

Mechanical Temperature Switches Catalogue

Mechanical Temperature Switches



Overview

Control
Control
every move

Barksdale[®]
CONTROL PRODUCTS
CRANE Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

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Overview



Model	MT1H	T2H	ML1H
Micro switch	H, M, GH, GM, S, G (RD)	H, M, GH, GM, S, RD	H, M, GH, GM, S, G (RD)
Available with manual reset	yes	yes, but only with high circuit S2	yes
Set points	1	2	1
Adjustment ranges	-45 °C...+66 °C to +160 °C... +316 °C	-45 °C...+66 °C to +160 °C... +316 °C	-45 °C...+24 °C to +66 °C... +232 °C
Temperature sensor material	304 stainless steel	304 stainless steel	Brass/copper, version S: stainless steel
Temperature sensor type	Capillary, 1.8 m long (3.6 and 7.5 m)	Capillary, 1.8 m long (3.6 and 7.5 m)	Sensor, local mount type
Housing material	Anodized die-cast aluminium	Anodized die-cast aluminium	Anodized die-cast aluminium
Protection class	IP65, NEMA 4 / 13	IP65, NEMA 4 / 13	IP65, NEMA 4 / 13

Overview



Model	L2H	L1X	T1X / T2X
Micro switch	H, M, GH, GM, S, RD	H, M, GH, GM, S	H, M, GH, GM, S
Available with manual reset	yes, but only with high circuit S2	no	no
Set points	2	1	1 or 2
Adjustment ranges	-45 °C...+24 °C to +66 °C... +232 °C	-45 °C...+24 °C to +66 °C... +232 °C	-45 °C...+66 °C to +160 °C... +316 °C
Temperature sensor material	Brass/copper, version S: stainless steel	Brass/copper, version S: stainless steel	304 stainless steel
Temperature sensor type	Sensor, local mount type	Sensor, local mount type	Capillary, 1.8 m long (3.6 and 7.5 m)
Housing material	Anodized die-cast aluminium	Painted die-cast aluminium	Painted die-cast aluminium
Protection class	IP65, NEMA 4 / 13	IP65, NEMA 4 / 7 / 9	IP65, NEMA 4 / 7 / 9

Overview



Model	T9692X
Micro switch	EE, GH
Available with manual reset	no
Set points	1 resp. 2
Adjustment ranges	-23 °C...+43 °C to +82 °C...+165 °C
Temperature sensor material	Stainless steel
Temperature sensor type	Capillary, 1.8 m long (3.6 and 7.5 m) or sensor, local mount type
Housing material	Stainless steel
Protection class	IP65, NEMA 4X, 7 & 9

Mechanical temperature switches

MT1H

with capillary

Features

- ▶ Single switch with remote sensor
- ▶ Explosion proof housing
- ▶ Terminal clip and set point adjustment in °C and °F under tamper protected cover
- ▶ Protection class: IP65, NEMA 4 / 13
- ▶ Optional:
 - Disconnection with manual reset, G (RD)-micro switch
 - Adjustable hysteresis (dead band), S-micro switch
- ▶ Approvals: Ex ia, UL, CSA, SIL2 (IEC 61508)

Adjustment ranges

-45 °C...+66 °C to +160 °C...+316 °C

Applications

Temperature monitoring in machine and machine tool industry, shipbuilding, railcars, power plants, antifreeze, heating systems, compressor monitoring



Technical Data

Housing material:	Die-cast aluminium, anodized
Temperature sensor material:	304 stainless steel (1.4301)
Temperature sensor type:	Capillary, 1.8 m long (6 foot) (optional 3.6 m and 7,5 m) (12 foot and 25 foot), armoured If not equipped with thermowell the sensor may only be used up to 21 bar max.
Operation pressure: without thermowell with thermowell	max 21 bar (max. 300 psi) see page "Accessories" table 1.4
Operation temperature: Housing:	-40°C... +75°C (-40°F...167°F) except temp. code 601, 603;
Sensor:	-18°C...+75°C (0°F...167°F) see table "Adjustment range" (Sensor temperature limits)
Electrical values:	All models are equipped with SPDT contacts
Micro switch type:	H, M, GH, GM, G (RD), S

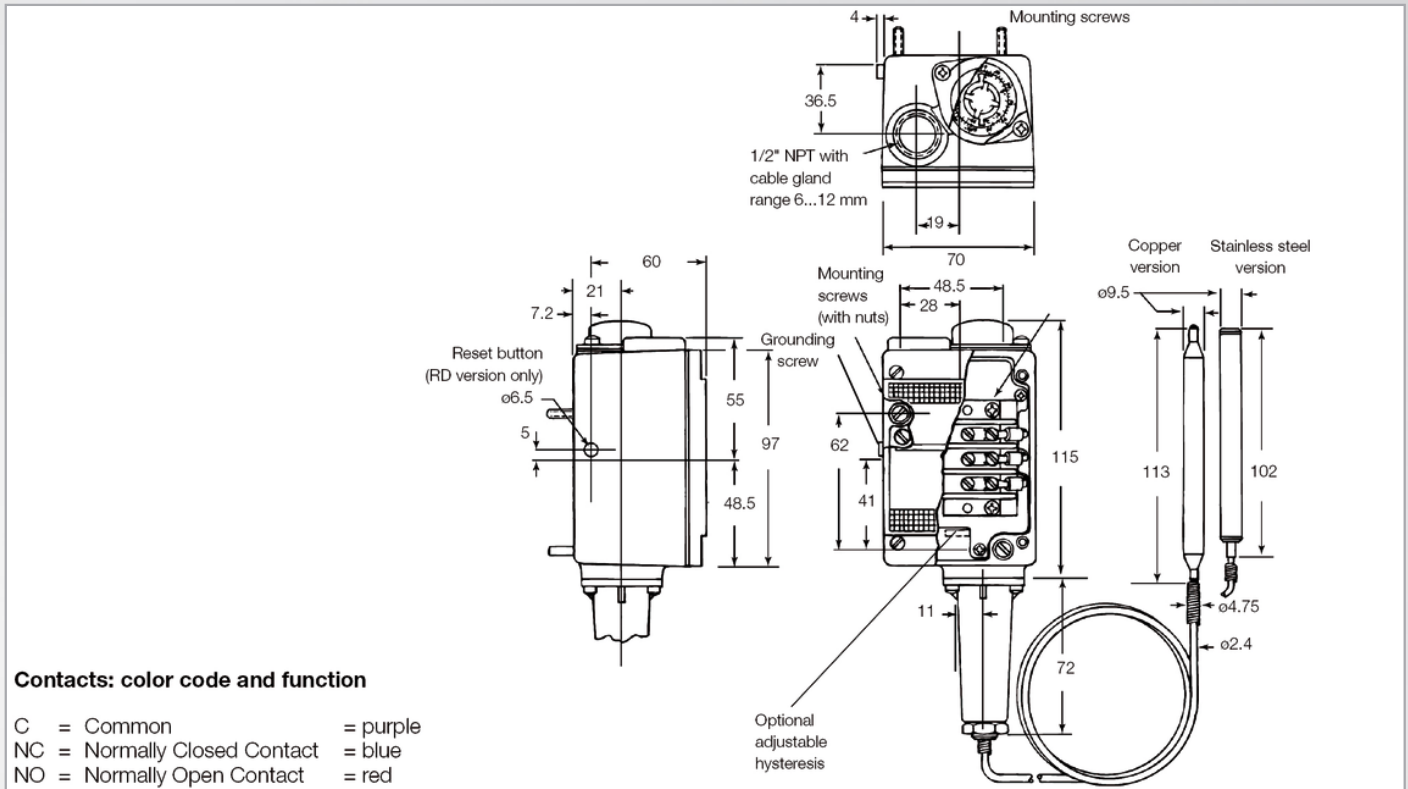
Electrical connection:	1/2" NPT female, internal screw terminal, cable gland in PA, for cable size 6...12 mm is included
Protection class:	IP65 , NEMA 4 / 13
Set point adjustment:	Turn adjustment knob clockwise to increase the actuation point
Standards:	The equipment is in conformity with the following harmonised European standards: EN 60014 1977 + A1 to A4 and EN 500120 1977 + A1
Intrinsic safety:	The switches are also suitable for intrinsically safe applications. In this case we recommend gold contacts. Add "Exi" in case of ordering. The following max. values are valid when using these switches: U _{max} = 28 V I _{max} = 50 mA
Approvals:	Ex ia, UL, CSA
Weight:	1.0 kg approx.

