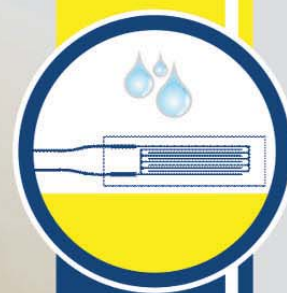


# Detection of moisture

for cooling ceiling control



Jola Spezi schalter GmbH & Co. KG  
Klostergartenstr. 11 • 67466 Lambrecht (Germany)  
Tel. +49 6325 188-01 • Fax +49 6325 6396  
[contact@jola-info.de](mailto:contact@jola-info.de) • [www.jola-info.de](http://www.jola-info.de)

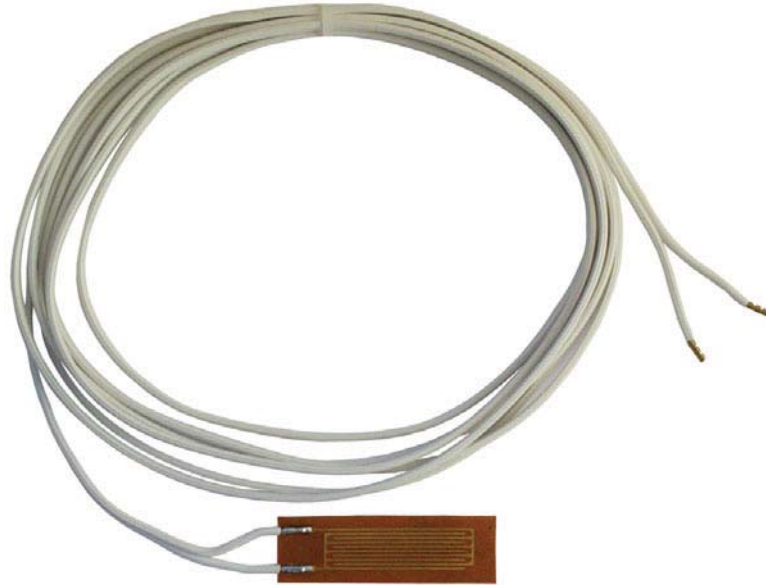
**The units described in this documentation  
may only be installed, connected and  
started up by suitably qualified personnel!**

**Subject to deviations from the diagrams  
and technical data.**

**The details in this brochure are product  
specification descriptions and do not  
constitute assured properties in the legal  
sense.**



## FTS/KO-1 film sensor for cooling ceiling controller



The FTS/KO-1 film sensor is a PCB film which can be stuck to a copper pipe or an even metal surface. The back of the film sensor is coated with an adhesive agent and a protective film.

The film sensor is equipped with parallel-routed printed conductors (sensitive surface) which are gold-plated for improved surface protection.

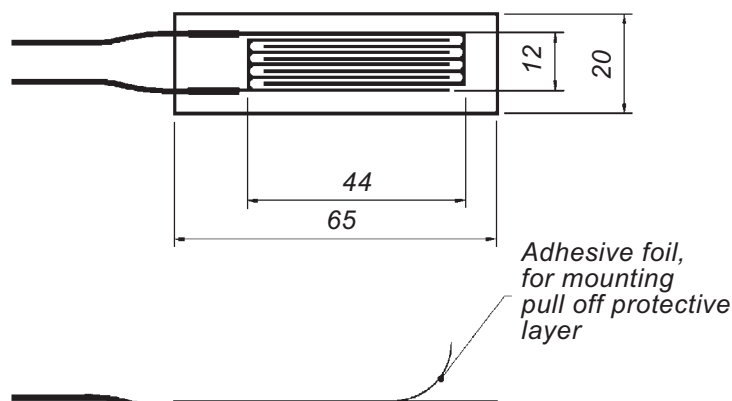
The sensor acts as a conductivity measuring cell. The conductivity is measured using alternating current in order to prevent corrosion and polarisation effects.

The sensor is available with connected 3-metre long thin white wire. Other connecting line lengths are available on request.

Care should always be taken to ensure that the sensitive surface of the sensor remains grease-free and is not treated with chemical substances, as these can severely impair or even completely destroy the functionality of the sensor.

