1...50 l/min	0.06...3 m³/h	16...793 gph	0.26...13.2 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 68 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	

SB3244



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		1...50 l/min	0.06...3 m³/h	16...793 gph 0.26...13.2 gpm
Display range		0...60 l/min	0...3.6 m³/h	0...951 gph 0...15.86 gpm
Resolution		0.01 l/min	0.001 m³/h	1 gph 0.01 gpm
Set point SP		0.35...50 l/min	0.02...3 m³/h	5...793 gph 0.08...13.2 gpm
Reset point rP		0...49.65 l/min	0...2.98 m³/h	0...787 gph 0...13.12 gpm
Frequency end point, FEP		3.35...50 l/min	0.2...3 m³/h	53...793 gph 0.88...13.2 gpm
In steps of		0.05 l/min	0.005 m³/h	1 gph 0.02 gpm
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C	14...212 °F	
Display range		-32...122 °C	-25.6...251.6 °F	
Resolution		0.1 °C	0.1 °F	
Set point SP		-9.3...100 °C	15.2...212 °F	
Reset point rP		-10...99.3 °C	14...210.8 °F	
In steps of		0.1 °C	0.2 °F	
Frequency start point, FSP		-10...78 °C	14...172.4 °F	
Frequency end point, FEP		12...100 °C	53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG11KL0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1045
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB3244



Flow meter with fast response and display

SBG11KL0FRKG

MTTF	[years]	145
UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	1583
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 68 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

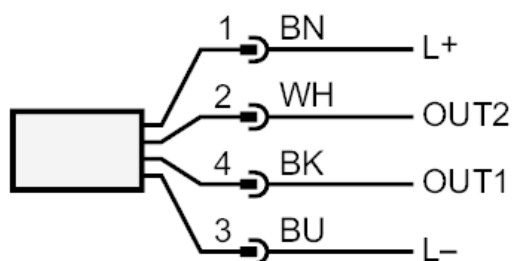




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

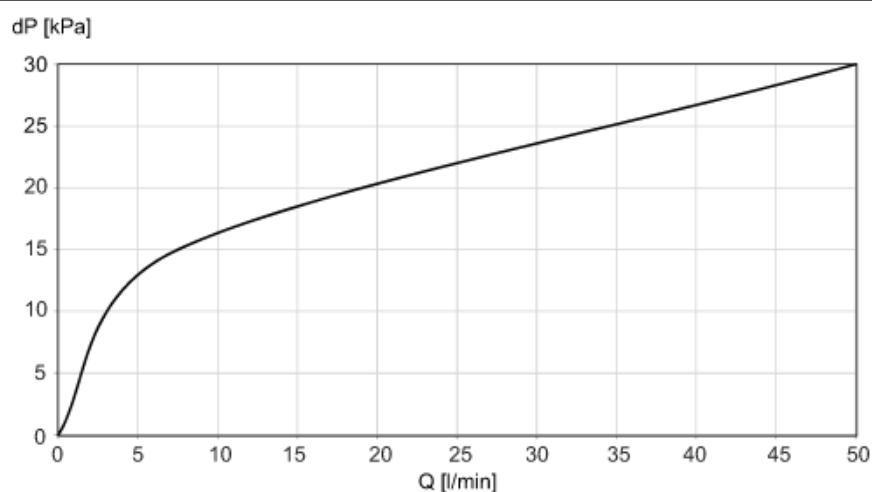
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs



SBG11KL0FRKG



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SB3246



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data					
Operating voltage	[V]	18...30 DC; (to SELV/PELV)			
Current consumption	[mA]	< 50			
Protection class		III			
Reverse polarity protection		yes			
Power-on delay time	[s]	< 3			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analog signal; frequency signal; IO-Link			
Output function		normally open / closed; (configurable)			
Max. voltage drop switching output DC	[V]	2			
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)			
Analog current output	[mA]	4...20			
Max. load	[Ω]	500			
Short-circuit protection		yes			
Overload protection		yes			
Frequency of the output	[Hz]	0...10000			
Measuring/setting range					
Measuring range		2...100 l/min	0.12...6 m³/h	32...1586 gph	0.55...26.4 gpm
Display range		0...120 l/min	0...7.2 m³/h	0...1902 gph	0...31.7 gpm
Resolution		0.1 l/min	0.01 m³/h	1 gph	0.01 gpm
Set point SP		0.7...100 l/min	0.04...6 m³/h	10...1586 gph	0.15...26.4 gpm
Reset point rP		0...99.3 l/min	0...5.96 m³/h	0...1574 gph	0...26.25 gpm
Frequency end point, FEP		6.7...100 l/min	0.4...6 m³/h	106...1586 gph	1.75...26.4 gpm
In steps of		0.1 l/min	0.01 m³/h	2 gph	0.05 gpm
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Measuring dynamics		1:50			
Temperature monitoring					
Measuring range		-10...100 °C		14...212 °F	
Display range		-32...122 °C		-25.6...251.6 °F	
Resolution		0.1 °C		0.1 °F	
Set point SP		-9.3...100 °C		15.2...212 °F	
Reset point rP		-10...99.3 °C		14...210.8 °F	
In steps of		0.1 °C		0.2 °F	
Frequency start point, FSP		-10...78 °C		14...172.4 °F	
Frequency end point, FEP		12...100 °C		53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Accuracy / deviations					
Flow monitoring					
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)			



Flow meter with fast response and display

SBG11KL0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1046
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB3246



Flow meter with fast response and display

SBG11KL0FRKG

MTTF	[years]	145
UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	1586
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 68 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

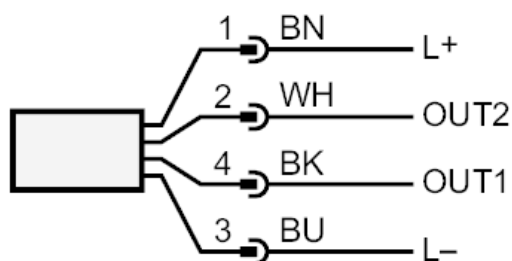




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

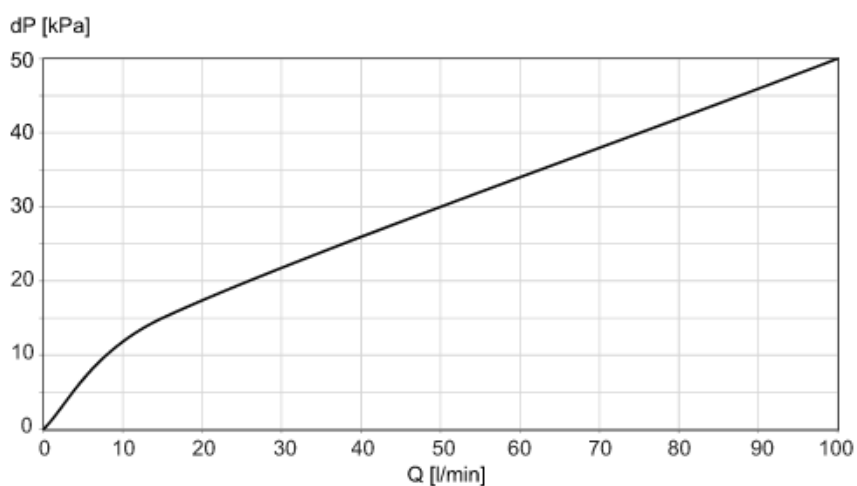
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

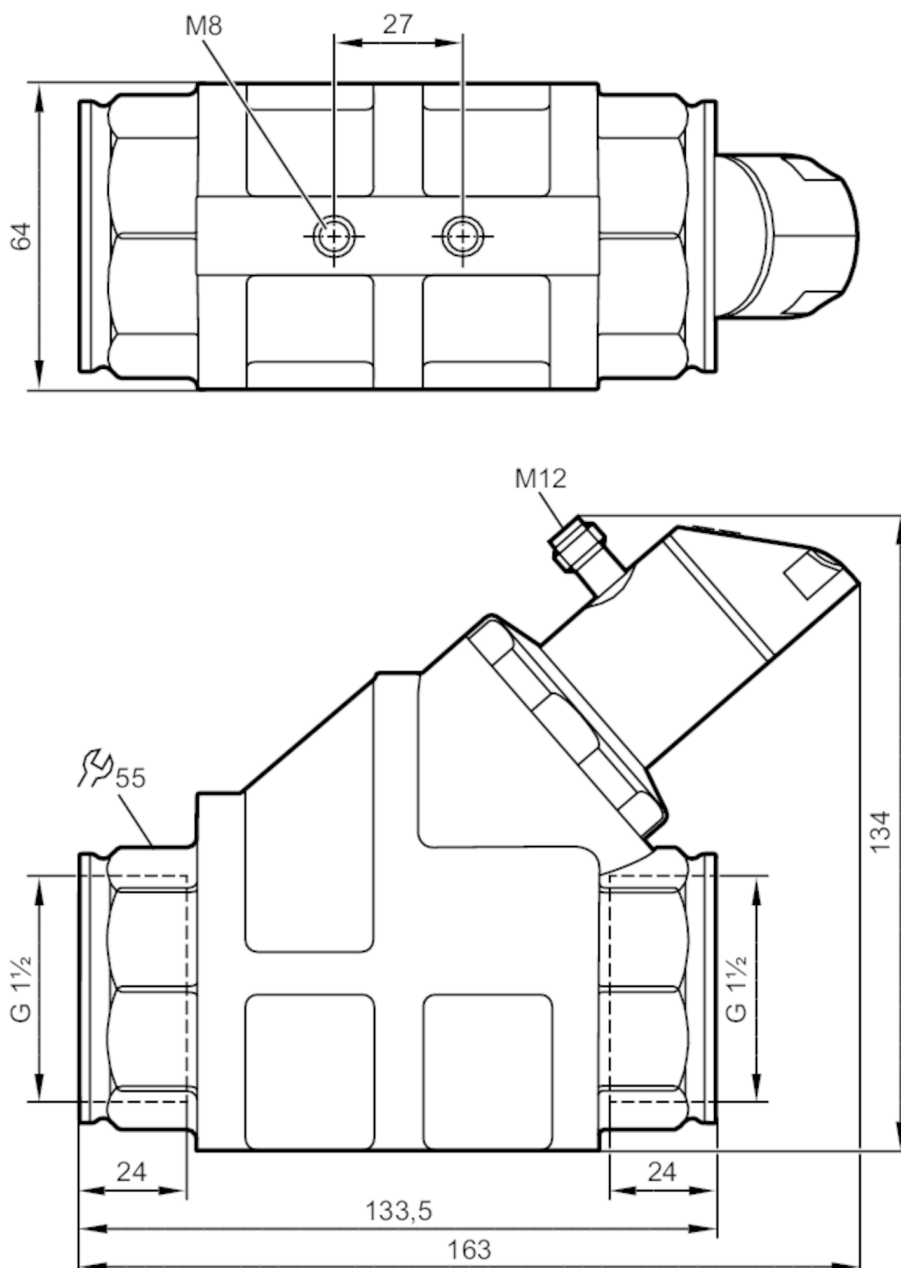


SB3257



Flow meter with fast response and display

SBG32KM0FRKG



Product characteristics

Measuring range	4...200 l/min	0.24...12 m³/h	65...3170 gph	1.1...52.8 gpm
Process connection	threaded connection G 1 1/2 Internal thread			

Application

System	gold-plated contacts		
Media	Liquids; oils (viscosity 68 mm²/s at 40 °C)		
Medium temperature [°C]	-10...100		
Pressure rating	63 bar	6.3 MPa	
Note on pressure rating	at medium temperature >70°C: 50 bar / 5 MPa		



Flow meter with fast response and display

SBG32KM0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		4...200 l/min	0.24...12 m³/h	65...3170 gph
Display range		0...240 l/min	0...14.4 m³/h	0...3805 gph
Resolution		0.1 l/min	0.01 m³/h	1 gph
Set point SP		1.4...200 l/min	0.08...12 m³/h	20...3170 gph
Reset point rP		0...198.6 l/min	0...11.92 m³/h	0...3150 gph
Frequency end point, FEP		13.4...200 l/min	0.8...12 m³/h	210...3170 gph
In steps of		0.02 l/min	0.02 m³/h	5 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C	14...212 °F	
Display range		-32...122 °C	-25.6...251.6 °F	
Resolution		0.1 °C	0.1 °F	
Set point SP		-9.3...100 °C	15.2...212 °F	
Reset point rP		-10...99.3 °C	14...210.8 °F	
In steps of		0.1 °C	0.2 °F	
Frequency start point, FSP		-10...78 °C	14...172.4 °F	
Frequency end point, FEP		12...100 °C	53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG32KM0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1047
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB3257



Flow meter with fast response and display

SBG32KM0FRKG

MTTF	[years]	145
UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	2803
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 1/2 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 68 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

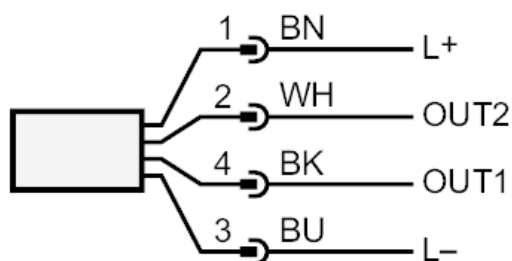




Flow meter with fast response and display

SBG32KM0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

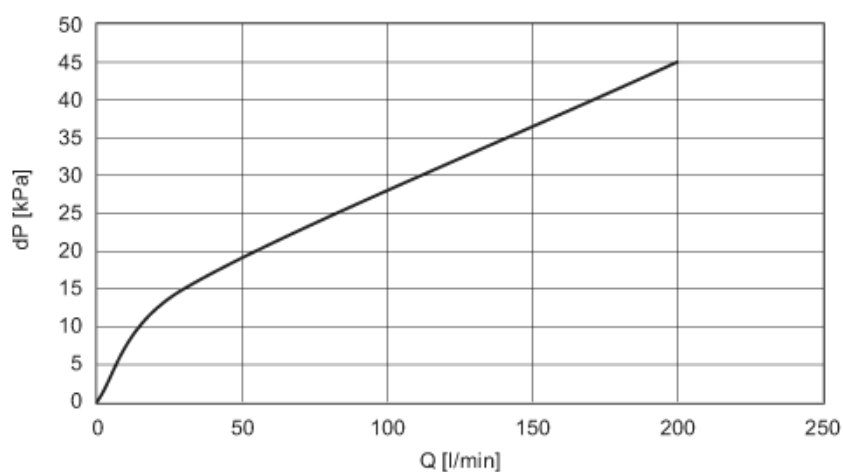
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

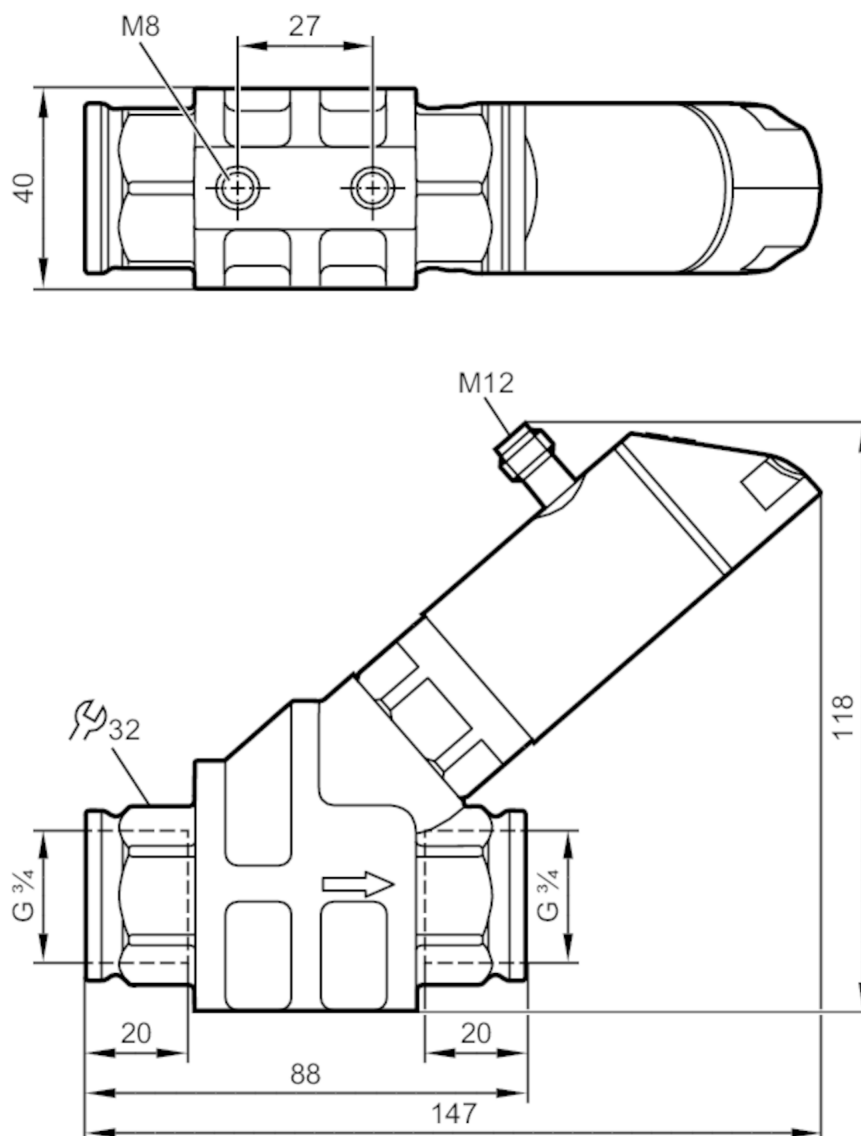


SB4232



Flow meter with fast response and display

SBG34KL0FRKG



Product characteristics

Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Process connection	threaded connection G 3/4 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oil (viscosity 100 mm²/s at 40° C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	

Electrical data

Operating voltage	[V]	18...30 DC; (to SELV/PELV)
Current consumption	[mA]	< 50



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Display range	0...18 l/min	0...1.08 m³/h	0...285.4 gph	0...4.755 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP	0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph	0.025...3.965 gpm
Reset point rP	0...14.9 l/min	0...0.894 m³/h	0...236.2 gph	0...3.935 gpm
Frequency end point, FEP	1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph	0.265...3.965 gpm
In steps of	0.01 l/min	0.001 m³/h	0.2 gph	0.005 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,029 °C / K
Accuracy [K]	3 K (25°C; Q > 1 l/min)



Flow meter with fast response and display

SBG34KL0FRKG

Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1043
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
UL approval	UL approval number	I005
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

SB4232



Flow meter with fast response and display

SBG34KL0FRKG

Mechanical data		
Weight	[g]	937.1
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	
Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit
Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 100 mm²/s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	
Electrical connection		
Connector: 1 x M12; coding: A; Contacts: gold-plated		
		

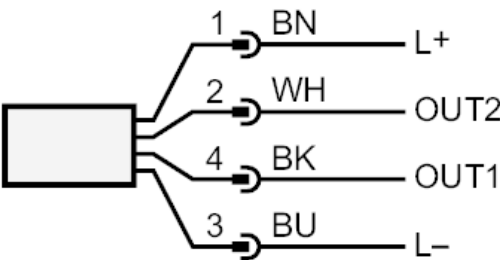




Flow meter with fast response and display

SBG34KL0FRKG

Connection



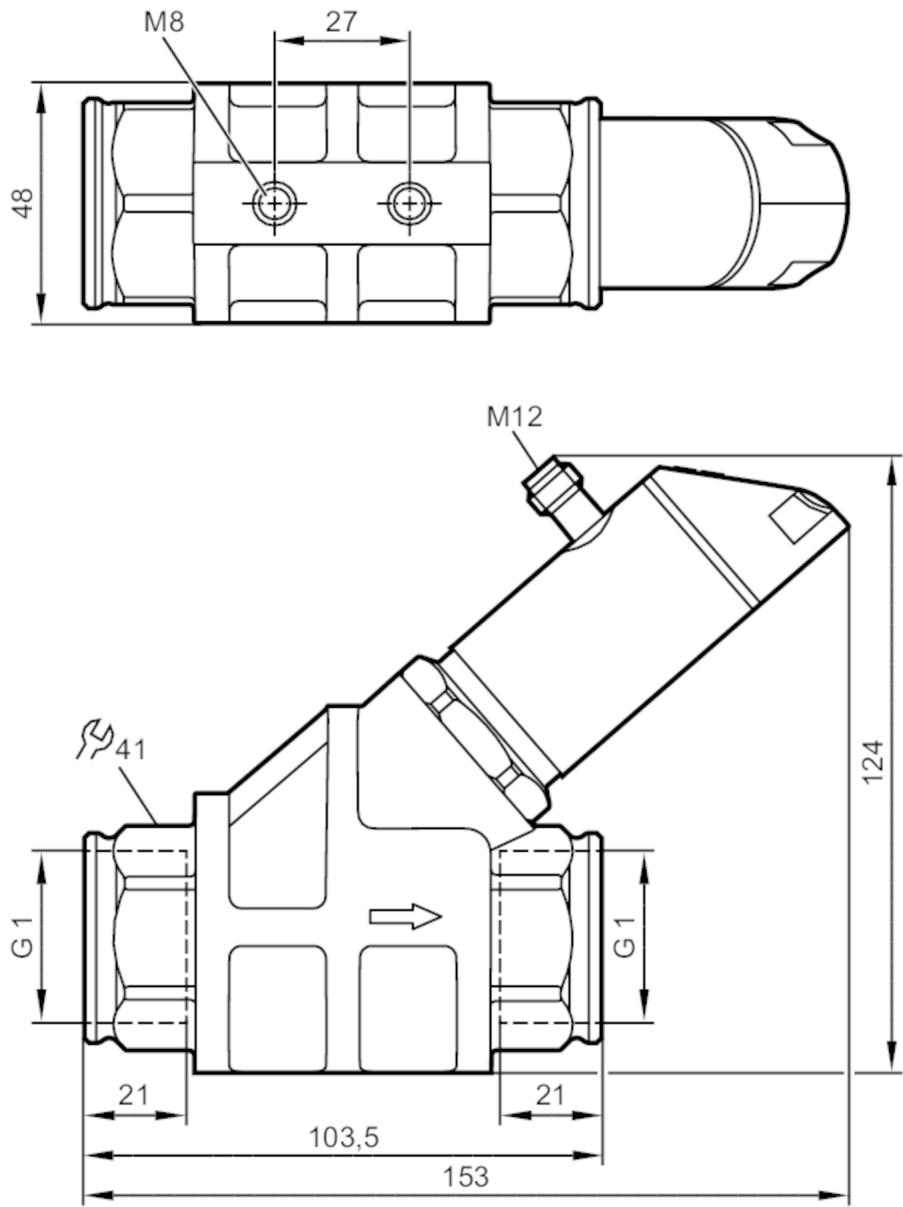
- OUT1:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - Frequency output Volumetric flow quantity monitoring
 - Frequency output Temperature monitoring
 - IO-Link
- OUT2:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2
- Core colors :
- BK = black
- BN = brown
- BU = blue
- WH = white

SB4243



Flow meter with fast response and display

SBG11KL0FRKG



Product characteristics				
Measuring range	1...25 l/min	0.06...1.5 m³/h	16...396.5 gph	0.26...6.6 gpm
Process connection	threaded connection G 1 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oil (viscosity 100 mm²/s at 40° C)			
Medium temperature	[°C]	-10...100		
Pressure rating	100 bar	10 MPa		
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa			



