### **Compact temperature switch**

# 06/2016

### **Applications**

- Temperature monitoring and control of processes
- Safety-critical applications in general process instrumentation, especially in the chemical and petrochemical industries, oil and gas industries, power generation incl. nuclear power plants, water/wastewater industries, mining
- For measuring points with limited space, e.g. control panels

#### **Special features**

- No power supply needed for switching of electrical loads
- Setting ranges from -30 ... +10 °C to 160 ... 250 °C
- Ex ia version available
- 1 set point, SPDT or DPDT, high switching power up to AC 250 V, 15 A
- Direct mounting or remote mounting with capillary ≤ 10 m



Order numbers		
Case	aluminium, epoxy resin coated	
Sensor	direct mounting	remote mounting with capillary, length 2 m
Process connection	1/2 NF	T male
Electrical connection	1/2 -14	INPT-F
Electric contacts	A - 1xSPDT, s	silver contact
Setting range		
-15 +40°C	14160352	14160356
10 70 °C	14160357	14160358
40 100°C	14160360	14160361
70 120°C	14160362	14160364
90 160°C	14160365	14160366
130 190 °C	14160367	14160368

Legend: available from stock in Germany available after production ---- not available



## **Quick order sheet model TCS**

## 06/2016

Field no.     Code     Version       Switch enclosure     a duminium, epoxy resin coaled       ①     2     aluminium, epoxy resin coaled       ③     4     stainless steel 316L       Sensor     B     direct mounting       ②     C     remote mounting with capillary, length 2 m       ③     C     remote mounting with capillary, length 5 m       R     remote mounting with capillary, length 10 m       Contacts     A     1xSPDT, silver contact       Ø     1xSPDT, silver contact     B       Ø     1xSPDT, silver contact, hermetically sealed with argon gas       G     1xSPDT, silver contact, hermetically sealed with argon gas       G     1xSPDT, silver contact, hermetically sealed with argon gas       G     1xSPDT, silver contact, hermetically sealed with argon gas       G     1xSPDT, silver contact, hermetically sealed with argon gas       G     1xSPDT, silver contact, hermetically sealed with argon gas       C     1xSPDT, silver contact, hermetically sealed with argon gas       G     1xSPDT, silver contact, hermetically sealed with argon gas       G     1xSPDT, silver contact, hermetically sealed with argon gas       C     1xSPDT, silver contact, hermetically sealed with argon gas       G     1xSPDT, silver contact, hermetically sealed with argon gas       CAG     1010 °C, working	Quick order code (for further details see data sheet TV 31.64)			
<ul> <li>information and section and sectin and sectin and sectin and section and section and secti</li></ul>	Field no.	Code	Version	
Image: Construct of the stand of the st	Switch enclosure			
Sensor     interes steel 316L       Sensor <ul> <li></li></ul>	1	2	aluminium, epoxy resin coated	
B     direct mounting with capillary, length 2 m       C     remote mounting with capillary, length 5 m       R     remote mounting with capillary, length 5 m       R     remote mounting with capillary, length 10 m       Contacts     Interpretermination of the second sec		4	stainless steel 316L	
<ul> <li></li></ul>	Sensor			
Q       remote mounting with capillary, length 5 m         R       remote mounting with capillary, length 10 m         Contacts       A       1xSPDT, silver contact         B       1xSPDT, gold-plated contact, hermetically sealed with argon gas       G         G       1xSPDT, silver contact, hermetically sealed with argon gas       G         G       1xSPDT, silver contact, hermetically sealed with argon gas       G         G       1xDPDT, silver contact, hermetically sealed with argon gas       G         G       1xDPDT, silver contact, hermetically sealed with argon gas       G         Setting range       CAA       -30		В	direct mounting	
