

Panel-Mounted Thermostats ETH

Special features

- Self-monitoring (STB/STW [STB]) and safety cut-out (STB/STW [STB]) in the event of a pressure drop
- Version according to DIN EN 14597 and to Pressure Equipment Directive 2014/68/EU
- Microswitch

Description

Panel-mounted thermostats ETH monitor thermal processes. The devices are available as safety-temperature monitors STW (STB) and safety temperature limiters STB. In the event of a malfunction, the STB switches the monitored machine to a safe operating status.

Panel-mounted thermostats operate according to the fluid expansion principle. A microswitch is used as an electrical switching element.

Switching functions

Safety temperature monitor STW

If the temperature on the temperature probe exceeds the limit value, the electrical circuit is opened by a microswitch. When the limit value falls below the set limit value (by the switching differential), the switch is returned to its initial position.

Restart lock at safety temperature limiter STB

If the temperature at the temperature sensor exceeds the set limit value, the electrical circuit is opened and the microswitch is mechanically locked. After falling below the limit value by approx. 10 % of the temperature range (approx. 15 % of the limit value setting > +350 °C), the switch can be unlocked manually.

Use of the safety temperature monitor STW as safety temperature limiter STB

In this case, the circuit following the thermostat must comply with DIN EN 14597 and VDE 0116.

Self-monitoring for safety temperature limiter STB and safety temperature monitor STW (STB)

If the measuring system is destroyed (i.e. if the expansion fluid escapes) the pressure in the membrane of the STB and STW (STB) drops and permanently opens the electrical circuit. Unlocking is then no longer possible. When the STW (STB) and STB sensors cool down to the negative temperature range, the circuit opens, but must be unlocked manually by the reclosing button when the temperature rises. The STW (STB) restarts automatically.



ETH-20 (Type 602010/20-...)



ETH-70 (Type 602010/70-...)

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 Email: mail@jumo.net
 Internet: www.jumo.net

JUMO UK LTD
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex, CM20 2DY, UK
 Phone: +44 1279 63 55 33
 Fax: +44 1279 62 50 29
 Email: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 6724 Joy Road
 East Syracuse, NY 13057, USA
 Phone: +1 315 437 5866
 Fax: +1 315 437 5860
 Email: info.us@jumo.net
 Internet: www.jumousa.com



Approval marks and certificates

	Description	DIN
	Testing agency	DIN CERTCO/TÜV Süd
	Certification number	STW(STB)799S
	Inspection basis	DIN EN 14597
	Valid for	ETH-20 (Type 602010/20 [STW (STB)])
	Description	DIN
	Testing agency	DIN CERTCO/TÜV Süd
	Certification number	STB800
	Inspection basis	DIN EN 14597
	Valid for	ETH-70 (Type 602010/70 [STB])
	Description	Pressure Equipment Directive
	Testing agency	TÜV Süd
	Certification number	Z-IS-TAF-MUC-17-11-2652099-021
	Inspection basis	2014/68/EU, DIN EN 14597
	Valid for	ETH-20 (Type 602010/20 [STW]), ETH-70 (Type 602010/70 [STB])

Technical data

Control ranges and temperature probes

	Liquid-filled				
Switching function	Control/limit value ranges °C	Max. admissible excessive probe temperature °C	Max. capillary length mm	Length of the temperature probe Probe-Ø „d“ = 6 mm ^a mm	
				Ø 6	Ø 8
STW, STB	30 to 110	135	5,000	108	75
	60 to 130	150		116	79
	20 to 150	175		77	60
	50 to 250	290		64	49
	50 to 300	345		55	-

	Gas-filled				
STW, STB	20 to 400	460	1,000	176	106
	20 to 500	575	2,000	127	81
	20 to 500	575	4,000	202	119

^a Standard

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 Email: mail@jumo.net
 Internet: www.jumo.net

