



TEMPERATURE

PRESSURE

HUMIDITY

www.temperatur-berlin.de

Paul Rüster & Co. GmbH - Quality since 1949

The service range of Paul Rüster & Co. GmbH offers development, engineering, manufacturing, calibration and distribution of sensors and components for temperature and pressure measurement in industrial and HVAC markets, power plants, electrical machines, railway systems, wind energy plants and refrigeration technologies.

The product range includes resistance thermometers, thermocouples, pressure and differential pressure transmitters in various designs. Most types are available as explosion-proof versions - certified to ATEX, IECEx and EAC Ex - or with DNV GL certification.

Furthermore Rüster is the official distributor for FEMA by Honeywell and the italian tradition-rich company Controlli.



→ *Innovative and reliable pressure switches, pressure transmitter and thermostats*



→ *High-quality valves and actuators for HVAC and industrial markets*

Paul Rüster & Co. GmbH is known for its reliable, individual solutions, for innovation, flexibility as well as high quality. Rüster is certified to DIN EN ISO 9001:2015.

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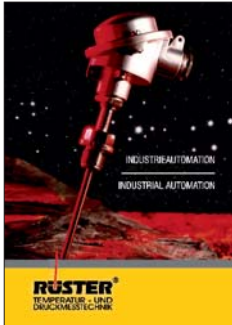
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Product range

Industrial automation



Resistance thermometers, thermocouples and pressure transmitters for use in power plants, electrical machines, railway systems, wind energy plants, refrigeration technologies as well as in plants of the chemical industry.

Paul Rüster & Co. GmbH offers special solution for individual customer demands.

Explosion-proof sensors



For applications in explosive gas atmospheres or dust atmospheres we supply temperature and pressure sensors, certified to ATEX, IECEx and Ex EAC.

Temperature sensors with DNV GL certification for the maritime industry. Combination of approvals are possible.

Controlli valves and actuators for HVAC



Paul Rüster & Co. GmbH acts as an **official distributor** of traditional Italian company **CONTROLLI**.

Valves and actuators for building automation applications complement our product portfolio.

FEMA by Honeywell products



Die Paul Rüster & Co. GmbH acts as an **official distributor** for all products of **FEMA by Honeywell**.

Safety-related pressure switches and field devices for ATEX, IECEx and SIL2 Applications offer conformity and safety for your plant.

Content

Page

Temperature		8-37
ETF1	Duct temperature sensor Ø6, housing polyamid	8
ETF1S	Duct temperature sensor (fast-response) Ø6, housing polyamid	9
ETF1/4	Duct temperature sensor Ø4, housing polyamid	10
ETF3/4	Duct temperature sensor Ø4, connection head "J"	11
ETF3S	Duct temperature sensor (fast-response) Ø6, connection head "J"	12
ETF3	Duct temperature sensor Ø6, connection head "J"	13
ETF5	Duct temperature sensor Ø4, connection head "BL"	14
ETF5S	Duct temperature sensor (fast-response) Ø6, connection head "BL"	15
MWTF3	Averaging temperature sensor PVC protection tube	16
MWTF4	Averaging temperature sensor copper protection tube	17
ATF1	Outdoor temperature sensor	18
ATF2	Outdoor temperature sensor with protection tube	19
ALTF2	Contact temperature sensor housing polyamid	20
ALTF1	Contact temperature sensor with connection cable	21
OFTF	Surface temperature sensor	22
KSTF	Cable shoe temperature sensor	23
RPTF1	Pendulum temperature sensor Ø15 x 100 mm	24
RPTF2	Pendulum temperature sensor spheric	25
RPTF1/9	Pendulum temperature sensor Ø9 x 100	26
DTF	Ceiling temperature sensor	27
HTF1	Cable temperature sensor crimped	28
HTF2	Cable temperature sensor rolled	29
HTFp	Cable temperature sensor perforated	30
CUTF	Contact temperature sensor copper	31

Content

Page

MGTF	Magnetic temperature sensor	32
WTF	Angle temperature sensor	33
BTF	Bayonet temperature sensor	34
ESTFM12	Screw-in temperature sensor	35
ESTF4	Screw-in temperature sensor	36
ESTF6	Screw-in temperature sensor	37

Pressure 40-47

DPT3	Digital differential pressure transmitter (with 3 ranges)	40
DPTD3	Digital differential pressure transmitter with Display (with 3 ranges)	41
DPT8	Digital differential pressure transmitter (with 8 ranges)	42
DPTD8	Digital differential pressure transmitter with display (with 8 ranges)	43
SHD	Pressure transmitter	44
SHD2	Pressure transmitter	45
SHD3	Pressure transmitter	46
SHD4	Pressure transmitter	47

Humidity 50-56

AFF1	Outdoor humidity sensor (1 x active output)	50
AFFD2	Outdoor humidity sensor with display (1 x active output)	51
AFF2	Outdoor humidity sensor (2 x active outputs)	52
AFFD3	Outdoor humidity sensor with display (2 x active outputs)	53
KFF1	Duct humidity sensor (1 x active output)	54
KFFD2	Duct humidity sensor with display (1 x active output)	55
KFF2	Duct humidity sensor (2 x active outputs)	56

TEMPERATURE

ETF1 - duct temperature sensor



Technical Data

Measuring range	-30 ... +150°C
Housing	64 x 58 x 38 mm, polyamid
Protection tube	stainless steel Ø 6 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 1,5 mm ²
Protection	IP 65
Process connection	thermowell, flange or cutting ring fitting (see accessories)

1. Sensor

Order code	Sensor	Price
ETF1-A	Pt100	28,90 €
ETF1-B	Pt1000	28,90 €
ETF1-C	Ni1000	30,90 €
ETF1-D	Ni1000-Tk5000	31,50 €
ETF1-E	NTC 1,8k	29,20 €
ETF1-F	NTC 3k	29,20 €
ETF1-G	NTC 5k	29,20 €

2. Nominal length*

Order code	Surcharge
-65 65 mm	-
for each additional 50 mm	0,75 €

*Nominal length = Insertion length of thermowell + 15 mm

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Order code	Sensor	Price
ETF1-H	NTC 10k	29,20 €
ETF1-I	NTC 10k PRECON	29,20 €
ETF1-J	NTC 20k	29,20 €
ETF1-K	NTC 30k	29,20 €
ETF1-L	NTC 50k	29,20 €
ETF1-ACT*	0...10V / 4...20mA	81,60 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

Ordering example

1.	ETF1	ETF1 with Pt100
2.	-115	Length 115 mm
3.	-1	1 x Sensor
4.	-2	2-wire circuit
5.	-1	Class B

Total order code	Price
ETF1-A-115-1-2-1	29,65 €

Accessories

Stainless steel thermowell Ø 9mm, G1/2"

Order code	Insertion length	Price
SA9-50	50 mm	12,50 €
for each additional 50 mm		1,50 €

Mounting flange, aluminium

Order code	Pipe Ø	Price
AF6.1	Ø 6 mm	4,50 €

Stainless steel cutting ring fitting

Order code	Thread	Price
100.M10x1.6.3.3	M10 x 1	18,30 €
100.G1/4.6.3.3	G1/4"	20,40 €
100.G1/2.6.3.3	G1/2"	24,50 €
Others on request		

ETF1S - duct temperature sensor



Technical Data

Measuring range	-30 ... +150°C
Housing	64 x 58 x 38 mm, polyamid
Protection tube	stainless steel Ø 6 mm, with fast-response plastic tip
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 1,5 mm ²
Protection	IP 65
Process connection	thermowell, flange or cutting ring fitting (see accessories)

1. Sensor

Order code	Sensor	Price
ETF1S-A	Pt100	36,10 €
ETF1S-B	Pt1000	36,10 €
ETF1S-ACT*	0...10V / 4...20mA	88,80 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Nominal length*

Order code	Surcharge
-65 65 mm	-
for each additional 50 mm	0,75 €

*Nominal length = Insertion length of thermowell + 15 mm

3. Sensor quantity

Order code	Surcharge
-1 1x	-

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-

Ordering example

1.	ETF1S-B	ETF1S with Pt1000
2.	-115	Length 115 mm
3.	-1	1 x Sensor
4.	-2	2-wire circuit
5.	-1	Class B

Total order code	Price
ETF1S-B-115-1-2-1	36,85 €

Accessories

Stainless steel thermowell Ø 9mm, G1/2"

Order code	Insertion length	Price
SA9-50	50 mm	12,50 €
for each additional 50 mm		1,50 €

Mounting flange, aluminium

Order code	Pipe Ø	Price
AF6.1	Ø 6 mm	4,50 €

Stainless steel cutting ring fitting

Order code	Thread	Price
100.M10x1.6.3.3	M10 x 1	18,30 €
100.G1/4.6.3.3	G1/4"	20,40 €
100.G1/2.6.3.3	G1/2"	24,50 €
Others on request		

ETF1/4 - duct temperature sensor



Technical Data

Measuring range	-30 ... +150°C
Housing	64 x 58 x 38 mm, polyamid
Protection tube	stainless steel Ø 4 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 1,5 mm ²
Protection	IP 65
Process connection	thermowell or cutting ring fitting (see accessories)

1. Sensor

Order code	Sensor	Price
ETF1/4-A	Pt100	29,40 €
ETF1/4-B	Pt1000	29,40 €
ETF1/4-C	Ni1000	31,40 €
ETF1/4-D	Ni1000-Tk5000	31,40 €
ETF1/4-E	NTC 1,8k	29,70 €
ETF1/4-F	NTC 3k	29,70 €
ETF1/4-G	NTC 5k	29,70 €

2. Nominal length*

Order code	Surcharge
-65 65 mm	-
for each additional 50 mm	0,75 €

*Nominal length = Insertion length of thermowell + 15 mm

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Order code	Sensor	Price
ETF1/4-H	NTC 10k	29,70 €
ETF1/4-I	NTC 10k PRECON	29,70 €
ETF1/4-J	NTC 20k	29,70 €
ETF1/4-K	NTC 30k	29,70 €
ETF1/4-L	NTC 50k	29,70 €
ETF1/4-ACT*	0...10V / 4...20mA	82,10 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

Ordering example

1.	ETF1/4-A	ETF1/4 with Pt100
2.	-165	Length 165 mm
3.	-1	1 x Sensor
4.	-2	2-wire circuit
5.	-2	Class A

Total order code	Price
ETF1/4-A-165-1-2-2	35,40 €

Accessories

Stainless steel thermowell Ø 6mm, G1/2"

Order code	Insertion length	Price
SA6-50	50 mm	12,50 €
for each additional 50 mm		1,50 €

Stainless steel cutting ring fitting

Order code	Thread	Price
100.M10x1.4.3.3	M10 x 1	18,30 €
100.G1/4.4.3.3	G1/4"	20,40 €
100.G1/2.4.3.3	G1/2"	24,50 €
Others on request		