The film sensor should be installed at the point in the cooling ceiling system where moisture is most probably expected to occur.

One FTS/KO-1 film sensor can be connected to one KUR 5, KUR 5/G or KUR-L4 cooling ceiling controller.



Jola

# KUR 5 cooling ceiling controller

for connection of a FTS/KO-1 film sensor

for detection of moisture on a cooling ceiling and  
for cooling ceiling control

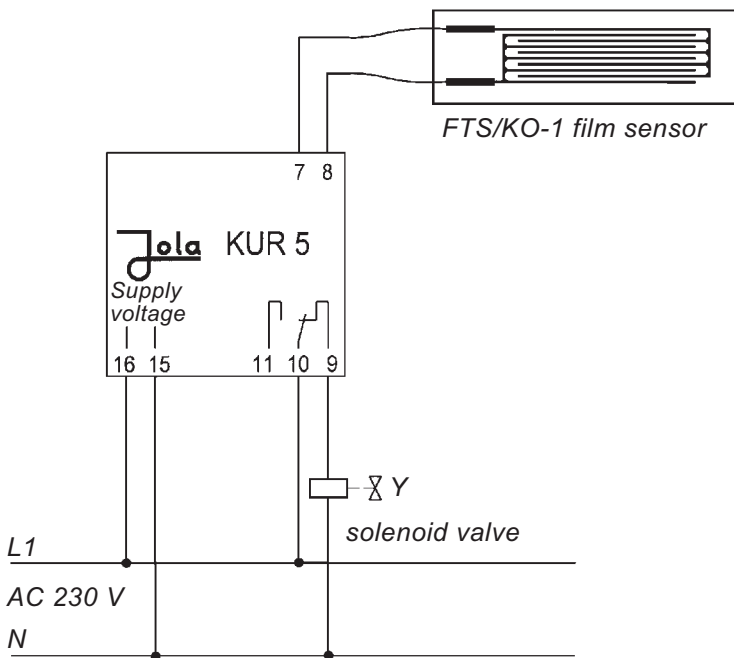


Conductive relay for U-bar or surface mounting, with connection terminals on top of housing and red LED for moisture signalling.

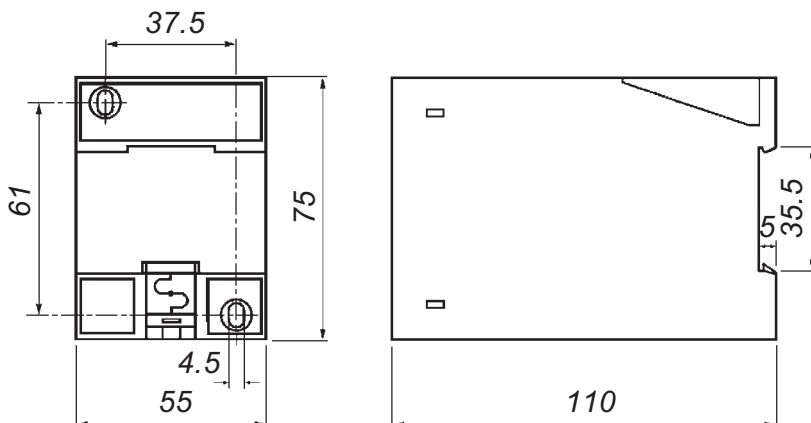
The unit is designed for switch cabinet mounting or installation in a suitable protective housing and may therefore only be mounted/installed in these locations. It is suitable for use in clean environments only.

The KUR 5 cooling ceiling controller is designed to measure the moisture between the printed conductors of a FTS/KO-1 film sensor and to switch the built-in output relay when a set sensitivity level is reached, thus permitting activation of an external solenoid valve.

The cooling ceiling controller is in protective circuit design: the potential-free changeover contact is in quiescent current design - in other words, the relay is energized when the sensor is dry.

