

ALTEROSTAT

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



Applications

- Machine tools
- HVAC
- Refrigeration
- Process technology

Features

- With 1 adjustable step between 2 stages
- Short response time
- Protection IP54
- Electrical connection on terminal screw

06/2021

Data sheet H72139r

Technical Data

Designation of application	Multistage thermostat with remote sensor	Switching differential	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	EN 60730-1/ EN 60730-2-9: Typ 2.B.H

Subject to change

Ordering information/type code

				XXX	XX	XX	XXX	XX	XXXXXXXXXX	XX	XX
Custom build code	External adjustment			104							
	Internal adjustment			114							
Microswitch	Small switching differential, not adjustable			10							
	Average switching differential, not adjustable			11							
	With gold plated contacts, switching differential not adjustable			21							
Range	Range	Sensor max.			Range	Sensor max.					
	[°C]	[°C]			[°C]	[°C]					
	-30 ... +40 ⁴⁾	45	01		+5 ... +95	105	20				
	-10 ... +25 ⁴⁾	60	07		+20 ... +110	115	23				
	0 ... +35 ⁴⁾	70	09		+20 ... +150	165	31				
	+10 ... +45	85	11		+20 ... +230	250	24				
	+10 ... +80 ⁴⁾	100	13		+40 ... +300	330	53				
	-10 ... +35 ⁴⁾	70	94		+70 ... +350	380	54				
	-10 ... +80 ⁴⁾	85	95								
Sensor ¹⁾	See table "Ordering-no. for sensors"						XXX				
Fixing ²⁾	Nut M10 (for remote sensing version)						10				
	Angle bracket (for remote sensing version)						17				
	Mounting bracket (for remote sensing version)						19				
	Grubscrew locked, lateral (direct mounting version) ⁵⁾						12				
	Cap nut (for direct mounting version) ⁵⁾						14				
	Grubscrew locked with spacer (cooling element) (for direct mounting version)						18				
Protection tube	See data sheet www.trafag.com/H72114 and www.trafag.com/H72163							XXXX.XXXX			
Accessories	Switchpoint locking 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 [°C]										
	- Increasing or decreasing										
	Capacitor over Pin 1-2									12	
	Capacitor over Pin 1-3									13	
	Capacitors over Pin 1-2 / 1-3									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 1.4301 (AISI 304)									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⁾										
Steps between stages	Desired stage difference to be indicated when ordering (without indication = switches synchronous)										
	Switch 1 on scale, difference switch 2 to scale -6 °C...+15 °C										
	Minimum distance between switches:										
	Switch 10: ±1 °C										
	Switch 11/21: ±2 °C										

¹⁾ See data sheet www.trafag.com/H72114 and www.trafag.com/H72163

²⁾ See data sheet www.trafag.com/H72106

³⁾ Overlengths upon request

⁴⁾ Only with type 114, internal adjustment

⁵⁾ 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

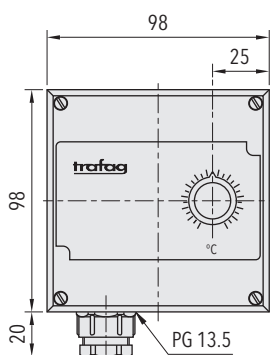
Standard products (extra short lead time)

Product No.	Type Code	Temperature range [°C]	Switching differential [°C]	Smallest stage difference [°C]	Largest stage difference [°C]	Sensor max. [°C]
M2S40	114 1101 422 19	-30 ... +40	1.8 (fixed)	0.8	25	45
M2S35	114 1109 422 19	0 ... +35	1.8 (fixed)	0.8	15	50
M2S95	114 1120 322 19	+5 ... +95	2.5 (fixed)	1.2	35	105
M2S150	114 1131 122 19	+20 ... +150	3 (fixed)	1.5	40	165
M2S230S	114 1124 021 19	+20 ... +230	4.5 (fixed)	2	70	250
M2S350S	114 1154 021 19	+70 ... +350	5 (fixed)	2.5	80	380