ETF3/4 - duct temperature sensor



Technical Data

Measuring range	-30 ... +180°C (standard)
Connection head	form "J", aluminium
Protection tube	stainless steel Ø 4 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 2,5 mm ²
Protection	IP 54
Process connection	thermowell or cutting ring fitting (see accessories)

1. Sensor

Order code	Sensor	Price
ETF3/4-A	Pt100	56,10 €
ETF3/4-B	Pt1000	56,10 €
ETF3/4-C	Ni1000	58,10 €
ETF3/4-D	Ni1000-Tk5000	59,90 €
ETF3/4-E	NTC 1,8k	56,40 €
ETF3/4-F	NTC 3k	56,40 €
ETF3/4-G	NTC 5k	56,40 €

Order code	Sensor	Price
ETF3/4-H	NTC 10k	56,40 €
ETF3/4-I	NTC 10k PRECON	56,40 €
ETF3/4-J	NTC 20k	56,40 €
ETF3/4-K	NTC 30k	56,40 €
ETF3/4-L	NTC 50k	56,40 €
ETF3/4-ACT-I*	4...20mA	108,80 €
Others on request		

*Please specify measuring range when ordering

2. Nominal length*

Order code	Surcharge
-65 65 mm	-
for each additional 65 mm	0,75 €

*Nominal length = Insertion length of thermowell + 15 mm

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

6. Temperature range

Order code	Surcharge
-A -30 ... +180°C	-
-B -30 ... +260°C	10,00 €
-C -30 ... +400°C	40,00 €
-D -30 ... +600°C	60,00 €

Ordering example

1.	ETF3/4-B	ETF3/4 with Pt1000
2.	-115	Length 115 mm
3.	-1	1 x Sensor
4.	-2	2-wire circuit
5.	-1	Class B
6.	-B	-30...+260°C

Total order code	Price
ETF3/4-B-115-1-2-1-B	66,85 €

Accessories

Stainless steel thermowell Ø 6mm, G1/2"

Order code	Insertion length	Price
SA6-50	50 mm	12,50 €
for each additional 50 mm		1,50 €

Stainless steel cutting ring fitting

Order code	Thread	Price
100.M10x1.4.3.3	M10 x 1	18,30 €
100.G1/4.4.3.3	G1/4"	20,40 €
100.G1/2.4.3.3	G1/2"	24,50 €
Others on request		

ETF3S - duct temperature sensor



Technical Data

Measuring range	-30 ... +150°C
Connection head	form "J", aluminium
Protection tube	stainless steel Ø 6 mm, with fast-response plastic tip
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 2,5 mm ²
Protection	IP 54
Process connection	thermowell, flange or cutting ring fitting (see accessories)

1. Sensor

Order code	Sensor	Price
ETF3S-A	Pt100	62,50 €
ETF3S-B	Pt1000	62,50 €
ETF3S-ACT-I*	4...20mA	115,20 €
Others on request		

*Please specify measuring range when ordering

2. Nominal length*

Order code	Surcharge
-65 65 mm	-
for each additional 50 mm	0,75 €

*Nominal length = Insertion length of thermowell + 15 mm

3. Sensor quantity

Order code	Surcharge
-1 1x	-

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-

Ordering example

1.	ETF3S-B	ETF3S with Pt1000
2.	-115	Length 115 mm
3.	-1	1 x Sensor
4.	-2	2-wire circuit
5.	-1	Class B

Total order code	Price
ETF3S-B-115-1-2-1	63,25 €

Accessories

Stainless steel thermowell Ø 9mm, G1/2"

Order code	Insertion length	Price
SA9-50	50 mm	12,50 €
for each additional 50 mm		1,50 €

Mounting flange, aluminium

Order code	Pipe Ø	Price
AF6.1	Ø 6 mm	4,50 €

Stainless steel cutting ring fitting

Order code	Thread	Price
100.M10x1.6.3.3	M10 x 1	18,30 €
100.G1/4.6.3.3	G1/4"	20,40 €
100.G1/2.6.3.3	G1/2"	24,50 €
Others on request		

ETF3 - duct temperature sensor



Technical Data

Measuring range	-30 ... +180°C (standard)
Connection head	form "J", aluminium
Protection tube	stainless steel Ø 6 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 2,5 mm ²
Protection	IP 54
Process connection	thermowell, flange or cutting ring fitting (see accessories)

1. Sensor

Order code	Sensor	Price
ETF3-A	Pt100	56,60 €
ETF3-B	Pt1000	56,60 €
ETF3-C	Ni1000	58,60 €
ETF3-D	Ni1000-Tk5000	60,40 €
ETF3-E	NTC 1,8k	56,90 €
ETF3-F	NTC 3k	56,90 €
ETF3-G	NTC 5k	56,90 €

Order code	Sensor	Price
ETF3-H	NTC 10k	56,90 €
ETF3-I	NTC 10k PRECON	56,90 €
ETF3-J	NTC 20k	56,90 €
ETF3-K	NTC 30k	56,90 €
ETF3-L	NTC 50k	56,90 €
ETF3-ACT-I*	4...20mA	109,30 €
Others on request		

*Please specify measuring range when ordering

2. Nominal length*

Order code	Surcharge
-65 65 mm	-
for each additional 65 mm	0,75 €

*Nominal length = Insertion length of thermowell + 15 mm

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

6. Temperature range

Order code	Surcharge
-A -30 ... +180°C	-
-B -30 ... +260°C	10,00 €
-C -30 ... +400°C	40,00 €
-D -30 ... +600°C	60,00 €

Ordering example

1.	ETF3-B	ETF3 with Pt1000
2.	-115	Length 115 mm
3.	-1	1 x Sensor
4.	-2	2-wire circuit
5.	-1	Class B
6.	-B	-30...+260°C

Total order code	Price
ETF3-B-115-1-2-1-B	67,35 €

Accessories

Stainless steel thermowell Ø 9mm, G1/2"

Order code	Insertion length	Price
SA9-50	50 mm	12,50 €
for each additional 50 mm		1,50 €

Mounting flange, aluminium

Order code	Pipe Ø	Price
AF6.1	Ø 6 mm	4,50 €

Stainless steel cutting ring fitting

Order code	Thread	Price
100.M10x1.6.3.3	M10 x 1	18,30 €
100.G1/4.6.3.3	G1/4"	20,40 €
100.G1/2.6.3.3	G1/2"	24,50 €
Others on request		

ETF5 - duct temperature sensor



Technical Data

Measuring range	-30 ... +180°C (standard)
Connection head	form "BL", aluminium
Protection tube	stainless steel Ø 6 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 2,5 mm ²
Protection	IP 54
Process connection	thermowell, flange or cutting ring fitting (see accessories)

1. Sensor

Order code	Sensor	Price
ETF5-A	Pt100	59,20 €
ETF5-B	Pt1000	59,20 €
ETF5-C	Ni1000	61,20 €
ETF5-D	Ni1000-Tk5000	63,00 €
ETF5-E	NTC 1,8k	59,50 €
ETF5-F	NTC 3k	59,50 €
ETF5-G	NTC 5k	59,50 €

Order code	Sensor	Price
ETF5-H	NTC 10k	59,50 €
ETF5-I	NTC 10k PRECON	59,50 €
ETF5-J	NTC 20k	59,50 €
ETF5-K	NTC 30k	59,50 €
ETF5-L	NTC 50k	59,50 €
ETF5-ACT-U*	0...10V	111,90 €
ETF5-ACT-I*	4...20mA	111,90 €

*Please specify measuring range when ordering

2. Nominal length*

Order code	Surcharge
-65 65 mm	-
for each additional 65 mm	0,75 €

*Nominal length = Insertion length of thermowell + 15 mm

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

6. Temperature range

Order code	Surcharge
-A -30 ... +180°C	-
-B -30 ... +260°C	10,00 €
-C -30 ... +400°C	40,00 €
-D -30 ... +600°C	60,00 €

Ordering example

1.	ETF5-A	ETF5 with Pt100
2.	-115	Length 115 mm
3.	-1	1 x Sensor
4.	-3	3-wire circuit
5.	-1	Class B
6.	-A	-30...+180°C

Total order code	Price
ETF5-A-115-1-3-1-A	61,45 €

Accessories

Stainless steel thermowell Ø 9mm, G1/2"

Order code	Insertion length	Price
SA9-50	50 mm	12,50 €
for each additional 50 mm		1,50 €

Mounting flange, aluminium

Order code	Pipe Ø	Price
AF6.1	Ø 6 mm	4,50 €

Stainless steel cutting ring fitting

Order code	Thread	Price
100.M10x1.6.3.3	M10 x 1	18,30 €
100.G1/4.6.3.3	G1/4"	20,40 €
100.G1/2.6.3.3	G1/2"	24,50 €
Others on request		

ETF5S - duct temperature sensor



Technical Data

Measuring range	-30 ... +150°C
Connection head	form "BL", aluminium
Protection tube	stainless steel Ø 6 mm, with fast-response plastic tip
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw terminal max. 2,5 mm ²
Protection	IP 54
Process connection	thermowell, flange or cutting ring fitting (see accessories)

1. Sensor

Order code	Sensor	Price
ETF5S-A	Pt100	69,10 €
ETF5S-B	Pt1000	69,10 €
ETF5S-ACT-U*	0...10V	120,80 €
ETF5S-ACT-I*	4...20mA	120,80 €
Others on request		

*Please specify measuring range when ordering

2. Nominal length*

Order code	Surcharge
-65 65 mm	-
for each additional 50 mm	0,75 €

*Nominal length = Insertion length of thermowell + 15 mm

3. Sensor quantity

Order code	Surcharge
-1 1x	-

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-

Ordering example

1.	ETF5S-ACT-U	ETF5S with output 0-10V
2.	-165	Length 165 mm
3.	-1	1 x Sensor
4.	-2	2-wire circuit
5.	-1	Class B

Total order code	Price
ETF5S-ACT-U-165-1-2-1	122,30 €

Accessories

Stainless steel thermowell Ø 9mm, G1/2"

Order code	Insertion length	Price
SA9-50	50 mm	12,50 €
for each additional 50 mm		1,50 €

Mounting flange, aluminium

Order code	Pipe Ø	Price
AF6.1	Ø 6 mm	4,50 €

Stainless steel cutting ring fitting

Order code	Thread	Price
100.M10x1.6.3.3	M10 x 1	18,30 €
100.G1/4.6.3.3	G1/4"	20,40 €
100.G1/2.6.3.3	G1/2"	24,50 €
Others on request		

MWTF3 - averaging temperature sensor



Technical Data

Measuring range	-30 ... +80°C
Housing	64 x 58 x 38 mm, polyamid
Protection tube	PVC Ø 3,3 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 1,5 mm ²
Protection	IP 65
Process connection	with mounting bracket (included in delivery)

1. Sensor

Order code	Sensor	Price
MWTF3-A	Pt100	123,00 €
MWTF3-B	Pt1000	123,00 €
MWTF3-C	Ni1000	123,00 €
MWTF3-ACT*	0...10V / 4...20mA	158,00 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Length