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data					
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)			
Current consumption	[mA]	< 50			
Protection class		III			
Reverse polarity protection		yes			
Power-on delay time	[s]	< 3			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analog signal; frequency signal; IO-Link			
Max. voltage drop switching output DC	[V]	2			
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)			
Analog current output	[mA]	4...20			
Max. load	[Ω]	500			
Short-circuit protection		yes			
Overload protection		yes			
Frequency of the output	[Hz]	0...10000			
Measuring/setting range					
Measuring range		1...25 l/min	0.06...1.5 m³/h	16...396.5 gph	0.26...6.6 gpm
Display range		0...30 l/min	0...1.8 m³/h	0...475.5 gph	0...7.93 gpm
Resolution		0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP		0.16...25 l/min	0.01...1.5 m³/h	2.5...396 gph	0.04...6.6 gpm
Reset point rP		0...24.84 l/min	0...1.49 m³/h	0...393.5 gph	0...6.56 gpm
Frequency end point, FEP		1.66...25 l/min	0.1...1.5 m³/h	25.6...396 gph	0.44...6.6 gpm
In steps of		0.02 l/min	0.002 m³/h	0.5 gph	0.01 gpm
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Measuring dynamics		1:50			
Temperature monitoring					
Measuring range		-10...100 °C		14...212 °F	
Display range		-32...122 °C		-25.6...251.6 °F	
Resolution		0.1 °C		0.1 °F	
Set point SP		-9.3...100 °C		15.2...212 °F	
Reset point rP		-10...99.3 °C		14...210.8 °F	
In steps of		0.1 °C		0.2 °F	
Frequency start point, FSP		-10...78 °C		14...172.4 °F	
Frequency end point, FEP		12...100 °C		53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000			
Accuracy / deviations					
Flow monitoring					
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)			
Repeatability		± 1 % MEW			



Flow meter with fast response and display

SBG11KL0FRKG

Temperature monitoring		
Temperature drift		0,029 °C / K
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1044
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	EN IEC 61326-1	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
UL approval	UL approval number	I006
	File number UL	E174189



Flow meter with fast response and display

SBG11KL0FRKG

Pressure equipment directive	sound engineering practice
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Mechanical data

Weight	[g]	1541
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 100 mm²/s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

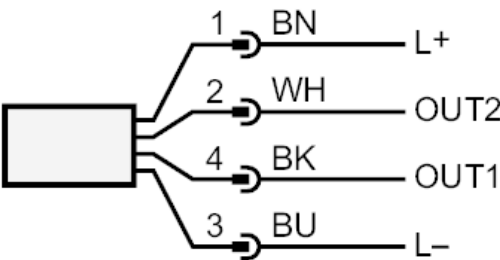




Flow meter with fast response and display

SBG11KL0FRKG

Connection



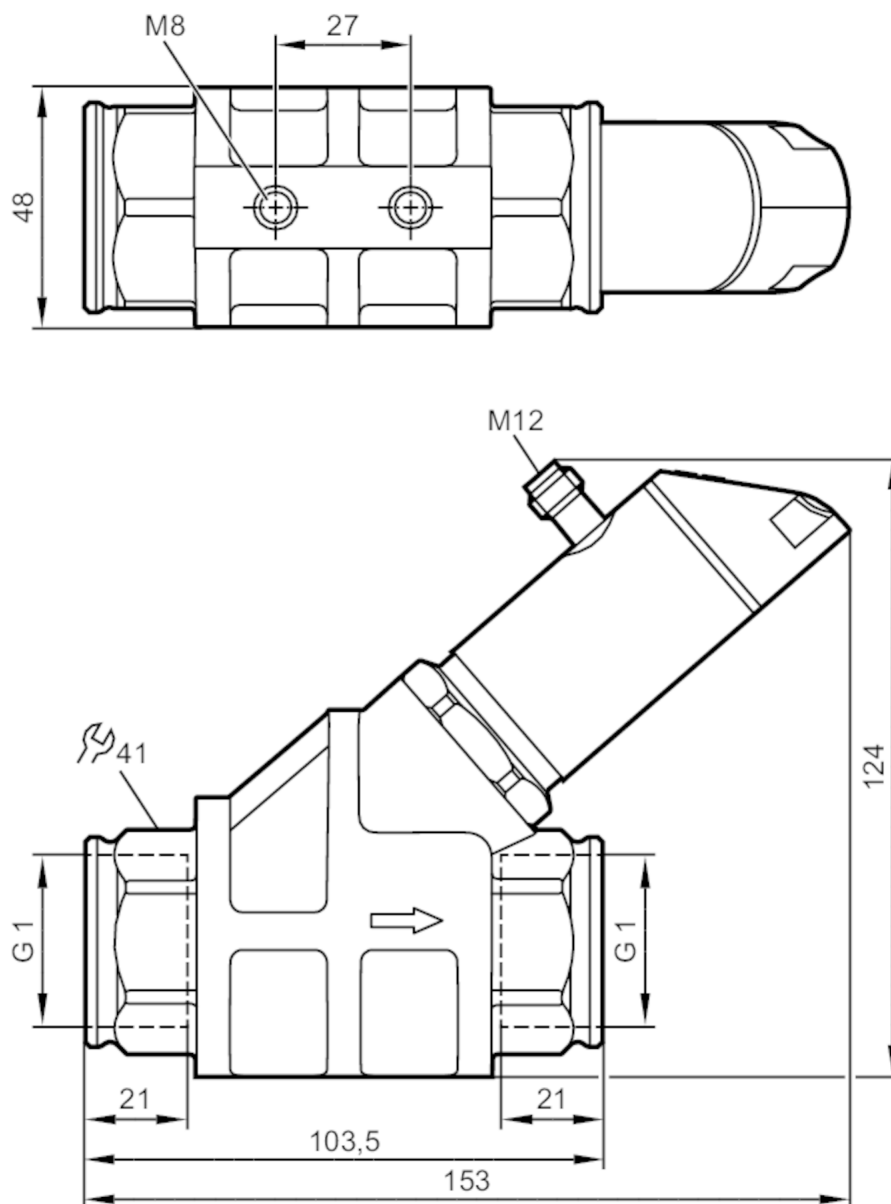
- OUT1:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - Frequency output Volumetric flow quantity monitoring
 - Frequency output Temperature monitoring
 - IO-Link
- OUT2:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2
- Core colors :
- BK = black
- BN = brown
- BU = blue
- WH = white

SB4244



Flow meter with fast response and display

SBG11KL0FRKG



Product characteristics

Measuring range	2...50 l/min	0.12...3 m³/h	32...793 gph	0.52...13.2 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oil (viscosity 100 mm²/s at 40° C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		2...50 l/min	0.12...3 m³/h	32...793 gph
Display range		0...60 l/min	0...3.6 m³/h	0...951 gph
Resolution		0.01 l/min	0.001 m³/h	1 gph
Set point SP		0.35...50 l/min	0.02...3 m³/h	5...793 gph
Reset point rP		0...49.65 l/min	0...2.98 m³/h	0...787 gph
Frequency end point, FEP		3.35...50 l/min	0.2...3 m³/h	53...793 gph
In steps of		0.05 l/min	0.005 m³/h	1 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C		14...212 °F
Display range		-32...122 °C		-25.6...251.6 °F
Resolution		0.1 °C		0.1 °F
Set point SP		-9.3...100 °C		15.2...212 °F
Reset point rP		-10...99.3 °C		14...210.8 °F
In steps of		0.1 °C		0.2 °F
Frequency start point, FSP		-10...78 °C		14...172.4 °F
Frequency end point, FEP		12...100 °C		53.6...212 °F
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG11KL0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1045
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB4244



Flow meter with fast response and display

SBG11KL0FRKG

UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	1539.8
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 100 mm²/s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
	Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

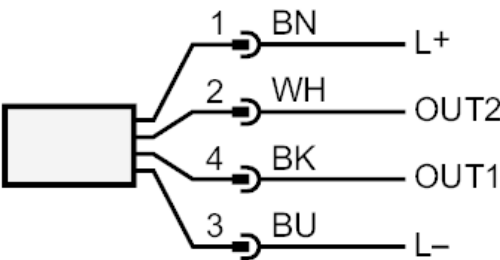




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

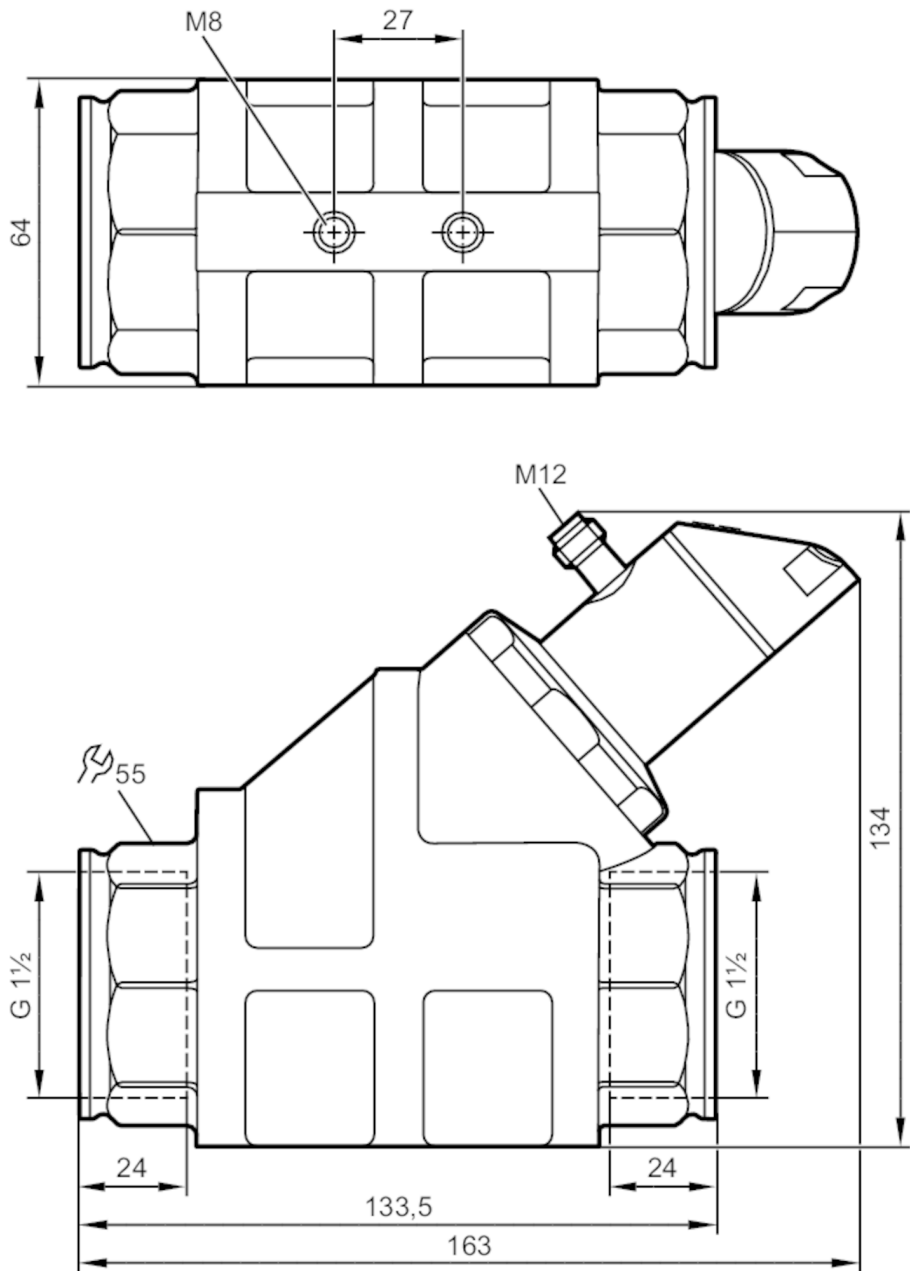
- BK = black
BN = brown
BU = blue
WH = white

SB4256



Flow meter with fast response and display

SBG32KM0FRKG



Product characteristics				
Measuring range	4...100 l/min	0.24...6 m³/h	64...1586 gph	1.05...26.4 gpm
Process connection	threaded connection G 1 1/2 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oil (viscosity 100 mm²/s at 40° C)			
Medium temperature	[°C] -10...100			
Pressure rating	63 bar		6.3 MPa	
Note on pressure rating	at medium temperature >70°C: 50 bar / 5 MPa			



Flow meter with fast response and display

SBG32KM0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		4...100 l/min	0.24...6 m³/h	64...1586 gph
Display range		0...120 l/min	0...7.2 m³/h	0...1902 gph
Resolution		0.1 l/min	0.01 m³/h	1 gph
Set point SP		0.7...100 l/min	0.04...6 m³/h	10...1586 gph
Reset point rP		0...99.3 l/min	0...5.96 m³/h	0...1574 gph
Frequency end point, FEP		6.7...100 l/min	0.4...6 m³/h	106...1586 gph
In steps of		0.1 l/min	0.01 m³/h	2 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C	14...212 °F	
Display range		-32...122 °C	-25.6...251.6 °F	
Resolution		0.1 °C	0.1 °F	
Set point SP		-9.3...100 °C	15.2...212 °F	
Reset point rP		-10...99.3 °C	14...210.8 °F	
In steps of		0.1 °C	0.2 °F	
Frequency start point, FSP		-10...78 °C	14...172.4 °F	
Frequency end point, FEP		12...100 °C	53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG32KM0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1046
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	EN IEC 61326-1	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB4256



Flow meter with fast response and display

SBG32KM0FRKG

UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	2766.3
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 1/2 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 100 mm²/s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
	1 pcs.	
Pack quantity		

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

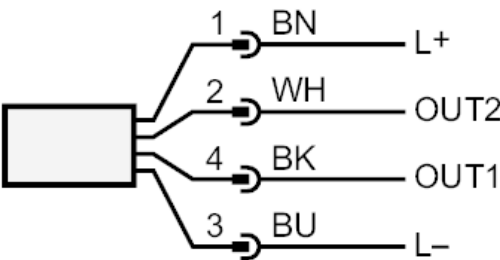




Flow meter with fast response and display

SBG32KM0FRKG

Connection



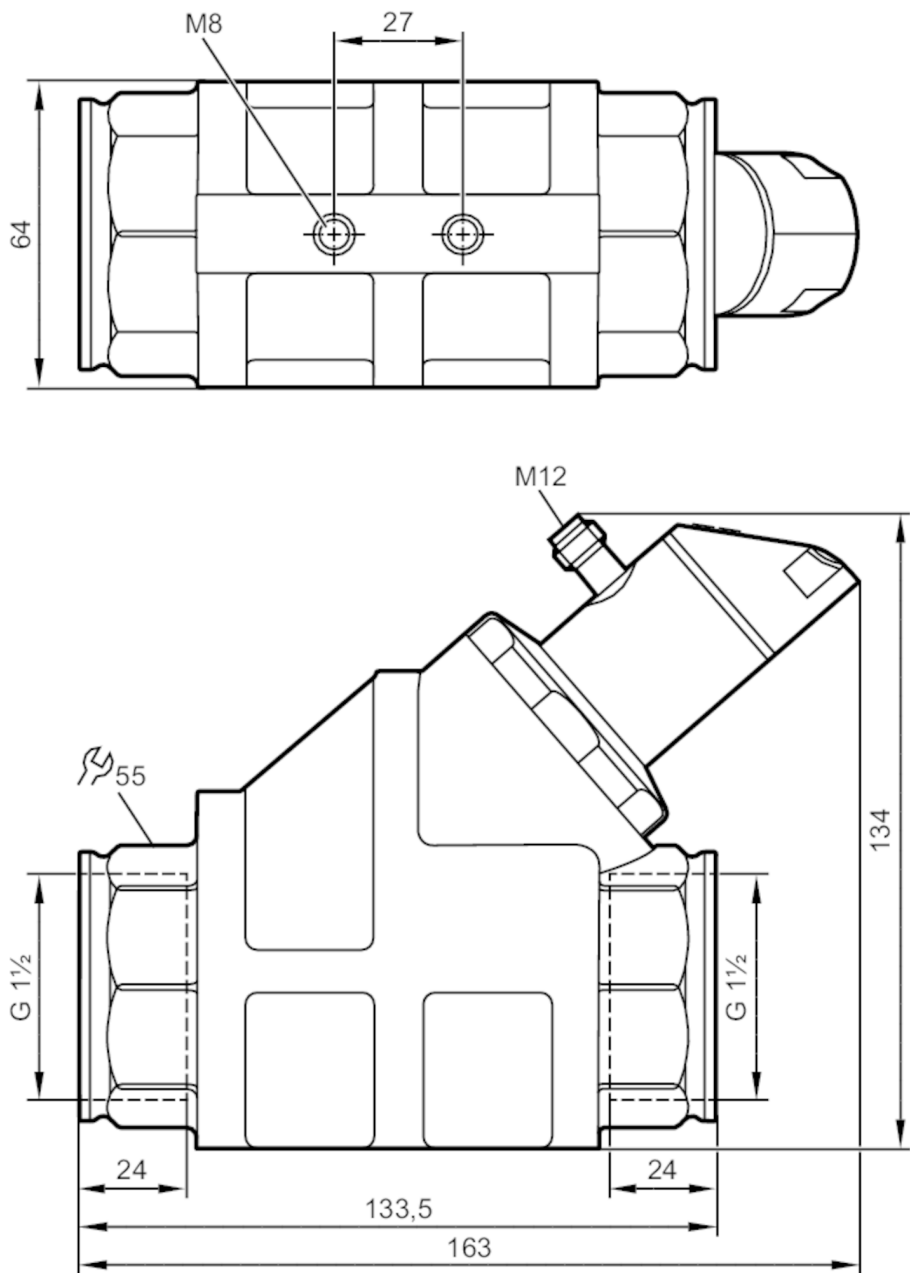
- OUT1:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - Frequency output Volumetric flow quantity monitoring
 - Frequency output Temperature monitoring
 - IO-Link
- OUT2:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2
- Core colors :
- BK = black
- BN = brown
- BU = blue
- WH = white

SB4257



Flow meter with fast response and display

SBG32KM0FRKG



Product characteristics				
Measuring range	8...200 l/min	0.48...12 m³/h	130...3170 gph	2.1...52.8 gpm
Process connection	threaded connection G 1 1/2 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oil (viscosity 100 mm²/s at 40° C)			
Medium temperature	[°C]	-10...100		
Pressure rating	63 bar	6.3 MPa		
Note on pressure rating	at medium temperature >70°C: 50 bar / 5 MPa			



Flow meter with fast response and display

SBG32KM0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		8...200 l/min	0.48...12 m³/h	130...3170 gph
Display range		0...240 l/min	0...14.4 m³/h	0...3805 gph
Resolution		0.1 l/min	0.01 m³/h	1 gph
Set point SP		1.4...200 l/min	0.08...12 m³/h	20...3170 gph
Reset point rP		0...198.6 l/min	0...11.92 m³/h	0...3150 gph
Frequency end point, FEP		13.4...200 l/min	0.8...12 m³/h	210...3170 gph
In steps of		0.02 l/min	0.02 m³/h	5 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C	14...212 °F	
Display range		-32...122 °C	-25.6...251.6 °F	
Resolution		0.1 °C	0.1 °F	
Set point SP		-9.3...100 °C	15.2...212 °F	
Reset point rP		-10...99.3 °C	14...210.8 °F	
In steps of		0.1 °C	0.2 °F	
Frequency start point, FSP		-10...78 °C	14...172.4 °F	
Frequency end point, FEP		12...100 °C	53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG32KM0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1047
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB4257



Flow meter with fast response and display

SBG32KM0FRKG

UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	2766.6
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 1/2 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 100 mm²/s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
	1 pcs.	
Pack quantity		

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

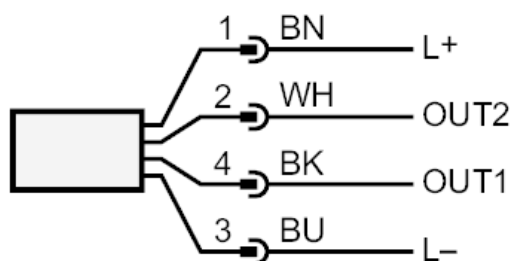




Flow meter with fast response and display

SBG32KM0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

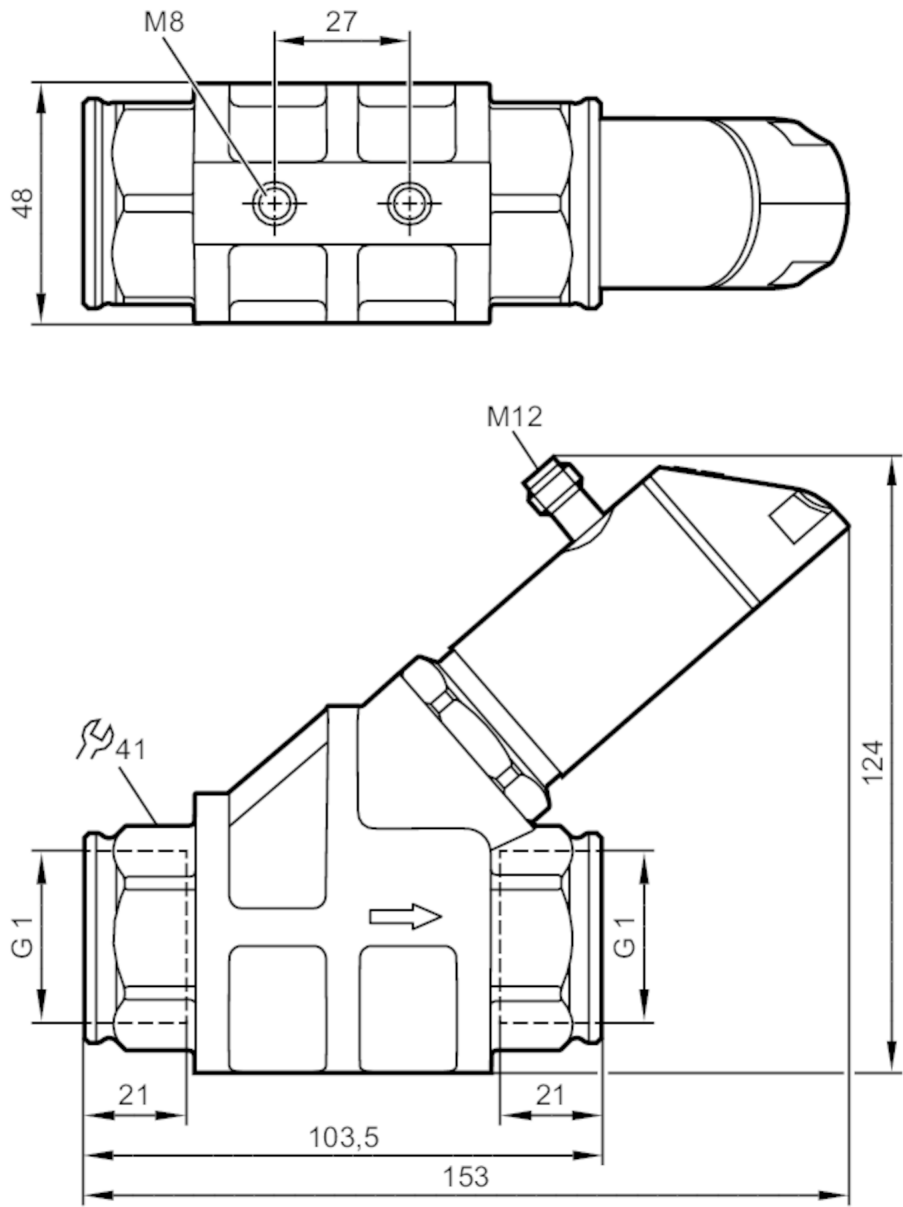
BK = black
 BN = brown
 BU = blue
 WH = white

SB5242



Flow meter with fast response and display

SBG11KL0FRKG



CRN



IO-Link

Product characteristics

Measuring range	0.6...15 l/min	0.036...0.9 m³/h	9.6...237.8 gph	0.16...3.965 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 150 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		0.6...15 l/min	0.036...0.9 m³/h	9.6...237.8 gph
Display range		0...18 l/min	0...1.08 m³/h	0...285.4 gph
Resolution		0.01 l/min	0.001 m³/h	0.1 gph
Set point SP		0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph
Reset point rP		0...14.9 l/min	0...0.894 m³/h	0...236.2 gph
Frequency end point, FEP		1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph
In steps of		0.01 l/min	0.001 m³/h	0.2 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C		14...212 °F
Display range		-32...122 °C		-25.6...251.6 °F
Resolution		0.1 °C		0.1 °F
Set point SP		-9.3...100 °C		15.2...212 °F
Reset point rP		-10...99.3 °C		14...210.8 °F
In steps of		0.1 °C		0.2 °F
Frequency start point, FSP		-10...78 °C		14...172.4 °F
Frequency end point, FEP		12...100 °C		53.6...212 °F
Frequency at the end point FRP	[Hz]	10...10000		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		
Repeatability		± 1 % MEW		