Adjustment ranges

Code adjustment range	Sensor temperature limits (°C)	Adjustment range (°C)	Hysteresis (°C)* for micro switch			
			H, GH	M, GM	S	G (RD)
						2.8...manual
154	-73 ... +93	-45... +66	0.5... 1.1	1.1... 2.2	2.2... 8.3	
251	-73 ... +149	+10... +121	0.5... 1.1	1.1... 2.2	2.2... 8.3	
351	-73 ... +205	+66... +177	0.5... 1.1	1.1... 2.2	2.2... 8.3	
601	-18 ... +343	+149... +227	1.1... 2.2	2.2... 3.3	3.9... 13.9	
603	-18 ... +343	+160...+316	1.1... 2.2	2.2... 3.3	3.9... 13.9	

* Dependent on medium

Dimensions (mm / inch)



Electrical Ratings

Micro switch	Special features	Volt AC 50/60 Hz	Ind. load A	Res. load A	Volt DC	Ind. load A	Res. load A	Comments
H	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	6 to 28	0.50	0.5	Small hysteresis; High AC / low DC loads
M	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	12 24 250	5.00 1.00 0.25	15.0 2.0 0.4	Medium hysteresis; High AC and DC loads
GH	Micro switch with gold contacts for low voltage and low current (e. g. "Exi")	125	1	1	24	1.00	1.00	Small hysteresis
GM		30	0.1	0.1	30	0.10	0.1	Medium hysteresis
S	Micro switch with silver contacts	480	15	15	125	0.05	0.4	Adjustable hysteresis
G (RD)	Micro switch with silver contacts	480	10	10	125	0.4	0.75	Manual reset

Hermetically sealed micro switch (HMT1H) on request

Sensor lengths / Options

Sensor lengths		Options	
S-A	1.8 m, armoured, SS (6 foot)	RD	Manual reset
S-12-A	3.6 m, armoured, SS (12 foot)	EXI	for intrinsically safe application, Ex ia
S-25-A	7.5 m, armoured, SS (25 foot)		

Order Code

Example for order number

Type	Micro switch	Code Adjustment range	Sensor length	Options
MT1H	- GH	- 251	- S-A	- EXI

Your order number

MT1H	-	-	-	-
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Mechanical temperature switches

T2H

with capillary

Features

- ▶ Dual switch with remote sensor and explosion proof housing
- ▶ Terminal clip integrated, set point adjustment in °C and °F under tamper protected cover
- ▶ Protection class: IP65, NEMA 4 / 13
- ▶ For use as two position controller
- ▶ Optional for high circuit S2:
 - Disconnection with manual reset, RD-micro switch
 - Adjustable hysteresis (dead band), S-micro switch
 - The low circuit S1 can also be used for max. or min. monitoring or for sensor monitoring
- ▶ Approvals: Ex ia, UL, CSA, SIL2 (IEC 61508)

Adjustment ranges

-45 °C...+66 °C to +160 °C...+316 °C

Applications

Temperature monitoring and control in industry, shipbuilding, railcars



Technical Data

Housing material:	Die-cast aluminium, anodized
Temperature sensor material:	304 stainless steel (1.4301)
Temperature sensor type:	Capillary, 1.8 m long (6 foot) (optional 3.6 m and 7.5 m) (12 and 25 foot), armoured If not equipped with thermowell the sensor may only be used up to 21 bar max.
Operation pressure: without thermowell: with thermowell:	max. 21 bar (max. 300 psi) see page "Accessories" table 1.4
Operation temperature: Housing: Sensor:	-40°C...+75°C (-40°F...167°F) except temp. code 601, 603: -18°C...+75°C (0°F...167°F) see table "Adjustment range" (Sensor temperature limits)
Electrical values:	All models are equipped with SPDT contacts
Micro switch type:	H, M, GH, GM, S, RD

Electrical connection:	3/4" NPT female, internal screw terminal, cable gland in PA in PA, for cable size 6...12 mm is included
Protection class:	IP65, NEMA 4 / 13
Set point adjustment:	Turn adjustment knob clockwise to increase the actuation point
Standards:	The equipment is in conformity with the following harmonised European standards: EN 60014 1977 + A1 to A4 and EN 500120 1977 + A1
Intrinsically safety:	The switches are also suitable for intrinsically safe applications. In this case we recommend gold contacts. Add "Exi" in case of ordering. The following max. values are valid when using these switches: U _{max} = 28 V I _{max} = 50 mA
Approvals:	Ex ia, UL, CSA
Weight:	1.5 kg approx.