Order code		Surcharge
-3000	3000 mm	-
-6000	6000 mm	18,00 €

3. Wiring

Order code		Surcharge
-2	2-wire circuit	-
-3	3-wire circuit	1,50 €
-4	4-wire circuit	3,00 €

Ordering example

1.	MWTF3-A	MWTF3 with Pt100
2.	-3000	Length 3000 mm
3.	-3	3-wire circuit

Total order code	Price
MWTF3-A-3000-3	124,50 €

Accessories

Mounting bracket (included in delivery)

Order code		Price
100.MK	Mounting bracket	-

MWTF4 - averaging temperature sensor



Technical Data

Measuring range	-30 ... +80°C
Housing	64 x 58 x 38 mm, polyamid
Protection tube	Copper Ø 4 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 1,5 mm ²
Protection	IP 65
Process connection	with mounting bracket (included in delivery)

1. Sensor

Order code	Sensor	Price
MWTF4-A	Pt100	120,00 €
MWTF4-B	Pt1000	120,00 €
MWTF4-C	Ni1000	120,00 €
MWTF4-ACT*	0...10V / 4...20mA	155,00 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Length

Order code		Surcharge
-400	400 mm	-
-3000	3000 mm	55,00 €
-6000	6000 mm	78,00 €

3. Schaltungsart

Bestellcode		Aufpreis
-2	2-Leiterschaltung	-
-3	3-Leiterschaltung	1,50 €
-4	4-Leiterschaltung	3,00 €

Ordering example

1.	MWTF4-A	MWTF4 with Pt100
2.	-3000	Length 3000 mm
3.	-3	3-wire circuit

Total order code	Price
MWTF4-A-3000-3	176,50 €

Accessories

Mounting bracket (included in delivery)

Order code		Price
100.MK	Mounting bracket	-

ATF1 - outdoor temperature sensor



Technical Data

Measuring range	-30 ... +90°C
Housing	64 x 58 x 38 mm, polyamid
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 1,5 mm ²
Protection	IP 65

1. Sensor

Order code	Sensor	Price
ATF1-A	Pt100	22,70 €
ATF1-B	Pt1000	22,70 €
ATF1-C	Ni1000	24,70 €
ATF1-D	Ni1000-Tk5000	26,50 €
ATF1-E	NTC 1,8k	23,00 €
ATF1-F	NTC 3k	23,00 €
ATF1-G	NTC 5k	23,00 €

Order code	Sensor	Price
ATF1-H	NTC 10k	23,00 €
ATF1-I	NTC 10k PRECON	23,00 €
ATF1-J	NTC 20k	23,00 €
ATF1-K	NTC 30k	23,00 €
ATF1-L	NTC 50k	23,00 €
ATF1-ACT*	0...10V / 4...20mA	75,40 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Sensor quantity

Order code	Quantity	Surcharge
-1	1x	-
-2	2x	18,00 €

3. Wiring

Order code	Wiring	Surcharge
-2	2-wire circuit	-
-3	3-wire circuit	1,50 €
-4	4-wire circuit	3,00 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Ordering example

1.	ATF1-A	ATF1 with Pt100
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B

Total order code	Price
ATF1-A-1-2-1	22,70 €

ATF2 - outdoor temperature sensor



Technical Data

Measuring range	-30 ... +90°C
Housing	64 x 58 x 38 mm, polyamid
Protection tube	stainless steel Ø 6 x 34
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 1,5 mm ²
Protection	IP 65

1. Sensor

Order code	Sensor	Price
ATF2-A	Pt100	25,70 €
ATF2-B	Pt1000	25,70 €
ATF2-C	Ni1000	27,70 €
ATF2-D	Ni1000-Tk5000	29,50 €
ATF2-E	NTC 1,8k	26,00 €
ATF2-F	NTC 3k	26,00 €
ATF2-G	NTC 5k	26,00 €

Order code	Sensor	Price
ATF2-H	NTC 10k	26,00 €
ATF2-I	NTC 10k PRECON	26,00 €
ATF2-J	NTC 20k	26,00 €
ATF2-K	NTC 30k	26,00 €
ATF2-L	NTC 50k	26,00 €
ATF2-ACT*	0...10V / 4...20mA	78,40 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Sensor quantity

Order code	Quantity	Surcharge
-1	1x	-
-2	2x	18,00 €

3. Wiring

Order code	Wiring	Surcharge
-2	2-wire circuit	-
-3	3-wire circuit	1,50 €
-4	4-wire circuit	3,00 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Ordering example

1.	ATF2-A	ATF2 with Pt100
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B

Total order code	Price
ATF2-A-1-2-1	25,70 €

ALTF2 - contact temperature sensor



Technical Data

Measuring range	-30 ... +90°C
Housing	64 x 58 x 38 mm, polyamid with stainless steel bar
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	screw clamps max. 1,5 mm ²
Protection	IP 65
Process connection	pipe clamp Ø 50-110 mm (included in delivery)

1. Sensor

Order code	Sensor	Price
ALTF2-A	Pt100	25,50 €
ALTF2-B	Pt1000	25,50 €
ALTF2-C	Ni1000	27,50 €
ALTF2-D	Ni1000-Tk5000	29,30 €
ALTF2-E	NTC 1,8k	25,80 €
ALTF2-F	NTC 3k	25,80 €
ALTF2-G	NTC 5k	25,80 €

Order code	Sensor	Price
ALTF2-H	NTC 10k	25,80 €
ALTF2-I	NTC 10k PRECON	25,80 €
ALTF2-J	NTC 20k	25,80 €
ALTF2-K	NTC 30k	25,80 €
ALTF2-L	NTC 50k	25,80 €
ALTF2-ACT*	0...10V / 4...20mA	78,20 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Sensor quantity

Order code	Quantity	Surcharge
-1	1x	-
-2	2x	18,00 €

3. Wiring

Order code	Wiring	Surcharge
-2	2-wire circuit	-
-3	3-wire circuit	1,50 €
-4	4-wire circuit	3,00 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Ordering example

1.	ALTF2-B	ALTF2 with Pt1000
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B

Total order code	Price
ALTF2-B-1-2-1	25,50 €

ALTF1 - contact temperature sensor



Technical Data

Measuring range	-30 ... +90°C
Probe	aluminium block radius 15 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 54
Process connection	pipe clamp Ø 50-110 mm (included in delivery)

1. Sensor

Order code	Sensor	Price
ALTF1-A	Pt100	18,50 €
ALTF1-B	Pt1000	18,50 €
ALTF1-C	Ni1000	20,50 €
ALTF1-D	Ni1000-Tk5000	22,30 €
ALTF1-E	NTC 1,8k	18,80 €
ALTF1-F	NTC 3k	18,80 €
ALTF1-G	NTC 5k	18,80 €

Order code	Sensor	Price
ALTF1-H	NTC 10k	18,80 €
ALTF1-I	NTC 10k PRECON	18,80 €
ALTF1-J	NTC 20k	18,80 €
ALTF1-K	NTC 30k	18,80 €
ALTF1-L	NTC 50k	18,80 €
ALTF1-ACT*	0...10V / 4...20mA	79,20 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

3. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Ordering example

1.	ALTF1-B	ALTF1 with Pt1000
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B
5.	-2PP	2m PVC/PVC cable

Total order code	Price
ALTF1-B-1-2-1-2PP	19,60 €

5. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

OFTF - surface temperature sensor



Technical Data

Measuring range	-20 ... +70°C
Probe	30 x 6 x 6 mm, hole Ø 3 mm incl. self-adhesive cap
Measuring current	max. 1 mA
Insulation current	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 54
Process connection	with self-adhesive cap or screw connection (hole Ø 3 mm)

1. Sensor

Order code	Sensor	Price
OFTF-A	Pt100	20,40 €
OFTF-B	Pt1000	20,40 €
OFTF-C	Ni1000	22,40 €
OFTF-D	Ni1000-Tk5000	24,20 €
OFTF-E	NTC 1,8k	20,70 €
OFTF-F	NTC 3k	20,70 €
OFTF-G	NTC 5k	20,70 €

Order code	Sensor	Price
OFTF-H	NTC 10k	20,70 €
OFTF-I	NTC 10k PRECON	20,70 €
OFTF-J	NTC 20k	20,70 €
OFTF-K	NTC 30k	20,70 €
OFTF-L	NTC 50k	20,70 €
OFTF-ACT*	0...10V / 4...20mA	73,10 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Wiring

Order code		Surcharge
-2	2-wire circuit	-
-3	3-wire circuit	1,50 €
-4	4-wire circuit	3,00 €

Ordering example

1.	OFTF-A	OFTF with Pt100
2.	-2	2-wire circuit
3.	-2	Class A
4.	-3TT	3m PTFE/PTFE cable

3. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Total order code	Price
OFTF-A-2-2-3TT	31,50 €

4. Connection cable

Order code*		Temperature	2-wire/m	3-wire/m	4-wire/m
-PP	PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS	PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT	PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD	glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

KSTF - cable shoe temperature sensor



Technical Data

Measuring range	-30 ... +90°C
Probe	cable shoe, CU-ETP hole Ø 8,4 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 54
Process connection	screw connection (Ø 8,4 mm)

1. Sensor

Order code	Sensor	Price
KSTF-A	Pt100	19,50 €
KSTF-B	Pt1000	19,50 €
KSTF-C	Ni1000	21,50 €
KSTF-D	Ni1000-Tk5000	23,30 €
KSTF-E	NTC 1,8k	19,80 €
KSTF-F	NTC 3k	19,80 €
KSTF-G	NTC 5k	19,80 €

Order code	Sensor	Price
KSTF-H	NTC 10k	19,80 €
KSTF-I	NTC 10k PRECON	19,80 €
KSTF-J	NTC 20k	19,80 €
KSTF-K	NTC 30k	19,80 €
KSTF-L	NTC 50k	19,80 €
KSTF-ACT*	0...10V / 4...20mA	72,20 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Sensor quantity

Order code	Quantity	Surcharge
-1	1x	-
-2	2x	18,00 €

Ordering example

1.	KSTF-A	KSTF with Pt100
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-2	Class A
5.	-1TT	1m PTFE/PTFE cable

3. Wiring

Order code	Wiring	Surcharge
-2	2-wire circuit	-
-3	3-wire circuit	1,50 €
-4	4-wire circuit	3,00 €

Total order code	Price
KSTF-A-1-2-2-1TT	26,20 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

5. Connection cable

Order code*	Material	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP	PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS	PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT	PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD	glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

RPTF1 - pendulum temperature sensor



Technical Data

Measuring range	-30 ... +90°C
Protection tube	stainless steel Ø 15 x 100 mm others on request
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 65