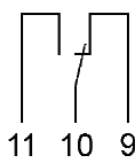


Position of contact in no-current status of the KUR 5

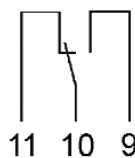


Technical data	KUR 5
Alternative supply voltages (AC versions: terminals 15 and 16; DC versions: - terminal 15: – - terminal 16: +)	<ul style="list-style-type: none"> <li>- AC 230 V (supplied if no other supply voltage is specified in the order) or</li> <li>- AC 240 V or</li> <li>- AC 115 V or</li> <li>- AC 24 V or</li> <li>- DC 24 V or } only for connection to a safety low voltage</li> <li>- DC 12 V or } which corresponds to the safety regulations relating to the application</li> </ul> <ul style="list-style-type: none"> <li>- further supply voltages on request</li> </ul>
Power consumption Control circuit (terminals 7 and 8)  - no-load voltage - short-circuit current - response sensitivity	<p>approx. 3 VA</p> <p>2 terminals (under safety extra low voltage SELV), acting on 1 output relay without self-hold</p> <p>18 V<sub>eff</sub> <math>\square</math> 10 Hz (safety extra low voltage SELV)</p> <p>0.3 mA</p> <p>approx. 50 k<math>\Omega</math> or approx. 20 <math>\mu</math>S (electric conductance)</p>
<b>Controlled circuit (terminals 9, 10, 11)</b>	<b>1 single-pole potential-free changeover contact without self-hold</b>
Operating principle Switching status indicator	quiescent current 1 red LED lights when the sensor is wet / output relay is not energized
Switching voltage Switching current Switching capacity	max. AC 250 V max. AC 4 A max. 500 VA
Housing Connection	insulating material, 75 x 55 x 110 mm terminals on top of housing
Protection class Mounting	IP 20 clip attachment for U-bar to DIN 46277 and DIN EN 50022 or fastening via two boreholes
Mounting orientation Temperature range	any - 20°C to + 60°C
<b>Max. length of connecting cable between cooling ceiling controller and sensor</b>	<b>500 m</b>
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies

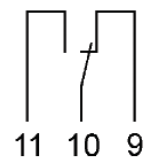
### Position of output contact in the KUR 5 cooling ceiling controller