Adjustment ranges

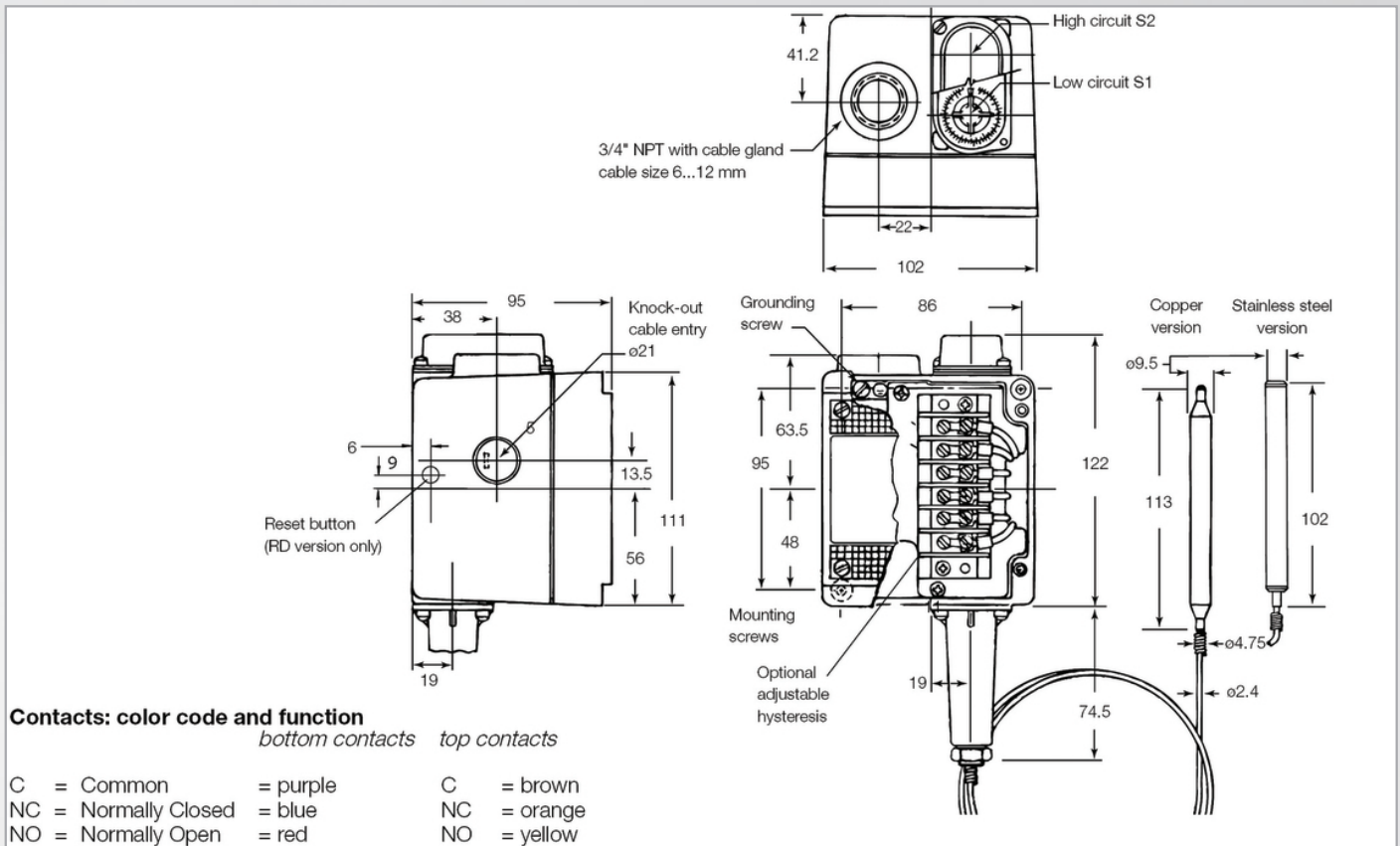
Code adjustment range	Sensor temperature limits (°C)	Adjustment range (°C)	Hysteresis (°C)* for micro switch			
			H, GH	M, GM	S	RD
						2.8...manual
154	-73 ... +93	-45... +66	0.5... 1.1	1.1... 2.2	2.2... 8.3	
251	-73 ... +149	+10... +121	0.5... 1.1	1.1... 2.2	2.2... 8.3	
351	-73 ... +205	+66... +177	0.5... 1.1	1.1... 2.2	2.2... 8.3	
601	-18 ... +343	+149... +227	1.1... 2.2	2.2... 3.3	3.9... 13.9	
603	-18 ... +343	+160...+316	1.1... 2.2	2.2... 3.3	3.9... 13.9	

* Dependent on medium

Mechanical temperature switches

T2H

Dimensions (mm / inch)



Electrical Ratings

Micro switch	Special features	Volt AC 50/60 Hz	Ind. load A	Res. load A	Volt DC	Ind. load A	Res. load A	Comments
H	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	6 to 28	0.50	0.5	Small hysteresis; High AC / low DC loads
M	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	12 24 250	5.00 1.00 0.25	15.0 2.0 0.4	Medium hysteresis; High AC and DC loads
GH	Micro switch with gold contacts for low voltage and low current (e. g. "Exi")	125	1	1	24	1.00	1.00	Small hysteresis
GM		30	0.1	0.1	30	0.10	0.1	Medium hysteresis
S	Micro switch with silver contacts	480	15	15	125	0.05	0.4	Adjustable hysteresis
RD *	Micro switch with silver contacts	480	10	10	125	0.4	0.75	Manual reset (S2 only)

* Please note: enter "RD" in "Option" and the micro switch for S1 (H, M, GH or GM) in "Micro switch" when placing your order.
Hermetically sealed micro switch (HT2H) on request

Sensor lengths / Options

Sensor lengths		Options
S-A	1.8 m, armoured, SS (6 foot)	RD Manual reset (S2 only)
S-12-A	3.6 m, armoured, SS (12 foot)	EXI for intrinsically safe application, Ex ia
S-25-A	7.5 m, armoured, SS (25 foot)	

Order Code

Example for order number

Type	Micro switch	Code Adjustment range	Sensor length	Options
T2H	- GH	- 251	- S-A	- EXI

Your order number

T2H	-	-	-	-
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Mechanical temperature switches

ML1H

Local mount type

Features

- ▶ Local mount type single switch
- ▶ Explosion proof housing
- ▶ Terminal clip and set point adjustment in °C and °F under tamper protected cover
- ▶ Protection class: IP65, NEMA 4 / 13
- ▶ Optional:
 - Disconnection with manual reset, G (RD)-micro switch
 - Adjustable hysteresis (switch-back difference), S-micro switch
- ▶ Thermowell in stainless steel and brass
3/4" NPT male thread
- ▶ Option thermowell: W = Brass
WS = Stainless steel SS316Ti, 1.4571
- ▶ Approvals: Ex ia, UL, CSA, SIL2 (IEC 61508)

Adjustment ranges

-45 °C...+24 °C to +66 °C...+232 °C

Applications

Temperature monitoring in machine and machine tool industry, shipbuilding, power plants, antifreeze, heating systems, compressor monitoring



Technical Data

Housing material:	Die-cast aluminium, anodized
Process connection:	Standard 1/2" NPT male, option W/ WS 3/4" NPT male
Temperature sensor material:	Standard: brass / copper, version S: stainless steel (SS304 / 1.4301) for pressure values refer to table in chap. Accessories
Operation pressure: without thermowell: with thermowell:	max. 21 bar (max. 300 psi) see page "Accessories" table 1.4
Operation temperature: Housing: Sensor:	-40°C...+75°C (-40°F...167°F) except temperature code 454: -18°C...+75°C (0°F...167°F) see table "Adjustment range" (Sensor temperature limits)
Electrical values:	All models are equipped with SPDT contacts
Micro switch type:	H, M, GH, GM, S, G (RD)