1. Sensor

Order code	Sensor	Price
RPTF1-A	Pt100	47,00 €
RPTF1-B	Pt1000	47,00 €
RPTF1-C	Ni1000	49,00 €
RPTF1-D	Ni1000-Tk5000	50,80 €
RPTF1-E	NTC 1,8k	47,30 €
RPTF1-F	NTC 3k	47,30 €
RPTF1-G	NTC 5k	47,30 €

Order code	Sensor	Price
RPTF1-H	NTC 10k	47,30 €
RPTF1-I	NTC 10k PRECON	47,30 €
RPTF1-J	NTC 20k	47,30 €
RPTF1-K	NTC 30k	47,30 €
RPTF1-L	NTC 50k	47,30 €
RPTF1-ACT*	0...10V / 4...20mA	99,70 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Sensor quantity

Order code	Quantity	Surcharge
-1	1x	-
-2	2x	18,00 €

Ordering example

1.	RPTF1-A	RPTF1 with Pt100
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B
5.	-1TT	1m PTFE/PTFE cable

3. Wiring

Order code	Wiring	Surcharge
-2	2-wire circuit	-
-3	3-wire circuit	1,50 €
-4	4-wire circuit	3,00 €

Total order code	Price
RPTF1-A-1-2-1-1TT	49,20 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

5. Connection cable

Order code*	Material	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP	PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS	PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT	PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD	glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

RPTF2 - pendulum temperature sensor



Technical Data

Measuring range	-30 ... +90°C
Bulb	aluminium (black) Ø 70 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrule
Protection	IP 65

1. Sensor

Order code	Sensor	Price
RPTF2-A	Pt100	52,90 €
RPTF2-B	Pt1000	52,90 €
RPTF2-C	Ni1000	54,90 €
RPTF2-D	Ni1000-Tk5000	56,70 €
RPTF2-E	NTC 1,8k	53,20 €
RPTF2-F	NTC 3k	53,20 €
RPTF2-G	NTC 5k	53,20 €

Order code	Sensor	Price
RPTF2-H	NTC 10k	53,20 €
RPTF2-I	NTC 10k PRECON	53,20 €
RPTF2-J	NTC 20k	53,20 €
RPTF2-K	NTC 30k	53,20 €
RPTF2-L	NTC 50k	53,20 €
RPTF2-ACT*	0...10V / 4...20mA	105,60 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Sensor quantity

Order code	Quantity	Surcharge
-1	1x	-
-2	2x	18,00 €

Ordering example

1.	RPTF2-A	RPTF2 with Pt100
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B
5.	-3PP	3m PVC/PVC cable

3. Wiring

Order code	Wiring	Surcharge
-2	2-wire circuit	-
-3	3-wire circuit	1,50 €
-4	4-wire circuit	3,00 €

Total order code	Price
RPTF2-A-1-2-1-3PP	54,55 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

5. Connection cable

Order code*	Material	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP	PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS	PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT	PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD	glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

RPTF1/9 - pendulum temperature sensor



Technical Data

Measuring range	-30 ... +90°C
Protection tube	stainless steel Ø 9 x 100 mm others on request
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 65

1. Sensor

Order code	Sensor	Price
RPTF1/9-A	Pt100	46,50 €
RPTF1/9-B	Pt1000	46,50 €
RPTF1/9-C	Ni1000	48,50 €
RPTF1/9-D	Ni1000-Tk5000	50,30 €
RPTF1/9-E	NTC 1,8k	46,80 €
RPTF1/9-F	NTC 3k	46,80 €
RPTF1/9-G	NTC 5k	46,80 €

Order code	Sensor	Price
RPTF1/9-H	NTC 10k	46,80 €
RPTF1/9-I	NTC 10k PRECON	46,80 €
RPTF1/9-J	NTC 20k	46,80 €
RPTF1/9-K	NTC 30k	46,80 €
RPTF1/9-L	NTC 50k	46,80 €
RPTF1/9-ACT*	0...10V / 4...20mA	99,20 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

Ordering example

1.	RPTF1/9-A	RPTF1/9 with Pt100
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B
5.	-1TT	1m PTFE/PTFE cable

3. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

Total order code	Price
RPTF1/9-A-1-2-1-1TT	48,70 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

5. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

DTF - ceiling temperature sensor



Technical Data

Measuring range	-30 ... +60°C
Housing	aluminium (white) Ø 23 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	135 mm silicone cable 2-wire circuit
Protection	IP 30
Mounting	in subceiling with 2 tension springs

1. Sensor

Order code	Sensor	Price
DTF-A	Pt100	32,40 €
DTF-B	Pt1000	32,40 €
DTF-C	Ni1000	34,40 €
DTF-D	Ni1000-Tk5000	36,20 €
DTF-E	NTC 1,8k	32,70 €
DTF-F	NTC 3k	32,70 €
DTF-G	NTC 5k	32,70 €

Order code	Sensor	Price
DTF-H	NTC 10k	32,70 €
DTF-I	NTC 10k PRECON	32,70 €
DTF-J	NTC 20k	32,70 €
DTF-K	NTC 30k	32,70 €
DTF-L	NTC 50k	32,70 €

Others on request

2. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Ordering example

1.	DTF-A	DTF with Pt100
2.	-1	Class B

Total order code	Price
DTF-A-1	32,40 €

HTF1 - cable temperature sensor



Technical Data

Measuring range	depends on chosen cable type (see chart 5.)
Protection tube	stainless steel Ø 6 x 46 mm crimped
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 54

1. Sensor

Order code	Sensor	Price
HTF1-A	Pt100	14,90 €
HTF1-B	Pt1000	14,90 €
HTF1-C	Ni1000	16,90 €
HTF1-D	Ni1000-Tk5000	18,70 €
HTF1-E	NTC 1,8k	15,20 €
HTF1-F	NTC 3k	15,20 €
HTF1-G	NTC 5k	15,20 €

Order code	Sensor	Price
HTF1-H	NTC 10k	15,20 €
HTF1-I	NTC 10k PRECON	15,20 €
HTF1-J	NTC 20k	15,20 €
HTF1-K	NTC 30k	15,20 €
HTF1-L	NTC 50k	15,20 €
HTF1-ACT*	0...10V / 4...20mA	67,60 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

Ordering example

1.	HTF1-A	HTF1 with Pt100
2.	-1	1 x Sensor
3.	-3	3-wire circuit
4.	-1	Class B
5.	-1TT	1m PTFE/PTFE cable

3. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

Total order code	Price
HTF1-A-1-3-1-1TT	19,20 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

5. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

HTF2 - cable temperature sensor



Technical Data

Measuring range	depends on chosen cable type (see chart 5.)
Protection tube	stainless steel Ø 6 x 46 mm rolled
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 65

1. Sensor

Order code	Sensor	Price
HTF2-A	Pt100	16,50 €
HTF2-B	Pt1000	16,50 €
HTF2-C	Ni1000	18,50 €
HTF2-D	Ni1000-Tk5000	20,30 €
HTF2-E	NTC 1,8k	16,80 €
HTF2-F	NTC 3k	16,80 €
HTF2-G	NTC 5k	16,80 €

Order code	Sensor	Price
HTF2-H	NTC 10k	16,80 €
HTF2-I	NTC 10k PRECON	16,80 €
HTF2-J	NTC 20k	16,80 €
HTF2-K	NTC 30k	16,80 €
HTF2-L	NTC 50k	16,80 €
HTF2-ACT*	0...10V / 4...20mA	69,20 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

Ordering example

1.	HTF2-A	HTF2 with Pt100
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B
5.	-1TT	1m PTFE/PTFE cable

3. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 3-wire circuit	3,00 €

Total order code	Price
HTF2-A-1-2-1-1TT	18,70 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

5. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

HTFp - cable temperature sensor



Technical Data

Measuring range	depends on chosen cable type (see chart 5.)
Protection tube	stainless steel Ø 6 x 46 mm perforated
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 20

1. Sensor

Order code	Sensor	Price
HTFp-A	Pt100	18,00 €
HTFp-B	Pt1000	18,00 €
HTFp-C	Ni1000	20,00 €
HTFp-D	Ni1000-Tk5000	21,80 €
HTFp-E	NTC 1,8k	18,30 €
HTFp-F	NTC 3k	18,30 €
HTFp-G	NTC 5k	18,30 €

Order code	Sensor	Price
HTFp-H	NTC 10k	18,30 €
HTFp-I	NTC 10k PRECON	18,30 €
HTFp-J	NTC 20k	18,30 €
HTFp-K	NTC 30k	18,30 €
HTFp-L	NTC 50k	18,30 €
HTFp-ACT*	0...10V / 4...20mA	70,70 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

Ordering example

1.	HTFp-A	HTFp with Pt100
2.	-1	1 x Sensor
3.	-2	2-wire circuit
4.	-1	Class B
5.	-1TT	1m PTFE/PTFE cable

3. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

Total order code	Price
HTFp-A-1-2-1-1TT	20,20 €

4. Accuracy

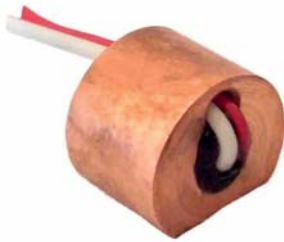
Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

5. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

CUTF - contact temperature sensor



Technical Data

Measuring range	-30 ... +180°C
Probe	copper, 10 x 12 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	PTFE twisted, 2-wire circuit with ferrules
Protection	IP 20

1. Sensor

Order code	Sensor	Price
CUTF-A	Pt100	28,40 €
CUTF-B	Pt1000	28,40 €
CUTF-C	Ni1000	30,40 €
CUTF-D	Ni1000-Tk5000	32,20 €
CUTF-E	NTC 1,8k	28,70 €
CUTF-F	NTC 3k	28,70 €
CUTF-G	NTC 5k	28,70 €

Order code	Sensor	Price
CUTF-H	NTC 10k	28,70 €
CUTF-I	NTC 10k PRECON	28,70 €
CUTF-J	NTC 20k	28,70 €
CUTF-K	NTC 30k	28,70 €
CUTF-L	NTC 50k	28,70 €
CUTF-ACT*	0...10V / 4...20mA	81,10 €
Other on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

3. Connection cable

Order code*	Temperature	2-wire/m
-Tv	PTFE, twisted	180°C
		1,20 €

*Add cable length (meter) to the order code

Ordering example

1.	CUTF-B	CUTF with Pt1000
2.	-1	Class B
3.	-4Tv	4m PTFE, twisted

Total order code	Price
CUTF-B-1-4Tv	33,20 €

MGTF - magnetic Temperature sensor



Technical Data

Measuring range	-30 ... +180°C
Housing	stainless steel, Ø 25 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	Connection cable with ferrules
Protection	IP 65

1. Sensor

Order code	Sensor	Price
MGTF-A	Pt100	49,80 €
MGTF-B	Pt1000	49,80 €
MGTF-C	Ni1000	51,80 €
MGTF-D	Ni1000-Tk5000	53,60 €
MGTF-E	NTC 1,8k	50,10 €
MGTF-F	NTC 3k	50,10 €
MGTF-G	NTC 5k	50,10 €