Flow meter with fast response and display

SBG11KL0FRKG

Temperature monitoring		
Temperature drift		0,029 °C / K
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1043
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	145



Flow meter with fast response and display

SBG11KL0FRKG

UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	1581
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 150 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

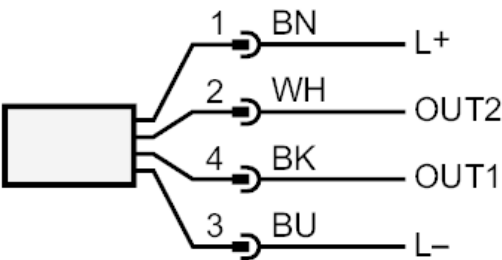




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

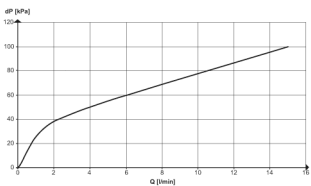
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

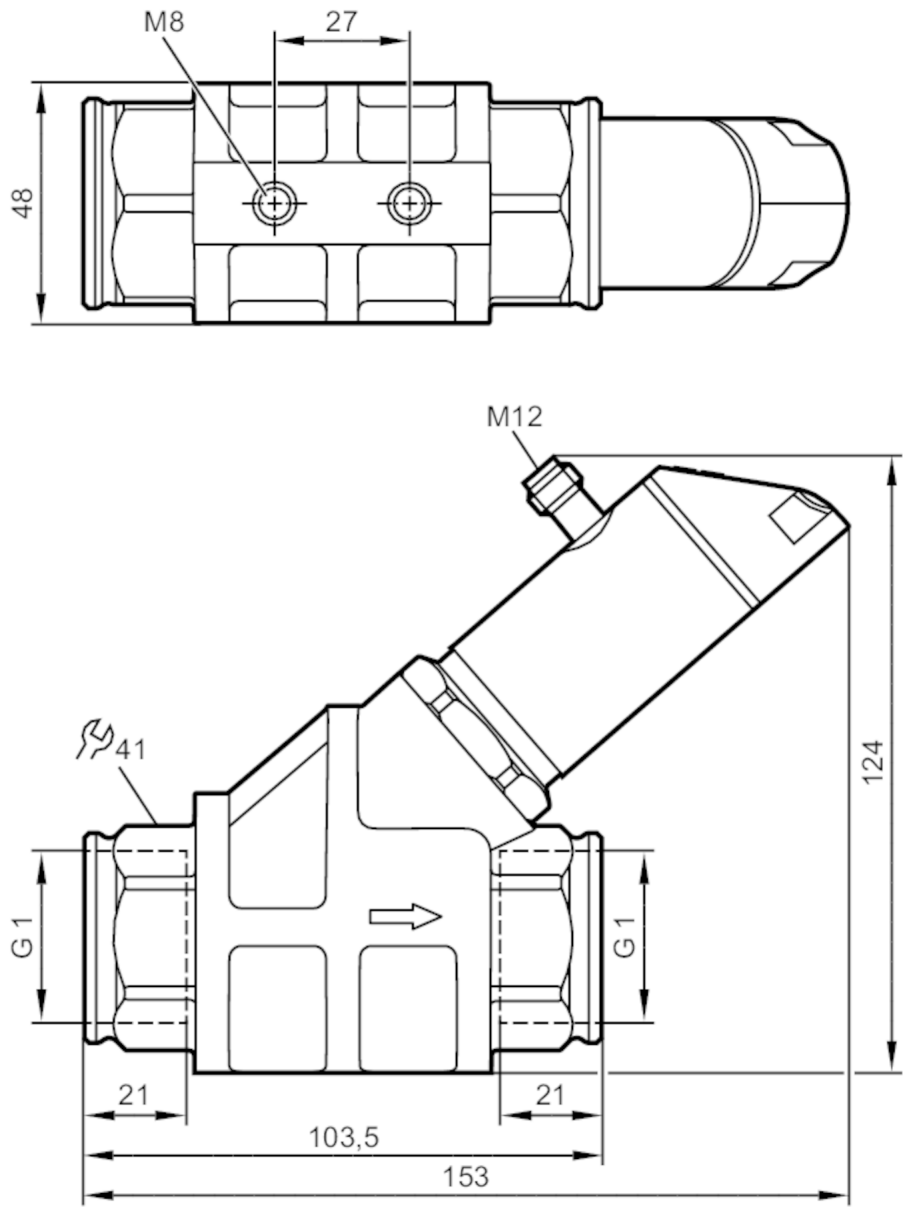


SB5244



Flow meter with fast response and display

SBG11KL0FRKG



CRN



IO-Link

Product characteristics

Measuring range	1...50 l/min	0.06...3 m³/h	16...793 gph	0.26...13.2 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 150 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	

SB5244



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		1...50 l/min	0.06...3 m³/h	16...793 gph
Display range		0...60 l/min	0...3.6 m³/h	0...951 gph
Resolution		0.01 l/min	0.001 m³/h	1 gph
Set point SP		0.35...50 l/min	0.02...3 m³/h	5...793 gph
Reset point rP		0...49.65 l/min	0...2.98 m³/h	0...787 gph
Frequency end point, FEP		3.35...50 l/min	0.2...3 m³/h	53...793 gph
In steps of		0.05 l/min	0.005 m³/h	1 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C	14...212 °F	
Display range		-32...122 °C	-25.6...251.6 °F	
Resolution		0.1 °C	0.1 °F	
Set point SP		-9.3...100 °C	15.2...212 °F	
Reset point rP		-10...99.3 °C	14...210.8 °F	
In steps of		0.1 °C	0.2 °F	
Frequency start point, FSP		-10...78 °C	14...172.4 °F	
Frequency end point, FEP		12...100 °C	53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG11KL0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1045
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)



Flow meter with fast response and display

SBG11KL0FRKG

MTTF	[years]	170
UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	1571.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 150 cSt, 40 °C ± 3 K	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

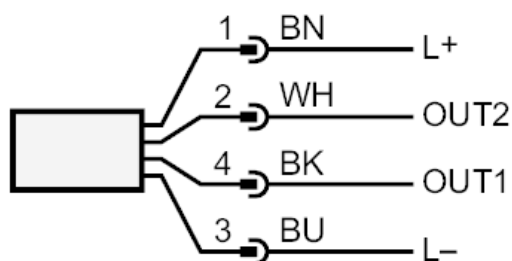




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

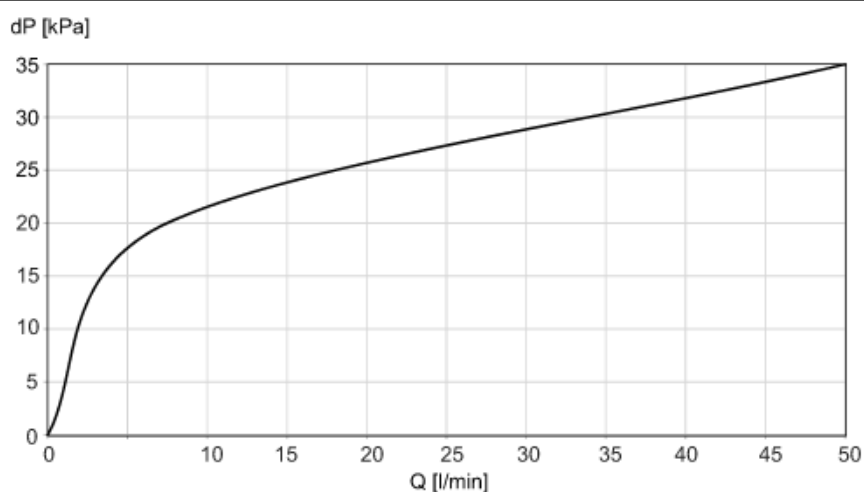
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

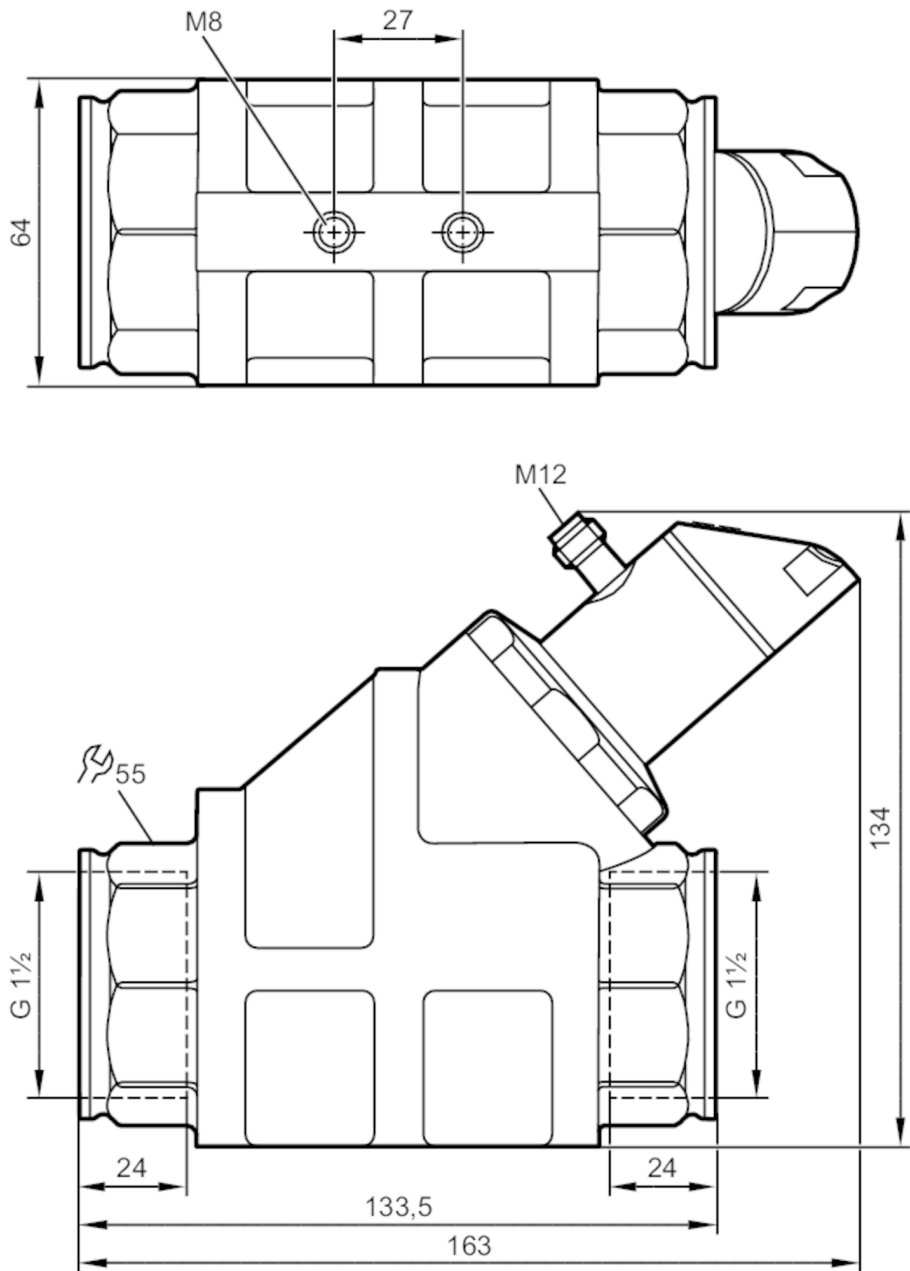


SB5256



Flow meter with fast response and display

SBG32KM0FRKG



Product characteristics

Measuring range	2...100 l/min	0.12...6 m³/h	32...1586 gph	0.55...26.4 gpm
Process connection	threaded connection G 1 1/2 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 150 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	63 bar	6.3 MPa
Note on pressure rating	at medium temperature >70°C: 50 bar / 5 MPa	



Flow meter with fast response and display

SBG32KM0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		2...100 l/min	0.12...6 m³/h	32...1586 gph
Display range		0...120 l/min	0...7.2 m³/h	0...1902 gph
Resolution		0.1 l/min	0.01 m³/h	1 gph
Set point SP		0.7...100 l/min	0.04...6 m³/h	10...1586 gph
Reset point rP		0...99.3 l/min	0...5.96 m³/h	0...1574 gph
Frequency end point, FEP		6.7...100 l/min	0.4...6 m³/h	106...1586 gph
In steps of		0.1 l/min	0.01 m³/h	2 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C	14...212 °F	
Display range		-32...122 °C	-25.6...251.6 °F	
Resolution		0.1 °C	0.1 °F	
Set point SP		-9.3...100 °C	15.2...212 °F	
Reset point rP		-10...99.3 °C	14...210.8 °F	
In steps of		0.1 °C	0.2 °F	
Frequency start point, FSP		-10...78 °C	14...172.4 °F	
Frequency end point, FEP		12...100 °C	53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG32KM0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1046
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)



Flow meter with fast response and display

SBG32KM0FRKG

MTTF	[years]	145
UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	2811.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 1/2 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 150 cSt, 40 °C ± 3 K	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

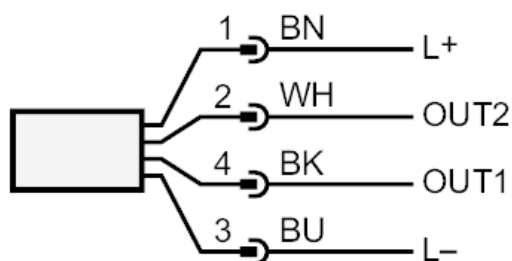




Flow meter with fast response and display

SBG32KM0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

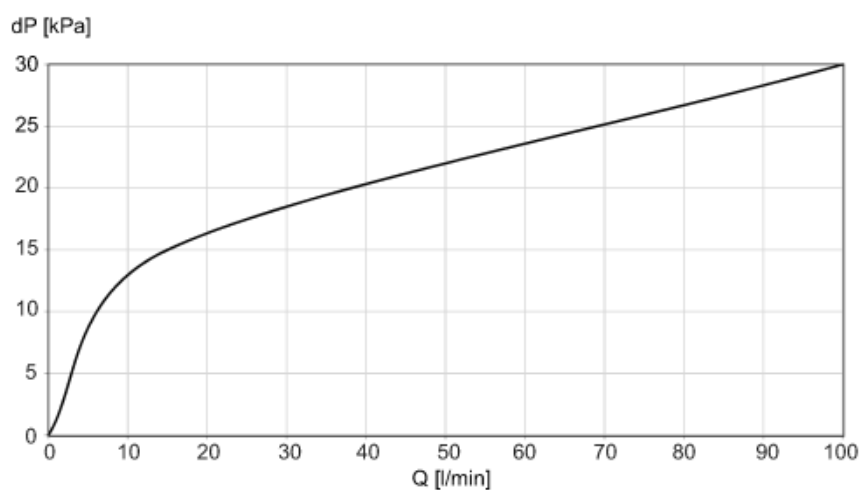
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

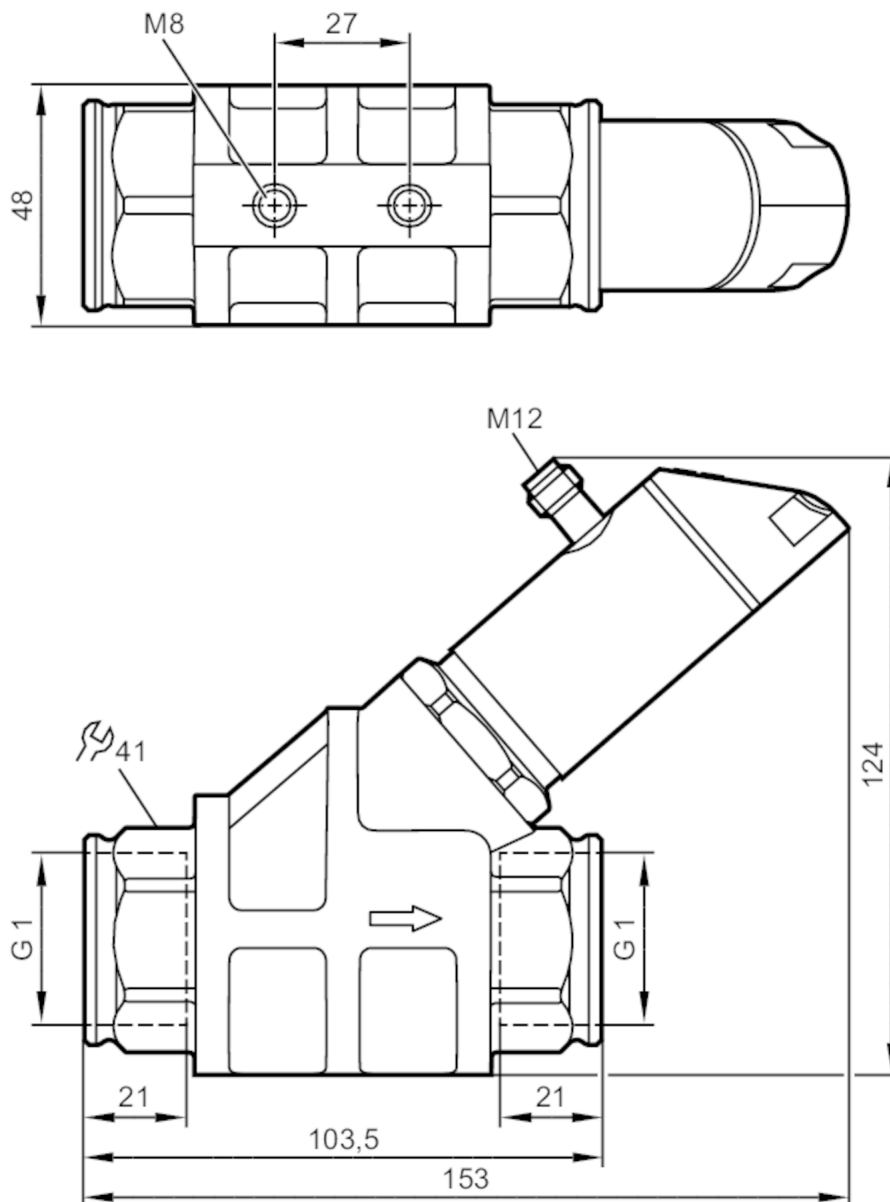


SB6242



Flow meter with fast response and display

SBG11KL0FRKG



Product characteristics

Measuring range	0.6...15 l/min	0.036...0.9 m³/h	9.6...237.8 gph	0.16...3.965 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oil (viscosity 220 mm²/s at 40° C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	
MAWP (for applications according to CRN)	78 bar	7.8 MPa



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		0.6...15 l/min	0.036...0.9 m³/h	9.6...237.8 gph
Display range		0...18 l/min	0...1.08 m³/h	0...285.4 gph
Resolution		0.01 l/min	0.001 m³/h	0.1 gph
Set point SP		0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph
Reset point rP		0...14.9 l/min	0...0.894 m³/h	0...236.2 gph
Frequency end point, FEP		1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph
In steps of		0.01 l/min	0.001 m³/h	0.2 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C		14...212 °F
Display range		-32...122 °C		-25.6...251.6 °F
Resolution		0.1 °C		0.1 °F
Set point SP		-9.3...100 °C		15.2...212 °F
Reset point rP		-10...99.3 °C		14...210.8 °F
In steps of		0.1 °C		0.2 °F
Frequency start point, FSP		-10...78 °C		14...172.4 °F
Frequency end point, FEP		12...100 °C		53.6...212 °F
Frequency at the end point FRP	[Hz]	10...10000		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		
Repeatability		± 1 % MEW		



Flow meter with fast response and display

SBG11KL0FRKG

Temperature monitoring		
Temperature drift		0,029 °C / K
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1043
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	170

SB6242



Flow meter with fast response and display

SBG11KL0FRKG

UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	1547.7
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 220 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
	Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

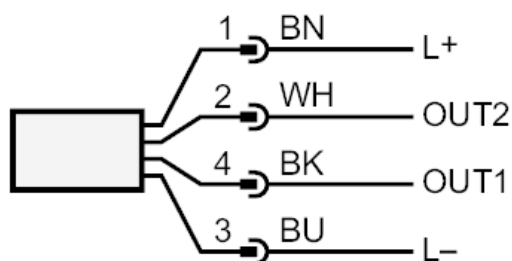




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

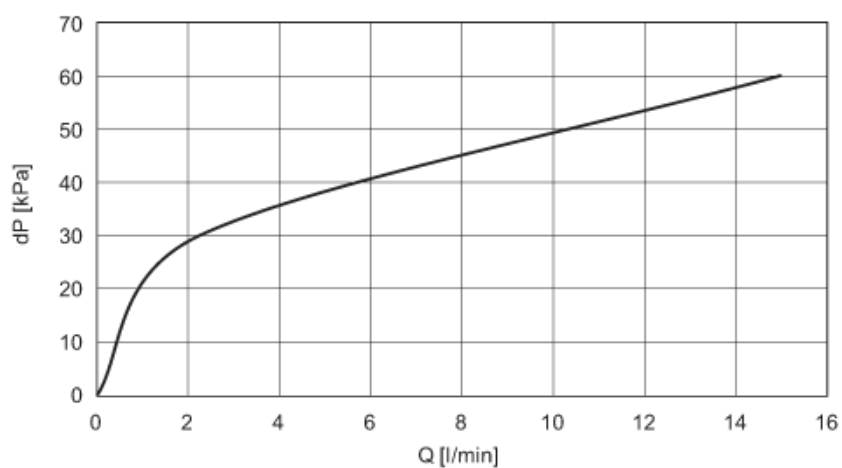
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
- BN = brown
- BU = blue
- WH = white

Diagrams and graphs

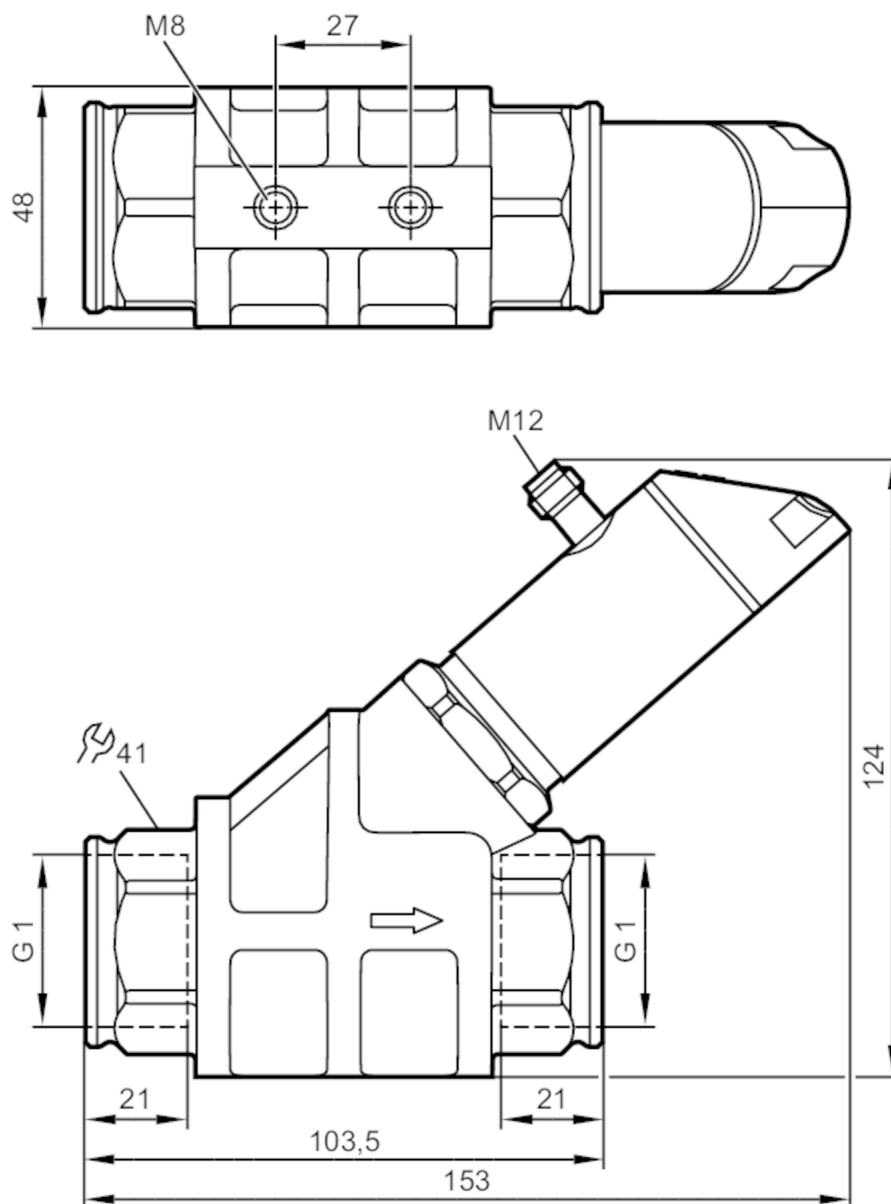


SB6243



Flow meter with fast response and display

SBG11KL0FRKG



Product characteristics

Measuring range	1...25 l/min	0.06...1.5 m³/h	16...396.5 gph	0.26...6.6 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oil (viscosity 220 mm²/s at 40° C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	
MAWP (for applications according to CRN)	78 bar	7.8 MPa