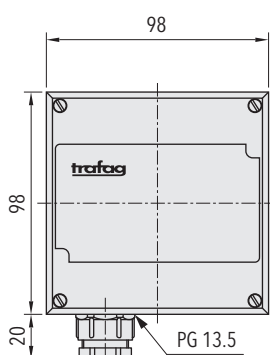
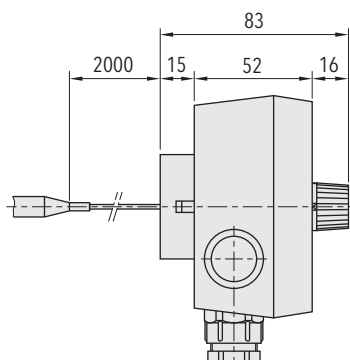
Specifications		
Accuracy	Repeatability	± 0.5 % FS typ.
	Scale accuracy typ.	± 2 % FS typ.
	Switching differential	See table
	Switching point	Temperature compensated with bimetal switch lever
Environmental conditions	Ambient temperature	Range ≤ +45°C: -30°C ... +50°C Range +45°C ... +250°C: -30°C ... +70°C Range > +250°C: -10°C ... +70°C (Important: Temperature at sensor may not exceed maximum sensortemperature)
	Storage temperature	Range ≤ +45°C: -30°C ... +50°C Range > +45°C: -30°C ... +85°C
	Protection	IP54
	Humidity	Max. 95 % relative
Mechanical Data	Sensor housing	See ordering information
	Filling	Liquid
	Housing	Noryl
	Screwed cable gland	Polyamide (PA)
	Installation	any position
	Weight	~ 480 g
Microswitch	Rating	See table
	Resistance of insulation	> 2 MΩ
	Dielectric strength	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground
	Life time (mechanical)	Microswitch 10/11: 20 Mio. cycles Microswitch 21: 0.5 Mio. cycles
Electrical connection	Cable gland	PG13.5 Cable-Ø 5 ... 12.5 mm
	Terminal screw	6 x 1 ... 2.5 mm²

Additional information		
Documents	Data sheet	www.trafag.com/H72139
	Instructions	www.trafag.com/H70311
	Flyer	www.trafag.com/H70965

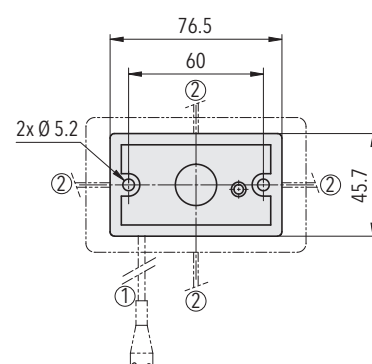
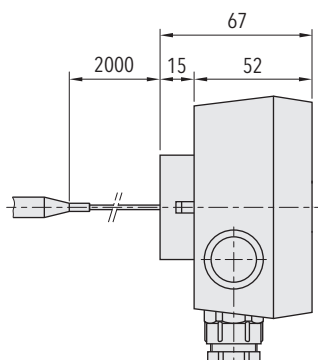
Dimensions



104.XXXX.XXXX.XX...

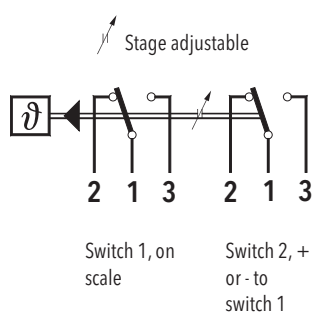


114.XXXX.XXXX.XX...



Fixation 19

Electrical connection



Switching differential typ.

Measuring range	[°C]	-30 ... +40 +10 ... +80	-10 ... +25 0 ... +35 +10 ... +45	+15 ... +30	-10 ... +35
Microswitch 10: Switching differential not adjustable	[°C]	0.7	0.7	0.7	1.5
Microswitch 11: Switching differential not adjustable	[°C]	1.8	1.8	1.8	2.5
Microswitch 21: Switching differential not adjustable	[°C]	1.8	1.8	1.8	2.5
Steps between stages from switch S2 to switch S1 (S1 on scale): S1 < S2	[°C]	0.8 ... 25	0.8 ... 15	0.8 ... 10	1.2 ... 25
Steps between stages from switch S2 to switch S1 (S1 on scale): S1 > S2	[°C]	0.8 ... 12	0.8 ... 6	0.8 ... 4	1.2 ... 8
Measuring range	[°C]	-10 ... +80 +5 ... +95 +20 ... +110	+20 ... +150	+20 ... +230	+40 ... +300 +70 ... +350
Microswitch 10: Switching differential not adjustable	[°C]	1.5	1.8	2	2.5
Microswitch 11: Switching differential not adjustable	[°C]	2.5	3	4.5	5
Microswitch 21: Switching differential not adjustable	[°C]	2.5	3	4.5	5
Steps between stages from switch S2 to switch S1 (S1 on scale): S1 < S2	[°C]	1.2 ... 35	1.5 ... 40	2 ... 70	2.5 ... 80
Steps between stages from switch S2 to switch S1 (S1 on scale): S1 > S2	[°C]	1.2 ... 15	1.5 ... 20	2 ... 30	2.5 ... 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