Q       remote mounting with capillary, length 5 m         R       remote mounting with capillary, length 10 m         Contacts       B       1xSPDT, silver contact         B       1xSPDT, silver contact, hermetically sealed with argon gas       C         G       1xSPDT, silver contact, hermetically sealed with argon gas       C         G       1xDPDT, silver contact, hermetically sealed with argon gas       C         G       1xDPDT, silver contact, hermetically sealed with argon gas       C         G       1xDPDT, silver contact, hermetically sealed with argon gas       C         G       1xDPDT, silver contact, hermetically sealed with argon gas       C         Setting range       CAA       -30+10 °C, working range -40+60 °C, proof temperature +90 °C         CAB       -15+40 °C, working range -40+70 °C, proof temperature +90 °C         CAB       -15+40 °C, working range -40+70 °C, proof temperature +90 °C         CAB       -100° °C, working range -40+170 °C, proof temperature +90 °C         CAE       70	0	С	remote mounting with capillary, length 2 m	
Contacts       A       1xSPDT, silver contact         B       1xSPDT, silver contact, hermetically sealed with argon gas         C       1xSPDT, gold-plated contact, hermetically sealed with argon gas         G       1xDPDT, silver contact         H       1xDPDT, silver contact, hermetically sealed with air         Setting range       CAA         CAB       -30 +10 °C, working range -40 +60 °C, proof temperature +90 °C         CAB       -30 +10 °C, working range -40 +70 °C, proof temperature +90 °C         CAB       -15 +40 °C, working range -40 +10 °C, proof temperature +90 °C         CAB       -10 70 °C, working range -40 +10 °C, proof temperature +10 °C         CAC       10 70 °C, working range -40 +120 °C, proof temperature +10 °C         CAB       -10 100 °C, working range -40 +120 °C, proof temperature +140 °C         CAF       90 160 °C, working range -40 +120 °C, proof temperature +140 °C         CAF       90 160 °C, working range -40 +120 °C, proof temperature +140 °C         CAG       130 190 °C, working range -40 +120 °C, proof temperature +140 °C         CAB       -120 °C, working range -40 +120 °C, proof temperature +140 °C         CAF       90 160 °C, working range -40 +120 °C, proof temperature +140 °C         CAB       160 250 °C, working range -40 +280 °C, proof temperatur	(2)	Q	remote mounting with capillary, length 5 m	
A         1xSPDT, silver contact           B         1xSPDT, silver contact, hermetically sealed with argon gas           C         1xSPDT, gold-plated contact, hermetically sealed with argon gas           G         1xDPDT, silver contact, hermetically sealed with argon gas           B         1xDPDT, silver contact, hermetically sealed with argon gas           Setting range         1xDPDT, silver contact, hermetically sealed with air           Setting range         -40 °C, working range -40 +60 °C, proof temperature +90 °C           CAB         -51		R	remote mounting with capillary, length 10 m	
BixSPDT, silver contact, hermetically sealed with argon gasCixSPDT, gold-plated contact, hermetically sealed with argon gasGixSPDT, silver contactHixSPDT, silver contact, hermetically sealed with airSetting range	Contacts			
③       C       1xSPDT. gold-plated contact, hermetically sealed with argon gas         G       1xDPDT, silver contact         H       1xDPDT, silver contact, hermetically sealed with air         Setting range       CAA       -30+10 °C, working range -40+60 °C, proof temperature +90 °C         CAB       -15+40 °C, working range -40+60 °C, proof temperature +90 °C         CAC       1070 °C, working range -40+120 °C, proof temperature +90 °C         CAE       70120 °C, working range -40+120 °C, proof temperature +90 °C         CAE       70120 °C, working range -40+120 °C, proof temperature +90 °C         CAE       70120 °C, working range -40+120 °C, proof temperature +10 °C         CAE       70120 °C, working range -40+170 °C, proof temperature +180 °C         CAE       70120 °C, working range -40+170 °C, proof temperature +180 °C         CAF       90160 °C, working range -40+120 °C, proof temperature +180 °C         CAF       90160 °C, working range -40+120 °C, proof temperature +180 °C         CAF       90160 °C, working range -40+120 °C, proof temperature +180 °C         CAF       90160 °C, working range -40+120 °C, proof temperature +10 °C         CAF       90160 °C, working range -40+120 °C, proof temperature +10 °C         G       G       G         G       G       1/2 NPT	3	Α	1xSPDT, silver contact	
