

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

10/2015

Data sheet H72110m

Subject to change

Ordering information/type code

		XXX	XX	XX	XXX	XX	XXXXXXXXXX	XX	XX	
Custom build code	External adjustment	404								
	Internal adjustment	414								
Microswitch	Small switching differential, not adjustable		10							
	Average switching differential, not adjustable		11							
	With gold plated contacts, not adjustable		21							
	Adjustable large switching differential		24							
	Adjustable standard switching differential		25							
Range	Range	Sensor max.		Range	Sensor max.					
	[°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					
Sensor ¹⁾	Range	Sensor diameter	Sensor material	Range	Sensor diameter	Sensor material				
		[mm]			[mm]					
	01, 07, 09, 11, 13, 17	Ø7	Stainless steel	94, 95, 20, 23, 31	Ø9	Copper	321			
	01, 07, 09, 11, 13, 17	Ø4.7	Copper	94, 95, 20, 23, 31	Ø4.7	Copper nickel plated	313			
	01, 07, 09, 11, 13, 17	Ø7	Copper	94, 95, 20, 23, 31	Ø7	Copper nickel plated	323			
	01, 07, 09, 11, 13, 17	Ø9	Copper	94, 95, 20, 23, 31	Ø9	Copper nickel plated	333			
	01, 07, 09, 11, 13, 17	Ø4.7	Copper nickel plated	24, 53, 54	Ø4.7	Stainless steel	111			
	01, 07, 09, 11, 13, 17	Ø7	Copper nickel plated	24, 53, 54	Ø7	Stainless steel	121			
	01, 07, 09, 11, 13, 17	Ø9	Copper nickel plated	24, 53, 54	Ø9	Stainless steel	131			
	94, 95, 20, 23, 31	Ø4.7	Stainless steel	24, 53, 54	Ø4.7	Copper	112			
	94, 95, 20, 23, 31	Ø7	Stainless steel	24, 53, 54	Ø7	Copper	122			
	94, 95, 20, 23, 31	Ø9	Stainless steel	24, 53, 54	Ø9	Copper	132			
	94, 95, 20, 23, 31	Ø4.7	Copper	24, 53, 54	Ø4.7	Copper nickel plated	113			
	94, 95, 20, 23, 31	Ø7	Copper	24, 53, 54	Ø7	Copper nickel plated	123			
	94, 95, 20, 23, 31	Ø9	Copper	24, 53, 54	Ø9	Copper nickel plated	133			
	Fixing ²⁾	Nut M10 (for remote sensing version)								10
		Flange (for remote sensing version)								16
		Console (for remote sensing version)								17
		Bracket (for remote sensing version)								27
		Grubscrew locked, lateral (direct mounting version)								12
Captive nut (for direct mounting version)									13	
Captive nut (for direct mounting version)									14	
Grubscrew locked with thermal distance piece (for direct mounting version)									18	
Protection tube	See data sheet H72114/H72163								XXXX.XXXX	

	XXX	XX	XX	XXX	XX	XXXXXXXXXX	XX	XX
Accessories	Signal lamp							14
	Set blocking ⁴⁾							15
	Switchpoint fixed and sealed upon customer's request ⁴⁾							88
	Switchpoint preset upon customer's request, no guarantee on switching accuracy ⁴⁾							83
	Switchpoint adjustment please indicate when ordering:							
	- Switchpoint [bar]							
	- 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 (UIC 616)							28
	Outdoor usage (aerated)							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	
Capillary tube length	Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L=XXXX ³⁾							

