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JUMO Process Control, Inc.
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JUMO frostTHERM-ATE

Electronic Frost Protection Thermostat

Special features

- Setting range 1 to 10 °C
- Operating mode: manual or automatic reset
- Regulated membrane heating for operation up to -15 °C
- Self-monitoring of the probe line
- 2 analog outputs 0 to 10 V
- 1 switching output (relay: max. AC 230 V, 6(2) A)
- Setting without opening the case lid
- Electrical connection via spring-cage terminals
- Operating voltage (SELV) AC 24 V



Type 604170

Description

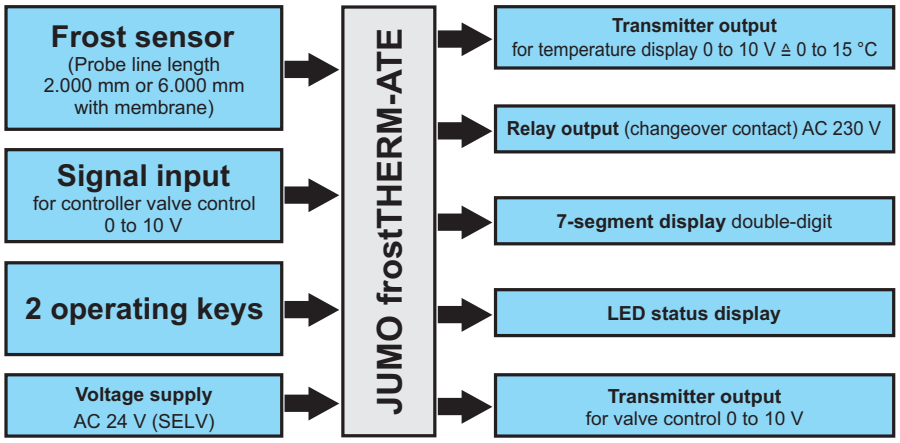
The device Frostschutzthermostat is used for air-side temperature monitoring in ventilation and air conditioning systems to prevent damage caused by freezing.

Applications:

- Switching off ventilators
- Opening heating valves
- Closing air flaps
- Or other measures to prevent freezing

Thanks to the freely selectable switching point between 1 and 10 °C and the choice of a monitoring (automatic reset) or limiting function (manual reset), the device can always be adjusted to suit the requirements of any particular application. The self-monitoring feature for the probe line ensures that the thermostat switches to frost function and the monitored plant remains protected at all times if a capillary tube breaks.

Block diagram



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Approval marks and certificates

CE

Certificates for approved device versions are available for download on the manufacturer's website.

Technical data

Specifications

Measuring range	0 to 15 °C
Setting range	1 to 10 °C
Adjustment point	5 °C
Accuracy at adjustment point	±1 K
Switching differential	~ 2 K
Time constant	
In still air	~ 90 s
In moving air	<40 s
Probe line	
Minimum response length	250 mm
Admissible temperature	Max. 110 °C
Weight	
Device with probe line 2 m	~ 0.34 kg
Device with probe line 6 m	~ 0.41 kg

Electrical data

Reference conditions	DIN EN 60730
Electrical connection	
Spring-cage terminals	Max. 2 × 1.5 mm² or 1 × 2.5 mm², min. 0.25 mm²
Cable inlet	Cable fitting M16 for cable diameter 5 to 10 mm
Voltage supply	AC 24 V +10 %/- 20 %, SELV
Frequency	48 to 63 Hz
Power consumption	Max. 6.6 VA
Electrical protection	Power switch max. 13 A
Analog inputs	
Valve control (terminal Y)	DC 0 to 10 V
Current	Max. 0.1 mA
Admissible line length for 1.5 mm²	300 m
Analog outputs	
Probe temperature (terminal B)	DC 0 to 10 V ≙ 0 to 15 °C
Valve control (terminal Y10)	DC 0 to 10 V
Current	Max. 1 mA
Admissible line length for 1.5 mm²	300 m
Relay output	
Output (terminals Q11, 12, 14)	Floating
Min. switching capacity	AC/DC 12 V, 100 mA
Max. switching capacity	AC 230 V, 6(2) A; DC 24 V, 6 A

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Environmental influences

Operating temperature range	IEC 721-3-3
Climatic conditions	Class 3K5
Temperature	-15 to +55 °C
Humidity	<85 % relative humidity
Storage, transport	IEC 721-3-2
Climatic conditions	Class 2K3
Temperature	-25 to +65 °C
Humidity	<95 % relativee humidity
Electromagnetic compatibility	DIN EN 61326-1
Interference emission	Class B[a]
Interference immunity	Industrial requirements
CE conformity acc. to the EMC Directive	2004/108/EG
Low Voltage Directive	2006/95/EG
Vibrations strength	DIN EN 60 721-3-3
	Class 3M2

[a] The product is suitable for industrial use as well as for households and small businesses.

