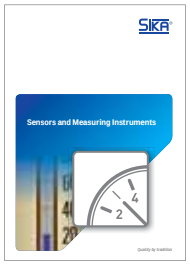
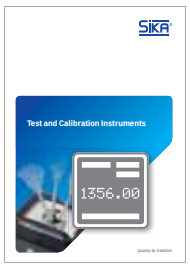
Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Киргизия (996)312-96-26-47
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Казахстан (772)734-952-31
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Таджикистан (992)427-82-92-69
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

https://sika.nt-rt.ru/ || skx@nt-rt.ru

Measuring Instruments for Marine Applications

Quality by tradition





Mechanical measuring instruments

Electronic monitoring systems and temperature sensors

Test and calibration equipment

Force and weight measuring instruments

Flow measurement

Safety and precision on all seas

Mechanical measuring instruments

Electronic monitoring systems and temperature sensors

Test and calibration equipment

Force and weight measuring instruments

Flow measurement

A name which means reliability

For more than 60 years SIKA has gained experience in the field of measuring technique for the marine industry. Everything started with the famous SIKA Thermometer, which is still an ongoing story of success. Precision, quality and life time of SIKA thermometers still set the global standard for V-shape glass thermometers. Over the years, SIKA has developed a wide range of measurement and calibration solutions for marine applications.

Today, all well-known European makers of Diesel engines and their world-wide licenses as well as many shipyards are our customers. All products shown in this catalogue are suitable for use in the marine field. Most of them are approved by Germanischer Lloyd and other classification organisations.

- → SIKA thermometers
- → SIKA glass inserts for replacement
- → Diesel engine protection tubes
- → Diesel engine thermometers
- → KombiTemp® dial thermometers
- → Bimetal dial thermometers
- → Pressure gauges

MECHANICAL MEASURING INSTRUMENTS →

SIKA thermometers

SIKA thermometer type 271 B, straight

- Nominal size 200 mm
- Immersion tube Ø 10 mm, brass
- Connection thread: G½, brass
- DIN 16189 B
- DNV GL type approval
  Certificate No. 94 65494 HH
- Original SIKA thermometer, made in Germany

Order code	SIKA	ISSA	IMPA
Display range [°C]	**Immersion tube length (l_1) 63 mm**		
-30...50	2712351106321	61.110.10	65 19 01
0...60	2712061106321	61.110.16	65 19 28
0...100	2712101106321	61.110.22	65 19 04
0...120	2712121106321	61.110.28	65 19 31
0...160	2712161106321	61.110.34	65 19 07
0...200	2712201106321		65 19 10
0...250	2712251106321	61.110.40	
0...300	2712301206321	61.110.50	65 20 53
0...600	2717601206322	61.110.80	65 19 22
Display range [°C]	**Immersion tube length (l_1) 100 mm**		
-30...50	2712351110021	61.110.11	65 19 02
0...60	2712061110021	61.110.17	65 19 29
0...100	2712101110021	61.110.23	65 19 05
0...120	2712121110021	61.110.29	65 19 32
0...160	2712161110021	61.100.83	65 19 08
0...200	2712201110021		65 19 11
0...250	2712251110021	61.100.41	
0...300	2712301210021	61.110.51	65 19 54
0...600	2712601210022	61.110.81	65 19 23
Display range [°C]	**Immersion tube length (l_1) 160 mm**		
-30...50	2712351116021	61.110.12	65 19 03
0...60	2712061116021	61.110.18	65 19 30
0...100	2712101116021	61.110.24	65 19 06
0...120	2712121116021	61.110.30	65 19 33
0...160	2712161116021	61.110.36	65 19 09
0...200	2712201116021		65 19 12
0...250	2712251116021	61.100.42	
0...300	2712301216021	61.110.52	65 19 55
0...600	2712601216022	61.110.82	65 19 24

Also available with connection threads:
G¾, M20 x 1.5, M27 x 2, ½ NPT

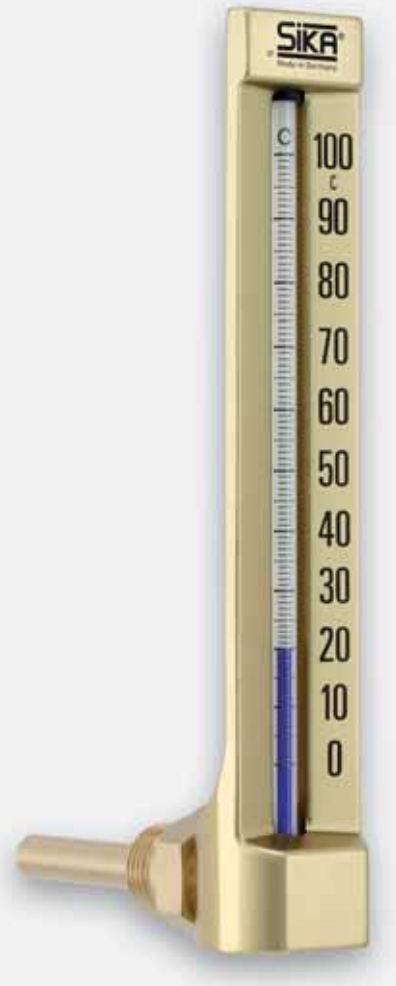
Type 271 B

Legal notice

According to regulation no. 847/2012 of European Union, thermometers with mercury filling are only bound for export outside the EU. Placing them on the market inside the EU after April 10th, 2014 is prohibited. Concerned are industrial thermometers and glass inserts with display ranges 0...300°C and higher, only. In this case, we are recommending the use of our dial or digital thermometers.

SIKA thermometer type 272 B, angle 90°

Type 272 B



- Nominal size 200 mm
- Immersion tube Ø 10 mm, brass
- Connection thread: G½, brass
- DIN 16190 B
- DNV GL type approval
  Certificate No. 94 65494 HH
- Original SIKA thermometer, made in Germany

Order code	SIKA	ISSA	IMPA
Display range [°C]	**Immersion tube length (l_1) 63 mm**		
-30...50	2722351106321	61.113.05	65 20 01
0...60	2722061106321	61.113.08	65 20 28
0...100	2722101106321	61.113.11	65 20 04
0...120	2722121106321	61.113.14	62 20 31
0...160	2722161106321	61.113.17	65 20 07
0...200	2722201106321		65 20 10
0...250	2722251106321	61.113.20	
0...300	2722301206321	61.113.25	65 20 13
0...600	2722601206322	61.113.40	65 20 22
Display range [°C]	**Immersion tube length (l_1) 100 mm**		
-30...50	2722351110021	61.113.06	65 20 02
0...60	2722061110021	61.113.09	62 20 29
0...100	2722101110021	61.113.12	65 20 05
0...120	2722121110021	61.113.15	65 20 32
0...160	2722161110021	61.113.18	65 20 08
0...200	2722201110021		65 20 11
0...250	2722251110021	61.113.21	
0...300	2722301210021	61.113.26	65 20 14
0...600	2722601210022	61.113.41	65 20 23
Display range [°C]	**Immersion tube length (l_1) 160 mm**		
-30...50	2722351116021	61.113.07	65 20 03
0...60	2722061116021	61.113.10	65 20 30
0...100	2722101116021	61.113.13	65 20 06
0...120	2722121116021	61.113.16	65 20 33
0...160	2722161116021	61.113.19	65 20 09
0...200	2722201106021		65 20 12
0...250	2722251116021	61.113.22	
0...300	2722301216021	61.113.27	65 20 15
0...600	2722601216022	61.113.42	65 20 24

Also available with connection threads:
G¾, M20 x 1.5, M27 x 2, ½ NPT

Legal notice

According to regulation no. 847/2012 of European Union, thermometers with mercury filling are only bound for export outside the EU. Placing them on the market inside the EU after April 10th, 2014 is prohibited. Concerned are industrial thermometers and glass inserts with display ranges 0...300°C and higher, only. In this case, we are recommending the use of our dial or digital thermometers.

SIKA thermometer type 291 B, straight

- Nominal size 150 mm
- Immersion tube Ø 10 mm, brass
- Connection thread: G½, brass
- DIN 16185 B
- DNV GL type approval
  Certificate No. 94 65494 HH
- Original SIKA thermometer, made in Germany

Order code	SIKA	ISSA	IMPA
Display range [°C]	**Immersion tube length (l_1) 63 mm**		
-30...50	2912351106321	61.111.10	65 19 41
0...60	2912061106321	61.111.16	65 19 68
0...100	2912101106321	61.111.22	65 19 44
0...120	2912121106321	61.111.28	65 19 71
0...160	2912161106321	61.111.34	65 19 47
0...200	2912201106321		65 19 50
0...250	2912251106321	61.111.40	
0...300	2912301206321	61.111.50	65 19 53
0...600	2912601206322	61.111.80	65 19 62
Display range [°C]	**Immersion tube length (l_1) 100 mm**		
-30...50	2912351110021	61.111.11	65 19 42
0...60	2912061110021	61.111.17	65 19 69
0...100	2912101110021	61.111.23	65 19 45
0...120	2912121110021	61.111.29	65 19 72
0...160	2912161110021	61.111.35	65 19 48
0...200	2912201110021		65 19 51
0...250	2912251110021	61.111.41	
0...300	2912301210021	61.111.51	65 19 54
0...600	2912601210022	61.110.81	65 19 63
Display range [°C]	**Immersion tube length (l_1) 160 mm**		
-30...50	2912351116021	61.111.12	65 19 43
0...60	2912061116021	61.111.18	65 19 70
0...100	2912101116021	61.111.24	65 19 46
0...120	2912121116021	61.111.30	65 19 73
0...160	2912161116021	61.111.36	65 19 49
0...200	2912201116021		65 19 52
0...250	2912251116021	61.111.42	
0...300	2912301216021	61.111.52	65 19 55
0...600	2912601216022	61.111.82	65 19 64

Also available with connection threads:
G¾, M20 x 1.5, M27 x 2, ½ NPT

Type 291 B

Legal notice

According to regulation no. 847/2012 of European Union, thermometers with mercury filling are only bound for export outside the EU. Placing them on the market inside the EU after April 10th, 2014 is prohibited. Concerned are industrial thermometers and glass inserts with display ranges 0...300°C and higher, only. In this case, we are recommending the use of our dial or digital thermometers.

SIKA thermometer type 292 B, angle 90°

Type 292 B

- Nominal size 150 mm
- Immersion tube Ø 10 mm, brass
- Connection thread: G½, brass
- DIN 16186 B
- DNV GL type approval
  Certificate No. 94 65494 HH
- Original SIKA thermometer, made in Germany

Order code	SIKA	ISSA	IMPA
Display range [°C]	**Immersion tube length (l_1) 63 mm**		
-30...50	2922351106321	61.114.08	65 20 41
0...60	2922061106321	61.114.13	65 20 68
0...100	2922101106321	61.114.18	65 20 44
0...120	2922121106321	61.114.23	65 20 71
0...160	2922161106321	61.114.28	65 20 47
0...200	2922201106321		65 20 50
0...250	2922251106321	61.114.33	
0...300	2922301206321	61.114.38	65 20 53
0...600	2922 601206322	61.114.43	65 20 62
Display range [°C]	**Immersion tube length (l_1) 100 mm**		
-30...50	2922351110021	61.114.09	65 20 42
0...60	2922061110021	61.114.14	65 20 69
0...100	2922101110021	61.114.19	65 20 45
0...120	2922121110021	61.114.24	65 20 72
0...160	2922161110021	61.114.29	65 20 48
0...200	2922201110021		65 20 51
0...250	2922251110021	61.114.34	
0...300	2922301210021	61.114.39	65 20 54
0...600	2922601210022	61 114.44	65 20 63
Display range [°C]	**Immersion tube length (l_1) 160 mm**		
-30...50	2922351116021	61.114.10	65 20 43
0...60	2922061116021	61.114.15	65 20 70
0...100	2922101116021	61.114.20	65 20 46
0...120	2922121116021	61.114.25	65 20 73
0...160	2922161116021	61.114.30	65 20 49
0...200	2922201116021		65 20 52
0...250	2922251116021	61.114.35	
0...300	2922301216021	61.114.40	65 20 55
0...600	2922601216022	61.114.45	65 20 64

Also available with connection threads:
G¾, M20 x 1.5, M27 x 2, ½ NPT

Legal notice

According to regulation no. 847/2012 of European Union, thermometers with mercury filling are only bound for export outside the EU. Placing them on the market inside the EU after April 10th, 2014 is prohibited. Concerned are industrial thermometers and glass inserts with display ranges 0...300°C and higher, only. In this case, we are recommending the use of our dial or digital thermometers.

SIKA thermometer type 174 B, straight

- Nominal size 110 mm
- Immersion tube Ø 10 mm, brass
- Connection thread: G½, brass
- DIN 16181 B
- DNV GL type approval
  Certificate No. 94 65494 HH
- Original SIKA thermometer, made in Germany

Type 174 B

MERCURY-FREE

Order code	SIKA	ISSA	IMPA
Display range [°C]	**Immersion tube length (l_1) 30 mm**		
-30...50	1742351103021		
0...60	1742061103021		
0...100	1742101103021		65 19 81
0...120	1742121103021		
0...160	1742161103021		
0...200	1742201103021		65 19 86
Display range [°C]	**Immersion tube length (l_1) 40 mm**		
-30...50	1742351104021		
0...60	1742061104021		
0...100	1742101104021		65 19 82
0...120	1742121104021		
0...160	1742161104021		
0...200	1742201104021		65 19 87
Display range [°C]	**Immersion tube length (l_1) 63 mm**		
-30...50	1742351106321	61.112.07	
0...60	1742061106321	61.112.13	
0...100	1742101106321	61.112.19	65 19 83
0...120	1742121106321	61.112.25	
0...160	1742161106321	61.112.31	
0...200	1742201106321		65 19 88
Display range [°C]	**Immersion tube length (l_1) 100 mm**		
-30...50	1742351110021	61.112.08	
0...60	1742061110021	61.112.14	
0...100	1742101110021	61.112.20	65 19 84
0...120	1742121110021	61.112.26	
0...160	1742161110021	61.112.32	
0...200	1742201110021		65 19 89
Display range [°C]	**Immersion tube length (l_1) 160 mm**		
-30...50	1742351116021	61.112.09	
0...60	1742061116021	61.112.15	
0...100	1742101116021	61.112.21	65 19 85
0...120	1742121116021	61.112.27	
0...160	1742161116021	61.112.33	
0...200	1742201116021		65 19 90

Also available with connection threads:
G¾, M20 x 1.5, M27 x 2, ½ NPT

SIKA thermometer type 175 B, angle 90°

Order code	SIKA	ISSA	IMPA
Display range [°C]	**Immersion tube length (l_1) 30 mm**		
-30...50	1752351103021		
0...60	1752061103021		
0...100	1752101103021		65 20 81
0...120	1752121103021		
0...160	1752161103021		
0...200	1752201103021		65 20 86
Display range [°C]	**Immersion tube length (l_1) 40 mm**		
-30...50	1752351104021	61.115.06	
0...60	1752061104021	61.115.11	
0...100	1752101104021	61.115.16	65 20 82
0...120	1752121104021	61.115.21	
0...160	1752161104021	61.115.26	
0...200	1752201104021		65 20 87
Display range [°C]	**Immersion tube length (l_1) 63 mm**		
-30...50	1752351106321	61.115.08	
0...60	1752061106321	61.115.13	
0...100	1752101106321	61.115.18	65 20 83
0...120	1752121106321	61.115.23	
0...160	1752161106321	61.115.28	
0...200	1752201106321		65 20 88
Display range [°C]	**Immersion tube length (l_1) 100 mm**		
-30...50	1752351110021	61.115.09	
0...60	1752061110021	61.115.14	
0...100	1752101110021	61.115.19	65 20 84
0...120	1752121110021	61.115.24	
0...160	1752161110021	61.115.29	
0...200	1752201110021		65 20 89
Display range [°C]	**Immersion tube length (l_1) 160 mm**		
-30...50	1752351116021	61.115.10	
0...60	1752061116021	61.115.15	
0...100	1752101116021	61.115.20	65 20 85
0...120	1752121116021	61.115.25	
0...160	1752161116021	61.115.30	
0...200	1752201116021		65 20 90

Also available with connection threads:
G¾, M20 x 1.5, M27 x 2, ½ NPT

- Nominal size 110 mm
- Immersion tube Ø 10 mm, brass
- Connection thread: G½, brass
- DIN 16182 B
- DNV GL type approval
  Certificate No. 94 65494 HH
- Original SIKA thermometer, made in Germany

Type 175 B

MERCURY-FREE

SIKA glass inserts for replacement

SIKA glass inserts for thermometers

Order example	174	2	35	1	1	030
Thermometer type						
Straight	174					
	291					
	271					
Angle 90°	175					
	292					
	272					
Immersion tube						
Type B		2				
Display ranges						
-30...50 °C			35			
0...60 °C			06			
0...100 °C			10			
0...120 °C			12			
0...160 °C			16			
0...200 °C			20			
0...250 °C			25			
0...300 °C			30			
0...600 °C			60			
Scale						
Celsius (°C)				1		
Celsius + Fahrenheit (°C + °F)				2		
Filling						
Standard fluid for ranges up to 250 °C		Fü			1	
Mercury for ranges above 250 °C		HG			2	
Immersion tube length						
Immersion tube length l1 in mm						030
(according to complete thermometers)						040
for types B with fixed male connection thread						063
						100
						160
						250

Spare glass inserts

Spare glass inserts include required all mounting parts.

Please notice:
The required order specification is printed on the backside of the insert

Quality by Tradition - Made in Germany

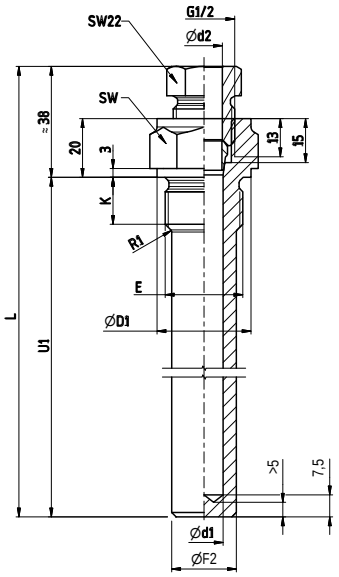
Since 1901 we at SIKA Dr. Siebert and Kühn have been producing precision measuring and control instruments. Mechanical parts as well as glass inserts of our standard types are produced in automated manufacturing processes. However, the glass inserts of special versions, e. g. high temperature versions are still manufactured by our glassblowers in traditional handcraft. Thanks to our long year experience and proven manufacturing processes in Germany, we are in the position to guarantee best quality. SIKA thermometers meet highest demands in precision as well as in mechanical stability. Original SIKA thermometers simply last longer than most others.

Diesel engine protection tubes

As an accessory to the diesel engine thermometer

Protection tubes are applied to protect thermometer immersion tubes against difficult chemical and / or mechanical process conditions. Furthermore it is far easier to dismount a thermometer e.g. for repair or other reasons when a protection tube remains at the measuring point.

SIKA ZVFG protection tubes with integrated compression fitting have been developed as a solution for Diesel engine dial thermometers. They are machined from solid material; their integrated compression fitting minimises the risk of breakage during operation.



Type ZVFG

Order example	ZVFG	100	2	3	4	M
Order code starting with	ZVFG					
Protection tube length (U1)						
100 mm		100				
135 mm		135				
160 mm		160				
200 mm		200				
250 mm		250				
300 mm		300				
Connection thread						
G½			2			
G¾			3			
Material						
Stainless steel 1.4571				3		
Thermometer immersion tube						
Ø 12 mm					4	
Ø 13 mm					6	
Male thread						M

Please ask for customised specifications

Diesel engine dial thermometers

Local reading dial thermometers

This range of instruments includes special precision dial thermometers optimised for marine engines, based on the nitrogen gas expansion principle.

Typical applications

- Cooling water
- Turbo charged air
- Lubricating oil
- Exhaust gas

Diesel engine thermometers – Quality lasts longer

A problem to all Diesel engines is vibration, which reduces the life time of mechanical thermometers. SIKA has overcome this problem with their Diesel engine thermometer. This thermometer has a special mechanical sensor design, optimised for the use at marine engines. Furthermore, the case contains a shock absorbing liquid of high viscosity, which protects the internal meter movement against heavy vibration and at the same time lubricates internal parts and avoids corrosion. SIKA Diesel Engine Thermometers therefore last longer than many others.

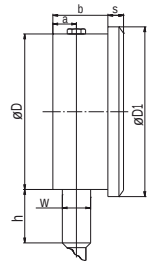
Type 1312

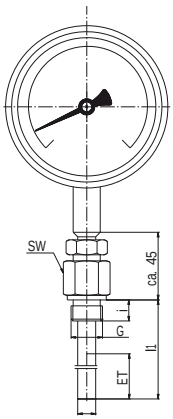
Technical data	
Display range*	0...100 °C 0...120 °C 0...160 °C 0...250 °C 50...650 °C
Nominal size, material	63, 80 or 100 mm, stainless steel 1.4301
Dial	White, black markings (up to 250 °C) Silver coloured, black markings (above 250 °C)
System	Nitrogen filled system
Immersion tube	Stainless steel
Standard immersion tube lengths (l_1)	100, 135, 160, 200, 250, 300, 400 mm
Thread connection	Adjustable compression fitting
Thread size	G½, G¾
Accuracy (EN 13190)	Class 1.0
Approval	DNV GL type approval, Certificate No. 12 02698 HH

* Dual scale °C and °F available on request

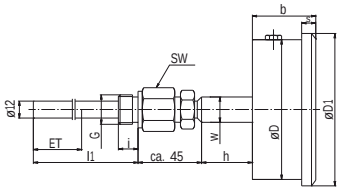
Dimensions

Bottom connection
Type 1312 / type 8312 / type 6312





Central back connection
Type 1372 / type 8372 / type 6372



NS	a	b	D	D1	h	s	w
Type 6312							
63	12	39	62	67	60	8	12
Type 6372							
63	12	39	62	67	34	8	18
Type 8312, type 8372							
80	15	42	79	86	34	8	18
Type 1312, type 1372							
100	15	43	99	106	34	10	18

Order code

Oder example	Z	63	12	A	10	1	100	0	0	3
Nominal size										
63 mm		63								
80 mm		83								
100 mm		13								
Type										
Bottom connection			12							
Central back connection			72							
Connection type										
Connection type A, plain immersion tube				A						
Connection type Ak, adjustable compression fitting				M						
Scale range										
0...100 °C					10					
0...120 °C					12					
0...160 °C					16					
0...250 °C					25					
50...650 °C					56					
Temperature unit										
°C*						1				
Immersion tube length l_1 and L										
Immersion tube length l_1	Immersion tube length L									
100 mm	145 mm						100			
135 mm	180 mm						135			
160 mm	205 mm						160			
200 mm	245 mm						200			
250 mm	295 mm						250			
300 mm	345 mm						300			
400 mm	445 mm						400			
Connection thread										
Without - plain immersion tube, type A								0		
G½								2		
G¾								3		
½ NPT								B		
¾ NPT								C		
M20 x 1,5								7		
Connection thread material										
Without - plain immersion tube, type A									0	
Steel									2	
Immersion tube diameter										
10 mm (for NS 63 and NS 80 mm only)										3
12 mm										4
13 mm										6

* Double scale °C and °F available on request.

Please use our order numbers for standard types or provide full technical specification in case of special non-standard thermometers

Remote reading dial thermometers

SIKA remote reading Diesel engine thermometers are based on the same system as our well-known direct mount thermometers. These instruments are available adapted to the customers present needs with any of the optional accessories: wall bracket, rear flange or U-clamp fixing for panel mounting.

Typical applications

- Cooling water
- Turbo charged air
- Lubricating oil
- Exhaust gas

Remote reading diesel engine thermometer

The remote reading versions are of the same mechanical sensor design as the local reading thermometers. The case is filled with a shock absorbing liquid of high viscosity.
Furthermore, the capillary line is protected by a stable stainless steel spiral protection. SIKA remote Diesel Engine Thermometers – vibration optimised quality for rough environments, ideal for the use at marine Diesel engines.

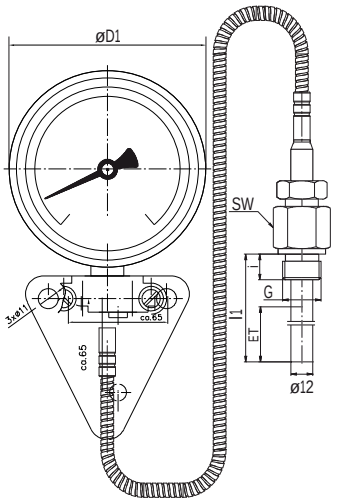
Type 321

Technical data	
Display range*	0...100 °C 0...120 °C 0...160 °C 0...250 °C 50...650 °C
Nominal size, material	80 or 100 mm, stainless steel 1.4301
Dial	Silver coloured, black markings
System	Nitrogen filled system
Immersion tube	Stainless steel
Standard immersion tube length (l_1)	100, 135, 160, 200, 250, 300, 400 mm
Thread connection	Adjustable compression fitting
Thread size	G½, G¾
Accuracy (EN 13190)	Class 1.0, Limits of error acc. DIN EN 13190
Approval	DNV GL type approval, Certificate No. 12 027-98 HH

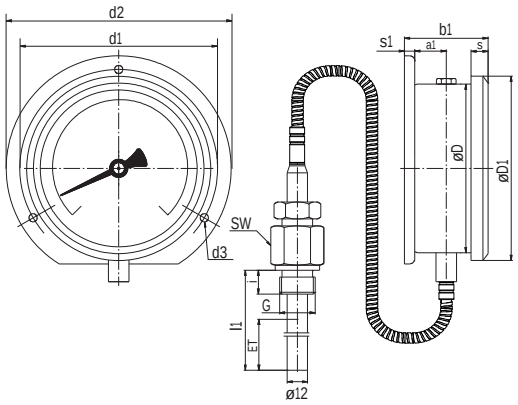
* Dual scale °C and °F available on request

Dimensions

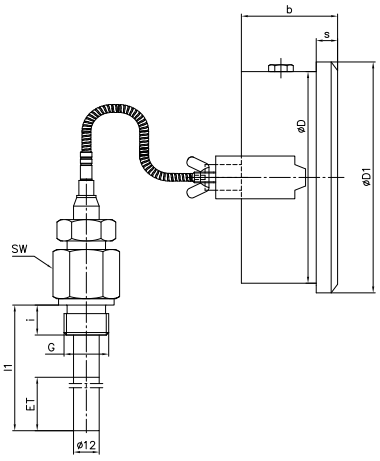
Type 311
with wall bracket



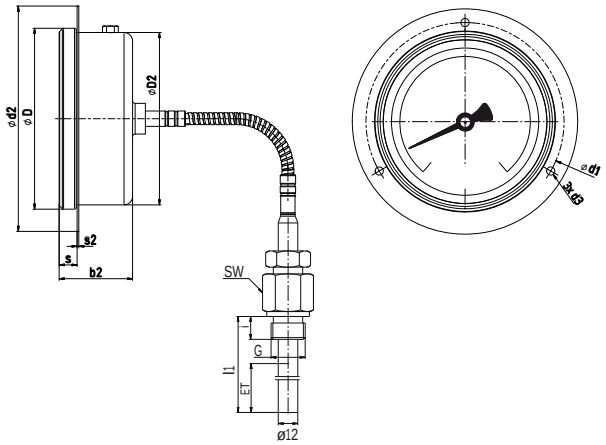
Type 321
with rear mounting flange



Type 331
U-clamp for panel mounting



Type 332
with front mounting flange



NS	a1	b1	b2	D	D1	d1	d2	d3	s	s1	s2
80	18	48	42	79	86	95	110	4,8	8	5	1
100	18.5	49	43	99	106	116	132	4,8	10	6	1

Order code

Oder example	Z	311	B2	10	100	1	0	2	1	C
Type										
311 WH		311								
321 TA		321								
331 KL		331								
332 TE		332								
Nominal size										
80 mm			B2							
100 mm			C2							
Scale range										
0...100 °C				10						
0...120 °C				12						
0...160 °C				16						
0...250 °C				25						
50...650 °C				56						
Immersion tube length l_1 and L										
Immersion tube length l_1	Immersion tube length L									
100 mm	145 mm				100					
135 mm	180 mm				135					
160 mm	205 mm				160					
200 mm	245 mm				200					
250 mm	295 mm				250					
300 mm	345 mm				300					
400 mm	445 mm				400					
Connection type										
Connection type A, plain immersion tube						1				
Connection type Ak, adjustable compression fitting						9				
Connection thread										
Without - plain immersion tube							0			
G½							2			
G¾							3			
½ NPT							B			
¾ NPT							C			
M20 x 1.5							7			
Immersion tube diameter										
Ø 12 mm								2		
Capillary length										
1 m									1	
3 m									3	
5 m									5	
Length in meter									_	
Capillary material, protection										
Stainless steel, stainless steel spiral protection										C

* Double scale °C and °F available on request.

Please use our order numbers for standard types or provide full technical specification in case of special non-standard thermometers

Low temperature dial thermometers

Local reading - Type 301 - 302 for measuring ranges -200...100 °C

This product group was developed to monitor temperature critical cooling applications. By using high quality materials and a proven as well as safe measuring system with nitrogen filling, our low temperature thermometers are suitable for the use on e.g. liquid gas transport ships. These measuring instruments are adapted to the specific needs of the industry and are available in several versions.

Typical Applications

- Gas transport for LNG, CNG, LPG, etc.
- Cooling ships and other cooling vehicles

Similar to our well-known diesel engine thermometers, which were specially designed for high operating temperatures on large and marine diesel engines, our low temperature dial thermometers have a mechanical design which was adapted to the harsh operating conditions in cooling applications.

- Very good readability of the shown measured value
- Protection of the measuring system by a vibration absorbing case filling
- Stable, durable housing design made of stainless steel
- Extensive product range with different measuring ranges and housing sizes
- Easy installation by variable compression fitting in numerous thread sizes

Type 301

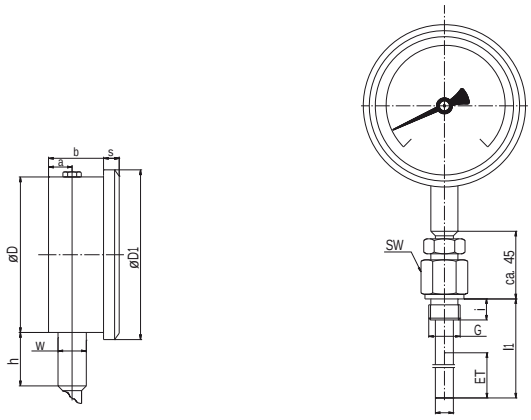
Technical data	
Display range*	-200...100 °C -150...100 °C -50...10 °C -100...50 °C
Nominal size, material	63, 80 or 100 mm, stainless steel 1.4301
Dial	Silver coloured, black markings
System	Nitrogen filled system
Immersion tube	Stainless steel
Standard immersion tube lengths (l_1)	100, 135, 160, 200, 250, 300, 400 mm
Thread connection	Adjustable compression fitting
Thread size	G½, G¾
Accuracy (EN 13190)	Class 1.0

* Double scale °C and °F available on request

Dimensions

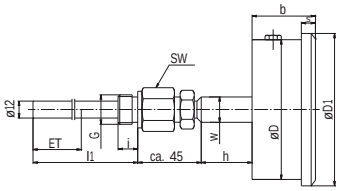
Bottom connection

Type 301



Central back connection

Type 302



Dimensions [mm]							
NS	**a**	**b**	**D**	**D1**	**h**	**s**	**w**
Type 301							
63	12	39	62	67	60	8	12
Type 302							
63	12	39	62	67	34	8	18
Type 301, 302							
80	15	42	79	86	34	8	18
Type 301, 302							
100	15	43	99	106	34	10	18

Order code

Order example	Z	301	A2	F2	100	0	0	0	3
Type									
Bottom connection		301							
Central back connection		302							
Nominal size									
63 mm			A2						
80 mm			B2						
100 mm			C2						
Scale range									
-200...100 °C				F2					
-200...50 °C				A2					
-150...100 °C				E4					
-50...100 °C				F1					
-100...50 °C				95					
Immersion tube length l_1	**Nominal length L = l_1 + 45 mm**								
100 mm	145 mm				100				
135 mm	180 mm				135				
160 mm	205 mm				160				
200 mm	245 mm				200				
250 mm	295 mm				250				
300 mm	345 mm				300				
400 mm	445 mm				400				
Connection type									
Connection type A, plain immersion tube						0			
Connection type Ak, adjustable compression fitting						9			
Connection thread									
Without - plain immersion tube, type A							0		
G½							2		
G¾							3		
½ NPT							B		
¾ NPT							C		
M20 x 1.5							7		
Connection thread material									
Without - plain immersion tube, type A								0	
Steel								2	
Immersion tube diameter									
10 mm (for NS 63 and NS 80 mm only)									3
12 mm									4
13 mm									6

* Double scale °C and °F available on request.
Please use our order numbers for standard types or provide full technical specification in case of special non-standard thermometers

Remote reading - Type 310 - 340 for measuring ranges -200...100 °C

This product group was developed to monitor temperature critical cooling applications. By using high quality materials and a proven as well as safe measuring system with nitrogen filling, our low temperature thermometers are suitable for the use in various cooling applications. These measuring instruments are adapted to the specific needs of the industry and are available in several versions.