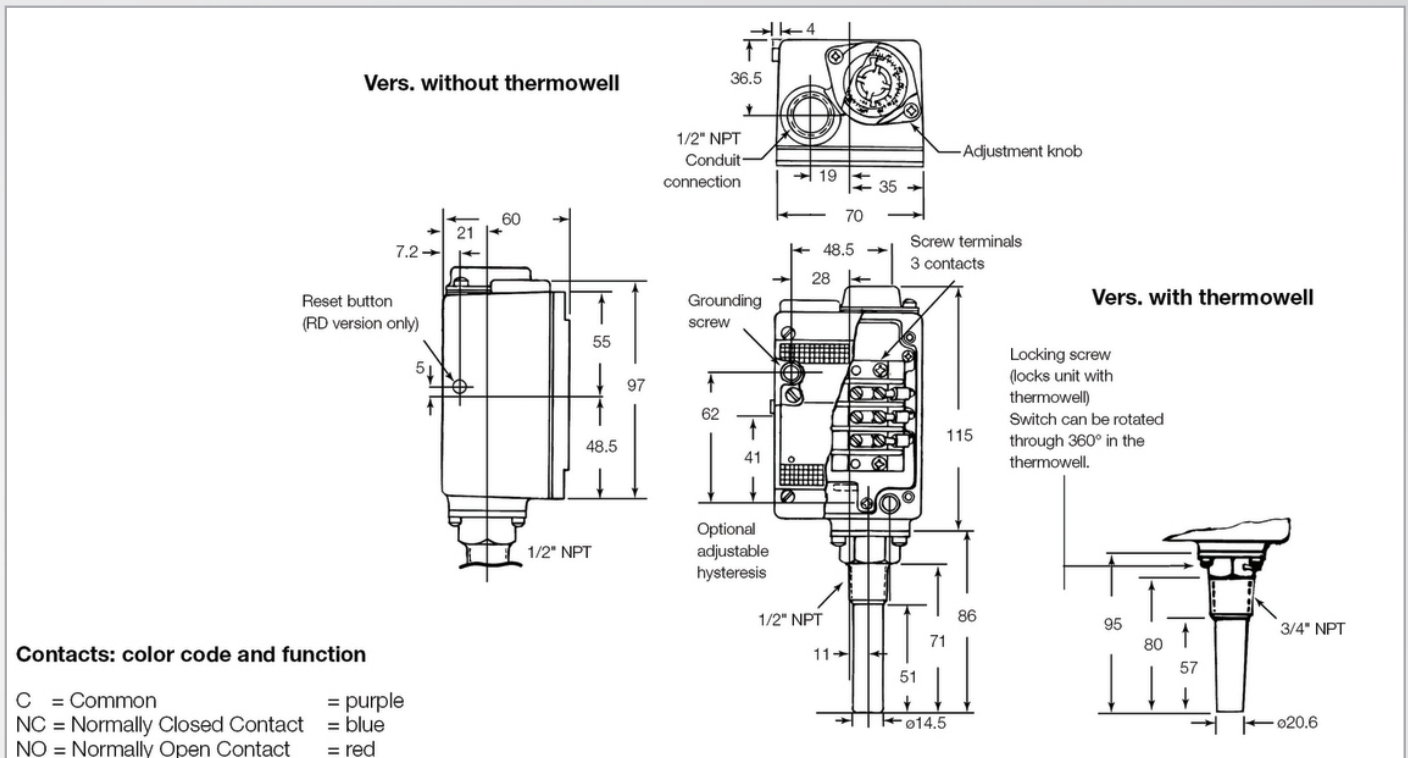
Electrical connection:	1/2" NPT female, internal screw terminal, cable gland in PA, for cable size 6...12 mm is included
Protection class:	IP65, NEMA 4 / 13
Set point adjustment:	Turn adjustment knob clockwise to increase the actuation point
Standards:	The equipment is in conformity with the following harmonised European standards: EN 60014 1977 + A1 to A4 and EN 500120 1977 + A1
Intrinsic safety:	The switches are also suitable for intrinsically safe applications. In this case we recommend gold contacts. Add "Exi" in case of ordering. The following max. values are valid when using these switches: U _{max} = 28 V I _{max} = 50 mA
Approvals:	Ex ia, UL, CSA
Weight:	1.0 kg approx.

Adjustment ranges

Code/adjustment range	Sensor temperature limits (°C)	Adjustment range (°C)	Hysteresis (°C)* for micro switch			
			H, GH	M, GM	S	G (RD)
						2.8...manual
201	-73 ... +121	-45... +24	0.5... 1.6	1.7... 3.3	3.3... 11.2	
202	-73 ... +121	-9... +60	0.5... 1.6	1.7... 3.3	3.3... 11.2	
203	-73 ... +121	+24... +93	0.5... 1.6	1.7... 3.3	3.3... 11.2	
204	-73 ... +121	-45... +93	0.5... 1.6	1.7... 3.3	3.3... 11.2	
351	-73 ... +205	+38... +107	0.5... 1.6	1.7... 3.3	3.3... 11.2	
354	-73 ... +205	+38... +177	0.5... 1.6	1.7... 3.3	3.3... 11.2	
454	-18 ... +260	+66... +232	1.6... 3.3	3.3... 5.0	5.5... 16.8	

* Dependent on medium

Dimensions (mm / inch)



Electrical Ratings

Micro switch	Special features	Volt AC 50/60 Hz	Ind. Load A	Res.load A	Volt DC	Ind load A	Res. Load A	Comments
H	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	6 to 28	0.50	0.5	Small hysteresis; High AC / low DC loads
M	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	12 24 250	5.00 1.00 0.25	15.0 2.0 0.4	Medium hysteresis; High AC and DC loads
GH	Micro switch with gold contacts for low voltage and low current (e. g. "Exi")	125	1	1	24	1.00	1.00	Small hysteresis
GM		30	0.1	0.1	30	0.10	0.1	Medium hysteresis
S	Micro switch with silver contacts	480	15	15	125	0.05	0.4	Adjustable hysteresis
G	Micro switch with silver contacts	480	10	10	125	0.4	0.75	Manual reset (RD)

Hermetically sealed micro switch (HML1H) on request

Sensor material / Options

Sensor material		Options 1		Options 2	
---	Brass/copper	W	Thermowell of brass	RD	Manual reset
S	Stainless steel	WS	Thermowell of SS (1.4571, SS316 Ti)	EXI	for intrinsically safe application, Ex ia

Order Code

Example for order number

Type	Micro switch	Code Adjustment range	Sensor length*	Option 1	Option 2
ML1H	GH	202	S	WS	EXI

* Brass/cooper, option: S = Stainless steel

Your order number

ML1H	-		-		-	
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Mechanical temperature switches

L2H

Local mount type

Features

- ▶ Local mount type dual switch with explosion proof housing
- ▶ Terminal clip integrated, set point adjustment in °C and °F under tamper protected cover
- ▶ Protection class: IP65, NEMA 4 / 13
- ▶ For use as two-position controller optionally with one micro switch with adjustable hysteresis for temperature control
- ▶ The second contact can also be used for max. or min. monitoring for for sensor monitoring
- ▶ Optional for high circuit S2:
 - Disconnection with manual reset, RD-micro switch
 - Adjustable hysteresis (deadband), S-micro switch
 - Option thermowell: W = Brass
WS = Stainless steel SS316Ti, 1.4571
- ▶ Approvals: Ex ia, UL, CSA, SIL2 (IEC 61508)