JUMO UK LTD
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex, CM20 2DY, UK
 Phone: +44 1279 63 55 33
 Fax: +44 1279 62 50 29
 Email: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 6724 Joy Road
 East Syracuse, NY 13057, USA
 Phone: +1 315 437 5866
 Fax: +1 315 437 5860
 Email: info.us@jumo.net
 Internet: www.jumousa.com



Capillary and temperature probe

Type	Scale limit value	Capillary	Temperature probe
ETH-...	up to 200 °C	Copper (Cu), Ø 1.5 mm, material no. 2.0090	Copper (Cu), material no. 2.0090, hard soldered
	up to 350 °C	Copper (Cu), Ø 1.5 mm, material no. 2.0090	Stainless steel (CrNi), Ø 1.5 mm, material no. 1.4571
	up to 500 °C	Stainless steel (CrNi), Ø 1.5 mm	Stainless steel (CrNi), Ø 1.5 mm, material no. 1.4571
	up to 350 °C	Stainless steel (CrNi), Ø 1.5 mm	Stainless steel (CrNi), Ø 1.5 mm, material no. 1.4571 (extra cost)
Capillary length	Standard length: 1,000 mm, max. 5,000 mm		
Min. bending radius of the capillary	5 mm		

Electrical data

Switching function	STW (-20)	STB (-70)	STB (-70/U)
	Microswitch with changeover contact	Microswitch with NC contact and restart lock	Microswitch with NC contact, restart lock and additional signal contact
Max. switching capacity with switching differential 2 %	AC 230 V +10 %, 10 (2) ^a A, $\cos \varphi = 1$ (0.6) ^a , DC 230 V +10 %, 0.25 A AC 230 V +10 %, 6 (1.2) ^a A, $\cos \varphi = 1$ (0.6) ^a Microswitch with gold-plated contacts, extra code 702, AC/DC 24 V, 0.1 A, contact resistance 2.5 to 10 mΩ		

^a Inductive loads

Contact reliability with silver contacts	To ensure a high switching reliability, we recommend a minimum load of: AC/DC = 24 V, 100 mA
with gold-plated contacts (extra code 702)	AC/DC = 10 V, 5 mA

Environmental influences

Switching differential in % from the control/limit value range	Nominal value	Poss. actual value	Nominal value	Poss. actual value	
	Liquid-filled		Gas-filled		
	5	4 max. 6	7	5 max. 12	(Standard)
	9	8 max. 11	9	8 max. 16	(upon request)
Switching function STW, STB	2	1 max. 3	2	1.5 max. 3	(extra cost)
Switching point accuracy in % of the control/limit value range	In the upper third of the scale 0/-5 %, at scale beginning 0/-10 %				
Ambient temperature influence	Based on the control/limit value range If the ambient temperature at the switching head and/or the capillary deviates from the calibration ambient temperature 22 °C, a switching point shift occurs. Higher ambient temperatures = lower switching point Lower ambient temperatures = higher switching point				
Panel-mounted thermostats with scale limit value	< 200 °C		≥ 200 °C ≤ 350 °C		> 350 °C ≤ 500 °C
Influence on the switching head	0.17 %/K		0.13 %/K		0.12 %/K
Influence on the capillary per meter	0.054 %/K		0.11 %/K		0.03 %/K
Admissible storage temperature	-50 to +80 °C or up to max. admissible ambient temperature, see nameplate				
Admissible ambient temperature during use	See nameplate				
Rated position (NL)	Any				

JUMO GmbH & Co. KG

Delivery address: Mackenrodtstraße 14
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
Email: mail@jumo.net
Internet: www.jumo.net

JUMO UK LTD

JUMO House
Temple Bank, Riverway
Harlow, Essex, CM20 2DY, UK
Phone: +44 1279 63 55 33
Fax: +44 1279 62 50 29
Email: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.