Typical Applications

- Gas transport for LNG, CNG, LPG, etc.
- Cooling ships and other cooling vehicles

Our remote reading low temperature dial thermometers were specifically developed for measuring points which are not directly accessible. The capillary of these measuring devices is protected by a stainless steel spiral tube and therefore always adapted to the demanding operating conditions on the high seas.

- Very good readability of the shown measured value
- Protection of the measuring system by a vibration absorbing case filling
- Stable, durable housing design made of stainless steel
- Extensive product range with different measuring ranges and housing sizes
- Easy installation by variable compression fitting in numerous thread sizes

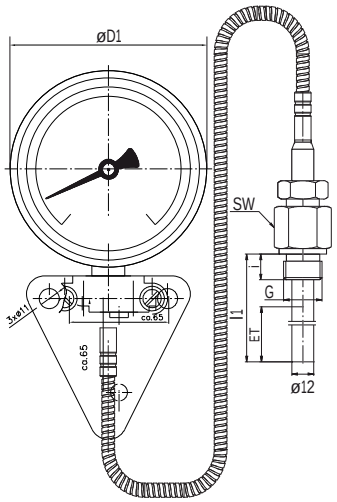
Type 320

Technical data	
Display range*	-200...100 °C -150...100 °C -50...10 °C -100...50 °C
Nominal size, material	80 or 100 mm, stainless steel 1.4301
Dial	Silver coloured, black markings
System	Nitrogen filled system
Immersion tube	Stainless steel
Standard immersion tube length (l_1)	100, 135, 160, 200, 250, 300, 400 mm
Thread connection	Adjustable compression fitting
Thread size	G½, G¾
Accuracy (EN 13190)	Class 1.0, Limits of error acc. DIN EN 13190

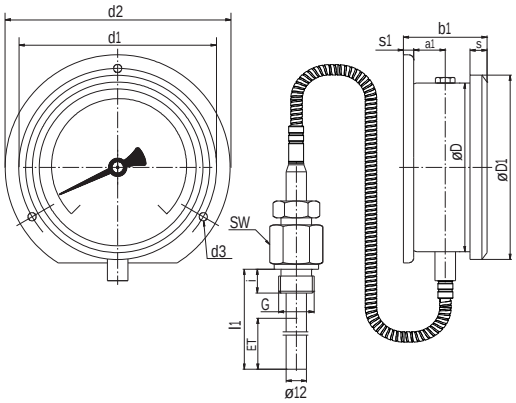
* Double scale °C and °F available on request

Dimensions

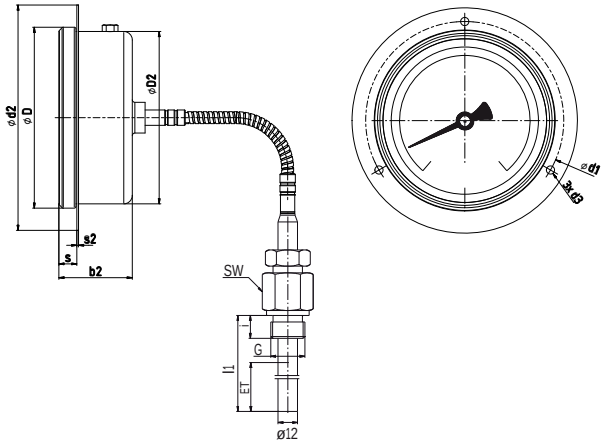
Type 310 WH
with wall bracket



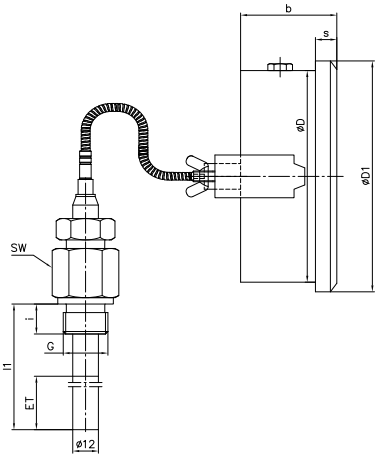
Type 320 TA
with rear mounting flange



Type 330 TE
with front mounting flange



Type 340 KL
U-clamp for panel mounting



Dimensions [mm]

NS	a1	b1	b2	D	D1	d1	d2	d3	s	s1	s2
80	18	48	42	79	86	95	110	4,8	8	5	1
100	18.5	49	43	99	106	116	132	4,8	10	6	1

Order code

Oder example		Z	310	B2	10	100	1	0	2	1	C
Type											
With wall bracket			310								
With rear mounting flange			320								
With front mounting flange			330								
With U bracket			340								
Nominal size											
80 mm				B2							
100 mm				C2							
Scale range											
-200...100 °C					F2						
-200...50 °C					A2						
-150...100 °C					E4						
-50...10 °C					F1						
-100...50 °C					95						
Immersion tube length l_1	**Nominal length L = l_1 +45 mm**										
100 mm	145 mm					100					
135 mm	180 mm					135					
160 mm	205 mm					160					
200 mm	245 mm					200					
250 mm	295 mm					250					
300 mm	345 mm					300					
400 mm	445 mm					400					
Connection type											
Connection type A, plain immersion tube							1				
Connection type Ak, adjustable compression fitting							9				
Connection thread											
Without - plain immersion tube								0			
G½								2			
G¾								3			
½ NPT								B			
¾ NPT								C			
M20 x 1.5								7			
Immersion tube diameter											
Ø 12 mm									2		
Capillary length											
1 m										1	
3 m										3	
5 m										5	
Length in meter										_	
Capillary material, protection											
Stainless steel, stainless steel spiral protection											C

* Double scale °C and °F available on request.

Please use our order numbers for standard types or provide full technical specification in case of special non-standard thermometers

KombiTemp® dial thermometers

Diesel engine dial thermometer with integrated temperature sensor

KombiTemp K8312 dial thermometers are the ideal solution for combined temperature measurement of exhaust gas on large diesel engines.

The dial thermometer displays the temperature locally whereas the integrated sensor provides the basis for the corresponding electrical signal to be transmitted to the engine control room. Measuring in the same measuring point saves cost and ensures matching temperature values both at the local display as well as in the vessel's electronic system.

SIKA offers two different versions for common diesel engine types: version 1 for 4-stroke engines and version two for 2-stroke engines.

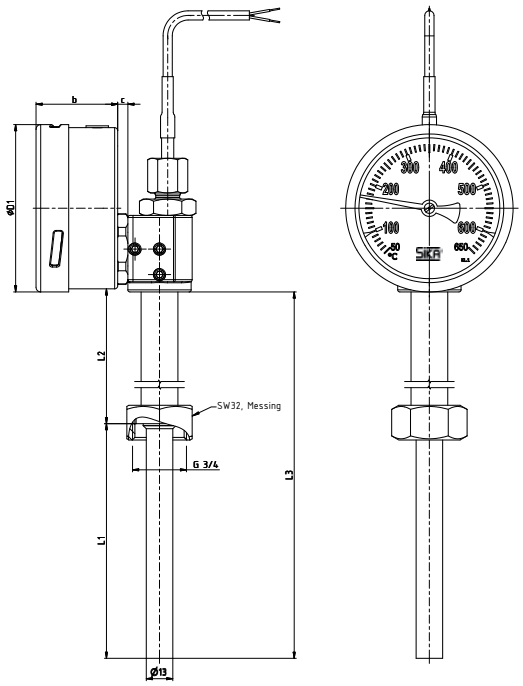
Performance features

- Two in one measuring point temperature measurement
- Matching indicator values of dial thermometer and temperature sensor
- With thermocouple type K
- Suitable solid material protection tube available

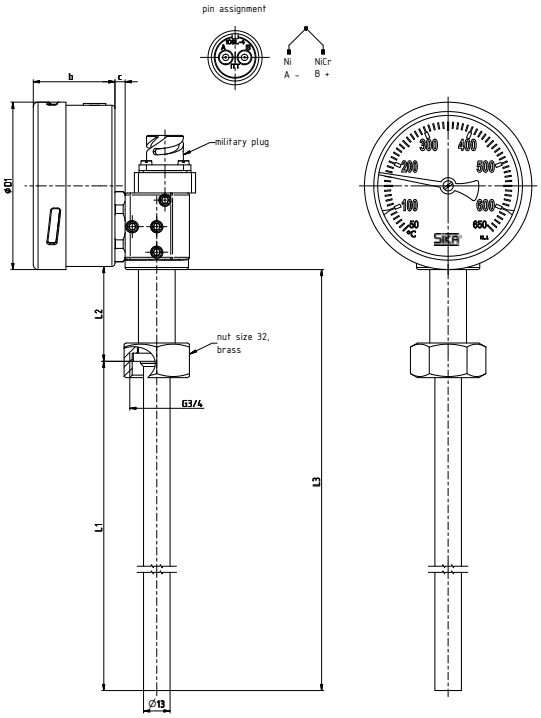
Technical data	
Case	Bayonet ring case, st. steel 1.4301
Nominal size	80 mm
Case filling	Silicone oil
Dial	White coloured, black markings
Display range	50...650 °C
System/accuracy	Gas-filled dial thermometer acc. 1,0, DIN EN 13190, Thermocouple type K (NiCr-Ni), class 2.0
Electrical connection	Cable output with 9 m cable length (version 1) 2 pole MIL connector, without cable (version 2)
Degree of protection	Dial thermometer IP65 Electrical sensor IP56
Connection position	Bottom connection
Immersion tube length/material	l1=115 x Ø 13 mm (version 1), st. steel 1.4571 l1=220 x Ø 13 mm (version 2), st. steel 1.4571
Connection thread/material	Union Nut, G ¾, brass

Dimensions and order code

Type K8312 - version 1

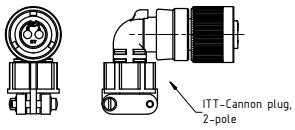


Type K8312 - version 2



Dimensions [mm]	b	c	$ØD_1$	L_1	L_2	L_3
Version 1	40	7.5	82	115	165	274
Version 2	40	7.5	82	220	51.5	265

Order code	
KombiTemp K8312 – version 1	K8312V5610000001
KombiTemp K8312 – version 2	K8312V5610000002
90° angle military plug	XMT0004



90° angle military plug

Bimetal dial thermometers

Local reading dial thermometers

This range of dial thermometers is a selection of commonly used thermometers for cooling water, lubracating oil, bearings and other low temperature measurement applications on board of marine vessels. In direct comparison to our diesel engine thermometers these thermometers are prooven basic quality thermometers working on the bimetal coil principle. Due to their swivel nut connection they can easily be installed and alligned in measuring points with existing protection tubes.

Typical applications

- Cooling water
- Turbo charged air
- Lubricating oil

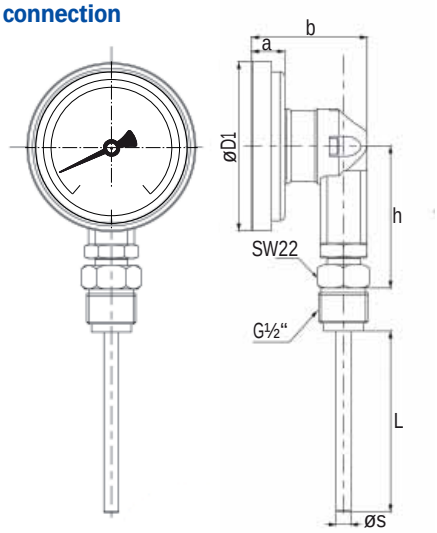
Type Z8612

Thermometers with swivel nut connection are not recommended for direct installation without protection tube in liquids or gases as this connection does not automatically seal. In case of installation without protection tube we refer to our diesel engine thermometers with adjustable compression fitting.

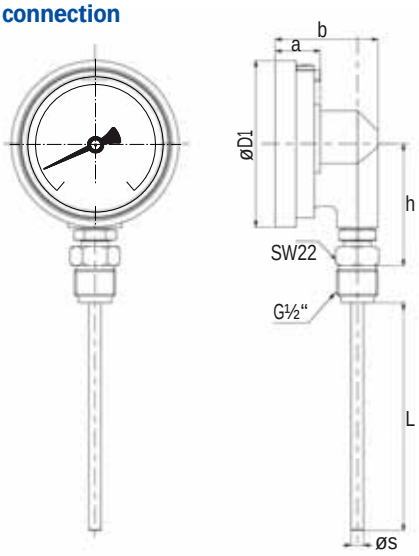
Technical data	
Display range	0...120 °C 0...200 °C
Nominal size, material	70 or 85 mm, stainless steel
Dial	White coloured, black markings
System	Bimetal coil
Immersion tube	Stainless steel
Immersion tube lengths (L)	50, 80, 140 mm
Connection	Rotatable male thread (to be used in protection tubes)
Thead size	G½
Accuracy	± 2% FS

Dimensions and order code

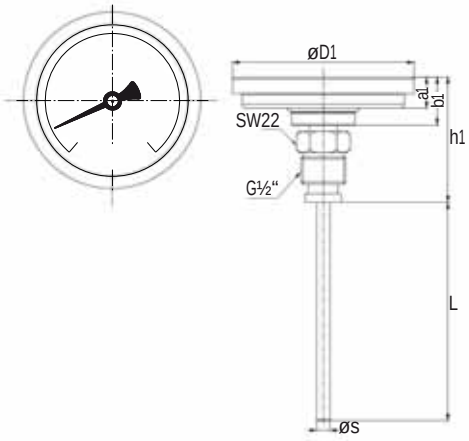
Type Z7612
Bottom connection



Type Z8612
Bottom connection



Type Z7672 and Z8672
Central back connection



Dimensions [mm]

NS	a	a1	b	b1	øD1	h	h1	øs
70	14	15	49	23	72	60	59	6.4
85	23	15	52	23	85	63	59	6.4

Order code		Z76	12	S	12	1	050	2	3	1
Model type (nominal size)	70 mm	Z76								
	85 mm	Z86								
Case configuration	Bottom connection		12							
	Central back connection		72							
Connection thread type	Rotatable male thread			S						
Display range	0...120 °C				12					
	0...200 °C				20					
Temperature unit	°C					1				
Immersion tube length (L)	50 mm						050			
	80 mm						080			
	140 mm						140			
Connection thread	G½							2		
Connection thread material	Stainless steel								3	
Immersion tube diameter	6.4 mm									1

Pressure gauges

SIKA pressure gauges, type MRE-M and MRE-g

SIKA Pressure gauges are Bourdon type quality gauges, manufactured according to EN 837-1. They are available in three different case sizes, as direct mount versions, with optional mounting flange or as a U-clamp panel mounting version. SIKA offers different measuring ranges starting from -0.6 up to 1600 bar.

These gauges can be used for any gaseous media or low viscous fluid that does not corrode the brass parts. Their special mechanical design and case filling provide best properties for the use in marine applications.

- Crimped on ring case, stainless steel 1.4301
- Nominal size 63, 80 and 100 mm
- Filled with glycerine
- Bottom or rear connection
- Connection thread: G½ (G¼ for 63 mm), brass
- Optional with mounting flange or U-clamp
- Accuracy
  → Class 1 for nominal size 80 and 100 mm
  → Class 1.6 for nominal size 63 mm
- GL-Certificate available on request

Bottom connection direct mounting

Bottom connection with rear flange

Back connection direct mounting

Back connection with front flange

Back connection with U-clamp

Types and dimensions

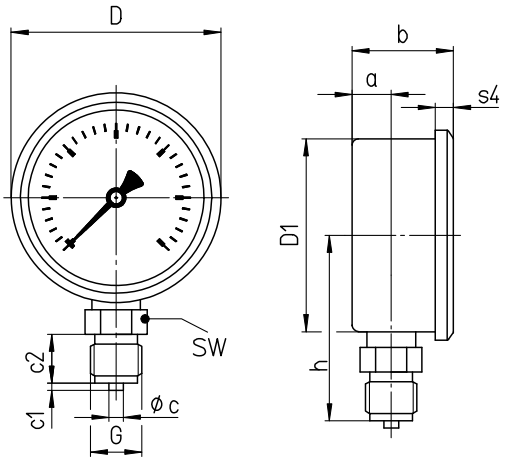
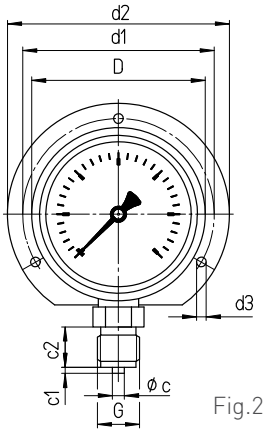


Fig.1: Bottom connection



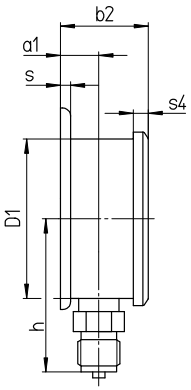


Fig.2: Bottom connection with rear flange

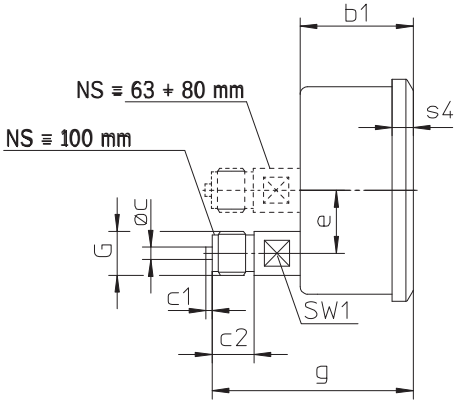
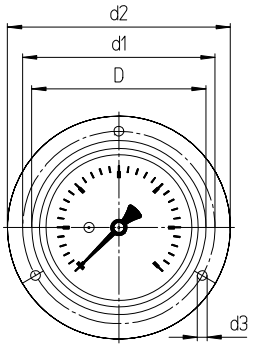


Fig.3: Back connection



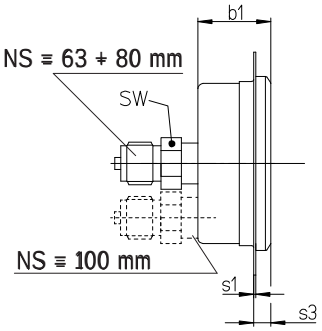


Fig.4: Back connection with front flange

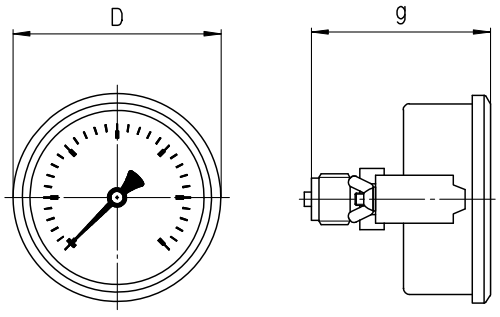


Fig.5: Back connection with U-clamp

NG	D	D1	a	a1	b	b1	b2	c	c1	c2	d1	d2	d3	e	G	g	h	s	s1	s3	SW
63	68	62	13	14	32	32	33	5	2	13	75	85	3.6	-	G¼	58	54	1	1	4.5	14
80	86	79	16	19	41.5	36	44	6	3	20	95	110	4.8	-	G½	74	76	5	1	9	22
100	107	99	15.5	14	48	48	49	6	3	20	115	132	5.1	30	G½	81.5	87	1	1	6	22

Order code

Order example		MREM	1	1	1	305	00	G	ISSA-Code	IMPA-Code
		MREM MREG								
Nominal size	63 mm (MREM)		1							
	80 mm (MREG)		2							
	100 mm (MREM)**		3							
Bottom connection	G¼ (63 mm)			1						
Bottom connection	G½ (80 mm / 100 mm)			1						
Center back connection	G¼ (63 mm)			5						
Center back connection	G½ (80 mm)			2						
Lower back connection	G½ (100 mm)**			2						
Connection thread	Brass				1				61.230.01	653101
material	Stainless steel (for 1000 / 1600 bar only)				3				-	-
Display range (bar)	-1...0					315			61.230.20	653339
	-1...0.6					505				
	-1...1.5					515				
	-1...3					525				
	-1...5					535			or	or
	-1...9					545				
	-1...15					555				
	0...0.6					015				
	0...1					025			61.234.05	65 15
	0...1.6					035			-	(general
	0...2.5					045			61.234.80	number)
	0...4					055				
	0...6					065				
	0...10					075				
	0...16					085			or	or
	0...25					095				
	0...40					105				
	0...60					115				
	0...100					125			61.235.00	653001
	0...160					135			-	-
	0...250					145			61.239.12	653075
	0...400					155				
	0...600					165				
	0...1000* (only 100 mm dial size)**					175				
	0...1600* (only 100 mm dial size)**					185				
Bottom connection	Direct mounting						00			
	Back flange						10			
Back connection	Direct mounting						00			
	Front flange						20			
	U-clamp						30			
Case filling	Glycerine							G		

* With stainless steel connection ** Only type MRE-g

Please ask for customised specifications

Bourdon tube pressure gauges, special version

For separators for flow measurement, type MRE-g, nominal size 63 mm

SIKA manometers for separators with 63 mm stainless-steel housing are especially suitable for flow measurement dependent on the pressure on the separators. Depending on the separator, various display ranges are available.

- Pressure gauges compliant with EN 837-1
- Stainless steel case with crimped-on ring
- Brass threaded connection
- Connection at bottom G¼ B
- EN 837-1 accuracy class 1.6
- Protection class IP65 / EN 60529
- DNV GL type approval available

Case type

The stainless steel case is available with a crimped-on ring. Case ventilation is provided by a pressure equalisation insert.

Display ranges

Multiple scales in bar, l/h and USg/h

Degree of protection according to EN 60529

IP65 for filled case with closed pressure equalisation insert

Dial

Aluminium, white with black scale markings.

Window

Instrument glass

Pointer movement

CrNi-Steel

Connection threads and materials

The pressure gauges have a stainless steel connection thread and bourdon tube.

Temperature range

- **Storage temperature**
  -20...70 °C
- **Ambient operating temperature**
  -20...60 °C
- **Media temperature**
  Up to 160 °C

Ambient temperature sensivity

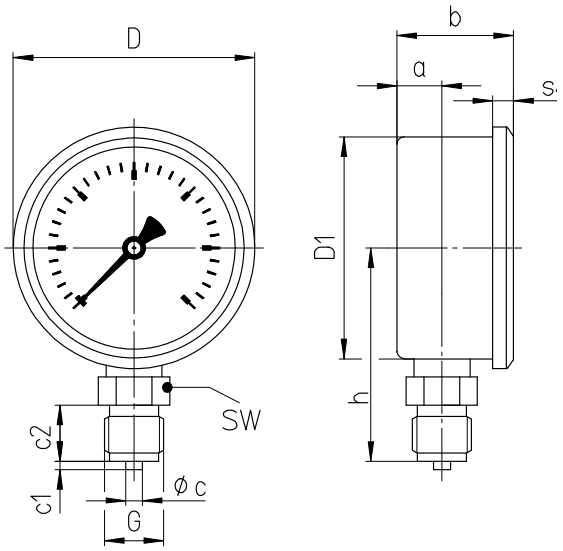
The pressure gauges are calibrated at a reference temperature of 20 °C. At other operating temperatures the maximum indication error is ±0.4 % of full scale value per 10 °C difference in accordance with EN 837-1.

Maximum pressure load	
Static load	75 % of full-scale value
Dynamic load	65 % of full-scale value
Overload	2-times of full-scale value

Display ranges		
0...1 bar	150...400 l/h	40...100 USg/h
0...1 bar	300...800 l/h	80...200 USg/h
0...1 bar	400...1200 l/h	60...320 USg/h
0...1 bar	500...2500 l/h	180...660 USg/h
0...1 bar	500...4000 l/h	100...1100 USg/h
0...1 bar	1000...6000 l/h	300...1500 USg/h
0...1 bar	2000...12000 l/h	500...3200 USg/h
0...2.5 bar	2000...16000 l/h	1000...4300 USg/h

Types and dimensions

Bottom connection



Dimensions [mm]

NS	D	D1	a	a1	b	b1	b2	c	c1	c2	d1	d2	d3	e	G	g	h	s	s1	s3	SW
63	67	62	10	13	33	37	36	5	2	13	75	85	3.6	18	G¼ B	60	54	5	1	9,5	14

Order code

Order example		MREG	1	1	3	02513	G	DA
SIKA bourdon tube pressure gauges for separators								
Crimped on ring case		MREG						
Nominal size								
63 mm			1					
Connection thread								
G¼ B bottom				1				
Connection material								
Stainless steel					3			
Display range								
Pressure	Flow rate							
0...1 bar	2000...12 000 l/h, 500...3200 USg/h					02513		
0...1 bar	1000...6000 l/h, 3000...1500 USg/h					02523		
0...1 bar	150...400 l/h, 40...100 USg/h					02533		
0...1 bar	300...800 l/h, 80...200 USg/h					02543		
0...1 bar	400...1200 l/h, 60...320 USg/h					02553		
0...1 bar	500...4000 l/h, 100...1100 USg/h					02544		
0...2.5 bar	2000...16 000 l/h, 1000...4300 USg/h					04503		
Case filling								
Glycerine							G	
Additional product information								
Flow indicators								DA

Bourdon tube pressure gauges, chiller version

Type MREG-K, nominal sizes 63, 80 and 100 mm

We manufacture pressure gauges specifically designed for use in refrigeration and chiller systems and specifically adapted to this application. They have scales showing both the pressure and the pressure-dependent evaporation temperature of the corresponding refrigerant. Some of these pressure gauges also have additional safety features according to the hazard classification of the refrigerant.

- Stainless steel crimped ring case
- Bottom or rear connection
- Brass connection (stainless steel for R717)
- EN 837-1 accuracy class 1 (class 1.6 with 63 mm case)
- Standard display ranges -1 to 15 bar, -1 to 24 bar, -1 to 30 bar
- Standard refrigerants R134a, R404a, R407c, R507, R717

Designed and built for safety

Refrigerants are classified into three groups according to VBG 20 Sect. 3:

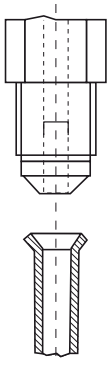
- Group 1:
  Non-flammable refrigerants with no harmful impact on health
- Group 2:
  Toxic or corrosive refrigerants and refrigerants with a lower explosion limit of at least 3.5 % by volume when mixed with air
- Group 3:
  As group 2, but with an explosion limit below 3.5 % by volume

SIKA refrigeration pressure gauges comply with EN 837-1 safety level S2 for refrigerants in groups 1 and 2 and EN 837-1 safety level S3 for refrigerants in group 3.

Type MREG-K

Option

Thread 7/16"-20 UNF with tapered seal according to DIN 3866 for solderless connection to 6 mm tubing (¼" flare)



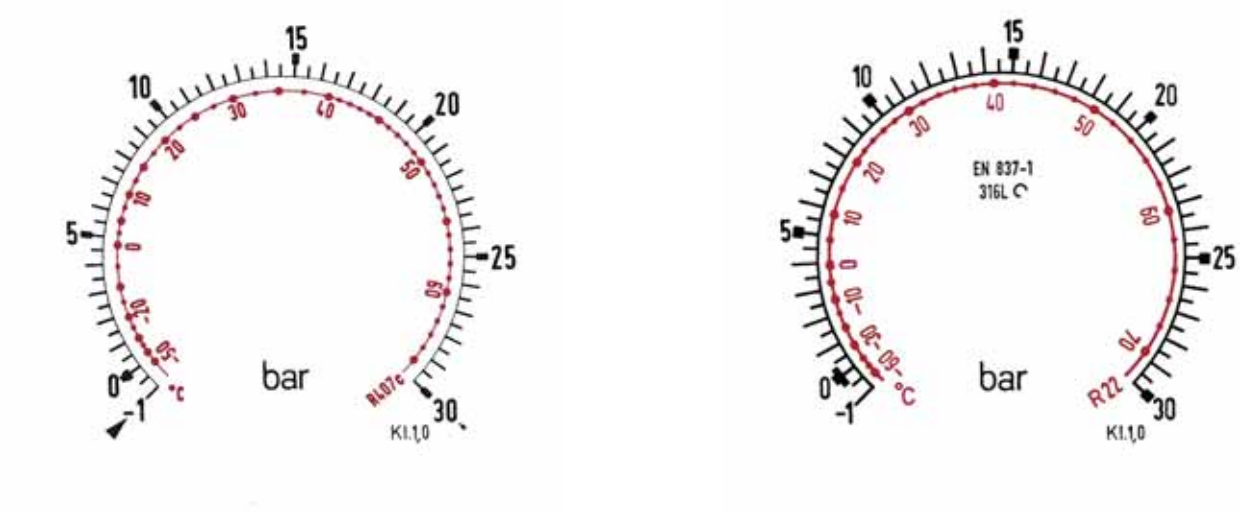
The provisions of the EN 837-2 standard should be observed when using pressure gauges.

Scales and types

Scales

Our gauges are available with standard display ranges of -1...15 bar, -1...24 bar and -1...30 bar. The scale plates are printed with combined pressure and temperature scales. The pressure scales are in bar, kPa / MPa or psi; the temperature scales are in °C or °F and match the evaporation pressure curve of the corresponding refrigerant. In accordance with DIN 16112, the temperature scales are implemented as „dot scales" and are usually printed in colour. Gauges with scales for more than one refrigerant can be supplied on request. SIKA offers a wide variety of ready-made special scales for individual measuring ranges and refrigerants. Please contact us to discuss your needs.

Examples of DIN 16112 compliant scales for R22 and R407c



Connection threads and materials

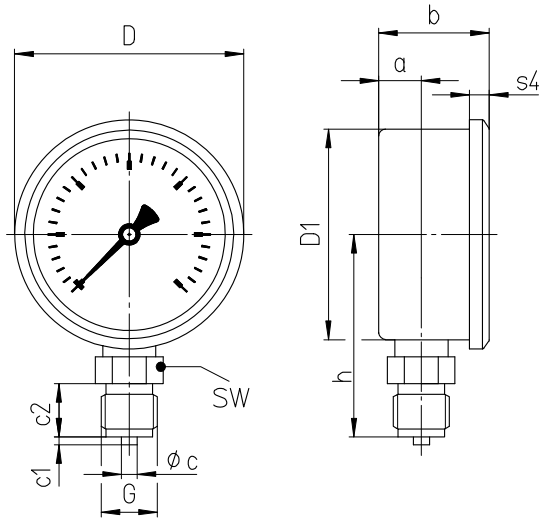
All pressure gauges have standard G¼ B or G½ B thread (also available with NPT thread). As an option, we can supply pressure gauges with ¼" flare connection according to the diagram. The components in contact with the medium being measured are made from brass or bronze. Non-ferrous metals are not allowed in gauges for use with ammonia refrigerant (R717, NH_3), so stainless steel alloys are used for this purpose.