Adjustment ranges

-45 °C...+24 °C to +66 °C...+232 °C

Applications

Temperature monitoring and control in industry, shipbuilding, railcars



Technical Data

Housing material:	Die-cast aluminium, anodized
Process connection:	Standard 1/2" NPT male, option W/WS 3/4" NPT male
Temperature sensor material:	Standard: brass / copper, version S: stainless steel (SS304 / 1.4301) for pressure values refer to table in chap. Accessories
Operation pressure: without thermowell: with thermowell:	max. 21 bar (max 300 psi) see page "Accessories" table 1.4
Operation temperature: Housing: Sensor:	-40°C...+75°C (-40°F...167°F) except temperature code 454: -18°C...+75°C (0°F...167°F) see table "Adjustment range" (Sensor temperature limits)
Electrical values:	All models are equipped with SPDT contacts
Micro switch type:	H, M, GH, GM, S, RD

Electrical connection:	3/4" NPT female, internal screw terminal, cable gland in PA, for cable size 6...12 mm is included
Protection class:	IP65, NEMA 4 / 13
Set point adjustment:	Turn adjustment knob clockwise to increase the actuation point
Standards:	The equipment is in conformity with the following harmonised European standards: EN 60014 1977 + A1 to A4 and EN 500120 1977 + A1
Intrinsic safety:	The switches are also suitable for intrinsically safe applications. In this case we recommend gold contacts. Add "Exi" in case of ordering. The following max. values are valid when using these switches: Umax = 28 V I _{max} = 50 mA
Approvals:	Ex ia, UL, CSA
Weight:	1.5 kg approx.

Adjustment ranges

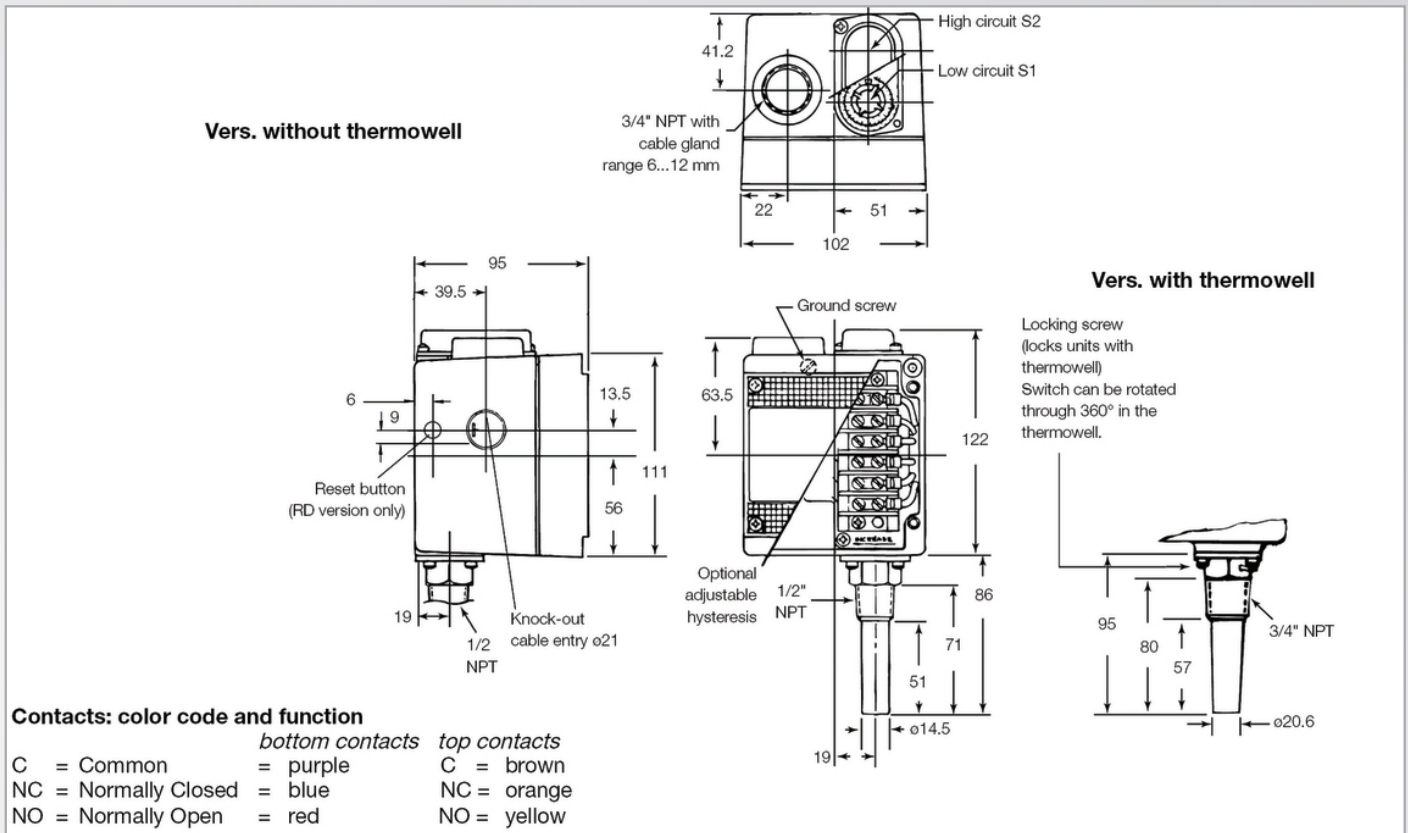
Code adjustment range	Sensor temperature limits (°C)	Adjustment range (°C)	Hysteresis (°C)* for micro switch			
			H, GH	M, GM	S	RD
						2.8...manual
201	-73 ... +121	-45... +24	0.5... 1.6	1.6... 3.3	3.3... 11.2	
202	-73 ... +121	-9... +60	0.5... 1.6	1.6... 3.3	3.3... 11.2	
203	-73 ... +121	+24... +93	0.5... 1.6	1.6... 3.3	3.3... 11.2	
204	-73 ... +121	-45... +93	0.5... 1.6	1.6... 3.3	3.3... 11.2	
351	-73 ... +205	+38... +107	0.5... 1.6	1.6... 3.3	3.3... 11.2	
354	-73 ... +205	+38... +177	0.5... 1.6	1.6... 3.3	3.3... 11.2	
454	-18 ... +260	+66... +232	1.6... 3.3	3.3... 5.0	5.5... 16.8	

* Dependent on medium

Mechanical temperature switches

L2H

Dimensions (mm / inch)