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data					
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)			
Current consumption	[mA]	< 50			
Protection class		III			
Reverse polarity protection		yes			
Power-on delay time	[s]	< 3			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analog signal; frequency signal; IO-Link			
Max. voltage drop switching output DC	[V]	2			
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)			
Analog current output	[mA]	4...20			
Max. load	[Ω]	500			
Short-circuit protection		yes			
Overload protection		yes			
Frequency of the output	[Hz]	0...10000			
Measuring/setting range					
Measuring range		1...25 l/min	0.06...1.5 m³/h	16...396.5 gph	0.26...6.6 gpm
Display range		0...30 l/min	0...1.8 m³/h	0...475.5 gph	0...7.93 gpm
Resolution		0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP		0.16...25 l/min	0.01...1.5 m³/h	2.5...396 gph	0.04...6.6 gpm
Reset point rP		0...24.84 l/min	0...1.49 m³/h	0...393.5 gph	0...6.56 gpm
Frequency end point, FEP		1.66...25 l/min	0.1...1.5 m³/h	26.5...396 gph	0.44...6.6 gpm
In steps of		0.02 l/min	0.002 m³/h	0.5 gph	0.01 gpm
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Measuring dynamics		1:50			
Temperature monitoring					
Measuring range		-10...100 °C		14...212 °F	
Display range		-32...122 °C		-25.6...251.6 °F	
Resolution		0.1 °C		0.1 °F	
Set point SP		-9.3...100 °C		15.2...212 °F	
Reset point rP		-10...99.3 °C		14...210.8 °F	
In steps of		0.1 °C		0.2 °F	
Frequency start point, FSP		-10...78 °C		14...172.4 °F	
Frequency end point, FEP		12...100 °C		53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000			
Accuracy / deviations					
Flow monitoring					
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)			
Repeatability		± 1 % MEW			



Flow meter with fast response and display

SBG11KL0FRKG

Temperature monitoring		
Temperature drift		0,029 °C / K
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1044
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	170

SB6243



Flow meter with fast response and display

SBG11KL0FRKG

UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	1545.3
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 220 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
	Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

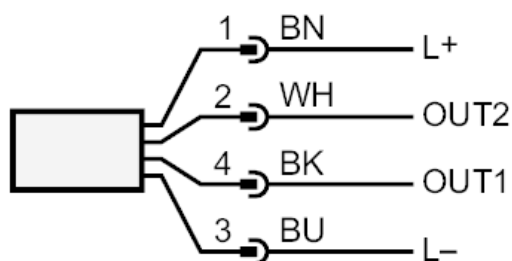




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

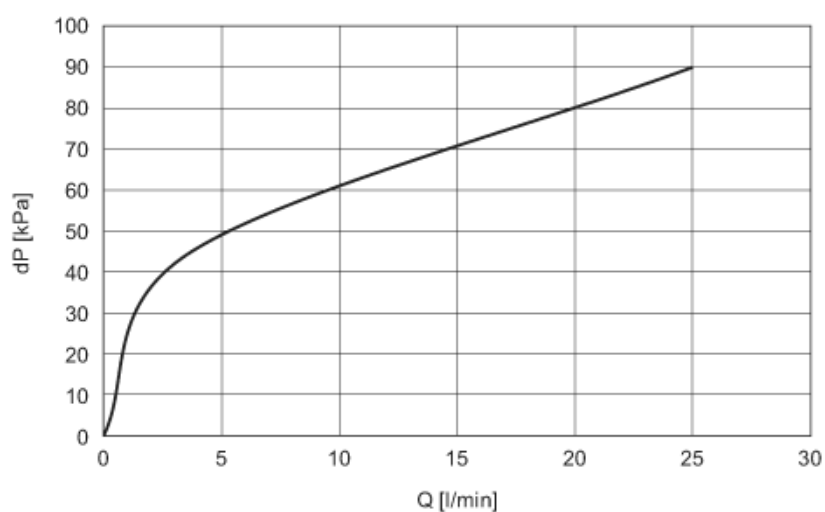
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

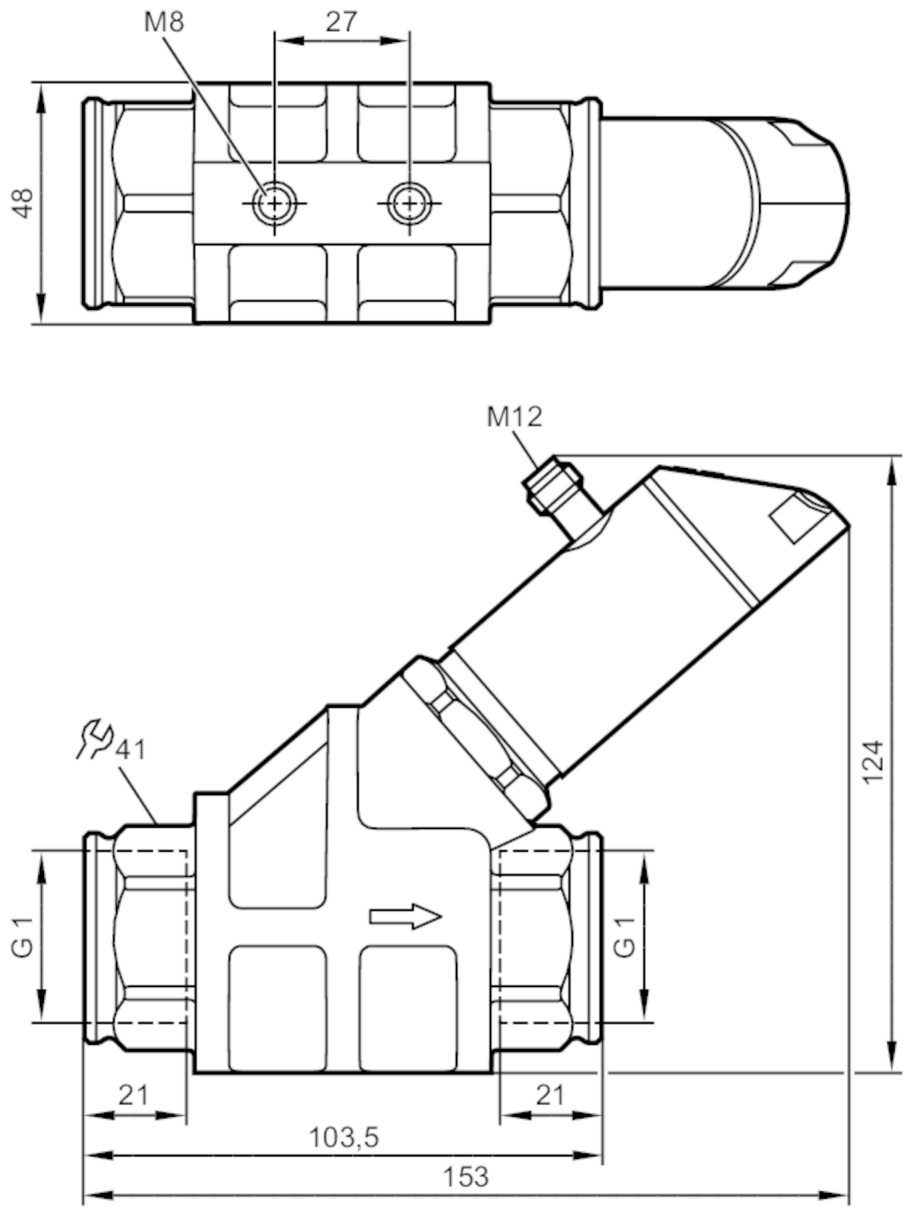


SB7242



Flow meter with fast response and display

SBG11KL0FRKG



CRN



IO-Link

Product characteristics

Measuring range	0.6...15 l/min	0.036...0.9 m³/h	9.6...237.8 gph	0.16...3.965 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 320 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	
MAWP (for applications according to CRN)	78 bar	7.8 MPa



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		0.6...15 l/min	0.036...0.9 m³/h	9.6...237.8 gph
Display range		0...18 l/min	0...1.08 m³/h	0...285.4 gph
Resolution		0.01 l/min	0.001 m³/h	0.1 gph
Set point SP		0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph
Reset point rP		0...14.9 l/min	0...0.894 m³/h	0...236.2 gph
Frequency end point, FEP		1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph
In steps of		0.01 l/min	0.001 m³/h	0.2 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C		14...212 °F
Display range		-32...122 °C		-25.6...251.6 °F
Resolution		0.1 °C		0.1 °F
Set point SP		-9.3...100 °C		15.2...212 °F
Reset point rP		-10...99.3 °C		14...210.8 °F
In steps of		0.1 °C		0.2 °F
Frequency start point, FSP		-10...78 °C		14...172.4 °F
Frequency end point, FEP		12...100 °C		53.6...212 °F
Frequency at the end point FRP	[Hz]	10...10000		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		
Repeatability		± 1 % MEW		



Flow meter with fast response and display

SBG11KL0FRKG

Temperature monitoring		
Temperature drift		0,029 °C / K
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1043
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	170

SB7242



Flow meter with fast response and display

SBG11KL0FRKG

UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	1608.6
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 320 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
	1 pcs.	
Pack quantity		

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

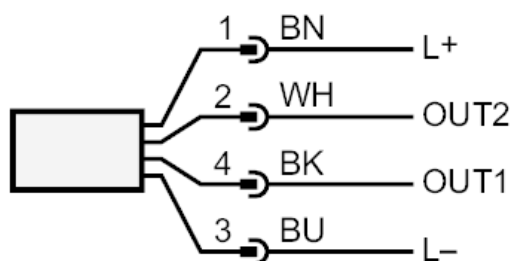




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

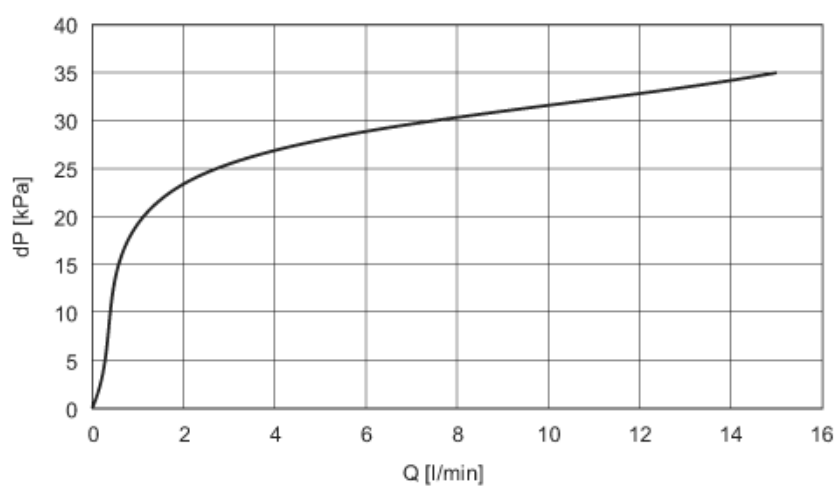
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

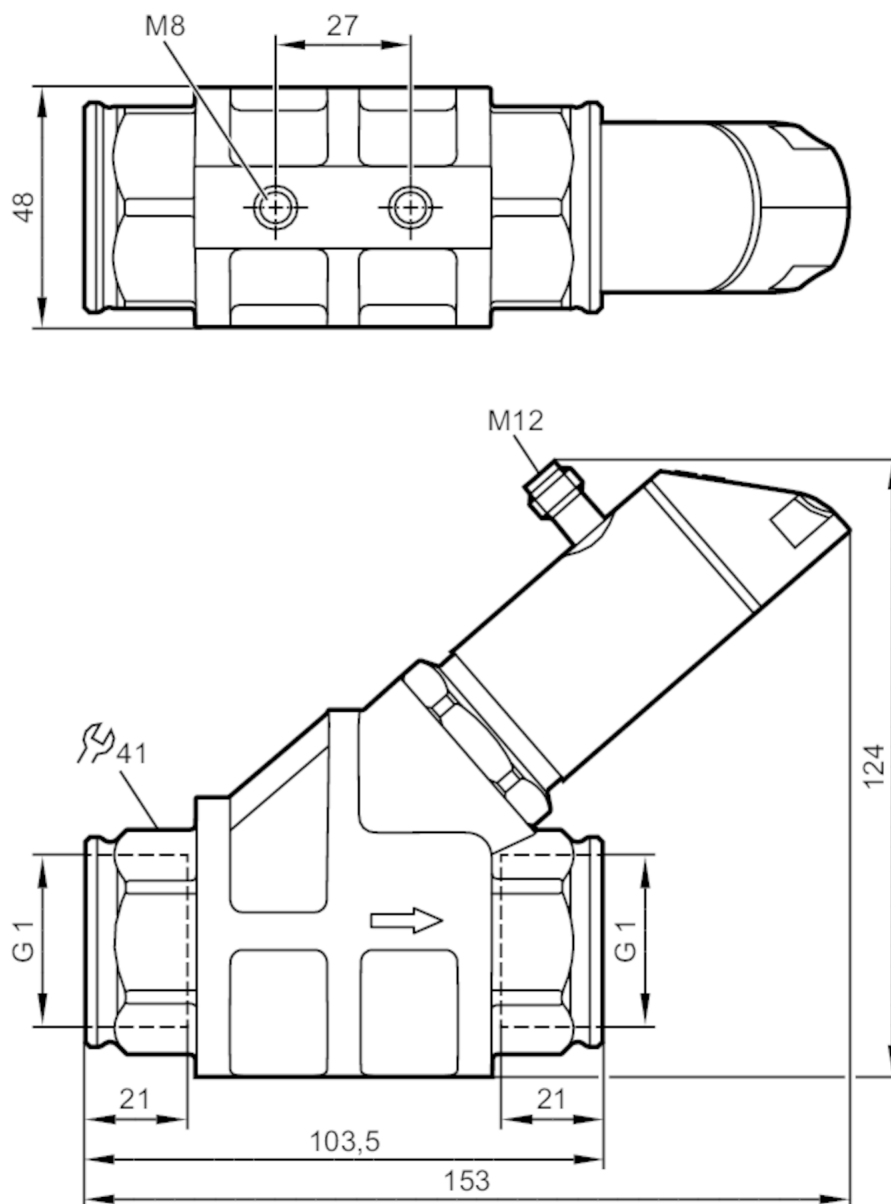


SB7243



Flow meter with fast response and display

SBG11KL0FRKG



Product characteristics

Measuring range	1...25 l/min	0.06...1.5 m³/h	16...396.5 gph	0.26...6.6 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 320 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	
MAWP (for applications according to CRN)	78 bar	7.8 MPa



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data					
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)			
Current consumption	[mA]	< 50			
Protection class		III			
Reverse polarity protection		yes			
Power-on delay time	[s]	< 3			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analog signal; frequency signal; IO-Link			
Max. voltage drop switching output DC	[V]	2			
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)			
Analog current output	[mA]	4...20			
Max. load	[Ω]	500			
Short-circuit protection		yes			
Overload protection		yes			
Frequency of the output	[Hz]	0...10000			
Measuring/setting range					
Measuring range		1...25 l/min	0.06...1.5 m³/h	16...396.5 gph	0.26...6.6 gpm
Display range		0...30 l/min	0...1.8 m³/h	0...475.5 gph	0...7.93 gpm
Resolution		0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP		0.16...25 l/min	0.01...1.5 m³/h	2.5...396 gph	0.04...6.6 gpm
Reset point rP		0...24.84 l/min	0...1.49 m³/h	0...393.5 gph	0...6.56 gpm
Frequency end point, FEP		1.66...25 l/min	0.1...1.5 m³/h	25.6...396 gph	0.44...6.6 gpm
In steps of		0.02 l/min	0.002 m³/h	0.5 gph	0.01 gpm
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Measuring dynamics		1:50			
Temperature monitoring					
Measuring range		-10...100 °C		14...212 °F	
Display range		-32...122 °C		-25.6...251.6 °F	
Resolution		0.1 °C		0.1 °F	
Set point SP		-9.3...100 °C		15.2...212 °F	
Reset point rP		-10...99.3 °C		14...210.8 °F	
In steps of		0.1 °C		0.2 °F	
Frequency start point, FSP		-10...78 °C		14...172.4 °F	
Frequency end point, FEP		12...100 °C		53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000			
Accuracy / deviations					
Flow monitoring					
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)			
Repeatability		± 1 % MEW			



Flow meter with fast response and display

SBG11KL0FRKG

Temperature monitoring		
Temperature drift		0,029 °C / K
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1044
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	170

SB7243



Flow meter with fast response and display

SBG11KL0FRKG

UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	1604
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 320 mm ² /s, 40 °C	
	MW = Measured value	
	MEW = Final value of the measuring range	
	1 pcs.	
Pack quantity		

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

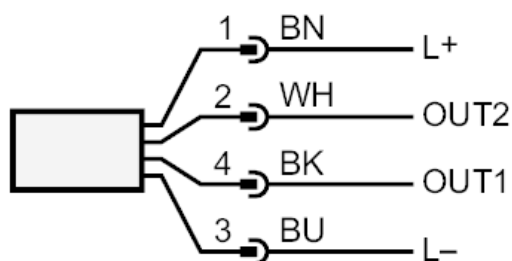




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

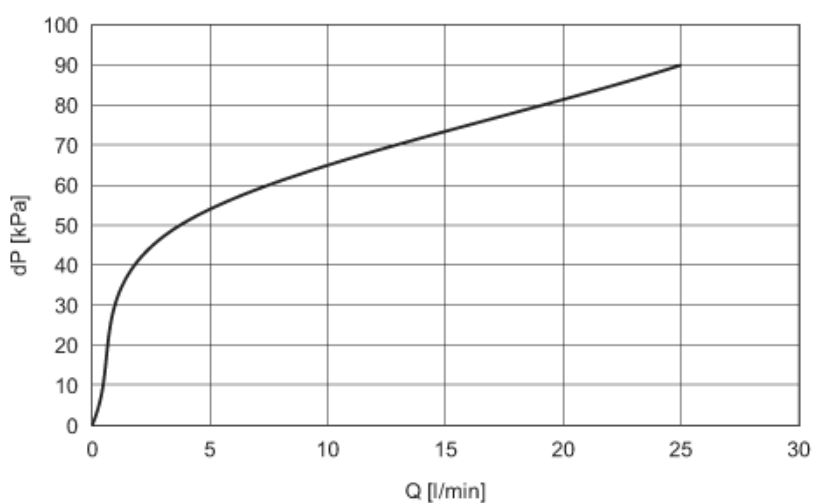
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
- BN = brown
- BU = blue
- WH = white

Diagrams and graphs

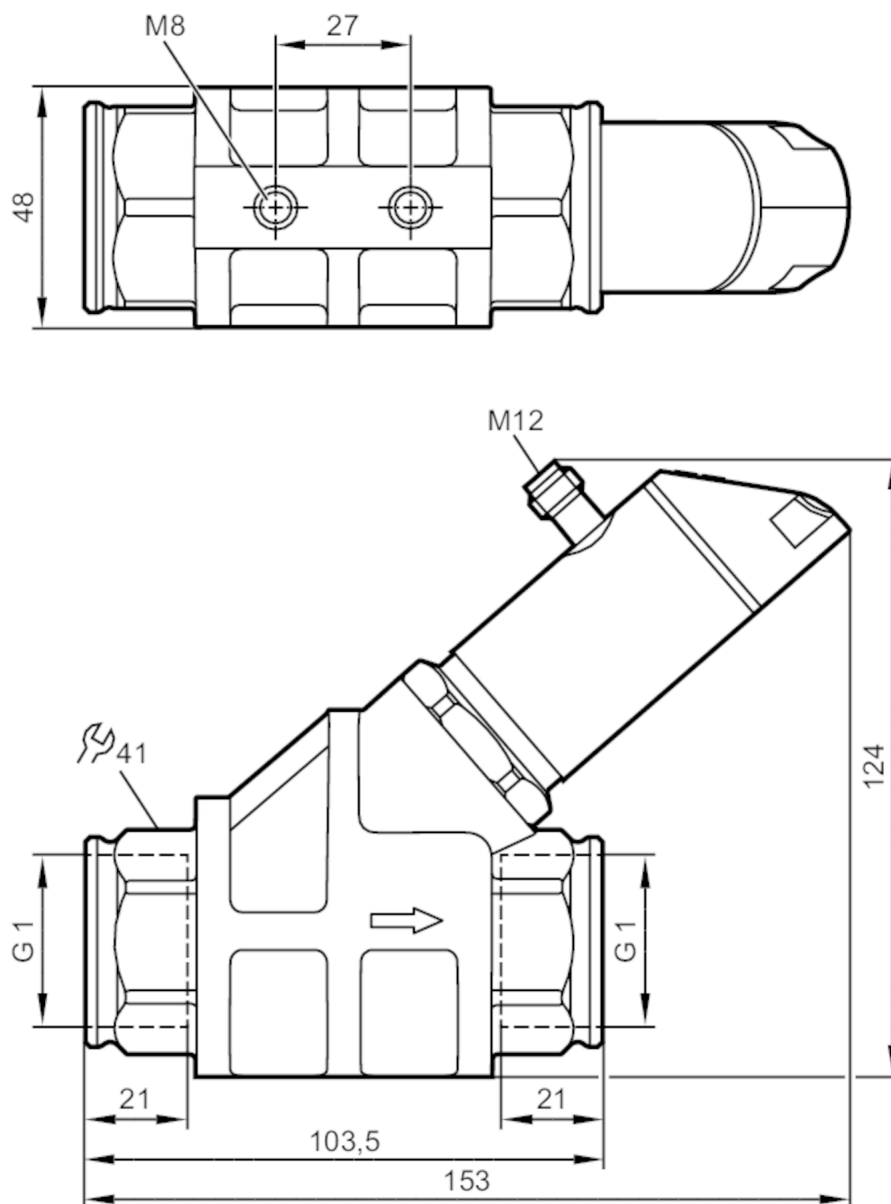


SB7244



Flow meter with fast response and display

SBG11KL0FRKG



Product characteristics

Measuring range	2...50 l/min	0.12...3 m³/h	32...793 gph	0.52...13.2 gpm
Process connection	threaded connection G 1 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 320 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	
MAWP (for applications according to CRN)	78 bar	7.8 MPa