Mecanical features

Case

Material	
Case lid	PC
Color	Transparent
Case bottom section	PA
Color	Silver gray (RAL 7001)
Cover cap	ABS
Color	Light gray (RAL 7035)
Probe line	Copper
Packaging	Corrugated cardboard

Environmentally relevant information

Probe type	in [mm]	Ø 2.0	Ø 2.0
	in [mm]	2000	6000
F-gas filling with		R134a	R134a
GWP (Global Warming Potential)		1430	1430
Filling weight	in [g]	0.13	0.35
	in [kg]	0.00013	0.00035
CO_2 equivalent	in [kg]	0.186	0.501
	in [t]	0.000186	0.000501

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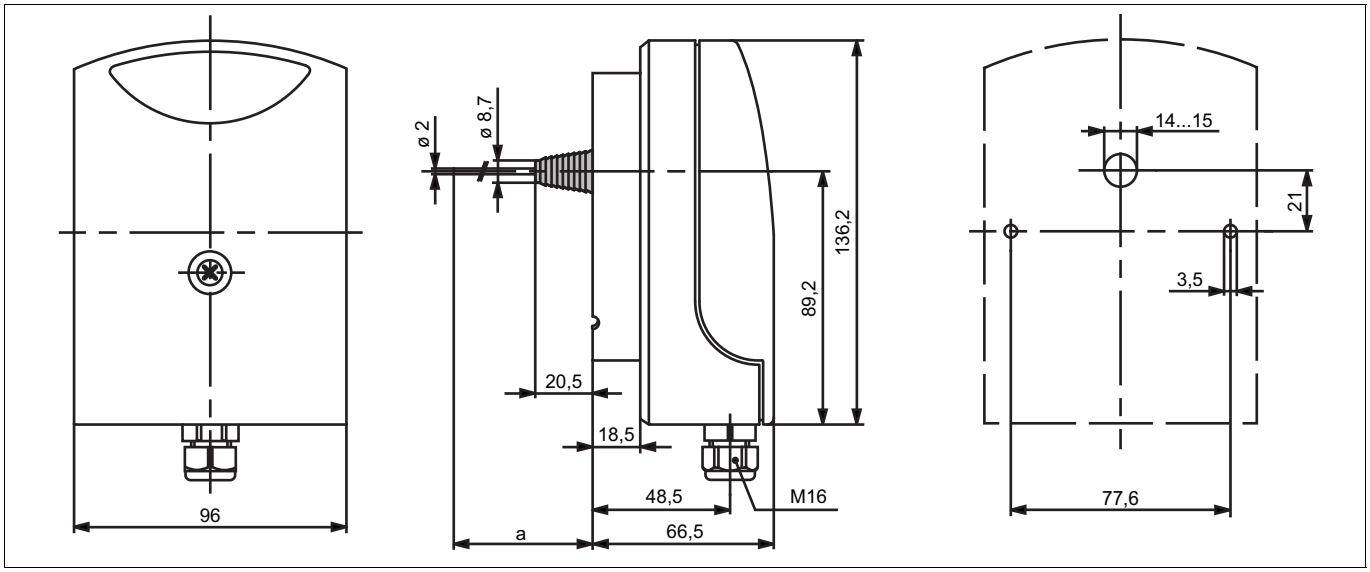
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Dimensions