Case

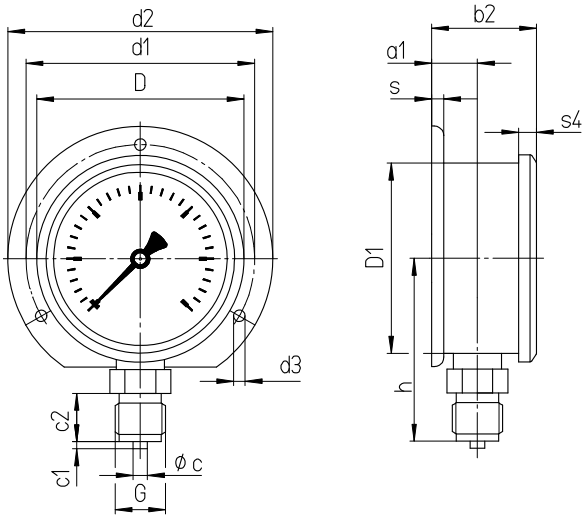
Cases of refrigeration pressure gauges can be painted in colour on request to enable the gauges to be visually associated with the corresponding cooling circuits and allow the system to be laid out for easier comprehension. For example, red may be used for the high-pressure side and blue for the low-pressure side.

Types and dimensions

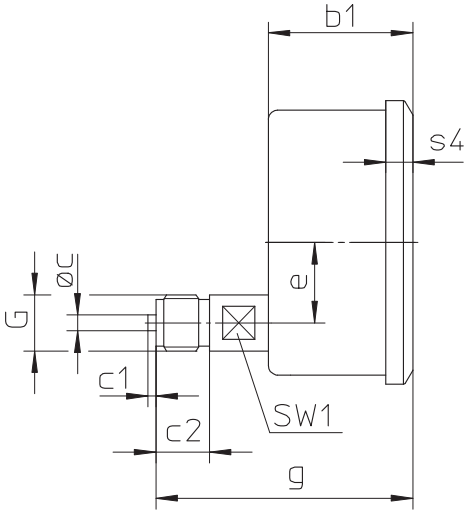
Bottom connection



Bottom connection with rear flange

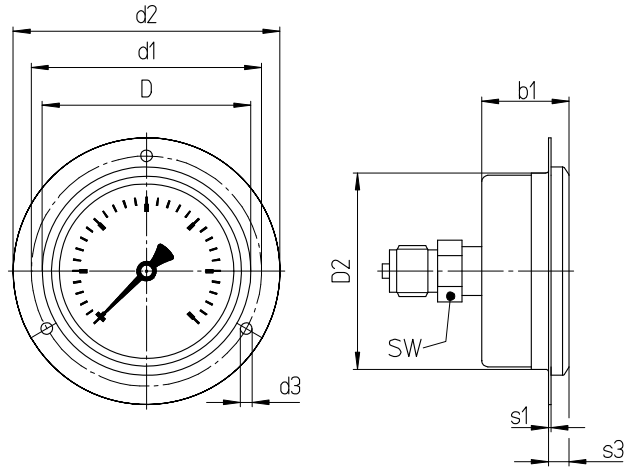


Lower back connection*



* Nominal size 80 mm has connection at centre back

Center back connection with front flange



Dimensions [mm]

NS	D	D1	a	a1	b	b1	b2	c	c1	c2	d1	d2	d3	e	G	g	h	s	s1	s3	SW
63	67	62	10	13	33	37	36	5	2	13	75	85	3.6	18	G¼ B	60	54	5	1	9.5	14
80	86	79	16	19	41.5	36	44	6	3	20	95	110	4.8		G½ B	74	76	5	1	9	22
100	106	99	20	23.5	54	54	57.5	6	3	20	116	132	4.8	30	G½ B	96	87	6	1	11.5	22

Order code

Order example			MREGK	1	1	1	K13	0	0	0
SIKA chiller pressure gauges										
Crimped on ring case (standard with liquid-filled case)			MREGK							
Nominal size										
63 mm				1						
80 mm (not available for all refrigerants)				2						
100 mm				3						
Connection thread										
Ø 63 mm case	G¼ B bottom				1					
	G¼ B lower back connection				2					
	G¼ B center back connection				5					
	¼ NPT bottom				M					
	¼ NPT lower back connection				N					
	¼ NPT center back connection				S					
Ø 80 mm case	G½ B bottom				1					
	G½ B center back connection				2					
Ø 100 mm case	G½ B bottom				1					
	G½ B lower back connection				2					
	¼ flare bottom	only with brass connection			F					
	¼ flare rear	only with brass connection			U					
Connection material										
Brass						1				
Stainless steel						3				
Refrigerant and display range										
R134a		-1...15 bar					K13			
		-1...24 bar					K14			
R404a		-1...15 bar					K16			
		-1...24 bar					K17			
R407c		-1...15 bar					K39			
		-1...24 bar					K41			
R507		-1...15 bar					K42			
		-1...24 bar					K43			
R717 (NH3)		-1...15 bar					K01			
(NS 63 mm / NS 100 mm, with st. st. connection)		-1...24 bar					K02			
		-1...30 bar					K03			
Multiple scales*										
R12 / R22 / R134a		-1...15 bar					K24			
		-1...24 bar					K25			
		-1...30 bar					K27			
R22 / R134a / R404a		-1...15 bar					K37			
		-1...24 bar					K44			
		-1...30 bar					K36			
Mounting flange										
None								0		
Rear flange								1		
Front flange								2		
Option										
None									0	
Case filling										
Unfilled case										0
Filled case (glycerine)										G

* Some refrigerant and display range options are not available with all case sizes. Please enquire regarding the required gauge types.

- → Electronic digital thermometer
- → Multi-channel temperature indicator
- → Temperature sensors
- → KombiTemp®

ELECTRONIC MONITORING SYSTEMS AND TEMPERATURE SENSORS

Electronic digital thermometer

SolarTemp type 850 with mounting plate

- Display suitable for sensor elements Pt1000
- Degree of protection IP65
- Measuring range 0...650 °C
- Optional Transmitter output 4...20mA
- Selection of temperature sensors for SolarTemp Type 850 is located on page 56

Technical data	
Ambient temperature	-20...60 °C (case)
Case	170 x 150 mm, steel case blue powder-coated, aluminium mounting plate
Power supply	Solar cell
Light density	Min. 50 Lux
Digital display	4 digit, 7 segment display, 25.4 mm high
Approved by several classification societies	

Order code				
Type	**Range**	**SIKA-Code**	**ISSA-Code**	**IMPA-Code**
Standard version	0...650 °C	85065P54	61 122 51	651861
Transmitter version	4...20 mA 0...600 °C	85065P53360	61 122 52	651862
Transmitter version	4...20 mA 0...300 °C	85065P53330	61 122 53	651863

SolarTemp applications

SolarTemp type approval certificates

- DNV GL type approval
- ABS
- ClassNK Nippon
- LR
- BV
- Korean R.

Temperature sensors

Temperature sensors for marine applications

Temperature measurement in marine applications makes high demands on sensor reliability. Standard temperature sensors not specifically designed for this application will not last long time in this environment. Especially sensors used on diesel engines and propulsion systems are subject to severe vibration with acceleration as high as 200 g in some cases as well as occasional exposure to water and oil. SIKA has longterm experience in manufacturing products for the marine industry and together with engine builders and end users has developed a wide range of temperature sensors suitable for this harsh environment.
Rugged design, vibration resistant components and reliable manufacturing give SIKA sensors a long lifetime also under difficult conditions. For quality assurance each sensor is thoroughly tested during and after production. The quality management system installed by SIKA guarantees a constant and reliable performance of the products.
Due to the high flexibility of SIKA, sensors in many common designs are available. Special sensors can be manufactured on request.

Important calibration instructions

Temperature sensors may be subject to changes in accuracy during their lifetime. A periodic calibration of your temperature sensors is required to make sure that they display always a correct temperature value. We provide you with the relevant calibration tools. Please see selection of Test & Calibration products from page 85.

SIKA temperature sensors

- For exhaust gas temperature measurement
- For cooling water temperature measurement
- For oil temperature measurement

Approvals

- Most sensors are approved by Germanischer Lloyd
- Additional approvals on request

Temperature sensors approval certificates

- DNV GL type approval
- ABS
- ClassNK Nippon
- BV
- RINA

Temperature sensor and sensor cable

for SolarTemp type 850

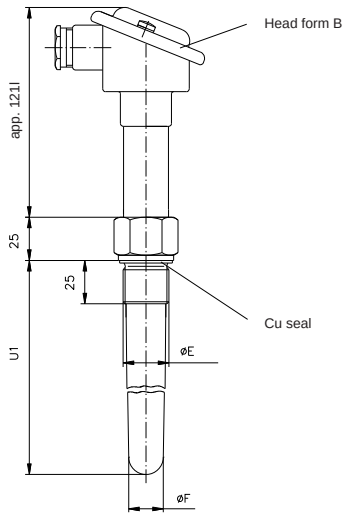


Fig. A

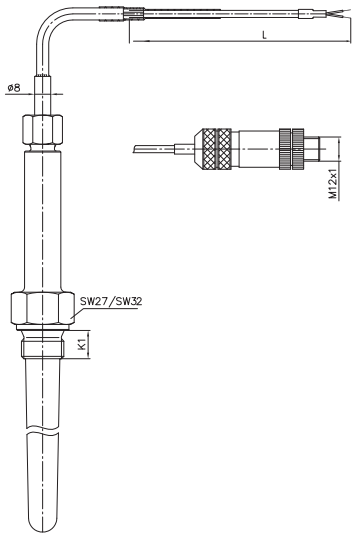


Fig. B

Please ask for customised specifications

Type W14

Order code	SIKA-Code	ISSA-Code	IMPA-Code
Sensor cable (connection sensor to indicator)			
Length*			
3 m	XPV108	61.122.72	651866
5 m	XPV109	61.122.73	651867
10 m	XPV110	61.122.74	651868
15 m	XPV158	61.122.75	651869
Transmitter cable (connection indicator to remote control)			
10 m	XPV150		651871
15 m	XPV167		651872

* Other lengths available on request

Order example	W	14	3	P53	100	2	3	8	2	03	ISSA-Code	IMPA-Code
Type												
Resistance thermometer	W											
Diameter												
14 / 17 mm conical (U1 = 100 mm or 150 mm)		14										
17 / 23 mm conical (U1 = 100 mm or 150 mm)		17										
20 / 23 mm conical (U1 = 200 mm)		20										
Material												
Stainless steel 1.4571			3									
Sensor element												
2 x Pt1000 (only for transmitter version)				P53								
1 x Pt1000				P54								
Immersion tube length U1												
100 mm					100						61.122.55 - 61.122.76	651865
150 mm					150							
200 mm					200							
Measuring insert												
Demountable						2						
Electrical connection												
Plug M12 x 1 (Fig. B)							3					
Head form B (Fig. A)							B					
Cable												
Teflon FEP shielded (only plug M12 x 1) (Fig. B)								8				
Without cable (only Head B) (Fig. A)								0				
Process connection												
G½									2			
G¾									3			
Thread M33 x 2									F			
Cable length (only Fig. B)												
2.0 m										03		
3.0 m										05		
5.0 m										09		

For exhaust gas temperature measurement

Type W20

Temperature sensor with connection head form B. This robust sensor is used for measuring exhaust gas temperatures. It is used in large diesel engines such as those on ships and in combined heat and power stations. It is also used in turbines and compressors.

Technical features

- Very high vibration resistance
- One-piece protection tube
- Available with optional instrument transformer
- Customer-specific fitting lengths and fixing thread on request

Accuracy class

- Resistance thermometer class B
- Thermocouple class 1

Measuring insert

Interchangeable

Diameter

- 14 / 17 mm conical up to 150 mm
- 17 / 23 mm conical up to 150 mm
- 20 / 23 mm conical from 200 mm

Degree of protection

IP54

Max. Temperature

Depending on Immersion tube material

Process connection

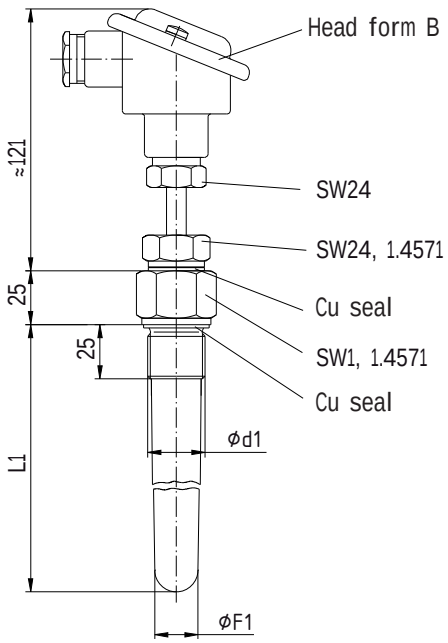
Fix connecting thread

Electrical connection

Head form B made of aluminium diecasting, silver finish, max. temperature 200 °C

Approvals

DNV GL type approval



Type T55

Temperature sensor with connecting cable and Cannon connector. This robust sensor is designed for measuring exhaust gas temperatures. It is used in diesel engines such as those on ships and in combined heat and power stations. It is also used in turbines and compressors.
Thanks to the flexible light plastic-sheathed cable, even measurement points that are difficult to access can be reached. It is also extremely resistant to external temperature influences.

Technical features

- Reliable electrical connection thanks to robust Cannon connector system
- High vibration resistance
- Optional protection tube available
- Customer-specific fitting lengths and fixing thread on request

Accuracy class

Thermocouple class 2

Measuring insert

Not interchangeable

Diameter

5.2 mm

Degree of protection

IP54

Max. temperature

800 °C for thermocouple

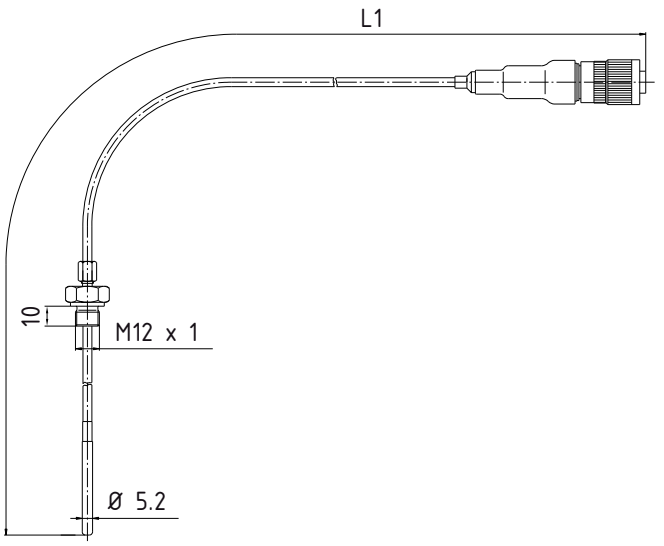
Process connection

Without or with clamp coupling

Electrical connection

Mineral insulated cable with Cannon plug

Type T55



Order code

Order example	T55	3	1TK	1500	X0	R	ISSA-Code	IMPA-Code
Diameter								
5.2 mm	T55							
Material								
Stainless steel 1.4571		3						
Sensor element								
1 x NiCr-Ni (type K)			1TK				61.116.21	
2 x NiCr-Ni (type K)			2TK				-	652527
Length L*							61.116.38	
1500 mm				1500				
Electrical connection								
Mineral insulated cable with Cannon plug					X0			
Process connection								
Clamp coupling steel, M12 x 1						R		

* All other lengths are also available on request

Type T45

Temperature sensor with connecting cable. This robust sensor is designed for measuring exhaust gas temperatures. It is used in large diesel engines such as those used on ships and in combined heat and power stations. It is also used in turbines and compressors.

Technical features

- Very high vibration resistance
- Exceptionally durable connecting cable
- Customer-specific fitting lengths on request

Accuracy class

Thermocouple class 1

Measuring insert

Interchangeable

Diameter

4.5 mm

Degree of protection

IP54

Max. temperature

800 °C for thermocouple

Process connection

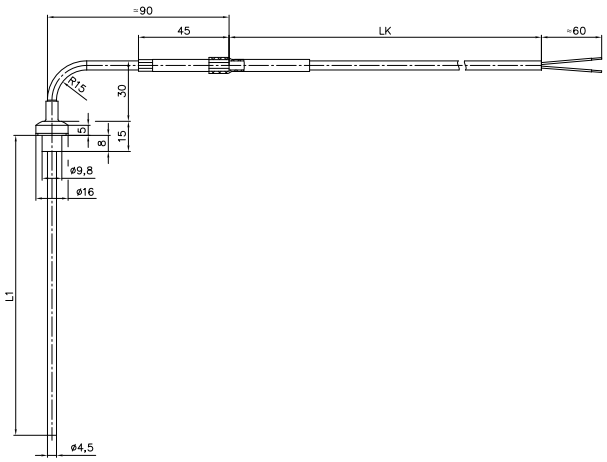
Fitting

Electrical connection

Cable, wire-braided

Approvals

DNV GL type approval



Order code

Order example	T	45	3	1TK	045	07	01	01
Type								
Thermocouple	T							
Diameter								
4.5 mm		45						
Material								
Stainless steel 1.4541			3					
Inconel 2.4816			4					
Sensor element								
1 x NiCr-Ni (type K)				1TK				
2 x NiCr-Ni (type K)				2TK				
Length L1*								
45 mm					045			
80 mm					080			
104 mm					104			
138 mm					138			
150 mm					150			
Electrical connection								
FEP cable, wire-braided						07		
Process connection*								
Fitting SW5, 3-4 mm, stainless steel 1.4571							01	
Cable length LK								
1.0 m								01
1.5 m								02
2.0 m								03
2.5 m								04

* Other specifications available on request

Type T95

Temperature sensor with connecting cable. This robust sensor is designed for measuring exhaust gas temperatures. It is used in diesel engines such as those on ships and in combined heat and power stations. It is also used in turbines and compressors.

Type T95

Technical features

- High vibration resistance
- Optional protection tube available
- Exceptionally durable connecting cable
- Customer-specific fitting lengths and fixing thread on request

Accuracy class

Thermocouple class 2

Measuring insert

Not demountable

Diameter

9.5 mm

Degree of protection

IP54

Max. temperature

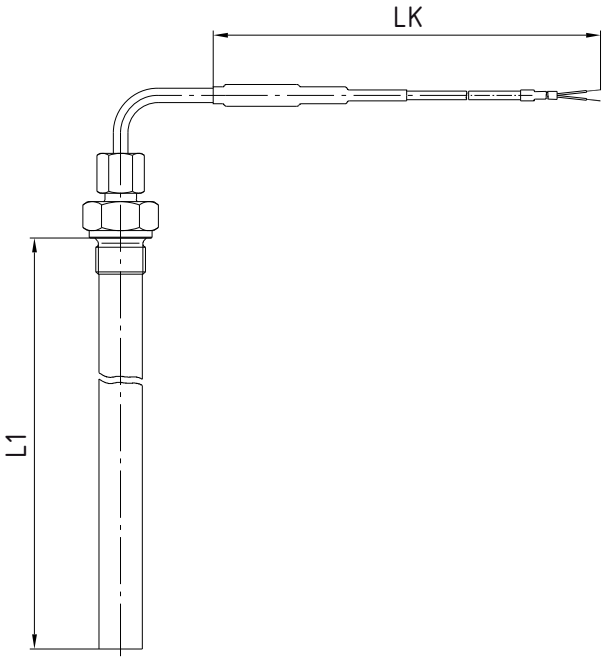
600 °C for thermocouple

Process connection

- Without
- Clamp coupling

Electrical connection

- FEP cable, wire-braided
- Fibre glass, wire-braided



Order code

Order example	T95	3	1TK	1000	07	0	02	ISSA-Code	IMPA-Code
Diameter									
9.5 mm	T95								
Material									
Stainless steel 1.4571		3							
Sensor element									
1 x NiCr-Ni (type K)			1TK						
2 x NiCr-Ni (type K)			2TK						
Length*									
200 mm				2000					
250 mm				2500				61.116.40	
290 mm				2900				-	652527
Electrical connection								61.116.54	
FEP cable, wire-braided					07				
Fibre glass, wire-braided					08				
Process connection									
Without						0			
Adjustable union nut M18 x 1.5						1			
Cable length LK*									
1.5 m							02		
2.5 m							04		
5.0 m							09		

* All other lengths are also available on request

Type T10

Temperature sensor with connecting cable. This robust sensor is designed for measuring exhaust gas temperatures. It is used in diesel engines such as those on ships and in combined heat and power stations. It is also used in turbines and compressors.

Technical features

- Compact design
- Very high vibration resistance
- One-piece protection tube
- Exceptionally durable connecting cable
- Customer-specific fitting lengths and fixing thread on request

Accuracy class

Thermocouple class 1

Measuring insert

Interchangeable

Diameter

Conical 10 mm to 8 mm

Degree of protection

IP54

Max. temperature

850 °C for thermocouple

Process connection

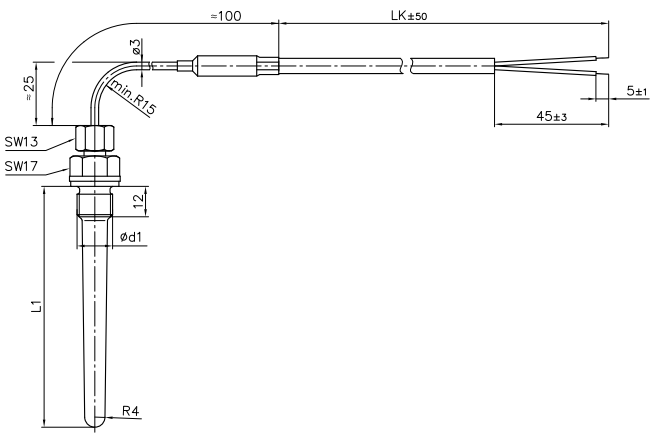
Fix connecting thread

Electrical connection

Cable

Approvals

DNV GL type approval



Order code

Order example	T	10	0	1TK	065	2	07	L	01
Type									
Thermocouple	T								
Diameter									
10 mm		10							
Material									
Steel 1.4876			0						
Sensor element									
1 x NiCr-Ni (Type K)				1TK					
Length L1*									
65 mm					065				
95 mm					095				
Measuring insert									
Interchangeable						2			
Electrical connection									
FEP-cable, wire-braided							07		
Process Connection d1*									
M14 x 1.5								G	
G¼ A								L	
Cable length LK*									
1.0 m									01
1.5 m									02
2.0 m									03
2.5 m									04

* Other specifications available on request

Type TWE

Temperature sensor with connecting cable. This robust sensor is designed for measuring exhaust gas temperatures. It is used in diesel engines such as those on ships and in combined heat and power stations. It is also used in turbines and compressors.

Technical features

- High vibration resistance
- Exceptionally durable connecting cable
- Customer-specific fitting lengths and fixing thread on request

Accuracy class

- Resistance thermometer class B
- Thermocouple class 1

Measuring insert

Not interchangeable

Diameter

- 8 mm
- 12 mm

Degree of protection

IP54

Max. Temperature

- 600 °C resistance thermometer
- 800 °C thermocouple

Process connection

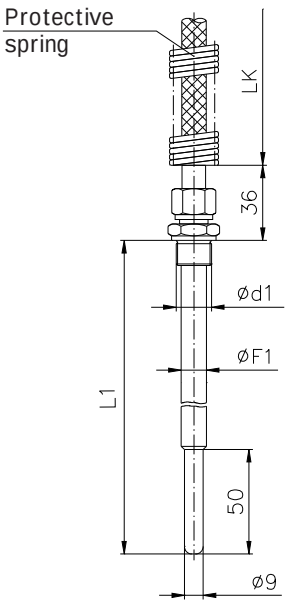
- Plain immersion tube
- Clamp coupling

Electrical connection

Compensation pipe, wire-braided

Approvals

DNV GL type approval (only for type TWE)



Order code

Order example	TVA	C	K11	0100	07	0	02	ISSA-Code	IMPA-Code
Diameter F1									
8 mm	TVA								
12 mm	TWE								
Material									
Stainless steel 1.4571		C							
Sensor element									
1 x Fe-CuNi (type J)			J11						
1 x NiCr-Ni (type K)			K11						
1 x Pt100 3-wire / class B (type TWE only)			P31						
2 x Pt100 3-wire / class B (type TWE only)			P32						
Length L1*									
100 mm				0100				61.116.55 - 61.116.84	65 25 27
150 mm				0150					
200 mm				0200					
250 mm				0250					
Electrical connection									
FEP cable, wire-braided					07				
Fibre glass, wire-braided					08				
Process connection d1*									
Without						0			
Clamp coupling steel, galvanized G¼						I			
Clamp coupling steel, galvanized G½						K			
Clamp coupling stainless steel G½						J			
Clamp coupling steel, galvanized M27 x 2						H			
Cable length LK*									
1.0 m							01		

* Other specifications are also available on request

For oil- and water temperature measurement

Type W30

Temperature sensor with angle plug as electrical connection. This sensor is designed with compact dimensions and is intended for use in industrial applications for measuring liquid and gaseous media.

Technical features

- High vibration resistance
- Reliable electrical connection using screw-on connectors
- Customer-specific fitting lengths and fixing thread on request

Sensor element

Resistance thermometer class A and B

Measuring insert

Interchangeable only for Ø 8 mm

Diameter

- 6 mm
- 8 mm

Degree of protection

IP65

Max. Temperature

200 °C Resistance thermometer, max. 125 °C at plug

Process connection

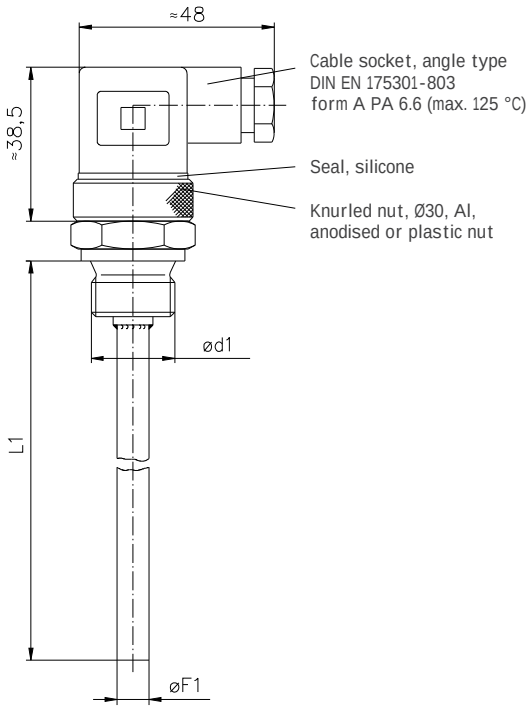
Fix connecting thread

Electrical connection

Cable socket, angle type, DIN EN 175 301-803, form A

Approvals

DNV GL type approval



Order example	W	06	1	P21	050	0	10	2	GL
Type									
Resistance thermometer	W								
Measuring insert	E								
Diameter									
6 mm		06							
8 mm		08							
Material									
Brass 2.0401 / 2.0402			1						
Stainless steel 1.4571			3						
Sensor element									
1 x Pt100 2-wire / class B				P21					
1 x Pt100 3-wire / class B				P31					
1 x Pt100 4-wire / class B				P41					
Resistance thermometer / class A				AXX					
Immersion tube length L1*									
Without (only for type measuring insert)					000				
50 mm					050				
100 mm					100				
150 mm					150				
200 mm					200				
Measuring insert									
Not interchangeable						0			
Interchangeable (only for Ø 8 mm)						2			
Electrical connection									
Cable socket, angle type form A							10		
Process connection d1									
G½ A								2	
M18 x 1.5								6	
M20 x 1.5								N	
G¾ A								3	
Options									
Version Germanischer Lloyd									GL

* Other specifications available on request

Type WMJ

Temperature sensor with connection head form J. This robust sensor is designed for use in industrial and marine applications for measuring the temperature of cooling water, lubricants and hydraulic oil.

Technical features

- Very high vibration resistance
- Simple alignment of the connection head
- One-piece protection tube
- Available with optional instrument transformer
- Customer-specific fitting lengths and fixing thread on request

Sensor element

Resistance thermometer class A and B

Measuring insert

Interchangeable

Diameter

8 mm

Degree of protection

IP54

Max. Temperature

200 °C resistance thermometer

Process connection

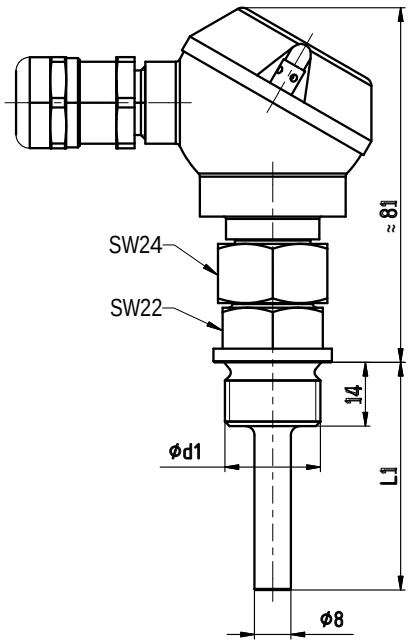
Fix connecting thread

Electrical connection

Head form B made of aluminium diecasting, silver finish, max. temperature 125 °C

Approvals

DNV GL type approval, ABS, BV, LRS, RINA and Class NK



Order code

Order example	W0	8	3	P31	050	2	J0	2
Type								
Resistance thermometer	W0							
Diameter								
8 mm		8						
Material								
Stainless steel 1.4571			3					
Sensor element								
1 x Pt100 3-wire / class B				P31				
2 x Pt100 2-wire / class B				P22				
1 x Pt1000 2-wire / class B				P12				
2 x Pt1000 2-wire / class B				P24				
Resistance thermometer / class A				AXX				
Immersion tube length L1*								
50 mm					050			
80 mm					080			
100 mm					100			
150 mm					150			
Measuring insert								
Interchangeable						2		
Electrical connection								
Head form J with ceramic socket							J0	
Head form J with transmitter** (without approvals)							JT	
Process connection d1*								
G½ A								2
G¼ A								L
G¾ A								3

* Other specifications available on request

** For more information, see chapter temperature transmitters

Type W12

Temperature sensor with connection head form B. This robust sensor is designed for use in industrial and marine applications for measuring the temperature of cooling water, lubricants and hydraulic oil.

Technical features

- High vibration resistance
- One-piece protection tube
- Available with optional instrument transformer
- Customer-specific fitting lengths and fixing thread on request

Sensor element

Resistance thermometer class A and B

Measuring insert

Interchangeable

Diameter

- 12 mm
- 14 mm

Degree of protection

IP54

Max. Temperature

200 °C resistance thermometer

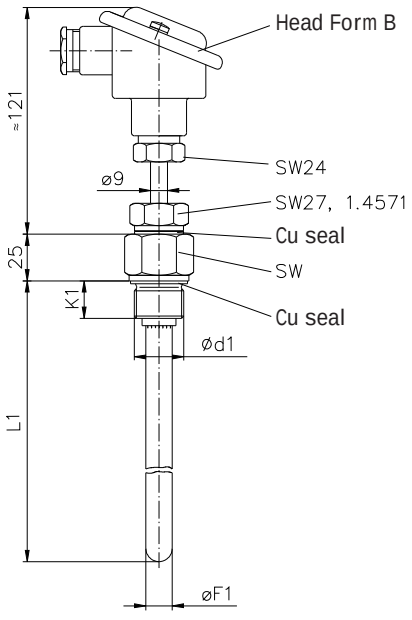
Process connection

Fix connecting thread

Electrical connection

Head form B made of aluminium diecasting, silver finish, max. temperature 200 °C

Type W12



SW	ØE	K1
32	G¾ A	20
41	M33 x 2	
27	G½ A	14

Order code

Order example	W	12	3	P31	080	2	B0	2T2
Type								
Resistance thermometer	W							
Diameter F1								
12 mm		12						
14 mm		14						
Material								
Stainless steel 1.4571			3					
Sensor element								
1 x Pt100 3-wire / class B				P31				
2 x Pt100 3-wire / class B				P32				
1 x Pt100 4-wire / class B				P41				
Resistance thermometer / class A				AXX				
Immersion tube length U1*								
80 mm					080			
100 mm					100			
120 mm					120			
150 mm					150			
200 mm					200			
250 mm					250			
Measuring insert								
Interchangeable						2		
Electrical connection								
Head form B with ceramic socket							B0	
Head form B with transmitter**							BT	
Process connection E*								
G½ A								2T2
G¾ A								3T2
M27 x 2								HT2
M33 x 2								FT2

* Other specifications available on request

** For more information, see our product range "temperature transmitters"

Type WBF

Temperature sensor with protection tube form 2 G / 2F and neck pipe. This sensor is used in industrial applications for measuring liquid and gaseous media.

