BIMETAL TEMPERATURE SWITCHES

Bimetal temperature switches with reset hysteresis ≤ 15 K

Description

In a robust brass or stainless steel housing there is a bimetal disc, which snaps over when nominal switching temperature is reached.
The switching contact can be implemented as a normally closed contact or a normally open contact in the temperature range between -25°C and 190°C.
The switch opens or closes its contact upon rising temperature and resets automatically to the original switching state when the temperature has dropped. The switching temperature cannot be adjusted.
The bimetal disc carries no current, and this eliminates the possibility of arcing.
The reset switching temperature is typically 5…15 K below the switching temperature. Other values on request.
A Normally Open (NO=open in the normal state) switch closes a circuit on reaching the switching temperature.
A Normally Closed (NC= closed in the normal state) switch opens a circuit on reaching the switching temperature.
The type of integral thread, sealing face and the heat transfer pin are to the customer specifications or can be selected from our extensive standard range.

Technical Data

Nominal voltage:	12 VDC / 24 VDC
Max. load:	16 A at 25°C
Min. load:	50 mA with silver-plated contacts (standard)
	≥ 10 mA with gold-plated contacts
Contact arrangement:	normally closed / normally open
Reset type:	automatic
Standard response temperature range	
stepped ín 5 K intervals:	-25 °C to +190 °C
Standard tolerance:	±3 K / ±5 K / ± 8 K
Reset hysteresis:	≤ 15 K
	min. 5 K, other values on request
Standard contact resistance of switch	≤ 25 mΩ with silver-plated contacts (standard)
mechanism:	≤ 10 mΩ with gold-plated contacts
Switch operations at rated current:	50000 at 12 VDC / 10000 at 24 VDC
Vibration 10 Hz to 60 Hz:	10 g
Connector:	see order number overview
IP-protection:	depending on the connector type
Housing material:	brass (standard), stainless steel on request

CONNECTORS AND DESIGNS

- Connector bayonet according to ISO 15170
  Protection class IP 69K according to DIN 40050
  without thermal conductivity probe

» Order number overview page 8

- Connector DEUTSCH DT04-2P
  Protection class IP 67 according to DIN 40050
  without thermal conductivity probe

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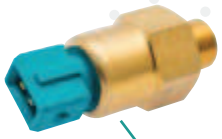

- Connector minitimer 2,8 x 0,8
  Protection class IP 67 according to DIN 40050
  without thermal conductivity probe

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- Connector minitimer 2,8 x 0,8
  Protection class IP 67 according to DIN 40050
  with thermal conductivity probe

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- Connector blade terminal 6,3 x 0,8; 2-pole
  Protection class IP 67 according to to DIN 40050
  without thermal conductivity probe

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- Connector blade terminal 6,3 x 0,8; 2-pole
  Protection class IP 67 according to to DIN 40050
  with thermal conductivity probe

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- Connector blade terminal 6,3 x 0,8; 1-pole
  Protection class IP 67 according to to DIN 40050
  with thermal conductivity probe

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- Connector bayonet 10SL plastic
  Protection class IP 67 according to DIN 40050
  without thermal conductivity probe

» Order number overview page 8

- Cable with flying leads
  Protection class IP 69K according to DIN 40050
  without thermal conductivity probe

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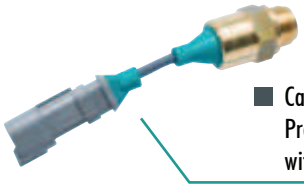

- Cable with DEUTSCH DT04-3P
  Protection class IP 69K according to DIN 40050
  without thermal conductivity probe

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- Cable with DEUTSCH DT04-3P
  Protection class IP 69K according to DIN 40050
  with thermal conductivity probe

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- Cable with connector M12x1
  Protection class IP 69K according to DIN 40050
  without thermal conductivity probe

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ORDER NUMBER OVERVIEW

Bimetal temperature switches with reset hysteresis ≤ 15 K

Connector bayonet according to ISO 15170

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number
M 14 x 1,5 / 27	/	110°C	normally closed	5 K	potential free	422 178

Connector bayonet 10SL plastic

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number
M 14x 1,5 / 19	/	17°C	normally closed	6 K	potential free	420 148

Connector minitimer 2,8 x 0,8

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number	
M 12 x 1,5 / 22	5 mm	40°C	normally open	8 K	potential free	422 866	2.
M 12 x 1,75 / 22	15 mm	80°C	normally closed	8 K	potential free	422 863	2.
M 14 x 1,5 / 22	12 mm	90°C	normally closed	5 K	potential free	420 277	2.
M 22 x 1,5 / 27	/	55°C	normally open	10 K	potential free	422 857	1.
M 22 x 1,5 / 27	/	85°C	normally open	5 K	potential free	422 858	1.
G 1/4" / 22	/	20°C	normally closed	5 K	potential free	420 181	1.
1/2" - 14 NPTF / 24	15 mm	112°C	normally closed	10 K	potential free	422 854	2.