Device

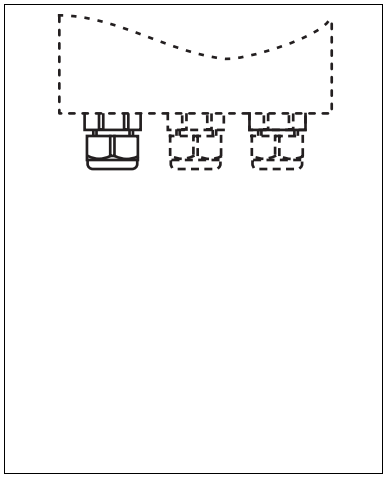
Drilling diagram for direct mounting



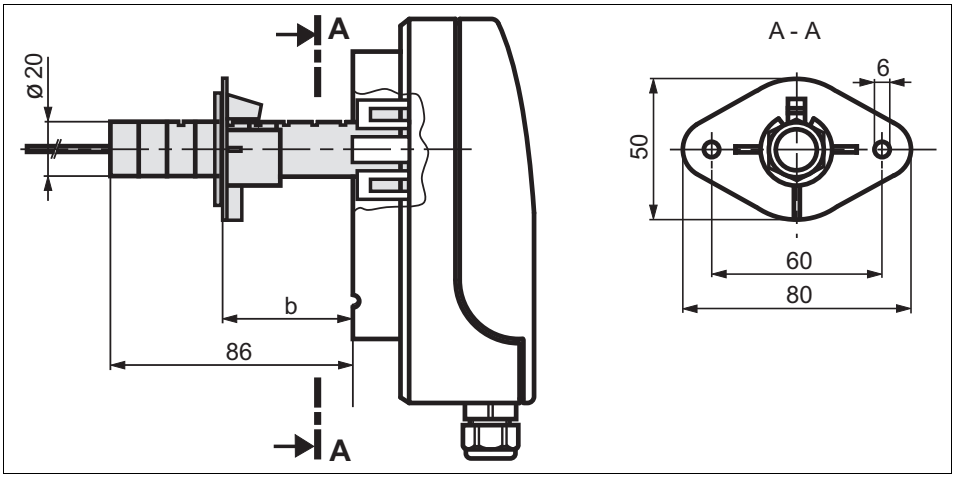
Accessories

Cable fitting

Max. 1 cable fitting for additional mounting



Mounting flange



b	
Max.	Min.
70	10

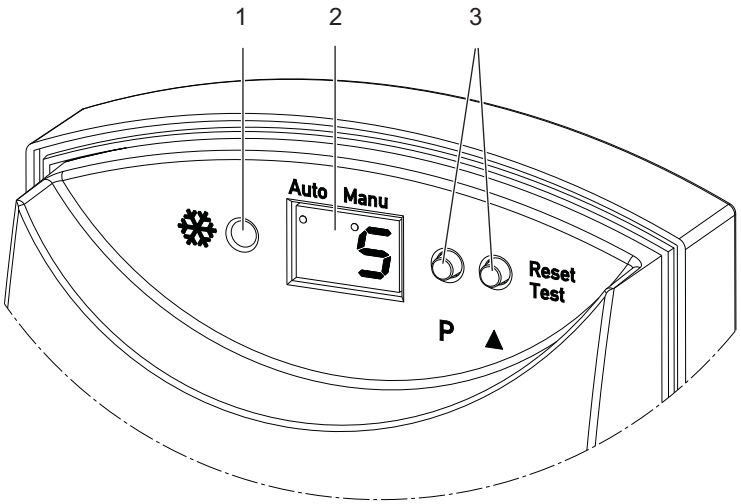
Dimensions in mm.

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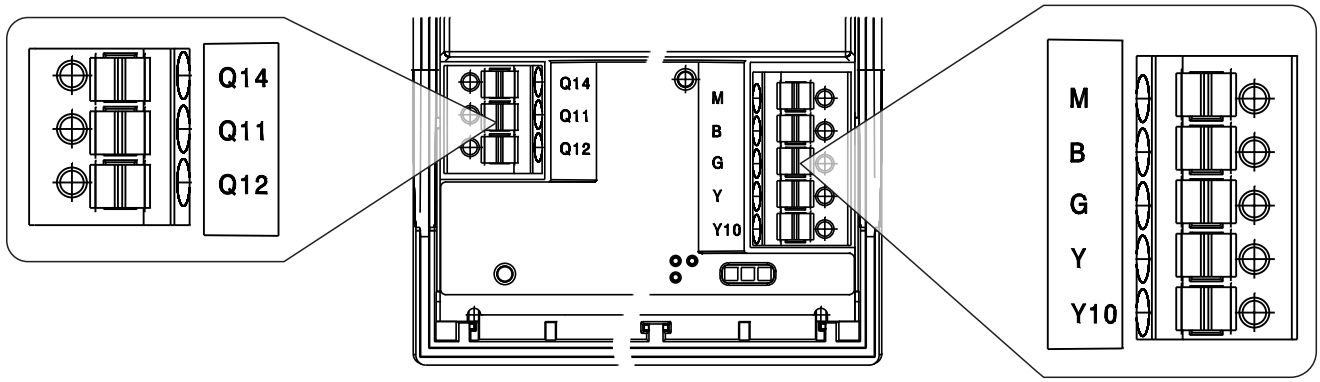
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Display and control elements



Pos.	Designation	Description
1	Switching position indicator	LED for relay output
2	Display	7-segment display, 2-digit, red
3	Keys	To operate and program the device in order to perform a reset in manual operating mode.