Order code	Sensor	Price
MGTF-H	NTC 10k	50,10 €
MGTF-I	NTC 10k PRECON	50,10 €
MGTF-J	NTC 20k	50,10 €
MGTF-K	NTC 30k	50,10 €
MGTF-L	NTC 50k	50,10 €
MGTF-ACT*	0...10V / 4...20mA	102,50 €
Others		on request

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

2. Sensor quantity

Order code	Surcharge
-1	1x
-2	2x

Ordering example

1.	MGTF-A	MGTF with Pt100
2.	-1	1 x Sensor
3.	-3	3-wire circuit
4.	-1	Class B
5.	-1TT	1m PTFE/PTFE cable

3. Wiring

Order code	Surcharge
-2	2-wire circuit
-3	3-wire circuit
-4	4-wire circuit

Total order code	Price
MGTF-A-1-3-1-1TT	54,10 €

4. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

5. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m	
-PP	PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS	PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT	PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD	glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

WTF - angle temperature sensor



Technical Data

Measuring range	depends on chosen cable Type
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	1 m 2-wire circuit PVC cabel
Process connection	2xM6x18 mm(hole distance 17 mm)
Protection	IP65
Protection tube	Stainless steel Ø 5 mm

1. Sensor

Order code	Sensor	Price
WTF-A	Pt100	102,60 €
WTF-B	Pt1000	102,60 €
WTF-C	Ni1000	104,60 €
WTF-D	Ni1000-Tk5000	106,40 €
WTF-E	NTC 1,8k	102,90 €
WTF-F	NTC 3k	102,90 €
WTF-G	NTC 5k	102,90 €

Order code	Sensor	Price
WTF-H	NTC 10k	102,90 €
WTF-I	NTC 10k PRECON	102,90 €
WTF-J	NTC 20k	102,90 €
WTF-K	NTC 30k	102,90 €
WTF-L	NTC 50k	102,90 €
WTF-ACT*	0...10V / 4...20mA	155,30 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Insertion length

Order code	Surcharge
-50 50 mm	-
for each additional 50 mm	1,60 €

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

6. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

Ordering example

1.	WTF-A	WTF with Pt100
2.	-100	Insertion length 100 mm
3.	-1	1 x Sensor
4.	-3	3-wire circuit
5.	-1	Class B
6.	-2TT	2m PTFE/PTFE cable

Total order code	Price
WTF-A-100-1-3-1-2TT	111,30 €

BTF - bayonet temperature sensor



Technical Data

Measuring range	depends on chosen cable type (see chart 6.)
Protection tube	stainless steel Ø 6 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	connection cable with ferrules
Protection	IP 65
Process connection	bayonet cap Ø12, Ø14 mm

1. Sensor

Order code	Sensor	Price
BTF-A	Pt100	68,00 €
BTF-B	Pt1000	68,00 €
BTF-C	Ni1000	70,00 €
BTF-D	Ni1000-Tk5000	71,80 €
BTF-E	NTC 1,8k	68,30 €
BTF-F	NTC 3k	68,30 €
BTF-G	NTC 5k	68,30 €

2. Insertion length

Order code	Surcharge
-50 50 mm	-
for each additional 50 mm	1,60 €

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

6. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

Order code	Sensor	Price
BTF-H	NTC 10k	68,30 €
BTF-I	NTC 10k PRECON	68,30 €
BTF-J	NTC 20k	68,30 €
BTF-K	NTC 30k	68,30 €
BTF-L	NTC 50k	68,30 €
BTF-ACT*	0...10V / 4...20mA	120,70 €
Others on request		

*Ranges: -50...+50°C, 0...+50°C, 0...+100°C, 0...+160°C

7. Bayonet cap

Order code	Surcharge
-1 Ø12 mm	-
-2 Ø14 mm	-

Ordering example

1.	BTF-A	BTF with Pt100
2.	-150	Insertion length 150 mm
3.	-1	1 x Sensor
4.	-3	3-wire circuit
5.	-1	Class B
6.	-2TT	2m PTFE/PTFE cable
7.	-1	Bayonet cap Ø12 mm

Total order code	price
BTF-A-150-1-3-1-2TT-1	78,30 €

ESTFM12 - screw-in temperature sensor



Technical Data

Measuring range	depends on chosen cable Type
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	M12 connector
Process connection	G 1/4" (others on request)
Protection	IP65
Protection tube	Stainless steel Ø 6 mm

1. Sensor

Order code	Sensor	Price
ESTFM12-A	Pt100	101,00 €
ESTFM12-B	Pt1000	101,00 €
ESTFM12-C	Ni1000	103,00 €
ESTFM12-D	Ni1000-Tk5000	104,80 €
ESTFM12-E	NTC 1,8k	101,30 €
ESTFM12-F	NTC 3k	101,30 €
ESTFM12-G	NTC 5k	101,30 €

Order code	Sensor	Price
ESTFM12-H	NTC 10k	101,30 €
ESTFM12-I	NTC 10k PRECON	101,30 €
ESTFM12-J	NTC 20k	101,30 €
ESTFM12-K	NTC 30k	101,30 €
ESTFM12-L	NTC 50k	101,30 €

Others on request

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Insertion length

Order code	Surcharge
-50 50 mm	-
for each additional 50 mm	1,60 €

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

Ordering example

1.	ESTFM12-A	ESTF6 with Pt100
2.	-100	Insertion length 100 mm
3.	-1	1 x Sensor
4.	-3	3-wire circuit
5.	-1	Class B

Total order code	Price
ESTFM12-A-100-1-3-1	104,10 €

ESTF4 - screw-in temperature sensor



Technical Data

Measuring range	depends on chosen cable type (see chart 6.)
Protection tube	stainless steel Ø 4 mm
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	connection cable with ferrules
Protection	IP 65
Process connection	G1/4" (others on request)

1. Sensor

Order code	Sensor	Price
ESTF4-A	Pt100	37,80 €
ESTF4-B	Pt1000	37,80 €
ESTF4-C	Ni1000	39,80 €
ESTF4-D	Ni1000-Tk5000	41,60 €
ESTF4-E	NTC 1,8k	38,10 €
ESTF4-F	NTC 3k	38,10 €
ESTF4-G	NTC 5k	38,10 €

Order code	Sensor	Price
ESTF4-H	NTC 10k	38,10 €
ESTF4-I	NTC 10k PRECON	38,10 €
ESTF4-J	NTC 20k	38,10 €
ESTF4-K	NTC 30k	38,10 €
ESTF4-L	NTC 50k	38,10 €
ESTF4-ACT*	0...10V / 4...20mA	90,20 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Insertion length

Order code	Surcharge
-50 50 mm	-
for each additional 50 mm	1,60 €

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

6. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

Ordering example

1.	ESTF4-A	ESTF4 with Pt100
2.	-150	Insertion length 150 mm
3.	-1	1 x Sensor
4.	-3	3-wire circuit
5.	-1	Class B
6.	-2TT	2m PTFE/PTFE cable

Total order code	Price
ESTF4-A-150-1-3-1-2TT	48,10 €

ESTF6 - screw-in temperature sensor



Technical Data

Measuring range	depends on chosen cable Type
Measuring current	max. 1 mA
Insulation resistance	> 100 MOhm @ 20°C (500Vdc)
Electrical connection	1 m 2-wire circuit PVC cable
Process connection	G 1/2" (others on request)
Protection	IP65
Protection tube	Stainless steel Ø 6 mm

1. Sensor

Order code	Sensor	Price
ESTF6-A	Pt100	35,80 €
ESTF6-B	Pt1000	35,80 €
ESTF6-C	Ni1000	37,80 €
ESTF6-D	Ni1000-Tk5000	39,60 €
ESTF6-E	NTC 1,8k	36,10 €
ESTF6-F	NTC 3k	36,10 €
ESTF6-G	NTC 5k	36,10 €

Order code	Sensor	Price
ESTF6-H	NTC 10k	36,10 €
ESTF6-I	NTC 10k PRECON	36,10 €
ESTF6-J	NTC 20k	36,10 €
ESTF6-K	NTC 30k	36,10 €
ESTF6-L	NTC 50k	36,10 €
ESTF6-ACT*	0...10V / 4...20mA	88,50 €
Others on request		

*Ranges: -50..+50°C, 0..+50°C, 0..+100°C, 0..+160°C

2. Insertion length

Order code	Surcharge
-50 50 mm	-
for each additional 50 mm	1,60 €

3. Sensor quantity

Order code	Surcharge
-1 1x	-
-2 2x	18,00 €

4. Wiring

Order code	Surcharge
-2 2-wire circuit	-
-3 3-wire circuit	1,50 €
-4 4-wire circuit	3,00 €

5. Accuracy

Order code	Class	Surcharge
-1	B (DIN EN 60751)	-
-2	A (DIN EN 60751)	4,50 €
-3	AA (DIN EN 60751)	10,00 €
-4	1/10 B (DIN EN 60751)	20,00 €

6. Connection cable

Order code*	Temperature	2-wire/m	3-wire/m	4-wire/m
-PP PVC / PVC	90°C	0,55 €	0,75 €	0,90 €
-TS PTFE / Silicone	180°C	1,30 €	1,70 €	2,50 €
-TT PTFE / PTFE	260°C	2,20 €	2,80 €	3,40 €
-GGD glassfiber/glassfiber/braided	350°C	2,80 €	3,40 €	4,00 €

*Add cable length (meter) to the order code

Ordering example

1.	ESTF6-A	ESTF6 with Pt100
2.	-100	Insertion length 100 mm
3.	-1	1 x Sensor
4.	-3	3-wire circuit
5.	-1	Class B
6.	-2TT	2m PTFE/PTFE cable

Total order code	Price
ESTF6-A-100-1-3-1-2TT	44,50 €

PRESSURE

DPT3 - differential pressure transmitter

3 measuring ranges



Technical Data

Outputs	Voltage	0 ... 10 V
	Current	4 ... 20 mA
Supply	at output voltage (0...10V):	13...32 Vdc / 13...24 Vac
	at output current (4...20 mA):	14...30 Vdc
Housing	65 x 50 x 35 mm, ABS	
Process connection	4 mm / 6 mm	
Measuring range	0...5000 Pa (standard)	
	optional mbar	
	on request: -5000 Pa...+5000 Pa	
Linearity error	+/- 1% FS	
Standard error @ 25°C	< +/- 0,4% FS	
Accuracy	+/- 1,5% FS	
Operating temperature	-10 °C...+50 °C	
Media	Dry air and non-aggressive gases	

1. Output

Order code	output signal	Price
DPT3-U	0..10 V	132,00 €
DPT3-I	4...20 mA	132,00 €

2. Measuring range

Order code	Measuring range	Surcharge
.0/200	0-100 / 200 / 400 Pa	-
.0/500	0-250 / 500 / 1000 Pa	-
.0/2500	0-1250 / 2500 / 5000 Pa	-