**red LED dark:**  
KUR 5 without voltage –  
sensor dry or moistened –  
output relay not energised



**red LED dark:**  
KUR 5 under voltage –  
sensor dry –  
output relay energised



**red LED lit:**  
KUR 5 under voltage –  
sensor moistened –  
output relay not energised



# KUR 5/G cooling ceiling controller

for connection of a FTS/KO-1 film sensor

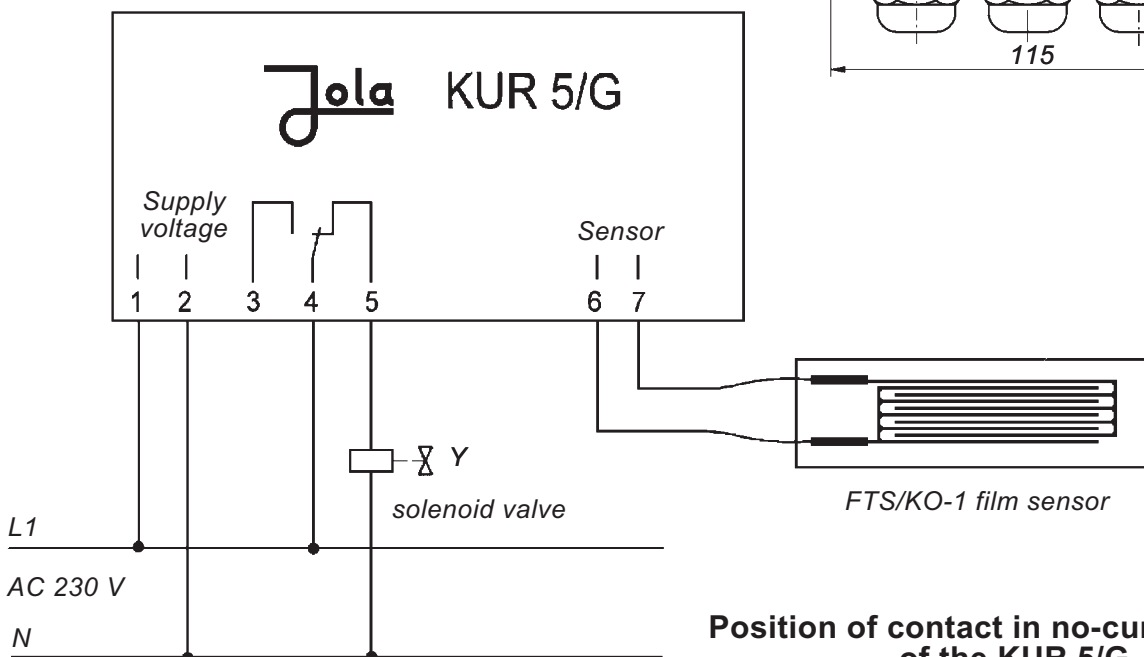
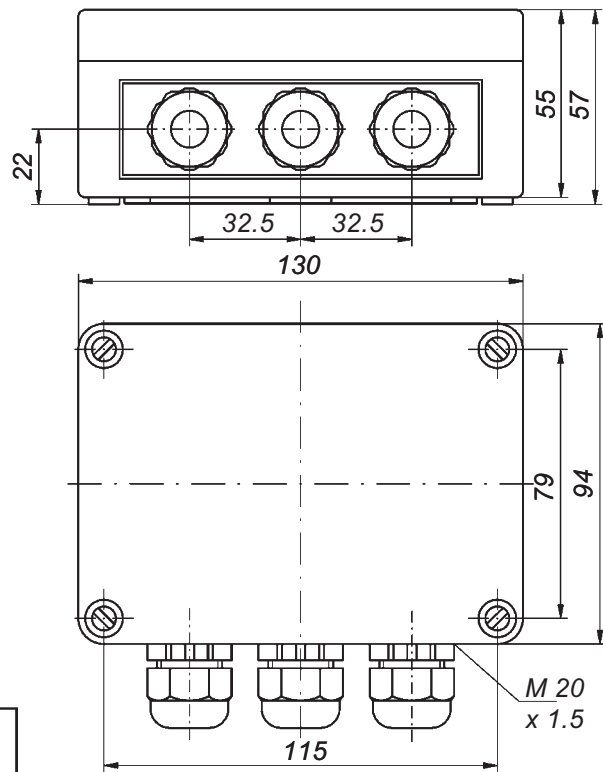
for detection of moisture on a cooling ceiling and for cooling ceiling control



Conductive relay in surface-mount housing with transparent cover, green mains monitoring indicator LED and red LED for moisture signalling inside the housing.

The KUR 5/G cooling ceiling controller is designed to measure the moisture between the printed conductors of a FTS/KO-1 film sensor and to switch the built-in output relay when a set sensitivity level is reached, thus permitting activation of an external solenoid valve.

The cooling ceiling controller is in protective circuit design: the potential-free changeover contact is in quiescent current design - in other words, the relay is energized when the sensor is dry.



Position of contact in no-current status of the KUR 5/G

**Technical data****KUR 5/G**

Alternative supply voltages  
(AC versions:  
terminals 1 and 2;  
DC versions:  
- terminal 1: –  
- terminal 2: +)

- AC 230 V (supplied if no other supply voltage is specified in the order) or
- AC 240 V or
- AC 115 V or
- AC 24 V or
- DC 24 V or } only for connection to a safety low voltage
- DC 12 V or } which corresponds to the safety regulations relating to the application
- further supply voltages on request

Mains monitoring indicator  
Power consumption  
Control circuit  
(terminals 6 and 7)

1 green LED  
approx. 3 VA

2 terminals (under safety extra low voltage SELV), acting on 1 output relay without self-hold  
18 V<sub>eff</sub>  $\overline{\square}$  10 Hz (safety extra low voltage SELV)  
0.3 mA  
approx. 50 k $\Omega$  or approx. 20  $\mu$ S (electric conductance)

- no-load voltage
- short-circuit current
- response sensitivity

**Controlled circuit  
(terminals 3, 4, 5)**

**1 single-pole potential-free changeover contact without self-hold**

Operating principle  
Switching status indicator

quiescent current  
1 red LED lights when the sensor is wet / output relay is not energized