Technical features

- Neck pipe 125 mm or 25 mm
- Flange DN 25 and DN 40 available
- Available with optional instrument transformer
- Customer-specific fitting lengths and fixing thread on request

Sensor element

- Resistance thermometer class A and B
- Thermocouple class 1

Measuring insert

According to DIN 43735, interchangeable, Ø 6 mm or 8 mm
Measuring insert no. 61 or 81

Diameter

- 9 mm
- 11 mm
- 14 mm

Degree of protection

IP54

Max. Temperature

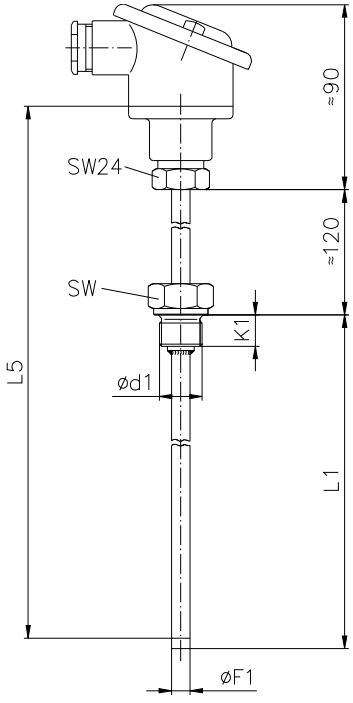
- 400 °C resistance thermometer
- 600 °C on request
- 800 °C thermocouple

Process connection

- Plain immersion tube
- Fix connecting thread

Electrical connection

Head form B made of aluminium diecasting, silver finish, max. temperature 200 °C



ød1	K1	SW
M20x1,5	15	27
G1/2A		
G1A	30	41

Order code

Order example	WB	B	C	P31	0100	B0	0	00
Type								
Resistance thermometer	WB							
Thermocouple	TB							
Diameter F1								
9 mm		B						
11 mm		D						
14 mm		F						
Material								
Stainless steel 1.4571			C					
Sensor element								
1 x Pt100 3-wire / class B				P31				
2 x Pt100 3-wire / class B				P32				
1 x Pt100 4-wire / class B				P41				
1 x Fe-CuNi (type J)				J11				
2 x Fe-CuNi (type J)				J12				
1 x NiCr-Ni (type K)				K11				
2 x NiCr-Ni (type K)				K12				
Resistance thermometer / class A				AXX				

Length L1*	Measuring insert L5*	0100	B0	0	00
100 mm	255 mm	0100			
160 mm	315 mm	0160			
250 mm	405 mm	0250			
400 mm	555 mm	0400			
Electrical connection					
Head form B with ceramic socket			B0		
Head form B with transmitter**			BT		
Process connection d1*					
Without				0	
G½ A				K	
M20 x 1.5 (no DIN)				G	
G 1 A				L	
Flange DN 25				F25	
Flange DN 40				F40	
Options					
Neck tube 25 mm					00

* Other specifications available on request

** For more information, see chapter temperature transmitters

KombiTemp®

SIKA thermometer with integrated temperature sensor

Technical data	
Type	**K 122**
Housing	Die cast aluminium, gold-coloured anodised
length	110 mm
width	30 mm
Thermometer capillaries	→ Special glass prismatic → Approx. 6 mm diameter, → black burnt-in scale,
Thermometer filling	Blue
Immersion tube	Diameter 10 x 1 mm
Electrical Connection	Cable socket, angle type DIN EN 175301-803
Immersion tube material	Brass, up to PN 16 bar Stainless steel, up to PN 40 bar
Design	Straight, fixed thread connection

Types K122

MERCURY-FREE

SIKA Order example		K122	35	063	2	1	1	0	ISSA-Code	IMPA-Code
K 122		K122								
Measuring range	-30...50 °C		35							
	0...60 °C		06							
	0...100 °C		10							
	0...120 °C		12							
	0...160 °C		16							
	0...200 °C		20							
Immersion tube length L_1	63 mm			063					61.231.01 - 61.231.18	
	100 mm			100						
	160 mm			160						
Mechanical connection	G½				2					
	M20 x 1.5				7					
Immersion tube material	Brass (2.0321, for pressure up to 16 bar)					1				
	Stainless steel (1.4571, for pressure up to 40 bar)					3				
Electrical temperature sensor	1x Pt100 / 3-wire / class B						1			
	1x Pt1000 / 2-wire / class B						7			
Scale	°C							0		
	°C and °F							2		

Please ask for customised specifications

Type K 130 for measuring ranges -30...200 °C

Technical data	
Type	**K 130**
Housing	Die cast aluminium, gold-coloured anodised
length	110 mm
width	30 mm
Thermometer capillaries	→ Special glass prismatic → Approx. 6 mm diameter, → black burnt-in scale,
Thermometer filling	Blue
Immersion tube	Diameter 12 x 1 mm
Electrical Connection	Cable socket, angle type DIN EN 175301-803
Immersion tube material	Brass, up to PN 16 bar Stainless steel, up to PN 40 bar
Design	90°, fixed thread connection

SIKA Order example		K130	35	063	2	1	1	0	ISSA-Code	IMPA-Code
K 130		K130								
Measuring range	-30...50 °C		35							
	0...60 °C		06							
	0...100 °C		10							
	0...120 °C		12							
	0...160 °C		16							
	0...200 °C		20							
Immersion tube length L_1	63 mm			063						
	100 mm			100						
	160 mm			160						
Mechanical connection	G½				2					
	M20 x 1.5				7					
Immersion tube material	Brass (2.0321, for pressure up to 16 bar)					1				
	Stainless steel (1.4571, for pressure up to 40 bar)					3				
Electrical temperature sensor	1x Pt100 / 3-wire / class B						1			
	1x Pt1000 / 2-wire / class B						4			
	1x Pt1000 / 2-wire						7			
	1x NiCr-Ni (Type K)						2			
	1x Fe-CuNi (Type J)						3			
Scale	°C							0		
	°C and °F							2		

- → Temperature calibrators
- → Pressure calibrators
- → Recalibration set
- → Hand held devices
- → CargoTemp roller
- → Simulators
- → Portable gas detectors

TEST AND CALIBRATION EQUIPMENT →

Temperature calibrators

Temperature calibrators - Series TP Basic

SOLAS ISM regulation

In 1998, the International Safety Management (ISM) code was adopted by IMO and became mandatory on certain ocean going vessels. In 2002 the Safety Of Life At Sea (SOLAS), Chapter IX and the ISM code applies to all ships. Our calibration equipment (temperature calibrators and pressure calibrators) will enable ship owners and marine engineers to comply with the SOLAS regulation for maintenance standards. We advice a recalibration of the calibrator with a cycle between 1 and 2 years depending on strain.
The recalibration comprises:

- On board:
  SIKA Recalibration Set (see on the following pages)
- SIKA in house:
  Calibrator adjustment made by SIKA
  laboratory with certificate

Economic and safe

Exact temperature measurement and monitoring are "musts" in applications crucial to operational safety of machinery and industrial installations.
Regular inspection of the temperature sensors used in these applications is essential for economic and technical safety reasons and is already prescribed as obligatory in many sectors.
The temperature calibrators are already a part of the standard equipment of the technician in the above listed sectors.
These compact devices are easy to transport and easy to operate and have all performance features required for "in-situ inspection".

For inspection of

Thermometers / SIKA thermometers
Inspection is performed by comparison of the temperature measured by the test piece and the block temperature indicated by the calibrator / calibration bath.

Temperature switches / thermostats
The test piece is inserted into the block and connected to the external transducer. The switch setting respective to the switch point is signalled by reached temperature.

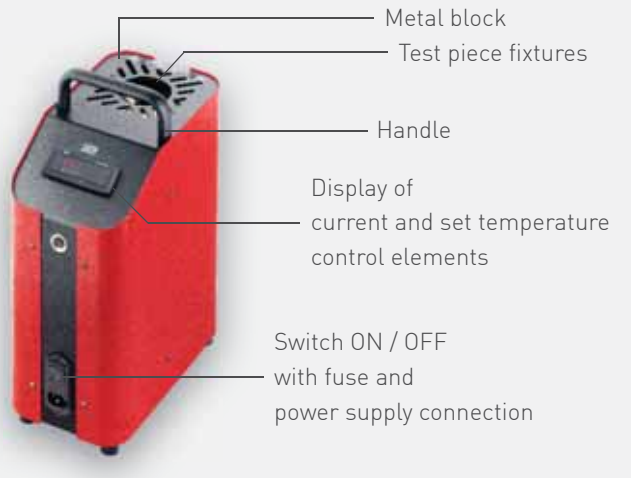
Resistance thermometers and thermocouples
The inspection is performed by comparison of the temperature indicated on the external measuring instrument with the reference temperature of the calibrator or calibration bath.

Description

The calibrators of series TP Basic contain an electrically controlled metal block with a bore for the insertion of the test piece. Adapter sleeves are used for test pieces with smaller diameter. The block is mounted in a heat insulated housing.
The complete electronic is located in the front of the calibrator. The required temperature is easily set on the digital controller. The current temperature will automatically be adjusted to the set value. The current temperature and set temperature are constantly shown on the 2-line, 4-digit, 7-segment LED display.

For calibration of indicators and loops, mono- and multifunction simulators are available on the following pages.

Series TP Basic



Accessoires

Technical data and order code

Type TP 17 165 M

Type TP 17 650 M

Order codes		
SIKA-Code	EP17160M281503	EP17650M281500
ISSA-Code	61.180.01	61.180.02
IMPA-Code	65 25 07	65 25 08 / 65 25 09
Type	**TP 17 165 M**	**TP 17 650 M**
Temperature range*	-35 °C up to 165 °C	Ambient temp. up to 650 °C
Block temperature control	Digital PID controller, automatic fine adjustment with softstart for fan	
Accuracy	±1 °C	±1 °C
Stability	±0.1 °C	
Block temperature display	4-digit, 2-line, 7-segment LED, 7 mm high, red and green	
Display range	-50.0 °C up to 165.0 °C	0.0 °C up to 650.0 °C
Resolution	1 °C	
Test piece fixture		
Block material	Aluminium	Brass
Block bore	Ø 28 mm	Ø 28 mm
Block depth	150 mm	
Adapter sleeves	Inside diameter between 1.5 mm and 25 mm in steps of 0.5 mm	
General data		
Power supply	100...240 VAC, 50 / 60 Hz	230 / 240 VAC, 50 / 60 Hz
Power consumption	Approx. 375 W	Approx. 1000 W
Dimensions L x W x H	Approx. 210 x 380 + 50 x 300 mm	Approx. 150 x 330 + 70 x 270 mm
Weight	Approx. 10.0 kg	Approx. 7.5 kg
Options		
Accessories	Aluminium transport case	Aluminium transport case, nylon service case
Power supply		100...115 VAC, 50 / 60 Hz 100...240 VAC, 50 / 60 Hz
Certificates	DAkkS-Certificates, SIKA works certificate	
Engineering unit	Display of temperature in °F	

* At an ambient temperature of 20 °C / 68 °F

Temperature calibrators - Series TP 17 200

Type TP 17 200

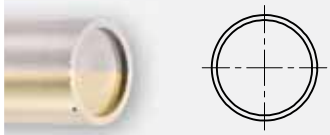
Order codes	
SIKA-Code	EP172000281503
Type	TP 17 200
Control sensor	Internal
Dry block	
Temperature range*	-55...200 °C
Accuracy	±0.4 °C
Stability	±0.1 °C
Measurement zone	110...150 mm
Block dimensions	
→ Diameter	Ø 28 mm
→ Depth	150 mm
Display unit	
Display	2-line, 4-digit display Red / green, unit °C / °F
Display range	-60...200 °C
Resolution	0.1 °C
General data	
Dimensions	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
Weight	Approx. 12.5 kg
Power supply	100...240 VAC, 50 / 60 Hz
Power consumption	Approx. 555 W

* At an ambient temperature of 20 °C / 68 °F

The TP 17 200 temperature calibrator, which is also known as TP COOL, works in a temperature range from -55 to 200 °C.

Adapter Sleeves - standard configurations

Our adapter sleeves are designed for use with SIKA dry block calibrators. The sleeves are configured with various diameter bores to accomodate industry standard temperature sensors. We provide several standard configurations for quick delivery.

Standard	Dimensions
Adapter sleeves Ø 28 mm	**Bores**
	1x 3.5 mm (⅛ in.) 1x 6.5 mm (¼ in.)
	1x 3.5 mm (⅛ in.) 1x 6.5 mm (¼ in.) 1x 13.5 mm (½ in.)
	1x 3.5 mm (⅛ in.) 1x 5.0 mm (3/16 in.) 1x 6.5 mm (¼ in.) 1x 9.5 mm (⅜ in.)
	1x 3.5 mm (⅛ in.) 6x 6.5 mm (¼ in.)
	1x 3.5 mm (⅛ in.) 2x 5.0 mm (3/16 in.) 2x 6.5 mm (¼ in.) 2x 9.5 mm (⅜ in.)
	Blank sleeve

For other configurations - consult factory

Pressure calibrators

Precision pressure calibrators - series PM

Pneumatic and hydraulic pressure calibrators of series PM distinguish themselves especially by high accuracy of measurement and compact type of construction. Reference pressures of -1 up to 1000 bar can be generated in a fast and simple way. Exact adjustment of the desired pressure is carried out by a precision adjustment valve. The reference pressure is indicated via an analogue precision pressure gauge or a digital LCD.

The instruments under test are connected to the pressure output of the calibrators by a pressure hose and an adapter. For rough use on the spot the calibrators can be supplied in protection class IP68. Power is supplied by batteries or rechargable accumulators. The automatic measuring range switch of the PM series grants an optimal resolution with any application. Different measurement units can be selected by pressing a function key.

Technical data test pumps

Type	**P 40.2**	**P 60**	**P 700.3**	**P 1000.2**
Pressure medium	Air		Distilled water or hydraulic fluid	
Pressure range	Vacuum -0.95 bar Pressure 40 bar	Vacuum -0.95 bar Pressure 60 bar	With destilled water 0...700 bar With hydraulic fluid 0...700 bar	With destilled water 0...1000 bar With hydraulic fluid 0...1000 bar
Pressure connection → References → Test sample	 G¼ G¼ with quick-coupling and pressure hose (1 m)		 G¼ G¼ with quick-coupling and pressure hose (1 m)	
Adapter set	G⅛, G¼, G⅜, G½, NPT ⅛, NPT ¼, NPT ½ M12 x 1.5, M20 x 1.5 and G⅛ male, G¼ male			
Set of seals	PA Seals and O-rings			
Dimensions → Pump with pressure hose → Pump with accessories in case	 Approx. 240 x 170 x 50 mm Approx. 450 x 370 x 110 mm		 Approx. 255 x 225 x 85 mm Approx. 450 x 370 x 125 mm	
Weight → Pump with pressure hose → Pump with accessories in case	 Approx. 1.1 kg Approx. 4.2 kg		 Approx. 1.8 kg Approx. 4.8 kg	

Types P 40.2 and P 60

Types P 700.3 and P 1000.2

Combinations

▼ ▶	Reference E2 (0.5% FS)	Reference D2 (0.1% FS)
 **P 40.2**	**PM 40.2 E2** (40 bar) 0.5 % FS	**PM 40.2 D2** (40 bar) 0.1 % FS
 **P 60**	**PM 60 E2** (60 bar) 0.5 % FS	**PM 60 D2** (60 bar) 0.1 % FS
 **P 700.3**	**PM 700.3 E2** (400 bar) 0.5 % FS (700 bar) 0.5 % FS	**PM 700.3 D2** (400 bar) 0.1 % FS (700 bar) 0.1 % FS
 **P 1000.2**	**PM 1000.2 E2** (1000 bar) 0.5 % FS	**PM 1000.2 D2** (1000 bar) 0.1 % FS

All hand-held pressure pumps and reference gauges can be combined for different measuring ranges, resolutions and accuracy classes, as outlined above.

Ex Please ask separately for EX-proof.

Type		SIKA Order code	ISSA-Code	IMPA-Code
Pressure pumps				
P 40.2 (pneumatic)		EPPM0400BL0000	61.241.50	65 16 31
P 60 (pneumatic)		EPPM0600BL0000	61.241.51	65 16 32
P 700.3 (hydraulic)		EPPM7000BL0003	61.241.52	65 16 33
P 1000 .2 (hydraulic)		EPPM1K0BL0000		65 16 34
References				
E2 (40)	Measuring range -1...40 bar	EME8REF-E2-0040	61.241.80	65 16 35
E2 (60)	Measuring range -1...60 bar	EME8REF-E2-0060		
E2 (400)	Measuring range 0...400 bar	EME8REF-E2-0400	61.241.81	65 16 36
E2 (700)	Measuring range 0...700 bar	EME8REF-E2-0700		
E2 (1000)	Measuring range 0...1000 bar	EME8REF-E2-1000		
D2 (40)	Measuring range -1...40 bar	EME8REF-D2-0040	61.241.82	65 16 37
D2 (60)	Measuring range -1...60 bar	EME8REF-D2-0060	61.241.83	65 16 38
D2 (400)	Measuring range 0...400 bar	EME8REF-D2-0400	61.241.84	65 16 39
D2 (700)	Measuring range 0...700 bar	EME8REF-D2-0700	61.241.85	65 16 40
D2 (1000)	Measuring range 0...1000 bar	EME8REF-D2-1000	61.241.86	65 16 41

Table top test pumps

Pneumatic table top test pump

Type P 120 T

Type	P 120 T	
Pressure ranges		
Negative pressure	-0.95 bar	-13.78 psi
Positive pressure	120 bar	1740 psi
OEM version		
Pressure medium	Air	
Dimensions	Approx. 420 x 320 x 150 mm	Approx. 16.54 x 12.6 x 5.91 in
Weight	Approx. 6.1 kg	Approx. 13.45 lbs
Connections		
Reference	M20 x 1.5 with quick coupling and adapter G1/4	
Test sample	M20 x 1.5 with quick coupling and adapter G1/4	
Full version		
Adapter kit	Chrome-plated brass	
Gasket kit	PA Seals and O-rings	
Dimensions	Approx. 575 x 470 x 230 mm	Approx. 16.54 x 12.6 x 5.91 in
Gewicht	Approx. 10.2 kg	Approx. 22.5 lbs

Hydraulic table top test pump

Type P 700 T

Type	P 700 T	
Pressure ranges		
With hydraulic fluid	0...700 bar	0...10 000 psi
OEM version		
Pressure medium	Hydraulic fluid	
Dimensions	Approx. 500 x 110 x 160 mm	Approx. 19.7 x 4.3 x 6.3 in
Weight	Approx. 5.6 kg	Approx. 12.35 lbs
Connections		
Reference	G¼	
Test sample	G¼ with quick coupling and pressure hose (1 m / 39.37 in)	
Full version		
Adapter kit	Stainless steel	
Gasket kit	PA Seals and O-rings	
Dimensions	Approx. 575 x 470 x 230 mm	Approx. 22.6 x 18.5 x 9.1 in
Weight	Approx. 10.2 kg	Approx. 22.5 lbs

Digital pressure gauges

Type E2, D2

Type E2 / D2					
Accuracy (full scale)		E2 0.5 %		D2 0.1 %	
Pressure range		**Resolution**			
-1...3 bar	-14.5...43.5 psi	1 mbar	0.01 psi	1 mbar	0.01 psi
-1...5 bar	-14.5...72.5 psi	1 mbar	0.01 psi	1 mbar	0.01 psi
-1...10 bar	-14.5...145 psi	1 mbar	0.01 psi	1 mbar	0.01 psi
-1...20 bar	-14.5...290 psi	1 mbar	0.1 psi	1 mbar	0.1 psi
-1...40 bar	-14.5...580 psi	10 mbar	0.1 psi	10 mbar	0.1 psi
-1...60 bar	-14.5...870 psi	10 mbar	0.1 psi	10 mbar	0.1 psi
0...100 bar	0...1450 psi	10 mbar	0.1 psi	10 mbar	0.1 psi
0...160 bar	0...2321 psi	10 mbar	1 psi	10 mbar	1 psi
0...250 bar	0...3626 psi	100 mbar	1 psi	100 mbar	1 psi
0...400 bar	0...5800 psi	100 mbar	1 psi	100 mbar	1 psi
0...700 bar	0...10 153 psi	100 mbar	1 psi	100 mbar	1 psi
0...1000 bar	0...14 500 psi	100 mbar	1 psi	100 mbar	1 psi

Functions		
Type	E2 / D2	
Adjustment options		
Linearisation	via adapter	
Tare / Zero	✓	
Selectable units		
Pressure	bar, mbar, kPa, MPa, PSI, kg/cm², mH_2O, inH_2O	
Features		
Measuring inputs	1 x direct	
Display / Representation		
Multi-functional LCD	4 ½ digit	
Bargraph	✓	
Illumination	✓	
Display filter	✓	
Min / max value	✓	
Measuring rate		
Standard	10 ms	
Peak / Fast	10 ms	
Process connection		
Connection options	G¼	
Material	1.4404	
Medium temperature	-20...80 °C	-4...176 °F
For aggressive media	✓	
Housing		
Degree of protection	IP67 (front) / IP67	
Dimension	Ø 80 mm T=30 mm H=100 mm	
Material	Zinc casting	
Operating temperature	0...50 °C	32...122 °F
Weight	540 g	1.2 lbs.
Power		
Auto-off function	✓	
Battery type	2x 1.5 V AA	
Battery operation	1500 h	
Certificates (optional)		
DAkkS certificate		
SIKA works certificate		

Recalibration set
for temperature and pressure calibrators

All your calibration equipment always available on board!

With dry block temperature calibrators of the TP Basic series and the pressure calibrators of the PM series, the vessel have necessary calibrated test equipment according to SOLAS and DNV on board. According to these regulations the test equipment for temperature and pressure must be recalibrated. Because of this we are able to offer our SIKA recalibration set. Including a reference thermometer MH 3710 for standard calibration requirements or MH 3750 for highest accuracy requirements. With the high temperature probe TF 650-6-300, you can measure the actual accuracy of the dry block calibrator. For precision pressure measurement we offer the SIKA pressure reference type D2. We deliver the complete equipment in a robust case including all necessary certificates.

Benefits

The advantage is that the test equipment doesn't have to be returned to SIKA. It can be left on board and the crew can make the recalibration on their own. Checking the recalibration set is very easy because only the small case has to be returned once a year.

Procedures

Recalibration of temperature calibrators is done with recalibration instrument type MH 3710 or MH 3750 and temperature sensor type TF 650-6-300. Recalibration of pressure calibrators is done with recalibration instrument type D2. Every calibrator has to be calibrated to 4 measuring points. The recalibration set measures the temperatures of the heating block or the pressure of the pressure calibrator and you have to place the measured values on record.

Temperature reference MH

in combination with Temperature Sensor TF

Measuring input:	Pt100
Measuring range:	-50.00...650.0 °C
Resolution up to:	0.1 °C
Miscellaneous:	Min. / max.-memory, hold function, auto-off

MH 3710 (Standard-Set)

- Accuracy 0.3 % full scale

MH 3750 (Premium-Set)

- Integrated alarm and data logger function
- User-specific characteristic curve of sensor
- Real-time clock with day, month and year
- Measured value memory 16384
- Accuracy < ±0.2 °C

Sensor TF 650-6-300

High-precision temperature sensor suitable for MH 3710 and MH 3750 long-time temperature stable

Measuring range:	-50...650 °C
Sensor:	Stainless steel Tube D = 6 mm, L = 300 mm
Cable / Handle:	Silicone cable (1 m) with 4-pin Mini-DIN-plug

Pressure reference type D2

High-precision digital manometer with versatile pressure measuring instrument.

- µC based with internal EEPROM
- DMS pressure cell
- Pressure- and temperature tested
- Min. / max.-memory, hold function, auto-off

Pressure ranges	-1....40 bar / 0.01 -1....60 bar / 0.01 0...400 bar / 0.1 0...700 bar / 0.1 0...1000 bar / 0.1
Accuracy	< ±0.1 % full scale
Temperature range	0...50 °C
Degree of protection	IP67

Recalibration Set

Recalibration Set

Pressure Reference D2

Temperature Hand Held Instrument
MH 3710 / MH 3750

Temperature Reference Sensor TF650-6-300

	Range	Accuracy	Model		SIKA Code	ISSA-Code
Standard recalibration set						
Set 1	650 °C	0.3% FS	Hand held instrument Temperature reference sensor Certificate temperature (2 points)	MH 3710 TF 650-6-300	EME8RCS-SET012	61.241.61
	40 bar	0.1% FS	Pressure reference Certificate pressure (2 points)	Ref D2 (40)		
			Transport case	GKK 3600-RCS		
Set 2	650 °C	0.3% FS	Hand held instrument Temperature reference sensor Certificate temperature (2 points)	MH 3710 TF 650-6-300	EME8RCS-SET022	61.241.62
	700 bar	0.1% FS	Pressure reference Certificate pressure (2 points)	Ref D2 (700)		
			Transport case	GKK 3600-RCS		
Premium recalibration set						
Set 3	650 °C	0.03% FS	Hand held instrument Temperature reference sensor Special linearisation Certificate temperature (4 points)	MH 3750 TF 650-6-300	EME8RCS-SET032	61.241.63
	40 bar	0.1% FS	Pressure reference Certificate pressure (2 points)	Ref D2 (40)		
			Transport case	GKK 3600-RCS		
Set 4	650 °C	0.03% FS	Hand held instrument Temperature reference sensor Special linearisation Certificate temperature (4 points)	MH 3750 TF 650-6-300	EME8RCS-SET042	61.241.64
	700 bar	0.1% FS	Pressure reference Certificate pressure (2 points)	Ref D2 (700)		
			Transport case	GKK 3600-RCS		

Hand held devices

Series MH - for temperature

The handy and reliable instruments of the MH range are used for measuring and recording temperature. The MH range is very flexible and is equally suitable for simple measurements and special applications.

Sensors and probes

The high accuracy of the signal detection and processing is achieved by means of powerful sensors with electronic linearisation of the characteristic curve. The correct probes are available for a wide range of measuring tasks.

Operating comfort

The innovative design of the attractive housing and the advanced technology make the sensors comfortable to operate. In mobile use, all functions can be selected and carried out easily by pressing the buttons. The membrane keypad guarantees protection against dust and moisture.

Multi-function display

As well as MIN / MAX values, hold function and the selected unit of measurement, various calculation values, such as temperature differential, can also be shown on the multi-function display.

Inputs

Automatic sensor recognition through standard DIN socket provides a plug-&-play solution that is easy to install.

Data storage (log functions)

Some instruments in the MH range can store data. The integrated memory records up to 16 384 measurement values. The date and time is automatically added to the values. A real time clock is integrated for this purpose.

Two **log functions** are available:

- In the STORE mode, data is transferred by means of pressing a button and 99 records can be stored. The values stored are shown directly on the display.
- In CYCLE operation, values are recorded automatically at a pre-programmed interval. 9999 or 16 384 records can be stored. The stored values are shown on a PC.

Outputs

Extensive alarm functions via the display, freely scalable standard signal output and buzzer and TTL interface.

PC-Interface

To transfer the measurement values and stored values to a PC, the majority of the MH instruments are fitted with a serial interface.
The EBS 20 M software packages are available with extensive recorder and display functions, as is the SOFT 3050 for evaluation of the logged and alarm values. Process sequences can then be monitored and analysed clearly using the measurement procedures recorded and visualised, and all data can be exported into standard programs (e.g. Microsoft Excel).

Alarm and time displays

A visual and acoustic warning signal indicates when measurements exceed or fall below a programmed alarm point. Transmission via PC is also possible. All data can be displayed with the year and date, thanks to the real time clock.

User-defined characteristic curve MH 3750

With this function, customer-specific curves can be used, alongside the standard calculation of the resistance / temperature characteristic curve in compliance with EN 60751.

The MH 3750 has a very high accuracy of measurement. In order to be able to exploit this high degree of accuracy, appropriate high-quality temperature sensors must be used. Various standard classes of accuracy are available for this purpose.

For applications that require a very high degree of accuracy which is higher than the accuracy of the sensor itself, it is recommended that the sensor be calibrated to the MH 3750 by means of a user-defined characteristic curve.