Ordering example

1.	DPT3-U	<i>DPT3, Output 0-10V</i>
2.	.0/200	<i>0-100/200/400 Pa</i>

Total order code	Price
DPT3-U.0/200	132,00 €

Accessories

Order code	Description	Price
DBZ06	Connection set	4,00 €

DPTD3 - differential pressure transmitter

with display - 3 measuring ranges



Technical Data

Outputs	Voltage	0 ... 10 V
	Current	4 ... 20 mA
Supply	at output voltage (0...10 V):	13...32 Vdc / 13...24 Vac
	at output current (4...20 mA):	14...30 Vdc
Housing	65 x 50 x 35 mm, ABS	
Process connection	4 mm / 6 mm	
Measuring range	0...5000 Pa (standard)	
	optional mbar	
	on request: -5000 Pa...+5000 Pa	
Display	4-Digit LCD	
Linearity error	+/- 1% FS	
Standard error @ 25°C	< +/- 0,4% FS	
Accuracy	+/- 1,5% FS	
Operating temperature	-10 °C...+50 °C	
Media	Dry air and non-aggressive gases	

1. Output

Order code	output signal	Price
DPTD3-U	0..10 V	162,00 €
DPTD3-I	4...20 mA	162,00 €

2. Measuring range

Order code	Measuring range	Surcharge
.0/200	0-100 / 200 / 400 Pa	-
.0/500	0-250 / 500 / 1000 Pa	-
.0/2500	0-1250 / 2500 / 5000 Pa	-

Ordering example

1.	DPTD3-U	<i>DPTD3, Output 0-10V</i>
2.	.0/200	<i>0-100/200/400 Pa</i>

Total order code	Price
DPTD3-U.0/200	162,00 €

Accessories

Order code	Description	Price
DBZ06	Connection set	4,00 €

DPT8 - differential pressure transmitter

8 measuring ranges



Technical Data

Measuring range	8 measuring ranges (see table)
Output	0-10 V or 4...20 mA (selectable with DIP-Switch)
Supply voltage	at output voltage (0...10 V): 16...32 VDC / 24 VAC ±10% at output current (4...20 mA): 32 VDC
Protection	IP65
Process connection	2x5,5 mm
Accuracy	max. +/- 1% FS / ±4 Pa at ≤ 250 Pa
Damping	0,5 s / 2 s / 4 s / 8 s (selectable with DIP-Switch)
Zero point calibration	push button
Operating temperature	-10 °C...+60 °C
Media	dry air and non-aggressive gases
Standards	EN 61326:2013 / EMC directive 2014/30/EU

Order code	Measuring range	Price
DPT8-250	±25/25/±50/50/±100/100/±150/250 Pa	136,10 €
DPT8-2500	±100/100/300/500/1000/1500/2000/2500 Pa	124,30 €
DPT8-7000	1000/1500/2000/2500/3000/4000/5000/7000 Pa	124,30 €

Accessories

Order code	Price
DBZ06 connection set	4,00 €

DPTD8 - differential pressure transmitter

with display - 8 measuring ranges



Technical Data

Measuring range	8 measuring ranges (see table)
Output	0-10 V or 4...20 mA (selectable with DIP-Switch)
Supply voltage	at output voltage (0...10 V): 16...32 VDC / 24 VAC ±10% at output current (4...20 mA): 32 VDC
Protection	IP65
Process connection	2x5,5 mm
Accuracy	max. +/- 1% FS / ±4 Pa at ≤ 250 Pa
Damping	0,5 s / 2 s / 4 s / 8 s (selectable with DIP-Switch)
Zero point calibration	push button
Operating temperature	-10 °C...+60 °C
Media	dry air and non-aggressive gases
Standards	EN 61326:2013 / EMC directive 2014/30/EU

Order code	Measuring range	Price
DPTD8-250	±25/25/±50/50/±100/100/±150/250 Pa	156,10 €
DPTD8-2500	±100/100/300/500/1000/1500/2000/2500 Pa	144,30 €
DPTD8-7000	1000/1500/2000/2500/3000/4000/5000/7000 Pa	144,30 €

Accessories

Order code	Price
DBZ06 connection set	4,00 €

SHD - pressure transmitter



Technical Data

Outputs	0...10V / 4...20mA
Supply	12...26 Vac / 14...30 Vdc
Process connection	G 1/4" optional G1/2" or NPT 1/2" (with adapter ADAP)
Measuring ranges	-1 ... 24 bar 0 ... 600 mbar 0 ... 100 bar
Accuracy	< +/- 0,5% @ 25°C (+/- 5°C)
Operating temperature	-40°C...+125°C
Membrane	Stainless steel

1. Output

Order code	Output signal	Price
SHD-U	0...10V	135,00 €
SHD-I	4...20mA	138,00 €

2. Measuring range

Order code	Measuring range	Surcharge
.-1/0	-1...0 bar	53,00 €
.-1/1,5	-1...1,5 bar	53,00 €
.-1/5	-1...5 bar	53,00 €

.0/160mb	0...160 mbar	56,00 €
.0/250mb	0...250 mbar	56,00 €
.0/600mb	0...600 mbar	56,00 €

.0/1	0...1 bar	-
.0/6	0...6 bar	-
.0/10	0...10 bar	-
.0/16	0...16 bar	-
.0/25	0...25 bar	-
.0/60	0...60 bar	-
.0/100	0...100 bar	-

Other measuring ranges on request

Ordering example

1.	SHD-I	SHD, Output 4-20mA
2.	.0/10	0...10 bar

Total order code	Price
SHD-I.0/10	138,00 €

Accessories

Order code	Description	Price
ADAP-G1/2	Adapter to G1/2"	12,50 €
ADAP-NPT1/2	Adapter to NPT1/2"	12,50 €

SHD2 - pressure transmitter



Technical Data

Outputs	0...10V / 4...20mA
Supply	12...26 Vac / 14...30 Vdc
Process connection	G 1/4" optional G1/2" or NPT 1/2" (with adapter ADAP)
Measuring ranges	-1 ... 24 bar 0 ... 600 mbar 0 ... 100 bar
Accuracy	< +/- 0,5% @ 25°C (+/- 5°C)
Operating temperature	-40°C...+125°C
Membrane	Stainless steel

1. Output

Order code	Output signal	Price
SHD2-U	0...10V	136,00 €
SHD2-I	4...20mA	139,00 €

2. Measuring range

Order code	Measuring range	Surcharge
.-1/0	-1...0 bar	53,00 €
.-1/1,5	-1...1,5 bar	53,00 €
.-1/5	-1...5 bar	53,00 €
.0/160mb	0...160 mbar	56,00 €
.0/250mb	0...250 mbar	56,00 €
.0/600mb	0...600 mbar	56,00 €
.0/1	0...1 bar	-
.0/6	0...6 bar	-
.0/10	0...10 bar	-
.0/16	0...16 bar	-
.0/25	0...25 bar	-
.0/60	0...60 bar	-
.0/100	0...100 bar	-

Other measuring ranges on request

Ordering example

1.	SHD2-I	SHD2, Output 4-20mA
2.	.0/10	0...10 bar

Total order code	Price
SHD2-I.0/10	139,00 €

Accessories

Order code	Description	Price
ADAP-G1/2	Adapter to G1/2"	12,50 €
ADAP-NPT1/2	Adapter to NPT1/2"	12,50 €

SHD3 - pressure transmitter



Technical Data

Outputs	0...10V / 4...20mA
Supply	12...26 Vac / 14...30 Vdc
Process connection	G 1/4" optional G1/2" or NPT 1/2" (with adapter ADAP)
Measuring ranges	-1 ... 24 bar 0 ... 600 mbar 0 ... 100 bar
Accuracy	< +/- 0,5% @ 25°C (+/- 5°C)
Operating temperature	-40°C...+125°C
Membrane	Stainless steel

1. Output

Order Code	Output signal	Price
SHD3-U	0...10V	145,00 €
SHD3-I	4...20mA	148,00 €

2. Measuring range

Order code	Measuring range	Surcharge
.-1/0	-1...0 bar	53,00 €
.-1/1,5	-1...1,5 bar	53,00 €
.-1/5	-1...5 bar	53,00 €

.0/160mb	0...160 mbar	56,00 €
.0/250mb	0...250 mbar	56,00 €
.0/600mb	0...600 mbar	56,00 €

.0/1	0...1 bar	-
.0/6	0...6 bar	-
.0/10	0...10 bar	-
.0/16	0...16 bar	-
.0/25	0...25 bar	-
.0/60	0...60 bar	-
.0/100	0...100 bar	-

Other measuring ranges on request

3. Cable length

Order code	Surcharge
-1000 1000 mm	-
each additional 1000 mm for SHD3-U	2,10 €
each additional 1000 mm for SHD3-I	2,50 €

Ordering example

1.	SHD3-I	SHD3, Output 4-20mA
2.	.0/10	0...10 bar
3.	-1000	1000 mm
Total order code		Price
SHD3-I.0/10-1000		148,00 €

Accessories

Order code	Description	Price
ADAP-G1/2	Adapter to G1/2"	12,50 €
ADAP-NPT1/2	Adapter to NPT1/2"	12,50 €

SHD4 - pressure transmitter



Technical Data

Outputs	0...10V / 4...20mA
Supply	12...26 Vac / 14...30 Vdc
Process connection	G 1/4" optional G1/2" or NPT 1/2" (with adapter ADAP)
Measuring ranges	-1 ... 24 bar 0 ... 600 mbar 0 ... 100 bar
Accuracy	< +/- 0,5% @ 25°C (+/- 5°C)
Operating temperature	-40°C...+125°C
Membrane	Stainless steel

1. Output

Order code	Output signal	Price
SHD4-U	0...10V	148,00 €
SHD4-I	4...20mA	151,00 €

2. Measuring range

Order code	Measuring range	Surcharge
.-1/0	-1...0 bar	53,00 €
.-1/1,5	-1...1,5 bar	53,00 €
.-1/5	-1...5 bar	53,00 €
.0/160mb	0...160 mbar	56,00 €
.0/250mb	0...250 mbar	56,00 €
.0/600mb	0...600 mbar	56,00 €
.0/1	0...1 bar	-
.0/6	0...6 bar	-
.0/10	0...10 bar	-
.0/16	0...16 bar	-
.0/25	0...25 bar	-
.0/60	0...60 bar	-
.0/100	0...100 bar	-

Other measuring ranges on request

Ordering example

1.	SHD4-I	SHD4, Output 4-20mA
2.	.0/10	0...10 bar

Total order code	Price
SHD4-I.0/10	151,00 €

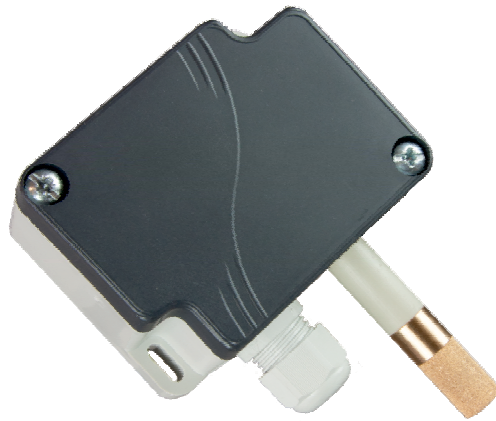
Accessories

Order code	Description	Price
ADAP-G1/2	Adapter to G1/2"	12,50 €
ADAP-NPT1/2	Adapter to NPT1/2"	12,50 €