Switching voltage  
Switching current  
Switching capacity

max. AC 250 V  
max. AC 4 A  
max. 500 VA

Housing  
Connection  
Protection class

insulating material, with 3 cable entries  
internal terminals  
IP 54

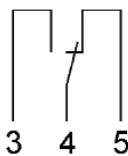
Mounting  
Mounting orientation  
Temperature range

surface mounting using 4 screws  
any  
- 20°C to + 60°C

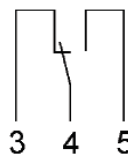
**Max. length of connecting cable between cooling ceiling controller and sensor**  
EMC

**500 m**  
for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies

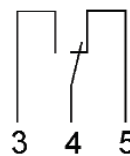
**Position of the output contact in the KUR 5/G cooling ceiling controller**



**green LED dark –**  
KUR 5/G without voltage



**green LED lit –**  
KUR 5/G under voltage



**green LED lit –**  
KUR 5/G under voltage



**red LED dark –**  
sensor dry or moistened –  
output relay not energised



**red LED dark –**  
sensor dry –  
output relay energised



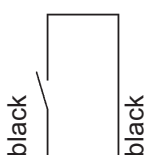
**red LED lit –**  
sensor moistened –  
output relay not energised



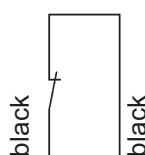


Technical data	KUR-L4
Supply voltage	AC/DC 24 V (safety extra low voltage SELV), colour of ropes: brown and blue
Power consumption	approx. 0.5 W
Control circuit	2 terminals (under safety extra low voltage SELV), acting on 1 output relay without self-hold
– no-load voltage	18 V <sub>eff</sub> $\sqrt{\square}$ 60 Hz (safety extra low voltage SELV)
– short-circuit current	0.1 mA
– response sensitivity	approx. 50 k $\Omega$ or approx. 20 $\mu$ S (electric conductance)
<b>Controlled circuit</b>	<b>1 single-pole potential-free make contact without self-hold, colour of ropes: black and black</b>
Operating principle	quiescent current
Switching voltage	max. AC/DC 24 V (safety extra low voltage SELV)
Switching current	max. AC/DC 3 A (1 A)
Housing	PC or PP, 65 x 50 x approx. 36 mm
Connection	by means of an integrated connecting cable 4 x 0.5 mm <sup>2</sup> ; 2 leads (brown and blue) for the supply voltage (DC or AC voltage), appliance operative by any polarity; 2 leads (black and black) for the potential-free make contact based on the quiescent current; length of the integrated connecting cable: 2 metres, longer on request
Protection class	IP 20
Mounting	surface mounting using 2 screws
Mounting orientation	any
Temperature range	- 20°C to + 60°C
<b>Max. length of the connecting cable between sensor and KUR-L4</b>	<b>100 m</b>
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies

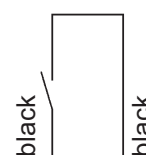
### Position of the output contact in the KUR-L4 compact cooling ceiling controller



*KUR-L4 without voltage -  
sensor dry or moistened -  
output relay not energized*



*KUR-L4 under voltage -  
sensor dry -  
output relay energized*



*KUR-L4 under voltage -  
sensor moistened -  
output relay not energized*



# KUR 5/K/.. compact cooling ceiling controller for safety extra low voltage SELV

for direct mounting on a copper pipe,  
with integrated FTS/KO-1 film sensor

for detection of moisture on a copper pipe of a cooling  
ceiling and for cooling ceiling control

Conductive relay for mounting on a copper pipe.

The KUR 5/K/.. compact cooling ceiling controllers are designed to measure the moisture between the printed conductors of the FTS/KO-1 film sensor located on a plate on the bottom of the housing and to switch the built-in output relay when a set sensitivity level is reached, thus permitting activation of an external solenoid valve.