Series MH - for temperature

MH 175 / **MH** 3710

MH 3750 / **MH** 1150

Order code						
SIKA-Code	EME8GMH1750000	EME8GMH3710000	EME8GMH3750000	EME8GMH1150000	EME8GMH3210000	EME8GMH3250000
ISSA-Code	61.176.10	61.176.11	61.176.12	61.176.13	61.176.15	61.176.17
IMPA-Code	65 18 11		65 18 12			65 18 13
Technical data						
Type	**MH 175**	**MH 3710**	**MH 3750**	**MH 1150**	**MH 3210**	**MH 3250**
Inputs	1	1	1	1	1	2
Measurement input	Pt1000	Pt100	Pt100	TC-K	TC-K / J / S / T / N	TC-K / J / S / T / N
Measuring ranges	-70.0...199.9 °C	-199.99...199.99 °C 200.0...850.0 °C		-50...1150 °C	-199.9...199.9 °C 200...1750 °C	
Resolution	0.1 °C	0.01 °C / 0.1 °C autorange		1 °C	0.1 °C / 1 °C	0.1 °C / 1 °C
Units	°C	°C / °F		°C	°C / °F	°C / °F
Display	3 ½ -digit	2 x 4 ½ -digit		3 ½ -digit	2 x 4 ½ -digit	2 x 4 ½ -digit
Linearisation	Offset / Slope	Offset / Slope	Offset / Slope 50 supporting points	Offset / Slope	Offset	Offset
Log Function			✓			✓

Temperature sensors

Pt1000 measurement sensor for MH 175

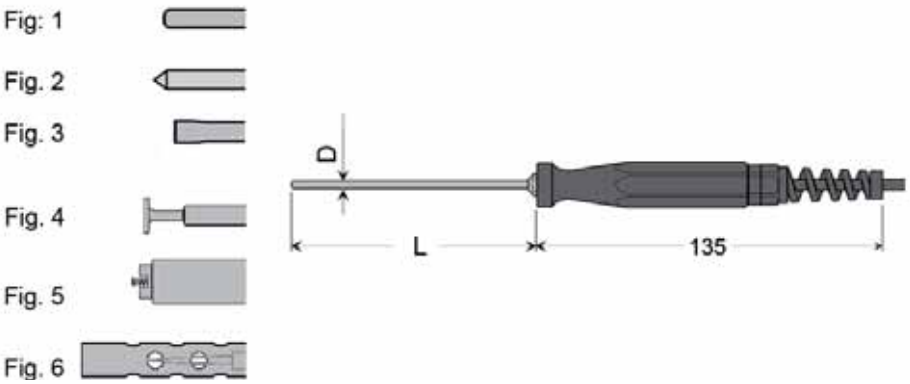
Type	Range	L [mm]	D [mm]	SIKA Order code	ISSA-Code	IMPA-Code
Standard sensor GTF 175 (Fig. 1)	-70...200 °C	100	3	EME8GTF175000G	61.178.01	651815
Spike sensor GES 175 (Fig. 2)	-70...200 °C	100	3	EME8GES175000G	61.178.02	651816
Surface sensor GOF 175 (Fig. 3)	-70...200 °C	100	3 (head = 4)	EME8GOF175000G	61.178.03	651817
Air / gas sensor GLF 175 (Fig. 6)	-70...200 °C	100	3 (head = 6)	EME8GLF175000G	61.178.04	651818

Pt100 measurement sensor for MH 3710 and MH 3750

Type	Range	L [mm]	D [mm]	SIKA Order code	ISSA-Code	IMPA-Code
Standard sensor GTF 401 (Fig. 1)	-50...400 °C	150	3	EME8GTF401000G	61.178.10	651821
Spike sensor GES 401 (Fig. 2)	-50...400 °C	150	3	EME8GES401000G	61.178.11	651822
Surface sensor GOF 401 (Fig. 3)	-50...400 °C	300	3 (head = 4)	EME8GOF401000G	61.178.12	651823
Air / gas sensor GLF 401 (Fig. 6)	-50...400 °C	100	3 (head = 4)	EME8GLF401000G	61.178.13	651824

NiCr-Ni measurement sensor for MH 1150, MH 3210 and MH 3250

Type	Range	L [mm]	D [mm]	SIKA Order code	ISSA-Code	IMPA-Code
Standard sensor GTF 900 (Fig. 1)	-65...1000 °C	130	3	EME8GTF900000G	61.178.15	651826
Spike sensor GES 900 (Fig. 2)	-65...1000 °C	130	3	EME8GES900000G	61.178.16	651827
Inconel sensor GTF 1200/300 (Fig. 1)	-65...1150 °C	300	3	EME8GTF120030G	61.178.20	651828
Surface sensor GOF 130 CU (Fig. 4)	-65...500 °C	130	3 (head = 4)	EME8GOF130CU0G	61.178.30	651830
Surface sensor GOF 130 (Fig. 5)	-65...900 °C	130	8	EME8GOF130000G	61.178.35	651831
Air / gas sensor GLF 130 (Fig. 6)	-65...600 °C	130	3 (head = 6)	EME8GLF130000G	61.178.40	651832



For non-contact temperature measurement

Types MiniTemp 400 / SemiTemp 512 / MaxiTemp 570

Order code			
SIKA-Code	EME8ETIR400000	EME8ETIR512000	EME8ETIR570000
ISSA-Code		61.175.32	61.175.34
Type	**MiniTemp 400**	**SemiTemp 512**	**MaxiTemp 570**
Temperature range	-20...330 °C	-35...1000 °C	-35...1000 °C
Resolution	0.1		0.1
Accuracy <500 °C >500 °C	±2 % .of rdg. +2 °C)	±(2 % of rdg. +2 °C) ±(3 % of rdg. +1 °C)	±(2 % of rdg..+2 °C) ±(3 % of rdg.+1 °C)
Optical resolution	8	30	50
Emissivity	Fix 0.95	Adjustable 0.10...1.00	Adjustable 0.10...1.00
Spectral range	8...14 µm		
Laser pointer	1	2	2
Alarm		Acustical high / low	Acustical high / low
TC connection			Type K
Datastore			100
PC connection			USB
Power supply	9 V		
LCD lightning	✓	✓	✓
°C / °F switchable	✓	✓	✓
Bargraph display			✓
Scan / Hold / Auto OFF	✓	✓	✓
Permanent measuring (Lock)		✓	✓
Low Bat. indication	✓	✓	✓
MIN / MAX store	✓	Max	✓
AVA / DIF function			✓
Accessories (incl.)	Battery	Battery	Battery, TC-K, stand stand base, software, USB cabel, transport case

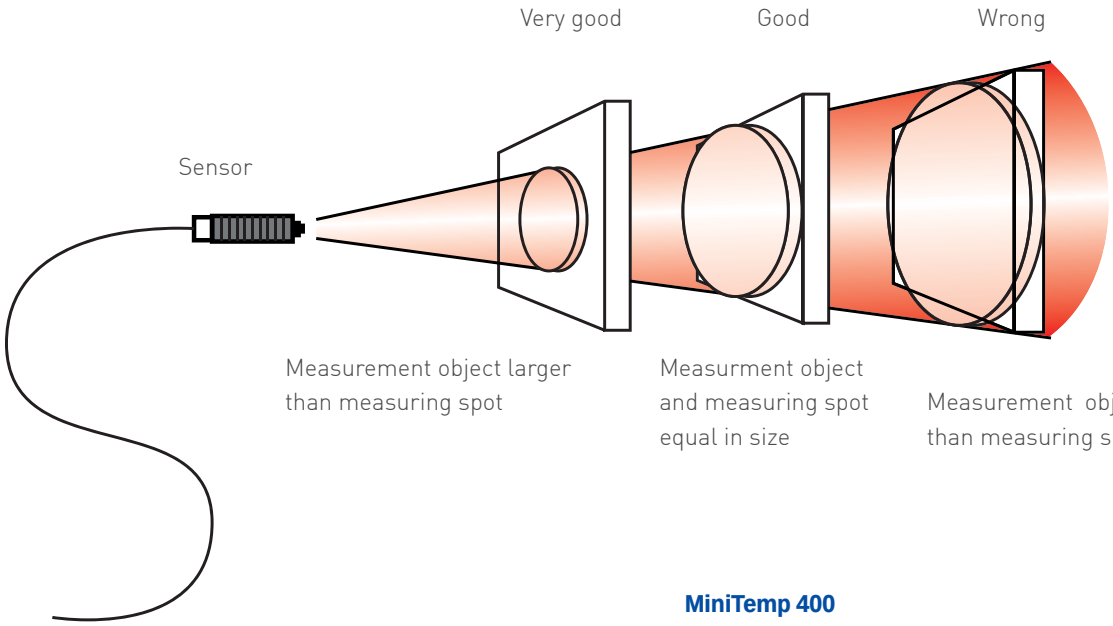
Measuring spots

Hand-held infrared measuring instruments measure the surface temperature of an opaque object.
The instrument's optics detect emitted, reflected, and transmitted energy, which is collected and focused onto a detector.

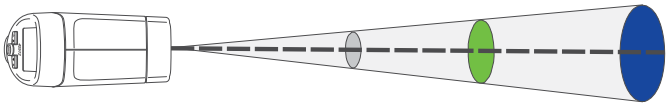
The electronics translate this information into a temperature measurement and display the temperature. The laser pointer is only used as an pointing device.

To measure a temperature, the hand-held measuring instrument is simply aimed at an object and the measurement activated. Here, the distance and associated spot size is to be observed.

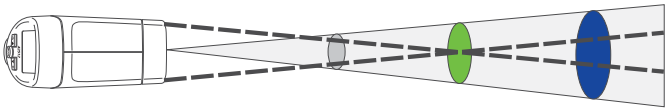
The measuring spot size increases as the distance from the object to be measured increases. The ratio between distance and measuring spot size is represented as optical resolution. The higher the optical resolution, the smaller the measuring spot size is with the same distance.



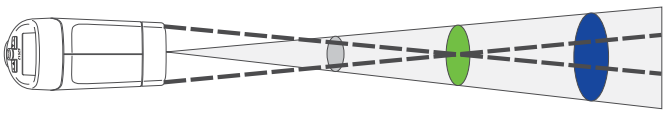
MiniTemp 400



SemiTemp 512



MaxiTemp 570



CargoTemp Roller

More safety by manual temperature monitoring of bulk cargo

CargoTemp Roller

Mobile temperature monitoring in your cargo holds!

- Easy to handle
- Cable with depth indication
- Large integrated LC display
- Comes in a sturdy plastic suitcase

Why is temperature monitoring important?

Many products are self-heating and / or self-igniting as bulk cargo. This autonomous process may lead to the cargo destroying itself, if measures to counteract are not taken in time.

Which products are affected?

- Raw materials such as tobacco, cocoa, cotton and jute
- Oleiferous goods such as seeds and nuts
- All products that can be grouped under the umbrella term 'oil cake', such as expeller, pellets and extractions, as well as
- Aluminium powder, ores and coals

As a basic principle, all goods falling under the IMDG Code, chapter 2.4 class 4.2, should be temperature monitored, in order to detect the incipient self-heating process in time.

SIKA Order code	ISSA-Code	IMPA-Code
ETCTP000350004	61.232.00	65 25 20
Technical Data		
Measurement Input	Pt1000 / 2-wire	
Cable length	35 m	
Cable design	Temperature proofed, braided FEP cable, with 6 marks every 5 meters for depth indication, tension = 50 N	
Measuring probe	Length = 100 mm, Ø = 20 mm, weight = 200 g	
Measurement input	Pt1000 / 2-wire	
Measuring range	-40.0...150.0 °C	
Resolution	0.1 °C	
Accuracy	±0.5 % full scale ±1 digit	
Display	3 ½ digit LCD, 18 mm high	
Measuring rate	3 sec.	
Power supply	Maintenance-free battery	
Battery life time	Expected 10 years	
Housing	Robust PP-plastic, blue / black, with handle	
Housing size	Ø approx. 210 mm, depth approx. 95 mm, handle approx. 45 mm	
Degree of protection	IP40	
Accessories	Portable ABS-plastic case with foam inlay Case dimensions 394 x 294 x 106 mm	
Weight	Approx. 2 kg incl. case	

Simulators

Universal mono- and multifunction calibrators

Types UC TC.2 / UC mAV.2 / UC RTD.2

Universal monofunction calibrator - series UC

- Digital, menu driven value adjustment, 6 keys and navigator
- Background-lit, graphic LC-display, 160 x 160 pixel
- Step-, ramp-, cycle-, HOLD- and scaling functions
- Serial USB PC interface (type mini B)
- Power supply via 4 x 1.5 V batteries (AA type)
- Dimensions approx. 160 x 85 x 45 mm
- Weight approx. 300 g

Type MC 50.2

Universal multifunction calibrator - series MC

- Digital, menu driven value adjustment, 22 keys and navigator
- Background-lit, graphic LC-display, 240 x 320 pixel
- Step-, ramp-, cycle-, HOLD- and scaling functions
- Serial USB PC interface (type B)
- Power supply via internal accumulator incl. power pack (230 VAC)
- Dimensions approx. 210 x 110 x 50 mm
- Weight approx. 900 g

Order code				
	EME8AOUCRTD020	EME8AOUC0TC020	EME8AOUCMAV020	EME8AOMC050200
	UC RTD.2	**UC TC.2**	**UC mAV.2**	**MC 50.2**
Signals → TC Types		J, K, T, R, S, B, C, U, L, N, E		J, K, T, R, S, B, U, L, N, E
→ RTD	Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni1000, Cu10, Cu50			Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni1000 ,Cu10, Cu50
→ Ω	Resistance 0...400 Ω, 0...3500 Ω			Resistance 0...400 Ω, 0...4000 Ω
→ mA			Current 0(4)...20 mA, 25 mA	Current 0(4)...20mA, 25 mA
→ mV		Voltage -10...100 mV		Voltage 0...100 mV
→ V			Voltage 0...10 V, 25 V, 50 V	Voltage 0...10 V, 25 V, 50 V
→ Hz				1...20 kHz
Features	Data logging function via flash memory for 10000 measured values. Graphic and tabular display of measured values			
Accuracy	±0.012 % of rdg. +K	±0.020 % of rdg. +K	±0.015 % of rdg. +K	±0.017 % of rdg. +K
Resolution	0.01 °C or 0.01 °F and 1...10 mΩ	0.1 °C or 0.1 °F and 1 µV	0.1 mA or 0.1 V	6 digits

SIKA Calibration Service Points

We support you worldwide

Thanks to the intensive work of our business development, the share of our export has continuously increased in recent years. The insights we have gained into regional markets have also had a positive influence on the development of new products.

Our steadily growing dealer network has enabled us to provide our foreign customers with high-quality onsite service: in our specially built service points, we can let marine customers recalibrate their calibrators. Special certified "Calibration Service Partners" offer comprehensive service for our industrial customers.

Portable gas detectors

PS 200

NEW SOLAS REGULATION XI-1/7
valid from July 2016

Type PS 200

A robust and accurate portable gas detector, the Personal Surveyor (Type PS 200) provides unrivalled protection in confined space applications with audible and visual alarms in the event of exposure to flammable or toxic gases.
Detecting and displaying up to 4 gases simultaneously, PS 200 is suitable for a host of applications in a variety of industries.
Pre-entry checking can be carried out with the internal sampling pump, and diffusion operation ensuring maximum battery life in confined spaces.

Features

- Simple 1-button operation
- Measures up to 4 gases (LEL / O_2 / CO / H_2S)
- Audible, visual and vibrating alarms
- Internal pump
- Lightweight
- Sensor integrity checking
- Robust construction
- Ease of maintenance

Accessories supplied with the instrument

- Instrument charging / comms clip
- Universal charging adaptor (Mains - USB)
- User handbook (CD-ROM)
- Quick operating instructions
- 3 m tubing c/w quick connect (pumped only)

Technical data			
Measuring Ranges	0...100 % LEL 0...25 % Oxygen (O_2) 0...100 ppm Hydrogen Sulphine (H_2S) 0...1000 ppm Carbon Monoxide (CO)		
Display	Green and red LCD backlit display		
Resolution	LEL	0...100 %	1 %
	Oxygen	0...25 %	0,1 %
	H_2S	0...100 ppm	1 ppm
	Carbon Monoxide	0...1000 ppm	1 ppm
Alarms	Highly visible flashing LED's, piercing 95 dB audible		
Sampling system	Internal sampling pump (optional: diffusion operation)		
Weight	230 g		
Dimensions	121 x 59 x 32 mm		
Degree of protection	IP67		
Enclosure	High impact rubberized polycarbonate case		
Drop test	3 m (10 ft)		
Power supply	Lithium Ion rechargeable battery		
Battery life	Run Time >14 hrs. (>8 hrs. pumped) Charging time <4 hrs.		
Environment	Temperature limits -20...50 °C Humidity: 0...95 % R.H. non-condensing		
Warranty	2 years		
Certification	IEC Ex d ia d IIC T4 GB ATEX Ex II 2 G Ex ia d IIC T4 UL913 Class 1 Groups A, B, C, D CSA Class 1 Groups A, B, C, D* MED CE		

Not available in all countries, please inquire.

- → Force sensors and load cells
- → Hanging scales
- → Sensors for proof load testing
- → Water filled bags

FORCE AND WEIGHT MEASURING INSTRUMENTS

Force and weight measuring instruments

From weighing in shipbuilding to measuring anchor and wind forces, measuring and monitoring forces and weights plays a major role in a wide variety marine engineering applications.

We at SIKA supply a wide range of force sensors, load cells, signal amplifiers, accessories, and specialised combination units.

The following pages include a selection of typical instruments that we supply to the marine engineering market.

Our sensors are ideal for measuring maximum forces and weights from 0...10 N / 0...1 kg to 0...5 MN / 0...500 t, with a wide selection of amplifiers giving you excellent flexibility in signal processing from displaying local measurement values to full integration into your vessel's electronics.

We manufacture stainless-steel sensors in hermetically welded, sealed encasements for long service life in harsh conditions. These sensors are available with sea water-resistant, halogen-free cables specifically for marine and offshore applications.

Other features include wireless load cells and force sensors for applications with constantly changing installation points, or where laying cables is not possible.

We also supply sensors with integrated amplifiers on request, such as for applications requiring a standard signal of 4...20 mA; apart from that, we also supply service cases with battery-operated amplifiers for mobile applications.

Please see our general catalogue 'Mechanical Measurement Instruments' for further information about our entire product range force and weight measuring instruments.

Force sensors and load cells

High quality transducers for marine applications

There is virtually no limit when it comes to possible applications for SIKA force sensors and load cells. SIKA offers sensors for compressive and / or tensile loads, special mechanical designs for measuring large steel wire rope forces and offers a wide range of mechanical accessories needed for system integration.

For further information please see our general catalogue 'Mechanical Measuring Instruments' or send us your technical specification. We will be happy to assist you in finding the right solution.

- Solutions for measuring ranges from 0...10 N / 0...1 kg up to 0...5 MN / 0...500 t
- Sensors fully made from stainless steel
- Hermetically sealed by Laser welding, IP67 / 68 rating
- Special cables material on request (salt water and / or oil resistant, halogen free, etc.)
- Force sensors and load cells with integrated amplifier
- Wireless Modular available for many sensors (wireless data transmission)

Force sensors and load cells with full range of mechanical accessoires

Force sensors

Load cells

Hanging scales

Set for proof load testing

Hanging scales

FGR5A

The FGR5A is designed to take tensile load measurements in situations that call for direct indication of measured values and straightforward connection to the measuring device.

The unit consists of a load cell, which offers particularly good long-term stability, combined with a compact display device. This display device consists of a digital measurement amplifier with an integrated digital display and bar graph. The metal housing provides the requisite sturdiness and protects the device from outside influences.

The shackle allows the FGR5A to be quickly integrated into and removed from the application. The four replaceable standard batteries provide an operating time of around one year.

Energy management in the device is optimised by an automatic shut-off function, which is triggered when the unit is not in use. Excessive loads are clearly indicated by an acoustic warning signal.

Type FGR5A

Performance features

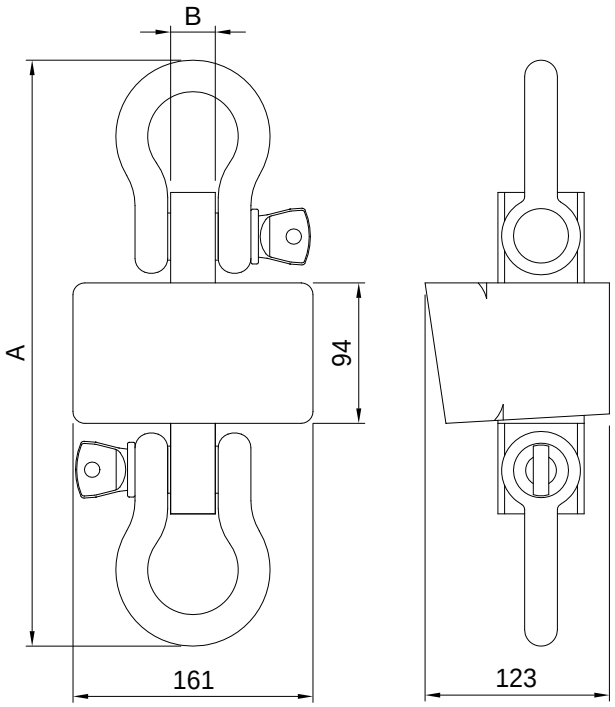
- Supplied with remote control and transport case
- High accuracy and long-term stability
- Robust and compact design
- Quick and easy installation and removal
- Zero and hold function

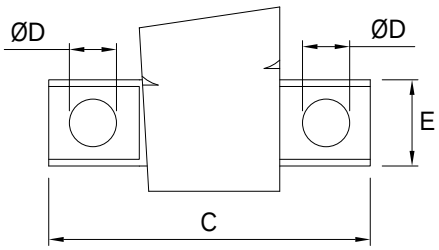
Optionen

- Serial interface RS-232C

Technical data

Hanging scales FGR5A					
Nominal load (E_{max})	500 kg	1 t	3 t	6.5 t	9.5 t
Load transfer direction	Tension				
Accuracy	⩽ ±0,05 % E_{Max}				
Sampling rate	1 Hz				
Resolution	0.1 kg	0.2 kg	0.5 kg	1 kg	2 kg
Save load limit	150 % full scale				
Security coefficient	> 5				
Degree of protection EN 60529	IP20				
Supply voltage					
Operating voltage	4 x 1.5 V, Size AA				
Weight					
Overall	3.5 kg		7.5 kg		12 kg





Nominal load	A	B	C	ØD	E
500 kg - 1 t	270	16	178	16	57
3 t - 6.5 t	400	30	213	25	57
9.5 t	477	40	239	32	70

Wireless force and weight measuring system

F5000MW and FT24-HS for proof load testing

Inspecting cranes with weights, particularly on derricks, is one of the most important safety-relevant tests that need to be performed during maintenance. During these tests appropriate load cells are of fundamental importance to ensure a smooth process.

For many years, SIKA has been supplying a load cell system that is precisely tailored to this application. We have now managed to improve our solution for proof load testing even further.
With the new F5000MW load cell in-shackle design we have achieved simpler connection to the crane. With this load cell we can measure loads of up to 200 t. But the most important attribute of all is that the F5000MW and the FT24-HS display unit now has a wireless solution to check derricks which is ingress protected, making it suitable for harsh environments.

Performance features

- Nominal loads of 1t to 200 t are available
- Simple installation with in-shackle design
- Degree of protection IP65
- Wireless range up to 500 m
- Wireless FT24-HS display unit

Options

- Version with external antenna (up to 800 m range)

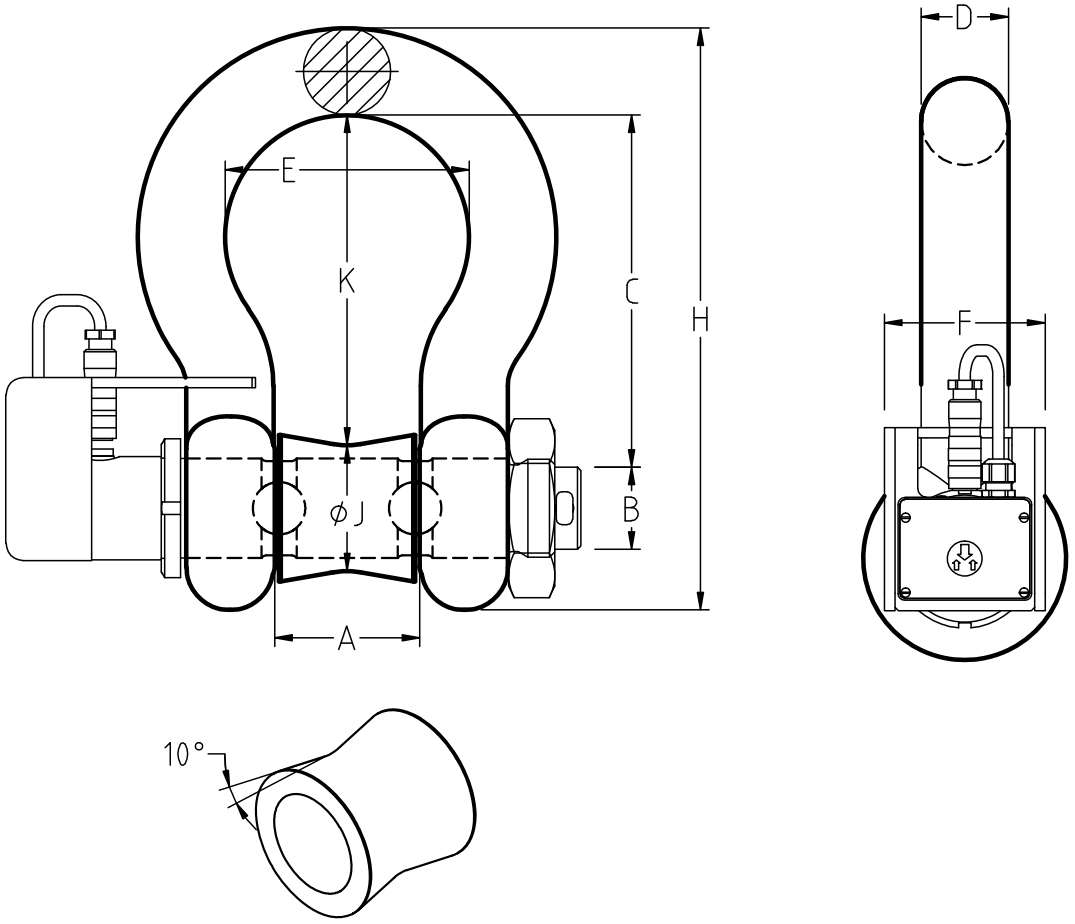
Type F5000MW with mobile display

Technical data

Hanging scale F5000MW	
Nominal load (E_{max})	1 / 2,5 / 4 / 5 / 6,3 / 8 / 12 / 20 / 30 / 45 / 75 / 80 / 115 / 150 / 200 t (higher on request)
Load transfer direction	Tension
Rated characteristic value (Cnom)	1 mV / V
Material	Stainless steel (bolt) / Steel (shackle)
Degree of protection EN 60529	IP65
Encapsulation	Hermetically sealed by welding
Range	500 m open field
Own weight	3...585 kg
Error limits	
Linearity	< 0.250 % E_{Max}
Creep (over 30 min)	< 0.300 % of Emax
Temperature effect on zero signal per 10 °C	< 0.200 % of Emax
Temperature effect on characteristic value per 10 °C	< 0.200 % of Emax
Maximum load	
Safe load limit (Elim)	150 % of Emax
Breaking load	> 500 % of Emax
Lateral load limit	150 % of Emax
Temperature data	
Reference temperature	23 °C
Nominal temperature range (Bnom)	-10...45 °C
Operating temperature range	-30...70 °C

Wireless Display FT24-HS	
Display	7 digits LCD of 8.8 mm high
Power supply	2.5...3.6 VDC
Service temperature range	-10...50 °C
Storage temperature range	-40...85 °C
Degree of protection EN 60529	IP67
Dimensions	152 x 90 x 34 mm

Dimensions



Load	Dimensions [mm]									Tolerances ± [mm]	
	A	B	C	D	E	F	H	ØJ	K	C / K	A
1 - 1.5 t	31	22	75	19	51	46	126	34	65	6.5	1.6
2.5 t	36	25	84	22	58	53	148	35.5	79		
4 t	43	28	95	25	68	60.5	167	37	90		
5 t	46	32	108	28	74	68.5	190	40	104		
6.3 t	57	38	133	35	92	85	233	50	127		3.5
8 t	60	42	146	38	99	92	254	54	140		
12 t	73	50	178	45	127	106	313	65	171		
20 t	83	57	197	50	138	122	348	72	189		
30 t	105	70	264	65	180	145	453	90	250		6.5
45 t	127	80	330	75	190	165	546	105	319		
75 t	147	95	400	95	238	203	647	117	389		
80 t	140	108	368	104	254	229	653	130	357		
115 t	200	140	540	130	305	308	921	165	527	/	/
150 t	200	150	600	140	305	335	1018	180	585	/	/
200 t	225	175	650	170	325	387	1137	200	630	/	/

Sensors for tensile loads

FT20 and FD200

Our heavy-load cells are suitable for measuring large tensile forces. We provide five different versions with nominal loads from 20 to 100 t.
The 60 mm or 73 mm diameter connector bores provide attachment for connector bolts in fork bearings. They may also be used with quality shackles as connectors for measuring large forces on cables. We provide the appropriate shackles as accessories on request.

Performance features

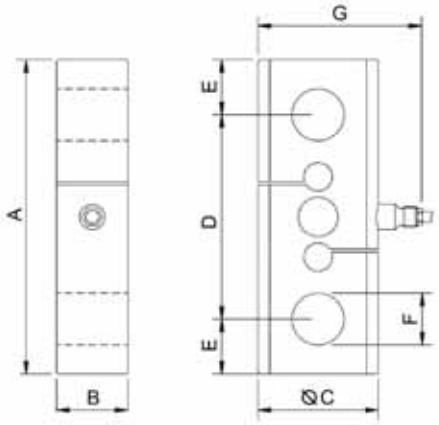
- Measurement ranges available from 20 to 100 t
- Laser-welded for complete insulation
- Easy to integrate into your application
- High long-term measurement stability
- A large number of mechanical mounting aids are available

Options

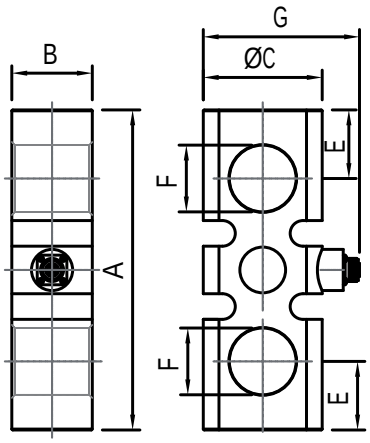
- Version available with cable-free measurement signal transmission
- Connection cable 5 or 10 m MIL connector
- Equipped with shackles for measuring forces on cables

Type FD200

FT20



FD200



Type	Load	Dimensions [mm]							
		A	B	ØC	D	E	F	G	Part No.**
FT20	5 t / 7.5 t / 10 t	200	45	76	130	35	33*	Approx. 103	FT20000WExxx22C
	15 t / 20 t	250	54	82	156	47	42.5*	Approx. 109	FT20000WExxx22C
FD200	20 t / 30 t	280	78	102	-	50	60	Approx. 140	FD20000WExxx26
	50 t / 75 t / 100 t	350	88	130	-	75	73	Approx. 171	FT20000WExxx26

* Connection holes for standard shackles

** xxx = maximum capacity (5t = 005, 7.5 t = 7.5, 10 t = 010, 50 t = 050)

Technical data

Heavy-load cell	FT20		FD200	
Maximum capacity (E_{max})	5 / 7.5 / 10 / 15 / 20 t		20 / 30 t	50 / 75 / 100 t
Load transfer direction	Tension			
Rated characteristic value (C_{nom})	2 mV/V			
Material	Stainless steel			
Degree of protection EN 60529	IP68		IP65 (with connector), IP67 (with cable)	
Encapsulation	Hermetically sealed by welding			
Own weight	4.4 kg	7 kg	10 kg	19 kg
Connection	10 m cable		MIL-C-5015 7-pin connector / cable	
Error limits				
Combined error	< 0.023 % of E_{max}		< 0.100 % of E_{max}	
Linearity	-		< 0.100 % of E_{max}	
Hysteresis	-		< 0.100 % of E_{max}	
Non-repeatability	< 0.014 % of E_{max}		-	
Zero Return over 30 min. at nominal load:	< 0.030 % of E_{max}		-	
Creep (over 30 min).	< 0.024 % of E_{max}		-	
Creep (over 20 and 30 min).	< 0.011 % of E_{max}		-	
Temperature influence zero signal for each 10 °C	< 0.028 % of E_{max}		< 0.028 % of E_{max}	
Temperature effect on characteristic value per 10 °C	< 0.008 % of E_{max}		< 0.008 % of E_{max}	
Electrical data				
Input resistance	420 ± 20 Ω			
Output resistance	350 ± 2 Ω			
Insulation resistance	> 5 GΩ			
Supply voltage	1...15 V (typically 10 V)			
Operating voltage	1...18 V			
Maximum load				
Operating load	120 % of E_{max}		120 % of E_{max}	
Load limit (E_{lim})	150 % of E_{max}		150 % of E_{max}	
Breaking load	> 300 % of E_{max}		> 200 % of E_{max}	
Lateral load limit	200 % of E_{max}		50 % of E_{max}	
Temperature data				
Reference temperature	23 °C			
Nominal temperature range	-10...40 °C			
Operating temperature range	-20...70 °C			

Shackles as an accessory to FT20 and FD200

Type	Load	Working Load Limit (WLL)*	Part No.
for FT20	5 t / 7.5 t / 10 t	9.5 t	FG-4161ZX0035
	15 t / 20 t	17 t	FG-4161ZX0017
for FD200	20 t / 30 t	35 t	FG-4161ZX0035
	50 t / 75 t / 100 t	55 t	FG-4161ZX0055

* Minimum breaking load = 6-times WLL

FPMA

Developed specifically for demanding applications, the professional FPMA compact display unit combines the advantages of a mobile measurement amplifier with the technical properties of a stationary device and a datalogger.

FPMA units feature a stable aluminium housing and are ideal for the use with our FT20 or FD200 load cells. The standard FPMA is connected to the sensor via cable. As an option, this compact display unit is available with Wireless Modular technology. This allows the FPMA to be used with SIKA sensors equipped with wireless data transmission module.