HUMIDITY

AFF1 - Outdoor humidity sensor

1 active output



Technical data

Output values (selectable for the number of outputs)	Relative humidity: 0...100% Absolute humidity: 0...300 g/m ³ dew point temperature: -30 °C...+80 °C Temperature output: 0 °C...+50 °C oder -20 °C...+80 °C	
Number of outputs	1 active	
Output signal	0...10 V or 4...20 mA (selectable with DIP-switches)	
Supply	at output voltage 0...10 V:	16...32 VDC / 24 VAC ± 10%
	at output current 4...20 mA:	32 VDC
Accuracy	Humidity, typically:	+/- 2% r.h. (10...90% r.h.)
	Temperature, typically:	+/- 0,3 K
adjustable humidity offset	±2%, others on request restore to factory setting via push-button	
Protection	IP65	
Process connection	Filter element 100 µm, probe 50 mm, Ø12 mm	
Operating temperature	-10 °C...+60 °C (Transmitter) / -20 °C...+80 °C (Sensor probe)	
Standards	EN 61326:2013 / EMC directive 2014/30/EU	

Order code	Output	Price
AFF1	0...10 V or 4-20 mA	134,00 €

Optional service

Calibration on request

AFFD2 - Outdoor humidity sensor

1 active output + display



Technical data

Output values (selectable for the number of outputs)	Relative humidity: 0...100% Absolute humidity: 0...300 g/m ³ dew point temperature: -30 °C...+80 °C Temperature output: 0 °C...+50 °C oder -20 °C...+80 °C	
Number of outputs	1 active output 1 display	
Output signal	0...10 V or 4...20 mA (selectable with DIP-switches)	
Display	4-digit display	
Supply	at output voltage 0...10 V:	16...32 VDC / 24 VAC ± 10%
	at output current 4...20 mA:	32 VDC
Accuracy	Humidity, typically:	+/- 2% r.h. (10...90% r.h.)
	Temperature, typically:	+/- 0,3 K
adjustable humidity offset	±2%, others on request restore to factory setting via push-button	
Protection	IP65	
Process connection	Filter element 100 µm, probe 50 mm, Ø12 mm	
Operating temperature	-10 °C...+60 °C (Transmitter) / -20 °C...+80 °C (Sensor probe)	
Standards	EN 61326:2013 / EMC directive 2014/30/EU	

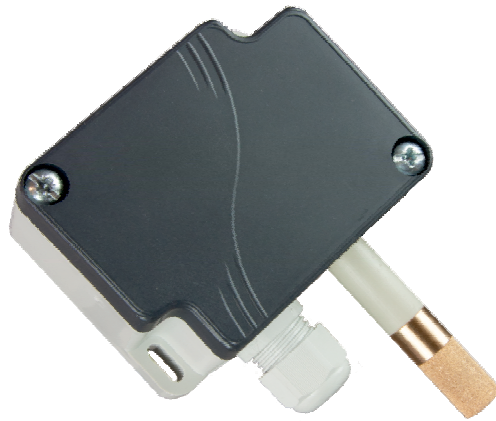
Order code	Output	Price
AFFD2	0...10 V or 4-20 mA	157,00 €

Optional service

Calibration on request

AFF2 - Outdoor humidity sensor

2 active outputs



Technical data

Output values (selectable for the number of outputs)	Relative humidity: 0...100%	
	Absolute humidity: 0...300 g/m ³	
	dew point temperature: -30 °C...+80 °C	
	Temperature output: 0 °C...+50 °C oder -20 °C...+80 °C	
Number of outputs	2 active	
Output signal	2 x 0...10 V or 2 x 4...20 mA (selectable with DIP-switches)	
Supply	at output voltage 0...10 V:	16...32 VDC / 24 VAC ± 10%
	at output current 4...20 mA:	32 VDC
Accuracy	Humidity, typically:	+/- 2% r.h. (10...90% r.h.)
	Temperature, typically:	+/- 0,3 K
adjustable humidity offset	±2%, others on request restore to factory setting via push-button	
Protection	IP65	
Process connection	Filter element 100 µm, probe 50 mm, Ø12 mm	
Operating temperature	-10 °C...+60 °C (Transmitter) / -20 °C...+80 °C (Sensor probe)	
Standards	EN 61326:2013 / EMC directive 2014/30/EU	

Order code	Output	Price
AFF2	0...10 V or 4-20 mA	164,00 €

Optional service

Calibration on request

AFFD3 - Outdoor humidity sensor

2 active outputs + display



Technical data

Output values (selectable for the number of outputs)	Relative humidity: 0...100% Absolute humidity: 0...300 g/m ³ dew point temperature: -30 °C...+80 °C Temperature output: 0 °C...+50 °C oder -20 °C...+80 °C	
Number of outputs	2 active output 1 display	
Output signal	2 x 0...10 V or 2 x 4...20 mA (selectable with DIP-switches)	
Display	4-digit display	
Supply	at output voltage 0...10 V:	16...32 VDC / 24 VAC ± 10%
	at output current 4...20 mA:	32 VDC
Accuracy	Humidity, typically:	+/- 2% r.h. (10...90% r.h.)
	Temperature, typically:	+/- 0,3 K
adjustable humidity offset	±2%, others on request restore to factory setting via push-button	
Protection	IP65	
Process connection	Filter element 100 µm, probe 50 mm, Ø12 mm	
Operating temperature	-10 °C...+60 °C (Transmitter) / -20 °C...+80 °C (Sensor probe)	
Standards	EN 61326:2013 / EMC directive 2014/30/EU	

Order code	Output	Price
AFFD3	0...10 V or 4-20 mA	187,00 €

Optional service

Calibration on request

KFF1 - Duct humidity sensor

1 active output



Technical data

Output values (selectable for the number of outputs)	Relative humidity: 0...100%	
	Absolute humidity: 0...300 g/m ³	
	dew point temperature: -30 °C...+80 °C	
	Temperature output: 0 °C...+50 °C oder -20 °C...+80 °C	
Number of outputs	1 active	
Output signal	0...10 V or 4...20 mA (selectable with DIP-switches)	
Supply	at output voltage 0...10 V:	16...32 VDC / 24 VAC ± 10%
	at output current 4...20 mA:	32 VDC
Accuracy	Humidity, typically:	+/- 2% r.h. (10...90% r.h.)
	Temperature, typically:	+/- 0,3 K
adjustable humidity offset	±2%, others on request restore to factory setting via push-button	
Protection	IP65	
Process connection	Filter element 100 µm, probe 50 mm, Ø12 mm	
Operating temperature	-10 °C...+60 °C (Transmitter) / -20 °C...+80 °C (Sensor probe)	
Standards	EN 61326:2013 / EMC directive 2014/30/EU	

Order code	Output	Price
KFF1	0...10V or 4-20mA	126,00 €

Optional service

Calibration on request

KFFD2 - Duct humidity sensor

1 active output + display



Technical data

Output values (selectable for the number of outputs)	Relative humidity: 0...100% Absolute humidity: 0...300 g/m ³ dew point temperature: -30 °C...+80 °C Temperature output: 0 °C...+50 °C oder -20 °C...+80 °C	
Number of outputs	1 active output 1 display	
Output signal	0...10 V or 4...20 mA (selectable with DIP-switches)	
Display	4-digit display	
Supply	at output voltage 0...10 V:	16...32 VDC / 24 VAC ± 10%
	at output current 4...20 mA:	32 VDC
Accuracy	Humidity, typically:	+/- 2% r.h. (10...90% r.h.)
	Temperature, typically:	+/- 0,3 K
adjustable humidity offset	±2%, others on request restore to factory setting via push-button	
Protection	IP65	
Process connection	Filter element 100 µm, probe 50 mm, Ø12 mm	
Operating temperature	-10 °C...+60 °C (Transmitter) / -20 °C...+80 °C (Sensor probe)	
Standards	EN 61326:2013 / EMC directive 2014/30/EU	

Order code	Output	Price
KFFD2	0...10V or 4-20mA	149,00 €

Optional service

Calibration on request

KFF2 - Duct humidity sensor

2 active outputs



Technical data

Output values (selectable for the number of outputs)	Relative humidity: 0...100% Absolute humidity: 0...300 g/m ³ dew point temperature: -30 °C...+80 °C Temperature output: 0 °C...+50 °C oder -20 °C...+80 °C	
Number of outputs	2 active	
Output signal	2 x 0...10 V or 2 x 4...20 mA (selectable with DIP-switches)	
Supply	at output voltage 0...10 V:	16...32 VDC / 24 VAC ± 10%
	at output current 4...20 mA:	32 VDC
Accuracy	Humidity, typically:	+/- 2% r.h. (10...90% r.h.)
	Temperature, typically:	+/- 0,3 K
adjustable humidity offset	±2%, others on request restore to factory setting via push-button	
Protection	IP65	
Process connection	Filter element 100 µm, probe 50 mm, Ø12 mm	
Operating temperature	-10 °C...+60 °C (Transmitter) / -20 °C...+80 °C (Sensor probe)	
Standards	EN 61326:2013 / EMC directive 2014/30/EU	

Order code	Output	Price
KFF2	0...10V or 4-20mA	162,00 €

Optional service

Calibration on request

KFFD3 - Duct humidity sensor

2 active outputs + Display



Technical data

Output values (selectable for the number of outputs)	Relative humidity: 0...100% Absolute humidity: 0...300 g/m ³ dew point temperature: -30 °C...+80 °C Temperature output: 0 °C...+50 °C oder -20 °C...+80 °C	
Number of outputs	2 active output 1 display	
Output signal	2 x 0...10 V or 2 x 4...20 mA (selectable with DIP-switches)	
Display	4-digit display	
Supply	at output voltage 0...10 V:	16...32 VDC / 24 VAC ± 10%
	at output current 4...20 mA:	32 VDC
Accuracy	Humidity, typically:	+/- 2% r.h. (10...90% r.h.)
	Temperature, typically:	+/- 0,3 K
adjustable humidity offset	±2%, others on request restore to factory setting via push-button	
Protection	IP65	
Process connection	Filter element 100 µm, probe 50 mm, Ø12 mm	
Operating temperature	-10 °C...+60 °C (Transmitter) / -20 °C...+80 °C (Sensor probe)	
Standards	EN 61326:2013 / EMC directive 2014/30/EU	

Order code	Output	Price
KFFD3	0...10V or 4-20mA	185,00 €

Optional service

Calibration on request

General Terms and Conditions

1. Scope

- 1.1 Supply contracts shall, as far as not expressly agreed to differently, be accepted and carried out according to the following sales and delivery conditions. This applies also to all subsequent contracts without further reference. Precious metal sales, repairs and assembly are subject to special conditions.
- 1.2 We (from now on called the supplier) contradict expressly all commercial trade conditions of the purchaser.
- 1.3 Arrangements amending these conditions shall be stated in writing. Verbal agreements shall immediately be confirmed in writing.
- 1.4 These conditions regulate the conduct of business.

