

**Immersion / screw-in / duct temperature sensor,
with passive output**

Resistance thermometer / temperature sensor **THERMASGARD® TF 54**
with passive output, with connecting head made from aluminium (optionally with **cable gland**
or **M12 connector** according to DIN EN 61076-2-101) and straight protective tube.

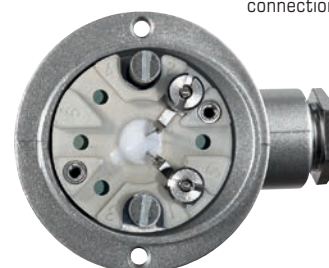
A basic unit in four variants through combination with accessories,
eg, for robust applications with a separate immersion sleeve made from stainless steel.

The duct sensor is used to detect temperatures in liquid or gaseous media. It is used in
pipes, heating engineering, storage systems, compact district heating stations, warm
and cold water systems, oil and lubrication cycle systems, mechanical, apparatus and
plant engineering and throughout the industrial sector.

TECHNICAL DATA

Measuring range:	-35...+180 °C (T _{max} NTC = +150 °C, T _{max} LM235Z = +125 °C)
Sensors / output:	see table, passive (Perfect Sensor Protection) (optionally also with two or other sensors)
Connection type:	2-wire connection (4-wire connection on PT100, optional on other sensors)
Testing current:	< 0.6 mA (Pt1000) < 1.0 mA (Pt100) < 0.3 mA (Ni1000, Ni1000 TK5000) < 2.0 mW (NTC xx) 400 µA...5 mA (LM235Z)
Insulating resistance:	≥ 100 MΩ, at +20 °C (500 V DC)
Electrical connection:	0.14 - 2.5 mm ² , via terminal screws on ceramic base
Cable connection:	TF 54 (standard) adjusting screw made of metal (M20 x 1,5) TF 54-KV (optional) cable gland, brass, nickel-plated (M20 x 1,5; with strain relief, exchangeable, inner diameter 6 - 12 mm) TF 54-Q (optional) M12 connector according to DIN EN 61076-2-101 (male, 5-pin, A-code)
Dimensions:	see dimensional drawing
Connecting head:	form B, material aluminium, colour white aluminium (similar RAL 9006), ambient temperature -20...+100 °C
Protective tube:	stainless steel, V4A (1.4571), Ø = 6 mm, inserted length (EL) = 50 - 400 mm (see table)
Process connection:	by means of immersion sleeve or mounting flange (accessories)
Humidity:	< 95 % RH, non-precipitating air
Protection class:	III (according to EN 60 730)
Protection type:	IP 54 (according to EN 60 529) TF 54 IP 65 (according to EN 60 529) TF 54-KV / TF 54-Q
ACCESSORIES	(see table)
TH-ms / xx	Immersion sleeve, brass, nickel-plated / galvanised Ø = 8 mm, T _{max} = +150 °C, p _{max} = 10 bar
TH-VA / xx	Immersion sleeve, stainless steel, V4A (1.4571), Ø = 8 mm, T _{max} = +600 °C, p _{max} = 40 bar
TH-VA / xx / 90	Immersion sleeve, stainless steel, V4A (1.4571), with neck tube (90 mm), Ø = 8 mm, T _{max} = +600 °C, p _{max} = 40 bar
MF-06-M	Mounting flange, metal, galvanised steel, Ø = 32 mm, Ø = 6.3 mm tube gland, T _{max} = +700 °C