Up to 4800 measurement values per second can be read with a resolution of ±50 000 steps. This also makes the FPMA interesting for dynamic and highly-precise applications.

To round off the wide functional scope, additional functions such as a datalogger with memory for 130,000 measurement values, filtering functions, detection of measurement value peaks and the preventative blocking of measurement values are available.

A USB connection is provided as standard on all units, which permits both real-time communication with the PC and charging the integrated Li-ion rechargeable battery.

Type FPMA

Performance features

- Compact unit in an ergonomic, convenient format
- Large, illuminated and rotatable LCD display
- Battery-powered
- DMS input 2 mV / V
- 1 sensor connectible
- 4-wire connection type
- Accuracy < 0.010 %
- Datalogger integrated
- Automatic sensor detection
- USB interface

Options

- Integrated force sensor from 10 N to 5 kN
- Version available with wireless measurement signal transmission

Technical data

Compact display unit	FPMA
Accuracy	< 0.010 %
Resolution (2 mV / V)	±50 000 steps
Sampling rate	5...4800 Hz
Strain gauge input	2 mV / V
Number of sensors that can be connected	1 (350 Ω or 700 Ω)
Supply voltage	5 V DC ±4%
Connection type	4-wire
Degree of protection EN 60529	IP40
Supply voltage	
Operating voltage	Internal lithium ion battery
Automatic shutoff	1...99 min
Digital display	
LCD display	128 x 64 pixel, illuminated, rotatable
Temperature data	
Nominal temperature range	0...50 °C
Temperature deviation (10 °C) → Measuring range zero point → Measuring range full scale value	 < 0.010 % < 0.010 %
Dimensions	
Overall	79 x 176 x 32 mm (L x W x H);

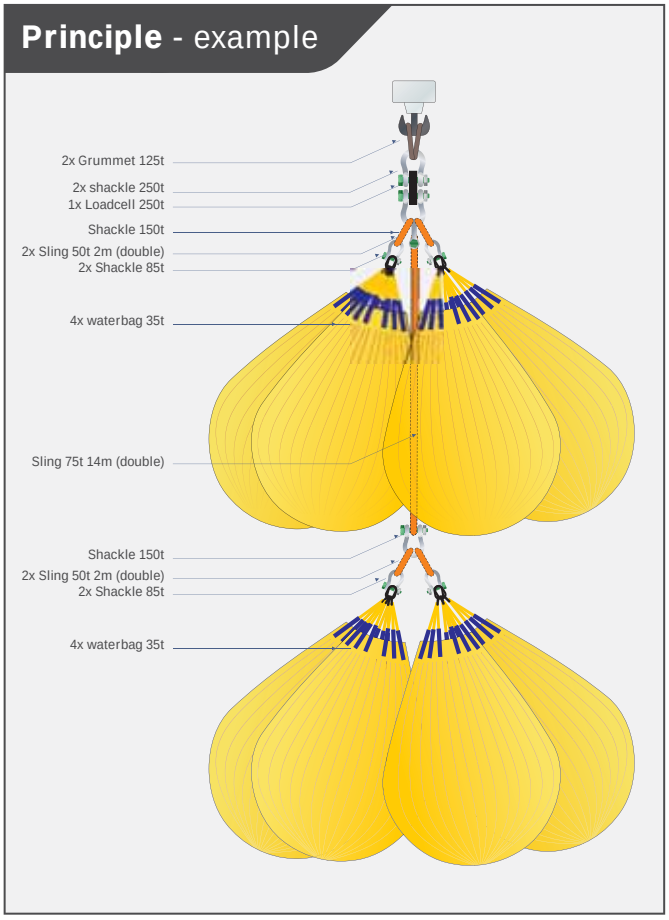
Water filled bags

For proof load testing

Water weights are a unique, safe and simple product specifically designed to provide a test load instead of traditional solid test weights. They are used for proof load testing of cranes and lifting devices.

- Water bags are certified in accordance with health and safety executive requirements
- Water bags weigh less than 2 % of achievable load allowing for considerable savings in transport, storage and labour costs.
- The bags have a physically proven factor of safety in excess of 6:1 and are proof load tested to over 2:1 prior to be taken into service.

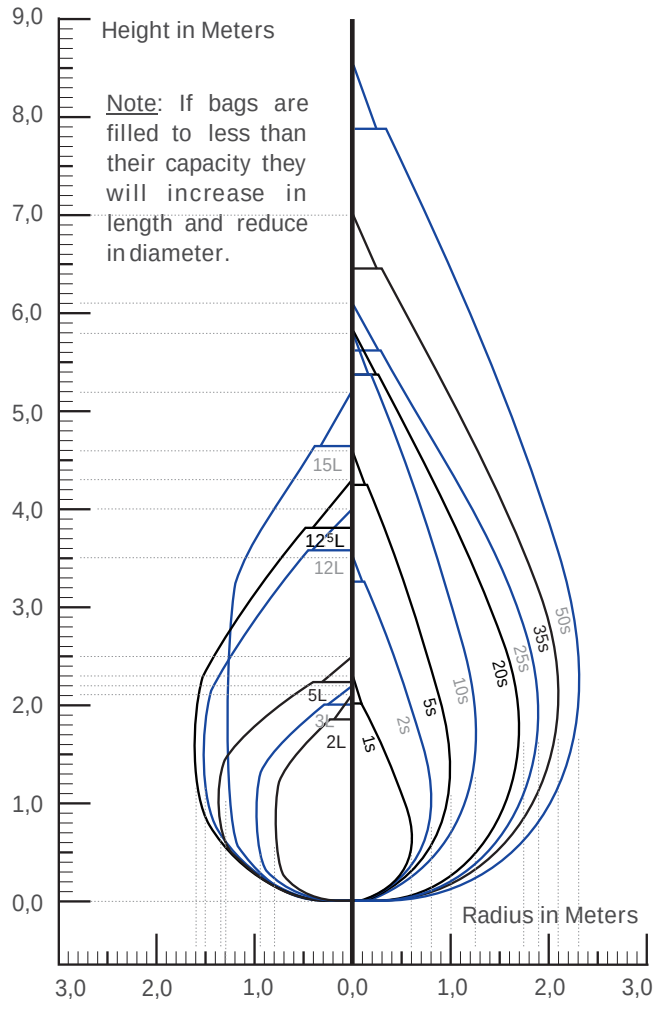
Principle - example



Note: no more than three bags should be slung from a single point. Dimensions are subject to change. Bags filled with less than their capacity will increase in length and reduce in diameter. Bags should not be used in wind speed greater than 25 knots.

Dimensions and order code

Capacity Tonnes	Capacity - L	Size - empty and rolled in m	Weight in kilos	Size when full - height in m	Size when full diam in m	Part No.
1	1000	0.9 x 0.56 x 0.56	23	2.3	1.2	FWFBVFRZY0001
2	2000	1 x 0.6 x 0.6	45	3.5	1.6	FWFBVFRZY0002
2L	2000	1 x 0.6 x 0.6	40	2.1	1.9	FWFBVFRZY0002L
5	5000	1.07 x 0.7 x 0.7	100	4.6	2.0	FWFBVFRZY0005
5L	5000	1.07 x 0.7 x 0.7	95	2.5	2.7	FWFBVFRZY0005L
10	10000	1.1 x 0.8 x 0.8	135	5.8	2.5	FWFBVFRZY0010
12L	12000	1.2 x 0.8 x 0.8	140	4.0	3.0	FWFBVFRZY0012L
12.5L	12500	1.2 x 0.8 x 0.8	140	4.25	3.22	FWFBVFRZY12X5L
20	20000	1.1 x 1 x 1	230	5.8	3.5	FWFBVFRZY0020
35	35000	1.7 x 1.2 x 1.2	340	7.0	4.2	FWFBVFRZY0035



- → Flow switches for insertion installation
- → Piston type flow switches
- → Magnetic inductive flow sensors
- → Turbine flow sensors
- → Positive displacement flow sensors
- → Oval gear flow meters

FLOW MEASUREMENT →

Flow switches for insertion installation

Paddles interchangeable, for marine applications

Type VH500

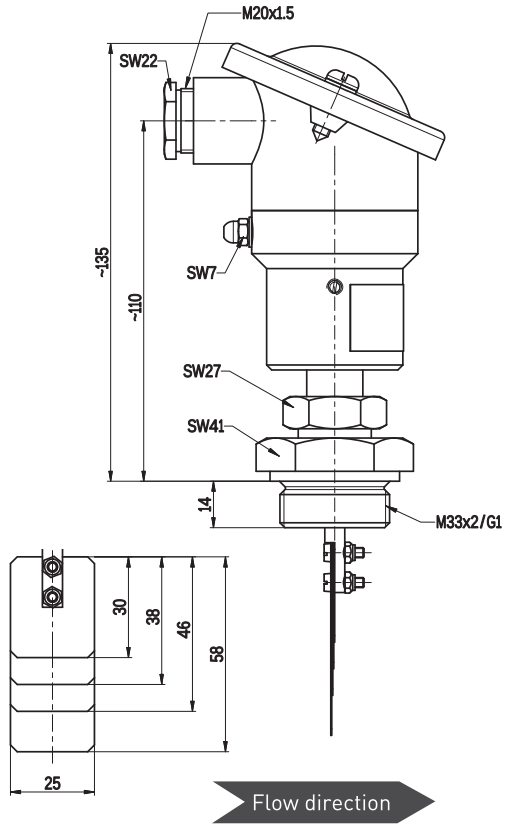
Technical data	
Switching function	Change over contact
Pressure rating (Test pressure)	Max. 6 bar (10 bar) or max. 10 bar (15 bar)
Temperatures	
Medium	Max. 100 °C
Ambient	Max. 85 °C
Electrical data	
Max. contact rating	24 VDC, 5 A resistive load 4 A inductive load 60 VDC, 1 A resistive load 0.5 A inductive load 250 VAC, 10 A resistive load 10 A inductive load
Degree of protection EN 60529	IP54
Protection class EN 60730-1	Class I
Approvals	
DNV GL type approval Certificate No. 8982494 HH and 9497010 HH	

Advantages

- DNV GL type approval
- Suitable for water, oil, etc.
- Insertion installation into pipes or pipe tees DN 25...DN 50 or bigger
- Easy installation and alignment due to screw in connection
- Four paddles in different sizes included, selection in accordance to the pipe size
- Set point adjustment by paddle size selection and by adjustment screw
- Micro switch with high contact rating
- Robust, vibration-resistant up to 4 g

Size of pipe tee	Paddle to select**	Set point ranges [m³/h]*	
		Increasing flow ON	Decreasing flow OFF
DN 25	25 x 30 mm	1.0...1.25	1.05...1.2
DN 32	25 x 38 mm	1.7...2.05	1.6...1.95
DN 40	25 x 46 mm	2.2...2.55	2.1...2.45
DN 50	25 x 58 mm	3.25...3.85	3.15...3.75

* Water, 20 °C, horizontal pipe, tolerance ±15 %
** Higher set points selectable by use of smaller paddle sizes
Set points for bigger pipe sizes on request



Materials in contact with fluid	
Body, process connection	Brass 2.0401
Bellow system	Stainless steel 1.4571
Paddles	Stainless steel 1.4310
Flat gasket	HD 300
O-ring	NBR

Order code	IMPA code	Pressure rating	Process connection
VH500NI3451R41	75 25 38	6 bar	G1
VH500NM3451M41	75 25 44	6 bar	M33 x 2
VH500RI3451R41		10 bar	G1
VH500RM3451M41		10 bar	M33 x 2

Piston type flow switches for marine applications

Series VM100

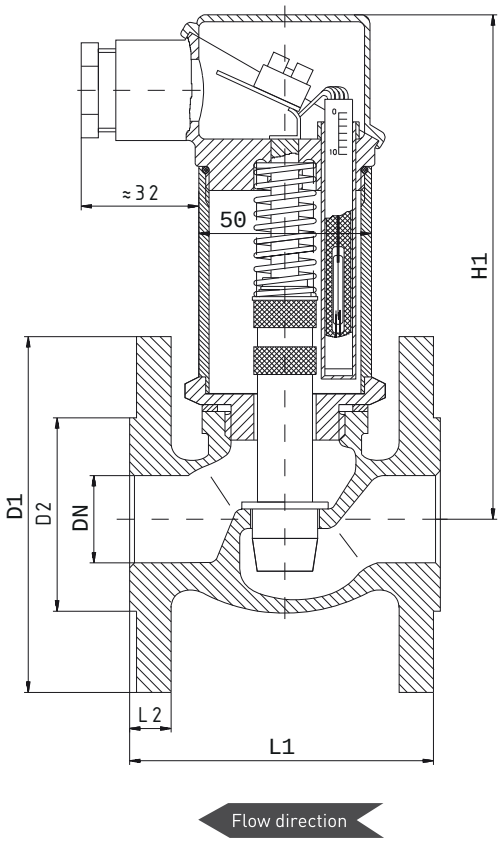
- DNV GL type approval
- Inline installation,
  DN 15...DN 20 female threaded, DN 25...DN 80 flanged
- Wide set point range
- Various fitting positions
- High repeatability
- Reed contact output
- Special version for oil available (on request)

Type VM100

Technical data	
Pressure rating	PN 16
Medium temperature	Max. 100 °C
Change over contact **max. contact rating**	24 V DC; 230 V AC 0,5 A DC; 1 A AC 25 W; 36 VA
Cable gland	M24 x 1,5 acc.to DIN 89280
Degree of protection EN 60529	IP44
Hysteresis	< 15 % of set point range
Accuracy	< 2 % of set point range
Approvals	
DNV GL type approval Certificate No. 5462771 HH	

Order code									
Pipe size	**Process connection**	**Set point range [l/min]* Decreasing flow OFF**	**Dimensions [mm]**					**SIKA-Code**	**IMPA-Code**
			D1	**D2**	**L1**	**L2**	**H1**		
DN 15	G½	2...13			81		136	VM115--1351G3R	75 25 51
DN 20	G¾	5...28			80		136	VM120--1351G4R	75 25 52
DN 25	Flange acc. to EN 1092-1	15...75	115	68	90	12	151	VM125--1351G5R	75 25 53
DN 32		20...125	140	78	95	13	161	VM132--1351G6R	75 25 54
DN 40		30...200	150	88	110	14	165	VM140--1351G7R	75 25 55
DN 50		85...280	165	102	125	14	165	VM150--1351G8R	75 25 56
DN 65		65...410	185	122	150	15	179	VM165--1351G9R	75 25 57
DN 80		150...550	200	138	170	16	185	VM180--1351G0R	75 25 58

* Water, 20 °C



Materials in contact with fluid	
Pipe section	Gun metal RG5
Body	Brass
Piston	PPN (Hostalen)
Magnet	Hard ferrite

Magnetic inductive flow sensors

Principle of operation

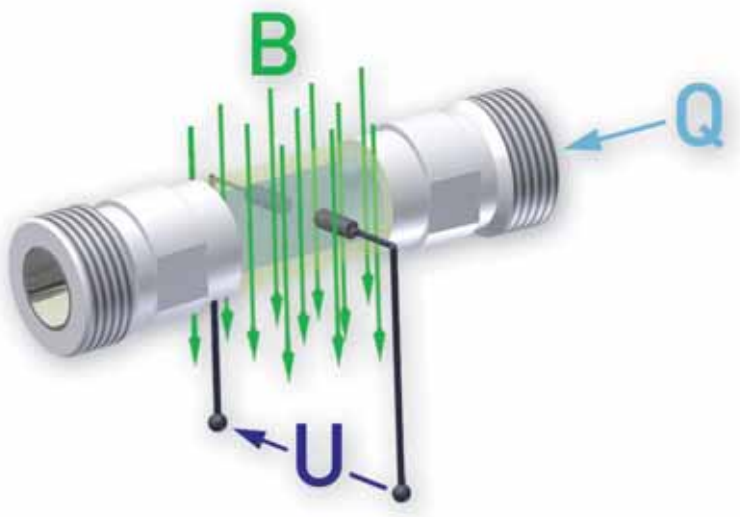
The smart flow sensors of the **induQ®** series operate according to the principle of induction: The measuring pipe is in a magnetic field (**B**). If an electrically conductive medium, with the flow (**Q**) to be measured, flows through the measuring pipe and thereby at a right-angle to the magnetic field, a voltage (**U**) is induced in the medium. This voltage is proportional to the average flow velocity and is picked up by two electrodes.

Regarding flow proportional output signals two versions are available depending on the model:

- Frequency output signal
- Analogue and frequency output signal

The pulse rate can be configured at the factory or on-site.

The **induQ®** sensors enable the flow measurement/volume flow measurement or dosing of electrically conductive liquids without any moving parts. They are the ideal flow sensors when accuracy and reliability are a must.



Advantages induQ®

- No moving parts
- No mechanical wear*
- Free pipe cross-section → no additional pressure drop
- Maintenance-free
- Fast response (< 100 ms)
- Minimum inlet section requirements

* For aqueous media without solid fractions

Magnetic inductive flow sensors

Series induQ® VMM

Advantages

- Rapid signal processing with a 16-bit microcontroller
- Password protection
- Self-test
- Language selection: German, English
- Low-flow suppression
- Empty pipe detection
- Easy menu-driven operation and programming (e.g. measuring range, pulse rate) by the user by means of a two-line alphanumeric display
- Delivery inlcuding works calibration certificate

Outputs

- Analogue output (0)4...20 mA
- Frequency or Impulse output
- 2 alarm / status outputs

Displays

- Flow rate, several total flows
- Flow velocity
- Relative flow rate [%]
- Mass and mass flow (enter density)

Units

- Divers, e.g. m³/h, l/s, USG/min, kg/h (density programmed)

Compact type

Separate type

Type	VMM15	VMM25	VMM32	VMM40	VMM50	VMM65	VMM80	VMM100	VMM125	VMM150	VMM200
Characteristics											
Nominal diameter	DN 15	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200
Process connection	Flange connection in accordance with EN 1092-1, JIS B2220 10K or ANSI B16.5										
Inner diameter											
→ Hard rubber	14.0	27.0	33.3	38.0	48.5	64.3	76.9	102.5	127.7	156.3	205.1
→ PTFE	14.0	27.0	33.3	38.0	48.5	63.3	75.9	102.5	124.7	152.3	201.1
Flow range											
→ Flow velocity [m/s]	0...10										
→ Volumetric flow [m³/h]	0...6.3	0...17.6	0...28.9	0...45.2	0...70.6	0...119.4	0...180.9	0...282.7	0...441.7	0...636.1	0...1130
Accuracy*											
v = 1...10 m/s	±0.5 % of reading										
v < 1 m/s	±0.4 % of reading ±1 mm/s										
additionally											
Frequency output	±0.05 % per 10 K										
Analogue output	±0.1 % per 10 K										
Repeatability	±0.15 %										
Response time	< 100 ms**										
Signal output starting from	> 0 m/s										
Medium / min. conductivity of medium	Water and other conductive liquids / 50 µS/cm										
Medium temperature											
→ Hard rubber	0...90 °C										
→ PTFE	-20...100 °C at 40 bar -20...150 °C at 25 bar -20...180 °C at 16 bar										
→ Process connections	Min. -10 °C (steel)										
→ Process connections	Min. -20 °C (stainless steel)										
Ambient temperature											
→ Hard rubber	0...80 °C										
→ PTFE	-20...100 °C										
→ Process connections	Min. -10 °C (steel)										
→ Process connections	Min. -20 °C (stainless steel)										
→ Display	-20...50 °C***										
Storage and transport temperature	-20...60 °C										
Pressure rating											
→ EN1092-1	PN 40	PN 40	PN 40	PN 40	PN 40	PN 16**** PN 40	PN 16 PN 40	PN 16 PN 40	PN 16 PN 40	PN 16 PN 40	PN 10 PN 16 PN 25 PN 40
→ JIS B2220 10K	9.8 bar										
→ ANSI B16.5 150 RF	19.6 bar (Process connection, steel) 15.9 bar (Process connection, stainless steel)										
Display	LCD two-line, backlight										
Operation	6 keys, menu-driven										
Degree of protection EN 60529	IP67										

* Reference conditions: Media temperature 10...30 °C; Ambient temperature 20...30 °C; warm-up period 30 min.; straight pipe lengths; inlet 5 x DN, outlet 2 x DN, regularly centered and earthed

** Depending on the electronics settings

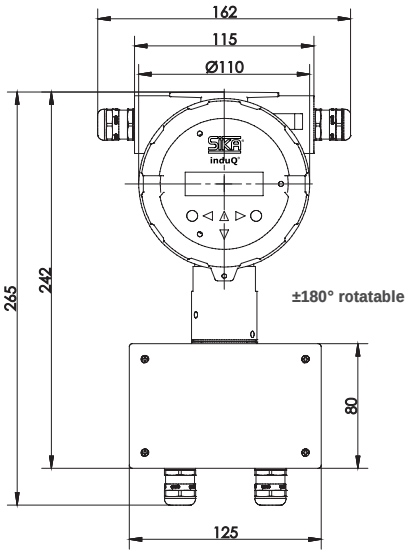
**** 8 bolt flanges

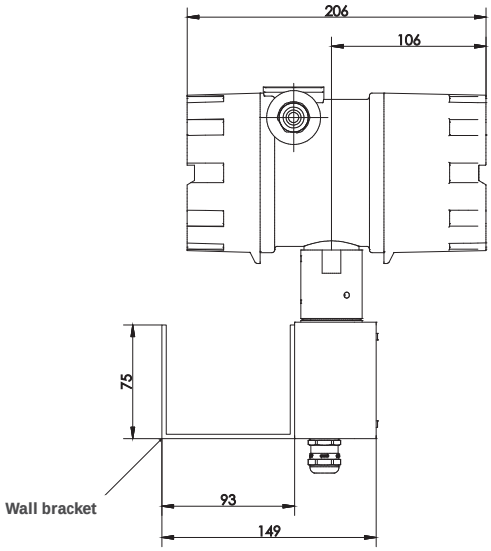
*** The readability of the LCD display is restricted below 0 °C

Output signals											
Type	**VMM15**	**VMM25**	**VMM32**	**VMM40**	**VMM50**	**VMM65**	**VMM80**	**VMM100**	**VMM125**	**VMM150**	**VMM200**
Pulse / frequency output											
→ **Configuration**	Pulse signal or frequency signal selectable										
Pulse output											
→ **Pulse rate (factory-set) [pulses/m³]**	1000	1000	1000	1000	1000	1000	1000	1000	100	100	100
→ **Pulses/Time**	⩽ 1000 Pulses/s										
→ **Pulse width**	⩾ 0.1 ms (max. 2 s), adjustable										
→ **Signal shape**	Squarewave signal										
Frequency output											
→ **Factory-scaled measuring range corresponds to 0...1 kHz [m³/h]**	0...3	0...10	0...10	0...10	0...20	0...50	0...50	0...70	0...100	0...150	0...250
→ **Frequency**	0...1 kHz										
→ **Signal shape**	Squarewave signal										
Analogue output											
→ **Factory-scaled measuring range corresponds to 4...20 mA [m³/h]**	0...3	0...10	0...10	0...10	0...20	0...50	0...50	0...70	0...100	0...150	0...250
→ **Operating range**	0 ... 20 mA / 4 ... 20 mA, selectable										
→ **Current limitation**	21.6 mA										
→ **Max. burden**	600 Ω										
→ **Short-circuit proof**	Permanent										
Alarm output											
→ **Quantity**	2										
→ **Version**	Optocoupler										
→ **Function**	Status output: Preflow, backflow, MIN flow rate, MAX flow rate, alarm (adjustable)										
→ **Switching values**	U_{max}: 30 V; I_{max}: 60 mA; P_{max}: 1,8 W										

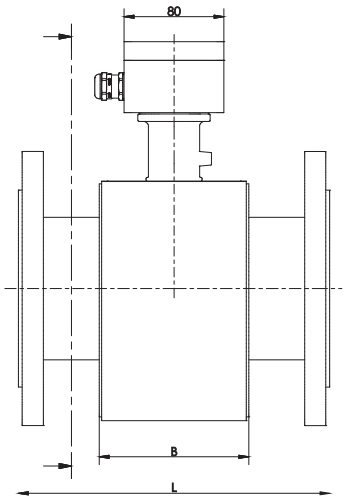
Electrical data	
Electrical connection	Cable gland M20 x 1.5
Power supply	230 VAC (-15 % / +10 %), 50/60 Hz or 115 VAC (-15 % / +10 %), 50/60 Hz or 19...36 VDC
Current consumption	15 VA

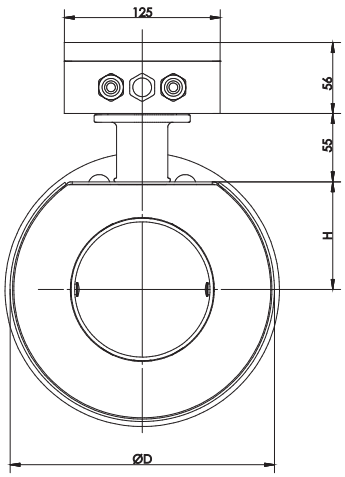
Separate type (Display)





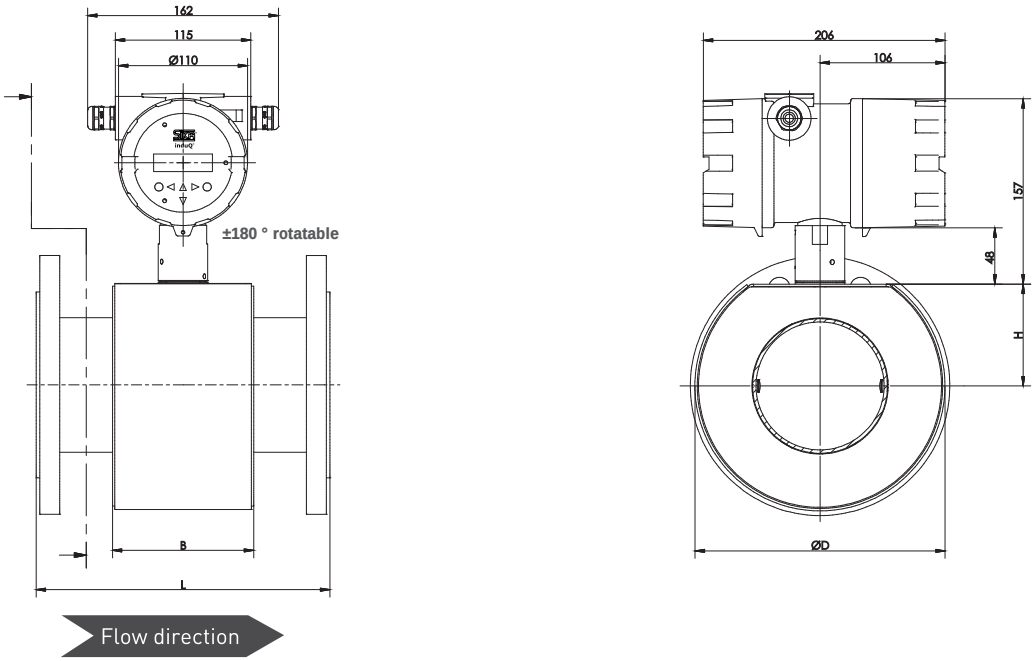
Separate type (Sensor)





Flow direction

Compact type



Dimensions [mm]										
Process connection		**Installation length L**							**Weight EN 1092-1 [kg]***	
EN 1092-1 JIS B2220 10K	ANSI B16.5	Hard rubber	PTFE		Tolerance	B	D	H	Sensor	Compact type
			Without protection rings	With protection rings						
DN 15	½"	200	200	206	+0 / -3	80	130	53	5	8
DN 25	1"	200	200	206	+0 / -3	80	130	53	6	9
DN 32	1¼"	200	200	206	+0 / -3	80	130	53	7	10
DN 40	1½"	200	200	206	+0 / -3	80	130	53	7.5	10
DN 50	2"	200	200	206	+0 / -3	80	140	57	9	12
DN 65	2½"	200	200	206	+0 / -3	80	155	63	10	13
DN 80	3"	200	200	206	+0 / -3	80	170	70	13	16
DN 100	4"	250	250	256	+0 / -3	120	210	86	15	18
DN 125	5"	250	250	256	+0 / -3	120	240	98	19	22
DN 150	6"	300	300	306	+0 / -3	120	285	117	23	26
DN 200	8"	350	350	360	+0 / -3	200	350	143	36	39

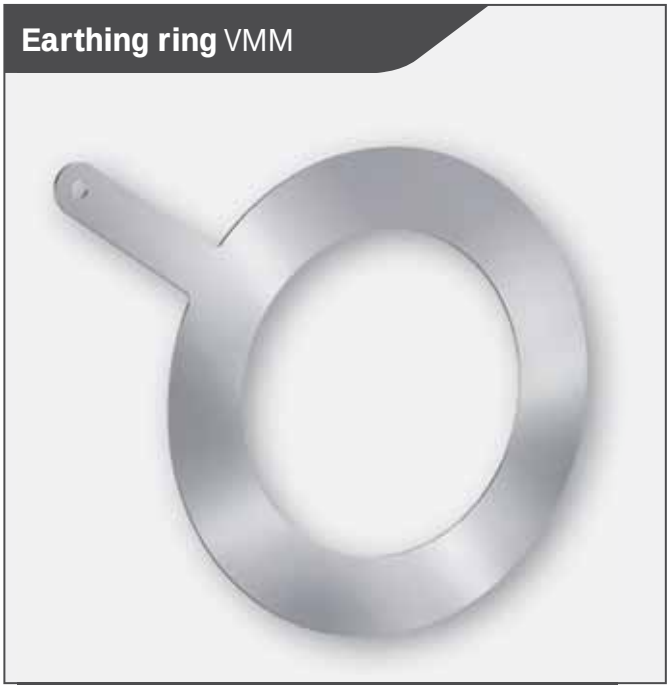
* valid for DN 15...DN 50 (PN 40), DN 65...DN 150 (PN 16), DN 200 (PN 10)

Materials	
Not in contact with fluid	
Display housing	Casted aluminium
Sensor housing	Steel
Measuring pipe	Stainless steel
Process connection	Steel 1.0460 or stainless steel 1.4404
In contact with fluid	
Electrodes	Stainless steel 1.4571 or Hastelloy C276
Measuring pipe lining	PTFE or Hard rubber

Order code	Example → VMM32	A	1	0	1	0	KAMA	20
Nominal diameter								
DN 15 / ½"	VMM15							
DN 25 / 1"	VMM25							
DN 32 / 1¼"	VMM32							
DN 40 / 1½"	VMM40							
DN 50 / 2"	VMM50							
DN 65 / 2½"	VMM65							
DN 80 / 3"	VMM80							
DN 100 / 4"	VMM1C							
DN 125 / 5"	VMMV3							
DN 150 / 6"	VMM3L							
DN 200 / 8"	VMM2C							
Process connection								
EN 1092-1 PN 10 starting from DN 200		A						
EN 1092-1 PN 16 starting from DN 65		B						
EN 1092-1 PN 25 starting from DN 200		C						
EN 1092-1 PN 40 starting from DN 15		D						
JIS B2220 10K		J						
ANSI B16.5 150 RF		I						
Material process connection								
Steel 1.0460			1					
Stainless steel 1.4571			2					
Lining								
PTFE				0				
Hard rubber				1				
Material electrodes								
Stainless steel 1.4571					1			
Hastelloy C276					2			
Earth electrode								
Without						0		
One						1		
Two						2		
Type								
Compact type with display							KAMA	
Separate type with display							GAMA	
Power supply								
230 VAC, 50/60 Hz								20
115 VAC, 50/60 Hz								40
19...36 VDC								30

Accessories

Earthing ring VMM



Earthing ring

An earthing ring is used for the electrical reference and earthing of the medium being measured. It is necessary if the pipes are not electrically conductive or lined (plastic or concrete pipes, etc.). The earthing ring must be connected to the provided earthing screw of the sensor. Retrofitting is possible. Material stainless steel 1.4571.