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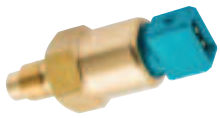

Connector blade terminal 6,3 x 0,8; 1-pole

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number	
M 14 x 1,5 / 22	12 mm	140°C	normally open	5 K	Low side switch	422 875	2.
M 27 x 2 / 32	/	5°C	normally closed	5 K	Low side switch	422 169	1.
1/4" - 18 NPTF / 22	13 mm	120°C	normally open	10 K	Low side switch	422 861	2.

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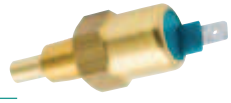

Bimetal temperature switches with reset hysteresis ≤ 15 K

Connector blade terminal 6,3 x 0,8; 2-pole

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number	
M 14 x 1,5 / 22	/	55°C	normally open	8 K	potential free	422 871	1.
M 14 x 1,5 / 22	/	70°C	normally open	5 K	potential free	422 872	1.
M 14 x 1,5 / 22	12 mm	90°C	normally closed	5 K	potential free	420 293	2.
M 14 x 1,5 / 22	12 mm	95°C	normally closed	≤ 20 K	potential free	422 869	2.
M 14 x 1,5 / 22	/	100°C	normally closed	5 K	potential free	422 360	1.
M 18 x 1,5 / 22	/	90°C	normally open	8 K	potential free	421 085	1.
9/16" UNF / 22	12 mm	95°C	normally closed	≤ 20 K	potential free	422 870	2.

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Connector Deutsch DT04-2P

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number	
M 14 x 1,5 / 27	19 mm	5°C	normally closed	5 K	potential free	422 183	2.
1/2" - 14 NPTF / 27	/	110°C	normally open	5 K	potential free	422 862	1.

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Cable connection

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Cable length	Cable connection type	Order number	
M 12 x 1,5 / 19	18 mm	95°C	normally closed	≤ 20 K	potential free	500mm	2*	422 855	5.
M 12 x 1,5 / 19	18 mm	105°C	normally closed	≤ 20 K	potential free	500mm	2*	422 856	5.
M 14 x 1,5 / 22	/	85°C	normally closed	5 K	potential free	300mm	4*	420 929	2.
M 14 x 1,5 / 22	/	95°C	normally closed	15 K	potential free	570mm	2*	422 218	4.
M 14 x 1,5 / 22	/	100°C	normally closed	5 K	potential free	570mm	2*	422 217	4.
M 14 x 1,5 / 27	19 mm	85°C	normally closed	5 K	potential free	350mm	3*	422 175	3.
M 14 x 1,5 / 27	19 mm	85°C	normally open	5 K	potential free	350mm	3*	422 158	3.
M 14 x 1,5 / 27	19 mm	100°C	normally closed	5 K	potential free	350mm	3*	422 176	3.
M 16 x 1,5 / 27	2,5 mm	92°C	normally open	5 K	potential free	350mm	3*	422 185	3.
M 22 x 1,5 / 27	2,5 mm	92°C	normally open	5 K	potential free	325mm	2*	422 865	5.
M 22 x 1,5 / 27	2,5 mm	92°C	normally open	5 K	potential free	350mm	3*	422 164	3.
M 22 x 1,5 / 27	2,5 mm	105°C	normally open	5 K	potential free	350mm	3*	422 157	3.
G 1/2" / 27	/	80°C	normally closed	5 K	potential free	400mm	1*	422 168	1.

1* Cable with flying leads
2* Cable with Deutsch connector DT04-2P
3* Cable with Deutsch connector DT04-3P
4* Cable with connector M12x1

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BIMETAL TEMPERATURE SWITCHES

Bimetal temperature switches with reset hysteresis ≤ 25 K

Description

These temperature switches operate by means of a thermally sensitive bimetal snap-element which switches a double electrical contact when reaching a pre-set response temperature. They can be normally open or normally closed. The electrical current flows through the bimetal element, which therefore gives a combination of temperature- and current-sensitivity.

