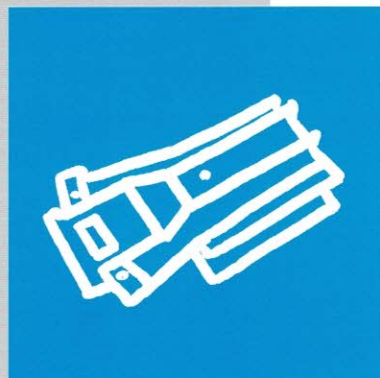


# Automatic Controls

NOTEBOOK



# Automatic Controls

COMERCIAL  
**teca**sa

**ITW** Metalflex



# DESCRIPTION, APPLICATION AND TECHNICAL DATA FOR PRESSURE SWITCHES, DOOR LOCKS AND THERMOSTATS FROM NOTEBOOK D

## **D1 SINGLE AND DOUBLE-LEVEL PRESSURE SWITCHES HD-505**

Intended to control the water level in washing machines and dish washers.

Operation is performed by air pressure which actuates the switching mechanism using the rubber diaphragm. Reduced dimensions allow the application even in very small areas.

Single and double-level pressure switches with or without overflow protection available.

All levels contain the heater protection.

Beside the version with single tabs, the single-level pressure switch with rast5 connection is available. The positions of the tabs correspond to recently created industry standard. The overflow tab can be placed on two different positions.

## **D2 TRIPLE- AND DOUBLE-LEVEL PRESSURE SWITCHES HD-512**

Intended to control the water level in washing machines and dish washers.

Operation is performed by air pressure which actuates the switching mechanism using the rubber diaphragm.

Two versions of overflow protection are available:

ordinary overflow protection and the protection with snap-acting switching mechanism. This advanced version of the overflow protection allows also the fourth and the fifth water level to be included in the housing of the triple-level pressure switch.

The heater protection is available in two versions:

internal heater protection or heater protection with its own tab terminal.

The electrical connection by means of rast5 connection as well as by means of separate tab terminals is possible.

## **D3 BIMETAL DOOR LOCKS ZV-445**

Locks the door of washing machine while operating.

When the plastic slide plate is in the position "locked" and supply voltage is applied, the switching mechanism closes the electrical contacts and blocks the sliding key.

When the plastic slide plate is in the position "unlocked" and supply voltage is applied, the switching mechanism does not allow the electrical contacts to be closed.

The optional additional mechanism allows the remote aperture of the door of the washing machine by means of metal wire.

## **D4 BIMETAL DOOR LOCKS ZV-446**

Locks the door of washing machine while operating.

When the plastic slide plate is in the position "locked" and supply voltage is applied, the switching mechanism closes the electrical contacts and blocks the sliding key.

When the plastic slide plate is in the position "unlocked" and supply voltage is applied, the switching mechanism does not allow the electrical contacts to be closed.

The patented temperature compensating mechanism allows very low variation of the switch-off time even at wide variations of ambient temperature.

The optional additional mechanism allows the remote aperture of the door of the washing machine by means of metal wire.

This component contains rast 5 connector. The removable connector housing allows different positions of keying ribs and polarization ribs to be implemented.

## **D5 CAPILLARY THERMOSTATS KT-165**

Intended to control the temperature in most kinds of household appliances, for example washing machines, ovens, dryers, storage water heaters etc.

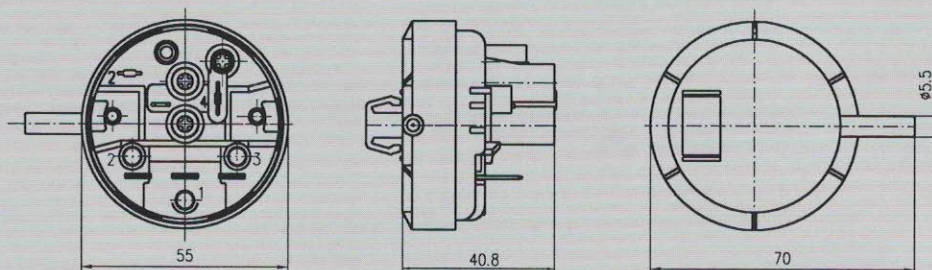
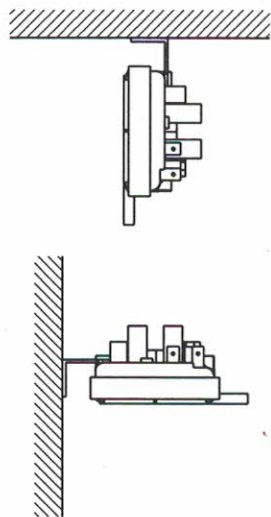
Operation is based on thermal expansion of liquid in closed system.