G         1xDPDT, silver contact           H         1xDPDT, silver contact, hermetically sealed with air           Setting range         Image: CAA         -30+10°C, working range-40+60°C, proof temperature +90°C           CAB         -15+40°C, working range-40+60°C, proof temperature +90°C         CAC         1070°C, working range-40+60°C, proof temperature +90°C           CAC         1070°C, working range-40+70°C, proof temperature +90°C         CAC         1070°C, working range-40+70°C, proof temperature +90°C           CAB         -15+40°C, working range-40+70°C, proof temperature +90°C         CAC         1070°C, working range-40+70°C, proof temperature +90°C           CAB         -1070°C, working range-40+70°C, proof temperature +90°C         CAC         1070°C, working range-40+70°C, proof temperature +90°C           CAB         90180°C, working range-40+170°C, proof temperature +180°C         CAE         70120°C, working range-40+170°C, proof temperature +180°C           CAF         90180°C, working range-40+190°C, proof temperature +210°C         CAH         160250°C, working range-40+280°C, proof temperature +210°C           CAB         1/2 NPT male         F         3/4 NPT male         3/4 NPT male         3/4 NPT           Special desize         Image: Special desize         Special desize         Special desize         Special desize         Special desize <td>В</td> <td>1xSPDT, silver contact, hermetically sealed with argon gas</td>		В	1xSPDT, silver contact, hermetically sealed with argon gas	
H         1xDPDT, silver contact, hermetically sealed with air           Setting range         CAA         -30 +10 °C, working range -40 +60 °C, proof temperature +90 °C           CAB         -15 +40 °C, working range -40 +60 °C, proof temperature +90 °C           CAC         10 70 °C, working range -40 +60 °C, proof temperature +90 °C           CAC         10 70 °C, working range -40 +70 °C, proof temperature +90 °C           CAC         40 100 °C, working range -40 +170 °C, proof temperature +140 °C           CAG         90 180 °C, working range -40 +170 °C, proof temperature +180 °C           CAG         130 190 °C, working range -40 +170 °C, proof temperature +180 °C           CAG         130 190 °C, working range -40 +190 °C, proof temperature +180 °C           CAG         130 190 °C, working range -40 +190 °C, proof temperature +180 °C           CAG         130 190 °C, working range -40 +190 °C, proof temperature +180 °C           CAG         130 190 °C, working range -40 +190 °C, proof temperature +180 °C           CAG         130 190 °C, working range -40 +190 °C, proof temperature +180 °C           CAG         140 250 °C, working range -40 +190 °C, proof temperature +180 °C           CAG         140 250 °C, working range -40 +190 °C, proof temperature +300 °C           F         3/4 NPT male           G		С	1xSPDT, gold-plated contact, hermetically sealed with argon gas	
Setting range       CAA       -30 +10 °C, working range -40 +60 °C, proof temperature +90 °C         CAB       -15 +40 °C, working range -40 +60 °C, proof temperature +90 °C         CAC       10 70 °C, working range -40 +70 °C, proof temperature +90 °C         CAC       10 70 °C, working range -40 +70 °C, proof temperature +90 °C         CAD       40 100 °C, working range -40 +120 °C, proof temperature +180 °C         CAE       70 120 °C, working range -40 +170 °C, proof temperature +180 °C         CAG       130 190 °C, working range -40 +170 °C, proof temperature +180 °C         CAG       130 190 °C, working range -40 +170 °C, proof temperature +180 °C         CAG       130 190 °C, working range -40 +190 °C, proof temperature +210 °C         CAG       130 190 °C, working range -40 +190 °C, proof temperature +210 °C         CAG       130 190 °C, working range -40 +190 °C, proof temperature +210 °C         CAG       130 190 °C, working range -40 +190 °C, proof temperature +210 °C         CAH       160 250 °C, working range -40 +190 °C, proof temperature +210 °C         CAH       160 250 °C, working range -40 +190 °C, proof temperature +300 °C         Process construction       Image: status and status		G	1xDPDT, silver contact	