Flow meter with fast response and display

SBG11KL0FRKG

Electrical data					
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)			
Current consumption	[mA]	< 50			
Protection class		III			
Reverse polarity protection		yes			
Power-on delay time	[s]	< 3			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analog signal; frequency signal; IO-Link			
Output function		normally open / closed; (configurable)			
Max. voltage drop switching output DC	[V]	2			
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)			
Analog current output	[mA]	4...20			
Max. load	[Ω]	500			
Short-circuit protection		yes			
Overload protection		yes			
Frequency of the output	[Hz]	0...10000			
Measuring/setting range					
Measuring range		2...50 l/min	0.12...3 m³/h	32...793 gph	0.52...13.2 gpm
Display range		0...60 l/min	0...3.6 m³/h	0...951 gph	0...15.86 gpm
Resolution		0.01 l/min	0.001 m³/h	1 gph	0.01 gpm
Set point SP		0.35...50 l/min	0.02...3 m³/h	5...793 gph	0.08...13.2 gpm
Reset point rP		0...49.65 l/min	0...2.98 m³/h	0...787 gph	0...13.12 gpm
Frequency end point, FEP		3.35...50 l/min	0.2...3 m³/h	53...793 gph	0.88...13.2 gpm
In steps of		0.05 l/min	0.005 m³/h	1 gph	0.02 gpm
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Measuring dynamics		1:50			
Temperature monitoring					
Measuring range		-10...100 °C		14...212 °F	
Display range		-32...122 °C		-25.6...251.6 °F	
Resolution		0.1 °C		0.1 °F	
Set point SP		-9.3...100 °C		15.2...212 °F	
Reset point rP		-10...99.3 °C		14...210.8 °F	
In steps of		0.1 °C		0.2 °F	
Frequency start point, FSP		-10...78 °C		14...172.4 °F	
Frequency end point, FEP		12...100 °C		53.6...212 °F	
Frequency at the end point FRP	[Hz]	10...10000			
In steps of	[Hz]	10			
Accuracy / deviations					
Flow monitoring					
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)			



Flow meter with fast response and display

SBG11KL0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1045
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)



Flow meter with fast response and display

SBG11KL0FRKG

MTTF	[years]	170
UL approval	UL approval number	I006
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	1602.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 320 cSt, 40 °C ± 3 K	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

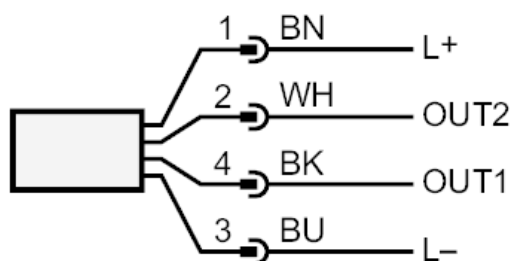




Flow meter with fast response and display

SBG11KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

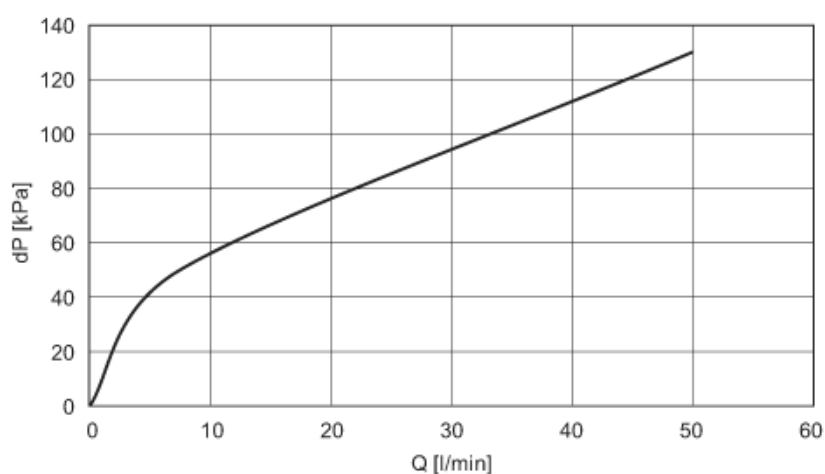
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

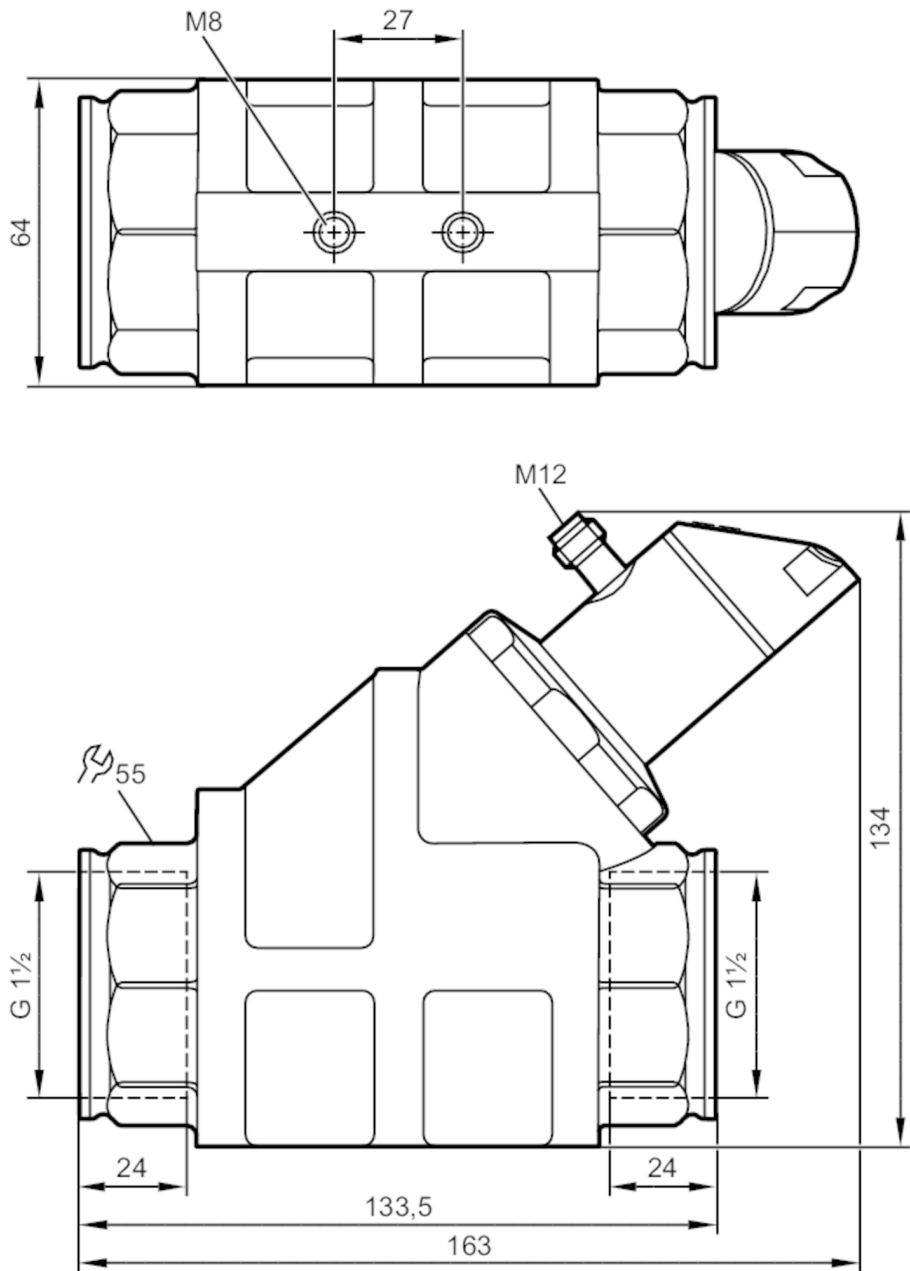


SB7256



Flow meter with fast response and display

SBG32KM0FRKG



Product characteristics				
Measuring range	4...100 l/min	0.24...6 m³/h	64...1586 gph	1.05...26.4 gpm
Process connection	threaded connection G 1 1/2 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 320 mm²/s at 40 °C)			
Medium temperature	-10...100			
Pressure rating	63 bar		6.3 MPa	
Note on pressure rating	at medium temperature >70°C: 50 bar / 5 MPa			
MAWP (for applications according to CRN)	78 bar		7.8 MPa	



Flow meter with fast response and display

SBG32KM0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		4...100 l/min	0.24...6 m³/h	64...1586 gph
Display range		0...120 l/min	0...7.2 m³/h	0...1902 gph
Resolution		0.1 l/min	0.01 m³/h	1 gph
Set point SP		0.7...100 l/min	0.04...6 m³/h	10...1586 gph
Reset point rP		0...99.3 l/min	0...5.96 m³/h	0...1574 gph
Frequency end point, FEP		6.7...100 l/min	0.4...6 m³/h	106...1586 gph
In steps of		0.1 l/min	0.01 m³/h	2 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C		14...212 °F
Display range		-32...122 °C		-25.6...251.6 °F
Resolution		0.1 °C		0.1 °F
Set point SP		-9.3...100 °C		15.2...212 °F
Reset point rP		-10...99.3 °C		14...210.8 °F
In steps of		0.1 °C		0.2 °F
Frequency start point, FSP		-10...78 °C		14...172.4 °F
Frequency end point, FEP		12...100 °C		53.6...212 °F
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG32KM0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1046
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)



Flow meter with fast response and display

SBG32KM0FRKG

MTTF	[years]	170
UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data

Weight	[g]	2803.4
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 1/2 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 320 cSt, 40 °C ± 3 K	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

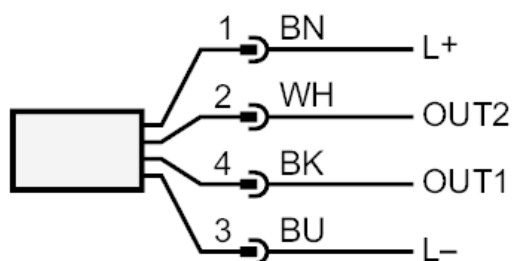




Flow meter with fast response and display

SBG32KM0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

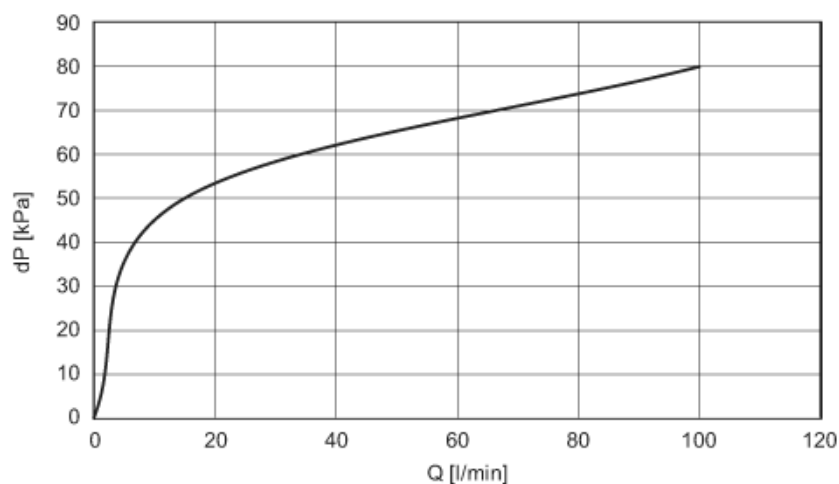
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
- BN = brown
- BU = blue
- WH = white

Diagrams and graphs

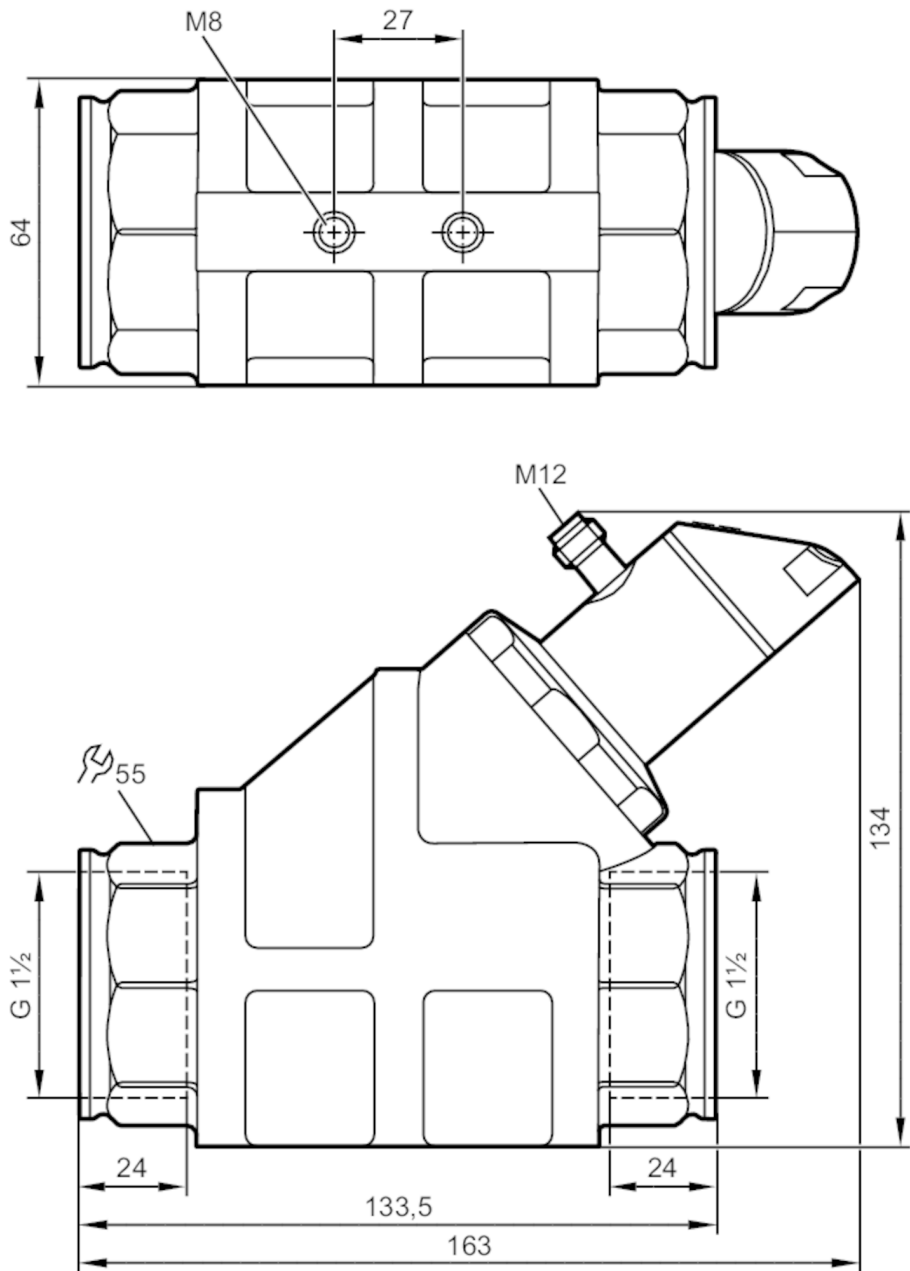


SB7257



Flow meter with fast response and display

SBG32KM0FRKG



Product characteristics				
Measuring range	8...200 l/min	0.48...12 m³/h	130...3170 gph	2.1...52.8 gpm
Process connection	threaded connection G 1 1/2 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 320 mm²/s at 40 °C)			
Medium temperature	-10...100			
Pressure rating	63 bar		6.3 MPa	
Note on pressure rating	at medium temperature >70°C: 50 bar / 5 MPa			
MAWP (for applications according to CRN)	78 bar		7.8 MPa	



Flow meter with fast response and display

SBG32KM0FRKG

Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV ; cULus - Class 2 source required)		
Current consumption	[mA]	< 50		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 3		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analog signal; frequency signal; IO-Link		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Max. current load per output	[mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Short-circuit protection		yes		
Overload protection		yes		
Frequency of the output	[Hz]	0...10000		
Measuring/setting range				
Measuring range		8...200 l/min	0.48...12 m³/h	130...3170 gph
Display range		0...240 l/min	0...14.4 m³/h	0...3805 gph
Resolution		0.1 l/min	0.01 m³/h	1 gph
Set point SP		1.4...200 l/min	0.08...12 m³/h	20...3170 gph
Reset point rP		0...198.6 l/min	0...11.92 m³/h	0...3150 gph
Frequency end point, FEP		13.4...200 l/min	0.8...12 m³/h	210...3170 gph
In steps of		0.02 l/min	0.02 m³/h	5 gph
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Measuring dynamics		1:50		
Temperature monitoring				
Measuring range		-10...100 °C		14...212 °F
Display range		-32...122 °C		-25.6...251.6 °F
Resolution		0.1 °C		0.1 °F
Set point SP		-9.3...100 °C		15.2...212 °F
Reset point rP		-10...99.3 °C		14...210.8 °F
In steps of		0.1 °C		0.2 °F
Frequency start point, FSP		-10...78 °C		14...172.4 °F
Frequency end point, FEP		12...100 °C		53.6...212 °F
Frequency at the end point FRP	[Hz]	10...10000		
In steps of	[Hz]	10		
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)		± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)		



Flow meter with fast response and display

SBG32KM0FRKG

Repeatability	± 1 % MEW	
Temperature monitoring		
Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1047
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)

SB7257



Flow meter with fast response and display

SBG32KM0FRKG

MTTF	[years]	145
UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

Mechanical data		
Weight	[g]	2810.2
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 1 1/2 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 320 cSt, 40 °C ± 3 K	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

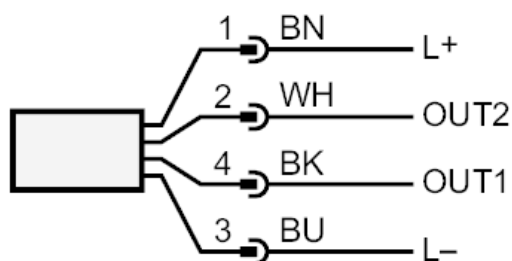




Flow meter with fast response and display

SBG32KM0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

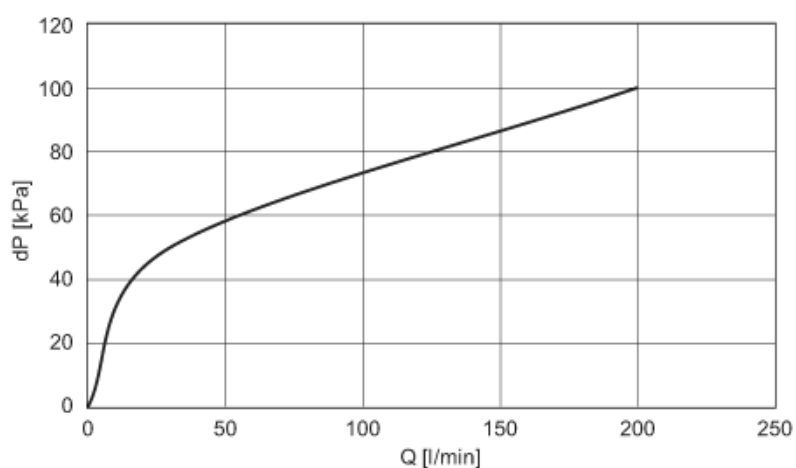
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

BK = black
 BN = brown
 BU = blue
 WH = white

Diagrams and graphs

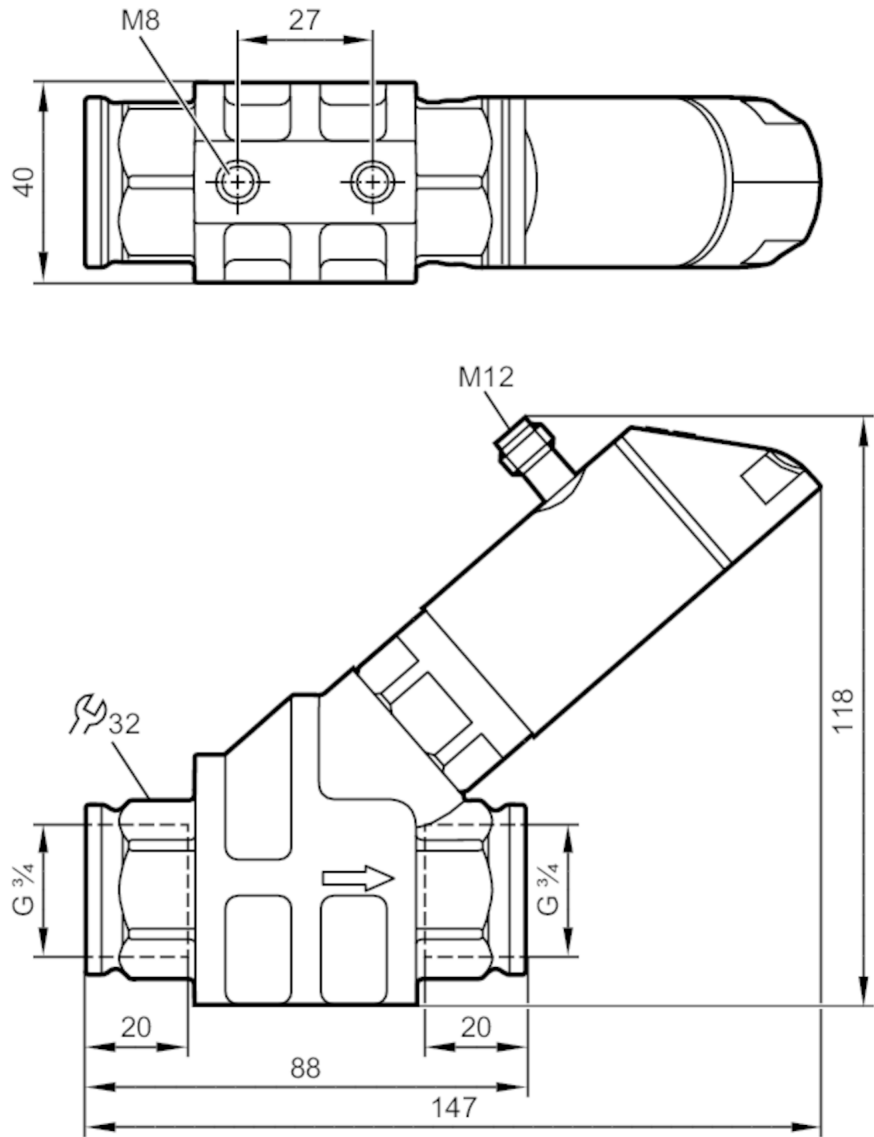


SB9232



Flow meter with fast response and display

SBG34KL0FRKG



CRN



IO-Link

Product characteristics

Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Process connection	threaded connection G 3/4 Internal thread			

Application

System	gold-plated contacts	
Media	Liquids; oils (viscosity 32 mm²/s at 40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	100 bar	10 MPa
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa	

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)			
Current consumption [mA]	< 50			



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range

Measuring range	0.3...15 l/min	0.018...0.9 m³/h	4.8...237.8 gph	0.08...3.965 gpm
Display range	0...18 l/min	0...1.08 m³/h	0...285.4 gph	0...4.755 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.001 gpm
Set point SP	0.1...15 l/min	0.006...0.9 m³/h	1.6...237.8 gph	0.025...3.965 gpm
Reset point rP	0...14.9 l/min	0...0.894 m³/h	0...236.2 gph	0...3.935 gpm
Frequency end point, FEP	1...15 l/min	0.06...0.9 m³/h	15.8...237.8 gph	0.265...3.965 gpm
In steps of	0.01 l/min	0.001 m³/h	0.2 gph	0.005 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring

Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,029 °C / K
Accuracy [K]	3 K (25°C; Q > 1 l/min)



Flow meter with fast response and display

SBG34KL0FRKG

Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1043
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	145
UL approval	UL approval number	I005
	File number UL	E174189
Pressure equipment directive	sound engineering practice	

SB9232



Flow meter with fast response and display

SBG34KL0FRKG

Mechanical data		
Weight	[g]	990.5
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements		
Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks		
Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 32 cSt, 40 °C ± 3 K	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