TF 54
Basic unit

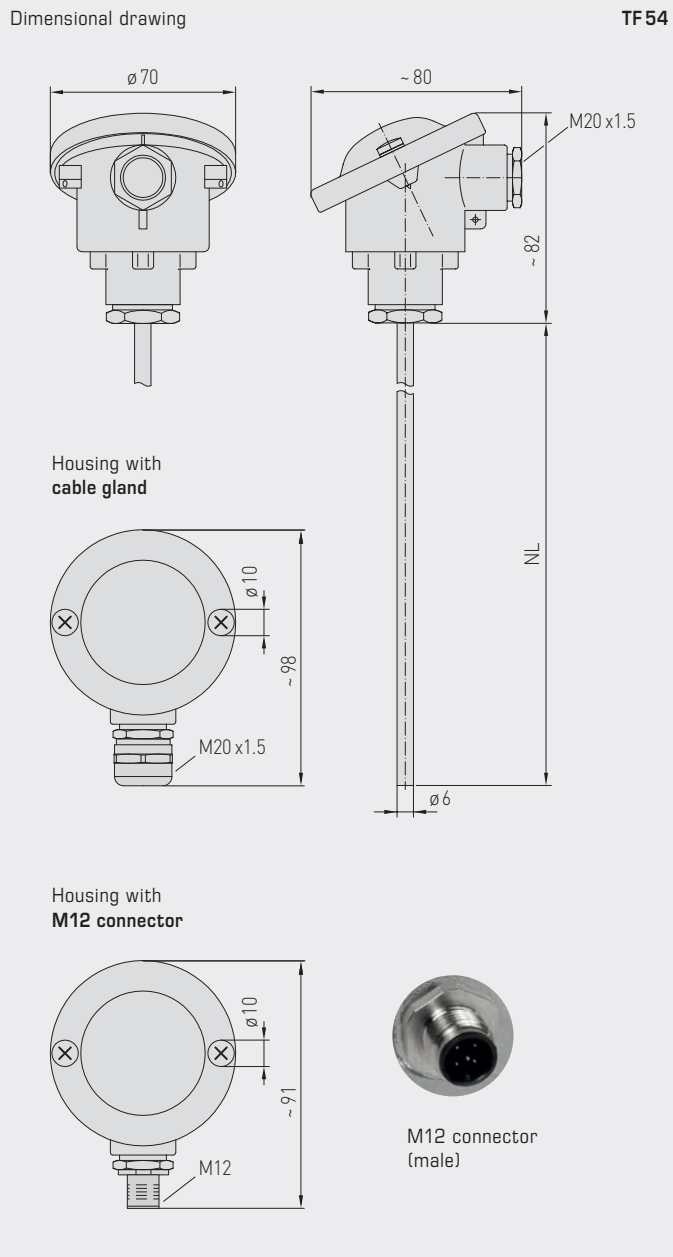
 2-wire
connection

 4-wire
connection




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THERMASGARD® TF 54

Immersion / screw-in / duct temperature sensor,
with passive output



High-performance encapsulation against
vibration, mechanical stress and humidity



PS-PROTECTION

PERFECT SENSOR PROTECTION

TF 54
Standard
(IP 54)



TF 54 - KV
with cable gland
(IP 65)

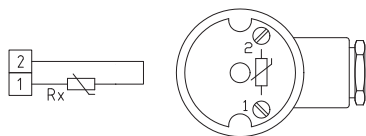


TF 54 - Q
with M12 connector
(IP 65)

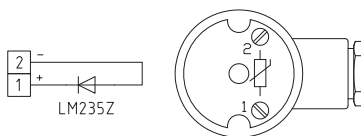


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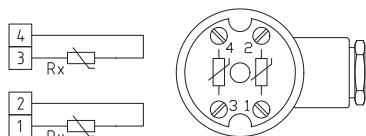
1x two-wire connection
standard



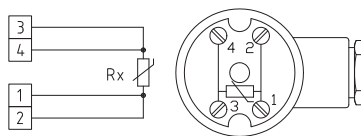
1x two-wire connection
LM235Z (KP 10)



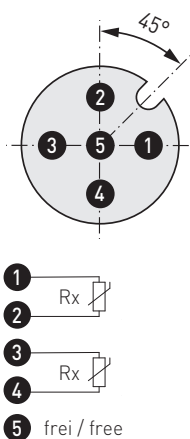
2x two-wire connection
(optional)



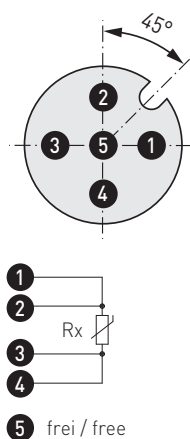
1x four-wire connection
(Pt100 / optional)



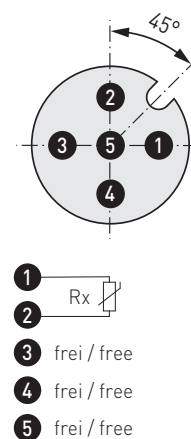
2x two-wire connection
pin assignment (M12)



1x four-wire connection
pin assignment (M12)



1x two-wire connection
pin assignment (M12)