Connection elements



Spring-cage terminals | Housing rear (front view) | Spring-cage terminals

Terminal assignment

Spring-cage terminals

Description	Assignment
Relay output AC/DC 12 to 230 V	Q11/12/14

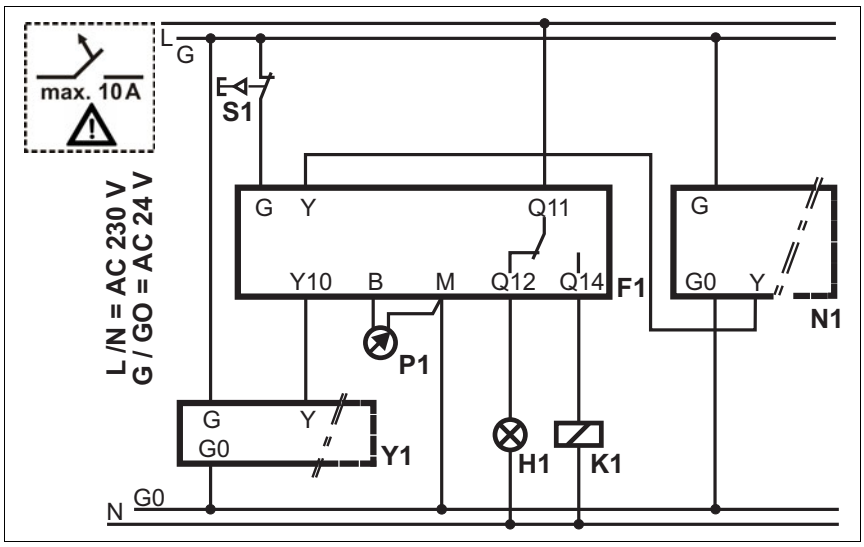
Description	Assignment
System zero point, measurement zero point	M
Output transmitter DC 0 to 10 V ≙ 0 to 15 °C	B
Voltage supply (SELV) AC 24 V	G
Signal input for controller valve control DC 0 to 10 V	Y
Output transmitter for valve control DC 0 to 10 V	Y10

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Connection examples



F1 Frost monitor JUMO frostTHERM-ATE
N1 Controller with control signal DC 0 to 10 V
H1 e.g. external frost detector
K1 e.g. fan contactor
P1 e.g. temperature display
S1 Button to reset the frost status (if required)
Y1 Actuator

Parameter and configuration

Designation	Display	Default	Value range
Switching point	Sp	5 °C	1 to 10 °C
Operation mode	St	Automatic	Automatic (At) Manual (Hd)

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Order details

	(1)	Basic type
604170		JUMO frostTHERM-ATE
	(2)	**Basic type extensions**
02		Frost monitor with relay contact
	(3)	**Design**
5		Surface-mounted thermostat (standard)
	(4)	**Control range 1**
008		1 to 10 °C
	(5)	**Probe line**
2000		2,000 mm
6000		6,000 mm
	(6)	**Probe material**
40		Cu (copper)
	(7)	**Extra codes**
000		Without
102		Neutral device version[a]

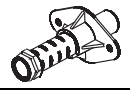
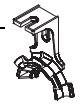
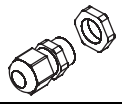
[a] The customer is obligated to comply with relevant legal provisions regarding product labeling.

	(1)		(2)		(3)		(4)		(5)		(6)		(7)
Order code		/		-		-		-		-		/	
Order example	604170	/	02	-	5	-	008	-	6000	-	40	/	000

Stock versions

Order code	Control range 1	Probe line	Probe material	Part no.
604170/02-5-008-2000-40/000	1 to 10 °C	2,000 mm	Cu (copper)	60003410
604170/02-5-008-6000-40/000	1 to 10 °C	6,000 mm	Cu (copper)	60003411

Accessories

Designation		Part no.
Mounting flange (1 piece)		00604453
Holder (3 pieces)		00558731
Holder (6 pieces)		00558730
Cable fitting M16 × 1.5		00495887

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Scope of delivery

Device in ordered version
Operating manual
2 cable fittings M16 × 1.5
2 screws for direct mounting
1 rubber plug for routing the probe line

Trademark information

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