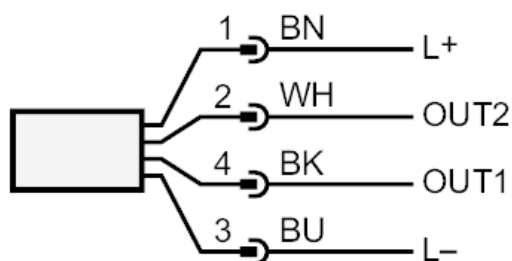




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

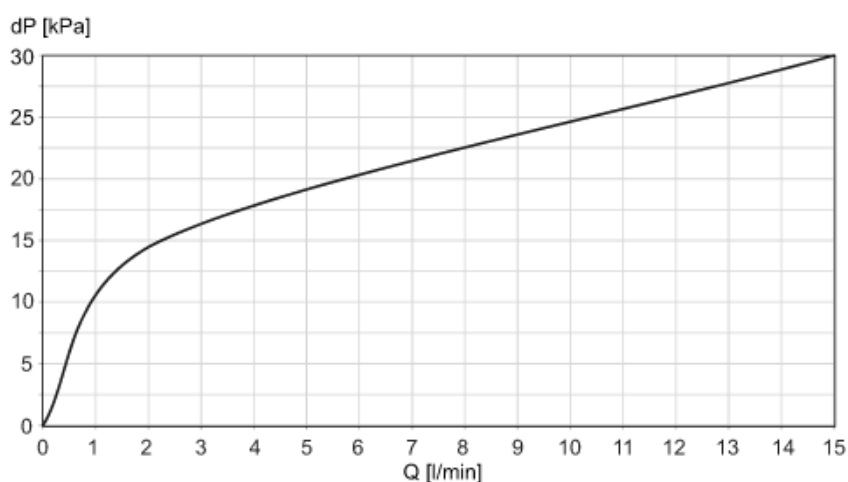
OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
- BN = brown
- BU = blue
- WH = white

Diagrams and graphs

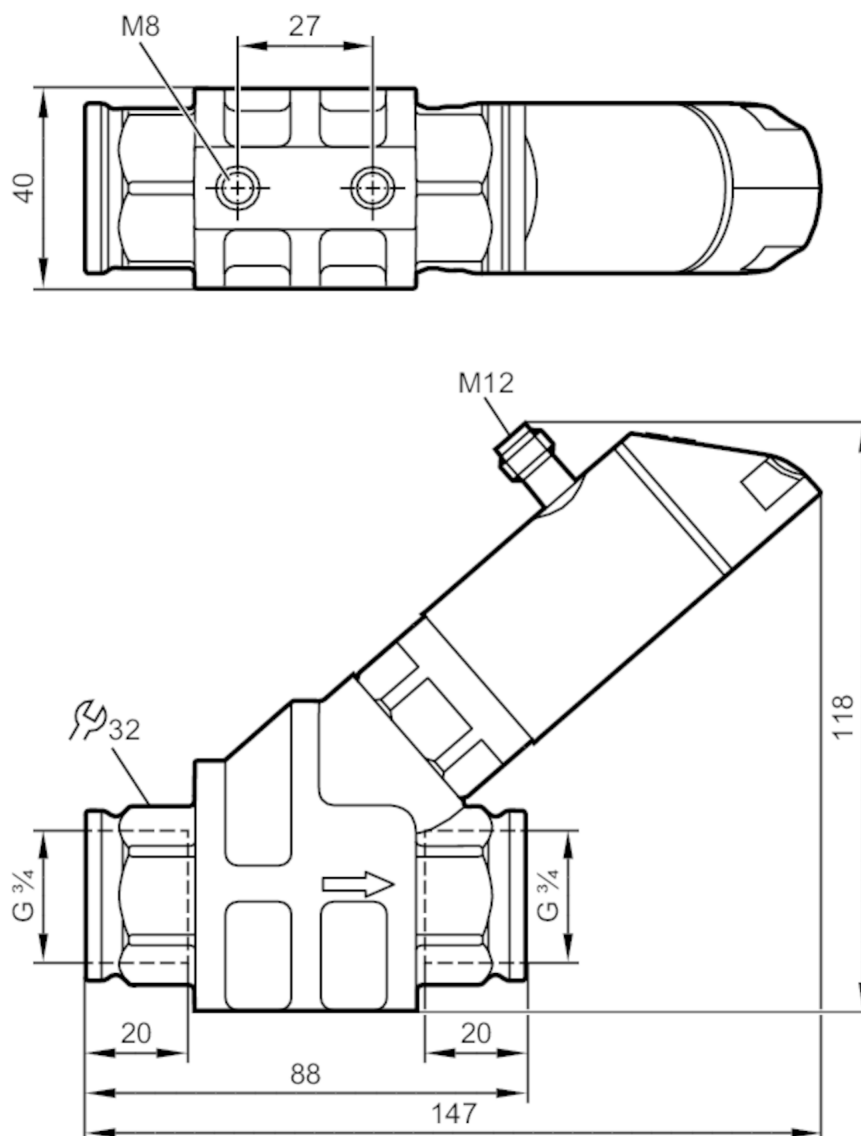


SB9233



Flow meter with fast response and display

SBG34KL0FRKG



Product characteristics				
Measuring range	0.5...25 l/min	0.03...1.5 m³/h	8...396.5 gph	0.13...6.6 gpm
Process connection	threaded connection G 3/4 Internal thread			
Application				
System	gold-plated contacts			
Media	Liquids; oils (viscosity 32 mm²/s at 40 °C)			
Medium temperature	[°C]	-10...100		
Pressure rating	100 bar	10 MPa		
Note on pressure rating	at medium temperature >70°C: 80 bar / 8 MPa			
Electrical data				
Operating voltage	[V]	18...30 DC; (to SELV/PELV)		
Current consumption	[mA]	< 50		



Flow meter with fast response and display

SBG34KL0FRKG

Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3

Outputs	
Total number of outputs	2
Output signal	switching signal; analog signal; frequency signal; IO-Link
Output function	configurable
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)
Analog current output [mA]	4...20
Max. load [Ω]	500
Short-circuit protection	yes
Overload protection	yes
Frequency of the output [Hz]	0...10000

Measuring/setting range				
Measuring range	0.5...25 l/min	0.03...1.5 m³/h	8...396.5 gph	0.13...6.6 gpm
Display range	0...30 l/min	0...1.8 m³/h	0...475.5 gph	0...7.93 gpm
Resolution	0.01 l/min	0.001 m³/h	0.1 gph	0.01 gpm
Set point SP	0.16...25 l/min	0.01...1.5 m³/h	2.5...396 gph	0.04...6.6 gpm
Reset point rP	0...24.84 l/min	0...1.49 m³/h	0...393.5 gph	0...6.56 gpm
Frequency end point, FEP	1.66...25 l/min	0.1...1.5 m³/h	26.5...396 gph	0.44...6.6 gpm
In steps of	0.02 l/min	0.002 m³/h	0.5 gph	0.01 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			

Temperature monitoring		
Measuring range	-10...100 °C	14...212 °F
Display range	-32...122 °C	-25.6...251.6 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-9.3...100 °C	15.2...212 °F
Reset point rP	-10...99.3 °C	14...210.8 °F
In steps of	0.1 °C	0.2 °F
Frequency start point, FSP	-10...78 °C	14...172.4 °F
Frequency end point, FEP	12...100 °C	53.6...212 °F
Frequency at the end point FRP [Hz]	10...10000	
In steps of [Hz]	10	

Accuracy / deviations	
Flow monitoring	
Accuracy (in the measuring range)	± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)
Repeatability	± 1 % MEW
Temperature monitoring	
Temperature drift	0,029 °C / K



Flow meter with fast response and display

SBG34KL0FRKG

Accuracy	[K]	3 K (25°C; Q > 1 l/min)	
Reaction times			
Flow monitoring			
Response time	[s]	0.01	
Damping process value dAP	[s]	0...5	
In steps of	[s]	0.1	
Damping for the analog output dAA	[s]	0...5	
In steps of	[s]	0.1	
Temperature monitoring			
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)	
Software / programming			
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor		
Interfaces			
Communication interface	IO-Link		
Transmission type	COM2 (38,4 kBaud)		
IO-Link revision	1.1		
SDCI standard	IEC 61131-9 CDV		
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor	
	Function	Device identification	
	Function	Process data variable	
	Function	Device diagnosis	
SIO mode	yes		
Required master port class	A		
Process data analog	2		
Process data binary	2		
Min. process cycle time	[ms]	3.2	
Supported DeviceIDs	Type of operation	DeviceID	
	default	1044	
Operating conditions			
Ambient temperature	[°C]	0...60	
Note on ambient temperature	medium temperature < 80 °C		
	medium temperature < 100 °C: 0...40 °C		
Storage temperature	[°C]	-15...80	
Protection	IP 65; IP 67		
Tests / approvals			
EMC	DIN EN 61000-6-2		
	DIN EN 61000-6-3		
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)	
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)	
MTTF	[years]	145	
UL approval	UL approval number	I005	
	File number UL	E174189	



Flow meter with fast response and display

SBG34KL0FRKG

Pressure equipment directive	sound engineering practice
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Mechanical data

Weight	[g]	997
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection	threaded connection G 3/4 Internal thread	
Switching cycles mechanical	10 million	

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to oil with the following nominal viscosity: 32 cSt, 40 °C ± 3 K	
	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

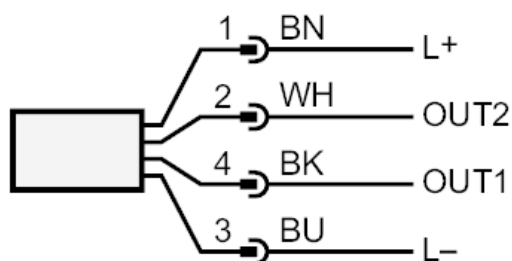




Flow meter with fast response and display

SBG34KL0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

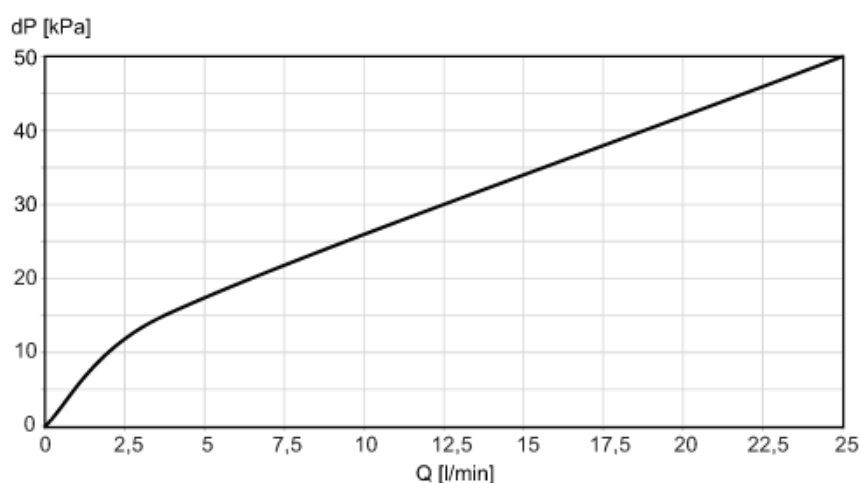
OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
- BN = brown
- BU = blue
- WH = white

Diagrams and graphs



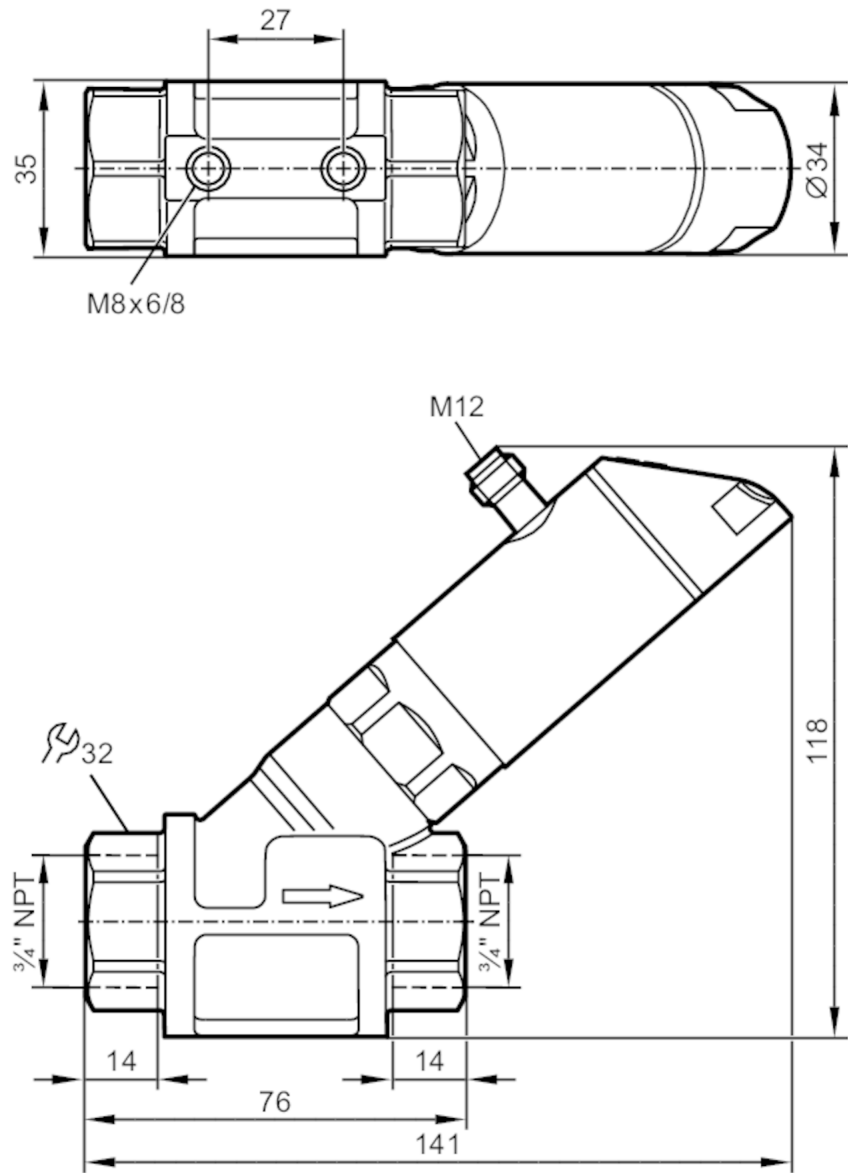
SBN232



Flow meter with fast response and display

SBN34IQ0FRKG

Please note the changed housing design!



Product characteristics		
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	5...240 gph	0.1...4 gpm
Process connection	threaded connection 3/4" NPT Internal thread	
Application		
System	gold-plated contacts	
Application	for industrial applications	
Media	Liquids; water; glycol solutions; Coolants	



Flow meter with fast response and display

SBN34IQ0FRKG

Note on media	oil 1 with viscosity: 10 mm²/s (104 °F)	
	oil 2 with viscosity: 46 mm²/s (104 °F)	
Medium temperature [°F]	14...212	
Pressure rating	40 bar	4 MPa
MAWP (for applications according to CRN) [bar]	40	
Electrical data		
Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	< 50	
Protection class	III	
Reverse polarity protection	yes	
Power-on delay time [s]	< 3	
Inputs / outputs		
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; frequency signal; IO-Link; (configurable)	
Number of digital outputs	2	
Output function	normally open / closed; (configurable)	
Max. voltage drop switching output DC [V]	2	
Permanent current rating of switching output DC [mA]	150; (per output 2 x 200 (...140 °F); 2 x 250 (...104 °F))	
Switching cycles (mechanical)	10 million	
Number of analog outputs	1	
Analog current output [mA]	4...20	
Max. load [Ω]	500	
Short-circuit protection	yes	
Overload protection	yes	
Frequency of the output [Hz]	0...10000	
Measuring/setting range		
Measuring range	5...240 gph	0.1...4 gpm
Display range	0...288 gph	0...4.8 gpm
Resolution	1 gph	0.05 gpm
Set point SP	2...240 gph	0.05...4 gpm
Reset point rP	0...238 gph	0...3.95 gpm
Frequency end point, FEP	16...240 gph	0.25...4 gpm
In steps of	1 gph	0.05 gpm
Frequency at the end point FRP [Hz]	10...10000	
Measuring dynamics	1:50	
Temperature monitoring		
Measuring range [°F]	14...212	
Display range [°F]	-26...252	
Resolution [°F]	2	



Flow meter with fast response and display

SBN34IQ0FRKG

Set point SP	[°F]	16...212
Reset point rP	[°F]	14...210
In steps of	[°F]	2
Frequency start point, FSP	[°F]	14...172
Frequency end point, FEP	[°F]	54...212
Frequency at the end point FRP	[Hz]	10...10000
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		$\pm (4 \% \text{ MW} + 1 \% \text{ MEW})$; ($Q > 0,3 \text{ l/min}$; medium and operating temperature: $+71,6 \text{ °F} \pm 4\text{K}$)
Repeatability		$\pm 1 \% \text{ MEW}$
Temperature monitoring		
Temperature drift		0,9802 °F / K
Accuracy	[K]	3 K (77 °F; $Q > 1 \text{ l/min}$)
Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
Damping for the analog output dAA	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 ($Q > 1 \text{ l/min}$)
Software / programming		
Parameter setting options		hysteresis / window; normally open / closed; switching logic; current output; medium selection; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color
Interfaces		
Communication interface		IO-Link
Transmission type		COM2 (38,4 kBaud)
IO-Link revision		1.1
SDCI standard		IEC 61131-9 CDV
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode		yes
Required master port class		A
Process data analog		2
Process data binary		2
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	565
Operating conditions		
Ambient temperature	[°F]	32...140



Flow meter with fast response and display

SBN34IQ0FRKG

Note on ambient temperature	medium temperature < 176 °F
	medium temperature < 212 °F: 32...104 °F
Storage temperature [°F]	5...176
Protection	IP 65; IP 67

Tests / approvals

EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF [years]		145
UL approval	UL approval number	I005
	File number UL	E174189
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	696
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM
Process connection	threaded connection 3/4" NPT Internal thread

Displays / operating elements

Display	Display unit	3 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.
	All data refer to water (68 °F).
	MW = Measured value
	MEW = Final value of the measuring range
Notes	Please note the changed housing design!
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

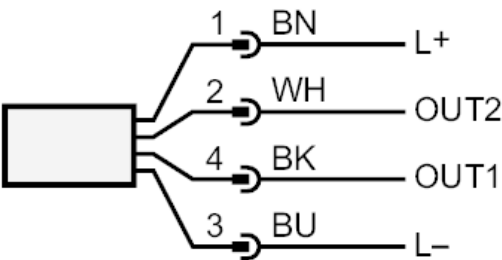




Flow meter with fast response and display

SBN34IQ0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

OUT2:

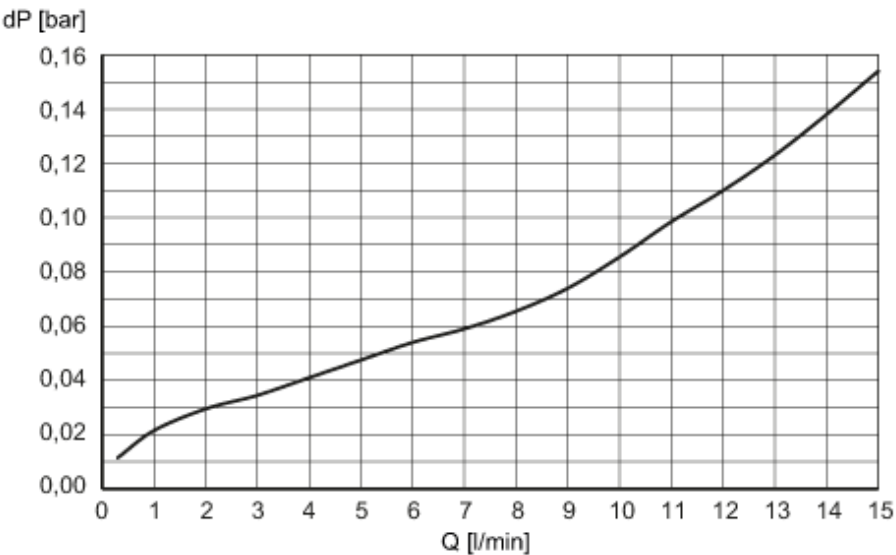
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss
Q volumetric flow quantity

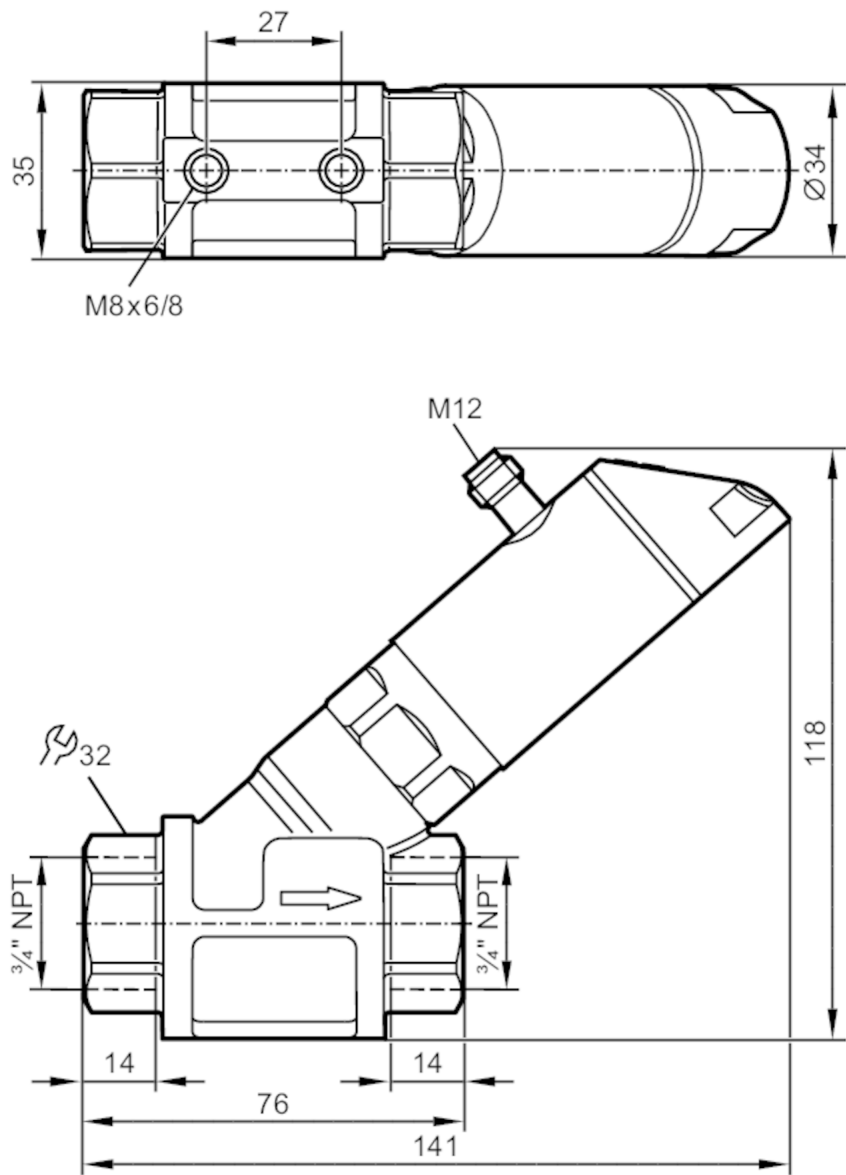
SBN233



Flow meter with fast response and display

SBN34IQ0FRKG

Please note the changed housing design!



