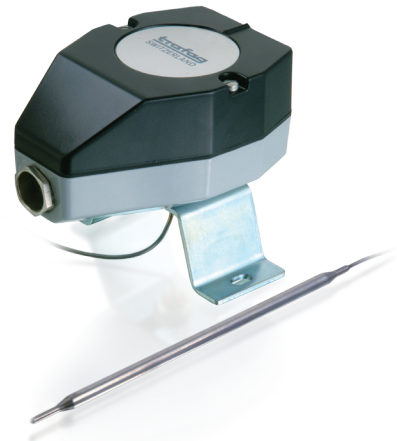


# INDUSTAT

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for the measurement of pressure and temperature.



## Applications

- Railways
- Machine tools

## Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

## Technical Data

Designation of application	Industrial thermostat with remote sensor	Switching differential	Adjustable / not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

03/2019

Data sheet H72110r

Subject to change

## Ordering information/type code

		XXX	XX	XX	XXX	XX	XXXXXXXXXX	XX	XX
<b>Custom build code</b>	External adjustment	404							
	Internal adjustment	414							
<b>Microswitch</b>	Small switching differential, not adjustable		10						
	Average switching differential, not adjustable		11						
	With gold plated contacts, switching differential not adjustable		21						
	Adjustable large switching differential		24						
	Adjustable standard switching differential		25						
<b>Range</b>	<b>Range</b>	<b>Sensor max.</b>		<b>Range</b>	<b>Sensor max.</b>				
	[°C]	[°C]		[°C]	[°C]				
	-30 ... 40	50	01	-10 ... 80	85	95			
	-10 ... 25	60	07	5 ... 95	105	20			
	0 ... 35	70	09	20 ... 110	115	23			
	10 ... 45	85	11	20 ... 150	165	31			
	10 ... 80	100	13	20 ... 230	250	24			
	15 ... 30	60	17	40 ... 300	330	53			
-10 ... 35	70	94	70 ... 350	380	54				
<b>Sensor <sup>1)</sup></b>	See table "Ordering-no. for sensors"						XXX		
<b>Fixing <sup>2)</sup></b>	Nut M10 (for remote sensing version)								10
	Flange connection (for remote sensing version)								16
	Angle bracket (for remote sensing version)								17
	Bracket (for remote sensing version)								27
	Grubscrew locked, lateral (direct mounting version) <sup>5)</sup>								12
	Cap nut (for direct mounting version) <sup>5)</sup>								13
	Cap nut (for direct mounting version) <sup>5)</sup>								14
Grubscrew locked with spacer (cooling element) (for direct mounting version)								18	
<b>Protection tube</b>	See data sheet H72114/H72163						XXXX.XXXX		
<b>Accessories</b>	Switchpoint locking <sup>4)</sup>								15
	Switchpoint fixed and sealed upon customer's request <sup>4)</sup>								88
	Switchpoint preset upon customer's request, no guarantee on switching accuracy <sup>4)</sup>								83
	Switchpoint adjustment please indicate when ordering:								
	- Switchpoint [°C]								
	- Increasing or decreasing								
	Condensator over Pin 1-2								12
	Condensator over Pin 1-4								13
	Condensators over Pin 1-2 / 1-4								23
	Railway version IEC 61373, category 2								28
	Outdoor application (vented)								44
	Capillary tube protection: Flexible metal tube, brass nickel plated								90
	Capillary tube protection: Flexible metal tube 1.4541/V2A								91
Capillary tube protection: PVC tube								92	
<b>Capillary tube length</b>	Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L=XXXX <sup>3)</sup>								

<sup>1)</sup> See data sheet H72114/H72163

<sup>2)</sup> See data sheet H72106

<sup>3)</sup> Overlengths upon request

<sup>4)</sup> Only with type 414, internal adjustment

<sup>5)</sup> Media max. 150°C in continuous operation

## Ordering no. for sensors

Range	Sensor-Ø	Sensor material		
		Stainless steel	Copper	Copper nickel plated
01, 07, 09, 11, 13, 17	4.7 mm		412	413
	7.0 mm	421	422	423
	9.0 mm		432	433
94, 95, 20, 23	4.7 mm	311	312	313
	7.0 mm	321	322	323
	9.0 mm	331	332	333
31	4.7 mm	111	112	113
	7.0 mm	121	122	123
	9.0 mm	131	132	133
24, 53, 54	4.7 mm	011	012	013
	7.0 mm	021	022	023
	9.0 mm	031	032	033