¹⁾ See data sheet H72114/H72163

²⁾ See data sheet H72106

³⁾ Overlengths upon request

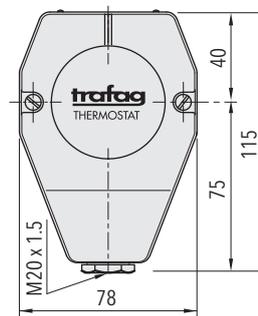
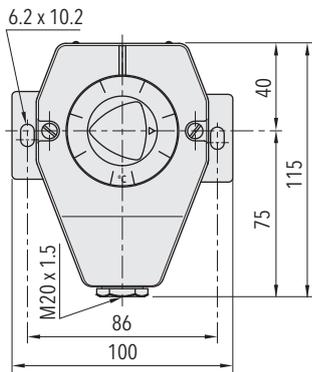
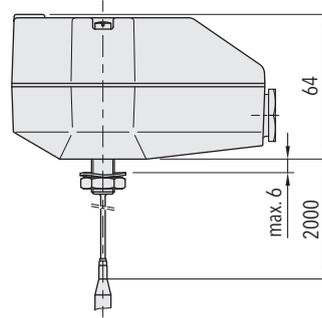
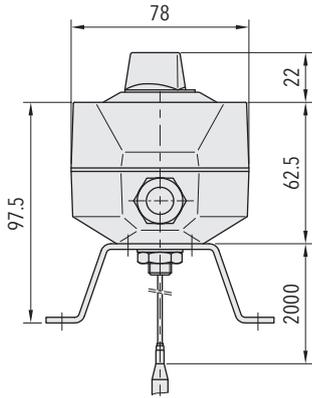
⁴⁾ Only with type 414, internal adjustment

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 322 27	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
I230S	404 2524 121 27	1.4435/316L	+20 ... +230	3 ... 32 (adjustable)	250
I350S	404 2554 121 27	1.4435/316L	+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 322 27	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
IS230S	414 2524 121 27	1.4435/316L	+20 ... +230	3 ... 32 (adjustable)	250
IS350S	414 2554 121 27	1.4435/316L	+70 ... +350	4 ... 40 (adjustable)	380

Specifications		
Accuracy	Repeatability	$\pm 0.5\%$ FS typ.
	Scale accuracy typ.	$\pm 2\%$ FS typ.
	Switching differential	See table
	Switching point	Temperature compensated with bimetal switch lever
Environmental conditions	Ambient temperature	Range $\leq +45^\circ\text{C}$: $-30^\circ\text{C} \dots +50^\circ\text{C}$ Range $+45^\circ\text{C} \dots +250^\circ\text{C}$: $-30 \dots +70^\circ\text{C}$ Range $> +250^\circ\text{C}$: $-10^\circ\text{C} \dots +70^\circ\text{C}$ (Important: Temperature at sensor may not exceed maximum sensor temperature)
	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: ± 1.6 mm 25...100 Hz: 4g
	Shock	50g/ 11 ms
Mechanical Data	Sensor housing	See ordering information
	Filling	Liquid
	Housing	AlSi9Cu3, coated
	Screwed cable gland	Brass nickel plated
	Installation	any position
	Weight	~ 950 g
Microswitch	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
Electrical connection	Cable gland	M20x1.5 Cable- \varnothing 4...10 mm
	Terminal screw	3 x 1...2.5 mm ²

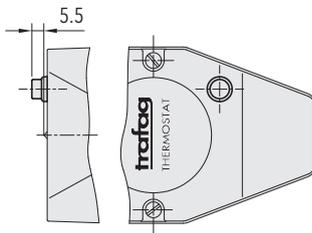
Additional information		
Documents	Data sheet	www.trafag.com/H72110
	Instructions	www.trafag.com/H73111
	Flyer	www.trafag.com/H70951

Dimensions



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

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

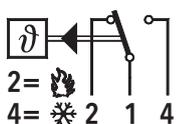


Accessory 14

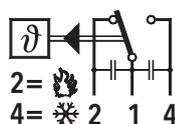
Switching differential typ.						
Range	[°C]	-30 ... +40 -10 ... +25 0 ... +35 +15 ... +30 +10 ... +45 +10 ... +80	-10 ... +35 -10 ... +80 +5 ... +95 +20 ... +110	+20 ... +150	+20 ... +230	+40 ... +300 +70 ... +350
Microswitch 10 Switching differential [°C] (fixed value, not adjustable)	[°C]	0.3	0.8	1	1.2	2
Microswitch 11/21 Switching differential [°C] (fixed value, not adjustable)	[°C]	0.7	2	2.5	3	4
Microswitch 24 Switching differential [°C] (adjustable value)	[°C]	4 ... 21	5.5 ... 26	7 ... 34	15 ... 65	18 ... 84
Microswitch 25 Switching differential [°C] (adjustable value)	[°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