TM 54
standard
(IP 54)

THERMASGARD® TF 54

Temperature sensor
(Basic unit)

Type / WG03	Sensor / Output	Installation length (EL)	Item No.
TF 54 Pt100 xx	Pt100 (according to DIN EN 60751, class B)		IP 54, 4-wire
TF54 Pt100 50mm	Pt100	50 mm	1101-7050-1013-000
TF54 Pt100 100mm	Pt100	100 mm	1101-7050-1023-000
TF54 Pt100 150mm	Pt100	150 mm	1101-7050-1033-000
TF54 Pt100 200mm	Pt100	200 mm	1101-7050-1043-000
TF54 Pt100 250mm	Pt100	250 mm	1101-7050-1053-000
TF54 Pt100 300mm	Pt100	300 mm	1101-7050-1063-000
TF54 Pt100 400mm	Pt100	400 mm	1101-7050-1083-000
TF 54 Pt1000 xx	Pt1000 (according to DIN EN 60751, class B)		IP 54, 2-wire
TF54 Pt1000 50mm	Pt1000	50 mm	1101-7050-5011-000
TF54 Pt1000 100mm	Pt1000	100 mm	1101-7050-5021-000
TF54 Pt1000 150mm	Pt1000	150 mm	1101-7050-5031-000
TF54 Pt1000 200mm	Pt1000	200 mm	1101-7050-5041-000
TF54 Pt1000 250mm	Pt1000	250 mm	1101-7050-5051-000
TF54 Pt1000 300mm	Pt1000	300 mm	1101-7050-5061-000
TF54 Pt1000 400mm	Pt1000	400 mm	1101-7050-5081-000

Continued on next page...



THERMASGARD® TF 54		Temperature sensor (Basic unit)	
Type / WG03	Sensor / Output	Installation length (EL)	Item No.
TF 54 Ni1000 xx	Ni 1000 (according to DIN EN 43 760, class B, TCR = 6180 ppm / K)		IP 54, 2-wire
TF54 Ni1000 50mm	Ni1000	50 mm	1101-7050-9011-000
TF54 Ni1000 100mm	Ni1000	100 mm	1101-7050-9021-000
TF54 Ni1000 150mm	Ni1000	150 mm	1101-7050-9031-000
TF54 Ni1000 200mm	Ni1000	200 mm	1101-7050-9041-000
TF54 Ni1000 250mm	Ni1000	250 mm	1101-7050-9051-000
TF54 Ni1000 300mm	Ni1000	300 mm	1101-7050-9061-000
TF54 Ni1000 400mm	Ni1000	400 mm	1101-7050-9081-000
TF 54 Ni1000TK xx	Ni1000 TK5000 (TCR = 5000 ppm / K), LG-Ni1000		IP 54, 2-wire
TF54 NiTK 50mm	Ni1000 TK5000	50 mm	1101-7051-0011-000
TF54 NiTK 100mm	Ni1000 TK5000	100 mm	1101-7051-0021-000
TF54 NiTK 150mm	Ni1000 TK5000	150 mm	1101-7051-0031-000
TF54 NiTK 200mm	Ni1000 TK5000	200 mm	1101-7051-0041-000
TF54 NiTK 250mm	Ni1000 TK5000	250 mm	1101-7051-0051-000
TF54 NiTK 300mm	Ni1000 TK5000	300 mm	1101-7051-0061-000
TF54 NiTK 400mm	Ni1000 TK5000	400 mm	1101-7051-0081-000
TF 54 LM235Z xx	LM235Z (TCR = 10 mV / K; 2.73 V at 0 °C), KP10		IP 54, 2-wire
TF54 LM235Z 50mm	LM235Z	50 mm	1101-7052-1011-000
TF54 LM235Z 100mm	LM235Z	100 mm	1101-7052-1021-000
TF54 LM235Z 150mm	LM235Z	150 mm	1101-7052-1031-000
TF54 LM235Z 200mm	LM235Z	200 mm	1101-7052-1041-000
TF54 LM235Z 250mm	LM235Z	250 mm	1101-7052-1051-000
TF54 LM235Z 300mm	LM235Z	300 mm	1101-7052-1061-000
TF54 LM235Z 400mm	LM235Z	400 mm	1101-7052-1081-000
TF 54 NTC 1,8K xx	NTC 1,8K		IP 54, 2-wire
TF54 NTC1,8K 50mm	NTC 1,8K	50 mm	1101-7051-2011-000
TF54 NTC1,8K 100mm	NTC 1,8K	100 mm	1101-7051-2021-000
TF54 NTC1,8K 150mm	NTC 1,8K	150 mm	1101-7051-2031-000
TF54 NTC1,8K 200mm	NTC 1,8K	200 mm	1101-7051-2041-000
TF54 NTC1,8K 250mm	NTC 1,8K	250 mm	1101-7051-2051-000
TF54 NTC1,8K 300mm	NTC 1,8K	300 mm	1101-7051-2061-000
TF54 NTC1,8K 400mm	NTC 1,8K	400 mm	1101-7051-2081-000
TF 54 NTC10K xx	NTC 10K		IP 54, 2-wire
TF54 NTC10K 50mm	NTC 10K	50 mm	1101-7051-5011-000
TF54 NTC10K 100mm	NTC 10K	100 mm	1101-7051-5021-000
TF54 NTC10K 150mm	NTC 10K	150 mm	1101-7051-5031-000
TF54 NTC10K 200mm	NTC 10K	200 mm	1101-7051-5041-000
TF54 NTC10K 250mm	NTC 10K	250 mm	1101-7051-5051-000
TF54 NTC10K 300mm	NTC 10K	300 mm	1101-7051-5061-000
TF54 NTC10K 400mm	NTC 10K	400 mm	1101-7051-5081-000
TF 54 NTC20K xx	NTC 20K		IP 54, 2-wire
TF54 NTC20K 50mm	NTC 20K	50 mm	1101-7051-6011-000
TF54 NTC20K 100mm	NTC 20K	100 mm	1101-7051-6021-000
TF54 NTC20K 150mm	NTC 20K	150 mm	1101-7051-6031-000
TF54 NTC20K 200mm	NTC 20K	200 mm	1101-7051-6041-000
TF54 NTC20K 250mm	NTC 20K	250 mm	1101-7051-6051-000
TF54 NTC20K 300mm	NTC 20K	300 mm	1101-7051-6061-000
TF54 NTC20K 400mm	NTC 20K	400 mm	1101-7051-6081-000
Housing variant:	equipped as standard with pressure screw (IP 54), optional housing variants with cable gland (IP 65) or M12 connector (IP 65) see the next page!		
Extra charge:	optionally also with two or other sensors		on request