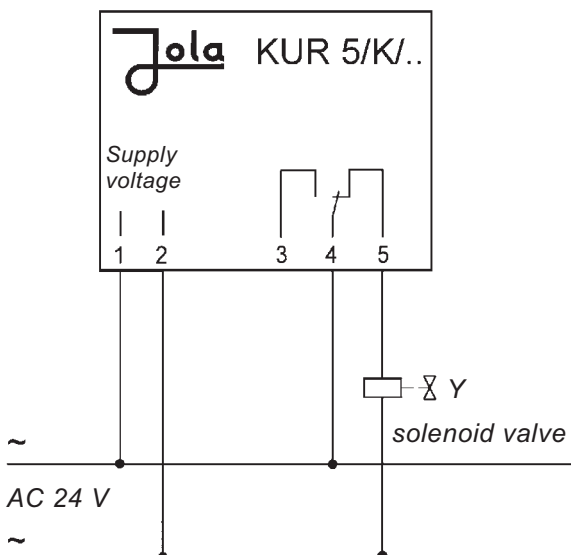
The compact cooling ceiling controllers are in protective circuit design: the potential-free changeover contact is in quiescent current design - in other words, the relay is energised when the sensor is dry.




**KUR 5/K/WI**



**KUR 5/K/BA**



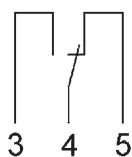
**Position of contact in no-current status**

Technical data	KUR 5/K/WI	KUR 5/K/BA
Application range	for mounting on a copper pipe with an external diameter between 10 mm and 25 mm   25 mm and 32 mm (for inquiries or orders please always state the outer diameter! special executions on request)	
Supply voltage (terminals 1 and 2)	AC 24 V (safety extra low voltage SELV), further supply voltage on request	
Power consumption	approx. 3 VA	
Control circuit	2 terminals (under safety extra low voltage SELV), acting on 1 output relay without self-hold	
– no-load voltage	9 V <sub>eff</sub>  10 Hz (safety extra low voltage SELV)	
– short-circuit voltage	0.3 mA	
– response sensitivity	approx. 50 kΩ or approx. 20 μS (electric conductance)	
<b>Controlled circuit (terminals 3, 4, 5)</b>	<b>1 single-pole potential-free changeover contact without self-hold</b> quiescent current	
Operating principle	max. AC 24 V (safety extra low voltage SELV)	
Switching voltage	max. AC 4 A	
Switching current	insulating material, with 2 M 20 x 1.5 cable entries	
Housing	internal terminals	
Connection	IP 54	
Protection class	on a copper pipe using a copper angle and 2 cable binders	on a copper pipe using a tape clip
Mounting	any	
Mounting orientation	> 0°C to + 60°C	
Temperature range	for interference emission in accordance with the appliance- specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.	
EMC		

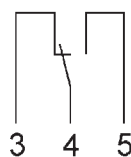
### Mounting instructions:

The KUR 5/K/.. compact cooling ceiling controllers should be installed at the point on the copper pipe where moisture is most probably expected to occur. After fastening the cooling ceiling controller to the pipe, do not push the cable binder ends or the protruding end of the tape clip between the foil sensor and the housing as this could damage the film sensor.

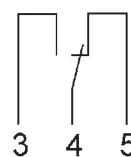
### Position of the output contact in the KUR 5/K/.. compact cooling ceiling controller



*KUR 5/K/.. without voltage -  
sensor dry or moistened -  
output relay not energized*