The clearances and creepage distances between live parts and detachable parts correspond to the requirements of reinforced insulation.

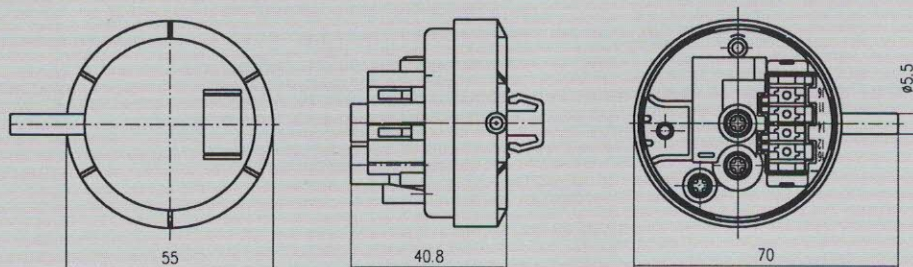
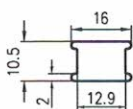
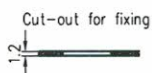
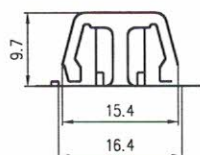
The optional additional switch contains the full-disconnection contacts, enabling it to be applied as the appliance's main switch.



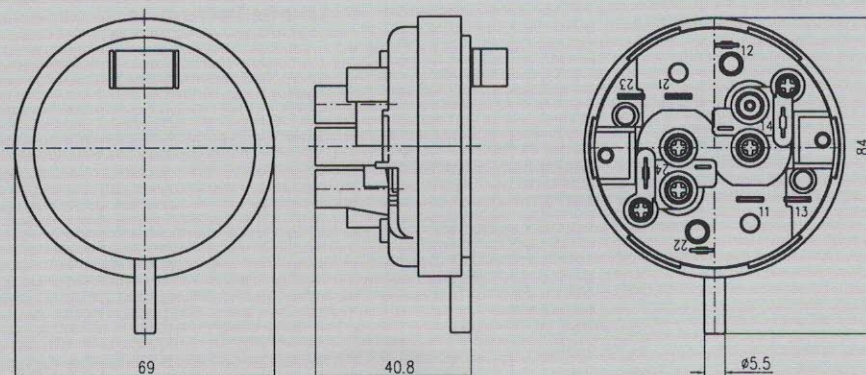
### MOUNTING POSSIBILITIES



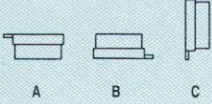

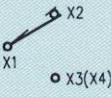
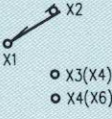
### SNAP MOUNTING



### SCREW MOUNTING





TECHNICAL DATA					
	T85 PTI > 250 $\mu$ (<3 mm)	X1 - X2 10(4)A 250V-30E3 X1 - X3(X4) 16(4)A 250V-30E3 X1 - X4(X6) 2(1)A 250V-10E3 (overflow protection)	LEVELS: FACTORY ADJUSTED BETWEEN 40 AND 350 mm H2O  STANDARD TOLERANCE: + - 7,5 mm H2O	THE POSITION THE LEVELS ARE MEASURED IN:   A                  B                  C	
CIRCUIT DIAGRAM	numbers in brackets refer to rast 5 version X = number of the level  	 A	 B		