6724 Joy Road
East Syracuse, NY 13057, USA
Phone: +1 315 437 5866
Fax: +1 315 437 5860
Email: info.us@jumo.net
Internet: www.jumousa.com

**Switching head**

Material Chassis	Sheet steel, galvanized
Fastening	2 M3 screws, spacing 22 mm
Scale range	250°
Electrical connection	Screw connection up to 2.5 mm ² conductor cross section
Limit value setting	The limit value can be adjusted with a screwdriver on the adjustment spindle before installation.
Protection type	IP00, according to DIN EN 60529
Weight	Approx. 200 g

Process connection

Type ETH with capillary	Process connection 10: Plain cylindrical probe (standard) Process connection 20: Screw-in thermowell (upon request) Screw-in sleeve with screw-in spigot G 1/2, form A, according to DIN 3852/2, and clamping piece with fixing screw to lock the probe
Material Up to 150 °C Over 150 °C	CuZn, nickel-plated (standard) CrNi
Fitting length	Standard lengths: 100, 120, 150, 200 or 300 mm (other lengths upon request)
Immersion tube Ø	D = 8 mm

⇒ For different process connections and thermowells refer to data sheet 606710.

JUMO GmbH & Co. KG

Delivery address: Mackenrodtstraße 14
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
Email: mail@jumo.net
Internet: www.jumo.net

JUMO UK LTD

JUMO House
Temple Bank, Riverway
Harlow, Essex, CM20 2DY, UK
Phone: +44 1279 63 55 33
Fax: +44 1279 62 50 29
Email: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.

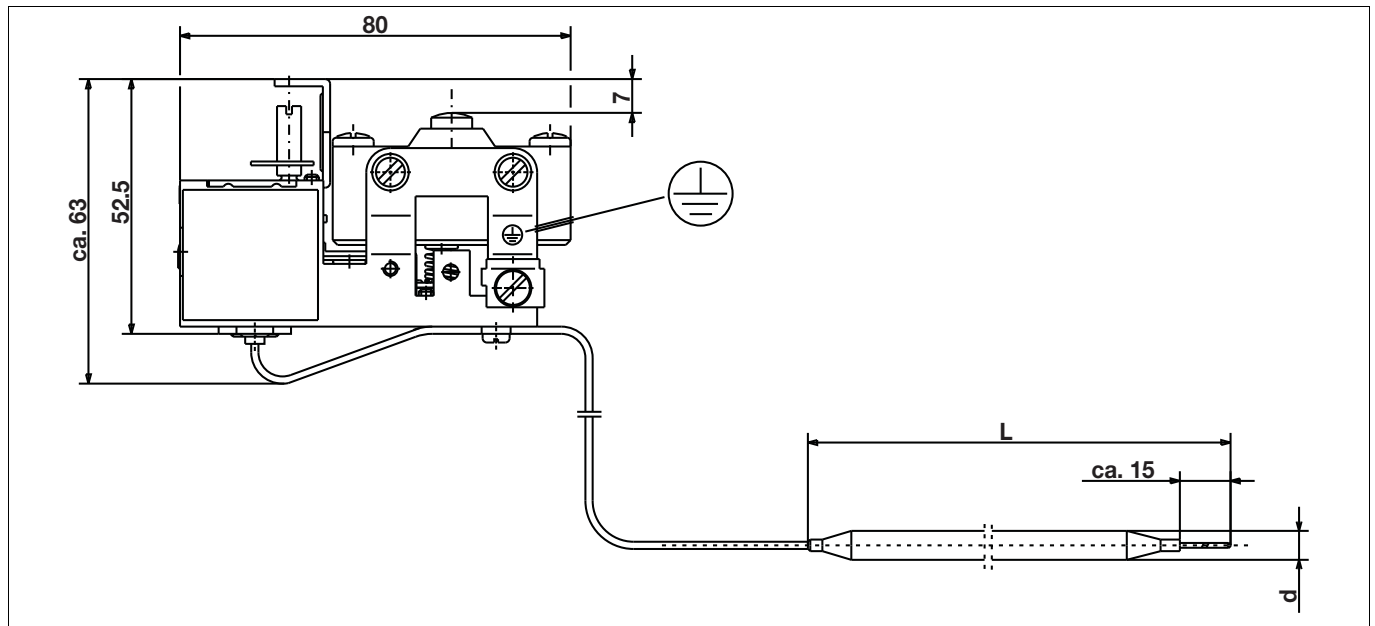
6724 Joy Road
East Syracuse, NY 13057, USA
Phone: +1 315 437 5866
Fax: +1 315 437 5860
Email: info.us@jumo.net
Internet: www.jumousa.com