2. Sales, sales brochures and commercial protection

- 2.1 Sale offers, unless stated differently, are valid for a period of 4 weeks or until stocks last. The supplier is only obliged to supply after an expressly issued confirmation of the order.
- 2.2 In the absence of any particular reference in the sales offer, technical data, material used etc and standard values used in the trade should be assumed. Notification in the case of a variation will only be given when the product integrity warranty is affected.
- 2.3 All documentation provided to the customer by the supplier remains the property of the supplier. It should not be made available to third parties without the prior written permission of the supplier. If an order is not placed with the supplier and if requested by the supplier, all documentation including any copies that may have been made must be returned to the supplier without delay.
- 2.4 It is the responsibility of the purchaser to check all data contained in catalogues, sales brochures and published documentation that the intended application is suitable and appropriate, before acceptance and use. This also applies to the choice of suitable materials. The purchaser must ensure that the use of the product is appropriate.
- 2.5 The supplier is not duty-bound to check the correctness and/or legal conformity of the requirements and/or assumptions of the purchaser, as this is the sole responsibility of the purchaser. This applies in particular in the case of possible litigation for a breach of commercial protection laws.
- 2.6 The purchaser guarantees, that the execution of the contract does not result in any breach of commercial law by the use of components, drawings or samples supplied by the purchaser or third parties. The purchaser will conduct any possible defense procedures at his own expense and will compensate the supplier for any expenses resulting from such action.
- 2.7 Drawings, developments and discussion papers, which are generated in the course of contractual negotiations as an advisory service, are not binding. The purchaser cannot make demands based on such documents or services given by the supplier or his agents, except in the case of culpable intent or gross negligence.
- 2.8 Requested samples shall be billed by the supplier according to expense incurred.

3. Contract order

Orders constitute a valid contract only after written confirmation of the supplier. The extent of the contract, thus generated, is determined by the actual text of the confirmation. The purchaser is obliged to check all relevant detail and draw attention to any discrepancy in writing.

4. Delivery period and extent

- 4.1 The delivery period starts when all technical and commercial questions have been resolved and terminates with the dispatch or the notification of dispatch. Keeping to delivery schedules assumes the keeping of obligations by the purchaser, particularly in respect to payments.
- 4.2 Purchaser initiated amendments to the supply contract cause the delivery schedule to recommence with the date of the revised confirmation of the order.
- 4.3 The supplier does not accept responsibility for any delivery delays in respect to acts of God or events not caused or predicted by the supplier, such as non-issue of permits by government instrumentalities, strikes etc. Delivery schedules are extended by the extent of the difficulty.
- 4.4 The supplier accepts liability for not maintaining the delivery schedule or for delayed delivery, including delivery scheduled by the supplier only in the case of willful intent, gross negligence or a breach of essential contractual duty. However, this implies no change in the requirement of proof at the disadvantage of the purchaser.
- 4.5 The right of the purchaser to cancel an order after the passing of an appropriate delivery deadline agreed to by the supplier is not affected.
- 4.6 Part delivery is deemed acceptable at minor inconvenience to the purchaser.

5. Point of delivery, risk transfer

- 5.1 Delivery is affected from the place of production of the supplier at the expense and risk of the purchaser. The means of delivery is chosen at the discretion of the supplier according to usual practice, unless the purchaser has made a particular request.
- 5.2 In the case of delivery without any installation or erection, the risk in respect of the delivered items, even if free delivery had been agreed to, transfers to the purchaser, transport company or transport driver, or at the latest at the point of leaving the factory or store. If acceptance by the purchaser is delayed, the risk is transferred at the point of readiness to deliver, even if the delay of acceptance occurs after readiness to deliver. The supplier may insure delivery against breakage, transport or fire damage at the request and at cost of the purchaser.
- 5.3 In the case of delivery with installation or erection, the risk in respect of the delivery transfers to the purchaser on the day of acceptance.

6. Prices

- 6.1 All prices are ex store, freight/postage, packing, insurance and the respective applicable VAT are added that may legally apply for commissioning, installation, adjustment and similar services, which are listed separately on the account.
- 6.2 In the case of precious metals, the official stock exchange day trading rate on the day of delivery will be invoiced.

7. Settlement of accounts

- 7.1 The agreed price is to be paid in full in EURO. The terms of payment are set in the acknowledgement. Risk and payment costs are born by the purchase.
- 7.2 The supplier reserves the right to add an extra charge of 35,00 EUR net for orders of less than 100,00 EUR net value of goods.
- 7.3 In the case of late payment, an additional 8 percentage points over and above the base rate of the European Central Bank is added to the account. The purchaser cannot vary this clause.
- 7.4 The purchaser has the right to counter demands only in the case of indisputable or legally determined demands.
- 7.5 Costs incurred to ascertain credit, letters of credit in dealings with foreign countries or similar are at the expense of the purchaser.

8 Warranty for Material Defects

- 8.1 The purchaser should check goods immediately after receipt for possible defects. Obvious defects are to be reported to the supplier within 5 working days in writing, hidden defects within 5 days after detection.
- 8.2 The supplier has the discretion to repair or replace defects, which are reported to the supplier within 12 months after commissioning but not later than 15 months after delivery. This discretion is not waived even after repeated unsatisfactory repairs. The supplier must be given appropriate time and

access to affect repairs.

- 8.3 The purchaser has the right to rescind the purchase order or demand a price reduction (decrease in the order value), if the defect cannot be repaired in an appropriate period of time.
- 8.4 In the case of defects, which could have been determined by the purchaser with little inconvenience before inclusion or use, all under warranty claims for defective materials are voided as soon as the product is included or used. This does not apply in the case of culpable intent, gross negligence or injury to life, body or health by the supplier, leading employee, consultant or contractor, or a liability for the breach of a major contractual duty or of a mandatory product liability.
- 8.5 No warranty claims will be accepted for a predetermined life of products especially under extreme or unknown operating conditions. Claims for the premature failure of the product are excluded.
- 8.6 In the case of products, which were manufactured to customer drawings and specifications, supplier warranty for materials defects only extends to include compliance with the specification. Legal liability according to the product liability laws as well as liability for intentional and gross negligence is not affected.
- 8.7 The warranty for material defects does not cover normal wear and tear or damage caused by faulty or negligent maintenance or inappropriate use outside the specifications or contract.
- 8.8 Material defects, which reduce the value or the useability only minimally or not at all, a liability is excluded.
- 8.9 Rights to referred warranty provisions according to §§ 478, 479 of Federal Common Law (BGB) only allow the consumer to make claims within the scope of the legislation and do not regulate the understanding of good will provisions with the supplier and assume that any party with referred warranty rights will duly observe their duty, in particular the duty to report defects.

9. Liability

- 9.1 All claims for damages and compensation of the purchaser are excluded. whatever the legal base, including claims as to illegal action or material defect or damage caused by the defect, or culpable neglect of associated contractual duties or the loss of income. This does not apply if the supplier, leading employee, consultant or contractor is guilty of culpable intent, gross negligence or injury to life, body or health or a liability for the breach of a major contractual duty or of a mandatory product liability exists.
- 9.2 In the case of a major breach of contractual liability, which does not involve intent or gross negligence and which does not involve an injury to life, body or health or the product integrity warranty, the liability shall be limited to compensation to the extent of assessable damage, which is typical in these contractual contexts.
- 9.3 Materials, which the purchaser is supplying to the supplier for the manufacture of products ordered by the purchaser, are only insured against theft. The supplier is liable for the loss or deterioration of such goods only in the case of intent or gross negligence.
- 9.4 Advice given to the purchaser by the supplier, particularly as to the usage of products, is binding only if given or confirmed in writing.
- 9.5 The legal requirements as to the need of proof are not affected.

10. Joint ownership

- 10.1 The finished product (from now on called the joint product) remains the property of the supplier until paid in full and all due demands, which the supplier derives from the business relationship with the purchaser, have been met. During this period of the joint ownership no seizure, nor transfer nor ceding of the demands from the purchaser without the express permission of the supplier may take place. The supplier is to be notified without delay in case of a seizure by a third party.
- 10.2 If the purchaser processes the joint product into a new product, the processed article remains the property of the supplier. The transfer of ownership is excluded under Federal Law (BGB) § 950. By processing, mixing or reconstructing the joint product with other products, not the property of the supplier, the supplier gains shared ownership of the resultant product in proportion of the monetary value of the joint product and other component products at the time of processing. It is the duty of the purchaser to store and control the resultant product with appropriate care.
- 10.3 Therefore, under these conditions, the resultant product is treated the same as the joint product. In the case of a sale of the resultant joint product, the purchaser reduces his claim on the product value by the amount proportioned according to the purchase value of the joint product of the supplier in respect to all other products contained in the resultant product. In the case of the sale of the resultant product, together with other components not owned by the supplier for a total all-inclusive price the purchaser shall pay the supplier the proportion of the total price that represents the share of the supplier.
- 10.4 The purchaser also accedes to a claim of the supplier in respect to any third party, if the joint product is incorporated in real estate property.
- 10.5 The purchaser is empowered, unless the power is revoked, to satisfy claims resulting from the resale in the course of normal business transactions. Furthermore, the supplier has the right to independently seek an order, if the purchaser has not fulfilled his contractual duty, in particular to settle due accounts on time. The purchaser must name, if requested, the debtors of outstanding claims and show the amounts owing. Making a claim on the reserved ownership goods and in particular a demand to transfer same constitutes a contract cancellation.
- 10.6 The supplier undertakes upon request by the purchaser to free the purchaser from any obligation to accede to claims of the supplier exceeding 10% of the actual value of the goods.

11. Legal Venues

- 11.1 The laws of the Federal Republic of Germany are exclusively valid, excluding UN Commercial Laws (UNCITRAL-Commercial Laws). Contract language is German.
- 11.2 In the case of the purchaser being a purchasing agent, a legal representative of the public instrumentality or utility, also for all disputes involving documents, exchange and cheque transactions, the legal venue for both parties is the local court of the supplier. The supplier has the right to take legal action against the purchaser in any other legal court.

12. General Clause

Invalidation of any one of the clauses in this contract does not affect the validity of other paragraphs. Should a clause be or become ineffective, the contractual parties to this contract shall endeavour to replace the ineffective clause with a new agreed clause, to reflect as fully as possible the commercial and legal purpose.

All information in this catalogue subject to change. Errors excepted.

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