The resilient snap action disk ensures excellent performance.

The bimetal will only snap back to its initial condition after the temperature has dropped significantly. Compared to other temperature switches with relatively small hysteresis, the temperature difference between the temperature switch opening and closing is significantly higher. This ensures a more distinct status indication, i.e. longer switch-off times, in the event of a fault condition.

Technical Data

Nominal voltage:	12 VDC / 24 VDC
Max. load:	36 VDC / 1,0 A
	24 VDC / 1,5 A
Min. load:	50 mA
Contact arrangement:	normally closed / normally open
Reset type:	automatic
Standard response temperature range	
stepped ín 5 K intervals:	+50 °C to +180 °C
Standard tolerance:	±3 K / ±5 K / ± 10 K
Reset hysteresis:	≤ 25 K
Standard contact resistance of switch	
mechanism:	≤ 40 mΩ
Switch operations at rated current:	10000
Vibration 10 Hz to 60 Hz:	10 g
Connector:	see order number overview
IP-protection:	depending on the connector type
Housing material:	brass (standard), stainless steel on request

CONNECTORS AND DESIGNS

- Connector bayonet according to ISO 15170
  Protection class IP 69K according to DIN 40050
  with thermal conductivity probe

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- Connector bayonet 10 SL according to VG 95234
  Protection class IP 67 according to DIN 40050
  with thermal conductivity probe

» Order number overview page 12

- Connector minitimer 2,8 x 0,8
  Protection class IP 67 according to DIN 40050
  with thermal conductivity probe

» Order number overview page 13

- Connector bayonet 10 SL plastic
  Protection class IP 67 according to DIN 40050
  with thermal conductivity probe

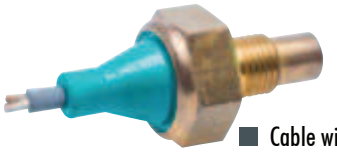
» Order number overview page 13

- Connector blade terminal 6,3 x 0,8
  Protection class IP 67 according to DIN 40050
  with thermal conductivity probe

» Order number overview page 14

- Connector blade terminal 6,3 x 0,8
  Protection class IP 67 according to DIN 40050
  with thermal conductivity probe

» Order number overview page 14



- Cable with flying leads
  Protection class IP 69K according to DIN 40050
  with thermal conductivity probe

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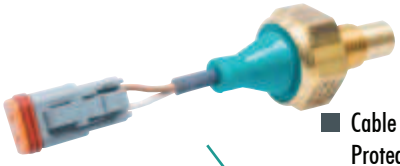
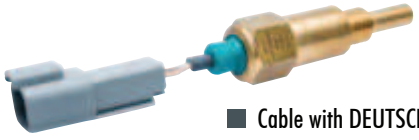


- Cable with DEUTSCH DT06-2S
  Protection class IP 69K according to DIN 40050
  with thermal conductivity probe

» Order number overview page 14

- Cable with flying leads
  Protection class IP 69K according to DIN 40050
  with thermal conductivity probe

» Order number overview page 14



- Cable with DEUTSCH DT04-2P
  Protection class IP 69K according to DIN 40050
  with thermal conductivity probe

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ORDER NUMBER OVERVIEW

Bimetal temperature switches with reset hysteresis ≤ 25 K

Connector bayonet according to ISO 15170

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number
M 14 x 1,5 / 27	11 mm	50°C	normally open	≤ 15 K	potential free	422 874
M 14 x 1,5 / 27	11 mm	60°C	normally closed	≤ 20 K	potential free	421 069
M 14 x 1,5 / 27	11 mm	90°C	normally closed	≤ 20 K	potential free	422 849
M 14 x 1,5 / 27	11 mm	95°C	normally open	< 20 K	potential free	422 842
M 14 x 1,5 / 27	11 mm	100°C	normally open	≤ 20 K	potential free	422 843
M 14 x 1,5 / 27	11 mm	110°C	normally open	≤ 20 K	potential free	422 320
M 14 x 1,5 / 27	11 mm	120°C	normally open	≤ 20 K	potential free	422 844
M 14 x 1,5 / 27	11 mm	120°C	normally closed	≤ 20 K	potential free	422 847
M 14 x 1,5 / 27	11 mm	150°C	normally open	≤ 20 K	potential free	422 321