CRN



IO-Link

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	7...360 gph	0.1...6 gpm
Process connection	threaded connection 3/4" NPT Internal thread	

Application

System	gold-plated contacts
Application	for industrial applications
Media	Liquids; water; glycol solutions; Coolants



Flow meter with fast response and display

SBN34IQ0FRKG

Note on media	oil 1 with viscosity: 10 mm²/s (104 °F)	
	oil 2 with viscosity: 46 mm²/s (104 °F)	
Medium temperature [°F]	14...212	
Pressure rating	40 bar	4 MPa
MAWP (for applications according to CRN) [bar]	40	
Electrical data		
Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	< 50	
Protection class	III	
Reverse polarity protection	yes	
Power-on delay time [s]	< 3	
Inputs / outputs		
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; frequency signal; IO-Link; (configurable)	
Number of digital outputs	2	
Output function	normally open / closed; (configurable)	
Max. voltage drop switching output DC [V]	2	
Permanent current rating of switching output DC [mA]	150; (per output 2 x 200 (...140 °F); 2 x 250 (...104 °F))	
Switching cycles (mechanical)	10 million	
Number of analog outputs	1	
Analog current output [mA]	4...20	
Max. load [Ω]	500	
Short-circuit protection	yes	
Overload protection	yes	
Frequency of the output [Hz]	0...10000	
Measuring/setting range		
Measuring range	7...360 gph	0.1...6 gpm
Display range	0...432 gph	0...7.2 gpm
Resolution	1 gph	0.05 gpm
Set point SP	2...360 gph	0.05...6 gpm
Reset point rP	0...358 gph	0...5.95 gpm
Frequency end point, FEP	24...360 gph	0.4...6 gpm
In steps of	1 gph	0.05 gpm
Frequency at the end point FRP [Hz]	10...10000	
Measuring dynamics	1:50	
Temperature monitoring		
Measuring range [°F]	14...212	
Display range [°F]	-26...252	
Resolution [°F]	2	



Flow meter with fast response and display

SBN34IQ0FRKG

Set point SP	[°F]	16...212
Reset point rP	[°F]	14...210
In steps of	[°F]	2
Frequency start point, FSP	[°F]	14...172
Frequency end point, FEP	[°F]	54...212
Frequency at the end point FRP	[Hz]	10...10000

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		$\pm (4 \% \text{ MW} + 1 \% \text{ MEW})$; ($Q > 0,5 \text{ l/min}$; medium and operating temperature: $+71,6 \text{ °F} \pm 4\text{K}$)
Repeatability		$\pm 1 \% \text{ MEW}$

Temperature monitoring

Temperature drift		0,9802 °F / K
Accuracy	[K]	3 K (77 °F; $Q > 1 \text{ l/min}$)

Reaction times

Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
Damping for the analog output dAA	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 ($Q > 1 \text{ l/min}$)

Software / programming

Parameter setting options	hysteresis / window; normally open / closed; switching logic; current output; medium selection; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color	
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Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	566

Operating conditions

Ambient temperature	[°F]	32...140
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Flow meter with fast response and display

SBN34IQ0FRKG

Note on ambient temperature	medium temperature < 176 °F
	medium temperature < 212 °F: 32...104 °F
Storage temperature [°F]	5...176
Protection	IP 65; IP 67

Tests / approvals

EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF [years]		145
UL approval	UL approval number	I005
	File number UL	E174189
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	754.4
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM
Process connection	threaded connection 3/4" NPT Internal thread

Displays / operating elements

Display	Display unit	3 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.
	All data refer to water (68 °F).
	MW = Measured value
	MEW = Final value of the measuring range
Notes	Please note the changed housing design!
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

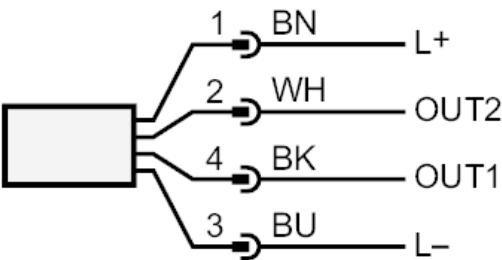




Flow meter with fast response and display

SBN34IQ0FRKG

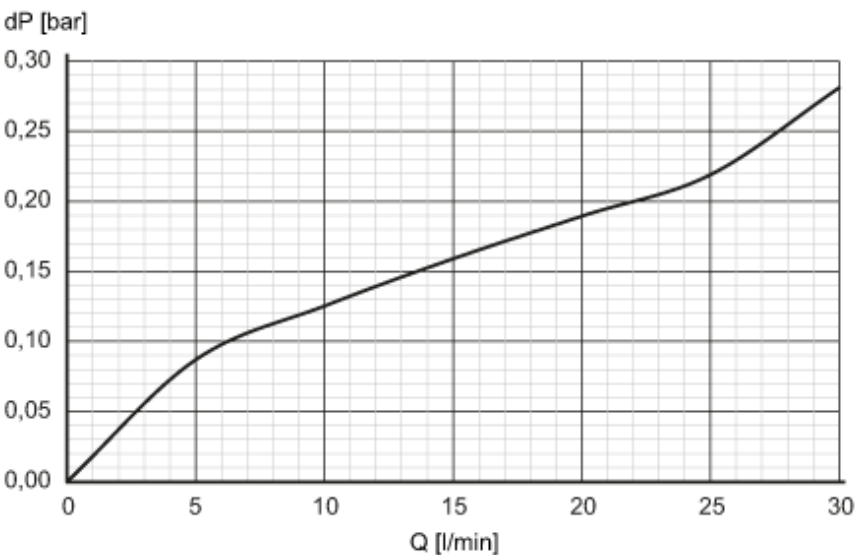
Connection



- OUT1:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - Frequency output Volumetric flow quantity monitoring
 - Frequency output Temperature monitoring
 - IO-Link
- OUT2:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2
- Core colors :
- BK = black
- BN = brown
- BU = blue
- WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

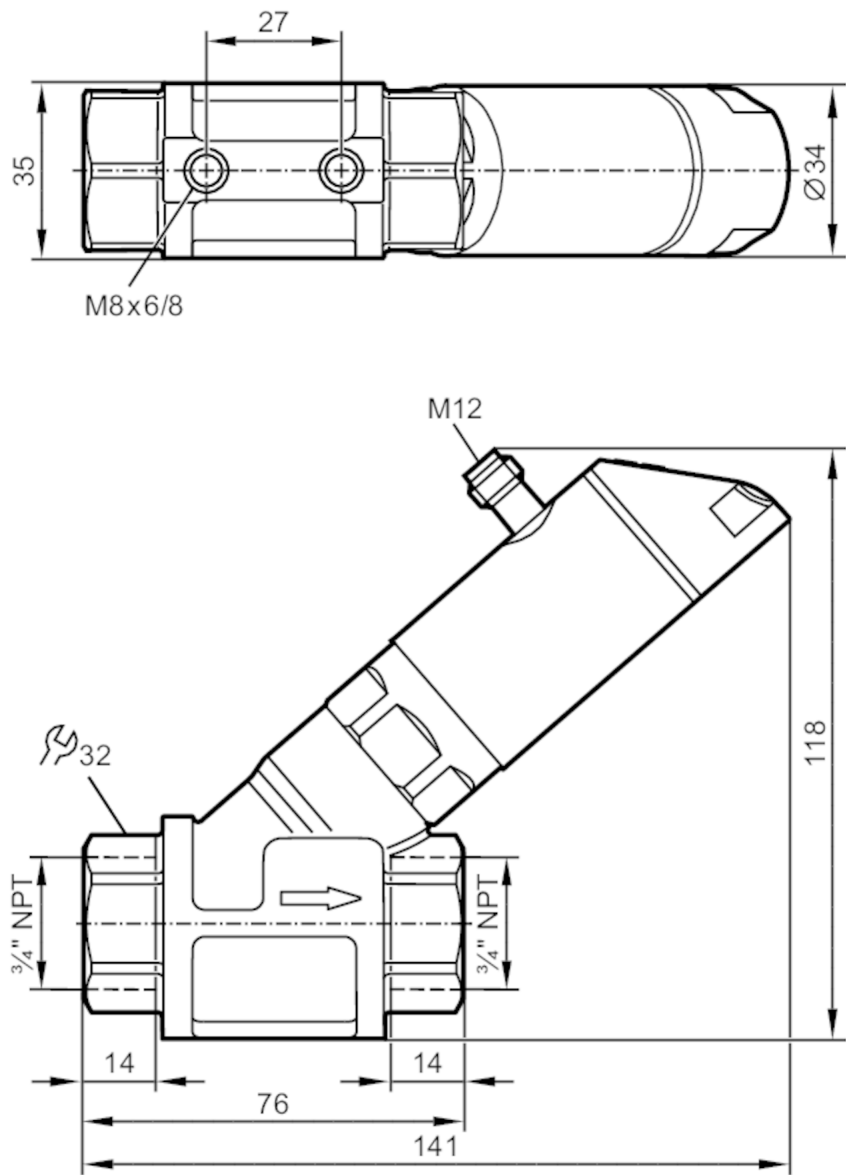
SBN234



Flow meter with fast response and display

SBN34IQ0FRKG

Please note the changed housing design!



CRN



IO-Link

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	10...600 gph	0.2...10 gpm
Process connection	threaded connection 3/4" NPT Internal thread	

Application

System	gold-plated contacts
Application	for industrial applications
Media	Liquids; water; glycol solutions; Coolants



Flow meter with fast response and display

SBN34IQ0FRKG

Note on media	oil 1 with viscosity: 10 mm²/s (104 °F)	
	oil 2 with viscosity: 46 mm²/s (104 °F)	
Medium temperature [°F]	14...212	
Pressure rating	40 bar	4 MPa
MAWP (for applications according to CRN) [bar]	40	
Electrical data		
Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	< 50	
Protection class	III	
Reverse polarity protection	yes	
Power-on delay time [s]	< 3	
Inputs / outputs		
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; frequency signal; IO-Link; (configurable)	
Number of digital outputs	2	
Output function	normally open / closed; (configurable)	
Max. voltage drop switching output DC [V]	2	
Permanent current rating of switching output DC [mA]	150; (per output 2 x 200 (...140 °F); 2 x 250 (...104 °F))	
Switching cycles (mechanical)	10 million	
Number of analog outputs	1	
Analog current output [mA]	4...20	
Max. load [Ω]	500	
Short-circuit protection	yes	
Overload protection	yes	
Frequency of the output [Hz]	0...10000	
Measuring/setting range		
Measuring range	10...600 gph	0.2...10 gpm
Display range	0...720 gph	0...12 gpm
Resolution	5 gph	0.1 gpm
Set point SP	5...600 gph	0.1...10 gpm
Reset point rP	0...595 gph	0...9.9 gpm
Frequency end point, FEP	40...600 gph	0.67...10 gpm
In steps of	5 gph	0.1 gpm
Frequency at the end point FRP [Hz]	10...10000	
Measuring dynamics	1:50	
Temperature monitoring		
Measuring range [°F]	14...212	
Display range [°F]	-26...252	
Resolution [°F]	2	



Flow meter with fast response and display

SBN34IQ0FRKG

Set point SP	[°F]	16...212
In steps of	[°F]	2
Frequency start point, FSP	[°F]	14...172
Frequency end point, FEP	[°F]	54...212
Frequency at the end point FRP	[Hz]	10...10000

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± (4 % MW + 1 % MEW); (Q > 1 l/min; medium and operating temperature: +71,6 °F ± 4K)
Repeatability	± 1 % MEW

Temperature monitoring

Temperature drift	0,9802 °F / K
Accuracy	[K] 3 K (77 °F; Q > 1 l/min)

Reaction times

Flow monitoring

Response time	[s] 0.01
Damping process value dAP	[s] 0...5
Damping for the analog output dAA	[s] 0...5

Temperature monitoring

Dynamic response T05 / T09	[s] T09 = 120 (Q > 1 l/min)
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Software / programming

Parameter setting options	hysteresis / window; normally open / closed; switching logic; current output; medium selection; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color
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Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	567

Operating conditions

Ambient temperature	[°F]	32...140
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Flow meter with fast response and display

SBN34IQ0FRKG

Note on ambient temperature	medium temperature < 176 °F
	medium temperature < 212 °F: 32...104 °F
Storage temperature [°F]	5...176
Protection	IP 65; IP 67

Tests / approvals

EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF [years]		145
UL approval	UL approval number	I005
	File number UL	E174189
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	752.9
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM
Process connection	threaded connection 3/4" NPT Internal thread

Displays / operating elements

Display	Display unit	3 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.
	All data refer to water (68 °F).
	MW = Measured value
	MEW = Final value of the measuring range
Notes	Please note the changed housing design!
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

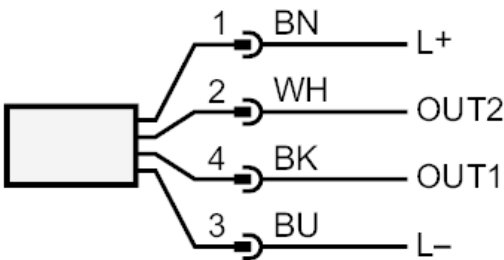




Flow meter with fast response and display

SBN34IQ0FRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

OUT2:

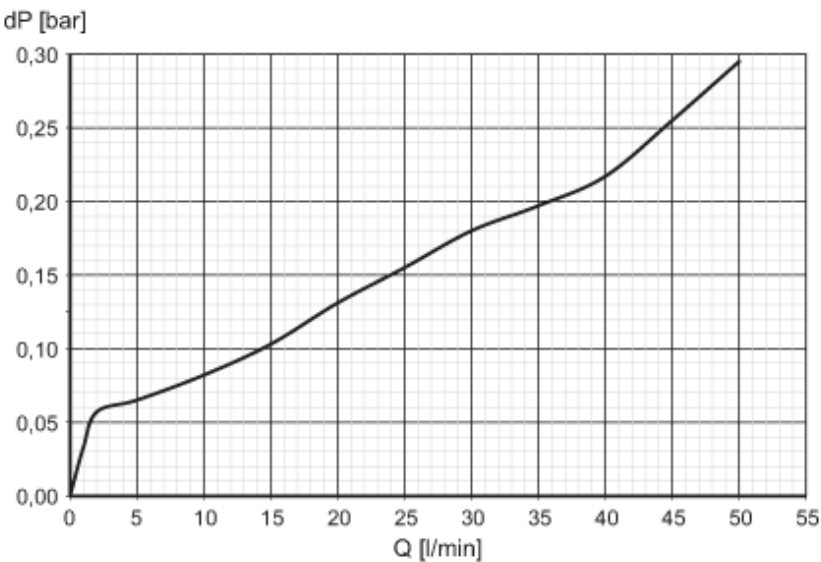
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss

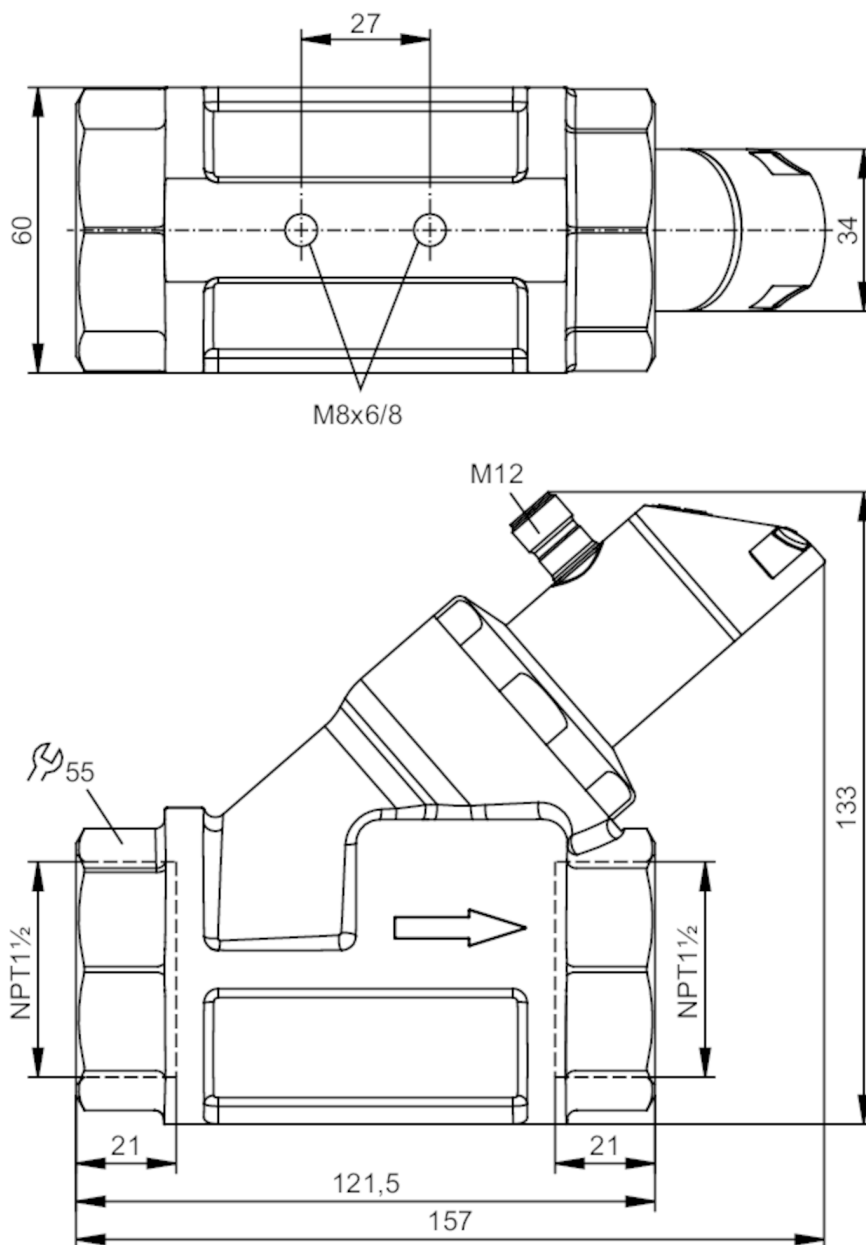


dP Pressure loss
Q volumetric flow quantity

Flow meter with fast response and display

SBN32IF0FRKG

Please note the changed housing design!



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	60...3000 gph	1...50 gpm
Process connection	threaded connection 1 1/2" NPT Internal thread	

Application

System	gold-plated contacts
Application	for industrial applications
Media	Liquids; water; glycol solutions; Coolants



Flow meter with fast response and display

SBN32IF0FRKG

Note on media	oil 1 with viscosity: 10 mm²/s (104 °F)	
	oil 2 with viscosity: 46 mm²/s (104 °F)	
Medium temperature [°F]	14...212	
Pressure rating	25 bar	2.5 MPa
MAWP (for applications according to CRN) [bar]	25	
Electrical data		
Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	< 50	
Protection class	III	
Reverse polarity protection	yes	
Power-on delay time [s]	< 3	
Inputs / outputs		
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; frequency signal; IO-Link; (configurable)	
Number of digital outputs	2	
Output function	normally open / closed; (configurable)	
Max. voltage drop switching output DC [V]	2	
Permanent current rating of switching output DC [mA]	150; (per output 2 x 200 (...140 °F); 2 x 250 (...104 °F))	
Switching cycles (mechanical)	10 million	
Number of analog outputs	1	
Analog current output [mA]	4...20	
Max. load [Ω]	500	
Short-circuit protection	yes	
Overload protection	yes	
Frequency of the output [Hz]	0...10000	
Measuring/setting range		
Measuring range	60...3000 gph	1...50 gpm
Display range	0...3600 gph	0...60 gpm
Resolution	20 gph	0.2 gpm
Set point SP	20...3000 gph	0.4...50 gpm
Reset point rP	0...2980 gph	0...49.6 gpm
Frequency end point, FEP	200...3000 gph	3.4...50 gpm
In steps of	20 gph	0.2 gpm
Frequency at the end point FRP [Hz]	10...10000	
Measuring dynamics	1:50	
Temperature monitoring		
Measuring range [°F]	14...212	
Display range [°F]	-26...252	
Resolution [°F]	2	



Flow meter with fast response and display

SBN32IF0FRKG

Set point SP	[°F]	16...212
Reset point rP	[°F]	14...210
In steps of	[°F]	2
Frequency start point, FSP	[°F]	14...172
Frequency end point, FEP	[°F]	54...212
Frequency at the end point FRP	[Hz]	10...10000

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	$\pm (4 \% \text{ MW} + 1 \% \text{ MEW})$; (Q > 1 l/min; medium and operating temperature: +71,6 °F $\pm$ 4K)
Repeatability	$\pm 1 \% \text{ MEW}$

Temperature monitoring

Temperature drift	0,9802 °F / K
Accuracy	[K] 3 K (77 °F; Q > 1 l/min)

Reaction times

Flow monitoring

Response time	[s]	0.01
Damping process value dAP	[s]	0...5
Damping for the analog output dAA	[s]	0...5

Temperature monitoring

Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
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Software / programming

Parameter setting options	hysteresis / window; normally open / closed; switching logic; current output; medium selection; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color
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Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	680

Operating conditions

Ambient temperature	[°F]	32...140
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Flow meter with fast response and display

SBN32IF0FRKG

Note on ambient temperature	medium temperature < 176 °F
	medium temperature < 212 °F: 32...104 °F
Storage temperature [°F]	5...176
Protection	IP 65; IP 67

Tests / approvals

EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF [years]		170
UL approval	UL approval number	I007
	File number UL	E174189
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	2258.35
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; spacer: POM; O-ring: FKM
Process connection	threaded connection 1 1/2" NPT Internal thread

Displays / operating elements

Display	Display unit	3 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.
	All data refer to water (68 °F).
	MW = Measured value
	MEW = Final value of the measuring range
Notes	Please note the changed housing design!
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

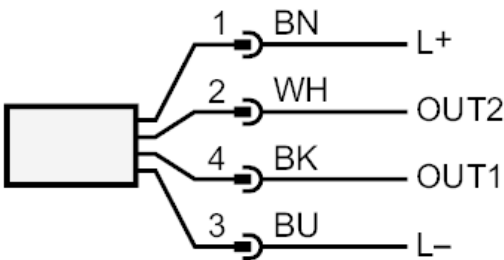




Flow meter with fast response and display

SBN32IF0FRKG

Connection



- OUT1:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - Frequency output Volumetric flow quantity monitoring
 - Frequency output Temperature monitoring
 - IO-Link

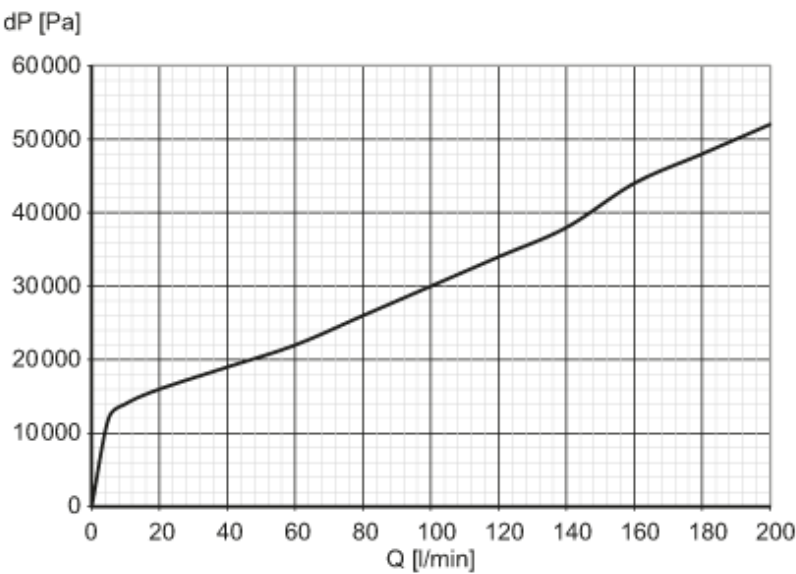
- OUT2:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss
Q volumetric flow quantity

SBY34BF0BPKG/US



Number of inputs and outputs	Number of digital outputs: 1
Process connection	threaded connection 3/4" NPT Internal thread

Media	Liquids; water; glycol solutions; Coolants	
Medium temperature [°F]	32...185	
Pressure rating	40 bar	4 MPa

Operating voltage	[V]	10...30 DC; (to SELV/PELV)
Current consumption	[mA]	< 15



Flow sensor with fast response time

SBY34BF0BPKG/US

Protection class	III
Reverse polarity protection	yes
Inputs / outputs	
Number of inputs and outputs	Number of digital outputs: 1
Outputs	
Total number of outputs	1
Output signal	switching signal
Electrical design	PNP
Number of digital outputs	1
Output function	normally open
Max. voltage drop switching output DC [V]	2.5
Permanent current rating of switching output DC [mA]	100
Short-circuit protection	yes
Overload protection	yes
Measuring/setting range	
Setting range [gpm]	0.26...6.6
Accuracy / deviations	
Repeatability [% of the final value]	1
Hysteresis [gpm]	0,13...0,53
Measuring error [% of the final value]	± 5
Reaction times	
Response time [s]	< 0.01
Operating conditions	
Ambient temperature [°F]	32...140
Storage temperature [°F]	5...176
Protection	IP 65; IP 67
Tests / approvals	
EMC	DIN EN 61000-6-2
	DIN EN 61000-6-3
Shock resistance	DIN EN 60068-2-27
Vibration resistance	DIN EN 60068-2-6
MTTF [years]	3318
Mechanical data	
Weight [g]	578.25
Material	brass chemically nickel-plated; PPS; aluminum anodized; PA
Materials (wetted parts)	stainless steel (1.4310 / 301); stainless steel (1.4301 / 304); PBT; brass chemically nickel-plated; PP; PPS; Polyolefin; O-ring: FKM
Process connection	threaded connection 3/4" NPT Internal thread
Switching cycles mechanical	10 million