Immersion / screw-in / duct temperature sensor,
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TF 54 - Q
with M12 connector
(IP65)



THERMASGARD® TF 54 - Q		Temperature sensor (Basic unit with M12 connector)		
Type / WG03	Sensor / Output	Installation length (EL)	Q	Item No.
TF 54 Pt100 xx Q		Pt100 (according to DIN EN 60751, class B)		IP65, 4-wire
TF54 Pt100 50mm Q	Pt100	50 mm	●	2Z01-4111-0100-011
TF54 Pt100 100mm Q	Pt100	100 mm	●	2Z01-4111-0100-021
TF54 Pt100 150mm Q	Pt100	150 mm	●	2Z01-4111-0100-031
TF54 Pt100 200mm Q	Pt100	200 mm	●	2Z01-4111-0100-041
TF54 Pt100 250mm Q	Pt100	250 mm	●	2Z01-4111-0100-051
TF54 Pt100 300mm Q	Pt100	300 mm	●	2Z01-4111-0100-061
TF54 Pt100 400mm Q	Pt100	400 mm	●	2Z01-4111-0100-081
TF 54 Pt1000 xx Q		Pt1000 (according to DIN EN 60751, class B)		IP65, 2-wire
TF54 Pt1000 50mm Q	Pt1000	50 mm	●	2Z05-4111-0100-011
TF54 Pt1000 100mm Q	Pt1000	100 mm	●	2Z05-4111-0100-021
TF54 Pt1000 150mm Q	Pt1000	150 mm	●	2Z05-4111-0100-031
TF54 Pt1000 200mm Q	Pt1000	200 mm	●	2Z05-4111-0100-041
TF54 Pt1000 250mm Q	Pt1000	250 mm	●	2Z05-4111-0100-051
TF54 Pt1000 300mm Q	Pt1000	300 mm	●	2Z05-4111-0100-061
TF54 Pt1000 400mm Q	Pt1000	400 mm	●	2Z05-4111-0100-081
Housing variant "Q":		Cable connection with M12 connector (male, 5-pin, A-code)		
Extra charge:		optionally also with two or other sensors		on request

ACCESSORIES	
Special accessories for M12 connector see chapter Accessories!	