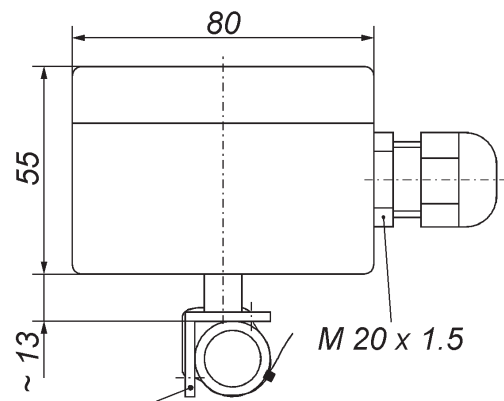
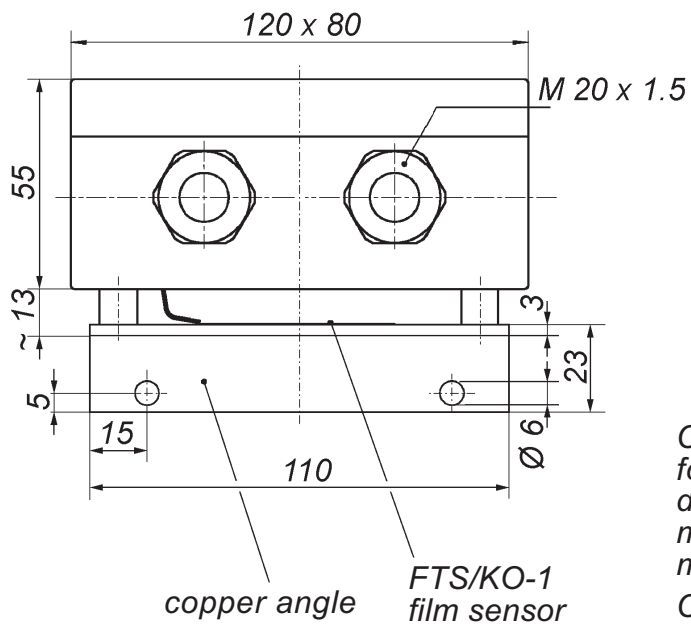


*KUR 5/K/.. under voltage -  
sensor dry -  
output relay energized*



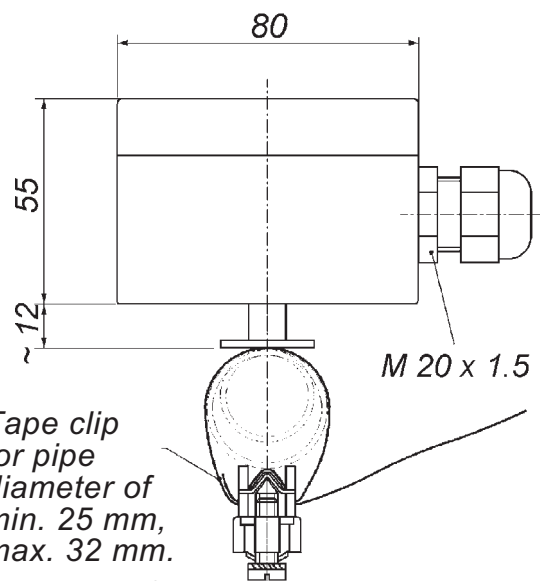
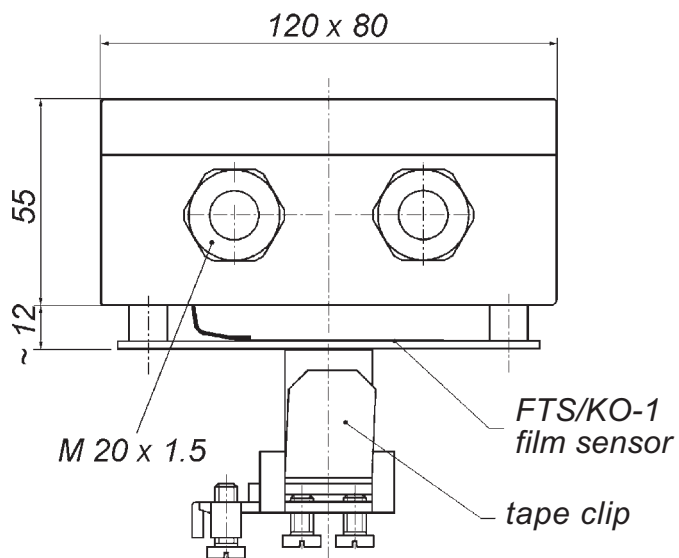
*KUR 5/K/.. under voltage -  
sensor moistened -  
output relay not energized*

## Dimensional drawing KUR 5/K/WI



Copper angle for pipe diameter of min. 10 mm, max. 25 mm.  
Copper angles for other pipe diameters on request.

## Dimensional drawing KUR 5/K/BA



Tape clip for pipe diameter of min. 25 mm, max. 32 mm.  
Tape clips for other pipe diameters on request.