SBN333



Flow sensor with fast response time

SBY34BF0BPKG/US

Displays / operating elements

Display	Switching status	4 x LED, yellow
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Accessories

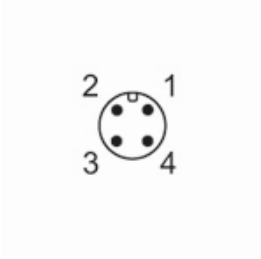
Items supplied	Allen key
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Remarks

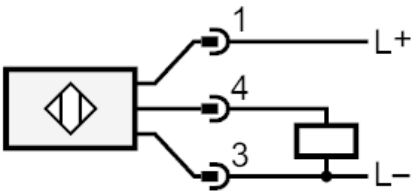
Remarks	Caution Do not turn the cap beyond the maximum value of the setting range.
	All data refer to water (68 °F).
Notes	Please note the changed housing design!
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A



Connection



SBN333

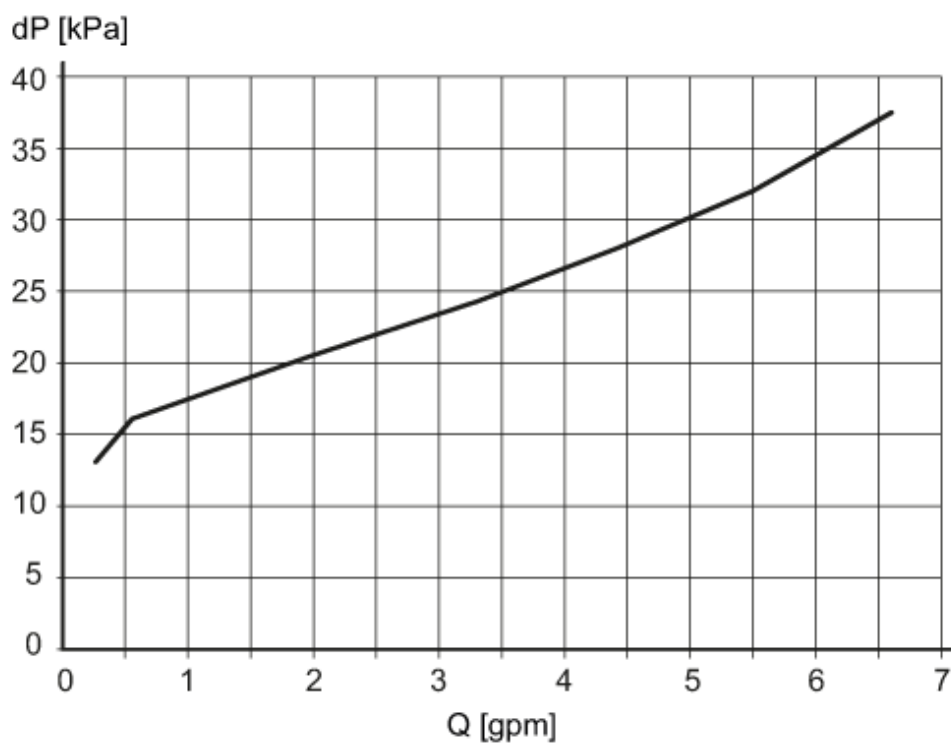


Flow sensor with fast response time

SBY34BF0BPKG/US

Diagrams and graphs

Pressure loss



dP Pressure loss

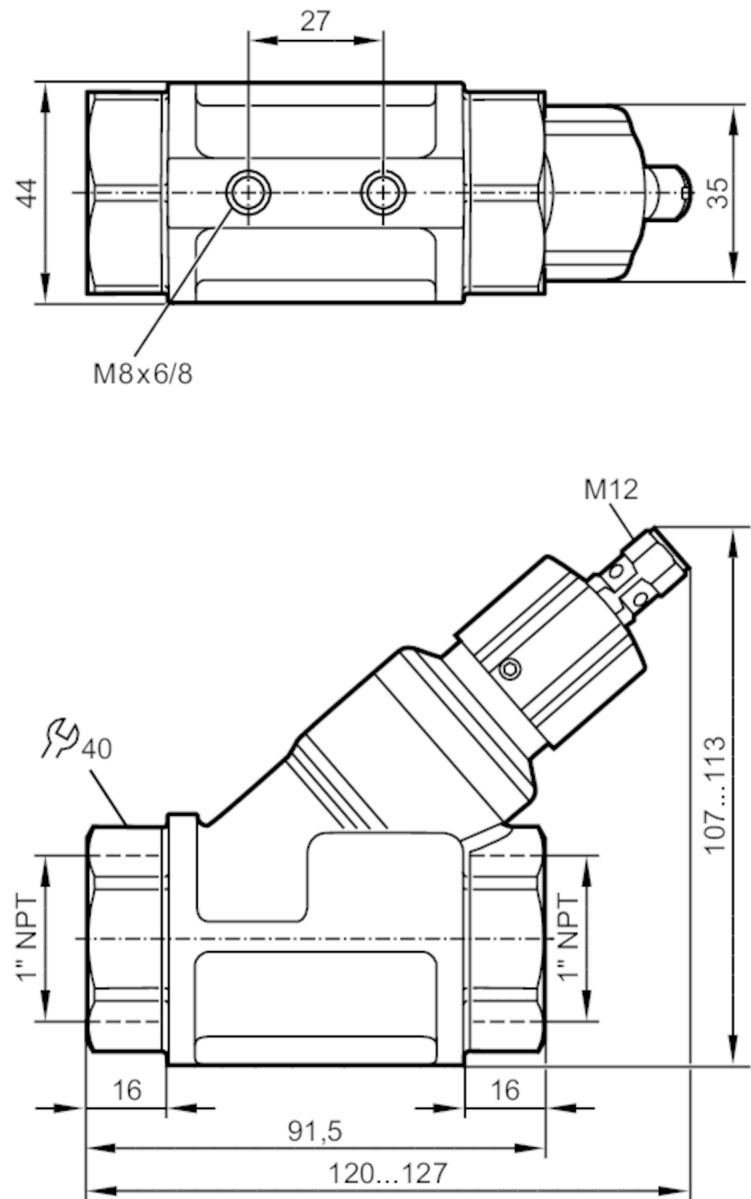
Q volumetric flow quantity



Flow sensor with fast response time

SBY11BF0BPKG/US

Please note the changed housing design!



Product characteristics		
Number of inputs and outputs	Number of digital outputs: 1	
Process connection	threaded connection 1" NPT Internal thread	
Application		
Media	Liquids; water; glycol solutions; Coolants	
Medium temperature	[°F]	32...185
Pressure rating	25 bar	2.5 MPa
Electrical data		
Operating voltage	[V]	10...30 DC; (to SELV/PELV)



Flow sensor with fast response time

SBY11BF0BPKG/US

Current consumption	[mA]	< 15
Protection class		III
Reverse polarity protection		yes
Inputs / outputs		
Number of inputs and outputs		Number of digital outputs: 1
Outputs		
Total number of outputs		1
Output signal		switching signal
Electrical design		PNP
Number of digital outputs		1
Output function		normally open
Max. voltage drop switching output DC	[V]	2.5
Permanent current rating of switching output DC	[mA]	100
Short-circuit protection		yes
Overload protection		yes
Measuring/setting range		
Setting range	[gpm]	1.32...26.4
Accuracy / deviations		
Repeatability		1
	[% of the final value]	
Hysteresis	[gpm]	0.8...1.58
Measuring error		± 5
	[% of the final value]	
Reaction times		
Response time	[s]	< 0.01
Operating conditions		
Ambient temperature	[°F]	32...140
Storage temperature	[°F]	5...176
Protection		IP 65; IP 67
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	3318
Mechanical data		
Weight	[g]	1088.45
Material		brass chemically nickel-plated; PPS; aluminum anodized; PA
Materials (wetted parts)		stainless steel (1.4310 / 301); stainless steel (1.4301 / 304); PBT; brass chemically nickel-plated; PP; PPS; Polyolefin; O-ring: FKM
Process connection		threaded connection 1" NPT Internal thread
Switching cycles mechanical		10 million

SBN346



Flow sensor with fast response time

SBY11BF0BPKG/US

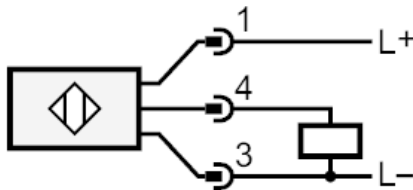
Displays / operating elements		
Display	Switching status	4 x LED, yellow
Accessories		
Items supplied	Allen key	
Remarks		
Remarks	Caution Do not turn the cap beyond the maximum value of the setting range.	
	All data refer to water (68 °F).	
Notes	Please note the changed housing design!	
Pack quantity	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A

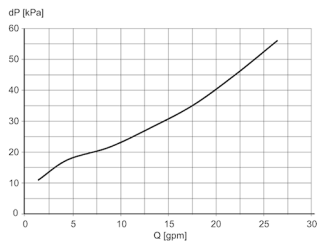


Connection



Diagrams and graphs

Pressure loss



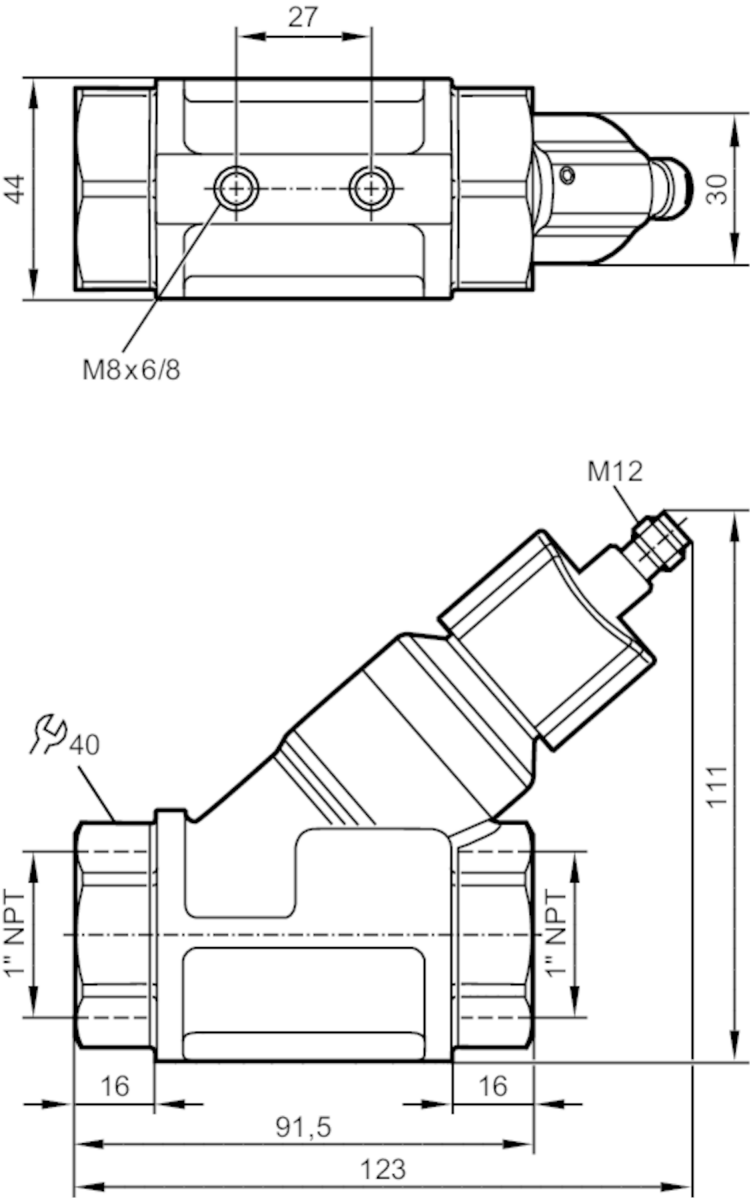
dP Pressure loss
Q volumetric flow quantity



Flow transmitters with fast response time

SBN11HF010KG/US

Please note the changed housing design!



Product characteristics		
Measuring range	[gpm]	0.5...27
Process connection	threaded connection 1" NPT Internal thread	
Application		
Media	Liquids; water; glycol solutions; Coolants	
Medium temperature	[°F]	14...212
Pressure rating	25 bar	2.5 MPa
Electrical data		
Operating voltage	[V]	18...32 DC; (to SELV/PELV)



Flow transmitters with fast response time

SBN11HF010KG/US

Current consumption	[mA]	< 35
Protection class		III
Reverse polarity protection		yes
Outputs		
Output signal		analog signal
Analog current output	[mA]	4...20
Max. load	[Ω]	500
Short-circuit protection		yes
Overload protection		yes
Measuring/setting range		
Measuring range	[gpm]	0.5...27
Accuracy / deviations		
Repeatability		1
	[% of the final value]	
Measuring error		± 5
	[% of the final value]	
Reaction times		
Response time	[s]	< 0.01
Operating conditions		
Ambient temperature	[°F]	32...140
Storage temperature	[°F]	5...176
Protection		IP 65; IP 67
Tests / approvals		
EMC		DIN EN 61000-6-2
		DIN EN 61000-6-3
Shock resistance		DIN EN 60068-2-27
Vibration resistance		DIN EN 60068-2-6
MTTF	[years]	778
Mechanical data		
Weight	[g]	1117.05
Material		brass chemically nickel-plated; PP; stainless steel (1.4404 / 316L); aluminum anodized; PA
Materials (wetted parts)		stainless steel (1.4401 / 316); brass; brass chemically nickel-plated; PP; PPS; O-ring: FKM
Process connection		threaded connection 1" NPT Internal thread
Switching cycles mechanical		10 million
Remarks		
Remarks		Recommendation Use 200 micron filtration
		All data refer to water (68 °F).
Notes		Please note the changed housing design!
Pack quantity		1 pcs.

SBN446



Flow transmitters with fast response time

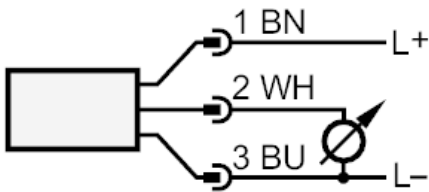
SBN11HF010KG/US

Electrical connection

Connector: 1 x M12; coding: A



Connection



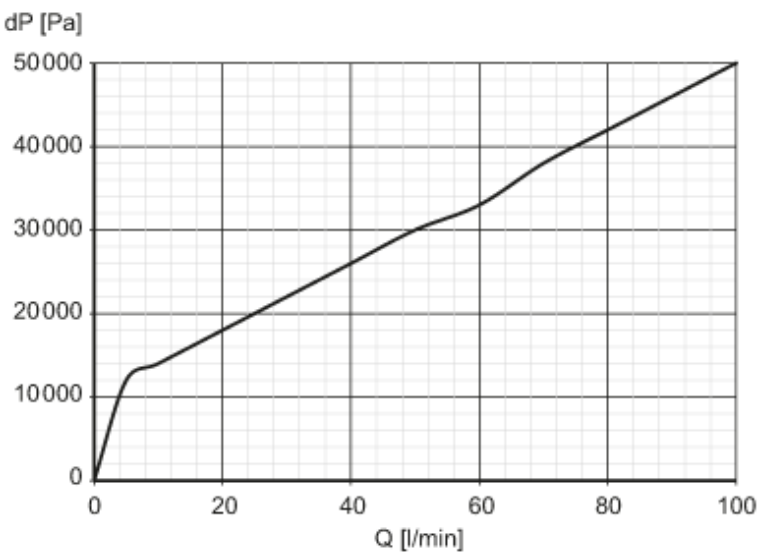
Colors to DIN EN 60947-5-2

Core colors :

BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss

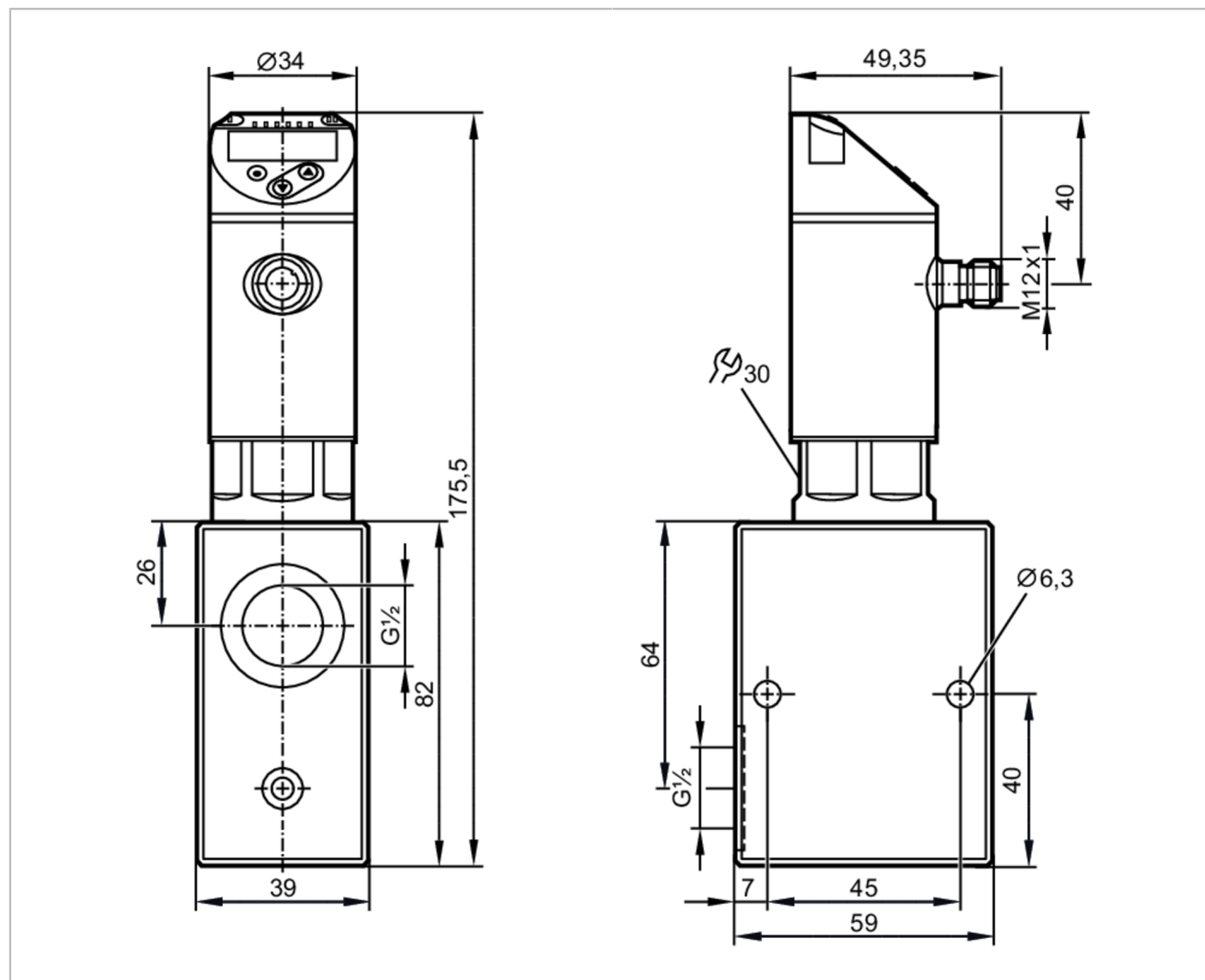
Q volumetric flow quantity

SBZ224



Flow meter with fast response and display

SBZ12IIBFRKG



Product characteristics

Measuring range	1...50 l/min	0.06...3 m³/h	16...793 gph	0.26...13.2 gpm
Process connection	threaded connection G 1/2 Internal thread			

Application

System	gold-plated contacts
Media	Liquids; water; glycol solutions; Coolants
Medium temperature [°C]	-10...100
Pressure rating	200 bar

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	< 50
Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 3



Flow meter with fast response and display

SBZ121IBFRKG

Outputs				
Total number of outputs	2			
Output signal	switching signal; analog signal; frequency signal; IO-Link			
Output function	normally open / closed; (configurable)			
Max. voltage drop switching output DC [V]	2			
Max. current load per output [mA]	150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature)			
Analog current output [mA]	4...20			
Max. load [Ω]	500			
Short-circuit protection	yes			
Overload protection	yes			
Frequency of the output [Hz]	0...10000			
Measuring/setting range				
Measuring range	1...50 l/min	0.06...3 m³/h	16...793 gph	0.26...13.2 gpm
Display range	0...60 l/min	0...3.6 m³/h	0...951 gph	0...15.86 gpm
Resolution	0.01 l/min	0.001 m³/h	1 gph	0.01 gpm
Set point SP	0.35...50 l/min	0.02...3 m³/h	5...793 gph	0.08...13.2 gpm
Reset point rP	0...49.65 l/min	0...2.98 m³/h	0...787 gph	0...13.12 gpm
Frequency end point, FEP	3.35...50 l/min	0.2...3 m³/h	53...793 gph	0.88...13.2 gpm
In steps of	0.05 l/min	0.005 m³/h	1 gph	0.02 gpm
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Measuring dynamics	1:50			
Temperature monitoring				
Measuring range	-10...100 °C		14...212 °F	
Display range	-32...122 °C		-25.6...251.6 °F	
Resolution	0.1 °C		0.1 °F	
Set point SP	-9.3...100 °C		15.2...212 °F	
Reset point rP	-10...99.3 °C		14...210.8 °F	
In steps of	0.1 °C		0.2 °F	
Frequency start point, FSP	-10...78 °C		14...172.4 °F	
Frequency end point, FEP	12...100 °C		53.6...212 °F	
Frequency at the end point FRP [Hz]	10...10000			
In steps of [Hz]	10			
Accuracy / deviations				
Flow monitoring				
Accuracy (in the measuring range)	± (4 % MW + 1 % MEW); (Q > 1 l/min; medium and operating temperature: + 22 °C ± 4K; Mounting orientation upright)			
Repeatability	± 1 % MEW			
Temperature monitoring				
Temperature drift	0,029 °C / K			
Accuracy [K]	3 K (25 °C; Q > 1 l/min)			



Flow meter with fast response and display

SBZ12IIBFRKG

Reaction times		
Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
In steps of	[s]	0.1
Damping for the analog output dAA	[s]	0...5
In steps of	[s]	0.1
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)
Software / programming		
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; calibration factor	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Process data binary	2	
Min. process cycle time	[ms]	3.2
Supported DeviceIDs	Type of operation	DeviceID
	default	1447
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C	
	medium temperature < 100 °C: 0...40 °C	
Storage temperature	[°C]	-15...80
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	170
Pressure equipment directive	sound engineering practice	
Mechanical data		
Weight	[g]	1734.3

SBZ224



Flow meter with fast response and display

SBZ121IBFRKG

Housing	rectangular
Dimensions [mm]	175.5 x 59 x 39
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC
Materials (wetted parts)	stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); O-ring: FKM
Process connection	threaded connection G 1/2 Internal thread
Switching cycles mechanical	10 million

Displays / operating elements

Display	Display unit	6 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green alternating indication 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.
	All data refer to water (20 °C).
	Mounting orientation upright
	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated

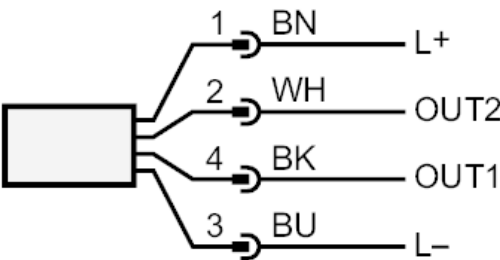




Flow meter with fast response and display

SBZ12IIBFRKG

Connection



OUT1:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

OUT2:

- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