Dimensions

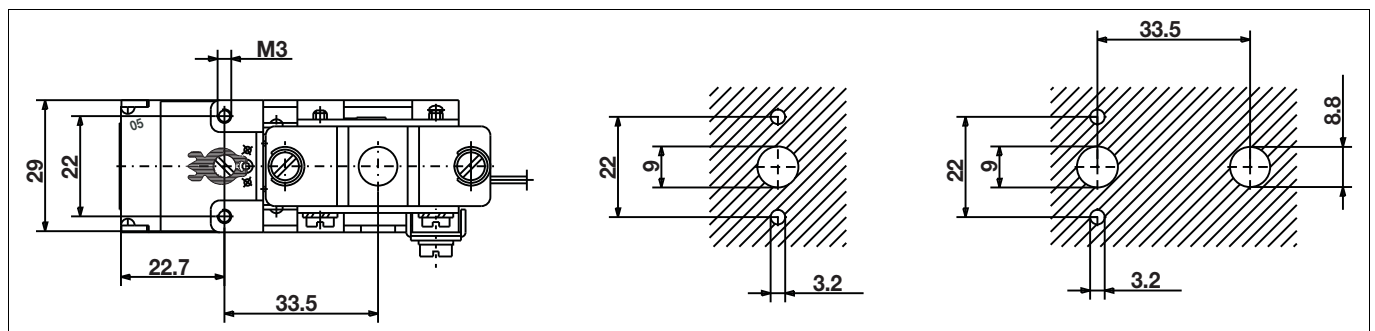
ETH-70 (Type 602010/70)

Process connection plain cylindrical probe, without thermowell



ETH-20 (Type 602010/20)

ETH-70 (Type 602010/70)



JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 Email: mail@jumo.net
 Internet: www.jumo.net

JUMO UK LTD
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex, CM20 2DY, UK
 Phone: +44 1279 63 55 33
 Fax: +44 1279 62 50 29
 Email: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 6724 Joy Road
 East Syracuse, NY 13057, USA
 Phone: +1 315 437 5866
 Fax: +1 315 437 5860
 Email: info.us@jumo.net
 Internet: www.jumousa.com

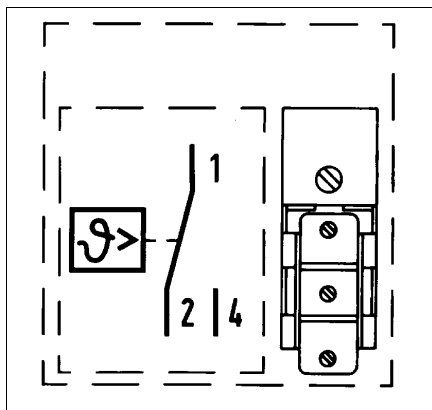


Connection diagram

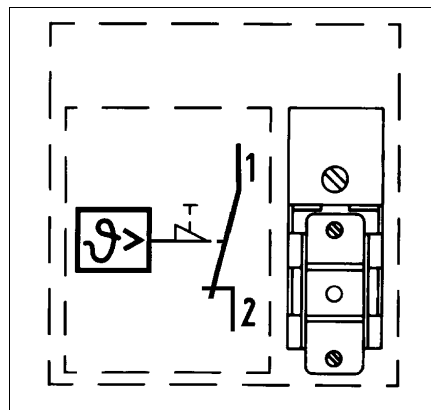
The connection diagram in the data sheet provides information on product selection.