Electrical Ratings

Micro switch	Special features	Volt AC 50/60 Hz	Ind. load A	Res. load A	Volt DC	Ind. load A	Res. load A	Comments
H	Micro switch with silver contacts	125	10	10	6 to 28	0.50	0.5	Small hysteresis; High AC / low DC loads
		250	10	10				
		480	3	3				
M	Micro switch with silver contacts	125	10	10	12 to 250	5.00 to 0.25	15.0 to 0.4	Medium hysteresis; High AC and DC loads
		250	10	10				
		480	3	3				
GH	Micro switch with gold contacts for low voltage and low current (e. g. "Exi")	125	1	1	24 to 30	1.00 to 0.1	1.00 to 0.1	Small hysteresis to Medium hysteresis
GM		30	0.1	0.1				
S	Micro switch with silver contacts	480	15	15	125	0.05	0.4	Adjustable hysteresis
RD *	Micro switch with silver contacts	480	10	10	125	0.4	0.75	Manual reset (S2 only)

* Please note: enter "RD" in "Option" and the 2nd micro switch (H, M, GH or GM) in "Micro switch" when placing your order.
Hermetically sealed micro switch (HL2H) on request

Sensor material / Options

Sensor material		Options 1		Options 2	
---	Brass/copper	W	Thermowell of brass	RD	Manual reset (S2 only)
S	Stainless steel	WS	Thermowell of SS (1.4571, SS316 Ti)	EXI	for intrinsically safe application, Ex ia

Order Code

Example for order number

Type	Micro switch	Code Adjustment range	Sensor material *	Option 1	Option 2
L2H	GH	202	S	WS	EXI

* : Brass/copper, option: S = Stainless steel

Your order number

L2H	-		-		-	
-----	---	--	---	--	---	--

Mechanical temperature switches

L1X

Local mount type for hazardous areas

Features

- ▶ Local mount type single switch with explosion proof housing
- ▶ Terminal clip integrated, set point adjustment in °C and °F under tamper protected cover
- ▶ Protection class: IP65, NEMA 4 / 7 / 9
- ▶ Optional:
 - Adjustable hysteresis (deadband), S-micro switch
 - Option thermowell: W = Brass
WS = Stainless steel SS316Ti, 1.4571
- ▶ Approvals: Ex d, Ex ia, UL, CSA, SIL2 (IEC 61508)

Adjustment ranges

-45 °C...+24 °C to +66 °C...+232 °C

Applications

Temperature monitoring and control in industry, shipbuilding, railcars



Technical Data

Housing material:	Die-cast aluminium, painted
Process connection:	Standard 1/2" NPT male, option W/ WS 3/4" NPT male
Temperature sensor material:	Standard: brass / copper, version S: stainless steel (SS304 / 1.4301) for pressure values refer to table in chap. Accessories
Operation pressure: without thermowell with thermowell	max. 21 bar (max. 300 psi) see page "Accessories" table 1.4
Operation temperature: Housing:	-40°C... + 75°C (-40°F...167°F) except temperature code 454: -18°C...+75°C (0°F...167°F)
Sensor:	see table "Adjustment range" (Sensor temperature limits)
Electrical values:	All models are equipped with SPDT contacts
Micro switch type:	H, M, GH, GM, S

Electrical connection:	1/2" NPT female, internal screw terminal, cable gland in PA, for cable size 6...12 mm is included
Protection class:	IP65, NEMA 4 / 7 / 9
Set point adjustment:	Turn adjustment knob clockwise to increase the actuation point
Standards:	The equipment is in conformity with the following harmonised European standards: EN 60014 1977 + A1 to A4 and EN 500120 1977 + A1
Intrinsically safe:	The switches are also suitable for intrinsically safe applications. In this case we recommend gold contacts. Add "Exi" in case of ordering. The following max. values are valid when using these switches: Umax = 28 V Imax = 50 mA
Approvals:	Ex d, Ex ia, UL, CSA
Weight:	2.0 kg approx.

Adjustment ranges

Code adjustment range	Sensor temperature limits (°C)	Adjustment range (°C)	Hysteresis (°C)* for micro switch		
			H, GH	M, GM	S
201	-73 ... +121	-45... +24	0.5... 1.6	1.6... 3.3	3.3... 11.2
202	-73 ... +121	-9... +60	0.5... 1.6	1.6... 3.3	3.3... 11.2
203	-73 ... +121	+24... +93	0.5... 1.6	1.6... 3.3	3.3... 11.2
204	-73 ... +121	-45... +93	0.5... 1.6	1.6... 3.3	3.3... 11.2
351	-73 ... +205	+38... +107	0.5... 1.6	1.6... 3.3	3.3... 11.2
354	-73 ... +205	+38... +177	0.5... 1.6	1.6... 3.3	3.3... 11.2
454	-18 ... +260	+66... +232	1.6... 3.3	3.3... 5.0	5.5... 16.8

* dependent on medium

Compact explosion proof temperature switch

T9692X

Features

- Compact design
- NEMA 4X, 7 & 9
- SPDT and DPDT switch
- ATEX approved
- Class I Div I
- Local mount or capillary type
- Panel mount capability
- 316 stainless steel
- NACE compliant
- Armored capillary

Adjustment ranges

-23 °C...+43 °C bis 82 °C...+165 °C

Applications

Offshore,
Chemical plants & refineries,
Compressor skids,
Instrument panels,
Hazardous location applications



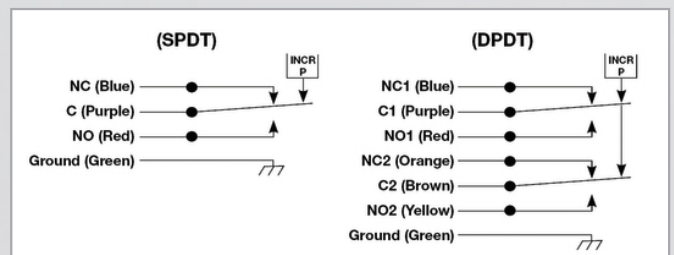
Technical Data

Repeatability:	±3% of full scale
Typical life:	1 million cycles
Switch type:	SPDT, snap action, Class EE, simulated DPDT (optional) with 2 SPDT
Electrical ratings:	11 A 125/250 VAC 5 A 30 VDC (EE class)
Material:	Capillary & armor: 316 stainless steel (1.4401/1.4436) Housing: 316 stainless steel (1.4401/1.4436) Sensor: stainless steel
Electrical connection:	1/2" NPT male conduit connection 18 AWG, 18" (450 mm) free leads
Protection class:	NEMA 4X, 7 & 9

Approvals:	
ATEX:	CE 0081 LCIE 08 ATEX 6074X Ex II 2 G Ex d IIC T6, -40 °C ≤ T _{amb} ≤ 60 °C
UL:	Listed 366S, Class: I, Groups: A, B, C, D, -25 °C ≤ T _{amb} ≤ 60 °C
CSA:	Class: I, Groups: B, C, D, -40 °C ≤ T _{amb} ≤ 60 °C
Ambient temperature:	CSA & ATEX: -40 °C to 60 °C (-40 °F to 140 °F) UL: -25 °C to 60 °C (-13 °F to 140 °F)
EMI/RFI (EMC):	EN55011
Vibration resistance:	10g 10-500 Hz, MIL-STD 202 °F
Shock resistance:	50g 11 ms, MIL-S-901C
Set point adjustment:	Adjustment knob can be locked by means of setscrew (hexagon socket SW 1.5). Set point is increased by turning the adjustment knob clockwise.
Weight:	max. 1.4 kg