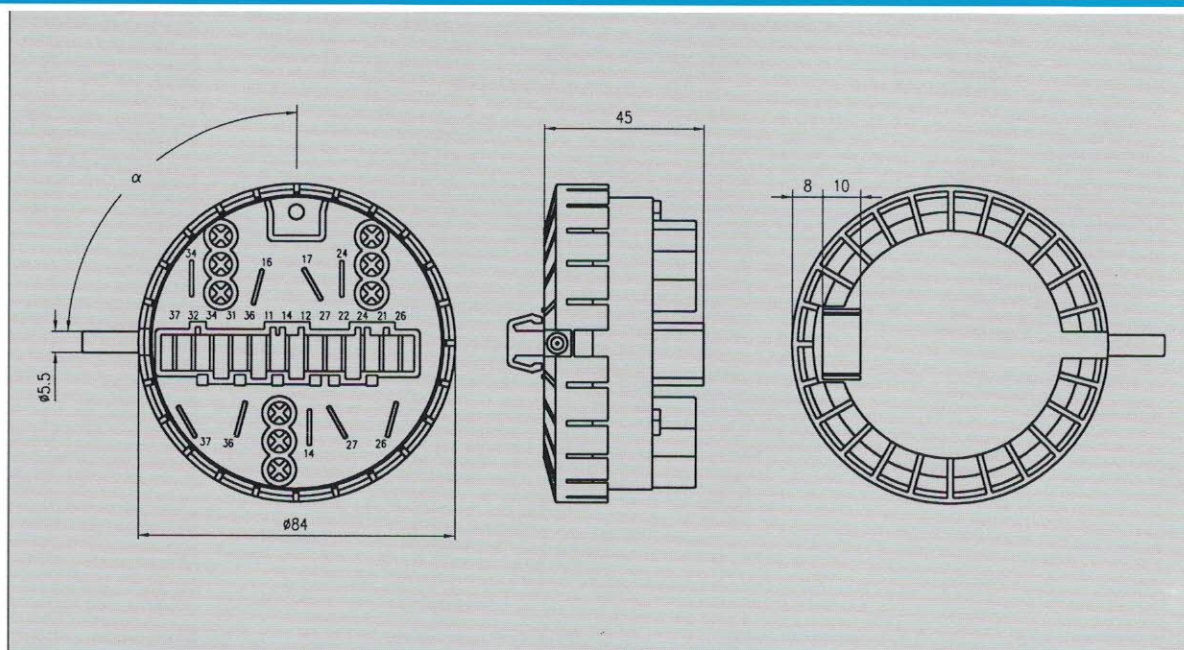
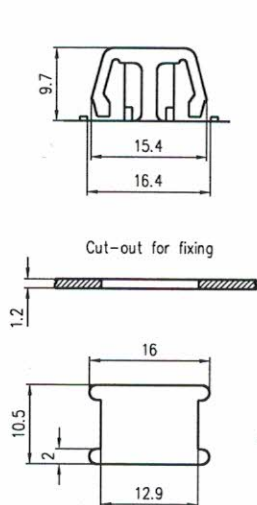
TABS: 6.3 x 0.8 (EN 60730)  
 APPROVALS: VDE

ORDER DATA:

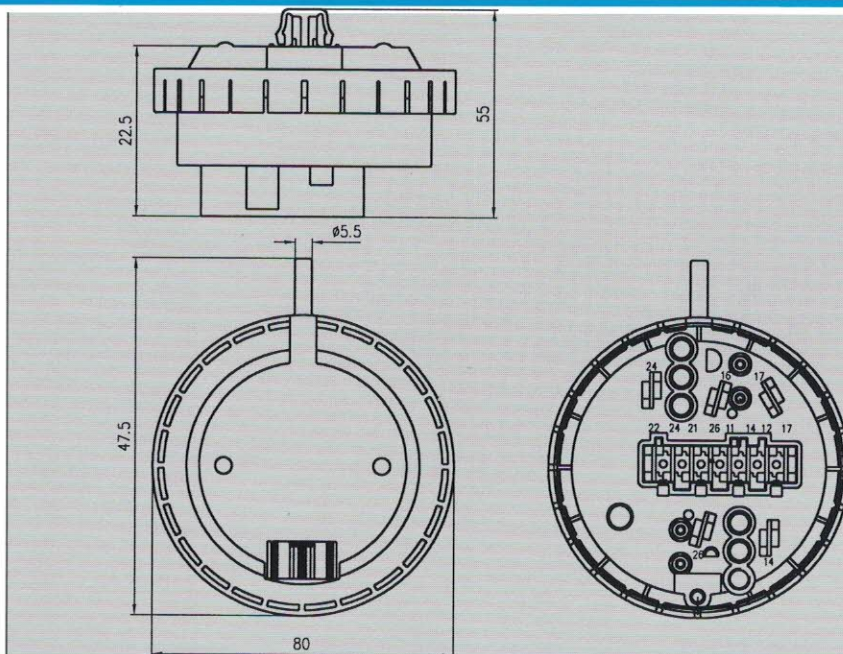
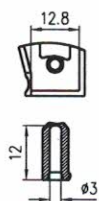
- Circuit diagram
- Levels in mm H2O
- Position of the pressure switch the levels are measured in
- Angular position of the air connector
- Printings on the housing
- Snap-mounting facility yes/no
- Position of tab N°2 - on single level pressure switch with single tabs
- Position of tab N°16 - on rast 5 single level pressure switch
- Annual consume