**TF54 - KV**
with cable gland
(IP 65)

THERMASGARD® TF 54 - KV		Temperature sensor (Basic unit with cable gland)	
Type / WG03	Sensor / Output	Installation length (EL)	Item No.
TF54 Pt100 xx KV	Pt100 (according to DIN EN 60751, class B)		IP65, 4-wire
TF54 Pt100 50mm KV	Pt100	50 mm	1101-7070-1013-000
TF54 Pt100 100mm KV	Pt100	100 mm	1101-7070-1023-000
TF54 Pt100 150mm KV	Pt100	150 mm	1101-7070-1033-000
TF54 Pt100 200mm KV	Pt100	200 mm	1101-7070-1043-000
TF54 Pt100 250mm KV	Pt100	250 mm	1101-7070-1053-000
TF54 Pt100 300mm KV	Pt100	300 mm	1101-7070-1063-000
TF54 Pt100 400mm KV	Pt100	400 mm	1101-7070-1083-000
TF54 Pt1000 xx KV	Pt1000 (according to DIN EN 60751, class B)		IP65, 2-wire
TF54 Pt1000 50mm KV	Pt1000	50 mm	1101-7070-5011-000
TF54 Pt1000 100mm KV	Pt1000	100 mm	1101-7070-5021-000
TF54 Pt1000 150mm KV	Pt1000	150 mm	1101-7070-5031-000
TF54 Pt1000 200mm KV	Pt1000	200 mm	1101-7070-5041-000
TF54 Pt1000 250mm KV	Pt1000	250 mm	1101-7070-5051-000
TF54 Pt1000 300mm KV	Pt1000	300 mm	1101-7070-5061-000
TF54 Pt1000 400mm KV	Pt1000	400 mm	1101-7070-5081-000
Housing variant "KV":		Cable connection with cable gland	
Extra charge:	optionally also with two or other sensors		on request

Immersion / screw-in / duct temperature sensor,
with passive output

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One basic device in four variants ...



**TF 54 +
TH - ms / xx**

Immersion / screw-in
temperature sensor
with immersion sleeve, brass,
nickel-plated / galvanised



**TF 54 +
TH - VA / xx**

Immersion / screw-in
temperature sensor
with immersion sleeve,
stainless steel, V4A



**TF 54 +
TH - VA / xx / 90**

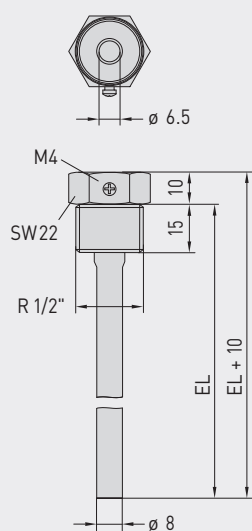
Immersion / screw-in
temperature sensor with
immersion sleeve with neck
tube, stainless steel, V4A