Switching and Connection Diagram

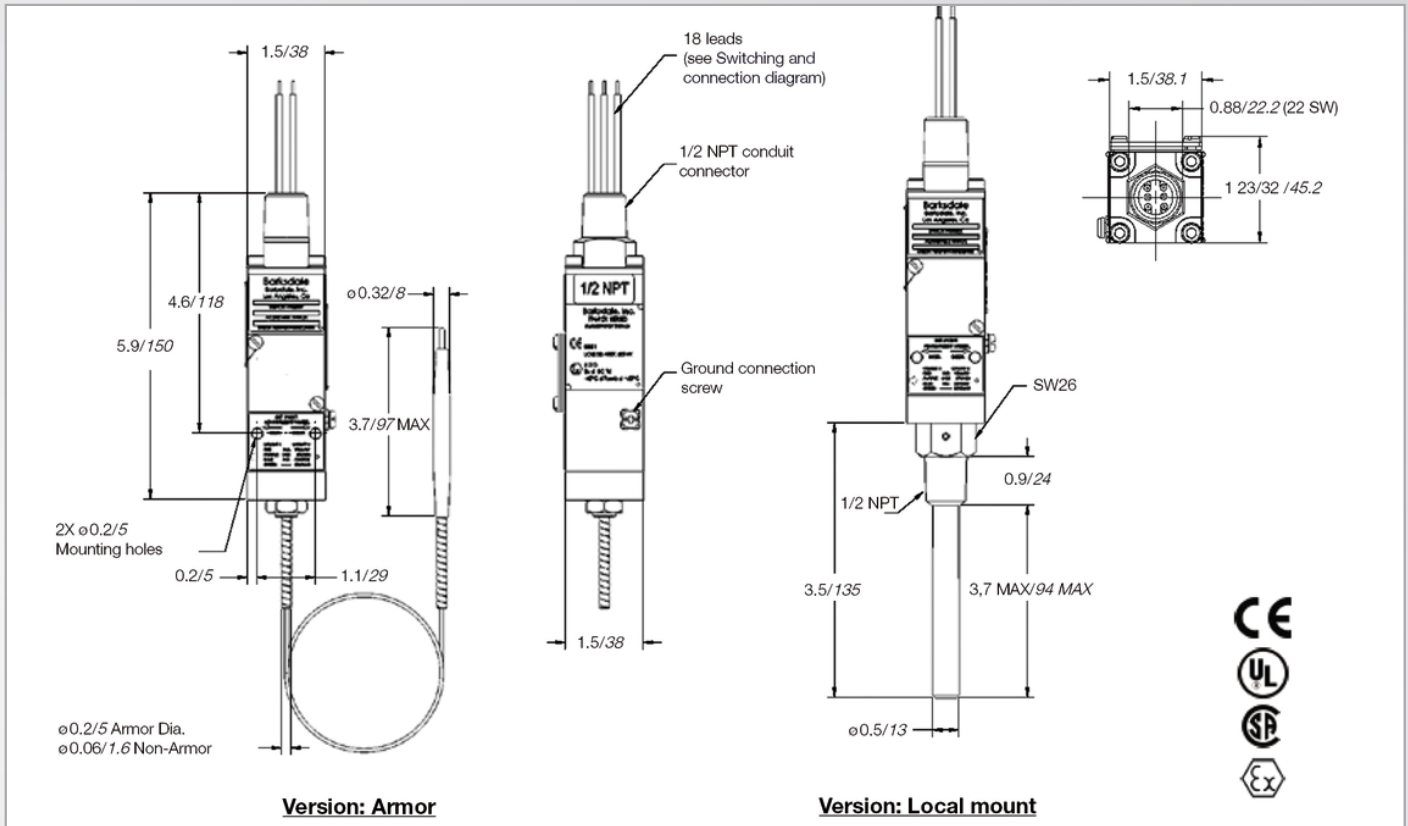
---	Circuit #1	Circuit #2
Normally Closed/NC	Blue	Orange
Common	Purple	Brown
Normally Open/NO	Red	Yellow
Ground	Green	



Compact explosion proof temperature switch

T9692X

Dimensions (mm / inch)



Product Configurator

Example T9692X -1 EE -1 -72

Base Configurator

T9692X Temperature switch

Switch contact

-1	SPDT
-2	DPDT (simulated with 2 SPDT)

Micro switch

EE	Silver contacts, 11 A, 125V/250 VAC; 5 A, 30 VDC
GH	Gold contacts, 1 A, 125/250 VAC

Temperature ranges

	Adjustment range	Approx. Deadband ² Actuation value	Max. temperature range	Proof temperature
-1	-10 °F to 110 °F (-23 °C to 43 °C)	5 °F to 30 °F (2,8 °C to 16,7 °C)	-40 °F to 160 °F (-40 °C to 71 °C)	160 °F (71 °C)
-2	95 °F to 220 °F (35 °C to 104 °C)	5 °F to 30 °F (2,8 °C to 16,7 °C)	40 °F to 270 °F (4 °C to 132 °C)	270 °F (132 °C)
-3	180 °F to 330 °F (82 °C to 165 °C)	5 °F to 30 °F (2,8 °C to 16,7 °C)	70 °F to 380 °F (21 °C to 193 °C)	380 °F (193 °C)

¹ Not available in local mount

² Deadband values indicated when used with the "EE" limit switch.

Options

---	Standard
-A ¹	Stainless steel, armor
-SXXX	with factory set point adjustment
-WXXX	Extra wire length (XXX=inches)

Capillary Length

-72	6 ft (1.8 meters)
-108	9 ft (2.7 meters)
-144	12 ft (3.7 meters)
-1	Local mount

Accessories

Order No.	Description
926-0811	Ex d - Terminal box incl. terminal (drawing 923-1533 on request)
999-0081	Tamper proof cover

Mechanical temperature switches

T1X/T2X

with capillary for hazardous areas

Features

- ▶ Single switch T1X and dual switch T2X with remote sensor
- ▶ Explosion proof housing
- ▶ Terminal clip integrated, set point adjustment in °C and °F under tamper protected cover
- ▶ Protection class: IP65, NEMA 4 / 7 / 9
- ▶ Optional:
 - for T1X: adjustable hysteresis (switch-back difference), S-micro switch
 - Special version for trace heating systems with ratings up to 32 A / 220 V (22/32A / 380 V AC) on request
- ▶ Approvals: Ex d, Ex ia, UL, CSA, SIL2 (IEC 61508)

Adjustment ranges

-45 °C...+66 °C to +160 °C...+316 °C

Applications

Temperature monitoring and control in chemical industry and oil industry, offshore