## SNAP MOUNTING DETAIL



## SCREW MOUNTING



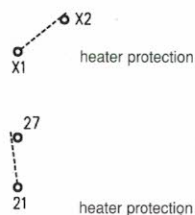


## TECHNICAL DATA

<p>T85 PTI &gt; 250 <math>\mu</math> (&lt; 3 mm)</p> <p>LIFE ENDURANCE 30.000 CYCLES</p>	<p>X1 - X2 10(4)A 250V-30E3 X1 - X4 16(4)A 250V-30E3 X1 - X6 2(1)A 250V~ (overflow protection)</p>	<p>36 - 37 2(1)A 250V ~ (momentary switch on the spill-over protection)</p> <p>21 - 27 0,1A ind. 250 ~ (heater protection)</p>	<p>LEVELS: FACTORY ADJUSTED BETWEEN 40 and 400 mm H2O</p> <p>STANDARD TOLERANCE: ± 7,5 mm H2O</p>	<p>THE POSITION THE LEVELS ARE MEASURED IN:</p>
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## CIRCUIT DIAGRAM

X = number of the level  
\* = momentary switch on the  
overflow protection



<p>A</p>	<p>B</p>	<p>C</p>	<p>D</p>	<p>E</p>
<p>F</p>	<p>G</p>	<p>H</p>		

TABS: 6.3 x 0.8 (EN 60730)

APPROVALS: all the main national approvals available

## ORDER DATA:

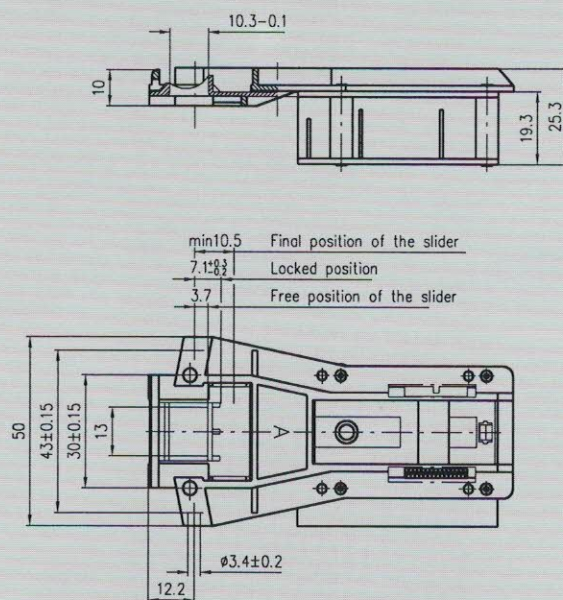
- Circuit diagram
- Levels in mm H2O
- Position of the applied tabs (inside or outside raster 5 mm)
- Position of the pressure switch the levels are measured in
- Angular position of the air connector
- Printings on the housing
- Annual consume