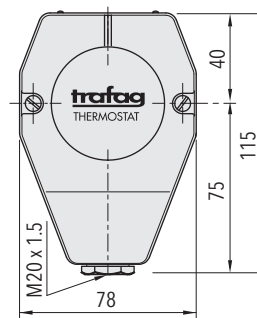
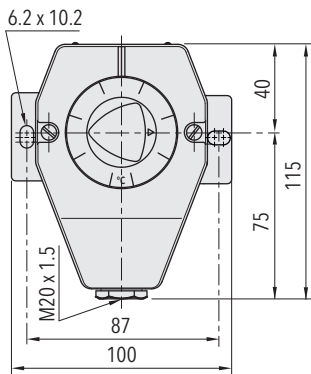
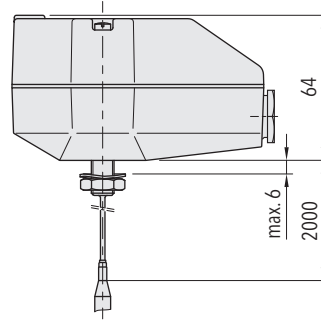
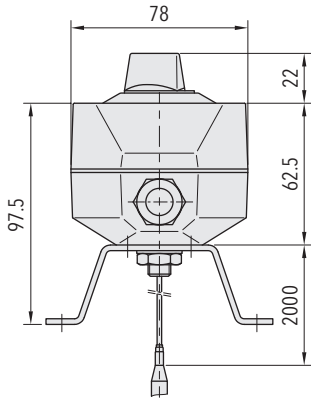
## Standard products (extra short lead time)

Product No.	Type Code	Sensor material	Temperature range [°C]	Switching differential [°C]	Sensor max. [°C]
I35	404 2509 422 27	Copper	0 ... +35	0.7 ... 10 (adjustable)	60
I40	404 2501 422 27	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
I95	404 2520 322 27	Copper	+5 ... +95	2 ... 12 (adjustable)	105
I150	404 2531 122 27	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
I230S	404 2524 021 27	1.4435 (AISI316L)	+20 ... +230	3 ... 32 (adjustable)	250
I350S	404 2554 021 27	1.4435 (AISI316L)	+70 ... +350	4 ... 40 (adjustable)	380
IS35	414 2509 422 27	Copper	0 ... +35	0.7 ... 10 (adjustable)	60
IS40	414 2501 422 27	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
IS95	414 2520 322 27	Copper	+5 ... +95	2 ... 12 (adjustable)	105
IS150	414 2531 122 27	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
IS230S	414 2524 021 27	1.4435 (AISI316L)	+20 ... +230	3 ... 32 (adjustable)	250
IS350S	414 2554 021 27	1.4435 (AISI316L)	+70 ... +350	4 ... 40 (adjustable)	380

Specifications		
<b>Accuracy</b>	Repeatability	$\pm 0.5 \% \text{ FS typ.}$
	Scale accuracy typ.	$\pm 2 \% \text{ FS typ.}$
	Switching differential	See table
	Switching point	Temperature compensated with bimetal switch lever
<b>Environmental conditions</b>	Ambient temperature	Range $\leq +45^{\circ}\text{C}$ : $-30^{\circ}\text{C} \dots +50^{\circ}\text{C}$ Range $+45^{\circ}\text{C} \dots +250^{\circ}\text{C}$ : $-30^{\circ}\text{C} \dots +70^{\circ}\text{C}$ Range $> +250^{\circ}\text{C}$ : $-10^{\circ}\text{C} \dots +70^{\circ}\text{C}$ (Important: Temperature at sensor may not exceed maximum sensortemperature)
	Storage temperature	Range $\leq +45^{\circ}\text{C}$ : $-30^{\circ}\text{C} \dots +50^{\circ}\text{C}$ Range $> +45^{\circ}\text{C}$ : $-30^{\circ}\text{C} \dots +85^{\circ}\text{C}$
	Protection	IP65
	Humidity	Max. 95 % relative
	Vibration	5...25 Hz: $\pm 1.6 \text{ mm}$ 25...100 Hz: 4g
	Shock	50 g / 11 ms
<b>Mechanical Data</b>	Sensor housing	See ordering information
	Filling	Liquid
	Housing	AlSi9Cu3, coated
	Screwed cable gland	Brass nickel plated
	Installation	any position
	Weight	$\sim 950 \text{ g}$
<b>Microswitch</b>	Rating	See table
	Resistance of insulation	$> 2 \text{ M}\Omega$
	Dielectric strength	$U \leq 250\text{V}$ : 1.45 kV / $U \leq 500\text{V}$ : 2 kV terminal ground
	Life time (mechanical)	Microswitch 10/11/25: 20 Mio. cycles Microswitch 21: 0.5 Mio. cycles Microswitch 24: 0.3 Mio. cycles
<b>Electrical connection</b>	Cable gland	M20x1.5 Cable- $\varnothing$ 4...10 mm
	Terminal screw	3 x 1 ... 2.5 mm <sup>2</sup>