For the electrical connection, only use the installation instructions or the operating manual.

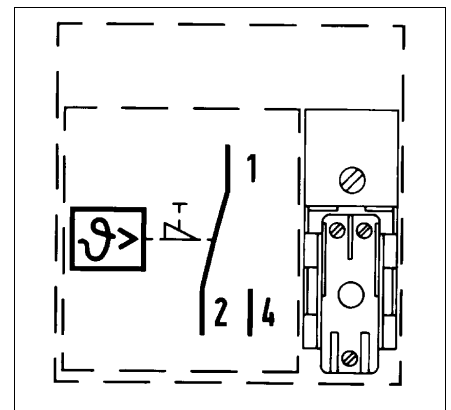
ETH-20 (Type 602010/20)
 with changeover contact



ETH-70 (Type 602010/70)
 with NC contact, and restart lock



ETH-70 (Type 602010/70)
 with NC contact, restart lock, and additional
 signal contact



JUMO GmbH & Co. KG

Delivery address: Mackenrodtstraße 14
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
Email: mail@jumo.net
Internet: www.jumo.net

JUMO UK LTD

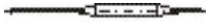
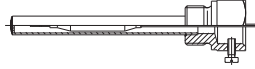
JUMO House
Temple Bank, Riverway
Harlow, Essex, CM20 2DY, UK
Phone: +44 1279 63 55 33
Fax: +44 1279 62 50 29
Email: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.

6724 Joy Road
East Syracuse, NY 13057, USA
Phone: +1 315 437 5866
Fax: +1 315 437 5860
Email: info.us@jumo.net
Internet: www.jumousa.com



Order details

	(1) Basic type	
602010	Panel-mounted thermostats ETH	
	(2) Basic type extension	
20	ETH-20 Safety temperature monitor (STW)	
70	ETH-70 Safety temperature limiter (STB)	
	(3) Control range	
043	20 to 150 °C	
045	20 to 400 °C	
046	20 to 500 °C	
052	30 to 110 °C	
063	50 to 250 °C	
064	50 to 300 °C	
066	60 to 130 °C	
	(4) Switching differential	
00	None	
20	2 %	
50	5 %	
70	7 %	
90	9 %	
	(5) Capillary length	
1000	1,000 mm	
2000	2,000 mm	
3000	3,000 mm	
4000	4,000 mm	
5000	5,000 mm	
	(6) Capillary material Fernleitung	
20	CrNi (stainless steel)	
40	Cu (copper)	
	(7) Process connection	
10	Plain cylindrical probe	
20	Screw-in thermowell	
	(8) Process connection thread	
00	None	
13	G 1/2	
	(9) Process connection material	
00	None	
20	CrNi (stainless steel)	
46	CuZn (brass)	
	(10) Insertion length	
000	Without thermowell	
100	100 mm	
120	120 mm	
150	150 mm	
200	200 mm	
300	300 mm	

Delivery address: Mackenrodtstraße 14
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
Email: mail@jumo.net
Internet: www.jumo.net

JUMO House
Temple Bank, Riverway
Harlow, Essex, CM20 2DY, UK
Phone: +44 1279 63 55 33
Fax: +44 1279 62 50 29
Email: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.
6724 Joy Road
East Syracuse, NY 13057, USA
Phone: +1 315 437 5866
Fax: +1 315 437 5860
Email: info.us@jumo.net
Internet: www.jumousa.com



Order code

(1)	(2)	(3)	(4)	(5)	(6)	(7)

Order example

602010	/	70	-	052	-	00	-	1000	-	40	-	10	-
--------	---	----	---	-----	---	----	---	------	---	----	---	----	---

(8)	(9)	(10)	(11)	(12)	(13)

00 - 00 - 100 - 00 - 8 / 702 , ...^a

^a List extra codes in sequence, separated by commas.