CAA         -30+10°C, working range -40+60°C, proof temperature +90°C           CAB         -15+40°C, working range -40+60°C, proof temperature +90°C           CAC         1070°C, working range -40+120°C, proof temperature +90°C           CAD         40100°C, working range -40+120°C, proof temperature +140°C           CAE         70120°C, working range -40+120°C, proof temperature +140°C           CAE         70120°C, working range -40+170°C, proof temperature +180°C           CAE         70120°C, working range -40+170°C, proof temperature +180°C           CAE         70120°C, working range -40+190°C, proof temperature +180°C           CAE         70120°C, working range -40+190°C, proof temperature +210°C           CAB         100250°C, working range -40+190°C, proof temperature +210°C           CAB         100250°C, working range -40+190°C, proof temperature +210°C           CAB         100250°C, working range -40+190°C, proof temperature +300°C           Process comperature         50°C           F         1/2 NPT male           F         3/4 NPT male           G         61/2 A male           B         1/2 A male           Special desiz         50°C           R         helical bulb           NACE         50°C           Z		н	1xDPDT, silver contact, hermetically sealed with air	
CAB         -15 +40 °C, working range -40 +60 °C, proof temperature +90 °C           CAC         10 70 °C, working range -40 +70 °C, proof temperature +90 °C           CAD         40 100 °C, working range -40 +70 °C, proof temperature +90 °C           CAE         70 120 °C, working range -40 +170 °C, proof temperature +140 °C           CAE         70 120 °C, working range -40 +170 °C, proof temperature +180 °C           CAF         90 160 °C, working range -40 +170 °C, proof temperature +180 °C           CAG         130 190 °C, working range -40 +170 °C, proof temperature +180 °C           CAG         130 190 °C, working range -40 +170 °C, proof temperature +210 °C           CAH         160 250 °C, working range -40 +280 °C, proof temperature +210 °C           CAH         160 250 °C, working range -40 +280 °C, proof temperature +210 °C           CAH         160 250 °C, working range -40 +280 °C, proof temperature +210 °C           CAH         160 250 °C, working range -40 +280 °C, proof temperature +210 °C           CAH         160 250 °C, working range -40 +280 °C, proof temperature +210 °C           GAH         160 250 °C, working range -40 +280 °C, proof temperature +210 °C           G         6 // 2 NPT male           G         1/2 A male           G         1/2 A male           G	Setting rang	е		
Image: Acc and a stress of a stres		CAA	-30 +10 °C, working range -40 +60 °C, proof temperature +90 °C	
CAD       40 100 °C, working range -40 +120 °C, proof temperature +140 °C         CAE       70 120 °C, working range -40 +170 °C, proof temperature +180 °C         CAF       90 160 °C, working range -40 +170 °C, proof temperature +180 °C         CAG       130 190 °C, working range -40 +170 °C, proof temperature +180 °C         CAG       130 190 °C, working range -40 +190 °C, proof temperature +210 °C         CAH       160 250 °C, working range -40 +280 °C, proof temperature +300 °C         Process connection         F       3/4 NPT male         G       G 1/2 A male         H       G 3/4 A male         Special design Features         M       NACE         Z       without         Addition temperature up to -60°C         ⑦       O1       Offshore		CAB	-15 +40 °C, working range -40 +60 °C, proof temperature +90 °C	
(4)       CAE       70 120 °C, working range -40 +170 °C, proof temperature +180 °C         (CAF       90 160 °C, working range -40 +170 °C, proof temperature +180 °C         (CAG       130 190 °C, working range -40 +170 °C, proof temperature +210 °C         (CAG       130 190 °C, working range -40 +190 °C, proof temperature +210 °C         (CAG       160 250 °C, working range -40 +280 °C, proof temperature +300 °C         Process convection       F         (G       1/2 NPT male         (G       G1/2 A male         (G       G1/2 A male         (G)       G1/2 A male         (G)       NACE         (G)       NACE         (G)       NACE         (G)       without		CAC	10 70 °C, working range -40 +70 °C, proof temperature +90 °C	