Sensor cable set

Sensor cable between sensor and display unit (separate design) consisting of magnetic power cable and electrode cable for configuration of M16 x 1.5 screw connection.

Protection rings VMM

Pair of protection rings

Protection rings protect the inlet and outlet edges of the sensor against mechanical damage, in particular when abrasive media such as gravel, sand, etc. are concerned. At the same time, they also serve as earthing rings. The protection rings are firmly screwed to the sensor. Material stainless steel 1.4571.

Order example	VMMZEW	32	A	1
Type				
Earthing ring	VMMZEW			
Protection rings (pair)	VMMZPR			
Nominal diameter				
DN 15 / ½"		15		
DN 25 / 1"		25		
DN 32 / 1¼"		32		
DN 40 / 1½"		40		
DN 50 / 2"		50		
DN 65 / 2½"		65		
DN 80 / 3"		80		
DN 100 / 4"		1C		
DN 125 / 5"		V3		
DN 150 / 6"		3L		
DN 200 / 8"		2C		
Process connection				
EN 1092-1			E	
JIS B2220 10K			J	
ANSI B16.5 150 RF			A	
Lining				
PTFE				0
Hard rubber				1

Sensor cable set - length of cable	Order code
5 m	VMMZSC000Z0005
10 m	VMMZSC000Z0010

Turbine flow sensors

Series VTR

Turbine flow sensors of the series VTR are used to measure different low viscosity media such as water and coolants. They are long-lasting and provide continuously reliable measuring results because they are made of stainless steel and equipped with a tungsten carbide supported turbine wheel.

During the design of these turbine flow sensors, versatile customisation options for special applications were in the focus of attention. Versions with flanged or threaded connection, a wide range of different sizes and application-specific sensors allow the adaption to a variety of applications. Pick-up sensors are available for example as versions with or without auxiliary energy, for high temperatures or for use with the local display TD32500.

To maintain accurate readings, the characteristic K-factor – the number of measured pulses per litre – is determined for each device in the factory and specified on the type plate. In addition, a five point calibration report for each sensor can be created on request.

Advantages

- Works calibration certificate 5 point calibration
- Wide measuring ranges (1.8...45090 l/min)
- Always reliable measuring results due to high measuring accuracy, regardless of the mounting position
- High quality tungsten carbide bearings with low wear and long durability
- Robust stainless steel body, even for difficult applications
- For variable use thanks to different pick-up sensors as well as a variety of connections and sizes

Turbine flow sensors

Series VTR

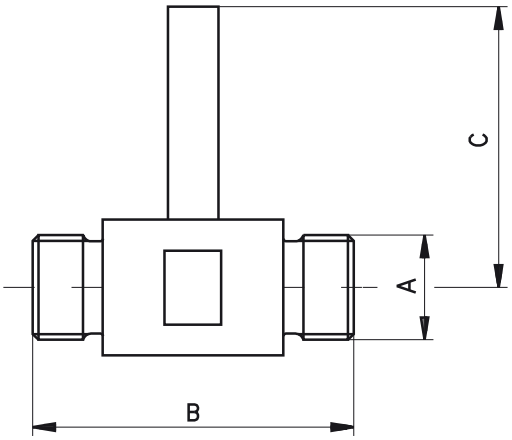
Type VTR1050

Technical data	
Accuracy	±0.5 % of reading
Repeatability	±0.05 % of reading
Response time	< 50 ms up to DN 40 > 50 ms up to DN 300
Process connections	Thread (up to DN 50): BSP ISO 228 Flange: DIN
Pressure drop	280 mbar at 100 % measurement range (density 1, viscosity 1 mm²/s)
Minimum pressure	2 x pressure drop of sensor
Pressure rating	Threaded connection: 250 bar Flanged connection: corresponding to flange specification
Medium temperature	Max. 150 °C
All specified values apply to viscosities up to 5 cSt. Higher viscosities on request.	

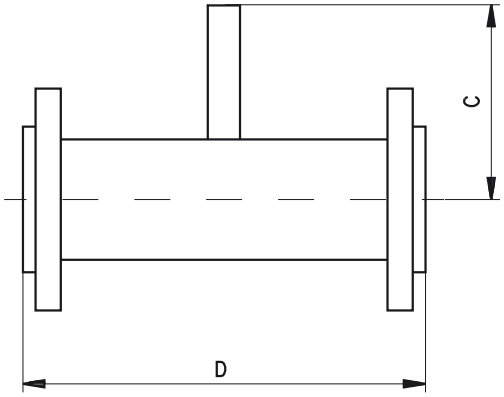
Options	
Local display TD32500	
On request	
Process connections	→ ANSI → NPT thread

Type	Nominal diameter	Flow range		Dimensions			
	DN	[m³/h]	[l/min]	A	B [mm]	C max [mm]	D [mm]
VTR1010	10	0.11...1.1	1.8...18.3	G½	64	150	127
VTR1015-S	15	0.22...2.2	3.7...36.7	G¾	64	150	127
VTR1015	15	0.4...4	6.7...66.7	G¾	64	150	127
VTR1020	20	0.8...8	13.3...133	G¾	83	150	140
VTR1025	25	1.6...16	26.7...267	G 1	88	200	152
VTR1040	40	3.4...34	56.7...567	G 1½	114	200	178
VTR1050	50	6.8...68	113...1133	G 2	132	200	197
VTR1075	80	13.5...135	225...2250			200	254
VTR1100	100	27...270	450...4500			300	356
VTR1150	150	55...550	917...9167			300	360
VTR1200	200	110...1100	1833...18333			350	457
VTR1250	250	190...1900	3173...31730			350	457
VTR1300	300	270...2700	4509...45090			400	457

Thread connection DN 10...DN 50



Flange connection DN 10...DN 300



Materials	
Turbine body	Stainless steel ANSI 316
Flange	Stainless steel ANSI 316
Rotor	VTR1010 - VTR1020: Stainless steel (18 % Cr, 2 % Mo) VTR1025 - VTR1300: Stainless steel (20 % Cr, 2 % Mo)
Bearing support	Stainless steel ANSI 316
Rotor bearing	Tungsten carbide sleeve bearing

Order code	Example → VS	1071VA	ISP0	A3
Type				
VTR thread connection male	VS			
Nominal size / flow range	**Process connection**			
DN 10 / 0.11...1.1 m³/h	male thread G½	1071VA		A3
DN 15 / 0.22...2.2 m³/h	male thread G¾	1572VA		A4
DN 15 / 0.4...4 m³/h	male thread G¾	1573VA		A4
DN 20 / 0.8...8 m³/h	male thread G¾	2074VA		A4
DN 25 / 1.6...16 m³/h	male thread G 1	2575VA		A5
DN 40 / 3.4...34 m³/h	male thread G 1½	4076VA		A7
DN 50 / 6.8...68 m³/h	male thread G 2	5077VA		A8
Sensor				
Inductive pick-up VISPP (included in the scope of delivery)			ISP0	
Optional pick-up according to table on the following page (separate order)			0000	

Order code	Example → VS	1071VA	ISP0	G	1
Type					
VTR flange connection	VS				
Nominal size / flow range					
DN 10 / 0.11...1.1 m³/h		1071VA			
DN 15 / 0.22...2.2 m³/h		1572VA			
DN 15 / 0.4...4 m³/h		1573VA			
DN 20 / 0.8...8 m³/h		2074VA			
DN 25 / 1.6...16 m³/h		2575VA			
DN 40 / 3.4...34 m³/h		4076VA			
DN 50 / 6.8...68 m³/h		5077VA			
DN 80 / 13.5...135 m³/h		7578VA			
DN 100 / 27...270 m³/h		1H79VA			
DN 150 / 55...550 m³/h		HF81VA			
DN 200 / 110...1100 m³/h		2H82VA			
DN 250 / 190...1900 m³/h		ZF83VA			
DN 300 / 270...2700 m³/h		3H84VA			
Sensor					
Inductive pick-up VISPP (included in the scope of delivery)			ISP0		
Optional pick-up according to table on the following page (separate order)			0000		
Process connection					
DIN flange stainless steel				G	
ANSI flange stainless steel				I	
PN 6 / #150					1
PN 16 / #300					2
PN 25 / #400					3
PN 40 / #600					4

Accessories for series VTR

Pick-ups

Pick-ups

The local display TD32500 is ordered and configured separately. The specifications can be selected in the subchapter Accessories for series VTR.

Technical data

Type	VISPP Inexpensive, fitted as standard	VISPP-HT For high medium temperatures	VSAPPS* Square wave signal	VSAPPSHT* Square wave signal, for high medium temperatures	VSANTD For local display TD32500
Output signal	Sinus wave		Square wave NPN or PNP to choose		Square wave NPN
Measuring principle	Inductive		Magnetically biased Hall effect sensor		
Temperature range	-20...120 °C	-20...230 °C**	-20...85 °C	-20...100 °C	-20...85 °C
Power supply			10...30 VDC		Via TD32500
Degree of protection EN 60529	IP54		IP67		IP65
Electrical connection	Amphenol plug connection Pick-up: MS3101E10SL-4P Plug: MS3106F10SL-4S		4-pin plug connection M12 x 1		
Cable socket	Inclusive		Accessory		
Material housing	Stainless steel ANSI 314	Stainless steel ANSI 316	Brass nickel-plated		

* Adapter VT1140 sold separately ** Notice the max. medium temperature of measuring turbine (150 °C).

Connection cables	Length	Order code	
Connection cable for turbine flow sensor with cable socket M12 x 1 moulded lead, 4-pin, shielded, sheathing material PUR (T_{max} = 70 °C) UL-approval	3 m 5 m 10 m	XVT2053 XVT2009 XVT2070	
4-pin cable socket M12 x 1 angle type unassembled		VT1331	

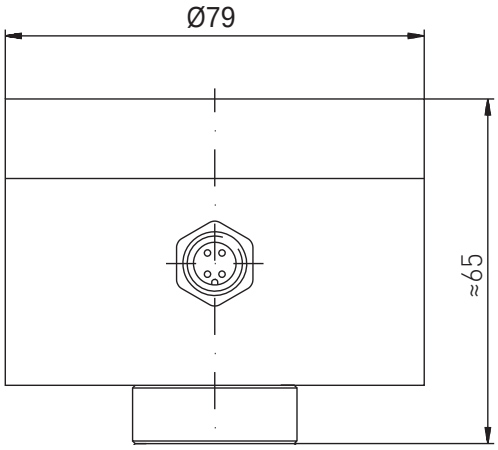
Local displays, series TD32500

Description

- Supplied fitted directly on SIKA turbine flow sensors, series VTR
- Display can be switched to:
  → flow rate
  → total flow (resettable)
  → total flow (non resettable)
  → optional temperature
- In addition bargraph 0...100 % to display flow rate, total flow (resettable) or optionally temperature
- Menu-driven programming via two light-reflex buttons
- Key lock for unintentional operation
- Robust stainless steel casing, with a closed glass window front
- Rotating case gives improved reading
- Language selection German, English or French
- Fixed connecting cable or plug connector M12 x 1

Type TD32500

Technical data	
Signal input	Fequency signal from flow sensor 0.5...2000 Hz, pulse rate programmable
Additional temperature input (optional)	Pt100 / 3-wire, measuring range -10...150 °C
Programming	Menu-driven with two light reflex buttons
Display	2-line LC-display with 16 characters per line, character height: 5 mm
Programmable units	l/min, l/h, m³/h, GPM (US), GPM (UK), l, m³, GAL (US), GA L(UK), °C,°F
Power supply	12...24 VDC
Power supply to sensor	12 VDC
Ambient temperature	-10...60 °C
Temperature of medium through the flow sensor	Depending on type of sensor, not exceeding -20...90 °C
Analogue output (optional)	(0)4...20 mA (max. resistance 800 Ω with 24 VDC) or 0...10 V, adjustable for flow rate, total flow (resettable) or optional temperature
Alarm outputs (optional)	Two fast-switching PNP transistor open collector outputs, programmable for min- or max alarm, hysteresis programmable, allocation of flow rate, total flow (resettable) or optional temperature holding current or working current programmable
Pulse output with frequency divider (optional)	PNP open collector, TTL-level, programmable divider-rate
Casing	Circular stainless steel casing, Ø 80 mm, height 55 mm, 350° rotating
Degree of protection EN 60529	IP65
Electrical supply	PVC-connection cable, 2 m or plug connector M12 x 1



Options

- Additional temperature display, input for resistance thermometer Pt100 / 3-wire
- Analogue output 0(4)... 20 mA or 0...10 V, freely adjustable, allocated to: flow rate, total flow (resettable) or optional temperature
- Two fast-switching alarm outputs, min or max allocation selective: flow rate, total flow (resettable) or optional temperature. A red LED clearly signals alarms
- Pulse output for flow rate, if required with frequency divider (pulse reduction)

The turbine flow sensor is ordered and configured separately. The specifications can be selected in the chapter Turbine flow sensors.

Order code	Example → ED325	6	0I000	009	1	0
Type						
TD32500	ED325					
Input						
Flow sensor		6				
Flow sensor and Pt100		7				
Outputs						
None			0I000			
Analogue output			AI000			
Pulse + frequency divider			FI000			
Analogue + frequency divider			BI000			
Alarm output						
None				009		
Two, programmable				299		
Electrical connection						
2 m cable					1	
Plug M12 x 1					2	
Number of pins / leads						
Factory preset						[ ]

Positive displacement flow sensors

Gearwheel type flow sensors record volume flows of liquids with both high and changing viscosities. The high-precision sensors work according to the displacement principle. The high resolution combined with reliable measurement accuracy make the sensors especially useful for applications involving the measurement of small and very small volumes.

In principle, the measurement accuracy is increased for high viscosities. Conversely, the measurement accuracy is lower with a viscosity of less than 10 mm²/s. Due to their construction, gearwheel type flow sensors require a certain lubricity of the fluid beeing measured. Operation with non-lubricating media, e.g. water, is not possible.

Applications

- Consumption measurement
- Control of filling operations
- Dosage of oils and chemicals
- Flow measurement of paints and varnishes
- Ratio control of polyol and isocyanate

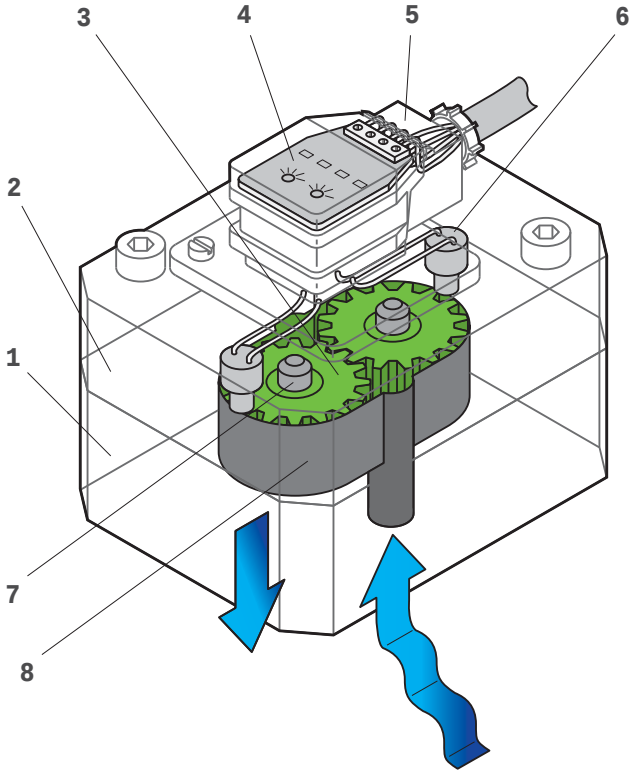
Principle of operation

A very precisely adjusted gear pair within the casing forms the measuring element. The inflowing medium causes the gear pair to rotate. The rotary motion is scanned by contactless sensors. Since each individual tooth generates a pulse, this results in a very high resolution. Consequently, even the smallest volumes can be measured or dosed precisely.

The measurement unit contains two pick-offs that are circumferentially offset by ¼ of a tooth pitch to generate a 2 channel flow-proportional frequency signal. Suitable processing of the signal provides an greater resolution and the option to identify the flow direction.

The maximum pressure drop should not exceed 16 bar. This limits the measurement range of high viscosity media (see pressure drop diagrams). Basically, the measurement accuracy increases with increase in viscosity of the media.

1 Housing bottom
2 Housing cover
3 Gear wheels
4 Pre-amplifier
5 Connection plug
6 Pick-offs
7 Bearing
8 Measurement chamber



Overview of performance features of the VZGG / VZVA / VZAL

	VZGG / VZVA	VZAL
Housing	Ductile iron or stainless steel	Aluminium
Viscosity of medium	1...100 000 mm²/s	1...4000 mm²/s (depending on the model)
Temperature of medium	-30...120 °C (standard)	-10...80 °C
Measuring accuracy	±0.3 % of reading	±1... 3 % of reading
Sizes	8	4
Process connection	Via subplate with lateral female thread connection	Direct female thread

Additional performance features of the VZGG / VZVA

- The measuring volume per pulse determines the size, e.g. 0.4 cm³/pulse for VZ 0.4...-S
- HT version for temperatures up to 150 °C with thermally insulated preamplifier (option)
- Intrinsically safe explosion-proof versions available in accordance with ATEX (max. medium temperature 80 °C)
- Variety of casing and sealing materials, meaning they can be universally used for different measurement media
- Standard process connection via connecting plates, so they can be replaced quickly without lengthy interruptions to the process
- Other bearings for special requirements on request

Additional performance features of the VZAL

- Standard process connections
- Output signal: pulse signal

Positive displacement flow sensors

Series VZGG, VZVA

Type VZGG

Type VZVA

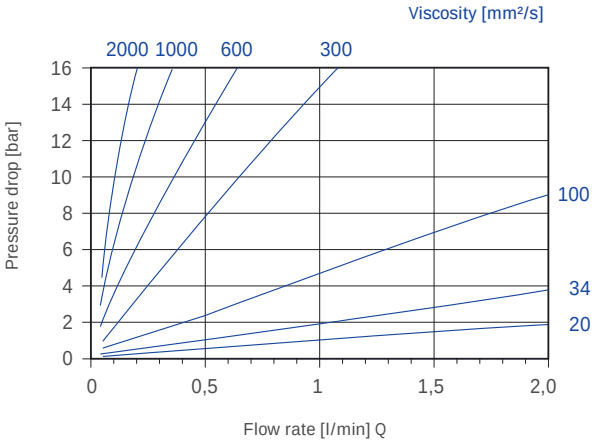
Type	VZ0.025	VZ0.04	VZ0.1	VZ0.2	VZ0.4	VZ1	VZ3	VZ5
Size	0.025	0.04	0.1	0.2	0.4	1	3	5
Start of gear wheel rotation [l/min]	0.001	0.004	0.008	0.01	0.01	0.02	0.03	0.04
Measuring range* [l/min]	0.008...2	0.02...4	0.04...8	0.16...16	0.2...40	0.4...80	0.6...160	1...250
Geometric gear volume [cm³]	0.025	0.04	0.1	0.245	0.4	1.036	3	5.222
Measuring volume [ml/Pulse]	0.025	0.04	0.1	0.245	0.4	1.036	3	5.222
Resolution [Pulse/l]	40 000	25 000	10 000	4081.63	2500	965.25	333.33	191.5

* For media with high viscosity the measuring range is reduced.
The max. pressure drop shouldn't exceeded 16 bar (see pressure drop diagrams).

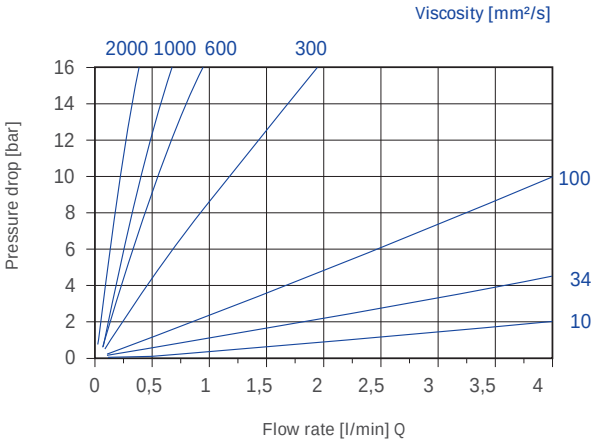
Technical data			
Measuring accuracy	±0.3 % of reading (21 mm²/s)		
Repeatability	< 0.1 % under same conditions		
Viscosity of medium	1...100 000 mm²/s		
Pressure rating	→ VZ 0.025... to VZ 1... -max. 400 bar → VZ 3... to VZ 5... -max. 315 bar → Higher pressure rating on request		
Medium temperature range (depends on sealing material) → Standard → Without preamplifier (for TD8250) → High temperature → Ex version	FKM -15...120 °C 0...60 °C -15...150 °C -15...80 °C	FEP -30...120 °C 0...60 °C -30...130 °C -30...80 °C	EPDM -30...120 °C 0...60 °C -30...130 °C -30...80 °C
Ambient temperature range (depends on sealing material)	FKM -15...80 °C	FEP -30...80 °C	EPDM -30...80 °C
Process connection	Via subplate with lateral female thread connection		
Power supply	12...30 VDC / max. 90 mA		
Electrical connection	Via standard socket		
Degree of protection EN 60529	IP65		
Output signal	2-channel, squarewave, pulse duty ratio 1:1, PNP		

Options	
For type	**On request**
VZVA	→ Direct Process connection

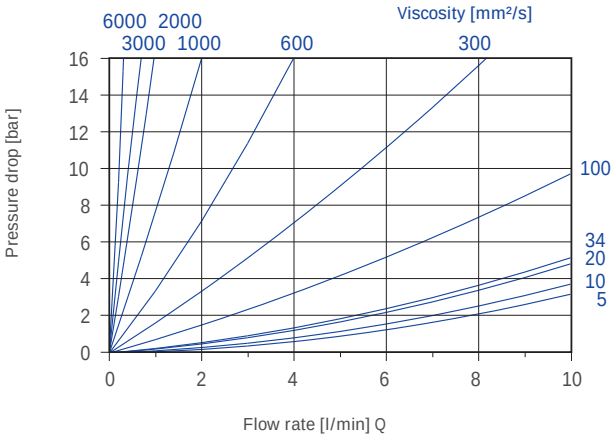
Typical pressure drop VZ0.025



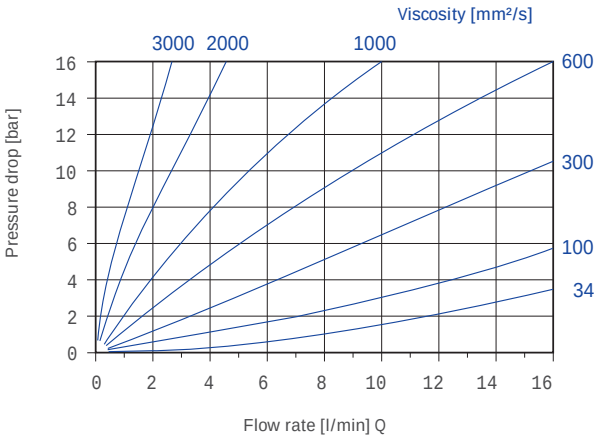
Typical pressure drop VZ0.04



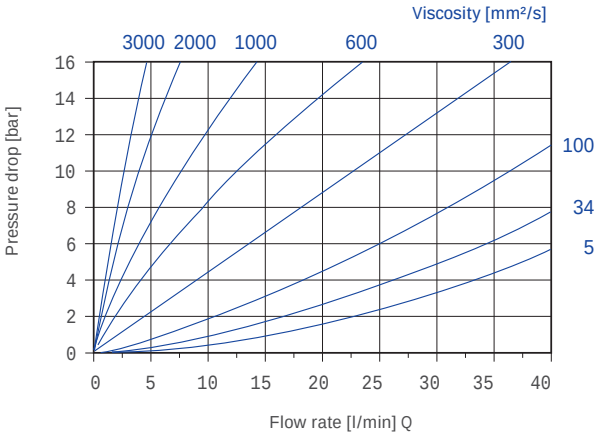
Typical pressure drop VZ0.1



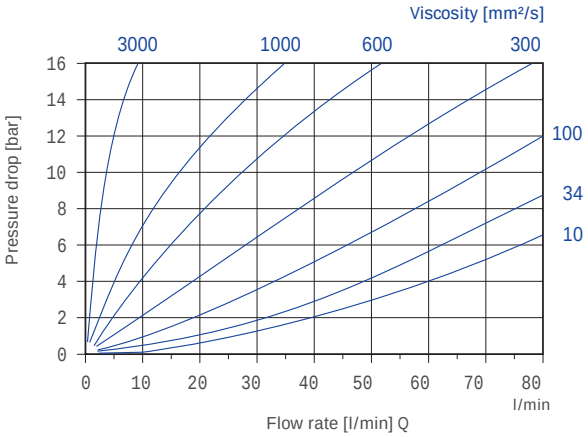
Typical pressure drop VZ0.2



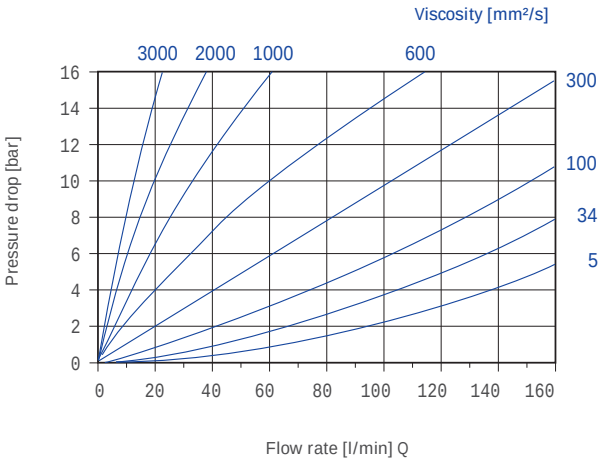
Typical pressure drop VZ0.4



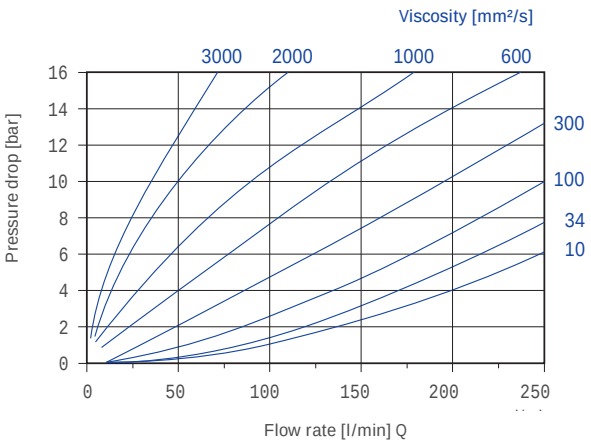
Typical pressure drop VZ1



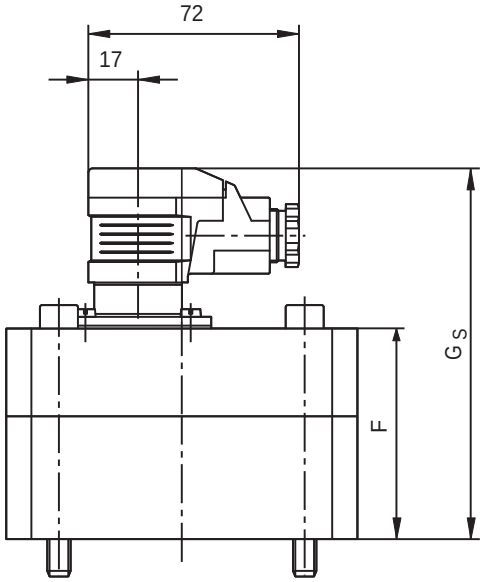
Typical pressure drop VZ3

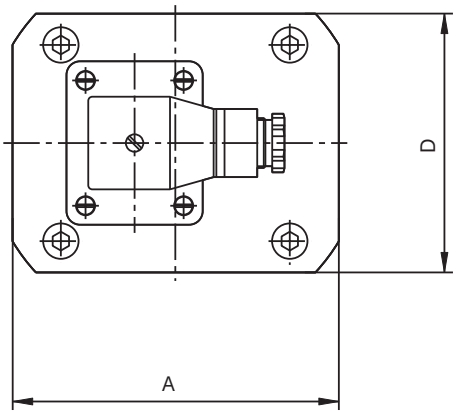


Typical pressure drop VZ5

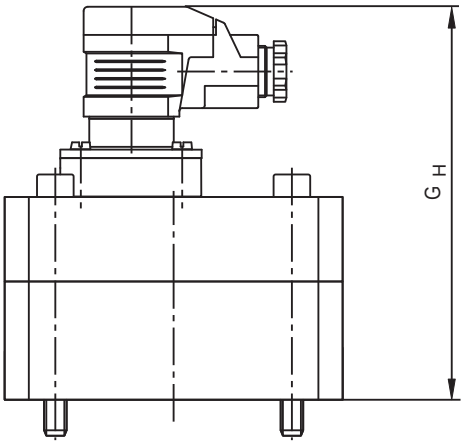


VZGG





Standard version and Ex version

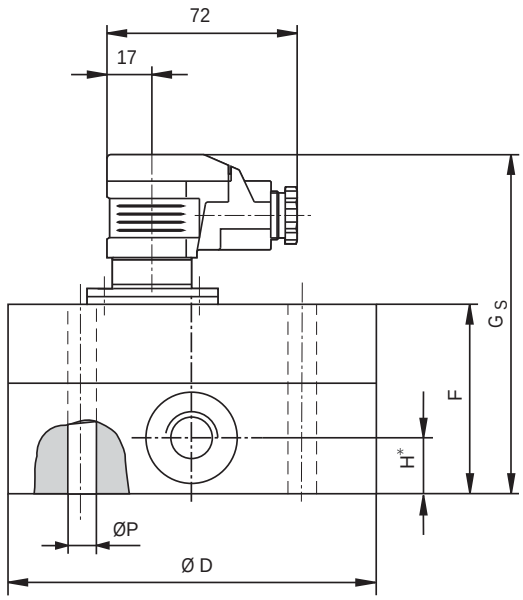


High temperature version

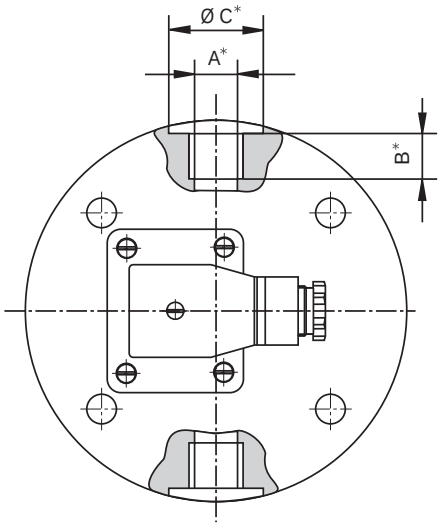
Material	
Housing	Ducitile iron EN-GJS-400-15
Gear wheels	Steel 1.7139
Bearings	Ball bearings
Seals	Standard: FKM Option: EPDM, FEP

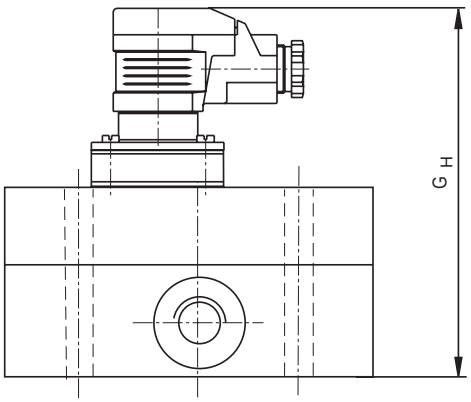
Type	VZ0.025GG	VZ0.04GG	VZ0.1GG	VZ0.2GG	VZ0.4GG	VZ1GG	VZ3GG	VZ5GG
A [mm]	85	85	85	85	100	120	170	170
D [mm]	60	60	60	60	90	95	120	120
F [mm]	50	56	65	57	63	72	89	105
GS [mm]	101	107	116	108	114	123	140	156
GH [mm]	114	120	129	121	127	136	153	169
Weight [kg]	1.8	2	2.3	2	3.7	5.2	9	13