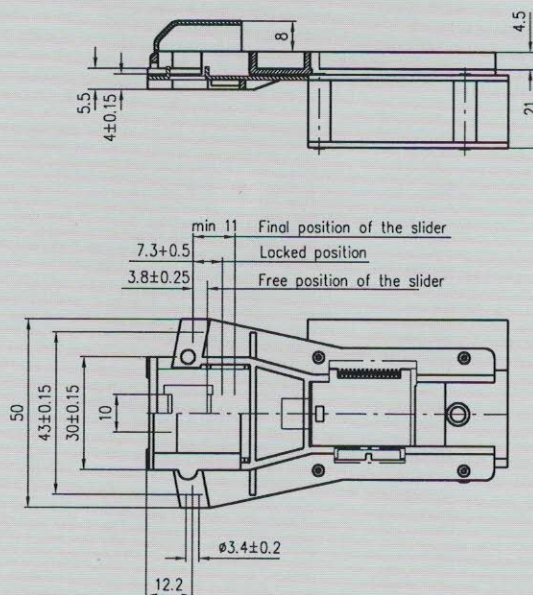
### LOCKING DIRECTIONS



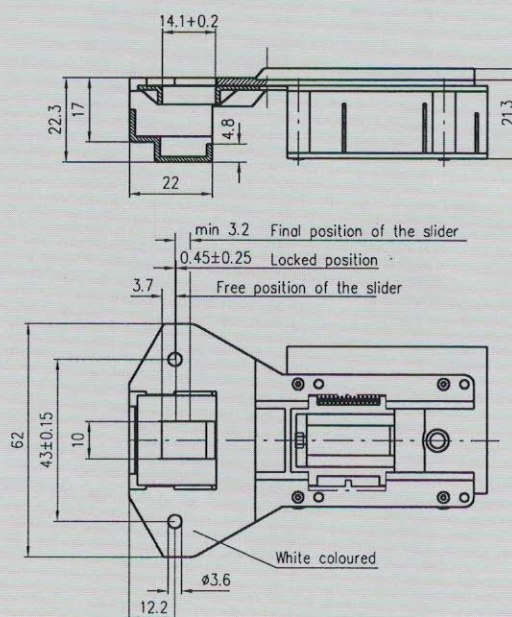
ZV-445A1



ZV-445M2

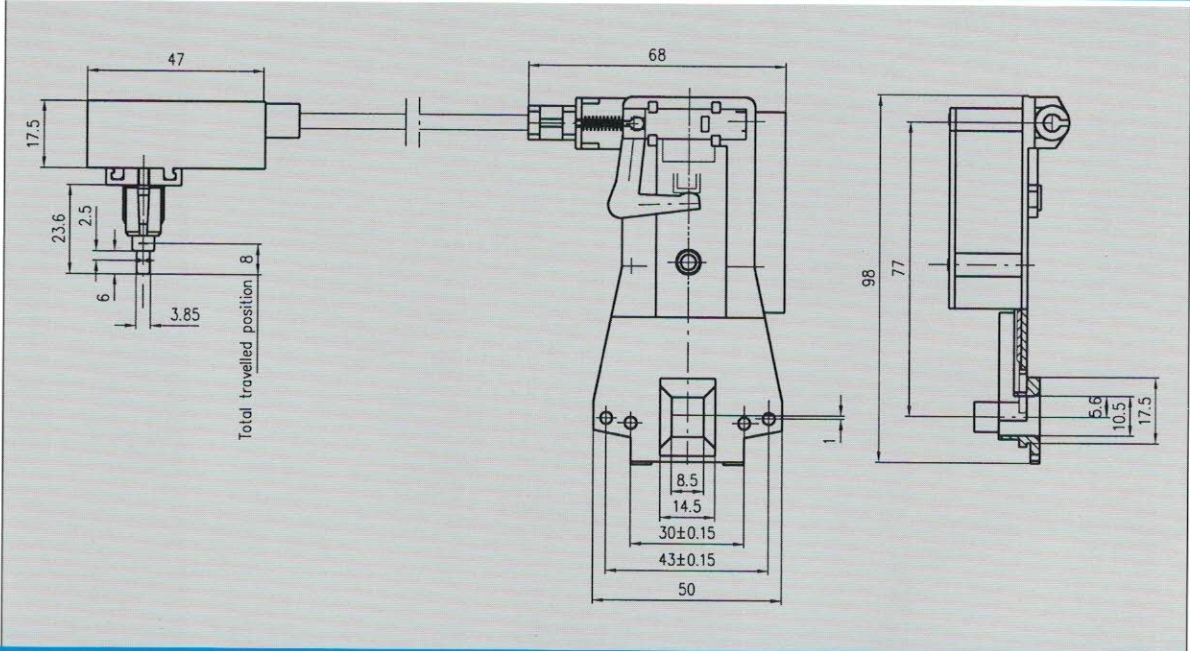


ZV-445T4





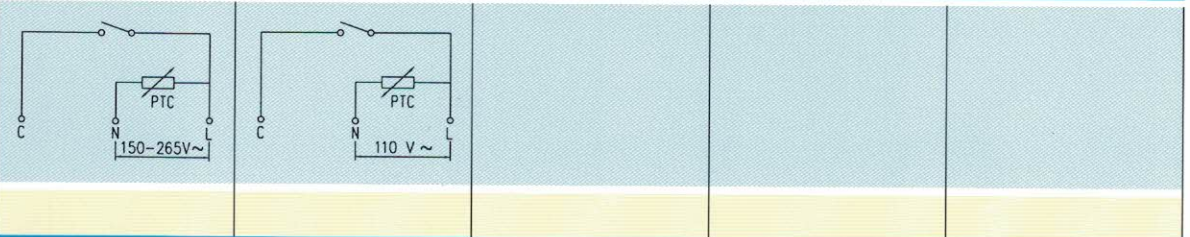
VERSION WITH  
REMOTE APERTURE



TECHNICAL DATA

220 / 250 V ~ 16(4) A CLOSING 0(0) A OPENING T85 PTI 250 $\mu$ (<3 mm) LIFE ENDURANCE 10.000 CYCLES FORCE AT TOTAL TRAVEL OF THE SLIDER <5N	110 V ~ 