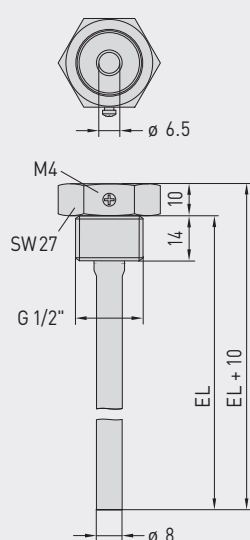
**TF 54 +
MF - 06 - M**

Duct temperature sensor
with mounting flange, metal

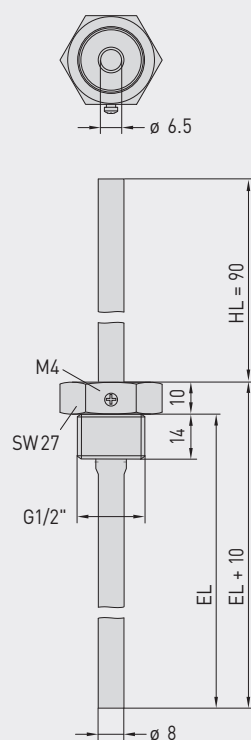
**Dimensional drawing
TH - ms / xx**



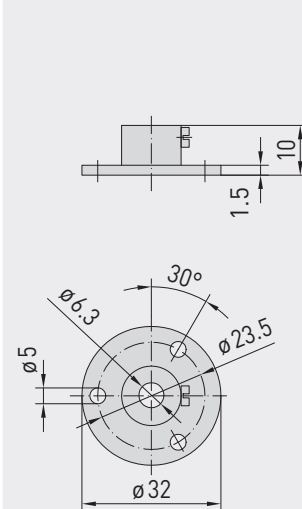
**Dimensional drawing
TH - VA / xx**



**Dimensional drawing
TH - VA / xx / 90**



**Dimensional drawing
MF - 06 - M**





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THERMASGARD® TF 54

Immersion / screw-in / duct temperature sensor,
with passive output



...through combination with accessories:



TH -ms/xx

Immersion sleeve,
brass, nickel-plated / galvanised,
thread-sealing, conical,
according to DIN 10226



TH -VA/xx

Immersion sleeve,
stainless steel, V4A,
flat-sealing, cylindrical,
according to DIN 228



TH -VA/xx/90

Immersion sleeve with neck tube,
stainless steel, V4A,
flat-sealing, cylindrical,
according to DIN 228



MF-06-M

Mounting flange,
metal

THERMASGARD® TH					Immersion sleeve Ø 8 mm (accessories)				
Type / WG01		p _{max} (static)		T _{max}		Inserted Length (EL)		Item No.	
TH -ms / xx		Brass nickel-plated / galvanised						without neck tube	
TH-MS 50MM		10 bar		+150 °C		50 mm		7100-0011-0010-001	
TH-MS 100MM		10 bar		+150 °C		100 mm		7100-0011-0020-001	
TH-MS 150MM		10 bar		+150 °C		150 mm		7100-0011-0030-001	
TH-MS 200MM		10 bar		+150 °C		200 mm		7100-0011-0040-001	
TH-MS 250MM		10 bar		+150 °C		250 mm		7100-0011-0050-001	
TH-MS 300MM		10 bar		+150 °C		300 mm		7100-0011-0060-001	
TH-MS 350MM		10 bar		+150 °C		350 mm		7100-0011-0070-001	
TH-MS 400MM		10 bar		+150 °C		400 mm		7100-0011-0080-001	
TH -VA / xx		Stainless steel, V4A (1.4571)						without neck tube	
TH-VA 50MM		40 bar		+600 °C		50 mm		7100-0012-0010-001	
TH-VA 100MM		40 bar		+600 °C		100 mm		7100-0012-0020-001	
TH-VA 150MM		40 bar		+600 °C		150 mm		7100-0012-0030-001	
TH-VA 200MM		40 bar		+600 °C		200 mm		7100-0012-0040-001	
TH-VA 250MM		40 bar		+600 °C		250 mm		7100-0012-0050-001	
TH-VA 300MM		40 bar		+600 °C		300 mm		7100-0012-0060-001	
TH-VA 350MM		40 bar		+600 °C		350 mm		7100-0012-0070-001	
TH-VA 400MM		40 bar		+600 °C		400 mm		7100-0012-0080-001	
TH -VA / xx / 90		Stainless steel, V4A (1.4571)						with neck tube (90 mm)	
TH-VA 50/90MM		40 bar		+600 °C		50 mm		7100-0012-2010-001	
TH-VA 100/90MM		40 bar		+600 °C		100 mm		7100-0012-2020-001	
TH-VA 150/90MM		40 bar		+600 °C		150 mm		7100-0012-2030-001	
TH-VA 200/90MM		40 bar		+600 °C		200 mm		7100-0012-2040-001	
TH-VA 250/90MM		40 bar		+600 °C		250 mm		7100-0012-2050-001	
TH-VA 300/90MM		40 bar		+600 °C		300 mm		7100-0012-2060-001	
Note:		inner diameter of socket 6.5 mm For further information see last chapter!							
Mounting flange (accessories)									
Type / WG01						T _{max}		Item No.	
MF									
MF-06-M		Mounting flange, metal (galvanised steel) Ø 32 mm, tube gland Ø 6.3 mm				+700 °C		7100-0030-5000-100	
Note:		For further information see last chapter!							