CAE       70 120 °C, working range -40 +170 °C, proof temperature +180 °C         CAF       90 160 °C, working range -40 +170 °C, proof temperature +180 °C         CAG       130 190 °C, working range -40 +170 °C, proof temperature +210 °C         CAH       160 250 °C, working range -40 +190 °C, proof temperature +210 °C         CAH       160 250 °C, working range -40 +280 °C, proof temperature +300 °C         Process convection         F       3/4 NPT male         G       G G 1/2 A male         F       3/4 NPT male         G       G J/2 A male         F       3/4 A male         Special design         F       Vithout         A mode         M       helical bulb         N       NACE         Z       without         A mode         M       NACE         Z       without         A suitable for ambient temperature up to -60°C         ⑦       O1       Offshore		CAD	40 100 °C, working range -40 +120 °C, proof temperature +140 °C	
CAG         130 190 °C, working range -40 +190 °C, proof temperature +210 °C           CAH         160 250 °C, working range -40 +280 °C, proof temperature +300 °C           Process concent         I         1/2 NPT male           F         3/4 NPT male         I/2 NPT male           G         G // 2 A male         G         G // 2 A male           Special designer         Feature         Feature         Feature           M         helical bulb         NACE           Ambient condition         AACE         Secondition         Secondition           D1         suitable for ambient temperature up to -60°C         Offshore	(4)	CAE	70 120 °C, working range -40 +170 °C, proof temperature +180 °C	
CAH       160 250 °C, working range -40 +280 °C, proof temperature +300 °C         Process con		CAF	90 160 °C, working range -40 +170 °C, proof temperature +180 °C	
Process convertion       E       1/2 NPT male         Image: Second design of the		CAG	130 190 °C, working range -40 +190 °C, proof temperature +210 °C	
E1/2 NPT maleF3/4 NPT maleGG 1/2 A maleHG 3/4 A maleSpecial desizIBAlical bulbNACENACEIvithoutDautable for ambient temperature up to -60°CO1Offshore		CAH	160 250 °C, working range -40 +280 °C, proof temperature +300 °C	
F3/4 NPT maleGG 1/2 A maleHG 3/4 A maleSpecial designationFeaturesIndical bulbImage: NACENACEImage: National colspan="3">A vithoutD1suitable for ambient temperature up to -60°CImage: One StateOne StateImage: One State <td colspan="4">Process connection</td>	Process connection			
Image: Special design features	\$	E	1/2 NPT male	
G     G 1/2 A male       H     G 3/4 A male       Special design features     Image: Imag		F	3/4 NPT male	
Special design features         B       helical bulb         N       NACE         Z       without         Ambient condition / application condition         D1       suitable for ambient temperature up to -60°C         O1       Offshore		G	G 1/2 A male	
H         helical bulb           N         NACE           z         without           Ambient condition / application / application condition         condition condition           D1         suitable for ambient temperature up to -60°C           O1         Offshore		н	G 3/4 A male	
N         NACE           Z         without           Ambient condition / application condition         condition           D1         suitable for ambient temperature up to -60°C           ①1         Offshore	Special design features			
N         NACE           Z         without           Ambient condition / application condition           D1         suitable for ambient temperature up to -60°C           O1         Offshore	6	н	helical bulb	
D1     suitable for ambient temperature up to -60°C       ⑦     01     Offshore		Ν	NACE	
D1     suitable for ambient temperature up to -60°C       ⑦     01     Offshore		Z	without	
⑦     01     Offshore	Ambient condition / application condition			
	$\bigcirc$	D1	suitable for ambient temperature up to -60°C	
		01	Offshore	
		ZZ	without	



Please specify approvals and certificates via free text. C1 Intrinsic safety Ex ia IECEx-ATEX C4 SIL 2 for functional safety

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