Connector bayonet 10SL according to VG 95234

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number
M 14 x 1,5 / 27	11 mm	80°C	normally open	20 K	potential free	422 316
M 14 x 1,5 / 27	11 mm	120°C	normally closed	≤ 15 K	potential free	421 088
M 14 x 1,5 / 27	11 mm	130°C	normally open	≤ 20 K	potential free	422 313
M 14 x 1,5 / 27	11 mm	130°C	normally closed	20 K	potential free	420 295
M 18 x 1,5 / 27	11 mm	80°C	normally open	20 K	potential free	422 318

Bimetal temperature switches with reset hysteresis ≤ 25 K

Connector bayonet 10SL plastic

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number
9/16" - 18 UNF / 19	15 mm	50°C	normally open	≤ 20 K	potential free	420 186
9/16" - 18 UNF / 19	15 mm	60°C	normally closed	≤ 20 K	potential free	420 224
9/16" - 18 UNF / 19	15 mm	70°C	normally closed	≤ 15 K	potential free	420 190
9/16" - 18 UNF / 19	15 mm	100°C	normally open	≤ 20 K	potential free	420 353
9/16" - 18 UNF / 19	15 mm	120°C	normally open	≤ 20 K	potential free	420 187
9/16" - 18 UNF / 19	15 mm	150°C	normally open	≤ 20 K	potential free	420 191
3/4" - 16 UNF / 22	15 mm	100°C	normally open	≤ 20 K	potential free	420 189

Connector minitimer 2,8 x 0,8

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number
M 14 x 1,5 / 19	18 mm	50°C	normally closed	≤ 20 K	potential free	422 322

ORDER NUMBER OVERVIEW

Bimetal temperature switches with reset hysteresis ≤ 25 K

Connector blade terminal 6,3 x 0,8

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Order number	
M 14 x 1,5 / 19	15 mm	50°C	normally closed	≤ 20 K	potential free	421 099	1.
M 14 x 1,5 / 19	15 mm	70°C	normally open	≤ 20 K	potential free	421 079	1.
M 14 x 1,5 / 19	15 mm	95°C	normally open	≤ 20 K	potential free	421 077	1.
M 14 x 1,5 / 19	15 mm	95°C	normally closed	≤ 20 K	potential free	420 133	1.
M 14 x 1,5 / 19	15 mm	100°C	normally open	≤ 20 K	potential free	420 166	1.
M 14 x 1,5 / 19	15 mm	110°C	normally open	≤ 20 K	potential free	420 221	1.
M 14 x 1,5 / 19	15 mm	115°C	normally closed	20 K	potential free	422 230	1.
M 14 x 1,5 / 19	15 mm	120°C	normally open	≤ 20 K	potential free	420 155	1.
M 14 x 1,5 / 19	12 mm	130°C	normally closed	≤ 30 K	potential free	421 067	2.
M 16 x 1,5 / 19	15 mm	50°C	normally closed	≤ 20 K	potential free	421 087	1.
R 1/2" / 22	15 mm	95°C	normally closed	≤ 20 K	potential free	422 314	1.

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Cable connection

Thread/HEX	thermal conductivity probe	Switch point	Function	Hysteresis	Electric potential	Cable length	Cable connection type	Order number	
M 14 x 1,5 / 27	11 mm	50°C	normally open	≤ 15 K	potential free	1300mm	1*	421 096	1.
M 14 x 1,5 / 27	11 mm	70°C	normally open	5 K	potential free	315mm	3*	420 926	2.
M 14 x 1,5 / 27	11 mm	70°C	normally open	≤ 20 K	potential free	1300mm	1*	421 097	1.
M 14 x 1,5 / 27	13 mm	80°C	normally open	≤ 20 K	potential free	1300mm	1*	420 149	1.
M 14 x 1,5 / 27	13 mm	100°C	normally closed	≤ 20 K	potential free	3000mm	1*	422 182	1.
M 14 x 1,5 / 27	6 mm	110°C	normally open	≤ 20 K	potential free	315mm	3*	420 206	2.
M 14 x 1,5 / 27	4 mm	120°C	normally open	≤ 20 K	potential free	320mm	2*	420 182	3.
M 14 x 1,5 / 27	18 mm	120°C	normally open	≤ 20 K	potential free	315mm	3*	422 841	2.

1* Cable with flying leads
2* Cable with Deutsch connector DT04-2P
3* Cable with Deutsch connector DT06-2S

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