16(4) A CLOSING 0(0) A OPENING T85 PTI 250 $\mu$ (<3 mm) LIFE ENDURANCE 10.000 CYCLES FORCE AT TOTAL TRAVEL OF THE SLIDER <5N			

CIRCUIT DIAGRAM



STANDARD  
UNLOCKING TIMING

AT AMBIENT TEMP. 10 TO 40°C	AT AMBIENT TEMP. 40 TO 60°C			
35 TO 75 SECONDS	35 TO 120 SECONDS			

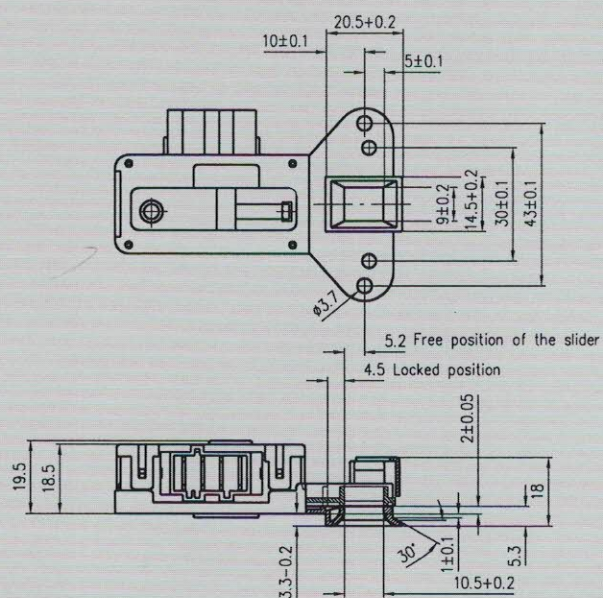
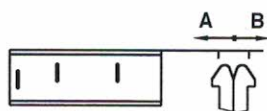
TERMINALS TABS: 6.3 x 0.8 (EN 60730)  
APPROVALS: VDE

ORDER DATA:

- Mounting and locking details
- Annual consume



### LOCKING DIRECTIONS





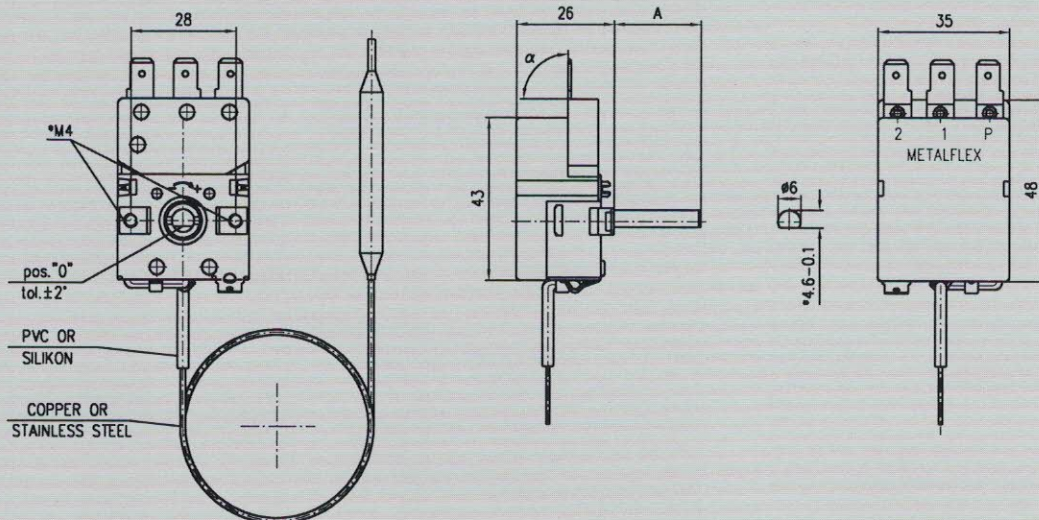
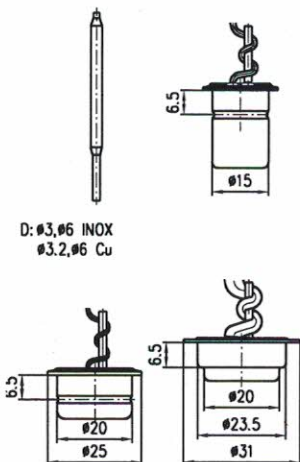
TECHNICAL DATA	220 / 250 V ~ 16(4) A CLOSING 0(0) A OPENING T85 PTI 250 $\mu$ (<3 mm) LIFE ENDURANCE 10.000 CYCLES FORCE AT TOTAL TRAVEL OF THE SLIDER <5N	110 V ~ 16(4) A CLOSING 0(0) A OPENING T85 PTI 250 $\mu$ (<3 mm) LIFE ENDURANCE 10.000 CYCLES FORCE AT TOTAL TRAVEL OF THE SLIDER <5N			
CIRCUIT DIAGRAMS					
STANDARD UNLOCKING TIMING	AT AMBIENT TEMP. 10 TO 40°C	AT AMBIENT TEMP. 40 TO 80°C			
	35 TO 75 SECONDS	35 TO 80 SECONDS			

TERMINALS TABS: 6.3 x 0.8 (EN 60730)  
APPROVALS: SIQ, VDE

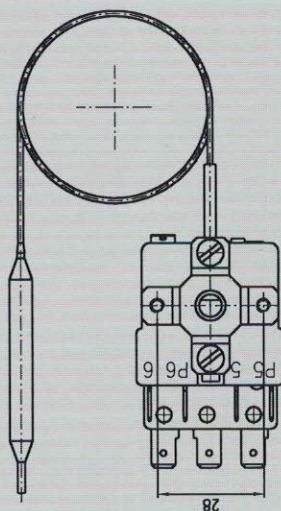
- ORDER DATA:**
- Mounting and locking details
  - Form of connector
  - Annual consume



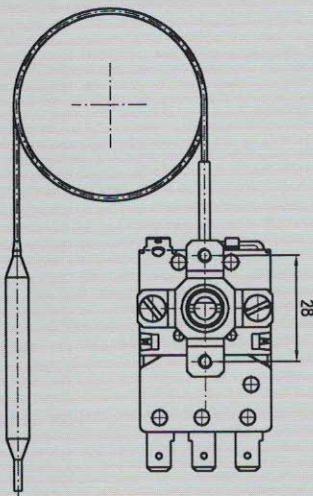
### STANDARD SENSING BULBS



### MOUNTING BRACKET



### MAIN SWITCH





## TECHNICAL DATA

16(4) / 250 V -  $\mu$  (<3 mm)  
T85, T150  
  
LIFE ENDURANCE  
T85 100.000, T150 100.000 CYCLES

## CIRCUIT DIAGRAMS



THERMOSTAT



THERMOSTAT



MAIN SWITCH

TERMINALS TABS: 6.3 x 0.8 (EN 60730)  
APPROVALS: VDE

## CHANGEABLE PARAMETERS

Temperature range

Maximal overtemperature of the bulb: 10% of full scale

Switching difference: 2 - 15K

Regulation angle: 180°, 200°, 225°, 260°, 270°, 310°, 315°

Capillary completely or partially insulated

Capillary length: 500 - 2000 mm

## ORDER DATA:

- Temperature range
- Ambient temperature
- Regulation angle
- Switching difference
- Circuit diagram
- Length "A" and "0" position of the spindle (fixed temperatures without spindle)
- Material, type and dimensions of the bulb
- Material and length of capillary
- Length of capillary insulation
- Annual consume
- Angle of tabs "α"
- Earth connector