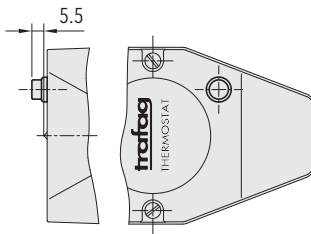
Additional information		
<b>Documents</b>	Data sheet	<a href="http://www.trafag.com/H72110">www.trafag.com/H72110</a>
	Instructions	<a href="http://www.trafag.com/H73111">www.trafag.com/H73111</a>
	Flyer	<a href="http://www.trafag.com/H70951">www.trafag.com/H70951</a>

## Dimensions



404.XXXX.XXX.27.XXXX.XXXX.XX

414.XXXX.XXX.10.XXXX.XXXX.XX

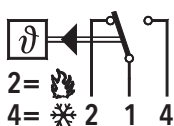


Accessory 14

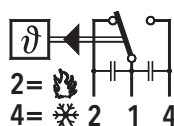
Switching differential typ.						
<b>Measuring range</b>	[°C]	-30 ... +40 -10 ... +25 0 ... +35 +15 ... +30 +10 ... +45 +10 ... +80	-10 ... +35 -10 ... +80 +5 ... +95 +20 ... +110	+20 ... +150	+20 ... +230	+40 ... +300 +70 ... +350
<b>Microswitch 10:</b> Switching differential not adjustable	[°C]	0.3	0.8	1	1.2	2
<b>Microswitch 11/21:</b> Switching differential not adjustable	[°C]	0.7	2	2.5	3	4
<b>Microswitch 24:</b> Switching differential adjustable	[°C]	4 ... 21	5.5 ... 26	7 ... 34	15 ... 65	18 ... 84
<b>Microswitch 25:</b> Switching differential adjustable	[°C]	0.7 ... 10	2 ... 12	2.5 ... 16	3 ... 32	4 ... 40

Electrical data switch			
Type	Features	Rating	
		Resistive Load (Inductive Load)	
		AC	DC
10	Small switching differential, not adjustable	125 V, 10 (1.5) A 250 V, 10 (1.25) A	250 V, 0.2 (0.02) A 125 V, 0.4 (0.03) A 30 V, 2 (1) A 14 V, 15 (2.5) A
11	Average switching differential, not adjustable	125 V, 15 (1.5) A 250 V, 15 (1.25) A 500 V, 10 (0.75) A	250 V, 0.25 (0.03) A 125 V, 0.5 (0.05) A 30 V, 6 (1.5) A 14 V, 15 (1.5) A
21	Gold plated contacts, not adjustable	24 V, 0.1 (0.1) A 12 V, 1 (1) A 5 V, 2 (2) A	24 V, 0.1 (0.1) A 12 V, 1 (1) A 5 V, 2 (2) A
25	Adjustable standard switching differential	125 V, 15 (1.5) A 250 V, 15 (1.25) A 500 V, 10 (0.75) A	250 V, 0.25 (0.03) A 125 V, 0.5 (0.05) A 30 V, 6 (1.5) A 14 V, 15 (2.5) A
24	Adjustable large switching differential	125 V, 15 (1.5) A 250 V, 15 (1.25) A 500 V, 10 (0.75) A	250 V, 0.3 (0.2) A 125 V, 0.75 (0.4) A 30 V, 15 (1.5) A 14 V, 15 (1.5) A

## Electrical Connection



404/414



with accessory 23