Technical Data

Housing material:	Die-cast aluminium, painted
Temperature sensor material:	304 stainless steel (1.4301)
Temperature sensor type:	Capillary, 1.8 m long (6 foot) (optional 3.6 m and 7.5 m) (12 and 25 foot), armoured If not equipped with thermowell the sensor may only be used up to 21 bar max.
Operation pressure: without thermowell: with thermowell:	max. 21 bar (max. 300 psi) see page "Accessories" table 1.4
Operation temperature: Housing:	-40°C...+75°C (-40°F...167°F) except temp. code 601, 603:
Sensor:	-18°C...+75°C (0°F...167°F) see table "Adjustment range" (Sensor temperature limits)
Electrical values:	All models are equipped with SPDT contacts.
Micro switch type:	H, M, GH, GM, S

Electrical connection:	From the terminal block through a 1/2" NPT conduit connection (T1X) resp. a 3/4" NPT conduit connection (T2X) outside.
Protection class:	IP65, NEMA 4 / 7 / 9
Set point adjustment:	Turn adjustment knob clockwise to increase the actuation point
Standards:	The equipment is in conformity with the following harmonised European standards: EN 60014 1977 + A1 to A4 and EN 500120 1977 + A1
Intrinsic safety:	The switches are also suitable for inherent safety applications. In this case we recommend gold contacts. Add "Exi" in case of ordering. The following max. values are valid when using these switches: U _{max} = 28 V I _{max} = 50 mA
Approvals:	Ex d, Ex ia, UL, CSA
Weight:	T1X: approx. 2.1 kg; T2X: approx. 2.9 kg

Adjustment ranges

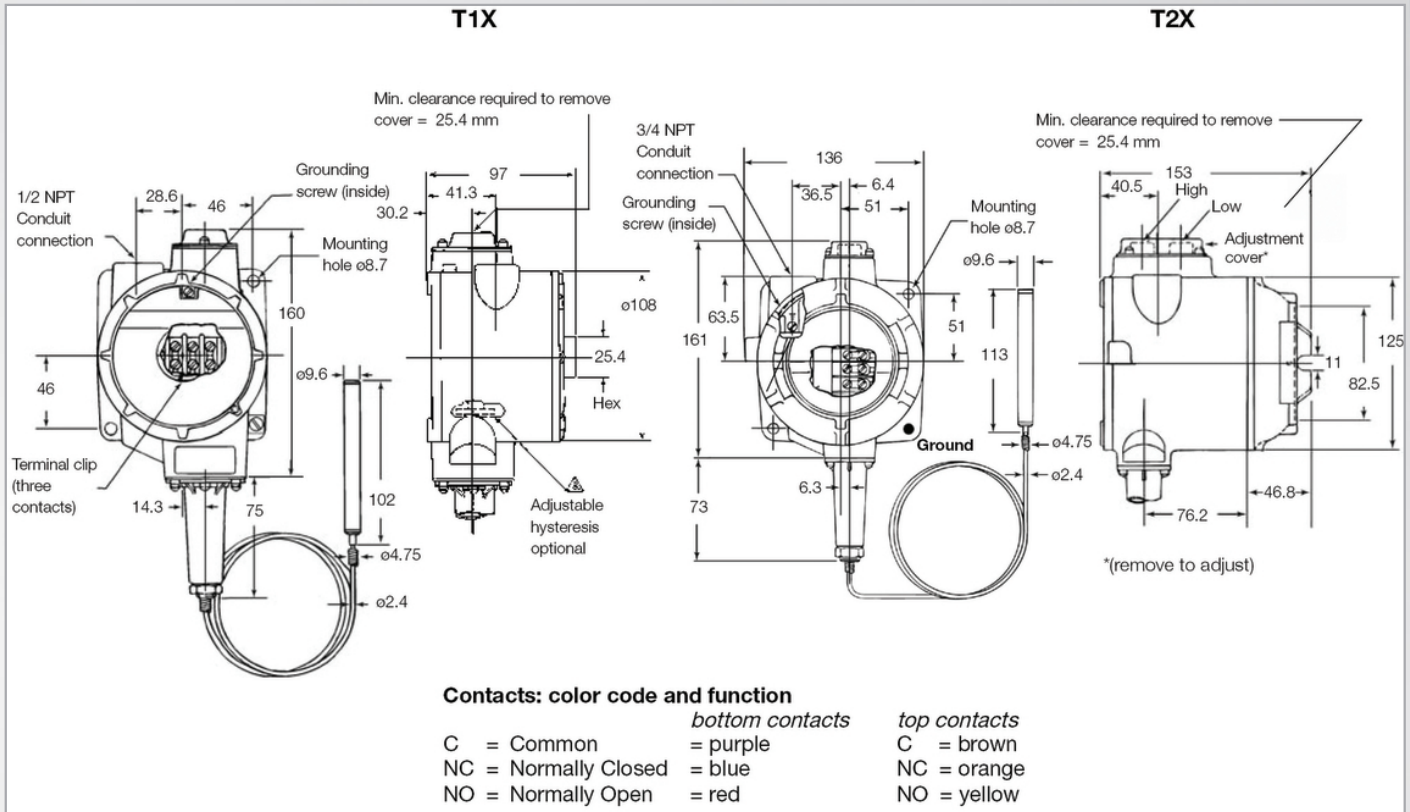
Code adjustment range	Sensor temperature limits (°C)	Adjustment range (°C)	Hysteresis (°C)* for micro switch		
			H, GH	M, GM	S
154	-73 ... +93	-45... +66	0.5... 1.1	1.1... 2.2	2.2... 8.3
251	-73 ... +149	+10... +121	0.5... 1.1	1.1... 2.2	2.2... 8.3
351	-73 ... +205	+66... +177	0.5... 1.1	1.1... 2.2	2.2... 8.3
601	-18 ... +343	+149... +227	1.1... 2.2	2.2... 3.3	1.6... 2.7
603	-18 ... +343	+160... +316	1.1... 2.2	2.2... 3.3	1.6... 2.7

* dependent on medium

Mechanical temperature switches

T1X/T2X

Dimensions (mm / inch)



Electrical Ratings

Micro switch	Special features	Volt AC 50/60 Hz	Ind. load A	Res. load A	Volt DC	Ind. load A	Res. load A	Comments
H	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	6 to 28	0.50	0.5	Small hysteresis; High AC / low DC loads
M	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	12 24 250	5.00 1.00 0.25	15.0 2.0 0.4	Medium hysteresis; High AC and DC loads
GH	Micro switch with gold contacts for low voltage and low current (e.g. "Exi")	125	1	1	24	1.00	1.00	Small hysteresis
GM	Micro switch with gold contacts for low voltage and low current (e.g. "Exi")	30	0.1	0.1	30	0.1	0.1	Medium hysteresis
S	Micro switch with silver contacts	480	15	15	125	0.05	0.4	Adjustable hysteresis

Sensor lengths / Options

Sensor lengths	(short term)	Options	(short term)
S-A	1.8 m, armoured, SS (6 foot)	EXI	for intrinsically safe application, Ex ia
S-12-A	3.6 m, armoured, SS (12 foot)	EX	Ex d protection
S-25-A	7.5 m, armoured, SS (25 foot)		

Order Code

Example for order number

Type	Micro switch	Code Adjustment range	Sensor length	Option				
T1X	-	GH	-	251	-	S-A	-	EXI
T2X								
Your order number								
T_X	-		-		-		-	

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