VZVA



Standard version and Ex version





High temperature version

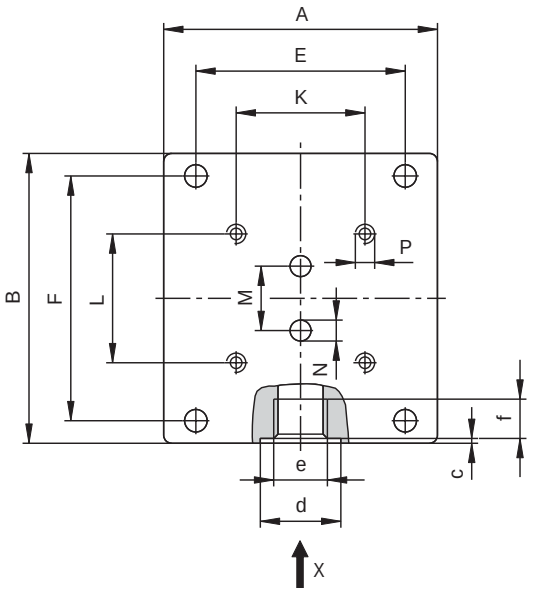
* For direct porcess connection

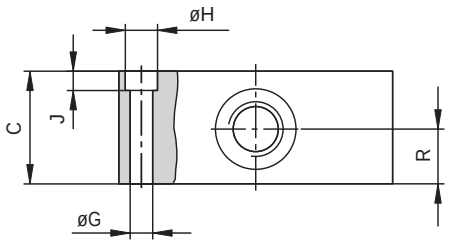
Material	
Housing	Stainless steel 1.4404
Gear wheels	Stainless steel 1.4462
Bearings	Ball bearings stainless steel
Seals	Standard: FKM Option: EPDM,FEP

Type	VZ0.025VA	VZ0.04VA	VZ0.1VA	VZ0.2VA	VZ1VA	VZ3VA	VZ5VA
D [mm]	94	94	94	94	124	170	170
F [mm]	55	56	65	57	72	89	105
GS [mm]	106	107	116	108	123	140	156
GH [mm]	119	120	129	121	136	153	169
Weight [kg]	3	3	3	3.1	7	15.9	18.7
Direct process connection							
A [mm]	G⅛	G¼	G⅜	G⅜	G½	G 1	G 1
B [mm]	9	13	13	13	15	19	19
C [mm]	17	21	25	25	29	42	42
H [mm]	15	15	20	16	22	30	30

Subplates for VZGG

For type	VZ0.025GG / VZ0.04GG / VZ0.1GG / VZ0.2GG	VZ0.4GG	VZ1GG	VZ3GG / VZ5GG
A [mm]	85	100	100	160
B [mm]	90	110	120	165
C [mm]	35	37	37	80
c [mm]	0.7	0.7	0.7	1
d [mm]	25	29	29	42
E [mm]	65	86	80	140
e	G⅜	G½	G½	G 1
F [mm]	76	96	106	145
f [mm]	13	15	15	19
G [mm]	7	7	7	9
H [mm]	11	11	11	15
J [mm]	7	7	7	9
K [mm]	70	80	84	46
L [mm]	40	38	72	95
M [mm]	20	34	35	50
N [mm]	6.5	16	12	25
P [mm]	M 6/14t	M 8/18t	M 8/18t	M 12/24t
R [mm]	17	18.5	17.5	28
Weight [kg]	1.8	2.7	2.9	14
Material	Ductile iron EN-GJL-250	Ductile iron EN-GJL-400-15		Ductile iron EN-GJL-250

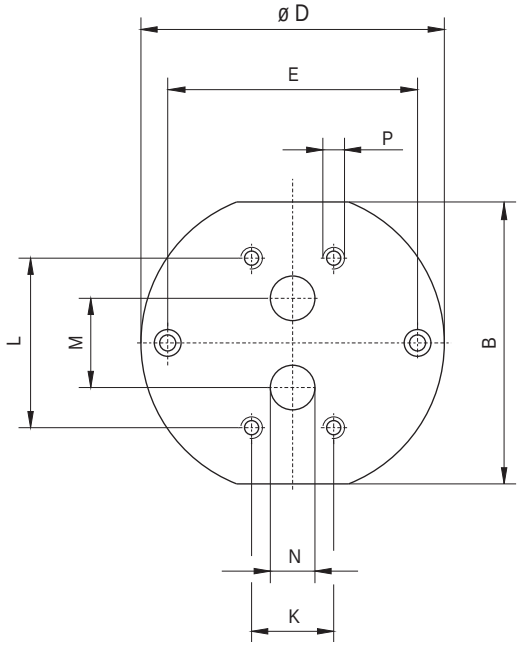


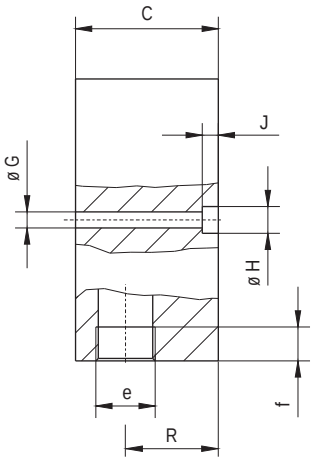


View X

Subplates for VZVA

For type	VZ0.025VA / VZ0.04VA / VZ0.1VA / VZ0.2VA	VZ1VA	VZ3VA / VZ5VA
B [mm]	85	116	158
C [mm]	35	37	80
D [mm]	94	124	170
E [mm]	75	100	140
e	G⅜	G½	G1
f [mm]	13	15	19
G [mm]	7	9	9
H [mm]	11	15	15
J [mm]	7	9	9
K [mm]	70	84	46
L [mm]	40	72	95
M [mm]	20	35	50
N [mm]	6.5	12	25
P [mm]	M 6/14t	M 8/18t	M 12/24t
R [mm]	18	19.5	52
Weight [kg]	1.7	3.2	13.9
Material	Stainless steel 1.4404		





Order code	Example → VZ0025	GG	V	3	2	I	00S
Type	**Size**						
VZ0.025	0.025	VZ0025					
VZ0.04	0.04	VZ004					
VZ0.1	0.1	VZ010					
VZ0.2	0.2	VZ020					
VZ0.4	0.4 (only ductile iron)	VZ040					
VZ1	1	VZ100					
VZ3	3	VZ300					
VZ5	5	VZ500					
Material							
Ductile iron		GG					
Stainless steel		VA					
Seals							
FKM			V				
EPDM			E				
FEP			P				
Power supply							
12...30 VDC				3			
Process connection							
Via subplates					2		
Direct (only for stainless steel)					1		
Preamplifier							
Integrated						I	
Without preamplifier, for TD8250 (not for Ex-version)						K	
Isolated for high temperature version (not for Ex-version)						E	
Version							
Standard							00S
Ex-version							10S

Order code	Example → AP004	GG	0380S
Subplates appropriate to			
VZ0.025 / VZ0.04 / VZ0.1 / VZ0.2	AP004		0380S
VZ0.4 (only ductile iron)	AP040		0120S
VZ1	AP100		0120S
VZ3 / VZ5	AP500		1000S
Material			
Ductile iron		GG	
Stainless steel		VA	

Positive displacement flow sensors

Series VZAL

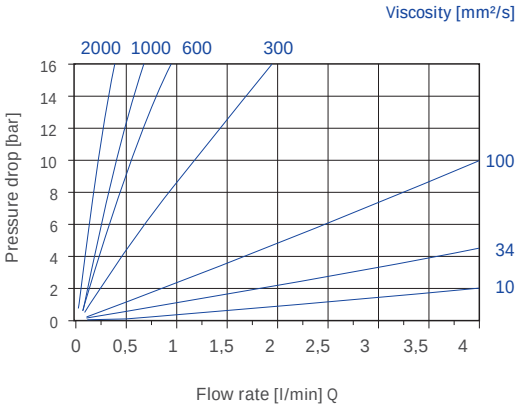
Type VZ0.2AL

Type VZ2AL

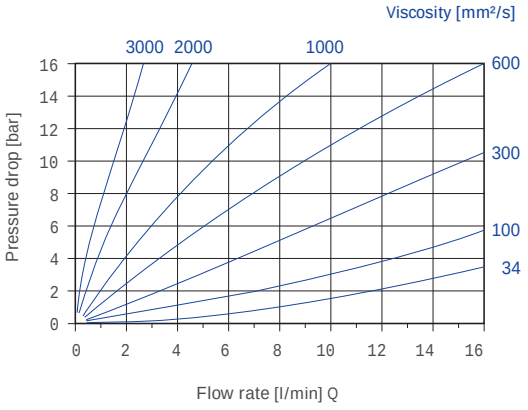
Technical data				
Type	**VZ 0.04AL**	**VZ0.2AL**	**VZ2AL**	**VZ5AL**
Size	0.04	0.2	2	5
Measuring range*	0.02...4 l/min	0.16...16 l/min	1...65 l/min	1...200 l/min
Viscosity of medium	20...4000 mm²/s	1...3000 mm²/s	20...4000 mm²/s	20...4000 mm²/s
Measuring accuracy	±2 % of reading	±1 % of reading	±2.5 % of reading	±1 % of reading
Repeatability	Up to 0.5 % under same conditions			
Pressure rating	Max. 200 bar	Max. 160 bar	Max. 160 bar	Max. 80 bar
Pressure peaks	Max. 240 bar	Max. 200 bar	Max. 200 bar	Max. 100 bar
Medium temperature range	-10...80 °C integrated preamplifier 0...60 °C without preamplifier (for TD8250)			
Thread connection	G¼	G⅜	G¾	G 1
Weight	0.5 kg	0.7 kg	1.9 kg	6 kg
Volume per pulse	0.04 cm³	0.245 cm³	2 cm³	5.222 cm³
Number of output channels	1	2	1	1
Output signal → Signal shape → Pulse rate → Resolution	 Square wave, pulse signal, PNP, pulse duty ratio 1:1 ±15 % 25000 pulses/l 0.04 ml/pulse	 Square wave, pulse signal, PNP, pulse duty ratio 1:1 ±15 % 4081.63 pulses/l 0.245 ml/pulse	 Square wave, pulse signal, PNP, pulse duty ratio 1:1 ±15 % 500 pulses/l 2 ml/pulse	 Square wave, pulse signal, PNP, pulse duty ratio 1:1 ±15 % 191.5 pulses/l 5.2 ml/pulse
Indication	Cable socket with one LED for pulse signal	Cable socket with two LED for pulse signal (two channels)	Cable socket with one LED for pulse signal	Cable socket with one LED for pulse signal
Electrical connection	Plug connector incl. cable socket			
Power supply	12...30 V DC reverse polarity protection			
Power input	0.6 W short circuit proof	0.9 W short circuit proof	0.6 W short circuit proof	0.6 W short circuit proof
Degree of protection EN 60529	IP65			

* For media with high viscosity the measuring range is reduced.
The max. pressure drop shouldn't exceeded 16 bar (see pressure drop diagrams).

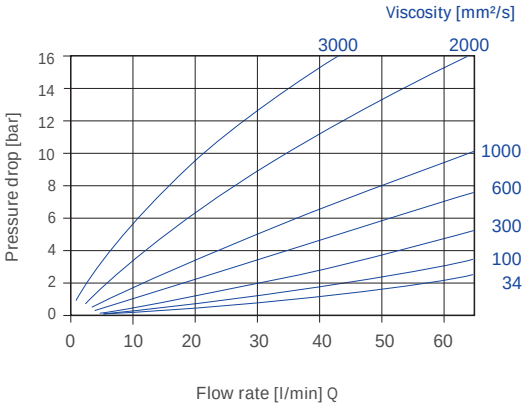
Typical pressure drop VZ0,04AL



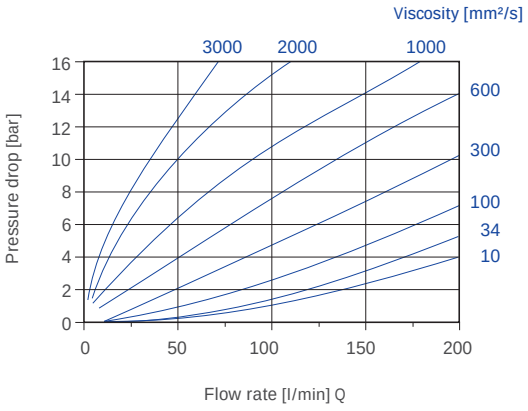
Typical pressure drop VZ0,2AL



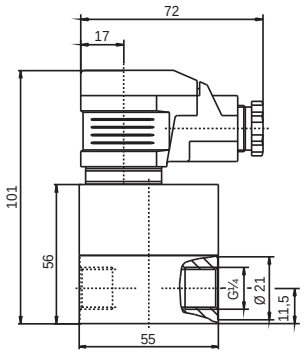
Typical pressure drop VZ2AL



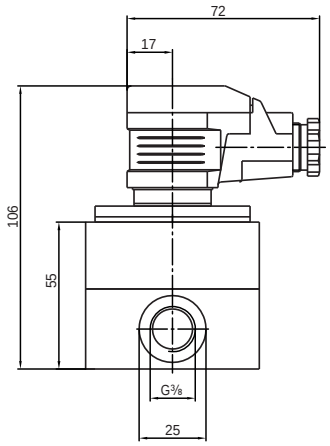
Typical pressure drop VZ5AL



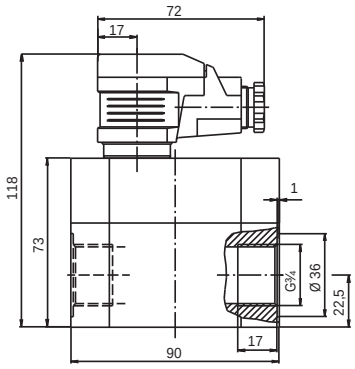
VZ0.04AL



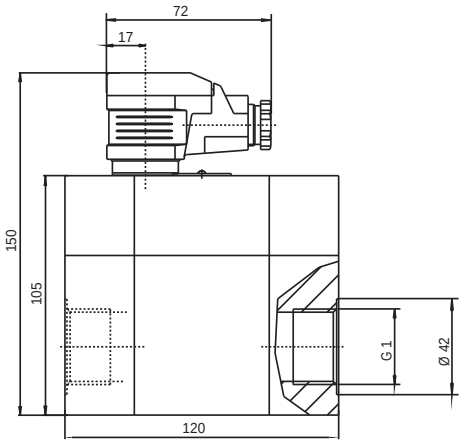
VZ0.2AL



VZ2AL



VZ5AL



Material				
Type	**VZ0.04AL**	**VZ0.2AL**	**VZ2AL**	**VZ5AL**
Housing	Aluminium, gold-colour anodised	Aluminium, gold-colour anodised	Aluminium AlMgSi F30 (hard coated)	Aluminium AlMgSi F30 (hard coated)
Gear wheels	Stainless steel 1.4462	Steel 1.7139	Steel 1.7139	Steel 1.7139
Bearings	Ball bearings	Ball bearings stainless steel	Sleeve bearings (P10)	Ball bearings
Seals	FKM	FKM	FKM	FKM

Order code		**Example → VZ004ALV31**	**I00S**
Type	**Size**		
VZ0.04AL	0,04	VZ004ALV31	
VZ0.2AL	0,2	VZ020ALV31	
VZ2AL	2	VZ200ALV31	
VZ5AL	5	VZ500ALV31	
Preamplifier			
Integrated			I00S
Without preamplifier (for TD8250)			K00S

Accessories

Local displays, series TD8250

The local display TD8250 is simply fitted between the plug connector plug and the cable socket of VZGG, VZVA or VAL positive displacement flow sensors. It is programmable via two buttons which are located behind the front panel. It can be set to display either the actual flow rate or the total volume (counter function), as required. The TD8250 is available in three different output signal versions:

- Pulse output (2-channel, depending on flow sensor)
- Analogue output 0(4)...20 mA
- Two alarm contacts

It is also easy to retrofit onto existing flow sensors. To do this, merely remove the amplifier board from the cable socket.

Type TD8250

Technical data	
Signal input	Pulse signal from flow sensor
Programming	Via 2 buttons, data retention on power off
Display	Four-digit LED display, red, 7.6 mm high
Power supply	19...28 VDC, optional 10...19 VDC
Current consumption	Max. 120 mA
Ambient temperature	0...60 °C
Storage temperature	-25...85 °C
Output signals	Pulse output (2-channel, depending on flow sensor) or analogue output 0(4)...20 mA or 2 alarm contacts max. 24 VDC / 1 A
Housing	Aluminium, 60 x 35 x 60 (W x H x D) without plug connector
Weight	Approx. 120 g
Degree of protection EN 60529	IP65
Electrical connection	Plug connector DIN EN 175301-803-A, 4 pin

Order code	**Example → ED825F**	**60**
Outpout signals		
Pulse output	ED825F	
Analogue output 0(4)...20 mA	ED825A	
Two alarm contacts	ED825R	
Power supply		
19...28 VDC (standard)		60
10...19 VDC (option)		50

Switch amplifier, series K-130

The switch amplifier K-130 serves as an interface between electrical signals of the hazardous areas to the safe areas.

The input signals of positive displacement flow sensors in in Ex-version are transmitted through transistor contacts. The input-, output- and power supply circuits are safe galvanic separated.

This unit is approved as associated apparatus.

Type K-130

Technical data	
Temperature ranges	
→ Ambient	-25...60 °C
→ Storage	-25...85 °C
Humidity	Max. 75 % RH
Housing	For assembly rail setup DIN EN 50022
Dimensions	114.5 mm x 22.5 mm x 99 mm (H x W x D)
Declaration of conformity	94/9/EG: CE 0158
Field of application	EX II (2) G D, [EEx ia] II C
EC-type examination	PTB 03 ATEX 2094 X
Electrical data	
Signal input	2 channel frequency signal of positive displacement flow sensors in Ex-version
→ Switching points	0 ⩽ 9 mA 1 ⩾ 12 mA
→ Open circuit voltage	10 V
→ Short circuit current	82 mA
Signal output	2 channel, open collector
Power supply	24 V AC/DC (±20 %)
Power consumption DC	3.6 W
Mode selection	2x switch
Displays	6x LED, each Channel power indication, switch status and wire monitoring
Order code	
	K-130-ATEX

Oval gear flow meters

Principle of operation

Oval gear meters are displacement-type volume meters that transport defined incremental volumes in individual measuring chambers. The measuring element consists of two high precision toothed oval gears, which are driven by the flow of the medium and mesh with each other. In this way, a defined volume is transported for each rotation of the pair of oval gears. The number of rotations is a measure of the amount of fluid that has passed through the meter. The rotations are detected by a sensor element.

Advantages

- Positive displacement meter for volumetric flow rate or total flow measurement
- Applicable for fluids such as lubrication oils, mineral oils, hydraulic oils, fuels, liquified gases and others
- No inlet or outlet section required
- High-quality construction for long service life and high reliability
- Long-term stability
- High measurement accuracy and repeatability
- Easy installation

Oval gear flow meters

Series VO, Sensor

Threaded Version

Flanged Version

Characteristics

- Sensor with pulse output signal, no local display
- Flow rate or total flow indication by local or remote display
- Individual calibration
- Various versions of local displays are available: battery powered (lifetime approx. 3 years) or externally powered version with analogue and pulse output
- Female threaded or flanged process connection
- O-ring material FKM, EPDM or FEP

Type	VO015	VO06	VO1	VO2	VO5	VO10	VO50	VO115
Measuring range [l/min]								
→ Oval gears st. steel (V0...VA)	0.03...1	0.2...5	0.4...10	1...30	2...50	4...100	15...300	35...660
→ Oval gears PEEK (V0...VP / AP)	0.03...1	0.2...7	0.4...14	1...30	2...60	3...120		
Process connection								
→ Thread	G¼	G½	G½	G¾	G 1	G 1	G 2	G 2
→ Flange (according to DIN EN 1092-1)				DN 15		DN 25	DN 50	DN 50
Nominal puls rate [1/l]	3100	333	166	100	40	20	4	1.7

Type	VO...VA	VO...VP**	VO...AP**
Accuracy*	±0.5 % of reading		
Repeatability*	< 0.05 %		
Pressure rating	PN 40 (PN 25 with FEP O-ring)		
Temperature range			
Standard	-10...70 °C		
High temperature sensor	-10...130 °C		
Materials***			
Housing	Stainless steel	Stainless steel	Aluminium
Oval gears	Stainless steel	PEEK	PEEK
O-ring	FKM (standard) or EPDM (option) or FEP (option)	FKM (standard) or EPDM (option) or FEP (option)	FKM (standard) or EPDM (option) or FEP (option)
Medium			
Allowable Viscosity	0.3...350 mPa s	0.3...50 mPa s	
Max. particle size	25...100 µm		
Electrical data			
Supply voltage			
→ Standard	10...30 VDC	10...30 VDC	10...30 VDC
→ High temperature sensor	18...30 VDC		
Electrical connection (Sensor without display)	M12 x 1 connector		
Signal output			
Standard	NPN, PNP	NPN, PNP	NPN, PNP
High temperature sensor	PNP		
Degree of protection EN 60529	IP67		

* Test conditions:
→ Viscosity >3 mPa s
→ Media temperature 20 °C
** Not availiable for VO50 and VO115
*** Other material combinations on request

Series VO, Display

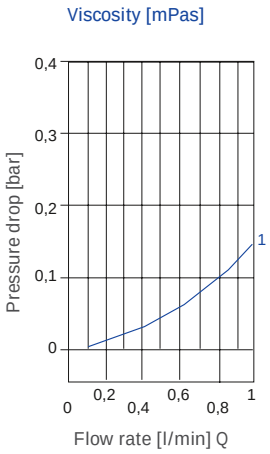
Display 1

General description – displays

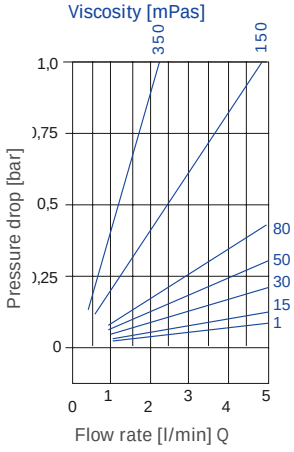
- Choice of three display models
- Actual flow rate indication
- Total flow indication, password protected counter
- Mass indication (temperature-dependent)
- Up to two VO sensors can be connected; configurable for differential measurement (Display 2 and 3)
- Impulse output (Display 2 and 3)
- Optionally available for wall mounting with bracket (for media temperatures up to 70 °C)

Type	Display 1	Display 2	Display 3
Display	8 digit		
Electrical data			
Power supply	Battery	Battery	10...30 VDC
Power consumption			100 mA, 28 V
Signal outputs		Pulse output NPN open collector	Pulse output NPN open collector Analogue output 4...20 mA / 2-wire
Degree of protection EN 60529	IP65		
Electrical connection		Terminal block / cable gland	
Cable length (remote type / wall mounting)		2000 mm	
Temperature range			
Medium temperature	-10...70 °C		
Ambient temperature	-20...70 °C		
Storage temperature	10...55 °C		
Type			
Local (meter mounted)	✓	✓	✓
Remote (wall mounting)		✓	✓

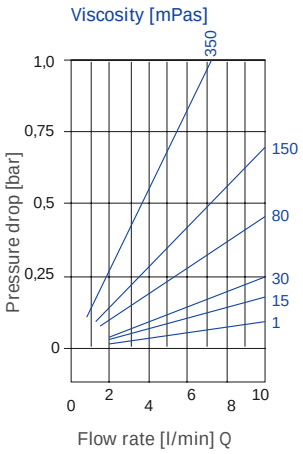
Typical pressure drop VO015



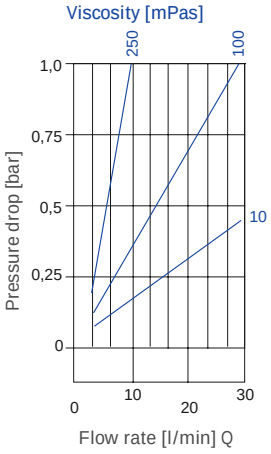
Typical pressure drop VO06



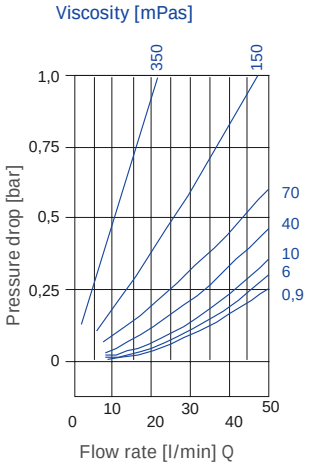
Typical pressure drop VO1



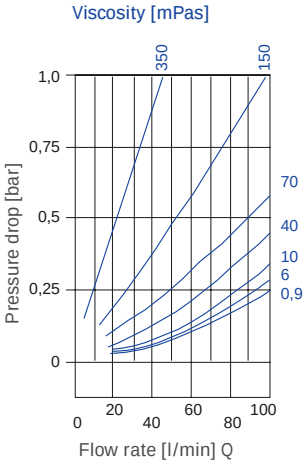
Typical pressure drop VO2



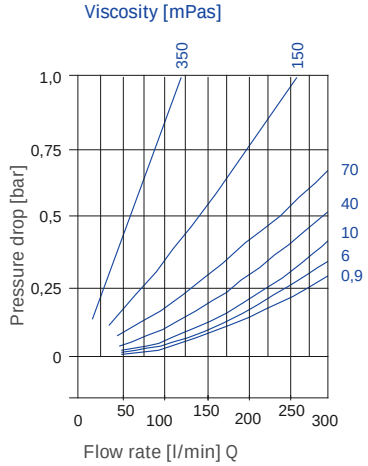
Typical pressure drop VO5



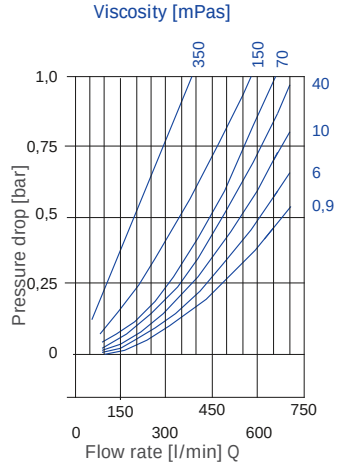
Typical pressure drop VO10



Typical pressure drop VO50

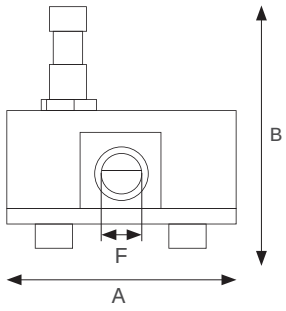


Typical pressure drop VO115

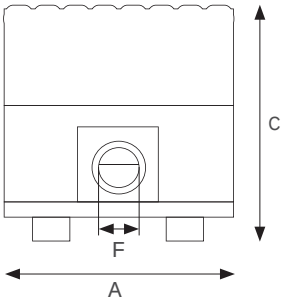


Process connection threaded

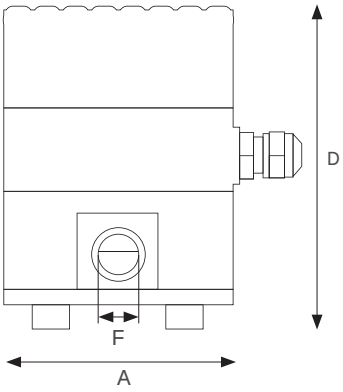
No display



Display 1



Display 2
Display 3

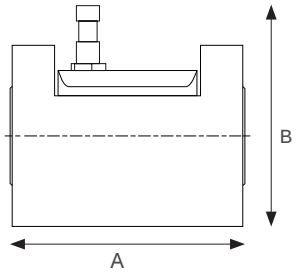


Size	VO015	VO06	VO1	VO2	VO5	VO10	VO50	VO115
A [mm]	78	78	78	99	112	112	220	260
C [mm]	70	75	85	93	98	125	187	245
B_{max}*, D [mm]	96	101	111	120	125	152	213	271
Installation [mm]	73	73	73	90	102	102	184	196
F / Process connection	G¼	G½	G½	G¾	G 1	G 1	G 2	G 2

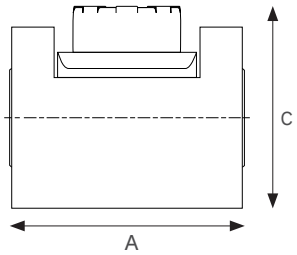
* Depends on sensor

Process connection flanged

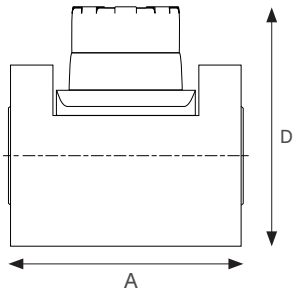
No display

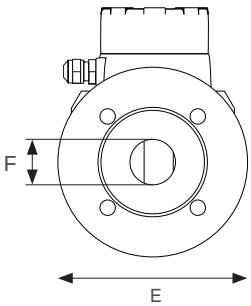


Display 1



Display 2
Display 3





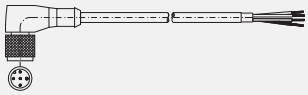
Size	VO 2	VO 10	VO 50	VO 115
A / Installation [mm]	140	170	184	196
C [mm]	108	153	165	243
B_{max}*, D [mm]	135	180	192	270
E [mm]	95	130	220	260
F / Process connection	DN 15	DN 25	DN 50	DN 50

* Depends on sensor

Order code	Example → VO	01	VA	P	N	I1K
Type						
Oval gear meters, series VO	VO					
Size	**Process connection**					
015	G¼ female	01				I1K
06	G½ female	06				I3K
1	G½ female	1A				I3K
2	G¾ female	2A				I4K
5	G 1 female	5A				I5K
10	G 1 female	10				I5K
50	G 2 female	50	[VA]*			I8K
115	G 2 female	11	[VA]*			I8K
2	DN 15 flange according to DIN EN 1092-1	2A				F3K
10	DN 25 flange according to DIN EN 1092-1	10				F5K
50	DN 50 flange according to DIN EN 1092-1	50	[VA]*			F8K
115	DN 50 flange according to DIN EN 1092-1	11	[VA]*			F8K
Materials						
Body	Oval gears					
Stainless steel	Stainless steel		VA			
Stainless steel	PEEK		VP			
Aluminium	PEEK		AP			
O-rings						
FKM (standard)				V		
EPDM				E		
FEP				P		
Sensor pulse output without display						
NPN					N	
PNP					P	
PNP (high temperature)					H	
Sensor with display						
Display 1						
Battery powered, local display					D	
Display 2						
Battery powered, local display and pulse output					C	
Battery powered, remote display and pulse output					B	
Display 3						
Local Display, pulse and analogue output (4...20 mA)					T	
Remote display, pulse and analogue output (4...20 mA)					A	

* Preset

Accessories

Accessories	Length	Order code	
Connection cable with 4-pin cable socket M12 x 1, angle type molded lead, sheathing material PUR, shielded, (T_{max} = 80 °C) - UL-approval	3 m 5 m 10 m	XVT2053 XVT2009 XVT2070	
4 pin cable socket M12x1 angle type, unassembled		VT1331	
3.6 V lithium battery for Display 1 and Display 2		VO1036	

Sensors and Measuring Instruments

Flow Measuring Instruments

Test and Calibration Instruments

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Киргизия (996)312-96-26-47
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Казахстан (772)734-952-31
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Таджикистан (992)427-82-92-69
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

https://sika.nt-rt.ru/ || skx@nt-rt.ru